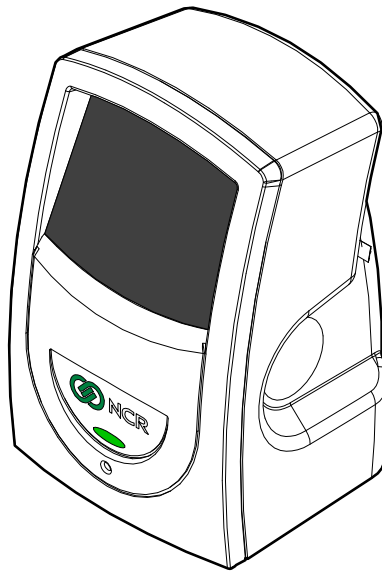


NCR RealPOS™ Presentation Scanner (7893)

Release 1.0

User Guide



27355

B005-0000-1917
Issue A

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Preface

Audience

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

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References

- *NCR RealPOSTM Presentation Scanner (7893) Hardware Service Guide*
(B005-0000-1918)
- *NCR RealPOS Scanner Tool Suite Guide*
(B005-0000-1883)
- *NCR RealPOSTM Scanners Safety and Regulatory Information*
(B005-0000-1699)

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Appendix G: User Feedback

Revision Record

Issue	Date	Remarks
A	May 29, 2009	First issue
	Sept 14, 2010	Added “Scanner Cloning using Programming tags” section

Chapter 1: Introduction

The new NCR RealPOS Presentation Scanner (7893) represents the latest technology in laser scanning. It features bi-optic electronics, including dual video, flash download technology, and flash programmability. It is a small, compact unit that weighs about 14 ounces. Being a presentation scanner, it permits you to present the bar code label to the scanner or pass it by for bar code reading.

Power for the 7893 is provided either by a powered USB cable or powered RS-232 cable, if available from the host terminal, or through a +12Vdc wall adapter Power Module. The input voltage to the NCR 7893 must be +12Vdc.

Using the Scanner

Although the 7893 is very simple to use, it is quite a complex electronic device. It contains a laser module that generates a low-level laser light. The laser light passes through a series of mirrors to generate a scan pattern. Reflected light from the bar code is collected and decoded to determine the bar code data. The scanner then sends the information to the host terminal or personal computer (PC).

The 7893 produces an omni-directional scan pattern that makes scanning easier. The pattern looks like several lines are scanning simultaneously, but is actually just a single beam reflected through several mirrors. It is this pattern that enables the scanner to read bar codes from most orientations.

This scanner meets the flexible mounting and use requirements for both hands-free and hand-held scanning. The 20 line scan pattern is designed to handle the aspect ratio tags commonly found in the general merchandise environment, with no orientation required. The large area covered by the pattern makes presentation scanning easy. The scan pattern is designed such that all lines expand in length and separation equally through space. The versatility of the scan pattern results in effective presentation and pass-by scanning. The scan pattern consists of 5 angular sets of 4 scan lines.

There may be times when the merchandise is too large to be presented to the scanner. In these cases, you can pick up the scanner and move it to the merchandise. Because the scanner is very light, you can maneuver it easily in these circumstances.

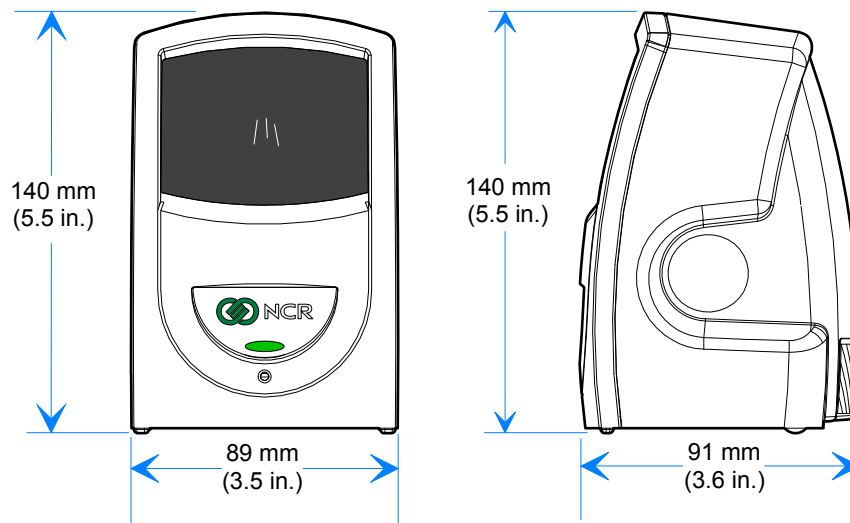
The 7893 does not have an On/Off switch. If you present a label to the scanner when it is idle, it detects the label and turns on. This occurs with minimal delay in reading the label. After several minutes of not detecting a valid bar code, the laser (programmable 5-30 minutes) shuts off.

Chapter 2: Product Information

The 7893 is designed to operate within a wide environmental range. Being a small peripheral unit, it does not require any special wiring or mounting. Normally, its requirements are within those of the host terminal or PC.

Physical Considerations

The 7893 is a lightweight unit with design consideration given to handling by store personnel. Weighing about 14 ounces, it is remarkably easy to pick up when necessary. The 7893 requires minimal counter space as shown below:



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Environmental Considerations

The 7893 operates in all standard-working environments. Temperature and humidity ranges permitted are greater when the 7893 is in storage or transit. The following table gives the various environmental requirements.

	Temperature	Temperature Change	Humidity Range
Operating Environment (Working Range)	10°C to 40°C (50°F to 104°F)	10°C (18°F) / Hour	5% - 95% (No Condensation)
Extreme Power-on Range	-15°C to 45°C (5°F to 113°F)	20°C (36°F) / Hour	5% - 95% (No Condensation)
Storage Range	-15°C to 50°C (5°F to 120°F)	20°C (36°F) / Hour	5% - 95% (No Condensation)
Transit Range	-40°C to 60°C (-40°F to 140°F)	20°C (36°F) / Hour	5% - 95% (No Condensation)

	Barometric Pressure	Equivalent Altitude (Reference Only)
Operating	$(105 - 79.5) \times 10^3$ Pascal (Pa)	Up to 2,000 meters (6560 feet)
Transit	$(105 - 74) \times 10^3$ Pascal (Pa)	Up to 2,500 meters (8200 feet)

Power Considerations

An external power supply provides power to the scanner through the interface cable. Due to power limitations, the 7893 will not be capable of operating solely from 5VDC USB power. The scanner shall operate with a 12 VDC supply with a peak current draw of less than 1 A. The power supply input can be 90-264 VAC at 50-60 Hz. A universal power supply comes with the scanner, depending on the requirements you specify.

Features and Options

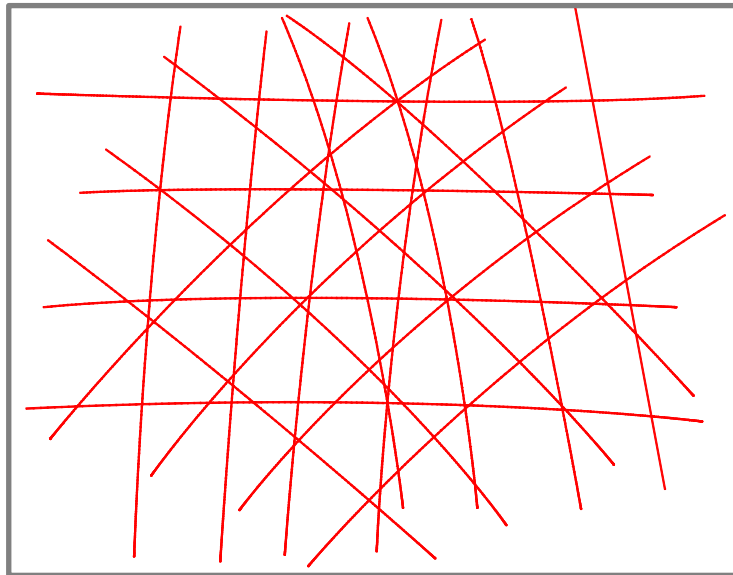
The 7893 is rich in features and options. This section details the features and options that are available.

Scanning Performance

The NCR 7893 uses laser light to create a pattern of 20 scan lines. As a bar code passes through these scan lines, the 7893 scanner uses the reflected light to identify the location of each bar in the bar code.

The following illustration displays the scan pattern. Item scanning maybe done from left to right or vice versa.

The image below shows the 7893 scan pattern.



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Communications Protocol

The 7893 communicates with the host terminal through the following:

- RS-232
- USB (IBM, NCR)
- PS/2 Keyboard Wedge
- USB Keyboard Wedge
- IBM RS-485

Autodiscrimination

The 7893 can decode a variety of barcodes. The ability to differentiate the various barcode types is a standard feature of the 7893. The following is a list of the different barcode types:

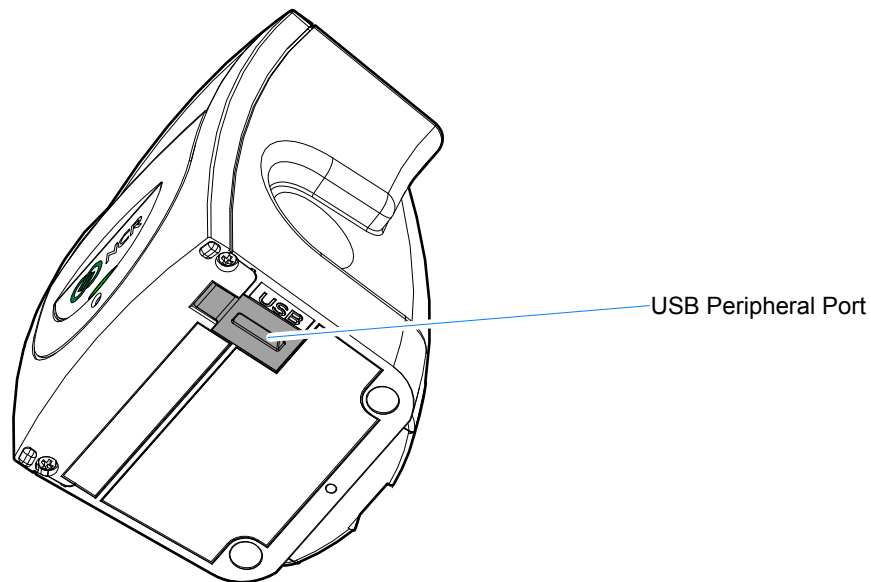
- UPC–A and UPC–E
- UPC–A and UPC–E with two-digit Add-on Symbols
- UPC–A and UPC–E with five-digit Add-on Symbols
- GS1–128 Coupon Extended Code
- Code 128 Markdown Code
- EAN–8 and EAN–13
- EAN–13 with two-digit Add-on Symbols
- EAN–13 with five-digit Add-on Symbols
- GS1 DataBar, formerly Reduced 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

USB Peripheral Port and Main (POS) Communication Port

The 7893 includes a USB Peripheral ports and a Main (POS) Communication Port. This port is included to permit an easy connection for peripherals and to improve its capabilities by permitting the devices to be hot-swappable (connecting or disconnecting devices without restarting the unit).

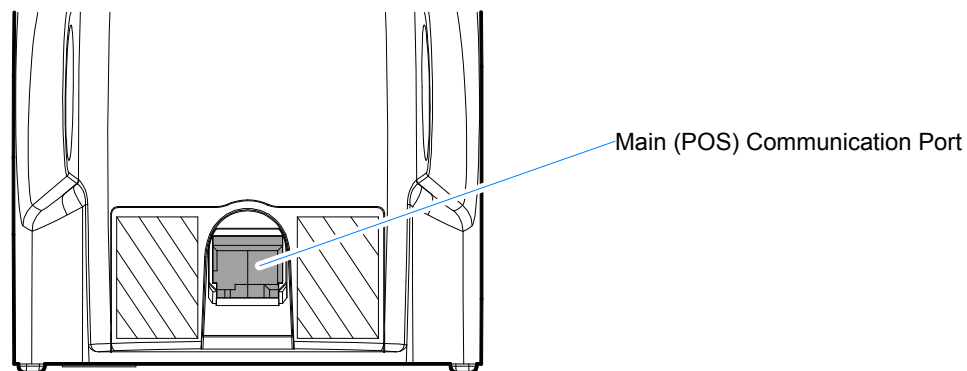
The USB peripheral port is located at the underside the unit. The purpose of the single USB peripheral port is to permit the use of a USB thumb drive.

Note: The total combined 5V current for the USB peripheral port must be limited to 500mA.



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



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Operator Interface

Interface between the operator and the 7893 is very minimal. Messages are sent from the 7893 to the operator through LED status indicator, audio tones, and voice messages.

Voice Messages

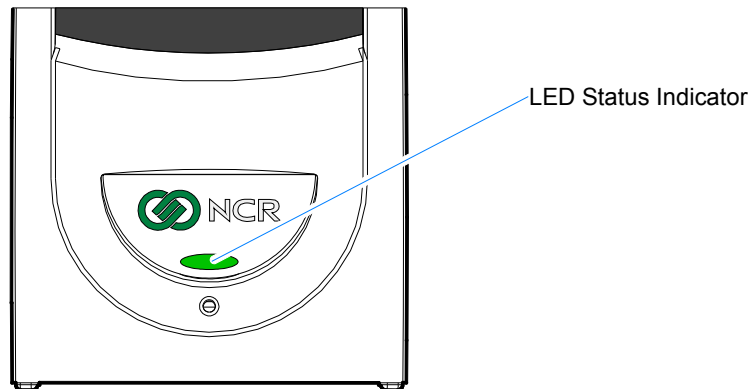
If the 7893 has voice enabled, certain mode changes and error conditions are alerted by synthesized voice messages. These messages give either the changed mode or the error message with the suggested corrective action. Voice is enabled and disabled in the Miscellaneous Parameter program.

Note: By default, Voice is ON.

LED Status Indicator

The LED Status Indicator is an intuitive feature of the 7893. It provides visual confirmation for scanning items using different colors— which is especially ideal for hearing-impaired cashiers and enables a quieter front end.

The LED Status Indicator is also useful in diagnosing problems with the 7893. Using a color coded LED, the user may quickly identify problems – thus effectively decreasing downtime and enhancing productivity.



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Motion Detector

The Motion Detector feature prolongs the life of the 7893. This is located inside the scanner window; it turns off components of the 7893 after an extended period of non-activity. The default non-active time is fifteen (15) minutes, but can be changed by programming. An item passing in front of the Motion Detector causes the 7893 to turn on. This movement is the normal item scanning movement.

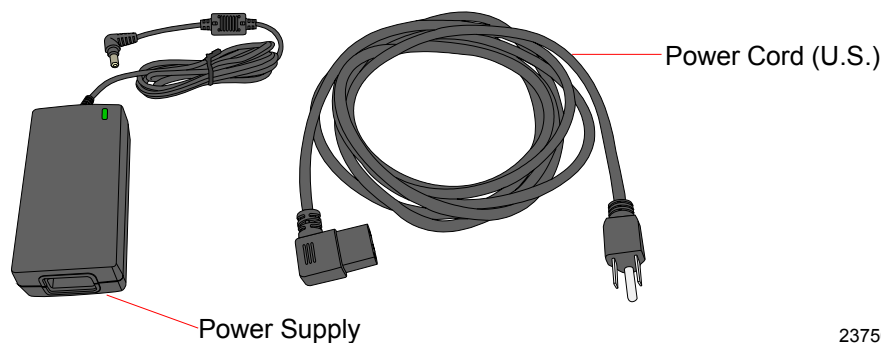
Not-On-File

The 7893 has a Not-On-File feature that locks the scanner and causes the LED Status Indicator to flash when a bar code is read that is not on file in the store system. This feature prevents the checker from moving beyond a product not recognized by the system. The Not-On-File feature is enabled and disabled through programming.

Note: The in-store processor and host terminal must have the host terminal software capable of supporting Not-On-File determination.

The 7893 is disabled from reading additional tags until the error is cleared. To clear, select the host terminal's **CLEAR** key and manually enter the item and price.

Power Supply



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The Power Supply provides the required DC voltage of the NCR 7893. 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 7893. Several power cords are available depending on the country of installation. The scanner shall operate with a 12 VDC supply with a peak current draw of less than 1 A. The power supply input can be 90-264 VAC at 50-60 Hz.

In addition, some host terminal interface types can power the 7893 without the use of this power supply. Please contact your NCR sales representative for details.

Parameter Programming

The NCR 7893 may need to be configured to meet specific installation needs. The 7893 uses special programming tags to modify the various programming parameters (refer to Chapter 5). This can be done through the following:

- scan using special tags
- sent from a PC with the NCR RealPOS Scanner Tool Suite
- remotely through the host terminal using the NCR RealPOS Scanner Tool Suite

Note: NCR does not control or specify the NCR scanner configuration required to support specific host terminal software unless you are using NCR host terminal software. You should consult with your host terminal software vendor or reseller to determine the correct configuration for your NCR scanner.

Scan Doctor Diagnostics

Scan Doctor is the state-of-the-art diagnostic software included in every 7893. 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 7893 each time power is applied and continues all throughout operation. When a problem is found, it notifies the operator through a color-coded LED on the LED Status Indicator, and a voice message. It lists the most probable causes first.

Many Scan Doctor statuses are available from the scanner using the NCR Scanner Tool Suite sold separately.

Power-On Wellness Check

When power is applied to the 7893, Scan Doctor performs a series of diagnostic tests after Power-On. These diagnostic tests include the following:

- RAM (read/write test).
- Spinner Motor Speed Test.
- Non-volatile Memory Test.
- IBM RS-485 TERMPWR Test
- Laser Diode Test.
- Program Code (ROM sum-check) Test.
- FPGA Load Test

If Scan Doctor finds a problem that hinders operation of the 7893 it disables the unit; otherwise the problem is identified and operation continues.

Ongoing Wellness Check

Scan Doctor runs continuously the moment 7893 is turned on. It constantly performs on-going diagnostic tests while the unit is running. These diagnostic tests include the following:

- Spinner Motor Speed Test.
- IBM RS-485 TERMPWR Test
- Laser Diode Test.

If a scanner malfunction is discovered during the power-on or on-going diagnostic tests, an error code will flash on the indicator LED with a unique color sequence. The speech that accompanies the indicator LED error sequence will suggest corrective action. The following table lists the supported error codes:

Error Code	Problem	Suspect Component
0	No power (LED off)	Power supply or PCB assembly
2	RAM test failed	PCB assembly
5	Motor too slow	Motor
6	Bad non-volatile memory (EEPROM)	PCB assembly
9	IBM RS485 – no TERMPWR signal	IBM host terminal; cable
11	Laser not turned on	PCB assembly
12	Program (ROM sum-check) test failed	PCB assembly
13	FPGA failed to program	PCB assembly

The following table lists the LED color sequences for each error code. The 7893 does not support all the available color sequences but they are included here for completeness and future additions:

Error Code	Sequence					
0	RED	ORANGE	(PAUSE)			
1	RED	ORANGE	ORANGE	(PAUSE)		
2	RED	ORANGE	ORANGE	ORANGE	(PAUSE)	
3	RED	ORANGE	ORANGE	ORANGE	ORANGE	(PAUSE)
4	RED	BLUE	(PAUSE)			
5	RED	BLUE	BLUE	(PAUSE)		
6	RED	BLUE	BLUE	BLUE	(PAUSE)	
7	RED	BLUE	BLUE	BLUE	BLUE	(PAUSE)
8	RED	GREEN	(PAUSE)			
9	RED	GREEN	GREEN	(PAUSE)		
10	RED	GREEN	GREEN	GREEN	(PAUSE)	

Error Code	Sequence					
11	RED	GREEN	GREEN	GREEN	GREEN	(PAUSE)
12	RED	RED	(PAUSE)			
13	RED	RED	RED	(PAUSE)		
14	RED	RED	RED	RED	(PAUSE)	
15	RED	RED	RED	RED	RED	(PAUSE)

Note: The 7893 will flash sequences of changing colors that match the Scan Advisor (5-LED light bar) color sequences used on other PXA scanners like the 7884. Except that the 7893 must flash the colors in sequence instead of displaying them all at once.

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 C for more information on the Scanner Service Diagnostics Tests.

Soft Power Down/Power Up

The 7893 can sense periods of scanner inactivity. The scanner's soft power down feature extends the life of the 7893 by disabling major portions of the unit, which includes the laser diode, 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 7893 motion detector detects movement. This detector is located inside the scan window. The 7893 can also be powered up when the checker signs on the host terminal. This capability assumes appropriate host terminal software.

Chapter 3: Installation

Preparing for Installation

There are several things you should do when preparing to install a 7893. Each of these is discussed in the following sections.

Unpack the Unit

Unpack the unit according to the instructions printed on the box. After everything is out of the box, take inventory to ensure that you have received all components. The following list identifies the package contents.

- 7893 scanner
- Power Supply
- Scanner Cable
- Documentation (also available from the NCR Web site (www.ncr.com))

Inspect the Unit for Damage

Inspect the unit for physical damage: broken or scratched scan window, broken or scratched cabinet, and so forth. If the scanner has been damaged due to shipping, notify the shipping carrier and the NCR representative. If other damages are found, notify NCR or the other supplier if not purchased directly from NCR. Out of Box failures are handled through the NCR customer Satisfaction Hot line.

Verify Correct Cables

The following table identifies the most common interface cables required for the different host connections that can be made with the 7893. See your NCR representative for additional cables.

Cable Number	Description
1432-C899-0040	Cable – USB, Latching, 7892SA, black
1432-C679-0040	Cable – PS/2 Keyboard Wedge, SuperASIC, black, coiled
1432-C897-0040	Cable – USB, non-latching
1432-C038-0030	Cable – Powered RS-232, Checkpoint, (coiled), black
1432-C967-0030	Cable – RS-232 Powered-Straight (black), coiled section
1416-C971-0030	Cable – RS-232 Scanner-Coiled (black)
1416-C807-0030	Verifone Ruby Powered Cable
1416-C547-0030	468X-9B
1416-C768-0040	Cable – Scanner, Gilbarco-coiled w/ RJ-45

Identifying Available Kits

A Power Brick for the electrical requirements you specified must be ordered with the 7893 if host terminal power is not used.

The following table identifies the kit number for all available kits.

