NCR RealScan 78 (7878)

Release 1.0

User Guide

23953

B005-0000-1724

Issue D

Preface

Audience

This book is written for hardware installer/service personnel, system integrators, and field engineers.

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References

- *NCR RealScan 78 Hardware Service Guide*
  (B005-0000-1725)

- *NCR Scanner Programming Tags*
  (BST0-2121-74)

- *NCR Scanner/Scale Interface Programmer's Guide*
  (BD20-1074-A)

- *NCR RealScan Safety and Regulatory Information*
  (B005-0000-1699)

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Revision Record

Issue	Date	Remarks
A	March 30, 2007	All–First issue
B	August 13, 2007	All applicable topics–incorporated latest engineering changes for GCA release
C	November 15, 2007	Modified Scale Calibration Instructions, Installation Instructions, Top Plate, and Checkstand cutout
D	December 2008	Updated port names, cable connection drawings, scale calibration test procedures, and added Checkpoint Antenna Cable Kit installation procedure

Safety and Regulatory Information

The NCR RealScan 78 conforms to all applicable legal requirements. To view the compliance statements refer to the *NCR RealScan Safety and Regulatory Information* (B005-0000-1699).

Chapter 1: Product Information

The NCR RealScan 78 is a state-of-the-art bi-optic scanner/scale. Its primary use is in high-performance checkout areas of food distribution and general merchandise sales. The RealScan 78 can read barcodes on all six sides of the product as it passes through the scan zone. This and other features reduce the amount of operator training and increase operator efficiency.

The RealScan 78 is compatible with the interface protocol and checkstand cutout size of previous RealScan 70 (Class 7870), RealScan 75 (Class 7875), and RealScan 76 (Class 7876) scanners. This makes it easier to replace older units with the latest scanner technology.

Available Models

The NCR RealScan 78 is available in two RoHS-compliant models.
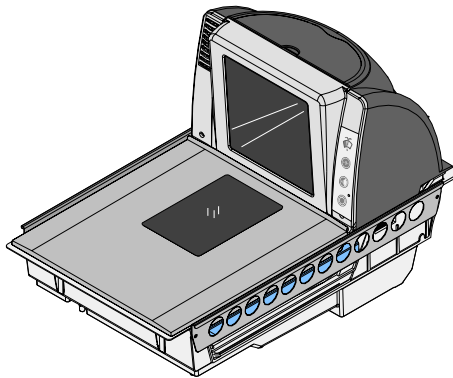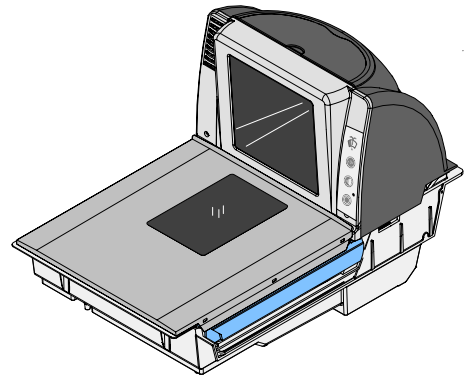
RealScan 7878 - 1xxx   **RealScan 7878 - 2xxx**

Note: Side rails are an optional feature for 7878-2xxx model.

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The following table identifies the major models along with a brief description of each.

Model	Description
RealScan 7878–1xxx	Full-size Scanner only
RealScan 7878–2xxx	Full-size Scanner/Scale

Features and Options

The RealScan 78 is rich in features and options which puts it in a class by itself. This section identifies the many features and options that are available.

Bi-Optic Scanning

The RealScan 78 combines scan patterns from both horizontal and vertical planes. The combination of two scan patterns projecting from different directions permit products to be brought into the scan zone with very little orientation of the barcode. Beginner and veteran checkers learn to use the RealScan 78 very quickly. With minimal training, users attain new levels of efficiency and productivity as they become familiar with the bi-optic scan zone.

The RealScan 78 vertical scan window is mounted to a tower that rises above the checkstand surface. The upper console is designed to withstand constant impact from items being scanned. The horizontal scan window is flush–mounted to a stainless steel top plate, permitting users to slide a product across the top plate without lifting the product. Furthermore, loosely wrapped products cannot snag on the top plate.

Because of its expanded scan zone, the RealScan 78 is very easy to use. It can read labels on all six sides of the product as they pass through the scan zone. Products can be read from right to left or from left to right.

The following is the scan pattern produced on both the vertical and horizontal scan windows.
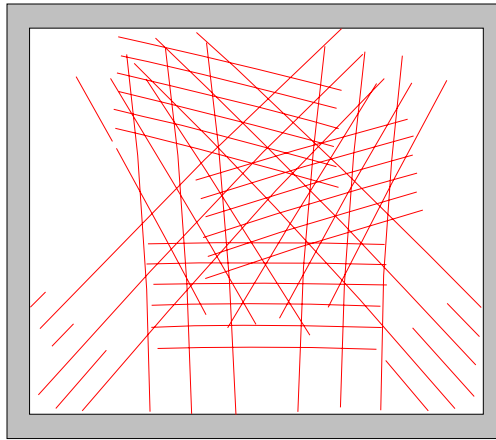
Vertical Scan Window

42 Scan Lines
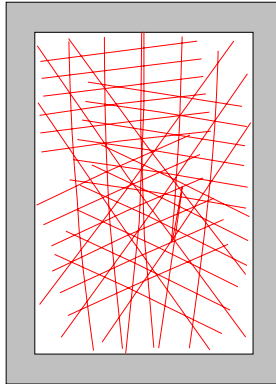
Horizontal Scan Window

36 Scan Lines

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Communications Protocol

The RealScan 78 communicates with the host terminal through:

- RS–232

- USB

- IBM 46xx

- Dual-cable RS–232

Autodiscrimination

The RealScan 78 can decode a variety of barcodes. The ability to discriminate among the different barcode types is a standard feature of the RealScan 78. The following lists the different barcode types.

- UPC–A and UPC–E

- UPC–A and UPC–E with two-digit Add-on Symbols

- UPC–A and UPC–E with five-digit Add-on Symbols

- GS1–128 Coupon Extended Code

- Code 128 Markdown Code

- EAN–8 and EAN–13

- EAN–13 with two-digit Add-on Symbols

- EAN–13 with five-digit Add-on Symbols

- GS1 DataBar, formerly Reduced Space Symbology (RSS)

  - GS1 DataBar–14

  - GS1 DataBar–14 Stacked Omni–directional

  - GS1 DataBar Expanded

  - GS1 DataBar Expanded Stacked

- Interleaved 2 of 5

- Code 39

- Code 39 Full ASCII

- Code 128 (including GS1–128)

- Multi-Stage Dual for Japan

- Codabar

- Pharmacode

Remote Compact Display
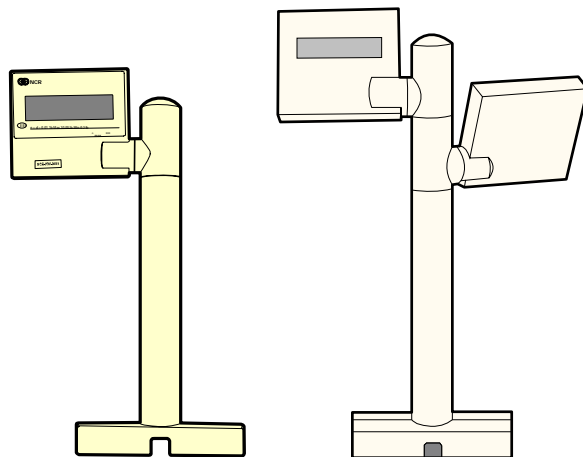
16217

The RealScan 78 Scanner/Scale units are available with no weight display or with a remote post mounted display. When no display is used, scale information is sent to the host terminal and displayed on the terminal's customer display. However, this is not available for all host terminals, and in some countries Weight and Measures authorities do not permit this configuration.

Note: It is acceptable to use the host terminal display if the host terminal is approved to perform the live/gross scale weight. Also, most countries require that both the operator and the consumer must be able to observe the scale live/gross weight display and the sale weight platform during a weighing operation.

When a display is needed, use the RealScan 25 Remote Compact Display. It is available with one or two display modules.

Auxiliary RS232 Ports

The RealScan 78 includes the Auxiliary RS232 Ports feature. The purpose of this feature is to permit other peripheral devices to connect to the host terminal through the RealScan 78. This eliminates the need of the host terminal having additional RS232 ports.

A typical use of this feature is to connect a hand–held scanner for items too large to place on the checkstand. It also provides a connection for some security tag deactivation systems.

The two Auxiliary RS232 ports are both located at the back of the unit. Port 1 (located on the left side when facing the rear of the unit) is the most convenient port for connecting a hand–held scanner.

Each peripheral device using a peripheral port requires special programming.

USB Peripheral Ports and Main (POS) USB Communication Port

The RealScan 78 includes USB Peripheral ports and a Main (POS) USB Communication Port. These ports are included to permit easy connections for peripherals and to improve the plug-and-play capabilities by permitting the devices to be hot-swappable (connecting or disconnecting devices without restarting the unit).

The USB Peripheral ports are located on the left-most side on the rear of the unit. The purpose of the USB Peripheral ports is to permit other peripheral devices with USB interfaces to connect to the host terminal through the RealScan 78.

The Main (POS) USB Communication Port is used to connect to the host terminal.

Firmware Flashing

The RealScan 78 includes Firmware Flashing. This permits upgrades to the firmware without replacing the actual firmware chip. The software comes in two forms. The first one is free from http://www.ncr.com/en/support/support_drivers_patches.asp?Class=retail_RealScan. The others provide various Enterprise functions and are sold separately.

Operator Interface

There is very little interface required between the operator and the RealScan 78. Messages are sent from the RealScan 78 to the operator through status indicators, audio tones, and voice messages.

Voice Messages

If the RealScan 78 has voice enabled, certain mode changes and error conditions are alerted by synthesized voice messages. These messages give either the changed mode or the error message with the suggested corrective action. Voice is enabled and disabled in the Miscellaneous Parameter program.

The scanner/scale provides audible voice messages during the following events.

- When the scanner/scale goes online or offline

- When checking the communications protocol (Diagnostic Mode)

- When testing item tags using PACESETTER III (Diagnostic Mode)

- When certain error conditions occur

- When there is interference with the scale

- When scanning any programming tag in the Programming Mode

Window Maintenance Indicator

The RealScan 78 has a Clean Window Indicator located on the Operator Display Panel. An icon of a wiper in wiping motion identifies the Window Maintenance Indicator.

Clean window Indicator
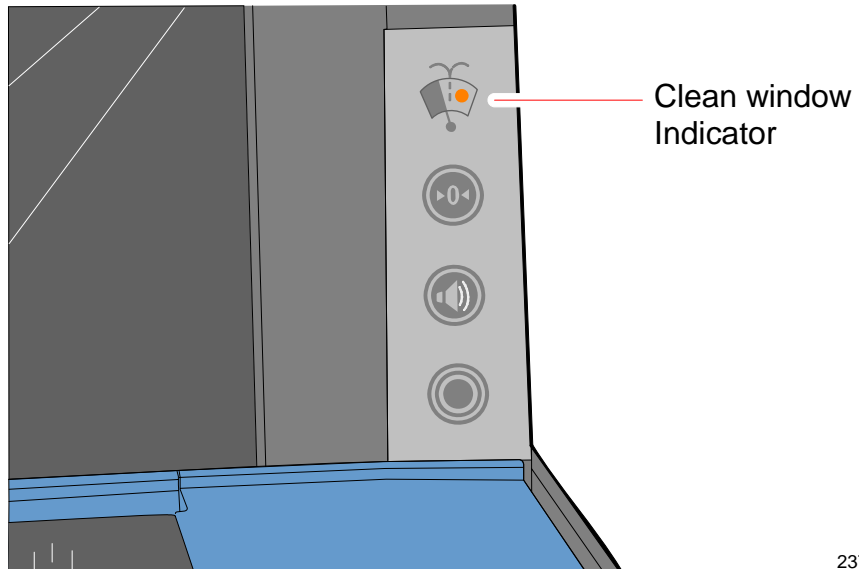
23761

When the orange light is on, this indicates that the Scan Window is dirty and needs cleaning for optimum scanner performance. It is also occasionally necessary to clean the window located under the Top Plate to remove loose debris or dust.

Scale Zero Button

The RealScan 78 has a Scale Zero button located on the Operator
Display Panel. An icon of a zero (0) in between right and left arrows
identifies the Scale Zero button.
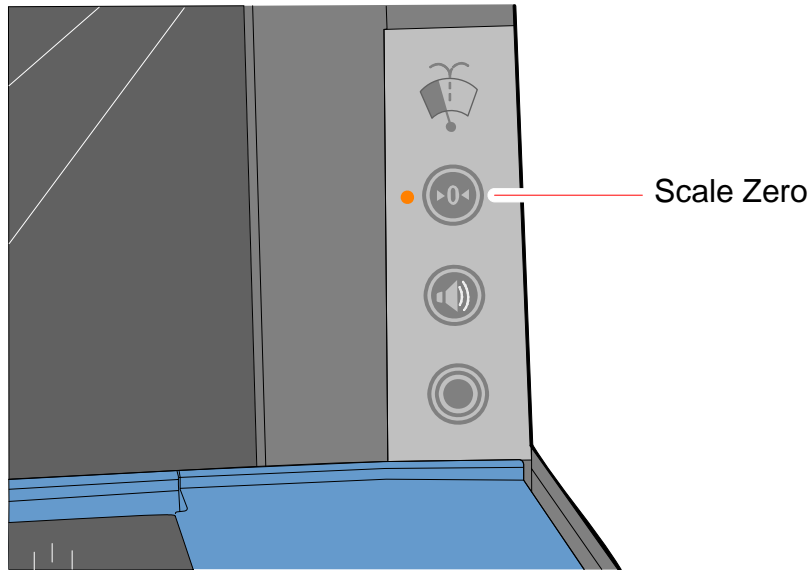
Scale Zero

23760

The Scale Zero button resets the scale to zero within legal limits
according to local Weights and Measures regulations.

Volume Adjust Button

The RealScan 78 has a Volume Adjust button located on the Operator Display Panel. An icon of a speaker emitting sound waves identifies the Volume Adjust button.

Volume Adjust Button
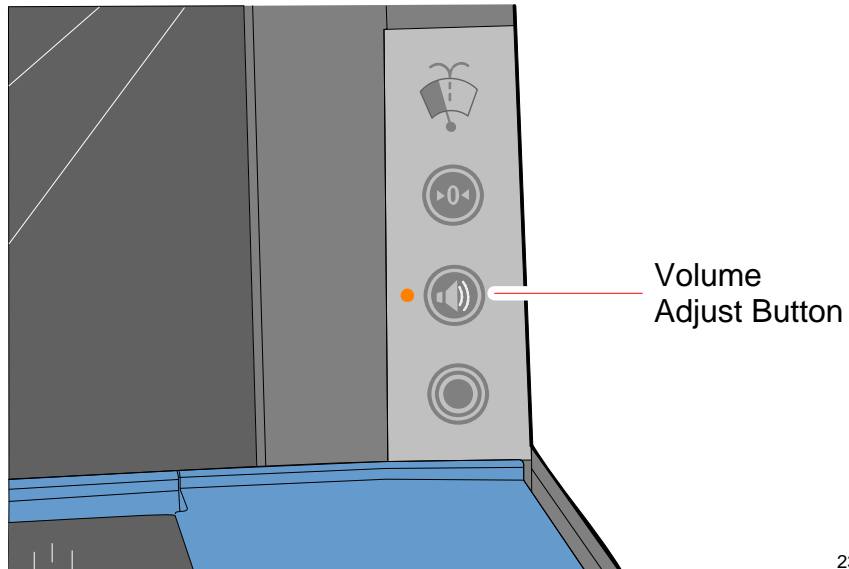
23759

The Volume Adjust button is used for two operations.

- Controlling the speaker volume. Volume is controlled by pressing and then releasing the button. Speaker sounds for each press/release of the button.

- Controlling the speaker frequency. Frequency is controlled by continuous pressing of the button. Speaker sounds and cycles through all different frequencies when button is pressed continuously.

These settings are lost on a power cycle but can be saved permanently if set up through a programming sequence or if the Reset barcode is immediately scanned after setting the desired volume with the button. Other options to configure the volume and frequency are available with programming sequences, as well. Refer to Worksheet 11 in the "Programming Worksheets" section in Chapter 5 for more information.
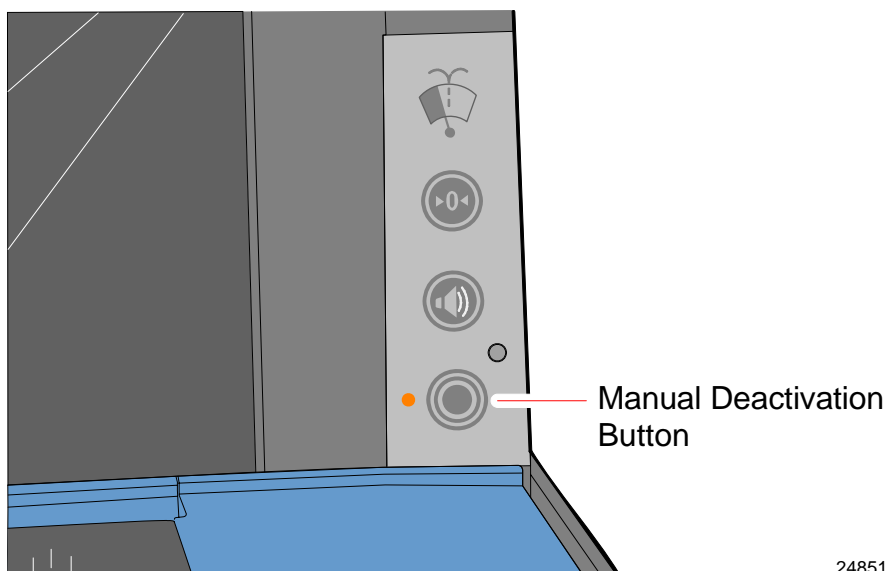
Manual Deactivation Button

Manual Deactivation Button

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The Manual Deactivation Button permits the user to disable scanning and enable the Sensormatic deactivator for three seconds with each touch of the button on the scanner display panel. It also turns off the scanner laser to prevent reading the item bar code a second time.

There is an LED indicator beside the Manual Deactivation Button used to indicate the EAS system status. When the system is connected and operating properly, the LED will be on solid. If the system is connected but not communicating the LED will be flashing. The LED is off when the EAS feature is disabled.

Motion Detector
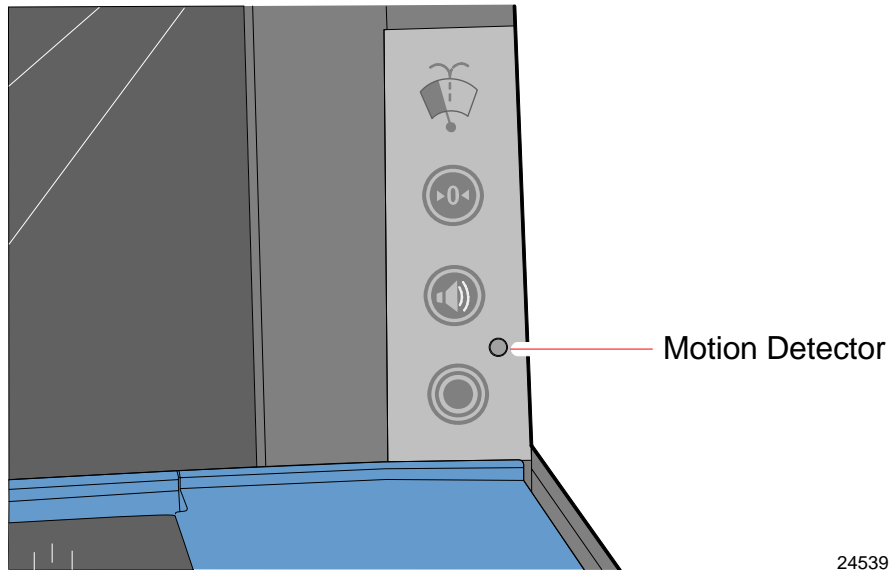
Motion Detector

24539

The Motion Detector is located at the lower portion of the Operator Display Panel. The laser diodes and spinner motors turn off after an extended period of time of an operator activity. This prolongs the life of the RealScan 78. The default non–active time is fifteen (15) minutes, but can be increased by programming. An item passing in front of the Motion Detector causes the RealScan 78 to turn on. This movement is the normal item scanning movement.

Power Supply
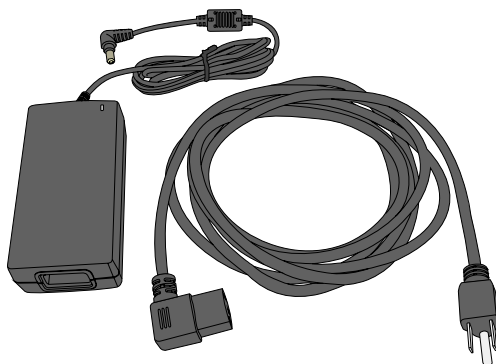
23756

The Power Supply provides the required DC voltage of the NCR RealScan 78. The Power Cord plugs into an electrical outlet and connects to the Power Supply. A low voltage Power Cable connects the Power Supply to the RealScan 78. Several Power Cords are available depending on the country installation. The Power Supply input can be 90 Vac to 264 Vac at a frequency of 47 Hz to 63 Hz.

In addition, some POS interface types can power the RealScan 78 without the use of this power supply. Please contact your NCR sales representative for details.

PACESETTER

NCR has continually improved its PACESETTER technology used on NCR RealScan products. Starting out as PACESETTER, it progressed to PACESETTER *Plus*, and then to PACESETTER III. Vendors and printers regularly supply products with overprinted, underprinted, or truncated barcodes to the market. Some labels have missing margins. Others may be printed around the corner of packages or on media that wrinkles when picked up. PACESETTER addresses the problems caused by these unreadable labels. PACESETTER III is standard on all RealScan 78 products.

PACESETTER *Plus*

PACESETTER *Plus* determines what is wrong with a barcode label, fixes the data, and then transfers the information to the host terminal. It provides information on possible barcode printer problems but is not a barcode specification conformity verifier.

The three models of PACESETTER Plus operation are summarized in the following paragraphs.

Mode 1–Inquiry

PACESETTER *Plus* can be used as a management tool by store personnel and chain management to monitor and report the status of label readability. Tally counters are kept for the following.

- Good reads

- No read due to lack of full label (missing bars or folded label)

- Good reads with overprinted bars

- Good reads with underprinted bars

- Missing margins

- Missing print lines

In Mode 1, the tally count displays on the RealScan 25 Remote Compact Display. The percentage of each error type to the good reads tally also displays. All tally counts can be reset to zero.

Mode 2–Demonstration Mode

In Mode 2, the scanner is offline and the scale is disabled. Each subsequent scan of a barcode causes the scanner to indicate the status of label readability. The scanner recognizes missing bars in labels, highly overprinted or underprinted labels, missing margins, or a "no read" condition.

Note: In Mode 2 the Window Maintenance Indicator light is ON.

Mode 3–Operations

Mode 3 is the normal operating mode. The scanner can be programmed to add PACESETTER III information to the decoded UPC/EAN data. This information describes the label readability. However, the host software must be capable of receiving the extra data. The host software should enable this at a regular interval (for example, Cashier Sign On) and check for the presence of the data if enabled.

PACESETTER III

It detects, corrects, and reports label errors discovered in UPC Number System Two and Number System Four and EAN–13 Number System Two. These label types are printed in the store and account for a significant number of unreadable labels due to failures of the in–store printing mechanism.

Parameter Programming

The NCR RealScan 78 may need to be configured to meet specific installation needs. The RealScan 78 uses special programming tags to modify the various programming parameters (refer to Chapter 5). This programming data may be scanned with special tags, sent from a PC with the free tools http://www.ncr.com/en/support/support_drivers_patches.asp?Class=retail_RealScan or remotely through the POS using the software (sold separately).

Scan Doctor Diagnostics

Scan Doctor is the state-of-the-art diagnostic software included in every RealScan 78. It continually monitors the unit to identify components that are not functioning correctly. It also provides inquiry capability for the host terminal to access specific diagnostic data. Scan Doctor diagnoses the RealScan 78 each time power is applied and continually during operation. When a problem is found, it notifies the operator through patterns of color LEDs on the Light Bar (above the Vertical Window), an error code on the remote display (if attached), and voice messages. It lists the most probable causes first.

Many Scan Doctor statuses are available from the scanner using NCR software tools sold separately.

Refer to the *RealScan 78 Diagnostics and Troubleshooting* section on chapter 5 for information.

Power–on Wellness Check

When power is applied to the RealScan 78, Scan Doctor checks many of the scanner and scale components:

- RAM
- ROM
- EEPROM
- Spinner Motors
- Interface Board
- Laser Diodes
- ASICs
- Scale Hardware.

If Scan Doctor finds a problem hinders operation of the RealScan 78, it disables the unit; otherwise the problem is identified and operation continues.

Ongoing Wellness Check

Scan Doctor runs all the time the moment RealScan 78 is turned on. It constantly monitors RAM, the Spinner Motors, the Laser Diodes, and Scale Hardware.

Service Diagnostics

Scan Doctor includes service diagnostics for the trained service technician. These go beyond the wellness checks and are accessed through the use of special programming tags. Refer to Appendix B for more information on the Scanner Service Diagnostics Tests.

Soft Power Down/Power Up

The RealScan 78 senses periods of scanner inactivity. The scanner's soft power down feature extends the life of the RealScan 78 by disabling major portions of the unit, including the laser diodes, spinner motor, and associated electronics. The length of the inactive period prior to the soft power down is user-selected and programmed remotely or through tags.

Scanner power up occurs when the RealScan 78 motion detector detects movement. This detector is located on the operator display panel, to the right of the vertical scan window. The RealScan 78 can also be powered up when the checker signs on the host terminal. This capability assumes appropriate host terminal software.

The RealScan 78 can also be powered up/down by the host application when cashier signs in/out when using RS232 communications.

Chapter 2: Site Preparation

Customer Responsibilities

The NCR customer is responsible in preparing the site for installation of the NCR RealScan 78. Information is provided to help with this task.

The customer must do or provide the following.

- When required by NCR, provide the NCR Customer Services Representative with appropriate drawings that indicate the following.

  - Location of equipment

  - Site wiring (power and signal, paths, and lengths)

  - Location of other equipment capable of generating large amounts of electrical noise, electromagnetic interference, heat, and so forth

- Provide floor coverings and environmental systems that prevent static electricity build-up and discharge.

- Provide and install necessary power distribution boxes, conduits, grounds, lightning arrestors, and associated hardware.

- Ensure clear space and environmental requirements of the unit are met.

- Make all building alterations necessary to meet wiring and other site requirements.

- Ensure all applicable codes, regulations, and laws (including, but not limited to, electrical, building, safety, and health) are met.

- Provide and install all communication cables, wall jacks, special connectors, and associated hardware.

- Provide and install auxiliary power or other equipment as required.

Preparing the Site

This document contains information necessary for the preparation of a site conforming to NCR specifications. It is important that the site complies with the requirements specified in this document because, once the equipment has been installed, deficiencies in the site or the problems caused by these deficiencies are much more difficult to detect or correct. Further, failure to comply with these requirements or to take proper steps to protect equipment against risks identified in this document may cause serious damage to the equipment and to the customer's business.

In addition to the need to comply with the requirements specified, electrical wiring and mechanical systems must also comply with all relevant codes, laws, and regulations. It is important that a customer or a customer agent who is very familiar with the special requirements of electronic equipment prepare the site. The responsibility of ensuring that the site is prepared in compliance with this document remains with the customer.

For information and guidance purposes only, a list of Customer Responsibilities is provided, in general terms, of those matters for which the customer is responsible. This list is not intended to be comprehensive, and in no way modifies, alters, or limits the responsibility of the customer for all aspects of adequate site preparation.

No comment, suggestion, or advice offered or not offered about preparation of the site nor any inspection of the site whether before or after preparation is to be taken as approval of the location of the site and equipment or of its preparation, and NCR is not liable in respect of any comment, suggestion, or advice given by its staff or in respect of any failure to give advice.

Finally, only the customer can know the full extent of damage that may be caused to his business by reason of failure of the equipment that is to be installed. For this reason, it is the customer's responsibility to ascertain the extent of any such possible damage to his existing or planned business, and to effect full insurance in respect of it.

Weight

The weight of the RealScan 78 depends on the model. The following are the installed weights of basic models.

Note: Weight of the power supply and power cord are not included.

Model	Kilograms	Pounds
RealScan 7878-1xxx **Full-size Scanner Only - EAS Ready** **without coil**	**8.11**	**17.84**
RealScan 7878-2xxx **Full-size Scanner/Scale - EAS Ready** **without coil**	**9.25**	**20.34**

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Scanner Dimensions

The dimensions of the RealScan 78 depend on the model.

Base unit measurements							
				Front	Back	Height	Depth
Model	With	Length	Depth	Flange	Flange	Tower	Tower
	(in)	(in)	(in)	(in)	(in)	(in)	(in)
7878-XXXX	11.5	20.0	5.0	1.4	1.4	6.8	7.6
With siderail	12.0	20.0	5.0	1.4	1.4	6.8	7.6
				Front	Back	Height	Depth
Model	With	Length	Depth	Flange	Flange	Tower	Tower
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
7878-XXXX	292.1	508.0	127.0	35.1	35.1	172.7	193.0
With siderail	304.8	508.0	127.0	35.1	35.1	172.7	193.0

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Checkstand Cutout

RealScan 7878–1xxx/2xxx

When cutting the checkstand hole, be careful to maintain the specified dimensions, especially if the RealScan 78 contains a scale. For proper scale operation, maintain a clearance between the leading and trailing edges of the top plate and the checkstand.

NCR recommends that an adjustable plate be placed between the leading edge of the RealScan 78 and the belt on the checkstand.
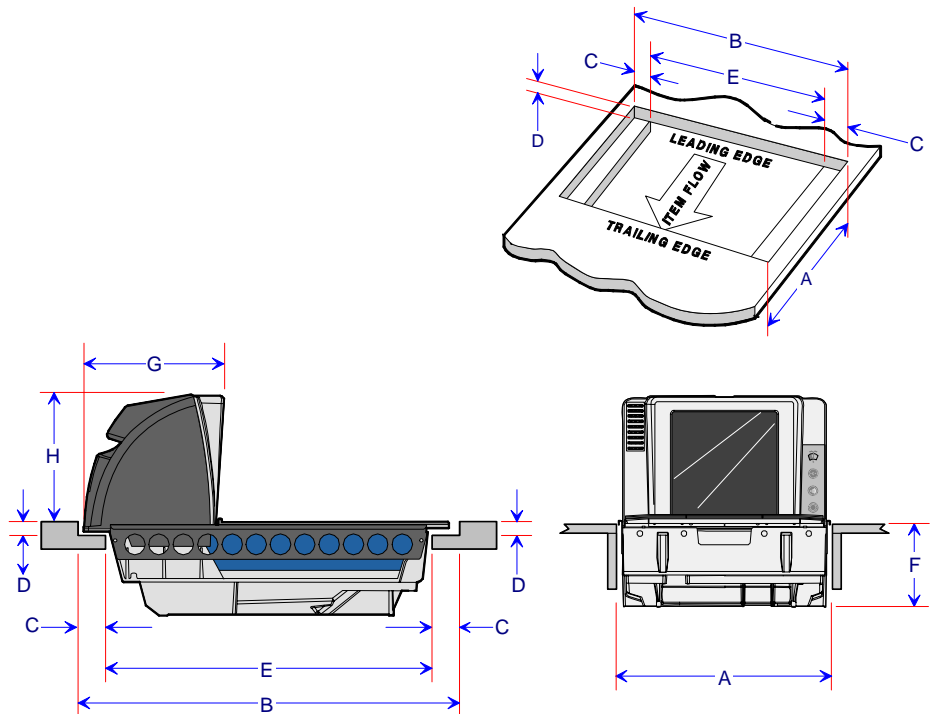
Model	A	B	C	D	E
7878-1xxx Scanner	**294.6 mm**	**510.5 mm**	**37.6 mm**	**9.9 mm**	**440.4 mm**
	11.6 in	**20.1 in**	**1.5 in**	**0.4 in**	**17.3 in**
7878-2xxx Scanner/Scale	**307.3 mm**	**510.5 mm**	**37.6 mm**	**9.9 mm**	**440.4 mm**
	12.1 in	**20.1 in**	**1.5 in**	**0.4 in**	**17.3in**

	F	G	H
7878-1xxx Scanner	**129.5 mm**	**195.6 mm**	**175.3 mm**
	5.1 in	**7.7 in**	**6.9 in**
7878-2xxx Scanner/Scale	**129.5 mm**	**195.6 mm**	**175.3 mm**
	5.1 in	**7.7 in**	**6.9 in**

Note: Dimension **A** for a RealScan 7878-2xxx includes a spacer along each side
   of the unit so that it fits an existing RealScan 7870-2xxx or RealScan 7875-2xxx cutout.

Note: Always treat the scanner's profile under the checkstand as a
   rectangular prism (a flat-sided box) when measuring the checkstand for a fit.
   Do not take advantage of voids or angles in the design of the scanner base
   as NCR reserves the right to change the profile without notice as long as the
   change does not impact overall outside dimensions.

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Test for Adequate ESD Ground

Note: Provide floor covering, environmental systems, and electrical grounding to prevent static electricity build-up and discharge.

Note: In an effort to eliminate a possible safety hazard and the generation of static electricity all metal parts of a metal checkstand must be electrically connected to earth ground.

Perform the following steps to test if there is adequate ESD ground for the scanner installation:

1. Remove the scanner from the checkstand.

2. Disconnect all of the communication and EAS cables from the scanner.

3. Plug the DC power cord into the scanner and the AC cord into the AC outlet.

4. Insulate the scanner from the checkstand (for example, place it on a rubber belt or similar material).

5. Measure the resistance from the scanner bucket to checkstand where the scanner was mounted.

6. If the resistance is greater than 100 Ohms, alert an electrician.

Checkstand Wiring

Input Voltage

L3

N

G

Conduit

Circuit A: Checkstand

Belt Control
Lighting
Misc. Equip.

Belt Motor

Main Service Panel

Checkstand Frame

Neutral and Ground Bus

Note: The electrical wiring must meet all electrical codes, laws, and regulations.

Feeder wiring and insulated ground from main service panel to distribution panel to be run in metal conduit.

Isolated/Insulated Ground Bus

Circuit Breakers

NCR circuits should be run in separate metal Conduits.

Note: NCR circuits must be dedicated to NCR equipment or other logically connected electronic equipment (modems, DAA, bridges, etc.)

L1

Circuit B: Terminal

L2

Circuit C: Scanner/Scale

Receptacle should be easily accessible and near the Scanner/Scale

Neutral Bus

Distribution Panel

Isolated Ground Receptacles

Installation Type	Input Voltage	L1, L2	Circuit Breakers
U.S., Canada, & Japan	100Vac to 120Vac	100Vac to 120Vac	Standard single-pole; value determined by type of device branch and by electrical code.
International	220Vac to 240Vac	220Vac to 240Vac	
European	220Vac	220Vac	European double-pole.

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Power Considerations

The RealScan 78 receives power from an external power supply. The power supply mounts in a remote location close to the RealScan 78. The power supply is a 40-watt switching power supply with the following inputs.

- Voltage: 90 to 264 Vac

- Frequency: 47 to 63 Hz

- Current: 0.9 A

The RealScan 78 has no power switch in the unit. Therefore, the checkstand must be wired to include a recessed 15A circuit breaker accessible to the operator. This circuit breaker serves as the power switch. It is also needed to reset the unit during programming and to remove power from the unit during servicing.

The power supply has a green LED which is lit when there is an AC voltage present and the power supply is functioning correctly.

Power Transient Protection

Voltage transients, surges, sags, impulses, and spikes may be experienced routinely or sporadically. When such phenomena occur, the equipment requires the use of protective devices to ensure proper operation.

Cable Connections

The following diagram shows the wiring connections located at the rear of the RealScan 7878–1xxx/2xxx.

Main (POS) RS232/RS485 Communication Port

Power Connector

Main (POS) USB Communication Port

Audio Line Out Connector

Scale Display Port

Checkpoint Interlock Port

Aux Port 2

Aux Port 1

USB Peripheral Port

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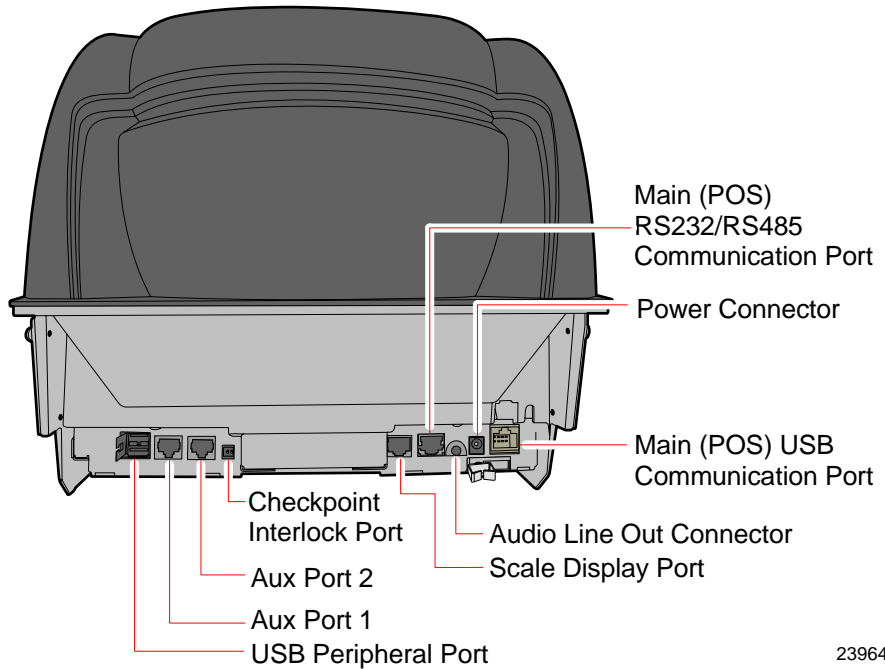
Service Clearance

Although many of the RealScan 78 components are accessed without removing the unit from the checkstand, service clearance must be provided. Clearance is also required for cleaning the unit. Refer to the following illustration for the required clearances.
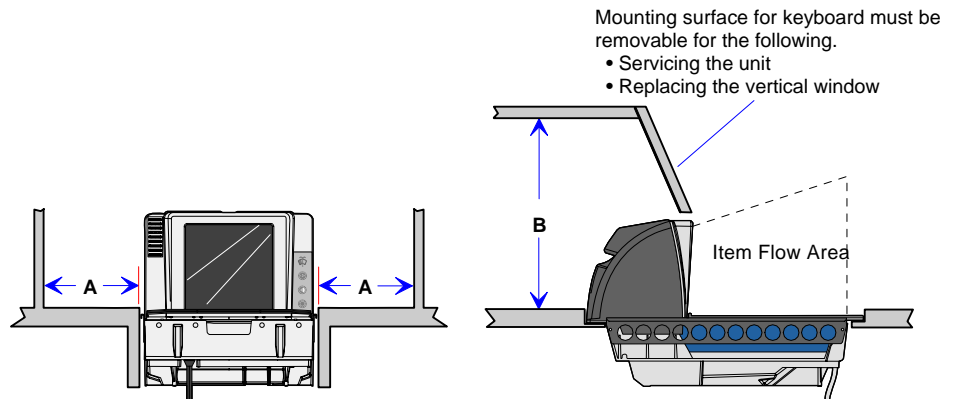
A = 203.00 mm (8.00 in) minimum if checkstand structure is not removable for servicing.
    25.00 mm (1.00 in) minimum if checkstand structure is removable for servicing.

