Honeywell

MS2420

Bar Code Scanner / Avery Scale

Installation and User's Guide

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Introduction

Manual Scope

This guide provides an overview of the MS2420 bar code scanner/Avery scale operation with detailed information about setup and installation. Adobe® Acrobat® versions of the user's manuals are also available for download from www.honeywellaidc.com.

Product Overview

Honeywell's MS2420 scanner/Avery scale is designed to meet the demanding needs of high volume supermarket and point-of-sale applications. With advanced features like 5-sided, 360° scanning, 5400 scans per second, a complex scan zone and advanced decoding software, this high performance series of in-counter scanner/scale products guarantees fast customer checkouts with minimal operator fatigue and stress. The MS2420 scanner/Avery scale is equipped with a multitude of standard features including:

- Stratos**SCAN** – 5-sided, 360° scanning that minimizes product orientation
- Stratos**SPHERE** – Decoding software that reads poor quality and damaged bar codes
- Stratos**SYNC** – Horizontal and vertical scanning zones operate independently from one another
- GS1 DataBar Decoding – Decodes GS1 DataBar, GS1 DataBar Limited and GS1 DataBar Expanded symbologies
- Flash ROM – Upgrade latest software enhancements on site.
- Powered Aux Port – Connect hand-held scanner for large or bulky items
- Integrated Scale – Factory integrated field upgradeable Avery scale
- Loud Speaker – 3 volume/7 tone settings can be heard in all environments
- Easy Configuration – Windows® based utility or simple bar code setup
- Fully Automatic – "No touch" photo-sensor wake up from power save modes
- EAS Deactivation – Electronic Article Surveillance (EAS) included
- Field Replaceable Vertical Window – Quickly remove vertical window for cleaning or replacement
- Stratos**SCOPE** – Visual diagnostic indicator for easy-to read feedback on scanner condition
- Stratos**SWAP** – Modular optics engine technology – small, pre-aligned, field replaceable modules
- Stratos**SCHOOL** – Operator training software

Base Kit Components

Part #	Description		
MS2420-105Az	MS2420 Scanner/Avery Scale		
	z	D	Diamonex Horizontal Window
		S	Sapphire Horizontal Window
00-02407	MetroSelect™ Configuration Guide		
00-02034	MS2xxx Stratos™ Series Configuration Addendum		
00-05312	MS2420 Scanner/Avery Scale Installation and User's Guide		

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

Other items may be ordered for the specific protocol being used. To order additional items, contact the dealer, distributor or Customer Service Department.

Optional Accessories

Part #	Description
57-57210x-N-3	RS232 Interface Cable, Straight Cord with Short Strain Relief
57-57212x-N-3	RS485◈ Port 9 Cable, Straight Cord
57-57201x-N-3	USB Full Speed Communication Cable, Straight Cord, Type A (Non-Locking) Connector
57-57227x-N-3	USB Full Speed Communication Cable, Straight Cord, Locking 12V Plus-Power™ Type A
57-57000x-N-3	Dual Interface Cable, Straight Cord with Short Strain Relief
57-57008x-N-3	Aux Program Cable, Straight Cord with Short Strain Relief
57-57099x-3	LSO RS232 PowerLink AUX Cable with built in Power Jack, Straight Cord with Short Strain Relief
57-57099x-3-12	RS232 AUX, Straight Cord, 3.7 m (12') (for 95xx, 5145 and 7580 scanners)
CBL-420-300-C00	RS232 AUX, Coiled Cord (for 1200, 1300 and 1900 Series scanners)
52-52511x	EAS cable, 24"
52-52556x	EAS cable, 6'
AC to DC Power Transformer - Regulated Output: +5.2V @ 4A, +12V @ 1.5A	
70-74868	120V United States and Canada
70-74882	220V – 240V Continental European
70-74880	220V – 240V United Kingdom
70-74884	220V – 240V China
70-74886	220V – 240V Australia
70-74888	220V – 240V India
46-00239	Wire Seal Conversion Kit

◈*Applicable for IBM® Host applications.*

Optional Accessories

Part #	Description
Optional Remote Scale Display	
46-00248	Remote Scale Display (lb.)
46-00249	Remote Scale Display (kg)

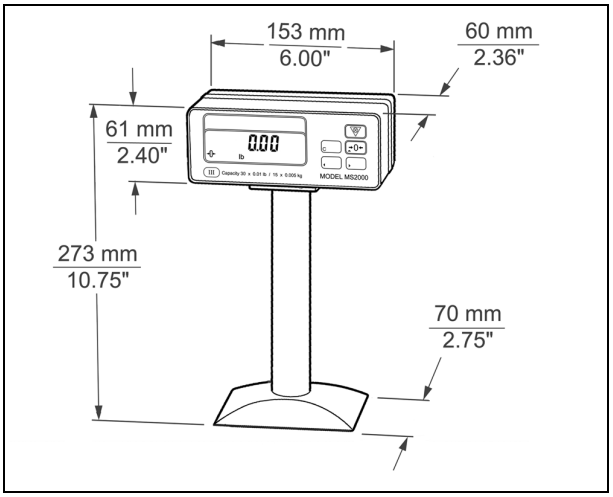


Figure 1. Optional Remote Scale Display Dimensions

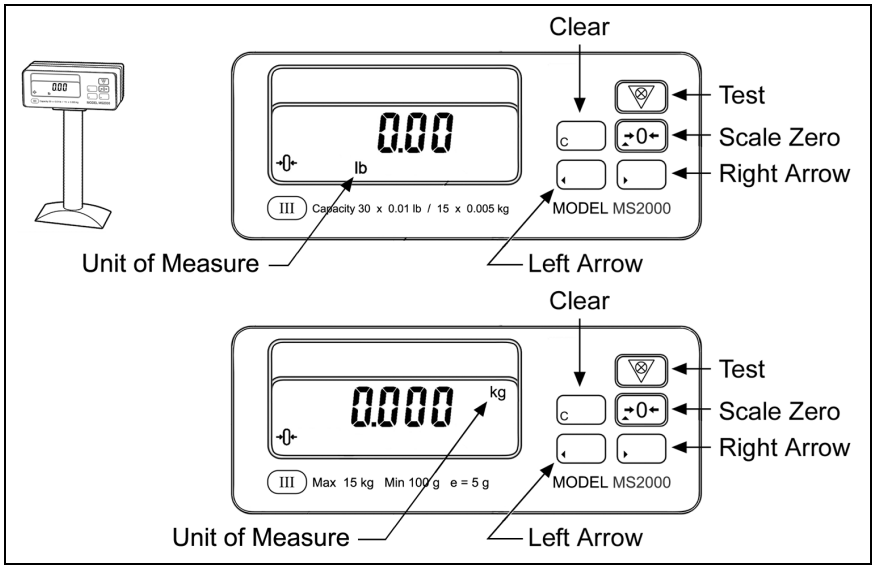


Figure 2. Optional Remote Scale Display Controls (46-00248 lb, 46-00249 kg)

Specifications are subject to change without notice.

Replacement Parts

Part #	Description
⚠ **Caution**	Window types (Diamonex and Sapphire) are not interchangeable due to laser safety and/or scanner performance differences. To change window type, the scanner must be returned to the manufacturer for reconfiguration.
46-00232	Vertical Window
46-00233	Diamonex Platter - Full Size
46-00296	Diamonex Platter - Full Size, with Product Weight Roll Bar / Platter Lift Handle
46-00235	Sapphire Platter - Full Size
46-00297	Sapphire Platter - Full Size, with Product Weight Roll Bar / Platter Lift Handle

Other items may be ordered for the specific protocol being used. To order additional items, contact the dealer, distributor or Customer Service Department.

General Precautions

The following are some general precautions to remember when handling the MS2420 scanner/Avery scale.

Do Not Turn the unit upside down with the platter in place.

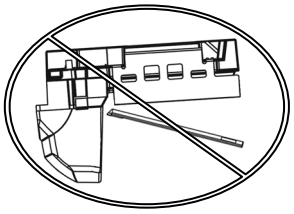


Figure 3.

Do Not Press on the window in the replacement platter or the vertical window frame.

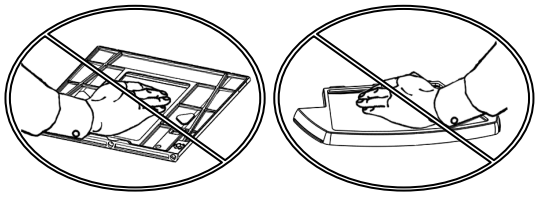


Figure 4.

Platter Removal

No hardware or tools are required to remove the platter (see Figure 5). Refer to the Maintenance section of this manual for additional information on platter replacement.

Note: See caution statement on page 4.

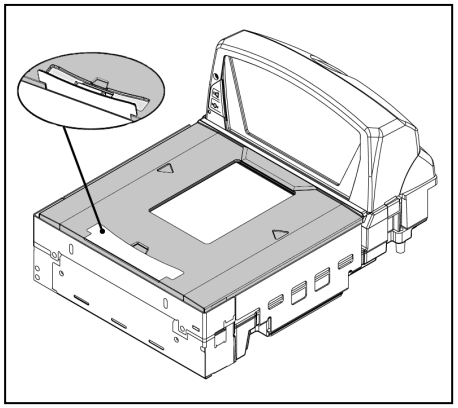


Figure 5.

Finger Recesses

Rest both thumbs against the vertical window frame for added stability when lifting the unit by the finger recesses.

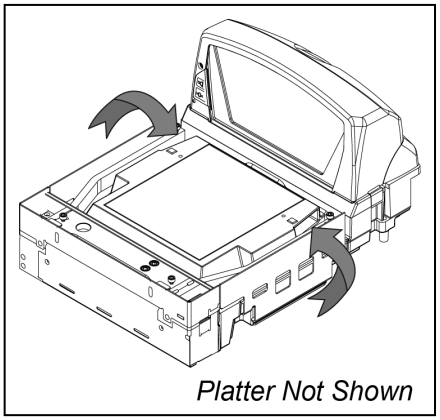


Figure 6.

MS2420 Scanner/Avery Scale Design Specifications

Operational

Light Source:	VLD 650 nm	
Peak Laser Power:	<1.5 mW	
Embedded Laser:	Max Optical Power:	10 mW
	Wavelength:	650 nm
Horizontal Depth of Field:	0 mm - 100 mm (0"- 4") for 0.33 mm (13 mil) Bar Code	
Vertical Depth of Field:	0 mm - 216 mm (0"- 8.5") for 0.33 mm (13 mil) Bar Code	
Scan Speed:	5400 Scan Lines per Second	
No. of Scan Lines:	56 (40 Horizontal / 16 Vertical)	
Motor Speed:	6000 / 6000 RPM (Horizontal / Vertical)	
Min Bar Width:	0.114 mm (4.5 mil)	
Scan Zone:	360°	
Decode Capability:	All Standard 1-D Bar Codes, GS1 DataBar, GS1 DataBar Expanded, and GS1 DataBar Limited Bar Codes	
System Interfaces:	RS232, Aux RS232, RS48, and USB	
Print Contrast:	35% Minimum Reflectance Difference	
No. Characters Read:	Up to 80 data characters. Maximum number will vary based on symbology and density.	
Beeper Operation:	7 Tones or No Beep; 3 Volume Settings	
Indicators (LED)	Blue	Laser ON, Ready to Scan
	Blue Flash	Good Read, Decoding
	Amber	Scale at Zero

Mechanical

MS2420 L x W x H:	399 mm (15.7") [L]	292 mm (11.5") [W]	130 mm (5.12") [Tower Height]
Depth (Below Counter):	100 mm (3.9")		
Weight (with Platter):	9.97 kg (22 lbs.)		

Specifications are subject to change without notice.

Scale Capacities

Capacity:	kg unit	15 kg	lb. unit	30.0 lb.
Minimum Increment:	kg unit	0.005 kg	lb. unit	0.01 lb.
Maximum Static Weight:	kg unit	75 kg	lb. unit	150 lb.
Adjustments required:	Calibration is required for scaled units.			

Electrical

Voltage Supply:	4A @ +5V / 0.8A @ +12V
Operating Power:	11.2 Watts
Standby Power:	4.0 Watts
Operating Current:	1.7A @ 5.2V / 0.2A @ 12V
Standby Current:	0.6 A @ 5.2V / 0.07A @ 12V
DC Transformers:	Class I; 5.2VDC @ 4A; 12VDC @ 1.5A
For Regulatory Compliance Information, refer to pages 69 - 71.	

Environmental

Operating Temperature:	0°C to 40°C (32°F to 104°F)
IP Rating:	IP 55
Light Levels:	4842 Lux (450 footcandles)
Storage Temperature:	-40°C to 60°C (-40°F to 140°F)
Humidity:	5% to 95% Relative Humidity, Non-Condensing
Contaminants:	Sealed to resist airborne particulate contaminants.
Ventilation:	None Required

Specifications are subject to change without notice.

Base Model Characteristics

Components

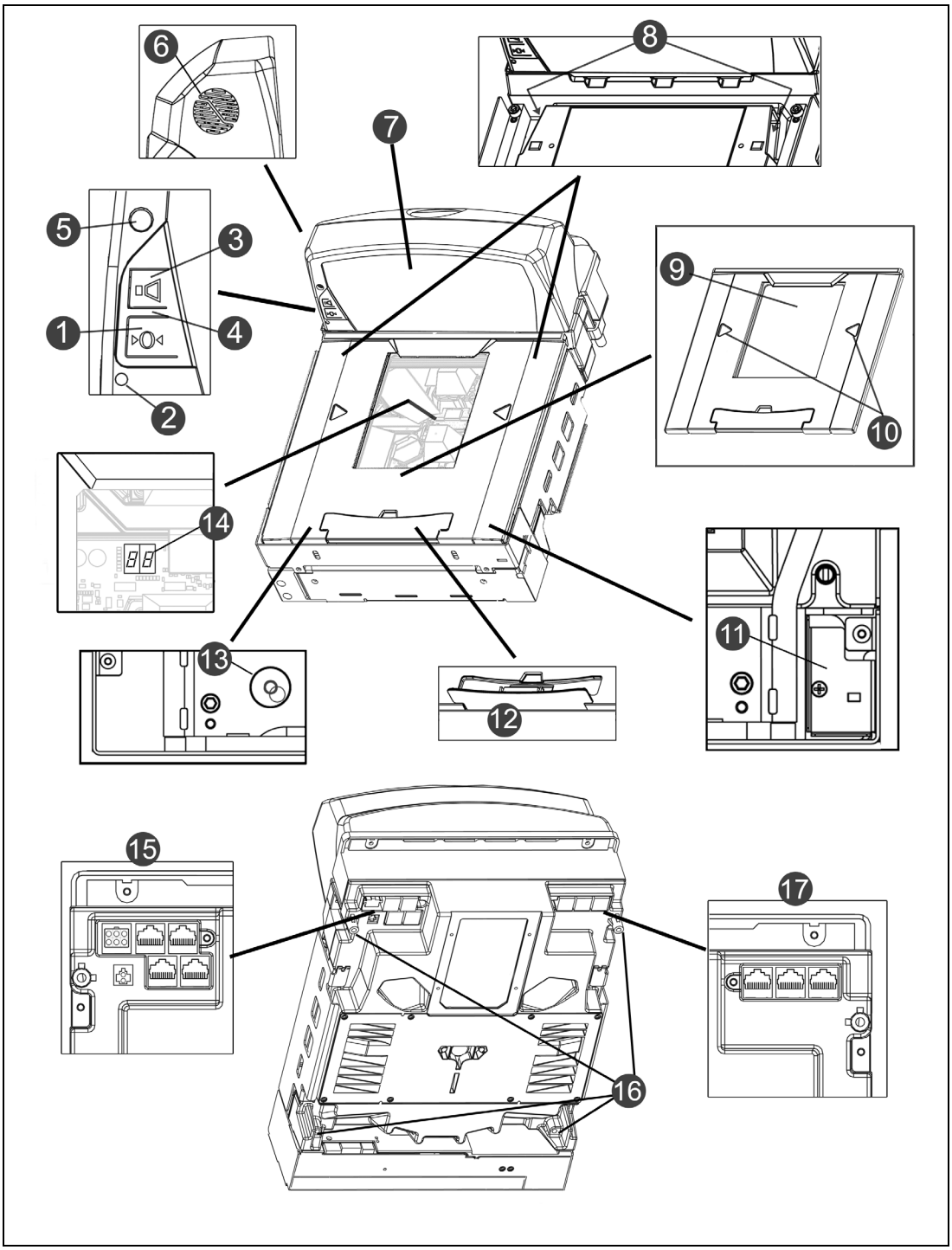


Figure 7. MS2420 Components

Components

Item No.	Description of Item in Figure 7
1	Scale Zero Button (see page 43)
2	Amber LED, Scale Zero Indicator (see page 43)
3	Volume/Tone Multi-Function Button (see page 41)
4	Blue LED Indicators (see page 34)
5	Photocell Window
6	Speaker
7	High Impact Window Frame/Vertical Window (Laser Aperture)
8	Finger Recesses for Lifting (Located Under Platter)
9	Replaceable Stainless Steel Platter with Diamonex or Sapphire Horizontal Window (Laser Aperture)
10	Flow Direction Indicator
11	Sealed Calibration Switch/Button Cover (Located Under Platter) On a fully installed unit, the calibration switch cover should be sealed with a lead wire or paper seal. This seal indicates the appropriate Federal, State and Local Weights and Measures authorities have calibrated the scale. See the Scale Operation: Calibration section of this guide for further information.
12	Product Weight Roll Bar / Platter Lift Handle
13	Leveling Bubble for Scale Arms (Located Under Platter)
14	Diagnostic Indicator Display (see page 36 for Error Codes)
15	Power and Scale Connectors (see page 11)
16	Leveling Feet
17	Interface, Aux Scanner and EAS Connectors (see page 11)

Note: Scanner/Scale label information can be found on page 12.