Kit Number	Kit Description
7892-K125-V003	Universal Input, +12v output Power Supply w/ Australian Cable with Straight 'BM' Power
7892-K111-V003	Kit – Universal Input, +12v output Power Supply, North American & Japanese
7892-K129-V002	Kit – US Power Supply with Twist Lock Power Cord
7892-K120-V002	Kit – Universal Input, +12v output Power Supply
7892-K119-V002	Universal Input, +12v output Power Supply, UK Plug with Straight 'BM' Power, RoHS (7892-K119-V002)
7892-K128-V001	Kit – SEV Power Supply and Swiss Cordset
7892-K118-V003	Universal Input, +12v output Power Supply, European w/ Cord-Power (Intl)
7892-K901-V001	Kit – Stand NCR-CG1

Determine Scanner Location

When identifying a location for the 7893 scanner, consider the length of the connecting cables. The electrical outlet used for the Power Module can be approximately 74 in. (188 cm) from the host terminal. Depending on the Scanner Module Cable, the scanner can be approximately 9 ft. (274 cm), 6.6 feet (2 meters) or 13.1 feet (4 meters) from the host terminal or PC. These distances are normally shorter depending on how you route the connecting cables. Be sure that the Scanner Module Cable is long enough to permit the scanner to be picked up when required for large packages.

Like any electronic device, the 7893 should not be located in direct sunlight. Temperatures above 104 degrees Fahrenheit (40 degrees Celsius) can occur when sunlight falls on objects through windows or on an outdoor checkstand.

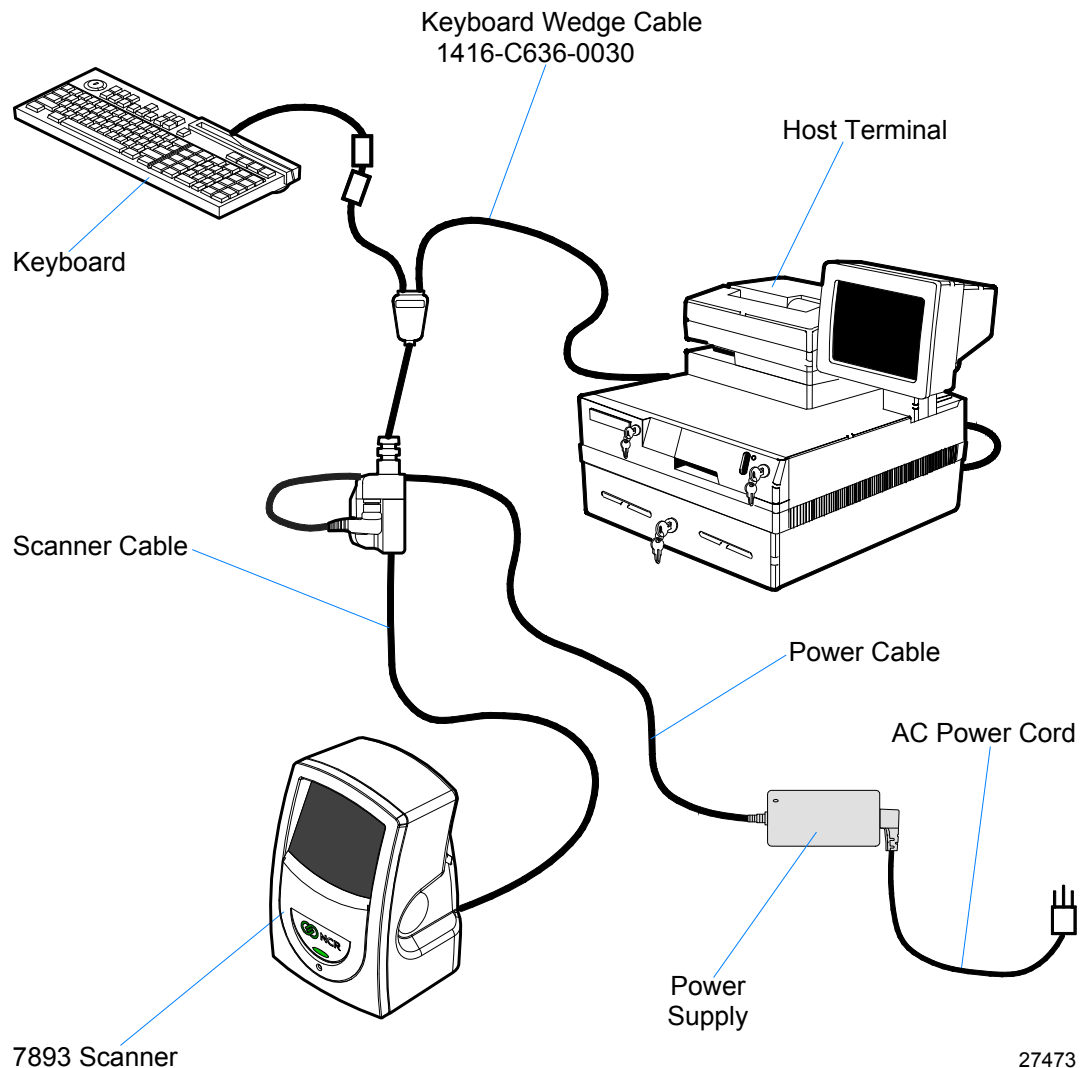
Installing the 7893

The 7893 can be connected to the host terminal through a PS/2 keyboard connector. Scan data is input into the PS/2 keyboard port. When connected in this configuration the 7893 cannot receive commands from the host terminal.

Note: For the 7893 there is only a single transmit message buffer. Also, the transmission of the data can be significantly longer than other communication protocols; the time depends on the length of the intercharacter delay.

Note: The PS/2 Keyboard Wedge cable connects both the scanner and the keyboard to the host terminal through the PS/2 keyboard port. This cable has two PS/2 connectors. If the host terminal system has an AT keyboard connector, two adapters are required: an AT to PS/2 and a PS/2 to AT. These adapters are available locally at most computer stores. For more information about PS/2 Keyboard Wedge, see *Appendix A*.

- Belkin F2N017—AT to PS/2
- Belkin F2N018—PS/2 to AT



USB Keyboard Wedge Communication

The 7893 can emulate a USB keyboard device by enumerating itself as an HID keyboard. By doing so, it passes barcodes directly to the host's keyboard driver. This eliminates the need of installing a third party driver since the operating system's native keyboard input driver will be used.

Programmables

1. Enable USB keyboard Communications Interface
Programming Mode + 1 + 0 + E + 3
2. Inter Character Delay
 - 4 ms: Programming Mode + 2 + 8 + D + 0
 - 8 ms: Programming Mode + 2 + 8 + D + 1
 - 16 ms: Programming Mode + 2 + 8 + D + 2
 - 32 ms: Programming Mode + 2 + 8 + D + 3
 - 64 ms: Programming Mode + 2 + 8 + D + 4
 - 1 ms: Programming Mode + 2 + 8 + D + 5 (New for this release, new default value)
3. Start and Stop Sentinel, maximum of 9 bytes each
 - Disable: Programming Mode + 2 + 9 + 0 (zeros all start/stop entries)
 - Start Sentinel: Programming Mode + 2 + 9 + 1 + DATA + End
 - Stop Sentinel: Programming Mode + 2 + 9 + 2 + DATA + End
 - DATA Input: Enter each byte as 2 nibbles
 - Example: Start Sentinel = 0x31, 0x21, 0x2D (0x31 will be transmitted first)
 - DATA Tag Sequence = 3 + 1 + 2 + 1 + 2 + D

Tag Message Format

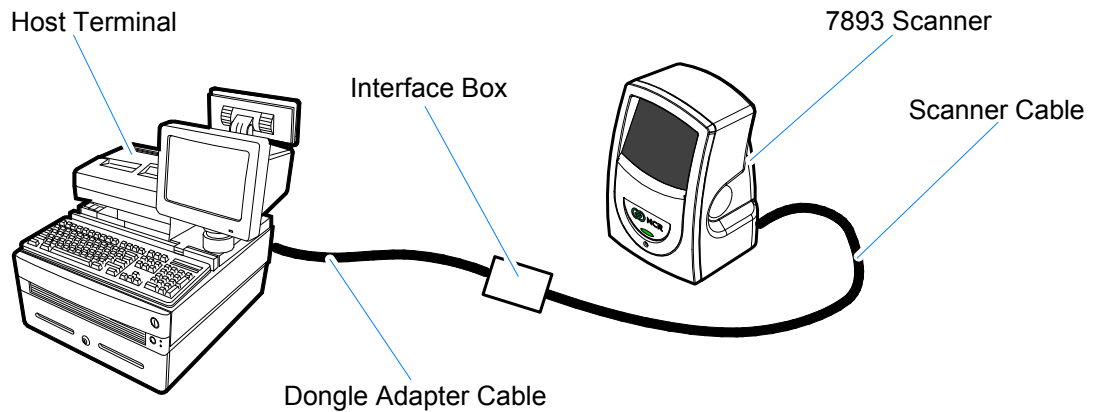
The Tag Message will consist of the following:

- Start Sentinel – 0 to 9 bytes
- Tag Identifier – 1 byte
- Tag Data – Variable, depending on the scanned tag
- Stop Sentinel – 0 to 9 bytes

Connecting Power

1. Verify that you have the correct Power Module for your electrical outlet.
2. Connect the power connector to the Interface Cable. Depending on the installation, this may be a connector on the cable or a box on the end of the cable.
3. Plug the Power Module into an electrical outlet. When the 7893 receives power, the diagnostics checks various hardware components. If the scanner passes the diagnostic tests, it gives a "ready" indication (four flashes of the LED Status Indicator). A green flash followed by a red flash is normal and indicates the scanner serial number is stored in the scanner's EEPROM.

Note: If the 7893 is receiving power from the host terminal, do not connect the Power Module.



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Warning: When the host terminal powers the 7893, do not plug the unit in live. This can cause the Power Supply in the host terminal to shut down and may also blow an internal fuse in the host terminal. Be sure to turn off the power to the host terminal before connecting the 7893.

Modifying the Scanner Program

The 7893 comes from the factory with all programming parameters set to default values. For changes on any values that do not match the system requirements, refer to Chapter 5, *Programming*.

Communications Protocol

The Communications Protocol programming mode selects the protocol that the 7893 uses to communicate with the host terminal.

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

IBM RS-485

The 7893 supports the IBM 468x/9x format and use the same protocol found on IBM host terminals.

RS-232

RS-232 is used to connect the 7893 to almost any RS-232 type of communications device. This protocol uses 7-bit ASCII to send tag to the device.

IBM USB

The 7893 can communicate to the host terminal through a USB cable. This parameter enables the IBM-USB format.

NCR (RS-232) USB

The 7893 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**.

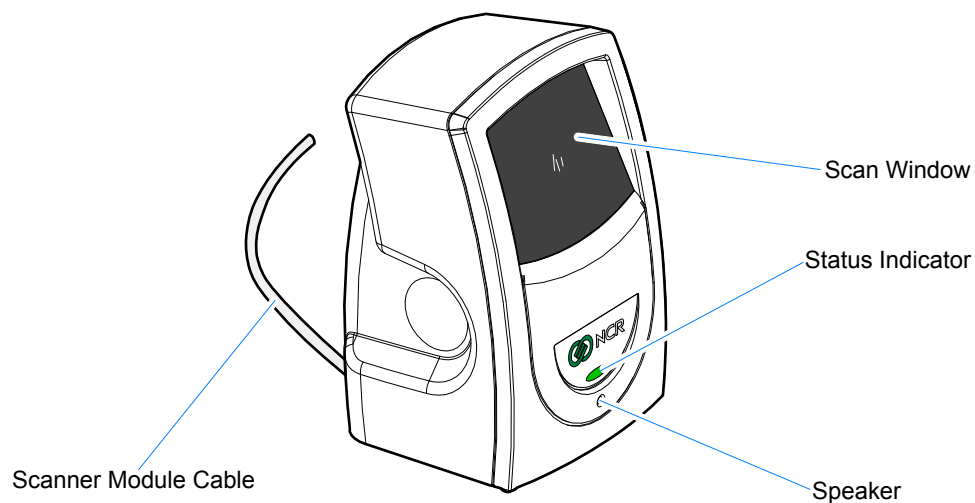
Wedge

The 7893 can communicate to the host terminal through a Wedge cable.

Chapter 4: Operating the Scanner

Scanner Components

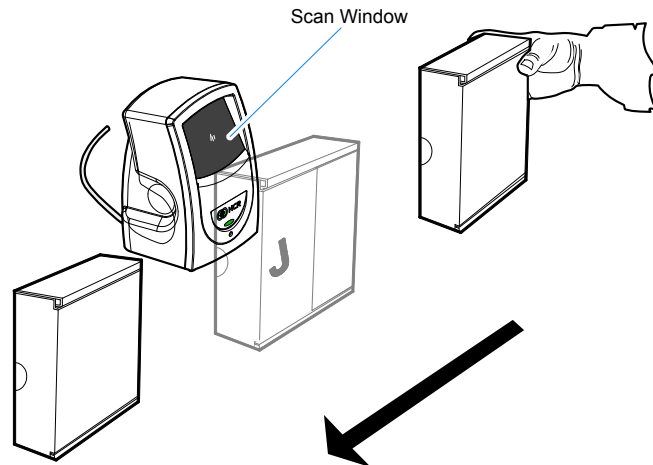
Before using the 7893, the user needs to be familiar with some of its components. The figure below shows the scanner and identifies some of the parts and features.



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Pass-by Scanning

This type of scanning is the familiar style used at checkout stands, such as in supermarkets. The item is moved across the front of the scanner window with the barcode label oriented to face the scanner window, as shown.



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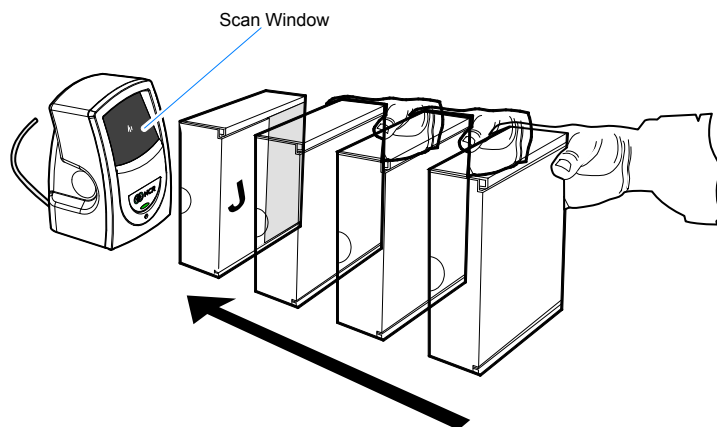
When the label is read the LED Status Indicator turns GREEN. If enabled, a Good Read Tone also sounds.

Presentation Scanning

Presentation scanning is much different from that used at checkout stands, such as in grocery stores. In the checkout stand environment, normally large quantities of items must be scanned in a short amount of time. Therefore, you pass the items over the scanner, moving them from one side of the checkstand to another. The scanner reads the label while the items are moving by.

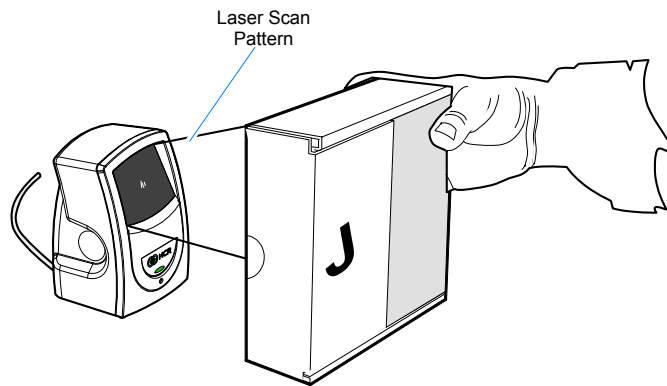
With presentation scanning, you simply present the label to the scanner and then remove it. Do not move the label *past* the scanner, but *to* the scanner. Presentation scanning is particularly useful in a retail environment where the number of items associated with each transaction is normally small. There are three simple steps to presentation scanning.

1. Move the bar code label to the scanner as shown.



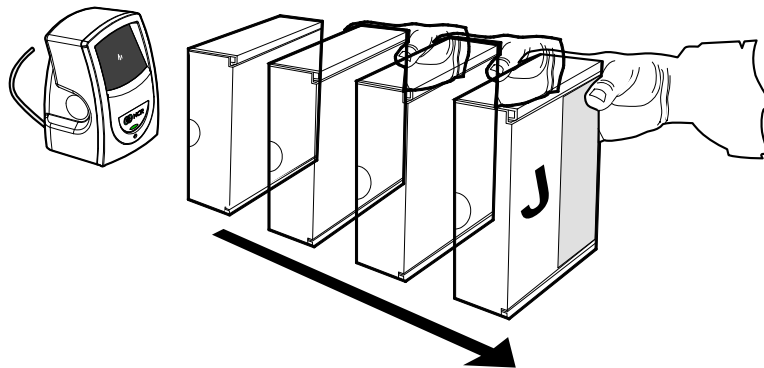
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2. Position the bar code label completely within the red Laser Scan Pattern as indicated below. Normally the bar code should be three to four inches from the scanner. When the label is read the LED Status Indicator turns green. If enabled, a Good Read Tone also sounds.



27478

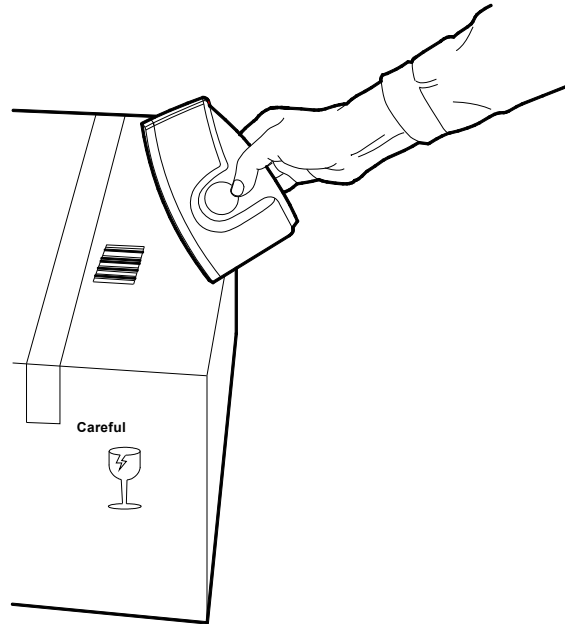
3. Move the bar code label away from the scanner as shown. The scanner is now ready to read another bar code label. To read another bar code, simply perform these three steps again.



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Hand Scanning

Occasionally you have merchandise that cannot be picked-up and presented to the scanner. The package may be too heavy or too awkward to hold while trying to position the bar code label. In these circumstances you can pick up the scanner and take it to the merchandise. The 7893 is designed so that you can easily pick the scanner up and hold it. Being light-weight, you can present the scanner to the merchandise with little effort.



17269

Label Orientation

Because the 7893 produces a dense, omni-directional scan pattern, labels can be read from many different angles.

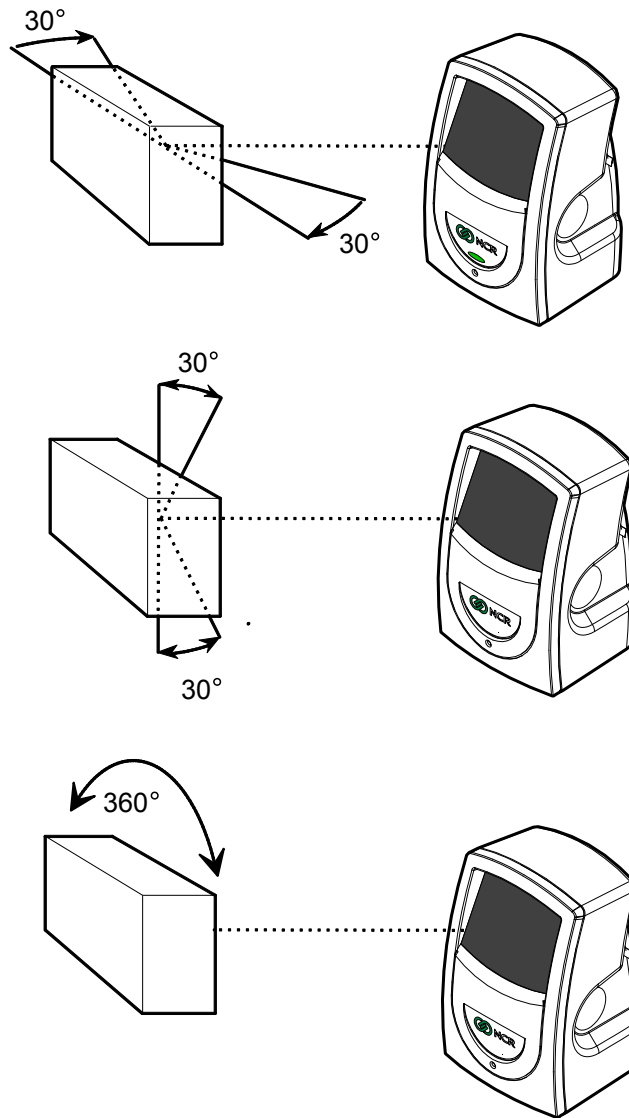
Scan Pattern Location

In order for the scanner to read a label, the center 90% of one scan line must cross the bar code. To successfully read Code 39 and Interleaved 2 of 5 labels, the scan line must cross the entire label, not missing any of the bars or spaces. UPC and Code 128 labels can be read by piecing together two reads of slightly more than half of each side of the bar code. Therefore, these labels are much easier to read and do not require as much accuracy when presenting the label to the scanner.

Because of the large scan pattern, you do not have to be very precise when you position the label. However, the concentration of scan lines is greater in the center of the scan pattern. Because of this, fewer rejects occur if you try to position the merchandise so that the label is presented toward the center of the scan pattern.

Label Rotation

The 7893 can read labels that are presented in many different positions. You can present labels that are rotated left or right 30 degrees from center, up or down 30 degrees from center, and 360 degrees around center.



