Honeywell

MS9500 Voyager™ Series

Single-Line Hand Held Laser Scanner

User's Guide

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Patents

For patent information, refer to www.hsmpats.com.

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INTRODUCTION

Product Overview

Honeywell's MS9500 Voyager™ series of hand-held (single-line) laser scanners offers the user an aggressive solution for scanning all standard 1D bar codes including GS1 DataBar™ (RSS) bar codes. The MS9500 series is equipped with both *in-stand* and *out-of-stand* operation enabling hand-held or fixed projection scanning. The MS9520 Voyager models, which included all of the same features as the MS9540 Voyager*CG*™ model, with the exception of Honeywell's patented CodeGate™ technology, were retired as of July 31, 2018.

The MS9540, Voyager*CG* incorporates Honeywell's patented auto-trigger and CodeGate button feature. When a bar code is place in the scanner's IR range, the auto-trigger activates the laser enabling the user to align the visible laser line over the bar code selected for scanning. The user can then press the CodeGate button, to transmit the data to the host system. When the MS9540 is placed in the stand the CodeGate button feature will automatically deactivating for hands free operation.

Some additional key product features for the MS9500 series include:

- Auto-trigger operation and auto-stand detect
- CodeGate data transmission technology (MS9540 only)
- Flash – upgradeable firmware
- Easy configuration with MetroSelect™ bar codes and MetroSet™*2* Windows® compatible software
- Support for common interfaces including USB (see chart below)

VOYAGER	STATUS	INTERFACE
MS9520 – 00	Retired as of 8/31/18	Laser Emulation RS232 Transmit/Receive
MS9520 – 11	Retired as of 8/31/18	RS485◈, RS232 (TXD, RXD, RTS, CTS)
MS9520 – 14	Retired as of 8/31/18	RS232 (TXD, RXD, RTS, CTS, DTR, DSR)
MS9520 – 38	Retired as of 8/31/18	Low Speed USB*, TTL RS232 (TXD, RXD, RTS, CTS)
MS9520 – 40	Retired as of 8/31/18	Full Speed USB, RS232 (TXD, RXD, RTS, CTS)
MS9520 – 41	Retired as of 8/31/18	RS232/Light Pen Emulation
MS9520 – 47	Retired as of 8/31/18	Keyboard Wedge, Stand-Alone Keyboard and TTL RS232 Transmit/Receive

* *Configurable for Keyboard Emulation Mode or Serial Emulation Mode. The default setting is Keyboard Emulation Mode.*

◈ *Applicable for IBM® host applications.*

VOYAGER*CG*	STATUS	INTERFACE
MS9540 – 00	Retired as of 8/31/18	Laser Emulation RS232 Transmit/Receive
MS9540 – 11	Retired as of 8/31/18	RS485◆, RS232 (TXD, RXD, RTS, CTS)
MS9540 – 14	Retired as of 8/31/18	RS232 (TXD, RXD, RTS, CTS, DTR, DSR)
MS9540 – 38		Low Speed USB*, TTL RS232 (TXD, RXD, RTS, CTS)
MS9540 – 40		Full Speed USB, RS232 (TXD, RXD, RTS, CTS)
MS9540 – 41		RS232/Light Pen Emulation
MS9540 – 47		Keyboard Wedge, Stand-Alone Keyboard and TTL RS232 Transmit/Receive

* *Configurable for Keyboard Emulation Mode or Serial Emulation Mode. The default setting is Keyboard Emulation Mode.*

◆ *Applicable for IBM® host applications.*

INTRODUCTION

Scanner and Accessories

BASIC KIT	
Part #	**Description**
MS9520 or MS9540	Voyager Bar Code Scanner or Voyager*CG* Bar Code Scanner with CodeGate
00-02544	MetroSelect Single-Line Configuration Guide*
00-02410	MS9500 Voyager Series Single-Line Hand Held Laser Scanner User's Guide*

* Available for download at - www.honeywellaidc.com

OPTIONAL ACCESSORIES	
Part #	**Description**
53-53000*x*-3	RS232 PowerLink Cable with Built in Power Jack Black, *Coiled* Cord, with Long Strain Relief
59-59000*x*-3	RS232 PowerLink Cable with Built in Power Jack Black, *Straight* cord, with Short Strain Relief
53-53002*x*-3	Keyboard Wedge PowerLink Cable with Adapter Cable *Black, Coiled* cord, with Long Strain Relief
53-53020*x*-3	Stand Alone Keyboard Wedge PowerLink Cable *Black, Coiled* cord, with Long Strain Relief

Other items may be ordered for the specific protocol being used. To order additional items, contact the dealer, distributor or a customer service representative.

Scanner and Accessories

| OPTIONAL ACCESSORIES	
Part #	**Description**
53-53213x-N-3	USB Full Speed Cable Locking Plus-Power™ Type A, Black, Coiled Cord with Long Strain Relief
53-53214x-N-3	USB Full Speed Cable Locking Plus-Power™ Type A, Black, Coiled Cord with Long Strain Relief, Extended Length 📝 *Not for use with Low Speed USB scanners.* *Use with Full Speed USB scanners only.*
53-53235x-N-3	USB Low Speed Communication Cable, Type A Black, Coiled Cord with Long Strain Relief
MVC**	RS485 MVC Cable ±12VDC to +5.2VDC
** *Contact a customer service representative for additional information on the MVC converter cable series and the host connections available.*	
46-46128	Free-Standing Stand with Accessories
46-46351	Hard Mount Accessory Kit (*used with kit #46-46128)*
46-46508	Wall Mount Hanger Accessory Kit

Other items may be ordered for the specific protocol being used. To order additional items, contact the dealer, distributor or a customer service representative.

Scanner Components
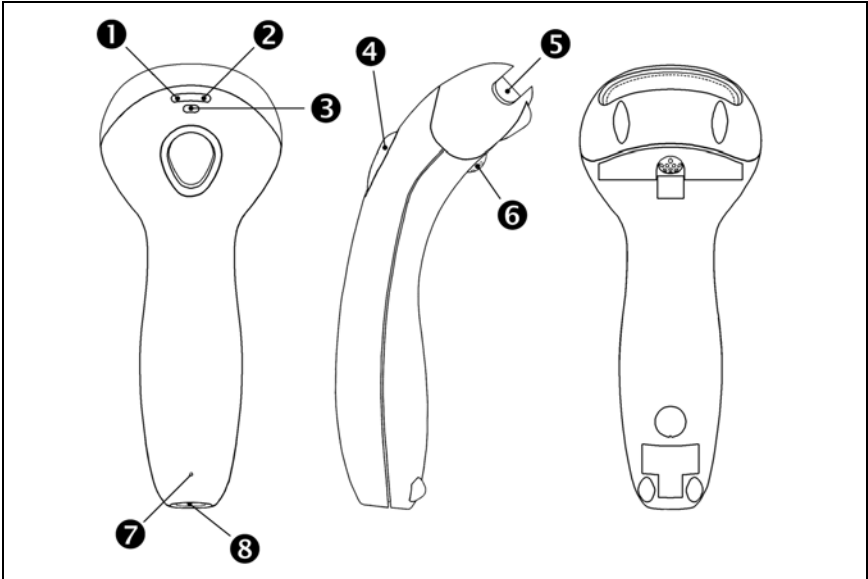
No.	Item Description	
1	Green LED♦	See *Visual Indicators* on page 19
2	Red LED♦	See *Visual Indicators* on page 19
3	Yellow LED♦♦	See *Visual Indicators* on page 19
4	Button♦♦	See *How to use CodeGate* on page 13
5	Red Window	Laser Aperture
6	Speaker	See *Audible Indicators* on page 18
7	Cable Release Pin-Hole	See *The PowerLink Cable* on page 6
8	Cable Connection	10-pin RJ45, Female Socket, See *Scanner Pinout Connections* on page 33

Figure 1. Scanner Components

♦   In some custom units the standard green LED has been replaced with a blue LED and the red LED has been replaced with a white LED.