Dimensions

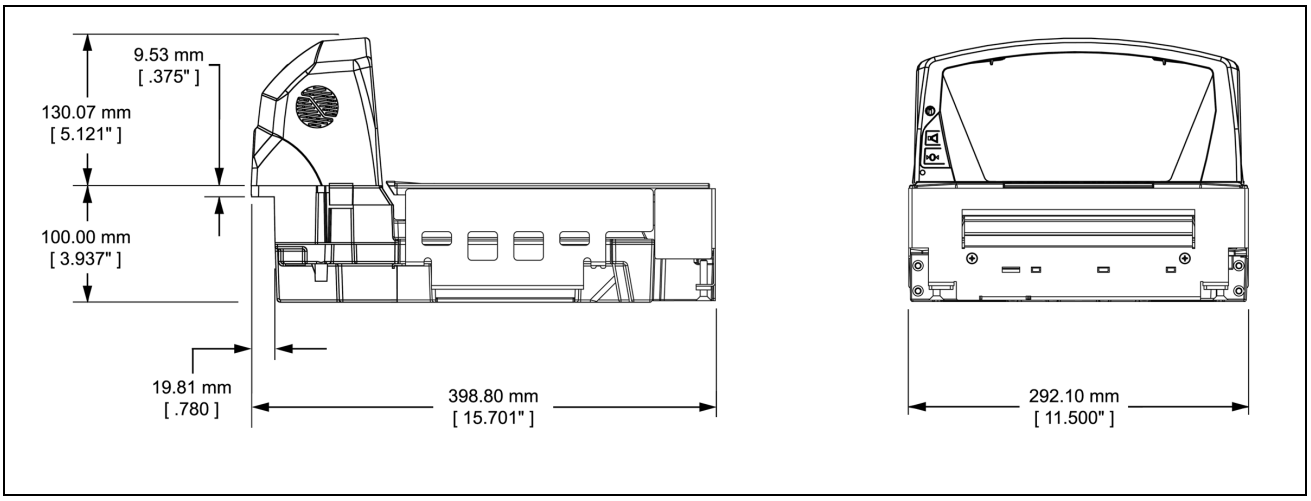


Figure 8. MS2420 Dimensions

Connector Panel

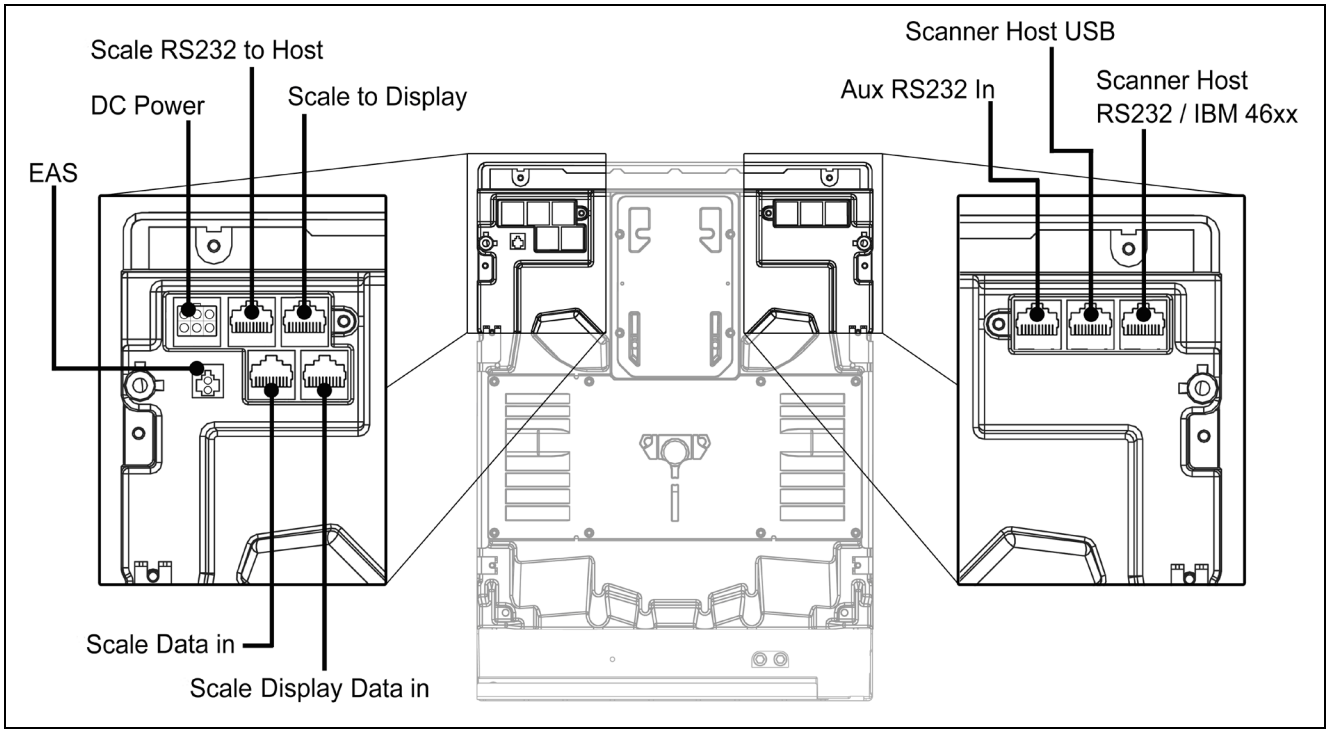


Figure 9. MS2420 Connector Panel

Specifications are subject to change without notice.

Caution and Serial Number Labels

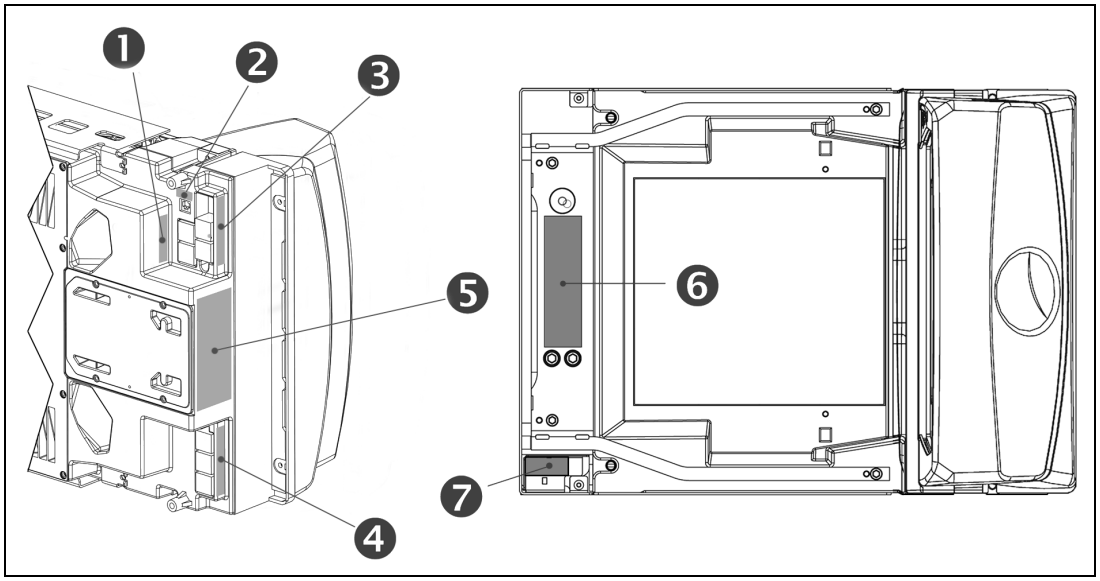


Figure 10. MS2420 Label Locations (Top) and Examples (Bottom)

1

Scale Data In	Scale Display Data In

2

EAS In

3

DC Power In	Scale RS232 to Host	Scale RS485 to Display

4

Aux RS232 In	Scanner Host USB	Scanner Host RS232 , 46xx

5

Honeywell International Inc.
Manufactured by Metro (Suzhou) Technologies Co., Ltd.
Contains no user servicable components. Warranty void if case is opened. Complies with FCC and ICES-003 Class B. See manual.
Made in Suzhou China June 2012 (C)
Model: MS2420-105AD 232, 46XX, USB
Stratos™ Barcode Scanner
0X 12 26 0043
See User's Guide for patent coverage.

This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50 dated June 24, 2007.
5V, 12V ⎓
CAUTION:
Laser light when opened.
DO NOT STARE INTO BEAM.
LISTED 94J8 I.T.E.

6

Honeywell
Model MS2420-z III
CAPACITY 30 x 0.01 lb / 15 x 0.005 kg
12V 1.5A MAX
NTEP CC 03-056
S/N: 0X 09 11 0771

7

Honeywell
SEAL

Caution: ⚠	To maintain compliance with applicable standards, all circuits connected to the imager 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.

Installation

Quick Installation Outline

The following is a quick preview of the steps required for first time installations. Each item is discussed in detail later in this section.

- Determine clearance, ventilation and service access requirements.
- Determine checkout counter layout taking into account package flow, cable routing and power requirements.
- Choose the mounting option which provides the best cable/power access and unit stability.
- Unpack the unit.
- Make the appropriate countertop cutouts and install all support brackets.
- Place the unit in the counter.
- Install the platter.
- Follow the steps under the correct interface to connect the cables and power supply.
- Configure the unit for the correct interface.
- Calibrate the scale.

Site Requirements

Before installing the MS2420 scanner/Avery scale, please consider the following items.

Vertical Clearance

A minimum clearance height of 5.25" from the checkout counter surface is needed for the vertical 'hood' on all of the scanner models.

Ventilation and Spacing

All MS2420 models have a die-cast housing to dissipate heat allowing the unit to operate without a ventilation fan. The temperature surrounding the unit is recommended not exceed 40°C (104°F). There should be adequate convection and minimal heat producing equipment in close proximity of the unit. A cooling fan with a filter is recommended if there will be a conveyor motor or other heat producing equipment close to the unit that will create a high temperature environment.

Adequate spacing between the unit and the checkout counter opening is required for proper operation of the scale. When the scanner/scale model is mounted properly, the scale platter should be able to move up and down freely without hitting the edges of the checkout counter cutout. Refer to *Installing the Unit in the Counter* for detailed cutout dimensions and mounting instructions.

Service Access

When routing and installing the cable(s) and power supply, make sure to leave access that these components may be swapped easily without the need to remove the unit from the checkout counter.

When changing the Stratos**SWAP** optics engine modules, removing the unit completely from the checkout counter is recommended.

When calibrating or zeroing the scale, do not remove the unit from the checkout counter. Refer to the *Scale Operation Section* of this guide for detailed instructions on zeroing and calibration.

Power Installation

The Power Supply (AC/DC) should be connected to an AC outlet that is free of electrical noise (clean). A qualified electrician can determine the amount of electrical noise on the AC line. See additional information on power installation and restrictions under the *Installation: Interface* section of this manual.

Note: Using a switched AC outlet is recommended. The switch should be located on the operator's side of the checkout counter in close proximity to the MS2420 scanner to facilitate calibration and service of the unit.

Checkout Counter Layout Considerations

When placing a scanner in a checkout counter, the following factors should be considered.

- Items should flow at a distance to the operator that maximizes comfort. The operator should not need to stretch or strain to reach for and scan packages.
- The MS2420 can scan a bar code on five sides of a package. The packages should flow into the scan area that provides the maximum reading performance. No lifting or orientation of the items is necessary. A properly placed item diverter can maximize the flow of packages.
- In what direction are the packages flowing? Most checkout counters are designed for left-handed takeaway. If the operator is facing the vertical window of the scanner, packages flow from the operator's right to left. The packages are in queue on the conveyor to the right and the bagging is to the left.

Unpacking the Unit

1. Make sure the shipping box is topside up before opening.

2. Remove the accessories box and check the box's content for the following items.
   - Product Manuals
   - Power Supply
   - Communication Cables
   - Remote Scale Display (Optional)

3. Carefully remove the platter and store it in a safe location until the unit is properly installed into the checkout counter.

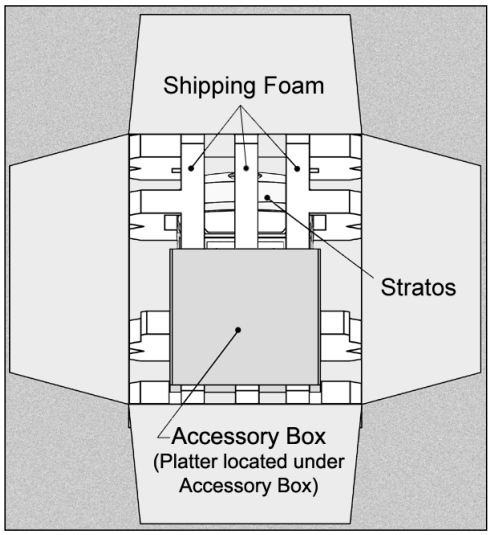


Figure 11

4. Lift the MS2420 scanner out of the box by carefully grasping both sides near the center of the unit and lifting directly up. Refer to Figure 12 for hand placement.

   Important! ***Do not*** *remove the MS2420 scanner from the box by grabbing the shipping foam. This can result in the unit falling!*

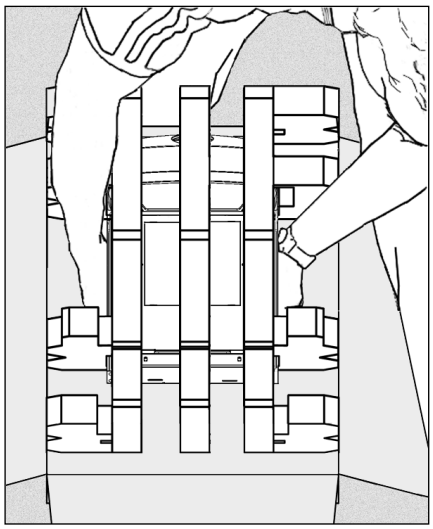


Figure 12

5. Carefully remove the shipping foam from around the MS2420 scanner.

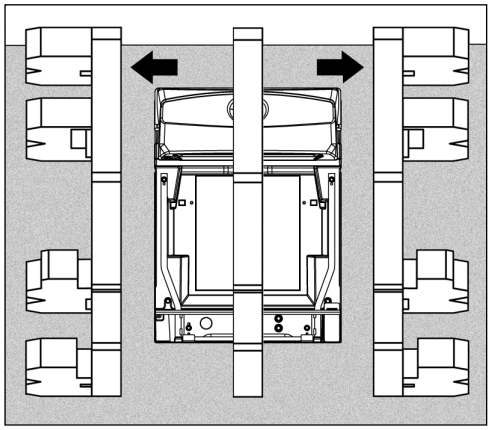


Figure 13

MS2420 Package Warning

All hardware securing the scale arms during shipping must be removed or the scale will not function!

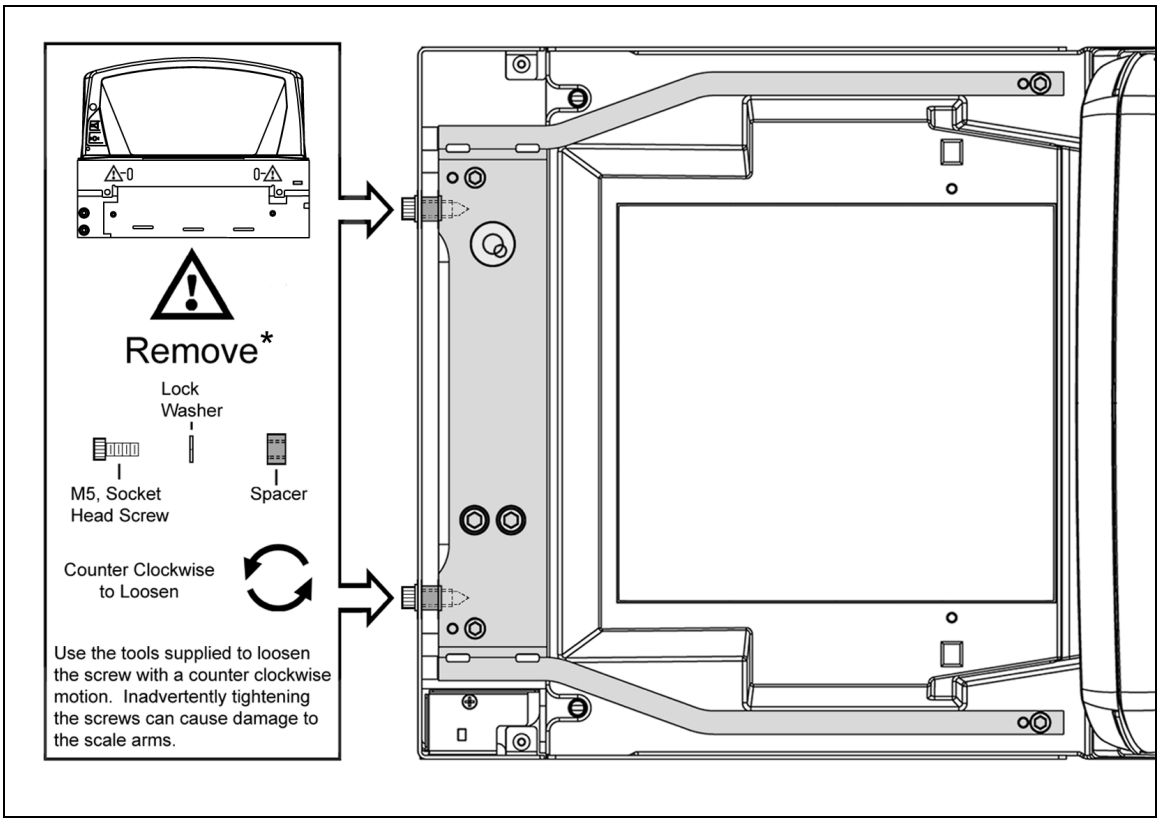


Figure 14.

**** Do not discard instructions and shipping hardware!***
These items must be reinstalled if the unit is going to be shipped.

Installing the Unit in the Counter

Before starting to mount the MS2420 determine:

- the scanner's orientation in reference to the operator and the direction of package flow,
- the mounting method that provides the most stability for the scanner and
- if any additional materials or tools are required for installation.

MS2420 Mounting Diagram

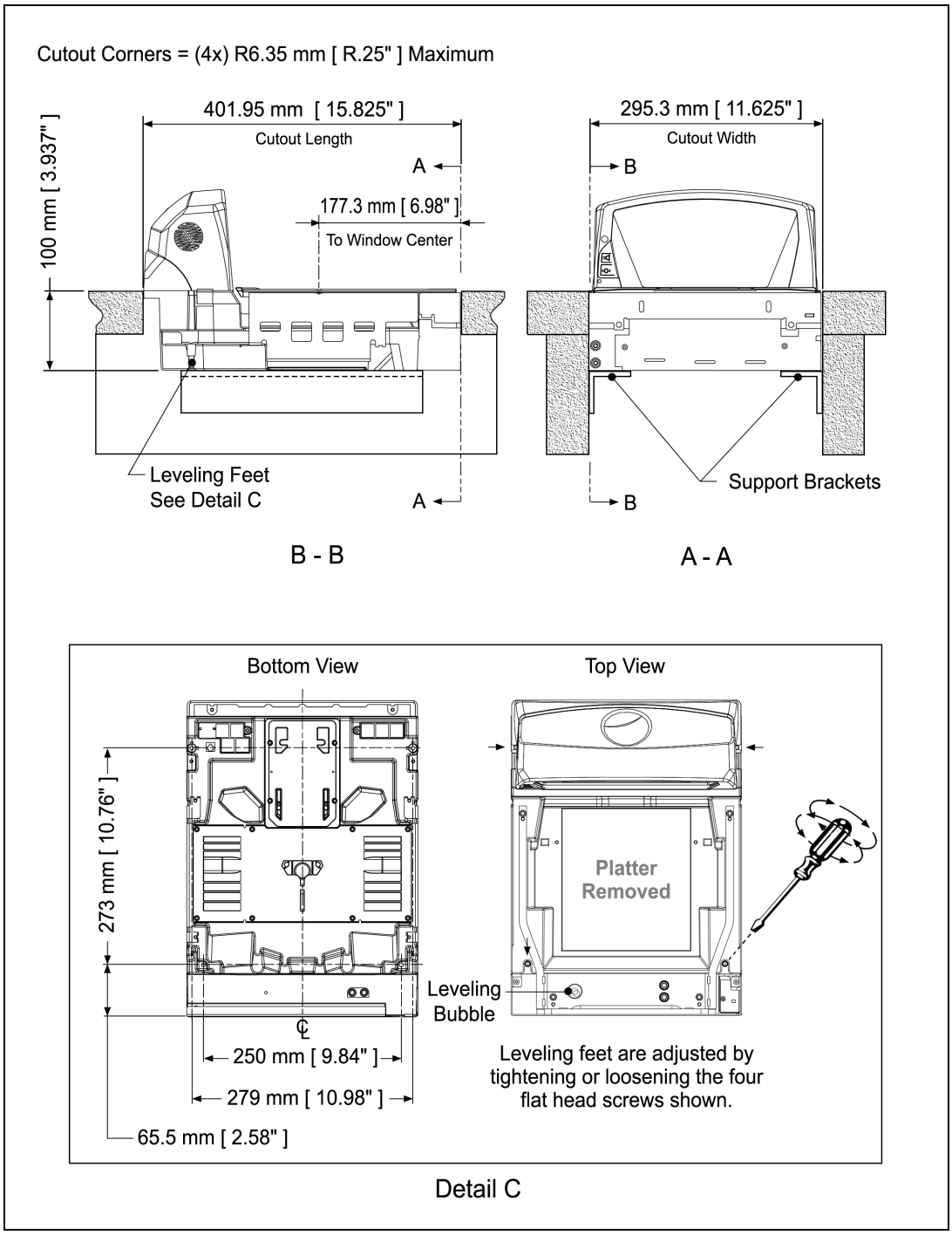


Figure 15. MS2420 Mounting Diagram

Specifications are subject to change without notice.