B = 356.00 mm (14.00 in) minimum if checkstand structure is not removable for servicing.
    178.00 mm (7.00 in) minimum if checkstand structure is removable for servicing.

The RealScan 7878-1xxx/2xxx must not be supported by a bottom panel.

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Environmental Considerations

The RealScan 78 operates in most standard working environments.
Temperature ranges permitted are greater when the RealScan 78 is in
storage or transit. The RealScan 78 can operate up to one hour at
extreme temperatures without suffering damage. The following table
gives the various environmental requirements:

Physical Variable	Normal Operating	Extreme Operating (One Hour Maximum)	Storage	Transit
Temperature	5ºC-40ºC 41ºF-104ºF	-0ºC-45ºC 32ºF-113ºF	-10ºC-55ºC 14ºF-131ºF	-40ºC-60ºC -40ºF-140ºF
Temperature Change	10ºC/hour 18ºF/hour	20ºC/hour 36ºF/hour	20ºC/hour 36ºF/hour	20ºC/hour 36ºF/hour
Relative Humidity	20% to 80% Non-condensing	10% to 95% Non-condensing	10% to 90% Non-condensing	5% to 95% Non-condensing
Barometric Pressure	105×10^3 Pa to 79.5×10^3 Pa			105×10^3 Pa to 74×10^3 Pa
Ambient Light	200 Foot-Candles max (2152 Lux) on both scanner windows	200 Foot-Candles max (2152 Lux) on both scanner windows		
Acoustical Noise	65 dBa or less	65 dBa or less		
Vibration	3-150-3 Hz 2.5 g input Base Position	3-150-3 Hz 2.5 g input Base Position		
Shock	$\triangle$V= 0.5 m / sec (20 in / sec) 25g @ 3.75 ms Triangular Pulse	$\triangle$V= 0.5 m / sec (20 in / sec) 25g @ 3.75 ms Triangular Pulse 1 Shockbase Position		

23786

Ventilation Requirements

If the checkstand contains other heat-producing equipment, forced air may be needed to keep the temperature within the specified range. However, air coming into or leaving the checkstand MUST NOT enter or exit past the RealScan 78.

RealScan 25 Compact Display Dimensions

The following are dimensions of the RealScan 25 Compact Display. The holes are spaced to align with those of the older RealScan 25 Remote Post Display and with some competitor models.

BASE
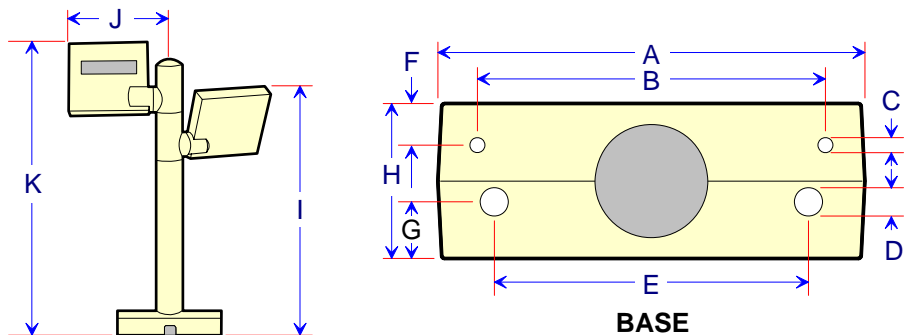
A	B	C	D	E
115.31 mm	93.98 mm	3.96 mm	7.62 mm	84.83 mm
4.54 in	3.70 in	0.156 in	0.30 in	3.34 in

F	G	H	I	J	K
11.17 mm	16.25 mm	41.65 mm	266.19 mm	104.39 mm	314.96 mm
0.44 in	0.64 in	1.64 in	10.48in	4.11 in	12.4 in

Note: Dimension I is also the height of a single-display unit.

24173

Chapter 3: Installation

Installing the RealScan 78 consists of nine main steps. Sometimes additional information is required depending on the installation. Information about enabling special functions is provided in *Programming* chapter.

Installation Steps

The following are the nine installation steps for installing RealScan 78.

1. Verify installation preparation (scanner and checkstand)

2. Cable installation preparation

3. Install Sensormatic® antenna (optional)

4. Connect Cables

5. Put RealScan 78 in checkstand cutout

6. Verify Top Plate alignment

7. Calibrate the scale

8. Setup Sensormatic® deactivation (applicable only if Sensormatic® antenna is installed)

9. Verify unit is operational

Step 1: Verify Installation Preparation (Scanner and Checkstand)

Reporting a Damaged Unit

After receiving the NCR RealScan 78, inspect the shipping carton for damage. If the RealScan 78 is damaged due to shipping, notify the carrier, the NCR representative, or the supplier if the unit is not purchased directly from NCR.

Package Contents

After unpacking the RealScan 78, take inventory to ensure that all components are received.

The following list identifies the package contents.

- NCR RealScan 78

- Power Supply (if ordered)

- Power Cord (if ordered)

- Top Plate

- Interface Cable (if ordered)

- Power Cord Documents (International Units)

- Aluminum Foil Stamping Plates (2xxx Model International Units used by local scale inspectors)

- The label identifies the model number (for example, RealScan 7878–2xxx)

- Select the correct label and place it on the outside of the unit according to the specifications

- Scale Calibration Procedure

- Customer Satisfaction Hotline Details and Scale Calibration Process

- Regulatory Information

Step 2: Cable Installation Preparation

Note: Before attempting to install the RealScan 78, the site must be prepared in accordance with the requirements described in *Site Preparation* chapter.

Note: The RealScan 78 is fully assembled at the factory and requires no operator assembly. The laser module is an integral part of the factory assembled device and does not have any controls that can increase the level of laser light or collateral radiation from the RealScan 78.

Follow these steps to install the NCR RealScan 78 in the checkstand (after installing all the cables).

1. Verify that the RealScan 78 power receptacle switch is off. Plug the power cord into the RealScan 78 power supply unit. Pass the power cable from the power supply through the checkstand opening.

2. Connect the communications interface cable to the host terminal. Refer to the terminal documentation for instructions on how to connect the interface cables.

    Note: Some terminals may require a trained service technician to open the terminal and connect the interface cables.

3. Pass the interface cables through the checkstand opening.

4. If connecting a remote display, pass the remote display cable through the checkstand opening.

5. If connecting an RS–232 peripheral device below the checkstand, pass its interface cable through the checkstand opening.

6. Place the unit so that a portion of the tower end is directly over the hole in the checkstand.

Skip to step 4 when not installing a RealScan 7878–1xxx/2xxx with a Sensormatic® deactivation system.

Step 3: Sensormatic® Coil Installation

To install the Sensormatic® Coil, perform the following procedure.

1. Position the RealScan 78 facing the operator.

2. Remove the Top Plate.

   a) Hold the front edge of the Top Plate until your fingers are underneath it.

   b) Lift the Top Plate to remove it from the RealScan 78.

Top Plate
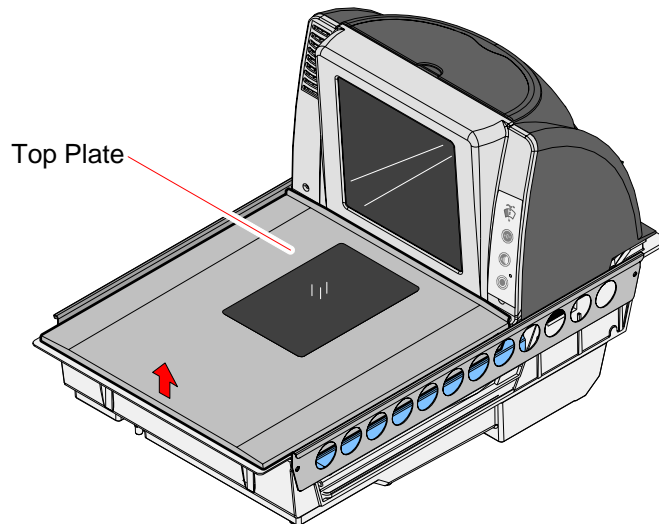
23794

3. Remove the Front Bezel.

   a) Place one hand and slightly apply pressure on the top corner of the Bezel and use the other hand to pull the snap features at the bottom.
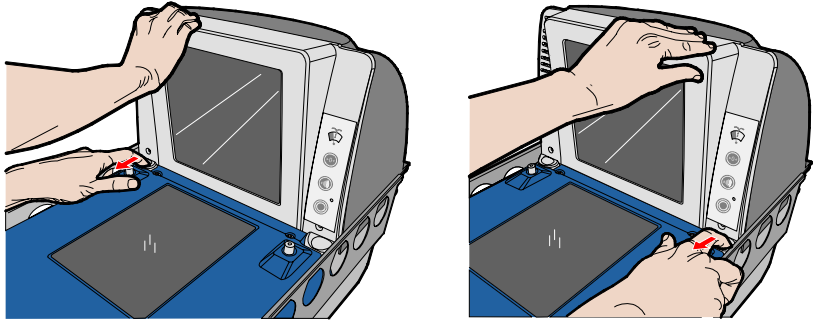
   24976

   b) Lift the Bezel up and set aside.
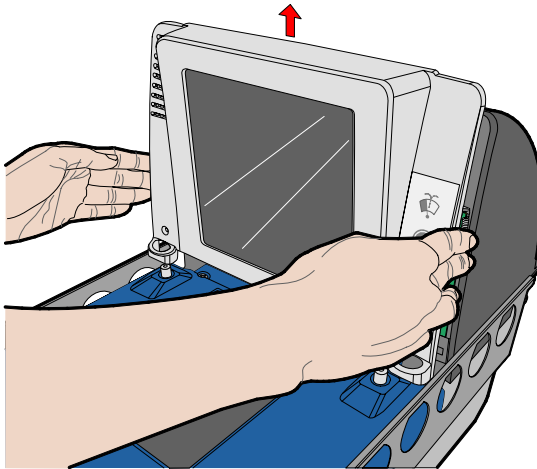
   24055

4. Remove the Debris Guard.

    a) Remove the four guard screws securing the Debris Guard.
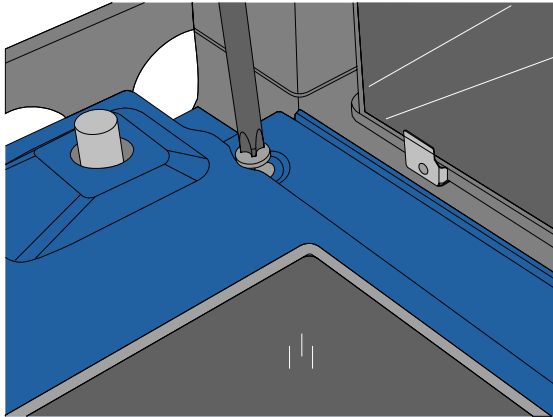
24072

    b) Lift off the Debris Guard.
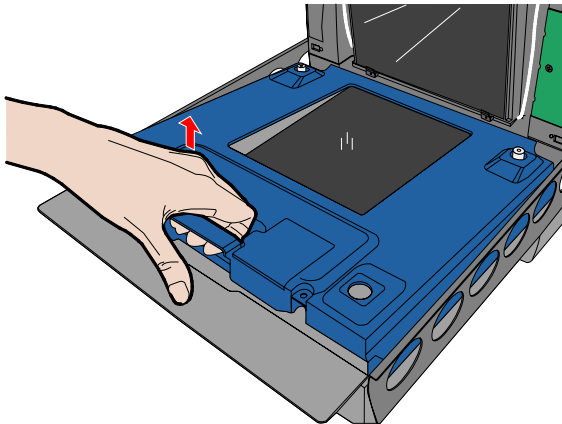
24523

5. Install the Sensormatic® Coil.

    a) Position the upper portion of the Coil along the top edge of the Vertical Window.
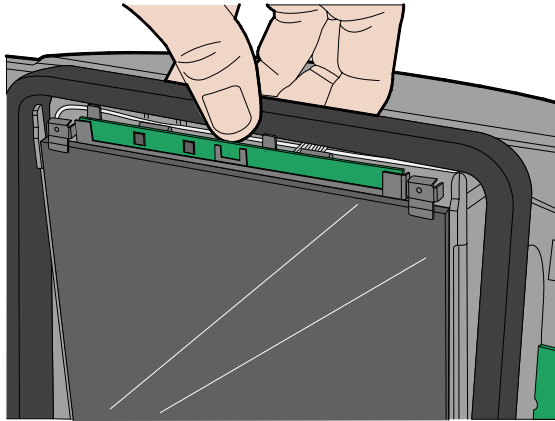
24162

    b) Lay the lower portion of the Coil down around the Horizontal Window.
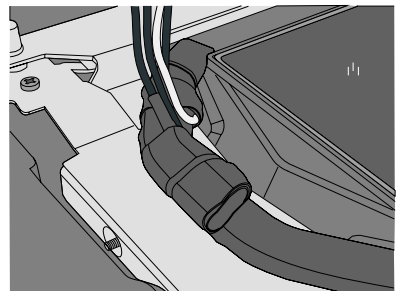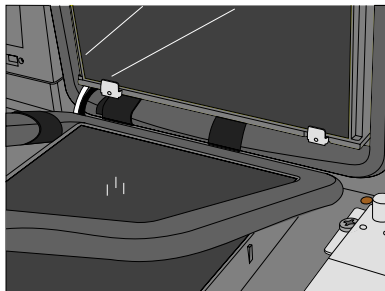
24068

c) Route the Coil Cable through the front of the Base Casting
    opening.
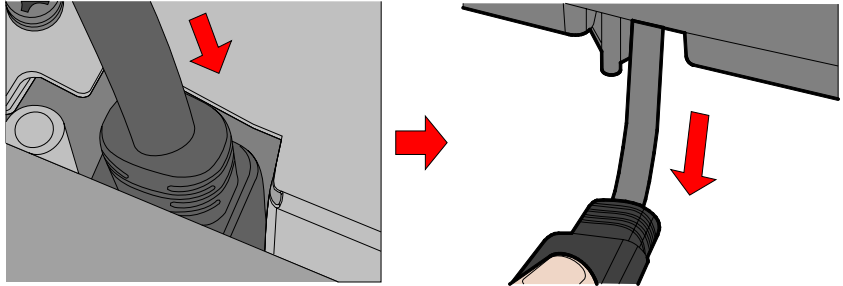
24035

d) Ensure the wires route to the shown position.
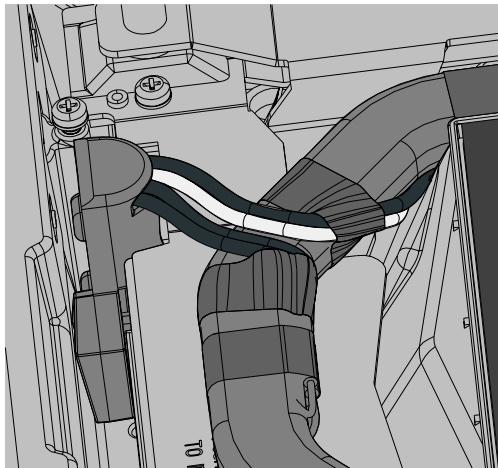
24073

e) Mate the Cable Strain Relief Hanger to the Plastic Tab on the Horizontal Cover and snap in place.
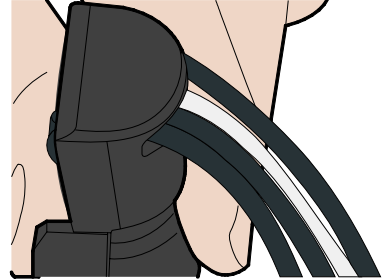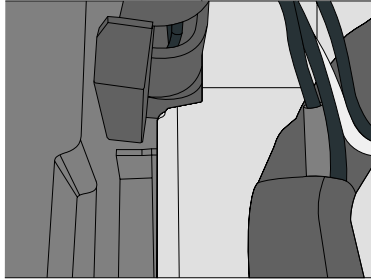
24074

f) Ensure the wires are flat against the Coil Edge so the Debris Guard is not affected.
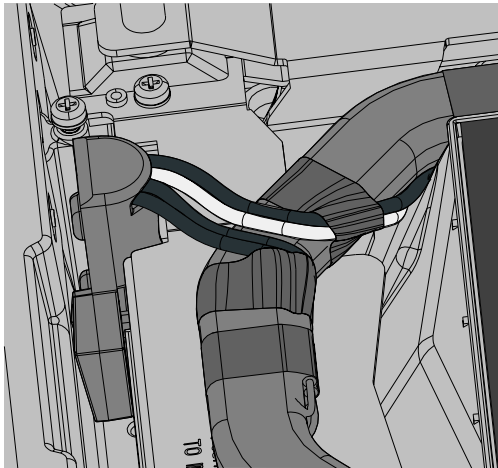
24073

g) Ensure the Coil lays flat from front to back and the wire is recessed in the canal under the coil.
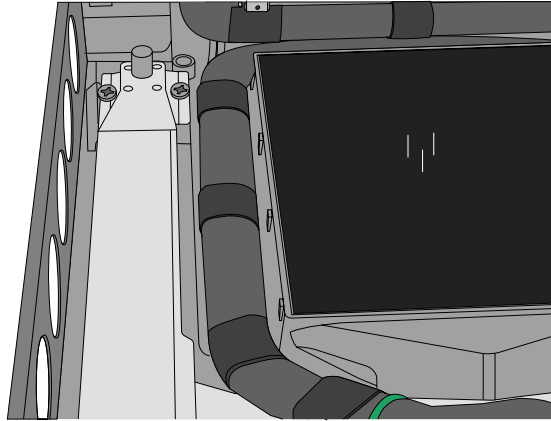
24075

6. Reseat the Debris Guard.
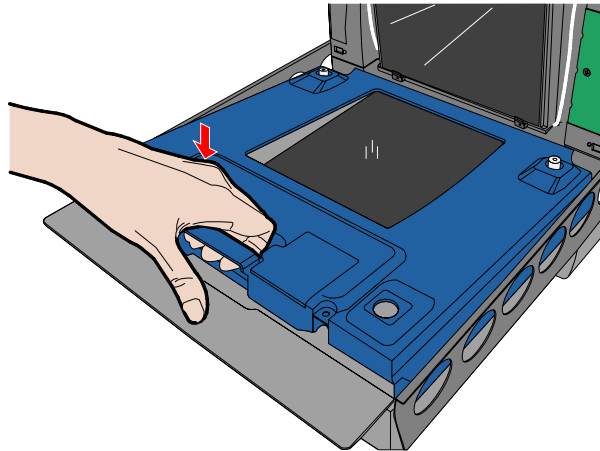
24524

7. Replace the four screws to secure the Debris Guard.
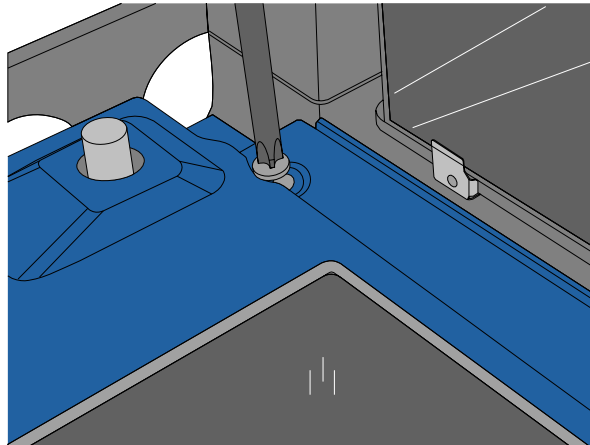
24072

8. Ensure the Cable Hanger is seated between the plastic tabs with no interference.
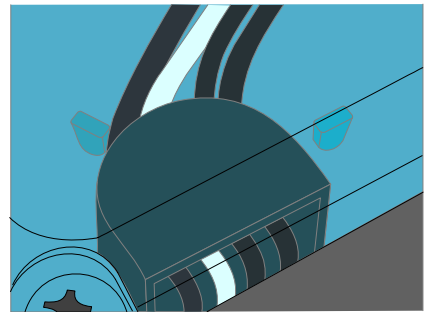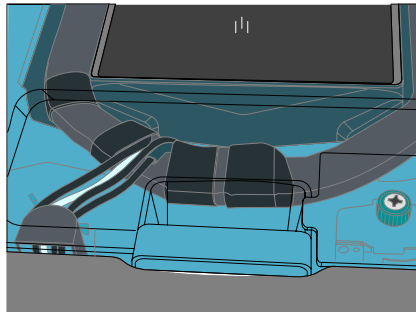
24032

9. Snap the Bezel back in place.

    a) Align the top edge of the Tower Cabinet with the top edge of the Front Bezel.
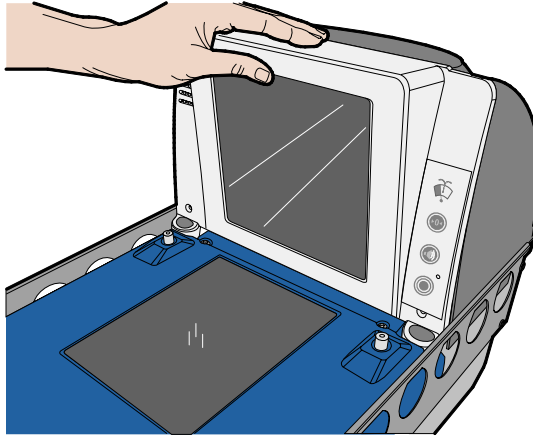
24051

    b) Apply pressure on the bottom-left and bottom-right corners of the Front Bezel to latch it in place.
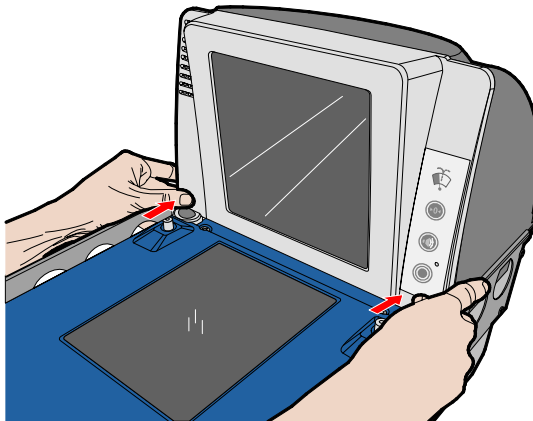
24052

10. Replace the Top Plate.

    a)   Lower the back edge of the Top Plate onto the back Support Posts on the RealScan 78.

    b)   Holding the front edge, lower the front of the Top Plate onto the two front Support Posts.

Top Plate

23795
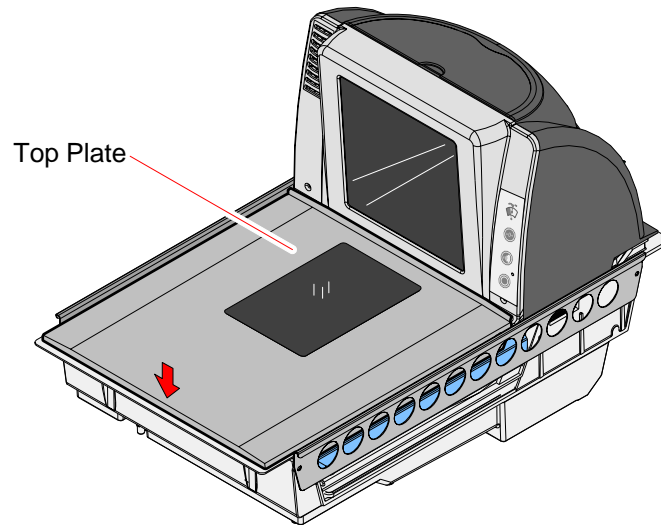
Step 4: Cable Connection

RealScan 7878–1xxx/2xxx

RealScan 78
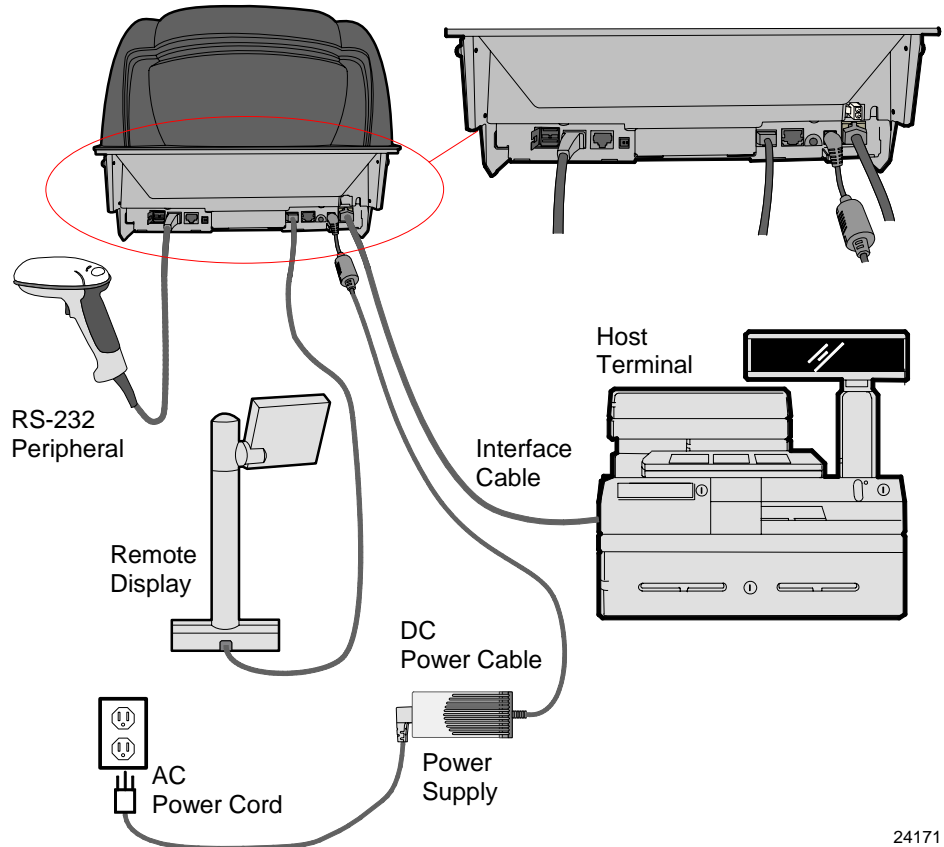
24171

Note: Ensure that the power is off before connecting or disconnecting cables.

To install the cables in the RealScan 78, perform the following procedure.

1. If available, install the Checkpoint Cable Kit.

    a) Remove the Front Bezel and Tower Cover.

    b) Remove the Bottom electronics Cover.

       Caution: Damage may occur to the Digital Board and external connectors if the Bottom Electronics Cover is forcibly removed while caught on the external connectors.

    c) Remove and discard the Internal Checkpoint Cable.

Remove and discard if present

26557
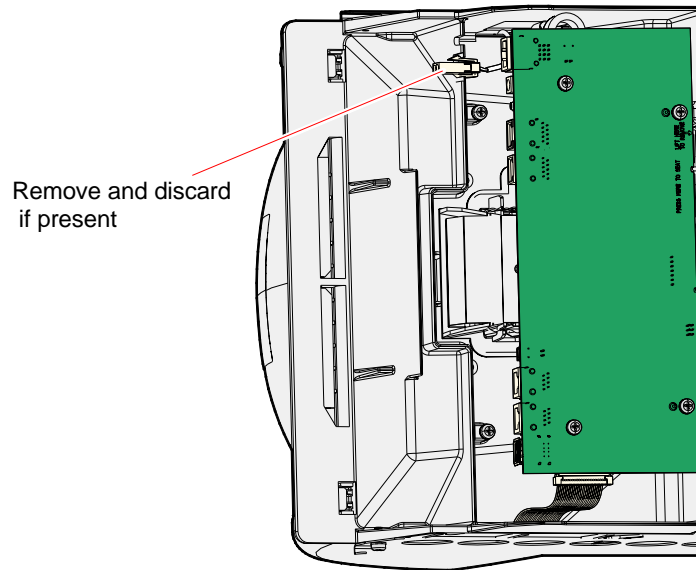
d) Route the Checkpoint Cable through the rubber grommet and place the rubber grommet in the hole as indicated below.

Location of grommet
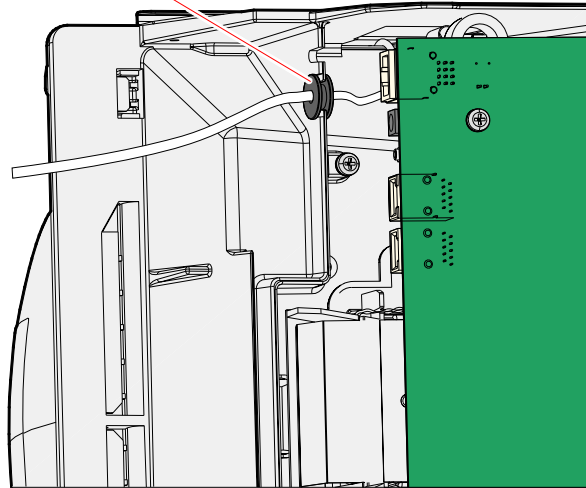
26558

e) Place the wire tie around the Checkpoint Cable where the cable will protrude through the casting. The tie should be on the inside of the unit.
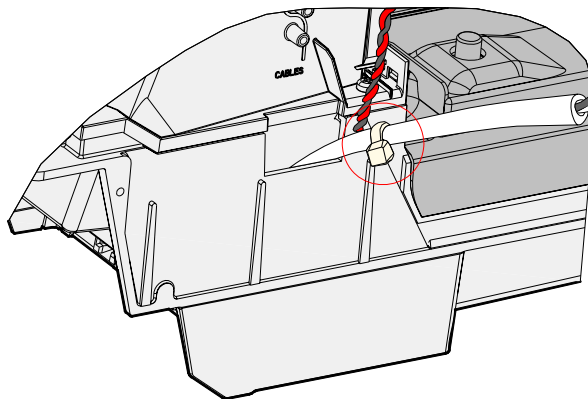
26559

f)   Route the black and white wires around the tower window as shown below. Tuck any excess cable into the scanner body and make sure it is not pinched by the tower cover.
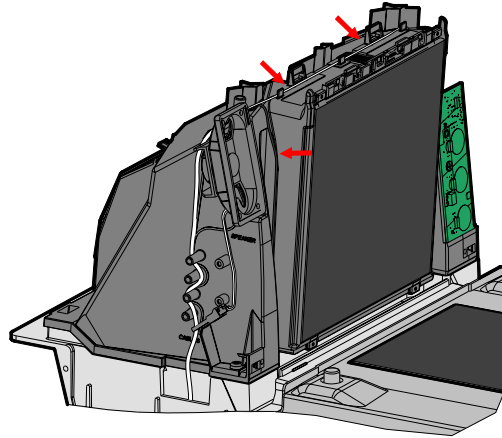
26761

g)   Replace the Front Bezel and Tower Cover.

h)   Replace the Bottom Electronics Cover.

i)   Have Checkpoint install the other end to the Checkpoint controller.

2.   Connect the DC Power Cable from the Power Supply to the DC Power connector.

3.   Connect the interface cable to the Main (POS) RS232/RS485 Communication Port.

Note: If you intend to program the scanner using programming barcode tags, do not connect the interface cable to theMain (POS) RS232/RS485 Communication Port until all programming is complete.

Note: The scanner can connect to a separate "POS scale interface cable" through "Port 1". Full details are added on the firmware's release.

4. If used, connect the remote display cable to the Scale Display Port.

5. If the configuration includes an RS–232 peripheral device, connect the cable to one of the two RS–232 peripheral ports. Port 1 is on the bottom of the unit in the back left corner.

6. Connect one end of the Sensormatic® Communications Cable to the Auxiliary Port 2 at the back of the RealScan 78. The other end connects to the POS connector on the Sensormatic® ScanMax™ Pro Controller.

7. Connect the Sensormatic Coil Cable to the Coil connector on the Sensormatic® ScanMax™ Pro Controller.

8. Connect the Sensormatic® AC Power Cord.

    Note: Some peripherals are limited to which port they can use.

Step 5: RealScan 78 Installation in Checkstand Cutout

24165
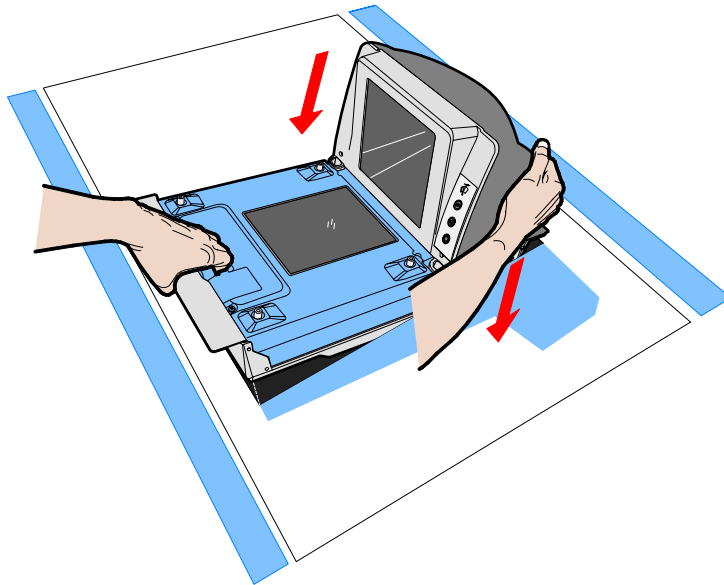
To install the RealScan 78 in the Checkstand Cutout, perform the following procedure.

1. Verify that the top of the RealScan 78 Supports are set to the initial distance from the top of the checkstand. Check dimension "D" on "Checkstand Cutout" section in *Site Preparation* chapter.

2. Holding the handles on the side of the tower cabinet and the front of the unit, slowly lower the RealScan 78 into the checkstand cutout. It should have support at the front and the rear, within 50 millimeters (2 inches) of its corners so that it does not rock.

3. Install the Top Plate on the four supports. According to the product flow, the leading edge of the Top Plate must be flushed or up 1.50 mm (0.06 in) below the top of the checkstand. The trailing edge of the Top Plate must be flushed or up to 1.50 mm (0.06 in) above the top of the checkstand.

    Note: It is important that the RealScan 78 does not rock on its supports. Make sure that all adjustable supports are securely fastened and that the RealScan 78 is sitting on all supports.

    Note: Place the power supply in a position where spilled liquids cannot fall onto it.

Step 6: Top Plate Alignment Verification

Verify the final alignment of the Top Plate with the top of the checkstand. If adjustment is needed, adjust the support posts or the fixed flanges that support the RealScan 78, placing the adjustment screws under the front and back flanges of the scanner.

*   For installation of a RealScan 78 that includes a scale, refer to the next section "Step 7: Scale Calibration".

*   For installation of a RealScan 78 scanner with Sensormatic Security Tag Deactivation, skip to "Step 8: Sensormatic Deactivation Setup".

- For installation of a RealScan 78 scanner only, skip to "Step 9: Operational Unit Verification".

Step 7: Scale Calibration

Note: Only certified personnel can perform the scale calibration procedure and place the scale into service for trade to comply with governmental weights and measures regulations.

The RealScan 78 must meet the following accuracy requirements.

- The RealScan 78 is considered a new unit each time the scale is calibrated. This status lasts for thirty (30) days.

- The RealScan 78 is considered an in-service unit thirty (30) days after the scale is calibrated.

During factory testing, the scale is calibrated one or more times to test the scale calibrating function. This calibration test is not sufficient to make the scale ready for weighing in trade.The scale **MUST** be calibrated when any of the following occur (this is a government requirement).

- Initial installation of a RealScan 78

- When the scale cannot be zeroed

- When the diagnostics indicate a calibration error

- When the load cell is changed

- If the digital board is changed, the EEPROM from the old board must be ported to the new board. Only 7878 EEPROMs may be used. If the EEPROM is not ported the scale must be recalibrated.

The calibration procedure sets the scale and the electronics to interpret the weight of an item accurately. The scale can be calibrated after power has been supplied for 30 minutes and if the ambient air condition has been 20° C (68° F) or above for at least 24 hours. If the ambient air condition has not been met (below 20° C (68° F)), then the scale must be on for at least 6 hours before it can be calibrated. One or more certified weight sets are required to calibrate and certify the scale. The following are examples:

- Whole Pound Weight Set: NCR Part Number 998-0633009

- Fractional Pound Weight Set: NCR Part Number 998-0633012

- Kilogram Weight Set: Obtain locally

The RealScan 78 maintains an audit trail of scale calibration and weighs parameter setting. The audit trail consists of two even counters. Display the audit trail count by pressing and holding the **Scale Zero** button on the Operator Display Panel. The display alternates between Cal xxx and Par xxx. The Cal value is the number of times the scale has been calibrated. The Par value is associated with the weigh parameter setting and should never change.

Note: The audit trail displays only on units with the RealScan 25 Remote Display.

Note: Some host terminals can corrupt the calibration settings if they are connected during scale calibration. Therefore, NCR recommends disconnecting the interface cable before starting calibration of the scale and then reconnect it after completing the calibration procedure.

Perform the Calibration Procedure

Note: If a protective plastic covering is present on the Top Plate, ensure that it is removed before calibrating the Scale.

The scale firmware controls the calibration procedure. It waits for a response to each prompt before going to the next step. The firmware uses the voice feature and the display to identify how much weight to place on the Top Plate. After the required weight has been placed on the Top Plate and the Scale Zero button is pressed, the firmware sounds a single tone and goes to the next prompt.

The calibration procedure can be ended before completion by turning the unit off. However, if this is done, the scale must still be calibrated before placing it into service.

Note: The pound and kilogram weights used for calibration are not equivalent values. They are the actual weights the firmware needs to perform the calibration.

Note: Turn off the EAS system during scale calibration.

Calibrating and Exercising the RealScan 78

1. Determine the type of weight set to use for calibration. There a two weight sets, Kilograms and Pounds.

   - For the **Kilogram** weight set, you must have a calibrated KG weight set, 12.5 KG total. Weight combinations 2.5kg, 7.5kg, and 12.5kg are required, with suggested individual weights made up of a set of two 5 kg weights, one 2kg weight, and one 500g weight.

   - For the **Pound** weight set, you must have a calibrated LB weight set, 30 pounds total. Weight combinations 5 lb, 15 lb, and 30 lb are required, with suggested individual weights made up of a set of two10 lb weights, one 5 lb weight, two 2 lb weights, and one 1 lb weight.

2. Apply power to the RealScan 78 if it is off. The unit needs to be ON for 30 minutes prior to calibration, unless it is cool in the environment (below 20° C (68° F)), in which case the scale must be on for at least 6 hours before it can be calibrated.

3. EXERCISE THE SCALE

    Note: You MUST exercise the scale BEFORE the scale can be calibrated

    a. Remove the Top Plate.

    b. Press the Calibration Switch.

        i. Remove the blue plastic Switch Cover located on the right–front corner of the unit. Lift the left side of the cover to unlatch and remove it.
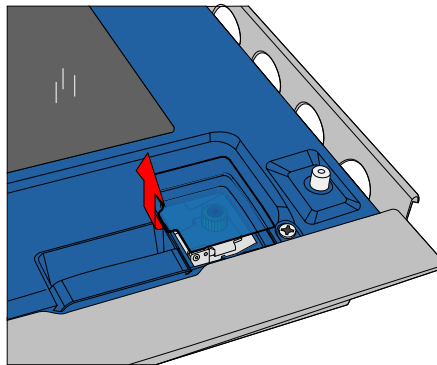
23960

        If the Calibration Switch Security Cover is secured with a lead/wire or paper seal, remove the seal.

ii. Unscrew the green sealing screw (1) and pull up on the cover (2) to access the blue calibration switch button.