♦♦   Items are provided with the MS9540, Voyager*CG* model only.

Disconnecting the PowerLink Cable

Before removing the cable from the scanner, Honeywell recommends that the power on the host system is off and the power supply has been disconnected from the PowerLink cable.
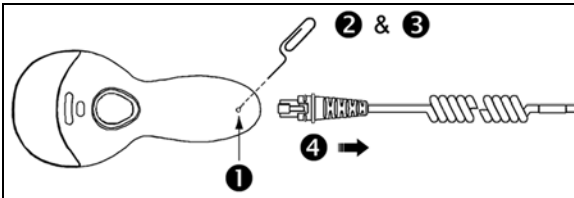
Figure 2.

1. Locate the small 'pin-hole' on the top of the unit near the bottom of the scanner.

2. Bend an ordinary paperclip into the shape shown above.

3. Insert the paperclip (or other small metallic pin) into the small 'pin-hole'.

4. There will be an audible *click* when the connector lock releases. Pull gently on the strain-relief of the PowerLink cable to separate the cable from the scanner.

Connecting the PowerLink Cable

[i] Important: If the PowerLink cable is not fully latched, the unit can power intermittently.

Figure 3.

Figure 4.

Labels

Every scanner has labels and molded text located on the underside of the unit. The labels and text contain important information s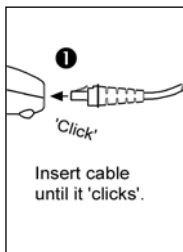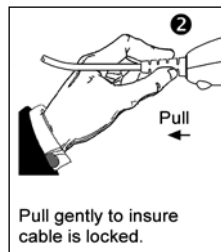uch as the unit's date of manufacture, serial number, CE and caution information. Figure 5 provides examples of the labels and the molded text.
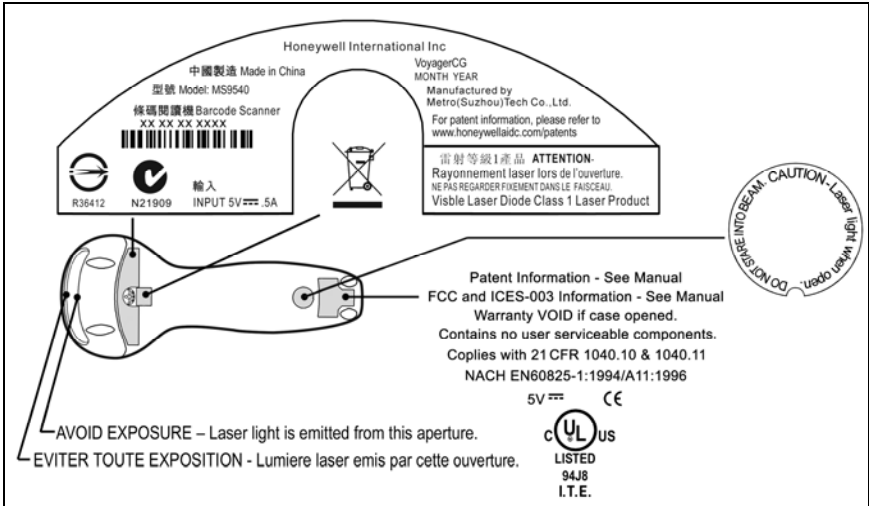
Figure 5 . Molded Text and Label Examples

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/IEC 60950-1.

To maintain compliance with standard CSA-C22.2 No. 60950-1/UL 60950-1 and norm EN/IEC 60950-1, the power source should meet applicable performance requirements for a limited power source.

Maintenance

Smudges and dirt on the unit's window can interfere with the unit's performance. If the window requires cleaning, use only a mild glass cleaner containing no ammonia. When cleaning the window, spray the cleaner onto a lint free, non-abrasive cleaning cloth then gently wipe the window clean.

If the unit's case requires cleaning, use a mild cleaning agent that does not contain strong oxidizing chemicals. Strong cleaning agents may discolor or damage the unit's exterior.

RS232, Laser Emulation, and Light Pen Emulation

1. Turn off the host system.

2. Connect the 10-pin RJ45 male connector into the jack on the scanner. There will be an audible *click* when the connector lock engages.

    > If the scanner is receiving power from the host system, skip to step #5.

3. Connect the L-shaped plug of the power supply into the power jack on the PowerLink cable.

4. Verify the AC input requirements of the power supply match the AC outlet. Connect the power supply into an AC outlet. The outlet should be near the equipment and easily accessible.

5. Connect the PowerLink cable to the proper port on the host system.

6. Turn on the host system.

Figure 6.

> Plugging the scanner into a port on the host system does not guarantee that scanned information will be communicated properly to the host system. Please refer to the MetroSelect Single-Line Configuration Guide or MetroSet2's help files for instructions on changing the scanner's factory default configuration. The scanner and host system must use the same communication protocols.

> All MS95*x*0-**00** scanners leave the factory with the *Laser Emulation Mode* enabled. If you *recall defaults* while re-configuring your scanner the *Laser Emulation Mode* will no longer be enabled. Refer to the *MS95x0-00 Laser Emulation Mode* section of the MetroSelect Single-Line Configuration Guide for information on enabling the *Laser Emulation Mode.*

> ⚠ *See caution on page 7.*

RS485

1. Turn off the host system.

2. Plug the male 10-pin RJ45 end of the MVC cable into the 10-pin socket on the scanner. There will be an audible *click* when the connection is made.

3. Connect the other end of the MVC cable to the host device.
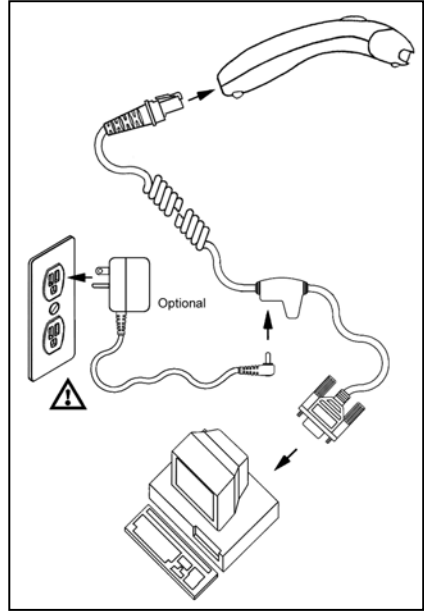
4. Turn on the host system.

Figure 7.

Plugging the scanner into a port on the host system does not guarantee that scanned information will be communicated properly to the host system. Please refer to the MetroSelect Single-Line Configuration Guide or MetroSet2's help files for instructions on changing the scanner's factory default configuration. The scanner and host system must use the same communication protocols.

See caution on page 7.

Keyboard Wedge

1. Turn off the host system.

2. Connect the 10-pin RJ45 male connector into the jack on the scanner. There will be an audible *click* when the connection is made.

   > If the scanner is receiving power from the host system, skip to step #5.

3. Connect the L-shaped plug of the power supply into the power jack on the PowerLink cable.

4. Verify the AC input requirements of the power supply match the AC outlet. Connect the power supply into an AC outlet. The outlet should be near the equipment and easily accessible.

5. Disconnect the keyboard from the PC.

6. Connect the PowerLink cable to the keyboard and the PC's keyboard port. If necessary use the supplied adapter cable (5-pin male DIN to 6-pin female mini DIN adapter).
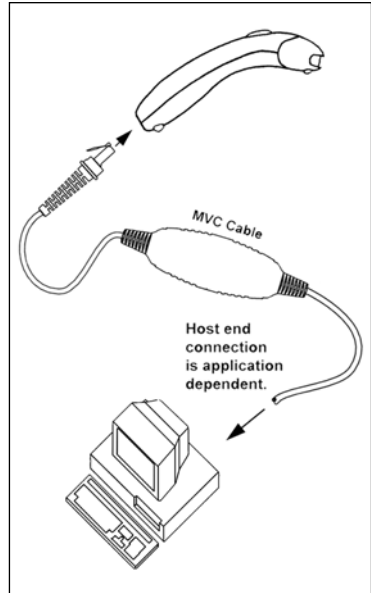
7. Power up the host system.