Cable Installation (Interface Specific)

RS232

The following steps describe how to properly install the cables for an RS232 scanner application. The scanner/Avery scale must then be configured to match the host's RS232 parameters. Cable installation alone does not guarantee that the scanner will communicate properly with the host system.

Note: Configuration bar codes are located in the MetroSelect Configuration Guide (PN 00-02407x) and the MS2xxx Stratos Series Configuration Addendum (PN 00-02034x).

1. Turn off the host system.
2. Plug the 10-pin RJ45 end of the RS232 interface cable (PN 57-57210x-N-3) into the 10-pin socket labeled 'Scanner Host RS232' on the bottom of the scanner. Refer to the figure on page 19.
3. Connect the other end of the RS232 cable to the proper communication port on the host device.

   ***Stop**: Before continuing, verify that the RS232 interface cable is connected to the appropriate interface socket on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner and/or terminal.*

Steps 4 and 5 are for dual cable interfaces where the scale and the scanner connect to the host with their own separate communication cables. Skip to step 6 for a single cable interface where the scale and scanner connect to the host with a single cable.

4. Plug the dual interface cable (PN 57-57000x-N-3) into the 10-pin socket labeled 'Scale RS232 to Host' on the bottom of the scanner.
5. Connect the other end of the dual interface cable (PN 57-57000x-N-3) to the appropriate communication port on the host's scale device.
6. Plug the optional remote display cable (PN 46-00248x or 46-00249x) into the 10-pin socket labeled 'Scale to Display' on the bottom of the scanner.
7. Plug the external power supply (PN 46-002xx) into the 3-pin Molex socket labeled 'DC Power In' on the bottom of the scanner.

   Note: Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.

   Using a switched AC outlet is recommended. The switch should be located on the operator's side of the checkout counter in close proximity to the MS2420 scanner to facilitate calibration and service of the unit.

8. Connect AC power to the transformer. If the AC outlet is equipped with an on/off switch, turn the power on.
9. Turn on the host system.
10. Scan the *Recall Defaults* bar code.

    Note: The Recall Defaults bar code is located in the MetroSelect Configuration Guide, under Need to Start Over (PN 00-02407x).

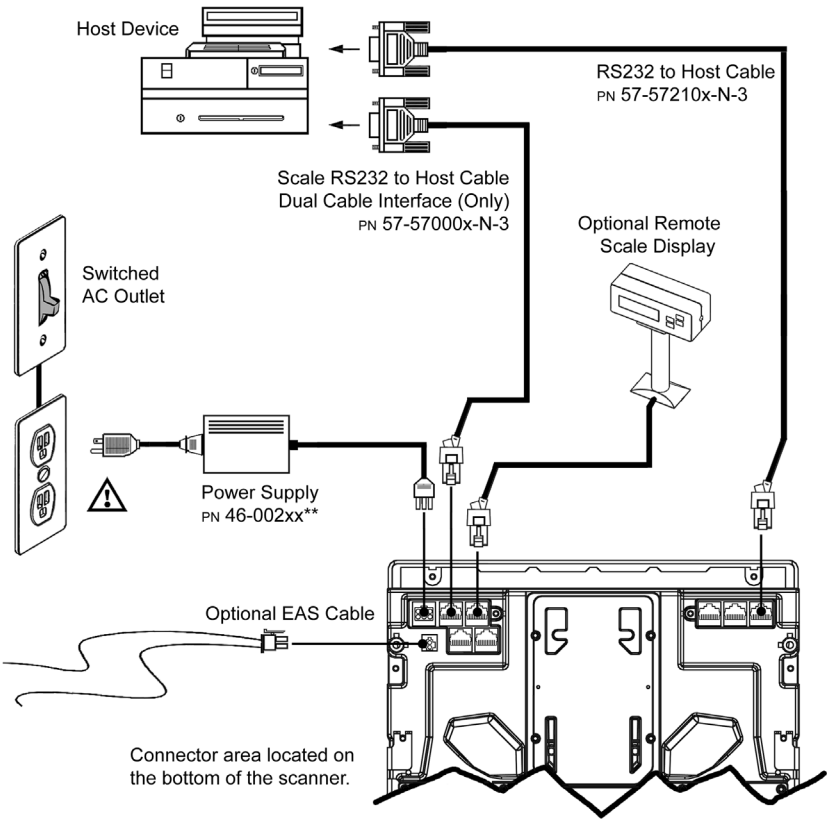
Cable Installation (Interface Specific)

RS232

11. Configure the MS2420 scanner to match the host system's RS232 parameters.

Note: Refer to the MetroSelect Configuration Guide (PN 00-02407x) under Section G: RS232 for enabling RS232 Mode (scan the recall defaults bar code first).

Refer to the MS2xxx Stratos Series Configuration Addendum (PN 00-02034x) for scale, dual cable and single cable configuration bar codes.



*xx** Specifies international connection. See the Base Kit Components and Optional Accessories section of this guide for a complete listing.*

⚠ *See Power Source caution statement located on page 12 of this manual.*

Figure 16. RS232 Interface Cable Installation Schematic

Cable Installation (Interface Specific)

Full Speed USB

The following steps describe how to properly install the cables for a Full Speed USB scanner application. The scanner/Avery scale must then be configured to match the host's USB parameters. Cable installation alone **does not** guarantee that the MS2420 scanner will communicate properly with the host system.

Note: Configuration bar codes are located in the MetroSelect Configuration Guide (PN 00-02407x) and the MS2xxx Stratos Series Configuration Addendum (PN 00-02034x).

1. Turn off the host system.
2. Plug the 10-pin RJ45 end of the USB interface cable (PN 57-57201x-N-3 or 57-57227x-N-3) into the 10-pin socket labeled 'Scanner Host USB' on the bottom of the scanner. Refer to the figure on page 20.
3. Connect the other end of the USB interface cable to the appropriate USB port on the host device.

   ***Stop**: Before continuing verify the USB interface cable is connected to the appropriate socket on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner and/or terminal.*

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

Steps 4 and 5 are for dual cable interfaces where the scale and the scanner connect to the host with their own separate communication cables. Skip to step 6 for a single cable interface where the scale and scanner connect to the host with a single cable.

4. Plug the dual interface cable (PN 57-57000x-N-3) to the 10-pin socket labeled 'Scale RS232 to Host' on the bottom of the scanner.
5. Connect the other end of the dual interface cable (PN 57-57000x-N-3) to the appropriate communication port on the host's scale device.
6. Plug the optional remote display cable (PN 46-00248x or 46-00249) into the 10-pin socket labeled 'Scale to Display' on the bottom of the scanner.
7. Plug the external power supply (PN 46-002xx) into the 3-pin Molex socket labeled 'DC Power In' on the bottom of the scanner.

   Note: Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.

   Using a switched AC outlet is recommended. The switch should be located on the operator's side of the checkout counter in close proximity to the MS2420 scanner to facilitate calibration and service of the unit.

8. Connect AC power to the transformer. If the AC outlet is equipped with an on/off switch, turn the power on.
9. Turn on the host system.

Cable Installation (Interface Specific)

Full Speed USB

10. Configure the MS2420 scanner to match the host system's USB parameters.

    For Single Cable Applications:

    The IBM OEM Full Speed USB English and Metric bar codes are located in the MS2xxx Stratos Series Configuration Addendum (PN 00-02034x) under Scanner Configuration Bar Codes: Single Cable Protocols for POS Compatibility, IBM OEM Full Speed USB.

    For Dual Cable Applications:

    The IBM OEM Full Speed USB Communication Defaults bar code is located in the MS2xxx Stratos Series Configuration Addendum (PN 00-02034x) under Scanner Configuration Bar Codes: Dual Cable Scanner Configuration Bar Codes, IBM OEM Full Speed USB Communication Defaults and IBM OEM Full Speed USB Protocols.

For USB Serial Emulation Mode or Keyboard Emulation Mode Only

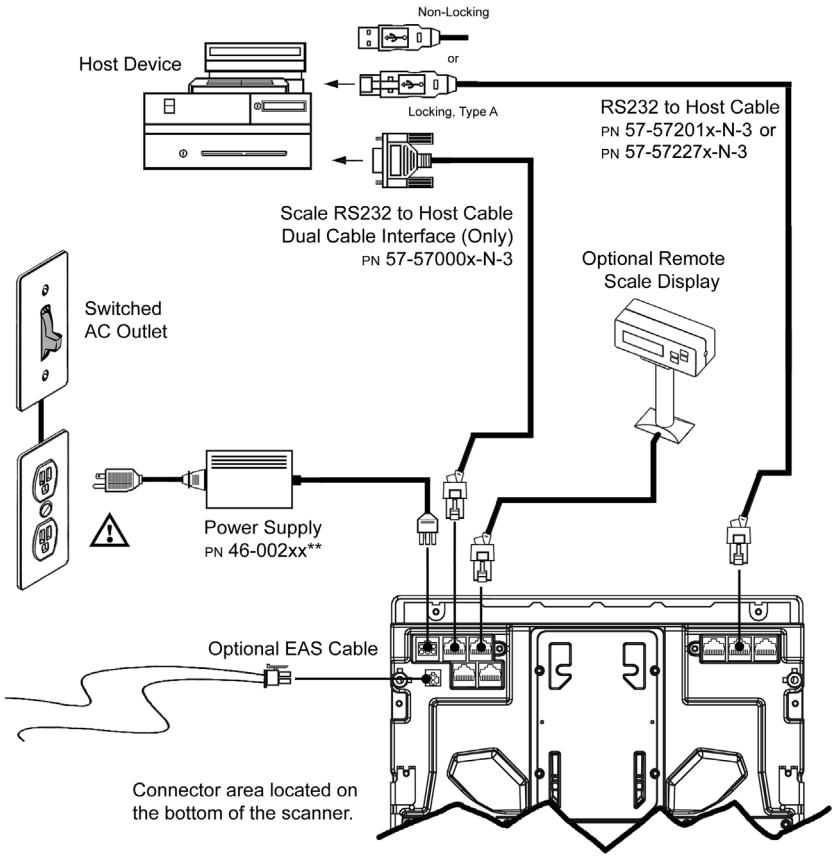
These features can only be used for Dual Cable Applications.

11. Configure the MS2420 scanner for USB Serial Emulation Mode or USB Keyboard Emulation Mode by scanning the appropriate configuration bar codes in the USB section of the MetroSelect Configuration Guide (PN 00-02407x) under Low Speed USB. Any low speed USB warnings may be disregarded when utilizing these codes for a Full Speed USB scanner.

    Note: These features can only be used for Dual Cable Applications. The IBM OEM Full Speed USB Communication Defaults bar code listed in step 10 must be scanned before scanning one of these bar codes or this feature will not work properly.

Cable Installation (Interface Specific)

Full Speed USB



*xx*** *Specifies international connection. See the Base Kit Components and Optional Accessories section of this guide for a complete listing.*

⚠ *See Power Source caution statement located on page 12 of this manual.*

Figure 17. USB Cable Installation Schematic

Cable Installation (Interface Specific)

RS485

The following steps describe how to properly install the cables for an RS485 scanner application. The scanner/Avery scale must then be configured to match the host's RS485 parameters. Cable installation alone does not guarantee that the MS2420 scanner will communicate properly with the host system.

Note: Configuration bar codes are located in the MetroSelect Configuration Guide (PN 00-02407x) and the MS2xxx Stratos Series Configuration Addendum (PN 00-02034x).

1. Turn off the host system.
2. Plug the 10-pin RJ45 end of the RS485 interface cable (PN 57-57212x-N-3) into the 10-pin socket labeled 'Scanner Host 46xx' on the bottom of the scanner. Refer to the figure on page 24.
3. Connect the other end of the RS485 cable to communication port 9 on the host device.

   Stop: Before continuing verify that the RS485 cable is connected to the appropriate interface socket on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner and/or terminal.

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

Steps 4 and 5 are for dual cable interfaces where the scale and the scanner connect to the host with their own separate communication cables. Skip to step 6 for a single cable interface where the scale and scanner connect to the host with a single cable.

4. Plug the 10-pin RJ45 end of the dual interface cable (PN 57-57000x-N-3) into the 10-pin socket labeled 'Scale RS232 to Host' on the bottom of the bottom of the scanner.
5. Connect the other end of the dual interface cable (PN 57-57000x-N-3) into the appropriate communication port on the host's scale.
6. Plug the optional remote display cable (PN 46-00248x or 46-00249x) into the 10-pin socket labeled 'Scale to Display' on the bottom of the scanner.
7. Plug the external power supply (PN 46-002xx) into the 3-pin Molex socket labeled 'DC Power In' on the bottom of the scanner.

   Note: Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.

   Using a switched AC outlet is recommended. The switch should be located on the operator's side of the checkout counter in close proximity to the MS2420 scanner to facilitate calibration and service of the unit.

8. Connect AC power to the transformer. If the AC outlet is equipped with an on/off switch, turn the power on.
9. Turn on the host system.

Cable Installation (Interface Specific)

RS485

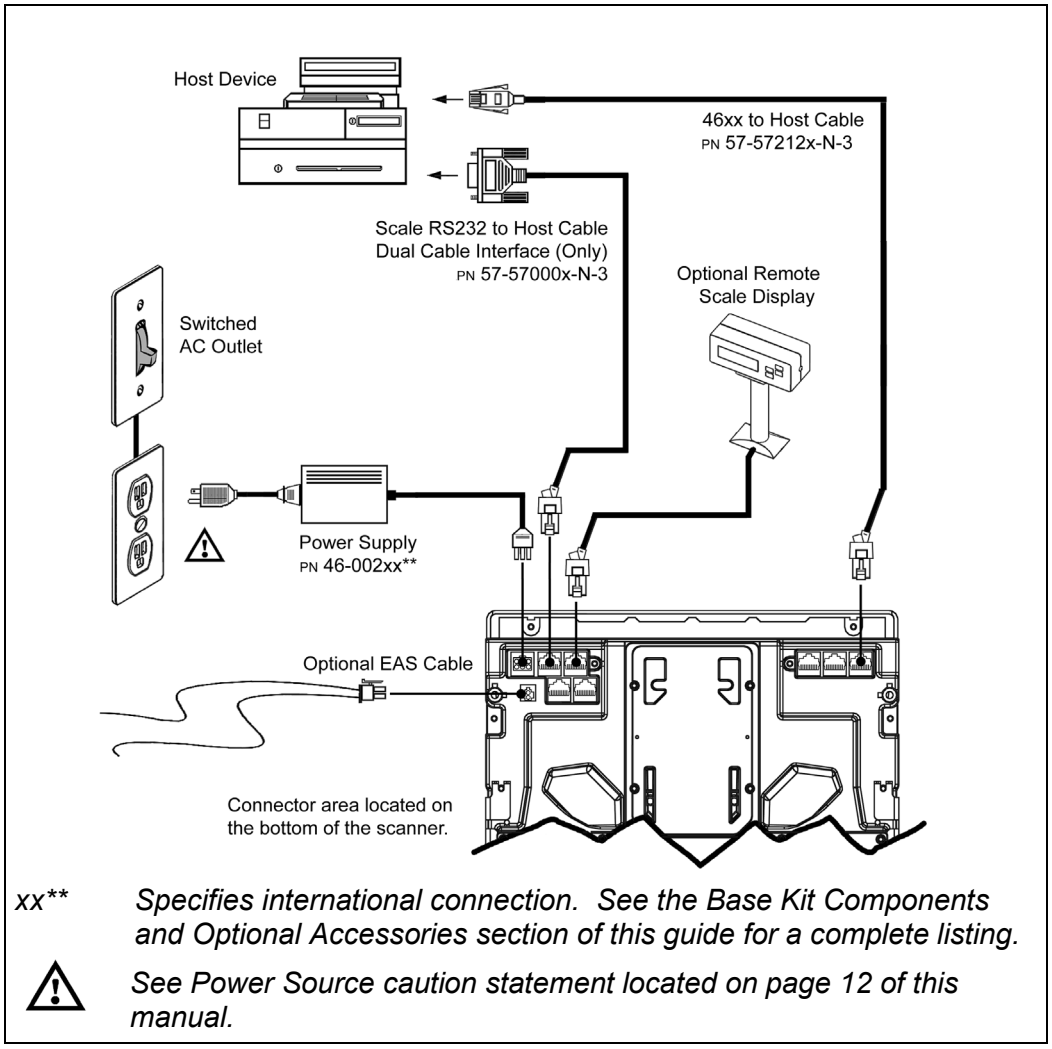
10. Configure the MS2420 to match the host system's RS485 parameters.

For Single Cable Applications:

The IBM 3rd Generation 46xx, English and Metric bar codes are located in the MS2xxx Stratos Series Configuration Addendum (PN 00-02034x) under Scanner Configuration Bar Codes: Single Cable Protocols for POS Compatibility, IBM 3rd Generation 46xx.

For Dual Cable Applications:

The IBM 3rd Generation 46xx and IBM OEM Full Speed USB bar code is located in the MS2xxx Stratos Series Configuration Addendum (PN 00-02034x) under Scanner Configuration Bar Codes: Dual Cable Scanner Configuration Bar Codes, IBM 3rd Generation 46xx and IBM OEM Full Speed USB.



*xx*** *Specifies international connection. See the Base Kit Components and Optional Accessories section of this guide for a complete listing.*

⚠ *See Power Source caution statement located on page 12 of this manual.*

Figure 18. RS485 Cable Installation Schematic

Cable Installation (Secondary Scanner)

The following steps describe how to properly install the cables between a secondary scanner and the MS2420. The MS2420 and the secondary scanner **must** then be configured to communicate properly. Cable installation alone **does not** guarantee that the MS2420 will communicate properly with the host system and secondary scanner.