Scale Calibration Switch
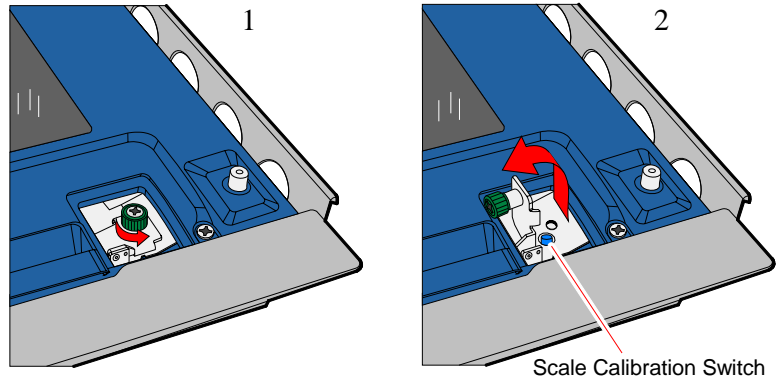
24982

iii. Press the small blue Calibration Switch button (this button is very small and very recessed). When you press the button, the scanner speaks "**Press Deck**".

The unit will IMMEDIATELY begin a continuous clicking sound along with a steady tone.

Note: You MUST replace the Calibration Switch Cover and Top Plate, and complete the scale exercise procedure within 90 seconds. If not, the scanner will report a 'Calibration Error Code 8' and you will see 1 blue and 1 green LED on the Light Bar.

| blue | green | Off | Off | Off |
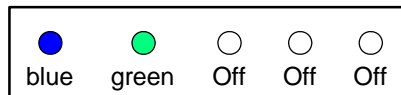
24977

Note: You will need to perform the press-down procedure twice, otherwise the unit will report 'Calibration Error Code 8'.

c. PRESS DOWN PROCEDURE.

   i. Once the Top Plate is back on and all the LEDs in the tower
       Light Bar are off, use both hands and press down HARD on
       the Top Plate with a constant and increasing pressure.

       Note: It will take a LOT of pressure. You might have to
       fully LEAN on the scale - you will not break it. <u>The goal is
       to light ALL 5 LEDs and keep them on for 4 seconds.</u>

   ii. As you press on the scale deck, an increasing number of
        LEDs will turn on indicating the amount of pressure you
        are applying.
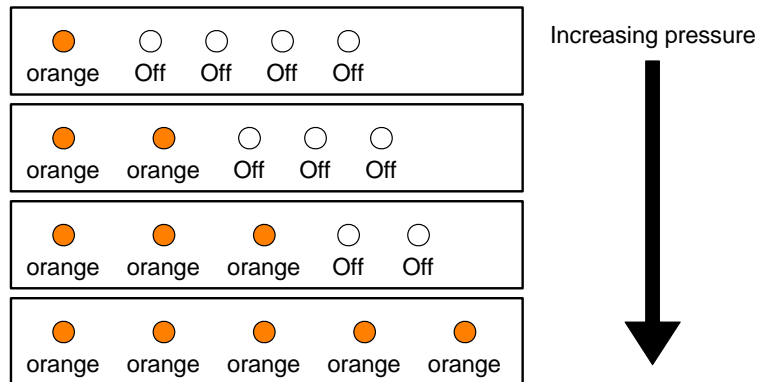
24978

   iii. As you press, the tone also increases in pitch, producing a
         different, higher tone for each additional LED that lights up.
         If you let go, the tone will decrease in pitch as the LEDs
         progressively turn off.

iv. At the highest pitch, with ALL 5 LEDs on, you **MUST CONTINUE** pressing down with continuous consistent pressure until the 5 LEDs turn solid **red** and the scanner beeps four times.
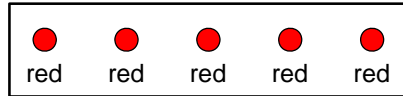
24980

v. Finally, the scanner will say "Complete" and all the 5 LEDs will turn solid **blue.** You can then release your hands from the deck.
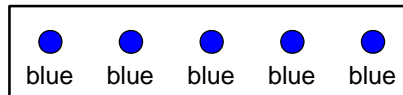
24981

vi. Scanner will again say "**Press deck**".

vii. Repeat the Press Down steps again until the scanner says "Complete".

4. Once the exercising is complete (press-down done twice), the scanner will require a delay before continuing with calibration. It will say "Please wait 20 seconds…15 seconds…10 seconds…five seconds…complete". There is a countdown shown on the 7825 remote display if one is attached.

5. The regular calibration procedure will begin after exercising is complete. Use the following procedures:

Note: Use the type of calibration procedure according to the type of weight sets being used.
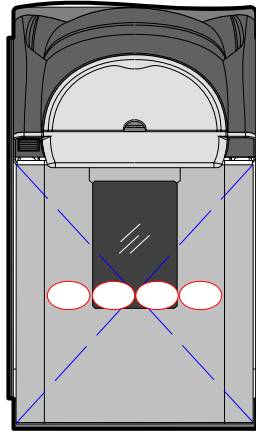
Note: Place weights in circles shown when calibrating to ensure even distribution of weight during calibration. Start at the center and work outward horizontally with increasing weight. Do not scatter weights around the Top Plate

24047

Calibration Using Kilogram Weights

a. Scanner speaks "Place zero kilograms on deck then press Scale Zero". Make sure the scale has no weights on it (is empty) then press Scale Zero. Wait.

b. Scanner speaks "Place 2.5 kilograms on deck then press Scale Zero". Put 2.5 kg on the scale then press Scale Zero. Wait.

c. Scanner speaks "Place 7.5 kilograms on deck then press Scale Zero". Put 7.5 kg on the scale then press Scale Zero. Wait.

d. Scanner speaks "Place 12.5 kilograms on deck then press Scale Zero". Put 12.5 kg on the scale then press Scale Zero. Wait.

e. Scanner speaks "Place zero kilograms on deck then press Scale Zero". Take all the weights off the scale then press Scale Zero. Wait.

f. Scanner speaks "Calibration complete" upon successful calibration.

Calibration Using Pound Weights

a. Scanner speaks "Place zero pounds on deck then press Scale Zero". Make sure the scale has no weights on it (is empty) then press Scale Zero. Wait.

b. Scanner speaks "Place 5 pounds on deck then press Scale Zero". Put 5 lb on the scale center then press Scale Zero. Wait.

c. Scanner speaks "Place 15 pounds on deck then press Scale Zero". Add 10 more pounds to make 15 lb on the scale then press Scale Zero. Wait.

d. Scanner speaks "Place 30 pounds on deck then press Scale Zero". Add 15 more pounds to make 30 lb on the scale then press Scale Zero. Wait.

e. Scanner speaks "Place zero pounds on deck then press Scale Zero". Take all the weights off the scale then press Scale Zero. Wait.

f. Scanner speaks "Calibration complete" upon successful calibration.

6. When successful calibration is concluded, take the Top Plate off, ensure the Scale Calibration Switch cover is closed, and tighten the green sealing screw.

7. Seal the Calibration Switch Security Cover with one of the following seals:

- Lead/Wire Seal (NCR Part Number: 603–8001097) using a Lead/Wire Seal Press (NCR Part Number: 603–9000157)

- Film/Paper Seal (Obtain locally—Must meet the requirements of the local government)

Note: Depending on local laws, Weights and Measures officials may be required to attach the seal.

8. Reinstall the Top plate.

If Scan Doctor detects an error during the calibration procedure, one of the following error codes may be given.

Error Code	Problem	Suspect Components
1, 2, or 3	Possible out of range calibration error	Digital Board Scale Assembly
4	Scale hadware error	Digital Board Scale Assembly Scale Digital Cable
5	Scale Drift	Digital Board Scale Assembly Scale cables Power Supply
6	Failure to update parameters into EEPROM.	EEPROM Digital Board
7	Error reading parameters from EEPROM	EEPROM Digital Board
8	Scale exercising failed (not enough pressure or time consumed)	Top Plate is bottoming out
9	Linearity problem or slight vibration noted while calibrating Scale (Zero Drift)	Top Plate is touching checkstand. Scale was jarred.

24535

After calibrating the scale, the accuracy must be verified to assure it meets the government requirements. This consists of a series of four tests that must be run in the continuous sequence given.

1. Increasing Load Test

2. Over-Capacity Test

3. Decreasing Load Test

4. Shift Test

Increasing Load Test

This test checks the scale's accuracy when incrementally adding weight to the center of the Top Plate. Use weights that correspond to the RealScan 78 weight features.

Step	Weight Feature	Add Weight	Remove Weight	Display Result
1	Kilogram	0.100 kg		0.100 ± 0.000 kg
	Pound	0.20 lb		0.20 ± 0.00 lb
2	Kilogram	2.500 kg	0.10 kg	2.500 ± 0.000 kg
	Pound	5.00 lb	0.20 lb	5.00 ± 0.00 lb
3	Kilogram	5.000 kg		7.500 ± 0.005 kg
	Pound	5.00 lb		10.00 ± 0.01 lb
4	Kilogram	5.000 kg		12.500 ± 0.005 kg
	Pound	10.00 lb		20.00 ± 0.01 lb
5	Kilogram	2.500 kg		15.000 ± 0.005 kg
	Pound	10.00 lb		30.00 ± 0.01 lb

24177

Note: Do **NOT** remove any weight from the Top Plate between test steps unless directed to do so.

Over-Capacity Test

This test checks for the proper indication from the scale when too much weight is placed on the Top Plate.

Note: This test must immediately follow the Increasing Load Test; do not remove any of the weights from the previous test prior to running this test.

Note: Scale capacity is 30 lb or 15 kg in 0.01 lb or 0.005 kg increments.

Place additional weight on the center of the Top Plate as shown in the following table. Use the weight that corresponds to the RealScan 78 weight feature. The display shows a series of dashes to indicate an over-capacity condition.

Step	Weight Feature	Add Weight	Remove Weight	Display Result
1	Kilogram	0.050 kg		--.---
	Pound	0.10 lb		--.---
2	Kilogram		0.050 kg	15.000 kg
	Pound		0.10 lb	30.00 lb

24180

Note: Do **NOT** remove any weight from the Top Plate after completing this test.

Decreasing Load Test

This test checks the scale's accuracy when incrementally removing weight from the Top Plate. Use weights that correspond to the RealScan 78 weight feature, as shown in the following table.

Note: This test must immediately follow the Over-Capacity Test; do **NOT** remove any of the weights from the previous test prior to running this test.

Step	Weight Feature	Remove Weight	Display Result
1	Kilogram	2.500 kg	10.000 ± 0.005 kg
	Pound	10.00 lb	20.00 ± 0.01 lb
2	Kilogram	5.000 kg	2.500 ± 0.000 kg
	Pound	10.00 lb	5.00 ± 0.00 lb
3	Kilogram	5.000 kg	0.100 ± 0.000 kg
	Pound	5.00 lb	0.20 ± 0.00 lb
4	Kilogram	2.500 kg	0.000 ± 0.000 kg
	Pound	5.00 lb	0.00 ± 0.00 lb

24179

Shift Test

This test involves moving a weight off the center point of the Top Plate to check for continued accuracy.
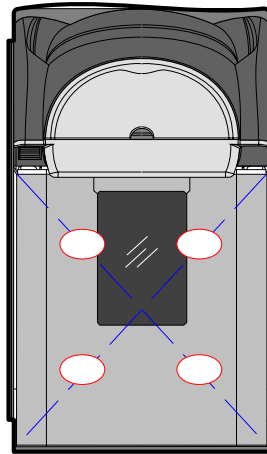
Test Pattern

23957

1. Place 5.00 kg (15.00 lb) on each of the four circles individually. The Display must show 5.00 ± 0.005 kg (15.00 ± 0.01 lb) with a max of 0.005 kg (0.01 lb) between any of the 5 readings.

2. Remove all weights. The display must read 0.000 ± 0.005 kg (0.00 ± 0.00l0b) Test max thirty pounds (30.00 lb) in center only.

3. Press and hold the **Scale Zero** button. Record the Cal and Par values shown on the display.

Position	Weight Feature	Test Load	Display Result
1	Kilogram	5.000 kg	5.000 kg
	Pound	10.00 lb	10.00 lb
2	Kilogram	5.000 kg	5.000 kg
	Pound	10.00 lb	10.00 lb
3	Kilogram	5.000 kg	5.000 kg
	Pound	10.00 lb	10.00 lb
4	Kilogram	5.000 kg	5.000 kg
	Pound	10.00 lb	10.00 lb
5	Kilogram	5.000 kg	5.000 kg
	Pound	10.00 lb	10.00 lb

24178

Note: Circles are half way from the center and corners of the Top Plate.

Securing the Calibration Switch

After performing a scale calibration, attach a seal to the scale calibration security cover. Depending on the local laws, Weights and Measures officials may be required to attach the seal.

Note: In the United States and Canada, the audit trail serves as an acceptable security seal when the RealScan 25 Compact Display is present.

Perform the following procedure to secure the calibration switch.

1. Remove the Top Plate.

2. Remove the clear plastic Calibration Switch Cover located on the right–front corner of the unit. Lift the left side of the cover to unlatch and remove it.
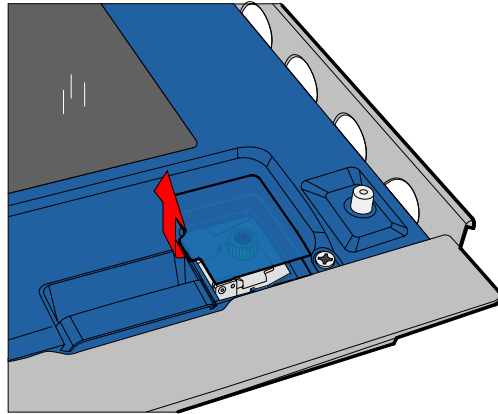
23960

3. Move the Calibration Switch Security Cover until the screw holes and the seal holes are properly aligned.
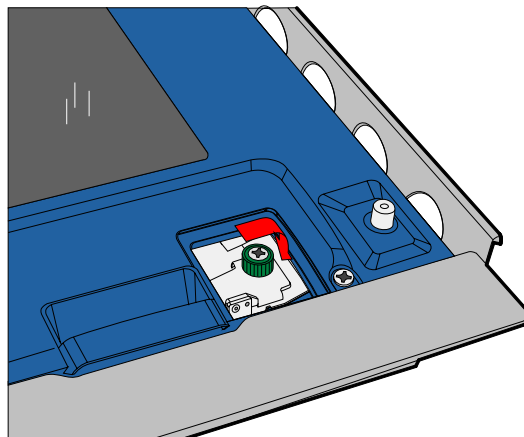
23966

4. Fasten the green thumbscrew in the Calibration Switch Security Cover to secure the Calibration Switch.
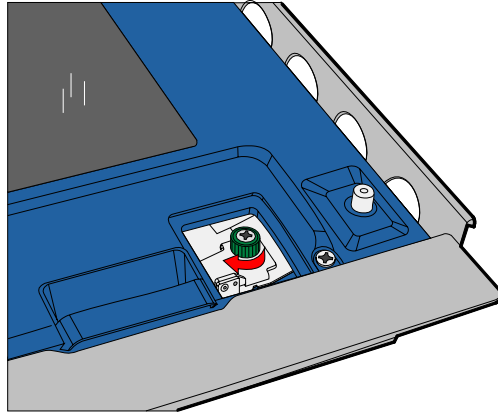
23967

5. Seal the Calibration Switch Security Cover with one of the following seals:

    •   Lead/Wire Seal (NCR Part Number: 603-8001097) using a Lead/Wire Seal Press (NCR Part Number: 603-9000157)

    •   Film/Paper Seal (Obtain locally—Must meet the requirements of the local government)

6. Install the Calibration Switch Cover.
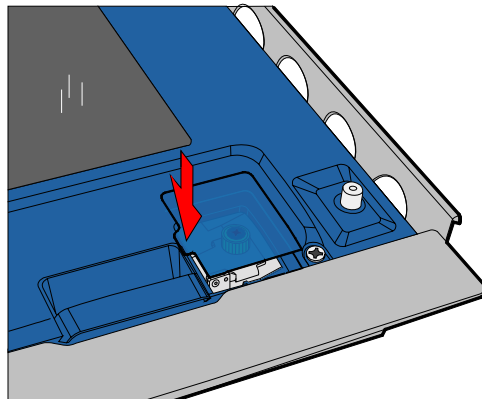
24537

7. Install the Top Plate.

Step 8: Sensormatic® Deactivation Setup

Sensormatic Tag Deactivation

Connect the Sensormatic® Tag Deactivation System to the RS–232 Peripheral Ports, which is Port 2. If a hand-held scanner is used, connect the hand-held to Port 1. When the RealScan 78 scanner reads a tag, the Sensormatic® hardware needs to receive an interlock signal for it to function. When the system is installed, the Sensormatic® Interlock Signal must be enabled.

There are two modes of Sensormatic operation, Interlocked and Non-interlocked. The mode is controlled by the Scan Enable Time which is a setting in the Sensormatic controller. When the Scan Enable Time is set to a value between 1 and 29, the system will run in the Interlock Mode. If the value is 0 or 30 the system will run in the Non-interlock Mode.

Interlock Mode

The scanner reads the Scan Enable Time from the controller. If it is between 1 to 29, it will enable the controller for deactivation for this many seconds after a bar code is read and then will disable the controller until the next bar code. Interlock mode is used in self service lanes and cashier assisted lanes.

Non-Interlock Mode
If the Scan Enable value is 0 or 30, the scanner will enable the Sensormatic controller for deactivation any time the scanner is enabled to read tags. In most systems, this corresponds to the time the cashier is signed into the POS Terminal. The terminal sends an "enable" to the scanner at cashier sign in and this is passed on to the Sensormatic controller. At cashier sign out, the POS sends a "disable" to the scanner and the Sensormatic controller is disabled. This is called Non-interlock Mode. this mode is designed for the cashier lanes.

Sensormatic® Online Offline Indication

If the scanner is programmed for Sensormatic operation when the scanner powers up and it establishes communication with the Sensrromatic controller, it will speak the message "EAS Online". This may take from 5 to 10 seconds. If this is the first time the Sensormatic controller has been detected, the scanner will remember that it has seen a controller and from then on at startup, if the controller is not detected, the scanner will speak "EAS offline". Once operation has started and the communication to the controller is lost, the scanner will speak "EAS Offline". If the communication is reestablished, the scanner will speak "EAS online". The only time the "EAS Offline" message is not spoken is on a new unit which has never been connected to a Sensormatic controller. This is to limit the messages at installation and testing before the controllers are installed.

Cashier Sign In Offline Alert
There is a feature to alert the cashier of the EAS system state at sign in. When the sign in occurs and the scanner is enabled if the EAS system is offline the "EAS OFFline message will be spoken". There is a programmable time limit on how long the sign out period must be before the offline message is spoken in order to prevent extraneous messages when cashier must sign in and out frequently. This message is from 1 to 15 minutes and is selected with the following programming tag sequence.

1. **Program Mode**—puts the scanner in programming mode.

2. **Hex 7, Hex C, Hex x**—where x is the time in minutes (1 to 15).

3. **Save and Reset**—saves the enabled setting and resets the RealScan 78.

EAS Offline LED

There is an LED indicator beside the Manual Deactivation Button used to indicate the EAS system status. The LED will be on solid when the system is connected and operating properly. If the system is connected but not communicating the LED will be flashing. The LED is off when the EAS feature is disabled.

Enable Sensormatic® Communications

Scan the following sequence of programming tags to enable the Sensormatic® communications. These must be the first tags scanned after applying power to the RealScan 78.

1. **Program Mode**—puts the scanner in programming mode.

2. **Hex 4, Hex 2, Hex B**—enables Sensormatic® Interlock Signal.

3. **Save and Reset**—saves the enabled setting and resets the RealScan 78.

Disable Sensormatic® Communications

Scan the following sequence of programming tags to disable the Sensormatic® communications. These must be the first tags scanned after applying power to the RealScan 78.

1. **Program Mode**—puts scanner in programming mode.

2. **Hex 4, Hex 2, Hex A**—disables Sensormatic® Interlock Signal.

3. **Save and Reset**—stores the disabled setting and resets the RealScan 78.

Sensormatic® Deactivation Tones

The deactivation tone is heard after the Sensormatic controller senses a EAS tag and fires the deactivator. The tone is a series of pulses programmable in frequency and number of pulses. There can be 1 to 8 pulses of a single frequency or 1 to 7 pulses of dual tones.

Scan the following sequence of programming tags to change the tone frequency of the RealScan 78.

1. **Program Mode**—puts scanner in programming mode.

2. **Hex 5, Hex 8, Hex B**—increments to the next frequencies. Continue scanning **Hex B** to get the desired frequency. There are eight frequencies to choose from:

    - 570 Hz (default)

    - 637 Hz

    - 721 Hz

    - 829 Hz

    - 976 Hz

    - 1186 Hz

    - 1512 Hz

    - 2083 Hz

3. **End**—completes the programming sequence.

4. **Save and Reset**—stores the setting and resets the RealScan 78.

Sensormatic® Deactivation Tone Pulse Length
Scan the following sequence of programming tags to change the number of pulses in the deactivation tone of the RealScan 78.

1. **Program Mode**—puts scanner in programming mode.

2. **Hex 7, Hex B, Hex x**—where x is the number of desired pulses. With 1-8 pulses there is a single frequency tone. With 9-15 pulses there are 1 to 7 pulses of dual tone frequency

3. **Save and Reset**—stores the setting and resets the RealScan 78.

Specific Function Programming

There are several Sensormatic® Security Tag Deactivation functions that can be programmed at the RealScan 78.

Manual Deactivation
The Manual Deactivation function permits the user to disable scanning and enable Sensormatic® Security Tag Deactivation for 3 seconds with each touch of the Manual Deactivation button on the RealScan 78 Operator Display Panel. A bar code can also be sent through the host to report the manual deactivation .The bar code is sent after the button is pressed and the deactivation signal is received from the controller.

The Manual Deactivation function is enabled and disabled by scanning the following Manual Deactivation Function Tag.

01234500143

Scanning this tag is a toggle function. The number of beeps indicates how the function is set.

- 1 Beep—Manual Deactivation function is disabled

- 2 Beeps—Manual Deactivation function is enabled—Factory Default

- 3 Beeps—Function is enabled plus 048589999977 barcode sent

After enabling or disabling the Manual Deactivation function, scan the following Reset tag to make the setting permanent in the RealScan 78.

||||||||||||||||||||||||||||||||

01234500095
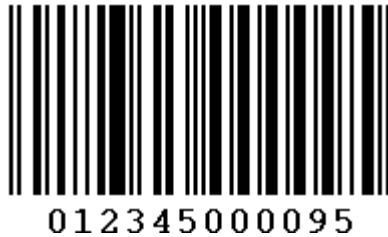
Barcode Label Hold-Off

The purpose of the Barcode Label Hold-Off function is to force the user to bring the barcode closer to the scanner when a live EAS tag is present on the item being scanned. When the RealScan 78 detects a live EAS tag it emits a clicking sound and sets a ½-second timer (optional). The timer will be restarted and will not expire as long as the EAS tag is detected. During this time the RealScan 78 does not beep or send barcode data to the host terminal even though it may read the barcode. The timer will not be restarted once the EAS tag is deactivated. After the timer expires, the RealScan 78 beeps and sends barcode data to the host terminal. If the barcode has been removed from the scan field, it may have to be returned to the field to be read and sent to the host.

The Barcode Label Hold-Off function is enabled and disabled by scanning the Barcode Label Hold-Off tag.

||||||||||||||||||||||||||||||||

01234500115

Scanning this tag is a toggle function. The number of beeps indicates how the function is set.

- 1 Beep—Barcode Label Hold-Off function is disabled

- 2 Beeps—Barcode Label Hold-Off function is enabled—Factory Default

After enabling or disabling the Barcode Label Hold-Off function, scan the following Reset tag to make the setting permanent in the RealScan 78.

```
012345000095
```
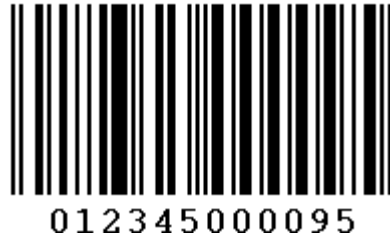
Audible Detection
The Audible Detection function provides direct feedback to the user when a live EAS tag is in the field of view of the scanner. Clicks are enabled on the scanner.

```
012345000114
```

The Audible Detection (click) function toggles between 1, 2, and 3 beeps with each scan.

- 1 Beep—Audible Detection function is disabled

- 2 Beeps—Audible Detection function is enabled

- 3 Beeps—Audible Detection function is enabled plus deactivation tone

EAS Optional Communications

The EAS Optional Communications function alerts the host application with a barcode communication message in three ways. This permits the host to control the sequence of events at the scanner.

- The RealScan 78 sends the Error barcode (048589999999) if an EAS detection signal occurs after a barcode is read by the scanner (for example, the Sensormatic® tag is still live.).The Error Barcode Timer defines the window for permitting a deactivation to occur after a barcode is read. The timer can be set from ½ second to 4 seconds in ½-second increments. If the timer expires and no EAS deactivation has occurred, the Error barcode is sent to the host application.

- The RealScan 78 can send a Detect barcode (048589999988) every 4 seconds when EAS detections are occurring (a live EAS tag is in the detection field).

- The RealScan 78 can send both barcodes if both conditions are met.

Scan the following EAS Communications Function tag to set the EAS Communication function.

01234500 0134

The function changes each time this tag is scanned. The number of beeps indicates how the function is set.

- 1 Beep—EAS Communications function is disabled—Factory default

- 2 Beeps—RealScan 78 sends Error barcode (048589999999)

- 3 Beeps—RealScan 78 sends Error barcode (048589999999) and Detect barcode (048589999988)

- 4 Beeps—RealScan 78 sends Detect barcode (048589999988)

The following tag increments the Error barcode timer. Each time the tag is read, the time is incremented ½ second until the maximum time is reached. It then starts over with the least time.

012345000116

The number of beeps indicates how the timer is set.

- 1 Beep—½ second

- 2 Beeps—1 second

- 3 Beeps—1½ seconds

- 4 Beeps—2 seconds

- 5 Beeps—2½ seconds

- 6 Beeps—3 seconds

- 7 Beeps—3½ seconds

- 8 Beeps—4 seconds

After setting the EAS Optional Communication function and the Error Barcode timer, scan the following Reset tag to make the setting permanent in the RealScan 78.

Reset Bar Code
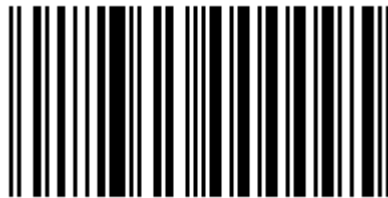
012345000095

Error, Detect, and Manual Deactivation Barcodes

The following are the Error, Detect, and Manual Deactivation barcodes, respectively. These barcodes are used for testing the POS system. Scan the barcode to simulate the effect on the POS system.

- Error Bar Code

048589999999

- Detect Bar Code

048589999988

- Manual Deactivation Bar Code

0   48589   99997   7

Power-up the System

Note: Refer to the Sensormatic® ScanMax™ Pro Controller documentation for additional information about setting up the controller.

Perform the following procedure to power-up the system.

1. Turn on the RealScan 78. When the RealScan 78 is first turned on, all Sensormatic® parameters should be at their default settings:

- • RealScan 78 Deactivation Button = Enabled

- • RealScan 78 Detection Clicking = Enabled

2. Turn on the Sensormatic® ScanMax™ Pro Controller. This system is programmed at the factory with default settings for proper operation.

3. After the RealScan 78 and the Sensormatic® ScanMax™ Pro Controller are operating for about 15 seconds, the RealScan 78 gives the voice message **EAS Online**.

   Note: Voice message **EAS Online** must be given before continuing. If voice message **EAS Online** is not given, turn off the power to all components. Check all cable connections and then repeat this procedure starting at Step 1. If voice message **EAS Online** is still not given and the Manual Deactivation Button flashes, scan the **Reset** programming tag. If **EAS Online** status is still not given, follow instructions on the Sensormatic Card—*Before You Call About….* The problem may be a bad Antenna cable.

4. Position a **Hard** Tag over the top of the RealScan 78. As the **Hard** Tag is moved, the RealScan 78 starts clicking when the tag moves within four inches of the center of the Top Plate. If the clicking sound is not generated, scan the Reset programming tag, then go to Step 3. If the second attempt fails, call for technical assistance. Refer to Appendix D for NCR Technical Support contact information.

Check Sensormatic® Deactivation System

Check the System
Position a **Hard** tag above the RealScan 78 Top Plate. As the tag moves within four inches of the Top Plate, a clicking sound is heard (if programmed). Refer to the previous topic, "Audible Detection," for instructions on enabling the clicking sound. If the **Hard** tag has to be closer than four inches to from the Top Plate to get the clicks, consult the Sensormatic® Card–*Before You Call About….*

X Axis Orientation
4" Above Top Plate

Y Axis Orientation
5" Above Top Plate
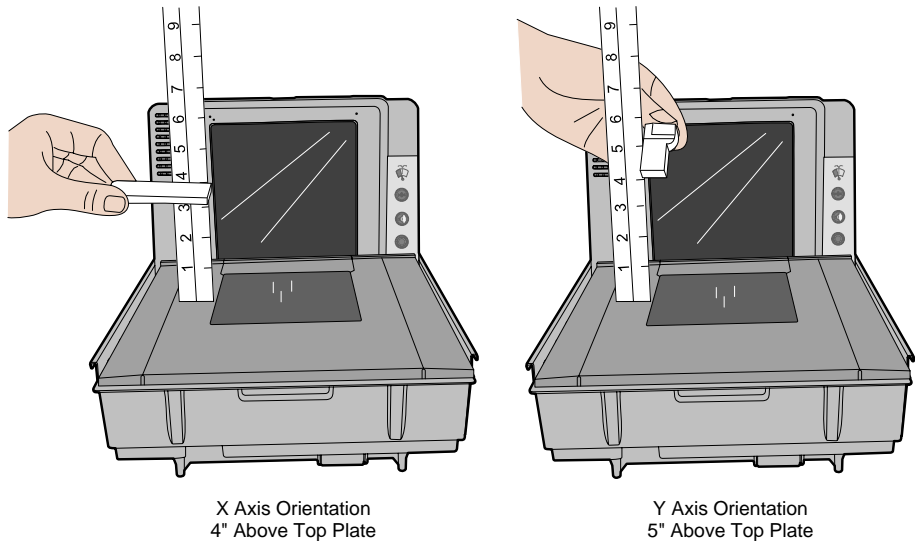
24170

Next, obtain a security tag that has not been deactivated. Scan a
barcode and immediately pass the security tag through the
deactivation zone. The Good Read Tone should sound indicating a
good read of the barcode and deactivation of the security tag. Refer to
the "Sensormatic Tag Deactivation Procedure" section in chapter 4 for
detailed operating instructions.

Call Sensormatic®

After the NCR RealScan 78 Sensormatic® configuration is installed, call
Sensormatic® to have them test, tune, and phase their system.

Step 9: Operational Unit Verification

When power is applied to the RealScan 78, the Scan Doctor software checks many of the scanner and scale components.

NCR RealScan 78 Scanner-Only Models

After passing the Scan Doctor Power-On Wellness Check, the Light Bar will start out with five blue LEDs and transitions through a range of colors, and leaves only the three center LEDs lit in green. The RealScan 78 is now operational.

NCR RealScan 78 Scanner/Scale Models

After passing the Scan Doctor Power-On Wellness Check, the RealScan 78 runs scale diagnostics. During this time, all segments on the RealScan 25 Remote Display are turned ON so the operator can verify the display works correctly. Then the display reads 0.000 kg (0.00 lb). The Light Bar starts out momentarily with five blue LEDs, changes to five red LEDs and blinks them five times. The unit beeps once after that and the RealScan 78 is now operational.

RealScan 78 Power-On Wellness Check

If an error occurs during the Power-On Wellness Check, the RealScan 25 Remote Display (if the unit has one) displays an error code, and if enabled, the RealScan 78 emits an audible description of the error and what action to take. There may be some simple steps that can be performed to correct the problem (refer to chapter 6 for more information). If the problem cannot be corrected, contact the maintenance provider for warranty and service information.

Checkout Reading Operation

The RealScan 78 comes from the factory with the programming parameters set to default values. The Communications Protocol is set to the specifications on the order. However, some parameter changes for a particular installation can be made. Refer to chapter 5 for more information.

Flash Latest Firmware

Although the latest firmware is loaded when the RealScan 78 is manufactured, newer firmware can be released after the unit is manufactured but before it is installed. NCR recommends checking the number of the firmware in the RealScan 78 and comparing it with the latest firmware available on www.NCR.com (Support→Drivers and Patches→Retail Support Files→ Retail RealScan Support Files).

To identify the firmware already in the scanner, scan the **Diagnostic Mode, Hex 4,** and **Hex A** programming tags. These must be the first tags scanned after applying power to the unit. The RealScan 78 gives a voice message containing the 497-xxxxxxx number of its firmware. Compare this number with the number of the firmware file on www.NCR.com (Support→Drivers and Patches→Retail Support Files→Retail RealScan Support Files). Perform the firmware flashing procedure if the 497-xxxxxxx number of the firmware file on www.NCR.com is higher than what is already loaded in the RealScan 78.

Some POS installations require a specific firmware version. Check that the IT and Operations organizations of the user have approved the latest version.

Note: There is a set of instructions for loading the appropriate flash tools based on the firmware currently in the scanner. Refer to the "Firmware Flashing" section in Chapter 5 for more detailed information.

Special Host Terminal Connections

Scanner Connected to IBM Terminals

The scanner and scanner/scale interface to any IBM system is basically Plug-and-Play, assuming the RealScan unit is programmed for IBM Communications (Refer to the "Programming Worksheets" section on Chapter 5 for more information). These systems are always single-cable, that is, one cable carries traffic for both the scanner and the scale (if scale is present). There are no configurable parameters in the IBM interface—the protocol is standardized and without any flexibility as far as barcode data formatting or interface characteristics such as baud rate. The scale's LOGICAL address, which is completely independent of the port designation into which it is plugged, is 6Eh.

The terminal port into which the RealScan unit is plugged varies with the type of terminal.

The older 468x series of terminals require the RealScan unit to be plugged into port 17.

Newer IBM terminals no longer have this port; instead they use cable 1416-C070-0040 to plug into port 9x (the "x" varies depending on the terminal model).

- A typical 4693/4682 uses port 9B for its scanner and/or scale devices.

- An IBM 4694-00x and 4694-02x have a port 9E for the scanner's use, while a 4694-244/245 needs the RealScan unit plugged into 9A.

SNI Beetle Host Terminal

For the RealScan 78 to communicate with an SNI Beetle Host Terminal, the communication parameters must be properly set. Scanning the following sequence of programming tags enables a typical installation; however, some variations may be necessary for any specific installation.

The following programming tags must be the first ones scanned after applying power to the RealScan 78.

1. **Program Mode**—enables programming mode

2. **Hex 3, Hex 4, Hex F, Hex 0, Hex 0**—chooses Wincor-Nixdorf Beetle parameters

3. **Save and Reset**—save Beetle parameters

4. **Default**—permanently store Beetle parameters as the default settings

The following settings get changed:

RS–232 Communication
9600 Baud, 8-bit, Odd Parity, 1 Stop, Raise RTS – Wait for CTS
Scanner Only Protocol
Terminator = 0Dh
One Tag Output Buffer enabled (buffers only one tag)

Label Identifiers	
EAN13	= "A" (41h)
EAN8	= "B" (42h)
UPC-E	= "C" (43h)
UPC-A	= "A0" (41h 30h) (UPC-A is expanded into EAN13
Code 39	= "M" (4Dh)
I 2 of 5	= "I" (49h)
Code 128	= "K" (4Bh)
UCC/EAN128	= "P" (50h) (UCC/EAN128 Label ID is enabled
Codabar	= "N" (4Eh)
Pharmacode	= "A" (41h)

25592

Peripheral Connections

Please be aware that these Hand-Held setup instructions assume Code 128, Code 39 and Interleaved 2 of 5 are enabled on the RealScan 78. Otherwise, if any of those bar code types are scanned with any of the Hand-Helds, and they are not also enabled on the RealScan 78, then the RealScan 78 produces a "bad" tone and will NOT transmit the barcode data.

Metrologic Hand-Held Scanner

A Metrologic Hand-Held Scanner can be connected to one of the RS232 auxiliary ports on the NCR RealScan 78. If the Metrologic Hand-Held is the only peripheral device, it can be connected to either port. However, if connecting another peripheral device, there may be restrictions for the Metrologic port connection.

Note: These were recently tested on a Metrologic Voyager (Metrologic MS9540) and worked. However, each additional model needs to be verified.

Cable: 53-53220A
No external power needed

26775
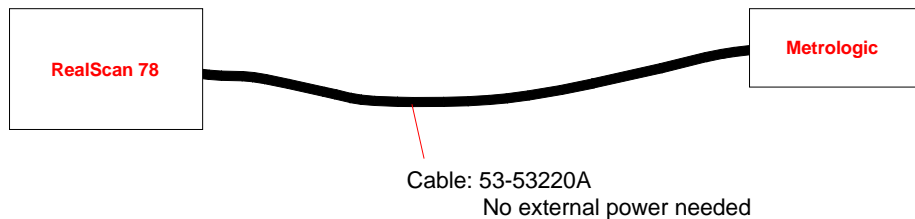
Programming the Metrologic Hand-Held Scanner if Connected through the Auxiliary RS232 Port

Scan the following sequence of tags with the Metrologic Hand-Held Scanner. If the scanner encounters problems reading these tags, use the tags printed in the Metrologic Installation and User's Guide:
http://www.metrologic.com/corporate/products/pos/ms9520/

Enter Config Mode

³ 9 9 9 9 9 9

Recall Defaults

³ 9 9 9 9 9 8

Enable RS232

³ 4 1 5 5 5 4
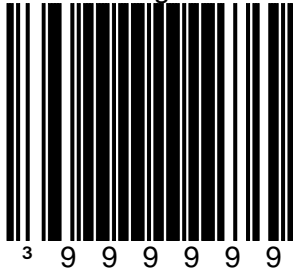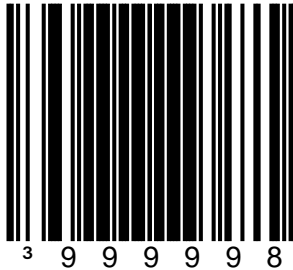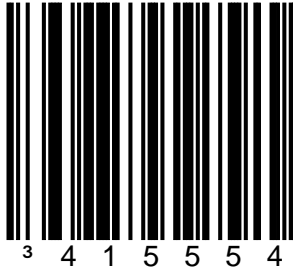
1 stop bit
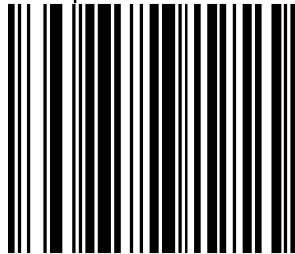
³ 1 1 6 0 1 4

Even Parity
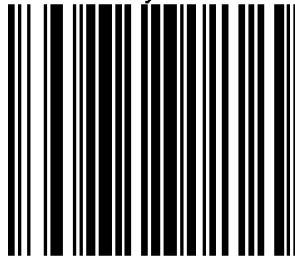
³ 3 1 6 0 2 5

UPC Prefix Id
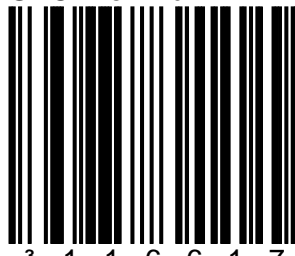
³ 1 1 6 6 1 7

9600 Baud
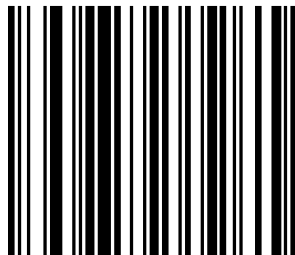
³ 4 1 5 8 5 0

CR-LF on
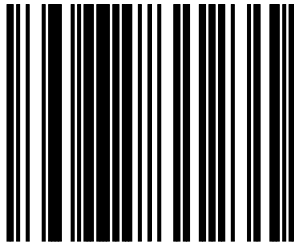
³ 2 1 6 6 3 2

UPC Format
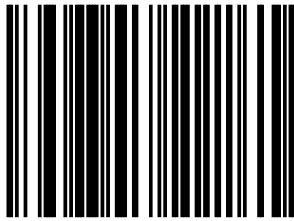
³ 8 0 7 5 1 3 0 0

Transmit UPC-E checl
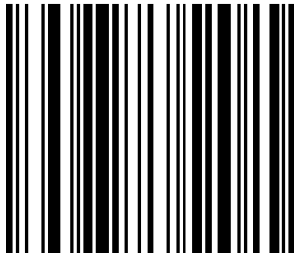
³ 1 0 7 5 1 6

ITF "b"

³ 8 0 6 7 0 9 8 0

Code 39 "a"

³ 8 0 6 0 0 9 7 0

Code 128 "f"

³ 8 0 6 1 1 0 2 0

Exit Config Mode

³ 9 9 9 9 9 9
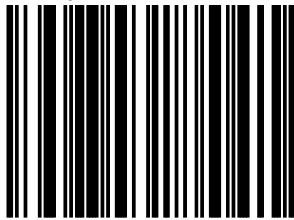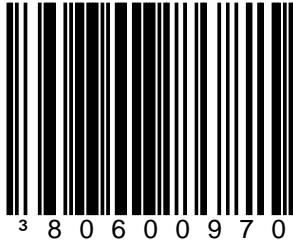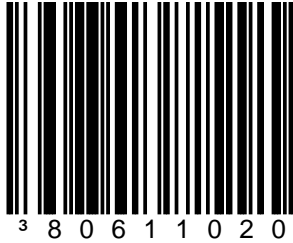
Programming the RealScan 78

When installing a Metrologic Hand-Held Scanner, certain programming options must be set in the RealScan 78. Program these options as follows.