Figure 8.

> Plugging the scanner into a port on the host system does not guarantee that scanned information will be communicated properly to the host system. Please refer to the MetroSelect Single-Line Configuration Guide or MetroSet2's help files for instructions on changing the scanner's factory default configuration. The scanner and host system must use the same communication protocols.

> Powering the MS95x0-**47** directly from the computer can sometimes cause interference with the operation of the scanner or the computer. Not all computers supply the same current through the keyboard port, explaining why a scanner may work on one computer and not another. Contact a Customer Service Representative if you require an external power supply.

> *See caution on page 7.*

Stand-Alone Keyboard

1. Turn off the host system.

2. Connect the 10-pin RJ45 male connector into the jack on the scanner. There will be an audible *click* when the connection is made.

   > If the scanner is receiving power from the host system, skip to step #5.

3. Connect the L-shaped plug of the power supply into the power jack on the PowerLink cable.

4. Verify the AC input requirements of the power supply match the AC outlet. Connect the power supply into an AC outlet. The outlet should be near the equipment and easily accessible.

5. Connect the PowerLink cable to the keyboard port on the host system.

6. Turn on the host system.
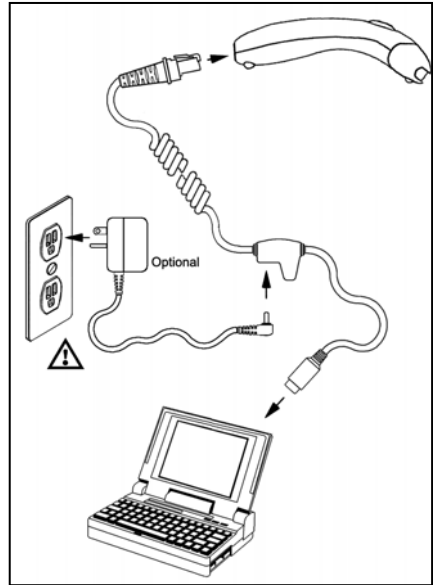
Figure 9.

> Powering the MS95x0-**47** directly from the computer can sometimes cause interference with the operation of the scanner or the computer. Not all computers supply the same current through the keyboard port, explaining why a scanner would work on one computer and not another. Contact a Customer Service Representative if you require an external power supply.
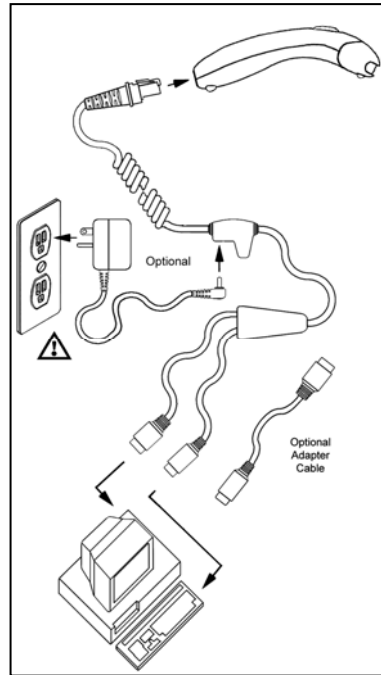
> Plugging the scanner into a port on the host system does not guarantee that scanned information will be communicated properly to the host system. Please refer to the MetroSelect Single-Line Configuration Guide or MetroSet2's help files for instructions on changing the scanner's factory default configuration. The scanner and host system must use the same communication protocols.

> ⚠ *See caution on page 7.*

Integrated USB: Full Speed (-40)
                    Low Speed (-38)

1. Turn off the host system.

2. Connect the 10-pin RJ45 male connector of the USB cable into the jack on the scanner. There will be an audible *click* when the connection is made.

3. Connect the other end of the USB cable to the host USB port.

4. Turn on the host system.
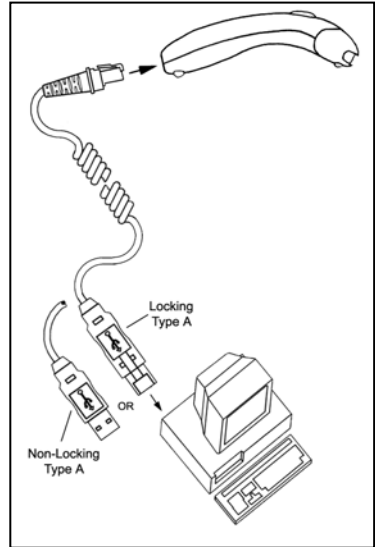
Figure 10.

As a default, the MS95x0-**38** leaves the factory with USB Keyboard Emulation Mode enabled.

For information on configuring the MS95x0-**38** for USB Serial Emulation Mode, please refer to the USB section of the MetroSelect Single-Line Configuration Guide (PN 00-02544).

Plugging the scanner into a port on the host system does not guarantee that scanned information will be communicated properly to the host system. Please refer to the MetroSelect Single-Line Configuration Guide or MetroSet2's help files for instructions on changing the scanner's factory default configuration. The scanner and host system must use the same communication protocols.

See caution on page 7.

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How to Use CodeGate and the Manual Activation Mode

CODEGATE	MANUAL ACTIVATION MODE*
1. Auto trigger (IR) activates the laser.	1. Aim the scanner at the bar code.
2. Place the laser line on the bar code.	2. Press and hold the button down to scan and transmit the bar code. Press & Hold Beep
3. Press the button to transmit the data. Press Beep	* This feature is not a default setting. Refer to the MetroSelect Configuration Guide for instructions on enabling the Manual Activation Mode.

Figure 11.	*Figure 12.*

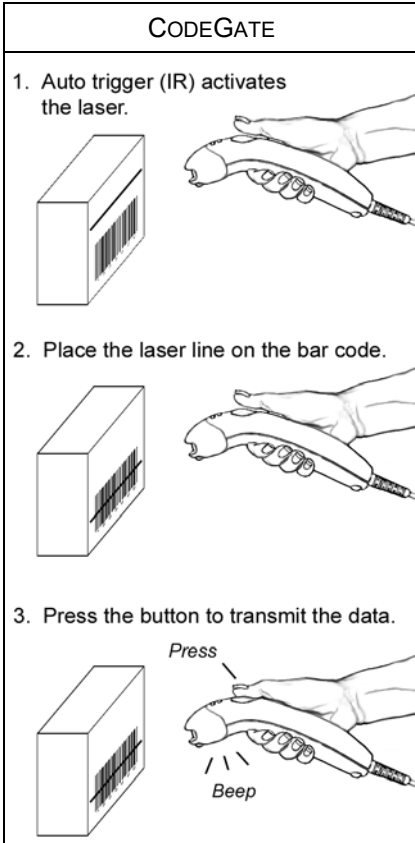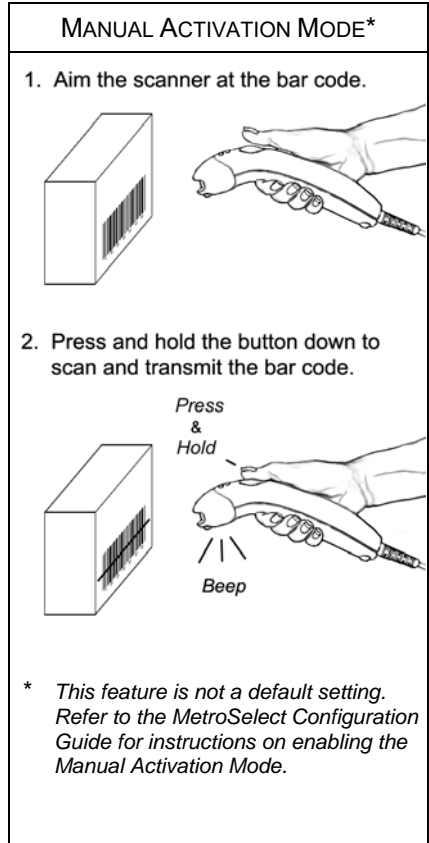**Three Modes of Operation**