*Note: Contact a customer service representative **before** connecting another manufacturer's scanner to the MS2420 as a secondary scanner.*

Configuration bar codes are located in the MS2xxx Stratos Series Configuration Addendum (PN 00-02034x) under Scanner Configuration Bar Codes: Auxiliary Port, Quick Start for a Secondary Scanners.

1. Refer to pages 18 - 23 for the type of interface (RS232, RS485, etc.) required for the application. Follow the cable installation steps under the appropriate interface before continuing. Once the communication and power cables have been installed follow step 2 below for the secondary scanner installation.
2. Connect the **straight** end of the RS232 PowerLink AUX cable (PN 57-57099x-3 or PN 57-57099x-3-12) into the RS232 socket of the **secondary** scanner (see the figure on page 26).
3. Connect the **angled** end of the RS232 AUX cable (PN 57-57099x-3 or PN 57-57099x-3-12) into the 10-pin socket labeled **Aux RS232 In**, on the bottom of the MS2420.

   Note: The MS2420 series aux port requires the signals; transmit, receive, RTS & CTS from the secondary scanner.

   For Rev G Units or later: The MS2420/MS2430's auxiliary port will support 5VDC devices with a 700mA maximum current.

   For Rev F units or earlier: The MS2420/MS2430's auxiliary port will support 5VDC devices with a 150mA maximum current. If the auxiliary device exceeds this specification, an external power supply will be required to power the auxiliary device. The following Honeywell scanners can receive power from MS2420/MS2430: the MS9520, MS9540, and the MS5145.

4. **This step is required for secondary devices that require >5VDC and/or 700mA current to operate.** Skip to step 5 if the secondary device requires ≤ 5VDC.

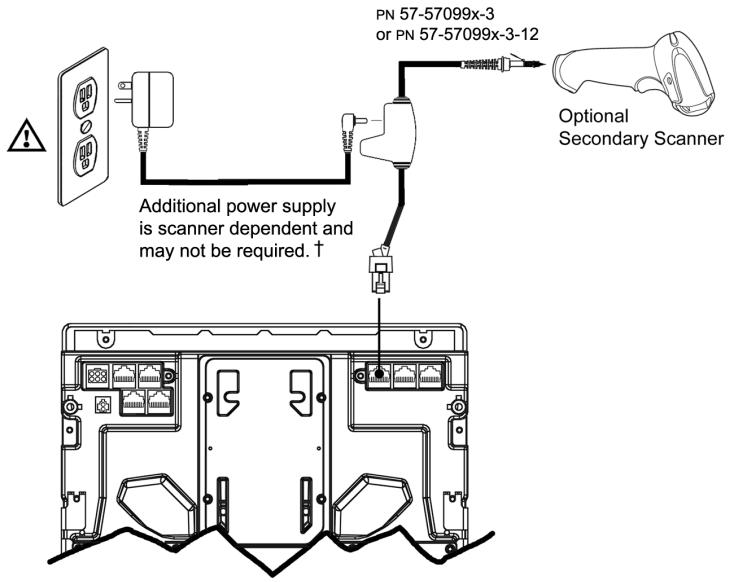
   Plug the power supply into the **secondary** scanner's PowerLink cable (PN 57-57099x-3 or PN 57-57099x-3-12) and connect AC power to the secondary scanner.

   Note: Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. The outlet should be located near the equipment and be easily accessible.

5. Configure the MS2420 and the secondary scanner. The auxiliary input port's data format must match the main output format of the secondary scanner.

   Note: Refer to the MS2xxx Stratos Series Configuration Addendum (PN 00-02034x) under Scanner Configuration Bar Codes: Auxiliary Port, Quick Start for a Secondary Scanners.

Cable Installation (Secondary Scanner)



† *See Aux power notes* ***Error! Bookmark not defined.****.*

⚠ *See Power Source caution statement located on page 12 of this manual.*

Figure 19. Secondary Scanner Cable Installation Schematic

EAS Deactivation

SW1 and SW2 are the switch banks inside the Checkpoint device that set the deactivation range. The following is a list of Checkpoint recommended switch bank settings.

Checkpoint Recommended Switch Bank Settings			
SW1		SW2	
Switch 1 and 6	ON	Switch 1 and 6	ON
Switch 2, 3, 4, and 5	OFF	Switch 2, 3, 4, and 5	OFF

All MS2420 models have a connector labeled EAS In on the bottom of the unit. An optional EAS cable (PN 52-52511x or 52-52556x) available for purchase for connection between the Checkpoint device and the scanner.

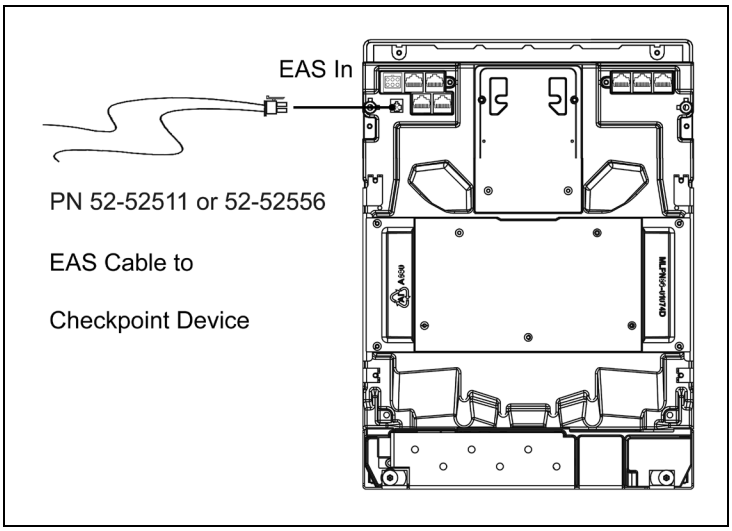


Figure 20. EAS Cable Connection (Bottom of MS2420)

The following figure shows the location of the EAS deactivation area for the MS2420 scanner. It is important to pass the entire tag through this area to deactivate the security tag.

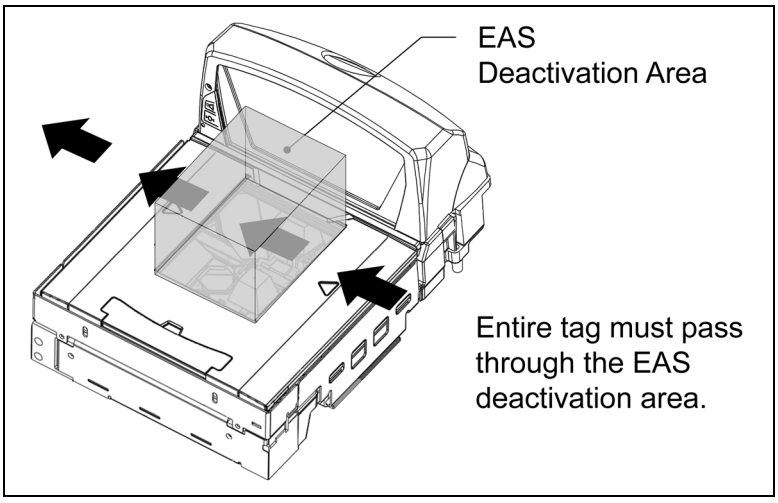


Figure 21. EAS Deactivation Area

Scan Zone

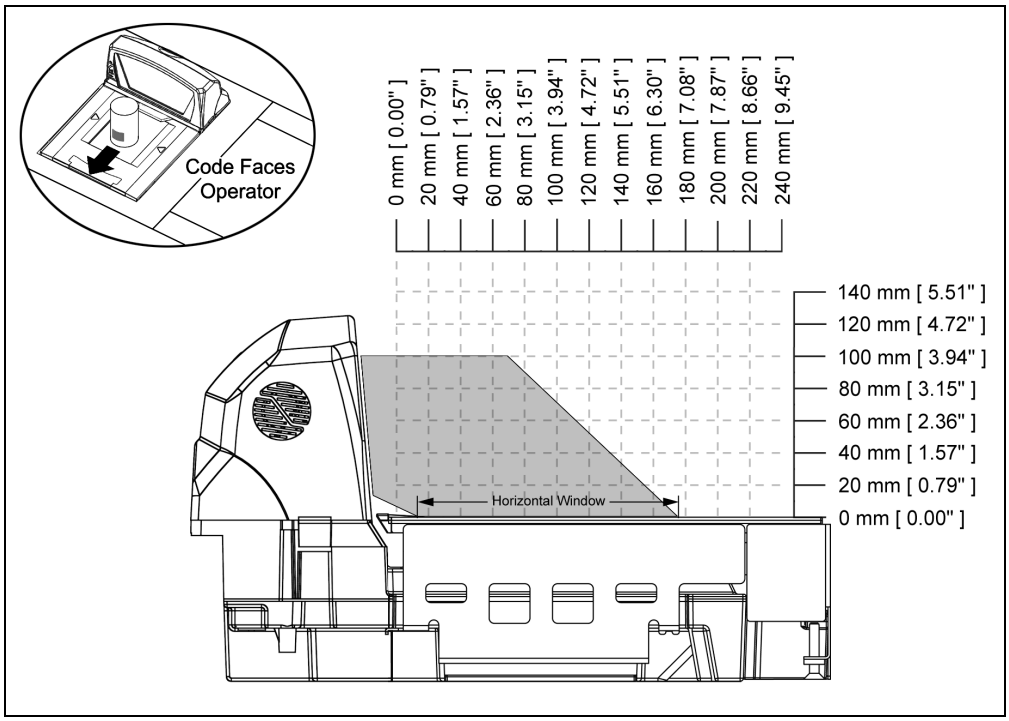


Figure 22. Checker-Side (13 mil)

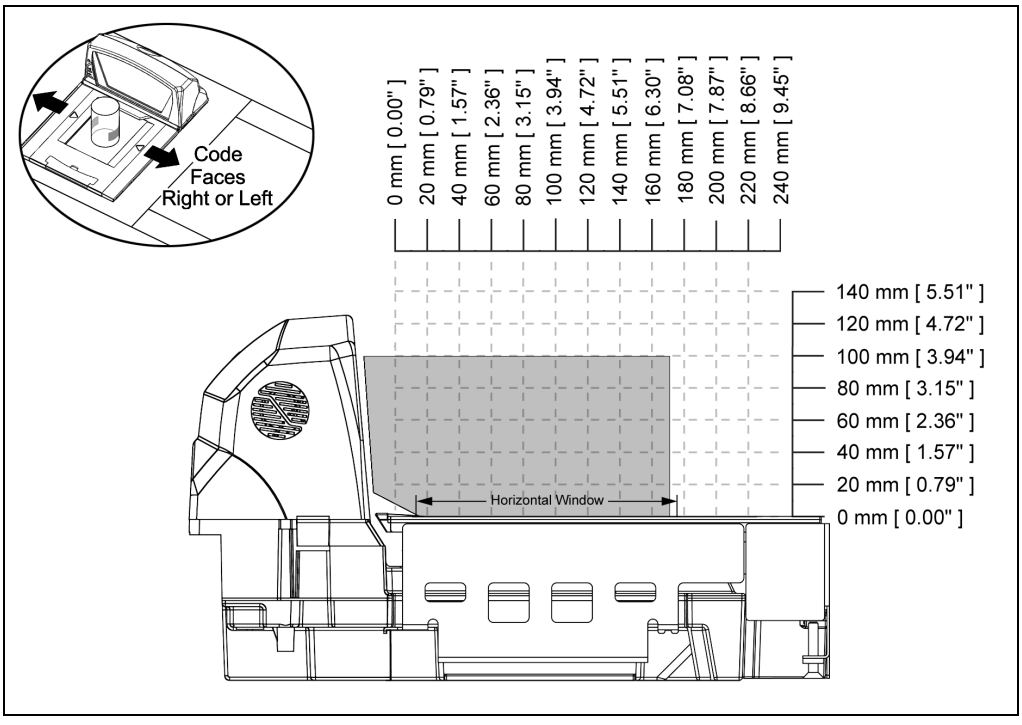


Figure 23. Horizontal Left/Right (13 mil)

Specifications are subject to change without notice.

Typical Scan Zones shown.

Scan Zone

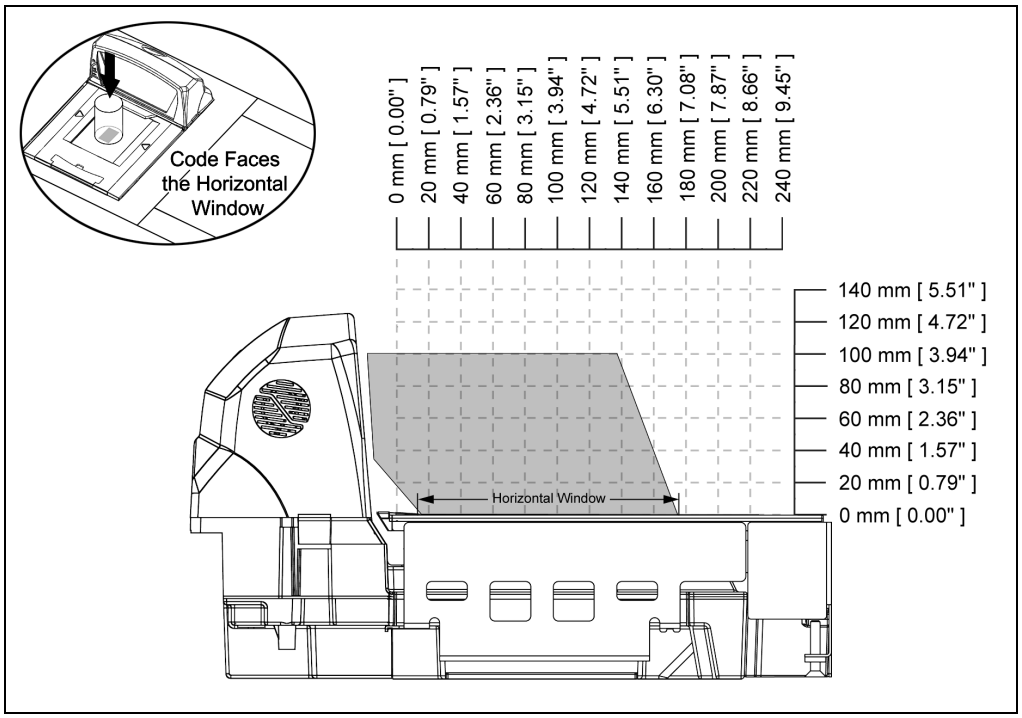


Figure 24. Horizontal Direct (13 mil)

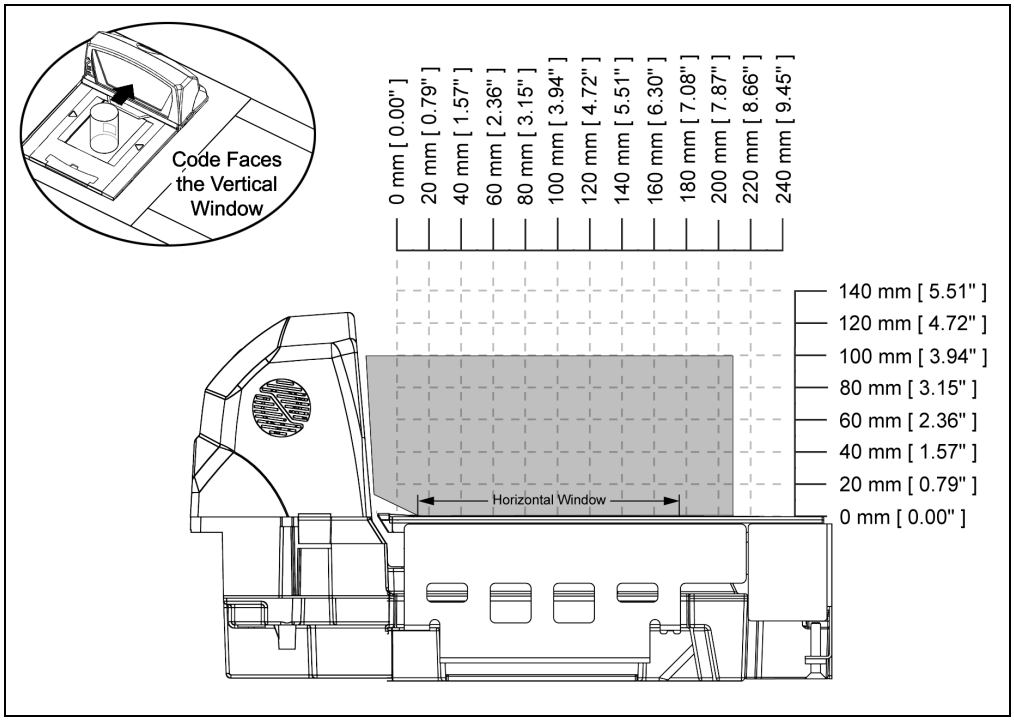


Figure 25. Vertical Direct (13 mil)

Specifications are subject to change without notice.

Typical Scan Zones shown.

Wake Activation Area (Photocell LED Output)

The MS2420 scanner's default power save mode† is Dual Action Power Save Mode #2 (see page 39). This power save mode turns the laser OFF after a configured period of non-use then turns the motor OFF after thirty-minute intervals. Any movement detected by the photocell in the activation area, shown below in grey, will cause the scanner to exit the power save mode. The motor will restart automatically and the laser will turn back on preparing the scanner for bar code recognition, decoding and transmission.