There are four options that must be programmed on the RealScan 78. Scan the following tags to set these options. These must be the first tags scanned after applying power to the RealScan 78.

Hand-Held Processing

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 4, Hex 0, Hex 1, Save and Reset	Required
Disable	Programming Mode, Hex 4, Hex 0, Hex 0, Save and Reset	

16386A

Hand-Held Port Selection

Selection	Programming Tag Sequence	Setting
Port 1	Programming Mode, Hex 4, Hex 0, Hex 2, Save and Reset	Either
Port 2	Programming Mode, Hex 4, Hex 0, Hex 3, Save and Reset	Either

24857

Hand-Held Beep on RealScan 78

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 4, Hex 0, Hex 5, Save and Reset	Required
Disable	Programming Mode, Hex 4, Hex 0, Hex 4, Save and Reset	

16386D

Hand-Held Selection

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 5, Hex 5, Hex 1, Save and Reset	Required

24855

NCR RealScan 2357 and Hand-Held Products (Honeywell) Type Hand-Held Scanner

These instructions apply to all Hand-Held Products scanners and 7837 models (except the 7837-1000 specifically), including the 3800g and 4600 series imagers.

When connecting a RealScan 2357 Hand-Held Scanner , certain programming options must be set on both the RealScan 78 and the Handheld Scanner. These options are given as follows.

Programming Hand-Held Products Scanner if Connected through the Auxiliary RS232 Port

If the RealScan 2357 Hand-Held Scanner (any model) is connected to the RealScan 78 through the auxiliary RS232 port, program the Hand-Held Products Scanner by scanning the following bar codes in order. If a triple beep is emitted from the Hand-Held scanner, start over with the first bar code.

FACTORY DEFAULT
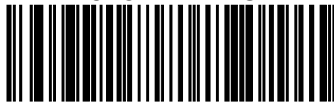
7837-1300 RS232 9600, 7, even, 1

Prefixes / Code 39 - a, Code 128 - f, Code I 2of 5 - b

Default Data Format

7837-1300 UPC-A Prefix A

7837-1300 UPC-E Prefix E

7837-1300 EAN-13 Prefix F

7837-1300 EAN-8 Prefix FF

Matrix RTS/CTS Mode 3 Enable

Programming the RealScan 78

There are four options that must be programmed on the RealScan 78. Scan the following programming tags to set these options. These must be the first tags scanned after applying power to the RealScan 78.

Hand-Held Processing

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 4, Hex 0, Hex 1, Save and Reset	Required
Disable	Programming Mode, Hex 4, Hex 0, Hex 0, Save and Reset	

16386A

Hand-Held Port Selection

Selection	Programming Tag Sequence	Setting
Port 1	Programming Mode, Hex 4, Hex 0, Hex 2, Save and Reset	Either
Port 2	Programming Mode, Hex 4, Hex 0, Hex 3, Save and Reset	Either

24857

Hand-Held Beep on RealScan 78

Selection	Programming Tag Sequence	Setting	
Enable	Programming Mode, Hex 4, Hex 0, Hex 5, Save and Reset	Either	
Disable	Programming Mode, Hex 4, Hex 0, Hex 4, Save and Reset	Either	16386F

Hand-Held Selection

Selection	Programming Tag Sequence	Setting	
Enable	Programming Mode, Hex 5, Hex 5, Hex 1, Save and Reset	Required	24855

Programming RealScan 2357 Hand-Held Scanner if Connected through the USB Peripheral Port

Prerequisites:

Firmware Levels:

- 7878, 497-0461765 - USB HH and USB HH pdf417.

Programming:

Use the following programming sequence if you want to make the scanner beep whenever it receives a valid barcode data through the USB host port (the scanner does not beep by default):

Selection	Programming Tag Sequence	Setting	
Enable	Programming Mode, Hex 4, Hex 0, Hex 5, Save and Reset	Required	
Disable	Programming Mode, Hex 4, Hex 0, Hex 4, Save and Reset		16386D

If the RealScan 2357 Hand-Held Scanner (any model) is connected to the RealScan 78 through the USB peripheral port, program RealScan 2357 Hand-Held Scanner by scanning the following bar codes in order.

There is NO programming necessary on the 7878 for this connection.

Factory Default
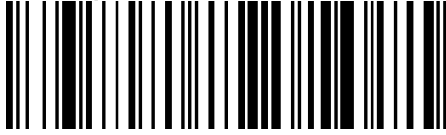
IBM Hand-Held USB
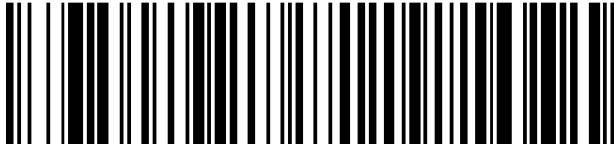
If it is desired to scan PDF 417 (2D) bar codes with the Hand-Held, you can enable the RealScan 78 to allow the pass-through of the data without the RealScan 78 itself having the capability to read that type of bar code.

The following programming sequence is only for USB-configured Hand-Helds:

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 7, Hex F, Hex 9, Save and Reset	
Disable	Programming Mode, Hex 7, Hex F, Hex 8, Save and Reset	Default

27023

NCR RealScan 2356 and Symbol (Motorola) Type Hand-Held Scanner

A RealScan 2356 Hand-Held Scanner can be connected to one of the auxiliary RS232 ports on the NCR RealScan 78. If the RealScan 2356-4208 is the only peripheral device, it can be connected to either port. However, if connecting another peripheral device, like Sensormatic® for example, there may be restrictions for the RealScan 2356 port connection.
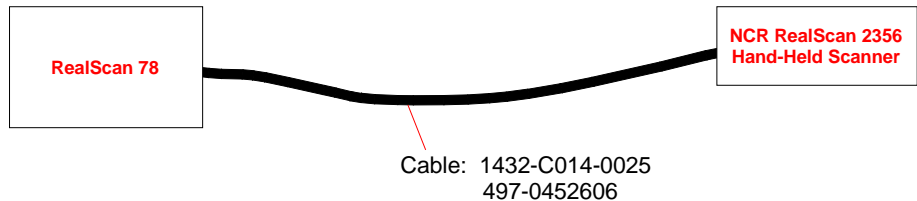
```
┌─────────────┐                              ┌──────────────────┐
│             │                              │ NCR RealScan 2356│
│ RealScan 78 │                              │ Hand-Held Scanner│
│             │                              │                  │
└─────────────┘                              └──────────────────┘

              Cable:  1432-C014-0025
                      497-0452606

                                                          26776
```

Programming the RealScan 2356 Hand-Held if Connected through the Auxiliary RS232 Port

For any RealScan 2356 connected to the RealScan 78 through the RS232 port, program the Hand-Held Scanner by scanning the following bar codes in order. If the scanner encounters problems reading these tags, use the individual bar codes printed in the appropriate RealScan 2356 User's Guide.

If you start at the external server, http://www.info.ncr.com/ select **General Search** under Point of Sale then select **Retail-Scanners** in the Product Line pull-down menu on the top, then select the **SEARCH** button.

ICL RS-232
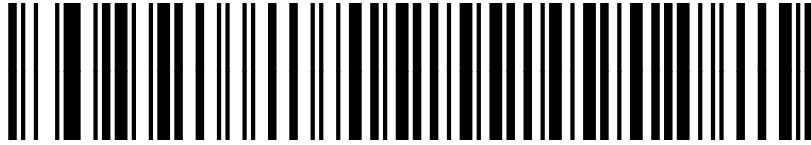
Even Parity
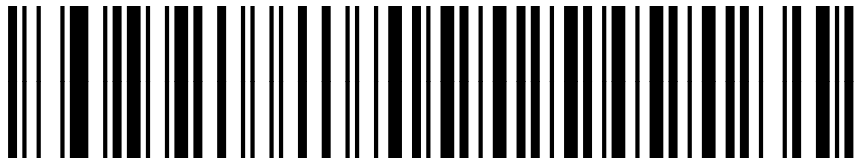
7-bit data
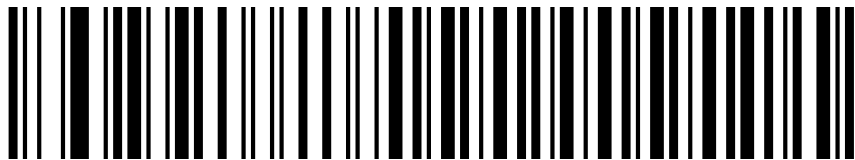
RTS/CTS Option 2

Host: Low RTS
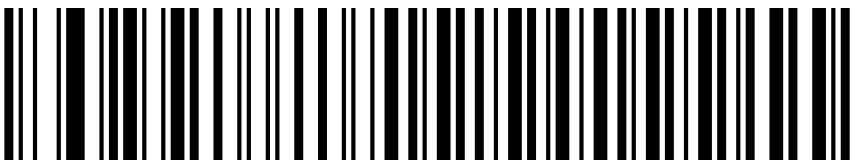
Auto-discriminate Supplementals

Programming the RealScan 78

There are four options that must be programmed on the RealScan 78. Scan the following programming tags to set these options. These must be the first tags scanned after applying power to the RealScan 78.

Hand-Held Processing

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 4, Hex 0, Hex 1, Save and Reset	Required
Disable	Programming Mode, Hex 4, Hex 0, Hex 0, Save and Reset	

16386A

Hand-Held Port Selection

Selection	Programming Tag Sequence	Setting
Port 1	Programming Mode, Hex 4, Hex 0, Hex 2, Save and Reset	Either
Port 2	Programming Mode, Hex 4, Hex 0, Hex 3, Save and Reset	Either

24857

Hand-Held Beep on RealScan 78

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 4, Hex 0, Hex 5, Save and Reset	Either
Disable	Programming Mode, Hex 4, Hex 0, Hex 4, Save and Reset	Either

16386F

Hand-Held Selection

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 5, Hex 5, Hex 2, Save and Reset	Required

24856

Programming RealScan 2356 Hand-Held Scanner if Connected through the USB Peripheral Port

Prerequisites:

Firmware Levels:

- 7878, 497-0461765 - USB HH and USB HH pdf417.

Programming:

Use the following programming sequence if you want to make the scanner beep whenever it receives a valid barcode data through the USB host port (the scanner does not beep by default):

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 4, Hex 0, Hex 5, Save and Reset	Required
Disable	Programming Mode, Hex 4, Hex 0, Hex 4, Save and Reset	

16386D

If the RealScan 2356 Hand-Held Scanner (any model) is connected to the RealScan 78 through the USB peripheral port, program the RealScan 2356 by scanning the following bar codes in order. If a triple beep is emitted from the Symbol scanner, start over with the first bar code.

Set Factory Defaults

IBM Hand-Held USB

If it is desired to scan PDF 417 (2D) bar codes with the Hand-Held, you can enable the RealScan 78 to allow the pass-through of the data without the RealScan 78 itself having the capability to read that type of bar code.

The following programming sequence is only for USB-configured Hand-Helds:

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 7, Hex F, Hex 9, Save and Reset	
Disable	Programming Mode, Hex 7, Hex F, Hex 8, Save and Reset	Default

27023

NCR RealScan 2356-4278 Wireless Hand-Held Scanner

A RealScan 2356 Wireless Hand-Held Scanner can be connected to one of the auxiliary RS232 ports on the NCR RealScan 78. If the RealScan 2356 Wireless Hand-Held Scanner is the only peripheral device, it can be connected to either port. However, if connecting another peripheral device, like Sensormatic® for example, there may be restrictions for the port connection.

RealScan 78

NCR RealScan 2356 Wireless Hand-Held Scanner

Cable: 1416-C127-0020
497-0444160
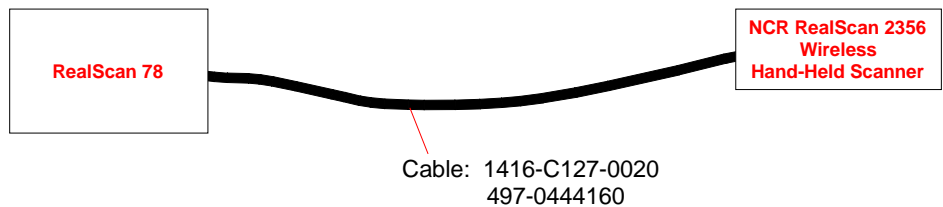
26777

Programming the RealScan 2356 Wireless Hand-Held Scanner

Scan the following sequence of tags with the RealScan 2356 Wireless Hand-Held Scanner. If the scanner encounters problems reading the tags, use the tags printed in the Symbol Technologies documentation.

Set All Defaults

ICL RS232
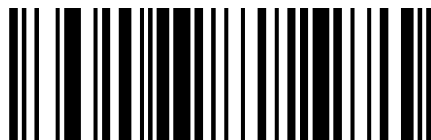
7-bit Data
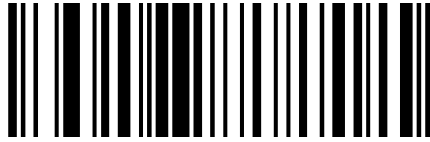
1 Stop Bit
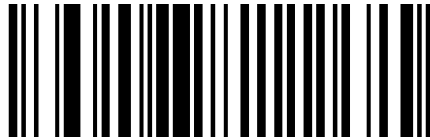
Even Parity
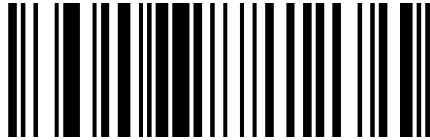
RTS/CTS Option 2
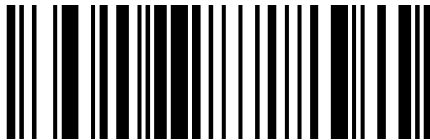
Host: Low RTS

After scanning the last tag, remove power from the RealScan 2356 Wireless Hand-Held Scanner by unplugging the cable, then plugging it back in.

Programming the RealScan 78

There are four options that must be programmed on the RealScan 78. Scan the following programming tags to set these options. These must be the first tags scanned after applying power to the RealScan 78.

Hand-Held Processing

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 4, Hex 0, Hex 1, Save and Reset	Required
Disable	Programming Mode, Hex 4, Hex 0, Hex 0, Save and Reset	

16386A

Hand-Held Port Selection

Selection	Programming Tag Sequence	Setting
Port 1	Programming Mode, Hex 4, Hex 0, Hex 2, Save and Reset	Either
Port 2	Programming Mode, Hex 4, Hex 0, Hex 3, Save and Reset	Either

24857

Hand-Held Beep on RealScan 78

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 4, Hex 0, Hex 5, Save and Reset	Required
Disable	Programming Mode, Hex 4, Hex 0, Hex 4, Save and Reset	

16386D

Hand-Held Selection

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 5, Hex 5, Hex 2, Save and Reset	Required

24856

Chapter 4: Operation

The NCR RealScan 78 requires very little attention during operation. It is designed to reduce the amount of barcode orientation prior to scanning an item. Most people become proficient in a very short time because of the bi-optic design and the PACESETTER functionality.

System Components
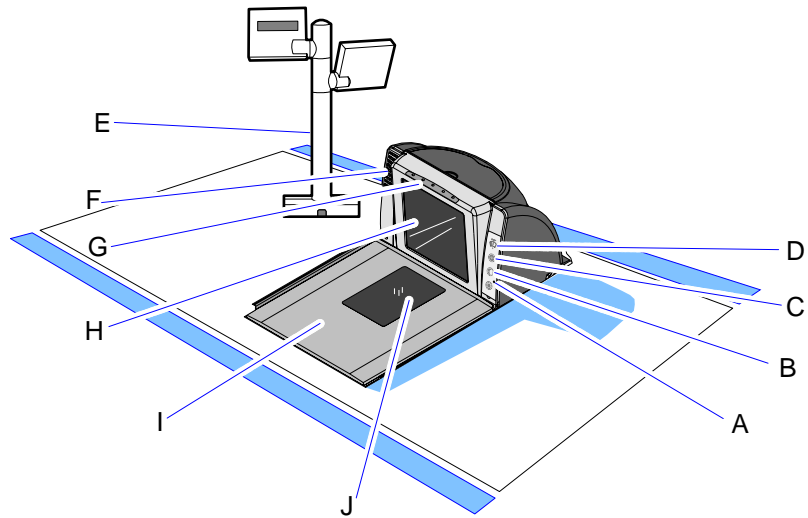
A - Motion Detector   F - Speaker
B - Volume Adjust Button   G - Light Bar Status Indicator
C - Scale Zero Button   H - Vertical Scan Window
D - Clean Window Indicator   I - Top Plate
E - Remote Compact Display   J - Horizontal Scan Window   24167

Operator Display Panel

The Operator Display Panel provides the interface to the operator. It contains the Light Bar Status Indicator, Window Maintenance Indicator, Scale Zero button, Volume Adjust button, and Motion Detector.

Light Bar Status Indicator

The Light Bar Status Indicator's middle three LEDs turn dim green when the RealScan 78 is ready to read a bar code. When the scanner reads a bar code, all five LEDS light up brightly for an instant. During power-up, if the unit goes into the Failure Mode, the Light Bar Status Indicator displays a distinct pattern of colors and number of lit LEDs to point to the probable scanner (or scale) error code that is used by the field engineer to repair the unit. Voice messages are used to indicate errors. The Light Bar Status Indicator generates one dimly-lit green LED in the center when the RealScan 78 shuts down due to operator inactivity.

When using IBM-485 communications, the Light Bar Status Indicator slowly flashes a red-green-green pattern nine times, then delays, then repeats indefinitely when the RealScan 78 does not detect the 12V TRMPWR voltage from the IBM terminal. It is still possible to successfully scan and weigh items with this light bar pattern displayed. Possible causes for this red-green-green indication may be on of the following:

- Host IBM terminal is not turned on.

- Interface cable is not connected between the POS and scanner.

- IBM port 9x being used by the scanner is not generating the 12V TRMPWR signal.

- Rarely, there could be an issue with the scanner digital board not detecting the 12V coming from the terminal.

Other interfaces can also disable the scanner under software control, resulting in all five LEDs on the Light Bar indicator turning dim RED.

When the scanner is disabled, no bar codes can be read.

Window Maintenance Indicator

The RealScan 78 has a Window Maintenance Indicator light located on the Operator Display Panel. A picture of a wiper in a wiping motion identifies the Window Maintenance light.

Clean window Indicator
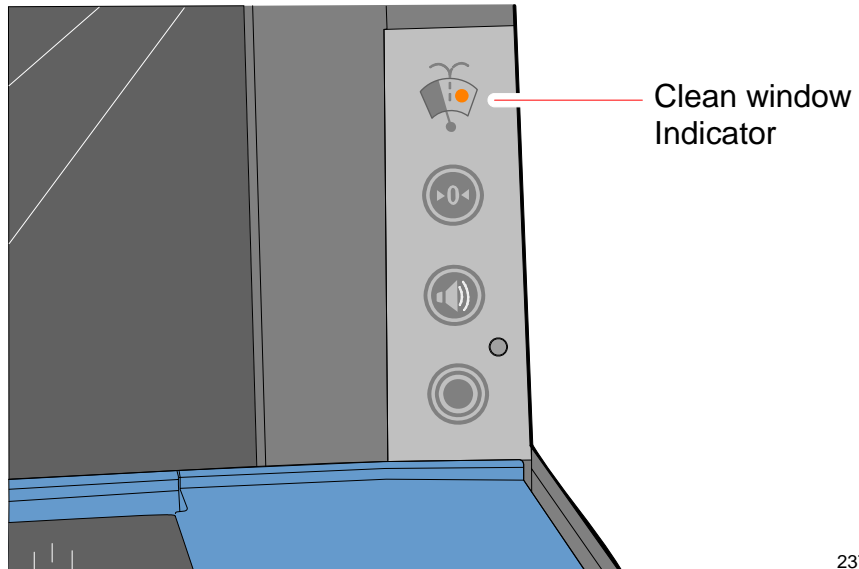
23761

This orange light, when flashing, indicates that the Top Plate window has become dirty and needs to be cleaned for optimum scanner performance. It is also occasionally necessary to clean the window located under the Top Plate to remove loose debris or dust. This indicator light may also come on if the glass has excessive scratches.

Scale Zero Button

The Scale Zero button is located on the Operator Display Panel of
RealScan 78 models that include a scale.
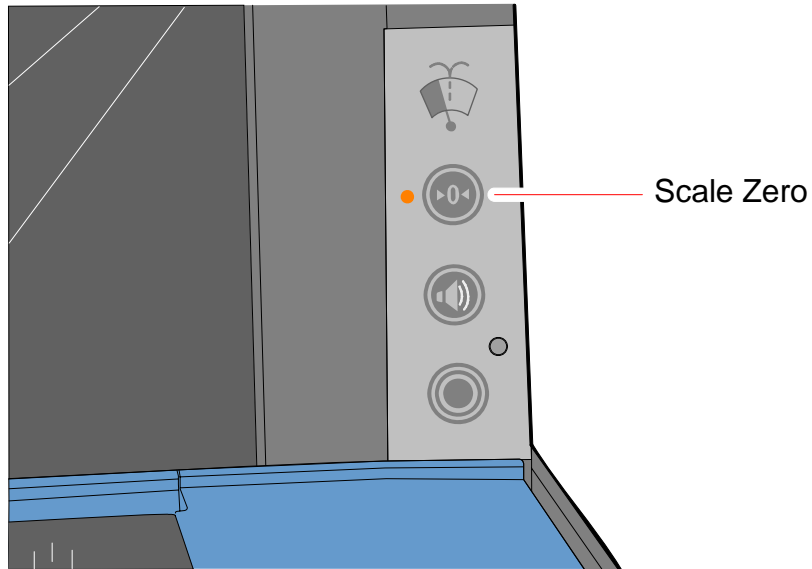
Scale Zero

23760

Note: RealScan 78 Scanner Only models have a blank plate where the
Scale Zero button would be if the scale was installed.

Volume Adjust Button

The RealScan 78 has a Volume Adjust button located on the Operator Display Panel. A picture of a speaker emitting sound waves identifies the Volume Adjust button.

Volume
Adjust Button
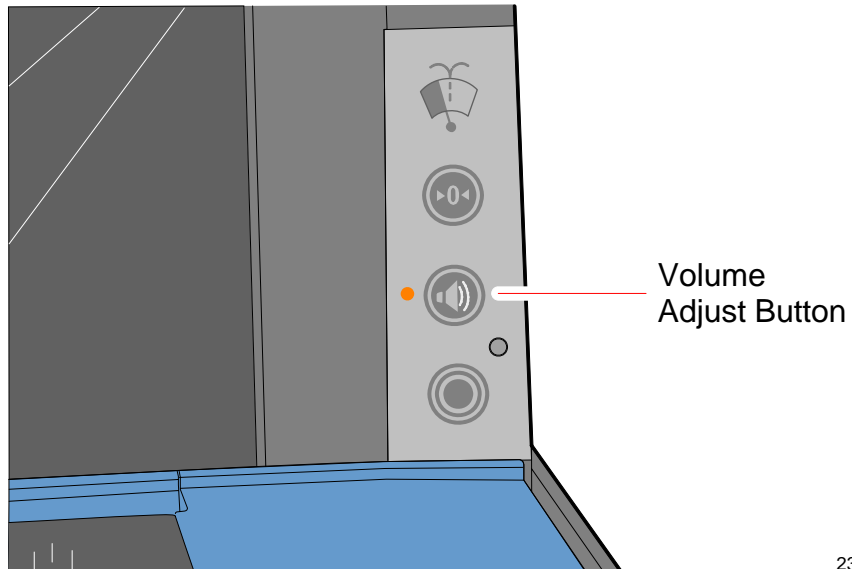
23759

The Volume Adjust button permits the operator to change the scanner's Good Read Tone Volume to a comfortable level depending on the ambient noise level at that time.

Each time the button is momentarily pressed, the Good Read Tone changes its volume and sounds a Good Read Tone using the new setting. Repeatedly pressing the Volume Adjust button increases the volume to the maximum setting and then repeats the cycle from minimum back up to maximum. However, the scanner reverts to the programmed volume setting on each power-up.

Note: Permanent changes to tone volume require changing the program. Refer to chapter 5 for more information.
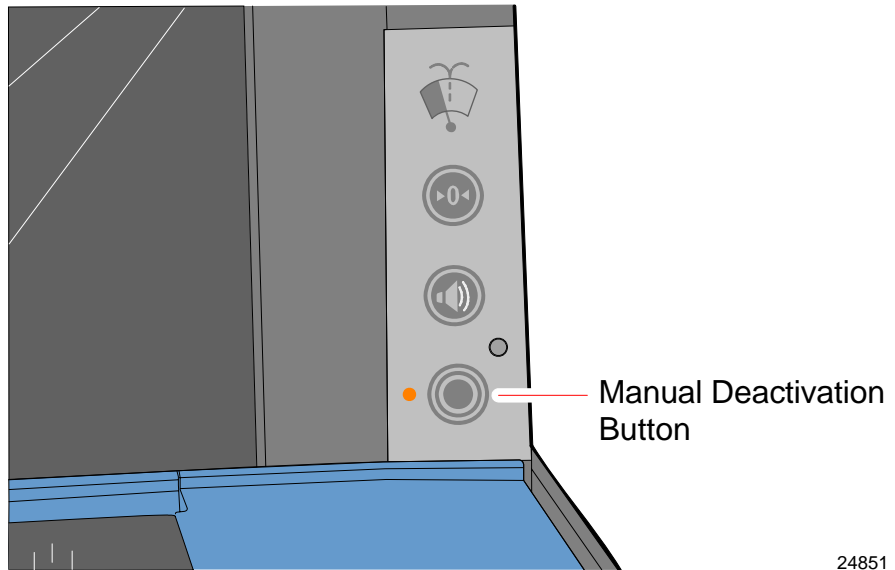
Manual Deactivation Button

Manual Deactivation Button

24851

The Manual Deactivation Button permits the user to disable scanning and enable the Sensormatic deactivator for three seconds with each touch of the tone volume button on the scanner display panel. It also turns off the scanner laser to prevent reading the item bar code a second time. If the tone volume increases when the button is first pressed, the function is disabled. If the tone volume does not increase when the button is first pressed, the function is enabled and the scanner will not scan for three seconds following the button depression. If the button is pressed and the EAS system is malfunctioning, then the scanner voice prompt will say "EAS-OFFLINE".

Motion Detector
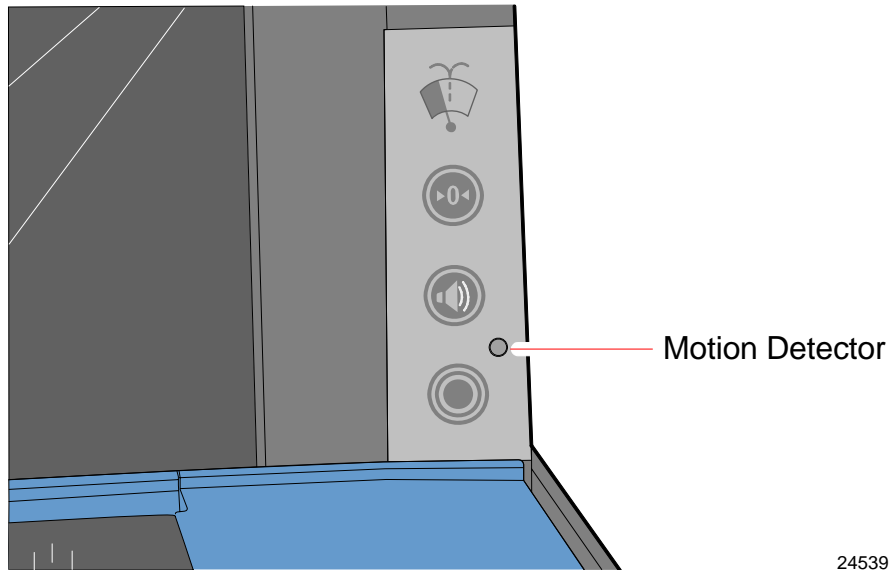
24539

The Motion Detector is located at the lower portion of the Operator Display Panel. The laser diodes and spinner motors turn off after an extended period of time of an operator activity. This prolongs the life of the RealScan 78. The default non-active time is fifteen (15) minutes, but can be increased by programming. An item passing in front of the Motion Detector causes the RealScan 78 to turn on. This movement is the normal item scanning movement.

Remote Compact Display

Normally, the scale automatically re–zeros itself when there is no weight on the Top Plate. If the RealScan 25 Remote Compact Display (if fitted) is blank or indicates a weight other than zero, yet no weight is currently on the scale, pressing the Scale Zero button re-zeros the scale.

If "Error Code 5 --- "displays on the RealScan 25 Remote Compact Display, remove any weight from the scale and press the **Scale Zero** button. If the error code persists, thoroughly clean the area under the Top Plate and try again before calling service.

Note: Refer to chapter 6 for other error codes and the steps to resolve these errors.

The RealScan 25 Remote Compact Display is used with scale units to display weight and scale status information. It connects to the back of the RealScan 78 with a cable.

The display is also used to display error codes that indicate specific scale failures. When an error code is displayed, the scale does not operate until the error is corrected.

During scale calibration, certain messages are displayed on the remote display which provides guidance through the calibration procedure. Inspection audit trail information relating to calibration changes are also displayed when the Scale Zero button is pressed and held.

Light Bar LED Scanner State Indicators

Scanner State		LED color	Brightness	Activity	Number of LEDs
Scan	Idle (Enabled)	Green	Dim	Solid	3 Center
	Enabled and in Sleep Mode	Green	Dim	Solid	1 Center LED
	Good Scan	Green	Bright	Solid	5 LEDs
	Disabled and Awake	Red	Bright	Solid	5 LEDs
	Disabled and in Sleep Mode	Red	Dim	Solid	1 Center LED
	Sleep Mode	Green	Dim	Solid	1 Center LED
EAS	EAS Deactivated	Orange	Bright	Flash	5 LEDs
	ScanMaxPro Box – online	Orange	Dim	Solid	1 Button
	ScanMaxPro Box – online to offline	Orange	Dim	Flash (double flash, pause, double flash)	1 Button
Scale	At zero (stable)	Orange	Dim	Solid	1 Button
	Unstable with weight			OFF	
	Stable with weight	Orange	Bright	Solid	1 Button
	Underzero weight (stable)	Orange	Off/Bright	Flashing	1 Button
Clean Window	Dirty Window	Orange	Off/Bright	Flashing	1 LED
	Clean Window			OFF	

Scanner State		LED color	Brightness	Activity	Number of LEDs
Volume	Volume Adjust	Orange	Bright	Solid	1 LED
	Tone Adjust	Orange	Bright	Solid	1 LED
	Idle			OFF	
Manual Deactivation	Manual deactivation	Orange	Dim	Solid	1 LED

Speaker

A tone can be programmed to sound when the RealScan 78 accurately reads a barcode. The tone provides a means of determining a good read without having to observe the Status Indicator.

The Good Read Tone can be enabled or disabled through programming. If the tone is enabled, its frequency, volume, and duration can be specified. The details for programming the tone are described in *Programming* chapter. The RealScan 78 factory default has the tone enabled. To adjust the Good Read Tone volume temporarily, use the Volume Adjust button.

If voice is enabled, audible voice messages may be heard during the following events:

- When the scanner/scale goes online or offline, from Sensormatic®

- When the Communications Protocol is checked

- When item tags are tested using PACESETTER

- When certain error conditions occur

- When there is interference with the scale

- Generally during diagnostics, programming with tags and during power–on wellness check

Vertical Scan Window

The RealScan 78 Vertical Scan Window is mounted in the tower cabinet that rises above the checkstand surface. This scan window provides a vertical scan pattern. The tower is designated to withstand occasional impact from elbows and purses.

Top Plate

The stainless steel Top Plate contains the Horizontal Scan Window. Items being scanned are slid from the checkstand, across the Top Plate, and back onto the checkstand. The Top Plate also provides a surface for placing new items when weighing them.

Occasionally, dirt and debris can collect under the Top Plate, causing weighing problems. The Top Plate can be easily removed to clean these obstructions.

Horizontal Scan Window

The RealScan 78 Horizontal Scan Window is flush–mounted in the stainless steel Top Plate. A scratch-proof window is provided. This window displays the horizontal scan pattern.

The flush-mounted Horizontal Scan Window permits users to slide a product across the Top Plate without lifting the product.

Label Orientation

Because the RealScan 78 produces an omni-directional scan pattern, barcode labels can be read from many different angles. The RealScan 78 reads the labels on the leading side of a package, the trailing side, the bottom side, the top side, the side opposite the operator, and the side next to the operator. Products can be read from right to left or from left to right.

Active Scan Zone

The active scan zone is the area where the unit can read a barcode label. Dashed lines in the illustrations indicate this area. The illustration on the right shows the scan zone for the leading, trailing, bottom, and the back (opposite the operator) sides. The illustration on the left shows the top-down zone where the unit can read the top of an item and the front-up zone where the unit can read the front of an item.
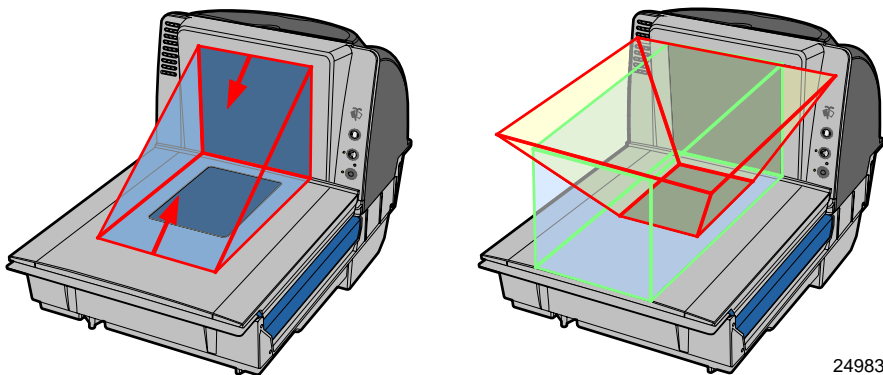
24983

Barcode Quality

Many labels in a typical retail environment are unreadable. The illustration shows some of the common problems. Vendors and printers regularly supply products to the market with barcodes that are overprinted, underprinted, or truncated. Some labels have missing margins. Others may be printed around the corners of packages, or on media not likely to remain flat when picked up.
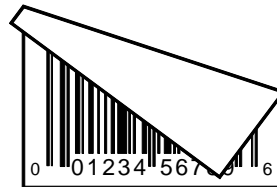
Barcode Scratched   **Barcode Folded**   **Barcode Truncated**

Barcode Torn   **Poor Color Contrast**   **Red Barcode On
Red Background**
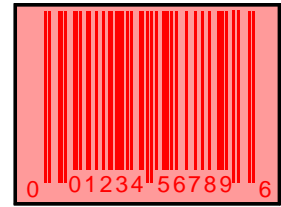
R0026

The readability of a label depends on variables such as size, placement, color, paper type, ink viscosity, and package coatings. The middle of a printing run can yield erroneous labels due to the many variants involved. In particular, poor color contrast and marginal print quality can make a label hard to read.

A label should be considered readable if it meets or exceeds the requirements set forth in ANSI X3.182 and ISO 15416.

Multiple Reads

Only one good read is reported if a barcode label is placed on the scanner window and left there. The scanner firmware inhibits a second read of the same label if it occurs within a preset time of a good read. The preset time is programmable from 350 ms to 450 ms, then 450 ms to 1500 ms—in increments of 150 ms. The unit is set at 900 ms when shipped from the factory. To read the label a second time, remove the label from the scan window and scan the label again when the time-out period has elapsed.

Operating Instructions

The RealScan 78 is extremely easy to operate. However, there are certain functions and procedures that the operator needs to understand in order to be proficient at operating the RealScan 78.

Turning RealScan 78 On and Off

The RealScan 78 does not have an ON/OFF switch. The checkout counter must have a circuit breaker switch that is accessible and located near the operator. Turn on the RealScan 78 by turning the circuit breaker switch ON. To turn off the RealScan 78, turn the circuit breaker switch to OFF.

When power is supplied to the RealScan 78, it performs specific diagnostics that check various components. If a scale error occurs during these diagnostics, an error code displays on the RealScan 25 Remote Compact Display. If a scanner error occurs during these diagnostics, an error code tone sounds and the Light Bar flashes an error code. Call a supervisor, the Service Company, or NCR for assistance.

Scanner/Scale Model

When power is applied, the Light Bar LEDs light up and all segments on the display are turned on for five (5) seconds. Momentarily, the Status Indicator flashes red, a tone sounds, and the RealScan 25 Remote Customer Display reads 0.000 kg or 0.00 lb. The Status Indicator then turns green and the RealScan 78 is ready to use.

Scanner Only Model

When power is applied, the Light Bar LEDs light up and a tone sounds. The Light Bar's 3 center LEDs then turns green and the RealScan 78 is ready to use.

Scanning Procedure
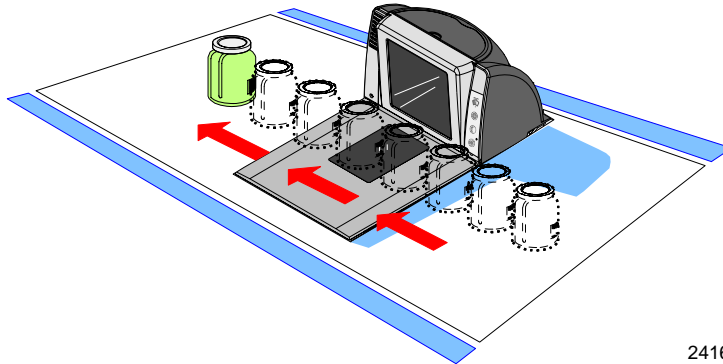
24168

To scan items with the NCR RealScan 78, use the following procedure.