Auto Trigger, In-Stand
- Auto-triggers while in the stand
- Bar code is automatically decoded and transmitted

CodeGate, Out-of-Stand
- CodeGate activates when removed from the stand
- Bar code data is transmitted when the button is pressed

Manual Activation Mode*, Out-of-Stand
- Button activates laser
- Bar code data is scanned and transmitted while button is held down

Types

Free Standing Kit #46-46128
(*Figure 13*)

Kit Contains:

a. Stand.. Qty. 1
b. Apron... Qty. 1
c. Screw, M3 x 6 mm .... Qty. 2
d. Washer, #5 x .5 OD..................................... Qty. 2
e. Stand Anchor .... Qty. 1
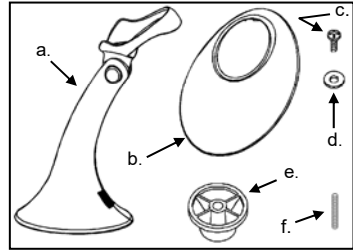f. M3 x 20 mm Set Screw .... Qty. 1

Figure 13.

Optional
Hard Mount Accessory Kit #46-46351
(*Figure 14*)

This kit, used in conjunction with the stand kit (#46-46128), can be used to hard mount (bolt) the MS9500 to the countertop.

Kit Contains:

a. Screw, #8 Round Head .... Qty. 4
b. Base .... Qty. 1
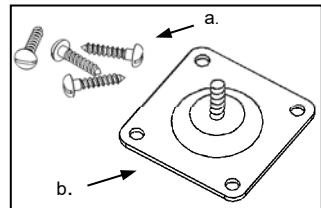
Figure 14.

Optional
Wall Mount Hanger Accessory Kit #46-46433
(*Figure 15*)

Kit Contains:

a. Screw #8 Round Head .... Qty. 2
b. Wall Mount Hanger .... Qty. 1
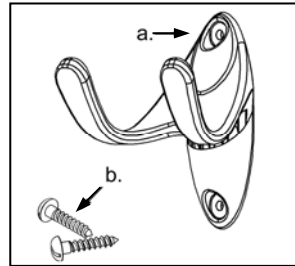
Figure 15.

Optional
Wall Mount Hanger Kit #46-46508
(*Figure 16*)

Kit Contains:

a. Wall Mount Hanger .... Qty. 1
b. Wall Mount Base .... Qty. 1
c. 4.8 x 13 mm, Self Tapping Screw .... Qty. 2
d. Double-Sided Adhesive Tape .... Qty. 1
e. #8 Wood Screw... Qty. 2

Figure 16.

Assembly

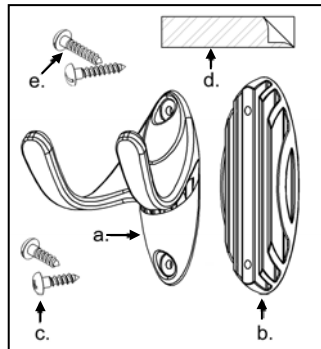There are two options for assembling the stand. The first option is a self-supporting stand that can be moved freely about on the countertop. The second option is used if the stand will be bolted or hard-mounted to the countertop.

Stand Option 1: Self-Supported Stand Kit #46-46128

Step 1

Slide the apron over the stand.

Figure 17.

Step 2

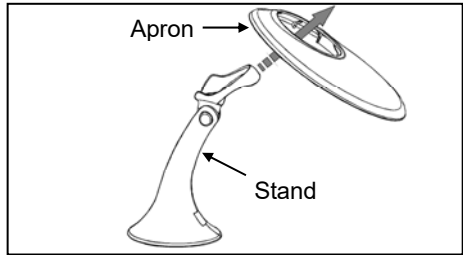Position the stand so that it sits under the tab on the apron. Then secure the apron to the stand using the two M3 x 6 mm screws and the two #5 washers provided.
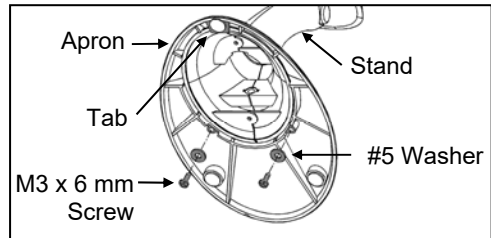
Figure 18.

Stand Option 2: Hard-Mount Accessory Kit #46-46351
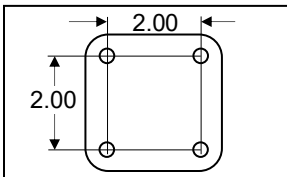
Figure 19.

Step 1

Drill four #39 holes in the countertop.
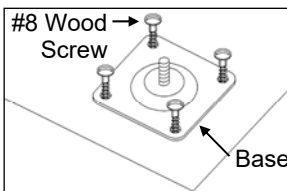
Figure 20.

Step 2

Secure the base to the countertop with the four #8 wood screws provided.

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Assembly

Stand Option 2: Hard-Mount Kits #46-46128 and #46-46351
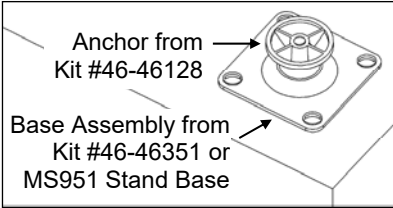
Figure 21.

Step 3

Screw the stand anchor onto the base assembly until it sits flush.
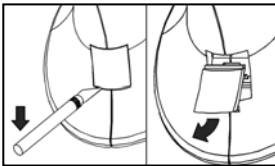
Figure 22.

Step 4

Remove the logo plate on the stand by gently using an exacto knife to release the plate hook.
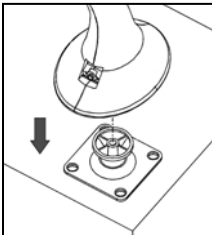
Figure 23.

Step 5

Position the stand over the base assembly.
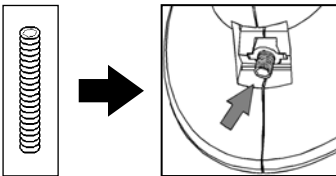
Figure 24.

Step 6

Secure the stand to the base assembly by installing and tightening the M3 set screw under the logo plate as shown.
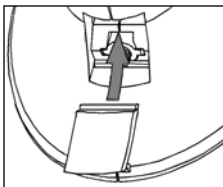
Figure 25.

Step 7

Snap the logo plate back into place.

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Assembly

Wall Mount, Option 1:

For Kit #46-46508

Step 1

Drill two #39 pilot holes 3.00″ apart.

Step 2

Attach the *Wall Mount Hanger* to the wall with the two #8 wood screws provided.
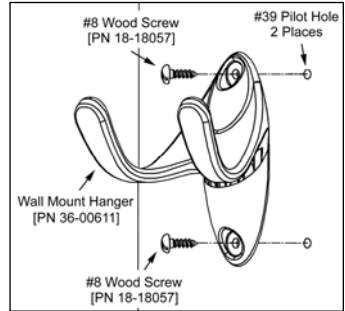
Figure 26.

Wall Mount, Option 2:

Kit #46-46508

Step 1

Attach the Wall Mount Base to the Wall Mount Hanger with the two 4.8 x 13 mm self-tapping screws.