27481

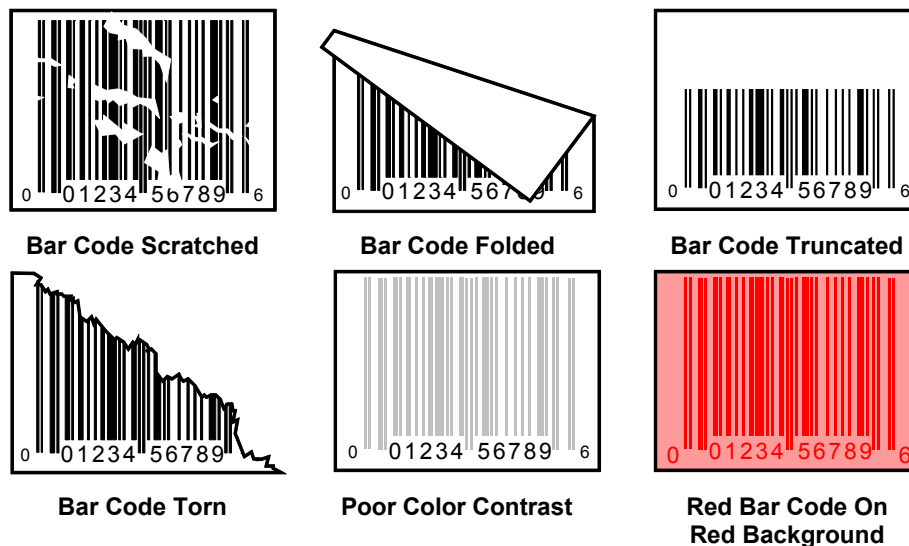
Distance from Scanner

For optimum reading, the distance you must place the label from the 7893 depends on the density and height of the bar code. You can relate this to focusing a camera, where you change the focus setting based on how far away the object is.

Depending on the label, reading can range from zero to six inches. Therefore, when you use your scanner, move the label toward the scanner to a comfortable distance in front of the scan window (approximately three to four inches) and hold the item momentarily. Normally the "Good Read" indication occurs within one fourth of a second. If this does not happen, try moving the label a little closer to the scanner.

Bar Code Quality

The ability of your 7893 to read bar code labels depends greatly on the quality of the label. Although the 7893 can often read bar codes that appear to be bad, it cannot read bar codes that are obstructed, defective, or damaged. If the scanner cannot read the bar code, you must key in the merchandise information at the host terminal and go on to the next item. Be sure to tell your supervisor if many bar code labels are defective. The figure below shows some examples of bad bar codes. These are only examples and are not all-inclusive.



R0026

The readability of a label depends on variables such as sizing, 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 the EAN UCC *General Specification* 1/2000.

PACESETTER

NCR has continually improved its PACESETTER technology used on NCR scanner 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 bar codes 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 NCR scanner products.

PACESETTER *Plus*

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

The three modes 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

Mode 2–Demonstration Mode

In Mode 2, the scanner is offline. Each subsequent scan of a bar code 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.

Mode 3–Operations

Mode 3 is the normal operating mode. The scanner can be programmed to add PACESETTER *Plus* information to the decoded UPC/EAN data. This information describes the label readability. However, the host terminal software must be capable of receiving the extra data. The host terminal 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

The PACESETTER III feature of the 7893 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 host terminal.

Read Indicators

The 7893 provides two methods of indicating valid reads: LED Status Indicator (visual) and Audible Tone (audio). The LED Status Indicator is always enabled; however, you can disable the Audible Tone.

LED Status Indicator

The LED Status Indicator light is located above the speaker. When the 7893 detects bar code data, the laser turns on and the LED Status Indicator turns GREEN. When an accurate read of a valid bar code occurs, the LED Status Indicator turns from GREEN to GREEN until the bar code is removed; it then turns GREEN again.

When using IBM 468x communications, the LED Status Indicator flashes PINK (group of nine flashes repeated at 3-second intervals) when the 7893 is offline. This can be caused if the IBM host terminal has not established communications with the 7893, the host terminal is not turned on, or the interface cable is not connected.

Audible Indicator

You can program a "Good Read" tone that indicates the scanner's ability to accurately read bar codes. This permits you to identify good reads without having to observe the LED Status Indicator. No tone is generated if the scanner does not detect a valid bar code.

You can enable or disable the Good Read Tone. If the Good Read Tone is enabled, you can also specify its volume and duration. Details for programming the Good Read Tone are in Chapter 5, *Programming*. The 7893 scanner comes with the Good Read Tone enabled.

Speech Functionality

The 7893 has the ability for speech. If speech is enabled the unit will speak during programming, during diagnostics, and when the unit encounters an error.

Programming Speech

Speech on the 7893 is enabled or disabled by scanning the following programming sequence.

Speech Enable/Disable toggle

- Programming Mode
- Hex 3
- Hex 2
- Hex D
- Save and Reset

Scan the programming tag sequence once to enable speech. Scan it a second time to disable speech.

Speech in Foreign Languages

The language used in the speech function of the 7893 can be toggled between English and foreign languages (French and Spanish). Scan the following programming tag sequence to change the language of speech.

Note: The default language for speech is English.

Setting Speech to a Foreign Language

- Programming Mode
- Hex 5
- Hex 6
- Hex 1
- Save and Reset

Setting Speech to English (Default)

- Programming Mode
- Hex 5
- Hex 6
- Hex 0
- Save and Reset

Taking Care of Your Scanner

Although your 7893 is rugged, remember to treat it carefully. Keeping the Scan Window clean helps keep the read rate exceptionally high. Follow these simple instructions to keep your scanner clean and well-maintained.

- Clean the scanner body with a soft cloth dampened by lukewarm water and a mild soap.
- When the Scan Window is dirty, clean it with a cloth dampened with lukewarm water.

The 7893 is designed to provide you with long, trouble-free service. However, it is up to you to care for your scanner. The following list identifies things to consider in taking care of the scanner.

- Handle the scanner with care.
- Keep the Scan Window clean.
- Do not pick up the scanner by the cable.
- Do not submerge the scanner in any liquid or let it get wet.

Chapter 5: Programming

This overview of programming the 7893 is intended to acquaint you with the overall programming procedure. The “Scanner Programming Summary” section at the end of this chapter is most useful after you have performed the programming function.

Programming Mode

To program the 7893, it must be in the Programming Mode. Enter this mode by scanning the **Programming Mode** tag immediately after applying power to the scanner; it must be the first tag scanned. This puts the scanner in the Base Programming state. When entering the Base Programming state, the scanner produces a long then short beep; the LED Status Indicator stays off. If speech is enabled, the scanner says “Program Mode”.

From the Base Programming state, select specific programming modes by scanning the proper two hexadecimal tags. The program parameters that you enter in a specific programming mode are identified on the associated Programming Worksheet.

In each specific programming mode, enter all the information contained on the worksheet by scanning all the proper tags in sequence as shown on the worksheet. In addition, use parameter shortcuts to enter a specific parameter. Program entry goes directly to a specific parameter when you scan the proper Hex tag.

If you do not know how your 7893 is programmed, you can set it to all defaults then enter any required changes to match your program. Do this by scanning the **Default** tag as the first tag after applying power to the scanner. This sets the defaults for the programmed default setting in the scanner. Next, scan the **Programming Mode** tag to enter the Programming Mode.

The scanner accepts programming tags only in the Programming Mode. If you scan a programming tag during normal operation, nothing happens.

Preparing for Your Program

Determine the requirements for your program, such as communications protocol, use of good read tone, timeouts, bar code types, label identifiers, RS-232 requirements (if using this protocol) and defaults. You may need to read your system application documentation.

Completing the Worksheets

Programming parameters are contained in the Programming Worksheets. Before using the worksheets, read the “Using the Programming Worksheets” section at the beginning of Chapter 7.

You need to know the communication protocol that your host terminal is using so that you can program your 7893 to the same protocol. If you are unsure of the setting in your scanner, scan the **Default** tag. The unit should make one long beep followed by the number of beeps corresponding to the communication protocol. (See Chapter 3 in this manual.) If this is not the desired default, program the communication protocol first, and then program any additional parameters using the programming tags and worksheets.

The Programming Worksheets identify the default values that are determined at the factory. You only need to use the worksheets that need changing for your particular requirements. Enter your program at the bottom of each worksheet. Be sure to read the sections later in this chapter that relate to the worksheets you are using.

Entering Your Program

Enter your program by performing three basic steps:

1. Enter the Base Programming state by scanning the **Programming Mode** tag first after applying power to the 7893 scanner.
2. Select a Programming Worksheet and enter its parameter data by scanning the Hex tags identified in *Your Program* at the bottom of the Programming Worksheet. Repeat this for each worksheet used if the default is changed.
3. Save your program by scanning the **Save and Reset** tag.

Requirements

- Programming Worksheets
- Programming Tags—Appendix B: *NCR Scanner Programming Tags* or BST0-2121-74

Help

- Refer to the “Programming Tags Chart” later in this chapter.
- Refer to the step-by-step procedure described in “Entering Your Program” section of this chapter.
- Refer to the “Scanner Programming Summary” later in this chapter.
- Refer to “Using the Programming Worksheets” later in this chapter.

Suggestion

If you do not know how your scanner is programmed then you can scan the following sequence to set it to Factory Defaults then make the necessary changes.

- PROGRAM MODE
- HEX 3
- HEX 4
- HEX 0
- SAVE&RESET

Note: The Factory Default for the 7893 is RS-232, 9600 baud, 7-bit data, and 1-stop bit.

Programming Considerations

The 7893 is fully programmable to meet your system requirements.

When you receive your 7893, it is already programmed with default values set at the factory. However, if you need to make programming changes, the procedure is very simple. First complete a series of programming worksheets then enter the information using special Programming Tags in Appendix A: *NCR Scanner Programming Tags* or BST0-2121-74.

Programming Tags

There are 5 unique tags and 16 hexadecimal (Hex) character tags. The following chart identifies each Programming Tag, its function, and the associated indicators.

Tag	Function	Indication
Default	This tag causes most parameters to go to default values. However, scanning this tag does not change a few parameters, including the Communications Protocol. The Default tag must be the first tag scanned after applying power to the 7893.	Performs power-up sequence.
Programming Mode	This tag puts the 7893 in the Base Programming State. It must be the first tag scanned after applying power to the 7893, or after scanning the Default tag.	LED Status Indicator—off. Short beep as soon as tag is read—Good Read tone. Long and short beep—In Base Programming State. If Voice is enabled, “Program Mode” is spoken and no beep sounds.
End	This tag ends certain input sequences. Since the programming mode determines the end of most sequences, this tag is not used often.	LED Status Indicator flashes green once. Short beep as soon as tag is read—Good Read tone. If Voice is enabled, a short beep sounds and returns to “Program Mode”.

Tag	Function	Indication
Save and Reset	This tag causes the 7893 to save and start using the programming data. It is used in the Base Programming State.	LED Status Indicator flashes red twice. Short beep as soon as tag is read—Good Read tone. If Voice is enabled, a short beep sounds and resets the scanner.
Abort	If this tag is scanned in the Base Programming State, programming is terminated and no previously entered parameters are saved.	LED Status Indicator flashes green once and returns to dim green. Short beep as soon as tag is read—Good Read tone. If Voice is enabled, a short beep sounds and returns to “Program Mode”.
Hex 0-Hex F	These 16 tags enter the selections for each of the parameters in the Parameter Programming Modes. They also select the Parameter Programming Mode.	Hex 0—no beep Hex 1 through Hex F—Beeps tag value. Multiples of 4 short beeps grouped together. Others are longer Example: Hex D is indicated by 12 short beeps (3 sets of 4) followed by 1 longer beep, for a total of 13. Note: In programming tag sequence, no beep for the second Hex tag; one short beep (different frequency from the Good Read Tone) after the last Hex tag. If Voice is enabled, “0” through “F” is spoken and no beep sounds.

Using the Programming Worksheets

The Programming Worksheets provide a convenient method of defining your 7893 program before loading it into the scanner. Each worksheet relates to a specific programming mode. Enter your selections and changes on the Worksheets. Save this information for future use should it be necessary to re-enter this program.

Most of the programming options have defaults that are determined at the factory. A bolded box around an entry selection specifies it as the default value. Scanning the **Default** tag as the first tag after applying power to the 7893 sets the parameters to these values. The scanner also indicates via beeps the Default setting.

Enter the program into your scanner by scanning the proper sequence of programming tags found in the *NCR Scanner Programming Tags* (BST0-2121-74). Following are the three major steps to programming your scanner.

1. Enter the Base Programming state by scanning the **Programming Mode** tag as the first tag after applying power to your 7893 scanner.
2. Select a Programming Worksheet and enter its parameter data by scanning the Hex tags identified in *Your Program* at the bottom of the Programming Worksheet. Repeat this for each worksheet.
3. Save your program by scanning the **Save and Reset** Tag.

Caution: Some host terminals can corrupt your program if they are running and are connected to the 7893 while you are entering a program. Either turn off the host terminal or disconnect the interface cable from the host terminal before entering your program.

Note: In most instances the factory determined defaults are the correct parameter settings. Normally you only need to change a few of these parameters and do not need to enter all the Programming Worksheets. When programming your scanner, it is recommended that you first set all the parameters to default values by scanning the **Default** tag, then make any necessary changes to the appropriate parameters. If you need to change the **Default** protocol, program that first.

Programming Description

The 7893 can be remotely programmed from its attached host terminal with no local intervention. To achieve this, special host terminal software (NCR RealPOS Scanner Tool Suite) must be purchased from NCR. This section describes programming a scanner with special bar code tags.

Programming the 7893 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 7893 installation. This includes information about the communications protocol, the types of bar codes to be scanned, the use of good read tones, and scanner time-outs.

Note: NCR does not control or specify the NCR scanner configuration required to support specific Host Terminal Software unless you are using NCR Host Terminal Software. You should consult with your Host Terminal Software vendor or reseller to determine the correct configuration for your NCR scanner.

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

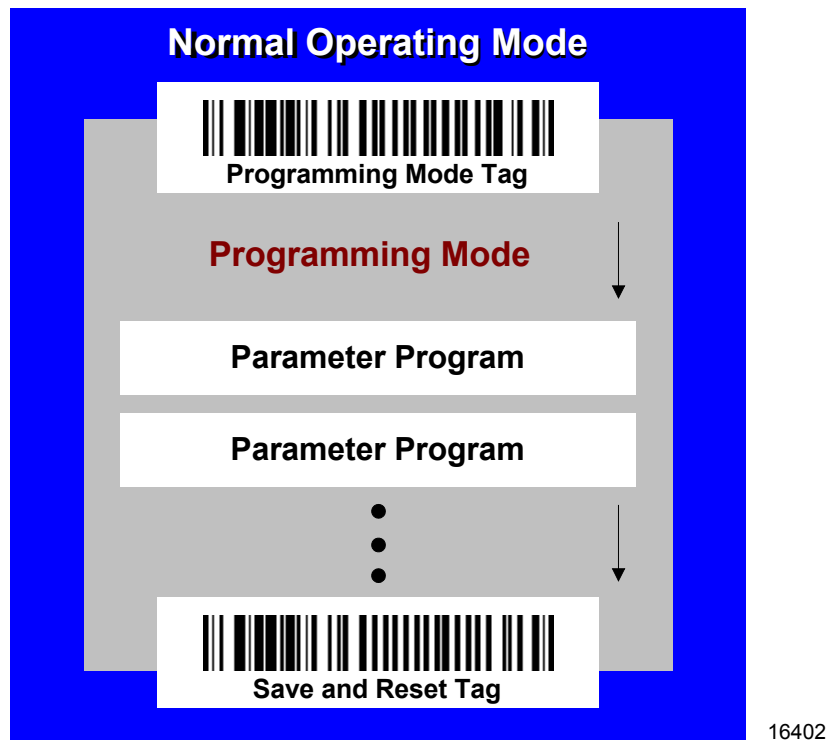
1. *Enter the programming mode.* Scan the **Program Mode** tag. This must be the first tag scanned after supplying power to the 7893 (or the first tag after scanning the **Reset** tag).
2. *Enter the parameters for each specific program.* Scan the two **Hex** tags to select a specific program, and then enter all parameter data for it. After all the information has been entered, the 7893 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.



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

- LED Status indicator dim green and then flashes bright green showing the tag was read. Scanner will reboot and perform power up sequence (the LED Status Indicator turns off momentarily, then comes on with a blue LED followed by a gradual change to bright green, then back to normal state at dim green).
- Short beep as soon as tag is read—Good Read tone
- Motor 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 7893 stays in Program Mode.

Indication—In a Parameter Program

- LED Status indicator flashes green once and then returns to dim green
- 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 7893

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

Indication

- Speaks "Set new default parameter complete", LED Status Indicator flashes bright green after speaking then beeps once.
- Performs power-up sequence (the LED Status Indicator turns off momentarily, then comes on with bright blue LED followed by a gradual change to bright green, then back to normal state 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

- LED Status indicator is initially dim green and then flashes bright green 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.

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 7893 into Program Mode. It must be the first tag scanned after applying power to the 7893, or after scanning the **Default** tag or the **Reset** tag.

Indication

- LED Status indicator is initially dim green and then flashes bright green 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 7893 to save and start using the programming data. It is used in the Program Mode.

Indication

- LED Status Indicator flashes red twice, then scanner reboots and performs power up sequence (the LED Status Indicator turns off momentarily, then comes on with bright blue LED followed by a gradual change to bright green, then back to normal state at dim green).
- Short beep as soon as tag is read—Good Read tone
- Motor stops momentarily while scanner reboots, then they come up to full speed.
- One beep when the scanner has completed power cycling.
- Reboots with no voice.

Speak Bar Codes Currently Enabled

This bar code prompts the scanner to speak a list of the bar code symbologies that the scanner has been programmed to recognize and read. Refer to Appendix B for the actual programming tag.

Indication

- The LED Status Indicator stays dim green.
- Scanner begins speaking as soon as bar code is scanned. It talks and lists all the bar codes 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

This bar code enables the user to obtain the scanner Serial Number without having to remove the scanner from the checkstand (if installed) and looking at the manufacturing name plate label on the back of the unit. Refer to Appendix B for the actual programming tag.

Indication

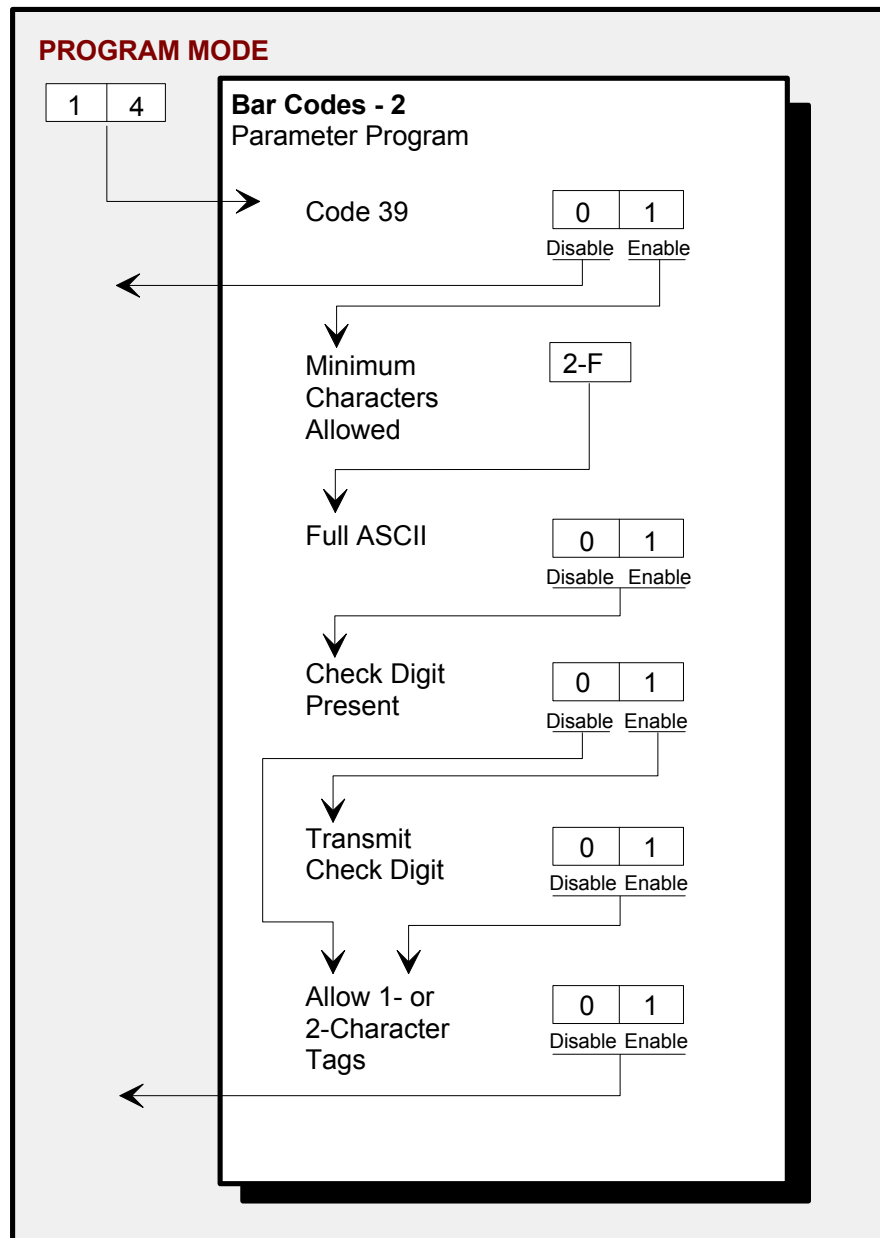
- The LED Status Indicator light up bright green while it is speaking then goes back to dim green when it is done.
- As soon as the scanner reads the bar code, it says “Scanner S N” then speaks all 10 digits.
- If the scanner says “Scanner S N 0 0 0 0 0 0 0 0 0 0”, then the actual serial number is NOT stored in memory.
- The scanner beeps when it is done speaking the serial number.

Program Entry Procedure

Enter All Parameters

To enter all parameters in a Parameter Program, scan the two Hex codes that set the 7893 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 bar codes are disabled, programming immediately returns to Program Mode. However, if Code 39 bar codes are enabled, the scanner directs the user to continue entering parameter information.