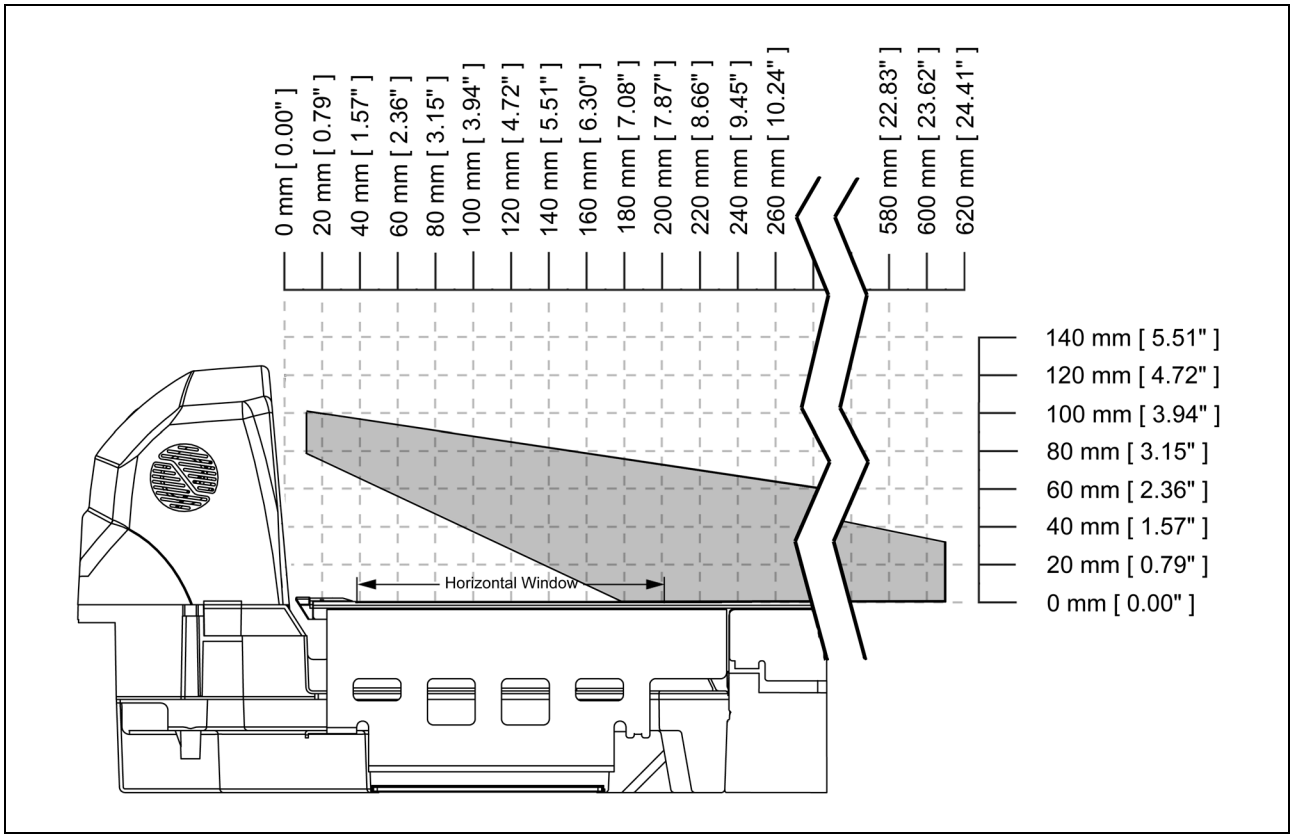


Figure 26. Wake Activation Area Perpendicular to Package Flow Default Range (Photocell LED Output)

† *Refer to the MetroSelect Configuration Guide (PN 00-02407) for additional information on configurable power save modes.*

Specifications are subject to change without notice.

Changing the Wake Area Sensitivity Level (Photocell LED Range Adjust)

The MS2400 Series bar code scanner wake area sensitivity level can be set to the end users preference by scanning one of the Photocell Sensitivity adjustment bar codes below.

*Max Photocell Sensitivity

This feature enables the MS24xx to be at max sensitivity or far sensing for the wake up photo transistor.

** This is the default setting.*

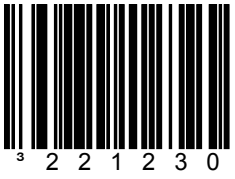
Medium Photocell Sensitivity

This feature enables the MS24xx to be at a medium 1 sensitivity or medium sensing for the wake up photo transistor.

Low Photocell Sensitivity

This feature enables the MS24xx to be at a low sensitivity or low sensing for the wake up photo transistor.

Min Photocell Sensitivity



This feature enables the MS24xx to be at the lowest sensitivity (close only) for the wake up photo transistor.

** MS2400 Series Bar Code Scanner Default Setting*

Audible Indicators

When in operation the MS2420 scanner provides audible feedback that indicates the status of the unit and the current scan. Eight settings are available for the tone of the beep (normal, six alternate tones and no tone) plus three volume settings. To change the tone or volume, refer to the *Changing the Beeper Tone and Volume* section of this manual.

One Beep

When the scanner first receives power, the blue LED will turn on and the scanner will beep once. The scanner is now ready to scan.

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

Razzberry Tone

This is a failure indicator. Refer to failure modes on page 35.

Three Beeps - during operation

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

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

When using one-code-configuring, 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 on page 35.

Descending Tone

The scanner will emit a descending tone when the microprocessor is about to Flash upgrade.

Ascending Tone

The scanner will emit an ascending tone when the interface coprocessor is about to Flash upgrade.

Visual Indicators

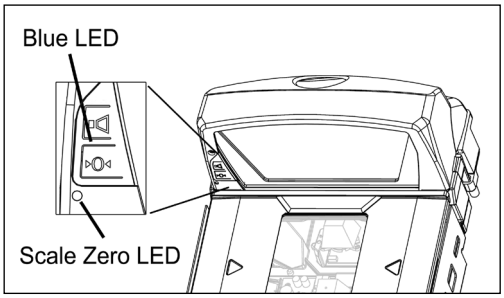


Figure 27. LEDs

The blue LED is located near the bottom corner of the vertical output window on the MS2420. When the scanner is ON, the flashing or constant, illumination of the LEDs indicates the status of the scanner and the current scan. There is an additional amber LED next to the scale zero symbol on all MS2420 scanner models that include a scale (see Figure 27).

No Blue LED

The blue LED will not be illuminated if the scanner is not receiving power from the host or transformer. They are also not illuminated when all lasers are turned off for any reason.

Steady Blue

When all lasers are active, the blue LED is illuminated. The blue LED will remain illuminated until all lasers are deactivated.

Steady Blue and Single Blue Flash

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

Blue LED Off

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 blue LED will remain off until the data can be transmitted.

or

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

Flashing Blue

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

or

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

or

This indicates there is an error active on the diagnostic indicator display (see *Error Codes* on page 36). The scanner may continue to operate depending on the type of error.

Steady Amber LED

The amber LED is illuminated when the scale is at zero.

Failure Modes

One Razzberry Tone

This indicates that the scanner has experienced a laser subsystem failure. The scanner will try up to three times to correct the failure condition. If the laser subsystem continues to fail, that subsystem (horizontal or vertical) will be shut down and an error indication will be shown on the Diagnostic Indicator Display. This error stays on the display until corrected. If the remaining subsystem is still operational, scanning will continue using the operational components.

Two Razzberry Tones

This indicates that the scanner has experienced a motor subsystem failure. The scanner will try up to three times to correct the failure condition. If the motor subsystem continues to fail, that subsystem (horizontal or vertical) will be shut down and an error indication will be shown on the Diagnostic Indicator Display. This error stays on the display until corrected. If the remaining subsystem is still operational, scanning will continue using the still operational components.

Continuous Razzberry Tone with Blue LED 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 three 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.

Diagnostic Indicator Display

There is a two-digit error code display located under horizontal output window near the vertical output window (see figure below).

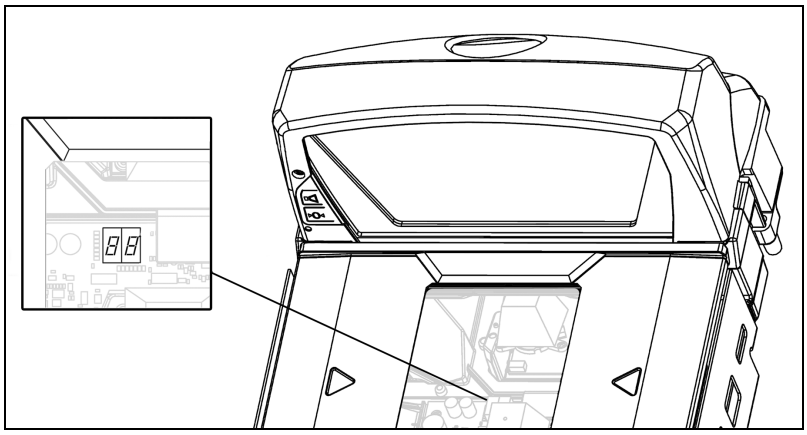


Figure 28. Error Code Display (Optional Product Roll Bar Shown)

The following is a list of possible error codes and their meanings. Some errors will require immediate scanner maintenance.

Error Code	Description
01	Reserved
02	RAM ERROR – The scanner's Random Access Memory (RAM) is tested as faulty. Return the unit for repair at an authorized service center.
03	PROGRAM ERROR – The scanner's software program is failing. Return the unit for repair.
04	INTERFACE ERROR – After power up and any application exit (e.g. MetroSet™, etc.), the scanner checks the interface hardware with that chosen in configuration. If they do not agree, an interface error exists. Correct this problem by getting the proper hardware interface OR programming MS2420 configuration for the proper interface hardware attached.
05	CONFIGURATION ERROR – The non-volatile configuration memory did not agree with the data last saved. Default configuration data is then used and the scanner continues operating. This error is also accompanied by three beeps. This error will remain during operation as a reminder that this power cycle is scanning against a default-generated configuration.
06	COMMUNICATION ERROR – The RS232 data line is being held active. This causes the scanner to read a "break" signal constantly and continuous attempts are made to enter MetroSet configuration mode. A short on the RX Data line can cause this condition. It can also be the result of a laptop in power save mode. The scanner will abort attempts to enter configuration mode after a short timeout. The scanner can automatically recover from this condition once the short in the RX Data line is corrected.

Diagnostic Indicator Display

Error Code	Description
09	COPROCESSOR COMMUNICATION ERROR – The main microprocessor is not communicating with the interface coprocessor. The interface coprocessor may be in a fault condition with the host or just not able to respond. This error may appear when the scanner is configured for USB or RS485 interface applications or during an attempt to update the interface software through the flash utility. The unit should be repaired at an authorized service center.
11	SWITCH ERROR – The switch used for volume selection or sleep mode is detected in error (always closed). The condition is self-correcting if possible. If the error persists, return the unit for repair at an authorized service center. The scanning operation can continue with this error active.
12	Reserved
13	SCALE ERROR – Single Cable Scanner/Scales Only. The scanner does not communicate with the scale. Make sure there is nothing plugged into the 'Scale RS232 to Host' port. If there is a disconnected cable, it may be causing the communication error. If there is still no communication between the scanner and scale, return the unit to authorized service center for repair.
14	SCALE RETURN TO ZERO ERROR – The scale did not return to zero between scale weight requests if the zero checking function is enabled. The scale will need to be re-zeroed.
21	LASER #1 (VERTICAL) ERROR – The laser in the vertical scanning subsystem denotes a failure. The scanner will try three times to correct the laser operation. If the laser error persists, the vertical scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
22	LASER #2 (RIGHT HORIZONTAL) ERROR – The right laser in the horizontal scanning subsystem denotes a failure. The scanner will try three times to correct the laser operation. If the laser error persists, and the left horizontal laser (#3) is also in error, the horizontal scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
23	LASER #3 (LEFT HORIZONTAL) ERROR – The left laser in the horizontal scanning subsystem denotes a failure. The scanner will try three times to correct the laser operation. If the laser error persists, and the right horizontal laser (#2) is also in error, the horizontal scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
24	LASER #1 (VERTICAL) HIGH CURRENT WARNING – The laser in the vertical scanning subsystem is drawing excessive current. This could be a warning for a future total failure. Have the unit checked at an authorized service center when convenient.

Diagnostic Indicator Display

Error Code	Description
25	LASER #2 (RIGHT HORIZONTAL) HIGH CURRENT WARNING – The laser in the vertical scanning subsystem is drawing excessive current. This could be a warning for a future total failure. Have the unit checked at an authorized service center when convenient.
26	LASER #3 (LEFT HORIZONTAL) HIGH CURRENT WARNING – The laser in the vertical scanning subsystem is drawing excessive current. This could be a warning for a future total failure. Have the unit checked at an authorized service center when convenient.
27	LASER #1 (VERTICAL) UDNERCURRENT WARNING – The laser in the vertical scanning subsystem is drawing too little current. The laser is probably not on. This could be the result of a loss of the required set point in memory. Have the unit checked at an authorized service center.
28	LASER #2 (RIGHT HORIZONTAL) UNDERCURRENT WARNING – The laser in the right horizontal scanning subsystem is drawing too little current. The laser is probably not on. This could be the result of a loss of the required set point in memory. Have the unit checked at an authorized service center.
29	LASER #3 (LEFT HORIZONTAL) UNDERCURRENT WARNING – The laser in the left vertical scanning subsystem is drawing too little current. The laser is probably not on. This could be the result of a loss of the required set point in memory. Have the unit checked at an authorized service center.
31	MOTOR #1 (VERTICAL) ERROR – The motor in the vertical scanning subsystem denotes a failure. The scanner will try three times to correct the motor operation. If the motor error persists, the vertical scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
32	MOTOR #2 (HORIZONTAL) ERROR – The motor in the horizontal scanning subsystem denotes a failure. The scanner will try three times to correct the motor operation. If the motor error persists, the horizontal scanning subsystem will be shut down and this error code will remain on the Diagnostic Indicators.
34	MOTOR #1 (VERTICAL) SPEED ERROR – The motor in the vertical section cannot be speed controlled as desired. Have the unit checked at an authorized service center.
35	MOTOR #2 (HORIZONTAL) SPEED ERROR – The motor in the horizontal section cannot be speed controlled as desired. Have the unit checked at an authorized service center.

Power Save Modes

The MS2420 has five configurable power save modes. Refer to the MetroSelect Configuration Guide for additional information on Power Save Modes.

1. Blink Power Save Mode:

   Blinks the laser OFF & ON after a configured 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 configured 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 26 on page 31).

3. Laser & Motor Off Power Save Mode:

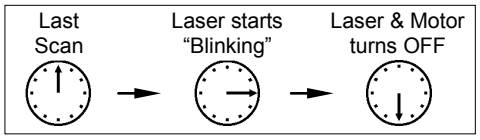
   Turns the laser and motor OFF after a configured period of non-use.

   Any movement detected by the IR will "wake" the scanner from the power save mode (see Figure 26 on page 31). 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 configured 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.

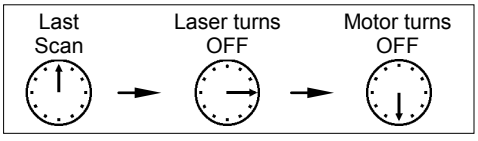


   Any movement detected by the IR will "wake" the scanner from the power save mode (see Figure 26 on page 31).

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

   Turns the laser OFF after a configured 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 26 on page 31).

Beeper Options and Button Functions

Changing the Beeper Tone

Beeper tones may be configured 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.

Next Beep Tone

Changing the Beeper Volume

Volume levels may be configured using the volume button 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.

Next Volume

The Multi-Function Button

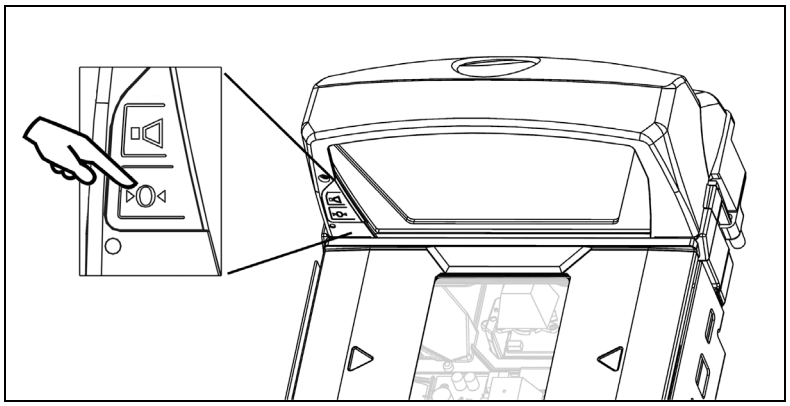


Figure 29. The Multi-Function Button

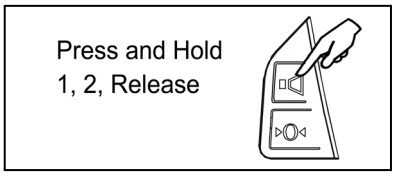


Figure 30. Changing the Beeper Volume

Changing the Beeper Volume

A short (<3 second) depression and the beeper volume will change. The new volume will be heard. The silent (no beep) volume is also selectable.

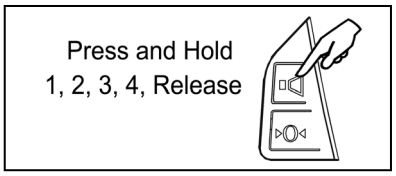


Figure 31. Laser & Motor Off Power Save Move

Placing the Unit in Laser & Motor Off Power Save Mode

Long (>3 seconds) depression
The Laser & Motor Off Power Save Mode is the only power save mode that can be activated with the multi-function button.*

* *This feature is configuration dependent. Refer to the MetroSelect Configuration Guide (PN 00-02407x) under Scanner Operation: Power Save Modes to enable this feature.*

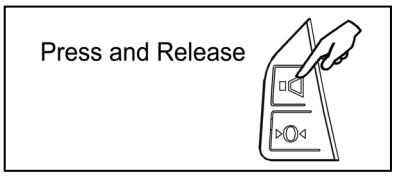


Figure 32. Normal Operation

Waking the Unit from All Power Save Modes

The next button depression will awaken the scanner for normal operation.

Startup

When the scanner first receives power, the blue LED will turn on and the scanner will beep once. The scanner is now ready to scan.

Power-Up Test Mode

When a MS2420 scanner is first powered up, it cycles through a number of self-tests before starting normal operation. If there are any initial failures during this sequence of tests the scanner will beep or razz to indicate the error and an error code will appear in the diagnostic indicator display.

The following are examples of the types of tests performed at power-up.

1. Memory tests
2. Hardware setup tests
3. Motor tests
4. Laser tests
5. Configuration tests
6. Interface tests
7. Scale tests

These tests are also performed on a periodic basis with the operator alerted to any failures.

Configuration Mode

All MS2420 series scanners have been configured at the factory with a set of default communication protocols. Since many host systems have unique formats and protocol requirements, A wide range of configurable features that may be selected with the use of the MetroSelect Configuration Guide (PN 00-02407x), the MS2xxx Stratos Series Configuration Addendum (PN 00-02034x) and MetroSet can be provided.

Scale Zeroing

After the unit has been officially calibrated (see page 44) the scale can be re-zeroed by pressing the scale zeroing button on either the unit or on the remote display stand. When the scale is at zero the amber LED will be illuminated.

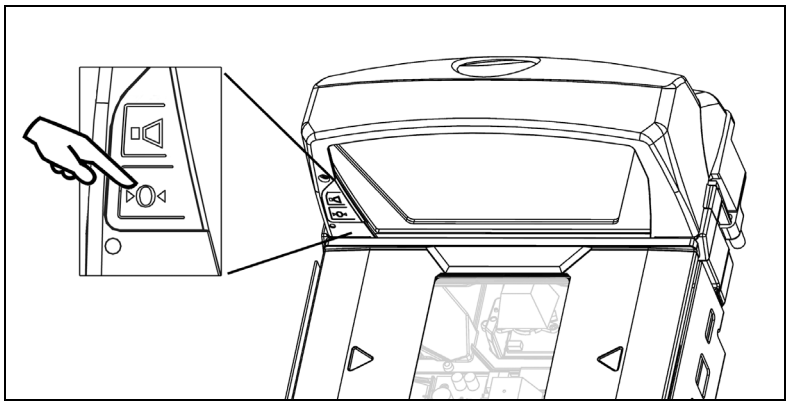


Figure 33. The scale zero button on scanner/scale.