Step 2

Remove one side of the protective backing from the double-sided adhesive tape.

Figure 27.

Step 3

Attach the tape to the back of the Wall Mount Hanger as shown.

Step 4

Remove the protective backing from the double-sided adhesive tape and apply hook to the wall.
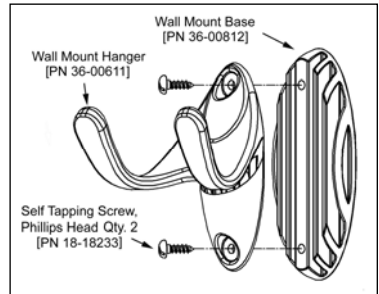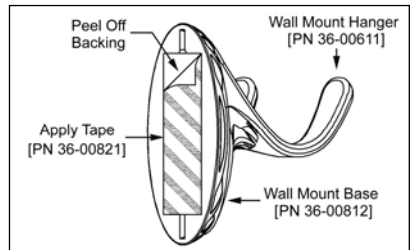
Figure 28.

Audible

When the Voyager 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, six alternate tones and no tone). To change the beeper tone, refer to the MetroSelect Single-Line Configuration Guide or MetroSet2's help files.

One Beep ◀≀♪

When the scanner *first* receives power, the green* LED will turn on, the red* LED will flash, and the scanner will beep once. The scanner is ready to scan.

When the scanner successfully reads a bar code, the red LED will flash and the scanner will beep once.

Three Beeps ◀≀♪♪♪

During Operation

When entering the configuration mode, the red* LED will flash while the scanner simultaneously beeps three times.

When exiting the configuration mode, the scanner will beep three times and the red LED will stop blinking.

Three beeps can also indicate a communication timeout during normal scanning mode if the scanner is configured to give this indication.

During Start-up

This is a failure indicator. Refer to "Failure Modes" on page 20.

Three Beeps ◀≀♪♪♪

When using the single-code-configuration method, the scanner will sound a 3-combination tone (a single beep then a short pause followed by, a high tone, and a low tone). This beep sequence signals that the single configuration bar code has successfully configured the scanner.

Razzberry Tone ◀≀≈

On startup, this tone indicates a failure mode. Refer to "Failure Modes" on page 20.

When in configuration mode, a short razzberry tone will sound if an invalid bar code is scanned.

*   In some *custom* units the standard green LED has been replaced with a blue LED and the red LED has been replaced with a white LED.

Visual
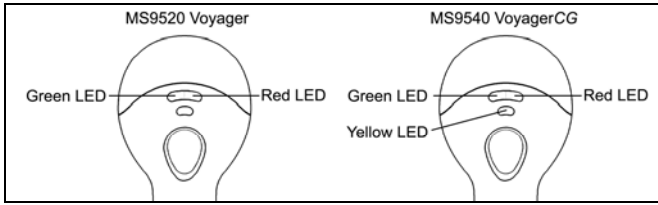
Figure 29. LED Configuration

The MS9540 has three LED indicators located on the head of the scanner.
The MS9520 has two LED indicators located on the head of the scanner.
When the scanner is in operation, the flashing, or stationary activity of the LEDs
indicates the status of the scanner and the current scan.

All LEDs are Off

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

The scanner is in stand-by mode, and CodeGate is enabled. Present a bar
code to the scanner and the green LED will turn on when the laser turns on.

Steady Yellow (*MS9540's Only*)

The CodeGate button is not active. If a bar code is in the scan field, the laser
will turn on. The bar code will be decoded and transmitted to the host
automatically.

Steady Green

When the laser is active, the green LED is illuminated. The green* LED will
remain illuminated until the laser is deactivated (*default mode only).*

Steady Green 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 (*default mode
only).*

> 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.

---

*   In *some custom* units the standard green LED has been replaced with a blue LED and
the red LED has been replaced with a white LED.

Indicators

Failure Modes

Razzberry Tone – On Start-Up ◀≈

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

Continuous Razzberry Tone with all LEDs Off ◀≈

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

Three Beeps – on power up ◀≈♪♪♪

If the scanner beeps three times on power up then the non-volatile memory
(NovRAM) that holds the scanner configuration has failed. If the scanner does
not respond after reconfiguring, return the scanner for repair to an authorized
service center.

CONFIGURATION MODES

The MS9500 Voyager has three modes of configuration.

- **Bar Codes**
  The MS7120 can be configured by scanning the bar codes located in the MetroSelect Single-Line Configuration Guide. This manual is available for download at www.honeywellaidc.com.

- **MetroSet2**
  This user-friendly Windows®-based configuration program allows you to simply 'point-and-click' at the desired scanner options. MetroSet2 is available for download at www.honeywellaidc.com.

- **Serial Configuration**
  This mode of configuration is ideal for OEM applications. Serial programming mode gives the end-user the ability to send a series of commands using the serial port of the host system. The commands are equivalent to the numerical values of the bar codes located in the MetroSelect Configuration Guide.

How does Serial Configuration work?

1. Each command sent to the scanner is the ASCII representation of each numeral in the configuration bar code. The entire numeric string is framed with an ASCII [stx] and an ASCII [etx].

    EXAMPLE #1:
    Command for Disabling Codabar
    Command = [stx]100104[etx]
    String Sent to Scanner = 02h 31h 30h 30h 31h 30h 34h 03h
    (All values are hexadecimal).

2. If the command sent to the scanner is valid, the scanner will respond with an [ack].

3. If the command sent to the scanner in invalid, the scanner will respond with a [nak].

    NOTE: If this occurs, the end-user must start over at the very beginning of the configuration sequence. Re-transmitting the invalid command will not work, the user must start over.

4. During configuration, the motor and laser turn off. YOU CANNOT SCAN A BAR CODE WHILE IN SERIAL CONFIGURATION MODE.

5. There is a 20 second window between commands. If a 20 second timeout occurs, the scanner will send a [nak] and you must start over.

6. To enter serial configuration mode, send the following command [stx]999999[etx].

7. To exit serial configuration mode, send the following command [stx]999999[etx], the scanner will respond with an [ack] followed by 3 beeps.

8. This mode uses the current Baud Rate, Parity, Stop Bits and Data Bits settings that are configured in the scanner. The default settings of the scanner are 9600, Space, 2, 7 respectively. If a command is sent to the scanner to change any of these settings, the change will NOT take effect until after serial configuration mode is exited.

    EXAMPLE #2:

    The following example will set the scanner to the factory default settings, Disable Scanning of Code 128 bar codes, change the beeper tone, and add a "G" as a configurable prefix.

FEATURE	HOST COMMAND	ASCII REPRESENTATION	SCANNER RESPONSE
Enter Configuration Mode	[stx]999999[etx]	02h 39h 39h 39h 39h 39h 39h 03h	[ack] or 06h
Load Defaults	[stx]999998[etx]	02h 39h 39h 39h 39h 39h 38h 03h	[ack] or 06h
Disable Code 128	[stx]100113[etx]	02h 31h 30h 30h 31h 31h 33h 03h	[ack] or 06h
Alternate Tone 1	[stx]318565[etx]	02h 33h 31h 38h 35h 36h 35h 03h	[ack] or 06h
Configure. Prefix #1	[stx]903500[etx]	02h 39h 30h 33h 35h 30h 30h 03h	[ack] or 06h
Code Byte 0	[stx]0[etx]	02h 30h 03h	[ack] or 06h
Code Byte 7	[stx]7[etx]	02h 37h 03h	[ack] or 06h
Code Byte 1	[stx]1[etx]	02h 31h 03h	[ack] or 06h
Exit Configuration Mode	[stx]999999[etx]	02h 39h 39h 39h 39h 39h 39h 03h	[ack] or 06h

The scanner will beep three times!

The commands sent to the scanner do not include the small superscripted '3' that you see in front of each bar code string in the MetroSelect manual. THE '3' SHOULD NOT BE SENT. IT IS A CODE TYPE DESIGNATION ONLY!