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Program Entry Procedure

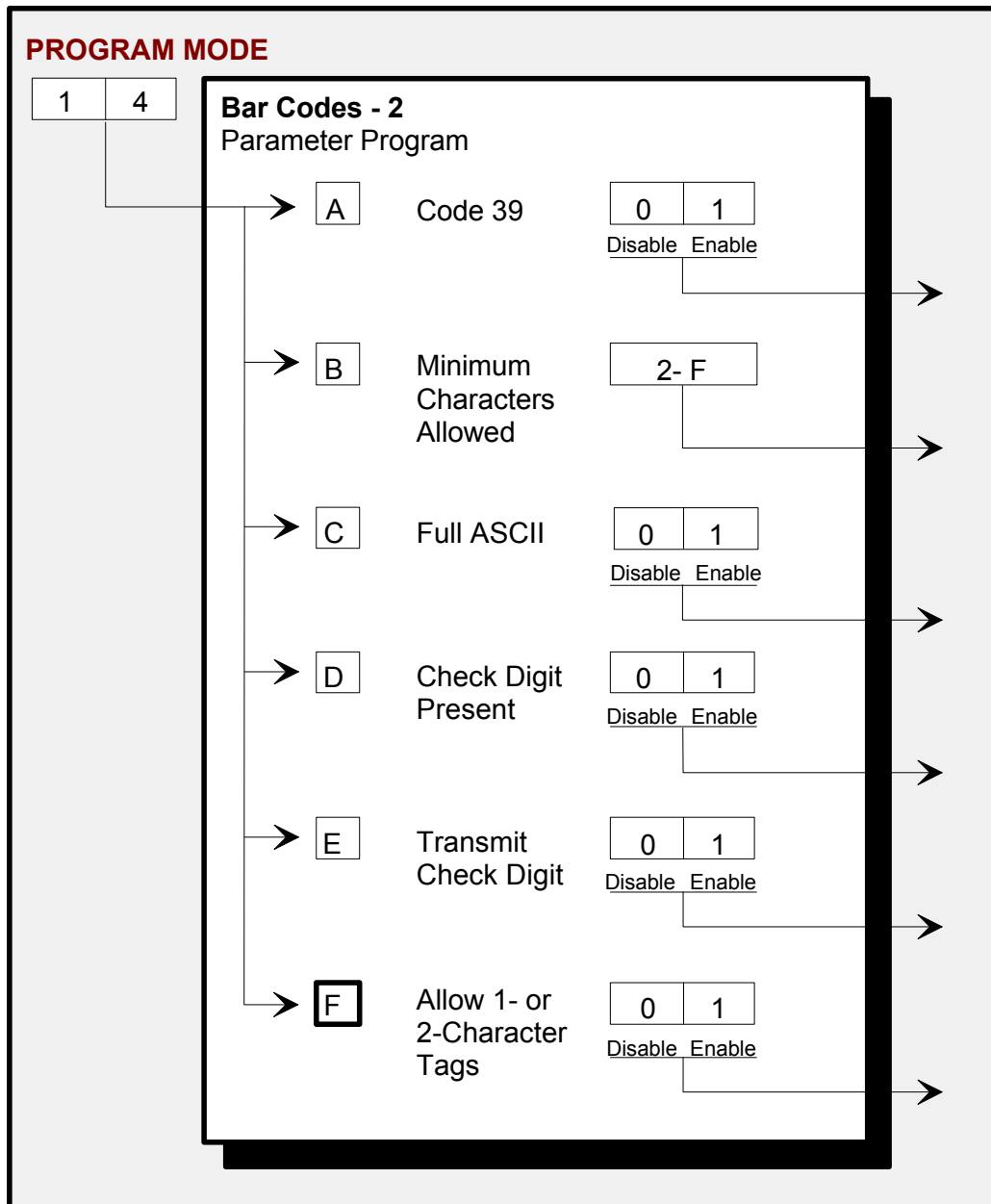
The following example is a typical program entry procedure.

1. Disconnect scanner from the host terminal.
2. Apply power to the 7893 (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 7893 is reset (goes through initial power-up sequence). The 7893 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 one decides 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.



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Program Entry Procedure (Shortcut Method)

The following example is a typical program entry procedure.

1. Disconnect scanner from the host terminal.
2. Apply power to the 7893 (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 7893 is reset (goes through initial power-up sequence). The 7893 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	2232 Hertz
	Tone Length	45 ms
	Tone Volume	2
	Not-On-File Volume	0
Timers	Lockout Time	450 Milliseconds
	Restart Lockout Timer	On
	Active Time	15 Minutes
	900ms Lockout Timer Restart Limit	Off

Programming Mode	Program Parameters	Default Setting
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 Tag Label	Off
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	2232 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	2232 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
Bar Codes-4	Code 128	Disable
	Minimum Data Character Allowed	3
	EAN/UCC 128	Disable
	Partial Decoding	Disable
	Code 128 Tone	Disable
	Tone Length	75 Milliseconds
	Tone Frequency	2232 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	2232 Hertz
	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
Label Identifiers	Identifier Type	Default Prefix
	Common Byte 1	5 D
	Common Byte 2	4 2
	Note: Default identifiers for each bar code type are available under Program Parameter Descriptions/Label Identifiers section of this chapter.	
Additional Bar Codes Options	UPC Number System Character	Send
	UPC-E Number System Character	Send
	UPC-A Number System Character	Send

Programming Mode	Program Parameters	Default Setting
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
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
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 7893.

- Turn the host terminal Off or disconnect all interface cables to the 7893 before entering the program. Some host terminals can corrupt the program if they are running and are connected to the 7893 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 7893 goes through initial startup and operates using the old program.
- If unknown how the 7893 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 7893. 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

Your Program

1

0

Communications ProtocolProtocol

Protocol

3

5

IBM Slot ScannerRS-232

D

E 0

E 2

E 3

IBM USBNCR (RS-232) USBPS/2 WedgeUSB Keyboard Wedge

24036

The Communications Protocol programming mode selects the protocol that the 7893 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 7893 support the IBM 468x/9x format and use the same protocol found on IBM host 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.

IBM USB

The 7893 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 7893 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**.

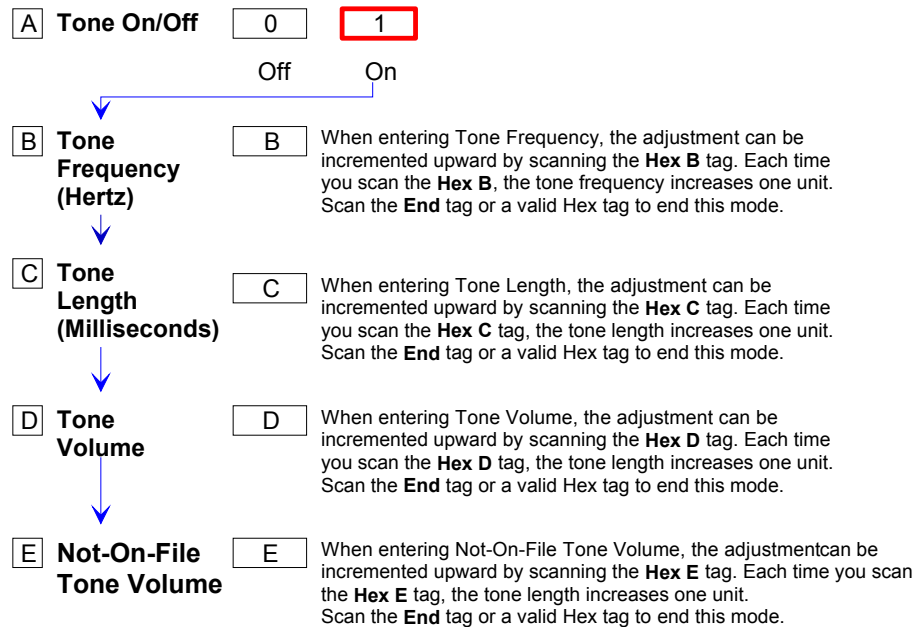
RS-232

RS-232 is used to connect the 7893 to almost any RS-232 type of communications device. This protocol uses 7-bit ASCII by default to send tag data to the device.

Good Read Tone

Your Program

1	1	
Good Read Tone	Protocol	



22761

The Good Read Tone programming mode selects the parameters for sounding a tone each time the 7893 successfully reads a bar code. 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. R

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:

3348 Hz

2976 Hz

2679 Hz

2435 Hz

2232 Hz

3906 Hz

3750 Hz

3538 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.

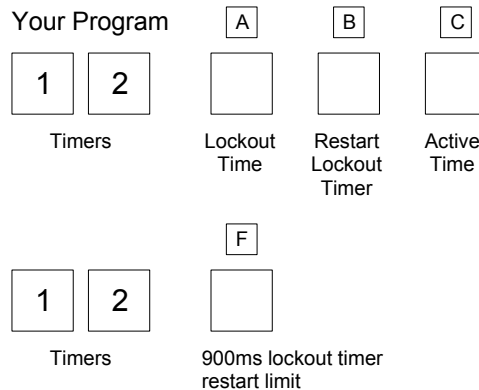
There are eight different volume settings available on the 7893. However, there is a programming sequence which allows the user to access eleven volumes. Refer to the Volume Adjust section in this chapter for details on activating the eleven volumes and other functions of the volume button.

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 host 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



A Lockout Time (Milliseconds)	8 350	0 450	1 600	2 750	3 900
	4 1050	5 1200	6 1350	7 1500	

↓

B Restart Lockout Timer	0 Off	1 On
--------------------------------	----------	----------------

↓

C Active Time (Minutes)	0 0	1 15	2 30	3 60
--------------------------------	--------	----------------	---------	---------

F 900ms Lockout Timer Restart Limit	0 Disable	1 Enable
--	---------------------	-------------

NOTE: Direct Entry Only.
If the Restart Lockout Timer [B] is set to OFF, the 900 ms Lockout Timer Restart Limit [F] has no effect.

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.

27550

The Timers programming mode controls the two 7893 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 bar code. After reading a bar code, 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 bar code 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 bar code. Turning on the Restart Lockout Timer option has the following effect. If a bar code 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 7893 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.

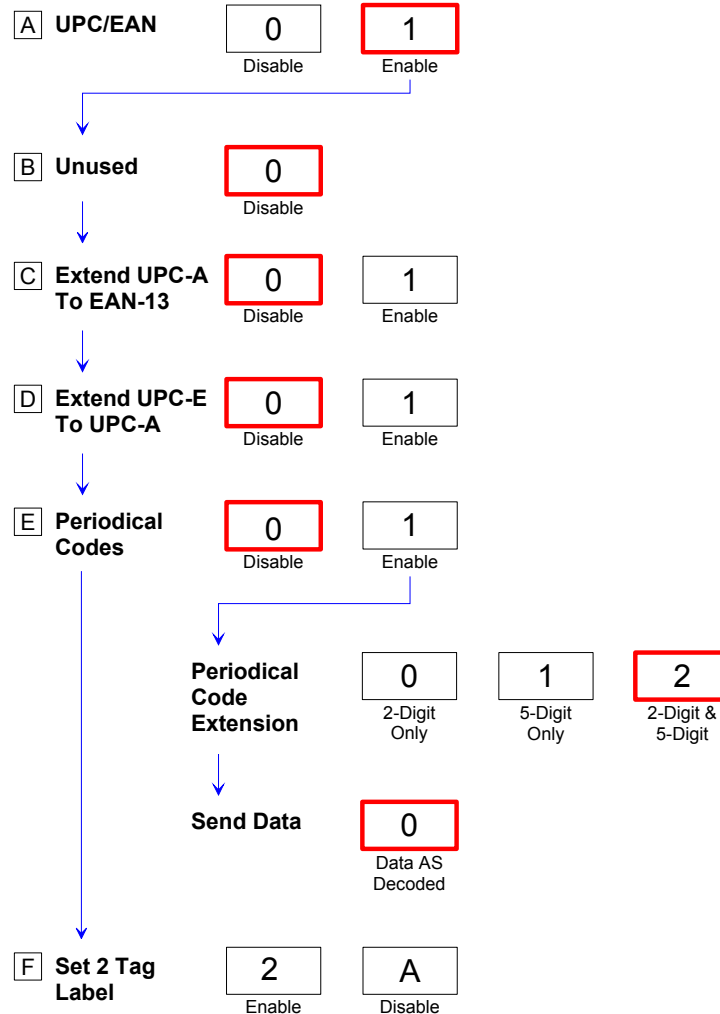
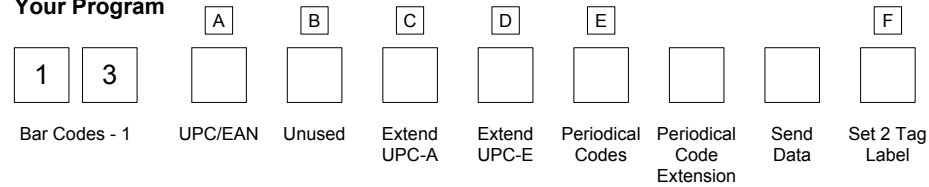
Note: NCR suggests that the Active Time parameter not be set to 0. When set to 0, the laser lights will be ON all the time which reduces the life expectancy of the laser diodes.

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 bar code as the same bar code 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

Your Program



24037

The Bar Codes–1 programming mode contains programming parameters for UPC/EAN bar codes. 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 bar codes. 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 bar codes 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 bar codes. 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

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 Disable ☐ 1 Enable

B Minimum Characters Allowed Default

C Full ASCII ☒ 0 Disable ☐ 1 Enable

D Check Digit Present ☒ 0 Disable ☐ 1 Enable **Note:** For SuperASIC scanners, continue to option F even if Check Digit Present **Disable** is chosen.

E Transmit Check Digit ☒ 0 Disable ☐ 1 Enable

F Allow 1- or 2-Character Tags ☒ 0 Disable ☐ 1 Enable

24174

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 host terminal software 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 host terminal software requires this capability, scan the **Hex 1** tag to enable it.

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	3348 Hz
Hex 1	2976 Hz
Hex 2	2679 Hz
Hex 3	2435 Hz
Hex 4	2232 Hz
Hex 5	3906 Hz
Hex 6	3750 Hz
Hex 7	3538 Hz

Note: The default Code 39 tone frequency is 2232 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

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 ☐ 1
Disable Enable

B Bar Code Length ☐ 0 ☐ 1
Range Check Specific Check

Value 1 → Character → ☐ 0 - 3 ☐ 0 - 9
Minimum → Character 1 Default ☐ 0 ☐ 8
Character 2 ☐ 0 - 9

Value 2 → Character → ☐ 0 - 3 ☐ 0 - 9
Maximum → Character 1 Default ☐ 1 ☐ 6
Character 2 ☐ 0 - 9

C Check Digit Present ☐ 0 ☐ 1
Disable Enable

D Transmit Check Digit ☐ 0 ☐ 1
Disable Enable

E Easy I25 ☐ 0 ☐ 1 **Note:** Requires only 1 scan.
Disable Enable

25788

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.

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	3348 Hz
Hex 1	2976 Hz
Hex 2	2679 Hz
Hex 3	2435 Hz
Hex 4	2232 Hz
Hex 5	3906 Hz
Hex 6	3750 Hz
Hex 7	3538 Hz

Note: The default Interleaved 2 of 5 tone frequency is 2232 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

Your Program

1

7

Bar Codes - 4

A

Code 128

B

Minimum Data Characters Allowed

C

UCC 128

F

1

7

Bar Codes - 4

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

NOTE: Direct Entry Only.

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.

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	3348 Hz
Hex 1	2976 Hz
Hex 2	2679 Hz
Hex 3	2435 Hz
Hex 4	2232 Hz
Hex 5	3906 Hz
Hex 6	3750 Hz
Hex 7	3538 Hz

Note: The default Code 128 tone frequency is 2232 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**).

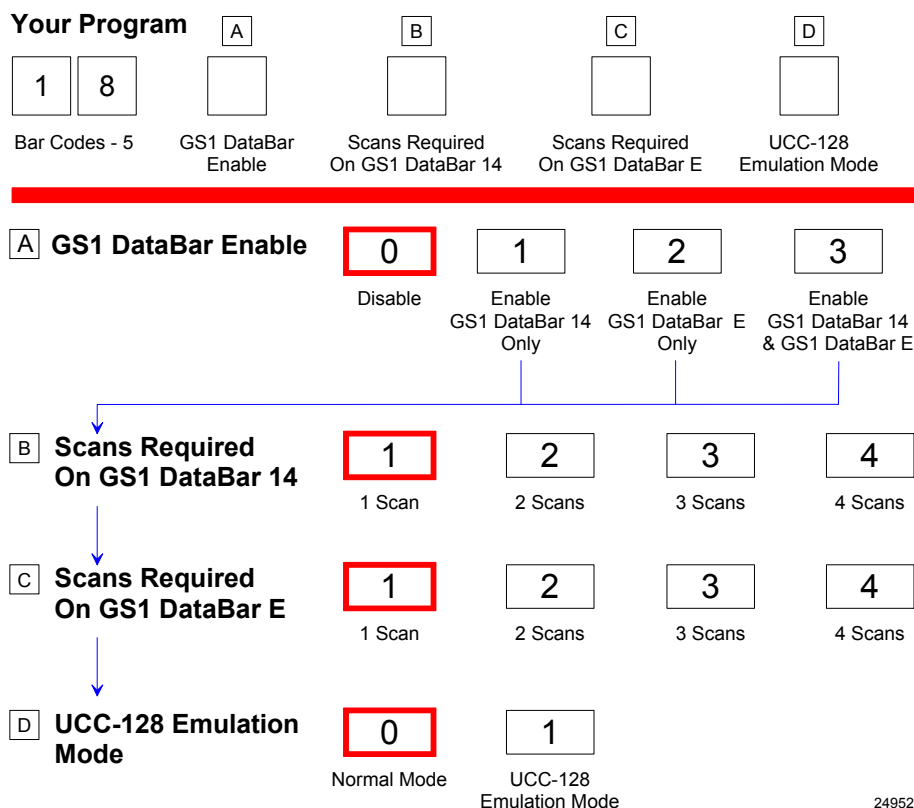
Overlap Characters

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.

GS1 DataBar Expanded Application Identifier Programming Options

There are situations where it may be desirable to disable certain DataBar Expanded Application Identifiers (AI) while enabling others. This may be due to the system software not being capable of handling certain DataBar Expanded tag data. Following are examples of such scenarios and how the scanner can be programmed to enable or disable the scanning of specific DataBar AIs:

1. Assume the host terminal software is only capable of handling DataBar with AI of 8110 (coupons). To enable the scanning of DataBar AI 8110 but disable all other DataBar AIs, use the following programming:

Enable DataBar Expanded Program Mode, Hex 1, Hex 8, Hex A, Hex 2, Save and Reset	Enables DataBar Expanded decoding
Disable General DataBar Expanded Program Mode Hex 7, Hex 1, Hex F, Save and Reset	Disables all DataBar Expanded barcodes except AIs specifically enabled
Enable DataBar AI 8110 Program Mode, Hex 7, Hex 1, Hex 3, Save and Reset	Enables DataBar Expanded AI 8110 to scan

2. Assume host terminal software capable of handling general DataBar AIs except DataBar Coupon AI 8110. To disable the scanning of DataBar AI 8110 but enable other DataBar AI's, use the following programming:

Enable DataBar Expanded Program Mode, Hex 1, Hex 8, Hex A, Hex 2, Save and Reset	Enables DataBar Expanded decoding
Enable General DataBar Expanded Program Mode, Hex 7, Hex 1, Hex E, Save and Reset	Enables all DataBar Expanded barcodes except AIs specifically disabled
Disable DataBar AI 8110 Program Mode, Hex 7, Hex 1, Hex 1, Save and Reset	Disables DataBar Expanded AI 8110 from scanning

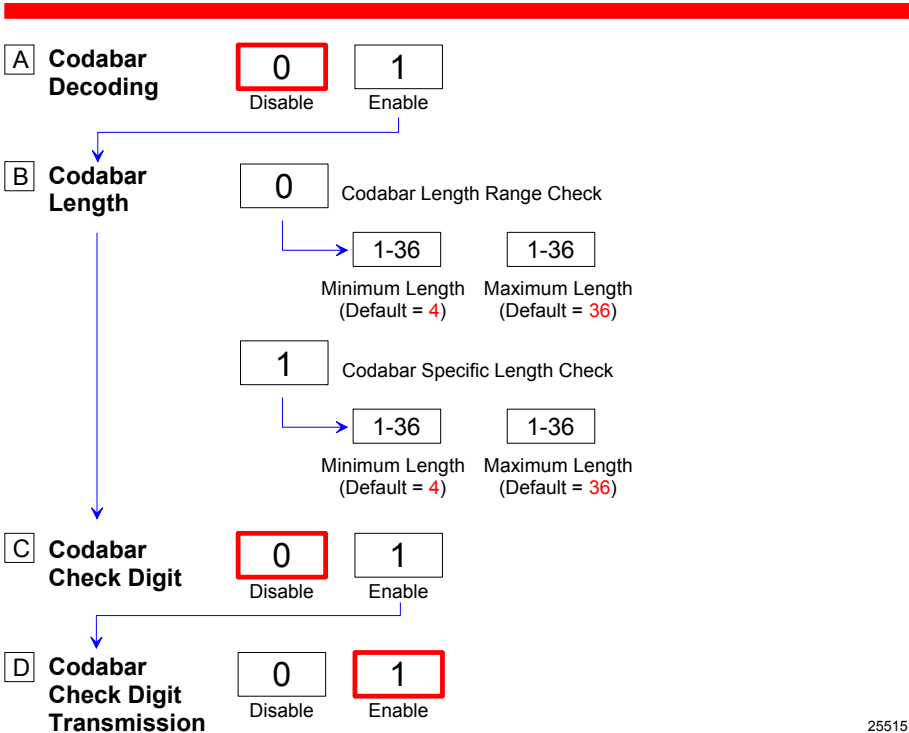
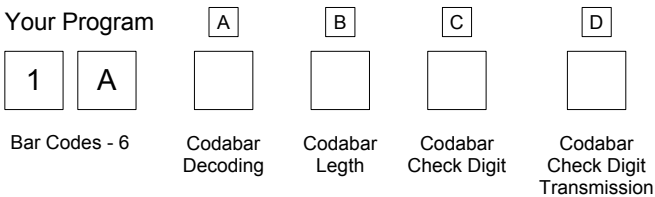
Other DataBar AIs can be substituted or added to the programming sequences in the examples above.