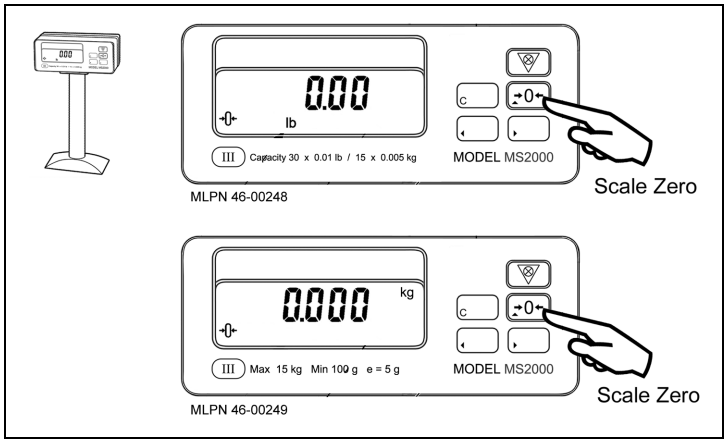


Figure 34. The scale zero button on the remote display.

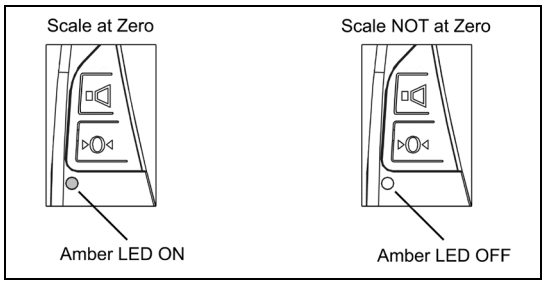


Figure 35. The scale zero indicator.

Calibration

The scanner/scale must be calibrated if:

- it is a first time installation
- the scale cannot be re-zeroed
- the calibration verification tests indicate errors
- there is a change in the units of measure [i.e. from pounds (lbs.) to kilograms (kg)]
- if the scale load cell has been replaced
- the calibration seal is missing or torn

Note: The certification of the weighing mechanism of the scale version of this scanner is subject to federal, state and local Weights and Measures statutes and regulations and can only be performed by authorized government agencies and/or their duly registered agents. Each time the scale or weighing mechanism is calibrated, it should be properly sealed with a paper seal or a wire seal prior to being placed into service in commerce.

It is the responsibility of the owner of the scale to confirm compliance with the relevant Weights and Measures statutes and regulations applicable in your area by checking with the appropriate government agency before placing a newly calibrated unit into service or removing any official seals.

Tools Required

- Field Standard 30.0 pound Weight Set or 15.0 kilogram Weight Set
- Wire or Paper Seal

  Note: Type of seal to be used will depend on the guidelines specified by the local Weights and Measures authorities.
- Phillips #1 Screw Driver

Scale Calibration Methods

- ***Scale Calibration with Remote Display*** uses the scale display to sequence through the calibration steps and store critical calibration points.
- ***Bar Code Scale Calibration without Remote Display**** uses the scanner / scale only and assumes there is no remote scale display. A bar code is used to initiate the calibration sequence and the speaker volume switch is used to store critical range values.

** This calibration procedure will work with the remote display connected to the MS2420 but no data will appear on the remote display.*

Priming the Scale for Calibration (lbs. or kg)

Prime the scale before starting either method of calibration.

Note: Calibrate the scanner/scale after the unit is installed in the checkout countertop.

It is important to use the correct certified (lb. or kg.) field weight set when calibrating the scale.

1. Check the platter to ensure that nothing is interfering with its freedom to move. Assure that no debris is present from daily use of the scanner/scale if it has been in service.
2. Apply power to the scanner/scale.
3. Wait 5 minutes after power up before proceeding.

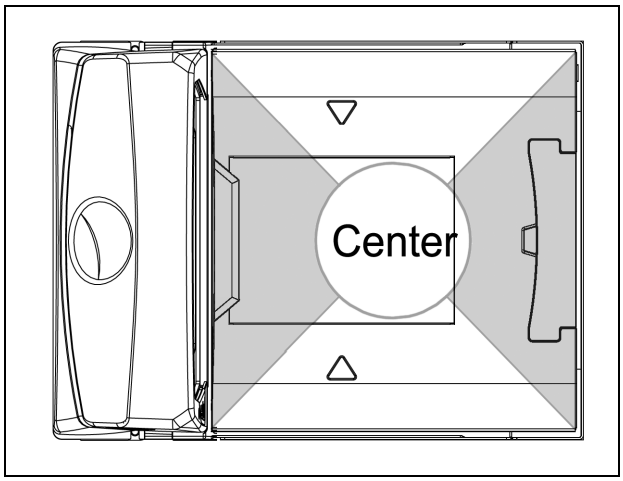


Figure 36. Scale Center

4. Place the 30.0 lb. weight or the 15 kg weight on the center of the scale. Allow the weight to settle.
5. Remove the weight.
6. Repeat three times to prime the scale before calibration.

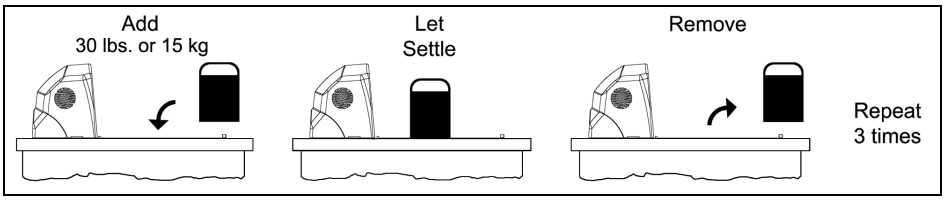


Figure 37. Priming the Scale for Calibration

Scale Calibration Procedure (lbs. or kg) with Remote Display

1. Temporarily Remove the platter and place it in a safe location.

   Note: It is the responsibility of the owner of the scale to confirm compliance with the relevant Weights and Measures statutes and regulations applicable in your area by checking with the appropriate government agency before placing a newly calibrated unit into service or removing any official seals.

2. If this is a currently installed scanner/scale in need of calibration, cut and remove the calibration switch cover seal. If this is a new installation, cut and remove the factory-applied adhesive seal.

   ⚠ *Follow all Electro-Static Discharge (ESD) procedures when exposing internal scanner/scale components.*

3. Remove the M3 screw securing the calibration switch/button cover. Place the cover and screw in a safe location. Verify that the scale calibration switch is in the Run position.

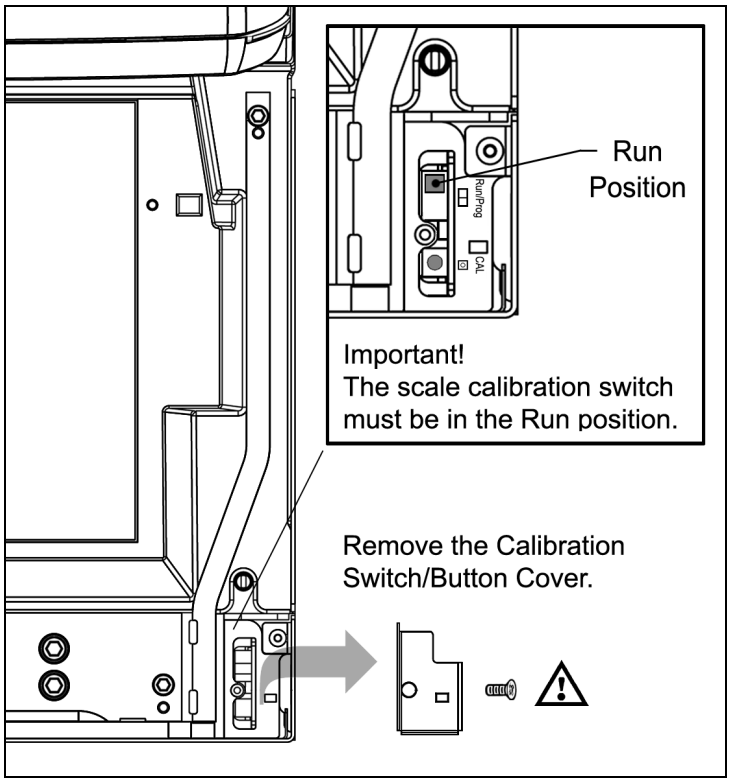


Figure 38. Calibration Switch/Button Cover Removal

Scale Calibration Procedure (lbs. or kg) with Remote Display

4. Enter full service access mode. Power down the unit if necessary. Press and hold down the Calibration push button then power up the scanner/scale. Release the Calibration push button.

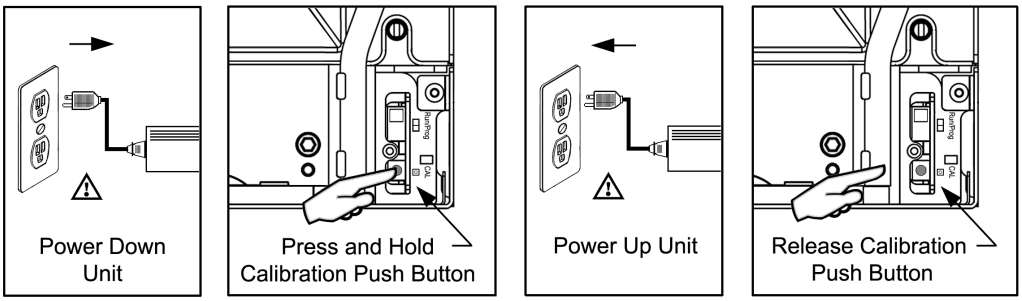


Figure 39. Entering Full Service Access Mode

⚠ *See Power Source caution statement located on page 12 of this manual.*

5. Enter calibration mode. The remote display will flash all of the characters available (see illustration below). Press the right arrow button twice (►)(►) while the display flashes all characters. The remote display should read CAL 1.

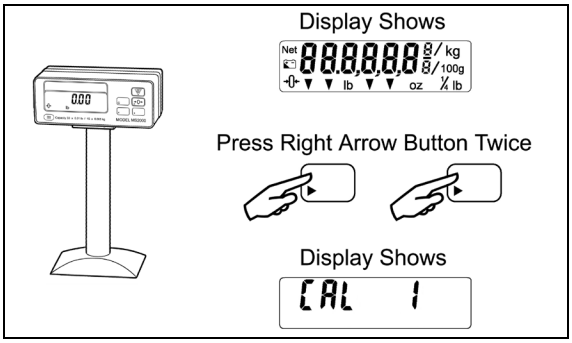


Figure 40. Enter Calibration Mode

6. Reinstall the platter onto the scanner/scale. Check the platter to ensure that it is seated properly and nothing is interfering with its freedom to move.

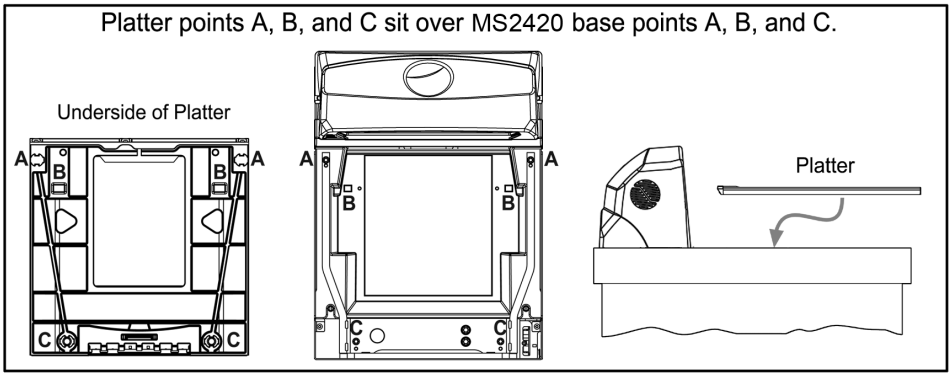


Figure 41. Install Platter

Scale Calibration Procedure (lbs. or kg) with Remote Display

7. Make sure there is no load on the scale platter.
8. Calibrate a zero load. Press the right arrow (►) button once when the remote display reads CAL 1 and there is no load on the scale platter.

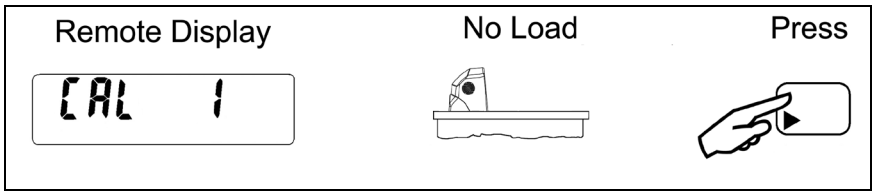


Figure 42.

9. Place a half load (15.00 lbs. or 7.500 kg) on the center of the scale platter then press the right arrow (►) button.

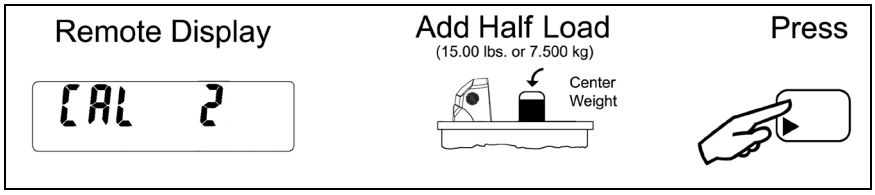


Figure 43.

10. Add an additional half load (15.00 lbs. or 7.500 kg) to the existing half to simulate a full load, center entire load then press the right arrow (►) button.

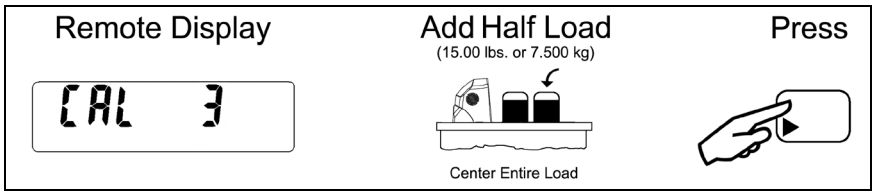


Figure 44.

11. Remove half of the load (15.00 lbs. or 7.500 kg), center the remaining load then press the right arrow (►) button.

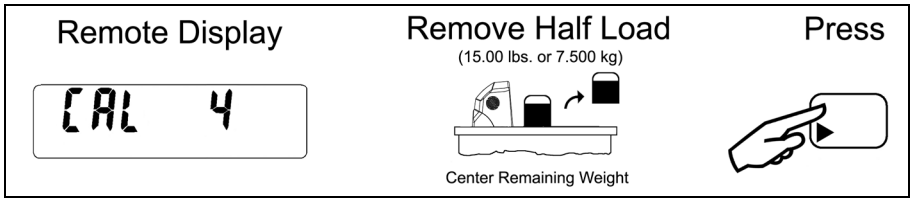


Figure 45.

Scale Calibration Procedure (lbs. or kg) with Remote Display

12. Remove the remaining half load from the scale then press clear (C). The message done will flash briefly on the display.

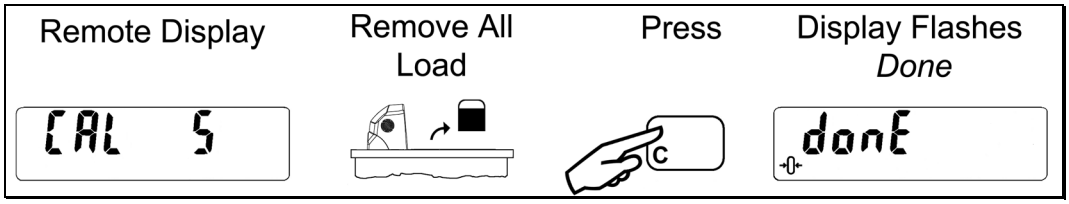


Figure 46.

13. Exit calibration mode. Press and hold the test button for at least 3 seconds then release. With no load on the scale the display should read 0.00 lb. or 0.000 kg.

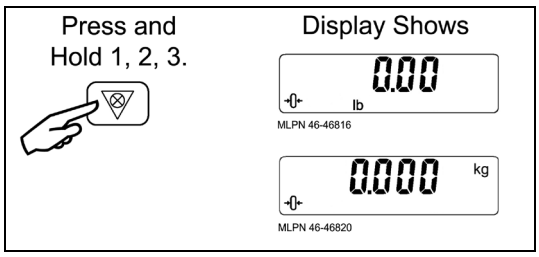


Figure 47.

14. The unit's calibration must now be verified as required by state and/or local Weights and Measures regulations (starting on page 54).

Need to Start Over?

To exit the calibration mode or restart the process press the test button then the clear button.

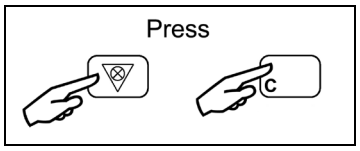


Figure 48.

Bar Code Calibration Procedure without Remote Display

The following calibration procedure can be used when the remote scale display is not present. This procedure requires that the scanner/scale have a software serial number of 15001, or greater. The beeper volume switch is used to advance to the next stage of calibration and the LED display notifies the operator which 'calibration stage' (1 through 5) is active.

1. Temporarily remove the platter and place it in a safe location.

   Note: It is the responsibility of the owner of the scale to confirm compliance with the relevant Weights and Measures statutes and regulations applicable in your area by checking with the appropriate government agency before placing a newly calibrated unit into service or removing any official seals.

2. If this is a currently installed scanner/scale in need of calibration, cut and remove the calibration switch cover seal. If this is a new installation, cut and remove the factory-applied adhesive seal.

   ⚠ *Follow all Electro-Static Discharge (ESD) procedures when exposing internal scanner/scale components.*

3. Remove the M3 screw securing the calibration switch/button cover. Place the cover and screw in a safe location.

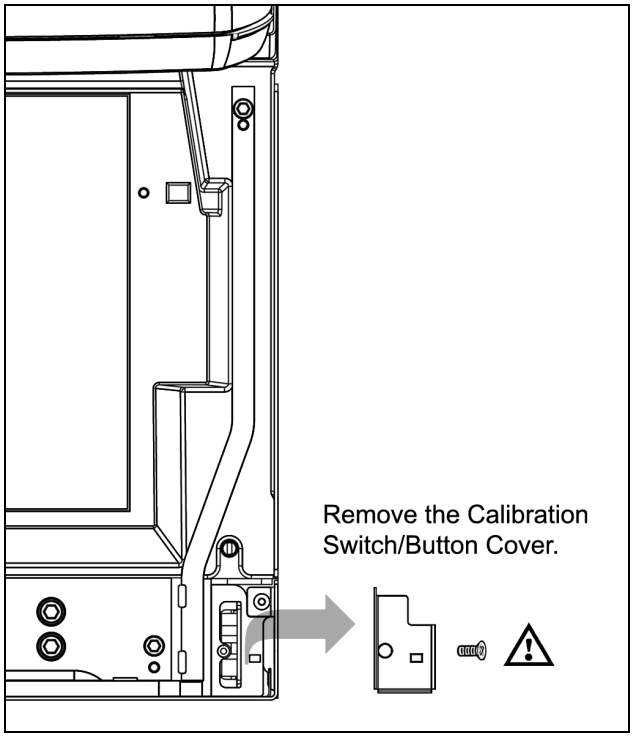


Figure 49. Calibration Switch Plate Cover Removal

Bar Code Calibration Procedure without Remote Display

4. Enter the scale program mode. Power down the unit and slide the scale program switch to the program position. If the system is a dual cable system, disconnect the host to scale RS232 cable from the unit.