1. Verify the scanner is ready (Light Bar's 3 center LEDs are green).

2. Pass the item across the RealScan 78 lower window. Slide the item from the checkstand, across the Top Plate, and back onto the checkstand.

3. If a good read occurs, the Light Bar flashes green (5 LEDs) and a tone is emitted (if programmed).

If the Light Bar does not flash, the RealScan 78 did not read the barcode label. Try to orient the label and scan the item again. If this does not work after two (2) more tries, manually enter information for the item. Then continue to scan.

Weighing Procedure

Clean Window Indicator

Scale Zero Button

Top Plate
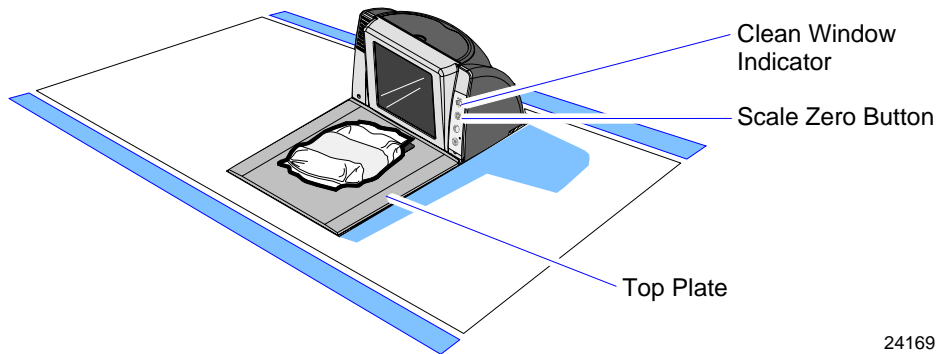
24169

Weigh items using the following procedure.

1. Verify the display reads 0.000 kg (0.00 lb).

    Note: If 0.000 kg (0.00 lb) is not displayed, reset the scale by pressing the **Scale Zero** button. If this does not work, turn the scanner circuit breaker **OFF** and then **ON**.

2. Pick up the item and place it in the center of the Top Plate.

    Note: Make sure the item does not overhang. Whatever is weighed must fit fully on the Top Plate.

3. Press the "weight request key" (for example, "4 0 1 1 [PLU]") on the terminal. The weight is communicated to the terminal.

The following are possible responses after weighing an item:

*   If enabled through programming, a Good Tone is emitted to indicate transmission of a stable, non–zero weight.

*   If a bad weigh occurs, weigh the package again (Refer to Step 2.)

*   If the Light Bar displays an error code, remove the item from the Top Plate. Then remove the Top Plate and check for debris under it. If there is debris, clean it. Replace the Top Plate, and then press the **Scale Zero** button to reset the scale.

- Wait for the *0.000 kg (0.00 lb)* message to be displayed. When it is displayed, weigh the item again.

Note: If the Light Bar still displays an error code, contact a supervisor, the Service Company, or NCR Customer Services.

Sensormatic® Security Tag Deactivation Procedure

Normal Operation

The operating procedures can vary according to the parameter settings. The following procedure assumes the Sensormatic® parameters are set to the following values.

- Security tag deactivation function is enabled

- Security tag deactivated tone is enabled

- Security tag detected tone is enabled

Following this procedure assumes the RealScan 78 and the Sensormatic® ScanMax™ Pro Controller are turned on and functioning properly.

1. Pass an item across the scanner.

   Note: As the barcode goes through the scan zone, the RealScan 78 reads it.

   Note: As the security tag goes through the Sensormatic® Deactivation zone, the Sensormatic® system deactivates the security tag and the deactivation tone is produced by the scanner. If the security tag is not deactivated, a clicking tone is generated.

2. Place the item against the gray label (area above the deactivation coil). The clicking tone stops when the security tag is deactivated.

The security tag must be detected by the Sensormatic® system before the Scan Enable Timer expires or it is not deactivated even when it does come into the deactivation zone. In this case, the Security tag Detected Tone sounds while the tag is in the deactivation zone. The sound is a rapid clicking. When this condition occurs, the security tag must be deactivated manually.

Manual Deactivation

If for some reason the security tag is not deactivated through normal operation, it can be deactivated manually. This usually occurs when too much time elapses after the RealScan 78 reads the barcode. There are two ways to initiate a manual security tag deactivation.

- Press the Manual Deactivation Button on the RealScan 78. The RealScan 78 laser light turns off, disabling the scanner.

- Pass the Security Tag into the deactivation zone. The Security Tag Detected Tone sounds (a rapid clicking) and the tag is deactivated and the deactivation tone is heard. If the deactivation tone is heard first, the detection tone will not be heard if the EAS tag is deactivated.

Note: The laser light is turned off for manual deactivation to keep the scanner from reading the barcode a second time.

Adjusting the Good Read Tone

The RealScan 78 has a Volume Adjust button that permits the operator to change the scanner's Good Read Tone Volume to a comfortable level depending on the ambient noise level at that time.

Each time the button is momentarily pressed, the Good Read Tone changes its volume and sounds a Good Read Tone using the new setting. Repeatedly pressing the Volume Adjust button increases the volume to the maximum setting and then repeats the cycle from minimum back up to maximum. However, the scanner reverts to the programmed volume setting on each power-up.

See also "Volume Adjust Button" section in this chapter.

Permanent changes to tone length, tone volume, and tone frequency require changes through programming. To adjust the tone length, volume, or frequency, refer to the following table:

Settings	Programming steps	Expected Behavior
Increment Good Tone Length	Repeatedly scan/enter the programming sequence **Programming Mode, Hex 1, Hex 1, Hex C, Save & Reset** until the desired tone length is achieved.	Scanner tone length changes from max to min or vice versa.
Increment Good Tone Volume	Repeatedly scan/enter the programming sequence **Programming Mode, Hex 1, Hex 1, Hex D, Save & Reset** until the desired tone volume is achieved.	Scanner tone volume changes from max to min or vice versa.
Increment Good Tone Frequency	Repeatedly scan/enter programming sequence **Programming Mode, Hex 1, Hex 1, Hex B, Save & Reset** until the desired tone frequency is achieved.	Scanner tone frequency changes from max to min or vice versa.

Not-On-File Error

The Not-On-File feature is available on the RealScan 78 only if the terminal has this capability. If a barcode label is not in the price lookup file, a special tone sounds six (6) times within a second and the Light Bar LEDs are solid red. The volume of the Not-On-File tone is programmable.

The RealScan 78 is disabled from reading additional tags until the error is cleared. To clear, press the terminal **CLEAR** key and manually enter the item and price.

Cleaning Instructions

The RealScan 78 should be kept in good operating condition by performing the following routine maintenance. Keeping the scan windows clean helps keep the read rate exceptionally high. During normal operation of the RealScan 78, the Horizontal Scan Window gets dirty. If dirt is permitted to accumulate, performance degrades to the point where the scanner can no longer read barcodes. The Horizontal Scan Window should be cleaned at least once a day.

Note: Before cleaning the RealScan 78, be sure to turn the circuit breaker switch OFF.

Note: When cleaning the RealScan 78, do not spray or pour the cleaning agent directly onto the RealScan 78. Moisten a soft cloth with the cleaning agent, and then wipe the components.

Scanner Body

Clean the scanner body using the following.

- Soft cloth dampened by lukewarm water and mild soap.
- Soft, dry cloth to wipe the surface dry.

Clean the scanner body using the damp cloth first, followed by the dry cloth to finish.

Vertical Scan Window

Clean the Vertical Scan Window with a soft cloth damped with a common, non-abrasive, liquid window cleaner.

Top Plate and Horizontal Scan Window

1. Remove the Top Plate with the Horizontal Scan Window glass using a soft cloth moistened with a common, non-abrasive, liquid window cleaner.

2. Clean the plastic cover that is under the Top Plate (and the window with it) by wiping the surfaces with a soft, dry cloth.

    Note: Be sure to remove any debris that may be accumulated on this plastic cover. This is especially important if the unit contains a scale.

3. Replace the Top Plate.

Chapter 5: Programming

The RealScan 78 can be programmed to meet most installation requirements. This includes communications with the host terminal and various RealScan 78 features and functions.

Programming Description

The RealScan 78 can be remotely programmed from its attached POS with no local intervention. To achieve this, special POS software must be purchased from NCR. This section describes programming a scanner with special barcode tags.

Programming the RealScan 78 consists of setting programming parameters to match specific needs. This is accomplished by scanning a specific sequence of programming tags. The factory sets most programming parameters to default values or values originally specified. In most installations, few, if any, programming changes need to be made.

Creating the Program

Creating a program consists of three basic steps. Details of these steps are given in various areas of this programming information.

Write the Program

1. *Identify requirements*. The first thing is to determine the requirements of the RealScan 78 installation. This includes information about the communications protocol, the types of barcodes to be scanned, the use of good read tones, and scanner time–outs.

2. *Complete the programming worksheets*. Using the descriptions contained in this document, complete each programming worksheet. Write the entries of the program in the space provided. Refer to the "Programming Worksheet" section in Chapter 5 for specific information about each parameter.

Enter the Program

1. *Enter the programming mode*. Scan the **Program Mode** tag. This must be the first tag scanned after supplying power to the RealScan 78 (or the first tag after scanning the **Reset** tag).

2. *Enter the parameters for each specific program*. Scan the two **Hex** tags to select a specific program, and then enter all parameter data for it. After all the information has been entered, the RealScan 78 returns to programming mode. Repeat this procedure for each specific program that needs to be changed.

Note: A specific program does not need to be entered if its associated programming is already correct.

Save the Program

1. *Scan the **Save and Reset** tag*. When the **Save and Reset** tag is scanned, the scanner saves all programming parameters entered. This becomes the new scanner program. The scanner goes through initial startup and operates using the new program.

2. *Save programming worksheets*. Be sure to save the programming worksheets that contain the scanner program. It is much easier to reenter the program, or change some of it, if a written record of the program exists.

16402
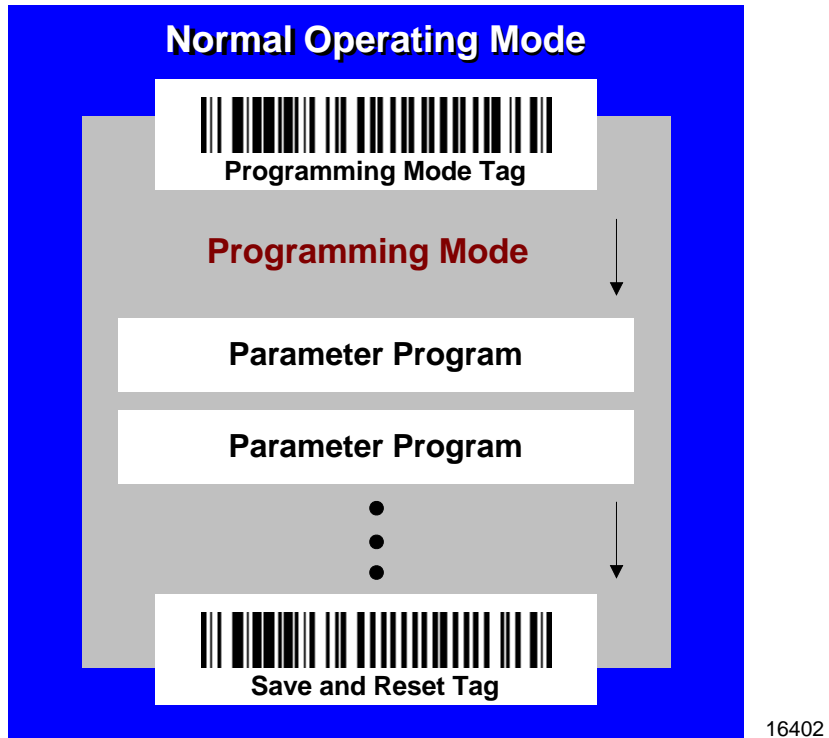
Programming Tags

After completing the worksheets, enter the information using the special programming tags contained in the *NCR Scanner Programming Tags* (BST0-2121-74) available at www.info.ncr.com. (The tags are also included in Appendix A of this document.) A large number of special programming tags are not needed. There are only five (5) unique tags and sixteen (16) hexadecimal (Hex) character tags. The following identifies each programming tag, its function, and the associated indicators.

ABORT

Function–In Base Program Mode
If the **Abort** tag is scanned in the Base Program Mode, programming is terminated and previously entered parameters are not saved.

Indication–In Program Mode
- Light Bar Status indicator is initially 3 center LEDs dim green and then flashes bright green (5 LEDs) showing the tag was read. Scanner will reboot and perform power up sequence (the light bar turns off momentarily, then comes on with 5 bright blue LEDs followed by a gradual change to bright green, then back to normal state of the center three LEDs at dim green).

- Short beep as soon as tag is read—Good Read tone

- Motors stop momentarily while scanner reboots, then they come up to full speed

Function–In a Parameter Programming
If this tag is scanned in a Parameter Program sequence, only the parameter sequence which was aborted is not saved. Any prior sequence that successfully ended with the scanner saying "Program Mode" is saved and the RealScan 78 stays in Program Mode.

Indication–In a Parameter Program
- Light Bar Status indicator flashes green (5 LEDs) once and then returns to 3 dim green LEDs in the center

- Short beep as soon as tag is read—Good Read tone

- Programming returns to Program Mode

- Scanner beeps to indicate it accepted the **Abort** tag, and then says "Program Mode"

DEFAULT

Function
This tag causes most parameters to reset to default values. However, scanning this tag does not change a few parameters, including the Communications Protocol. The **Default** tag must be scanned first after applying power to the RealScan 78

Note: The **Default** tag is not used while in Programming Mode

Indication
- Speaks "Set new default parameter complete", light bar will flash 5 LEDs bright green after speaking and beep once.

- Performs power-up sequence (the light bar turns off momentarily, then comes on with 5 bright blue LEDs followed by a gradual change to bright green, then back to normal state of the center three LEDs at dim green).

END

Function
This tag ends certain input sequences. Since the parameter program determines the end of most sequences, this tag is not used often.

Indication
- Light Bar Status indicator is initially 3 center LEDs dim green and then flashes bright green (5 LEDs) showing the tag was read.

- Short beep as soon as tag is read—Good Read tone.

- Scanner beeps to indicate it read the **End** tag, then it says "Program Mode" as it goes into Program Mode.

SPEAK BARCODES CURRENTLY ENABLED

Function
This barcode prompts the scanner to speak a list of the barcode symbologies that the scanner has been programmed to recognize and read.

Indication
- The three center LEDs in the Light Bar stay dim green.

- Scanner begins speaking as soon as barcode is scanned. It talks and lists all the barcodes currently enabled in the scanner.

  Example: "UPC EAN is ON, Periodical P2 is ON...Periodical P5 is ON...Code 128 is ON."

- Scanner beeps when it is done speaking the enabled symbologies.

SPEAK SCANNER SERIAL NUMBER

Function
This barcode enables the user to obtain the scanner Serial Number without having to remove the scanner from the checkstand (if installed) and look at the manufacturing name plate label on the back of the unit.

Indication
- The three center LEDs in the Light Bar light up bright green while it is speaking, then go back to dim green when it's done.

- As soon as the scanner reads the barcode, it says "Scanner S N" then speaks all 10 digits.

- If the scanner says "Scanner S N 0 0 0 0 0 0 0 0 0 0", then the actual serial number is NOT stored in memory.

- The scanner beeps when it is done speaking the serial number.

HEX 0–HEX F

Function

These sixteen (16) tags enter the selections for each of the parameters in the Parameter Programs. They also select the Parameter Program

Indication

- **Hex 0**—Scanner says "Zero" with no beeps. If voice disabled, scanner produces a short beep, different frequency from Good Read tone.

- **Hex 1** through **Hex F**—Scanner says "<tag value>" with no beeps. If voice is disabled, the scanner produces a number of beeps according to the tag value. Multiples of 4 short beeps grouped together.

  Example: Hex D Scanner says "D". If voice is disabled, Hex D is indicated by 12 short beeps (3 sets of 4) followed by 1 beep, for a total of 13.

PROGRAM MODE

Function

This tag sets the RealScan 78 into Program Mode. It must be the first tag scanned after applying power to the RealScan 78, or after scanning the **Default** tag or the **Reset** tag.

Indication

- Light Bar Status indicator is initially 3 center LEDs dim green and then flashes bright green (5 LEDs) showing the tag was read.

- The scanner says "Program Mode" with no beeps.

- If Voice NOT enabled, Short beep, long beep, short beep—indicates Program Mode

SAVE AND RESET

Function
This tag instructs the RealScan 78 to save and start using the programming data. It is used in the Program Mode.

Indication
- Light Bar LEDs flashes five LEDs red twice, then Scanner will reboot and perform power up sequence (the light bar turns off momentarily, then comes on with 5 bright blue LEDs followed by a gradual change to bright green, then back to normal state of the center three LEDs at dim green).

- Short beep as soon as tag is read—Good Read tone

- Motors stop momentarily while scanner reboots, then they come up to full speed.

- One beep when the scanner has completed power cycling.

- Reboots with no voice.

Program Entry Procedure

Enter All Parameters

To enter all parameters in a Parameter Program, scan the two Hex codes that set the RealScan 78 in the Parameter Program, and then make parameter changes in the order described on the programming worksheet for that mode. When programming all parameters in a specific mode, proceed directly through the work sheet. When making a change in a parameter, the scanner proceeds to the next parameter to be changed or it goes back to Program Mode if the selection ends programming in that particular Parameter Program.

The following figure shows how to proceed through a Specific Programming Mode where all parameters are entered. It presents the Parameter Program for the Bar Codes 2 program parameters. The figure shows how to proceed through the Parameter Program by entering all available parameters. Notice that (in this example) if Code 39 barcodes are disabled, programming immediately returns to Program Mode. However, if Code 39 barcodes are enabled, the scanner directs the user to continue entering parameter information.

PROGRAM MODE

| 1 | 4 |

Bar Codes - 2
Parameter Program

Code 39

| 0 | 1 |

Disable Enable

Minimum
Characters
Allowed

| 2-F |

Full ASCII

| 0 | 1 |

Disable Enable

Check Digit
Present

| 0 | 1 |

Disable Enable

Transmit
Check Digit

| 0 | 1 |

Disable Enable

Allow 1- or
2-Character
Tags

| 0 | 1 |

Disable Enable

11722
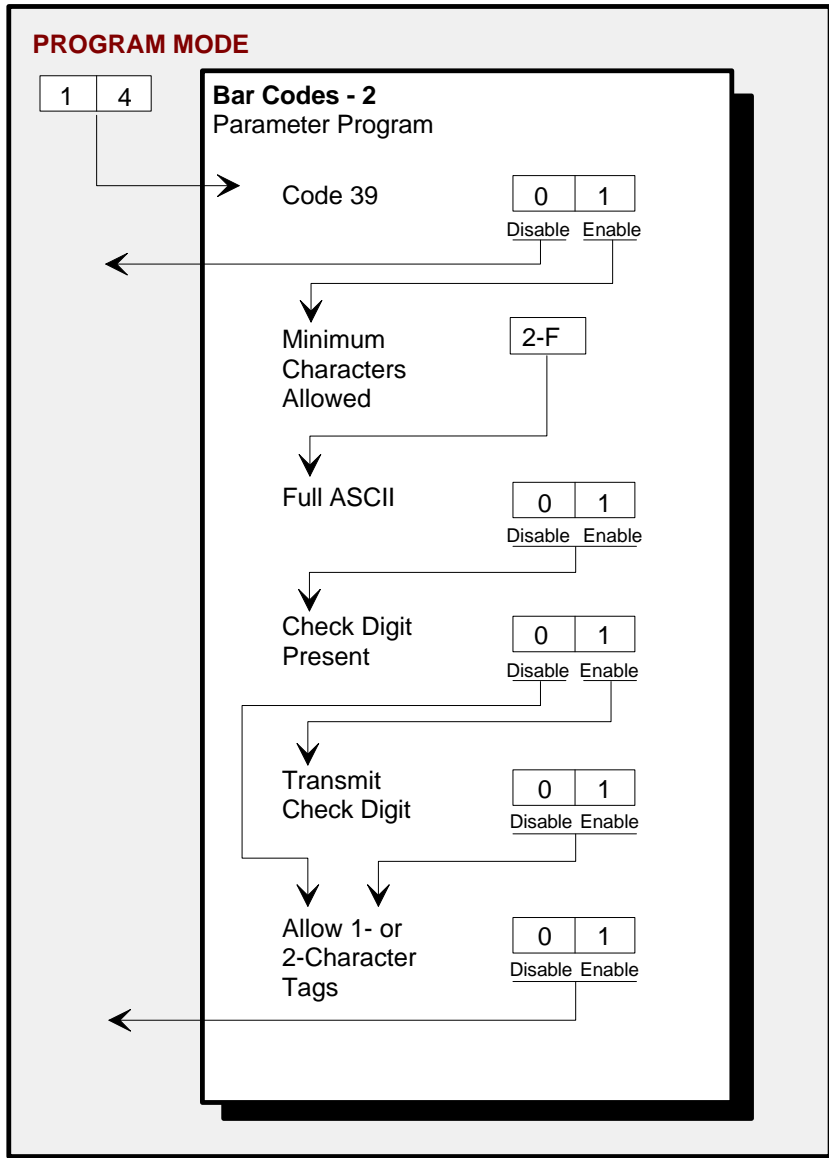
Program Entry Procedure
The following example is a typical program entry procedure.

1. NCR's official recommendation is to disconnect from the POS while programming an NCR scanner. However, the reality is that configuring a scanner while connected to the POS is generally safe and successful, and there are cases where there is no choice but keep the scanner connected because it is being powered from the terminal. But because of the wide variety of POS systems in the field, it is impossible to guarantee 100% success. If you experience problems or erratic behavior while programming a scanner connected to a POS, disconnect the scanner and try again.

2. Apply power to the RealScan 78 (or scan the Reset tag).

3. Scan the Program Mode tag.

4. Scan the two Hex tags corresponding to the worksheet number.

5. Scan appropriate Hex tags to enter parameters.

6. Repeat steps 4 and 5 until all the parameters are entered.

7. Scan the Save and Reset tag. All parameter changes are saved and RealScan 78 is reset (goes through initial power-up sequence). The RealScan 78 now operates using the new program.

Enter Specific Parameters (Shortcut Method)

To enter only one specific parameter in a Parameter Program, scan the two *numbered* Hex tags that correspond to that Parameter Program. However, once the Parameter Program has been entered instead of immediately changing parameters with numbered Hex tags, use the *lettered* Hex tags to choose the one particular parameter to be changed. After the new parameter setting has been selected, the scanner immediately returns to Program Mode. If deciding to do additional programming with these parameter options, reenter the Parameter Program by scanning the two Hex tags again.

The following figure shows how to proceed through a Parameter Program where shortcuts are used to change only one of the parameters. This figure presents the Parameter Program for Bar Codes 2 program parameters. Notice that once the Parameter Program has been entered, if the **Hex A**, **Hex B**, **Hex C**, **Hex D**, **Hex E**, or **Hex F** tag is scanned, the specific parameters that correspond to that tag can be entered. After recording the parameters, the scanner immediately returns to Program Mode. To return to programming, scan the **Hex 1** and **Hex 4** tags again and reenter the Parameter Program. From this point, enter either all parameters or another specific parameter.

PROGRAM MODE

| 1 | 4 |

Bar Codes - 2
Parameter Program

| A | Code 39 | 0 | 1 |
Disable Enable

| B | Minimum Characters Allowed | 2- F |

| C | Full ASCII | 0 | 1 |
Disable Enable

| D | Check Digit Present | 0 | 1 |
Disable Enable

| E | Transmit Check Digit | 0 | 1 |
Disable Enable

| F | Allow 1- or 2-Character Tags | 0 | 1 |
Disable Enable

11723
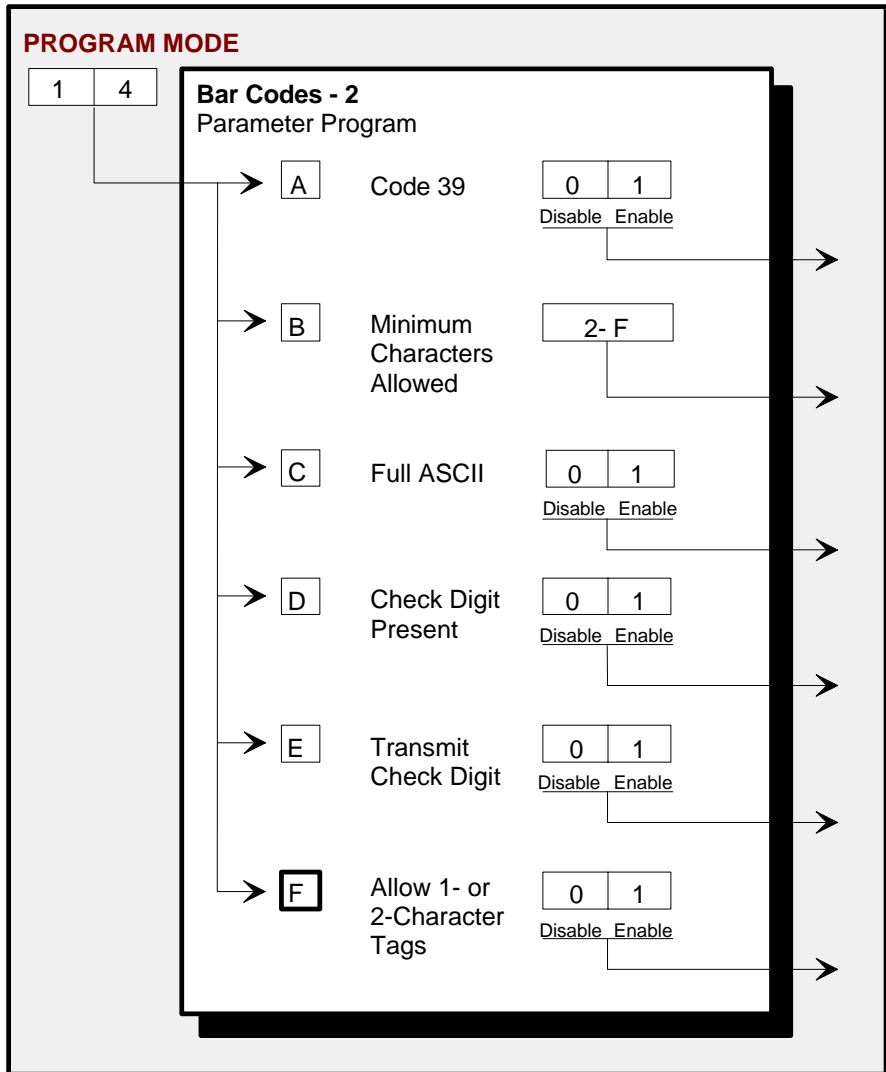
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The following example is a typical program entry procedure.

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2. Apply power to the RealScan 78 (or scan the **Reset** tag).

3. Scan the **Program Mode** tag.

4. Scan the two Hex tags corresponding to the worksheet number.

5. Scan specific parameter tag (**Hex A–F**).

6. Scan appropriate Hex tags to enter parameters.

7. Repeat steps 4 thru 6 until all the parameters are entered.

8. Scan the **Save and Reset** tag. All parameter changes are saved and RealScan 78 is reset (goes through initial power–up sequence). The RealScan 78 now operates using the new program.

Parameter Defaults

Programming Mode	Program Parameters	Default Setting
Communications Protocol	Protocol	No default value—remains as programmed
Good Read Tone	Tone On/Off	On
	Tone Frequency	702 Hz

Programming Mode	Program Parameters	Default Setting
	Tone Length	45 ms
	Tone Volume	Third Lowest Volume
	Not–On–File Volume	Second Lowest Volume
Timers	Lockout Time	450 Milliseconds
	Restart Lockout Timer	On
	Active Time	15 Minutes
	900ms Lockout Timer Restart Limit	On
Bar Codes-1	UPC/EAN	Enable
	Unused	Disable
	Extend UPC–A to EAN–13	Disable
	Extend UPC–E to UPC–A	Disable
	Periodical Codes	Disable
	Periodical Code Extension	No default value
	Send Data	Data As Decoded
	Set 2 or 3 Tag Label	No default value

Programming Mode	Program Parameters	Default Setting
Bar Codes-2	Code 39	Disable
	Minimum Characters Allowed	8
	Full ASCII	Disable
	Check Digit Present	Disable
	Transmit Check Digit	Disable
	Allow 1- or 2-Character Tags	Disable
	Code 39 Tone	Disable
	Tone Length	75 Milliseconds
	Tone Frequency	1071 Hertz
	Code 39 Halves Enable	Disable
	Code 39 Stitch Enable	Disable
	Code 39 Check Digit Length 1	0 0
	Code 39 Check Digit Length 2	0 0
	Code 39 Specific Length	0
	Code 39 Minimum Length	0 3
	Code 39 Maximum Length	3 6
	Scans Required	1 scan
	Overlap Characters	2
	Minimum Segment Size	3

Programming Mode	Program Parameters	Default Setting
Bar Codes-3	Interleaved 2 of 5	Disable
	Bar Code Length	Range Specific
	Value 1	0 8
	Value 2	1 6
	Check Digit Present	Disable
	Transmit Check Digit	Disable
	Interleaved 2 of 5 Tone	Disable
	Tone Length	75 Milliseconds
	Tone Frequency	1071 Hertz
	Interleaved 2 of 5 Check Digit Length 1	0 0
	Interleaved 2 of 5 Check Digit Length 2	0 0
	Scans Required	2 scans
	Overlap Characters	1
	Minimum Segment Size	3

Programming Mode	Program Parameters	Default Setting
Bar Codes-4	Code 128	Disable
	Minimum Data Character Allowed	3
	EAN/UCC 128	Disable
	Partial Decoding	Enable
	Code 128 Tone	Disable
	Tone Length	75 Milliseconds
	Tone Frequency	1071 Hertz
	Stitch Tag	Disable
	Scans Required	1 scan
	Overlap Characters	2
	Minimum Segment Size	4
Bar Codes-5	GS1 DataBar Enable	Disable
	Scan Required on GS1 DataBar–14	1 Scan
	UCC-128 Emulation Mode	Normal Mode

Programming Mode	Program Parameters	Default Setting
Bar Codes-6	Codabar Decoding	Disable
	Codabar Length Range Check	4-36
	Codabar Specific Length Check	4-36
	Codabar Check Digit	Disable
	Codabar Check Digit Transmission	Enable
	Codabar Tone Length	75 ms
	Codabar Tone Frequency	1071 Hz
	Codabar Tone	Disable
	Codabar Halves	Disable
	Codabar Stitch	Disable
	Codabar Require Start/Stop Match	Disable
	Codabar Require Quiet Zones	Disable
	Codabar Start/Stop Transmission	Enable
	Codabar Hard Correlation	Disable
	Number of Codabar Scans Required	1 Scan
Bar Codes-7	Pharmacode Decoding	Disable
	Pharmacode Check Digit Transmission	Enable

Programming Mode	Program Parameters	Default Setting
Label Identifiers	Identifier Type	Default Prefix
	Common Byte 1	5 D
	Common Byte 2	4 2
	Bar Code Type	No Default
	Common Byte	No Default
	Unique Identifier	No Default
Additional Bar Codes Options	UPC Number System Character	Send
	UPC–E Number System Character	Send
	UPC–A Number System Character	Send
RS–232 Parameters-1	Baud Rate	9600
	Parity	Odd
	Stop Bits and Character Length	1 Stop Bit and 7–bit Length
	Hand Shake	RTS High, Wait For CTS

Programming Mode	Program Parameters	Default Setting
RS–232 Parameters-2	BCC Options	Disable— Scanner-Only models Enable— Scanner/Scale Models
	Interface Control	None
	Check Digit	Enable UPC–A
		Enable EAN–8
		Enable EAN–13
		Disable UPC–E
RS–232 Prefix Byte	Prefix Byte	Disable
	ASCII Code	0 2
RS–232 Terminator Byte	Terminator Byte 1	Enable
	ASCII Code	0 3
	Terminator Byte 2	Disable
RS–232 Communications Options	Message Delay	10 ms Delay
	Scanner or Scanner/Scale Format	No default value
	Good Weigh Tone	Disable

Programming Mode	Program Parameters	Default Setting
Scale Parameters	Model Number	No default value
	IBM Address	Address 6E set by selecting IBM 468x on Communications Protocol Worksheet
	Vibration Filter	Normal Vibration Filter
	Display Mode	Argentina Cero Display Mode
Miscellaneous Parameters	Host Tone Control	Disable
	IBM Retransmit Control	3 times
	Enable/Disable Voice Messages	No default setting
	IBM-485 / IBM-USB Tag Data Format	Hex

Programming Tips

The following are some tips to help when programming the RealScan 78.

- Turn the host terminal Off or disconnect all interface cables to the RealScan 78 before entering the program. Some host terminals can corrupt the program if they are running and are connected to the RealScan 78 while entering the program.

- To exit a Parameter Program without entering all the parameters, scan the **Abort** tag. Only the parameter sequence which was aborted is not saved. Any prior sequence that successfully ended with the scanner saying "Program Mode" is saved. To save the changed parameters, scan the **Save and Reset** tag.

- To exit programming mode without saving any parameter changes, scan the **Abort** tag while in Program Mode. The RealScan 78 goes through initial startup and operates using the old program.

- If unknown how the RealScan 78 is programmed, set all parameters to default values, then enter any required changes. Do this by scanning the **Default** tag first after applying power to the RealScan 78. Next, scan the **Program Mode** tag to enter the Program Mode and enter the programming changes.

Note: Some parameters do not have default values and are not changed when the **Default** tag is scanned.

Program Parameter Descriptions

Within the Program Mode are several Parameter Programs. Each of these has specific programming parameters.

Communications Protocol

The Communications Protocol programming mode selects the protocol that the RealScan 78 uses to communicate with the host terminal.

Note: The factory sets the Communications Protocol according to the specifications on the order. Since there is no default Communications Protocol; the **Default** tag does not change this parameter.

IBM Slot Scanner

All models of the RealScan 78 support the IBM 468x/9x format and use the same protocol found on IBM terminals. The scanner uses any port number beginning with 9 or 5 (as in 9B or 5B) and the select address is set to 4B.

If the unit is a scanner/scale, the IBM address default setting is 6E, but can be programmed to 6A or 6B. The IBM terminal integrated scanner/scale driver normally uses address 6E. However, if the scanner works but the scale does not, try using the other two scale addresses.

IBM USB

The RealScan 78 can communicate to the host terminal through a USB cable. This parameter enables the scanner to use IBM's proprietary version of HID–type USB protocol.

NCR (RS–232 USB)

The RealScan 78 can communicate with the host terminal through a USB cable. This parameter enables the NCR (RS–232) format.

Note: Two programming tags must be scanned to enable this parameter: **Hex E** followed by **Hex 0**.

RS–232

RS–232 is used to connect the RealScan 78 to almost any RS–232 type of communications device. This protocol uses 7-bit ASCII by default to send tag and scale data to the device.

Good Read Tone

The Good Read Tone programming mode selects the parameters for sounding a tone each time the RealScan 78 successfully reads a barcode. It also controls the volume of the Not-On-File tone. This mode contains five shortcuts: A, B, C, D, and E. After entering this programming mode, proceed directly to a specific parameter by scanning the appropriate shortcut Hex tag. This eliminates the need to enter all parameters when only one needs changing. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Tone On/Off

The **Hex A** tag selects the Tone On/Off programming parameter, which offers two options, On and Off. The **Hex 0** tag turns the Good Read Tone off and the **Hex 1** tag turns the Good Read Tone on.

Tone Frequency (Hertz)

The **Hex B** tag sets the frequency of the Good Read tone. Each time the **Hex B** tag is scanned, the tone increments one unit. After reaching the highest frequency, the sequence starts over with the lowest frequency. End this mode by scanning the **End** tag or another valid Hex tag.

The Good Read Tone frequency can have one of the following eight values:

702 Hz
781 Hz
868 Hz
961 Hz
1071 Hz
1187 Hz
570 Hz
633 Hz

Tone Length (Milliseconds)

The **Hex C** tag sets the length of the Good Read Tone. Each time the **Hex C** tag is scanned, the tone length changes from the shortest to the longest, and then back again. End this mode by scanning the **End** tag or another valid Hex tag.

The Good Read Tone length is from 15 ms to 225 ms in 15 ms increments (15 total values).

Tone Volume

The **Hex D** tag selects the volume of the Good Read tone by increasing it as the **Hex D** tag is repeatedly scanned. After the loudest volume is reached, the sequence begins again with the softest volume. End this mode by scanning the **End** tag or another valid Hex tag.

There are eight different volume settings available on the RealScan 78. However, there is a programming sequence which allows the user to access eleven volumes. Refer to the Volume Adjust section in this chapter for details on activating the eleven volumes and other functions of the volume button.

Not-On-File Volume

The **Hex E** tag sets the volume of the Not–On–File tone by listening to it as the **Hex E** tag is repeatedly scanned. The new tone sounds for two seconds. End this mode by scanning the **End** tag or another valid Hex tag.

The Not-On-File tone goes off when the scanner receives a command from the terminal to do so. In RS–232 protocol, there is a Not–On–File command. Refer to the *NCR Scanner/Scale Interface Programmer's Guide* (BD20-1074-A) for more information about the Not-On-File command.

Timers

The Timers programming mode controls the two RealScan 78 timers: Lockout Time and Active Time. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Lockout Time

The lockout timer prevents the scanner from repeatedly reading the same barcode. After reading a barcode, it must be removed from the scan pattern and the time programmed in the lockout timer must elapse before the scanner can read the same barcode again. The Lockout Time parameter selects the lockout time.

There are 9 specific times ranging from 350 milliseconds to 1500 milliseconds. Select these times using the **Hex 0** through **Hex 8** tags.

Restart Lockout Timer

The Restart Lockout Timer parameter controls restarting the lockout timer each time the scanner reads the same barcode. Turning on the Restart Lockout Timer option has the following effect. If a barcode moves out of the scan pattern after being read and then back into the scan pattern before the lockout timer times out, the lockout timer restarts. The **Hex 0** tag turns off this option and the **Hex 1** tag turns it on.

Active Time

The specific lengths of time that the RealScan 78 stays ON after the last good read can be programmed. There are four options in the Active Time parameter: no shut down, shut down after 15 minutes, shut down after 30 minutes, and shut after 60 minutes. Select these times using the **Hex 0** through **Hex 3** tags, respectively.

Note: NCR suggests that the Active Time parameter not be set to 0. This causes the laser lights to be ON all the time which reduces the life expectancy of the laser diodes.

900ms Lockout Timer Restart Limit

The 900ms Lockout Timer Restart Limit parameter is OFF by default. Scan **Hex 1** to enable 900ms Lockout Timer Restart Limit. If the 900ms Lockout Timer Restart Limit is ON then the Restart Lockout Timer is also ON (refer to the "Restart Lockout Timer" section in this chapter for more information). If an item moves in (and the tag is read), out, and then back in the scan zone, the firmware recognizes the barcode as the same barcode that it has already read. In this case, the Lockout Timer is restarted only if it has been on for less than 900ms.

Bar Codes–1

The Bar Codes–1 programming mode contains programming parameters for UPC/EAN barcodes. Refer to the "Parameter Defaults" earlier in this chapter for the factory defined default value of each programming parameter.

UPC/EAN

The UPC/EAN parameter controls reading UPC/EAN barcodes. Disable reading UPC/EAN bar codes by scanning the **Hex 0** tag and enable reading by scanning the **Hex 1** tag.

If reading UPC/EAN bar codes is disabled, there are no other entries allowed for this parameter. However, if reading UPC/EAN barcodes is enabled, the remaining parameters can be programmed.