The following are all the other available programming options:

Enable only DataBar Expanded Program Mode, Hex 1, Hex 8, Hex A, Hex 2, Save and Reset	Enables only DataBar Expanded decoding
Enable Databar 14 and GS1 Databar Expanded Program Mode, Hex 1, Hex 8, Hex A, Hex 3, Save and Reset	
Disable DataBar Expanded Program Mode, Hex 1, Hex A, Hex 8, Hex 1, Save and Reset	Disables all DataBar Expanded decoding only
Disable Databar 14 and GS1 Databar Expanded Program Mode, Hex 1, Hex 8, Hex A, Hex 0, Save and Reset	

Enable General DataBar Expanded Program Mode, Hex 7, Hex 1, Hex E, Save and Reset	Enables all DataBar Expanded except AIs specifically disabled (default)
Disable General DataBar Expanded Program Modes, Hex 7, Hex 1, Hex F, Save and Reset	Disables all DataBar Expanded except AIs specifically enabled
Specifically Enable DataBar AI 8110 Program Mode, Hex 7, Hex 1, Hex 3, Save and Reset Program Mode, Hex 7, Hex 1, Hex 2, Save and Reset	Set DataBar Expanded AI 8110 enable (default)
Specifically Disable DataBar AI 8110 Program Mode, Hex 7, Hex 1, Hex 1, Save and Reset Program Mode, Hex 7, Hex 1, Hex 0, Save and Reset	Set DataBar Expanded AI 8110 disable (default)
Specifically Enable DataBar AI 019x Program Mode, Hex 7, Hex 1, Hex 7, Save and Reset Program Mode, Hex 7, Hex 1, Hex 6, Save and Reset	Set DataBar Expanded AI 019x variable measure enable (default)
Specifically Disable DataBar AI 019x Program Mode, Hex 7, Hex 1, Hex 5, Save and Reset. Program Mode, Hex 7, Hex 1, Hex 4, Save and Reset	Set DataBar Expanded AI 019x variable measure disable (default)

Bar Codes–6



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	3348 Hz
Hex 1	2976 Hz
Hex 2	2679 Hz
Hex 3	2435 Hz
Hex 4	2232 Hz
Hex 5	3906 Hz
Hex 6	3750 Hz
Hex 7	3538 Hz

Note: The default Codabar tone frequency is 2232 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

Your Program

7

F

Bar Codes - 7

Pharmacode

2

3

Disable

Enable

Pharmacode
Check Digit
Transmission

4

5

Disable

Enable

25516

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

Your Program

A	B	C	D			
1 6						
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	Common Byte and Unique Identifier Defaults vary according to Bar Code Type
Hex Character (ASCII Code Chart)	Hex Character (ASCII Code Chart)	

25514

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.

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	je0
GS1 DataBar-Expanded	5DH 65H 30H	je0
Pharmacode	41H	A
Codabar	4EH	N

25577

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

22769

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

Your Program

2

0

A

B

C

D

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

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.

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 7893 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

Your Program

2

1

A

B

C

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

4

5

6

7

8

9

A

B

C

D

E

F

Disable UPC-A
Disable EAN-8
Disable EAN-13
Disable UPC-E

Enable UPC-A
Enable EAN-8
Enable EAN-13
Disable UPC-E

Disable UPC-A
Disable EAN-8
Disable EAN-13
Enable UPC-E

Enable UPC-A
Enable EAN-8
Enable EAN-13
Enable UPC-E

Disable UPC-A
Disable EAN-8
Enable EAN-13
Disable UPC-E

Disable UPC-A
Disable EAN-8
Enable EAN-13
Enable UPC-E

Disable UPC-A
Enable EAN-8
Disable EAN-13
Disable UPC-E

Disable UPC-A
Enable EAN-8
Disable EAN-13
Enable UPC-E

Disable UPC-A
Enable EAN-8
Enable EAN-13
Disable UPC-E

Disable UPC-A
Enable EAN-8
Enable EAN-13
Enable UPC-E

Enable UPC-A
Disable EAN-8
Disable EAN-13
Disable UPC-E

Enable UPC-A
Disable EAN-8
Disable EAN-13
Enable UPC-E

Enable UPC-A
Disable EAN-8
Disable EAN-13
Disable UPC-E

Enable UPC-A
Disable EAN-8
Disable EAN-13
Enable UPC-E

24041

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.

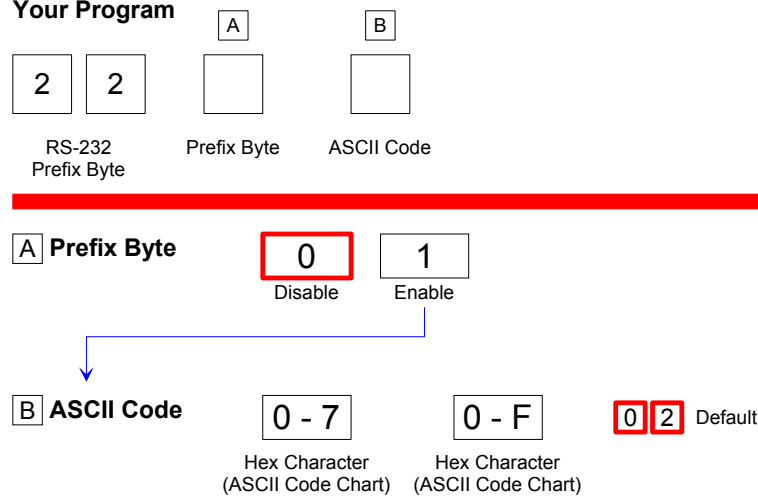
Select the interface by scanning the appropriate **Hex 0** through **Hex 5** tag.

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

Your Program



22774

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

Your Program

2

3

RS-232 Terminator Byte

A

Terminator Byte 1

B

ASCII Code

C

Terminator Byte 2

ASCII Code

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

Hex Character (ASCII Code Chart)

Hex Character (ASCII Code Chart)

0

3

Default

C

Terminator Byte 2

0

1

Disable

Enable

NOTE:

Terminator Byte 2 is a direct entry only.

ASCII Code

0 - 7

0 - F

Hex Character (ASCII Code Chart)

Hex Character (ASCII Code Chart)

0

3

Default

25786

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

Your Program

<div>2</div>	<div>4</div>	<div></div>	<div></div>	<div></div>
Communication Options	RS-232 Delay	Scanner or Scanner / Scale Format	Good Weigh Tone	

RS-232 Delay	<div>0</div> No Delay	<div>1</div> 10 Milliseconds	<div>2</div> 50 Milliseconds
--------------	--------------------------	---------------------------------	---------------------------------

Scanner or Scanner / Scale Format	<div>4</div> Scanner Only	<div>5</div> Scanner / Scale
---	------------------------------	---------------------------------

Good Weigh Tone	<div>8</div> Disable	<div>9</div> Enable
--------------------	-------------------------	------------------------

22779

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

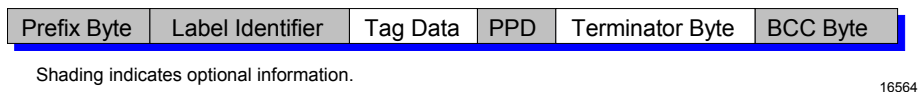
The Scanner or Scanner/Scale Format option permits forcing the data format to either scanner only format or scanner/scale format to accommodate the host terminal. In some circumstances a host terminal may not be able to handle the normal format sent to it. In that case, selecting one of these options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

The choices for this option are as follows:

- **Hex 4** for Scanner only format
- **Hex 5** for Scanner/Scale format

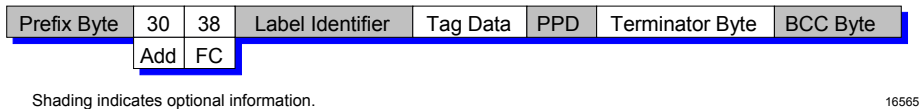
The normal (default) format for scanner only tag data messages is as follows:

- Scanner-Only Tag Data
- Message Format



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

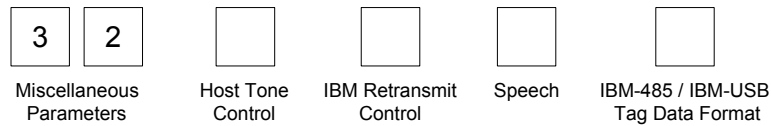
- Scanner/Scale Tag Data
- Message Format



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).

Miscellaneous Parameters

Your Program



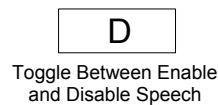
Host Tone Control



IBM Retransmit Control



Speech



IBM-485 / IBM-USB Tag Data Format



22813

The Miscellaneous Parameters programming mode controls parameters associated with the 7893 that do not fit easily into any of the other categories. The 7893 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.

Enable/Disable Voice Messages

The 7893 uses voice messages for diagnostics, 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. 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

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

Your Program

<div>1</div>	<div>9</div>	<div></div>	<div></div>	<div></div>
Number System Character	UPC-A & UPC-E Number System	UPC-E Number System	UPC-A Number System	

UPC-A & UPC-E Number System	<div>0</div>	<div>1</div>	
	Not Sent	Sent	
UPC-E Number System	<div>4</div>	<div>5</div>	
	Not Sent	Sent	
UPC-A Number System	<div>6</div>	<div>7</div>	
	Not Sent	Sent	

24040

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

Programming Worksheets

The programming worksheets provide a convenient method of defining the 7893 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	5		
IBM Slot Scanner	RS-232		
D	E 0	E 2	E 3
IBM USB	NCR (RS-232) USB	PS/2 Wedge	USB Keyboard Wedge

24036

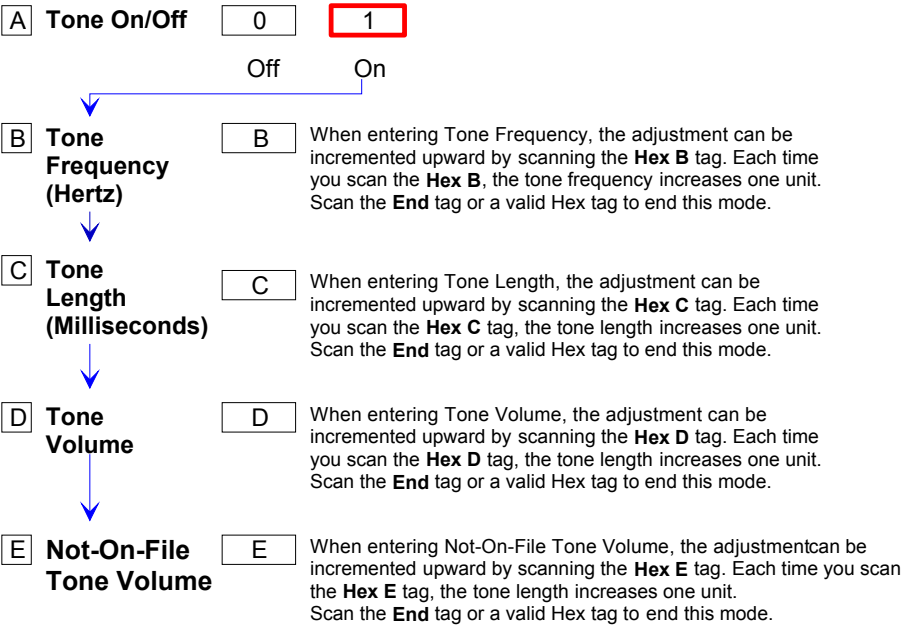
Good Read Tone

Your Program

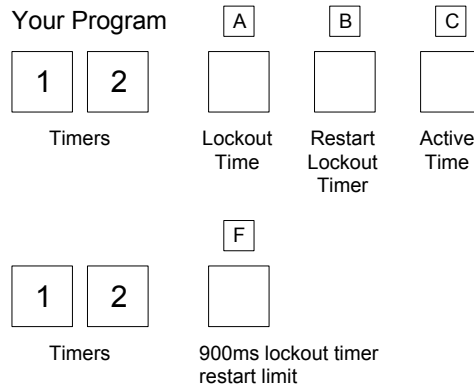
1

1

Good Read Tone Protocol



Timers



A Lockout Time (Milliseconds)	8 350	0 450	1 600	2 750	3 900
	4 1050	5 1200	6 1350	7 1500	

↓

B Restart Lockout Timer	0 Off	1 On
--------------------------------	-----------------	----------------

↓

C Active Time (Minutes)	0 0	1 15	2 30	3 60
--------------------------------	---------------	----------------	----------------	----------------

F 900ms Lockout Timer Restart Limit	0 Disable	1 Enable
--	---------------------	--------------------

NOTE: Direct Entry Only.
If the Restart Lockout Timer [B] is set to OFF, the 900 ms Lockout Timer Restart Limit [F] has no effect.

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.

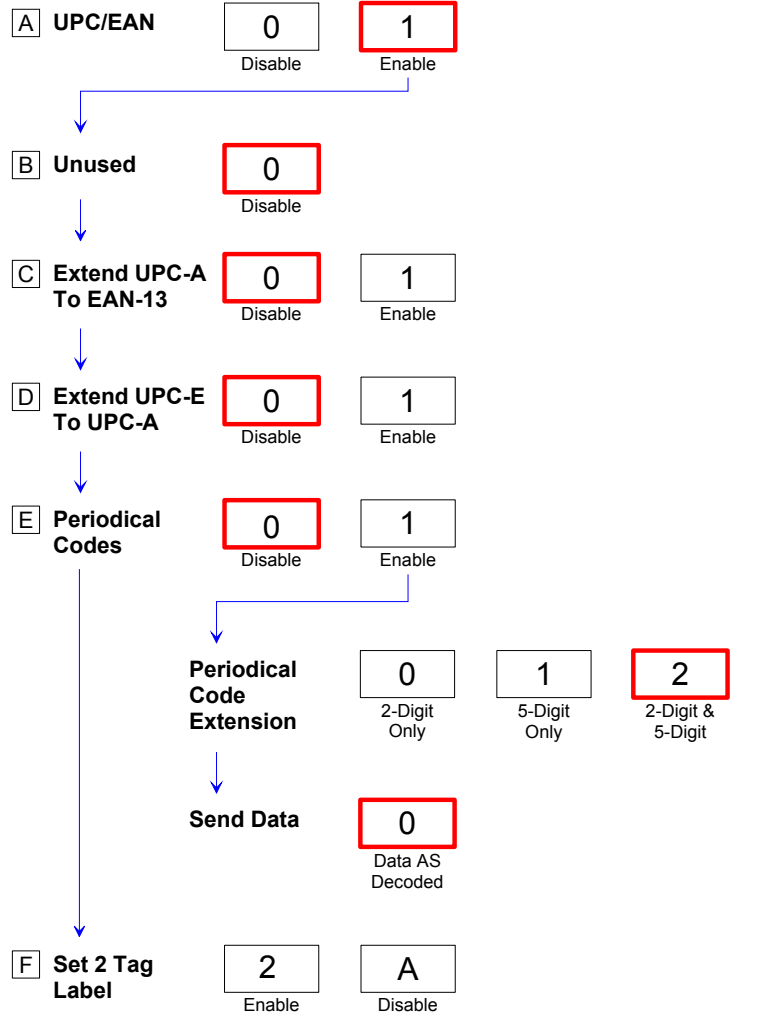
27550

Bar Codes–1

Your Program

Your Program

		A	B	C	D	E			F
1	3								
Bar Codes - 1		UPC/EAN	Unused	Extend UPC-A	Extend UPC-E	Periodical Codes	Periodical Code Extension	Send Data	Set 2 Tag Label



24037

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 Disable ☐ 1 Enable

B Minimum Characters Allowed Default

C Full ASCII ☒ 0 Disable ☐ 1 Enable

D Check Digit Present ☒ 0 Disable ☐ 1 Enable **Note:** For SuperASIC scanners, continue to option F even if Check Digit Present **Disable** is chosen.

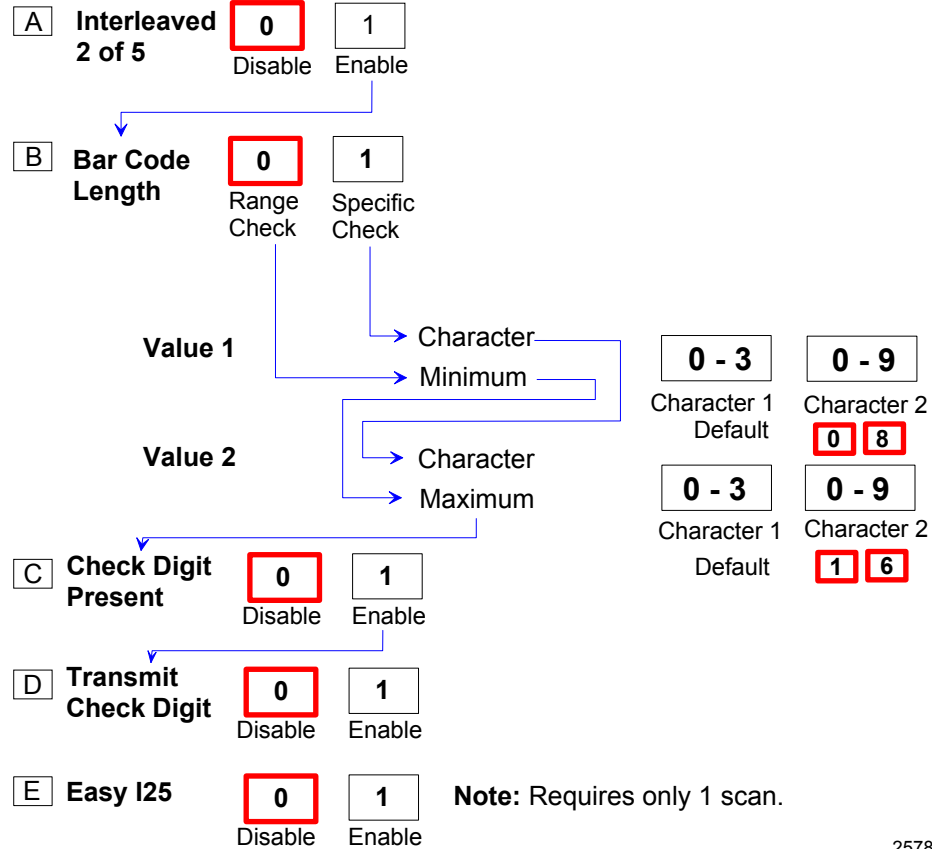
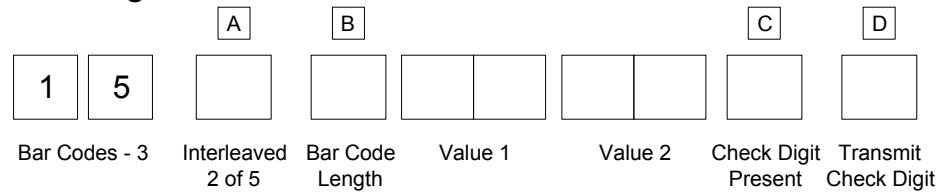
E Transmit Check Digit ☒ 0 Disable ☐ 1 Enable

F Allow 1- or 2-Character Tags ☒ 0 Disable ☐ 1 Enable

24174

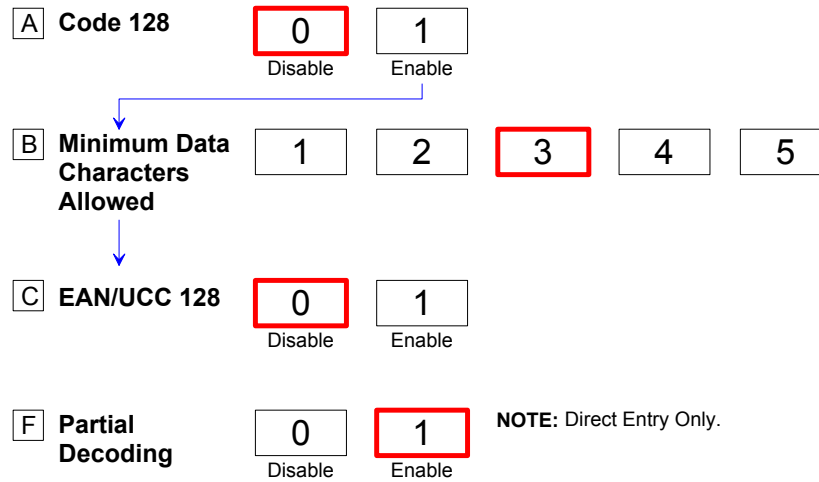
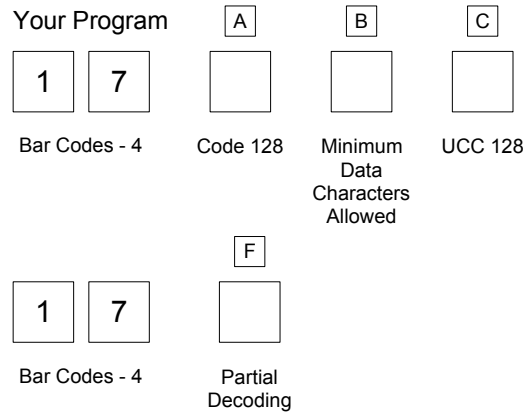
Bar Codes–3