As you will note for commands requiring additional bar codes to be scanned (such as prefixes, suffixes, timeouts, etc.), simply send the code bytes in the same order that you would normally scan the bar codes.

EXAMPLE #3:

The following example shows the events that occur when an invalid bar code is sent. This sample will load the factory default settings and then set the baud rate to 19200.

FEATURE	HOST COMMAND	ASCII REPRESENTATION	SCANNER RESPONSE
Enter Configuration Mode	[stx]999999[etx]	02h 39h 39h 39h 39h 39h 39h 03h	[ack] or 06h
Load Defaults	[stx]99999:[etx]	02h 39h 39h 39h 39h 39h 3Ah 03h	[nak] or 15h
Invalid command was sent, you must start over!			
Enter Configuration Mode	[stx]999999[etx]	02h 39h 39h 39h 39h 39h 39h 03h	[ack] or 06h
Load Defaults	[stx]999998[etx]	02h 39h 39h 39h 39h 39h 39h 03h	[ack] or 06h
19200 Baud Rate	[stx]415870[etx]	02h 34h 31h 35h 38h 37h 30h 03h	[ack] or 06h
Exit Configuration Mode	[stx]999999[etx]	02h 39h 39h 39h 39h 39h 03h	[ack] or 06h
The scanner will beep three times!			

This example illustrates two important points.

First, if an invalid command is sent from the host, the scanner responds with a [nak] and the end-user must start over from the beginning.

Second, if a command is sent to change the Baud Rate, the new baud rate does not take effect until after the end-user exits configuration mode.

ABBREVIATED ASCII TABLE

Character	Hex Value	Decimal Value
[STX]	02h	2
[ETX]	03h	3
[ACK]	06h	6
[NAK]	15h	21
0	30h	48
1	31h	49
2	32h	50
3	33h	51
4	34h	52
5	35h	53
6	36h	54
7	37h	55
8	38h	56
9	39h	57

UPGRADING THE FIRMWARE

The Voyager series is part of Honeywell's line of scanners with flash upgradeable firmware. The upgrade process requires a new firmware file supplied to the customer by a customer service representative♦ and MetroSet2 software♦♦. A personal computer running Windows 95 or greater with an available RS232 serial or USB port is required to complete the upgrade.

> **Do not** use the standard cable supplied with Keyboard Wedge or RS485 interface kits for firmware upgrades. Use either cable #54-54014x or #53-53014x. If using USB or RS232 for the upgrade process, the standard USB or RS232 cable provided with the scanner can be used.

To upgrade the firmware in the MS9520/MS9540:

1. Plug the scanner into a serial communication port on the host system.

2. Start the MetroSet2 software.

3. Click on the plus sign (+) next to *POS Scanners* to expand the supported scanner list.

4. Choose the *Voyager/9520 N/R* or *Voyager/9540 N/R* from the list.

5. Click on the *Configure Scanner* button.

6. Choose *Flash Utility* from the options list located on the left side of the screen.

7. Click on the *Open File* button in the Flash Utility window.

8. Locate and open the flash upgrade file supplied.

9. Select the COM port that the scanner is connected to on the host system.

10. Verify the settings listed in the Flash Utility window.

11. Click on the *Flash Scanner* button to begin the flash upgrade.

12. A message will appear on the screen when the upgrade is complete.

♦   See Customer Support on page 39.

♦♦   MetroSet2 is available for download, at no additional cost, from www.honeywellaidc.com

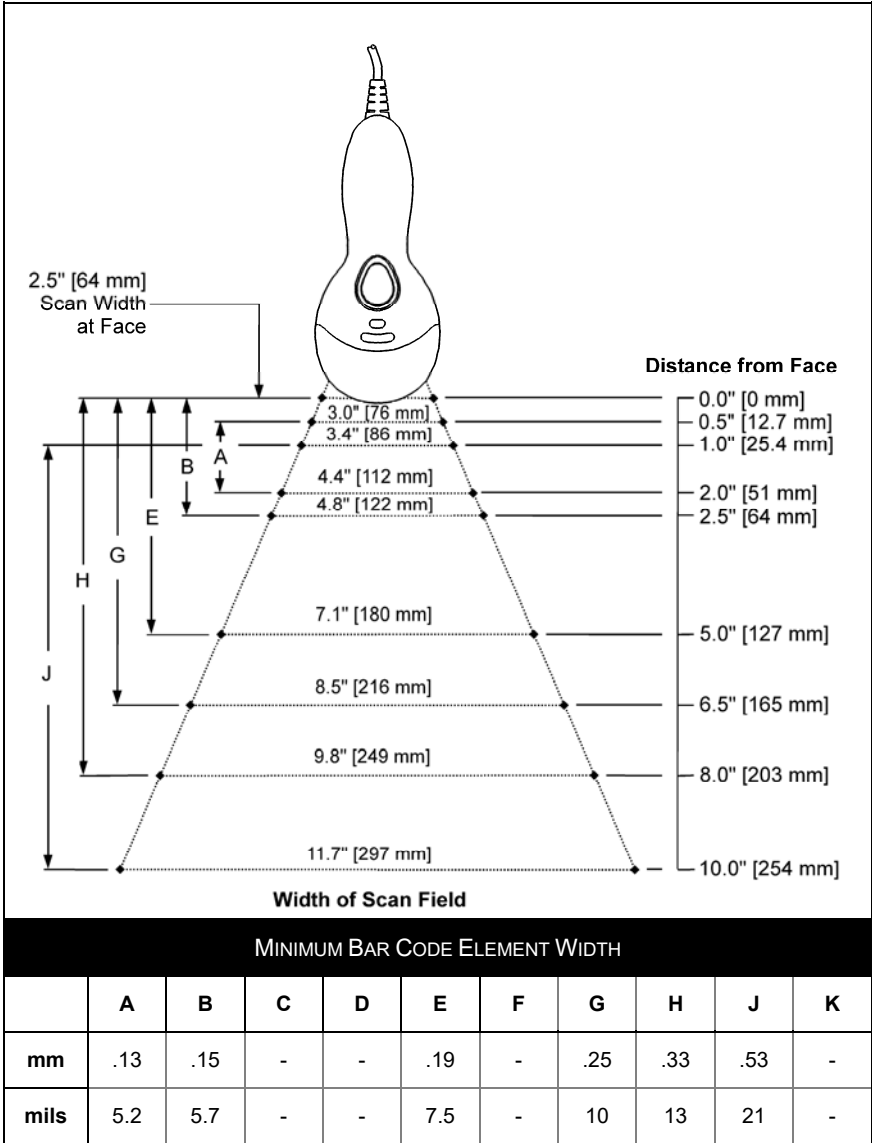| MINIMUM BAR CODE ELEMENT WIDTH									
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**K**
mm	.13	.15	-	-	.19	-	.25	.33	.53	-
mils	5.2	5.7	-	-	7.5	-	10	13	21	-