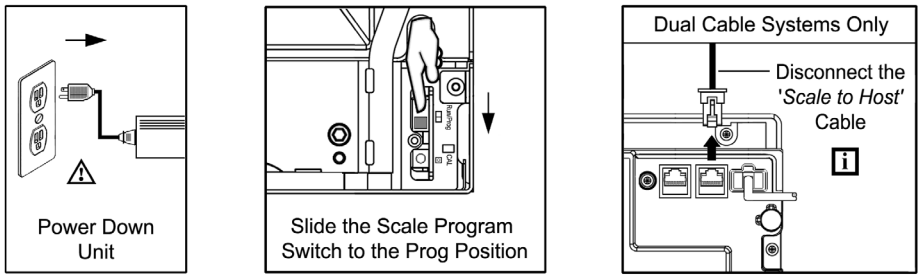


Figure 50. Entering the Scale Program Mode

5. Reinstall the platter and power up the unit.

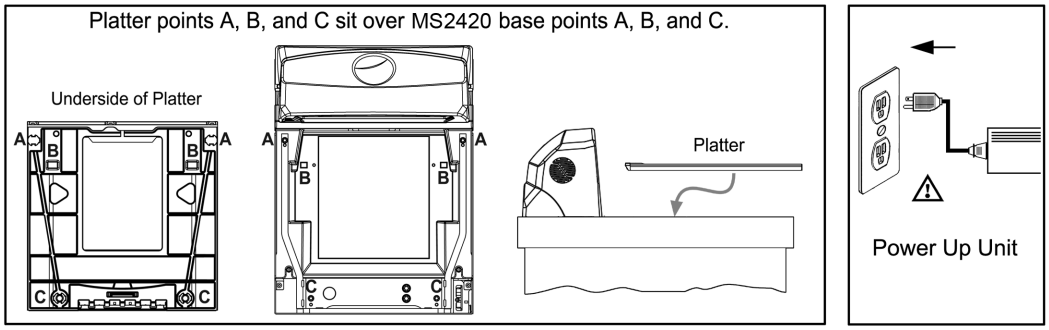


Figure 51. Platter Installation and Power Up

6. Enter bar code calibration mode. Use the vertical window to scan the following bar code. The scanner will beep once as it enters the bar code calibration mode and the calibration utility will start.

Bar Code
Calibration Mode

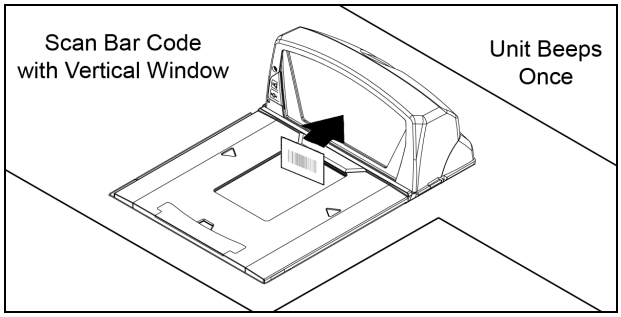


Figure 52. Entering Bar Code Calibration Mode

Note: If a razz tone sounds, an error has occurred. Refer to Diagnostic Indicator Display; Error Codes starting on page 36 for additional information.

⚠ *See Power Source caution statement located on page 12 of this manual.*

Bar Code Calibration Procedure without Remote Display

7. Make sure there is no load on the scale platter. The blue LED will be used to indicate the current step in the calibration process.
8. Calibrate a zero load. The blue LED will blink once periodically. Wait 8 to 10 seconds for scale stability then press the beeper volume switch one time. The beeper will beep 1 time indicating that the Cal 1 value has been stored.

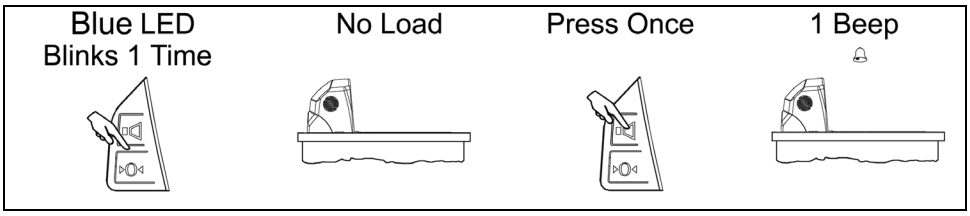


Figure 53.

9. Place a half load on the center of the scale platter. The blue LED will blink twice periodically. Wait for scale stability, and then press the beeper volume switch once. The beeper will beep 2 times indicating that the Cal 2 value has been stored.

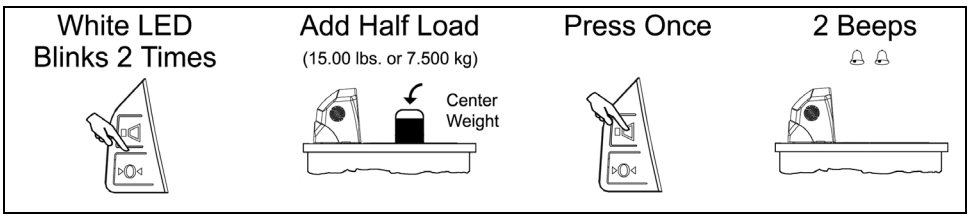


Figure 54.

10. Add an additional half load to the existing half to simulate a full load (center the entire load). The blue LED will blink three times periodically. Wait for scale stability, and then press the beeper volume switch once. The beeper will beep 3 times indicating that the Cal 3 value has been stored.

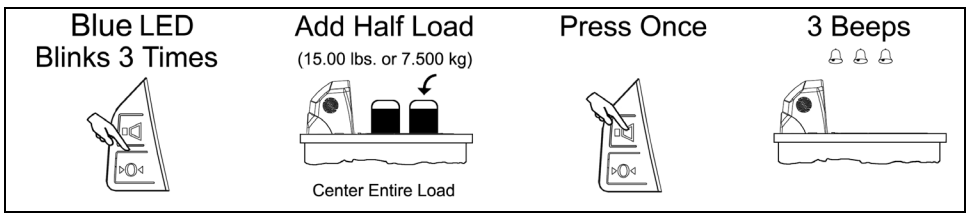


Figure 55.

Bar Code Calibration Procedure without Remote Display

11. Remove half of the load and center the remaining load. The blue LED will blink four times periodically. Wait for scale stability, and then press the beeper volume switch once. The beeper will beep 4 times indicating that the Cal 4 value has been stored.

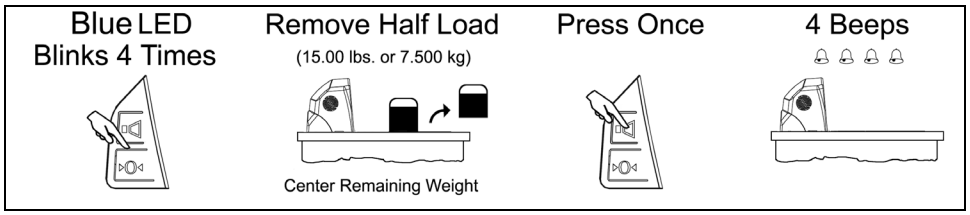


Figure 56.

12. Remove the remaining half load from the scale. The blue LED will blink five times periodically. Wait for scale stability, and then press the beeper volume switch once. The beeper will beep 5 times indicating that the Cal 5 value has been stored.

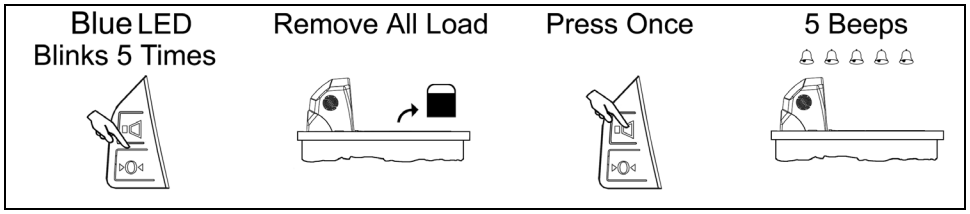


Figure 57.

13. Calibration is now complete. The scanner will automatically restart, and beep one time, in 5 seconds.

14. In order to use the scale in the normal operating mode, the unit must be powered down and the scale program switch returned to the run position.

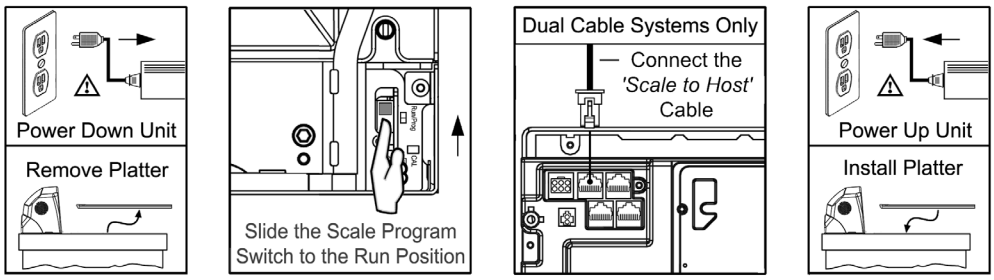


Figure 58.

⚠ *See Power Source caution statement located on page 12 of this manual.*

15. The unit's calibration must now be verified as required by state and/or local Weights and Measures regulations (starting on page 54).

Calibration Verification

U.S. Pounds (lbs.)

The following tests verify if the scale's Calibration is accurate. For Kilograms see instructions starting on page 55.

Note: The following tests are based on a 2-digit accuracy setting for pounds.

- Increasing Load Test
- Shift Test
- Decreasing Load Test
- Return to Zero Test

Increasing Load Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.00 lbs.
2. Place a 5.00 lb. weight on the center of the scale platter and verify the display reads 5.00 lbs.
3. Place an additional 5.00 lb. weight on the center of the scale platter and verify the remote display reads between 9.99 and 10.01 lbs.
4. Place an additional 10.00 lb. weight on the center of the scale platter and verify the remote display reads between 19.99 and 20.01 lbs.
5. Place an additional 10.00 lb. weight on the center of the scale platter and verify the remote display reads between 29.99 and 30.01 lbs.
6. Remove all the weight from the scale platter and verify the display reads 0.00 lbs.

Shift Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.00 lbs.
2. Place a 15.00 lb. weight on the scale platter in the center of zone A (see diagram) and verify the remote display reads between 14.99 and 15.01 lbs.
3. Remove the 15.00 lb. weight and verify the display reads 0.00 lbs.
4. Repeat steps 2 and 3 for each of the remaining zones (B, C, and D).
5. Verify that the remote display reads 0.00 lbs. when all weight has been removed.

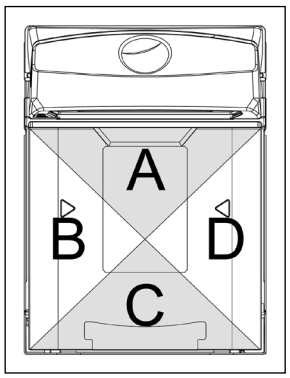


Figure 59. Shift Test Zones

Decreasing Load Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.00 lbs.
2. Place a 30.00 lb. load on the center of the scale platter (use two 10.00 lb. weights and two 5.00 lb. weights). Verify the remote display reads between 29.99 and 30.01 lbs.
3. Remove a 10.00 lb. weight from the platter and center remaining weight. Verify that the remote display reads between 19.99 and 20.01 lbs.
4. Remove another 15.00 lbs. from the platter, center the remaining weight and verify the scale reads 5.00 lbs.
5. Remove all the weight from the platter and verify the scale has returned to 0.00 lbs.

Return to Zero Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.00 lbs.

Calibration Verification

Kilograms (kg)

The following tests verify if the scale's Calibration is accurate. For US Pounds see instructions starting on page 54.

Note: The following tests are based on a 3-digit accuracy setting for kilograms.

- Increasing Load Test
- Shift Test
- Decreasing Load Test
- Return to Zero Test

Increasing Load test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.000 kg.
2. Place a 2.500 kg weight on the center of the scale platter and verify the display reads 2.500 kg.
3. Place an additional 2.500 kg weight on the center of the scale platter and verify the remote display reads between 4.995 kg and 5.005 kg.
4. Place an additional 5.000 kg weight on the center of the scale platter and verify the remote display reads between 9.995 kg. and 10.005 kg.
5. Place an additional 5.000 kg weight on the center of the scale platter and verify the remote display reads between 14.995 kg. and 15.005 kg.
6. Remove all the weight from the scale platter and verify the display reads 0.000 kg.

Shift Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.000 kg.
2. Place a 7.500 kg weight on the scale platter in the center of zone A (see diagram) and verify the remote display reads between 7.495 kg. and 7.505 kg.
3. Remove the 7.500 kg weight and verify the display reads 0.000 lbs.
4. Repeat steps 2 and 3 for each of the remaining zones (B, C, and D).
5. Verify that the remote display reads 0.000 kg when all weight has been removed.

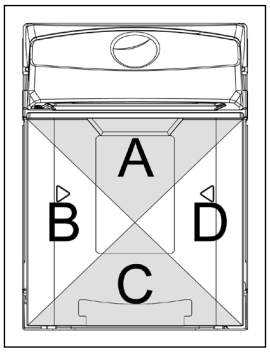


Figure 60. Shift Test Zones

Decreasing Load Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.000 kg.
2. Place a 15.000 kg load on the center of the scale platter. Verify the remote display reads between 14.995 kg. and 15.005 kg.
3. Remove 7.500 kg from the platter and center remaining weight. Verify that the remote display reads between 7.495 kg. and 7.505 kg.
4. Remove another 5.000 kg from the platter, center remaining weight and verify the scale reads 2.500 kg.
5. Remove all the weight from the platter and verify the scale has returned to 0.000 kg.

Return to Zero Test

1. Ensure there is no load on the scale platter and verify the remote display reads 0.000 kg.

Security Seal Installation

Note: The certification of the weighing mechanism of the scale version of this scanner is subject to federal, state and local Weights and Measures statutes and regulations and can only be performed by authorized government agencies and/or their duly registered agents. Each time the scale or weighing mechanism is calibrated, it should be properly sealed with a paper seal or a wire seal prior to being placed into service in commerce.

It is the responsibility of the owner of the scale to confirm compliance with the relevant Weights and Measures statutes and regulations applicable in your area by checking with the appropriate government agency before placing a newly calibrated unit into service or removing any official seals.

Type of seal to be used will depend on the guidelines specified by the local Weights and Measures authorities.

The security seal must only be installed if there were no errors during the scale calibration verification tests.

Pressure Sensitive Security Seal

1. Temporarily remove the platter and place it in a safe location.
2. Reinstall the calibration switch/button cover.

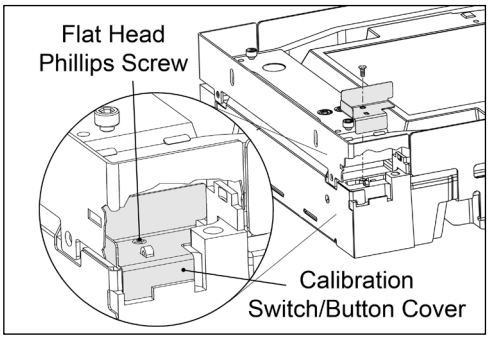


Figure 61. Calibration Switch/Button Cover

3. Apply the calibration security seal over the switch cover.

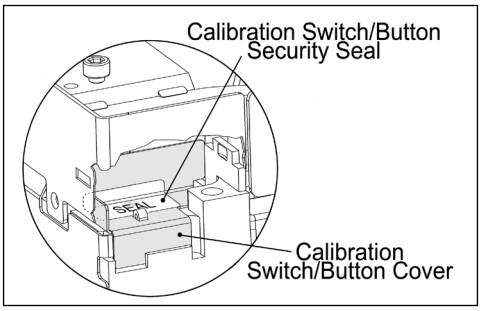


Figure 62. Calibration Switch/Button Security Seal Placement

4. Reinstall the platter.

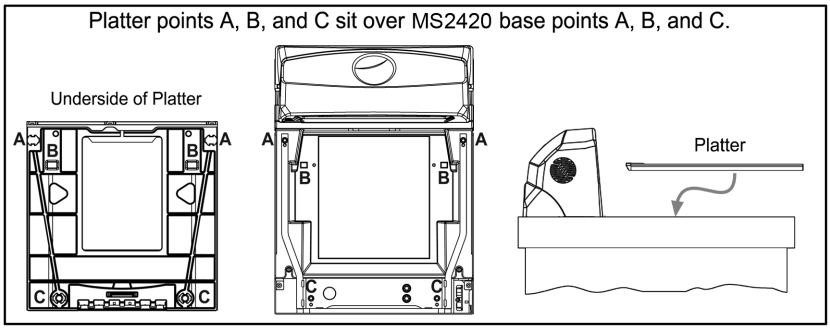


Figure 63. Platter Installation

Wire Security Seal (Seal Conversion Kit 46-00239)

1. Temporarily remove the platter and place it in a safe location.
2. Install the calibration switch/button cover.
3. Secure the cover in place with the flat head Phillips screw provided.
4. Thread the wire through the hole in the tab that protrudes through the calibration switch/button cover
5. Continue to thread the wire through the wire lock at the other end forming a loop (see Figure 64).
6. Crimp the lock closed to secure the wire.
7. Insert the tab on the end of the transparent cage cover into the slot on the end of the MS2420 unit then snap the other end into place over the tab on the MS2420 unit.
8. Reinstall the platter.

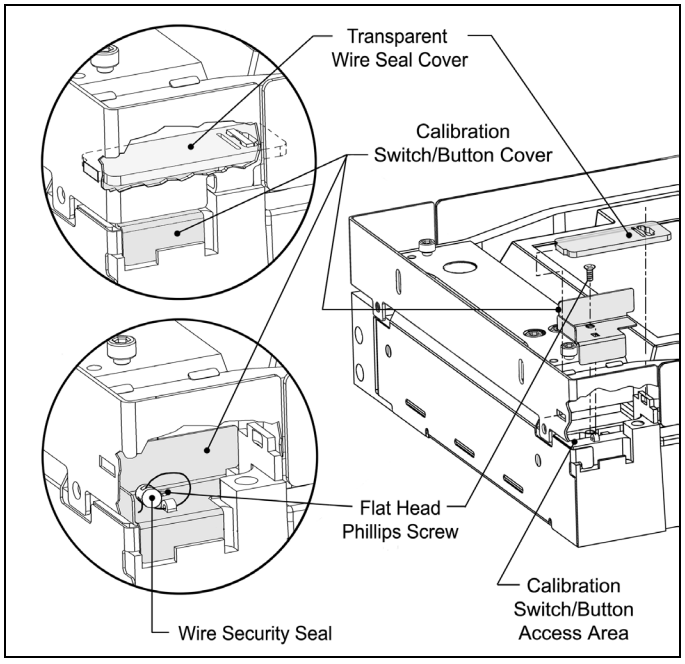
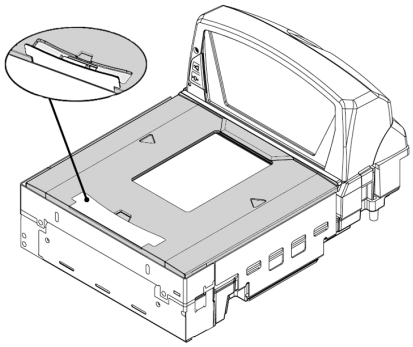


Figure 64. Calibration Switch/Button Wire Security Seal Assembly.