Extend UPC–A to EAN–13

The Extend UPC–A to EAN–13 parameter determines whether to pad the tag data, changing 12-digit UPC tags to 13-Character EAN tags. The program does this by putting a zero (0) at the front of the tag data. Scan the **Hex 0** tag to disable this option or the **Hex 1** tag to enable it.

Extend UPC–E to UPC–A

The Extend UPC–E to UPC–A parameter determines whether to pad the tag data, changing 6-digit UPC tags to 12–digit UPC–A tags. Scan the **Hex 0** tag to disable this option or the **Hex 1** tag to enable it.

Add-On Bar Codes

The Add-On Bar Codes parameter controls the processing of Add-On Bar Codes. Disable Add-On Bar Codes by scanning the **Hex 0** tag and enable them by scanning the **Hex 1** tag.

If Add-On Bar Codes is disabled, there are no other entries allowed for this parameter. Scanning the **Hex 0** tag also causes the scanner to go back to the Program Mode. However, if Add-On Bar Codes is enabled, the Add-On Code Length and Send Data parameters must also be programmed.

Add-On Code Length

The Add-On Code Length parameter has three selections: 2-digit *Add-On only*, *5-digit Add-On only*, and *either 2- or 5-digit Add-Ons*. Scan the **Hex 0** tag for 2-digit only, the **Hex 1** tag for 5-digit extension, or the **Hex 2** tag for both the 2- and 5-digit.

Send Data

Send Data parameter has only one option: *Data As Decoded*. If the **Hex 0** tag is scanned, the data is sent as decoded, whether or not there are extension digits.

Set 2 Tag Label

The Set 2 Tag Label parameter permits the scanner to read 2 tag specially–linked barcodes. This parameter has 2 selections: Enable and Disable. Scan **Hex 2** to enable this function or scan **Hex A** tag to disable it.

Bar Codes–2

The Bar Codes 2 programming mode contains programming parameters for Code 39. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Code 39

The Code 39 parameter controls reading Code 39 ("3 of 9") bar codes. Disable reading Code 39 bar codes by scanning the **Hex 0** tag and enable reading by scanning the **Hex 1** tag.

If reading Code 39 bar codes is disabled, there are no other entries permitted for this parameter.

Minimum Characters

The Minimum Characters Allowed parameter defines how many characters in a bar code must be read the same by two separate scans before determining a valid read has occurred. This option should be set to the number of characters in a typical tag which ensures that the scanner reads typical tags with at least two complete good scans before sending the tag data to the host terminal.

There are 14 selections for this parameter option (2 through 15 characters). Scan the proper Hex tag (**Hex 2** through **Hex F**). The default is 8 characters.

Note: 10 = **Hex A**, 11 = **Hex B**, 12 = **Hex C**...

Full ASCII

Code 39 permits full ASCII capability by encoding the additional characters. Disable this function by scanning the **Hex 0** tag, and scan the **Hex 1** tag to enable this function.

In this mode, the presence of a special character before an upper-case letter denotes that the character is lower-case.

Check Digit Present

The Check Digit Present parameter determines if the bar code must contain a correct check digit to be identified as valid. If this function is enabled, the bar code is ignored if a check digit is not present. Scan the **Hex 0** tag to disable this option, or the **Hex 1** tag to enable it.

Transmit Check Digit

The Transmit Check Digit parameter selects whether to send the check digit to the host terminal. Scan the **Hex 0** tag to disable this option, or the **Hex 1** tag to enable this option.

Allow 1- or 2-Character Tags

The Allow One- or Two-Character Tags parameter selects whether or not to permit the scanner to read a 1- or 2-character Code 39 label. If the application does not require that the scanner read a 1- or 2-character Code 39 label, scan the **Hex 0** tag to disable this option. If the application requires this capability, scan the **Hex 1** tag to enable it.

Note: Below are the parameters introduced in the new Super ASIC firmware versions—Programmed Firmware Chip (497-0443786) and Flash MEDIA (497-0443875).

Code 39 Tone

This parameter permits you to enable or disable the Code 39 tone. Scan **Hex 0** to disable the tone (default) or **Hex 1** to enable it. If disabled, the Code 39 tone is under control of the UPC tone control (general good read tone).

Tone Length

The Tone Length parameter permits you to set the length of the Code 39 tone. Set this parameter by scanning the appropriate Hex tag (**Hex** 0 **to Hex F**). Each Hex tag is incremented by 15 milliseconds. For example, **Hex 0** = 0 ms, **Hex 1** = 15 ms, **Hex 2** = 30 ms, **Hex 3** = 45 ms, and so forth. The default Code 39 Tone Length is 75 ms (**Hex 5**).

Tone Frequency

This parameter permits you to set the frequency of the Code 39 tone. Set this parameter by scanning the appropriate Hex tag (**Hex 0** to **Hex 7**).

Hex Tag	Frequency in Hertz
Hex 0	702 Hz
Hex 1	781 Hz
Hex 2	868 Hz
Hex 3	961 Hz
Hex 4	1071 Hz
Hex 5	1187 Hz
Hex 6	570 Hz
Hex 7	633 Hz

Note: The default Code 39 tone frequency is 1071 Hertz (**Hex 4**).

Code 39 Halves Enable

This parameter attempts to build a Code 39 tag on the three longest tag lengths seen (tag lengths are saved in C39_Max_Scanned1, C39_Max_Scanned2, and C39_Max_Scanned3) as well as on any Code 39 tag length that contains a Code 39 check digit.

Code 39 Halves Enabled programming requires a *half tag* partial longer than one-half of the longest Code 39 tag ever seen by a scanner in order to prevent getting a short tag from a longer one.

Code 39 Stitch Enable

This parameter attempts to stitch a tag to the longest tag scanned by a full strike across the whole tag. This parameter includes the Stitching Code 39 Check Digit (C39_Stitch_CD_tags) option.

Code 39 Stitch Check Digit

This parameter permits tag lengths containing a Code 39 Check Digit to be *stitched* if Code 39 Stitch Enable is active.

Check Digit Length1 and Length2

These Check Digit lengths are programmed to permit specific length of Code 39 tag to require a Code 39 Check Digit. These can be any length in the range of 01-36 and are not required to be in the range of C39 Minimum Length and C39 Maximum Length programming.

Scans Required

This parameter sets the number of scans required to read a Code 39 bar code. Increasing the number of scans can improve reading nominal bar codes. There are four settings: 1 scan, 2 scans, 3 scans, and 4 scans. The default is 1 scan. Set this parameter by scanning the appropriate Hex tag (**Hex 1** to **Hex 4)**.

Overlap Characters

This parameter sets the minimum number of characters which each segment must contain when tag stitching is done. There are four settings: 1 overlap character **(Hex 1)**, 2 overlap characters **(Hex 2)** (default), 3 overlap characters **(Hex 3)**, and 4 overlap characters **(Hex 4)**. Set this parameter by scanning the appropriate Hex tag (**Hex 1** to **Hex 4**).

Minimum Segment Size

This parameter sets the minimum number of characters which each segment must contain when tag stitching is done. Set this parameter by scanning the appropriate Hex tag (**Hex 2** to **Hex 9**). The default is **Hex 3**.

Bar Codes–3

Note: Starting with the April 2005 Release of Super ASIC firmware (497-0439869), inputting an ODD or HEX number for tag length, whether inputting values for a Specific Length, Range of values, Minimum of Maximum value results in a Program Tag Error.

The Bar Codes 3 programming mode contains programming parameters for Interleaved 2 of 5 ("ITF" or "I 2 of 5"). Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Interleaved 2 of 5

The Interleaved 2 of 5 parameter controls reading Interleaved 2 of 5 bar codes. Disable reading Interleaved 2 of 5 bar codes by scanning the **Hex 0** tag and enable reading by scanning the **Hex 1** tag.

Note: If reading Interleaved 2 of 5 bar codes is disabled, there are no other entries allowed for this parameter.

Bar Code Length

The Bar Code Length parameter selects the method for determining if an Interleaved 2 of 5 bar code is a valid length. The Range Check method identifies a length range by specifying the minimum and maximum number of characters. The Specific Check method identifies two specific bar code lengths by specifying the number of characters in each. With this option, the number of characters in all Interleaved 2 of 5 bar codes must be one of the two numbers. Scan the **Hex 0** tag to use the Range Check method, scan the **Hex 1** tag to use the Specific Check method.

It is best not to use ITF if more than one length of bar code is used. The symbology has an inherent weakness where any scanner can see part of the bar code and think it is complete. The options below provide protection against this. From strongest protection to weakest protection they are:

- Specific length, same value as "Value 1" and "Value 2"

- Specific check, different values as Values 1 and 2

- Range Check

Value 1 and 2

The Value 1 and Value 2 parameters specify the valid Interleaved 2 of 5 bar code lengths. Use these options with the Bar Code Length parameter option described in Bar Code Length. If the Range Check method is selected, Value 1 specifies the minimum number of characters in a valid Interleaved 2 of 5 bar code and Value 2 specifies the maximum number of characters. If the Specific Check method is selected, Value 1 contains one specific number of characters and Value 2 contains another.

Accepted values for Value 1 and Value 2 are 04 to 58 readable characters. The number of readable characters must be an even number; if an odd number is specified, it returns a Program Tag Error. Each value is input using two Hex tags. The first can be **Hex 0** through **Hex 5** and the second can be **Hex 0** through **Hex 9**.

Check Digit Present

The Check Digit Present parameter determines if the bar code must contain a correct check digit to be identified as valid. If this function is enabled, the bar code is ignored if a check digit is not present. Scan the **Hex 0** tag to disable this option, or the **Hex 1** tag to enable it.

Transmit Check Digit

The Transmit Check Digit parameter selects whether to send the check digit to the host terminal. Scan the **Hex 0** tag to disable this option, or the **Hex 1** tag to enable it.

Note: Below are the parameters introduced in the new Super ASIC firmware versions—Programmed Firmware Chip (497-0443786) and Flash MEDIA (497-0443875).

Interleaved 2 of 5 Tone

This parameter permits you to enable or disable the Interleaved 2 of 5 tone. Scan **Hex 0** to disable the tone (default) or **Hex 1** to enable it. If disabled, the Interleaved 2 of 5 tone is under control of the UPC tone control (general good read tone).

Tone Length

The Tone Length parameter permits you to set the length of the Interleaved 2 of 5 tone. Set this parameter by scanning the appropriate Hex tag (**Hex** 0 **to Hex F**). Each Hex tag is incremented by 15 milliseconds. For example, **Hex 0** = 0 ms, **Hex 1** = 15 ms, **Hex 2** = 30 ms, **Hex 3** = 45 ms, and so forth. The default Interleaved 2 of 5 Tone Length is 75 ms (**Hex 5**).

Tone Frequency

This parameter permits you to set the frequency of the Interleaved 2 of 5 tone. Set this parameter by scanning the appropriate Hex tag (**Hex 0** to **Hex 7**).

Hex Tag	Frequency in Hertz
Hex 0	702 Hz
Hex 1	781 Hz
Hex 2	868 Hz
Hex 3	961 Hz
Hex 4	1071 Hz
Hex 5	1187 Hz
Hex 6	570 Hz
Hex 7	633 Hz

Note: The default Interleaved 2 of 5 tone frequency is 1071 Hertz (**Hex 4**).

Interleaved 2 of 5 Check Digit Length1

Interleaved 2 of 5 Check Digit Length1 sets the number of data characters defining the tag length1 that requires a Check Digit. This tag length could be outside the normal *specific length* or *range* of tag lengths programming for Interleaved 2 of 5. This parameter permits Interleaved 2 of 5 tags of a certain length to have a Check Digit while other Interleaved 2 of 5 tag lengths may not require a Check Digit.

Interleaved 2 of 5 Check Digit Length2

Interleaved 2 of 5 Check Digit Length2 sets the number of data characters defining the tag length2 that requires a Check Digit. This tag length could be outside the normal *specific length* or *range* of tag lengths programming for Interleaved 2 of 5.

Enable Interleaved 2 of 5 Stitching

This parameter is only valid if the Interleaved 2 of 5 Specific Length is programmed as active. Scanning **Hex C** enables Interleaved 2 of 5 tag stitching. It is recommended that stitching be enabled only if one tag Interleaved 2 of 5 length is programmed. Scanning **Hex D** disables Interleaved 2 of 5 Tag Stitching.

Scans Required

This parameter sets the number of scans required to read an Interleaved 2 of 5 bar code. Increasing the number of scans can improve reading nominal bar codes. There are four settings: 1 scan, 2 scans, 3 scans, and 4 scans. The default is 2 scans. Set this parameter by scanning the appropriate Hex tag (**Hex 1** to **Hex 4)**.

Overlap Characters

This parameter sets the minimum number of characters which each segment must contain when tag stitching is done. There are four settings: 1 overlap character **(Hex 1)** (default), 2 overlap characters **(Hex 2)**, 3 overlap characters **(Hex 3)**, and 4 overlap characters **(Hex 4)**. Set this parameter by scanning the appropriate Hex tag (**Hex 1** to **Hex 4**).

Minimum Segment Size

This parameter sets the minimum number of characters which each segment must contain when tag stitching is done. Set this parameter by scanning the appropriate Hex tag (**Hex 2** to **Hex 9**). The default is **Hex 3**.

Bar Codes–4

The Bar Codes 4 programming mode contains programming parameters for Code 128 bar codes. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Code 128

The Code 128 parameter contains two selections: Disable and Enable. Disable reading Code 128 bar codes by scanning the **Hex 0** tag and enable reading by scanning the **Hex 1** tag.

Note: Below are the parameters introduced in the new Super ASIC firmware versions—Programmed Firmware Chip (497-0443786) and Flash MEDIA (497-0443875).

Code 128 Tone

This parameter permits you to enable or disable the Code 128 tone. Scan **Hex 0** to disable the tone (default) or **Hex 1** to enable it. If disabled, the Code 128 tone is under control of the UPC tone control (general good read tone).

Tone Length

The Tone Length parameter permits you to set the length of the Code 128 tone. Set this parameter by scanning the appropriate Hex tag (**Hex 0 to Hex F**). Each Hex tag is incremented by 15 milliseconds. For example, **Hex 0** = 0 ms, **Hex 1** = 15 ms, **Hex 2** = 30 ms, **Hex 3** = 45 ms, and so forth. The default Code 128 Tone Length is 75 ms (**Hex 5**).

Tone Frequency

This parameter permits you to set the frequency of the Code 128 tone. Set this parameter by scanning the appropriate Hex tag (**Hex 0** to **Hex 7**).

Hex Tag	Frequency in Hertz
Hex 0	702 Hz
Hex 1	781 Hz
Hex 2	868 Hz
Hex 3	961 Hz
Hex 4	1071 Hz
Hex 5	1187 Hz
Hex 6	570 Hz
Hex 7	633 Hz

Note: The default Code 128 tone frequency is 1071 Hertz (**Hex 4**).

Code 128 Stitch Enable

This parameter determines whether Code 128 tag stitching is enabled or disabled. Scan the **Hex C** to disable Code 128 Stitching (default) or **Hex D** to enable it.

Scans Required

This parameter sets the number of scans required to read a Code 128 bar code. Increasing the number of scans can improve reading nominal bar codes. There are four settings: 1 scan, 2 scans, 3 scans, and 4 scans. The default is 1 scan. Set this parameter by scanning the appropriate Hex tag (**Hex 1** to **Hex 4)**.

Overlap Characters

This parameter sets the minimum number of characters which each segment must contain when tag stitching is done. There are four settings: 1 overlap character **(Hex 1)**, 2 overlap characters **(Hex 2)** (default), 3 overlap characters **(Hex 3)**, and 4 overlap characters **(Hex 4)**. Set this parameter by scanning the appropriate Hex tag (**Hex 1** to **Hex 4**).

Minimum Segment Size

This parameter sets the minimum number of characters which each segment must contain when tag stitching is done. Set this parameter by scanning the appropriate Hex tag (**Hex 2** to **Hex 9**). The default is **Hex 4**.

Bar Codes–5

The Bar Codes 5 programming mode contains programming parameters for GS1 DataBar bar codes. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

GS1 DataBar Enable

This parameter contains 4 selections. Disable reading GS1 DataBar bar codes by scanning the **Hex 0** programming tag.

- Reading either or both GS1 DataBar–14 and GS1 DataBar–E bar codes is enabled with this parameter.

- Read GS1 DataBar–14 only—Scan the **Hex 1** programming tag

- Read GS1 DataBar–E only—Scan the **Hex 2** programming tag

- Read both GS1 DataBar–14 and GS1 DataBar–E—Scan the **Hex 3** programming tag

Scans Required on GS1 DataBar–14

This parameter sets the number of scans required to read a GS1 DataBar–14 bar code. Increasing the number of scans can improve reading nominal bar codes. There are four settings: 1 scan, 2 scans, 3 scans, and 4 scans. Set this parameter by scanning the appropriate programming tag, **Hex 1** through **Hex 4**.

Scans Required on GS1 DataBar–E

This parameter sets the number of scans required to read a GS1 DataBar–E bar code. Increasing the number of scans can improve reading nominal bar codes. There are four settings: 1 scan, 2 scans, 3 scans, and 4 scans. Set this parameter by scanning the appropriate programming tag, **Hex 1** through **Hex 4**.

UCC–128 Emulation Mode

The UCC–128 Emulation Mode refers to the Uniform Code Council Code 128 Data Formatted Start Code. Two choices are available for this parameter. Scan the **Hex 0** programming tag for normal mode or the **Hex 1** programming tag to enable UCC–128 Emulation.

Bar Codes–6

The Bar Codes 6 programming mode contains programming parameters for Codabar bar codes. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Codabar Check Digit

The Codabar Check Digit parameter permits control of Codabar check digit requirement. Scan the appropriate Hex tag (Hex 1 to Hex 0) to enable or disable the check digit. The default is Hex 0—Disable Codabar check digit.

Codabar Check Digit Transmission

The Codabar Check Digit Transmission parameter selects whether to send the check digit to the host terminal. Scan the **Hex 0** tag to disable this option, or the **Hex 1** tag to enable this option.

Codabar Tone Length

The Codabar Tone Length parameter permits you to set the length of the Codabar tone. Set this parameter by scanning the appropriate Hex tag (**Hex 0 to Hex F**). Each Hex tag is incremented by 15 milliseconds. For example, **Hex 0** = 0 ms, **Hex 1** = 15 ms, **Hex 2** = 30 ms, **Hex 3** = 45 ms, and so forth. The default Codabar Tone Length is 75 ms (**Hex 5**).

Codabar Tone Frequency

This parameter permits you to set the frequency of the Interleaved 2 of 5 tone. Set this parameter by scanning the appropriate Hex tag (**Hex 0** to **Hex 7**).

Hex Tag	Frequency in Hertz
Hex 0	702 Hz
Hex 1	781 Hz
Hex 2	868 Hz
Hex 3	961 Hz
Hex 4	1071 Hz
Hex 5	1187 Hz
Hex 6	570 Hz
Hex 7	633 Hz

Note: The default Codabar Tone Frequency is 1071 Hertz (**Hex 4**).

Codabar Tone

This parameter permits you to enable or disable the Codabar tone. Scan **Hex 0** to disable the tone (default) or **Hex 1** to enable it. If disabled, the Codabar tone is under control of the UPC tone control (general good read tone).

Codabar Halves

This parameter attempts to build a Codabar tag on the longest tag length seen. Codabar Halves Enabled programming requires a *half tag* partial longer than one-half of the longest Codabar tag ever seen by a scanner in order to prevent getting a short tag from a longer one.

Scan the **Hex 2** tag to disable this option, or the **Hex 3** tag to enable this option

Codabar Stitch

This parameter attempts to stitch a tag to the longest tag scanned by a full strike across the whole tag. Scan the Hex 4 tag to disable this option, or the Hex 5 tag to enable this option.

Number of Codabar Scans Required

This parameter sets the number of scans required to read a Codabar bar code. Increasing the number of scans can improve reading nominal bar codes. There are four settings: 1 scan, 2 scans, 3 scans, and 4 scans. The default is 1 scan. Set this parameter by scanning the appropriate Hex tag (**Hex 1** to **Hex 4)**.

Bar Codes–7

The Bar Codes 7 programming mode contains programming parameters for Pharmacode bar codes. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Pharmacode Check Digit Transmission

The Pharmacode Check Digit Transmission parameter selects whether to send the check digit to the host terminal. Scan the **Hex 0** tag to disable this option, or the **Hex 1** tag to enable this option.

Label Identifiers

The Label Identifiers programming mode selects the parameters for adding label identifiers to communication messages. These identifiers apply to the NCR USB and RS–232 communication protocols. Label identifiers for the other modes of communication are determined by the firmware and are not programmable. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Identifier Type

The Identifier Type parameter defines the type and placement of label identifiers. Default identifiers that prefix the message data, unique prefix identifiers, or no identifiers can be selected.

Select the Identifier Type parameter by scanning the appropriate tag (**Hex 0**, **Hex 2**, or **Hex 3**). If default identifiers are selected, do not enter any other parameter in this programming mode.

Default Prefix
Scan the **Hex 0** tag to use the default prefix. The default label identifiers vary depending on the type of bar code read. Following are the default identifiers for each bar code type:

Bar Code Type	Hex	ASCII
UPC-A	41H	A
UPC-E	45H	E
EAN-8	46H 46H	FF
EAN-13	46H	F
Code 39	42H 31H	B1
Interleaved 2 of 5	42H 32H	B2
Code 128	42H 33H	B3
GS1 DataBar-14	5DH 65H 30H	]e0
GS1 DataBar-Expanded	5DH 65H 30H	]e0
Pharmacode	41H	A
Codabar	4EH	N

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Scan the **Hex 2** tag to select none. No label identifiers are added to the message data.

Unique Prefix

To use a unique prefix, scan the **Hex 3** tag. A Unique Identifier is associated with each bar code type. Also, one, two, or no Common Bytes may be used. The following figure shows the possible message formats when using a unique prefix. The formats do not show other elements programmed in the other RS–232 programming modes.

Unique Label Identifiers

Unique Prefix
(All Bar Codes)

Unique Identifier	Bar Code Data

Common Byte 1	Unique Identifier	Bar Code Data

Common Byte 2	Unique Identifier	Bar Code Data

Common Byte 1	Common Byte 2	Unique Identifier	Bar Code Data
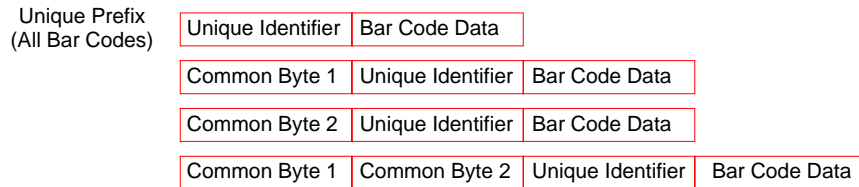
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Common Byte 1 and Common Byte 2

The Common Byte 1 and Common Byte 2 parameters permit the specification of the data sent to the host terminal in the Common Byte fields. Enter this information as two (2) Hex characters for each Common Byte.

Note: Refer to the ASCII Code Chart for the Hex Characters; however, values of 20 to 7E are recommended. Do not use the same characters as the Terminator Byte or the message may terminate too soon. Also, a Common Byte cannot be 00.

If not using a Common Byte, scan any Hex tag twice except **Hex 0** or the Terminator Byte value.

Note: Four (4) tags must be scanned to go to the next parameter.

Bar Code Type

The Bar Code Type parameter selects the bar code type for entering its associated label identifier information. After entering a Bar Code Type, enter the Common Byte and Unique Identifier. This procedure repeats until the label identifiers are specified for each bar code type. Scan the **Hex 0** through **Hex 9** tag to enter the appropriate Bar Code Type.

Note: UPC Version D is always disabled.

Common Byte

The Common Byte parameter selects which common bytes, if any, to add to the bar code data message. Each entry is unique to the previously specified Bar Code Type. Scan the **Hex 0** tag for no Common Bytes, the **Hex 1** tag for Common Byte 1, the **Hex 2** tag for Common Byte 2, the **Hex 3** tag for both Common Bytes, or the **Hex 4** tag for AIM ID on GS1 DataBar.

Unique Identifier

The Unique Identifier parameter permits the specification of the data sent to the host terminal in the Unique Identifier field. Each entry is unique to the previously specified Bar Code Type. Enter this data as two (2) Hex characters using recommended values of 20 to 7E (Refer to the "ASCII Code Chart" section in chapter 5).

Note: If the same characters are used as in the Terminator Byte, the message may terminate too soon.

RS–232 Parameters 1

The RS–232 Parameters 1 programming mode contains four of the parameters required for RS–232 communications. From this programming mode the Baud Rate, Parity, Stop Bits and Character Length, and Handshake Options can be selected. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Baud Rate

The Baud Rate parameter contains seven selections: 300 Baud, 600 Baud, 1200 Baud, 2400 Baud, 4800 Baud, 9600 Baud, and 19200 Baud. Scan the appropriate **Hex 0** through **Hex 6** tag to set the desired Baud rate.

Parity

The Parity parameter contains three selections: Odd, Even, and None. For 7-bit characters, bit 8 is the parity bit; for 8-bit characters, bit 9 is the parity bit. Choosing no parity and 7-bit character length causes the scanner to send two (2) stop bits; the scanner must also receive two (2) stop bits. Scan the appropriate **Hex 0**, **Hex 1**, or **Hex 4** tags to select the desired Parity.

Note: When power is applied to a RealScan 78 that includes a scale, the reset function checks the RS–232 Communications Parity programming. If the selection is **None**, it is ignored and Odd parity is used. If **Odd** or **Even** is selected, that selection is used.

Stop Bits and Character Length

The Stop Bits and Character Length parameter contains four selections: 1 Stop Bit and 7-bit Character Length, 1 Stop Bit and 8-bit Character Length, 2 Stop Bits and 7-bit Character Length, and 2 Stop Bits and 8-bit Character Length. Choosing no parity and 7-bit Character Length causes the RealScan 78 to send two (2) stop bits; the scanner must also receive two (2) stop bits. If 8-bit Character length and parity is selected, only one (1) stop bit is sent. Scan the appropriate **Hex 0** through **Hex 3** tag to set the Stop Bits and Character Length.

Handshake

The Handshake parameter contains six selections. When considering these, note that the scanner controls only RTS; however, it can monitor CTS. The following list identifies each Handshake option.

- RTS is always low, CTS is ignored (**Hex 0** tag).

- RTS is always high, CTS is ignored (**Hex 1** tag).

- Scanner raises RTS and waits for CTS to go high before transmitting (**Hex 2** tag).

- Scanner raises RTS before transmitting and ignores the state of CTS (**Hex 3** tag).

- RTS is always low and scanner waits for CTS to go high before transmitting (**Hex 4** tag).

- RTS is always high and scanner waits for CTS to go high before transmitting (**Hex 5** tag).

Scan the appropriate **Hex 0** through **Hex 5** tag to set the Handshake option.

RS–232 Parameters 2

The RS–232 Parameters 2 programming mode contains some of the parameters required for RS–232 communications. From this mode BCC Options, Interface Control, and Check Digit can be selected. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

BCC Options

The BCC Option parameter permits the use of BCC at the end of a message to be enabled or disabled. When enabled, the BCC is the last character sent and is the Exclusive OR of each byte sent prior to the BCC, except the prefix byte. Scan the **Hex 0** tag to disable the BCC Option, or scan the **Hex 1** tag to enable it.

Interface Control

The Interface Control parameter permits control of the transfer of data between the scanner and the host terminal. The options are None, enable ACK/NAK, enable XOn/XOff, and enable both ACK/NAK and XOn/XOff.

If enable ACK/NAK is selected, each message sent to the host terminal must be acknowledged before sending the next message. Receiving the message properly causes an ACK to be sent, and if there are any errors, a NAK is sent instead and the scanner sends the message again. Also, any valid message other than NAK or XOn/XOff, if enabled, serves as an ACK as long as the message from the scanner is completed before the host terminal starts sending the valid message to the scanner.

An XOff message turns the scanner transmitter off until the scanner receives an XOn message. An XOn message can be received at any time. If the scanner is sending a message when it receives an XOff, since these messages can be received any time, data transmission stops after sending the current byte. When the scanner receives the next XOn, it sends the remainder of the message. The scanner does not acknowledge XOff and XOn messages with ACK or NAK messages.

Select the interface by scanning the appropriate **Hex 0** through **Hex 5** tag.

Check Digit

The Check Digit parameter permits control of the transmission of UPC–A, UPC–E, EAN–8, and EAN–13 check digits. Scan the appropriate Hex tag (**Hex 0** to **Hex F**) to independently enable or disable UPC–A, UPC–E, EAN–8, and EAN–13 check digits. The default is **Hex 1**—Enable UPC–A, EAN–8, and EAN–13; Disable UPC–E.

RS–232 Prefix Byte

The RS–232 Prefix Byte programming mode controls the use of prefix bytes. If an RS–232 Prefix Byte is used, it is the leading character in each message sent to the host terminal. Following it is the message data. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Prefix Byte

The Prefix Byte parameter contains two selections: Disable and Enable. Scan the **Hex 0** tag to disable the Prefix Byte, or the **Hex 1** tag to enable it.

ASCII Code

The ASCII Code parameter permits the specification of what ASCII code to use for the Prefix Byte. Enter the selection by scanning the appropriate two Hex tags (shown in the *ASCII Code Chart* in *Programming* chapter). Any value from 01 through 0F can be selected; however, the recommendation is to use the Start Of Text (STX) ASCII Code which is 02 Hex. Scan the two appropriate Hex tags (**Hex 0** through **Hex 7** for the first character and **Hex 0** through **Hex F** for the second).

Note: ASCII Code parameter for the RS–232 Terminator Byte has the same function.

RS–232 Terminator Byte

The RS–232 Terminator Byte programming mode controls the use of terminator bytes. If an RS–232 Terminator Byte is used, it goes at the end of the message sent to the host terminal. If a BCC is included, it follows the Terminator Byte and includes the Terminator Byte in the calculation. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Terminator Byte

There are two RS–232 Terminator Bytes available–the second Terminator Byte being a direct entry only. Therefore after programming the First Terminator Byte **Hex 2**, **Hex 3** and **Hex C** must be scanned to be able to program the Second Terminator Byte.

ASCII Code

The ASCII Code parameter for RS–232 Terminator Byte and Prefix Byte has the same function. Refer to the "RS–232 Prefix Byte" section of this chapter for more information.

RS–232 Communications Options

The RS–232 Communications Options parameters control the delay between messages, and the format in which the scanner and host terminal exchange tag data messages. The firmware is programmed to accept one parameter at a time and then leave this programming mode. Therefore, each of the parameters must be programmed separately. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Message Delay

The Message Delay option sets the minimum time the firmware waits before sending the next message. This permits lowering CTS by the host terminal to inhibit data from the scanner. This option was not available on previous scanners.

Messages can be delayed as follows:

- **Hex 0** for no delay

- **Hex 1** for a 10 ms delay

- **Hex 2** for a 50 ms delay

Scanner/Scale Format

The Scanner or Scanner/Scale Format option permits forcing the data format to either scanner only format or scanner/scale format to accommodate the host terminal. In some circumstances a host terminal may not be able to handle the normal format sent to it. In that case, selecting one of these options permits the use of the other format.

The Model option in the Scale Parameters section overrides this option. If this option is programmed, do it after the other parameter or return here and change it again. This option affects the address and function code in the message, but not the BCC. The choices for this option are as follows:

- **Hex 4** for Scanner only format

- **Hex 5** for Scanner/Scale format

The normal (default) format for scanner only tag data messages is as follows:

- Scanner-Only Tag Data

- Message Format

Prefix Byte	Label Identifier	Tag Data	PPD	Terminator Byte	BCC Byte

Shading indicates optional information.

16564

The normal (default) format for scanner/scale tag data messages is as follows:

- Scanner/Scale Tag Data

- Message Format

Prefix Byte	30	38	Label Identifier	Tag Data	PPD	Terminator Byte	BCC Byte
	Add	FC					

Shading indicates optional information.

16565

The difference between the scanner only and the scanner/scale format is that the scanner/scale format has an address and a function code following the optional Prefix Byte. For more detailed information on message formats refer to the *NCR Scanner/Scale Interface Programmer's Guide* (BD20-1074-A).

Normal or Eavesdrop Mode

The normal mode is used for most RS–232 connections. Eavesdrop mode is also available to permit another device to monitor the communications between the RealScan 78 and the host terminal. Scan the **Hex 6** tag to select the normal mode or the **Hex 7** tag to select the eavesdrop mode.

Good Weigh Tone

The RealScan 78 can be programmed to sound a tone following a successful item weigh function. Scan the **Hex 8** tag to disable this function and the **Hex 9** tag to enable it.

Scale Parameters

The Scale Parameters programming mode controls specific parameters associated with a RealScan 78 that has a scale. This mode can be used to identify if the RealScan 78 includes a scale and to define the address if the scale is connected to an IBM terminal. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Model

The Model parameter specifies if the RealScan 78 is a Scanner/Scale or a Scanner only. This parameter is set at the factory and should not need changing under normal circumstances. Scan the **Hex 3** tag to specify that the unit is a Scanner/Scale, or scan the **Hex 4** tag to specify that the unit is a Scanner only. If the scale is disabled on a Scanner/Scale unit by scanning the **Hex 4** tag, the BCC option also changes to the appropriate state.

IBM Address

When programming a RealScan 78 for IBM communications, the proper scale communications address must be selected. Selecting the IBM 468x communications protocol sets the scale address to 6E; however, it may need to be changed to 6A or 6B, depending on the IBM configuration in the particular IBM customer retail application. Scan the **Hex 5** tag for address 6A, the **Hex 6** tag for address 6B, or the **Hex 7** tag for address 6E.

The IBM terminal integrated scanner/scale driver normally uses address 6E. However, if the scanner works but the scale does not, try using the other two scale addresses.

Miscellaneous Parameters

The Miscellaneous Parameters programming mode controls parameters associated with the RealScan 78 Scale that do not fit easily into any of the other categories. The RealScan 78 firmware is programmed to accept one parameter at a time and then leave this programming mode. Therefore, each of the parameters must be programmed separately. Refer to the "Parameter Defaults" section earlier in this chapter for the factory defined default value of each programming parameter.

Host Tone Control

When a host terminal is used, this parameter determines what device controls the tone. Scanning the **Hex 4** tag enables this option and the host terminal controls the tone. Scanning the **Hex 3** tag disables this option and the scale controls the tone.

IBM Retransmit Control

When an IBM terminal is used and the scale detects a bad message from the terminal, this parameter controls how the original message gets retransmitted. If enable is selected by scanning the **Hex 7** tag, the scale retransmits the original message three (3) times, and then terminates the sequence. If forever is selected by scanning the **Hex 8** tag, the scale retransmits the original message until it is accepted, or until the scale is told to reset by the terminal. Do not use the enable selection unless advised to do so by NCR to solve a problem.

Enable/Disable Voice Messages

The RealScan 78 uses voice messages for diagnostics, scale calibration, and clerk messages. If voice messages are enabled, the messages are heard at the appropriate time; if they are disabled, the beep tones are heard instead. When voice messages are disabled, the RealScan 78 uses the scale display to indicate error conditions. To enable or disable voice messages, scan the following sequence of programming tags. These tags must be the first tags scanned after applying power to the unit.

All Voice Messages Off/On
- Program Mode

- Hex 3

- Hex 2

- Hex D

- Save and Reset

Clerk Messages On
- Program Mode

- Hex 3

- Hex 3

- Hex 1

- Save and Reset

Clerk Messages Off
- Program Mode

- Hex 3

- Hex 3

- Hex 0

- Save and Reset

Because the clerk messages are a subset of the Voice Messages, disabling all voice messages disables the clerk messages also. All Voice Messages must be enabled for the Clerk Messages to be enabled.

The three clerk messages are:

a. Scale failed, clean under scale deck

b. Scale failed, code 5, clean under scale deck

    Next, do scale calibration

    Next, change scale

c. Scale failed, code 4

    Stop checkstand mechanical vibration

    Next, change scale

IBM–485 / IBM–USB Tag Data Format

This option is included because most IBM devices that have a select address of 4B require the bar code data to be transmitted as ASCII characters. Therefore, when selecting Communications Protocol choice 4 or B, NCR recommends that the tag format be set to ASCII. For handheld bar code readers, refer to the "Communications Protocol" section earlier in this chapter.

Number System Character Parameter

This parameter determines whether the UPC–A and UPC–E number system character is sent or not. The following are the options for this parameter.

- **Hex 0**—UPC–A and UPC–E Number System Character Not Sent

- **Hex 1**—UPC–A and UPC–E Number System Character Sent

- **Hex 4**—UPC–E Number System Character Not Sent

- **Hex 5**—UPC–E Number System Character Sent

- **Hex 6**—UPC–A Number System Character Not Sent

- **Hex 7**—UPC–A Number System Character Sent

Dual Cable Interface

The Dual Cable Interface programming mode identifies the scale type to the host terminal.

The scale type normally does not need changing unless you are connecting the RealScan 78 to a competitive host terminal.

Avery Scale Emulation

This replaces 7880–K107–V00x. The Avery Scale is now available in Super ASIC platform where the scale interface uses the AUX port of the RealScan 787x unit.

To enable Avery Scale Emulation, scan the following Hex tags.

- **Program Mode**, **Hex 4**, **Hex 0**, **Hex 1**—enable AUX port processing

- **Hex 4, Hex 0, Hex 2**—enable AUX port 1

- **Hex 5, Hex 5, Hex 6**—enable Avery Scale Emulation

Programming Worksheets

The programming worksheets provide a convenient method of defining the RealScan 78 program before loading it into the unit. Each worksheet relates to a Parameter Program.

The programming worksheets permit the exact sequence of tags to scan for each programming parameter to be determined. It also provides a hard copy of the program for possible future use.

The top half of each worksheet identifies the programming parameters and the specific tags for each one. Most of the worksheets contain arrows that guide through the proper sequence. The bottom half of each worksheet provides a place to write in each selection.

Most of the worksheets contain shortcuts that permit specific parameters to be entered without entering the entire worksheet. These parameters have an alpha character in a box just left of the parameter name. Scanning the Hex tag that corresponds to the alpha character enables input for that parameter. Scan the tags that pertain to that parameter. After entering the specified parameter, the program returns to Program Mode.

Communications Protocol

Your Program

1	0		

Communications   Protocol
Protocol

Protocol

3	4	5

IBM   IBM   RS-232
Slot Scanner   Hand-Held
Bar Code
Reader

D	E	0	E	2

IBM USB   NCR   Wedge
(RS-232)
USB

24036

Good Read Tone

Your Program

1	1	

Good Read Tone   Protocol

A	**Tone On/Off**	0	1

Off   On

B	**Tone Frequency (Hertz)**	B	When entering Tone Frequency, the adjustment can be incremented upward by scanning the **Hex B** tag. Each time you scan the **Hex B**, the tone frequency increases one unit. Scan the **End** tag or a valid Hex tag to end this mode.

C	**Tone Length (Milliseconds)**	C	When entering Tone Length, the adjustment can be incremented upward by scanning the **Hex C** tag. Each time you scan the **Hex C** tag, the tone length increases one unit. Scan the **End** tag or a valid Hex tag to end this mode.

D	**Tone Volume**	D	When entering Tone Volume, the adjustment can be incremented upward by scanning the **Hex D** tag. Each time you scan the **Hex D** tag, the tone length increases one unit. Scan the **End** tag or a valid Hex tag to end this mode.

E	**Not-On-File Tone Volume**	E	When entering Not-On-File Tone Volume, the adjustmentcan be incremented upward by scanning the **Hex E** tag. Each time you scan the **Hex E** tag, the tone length increases one unit. Scan the **End** tag or a valid Hex tag to end this mode.