Figure 30. Depth of Field

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IR ACTIVATION RANGE

The scanner's laser will turn off if the scanner has been idle. When the scanner's IR detects movement in the activation area (*see figure below*), the laser will automatically turn on, preparing the scanner for bar code recognition, decoding, and transmission. The default laser/scan mode for the MS9500 series is *normal scan*.
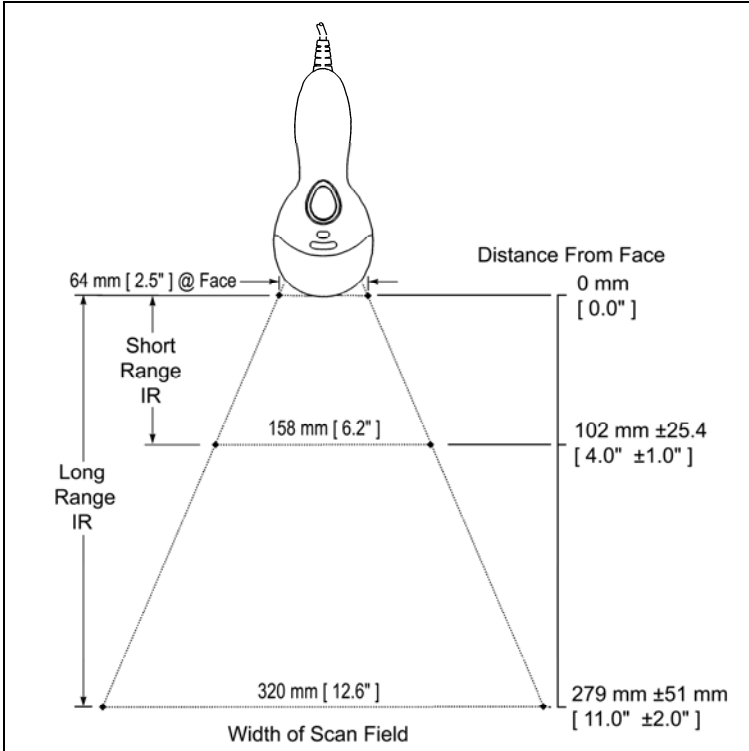

Figure 31. Short and Long IR Activation Area

APPLICATIONS AND PROTOCOLS

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

Scanner	Version Identifier	Communication Protocol(s)
MS9520 Or MS9540	00	Laser Emulation and RS232 Transmit/Receive
	11	RS485, RS232 - TXD, RXD, RTS, CTS
	14	RS232 - TXD, RXD, RTS, CTS, DTR, DSR
	38	Low Speed USB, Serial Emulation or Keyboard Emulation
	40	Full Speed Integrated USB
	41	RS232/Light Pen Emulation
	47	Keyboard Wedge, Stand-Alone Keyboard and TTL RS232 Transmit/Receive

The MS9520/9540 Keyboard Wedge Series (-47) is designed for keyboard emulation only. Many RS232 configurable functions available in other Honeywell scanners are also available as keyboard wedge functions.

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

Keyboard Type

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

Keyboard Country Type

- **USA
- Belgian
- French
- German
- Hungarian
- Italian
- Japanese
- Russian Cyrillic
- Slovenian
- Spanish
- Swiss
- Swedish/Finnish
- Turkish
- United Kingdom

** Default setting. Refer to the MetroSelect® Configuration Guide (PN 00-02407) or MetroSet2's help files for information on how to change the default settings.

TROUBLESHOOTING GUIDE

The following guide is for reference purposes only. Contact a customer service representative to preserve the limited warranty terms.

Symptoms	Possible Causes	Solution
All Interfaces		
The unit has no LEDs, beep or laser.	No power is being supplied to the unit.	Check the transformer, the outlet and power strip. Make sure the cable is plugged into the unit.
	No power is being supplied to the unit from host.	Some host systems cannot supply enough current to power Voyager. A power supply may be needed.
At power up the unit beeps 2 times and alternately flashes the LEDs.	There is a ROM failure.	A flash ROM upgrade is required.
At power up the unit beeps 3 times.	There is a non-volatile RAM failure.	Contact a customer service representative.
At power up there is a continuous razz tone.	There has been a diagnostic failure.	
At power up there is a razz tone and the green* LED flashes.	There is a VLD failure.	
At power up there is a razz tone and both LEDs flash.	There is a scanning mechanism failure.	
The unit scans, communicates, and beeps twice.	The same symbol timeout is set too short.	Adjust the same symbol timeout for a longer time.
The unit powers up, but does not beep.	The beeper may be disabled or no tone has been selected.	Enable beeper and select a tone.
The unit powers up, but does not scan and/or beep.	The unit is trying to scan a particular symbology that is not enabled.	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.
* *In some custom units, the standard green LED has been replaced with a blue LED and the red LED has been replaced with a white LED.*		

TROUBLESHOOTING GUIDE

Symptoms	Possible Causes	Solution
The unit powers up, but does not scan and/or beep.	The bar code being scanned does not satisfy the configured criteria for character length lock or minimum length.	Verify that the bar code being scanned falls into the configured criteria. *The scanner defaults to a minimum of 3 character bar code.*
The following item is only relevant for TTL RS232 and Serial Emulation USB interfaces.		
The unit scans a bar code, but locks up after the first scan and the red* LED stays on.	The unit is configured to support some form of host handshaking but is not receiving the signal.	If the unit 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.
The unit scans, but the data transmitted to the host is incorrect.	The unit's data format does not match the host system's requirements.	Verify that the unit's data format matches that required by the host. Make sure that the unit is connected to the proper host port.
The unit beeps at some bar codes but 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 unit is not configured correctly for the type of bar code being scanned.	
	The minimum symbol length setting does not work with the bar code.	Check if the correct minimum symbol length is set.
The unit scans the bar code but there is no data.	The unit's configuration is not correct.	Make sure the scanner is configured for the appropriate mode.
The host is receiving data but the data does not look correct.	The scanner and host may not be configured for the same interface parameters.	Check that the scanner and the host are configured for the same interface parameters.
Characters are being dropped.	Inter-character delay needs to be added to the transmitted output.	Add some inter-character delay to the transmitted output by using the MetroSelect Single-Line Configuration Guide.
* *In some custom units, the standard green LED has been replaced with a blue LED and the red LED has been replaced with a white LED.*		

Symptoms	Possible Causes	Solution
The following four items are relevant for a Keyboard Wedge interface only.		
The unit scans but the data is not correct.	The unit's configuration is not correct.	Make sure that the proper PC type AT, PS2 or XT is selected. Verify the correct country code and data format is selected. Adjust the inter-character delay symptom.
The unit is transmitting each character twice.	The unit's 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.	The computer is in *Caps Lock* mode.	Enable the *Caps Lock* detect feature 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.
The following item is relevant for an RS232 interface only.		
The unit will power-up and scan but does not communicate properly to the host.	The com port at the host is not working or not configured properly.	Check to make sure that the baud rate and parity of the scanner and the communication port match and that the program is looking for "RS232" data.
The unit will power-up and scan but does not communicate properly to the host.	The cable is not connected to the proper com port.	Check to make sure that the unit is connected to the correct com port on the host device.

DESIGN SPECIFICATIONS

OPERATIONAL		
Light Source	Visible Laser Diode 650 nm	
Laser Power:	Less than 1 mW (peak)	
Embedded Laser:	Max Power:	10 mW
	Wavelength:	650 nm
Depth of Scan Field:	0 mm - 203 mm (0" - 8") for 0.330 mm (13 mil) bar code at default settings	
Scan Speed:	72 scan lines per second	
Scan Pattern:	Single scan line	
Minimum Bar Width:	0.127 mm (5.0 mil)	
Infrared Activation:	Long Range: 0 mm – 279 mm ± 51 mm (0" – 11" ± 2")	
	Short Range: 0 mm – 102 mm ± 25 mm (0" – 4" ± 1")	
Decode Capability:	Autodiscriminates all standard bar codes for others call a customer service representative	
System Interfaces:	RS232, PC Keyboard Wedge, Stand-Alone Keyboard, RS485, Light Pen Emulation, Laser Emulation, RS232 with DSR, Low Speed USB (*Serial Emulation or Keyboard Emulation*), Full Speed USB	
Print Contrast:	35% minimum reflectance difference	
Number Characters Read:	Up to 80 data characters (*Maximum number will vary based on symbology & density*)	
Roll, Pitch, Yaw:	42°, 68°, 52°	
Beeper Operation:	7 tones or no beep	
Visual Indicators: *Default Settings*	Green* LED	laser on, ready to scan
	Red* LED	good read
	Yellow LED (MS9540 Only)	ON, CodeGate button is inactive
		OFF, CodeGate button is active
* In some *custom* units, the standard green LED has been replaced with a blue LED and the red LED has been replaced with a white LED.		