Horizontal Scan Window Replacement

Platter/Horizontal Scan Window Removal

Flip up the handle near the end of the platter. Grip it firmly and lift the platter off unit base.

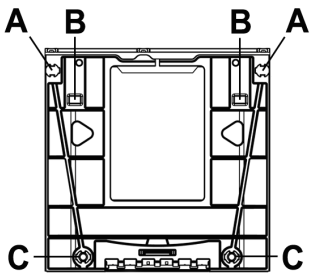


MS2420 Scanner/Scale Model

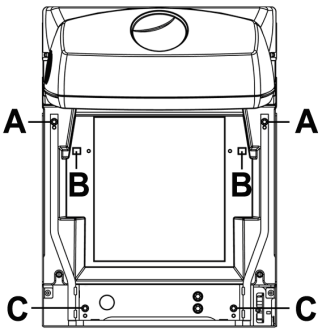
Platter/Horizontal Scan Window Installation

When installing the platter, it is important to ensure the platter is positioned properly. Carefully align the platter points shown below with the matching points indicated on the unit base. No hardware is required for platter installation.

Underside of Platter



MS2420 Platter *



MS2420 Base Unit

Figure 65. Platter/Horizontal Scan Window Replacement

* *See replacement parts on page 4.*

Daily Maintenance

Smudges and dirt on the unit's window can interfere with the unit's performance. If the horizontal or vertical output windows require 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.

Routinely check and clean the base unit to ensure that no debris is interfering with the platter movement.

Troubleshooting

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

Symptom	Possible Cause(s)	Solution
All Interfaces		
No LEDs, beep or motor spin.	No power is being supplied to the scanner.	Check the transformer, outlet and the power strip. Make sure the power cable is plugged into the scanner.
No LEDs and no beep.	No power is being supplied to the scanner.	The host system cannot supply enough current to power the MS2420 series scanner. Use the power supply included with the scanner.
During power up the unit beeps three times.	A non-volatile RAM failure.	Contact a customer service representative, if the unit will not hold the configuration.
During power up the unit razzes continuously.	There has been a diagnostic failure.	Contact a customer service representative, if the unit will not function.
During power up the unit razzes once.	A VLD failure.	Contact a customer service representative.
	Scanner motor failure.	Contact a customer service representative.
There are multiple scans upon presentation of code.	The same symbol timeout is set to short.	Adjust same symbol timeout for a longer time.
The unit powers up but does not beep.	The beeper is disabled.	Enable the beeper.
	No volume is selected.	Select a volume.
	No tone is selected.	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 and Code 128 are enabled by default. Verify that the type of bar code being read has been selected.
	The unit has been configured for a character length lock or a minimum length and the bar code being scanned does not satisfy the configured criteria.	Verify that the bar code that is being scanned falls into the criteria. Typical of Non-UPC/EAN codes. The scanner defaults to a minimum of 4 character bar code.

Symptom	Possible Cause(s)	Solution
All Interfaces		
The unit scans a bar code, but locks up after the first scan (the blue LED stays on).	The scanner is configured to support some form of host handshaking but is not receiving the signal.	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.
The unit scans but the data transmitted to the host is incorrect.	The scanner's data format does not match the host system requirements.	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.
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 and Code 128 are enabled by default. Verify that the type of bar code being read has been selected.
	The unit has been configured for a character length lock or a minimum length and the bar code being scanned does not satisfy the configured criteria.	Verify that the bar code that is being scanned falls into the criteria. Typical of Non-UPC/EAN codes. The scanner defaults to a minimum of 4 character bar code.
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 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.

Symptom	Possible Cause(s)	Solution
RS232 Only		
The unit powers up OK and scans OK but does not communicate properly to the host.	The com port at the host is not working or is not 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 RS232 data.
	The cable is not connected to the proper com port.	
	The com port is 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.
Characters are being dropped.	The intercharacter delay needs to be added to the transmitted output.	Add some intercharacter delay to the transmitted output by using the MetroSelect Configuration Guide (PN 00-02407x).
Aux Port Operation With Any Interface		
The secondary scanner is not functioning.		Refer to the user's guide provided with the secondary scanner.
The secondary scanner powers up but data is not relayed to the host.	The secondary scanner cable may not be connected to the proper port on the MS2420.	Ensure that the secondary scanner is connected to the MS2420 com port marked "Aux" port.
	The auxiliary com port may not be operating properly.	* The MS2420 series must be configured to enable the auxiliary port.
		The auxiliary input port's data format must match the main output format of the secondary scanner.

* *Refer to the MS2xxx Stratos Series Configuration Addendum (PN 00-02034x) under Scanner Configuration Bar Codes: Auxiliary Port, Quick Start for a Secondary Scanner.*

Scanner and Cable Terminations

Scanner Pinout Connections

The MS2420 scanner terminates to 10-pin modular jacks located on the bottom of the unit. The serial number label indicates the model number and interface of the scanner.

EAS	
Pin	**Function**
1	EAS In
2	EAS Out

DC Power	
Pin	**Function**
1	No Connect
2	Earth Ground
3	No Connect
4	5.2VDC
5	Ground
6	12VDC

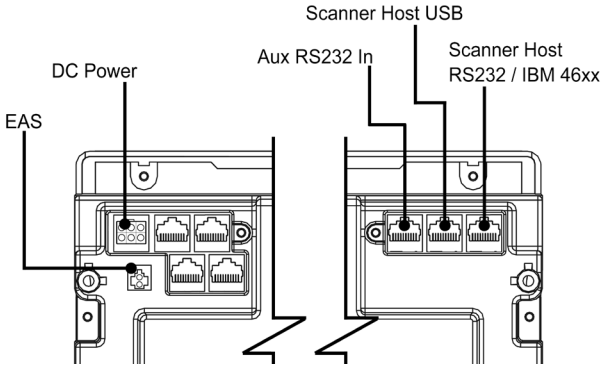


Figure 66. Connector Layout

Scanner to Host, RS485	
Pin	**Function**
1	Signal Ground
2	Reserved for RS232 Interface
3	Reserved for RS232 Interface
4	Reserved for RS232 Interface
5	Reserved for RS232 Interface
6	Reserved for RS232 Interface
7	No Connect
8	Reserved for RS232 Interface
9	IBM B-
10	IBM A+

Scanner to Host, RS232	
Pin	**Function**
1	Ground
2	RS232 Transmit
3	RS232 Receive
4	RS232 RTS Output
5	RS232 CTS Input
6	RS232 DTR Input
7	No Connect
8	DSR
9	Reserved for RS485 Interface
10	Reserved for RS485 Interface

Scanner to Host, USB	
Pin	**Function**
1	Signal Ground
2	RS232 Transmit
3	RS232 Receive
4	Shield
5	No Connect
6	RS232 CTS Input (EAS GPIO IN)
7	PC+5VDC
8	RS232 RTS Output (EAS GPIO OUT)
9	Data -
10	Data +

Auxiliary RS232 In	
Pin	**Function**
1	Ground
2	RS232 Receive Input
3	RS232 Transmit Output
4	RS232 RTS In
5	RS232 CTS Out
6	EAS GPIO IN
7	Ground
8	EAS GPIO OUT
9	+5V Out
10	No Connect

Specifications are subject to change without notice.

Scanner Scale Pinout Connections

There are four additional 10-pin modular jacks located on the bottom of the of the MS2420 scanner models that may be used for an integrated scale application and the use of a remote display.

Note: Please keep in mind that every application is unique. The use of these connections depends on the specifications of the scale's manufacturer. The following pinouts are for ***reference only****. If the scanner has been integrated with a scale, refer to the Scale Addendum for detailed instructions on the appropriate cable connections, communication specifications and calibration procedures required by the scale manufacturer and local Weights and Measures authorities.* ***When connecting any combination of scale/external scale display to the M2420 do not exceed the following current restrictions: 12V @ 0.7A max. / 5V @ 0.2A max.***

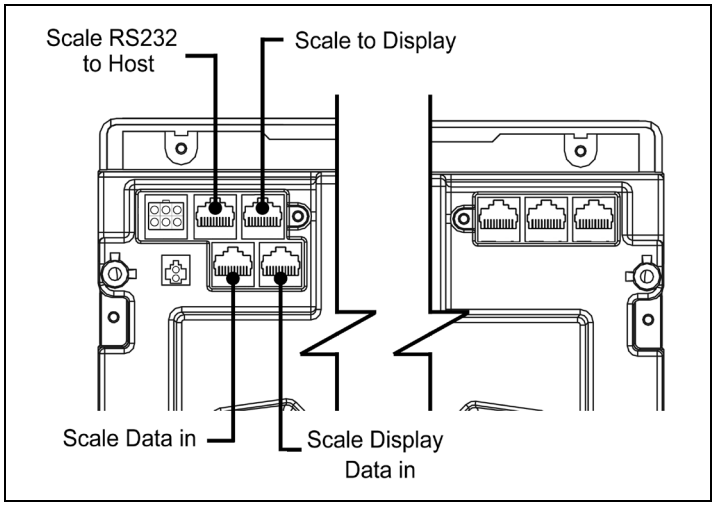


Figure 67. MS2420 Scale Connection Layout

Scale Display Data In Scale Data to Display from the Load Cell Interface	
Pin	**Function ****
1	SIG1
2	SIG2
3	SIG3
4	SIG4
5	SIG5
6	SIG6
7	SIG7 ††
8	SIG8 ††
9	SIG9 ††
10	SIG10 ††

Scale Data In RS232 from the Load Cell Interface	
Pin	**Function****
1	12V
2	Ground
3	5V
4	Ground
5	RS232 TX In
6	RS232 RX Out
7	RS232 CTS In
8	RS232 RTS Out
9	Scale Status, TTL
10	Scale Zero, TTL

Scale RS232 to Host Scale Data, Dual Cable Applications	
Pin	**Function****
1	Ground
2	Scale RS232 TX Out
3	Scale RS232 RX In
4	Scale RS232 RTS Out
5	Scale RS232 CTS In
6	*No Connect*
7	*No Connect*
8	*No Connect*
9	*No Connect*
10	Shield

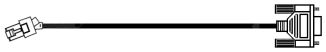
Scale to Display	
Pin	**Function****
1	SIG1
2	SIG2
3	SIG3
4	SIG4
5	SIG5
6	SIG6
7	SIG7 ††
8	SIG8 ††
9	SIG9 ††
10	SIG10 ††

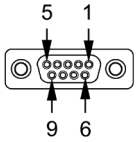
*** All signals are referenced from the MS2420 scanner.*

†† The use of these pins depends upon the specifications of the scale's manufacturer.

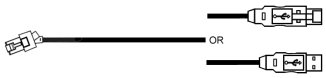
Specifications are subject to change without notice.

Cable Connector Configurations

RS232 Interface Cable, PN 57-57210x-N-3	
Pin	**Function****
1	*No Connect*
2	RS232 Transmit Output
3	RS232 Receive Input
4	DTR Input
5	Power/Signal Ground
6	DSR Output
7	CTS Input
8	RTS Output
9	*No Connect*



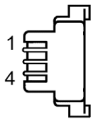
9-Pin D-Type Connector

Full Speed USB Cable, PN 57-57201x-N-3 or PN 57-57227x-N-3	
Pin	**Function****
1	PC +5V USB
2	D-
3	D+
4	Ground

Locking, Type A
57-57227x-N-3

Non-Locking, Type A
57-57201x-N-3

RS485 Cable, PN 57-57212x-N-3	
Pin	**Function****
1	Signal Ground
2	IBM +A
3	IBM –B
4	*No Connect*

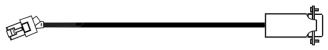
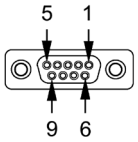


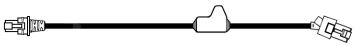
4-Pin SDL

*** All signals are referenced from the MS2420 scanner.*

Specifications are subject to change without notice.

Cable Connector Configurations

Aux Port Configuration Cable* PN 57-57008x-N-3	
Pin / **Function****	 9-Pin D-Type Connector
1 — *No Connect*	
2 — Output from Scanner	
3 — Input to Scanner	
4 — *No Connect*	
5 — Ground	
6-9 — *No Connect*	

RS232 LSO/AUX Cable PN 57-57099x-3 or PN 57-57099x-3-12	
Pin / **Function†**	 10-Position Modular Plug
1 — Signal Ground	
2 — RS232 from Aux / Secondary Scanner	
3 — RS232 to Aux / Secondary Scanner	
4 — RTS from Aux / Secondary Scanner	
5 — CTS to Aux / Secondary Scanner	
6-8 — *No Connect*	
9 — + 5VDC – Transformer / Direct	
10 — Shield Ground	

* *This configuration cable was designed to be used with the MS2420 auxiliary connector only.*

** *All signals are referenced from the MS2420 scanner.*

† *All signals are referenced from the auxiliary / secondary scanner.*

Specifications are subject to change without notice.

Regulatory Compliance

Safety

ITE Equipment

IEC 60950-1 Second Edition

EN 60950-1 Second Edition

Laser

Laser Class 1: IEC 60825-1: Second Edition 2007,
EN 60825-1: Second Edition 2007

⚠ 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.

⚠ 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 qú êst hazardous. 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.

⚠ 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.

EMC

Emissions

FCC Part 15, ICES-003, CISPR 22, EN 55022

Immunity

CISPR 24, EN 55024

Note: Immunity performance is not guaranteed for scanner cables greater than 3 meters in length when fully extended.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Class A Devices

The following is applicable when the scanner cable is greater in length than 3 meters (9.8 feet) when fully extended:

Les instructions ci-dessous s'appliquent aux cables de scanner dépassant 3 métres (9.8 pieds) de long en extension maximale:

Folgendes trifft zu, wenn das Scannerkabel länger als 3 Meter ist:

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

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.

Notice

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

Remarque

Cet appareil numérique de classe A est conforme à la norme canadienne NMB-003.

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Warnung!

Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen. In diesem Fall kann vom Betreiber verlangt werden, angemessene Massnahmen durchzuführen.

Attenzione

Questo e' un prodotto di classe A. Se usato in vicinanza di residenze private potrebbe causare interferenze radio che potrebbero richiedere all'utilizzatore opportune misure.

Attention

Ce produit est de classe "A". Dans un environnement domestique, ce produit peut être la cause d'interférences radio. Dans ce cas l'utiliseteur peut être amené à predre les mesures adéquates.

EMC

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Class B Devices

The following is applicable when the scanner cable is less than 3 meters (9.8 feet) in length when fully extended:

Les instructions ci-dessous s'appliquent aux cables de scanner ne dépassant pas 3 métres (9.8 pieds) de long en extension maximale:

Folgendes trifft zu, wenn das Scannerkabel kürzer als 3 Meter ist:

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.

Remarque

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

Weights & Measures

Directive 2009/23/EC, OIML R76

Limited Warranty

Honeywell International Inc. ("HII") warrants its products and optional accessories to be free from defects in materials and workmanship and to conform to HII's published specifications applicable to the products purchased at the time of shipment. This warranty does not cover any HII product which is (i) improperly installed or used; (ii) damaged by accident or negligence, including failure to follow the proper maintenance, service, and cleaning schedule; or (iii) damaged as a result of (A) modification or alteration by the purchaser or other party, (B) excessive voltage or current supplied to or drawn from the interface connections, (C) static electricity or electro-static discharge, (D) operation under conditions beyond the specified operating parameters, or (E) repair or service of the product by anyone other than HII or its authorized representatives.

This warranty shall extend from the time of shipment for the duration published by HII for the product at the time of purchase ("Warranty Period"). Any defective product must be returned (at purchaser's expense) during the Warranty Period to HII factory or authorized service center for inspection. No product will be accepted by HII without a Return Materials Authorization, which may be obtained by contacting HII. In the event that the product is returned to HII or its authorized service center within the Warranty Period and HII determines to its satisfaction that the product is defective due to defects in materials or workmanship, HII, at its sole option, will either repair or replace the product without charge, except for return shipping to HII.

EXCEPT AS MAY BE OTHERWISE PROVIDED BY APPLICABLE LAW, THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER COVENANTS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, ORAL OR WRITTEN, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

HII'S RESPONSIBILITY AND PURCHASER'S EXCLUSIVE REMEDY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT WITH NEW OR REFURBISHED PARTS. IN NO EVENT SHALL HII BE LIABLE FOR INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, AND, IN NO EVENT, SHALL ANY LIABILITY OF HII ARISING IN CONNECTION WITH ANY PRODUCT SOLD HEREUNDER (WHETHER SUCH LIABILITY ARISES FROM A CLAIM BASED ON CONTRACT, WARRANTY, TORT, OR OTHERWISE) EXCEED THE ACTUAL AMOUNT PAID TO HII FOR THE PRODUCT. THESE LIMITATIONS ON LIABILITY SHALL REMAIN IN FULL FORCE AND EFFECT EVEN WHEN HII MAY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH INJURIES, LOSSES, OR DAMAGES. SOME STATES, PROVINCES, OR COUNTRIES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

All provisions of this Limited Warranty are separate and severable, which means that if any provision is held invalid and unenforceable, such determination shall not affect the validity of enforceability of the other provisions hereof. Use of any peripherals not provided by the manufacturer may result in damage not covered by this warranty. This includes but is not limited to: cables, power supplies, cradles, and docking stations. HII extends these warranties only to the first end-users of the products. These warranties are non-transferable.

The duration of the limited warranty for the MS2420 is two (2) year(s). The accessories have a 90 day limited warranty from the date of manufacture.

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Customer Support

Technical Assistance

If you need assistance installing or troubleshooting your device, please contact us by using one of the methods below:

Knowledge Base: www.hsmknowledgebase.com

Our Knowledge Base provides thousands of immediate solutions. If the Knowledge Base cannot help, our Technical Support Portal (see below) provides an easy way to report your problem or ask your question.

Technical Support Portal: www.hsmsupportportal.com

The Technical Support Portal not only allows you to report your problem, but it also provides immediate solutions to your technical issues by searching our Knowledge Base. With the Portal, you can submit and track your questions online and send and receive attachments.

Web form: www.hsmcontactsupport.com

You can contact our technical support team directly by filling out our online support form. Enter your contact details and the description of the question/problem.

Telephone: www.honeywellaidc.com/locations

For our latest contact information, please check our website at the link above.

Product Service and Repair

Honeywell International Inc. provides service for all of its products through service centers throughout the world. To obtain warranty or non-warranty service, please visit www.honeywellaidc.com and select Support > Contact Service and Repair to see your region's instructions on how to obtain a Return Material Authorization number (RMA #). You should do this prior to returning the product.

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