22761

Timers

Your Program		A	B	C
1	2			
Timers		Lockout Time	Restart Lockout Timer	Active Time

		F
1	2	
Timers		900ms lockout timer restart limit

A	**Lockout Time (Milliseconds)**	8	0	1	2	3
		350	450	600	750	900
		4	5	6	7	
		1050	1200	1350	1500	

B	**Restart Lockout Timer**	0	1
		Off	On

C	**Active Time (Minutes)**	0	1	2	3
		0	15	30	60

F	**900ms Lockout Timer Restart Limit**	0	1	**NOTE:** Direct Entry Only.
		Disable	Enable	

NOTE: NCR suggests that you do not set the Active Time parameter to 0. Leaving the laser light on all the time reduces its life expectancy.

22762

Bar Codes–1

Bar Codes–2

Your Program

		A	B	C	D	E	F
1	4						

Bar Codes - 2 | Code 39 | Minimum Characters Allowed | Full ASCII | Check Digit Present | Transmit Check Digit | Allow 1- or 2-Character Tags

---

A **Code 39**

0	1
Disable	Enable

B **Minimum Characters Allowed**

2 - F	Default	8

C **Full ASCII**

0	1
Disable	Enable

D **Check Digit Present**

0	1
Disable	Enable

Note: For SuperASIC scanners, continue to option F even if Check Digit Present **Disable** is chosen.

E **Transmit Check Digit**

0	1
Disable	Enable

F **Allow 1- or 2-Character Tags**

0	1
Disable	Enable

24174

Bar Codes–3

Your Program

		A	B				C	D
1	5							

Bar Codes - 3   Interleaved 2 of 5   Bar Code Length   Value 1   Value 2   Check Digit Present   Transmit Check Digit

A **Interleaved 2 of 5**   **0** Disable   1 Enable

B **Bar Code Length**   **0** Range Check   **1** Specific Check

Value 1 → Character → Minimum

0 - 3	**0 - 9**
Character 1 Default	Character 2
	0 **8**

Value 2 → Character → Maximum
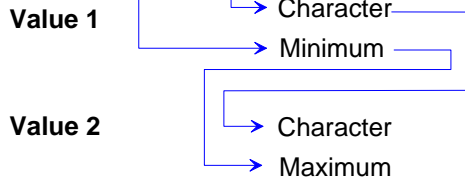
0 - 3	**0 - 9**
Character 1 Default	Character 2
	1 **6**

C **Check Digit Present**   **0** Disable   1 Enable

D **Transmit Check Digit**   **0** Disable   1 Enable

E **Easy I25**   **0** Disable   1 Enable   **Note:** Requires only 1 scan.

25788

Bar Codes–4

Your Program	A	B	C	F
1 7				
Bar Codes - 4	Code 128	Minimum Data Characters Allowed	UCC 128	Partial Decoding

A **Code 128**

0	1
Disable	Enable

B **Minimum Data Characters Allowed**

1	2	3	4	5

C **EAN/UCC 128**

0	1
Disable	Enable

F **Partial Decoding**

0	1
Disable	Enable

22766

Bar Codes–5

Your Program

		A	B	C	D
1	8				

Bar Codes - 5 / GS1 DataBar Enable / Scans Required On GS1 DataBar 14 / Scans Required On GS1 DataBar E / UCC-128 Emulation Mode

A **GS1 DataBar Enable**

0	1	2	3
Disable	Enable GS1 DataBar 14 Only	Enable GS1 DataBar E Only	Enable GS1 DataBar 14 & GS1 DataBar E

B **Scans Required On GS1 DataBar 14**

1	2	3	4
1 Scan	2 Scans	3 Scans	4 Scans

C **Scans Required On GS1 DataBar E**

1	2	3	4
1 Scan	2 Scans	3 Scans	4 Scans

D **UCC-128 Emulation Mode**

0	1
Normal Mode	UCC-128 Emulation Mode

24952

Bar Codes–6

Your Program		A	B	C	D
1	A				
Bar Codes - 6		Codabar Decoding	Codabar Legth	Codabar Check Digit	Codabar Check Digit Transmission

---

A **Codabar Decoding** | **0** | 1 |
Disable · Enable

B **Codabar Length** | 0 | Codabar Length Range Check

→ | 1-36 | 1-36 |
Minimum Length (Default = 4)   Maximum Length (Default = 36)

| 1 | Codabar Specific Length Check

→ | 1-36 | 1-36 |
Minimum Length (Default = 4)   Maximum Length (Default = 36)

C **Codabar Check Digit** | **0** | 1 |
Disable   Enable

D **Codabar Check Digit Transmission** | 0 | **1** |
Disable   Enable

25515

Bar Codes–7

Your Program

| 7 | | F |

Bar Codes - 7

Pharmacode | 2 | | 3 |
Disable   Enable

**Pharmacode
Check Digit
Transmission** | 4 | | 5 |
Disable   Enable

25516

Label Identifiers

Your Program

| 1 | 6 | | A | | B | | C | | D | | | | |

| Label Identifiers | Identifier Type | Common Byte 1 | Common Byte 2 | Bar Code Type | Common Byte | Unique Identifier |

A **Identifier Type**

| 0 | 2 | 3 |

Default Prefix   None   Unique Prefix

B **Common Byte 1**

| 0 - 7 | 0 - F | 5 | D | Default |

Hex Character (ASCII Code Chart)   Hex Character (ASCII Code Chart)

C **Common Byte 2**

| 0 - 7 | 0 - F | 4 | 2 | Default |

Hex Character (ASCII Code Chart)   Hex Character (ASCII Code Chart)

D **Bar Code Type**

| 0 | 1 | 2 | 3 | 4 |

UPC-A   UPC-D   UPC-E   EAN-8   EAN-13

| 5 | 6 | 7 | 8 | 9 |

Code 39   Code 128   Interleaved 2 of 5   GS1 DataBar 14   **GS1 DataBar Expanded**

| A | B |

Pharmacode   Codabar

Common Byte

| 0 | 1 | 2 | 3 | 4 | 5 |

None   Common Byte 1   Common Byte 2   Both Common Bytes   AIM Label ID   No Unique ID

Unique Identifier

| 0 - 7 | 0 - F |

Hex Character (ASCII Code Chart)   Hex Character (ASCII Code Chart)

Common Byte and Unique Identifier Defaults vary according to Bar Code Type

25514

Number System Character

Your Program

1	9			
Number System Character		UPC-A & UPC-E Number System	UPC-E Number System	UPC-A Number System

UPC-A & UPC-E Number System	0 Not Sent	1 Sent
UPC-E Number System	4 Not Sent	5 Sent
UPC-A Number System	6 Not Sent	7 Sent

24040

Sensormatic Deactivation Tone Frequency

Your Program

5	8	B

B	Tone Frequency (Hertz)	B	When entering Tone Frequency, the adjustment can be incremented upward by scanning the Hex B tag. Each time you scan the Hex B, the tone frequency increases one unit. Scan the End tag or a valid Hex tag to end this mode. The eight frequencies to choose from are 570 Hz (Default), 637 Hz, 721 Hz, 829 Hz, 976 Hz, 1186 Hz, 1512 Hz, and 2083 Hz.

25913

Sensormatic Deactivation Tone Pulse

Your Program

7	B		X
			1-F

X	The tone is a series of five pulses. The values of 1-8 generates 1 to 8 pulses of the frequency. The values 9-F generates 1 to 7 pulses of the frequency modulated with a second tone. The eight frequencies are: 570 Hz(default), 637 Hz, 721 Hz, 829 Hz, 976 Hz, 1186 Hz, 1512 Hz, and 2083 Hz.

25912

RS–232 Parameters 1

Your Program

		A	B	C	D
2	0				

RS-232 Parameters - 1   Baud Rate   Parity   Stop Bits And Character Length   Handshake

---

A **Baud Rate**

0	1	2	3	4	5	6
300	600	1200	2400	4800	9600	19200

B **Parity**

0	1	4
Odd	Even	None

C **Stop Bits And Character Length**

0	1	2	3
1 Stop Bit 7-Bit Character	1 Stop Bit 8-Bit Character	2 Stop Bits 7-Bit Character	2 Stop Bits 8-Bit Character

D **Handshake**

0	1	2	3	4	5
RTS Low Ignore CTS	RTS High Ignore CTS	Raise RTS Wait For CTS	Raise RTS Ignore CTS	RTS Low Wait For CTS	RTS High Wait For CTS

22772

RS–232 Parameters 2

Your Program

		A	B	C
2	1			

RS-232 Parameters - 2   BCC Options   Interface Control   Check Digit

---
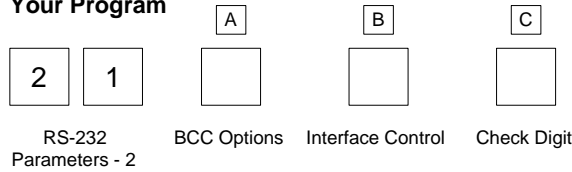
A **BCC Options**

0	1
Disable	Enable

B **Interface Control**

0	1	2	3
None	ACK/NAK	XOn/XOff	ACK/NAK & XOn/XOff

C **Check Digit**

0	1	2	3
Disable UPC-A	Enable UPC-A	Disable UPC-A	Enable UPC-A
Disable EAN-8	Enable EAN-8	Disable EAN-8	Enable EAN-8
Disable EAN-13	Enable EAN-13	Disable EAN-13	Enable EAN-13
Disable UPC-E	Disable UPC-E	Enable UPC-E	Enable UPC-E

4	5	6	7
Disable UPC-A	Disable UPC-A	Disable UPC-A	Disable UPC-A
Disable EAN-8	Disable EAN-8	Enable EAN-8	Enable EAN-8
Enable EAN-13	Enable EAN-13	Disable EAN-13	Disable EAN-13
Disable UPC-E	Enable UPC-E	Disable UPC-E	Enable UPC-E

8	9	A	B
Disable UPC-A	Disable UPC-A	Enable UPC-A	Enable UPC-A
Enable EAN-8	Enable EAN-8	Disable EAN-8	Disable EAN-8
Enable EAN-13	Enable EAN-13	Disable EAN-13	Disable EAN-13
Disable UPC-E	Enable UPC-E	Disable UPC-E	Enable UPC-E

C	D	E	F
Enable UPC-A	Enable UPC-A	Enable UPC-A	Enable UPC-A
Disable EAN-8	Disable EAN-8	Enable EAN-8	Enable EAN-8
Enable EAN-13	Enable EAN-13	Disable EAN-13	Disable EAN-13
Disable UPC-E	Enable UPC-E	Disable UPC-E	Enable UPC-E

24041

RS–232 Prefix Byte

Your Program

2	2	A	B

RS-232
Prefix Byte
    Prefix Byte
    ASCII Code

[A] **Prefix Byte**

0	1

Disable   Enable

[B] **ASCII Code**

| 0 - 7 | 0 - F | 0 | 2 | Default |

Hex Character
(ASCII Code Chart)   Hex Character
(ASCII Code Chart)

22774
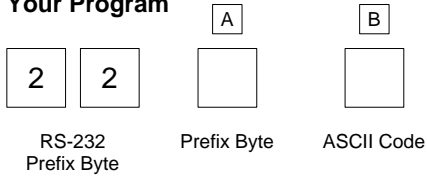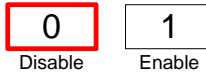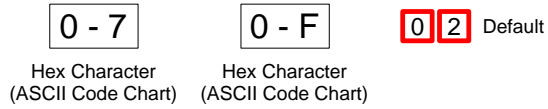
RS–232 Terminator Byte

Your Program

		A	B		C	

2	3							

RS-232 Terminator Byte   Terminator Byte 1   ASCII Code   Terminator Byte 2   ASCII Code

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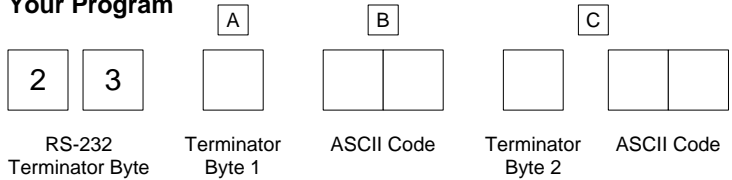
A **Terminator Byte 1**   0   1

Disable   Enable

NOTE: Terminator Byte 1 is required on a scale unit. If you select **Disable**, it is ignored and an ETX (03) is sent.

B **ASCII Code**   0 - 7   0 - F   0 3 Default

Hex Character (ASCII Code Chart)   Hex Character (ASCII Code Chart)

C **Terminator Byte 2**   0   1

Disable   Enable

NOTE: Terminator Byte 2 is a direct entry only.

ASCII Code   0 - 7   0 - F   0 3 Default

Hex Character (ASCII Code Chart)   Hex Character (ASCII Code Chart)

25786

RS–232 Communications Options

Your Program

2	4			
Communication Options	RS-232 Delay	Scanner or Scanner / Scale Format	Good Weigh Tone

RS-232 Delay

0	1	2
No Delay	10 Milliseconds	50 Milliseconds

Scanner or Scanner / Scale Format

4	5
Scanner Only	Scanner / Scale

Good Weigh Tone

8	9
Disable	Enable

22779

Scale Parameters

Your Program

3	0		
Scale Parameters	Model	IBM Address

Model

3	4
Scanner/Scale	Scanner Only

IBM address

5	6	7
Address 6A	Address 6B	Address 6E

22818

Miscellaneous Options

Miscellaneous Parameters

Your Program

3	2

Miscellaneous
Parameters

Host Tone
Control

IBM Retransmit
Control

Speech

IBM-485 / IBM-USB
Tag Data Format

Host Tone Control

3		4

Disable   Enable

IBM Retransmit Control

7		8

3 Times   Forever

Speech

D

Toggle Between Enable
and Disable Speech

**IBM-485 / IBM-USB Tag
Data Format**

E		F

Hex   ASCII

22813

Code 128 Tone Length

Selection	Programming Tag Sequence
0 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex 0, Save and Reset
15 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex 1, Save and Reset
30 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex 2, Save and Reset
45 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex 3, Save and Reset
60 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex 4, Save and Reset
75 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex 5, Save and Reset
90 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex 6, Save and Reset
105 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex 7, Save and Reset
120 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex 8, Save and Reset
135 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex 9, Save and Reset
150 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex A, Save and Reset
165 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex B, Save and Reset
180 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex C, Save and Reset
195 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex D, Save and Reset
210 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex E, Save and Reset
225 ms	Programming Mode, Hex 7, Hex 0, Hex 0, Hex F, Save and Reset

24383

Code 128 Tone Frequency

Selection	Programming Tag Sequence	Setting
702 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 0, Save and Reset	
781 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 1, Save and Reset	
868 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 2, Save and Reset	
961 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 3, Save and Reset	
1071 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 4, Save and Reset	Default
1187 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 5, Save and Reset	
570 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 6, Save and Reset	
633 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 7, Save and Reset	

24468

Code 128 Tone

Selection	Programming Tag Sequence
Disable	Programming Mode, Hex 7, Hex 0, Hex 2, Hex 0, Save and Reset
Enable	Programming Mode, Hex 7, Hex 0, Hex 2, Hex 1, Save and Reset

24384

Code 128 Minimum and Maximum Tag Length

Selection	Programming Tag Sequence
Length	Programming Mode, Hex 7, Hex 2, a, v, w, x, y, Save and Reset
	where a = Ø (Range of lengths) or 1 (Specific Length)
	v = 1-3 (default is 3) w = 1-9 (default is 9) x = 1-3 (default is 3) y = 1-9 (default is 9)
Default	Scan Default Tag

24954

Code 39 Tone Length

Selection	Programming Tag Sequence
0 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex 0, Save and Reset
15 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex 1, Save and Reset
30 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex 2, Save and Reset
45 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex 3, Save and Reset
60 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex 4, Save and Reset
75 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex 5, Save and Reset
90 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex 6, Save and Reset
105 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex 7, Save and Reset
120 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex 8, Save and Reset
135 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex 9, Save and Reset
150 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex A, Save and Reset
165 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex B, Save and Reset
180 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex C, Save and Reset
195 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex D, Save and Reset
210 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex E, Save and Reset
225 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex F, Save and Reset

24385

Code 128 Stitch

Selection	Programming Tag Sequence
Disable	Programming Mode, Hex 7, Hex 0, Hex 9, Hex C, Save and Reset
Enable	Programming Mode, Hex 7, Hex 0, Hex 9, Hex D, Save and Reset

24386

Code 39 Tone Frequency

Selection	Programming Tag Sequence	Setting
702 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 0, Save and Reset	
781 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 1, Save and Reset	
868 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 2, Save and Reset	
961 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 3, Save and Reset	
1071 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 4, Save and Reset	Default
1187 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 5, Save and Reset	
570 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 6, Save and Reset	
633 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 7, Save and Reset	

25900

Code 39 Tone

Selection	Programming Tag Sequence
Disable	Programming Mode, Hex 7, Hex 0, Hex 5, Hex 0, Save and Reset
Enable	Programming Mode, Hex 7, Hex 0, Hex 5, Hex 1, Save and Reset

24388

Code 39 Quiet Zone

Selection	Programming Tag Sequence
Disable	Programming Mode, Hex 7, Hex 0, Hex 5, Hex 2, Save and Reset
Enable	Programming Mode, Hex 7, Hex 0, Hex 5, Hex 3, Save and Reset

24389

Code 39 InterCharacter Gap Check

Selection	Programming Tag Sequence
Enable	Programming Mode, Hex 7, Hex 0, Hex 5, Hex 5, Save and Reset
Disable	Programming Mode, Hex 7, Hex 0, Hex 5, Hex 4, Save and Reset

24390

Code 39 Halves

Selection	Programming Tag Sequence
Disable	Programming Mode, Hex 7, Hex 0, Hex 9, Hex 0, Save and Reset
Enable	Programming Mode, Hex 7, Hex 0, Hex 9, Hex 1, Save and Reset

24451

Code 39 Stitch

Selection	Programming Tag Sequence
Disable	Programming Mode, Hex 7, Hex 0, Hex 9, Hex 2, Save and Reset
Enable	Programming Mode, Hex 7, Hex 0, Hex 9, Hex 3, Save and Reset

24452

Code 39 CD Length1

Selection	Programming Tag Sequence	Setting
Length	Programming Mode, Hex 7, Hex 0, Hex B, x, y, Save and Reset	
	CD Length x y = 01 - 36	
	where if x = 0 , y = 1 - 9	
	x = 1 , y = 0 - 9	
	x = 2 , y = 0 - 9	
	x = 3 , y = 0 - 6	
Disable	Programming Mode, Hex 7, Hex 0, Hex B, Hex 0, Hex 0, Save and Reset	Default

24454

Code 39 CD Length2

Selection	Programming Tag Sequence	Setting
Length	Programming Mode, Hex 7, Hex 0, Hex C, x, y, Save and Reset	
	CD Length x y = 01 - 36 where if x = 0 , y = 1 - 9 x = 1 , y = 0 - 9 x = 2 , y = 0 - 9 x = 3 , y = 0 - 6	
Disable	Programming Mode, Hex 7, Hex 0, Hex C, Hex 0, Hex 0 , Save and Reset	Default

24455

Code 39 Minimum and Maximum Length

Selection	Programming Tag Sequence
Length	Programming Mode, Hex 7, Hex 0, Hex F, a, vw, xy, Save and Reset
	where a = range (1-36) vw = c39 minimum length xy = c39 maximum length

25787

Interleaved 2 of 5 Tone Length

Selection	Programming Tag Sequence
0 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex 0, Save and Reset
15 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex 1, Save and Reset
30 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex 2, Save and Reset
45 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex 3, Save and Reset
60 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex 4, Save and Reset
75 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex 5, Save and Reset
90 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex 6, Save and Reset
105 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex 7, Save and Reset
120 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex 8, Save and Reset
135 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex 9, Save and Reset
150 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex A, Save and Reset
165 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex B, Save and Reset
180 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex C, Save and Reset
195 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex D, Save and Reset
210 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex E, Save and Reset
225 ms	Programming Mode, Hex 7, Hex 0, Hex 6, Hex F, Save and Reset

24456

Interleaved 2 of 5 Tone Frequency

Selection	Programming Tag Sequence	Setting
702 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 0, Save and Reset	
781 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 1, Save and Reset	
868 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 2, Save and Reset	
961 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 3, Save and Reset	
1071 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 4, Save and Reset	Default
1187 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 5, Save and Reset	
570 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 6, Save and Reset	
633 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 7, Save and Reset	

25901

Interleaved 2 of 5 Tone

Selection	Programming Tag Sequence
Disable	Programming Mode, Hex 7, Hex 0, Hex 8, Hex 0, Save and Reset
Enable	Programming Mode, Hex 7, Hex 0, Hex 8, Hex 1, Save and Reset

24458

Interleaved 2 of 5 CD Length1

Selection	Programming Tag Sequence	Setting
Length	Programming Mode, Hex 7, Hex 0, Hex D, x, y, Save and Reset	
	CD Length x y = 04 - 58	
	where if x = 0 , y = 4 - 9	
	x = 1 , y = 0 - 9	
	x = 2 , y = 0 - 9	
	x = 3 , y = 0 - 9	
	x = 4 , y = 0 - 9	
	x = 5 , y = 0 - 8	
Disable	Programming Mode, Hex 7, Hex 0, Hex D, Hex 0, Hex 0, Save and Reset	Default

24460

Interleaved 2 of 5 CD Length2

Selection	Programming Tag Sequence	Setting
Length	Programming Mode, Hex 7, Hex 0, Hex E, x, y, Save and Reset	
	CD Length x y = 04 - 58	
	where if x = 0 , y = 4 - 9	
	x = 1 , y = 0 - 9	
	x = 2 , y = 0 - 9	
	x = 3 , y = 0 - 9	
	x = 4 , y = 0 - 9	
	x = 5 , y = 0 - 8	
Disable	Programming Mode, Hex 7, Hex 0, Hex E, Hex 0, Hex 0, Save and Reset	Default

24461

Interleaved 2 of 5 Scans Required

Selection	Programming Tag Sequence	Setting
1 scan	Programming Mode, Hex 6, Hex B, Hex 5, Hex 1, Save and Reset	
2 scans	Programming Mode, Hex 6, Hex B, Hex 5, Hex 2, Save and Reset	Default
3 scans	Programming Mode, Hex 6, Hex B, Hex 5, Hex 3, Save and Reset	
4 scans	Programming Mode, Hex 6, Hex B, Hex 5, Hex 4, Save and Reset	

Note: This is an Advanced Programming Feature and should only be done under the recommendation and direction of NCR; otherwise, unexpected results may occur.

25645

Interleaved 2 of 5 Overlaps

Selection	Programming Tag Sequence	Setting
1 overlap	Programming Mode, Hex 6, Hex B, Hex B, Hex 1, Save and Reset	Default
2 overlaps	Programming Mode, Hex 6, Hex B, Hex B, Hex 2, Save and Reset	
3 overlaps	Programming Mode, Hex 6, Hex B, Hex B, Hex 3, Save and Reset	
4 overlaps	Programming Mode, Hex 6, Hex B, Hex B, Hex 4, Save and Reset	

Note: This is an Advanced Programming Feature and should only be done under the recommendation and direction of NCR; otherwise, unexpected results may occur.

25646

Interleaved 2 of 5 Minimum Segment Size

Selection	Programming Tag Sequence	Setting
2 segment size	Programming Mode, Hex 6, Hex B, Hex E, Hex 2, Save and Reset	
3 segment size	Programming Mode, Hex 6, Hex B, Hex E, Hex 3, Save and Reset	Default
4 segment size	Programming Mode, Hex 6, Hex B, Hex E, Hex 4, Save and Reset	
5 segment size	Programming Mode, Hex 6, Hex B, Hex E, Hex 5, Save and Reset	
6 segment size	Programming Mode, Hex 6, Hex B, Hex E, Hex 6, Save and Reset	
7 segment size	Programming Mode, Hex 6, Hex B, Hex E, Hex 7, Save and Reset	
8 segment size	Programming Mode, Hex 6, Hex B, Hex E, Hex 8, Save and Reset	
9 segment size	Programming Mode, Hex 6, Hex B, Hex E, Hex 9, Save and Reset	

Note: This is an Advanced Programming Feature and should only be done under the recommendation and direction of NCR; otherwise, unexpected results may occur.

25647

Enable/Disable Interleaved 2 of 5 Partials

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 6, Hex C, Hex C, Save and Reset	Default
Enable	Programming Mode, Hex 6, Hex C, Hex D, Save and Reset	

Note: This is an Advanced Programming Feature and should only be done under the recommendation and direction of NCR; otherwise, unexpected results may occur.

27060

GS1 DataBar Tone Length

Selection	Programming Tag Sequence	Setting
0 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex 0, Save and Reset	
15 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex 1, Save and Reset	
30 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex 2, Save and Reset	
45 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex 3, Save and Reset	Default
60 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex 4, Save and Reset	
75 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex 5, Save and Reset	
90 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex 6, Save and Reset	
105 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex 7, Save and Reset	
120 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex 8, Save and Reset	
135 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex 9, Save and Reset	
150 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex A, Save and Reset	
165 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex B, Save and Reset	
180 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex C, Save and Reset	
195 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex D, Save and Reset	
210 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex E, Save and Reset	
225 ms	Programming Mode, Hex 7, Hex 4, Hex 0, Hex F, Save and Reset	

24961

GS1 DataBar Tone Frequency

Selection	Programming Tag Sequence	Setting
702 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 0, Save and Reset	
781 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 1, Save and Reset	
868 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 2, Save and Reset	
961 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 3, Save and Reset	
1071 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 4, Save and Reset	Default
1187 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 5, Save and Reset	
570 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 6, Save and Reset	
633 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 7, Save and Reset	

25902

GS1 DataBar Tone

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 4, Hex 2, Hex 0, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 4, Hex 2, Hex 1, Save and Reset	

24963

GS1 DataBar−E AI 93 to Code 39 Tag Data Conversion

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 0, Hex A, Hex 2, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 0, Hex A, Hex 3, Save and Reset	

24955

GS1 DataBar−E AI 94 to UCC−128 Tag Data Conversion

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 0, Hex A, Hex 4, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 0, Hex A, Hex 5, Save and Reset	

24956

GS1 DataBar−E AI 94 to Code−128 Tag Data Conversion

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 0, Hex A, Hex 6, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 0, Hex A, Hex 7, Save and Reset	

24957

GS1 DataBar–E AI 95 to Interleaved 2 of 5 Tag Data Conversion

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 0, Hex 9, Hex A, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 0, Hex 9, Hex B, Save and Reset	

24958

Codabar Tone Length

Selection	Programming Tag Sequence	Setting
0 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex 0, Save and Reset	
15 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex 1, Save and Reset	
30 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex 2, Save and Reset	
45 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex 3, Save and Reset	
60 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex 4, Save and Reset	
75 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex 5, Save and Reset	Default
90 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex 6, Save and Reset	
105 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex 7, Save and Reset	
120 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex 8, Save and Reset	
135 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex 9, Save and Reset	
150 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex A, Save and Reset	
165 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex B, Save and Reset	
180 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex C, Save and Reset	
195 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex D, Save and Reset	
210 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex E, Save and Reset	
225 ms	Programming Mode, Hex 7, Hex 4, Hex 3, Hex F, Save and Reset	

25328

Codabar Tone Frequency

Selection	Programming Tag Sequence	Setting
702 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 0, Save and Reset	
781 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 1, Save and Reset	
868 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 2, Save and Reset	
961 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 3, Save and Reset	
1071 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 4, Save and Reset	Default
1187 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 5, Save and Reset	
570 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 6, Save and Reset	
633 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 7, Save and Reset	

25329

Codabar Tone

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 4, Hex 5, Hex 0, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 4, Hex 5, Hex 1, Save and Reset	

25324

Codabar Halves

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 4, Hex 5, Hex 2, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 4, Hex 5, Hex 3, Save and Reset	

25325

Codabar Stitch

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 4, Hex 5, Hex 4, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 4, Hex 5, Hex 5, Save and Reset	

25513

Codabar Require Start/Stop Match

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 6, Hex B, Hex 2, Hex 0, Save and Reset	Default
Enable	Programming Mode, Hex 6, Hex B, Hex 2, Hex 1, Save and Reset	

25320

Codabar Require Quiet Zones

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 6, Hex B, Hex 2, Hex 2, Save and Reset	Default
Enable	Programming Mode, Hex 6, Hex B, Hex 2, Hex 3, Save and Reset	

Note: Ensure that this sequence is set to **Enable** if Codabar is programmed to read very short tags (tags with less than 4 data characters). This programmable prevents getting a very short Codabar tag from another barcode type or from package graphics.

25321

Codabar Start/Stop Transmission

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 6, Hex B, Hex 2, Hex 5, Save and Reset	Default
Enable	Programming Mode, Hex 6, Hex B, Hex 2, Hex 4, Save and Reset	

25322

Selection	Programming Tag Sequence	Setting
abcd	Programming Mode, Hex 6, Hex B, Hex 1, Hex 0, Save and Reset	Default
ABCD	Programming Mode, Hex 6, Hex B, Hex 1, Hex 1, Save and Reset	
tn*e	Programming Mode, Hex 6, Hex B, Hex 1, Hex 2, Save and Reset	
TN*e	Programming Mode, Hex 6, Hex B, Hex 1, Hex 3, Save and Reset	

25327

Codabar Hard Correlation

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 6, Hex B, Hex 2, Hex 6, Save and Reset	Default
Enable	Programming Mode, Hex 6, Hex B, Hex 2, Hex 7, Save and Reset	

25323

Number of Codabar Overlaps Required

Selection	Programming Tag Sequence
1 overlap	Programming Mode, Hex 6, Hex B, Hex A, Hex 1, Save and Reset
2 overlaps	Programming Mode, Hex 6, Hex B, Hex A, Hex 2, Save and Reset
3 overlaps	Programming Mode, Hex 6, Hex B, Hex A, Hex 3, Save and Reset
4 overlaps	Programming Mode, Hex 6, Hex B, Hex A, Hex 4, Save and Reset

25580

Number of Codabar Scans Required

Selection	Programming Tag Sequence	Setting
1 scan	Programming Mode, Hex 6, Hex B, Hex 6, Hex 1, Save and Reset	Default
2 scans	Programming Mode, Hex 6, Hex B, Hex 6, Hex 2, Save and Reset	
3 scans	Programming Mode, Hex 6, Hex B, Hex 6, Hex 3, Save and Reset	
4 scans	Programming Mode, Hex 6, Hex B, Hex 6, Hex 4, Save and Reset	

25326

Number of Coupon Scans Required

Selection	Programming Tag Sequence
0 scan	Programming Mode, Hex 6, Hex B, Hex 0, Hex 0, Save and Reset
1 scan	Programming Mode, Hex 6, Hex B, Hex 0, Hex 1, Save and Reset
2 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex 2, Save and Reset
3 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex 3, Save and Reset
4 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex 4, Save and Reset
5 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex 5, Save and Reset
6 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex 6, Save and Reset
7 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex 7, Save and Reset
8 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex 8, Save and Reset
9 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex 9, Save and Reset
10 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex A, Save and Reset
11 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex B, Save and Reset
12 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex C, Save and Reset
13 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex D, Save and Reset
14 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex E, Save and Reset
15 scans	Programming Mode, Hex 6, Hex B, Hex 0, Hex F, Save and Reset

24462

Number of UPC/EAN Scans Required

Selection	Programming Tag Sequence
1 scan	Programming Mode, Hex 6, Hex B, Hex 3, Hex 1, Save and Reset
2 scans	Programming Mode, Hex 6, Hex B, Hex 3, Hex 2, Save and Reset
3 scans	Programming Mode, Hex 6, Hex B, Hex 3, Hex 3, Save and Reset
4 scans	Programming Mode, Hex 6, Hex B, Hex 3, Hex 4, Save and Reset

24463

Number of Code 39 Scans Required

Selection	Programming Tag Sequence
1 scan	Programming Mode, Hex 6, Hex B, Hex 4, Hex 1, Save and Reset
2 scans	Programming Mode, Hex 6, Hex B, Hex 4, Hex 2, Save and Reset
3 scans	Programming Mode, Hex 6, Hex B, Hex 4, Hex 3, Save and Reset
4 scans	Programming Mode, Hex 6, Hex B, Hex 4, Hex 4, Save and Reset

24464

Number of Code 128 Scans Required

Selection	Programming Tag Sequence
1 scan	Programming Mode, Hex 6, Hex B, Hex 7, Hex 1, Save and Reset
2 scans	Programming Mode, Hex 6, Hex B, Hex 7, Hex 2, Save and Reset
3 scans	Programming Mode, Hex 6, Hex B, Hex 7, Hex 3, Save and Reset
4 scans	Programming Mode, Hex 6, Hex B, Hex 7, Hex 4, Save and Reset

24466

Number of Code 39 Overlaps Required

Selection	Programming Tag Sequence
1 overlap	Programming Mode, Hex 6, Hex B, Hex 9, Hex 1, Save and Reset
2 overlaps	Programming Mode, Hex 6, Hex B, Hex 9, Hex 2, Save and Reset
3 overlaps	Programming Mode, Hex 6, Hex B, Hex 9, Hex 3, Save and Reset
4 overlaps	Programming Mode, Hex 6, Hex B, Hex 9, Hex 4, Save and Reset

24529

Number of Minimum Code 39 Characters in Code 39 Partial

Selection	Programming Tag Sequence
2 characters	Programming Mode, Hex 6, Hex B, Hex C, Hex 2, Save and Reset
3 characters	Programming Mode, Hex 6, Hex B, Hex C, Hex 3, Save and Reset
4 characters	Programming Mode, Hex 6, Hex B, Hex C, Hex 4, Save and Reset
5 characters	Programming Mode, Hex 6, Hex B, Hex C, Hex 5, Save and Reset
6 characters	Programming Mode, Hex 6, Hex B, Hex C, Hex 6, Save and Reset
7 characters	Programming Mode, Hex 6, Hex B, Hex C, Hex 7, Save and Reset
8 characters	Programming Mode, Hex 6, Hex B, Hex C, Hex 8, Save and Reset
9 characters	Programming Mode, Hex 6, Hex B, Hex C, Hex 9, Save and Reset

24531

Number of Code 128 Overlaps Required

Selection	Programming Tag Sequence
1 overlap	Programming Mode, Hex 6, Hex B, Hex D, Hex 1, Save and Reset
2 overlaps	Programming Mode, Hex 6, Hex B, Hex D, Hex 2, Save and Reset
3 overlaps	Programming Mode, Hex 6, Hex B, Hex D, Hex 3, Save and Reset
4 overlaps	Programming Mode, Hex 6, Hex B, Hex D, Hex 4, Save and Reset

24532

Number of Minimum Interleaved 2 of 5 Characters in Interleaved 2 of 5 Partial

Selection	Programming Tag Sequence
2 characters	Programming Mode, Hex 6, Hex B, Hex E, Hex 2, Save and Reset
3 characters	Programming Mode, Hex 6, Hex B, Hex E, Hex 3, Save and Reset
4 characters	Programming Mode, Hex 6, Hex B, Hex E, Hex 4, Save and Reset
5 characters	Programming Mode, Hex 6, Hex B, Hex E, Hex 5, Save and Reset
6 characters	Programming Mode, Hex 6, Hex B, Hex E, Hex 6, Save and Reset
7 characters	Programming Mode, Hex 6, Hex B, Hex E, Hex 7, Save and Reset
8 characters	Programming Mode, Hex 6, Hex B, Hex E, Hex 8, Save and Reset
9 characters	Programming Mode, Hex 6, Hex B, Hex E, Hex 9, Save and Reset

24533

Number of Minimum Code 128 Characters in Code 128 Partial

Selection	Programming Tag Sequence	Setting
4 characters	Programming Mode, Hex 6, Hex B, Hex F, Hex 4, Save and Reset	
5 characters	Programming Mode, Hex 6, Hex B, Hex F, Hex 5, Save and Reset	
6 characters	Programming Mode, Hex 6, Hex B, Hex F, Hex 6, Save and Reset	
7 characters	Programming Mode, Hex 6, Hex B, Hex F, Hex 7, Save and Reset	
8 characters	Programming Mode, Hex 6, Hex B, Hex F, Hex 8, Save and Reset	
9 characters	Programming Mode, Hex 6, Hex B, Hex F, Hex 9, Save and Reset	

24534

Command–type Disable

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 6, Hex 7, Hex 8, Save and Reset	Default
Enable	Programming Mode, Hex 6, Hex 7, Hex 9, Save and Reset	

24959

Ignore RS–232 Commands from POS

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 0, Hex A, Hex 0	Default
Enable	Programming Mode, Hex 7, Hex 0, Hex A, Hex 1	

24960

GS1 DataBar Coupon Support

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 7, Hex 1, Hex C, Save and Reset	Default
Disable	Programming Mode, Hex 7, Hex 1, Hex D, Save and Reset	

24964

GS1 DataBar AI 8110 coupons

GS1 DataBar 8110

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 1, Hex 0, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 1, Hex 2, Save and Reset	

24965

GS1 DataBar-E AI 8110

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 1, Hex 1, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 1, Hex3, Save and Reset	

24966

EAN-13 98 coupons

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 7, Hex 1, Hex 8, Save and Reset	Default
Disable	Programming Mode, Hex 7, Hex 1, Hex 9, Save and Reset	

24967

EAN-13 99 coupons

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 7, Hex 1, Hex A, Save and Reset	Default
Disable	Programming Mode, Hex 7, Hex 1, Hex B, Save and Reset	

24968

Scanner Power-On State

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 8, Hex 0, Hex 1, Save and Reset	
Enable	Programming Mode, Hex 8, Hex 0, Hex 0, Save and Reset	Default

27079

ASCII Code Chart

00	NULL	**10**	DLE	**20**	SP	**30**	0	**40**	@	**50**	P	**60**		**70**	p
01	SOH	**11**	DC1	**21**	!	**31**	1	**41**	A	**51**	Q	**61**	a	**71**	q
02	STX	**12**	DC2	**22**	"	**32**	2	**42**	B	**52**	R	**62**	b	**72**	r
03	ETX	**13**	DC3	**23**	#	**33**	3	**43**	C	**53**	S	**63**	c	**73**	s
04	EOT	**14**	DC4	**24**	$	**34**	4	**44**	D	**54**	T	**64**	d	**74**	t
05	ENQ	**15**	NAK	**25**	%	**35**	5	**45**	E	**55**	U	**65**	e	**75**	u
06	ACK	**16**	SYN	**26**	&	**36**	6	**46**	F	**56**	V	**66**	f	**76**	v
07	BEL	**17**	ETB	**27**	'	**37**	7	**47**	G	**57**	W	**67**	g	**77**	w
08	BS	**18**	CAN	**28**	(	**38**	8	**48**	H	**58**	X	**68**	h	**78**	x
09	HT	**19**	EM	**29**	)	**39**	9	**49**	I	**59**	Y	**69**	i	**79**	y
0A	LF	**1A**	SUB	**2A**	*	**3A**	:	**4A**	J	**5A**	Z	**6A**	j	**7A**	z
0B	VT	**1B**	ESC	**2B**	+	**3B**	;	**4B**	K	**5B**	[	**6B**	k	**7B**	{
0C	FF	**1C**	FS	**2C**	,	**3C**	<	**4C**	L	**5C**	\	**6C**	l	**7C**	|
0D	CR	**1D**	GS	**2D**	-	**3D**	=	**4D**	M	**5D**	]	**6D**	m	**7D**	}
0E	S0	**1E**	RS	**2E**	.	**3E**	>	**4E**	N	**5E**	^	**6E**	n	**7E**	~
0F	S1	**1F**	US	**2F**	/	**3F**	?	**4F**	O	**5F**	_	**6F**	o	**7F**	DEL

R0040

Special Programming

Some of the RealScan 78 features require programming that is somewhat different than the normal programming. The following sections describe the Special Programming options.