Your Program



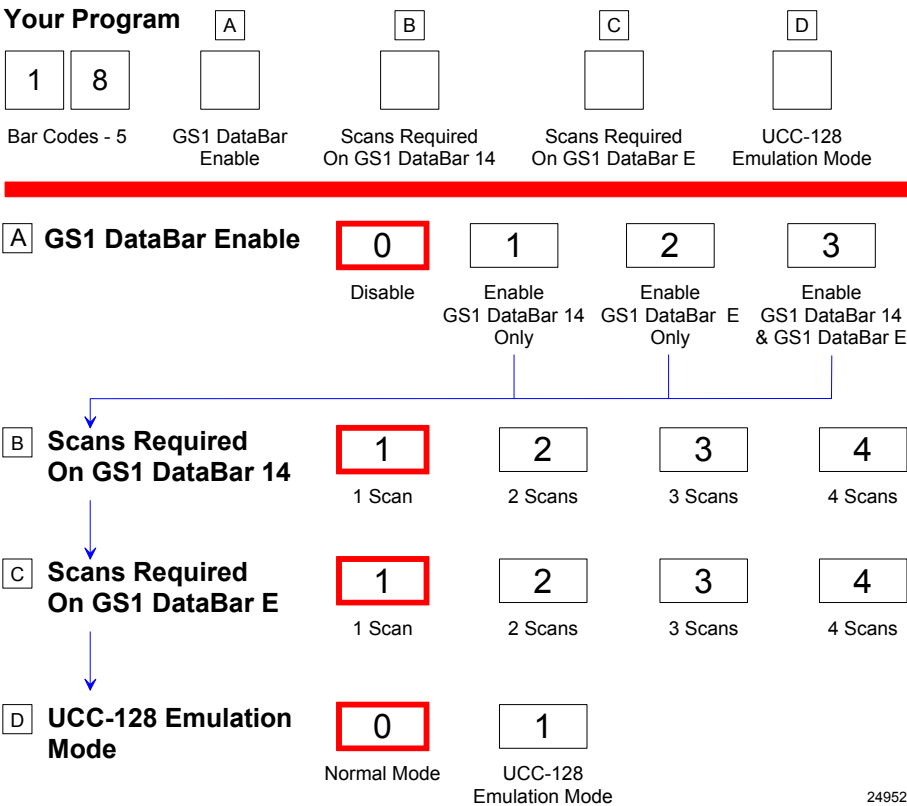
25788

Bar Codes-4

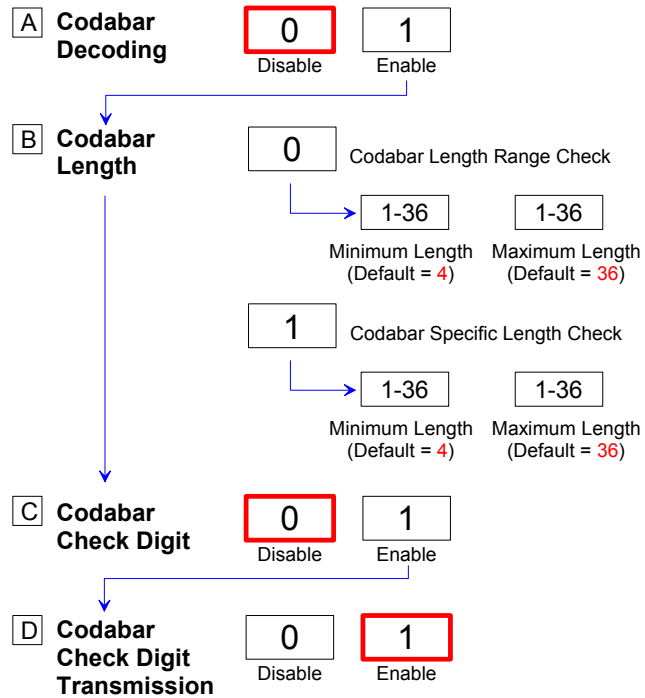
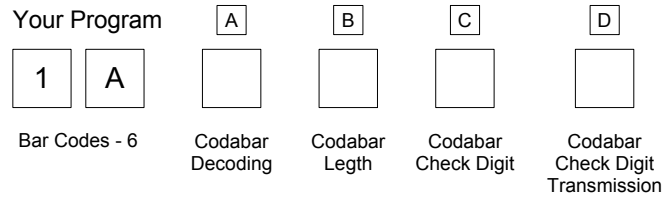


22766

Bar Codes–5



Bar Codes–6



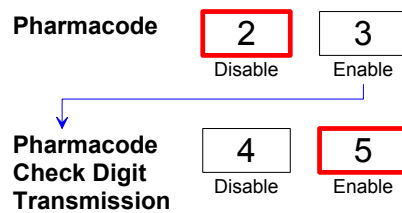
25515

Bar Codes–7

Your Program

7	F
---	---

Bar Codes - 7



25516

Label Identifiers

Your Program

A	B	C	D			
1 6						
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	Common Byte and Unique Identifier Defaults vary according to Bar Code Type
Hex Character (ASCII Code Chart)	Hex Character (ASCII Code Chart)	

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

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	0 300	1 600	2 1200	3 2400	4 4800	5 9600	6 19200
B Parity	0 Odd	1 Even	4 None				
C Stop Bits And Character Length	0 1 Stop Bit 7-Bit Character	1 1 Stop Bit 8-Bit Character	2 2 Stop Bits 7-Bit Character	3 2 Stop Bits 8-Bit Character			
D Handshake	0 RTS Low Ignore CTS	1 RTS High Ignore CTS	2 Raise RTS Wait For CTS	3 Raise RTS Ignore CTS	4 RTS Low Wait For CTS	5 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

<div>0</div> <div>Disable UPC-A Disable EAN-8 Disable EAN-13 Disable UPC-E</div>	<div>1</div> <div>Enable UPC-A Enable EAN-8 Enable EAN-13 Disable UPC-E</div>	<div>2</div> <div>Disable UPC-A Disable EAN-8 Disable EAN-13 Enable UPC-E</div>	<div>3</div> <div>Enable UPC-A Enable EAN-8 Enable EAN-13 Enable UPC-E</div>
<div>4</div> <div>Disable UPC-A Disable EAN-8 Enable EAN-13 Disable UPC-E</div>	<div>5</div> <div>Disable UPC-A Disable EAN-8 Enable EAN-13 Enable UPC-E</div>	<div>6</div> <div>Disable UPC-A Enable EAN-8 Disable EAN-13 Disable UPC-E</div>	<div>7</div> <div>Disable UPC-A Enable EAN-8 Disable EAN-13 Enable UPC-E</div>
<div>8</div> <div>Disable UPC-A Enable EAN-8 Enable EAN-13 Disable UPC-E</div>	<div>9</div> <div>Disable UPC-A Enable EAN-8 Enable EAN-13 Enable UPC-E</div>	<div>A</div> <div>Enable UPC-A Disable EAN-8 Disable EAN-13 Disable UPC-E</div>	<div>B</div> <div>Enable UPC-A Disable EAN-8 Disable EAN-13 Enable UPC-E</div>
<div>C</div> <div>Enable UPC-A Disable EAN-8 Enable EAN-13 Disable UPC-E</div>	<div>D</div> <div>Enable UPC-A Disable EAN-8 Enable EAN-13 Enable UPC-E</div>	<div>E</div> <div>Enable UPC-A Enable EAN-8 Disable EAN-13 Disable UPC-E</div>	<div>F</div> <div>Enable UPC-A Enable EAN-8 Disable EAN-13 Enable UPC-E</div>

RS-232 Prefix Byte

Your Program

		A	B
2	2		
RS-232 Prefix Byte		Prefix Byte	ASCII Code

A Prefix Byte

0

Disable

1

Enable

B ASCII Code

0 - 7

Hex Character
(ASCII Code Chart)

0 - F

Hex Character
(ASCII Code Chart)

0 2

Default

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	

A Terminator Byte 1

0

Disable

1

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

Hex Character
(ASCII Code Chart)

0 - F

Hex Character
(ASCII Code Chart)

0 3

Default

C Terminator Byte 2

0

Disable

1

Enable

NOTE: Terminator Byte 2 is a direct entry only.

ASCII Code

0 - 7

Hex Character
(ASCII Code Chart)

0 - F

Hex Character
(ASCII Code Chart)

0 3

Default

25786

RS-232 Communications Options

Your Program

<div>2</div>	<div>4</div>	<div></div>	<div></div>	<div></div>
Communication Options	RS-232 Delay	Scanner or Scanner / Scale Format	Good Weigh Tone	

RS-232 Delay	<div>0</div>	<div>1</div>	<div>2</div>
	No Delay	10 Milliseconds	50 Milliseconds

Scanner or Scanner / Scale Format	<div>4</div>	<div>5</div>
	Scanner Only	Scanner / Scale

Good Weigh Tone	<div>8</div>	<div>9</div>
	Disable	Enable

22779

Miscellaneous Options

Miscellaneous Parameters

Your Program

<div>3</div>	<div>2</div>	<div></div>	<div></div>	<div></div>	<div></div>
Miscellaneous Parameters	Host Tone Control	IBM Retransmit Control	Speech	IBM-485 / IBM-USB Tag Data Format	

Host Tone Control	<div>3</div>	<div>4</div>
	Disable	Enable

IBM Retransmit Control	<div>7</div>	<div>8</div>
	3 Times	Forever

Speech	<div>D</div>
	Toggle Between Enable and Disable Speech

IBM-485 / IBM-USB Tag Data Format	<div>E</div>	<div>F</div>
	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
3348 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 0\$Save and Reset	
2976 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 1\$Save and Reset	
2679 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 2\$Save and Reset	
2435 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 3\$Save and Reset	
2232 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 4\$Save and Reset	Default
3906 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 5\$Save and Reset	
3750 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 6\$Save and Reset	
3538 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 7\$Save and Reset	

27593

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 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 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 39 Tone Frequency

Selection	Programming Tag Sequence	Setting
3348 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 0	Save and Reset
2976 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 1	Save and Reset
2679 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 2	Save and Reset
2435 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 3	Save and Reset
2232 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 4	Save and Reset Default
3906 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 5	Save and Reset
3750 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 6	Save and Reset
3538 Hz	Programming Mode, Hex 7, Hex 0, Hex 4, Hex 7	Save and Reset

27592

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
3348 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 0\$Save and Reset	
2976 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 1\$Save and Reset	
2679 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 2\$Save and Reset	
2435 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 3\$Save and Reset	
2232 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 4\$Save and Reset	Default
3906 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 5\$Save and Reset	
3750 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 6\$Save and Reset	
3538 Hz	Programming Mode, Hex 7, Hex 0, Hex 7, Hex 7\$Save and Reset	

27594

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 Overlap

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 Partial

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
3348 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 0\$Save and Reset	
2976 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 1\$Save and Reset	
2679 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 2\$Save and Reset	
2435 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 3\$Save and Reset	
2232 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 4\$Save and Reset	Default
3906 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 5\$Save and Reset	
3750 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 6\$Save and Reset	
3538 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 7\$Save and Reset	

27593

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
3348 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 0, Save and Reset	
2976 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 1, Save and Reset	
2679 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 2, Save and Reset	
2435 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 3, Save and Reset	
2232 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 4, Save and Reset	Default
3906 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 5, Save and Reset	
3750 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 6, Save and Reset	
3538 Hz	Programming Mode, Hex 7, Hex 4, Hex 4, Hex 7, Save and Reset	

27591

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 Host Terminal

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

Enable UPC NS5 Coupon

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 1, Save and Reset	

27800

GS1 DataBar-E AI 8110

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 1, Hex2, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 1, Hex3, Save and Reset	

27801

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

Expand E to EAN-13 Directly

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 4, Hex 7, Hex 6, Save and Reset	Default
Enable	Programming Mode, Hex 4, Hex 7, Hex 7, Save and Reset	

25336

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

USB Programming

The 7893 must be properly programmed when using the USB connection to the host terminal. This programming depends on the type of host terminal being used.

Note: Some host terminals can corrupt your program if they are running and are connected to the 7893 while you are entering the program. Turn the host terminal off or disconnect all interface cables to the 7893 before entering your program.

NCR USB Communications

The 7893 must be programmed for NCR USB communications protocol. Other parameters may be set as required by the host terminal. Set the required program parameters by scanning the following sequence of programming tags. These must be the first tags scanned after supplying power to the unit.

1. **Programming Mode** tag—puts scanner in base programming state.
2. **Hex 1, Hex 0, Hex E, Hex 0**—sets the scanner to NCR USB communications protocol.
3. **Save and Reset**—saves the program just entered and resets the 7893.

The host terminal software may now be configured to use the communication port assigned by the IO Network driver when the Dongle Adapter Cable was plugged into the USB port.

IBM USB

The host terminal should assign the port and associate the scanner with the host terminal software when the USB connection is made. When programming a 7893 for IBM USB communications, all parameters are set to the standard default values, and the communications protocol is set to IBM USB. This is accomplished by scanning the following sequence of programming tags. These must be the first tags scanned after supplying power to the unit.

1. **Programming Mode** tag—puts scanner in base programming state.
2. **Hex 1, Hex 0, Hex D**—sets all parameters to standard default values and sets the communication protocol to IBM USB.
3. Change any other parameters as required by the host terminal.
4. **Save and Reset**—saves the program just entered and resets the 7893.

Chapter 6: Special Programming

Some of the 7893 features require programming that is somewhat different than the normal programming.

Changing Program Defaults to Current Parameters

Set Current Parameters to Default Values

The 7893 comes from the factory with specific default values already determined for the various programming parameters. Sometimes other default values are desired. This function permits you to store the current parameter settings 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 Complete"—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.

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**

Check Digits on Price Fields

UPC-A and EAN-13 barcodes which begin with a Number System 2 and contain either a 4 or 5 digit price value. To increase the security of reading a price from a bar code symbol, the Check Digit for these special fields is subject to additional scrutiny and mathematical calculations in addition to the standard check digit verification performed on every UPC bar code.

The basic principle of the Check Digit calculation is that each digit position in a price or weight field is assigned a weighing factor. Weighing factors are 2-, 3, 5+, and 5-. Each weighing factor affects the particular calculation for the position concerned. The detailed calculation and method used for calculating this weighing factor is described in the GS1 General Specifications, Section 3, of Version 7.1, specifically 3.A.1.2 Check Digit Calculation for Price/Weight Fields.

The scanner can be programmed to enforce this price check for 4 or 5 digit price tags.

Note: If the check digit is encoded incorrectly in the barcode, the scanner will NOT read it. It will be treated as if the bar code does not exist.

Mandatory 4 Digit Price Check

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 3, Hex 3, Hex 6, Save and Reset	Default
Enable	Programming Mode, Hex 3, Hex 3, Hex 7, Save and Reset	

25363

Mandatory 5 Digit Price Check

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 3, Hex 3, Hex E, Save and Reset	Default
Enable	Programming Mode, Hex 3, Hex 3, Hex F, Save and Reset	

25364

Enable/Disable Code 128 Partial

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 Partial—**Program Mode, Hex 1, Hex 7, Hex F, Hex 0, and Save and Reset**
- Enable Code 128 Partial—**Program Mode, Hex 1, Hex 7, Hex F, Hex 1, and Save and Reset**

Code 128 Overlap Characters

The 7893 can put together partial scans to identify a Code 128 bar code. Decoding partial scans is more secure with more overlap characters. The number of overlap characters can be programmed from one to four; two is the default.

1. 1 Overlap Character—**Programming Mode, Hex 6, Hex B, Hex D, Hex 1, Save and Reset**
2. 2 Overlap Characters—**Programming Mode, Hex 6, Hex B, Hex D, Hex 2, Save and Reset**
3. 3 Overlap Characters—**Programming Mode, Hex 6, Hex B, Hex D, Hex 3, Save and Reset**
4. 4 Overlap Characters—**Programming Mode, Hex 6, Hex B, Hex D, Hex 4, Save and Reset**

EAN/JAN/UPC Multi-Symbol Scanning Parameters

The optional Multi-Symbol programming feature permits you to scan bar code labels containing two or three EAN-13, JAN-13, or UPC-A symbols.

Label Construction

A multi-symbol label must consist of any combination of two or three EAN-13, JAN-13, or UPC-A symbols, each with different flag digits. Flag digits are the first two digits of the symbol on EAN-13/JAN-13 symbols. Flag digits for UPC-A symbols always have a zero (0) for the first digit with the number system character being the second digit. There is NO restriction on which flag digits may be used. A total of five multi-symbol combinations can be programmed.

Single Label Restriction

A single-symbol with the same flag digits as programmed for any 2-symbol labels cannot be scanned as a single-symbol label.

Transmitting Label Data

Transmission of a multi-symbol label consists of a separate message for each of the symbols. The symbol with the lower numbered flag digits is transmitted first. For example, for the 3-symbol combination of JAN-13 flag 21, JAN-13 flag 29, and JAN-13 flag 96, the symbol with flag digits 21 is transmitted first, the symbol with flag digits 29 is transmitted second, and the symbol with flag digits 96 is transmitted third.

Programming Multi-Symbol Scanning

Note: 3-Tag programming option is a Release 1.0 feature only.

Perform the following to program the 7893 for multi-symbol scanning.

1. Disconnect the communications cable from the scanner or the host terminal.
2. Apply power to the 7893 .
3. To enter the Multi-Symbol program parameters mode, scan the following tags:
Programming Mode, Hex 1, Hex 3, and Hex F.
4. Choose an option:
 - Clear multi-symbol programming by scanning the **Hex A** tag and the **Save and Reset** tag.
Result: All previously programmed combinations are cleared from permanent memory. The scanner goes through a sequence similar to the power up sequence.
 - Program a 2-symbol label by scanning the **Hex 2** tag.
Result: The scanner sounds two beeps followed by a 1-second pause. After the pause, the scanner beeps to indicate the number of labels that are currently in the scanner memory. Five beeps indicate a full multi-symbol memory.
5. Scan a multi-symbol label (2-symbol label).
Result: The scanner sounds the Good Read tone one time to indicate that the scanner accepted the multi-symbol label. If the multi-symbol label is already in the scanner's memory, the scanner then beeps twice for a 2-symbol label. A long, loud tone (error tone) indicates that the scanner's memory already has the maximum of five multi-symbol label combinations.
6. To program more labels, repeat step 4 and step 5 until a maximum of 5 label types (in any combination) have been scanned into memory.
7. Scan the **Save and Reset** tag to save the multi-symbol programming.
Result: The scanner should go through a sequence similar to a power up sequence.
8. Remove power from the 7893 and connect the communications cable.

Scanning UPC/EAN/JAN Tags without a Center Band

Some applications require reading UPC/EAN/JAN bar codes without a center band. This function can be enabled or disabled. The default is to disable reading tags without a center band.

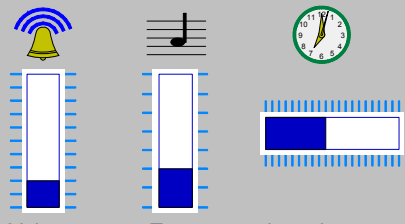
- Enable Tag Read without Center Band—**Programming Mode, Hex 4, Hex 8, Hex 1, Save and Reset**
- Disable Tag Read without Center Band—**Programming Mode, Hex 4, Hex 8, Hex 0, Save and Reset**

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

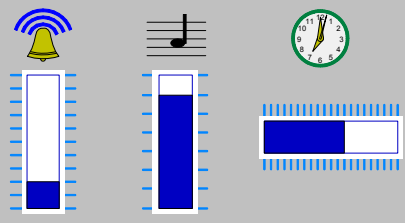
Programming Mode
Hex 4
Hex 3
Hex 0
Save and Reset



Volume Tone Length

Preset 1

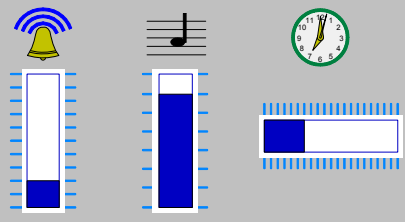
Programming Mode
Hex 4
Hex 3
Hex 1
Save and Reset



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 7893 with GS1 DataBar can read four types of GS1 DataBar bar codes. Refer to Chapter 5, *Programming* for information about enabling GS1 DataBar.

Enable GS1 DataBar

GS1 DataBar permits more data to be recorded in a smaller physical space. The 7893 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 7893.

- Enable—**Program Mode, Hex 1, Hex 8, Hex A, Hex 3, and Save and Reset**
- Disable—**Program Mode, Hex 1, Hex 8, Hex A, Hex 0, and Save and Reset**

GS1 DataBar-14

GS1 DataBar-14 is a linear symbology that encodes 14 UCC/EAN digits. This structure provides four segments that can be decoded separately, then reconstructed. The total symbol contains 96 modules combined into 46 elements (bars and spaces).



0100012345678905

19254

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.



0100991234567899

19255

GS1 DataBar Expanded

GS1 DataBar Expanded is a variable length linear symbology. It can encode 74 numeric or 41 alpha characters. GS1 DataBar Expanded can be scanned and decoded in up to 22 segments and then reconstructed.



9987 6543 2101 2345 6789 8888

19256

GS1 DataBar Expanded Stacked

GS1 DataBar Expanded Stacked is similar too GS1 DataBar-14 Stacked except it uses the GS1 DataBar Expanded format for creating the symbol.



0192 1234 5698 7457 3202 0000 9939 0200 296

19257

Send GS1 DataBar14 as EAN13 Tag Data

When enabled, the scanner sends the last 13 digits of the GS1 DataBar14 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 functions.

Note: Selection of optional add-on bar codes may require additional programming.

To set the Coupon Interface Parameters, you perform a series of steps in a designated order. The following step begins the series.

Terminal Coupon Select 1 Parameters

1. Scan the Programming 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
Markdown with 128 add-on optional	Hex 6	Hex 7
Program 1 with 128 add-on optional	Hex 8	Hex 9
Program 1 with 128 add-on mandatory	Hex A	Hex B
Program 2 with 128 add-on optional	Hex C	Hex D
Program 2 with 128 add-on mandatory	Hex E	Hex F

22811

4. Scan the Save and Reset tag to save the program (required).

- Repeat steps 1 through 4 to set the second Coupon Select 1 parameter.

Suggested Programming Sequence

- Programming Mode
 - Hex 3 and Hex 8
 - Hex 1
 - Save and Reset
 - Programming Mode
 - Hex 3 and Hex 8
 - Hex 3
- Scan **Programming 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 Parameters

- Scan the **Programming Mode** tag.
- Scan the **Hex 3** and **Hex D** tags to select this parameter.
- Scan a **Hex 0** through **Hex 7** tags to set a Coupon Select 2 parameter:

Coupon Select 2 Parameter	Disable	Enable
Coupon & P5 or 128 optional (EAN-99)	Hex 0	Hex 1
Coupon & 128 mandatory (EAN-99)	Hex 2	Hex 3
Markdown Tone	Hex 4	Hex 5
Early Tone for Optional Add-On	Hex 6	Hex 7

22812

- Scan the **Save and Reset** tag to save the program.
- Repeat steps 1 through 4 to set the other option, if needed.
- Scan **Programming 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 Volume

To change the volume of the voice (speech) on the 7893, 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 Levels

There are eight standard volume settings in the 7893. 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 7893 is shipped from the factory with this parameter disabled. The default setting of the 7893 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**

Single Volume Adjust Bar Code

There is a single Volume Adjustment bar code 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 B of this document.). The volume obtained by using this bar code 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 bar code is scanned within a Program Mode/Save&Reset sequence, or the Reset bar code from the booklet is scanned, the volume is saved as if it had been changed by using Worksheet 11.

Firmware Flashing

Firmware flashing permits updates to be installed to the scanner firmware without replacing the actual chip on the Digital Board. The 7893 must be connected to a PC through an RS-232 or USB cable. The PC must also contain the Flash Tool software utility and the new scanner firmware file. The cables which can be used for flashing the 7893 are:

- USB
- RS-232

Obtaining the Tools and New Firmware

If you will be reflashing a number of scanners of varying ages, you should install the NCR RealPOS Scanner Flash tool for Windows. All tools and firmware for the 7893 are available on the NCR web site (www.ncr.com).