*Specifications are subject to change without notice.*

DESIGN SPECIFICATIONS

MECHANICAL	
Length:	198 mm (7.8")
Width:	Handle - 45 mm (1.8"), Head - 78 mm (3.1")
Depth:	40 mm (1.6")
Weight:	149 g (5.25 oz)
ELECTRICAL	
Input Voltage:	5VDC ± 0.25V
Power:	Operating = 0.825 W *typical*
	Standby = 0.600 W *typical*
Current:	Operating = 165 mA @ 5VDC *typical*
	Standby = 120 mA @ 5VDC *typical*
DC Transformers:	Class 2; 5.2V @ 1A
ENVIRONMENTAL	
Temperature:	Operating = 0°C to 40° (32° to 104°F) Storage = -40°C to 60°C (-40°F to 140°F)
Humidity:	5% to 95% relative humidity, non-condensing
Light Levels:	Up to 4842 Lux (450 footcandles)
Shock:	Designed to withstand 1.5 m (5 ft.) drops
Contaminants:	Sealed to resist airborne particulate contaminants
Ventilation:	None required

Specifications are subject to change without notice.

Scanner Pinout Connections

The MS9520 and MS9540 scanner interfaces terminate to a 10-pin modular jack.
The serial number label indicates the interface enabled when the scanner is shipped from the factory.
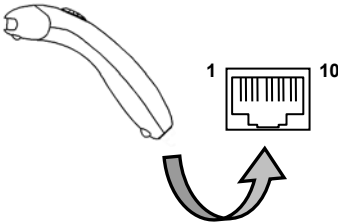
MS95x0-41 RS232 and Light Pen Emulation	
Pin	**Function**
1	Ground
2	RS232 Transmit Output
3	RS232 Receive Input
4	RTS Output
5	CTS Input
6	DTR Input/LTPN Source
7	Reserved
8	LTPN Data
9	+5VDC
10	Shield Ground

MS95x0-47 Keyboard Wedge and Stand-Alone Keyboard	
Pin	**Function**
1	Ground
2	TTL RS232 Transmit Output
3	TTL RS232 Receive Input
4	PC Data
5	PC Clock
6	KB Clock
7	PC +5V
8	KB Data
9	+5VDC
10	Shield Ground

1 ▦ **10**

MS95x0-11 RS485	
Pin	**Function**
1	Ground
2	RS232 Transmit Output
3	RS232 Receive Input
4	RTS Output
5	CTS Input
6	DTR Input
7	IBM B-Transmit
8	IBM A+ Receive
9	+5VDC
10	Shield Ground

Scanner Pinout Connections
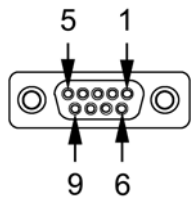
MS95x0-00 Laser Emulation	
Pin	**Function**
1	Ground
2	RS232 Transmit Output
3	RS232 Receive Input
4	Flip Sense/Start of Scan Output
5	Proximity Detect/Trigger Emulation Output
6	Scan/Laser Enable Input
7	Reserved
8	Data Out
9	+5VDC
10	Shield Ground

MS95x0-14 RS232	
Pin	**Function**
1	Ground
2	RS232 Transmit Output
3	RS232 Receive Input
4	RTS Output
5	CTS Input
6	DTR Input
7	Reserved
8	DSR Out
9	+5VDC
10	Shield Ground
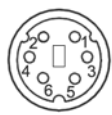
MS95x0-40 Full Speed USB & MS95x0-38 Low Speed USB	
Pin	**Function**
1	Ground
2	RS232 Transmit Output
3	RS232 Receive Input
4	RTS Output
5	CTS Input
6	D+
7	PC +5V/V_USB
8	D-
9	N/C
10	Drain Wire

Cable Connector Configuration (Host End)

<table>
<tr><td colspan="2" align="center">RS232 PowerLink Cable
PN 53-53000x-3</td><td rowspan="2"></td></tr>
<tr><td>Pin</td><td align="center">Function</td></tr>
<tr><td>1</td><td>Shield Ground</td><td rowspan="10">
9-Pin Female, D-Type</td></tr>
<tr><td>2</td><td>TTL RS232 Transmit Output</td></tr>
<tr><td>3</td><td>TTL RS232 Receive Input</td></tr>
<tr><td>4</td><td>DTR Input/Light Pen Source</td></tr>
<tr><td>5</td><td>Signal Ground</td></tr>
<tr><td>6</td><td>Light Pen Data
<i>(DSR Out for -14 interfaces)</i></td></tr>
<tr><td>7</td><td>CTS Input</td></tr>
<tr><td>8</td><td>RTS Output</td></tr>
<tr><td>9</td><td>+5VDC</td></tr>
</table>

<table>
<tr><td colspan="2" align="center">USB Cables
PN 53-53213x-N-3, 53-53214x-N-3 or
53-53235x-N-3</td><td></td></tr>
<tr><td>Pin</td><td align="center">Function</td><td rowspan="6">
Locking Type A   Non-Locking Type A</td></tr>
<tr><td>1</td><td>PC +5V/V_USB</td></tr>
<tr><td>2</td><td>D-</td></tr>
<tr><td>3</td><td>D+</td></tr>
<tr><td>4</td><td>Ground</td></tr>
<tr><td>Shield</td><td>Shield</td></tr>
</table>

<table>
<tr><td colspan="2" align="center">Stand-Alone Keyboard PowerLink Cable PN 53-53020x-3</td><td></td></tr>
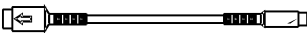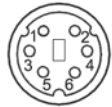<tr><td>Pin</td><td align="center">Function</td><td rowspan="7">
6-Pin Male Mini-DIN Connector</td></tr>
<tr><td>1</td><td>PC Data</td></tr>
<tr><td>2</td><td>NC</td></tr>
<tr><td>3</td><td>Power Ground</td></tr>
<tr><td>4</td><td>+5VDC PC Power to KB</td></tr>
<tr><td>5</td><td>PC Clock</td></tr>
<tr><td>6</td><td>NC</td></tr>
</table>

Cable Connector Configuration (Host End)

Keyboard Wedge PowerLink Cable PN 53-53002*x*-3	
Pin	**Function**
1	Keyboard Clock
2	Keyboard Data
3	No Connect
4	Power Ground
5	+5 Volts DC

5-Pin DIN, Female

Pin	**Function**
1	PC Data
2	No Connect
3	Power Ground
4	+5 Volts DC
5	PC Clock
6	No Connect

6-Pin DIN, Male

Honeywell 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. 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.

Keyboard Wedge Adapter Cable	
Pin	**Function**
1	PC Clock
2	PC Data
3	No Connect
4	Power Ground
5	+5 Volts DC

5-Pin DIN, Male

Pin	**Function**
1	Keyboard Data
2	No Connect
3	Power Ground
4	+5 Volts DC
5	Keyboard Clock
6	No Connect

6-pin Mini DIN, Female

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CUSTOMER SUPPORT

Technical Assistance

To search our knowledge base for a solution or to log in to the Technical Support portal and report a problem, go to www.hsmcontactsupport.com.
For our latest contact information, see www.honeywellaidc.com/locations.

Product Service and Repair

Honeywell International Inc. provides service for all of its products through service centers throughout the world. To find your service center, go to www.honeywellaidc.com and select **Support**. Contact your service enter to obtain a Return Material Authorization number (RMA #) before you return the product.
To obtain warranty or non-warranty service, return your product to Honeywell (postage paid) with a copy of the dated purchase record. To learn more, go to www.honeywellaidc.com and select **Service & Repair** at the bottom of the page.

Limited Warranty

For warranty information, go to www.honeywellaidc.com and click **Get Resources > Product Warranty.**