Set Current Parameters to Default Values

The RealScan 78 comes from the factory with specific default values already determined for the various programming parameters. Sometimes other default values are desired. This function permits the current parameter settings to be stored as soft default values. When this is done, scanning the **Default** tag sets the parameters to these values rather than the factory defined values.

Enable Soft Defaults

Scan the following sequence of programming tags.

1. **Diagnostic Mode**, **Hex 5**, and **Hex E**—sets current parameters as soft defaults

2. **Program Mode**, **Hex 3**, **Hex 4**, and **Hex E**—enables Soft Default option

3. **Save and Reset**—saves the program change

    One of three voice messages is given.

    • "Set New Default Parameter"—If any defaults were changed, followed by "Save and Reset Next"—to save the new soft default values

    • "No Default Parameter Change"—If there are no changes to the current default parameters

    • "Error Full Parameter Change Buffer"—If too many default changes are attempted. An error tone also sounds

4. **Save and Reset**—saves the new soft defaults

Disable Soft Defaults

To have the **Default** tag set program parameters to factory defined values, disable the Soft Default option. Do this by scanning the following tags.

1. **Program Mode**, **Hex 3**, **Hex 4**, and **Hex 0**—disable Soft Default option

2. **Save and Reset**—saves the program change

3. **Default**—sets the program to default values

Convert UPC–E Tags to EAN–13 Tags

UPC–E tags can be converted directly to EAN–13 tags. This function is only needed if UPC–A tags are not to be converted to EAN–13 tags. The default is to disable this function.

- Enable Converting UPC–E to EAN–13—**Program Mode, Hex 4, Hex 7**, **Hex 7**, **Save and Reset**

- Disable Converting UPC–E to EAN–13—**Program Mode**, **Hex 4, Hex 7**, **Hex 6, Save and Reset**

Enable/Disable Code–128 Partials

When decoding Code 128 using partial scans, sometimes a Decode error is generated. However, several conditions must occur to cause the misread. If having problems reading Code 128 bar codes, try disabling partials.

- Disable Code 128 Partials—**Program Mode**, **Hex 1**, **Hex 7**, **Hex F**, **Hex 0**, and **Save and Reset**

- Enable Code 128 Partials—**Program Mode**, **Hex 1**, **Hex 7**, **Hex F**, **Hex 1**, and **Save and Reset**

Good Read Tone

The Good Read tone is composed of three elements: volume, frequency (tone), and length. Three different presets, each with a different combination of volume, tone, and tone length settings, are available that permit the Good Read tone to be set by scanning just one sequence of Programming Tags. Preset 0 is the default for this parameter.

Preset 0
Programming Mode
Hex 4
Hex 3
Hex 0
Save and Reset

Volume   Tone   Length

Preset 1
Programming Mode
Hex 4
Hex 3
Hex 1
Save and Reset

Volume   Tone   Length

Preset 2
Programming Mode
Hex 4
Hex 3
Hex 2
Save and Reset

Volume   Tone   Length

16086

GS1 DataBar

GS1 Databar, formerly Reduced Space Symbology (RSS) permits more data to be recorded in a smaller physical space. This is accomplished by encoding the data in large symbol characters rather than encoding each data character separately. Also, no quiet zone is required around the symbols. The RealScan 78 can read four types of GS1 Databar barcodes.

GS1 Databar

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GS1 Databar–14

GS1 Databar–14 is a linear symbology that encodes 14 UCC/EAN digits. This structure provides four segments that can be scanned and decoded separately, then reconstructed. The total symbol contains 96 modules combined into 46 elements (bars and spaces).

GS1 Databar–14 Stacked

GS1 Databar–14 Stacked is a 2–row format. The bottom row is higher than the top row and the two are separated with a separator pattern. The stacked format is used when not enough linear space is available. An example use is marking produce in a grocery store.

010033123450708E

GS1 Databar–Expanded

GS1 Databar–Expanded is a variable length linear symbology. It can encode 74 numeric or 41 alpha characters. RSS Expanded can be scanned and decoded in up to 22 segments and then reconstructed

3307 0353 2101 2345 0709 0008

GS1 Databar–Expanded Stacked

GS1 Databar–Expanded Stacked is similar to GS1 Databar–14 Stacked except it uses the GS1 Databar–Expanded format for creating the symbol.

0192 1234 6809 7467 3202 0000 0030 0200 200

Enable/Disable GS1 DataBar

GS1 DataBar permits more data to be recorded in a smaller physical space. The RealScan 78 can be programmed to read GS1 DataBar tags. When programming the GS1 DataBar feature, the programming tags must be the first tags scanned after applying power to the RealScan 78.

- Enable—**Program Mode**, **Hex 1**, **Hex 8**, **Hex A**, **Hex 3**, **Save and Reset**.

- Disable—**Program Mode**, **Hex 1**, **Hex 8**, **Hex A**, **Hex 0**, **Save and Reset**.

Send GS1 DataBar–14 as EAN–13 Data

When enabled, the scanner sends the last 13 digits of the GS1 DataBar–14 data to the host terminal. The **Default** tag does not change this parameter.

- Enable—**Program Mode**, **Hex 6**, **Hex 0**, **Hex 5**, and **Save and Reset**.

- Disable—**Program Mode**, **Hex 6**, **Hex 0**, **Hex 4**, and **Save and Reset**.

Terminal Coupon Interface Parameters

Certain parameters must be set to permit the unit to transmit coupon data to the host terminal. These are in addition to the general parameters that are required for other scanner/scale functions.

Note: Selection of optional Add-On bar codes may require additional programming.

To set the Coupon Interface Parameters, perform a series of steps in a designated order. First, set the Terminal Coupon Select 1 parameters, and then set the Terminal Coupon Select 2 parameters. Select one of the parameters below to display the procedure.

Terminal Coupon Select 1

1. Scan the **Program Mode** tag.
2. Scan the **Hex 3** and **Hex 8** tags to select this parameter.
3. Scan a **Hex 0** through **Hex F** tag to set a Coupon Select 1 parameter.

Coupon Select 1 Parameter	Disable	Enable
Coupon with P5 optional	Hex 0	Hex 1
Coupon with 128 Add–On optional	Hex 2	Hex 3
Coupon with 128 Add–On mandatory	Hex 4	Hex 5

4. Scan the **Save and Reset** tag to save the program (required).

Note: Repeat steps 1 through 4 to set the second Coupon Select 1 parameter.

Suggested Programming Sequence

- Program Mode

- Hex 3 and Hex 8

- Hex 1

- Save and Reset

- Program Mode

- Hex 3 and Hex 8

- Hex 3

Scan **Program Mode**, **Hex 1**, **Hex 7**, **Hex F**, **Hex 0**, and **Save and Reset** tags to complete the programming function.

Note: Scanning the **Default** tag resets all options.

Terminal Coupon Select 2

1. Scan the **Program Mode** tag.

2. Scan the **Hex 3** and **Hex D** tags to select this parameter.

3. Scan a **Hex 0** through **Hex 7** tag to set a Coupon Select 2 parameter:

Coupon Select 2 Parameter	Disable	Enable
Coupon and P5 or 128 optional (EAN-99)	Hex 0	Hex 1
Coupon and 128 mandatory (EAN-99)	Hex 2	Hex 3
Markdown Tone	Hex 4	Hex 5
Early Tone for Optional Add–On	Hex 6	Hex 7

4. Scan the **Save and Reset** tag to save the program.

   Note: Repeat steps 1 through 4 to set the other option, if needed.

5. Scan **Program Mode**, **Hex 1**, **Hex 7**, **Hex F**, **Hex 0**, and **Save and Reset** tags to complete the programming function.

Note: Scanning the **Default** tag resets all options.

Voice Messages—Enable/Disable

The RealScan 78 uses voice messages for diagnostics, scale calibration, and clerk messages. If voice messages are enabled, they are heard at the appropriate time; if they are disabled, the beep tones are heard instead. When voice messages are disabled, the RealScan 78 uses the scale display to indicate error conditions. To enable or disable voice messages, scan the following sequence of programming tags. These tags must be the first tags scanned after applying power to the unit.

All Voice Messages Off/On
1. **Program Mode**

2. **Hex 3**

3. **Hex 3**

4. **Hex D**

5. **Save and Reset**

Clerk Messages On
1. **Program Mode**

2. **Hex 3**

3. **Hex 3**

4. **Hex 1**

5. **Save and Reset**

Clerk Messages Off
1. **Program Mode**

2. **Hex 3**

3. **Hex 3**

4. **Hex 0**

5. **Save and Reset**

Note: Because the clerk messages are a subset of the Voice Messages, disabling all voice messages disables the clerk messages also. All Voice Messages must be enabled for the Clerk Messages to be enabled.

Following are the three clerk messages.

- Scale failed, clean under scale deck

- Scale failed, code 5, clean under scale deck

  ▪ Next, do scale calibration

  ▪ Next, change scale

- Scale failed, code 4

  ▪ Stop checkstand mechanical vibration

  ▪ Next, change scale

Voice Volume

To change the volume of the voice (speech) on the RealScan 78, scan the following tags.

- **Program Mode, Hex 5, Hex 7, Hex 0, Save and Reset**—Maximum voice volume

- **Program Mode, Hex 5, Hex 7, Hex 1, Save and Reset**—High voice volume

- **Program Mode, Hex 5, Hex 7, Hex 2, Save and Reset**—Medium voice volume

- **Program Mode, Hex 5, Hex 7, Hex 3, Save and Reset**—Minimum voice volume

Volume Adjust Button

The Volume Adjust Button on the Operator Display Panel changes the Good Read tone volume and frequency (tone). This button can be programmed to work in various ways.

Volume Levels

There are eight standard volume settings in the RealScan 78. However, there is a programming sequence which activates eleven. This gives the operator greater flexibility in selecting the appropriate volume of the Good read Tone. This parameter does not have a default value, however, the RealScan 78 is shipped from the factory with this parameter disabled. The default setting of the RealScan 78 is eight volume levels.

- Enable—**Program Mode, Hex 4, Hex 2, Hex 5, and Save and Reset**

- Disable—**Program Mode, Hex 4, Hex 2, Hex 4, and Save and Reset**

Enable/Disable Volume Adjust Button

Through programming, the Volume Adjust button can be enabled or disabled. If disabled, the Good Read tone volume and tone are set using the various programming tags; and pressing the button does not change the Good Read tone. If the Volume Adjust Button is disabled, be sure to set the volume, tone, and tone length to the desired settings first.

Note: Scanning the **Default** tag enables the Volume Adjust Button.

- Enable—**Program Mode, Hex 3, Hex E, Hex 1, and Save and Reset**

- Disable—**Program Mode, Hex 3, Hex E, Hex 0, and Save and Reset**

Enable Volume Adjust Button

To enable the Volume Adjust button, scan the following sequence of programming tags. These tags must scanned first after applying power to the RealScan 78.

1. **Program Mode**—puts scanner in the programming mode

2. **Hex 3**, **Hex E**, **Hex 1**—enables the Volume Adjust button

3. **Save and Reset**—stores the enabled setting, and then resets the scanner

Disable Volume Adjust Button

To disable the Volume Adjust Button, scan the following sequence of programming tags. These tags must scanned first after applying power to the RealScan 78. This sequence sets the Good Read tone frequency (tone), length, and volume.

1. **Program Mode**—starts the scanner in the programming mode.

2. **Hex 1**, **Hex 1**—sends programming to the Good Read Tone parameters

3. **Hex A**, **Hex 1**—turns on the Good Read tone in case it was previously turned off

4. **Hex B**—repeatedly scan this tag until you reach the desired tone frequency (tone)

5. **Hex C**—repeatedly scan this tag until you reach the desired tone length

6. **Hex D**—repeatedly scan this tag until you reach the desired tone volume

7. **End**—Sends programming back to Program Mode

8. **Hex 3**, **Hex E**, then **Hex 0**—Disables the Volume Adjust button

9. **Save and Reset** tag—Stores the Good Read tone and Volume Adjust button settings, and then resets the scanner

Single Volume Adjust Barcode

There is a single Volume Adjustment barcode in the Programming Tag booklet, NCR Scanner Programming Tags (BST0–2121–74) available at www.info.ncr.com. (The tags are also included in Appendix A of this document.). This barcode functions exactly in the same manner as pressing the volume adjust button, except the disable Volume Adjust Button sequence has no effect when reading this barcode. The volume obtained by using this barcode is temporary. That is, if used outside a Program Mode/Save & Reset sequence, the original programmed volume level will return when the scanner is power cycled. But if the Volume Adjustment barcode is scanned within a Program Mode/Save&Reset sequence, or the Reset barcode from the booklet is scanned, the volume is saved as if it had been changed by using Worksheet 11.

Window Maintenance Indicator

The Window Maintenance Indicator can be set to flash or not flash when lit. Scan the following sequence of Programming Tags to set this parameter; the default setting is to flash. These must be the first tags scanned after applying power to the RealScan 78.

- Enable Flashing—**Program Mode**, **Hex 4**, **Hex 0**, **Hex A**, and **Save and Reset**

- Disable Flashing—**Program Mode**, **Hex 4**, **Hex 0**, **Hex B**, and **Save and Reset**

PACESETTER Functions

The PACESETTER function increases the performance of the RealScan 78. It can also identify and fix certain bar code problems. Two versions of PACESETTER are available. PACESETTER III is a standard feature on the RealScan 78.

PACESETTER III

The PACESETTER III feature of the RealScan 78 Scanner performs many functions that improve the efficiency of the scanner. It determines what is wrong with a bar code and then fixes it. It also keeps track of problems found.

PACESETTER III also detects, corrects, and reports errors discovered in UPC Number System Two and Number System Four labels. These two label types are printed in the store and account for a significant number of unreadable labels due to failures of the in–store printing mechanism. PACESETTER III looks for errors in these labels and learns from each attempted scan. After seeing a particular printing error a number of times, PACESETTER III may determine that an error is present in the label and that the error may be correctable. If the correction capability of PACESETTER III is enabled, the scanner attempts an error–free correction of the label and passes the results to the host terminal. Whenever an error–free correction is not possible, PACESETTER III does not pass label data to the terminal.

Firmware Flashing

Firmware flashing permits updates to be installed to the scanner firmware without replacing the actual chip on the Digital Board. The RealScan 78 must be connected to a PC through an RS-232 cable or USB cable. Also, the PC must contain the NCR Flash Tool software utility and the new scanner firmware file.

Obtaining the Utility and New Firmware

New firmware for the RealScan 78 is available on the NCR web site. It is flashed to the RealScan 78 using the NCR Flash Tool software utility. No version of the RealScan 78 scanner will use the older EasyFlash utility.

1. Go to the NCR Website:
   http://www5.ncr.com/support/support_drivers_patches.asp?Class=retail_RealScan

2. Download the Flash Tool and the needed firmware, and put them into a temporary subdirectory on your hard drive. You can also choose to install the tool directly from the website.

Firmware Download Tools for all SA and PXA Scanners

Release Number	Release Date	Download
2.0.1.4 Build 40	13 Jun 2007	Readme.doc
2.0.1.4 Build 40	13 Jun 2007	NCRFlashLimited.exe (Install tool)
2.0.1.4 Build 40	13 Jun 2007	NCRFlashLimitedSilent.exe (Install tool)

PXA Scanner Firmware (7878-1xxx/2xxx)

Part Number	Release Date	Download
497-xxxxxxx	dd mmm yyyy	04xxxxx.zip

3. After downloading, run the self-extracting zip called NCRFlashLimited.exe.

4. Select **Next** when it asks if you want to install.

5. Click on the check box to accept the terms of the EULA, and select **Next**.

6. Select **Install**.

7. The application will now install all the necessary components. Keep selecting **Next** until the installation is finished.

    Note: You might have to close a DOS box, if the application asks you to.

8. If you copied the firmware file into a temporary subdirectory, put it in the directory where the Flash Tool is installed. The default directory is C:\Program Files\NCR\RealScan\NCRRSFlash.

    Note: Ensure that the firmware is unzipped when placed in the Flash Tool directory. The Flash Tool cannot read the firmware when it is still zipped.

Firmware Version

To identify the firmware already in the scanner, scan the **Diagnostic Mode**, **Hex 4**, and **Hex A** programming tags. These must be the first tags scanned after applying power to the unit. The RealScan 78 gives a voice message containing the 497–xxxxxxx number of its firmware.

Firmware Flashing Procedure

Perform the following procedure to flash firmware on the RealScan 78:

1. Apply power to the RealScan 78.

2. Connect the scanner to the PC terminal using an RS-232 cable or USB cable appropriate for RealScan 78 scanner. The RS232 cable is part number 497-0300422 (1416-C019-004), and the USB cable is 497-0445079 (1432-C158-0040).

RS-232

IBM-USB / NCR-USB
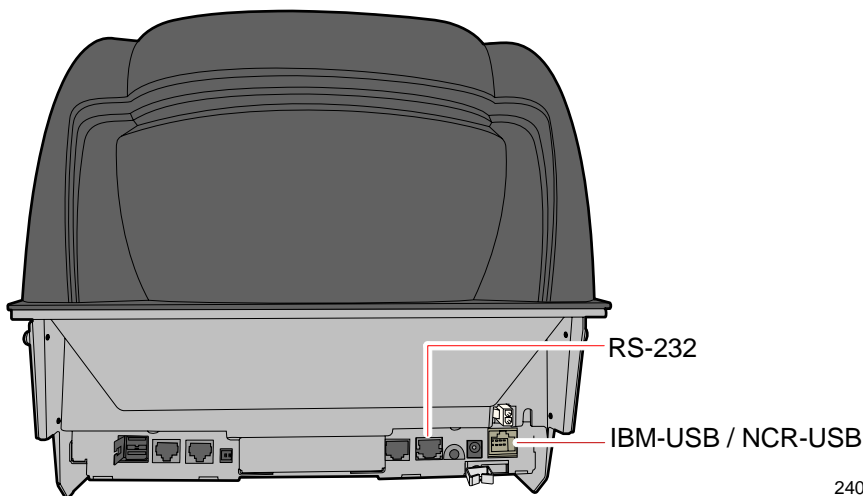
24043

3. Run the Flash Tool application by double-clicking on the FlashGUI icon on the desktop.

Note: Ensure that the PXA Scanner tab is in front. This displays the RealScan 78 settings. The program defaults with the SA Scanner tab in front.

4. See what firmware is under the heading "Firmware Update Flags". Select the **Modify INI File** button on the right side.

5. Use the pull-down menu under "Firmware Level" to point to the desired new firmware version.

   Note: There will be no item present under this combo box if there is no firmware (.bin) file in the NCR Flash Tool directory.

6. Under "Firmware Update Flags", select **Y** (for Yes) on the "Update FW" and "FlashOverride" selection boxes.

7. Under Com Settings, ensure the COM Port is **1**, and Port Type is **RS232**. Ensure the RS232 cable is connected between the PC and the scanner. The Com Port for the RS232 cable is the one immediately to the left of the power connector.

    If using a USB, select **IBM-USB** under the Port Type selection, and the Com Port should be set to **1**.

    Note: The port type selected in this utility must be the same with the communication protocol being used.

8. Select the **Save** button found on the right side of the application to save the settings in the INI file.

9. Scan the Firmware Flashing tag. Ensure the scanner motors are OFF, the orange LEDs on the side of the bezel are ON, and the light bar on top turns pink and may flash depending on the firmware already in the unit.

    Firmware Flashing

    ||||||| ||| |||||||||| |||

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    This Flash Mode tag is also included in the NCR Scanner Programming Tags booklet BST0-2121-74.

10. Select the **Run Flash Program** button to start the flashing process and select **OK** when asked about the cable.

    Caution: Do not remove the communication cable while the flashing process is not completed.

11. The unit should begin flashing. The process should take between 3 and 5 minutes.

Note: The unit resets itself when it's done. Reprogramming for the original POS interface is not needed.

12. Once the flash process is finished, a "Completed Successfully" message will display on the edit box in the NCR Flash Tool utility and the scanner will restart. You can also, verify if the scanner has been flashed with the desired Firmware version by selecting the **Query Firmware** button.

13. Exit the NCR Flash Tool utility and disconnect the scanner from the PC terminal.

Chapter 6: Troubleshooting

This chapter contains troubleshooting charts that are designed for locating and correcting certain problems without the aid of a trained technician. If the problem cannot be corrected using these charts, a trained technician can use Scan Doctor to help identify a faulty component.

RealScan 78 Diagnostics and Troubleshooting

There are two kinds of diagnostics that run on each scanner unit. The Level 0 Diagnostics run every time the scanner unit is powered up. This determines if the unit is operational. The Operational Diagnostics continuously check laser diode, spinner motor, communications, and barcode reading.

Scale Diagnostics

Scale Level 0 Diagnostics are performed on power–up to ensure the scale is operating normally. An error code is displayed on the RealScan 25 Remote Display or Light Bar identifies the problem.

The following table lists the error codes and problems that may be detected by the Level 0 or operational diagnostics:

Note: The scale error code is also displayed on the Remote Scale Display, if one is present.

Scale Troubleshooting Codes

Error Code	Possible Cause	Corrective Action	Light Bar Patterns

1---
2---
3---
	Out of range calibration error	1. Calibrate scale.
		2. If error code persists, check:
		   Scale cables and Power Supply
		   Digital Board
		   Scale Assembly
			Code 1:
			LED 1 = blue
			LED 2 = orange
			LED 3 = orange
			
			Code 2:
			LED 1 = blue
			LED 2 = orange
			LED 3 = orange
			LED 4 = orange
			
			Code 3:
			LED 1 = blue
			LED 2 = orange
			LED 3 = orange
			LED 4 = orange
			LED 5 = orange

4---	Calibration Switch is pressed for more than 3 seconds	1. Check for objects that interfere with the Calibration Switch. 2. Calibrate scale. 3. If error code persists, have scanner repaired.	LED 1 = blue LED 2 = red
4---	Possible scale error Internal scale connection problem or unit does not have scale	1. Press **Scale Zero** button and retry. 2. Verify unit is a scanner/scale. 3. I f unit does not have a scale, program for scanner only (**Progra m Mode, Hex 3, Hex 0, Hex 4, & Save and Reset)** 4. If e rror code persists, have scanner repaired.	LED 1 = blue LED 2 = red
5---	Scale drift	1. Verify that nothing is on the Top Plate. 2. Lift the Top Plate and verify that there are no objects under it. 3. Verify that nothing interferes with the Produce Guard. 4. Press the **Scale Zero** button. 5. If error code persists, have scanner repaired.	LED 1 = blue LED 2 = red LED 3 = red
6---	Failure to update program parameters in EEPROM	1. Reset scanner. 2. Calibrate scale. 3. If error code persists, have scanner repaired.	LED 1 = blue LED 2 = red LED 3 = red LED 4 = red
7---	Error reading program parameters from EEPROM	1. Calibrate scale. 2. If error code persists, have scanner repaired.	LED 1 = blue LED 2 = red LED 3 = red LED 4 = red LED 5 = red
8---	Scale not exercised properly	1. Press on the scale during calibration process. 2. Keep pressing on the scale until all red LEDs turn to blue. 3. Repeat procedure.	LED 1 = blue LED 2 = green
9---	Linearity problem	1. Calibrate scale. 2. If error code persists, have scanner repaired.	LED 1 = blue LED 2 = green LED 3 = green
Scale display is blank	Top Plate or Produce Guard has possible obstruction	1. P ress **Scale Zero** button. 2. Remove interference around edge of Top Plate or Produ ce Guard and Front Bezel. 3. Remove any fo reign objects from under the Top Plate.	

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Scanner Diagnostic Codes

Level 0 diagnostics are run every time the RealScan 78 is powered up. This diagnostic determines if the unit is operational. Level 0 diagnostics are also run when the unit is in Base Programming Mode and when the **Default**, **Save and Reset**, or **Abort** tag is read. Refer to chapter 5 for more information.

The following table lists the scanner error codes and problems that may be found by the Level 0 or operational diagnostics:

Error Codes	Problem	Suspect Component/s	Light Bar Patterns
2	RAM - Write/Read failure	Digital Board	LED 1 = red LED 2 = orange LED 3 = orange LED 4 = orange
5	Motor - Not running at proper speed	Optics Engine	LED 1 = red LED 2 = blue LED 3 = blue
6	EEPROM - Cannot load contents into memory	Digital Board	LED 1 = red LED 2 = blue LED 3 = blue LED 4 = blue
9	IBM mode - scanner does not detect POS terminal TRMPWR voltage, scanner may still scan or weigh	Cable not connected from Scanner to POS POS not turned on IBM Port problem	LED 1 = red LED 2 = green LED 3 = green
11	Laser - Not turned on	Digital Board Optics Engine	LED 1 = red LED 2 = green LED 3 = green LED 4 = green LED 5 = green
12	ROM - Sum check failure	Digital Board	LED 1 = red LED 2 = red
13	FPGA Failure (missing/failed part)	Digital Board	LED 1 = red LED 2 = red LED 3 = red

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Isolating Sensormatic® Problems

Problem	Possible Cause	Corrective Action
Does not deactivate tags	Sensormatic® ScanMax™ Pro Controller not turned on	Check the On/Off switch on the ScanMax™ Pro Controller if it is turned on.
Does not deactivate tags	Faulty Sensormatic® Interlock Cable	Replace Sensormatic® Interlock Cable.
Does not deactivate tags	Faulty Sensormatic® ScanMax™ Antenna or Antenna Cable	Replace Sensormatic® ScanMax™ Antenna or Antenna Cable.
Does not deactivate tags	Faulty Controller	Replace Sensormatic® ScanMax™ Pro Controller.
Red Status Indicator flashes rapidly	Sensormatic® ScanMax™ Pro Controller not turned on	Check the On/Off switch on the ScanMax™ Pro Contoller if it is turned on.

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Appendix A: NCR Scanner Programming Tags

Scanner Programming Tags
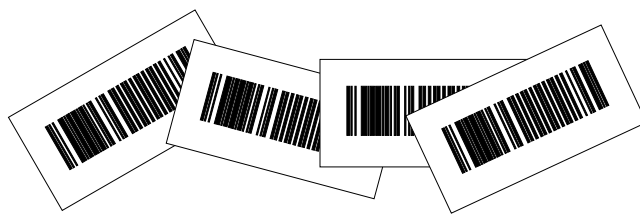
BST0-2121-74   Release N
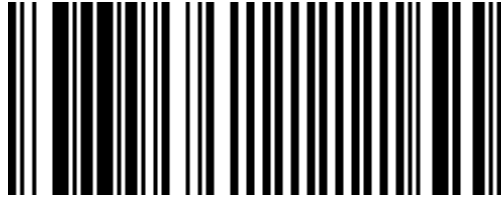
15108

Volume Adjustment

11817

Reset

11818

Default

R0046
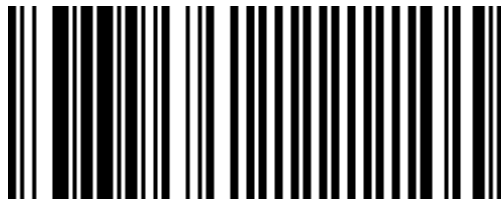
Programming Mode

R0042

End

R0043

Save and Reset

R0044

Abort
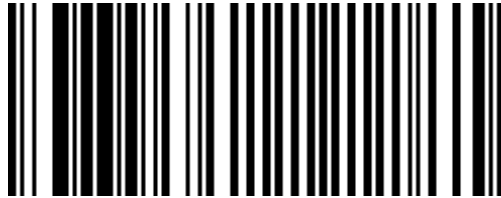
R0045

Diagnostic Mode
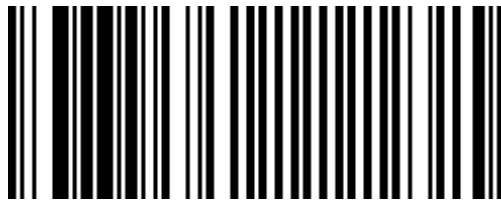
R0041

Speak Scanner Serial Number

Available with firmware version 497-0433606 or later.

22786

Speak Barcodes Currently Enabled

Available with firmware version 497-0433606 or later.

22785

Mode 1

Slot Scanner (PACESETTER Plus)

11500

Mode 2

Slot Scanner (PACESETTER Plus)

11501

Reset Tallies

Slot Scanner (PACESETTER Plus)

11502

Firmware Flashing

Super ASIC Models

20600

Hex 0

R0048

Hex 1

R0049

Hex 2

R0050

Hex 3

R0051

Hex 4

R0052

Hex 5

R0053

Hex 6

R0054

Hex 7

R0055

Hex 8

R0056

Hex 9

R0057

Hex A

R0058

Hex B

R0059

Hex C

R0060

Hex D

R0061

Hex E

R0062

Hex F

R0063

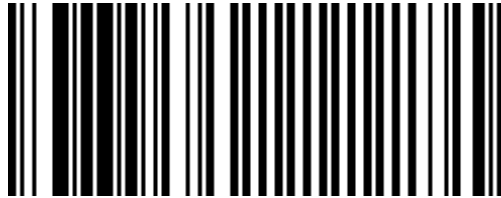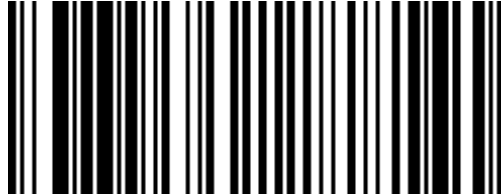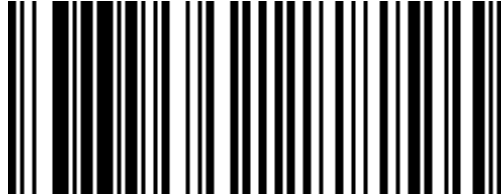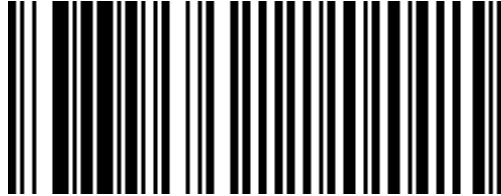| ASCII Code Chart															
00	NULL	10	DLE	20	SP	30	0	40	@	50	P	60		70	p
01	SOH	11	DC1	21	!	31	1	41	A	51	Q	61	a	71	q
02	STX	12	DC2	22	"	32	2	42	B	52	R	62	b	72	r
03	ETX	13	DC3	23	#	33	3	43	C	53	S	63	c	73	s
04	EOT	14	DC4	24	$	34	4	44	D	54	T	64	d	74	t
05	ENQ	15	NAK	25	%	35	5	45	E	55	U	65	e	75	u
06	ACK	16	SYN	26	&	36	6	46	F	56	V	66	f	76	v
07	BEL	17	ETB	27	'	37	7	47	G	57	W	67	g	77	w
08	BS	18	CAN	28	(	38	8	48	H	58	X	68	h	78	x
09	HT	19	EM	29	)	39	9	49	I	59	Y	69	i	79	y
0A	LF	1A	SUB	2A	*	3A	:	4A	J	5A	Z	6A	j	7A	z
0B	VT	1B	ESC	2B	+	3B	;	4B	K	5B	[	6B	k	7B	{
0C	FF	1C	FS	2C	,	3C	<	4C	L	5C	\	6C	l	7C		
0D	CR	1D	GS	2D	-	3D	=	4D	M	5D	]	6D	m	7D	}
0E	S0	1E	RS	2E	.	3E	>	4E	N	5E	^	6E	n	7E	~
0F	S1	1F	US	2F	/	3F	?	4F	O	5F	_	6F	o	7F	DEL

R0040

Appendix B: Additional Diagnostic Functions

Scale

Note: The following diagnostic functions are available only for SuperASIC firmware dated AFTER January 2007.

DM–4–3 Speak Weight

To enable the scanner to speak the weight shown in the display, scan the **Diagnostic Mode, Hex 4,** and **Hex 3** programming tags. If it is not valid or there is no scale, the scanner will speak "Not Scale".

DM–4–B Speak and Display Calibration Date

Scan the **Diagnostic Mode, Hex 4,** and **Hex B** programming tags to take the calibration date (which must have been previously set by a command) and enable the scanner to speak and display the date in `'C MM.DD.YY'` format.

Scanner Service Diagnostics

Service Diagnostics provide tests that are not available in the Power-On Wellness Check or On-Going Wellness Check diagnostics. To access Service Diagnostics, scan the **Diagnostic Mode** tag as the first tag after applying power to the RealScan 78. This causes the RealScan 78 to enter the Base Diagnostic State where specific diagnostic tests are available. Scan the appropriate Hex tags to select a diagnostic test. To end Service Diagnostics, remove power from the RealScan 78.

Note: If the RealScan 78 is connected to an IBM terminal, the terminal must be turned off or the interface cable disconnected. The RealScan 78 Status Indicator flashes Red when the RealScan 78 is offline.

The following table identifies the Service Diagnostic tests.

Base Diagnostic State	**Hex 3**	**Communication Protocol**
	Hex 4 Hex A	**Display Firmware Version**
	Hex 2	**RS-232 Turnaround**
	Hex 1	**Toad Test**
	Hex 4 Hex 1	**Vibration Check**

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Communication Protocol

Perform the following procedure to determine the communications protocol programmed in your RealScan 78.

1. Scan the **Diagnostic Mode** tag to enter Base Diagnostic state— this must be the first tag scanned after applying power to the RealScan 78.

2. Scan the **Hex 3** tag. The Good Read tone for this tag sounds (three beeps). If the RealScan 78 has the Voice feature enabled, the scanner will speak its communications protocol type.

    - RS–232
    - RS–232 USB
    - IBM 4A
    - IBM 4A USB

Display Firmware Version

This routine displays the version level of the firmware on the RealScan 78 Digital Board. There are no pass/fail points for this routine; it can only be used to read information. Perform the following procedure.

1. Scan the **Diagnostic Mode** tag to enter the Base Diagnostic state— this must be the first tag scanned after applying power to the RealScan 78.

2. Scan the **Hex 4** tag, then the **Hex A** tag to read the firmware version level.

3. At this point, the scanner will begin speaking the firmware version. It will also display this information on a Scale Remote Display, if on is attached. The Scanner will speak "Version Two Scanner 4 9 7 x x x x x x", where the 'x x x x x x x' refers to the firmware release number.

4. After taking a note of the firmware version, the scanner must power cycle (power off, then power on) to put it back into operational state.

RS-232 Turnaround

The RS-232 Turnaround test checks the RS-232 interface in the RealScan 78. An RS-232 turnaround plug is needed to run this test.

1. Remove power from the RealScan 78.

2. Install the turnaround plug.

   - Lift the RealScan 78 out of the checkstand and disconnect the Interface cable.

   - Install turnaround plug into the connector where you removed the interface cable.

3. Supply power to the RealScan 78.

4. Scan the **Diagnostic Mode** tag to enter the Base Diagnostic state – must be the first tag scanned after applying power to the RealScan 78.

5. Scan the **Hex 2** tag to start the RS-232 Turnaround test.

    •   Test Passes – a Good Read tone is emitted, the scanner will speak "RS232 Passed", and "232 232" will appear on the remote display

    •   Test Fails – no activity

6. Repeat steps 4 and 5 to repeat the test.

7. Remove power from the RealScan 78.

8. Disconnect the turnaround plug.

    •   Connect interface cable to connector where you removed the turnaround plug.

    •   Set the RealScan 78 into the hole in the checkstand and install the Top Plate.

9. Supply power the RealScan 78.

Possible Bad Component
•   Digital Board

Toad Test

The Toad test checks the scanner's ability to read UPC bar codes in various parts of the scan pattern. The test repeats until ended by removing power from the RealScan 78.

1. Scan the **Diagnostic Mode** tag to enter the Base Diagnostic state— must be the first tag scanned after applying power to the RealScan 78.

2. Scan the **Hex 1** tag to enter the Toad test mode.

3. Position a good UPC or EAN tag within the scan pattern.

   a. The green status Indicator displays and the Good Read tone
       sounds if the scanner can read the bar code.

   b. The red status Indicator displays if the scanner cannot read the
       bar code.

4. Repeat Step 3 for various areas of the scan pattern.

5. Remove power from the RealScan 78 to end this test.

Possible Bad Components
- Optics Engine
- Digital Board

Vibration Check

The Vibration Check tests the level of vibration or movement in the
checkstand and scanner/scale. There is no pass/fail point for this test; it
can only be used as a diagnostic tool. Perform the following procedure.

1. Remove power from the RealScan 78.

2. If the RealScan 78 does not have a RealScan 25 Remote Customer
    Display, remove the Tower Cabinet and connect the Field Service
    Calibration Display to the Scale Display Port on the Digital Board.

3. Apply power to the RealScan 78.

4. Scan the **Diagnostic Mode** tag to enter the Base Diagnostic
    state—must be first tag scanned after applying power to the
    RealScan 78.

5. Scan the **Hex 4** tag, then the **Hex 1** tag to enter the Vibration Check
    test.

6. Place a small weight on the scale (for example, a medium size coin).

7. Watch the display for 10 to 15 seconds and note the range of
    readings.

8. If the readings vary more than ± 0.001 kg (± 0.004 lb), there may be
    a problem.

9. If possible, move the RealScan 78 to a known stable location (like the floor) and take measurements again.

    a. If the readings vary less than they did in the checkstand, the vibration is probably in the checkstand. This could be the result of belt motors, ventilation fans, and so forth.

    b. If the readings are about the same, the problem could be in the RealScan 78. If you need assistance resolving this problem, contact the Retail Global Support Center.

10. After using this diagnostic check, remove power from the RealScan 78 to end the test.

11. If a Field Service Calibration Display is used, disconnect it and install the Tower Cabinet.

Appendix C: Obtaining Information Products

Additional information about the NCR RealScan 78 can be obtained by contacting an NCR representative. Information Products are available through several different channels. An order form is needed if using fax, e-mail, or mail order. Order forms are available to NCR personnel through QuickLook. In QuickLook, click on QuickLook Services, Forms and Templates, and then select Information Products Order Form.

Web Site

- http://inforetail.AtlantaGA.NCR.COM (NCR only)

- http://www.info.NCR.COM (Anyone)

Online Order

Connect System (NCR only)

Phone Order

800-543-2010 (select option #2)

Fax Order

770-831-2821

Email

ERI210013@exchange.DaytonOH.NCR.COM

Mail Order

- NCR Corporation—Sales Service Center
  3200 Shawnee Industrial Way
  Suwanee, Georgia 30024

Appendix D: Technical Support

Sometimes situations arise that require more information than what is provided in this NCR RealScan 78 User Guide. Technical support is available as follows:

- In the United States : 1-800-262-7782
- In other countries : call the local NCR office
- To order parts : 1-800-438-7830

Appendix E: User Feedback

Please print this page, answer the questions, and fax it to us at 770-813-3963.

Information Product :   RealScan 78 User Guide

Order Number   **:**   B005-0000-1724

Issue Level   **:**   A

Please enter your rating by circling the appropriate number.

How do you rate the technical accuracy of this document?

    Poor   1   2   3   4   5   Excellent

How you rate the organization of this document?

    Poor   1   2   3   4   5   Excellent

How easy is it for you to locate specific information in this document?

    Very Difficult   1   2   3   4   5   Excellent

How well did this document help you perform your job?

    Not Well   1   2   3   4   5   Excellent

How do you rate this document overall?

    Poor   1   2   3   4   5   Excellent

Please enter any additional comments.

Please enter the following so we can contact you concerning your comments.

Name   : _____

Address   : _____

          _____

Phone   : _____ Fax : _____

Email   : _____