Acquiring and Installing the RealPOS Scanner Flash Tool for Windows

1. Go to NCR website (www.ncr.com), and click on **Support** in the topics banner at the top of the page. Select **Drivers and Patches**→**Retail Support Files (Drivers, Firmware, Operating Systems, Platform Software, BIOS, etc.)**→**NCR RealPOS and SelfServ Peripherals (Firmware, Drivers, Utilities)**→**Scanners/Scales**.
2. Download the RealPOS Scanner Flash Tool and put it in a temporary directory on your hard drive, or you can install the tool directly from the website.

RealPOS Scanner FLASH Tool for Windows (all SA and PXA Scanners)

(Pushes firmware, EEPROM, foreign languages, and WAV files into the scanner; pulls EEPROM.)

PLEASE NOTE: This NEW version will place a shortcut on your desktop called "RealScan FLASH Tool".

Release Number	Release Date	Download
3.0.0.6 Build 49	11 Nov 2008	Readme.rtf
3.0.0.6 Build 49	11 Nov 2008	RealScan FLASH Tool, Free Version for Windows (GUI Installer)
3.0.0.6 Build 49	11 Nov 2008	RealScan FLASH Tool, Trial Enterprise Version for Windows (GUI Installer - no Flash tag required, trial good for 90 DAYS ONLY)

Note: If you run the installer from website, a message will display saying “The publisher could not be verified. Are you sure you want to run this software”, Select **Run** to continue.

3. Run the Flash Tool installer.

A GUI install wizard will display. Follow the **Next** button, and accept the User Agreement. Allow for a FULL install (default), and select **Next**, then select **Install** to start the installation.

Select **Exit** when installation is finished.

Note: The Flash Tool and all its components will be located at C:\Program Files\NCR\RealScan\NCRRSFlash directory, and a shortcut to the Flash Tool application will be placed on your desktop.

Acquiring Firmware

Download the desired firmware from the same website. There will be a list of the currently released firmware and several older versions. The following is an example.

PXA Scanner Firmware

(7874-3xxx/4xxx/5xxx) (7878-1xxx/2xxx) (7884-1xxx)

Firmware Versions for the 7874 (PXA) Scanner

Part Number	Release Date	Download
497-0461146	01 Jul 2008	0461146.zip - GCA
497-0459425	18 Feb 2008	0459425.zip - ICI

Firmware Versions for the 7878 (PXA) Scanner

Part Number	Release Date	Download
497-0461765	21 Oct 2008	0461765.zip
497-0455729	27 Aug 2007	0455729.zip
497-0455089	07 Jul 2007	0455089.zip - GCA
497-0454779	04 Jun 2007	0454779.zip - ICI

Firmware Versions for the 7884 (PXA) Scanner

Part Number	Release Date	Download
497-0460386	25 Sep 2008	0460386.zip
497-0459699	26 Mar 2008	0459699.zip - ICI

Download the desired firmware version into the C:\Program Files\NCR\RealScan\NCRRSFlash directory and extract the file to the same directory.

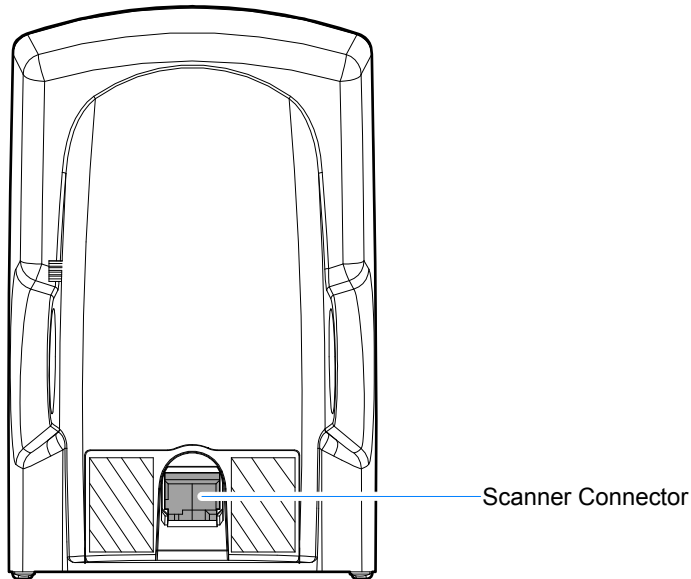
Note: The file extracted will be the actual firmware file with a .bin extension. This is the file that is flashed into the scanner. You cannot flash a .zip file into any scanner.

Identifying 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 7893 gives a voice message containing the 497-xxxxxxx number of its firmware.

Firmware Flashing Procedure

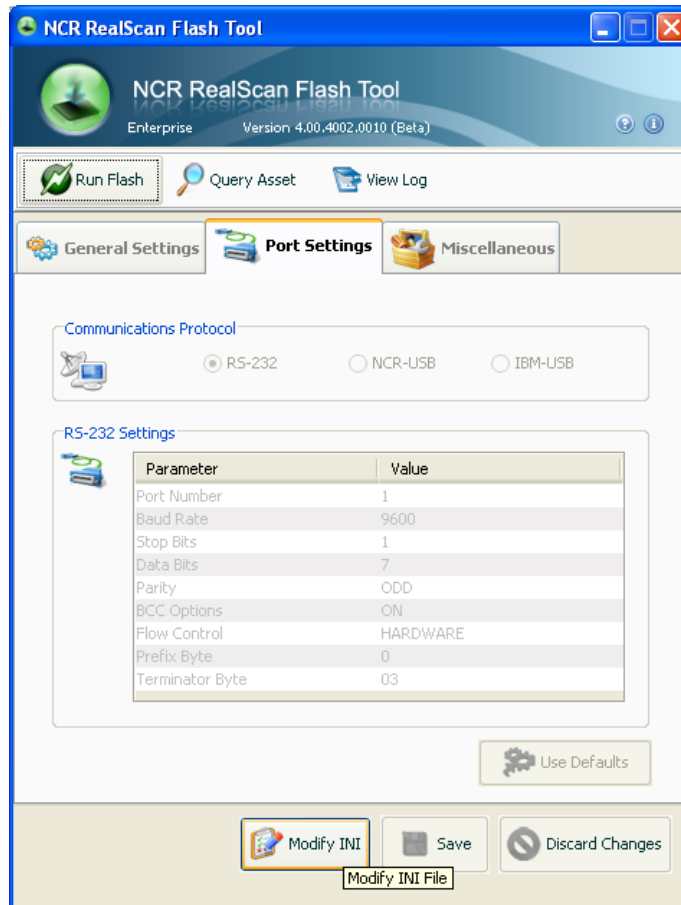
1. Remove power from the 7893.
2. Disconnect the Existing Interface Cable from the 7893 unless it is already an RS-232 serial cable.



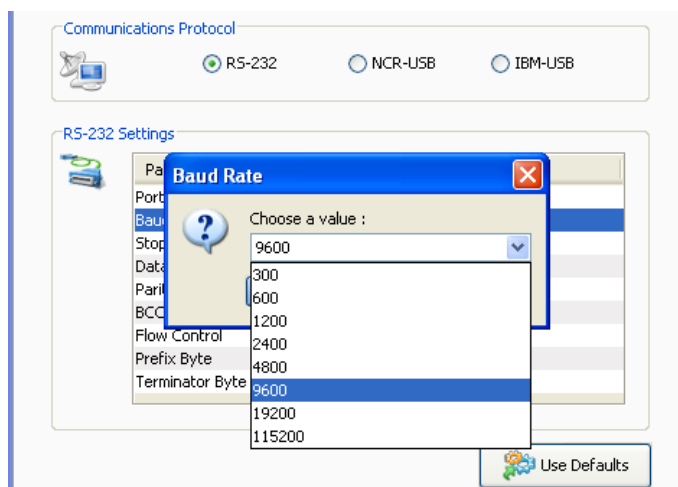
27482

3. Remove the cable by locating the small hole at the bottom of the scanner, toward the back and center of the unit. Push an unbent paperclip or other thin, sturdy wire into the hole and pull on the cable base at the same time. Pressing into the hole pushes on the latch of the RJ connector, allowing it to be removed.
4. Connect the above-mentioned RS-232 Cable in the interface connector of the 7893 and to the COM port of the host terminal.
5. Apply power to the 7893.
6. Run Flash Tool by double-clicking on the NCR Flash Tool icon on the desktop.

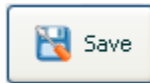
7. Port settings must be configured first before flashing firmware to the scanner. Select **Port Settings** in the main window and select the **Modify INI** button.



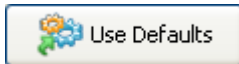
8. Select one of the radio buttons under the Communications Protocol Group within the Port Settings tab. For RS-232 communication protocol, you can configure more settings under the RS-232 Settings group. Right-click on one of the cells in the table to either change the parameter value or restore it to its default value.



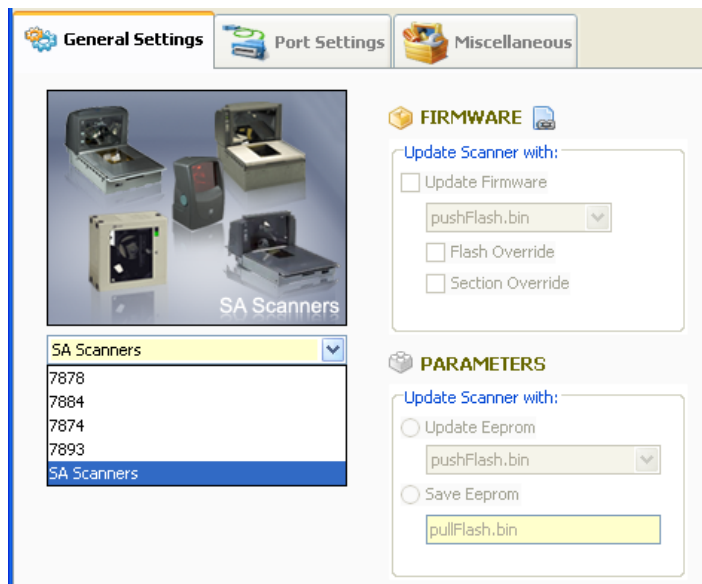
9. Select **Save** after making changes to the settings.



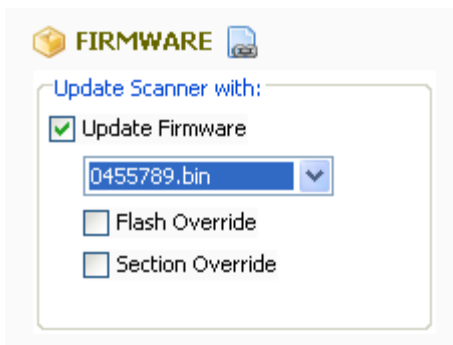
10. Select **Use Defaults** if default settings are preferred. A message box will display informing that all settings will be set to default. Select **Yes** to confirm.



11. After configuring the necessary port settings, choose the scanner you want to flash the firmware to.



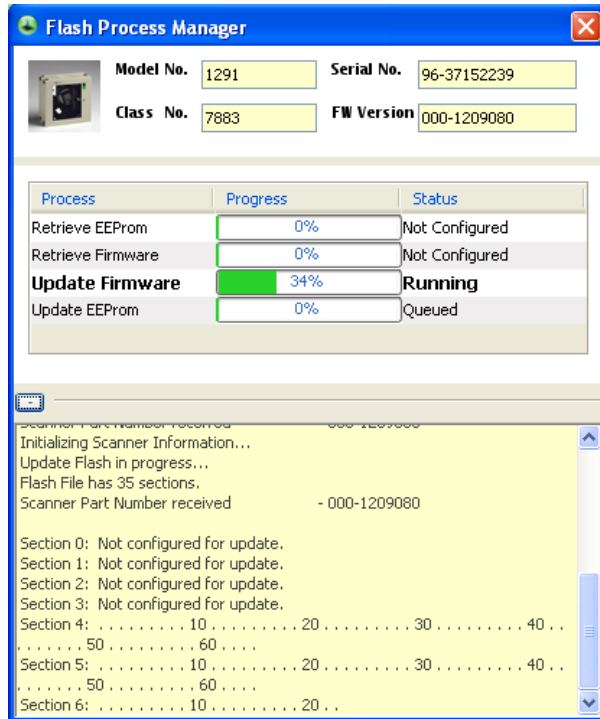
12. Select **Modify INI** after a scanner model has been chosen. Select the **Update Firmware** checkbox and choose the firmware BIN file you want to flash to the scanner. For your preference you may enable Flash Override and Section Override by selecting their checkboxes. Select **Save** to save and apply these settings.



13. Select Run Flash from the main toolbar to start flashing the firmware to the scanner.



14. The application will initialize communication with the scanner in the port you have specified in the settings. When initialization is successful, the following window will display and show the progress of the flashing process.



15. Exit the NCR Flash Tool application and disconnect the scanner from the host terminal once firmware flashing is finished.

Flash Utility Notes

If you are unsure exactly what firmware is in your scanner, or are unsure which of the Scanner Tool Suite to use, use this procedure to determine the firmware version inside your scanner. This serves as a guide to know which flash tool to use.

Checking 7893 Scanner Firmware Level

1. Power cycle the scanner (unplug then plug the power cable back in or scan the Reset Tag).
2. Scan the Diagnostic Mode Tag.

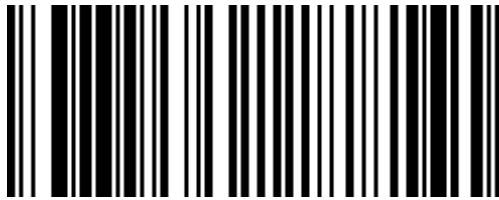
Diagnostic Mode



24985

3. Scan the HEX 4 Tag.

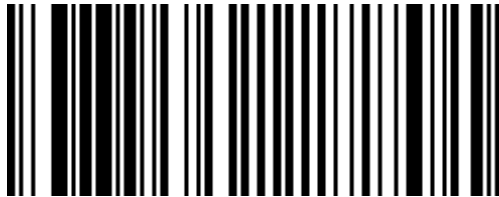
Hex 4



24986

4. Scan the HEX A Tag.

Hex A



24987

The scanner will speak the firmware level. It will say: “PXA scanner 4 9 7 ...”.

Make sure to write down the numbers being spoken after “4 9 7”. This will be used to determine the next step.

NCR RealPOS Scanner Flash Drive Support

The 7893 supports a flash drive to provide convenient and economic means of scanner service upgrades and initial installations. The flash drive support capabilities are similar to the capabilities currently provided by the scanner remote flash update and configuration tools NCR RealPOS Scanner Flash Tool. The major difference being that the required scanner support files will exist on the flash drive rather than on a PC, laptop, or back office controller which requires a transfer to the scanner over a cable.

Servicing or installing a scanner by flash drive is not a remote operation. A technician will be needed on-site to attach the flash drive to the scanner. A flash drive firmware upgrade is the fastest available means for upgrading the firmware of a scanner.

The scanner flash drive support files includes an INI file (created by the NCR RealPOS Scanner Flash Drive Prep Tool) that informs the scanner what tasks are to be performed, a firmware flash file for upgrading a scanner to a particular version, and a configuration file to configure a scanner for a particular end-user.

The scanner flash drive support files will be downloaded to the flash drive using the internet at the site currently used to download flash update files and tools (excluding the configuration file which is customer specific).

The following are the brands of flash drives (memory sticks, thumb drives, flash keys, jump drives) that have been tested by NCR.

Service Tool: Imation 1 GB, 603-9014783

Other Drives tested (but not guaranteed) by NCR:

- Memorex USB 2.0 Traveldrive 512MB
- Memorex USB 2.0 Traveldrive 1GB
- Lexar Jumpdrive JDS128 128 MB
- SanDisk Cruzer Micro 2 GB
- SanDisk Titanium 4 GB
- Kingston DataTraveler 1 GB
- Transcend JetFlash 2 GB
- Imation 1GB
- SanDisk Cruzer Micro 2 GB
- NCR 603-9014783 Flash drive (1GB, Imation Pivot model 18408)
- PQI 2GB
- Kingston DataTraveler 1GB
- Transcend JetFlash 2GB
- Kingston MicroSD w/ adapter 512MB

NCR RealPOS Scanner Flash Drive Prep Tool

In order to minimize the need for a PC at the scanner site, The NCR RealPOS Scanner Flash Drive Prep Tool preps a flash drive so that the scanner could understand its contents and performs the tasks defined inside the device prepared by the host terminal software. This flash drive could then be taken to each scanner to perform its tasks without changing anything on the flash drive in between scanners.

All of the processes involved in setting communication parameters and running applications is replaced by a single flash drive properly configured by the NCR RealPOS Scanner Flash Drive Prep Tool application. The application provides a user interface that displays the options the user can select for their scanners and then prepare the flash drive accordingly.

Scanner Cloning using Programming Tags

The scanner provides some programming sequences that permit you to clone a unit if the RealPOS Scanner Flash Drive Prep Tool was not run before going to the installation site. This requires programming tags.

To clone the scanner parameters with programming tags, perform these steps:

1. Bring a flash drive before going to the site.
2. Select the scanner you want to clone.
3. Perform power cycle on the scanner.

OR

Scan the RESET programming tag.

4. To set up the flash drive, use any of the three sequences:
 - PROGRAM MODE->HEX 7->HEX F->HEX C
 - This sequence clones the firmware and parameters.
 - PROGRAM MODE->HEX 7->HEX F->HEX D
 - This sequence clones Firmware only.
 - PROGRAM MODE->HEX 7->HEX F->HEX E
 - This sequence clones Parameters only.
5. When the scanner says "Insert USB flash drive", insert the flash drive to the USB port of the scanner. The scanner confirms and says "Load program in 3 seconds... 2... 1...0."

If the scanner says "Program tag error", either of these errors occurred:

- Flash drive was not inserted within the time interval.
- Scanner does not recognize your flash drive. Check the following:
 - Make sure flash drive is in FAT32 or FAT16 format.
 - Make sure the write protect switch of the flash drive is not engaged

6. The scanner then copies the requested clone data to the flash drive. Wait until it finishes.
7. When the scanner's LEDs stop flashing violet, wait for five seconds until the beeping sounds stop. Then, remove the flash drive.
8. Insert the flash drive to the target scanner you want to clone.

The above clone functionality requires the following minimum scanner firmware revision numbers:

- 7884: 497-0460386
- 7878: 497-0461765
- 7874: 497-0459952
- 7893: any

For more information on how to use the NCR RealPOS Scanner Flash Drive Prep Tool, please refer to the *NCR RealPOS Scanner Tool Suite Guide (B005-0000-1883)* documentation.

Chapter 7: Troubleshooting

Scanner Operation Summary

This summary identifies the correct barcode scanning procedure. Refer to this summary if there is a problem reading a barcode.

Scan the Bar Code Label

Pass-by Scanning

Slide the merchandise across the window of the scanner with the barcode facing the scanner window. To minimize scratching, try not to contact the Scan Window.

Presentation Scanning

Move the merchandise toward the scanner so the bar code label moves toward the center of the Scan window. To minimize scratching, try not to contact the Scan Window.

Hand Scanning

Carefully pick up the scanner and move it toward the merchandise so the center of the Scan Window moves toward the bar code label. To minimize scratching, try not to contact the merchandise or drop the scanner.

Observe the Read Indication

The scanner gives either a Good Read indication or no indication. A Good Read is indicated by the Status Indicator light going from red to green and then back to red. If the Good Read tone is enabled, the 7893 also beeps.

Good Read Indication

Put the merchandise on the counter top and go to the next item entry.

No Read Indication

Examine the bar code label. If it appears to be good, remove any folds or obstructions and try to read it again. Be sure you position the label within the scan pattern and close to the scanner. If the bar code still does not read, key in the merchandise information on the host terminal.

Tones and Status Indicators

Your 7893 uses tones and LED Status Indicator light to identify problems. It performs diagnostics that check various scanner functions at different times. Diagnostic checks are made each time power is applied to the scanner and while the scanner is operating.

If your 7893 does not work properly, you might be able to determine the problem and correct it without having to send the scanner in for repair. Use the following steps to help isolate the problem.

1. Identify exactly what the scanner is doing, or not doing. Pay particular attention to the LED Status Indicator light and the tone.
2. Verify that you are operating the scanner according to the procedures described in Chapter 4, *Operating Your Scanner*.
3. Refer to the following table to see if your scanner condition is identified. If your specific problem is not identified, follow your normal repair procedures. This may include sending your 7893 in for repair.

Error Code	Problem	Suspect Component
0	No power (LED off)	Power supply or PCB assembly
2	RAM test failed	PCB assembly
5	Motor too slow	Motor
6	Bad non-volatile memory (EEPROM)	PCB assembly
9	IBM RS485 – no TERMPWR signal	IBM host terminal; cable
11	Laser not turned on	PCB assembly
12	Program (ROM sum-check) test failed	PCB assembly
13	FPGA failed to program	PCB assembly

Scanner State	7893 LED Status Indicator
Idle (Enabled)	green, dim, solid
Enabled and in Sleep Mode	green, dim, solid
Good Scan or Barcode Still Visible	green, bright, solid
Disabled and Awake	red, dim, solid
Disabled and in Sleep Mode	red, dim, solid
Sleep Mode	green, dim, solid
Successful Power On Diagnostics	green, dim, solid
Firmware Updating	lavender while in firmware flash mode; blinking lavender while actively flashing an update.

Scanner State	7893 LED Status Indicator
Cannot Detect IBM RS485	color sequence repeats red-green-green -pause.
Failure Code	color sequence of blinks indicates the error code, matching the color sequences of the LED Status Indicator

Scanner Replacement

Inspect the Unit for Damage

Inspect the unit for physical damage: broken or scratched scan window, broken or scratched cabinet, and so forth. If the scanner has been damaged due to shipping, notify the shipping carrier and the NCR representative. If other damages are found, notify NCR or the other supplier if not purchased directly from NCR. Out of Box failures are handled through the NCR customer Satisfaction Hot line.

Prepare Scanner for Replacement

In cases where none of the troubleshooting and diagnostic procedures can provide resolution to the problem of your 7893 scanner, your scanner unit needs to be replaced. If you have determined that you cannot correct a problem with your scanner, you can return it to the factory for repair or replacement. Contact your NCR Representative for information about the cost and any specific instructions.

When returning your 7893 to the factory, pack it in the shipping carton that you saved when you received your scanner. The illustration on the top flap of the box shows how to pack your scanner in the box. Send only the 7893. Do not include the Power Module, Scanner Module Cable, and Interface Cable. Also, include a description of the problem; be as specific and complete as possible. Be sure to include your name and address.

Ensure to pack your scanner with enough packing material to prevent damage during shipment.

Appendix A: PS/2 Keyboard Wedge

Operational Overview

A PS/2 Keyboard Wedge functions by interposing itself on the PS/2 conforming keyboard clock and keyboard data lines that would typically connect just the keyboard to the host terminal. The wedge has the ability to monitor the PS/2 keyboard clock and data lines without affecting standard operations between PS/2 keyboard and host terminal. When the wedge has data to send to the host terminal it can put the PS/2 keyboard on hold and switch itself into the circuit. When the wedge is in the circuit it communicates to the host terminal by sending scan codes. When the wedge has finished sending its packet of scan codes it takes itself out of the circuit and releases the PS/2 keyboard from hold. The PS/2 keyboard and host terminal are then able to communicate as before.

At the hardware level the PS/2 keyboard interface consists of three open-collector lines: KBCLK PCCLK and DATA. The PS/2 keyboard or wedge device is always responsible for toggling the clock line to clock data in or out. The basic bit package of a transmission from wedge (or PS/2 keyboard) to the host terminal is 1 start bit, 8 data bits, 1 parity bit, and 1 stop bit. Transmissions from host terminal to wedge (or PS/2 keyboard) uses the same bit packaging but with a single acknowledge bit appended by the wedge (or PS/2 keyboard) after the stop bit.

The wedge interface is always in one of two states, Wedge-In, or Wedge-Out. These states are described below.

Wedge-In State

When in Wedge-In state, the wedge holds the clock line to the PS/2 keyboard low to put the keyboard on hold. At the same time the wedge interposes itself on the clock and data lines going to the host terminal. During Wedge-In, the wedge communicates with the host terminal by sending data, acknowledging data sent by the host terminal, and responding to host terminal commands. Which commands the wedge responds to depends on the state of the PS/2 Keyboard Emulation programming bit (see programmables section below). PS/2 Keyboard Emulation mode is described in detail below.

Wedge-Out State

When in Wedge-Out state, the wedge does not control either clock or data lines, however, it is able to monitor these lines. In particular, when the scanner generates a new packet of scan codes for transmission over the wedge interface, the wedge must wait for the PS/2 keyboard interface to be in the idle state (idle state is defined as clock high and data high) for at least 1 millisecond before transitioning to the Wedge-In state.

PS/2 Keyboard Emulation

The wedge uses the existing PS/2 keyboard interface to send data to the host terminal. The standard PS/2 keyboard - host terminal interaction is bidirectional, meaning that the host terminal can send commands and data to the PS/2 keyboard and the PS/2 keyboard can send data to the host terminal. In order to work correctly with the host terminal, the wedge needs to respond to host terminal commands. The state of the PS/2 Keyboard Emulation enable bit determines the way that the wedge responds to host terminal commands.

PS/2 Keyboard Emulation Disabled

When PS/2 Keyboard Emulation is disabled the wedge will respond only to the RESEND command from the host terminal. The RESEND command is sent from the host terminal in the event that a wedge data character with bad parity was received by the host terminal. The wedge responds to a RESEND command by resending the prior data character. The wedge will only respond to the RESEND command when in Wedge-In state. If a command other than RESEND is received by the wedge when PS/2 Keyboard Emulation is disabled, the wedge will transition to Wedge-Out state and wait for the PS/2 keyboard interface to be idle. Once in Wedge-In state again the wedge will resume transmission of any unsent data.

PS/2 Keyboard Emulation Enabled

When PS/2 Keyboard Emulation is enabled, the wedge must respond in a way that makes it look substantially like a PS/2 keyboard to the attached host terminal. The wedge will respond to the following commands:

Host Terminal Command	PS/2 Keyboard and Scanner Wedge Response	Detail
RESET (0xFF)	ACK (0xFA)	As a result of RESET a PS/2 keyboard would respond with 0xAA meaning self-test-completion, or 0xFC meaning self-test-failure.
RESEND(0xFE)	Resend Last Byte	
0xFD-0xF4	ACK (0xFA)	Various commands that have no specific meaning to the wedge.
SET TYPEMATIC RATE (0xF3)	ACK (0xFA), ACK (0xFA)	The host terminal follows the first ACK byte with one byte of data that defines the typematic rate. The data byte must be ACKed.
READ ID (0xF2)	ACK (0xFA) then two byte device ID	A PS/2 keyboard would respond to the command by sending a two byte ID 0xAB, 0x83.
SET SCAN CODE SET (0xF0)	ACK (0xFA), ACK (0xFA)	The host terminal follows the first ACK byte with one byte that defines the scan code set. The data byte must be ACKed.
ECHO (0xEE)	ECHO (0xEE)	The PS/2 keyboard would respond with 0xEE. For diagnostics.
SET/RESET LED (0xED)	ACK (0xFA), ACK (0xFA)	The host terminal follows the first ACK with one byte of data defining the state of Num Lock, Caps Lock, and Scroll Lock LEDs. The data byte must be ACKed.

Programmables

1. Enable Wedge Communications Interface
Programming Mode + 1 + 0 + E + 2
2. Country Code Option
United States: Programming Mode + 2 + 8 + A + 0
International: Programming Mode + 2 + 8 + A + 1
3. Caps Lock Option
Caps Lock Off: Programming Mode + 2 + 8 + B + 0
Caps Lock On: Programming Mode + 2 + 8 + B + 1
4. Number Lock and Keypad
Keypad Not Used: Programming Mode + 2 + 8 + C + 0
Num Lock On: Programming Mode + 2 + 8 + C + 1
5. Inter Character Delay
4 ms: Programming Mode + 2 + 8 + D + 0
12 ms: Programming Mode + 2 + 8 + D + 1
24 ms: Programming Mode + 2 + 8 + D + 2
48 ms: Programming Mode + 2 + 8 + D + 3
96 ms: Programming Mode + 2 + 8 + D + 4
0 ms: Programming Mode + 2 + 8 + D + 5
(New for this release, new default value)
6. PS/2 Keyboard Emulation
Disable: Programming Mode + 2 + 8 + E + 0
Enable: Programming Mode + 2 + 8 + E + 1
7. Start and Stop Sentinel, maximum of 9 bytes each
Disable: Programming Mode + 2 + 9 + 0
(zeros all start/stop entries)
Start Sentinel:
Programming Mode + 2 + 9 + 1 + DATA + End
Stop Sentinel:
Programming Mode + 2 + 9 + 2 + DATA + End
DATA Input: Enter each byte as 2 *nibbles*
Example: Start Sentinel = 0x31, 0x21, 0x2D (0x31 will be transmitted first)
DATA Tag Sequence = 3 + 1 + 2 + 1 + 2 + D

Tag Translation Scan Code Table

US PS/2 Keyboard Scan Codes	International Scan Codes	Num Lock Option On	ASCII Characters	ASCII Shifted Characters	System Scan Codes
29			Space	Not Applicable	39
52	Eliminate ‘ and “		'	“	28
41	Eliminate <		,	<	33
4E	Eliminate – and _		-	_	0C
49	Eliminate >		.	>	34
4A	Eliminate / and ?		/	?	35
45	Eliminate)	70	0	)	0B
16		69	1	!	02
1E	Eliminate @	72	2	@	03
26	Eliminate #	7A	3	#	04
25		6B	4	\$	05
2E		73	5	%	06
36	Eliminate ^	74	6	^	07
3D	Eliminate &	6C	7	&	08
3E	Eliminate *	75	8	*	09
46	Eliminate (	7D	9	(	0A
4C	Eliminate ; and :		;	:	27
55	Eliminate = and +		=	+	0D
54	Eliminate [and {		[	{	1A
5D	Eliminate \ and |		\	|	2B
5B	Eliminate] and }		]	}	1B
0E	Eliminate ` and ~		`	~	29
1C			a	A	1E
32			b	B	30
21			c	C	2E
23			d	D	20
24			e	E	12
2B			f	F	21
34			g	G	22
33			h	H	23
43			i	I	17

US PS/2 Keyboard Scan Codes	International Scan Codes	Num Lock Option On	ASCII Characters	ASCII Shifted Characters	System Scan Codes
3B			j	J	24
42			k	K	25
4B			l	L	26
3A			m	M	32
31			n	N	31
44			o	O	18
4D			p	P	19
15			q	Q	10
2D			r	R	13
1B			s	S	1F
2C			t	T	14
3C			u	U	16
2A			v	V	2F
1D			w	W	11
22			x	X	2D
35			y	Y	15
1A			z	Z	2C

Start/Stop Sentinel Table

The table below can be used to construct the start and stop sentinels. In most cases, the make and break codes will be used to represent a PS/2 keyboard keystroke. For example, the letter “m” would be represented by the sequence 3A, F0, 3A.

The default Start Sentinel is to send nothing, so the first bytes of the message are the tag data.

The default Stop Sentinel is 5A, F0, 5A (Enter Key).

Key	Make Code	Break Code	Key	Make Code	Break Code	Key	Make Code	Break Code
Space	29	F0, 29	m	3A	F0, 3A	F7	83	F0, 83
'	52	F0, 52	n	31	F0, 31	F8	0A	F0, 0A
,	41	F0, 41	o	44	F0, 44	F9	01	F0, 01
-	4E	F0, 4E	p	4D	F0, 4D	F10	09	F0, 09
.	49	F0, 49	q	15	F0, 15	F11	78	F0, 78
/	4A	F0, 4A	r	2D	F0, 2D	F12	07	F0, 07
0	45	F0, 45	s	1B	F0, 1B	Scroll	7E	F0, 7E

Key	Make Code	Break Code	Key	Make Code	Break Code	Key	Make Code	Break Code
1	16	F0, 16	t	2C	F0, 2C	Insert	E0, 70	E0, F0, 70
2	1E	F0, 1E	u	3C	F0, 3C	Home	E0, 6C	E0, F0, 6C
3	26	F0, 26	v	2A	F0, 2A	Page Up	E0, 7D	E0, F0, 7D
4	25	F0, 25	w	1D	F0, 1D	Delete	E0, 71	E0, F0, 71
5	2E	F0, 2E	x	22	F0, 22	End	E0, 69	E0, F0, 69
6	36	F0, 36	y	35	F0, 35	Page Down	E0, 7A	E0, F0, 7A
7	3D	F0, 3D	z	1A	F0, 1A	Up Arrow	E0, 75	E0, F0, 75
8	3E	F0, 3E	Backspace	66	F0, 66	Left Arrow	E0, 6B	E0, F0, 6B
9	46	F0, 46	Tab	0D	F0, 0D	Down Arrow	E0, 72	E0, F0, 72
;	4C	F0, 4C	Caps Lock	58	F0, 58	Right Arrow	E0, 74	E0, F0, 74
=	55	F0, 55	Left Shift	12	F0, 12	Num Lock	77	F0, 77
[	54	F0, 54	Left Ctrl	14	F0, 14	Keypad /	E0, 4A	E0, F0, 4A
\	5D	F0, 5D	L GUI	E0, 1F	E0, F0, 1F	Keypad *	7C	F0, 7C
]	5B	F0, 5B	L Alt	11	F0, 11	Keypad -	7B	F0, 7B
`	0E	F0, 0E	Right Shift	59	F0, 59	Keypad +	79	F0, 79
a	1C	F0, 1C	Right Ctrl	E0, 14	E0, F0, 14	Keypad Enter	E0, 5A	E0, F0, 5A
b	32	F0, 32	Right GUI	E0, 27	E0, F0, 27	Keypad .	71	F0, 71
c	21	F0, 21	Right Alt	E0, 11	E0, F0, 11	Keypad 0	70	F0, 70
d	23	F0, 23	Apps	E0, 2F	E0, F0, 2F	Keypad 1	69	F0, 69
e	24	F0, 24	Enter	5A	F0, 5A	Keypad 2	72	F0, 72
f	2B	F0, 2B	ESC	76	F0, 76	Keypad 3	7A	F0, 7A
g	34	F0, 34	F1	05	F0, 05	Keypad 4	6B	F0, 6B

Key	Make Code	Break Code	Key	Make Code	Break Code	Key	Make Code	Break Code
h	33	F0, 33	F2	06	F0, 06	Keypad 5	73	F0, 73
i	43	F0, 43	F3	04	F0, 04	Keypad 6	74	F0, 74
j	3B	F0, 3B	F4	0C	F0, 0C	Keypad 7	6C	F0, 6C
k	42	F0, 42	F5	03	F0, 03	Keypad 8	75	F0, 75
l	4B	F0, 4B	F6	0B	F0, 0B	Keypad 9	7D	F0, 7D
						Pause	E1,14, 77,E1, F0,14, F0,77	--None--

* All values are in hexadecimal

Tag Message Format

The Tag Message will consist of the following:

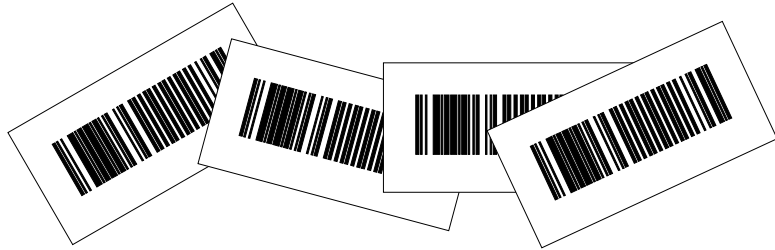
- Start Sentinel – 0 to 9 bytes
- Tag Identifier – 1 byte
- Tag Data – Variable, depending on the scanned tag
- Stop Sentinel – 0 to 9 bytes

Installation Details

The scanner can be connected to a PC with or without using a PS/2 keyboard, using a NCR cable.

Appendix B: NCR Scanner Programming Tags

Scanner Programming Tags



BST0-2121-74 Release O

27064

Volume Adjustment



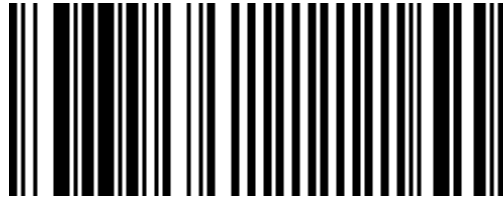
11817

Reset



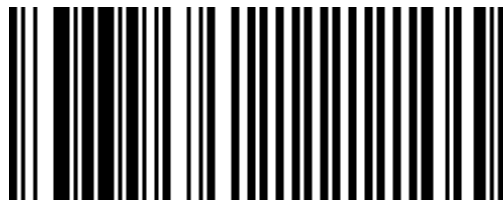
11818

Default



R0046

Programming Mode



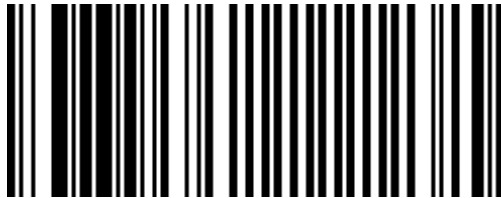
R0042

End



R0043

Save and Reset



R0044

Abort



R0045

Diagnostic Mode



R0041

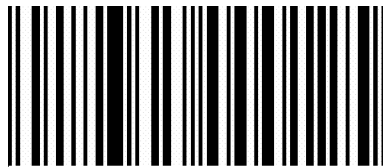
Speak Scanner Serial Number



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

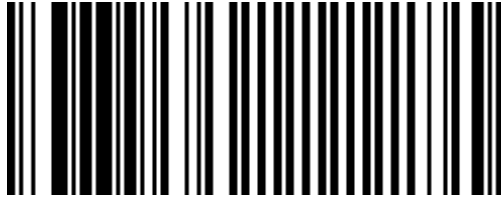
Firmware Flashing



Super ASIC and PXA Models

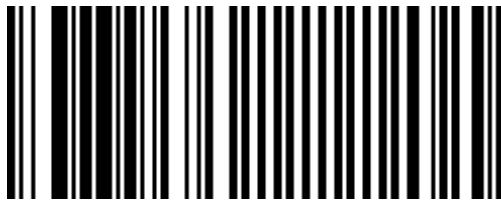
27581

Hex 0



R0048

Hex 1



R0049

Hex 2



R0050

Hex 3



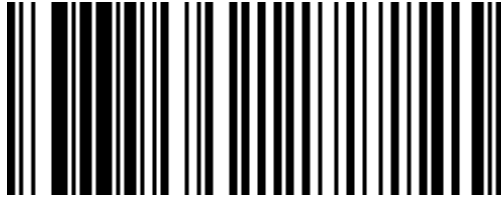
R0051

Hex 4



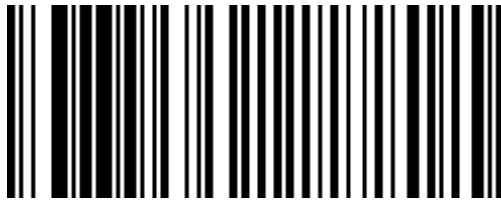
R0052

Hex 5



R0053

Hex 6



R0054

Hex 7



R0055

Hex 8



R0056

Hex 9



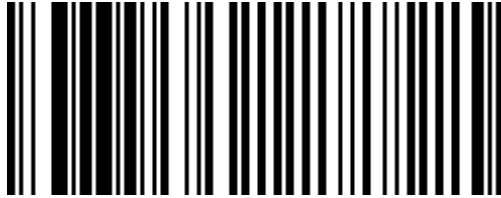
R0057

Hex A



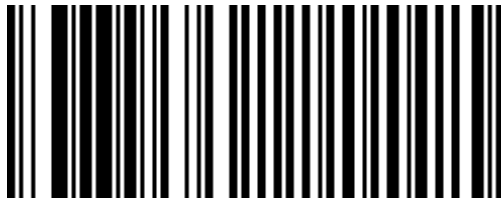
R0058

Hex B



R0059

Hex C



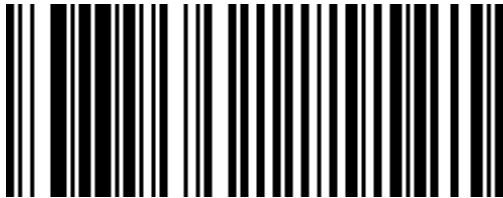
R0060

Hex D



R0061

Hex E



R0062

Hex F



R0063

ASCII Code Chart									
00	NULL	10	DLE	20	SP	30	0	40	@
01	SOH	11	DC1	21	!	31	1	41	A
02	STX	12	DC2	22	"	32	2	42	B
03	ETX	13	DC3	23	#	33	3	43	C
04	EOT	14	DC4	24	\$	34	4	44	D
05	ENQ	15	NAK	25	%	35	5	45	E
06	ACK	16	SYN	26	&	36	6	46	F
07	BEL	17	ETB	27	'	37	7	47	G
08	BS	18	CAN	28	(	38	8	48	H
09	HT	19	EM	29	)	39	9	49	I
0A	LF	1A	SUB	2A	*	3A	:	4A	J
0B	VT	1B	ESC	2B	+	3B	;	4B	K
0C	FF	1C	FS	2C	,	3C	<	4C	L
0D	CR	1D	GS	2D	-	3D	=	4D	M
0E	S0	1E	RS	2E	.	3E	>	4E	N
0F	S1	1F	US	2F	/	3F	?	4F	O
								5F	_
								6F	o
								7F	DEL

R0040

Appendix C: Service Diagnostics

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 7893. This causes the 7893 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 7893.

Note: If the 7893 is connected to an IBM host terminal and the communication type is set to PC-Wedge, this may cause the IBM host terminal to malfunction. Correcting this requires power cycling the IBM host terminal and scanner once the correct communication type has been set in the scanner. If possible, program the scanner first using a power brick supplied by NCR.

The following table identifies the Service Diagnostic tests.

Base Diagnostic State	Hex 3	Communication Protocol
	Hex 4	Display Firmware Version
	Hex A	
	Hex 1	Toad Test

Communication Protocol

Perform the following procedure to determine the communications protocol programmed in your 7893.

1. Scan the **Diagnostic Mode** tag to enter Base Diagnostic state— this must be the first tag scanned after applying power to the 7893.
2. Scan the **Hex 3** tag. The Good Read tone for this tag sounds (three beeps). If the 7893 has the Voice feature enabled, the scanner speaks its communications protocol type.
 - RS-232
 - RS-232 USB
 - IBM 4A
 - IBM 4A USB
 - USB or PS/2 Keyboard Wedge

Note: If programmed for USB or PS/2 Keyboard Wedge, the scanner speaks "**E 2**".

Display Firmware Version

This routine displays the version level of the firmware on the 7893 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 7893.
2. Scan the **Hex 4** tag, then the **Hex A** tag to read the firmware version level.
3. At this point, the scanner begins speaking the firmware version. The Scanner speaks "*Version Two Scanner 4 9 7 x x x x x*", where the 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. A **Reset** tag may be used.

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 7893.

1. Scan the **Diagnostic Mode** tag to enter the Base Diagnostic state—must be the first tag scanned after applying power to the 7893.
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 LED Status Indicator displays and the Good Read tone sounds off if the scanner can read the bar code.
 - b. The red LED 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 7893 to end this test.

Possible Bad Components

- Optics Engine
- Digital Board

Appendix D: Checkpoint

Operation

The Checkpoint system of the 7893 operates in Non Interlocked mode.

Note: Any interlock mode of operation will be supported through the POS Terminal.

Non Interlock Mode

The non interlock mode is the simplest and requires no scanner programming. In this mode the Checkpoint antenna is connected to the Checkpoint controller hardware and the system is enabled all the time. When a Checkpoint security tag is detected it is deactivated by the controller. There is no scanner intervention.

Appendix E: Additional Information Products

Additional information about the NCR 7893 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 & Templates, and then select Information Products Order Form.

Web Site

<http://infoetail.NCR.COM> (NCR only)

<http://www.info.NCR.COM> (Anyone)

Phone Order

800-543-2010 (select option #2)

Fax Order

770-831-2821

E-Mail

RI210013@exchange.daytonoh.ncr.com

Mail Order

NCR Corporation - Sales Service Center
3200 Shawnee Industrial Way
Suwanee, Georgia 30024

Appendix F: **Technical Support**

Sometimes situations arise that require more information than what is provided in this NCR 7893 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 G: User Feedback

Please print this page, answer the questions, and fax it to us at 404-479-1175.

Information Product: NCR RealPOS Presentation Scanner (7893) User Guide

Order Number: B005-0000-1917

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 do 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?

Poor 1 2 3 4 5 Excellent

How well did this document help you perform your job?

Poor 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:
