NCR RealPOS™ Single Window Scanner (7884)

Release 1.0

User Guide

25334

B005–0000–1819
Issue E

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Preface

Audience

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

References

- *NCR RealPOS Single Window Scanner Hardware Service Guide* (B005–0000–1820)
- *NCR RealPOS Single Window Scanner Parts Identification Manual* (B005–0000–1847)
- *NCR RealPOS Scanner Tool Suite Guide* (B005-0000-1883)
- *NCR RealPOS Safety and Regulatory Information* (B005–0000–1699)

Safety Requirements

The *NCR RealPOS Single Window Scanner (7884)* conforms to all applicable legal requirements. To view the compliance statements see the *NCR RealPOS Safety and Regulatory Information* (B005-0000-1699).

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Appendix I: **Obtaining Information Products**

Appendix J: **Technical Support**

Appendix K: **User Feedback**

Revision Record

Issue	Date	Remarks
A	Feb 2008	First issue
B	Mar 2009	Rebranding
C	Apr 2009	Update
	June 2009	Updated Timers worksheet
	Oct 2009	Updated Environmental Considerations table and RS232 Parameters 2 worksheet
	Feb 2010	Updated Dual Cable Interface
		Removed “NCR RealScan 2356 and Symbol (Motorola) Type Hand-Held Scanner” section and replaced with a link to the Scanner website
	Sept 2010	Added “Scanner Cloning using Programming Tags” section
	July 2011	Changed “Disable Volume Adjust Button” procedure
D	Dec 2012	Added Imager Feature (F150) information
E	Dec 2013	Updated the programming sequences and changed format from artworks to tables

Chapter 1: Product Information

The NCR RealPOS Single Window Scanner (also known as the NCR 7884) is a state–of–the–art, single window scanner designed for medium to high-performance scanning applications such as drug stores, convenience stores, supermarkets, and other checkout environments world wide. It is one of the smallest yet powerful scanners available; a compact, pass–through scanner that can be mounted in various ways. This and other features reduce the amount of operator training and increase operator efficiency.

Available Models

The NCR 7884 is available in two RoHS–compliant models:

- US version
- Japanese version

US Version

The following is a sample image of the US version scanner.

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Model	Description
NCR 7884–1000	Single Window Compact Scanner (US)

Japanese Version

A Japan model is also available with same functionalities except for a few cosmetic differences.

27522

Model	Description
NCR 7884–1010–9090	Single Window Compact Scanner (Japan)

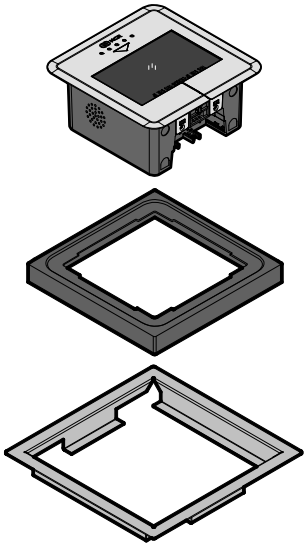
Available Adapter/Mounts

By using adapter mounts, the NCR 7884 is compatible with the interface protocol and checkstand cutout size of all previous NCR 788X models:

- 7880
- 7883
- 7882

This makes it easy to upgrade older units with the latest in scanner technology. In addition, the NCR 7884 is compatible with existing non–NCR, single–window scanner checkstand cutouts.

The following is a sample image blowup of the NCR 7884 using the adapter mounts for previous NCR 788x models.



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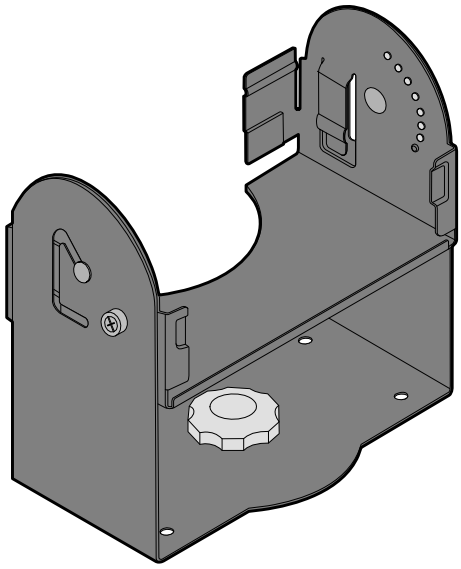
The following is a sample image of the vertical mount.



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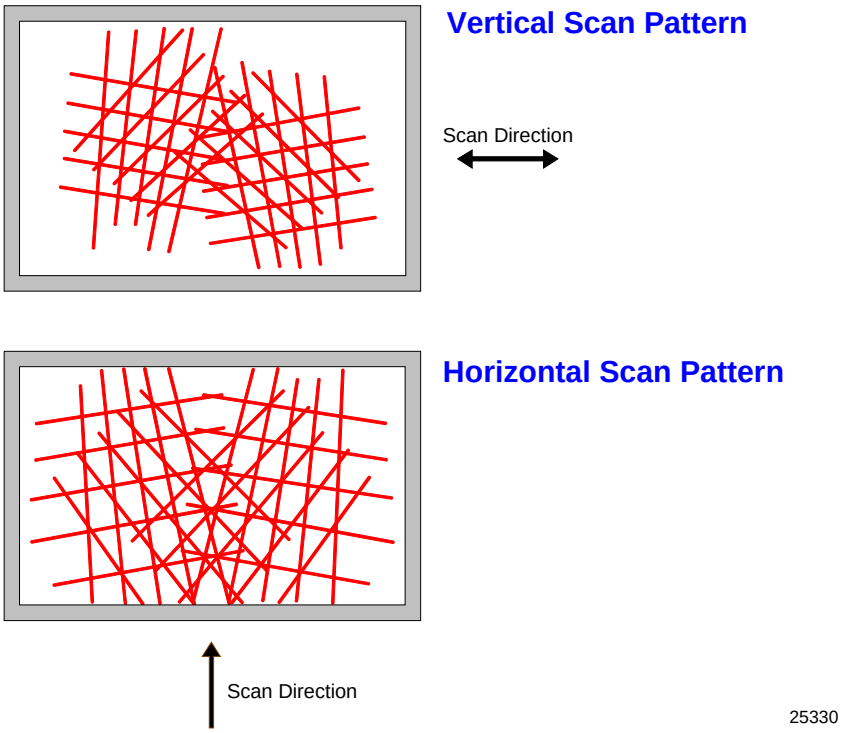
Features and Options

The NCR 7884 is rich in features and options which puts it in a class by itself. This section details the features and options that are available.

Scanning Performance

The NCR 7884 uses laser light to create a pattern of 30 scan lines. As a bar code passes through these scan lines, the NCR 7884 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 following image illustrates the vertical and horizontal scan patterns.



Communications Protocol

The NCR 7884 communicates with the host terminal through the following:

- RS232
- USB

  IBM

  NCR
- Keyboard Wedge
- IBM RS–485

Autodiscrimination

The NCR 7884 can decode a variety of barcodes. The ability to differentiate the various barcode types is a standard feature of the NCR 7884. 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

Auxiliary RS232 Port

The NCR 7884 includes an auxiliary RS232 Port feature. The purpose of this feature is to permit other peripheral devices to connect to the host terminal through the NCR 7884, thus eliminating the need for the host terminal having additional RS232 Ports.

A typical use of this feature is to connect a hand–held scanner for items too large to place on the checkstand. It also provides a connection for some security tag deactivation systems, as well as a 3rd party scale.

Each peripheral device using a peripheral port requires special programming. This port provides up to 750mA at 5V. The auxiliary RS232 port also provides up to 350mA at +12V.

Note: The total combined 5V current for the auxiliary RS232 plus the peripheral USB peripheral port must be limited to 750mA.

The NCR 7884 is also compatible with both the NCR RealScan 2356 and NCR RealScan 2357 handheld scanners.

Note: Normally, other SurePOS–compliant handheld scanners are compatible with the NCR 7884. However, NCR recommends a thorough integration test before using any 3rd–party handheld scanner.

Special programming is required for each peripheral device using a peripheral port. The connector is wired as follows.

Auxiliary RS232 Peripheral Port	
Pin Number	Signal Name
1	+5 Vdc
2	NC
3	GND
4	TXD
5	RXD
6	+12 Vdc
7	CTS
8	RTS

The NCR 7884 auxiliary RS232 port hardware is limited to the following fixed parameters.

Baud Range	9600
Parity	Even
Stop Bits	1
Number of Data Bits	7
Hardware Handshaking	Hardware
Terminator Character	CRLF
UPC–A Prefix Character	A
UPC–E Prefix Character	E
EAN 8 Prefix Character	FF
EAN 13 Prefix Character	F
Code 128 Prefix Character	f
Code 39 Prefix Character	a
Interleaved 2 of 5 Prefix Character	b
Databar (RSS–14 and Expanded)	r
Codabar	N

If the hand–held is to be used using the values from the previous table, use the following programming sequence:

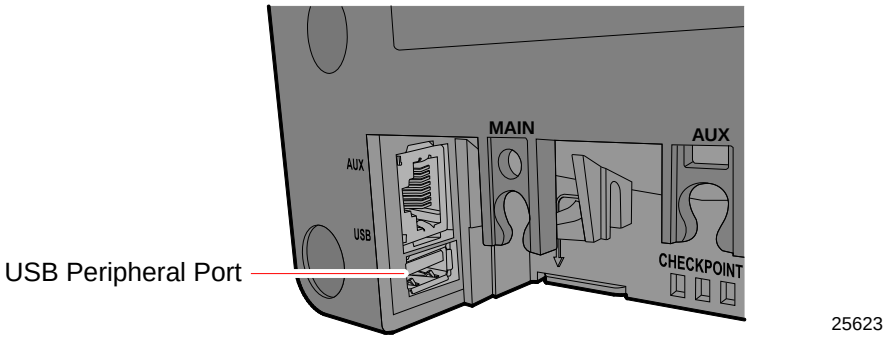
- **Programming Mode, Hex 5, Hex 5, Hex 1, Save and Reset**
- **Programming Mode, Hex 4, Hex 0, x, Save and Reset**

USB Peripheral Port

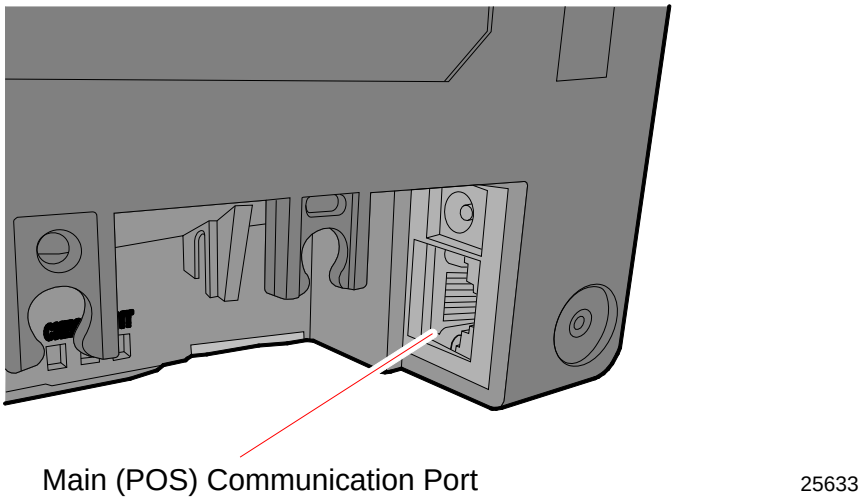
The NCR 7884 includes a single Type–A USB peripheral port. This port is included to permit an easy connection for peripherals and to improve its capabilities by permitting the devices to be hot–swappable (connecting or disconnecting devices without restarting the unit).

The USB peripheral port is located on the left side on the rear of the unit. The purpose of the single USB peripheral port is to permit other peripheral devices; such as a USB thumb drive, a handheld scanner, and so forth, with USB interfaces to connect to the host terminal through the NCR 7884. The USB peripheral port provides up to 500mA at 5V.

Note: The total combined 5V current for the auxiliary RS232 port plus the USB peripheral port must be limited to 750mA.



The Main (POS) Communication port is used to connect to the host terminal. This port may be used to connect to a USB peripheral port.



Firmware Flashing

The NCR 7884 includes the NCR RealPOS Scanner Tool Suite, which permit upgrades to the firmware without replacing the actual firmware chip. Refer to Chapter 6 *Programming* for more information.

Note: The NCR 7884's firmware chip is non–replaceable.

The Scanner Tool Suite comes in two forms. The first one is available at no charge from the following website: *www.ncr.com*. The other firmware is sold separately and provides various Enterprise functions.

Operator Interface

Interface between the operator and the NCR 7884 is very minimal. Messages are sent from the NCR 7884 to the operator through status indicators, audio tones, and voice messages.

Voice Messages

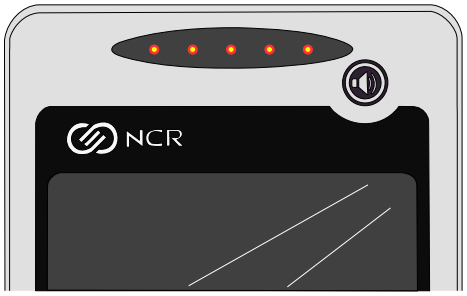
If the NCR 7884 has voice enabled, certain mode changes and error conditions are alerted by synthesized voice messages. These messages give either the changed mode or the error message with the suggested corrective action. Voice is enabled and disabled in the Miscellaneous Parameter program.

Note: By default, Voice is ON.

Scan Adviser

The Scan Adviser is an intuitive feature of the NCR 7884. It provides visual confirmation for scanning items using different colors and patterns— which is especially ideal for hearing–impaired cashiers and enables a quieter front end.

The Scan Adviser is also useful in diagnosing problems with the NCR 7884. Using a combination of colors and patterns, the user may quickly identify problems – thus effectively decrease downtime and enhance productivity.



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Volume Adjust

The Volume Adjust feature is used for two operations:

- **Controlling the speaker volume**—Volume is controlled by pressing and then releasing the Volume Adjust button. Speaker sounds for each press/release of the button.
- **Controlling the speaker frequency**—Frequency is controlled by holding down the Volume Adjust button. Speaker sounds and cycles through all different frequencies when button is pressed continuously.

These settings are lost on a power cycle but can be saved permanently if set up through a programming sequence or if the Reset barcode is immediately scanned after setting the desired volume with the button. Other options to configure the volume and frequency are available with programming sequences, as well. Refer to Worksheet 11 in the *Programming Worksheets* section in Chapter 6 for more information.

Motion Detector

The Motion Detector feature prolongs the life of the NCR 7884. This is located inside the scanner window; it turns off components of the NCR 7884 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 NCR 7884 to turn on. This movement is the normal item scanning movement.

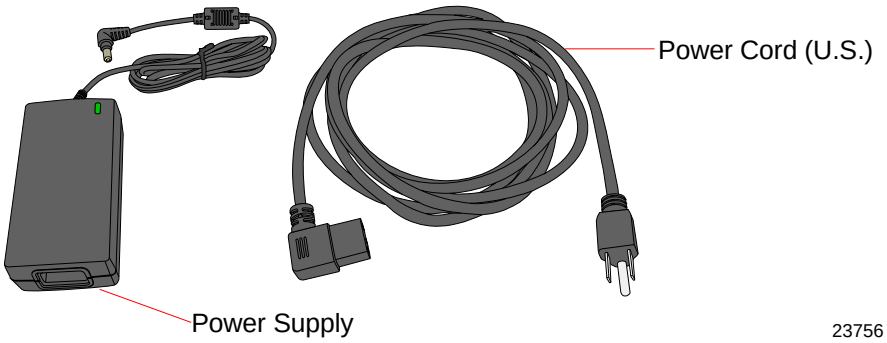
Not–On–File

The NCR 7884 has a Not-On-File feature that locks the scanner and causes the Scan Adviser 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 NCR 7884 is disabled from reading additional tags until the error is cleared. To clear, select the host terminal **CLEAR** key and manually enter the item and price.

Power Supply



The Power Supply provides the required DC voltage of the NCR 7884. 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 NCR 7884. Several power cords are available depending on the country of installation. The Power Supply input can be 90 – 264 VAC, with a frequency range of 47 – 63 Hz.

In addition, some host terminal interface types can power the NCR 7884 without the use of this power supply. Please contact your NCR sales representative for details.

PACESETTER

NCR has continually improved its PACESETTER technology used on NCR RealPOS products. Starting out as PACESETTER, it progressed to PACESETTER *Plus*, and then to PACESETTER III. Vendors and printers regularly supply products with overprinted, underprinted, or truncated barcodes to the market. Some labels have missing margins. Others may be printed around the corner of packages or on media that wrinkles when picked up. PACESETTER addresses the problems caused by these unreadable labels. PACESETTER III is standard on all NCR 7884 products.

PACESETTER *Plus*

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

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

Mode 1–Inquiry

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

- Good reads
- No read due to lack of full label (missing bars or folded label)
- Good reads with overprinted bars
- Good reads with underprinted bars
- Missing margins
- Missing print lines

To initiate this mode, scan the Mode 1 tag. The following is a sample of the mode 1 tag.

Mode 1

Slot Scanner (PACESETTER Plus) 11500

Mode 2–Demonstration Mode

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

To initiate this mode, scan the mode 2 tag. The following is a sample of the mode 2 tag.

Mode 2

Slot Scanner (PACESETTER Plus) 11501

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

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

Parameter Programming

The NCR 7884 may need to be configured to meet specific installation needs. The NCR 7884 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 http://www.ncr.com/
- remotely through the host terminal using the host terminal software (sold separately)

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 NCR 7884. 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 NCR 7884 each time power is applied and continues all throughout operation. When a problem is found, it notifies the operator through patterns of color LEDs on the Scan Adviser (above the Vertical Window), an error code on the remote display (if attached), and voice messages. It lists the most probable causes first.

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

Power–on Wellness Check

When power is applied to the NCR 7884, Scan Doctor checks the following scanner components:

- RAM
- ROM
- EEPROM
- Spinner Motors
- Laser Diodes
- ASICs

If Scan Doctor finds a problem that hinders operation of the NCR 7884, it disables the unit; otherwise the problem is identified and operation continues.

Ongoing Wellness Check

Scan Doctor runs continuously the moment NCR 7884 is turned on. It constantly monitors the RAM, the Spinner Motor, and the Laser Diode.

Service Diagnostics

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

Soft Power Down/Power Up

The NCR 7884 senses periods of scanner inactivity. The scanner's soft power down feature extends the life of the NCR 7884 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 NCR 7884 motion detector detects movement. This detector is located inside the scan window. The NCR 7884 can also be powered up when the checker signs on the host terminal. This capability assumes appropriate host terminal software.

Chapter 2: Site Preparation

Customer Responsibilities

The NCR customer is responsible for preparing the site for installation of the NCR 7884. Information is provided to help with this task.

The customer must do or provide the following:

- When required by NCR, provide the NCR Customer Services Representative with appropriate drawings that indicate the following:
  - Location of equipment
  - Site wiring (power and signal, paths, and lengths)
  - Location of other equipment capable of generating large amounts of electrical noise, electromagnetic interference, heat, and so forth
- Provide floor coverings and environmental systems that prevent static electricity build–up and discharge.
- Provide and install necessary power distribution boxes, conduits, grounds, lightning arrestors, and associated hardware.
- Ensure clear space and environmental requirements of the unit are met.
- Make all building alterations necessary to meet wiring and other site requirements.
- Ensure all applicable codes, regulations, and laws (including, but not limited to, electrical, building, safety, and health) are met.
- Provide and install all communication cables, wall jacks, special connectors, and associated hardware.
- Provide and install auxiliary power or other equipment, as required.

Preparing the Site

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

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

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

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

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

Weight

The weight of the NCR 7884 depends on the glass window installed. The following are the installed weights:

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

Unit Configuration	Pounds	Kilograms
Table Top Unit	2.250	1.020
Horizontal Unit w/ Sapphire Glass	3.064	1.389
Horizontal Unit w/ Everscan Glass	2.954	1.339

Scanner Dimensions

The following table lists the dimensions of the NCR 7884 Scanner:

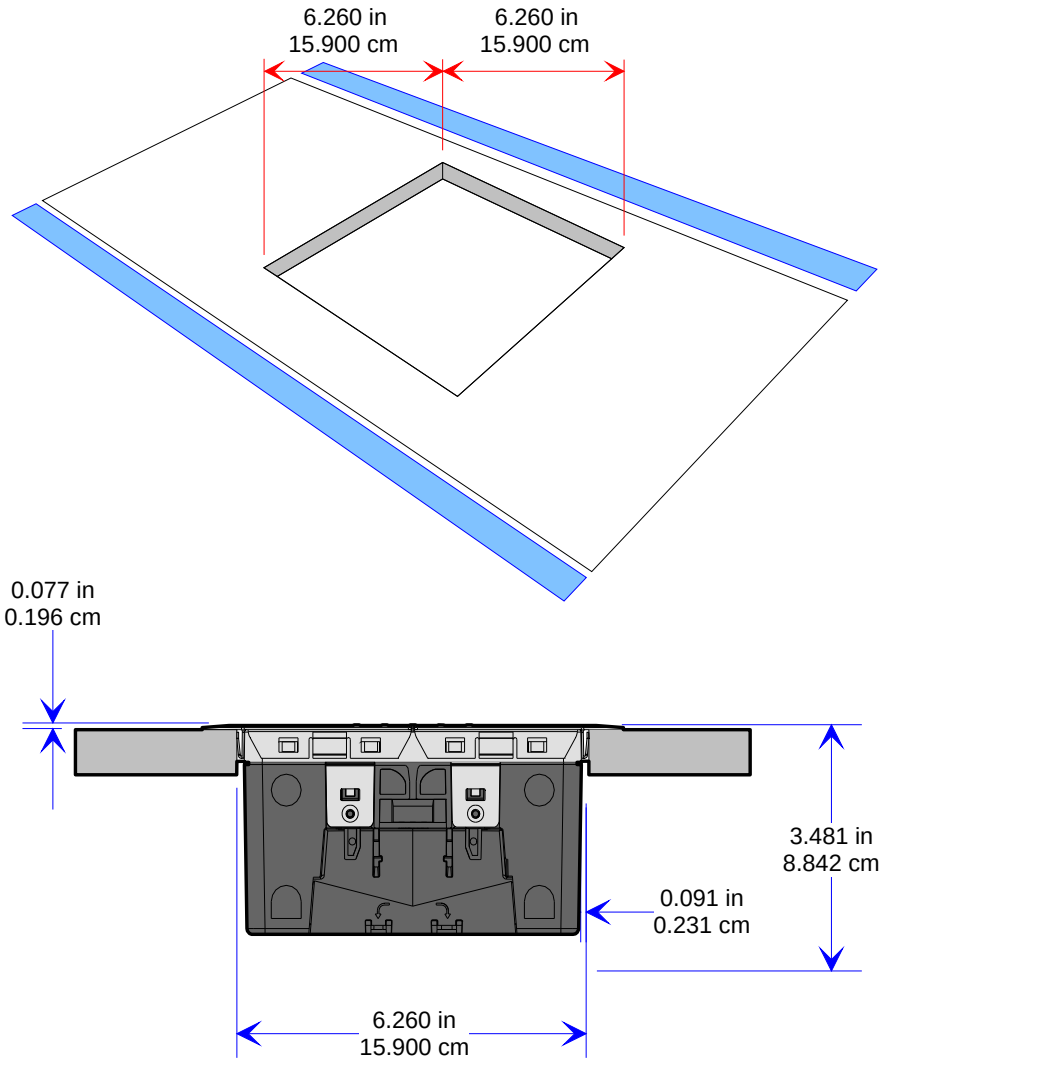
Unit Configuration	Length	Width	Height
Table Top	152.28 mm 6.00 in.	88.90 mm 3.40 in.	152.67 mm 6.01 in.
Table Top with attached Vertical Mount	167.39 mm 6.59 in.	95.82 mm 3.77 in.	229.30 mm 9.03 in.
Horizontal (with Top Cover)	190.42 mm 7.50 in.	89.32 mm 3.52 in.	190.42 mm 7.50 in.

Checkstand Cutout

When cutting the checkstand hole, be careful to maintain the specified dimensions. NCR recommends that an adjustable plate be placed between the leading edge of the NCR 7884 and the belt on the checkstand.

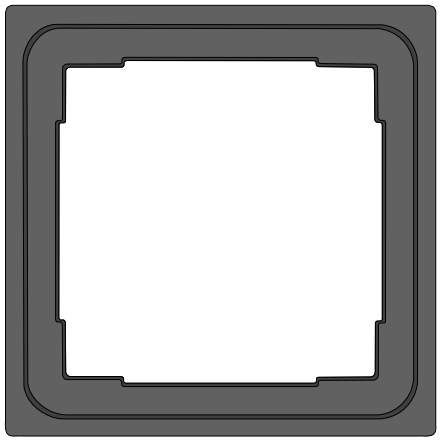
New Installation

For new installations, the following dimensions are needed for a horizontal mount configuration of the NCR 7884.



Existing NCR RealScan 7883 Users

This checkstand cutout is designed for existing NCR 7883 users. A horizontal Top Plate Plastic adapter (7884–K918) is available to permit the 7884 to fit inside a 7883 cutout.



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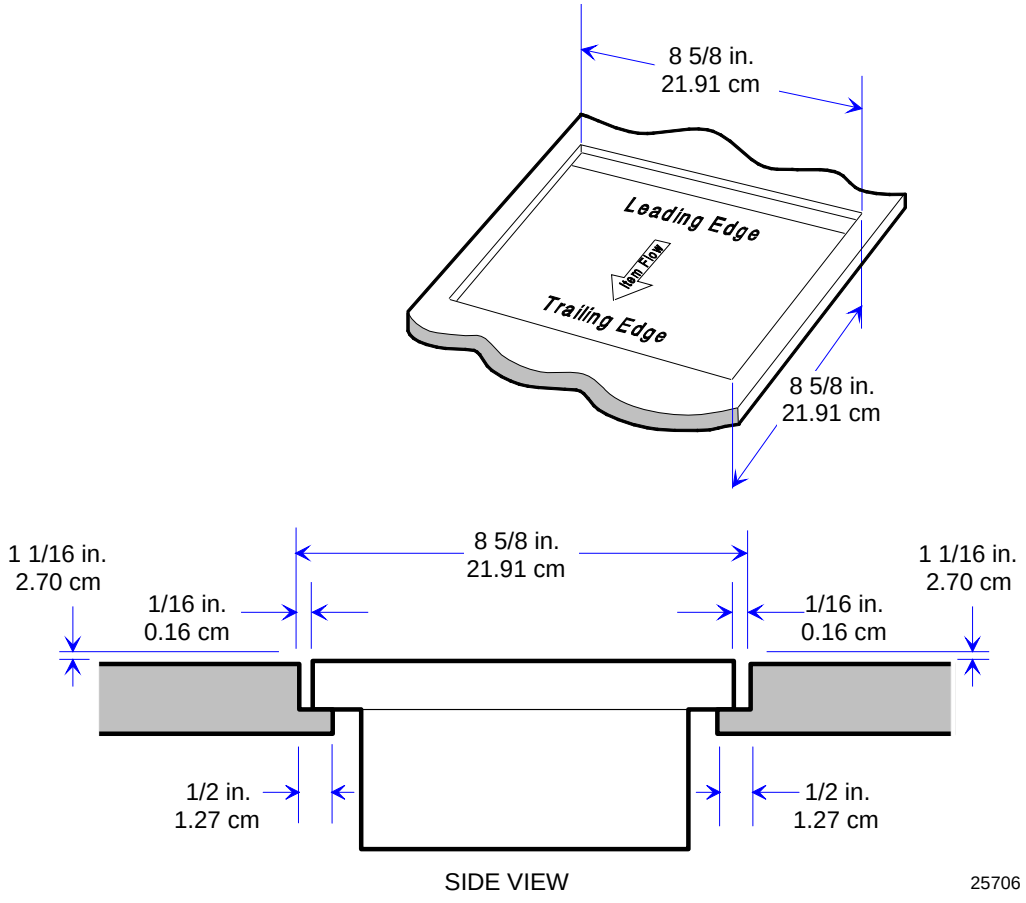
The flange on the Top Cover extends past the cutout. The NCR 7884 hangs from this flange.



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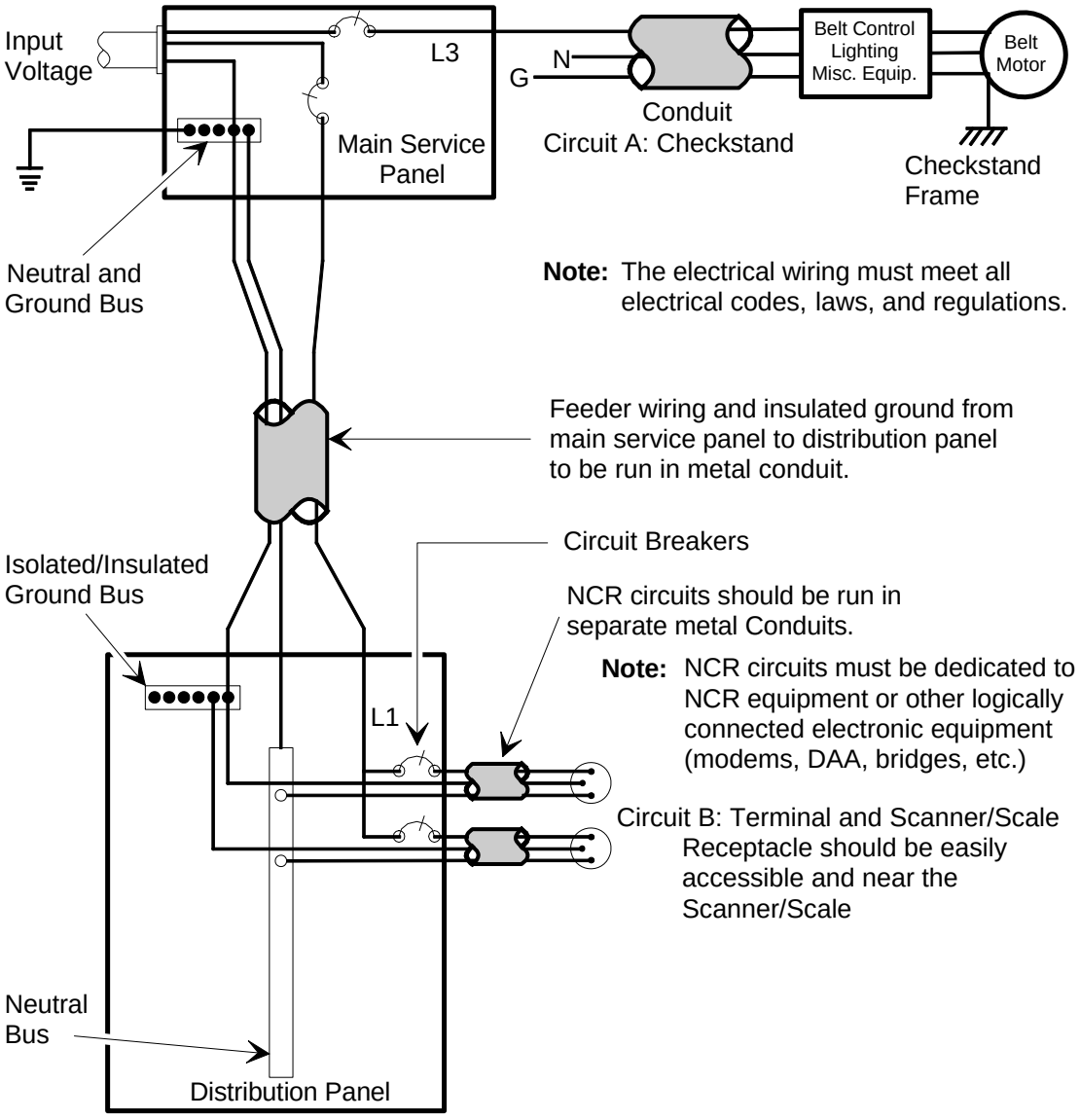
Checkstand Wiring

The following is the checkstand wiring diagram for the NCR 7884.



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

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Power Considerations

The NCR 7884 receives power from an external power supply. The power supply mounts in a remote location close to the NCR 7884. The power supply is a 40-watt switching power supply with the following inputs.

- Voltage: 90 to 264 Vac
- Frequency: 47 to 63 Hz
- Current: 0.9 A

The NCR 7884 has no power switch on the unit. Therefore, the checkstand must be wired to include a recessed 15A circuit breaker accessible to the operator. This circuit breaker serves as the power switch. It is also needed to reset the unit during programming and to remove power from the unit during servicing.

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

The following table lists the NCR 7884's Power Matrix:

Description	Power Source		
	115 VAC	230 VAC	12 VDC
Typical Operating Power (Motor and Laser ON)	5 W	6 W	4 W
Typical Standby Power (Motor and Laser OFF)	3 W	4 W	2 W

Power Transient Protection

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

Environmental Considerations

The NCR 7884 operates in most standard working environments. Temperature ranges permitted are greater when the NCR 7884 is in storage or transit. The NCR 7884 can operate up to one hour at extreme temperatures without suffering damage.

The following table gives the various environmental requirements:

Physical Variable	Normal Operation	Extreme Operation	Storage	Transit
Temperature	0°C – 40°C 41°F – 104°F	0°C – 45°C 32°F – 113°F	-10°C – 55°C 14°F – 122°F	-40°C – 60°C -40°F – 140°F
Temperature Change	10°C/hour 50°F/hour	20°C/hour 68°F/hour	20°C/hour 68°F/hour	20°C/hour 68°F/hour
Relative Humidity	5% to 95% No condensation	5% to 95% No condensation	5% to 95% No condensation	5% to 95% No condensation
Barometric Pressure	105 x 10^3 Pa to 79 x 10^3 Pa			105 x 10^3 Pa to 74 x 10^3 Pa
Ambient Light	200 ft candles max (2152 lux)	200 ft candles max (2152 lux)		
Acoustical Noise	55 dBa or less	55 dBa or less		
Vibration	3–150–3 Hz 2.5 g input Base Position	3–150–3 Hz 2.5 g input Base Position		
Shock	ΔV=0.5 m / sec (20 in / sec) 25g @ 3.75 ms Triangular Pulse	ΔV=0.5 m / sec (20 in / sec) 25g @ 3.75 ms Triangular Pulse 1 Shockbase Position		

Ventilation Requirements

The NCR 7884 is designed to operate without an exhaust fan in the checkstand (or other housing); however, there must be adequate convection air flow, and no other equipment can be in the checkstand (or other housing) that causes the ambient temperature inside to be out of the following ranges.

- Maximum ambient temperature inside the checkstand (or other housing)–40°C (104°F).
- Maximum variation between ambient temperature inside and outside the checkstand (or other housing)–7°C (12.6°F).

For example, if the ambient temperature outside the checkstand (or other housing) is 24.4°C (76°F), the ambient temperature inside cannot be greater than 31.4°C (88.6°F).

When the NCR 7884 is mounted in a vertical (Table Top) position above the checkstand, ventilation clearance is required around the scanner. If the checkstand (or other housing) contains other heat producing equipment, you may need to use forced air to keep the temperature within the specified range. However, the air MUST NOT enter or leave around the NCR 7884 Scanner.

Chapter 3: Installation

The following are the mounting configurations available for the NCR 7884:

- Table Top
  - Vertical
  - Horizontal
- Table Top with Vertical mount
- Horizontal
  - Sapphire Glass
  - Everscan Glass

Note: If ordered for horizontal mounting, the Top Cover is already factory–installed and attached to the scanner upon receipt. A horizontal Top Plate Plastic adapter (7884–K918) for existing NCR 7883 users can be ordered.

Additional information is required depending on the installation. Information about enabling special functions is provided in Chapter 6 *Programming*.

Installation Steps

The following are the five installation steps for installing NCR 7884.

1. Verify installation preparation (scanner and checkstand)
2. Cable installation preparation
3. Connect Cables
4. Put NCR 7884 in checkstand cutout
5. Verify unit is operational

All three mounting configurations have the same installation steps except in steps 3 and 4.

Step 1: Verify Installation Preparation

This applies to both the scanner unit and the checkstand.

Report Damaged Unit

After receiving the NCR 7884, inspect the shipping carton for damage. If the NCR 7884 is damaged due to shipping, notify the carrier, the NCR representative, or the supplier if the unit is not purchased directly from NCR.

Package Contents

After unpacking the NCR 7884, take inventory to ensure that all components are received. The following list identifies the package contents:

- NCR 7884
- Regulatory Information

The following items come in a separate package:

- Power Supply (if ordered)
- Power Cord (if ordered)
- Interface Cable (if ordered)
- Power Cord Documents (International Units)

Note: If ordered for horizontal mounting, the Top Cover is already factory–installed and attached to the scanner upon receipt.

Note: The Vertical Mount and 7884 Plastic Adapter (for existing NCR 7883 users) comes in separate boxes, if ordered.

Step 2: Cable Installation Preparation

Note: Before attempting to install the NCR 7884, the site must be prepared in accordance with the requirements described in *Site Preparation* chapter.

Note: The NCR 7884 is fully assembled at the factory and requires no operator assembly. The laser module is an integral part of the factory assembled device and does not have any controls that can increase the level of laser light or collateral radiation from the NCR 7884.

Follow these steps to install the NCR 7884 in the checkstand (after installing all the cables).

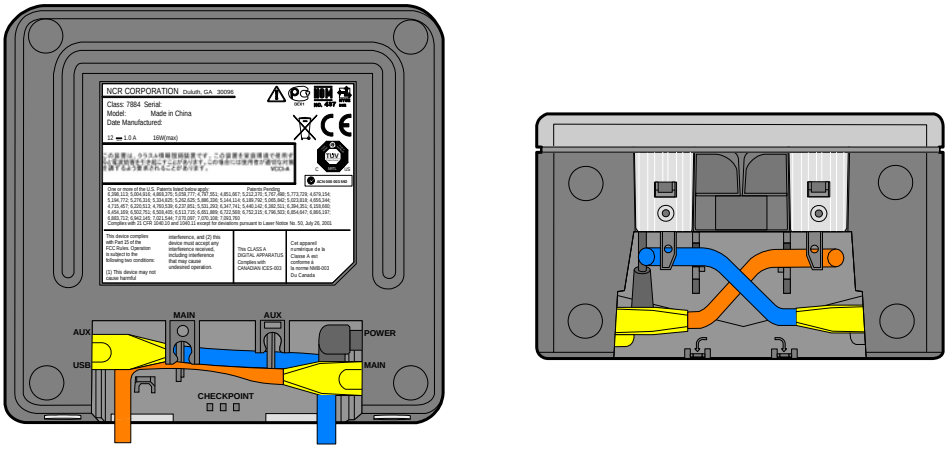
1. Verify that the NCR 7884 power receptacle switch is off. Plug the power cord into the NCR 7884 power supply unit. Pass the power cable from the power supply through the checkstand opening.
2. Connect the communications interface cable to the host terminal. Refer to the terminal documentation for instructions on how to connect the interface cables.

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

3. Pass the interface cables through the checkstand opening.
4. If connecting an RS232 peripheral device below the checkstand, pass its interface cable through the checkstand opening.

Step 3: Cable Connection

The following image displays the cable routing for a horizontal table top–mounted scanner.



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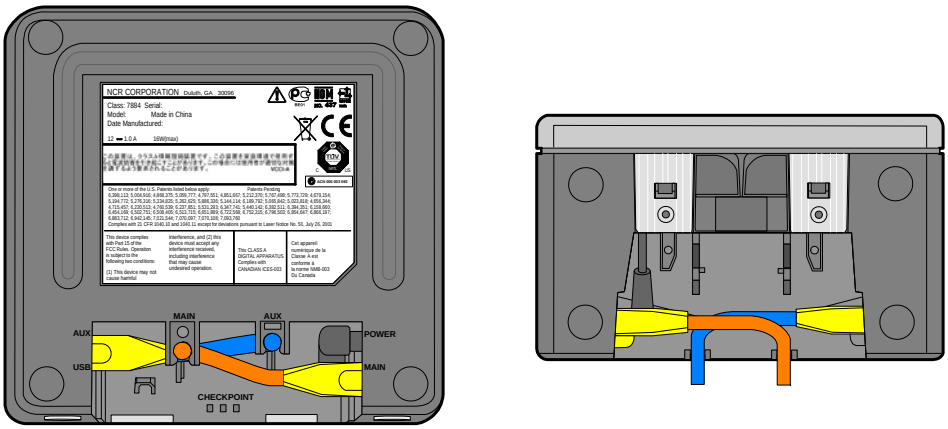
The following image displays the cable routing for a vertical table top–mounted or a horizontal–mounted (recessed in checkstand) scanner.



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The following table lists the description of the cables displayed from the previous images, as well as their connection.

Cable Name	Table Top Routing	Horizontal Routing
Power (black)	No specific routing	No specific routing
Aux (blue)	From the bottom to the back	From the bottom to the back
Main (orange)	From the bottom to the back	From the bottom to the back
USB (not displayed)	No specific routing	No specific routing

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

To install the cables in the NCR 7884, perform the following procedure:

1. Connect the DC Power Cable from the Power Supply to the Power connector.
2. Connect the interface cable to the Scanner main (POS) communication port.

   Note: If you intend to program the scanner using programming barcode tags, do not connect the interface cable to the Scanner connector until all programming is complete.

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

3. If the configuration includes an RS232 peripheral device, connect the cable to the auxiliary RS232 port.

Step 4: Mounting the NCR 7884

The NCR 7884 can be mounted vertically/horizontally in a checkstand or use the vertical mount (497–0456137).

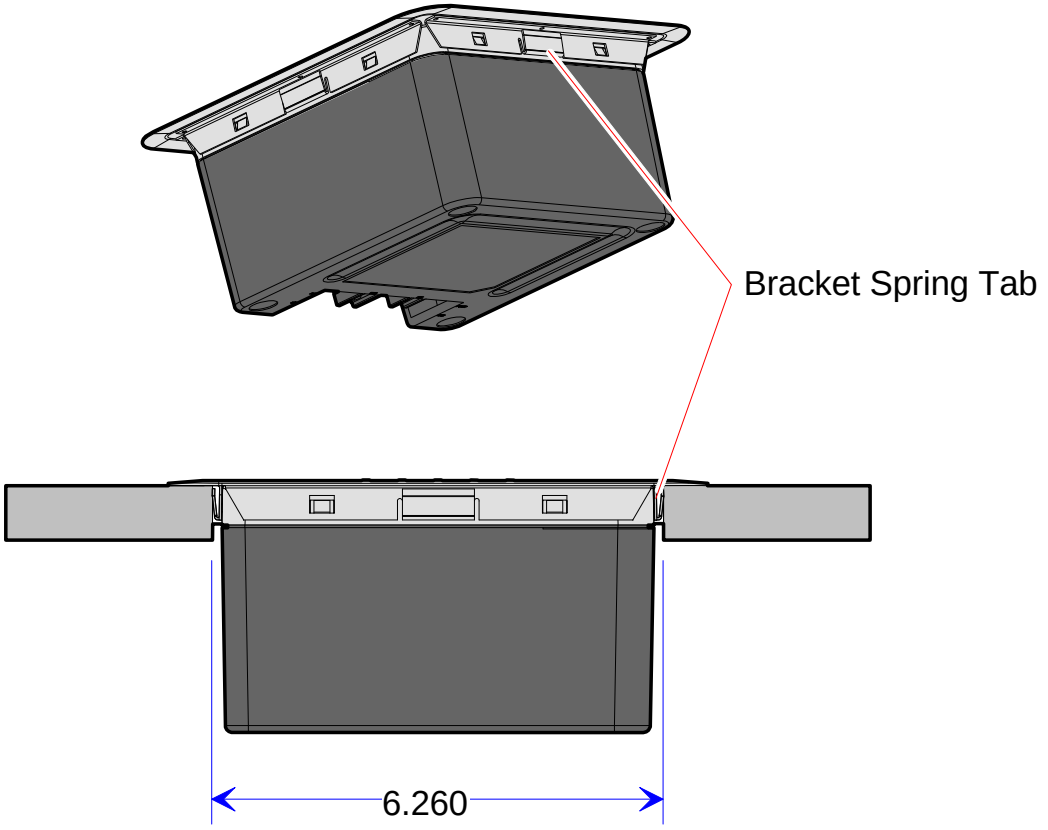
Checkstand Cutout

Note: No special installation procedures are needed to mount the NCR 7884 vertically in a checkstand.

To install the NCR 7884 horizontally in the checkstand cutout, perform the following procedure:

1. Ensure that the dimensions are accurate, as described on the **Checkstand Cutout** section in the *Site Preparation* chapter.
2. Connect the Power cable, Interface cable, USB cable, and RS232 peripheral cable (if present) to their respective ports. See the *Cable Connections* section for more information.
3. Carefully lower the NCR 7884 into the checkstand cutout. It should have support at the front and the rear, within 50 millimeters (2 inches) of its corners so that it does not rock.

A spring tab is present to prevent the NCR 7884 from rocking in its cutout.



Note: It is important that the NCR 7884 does not rock on its supports. Make sure that all adjustable supports are securely fastened and that the NCR 7884 is sitting on all supports.

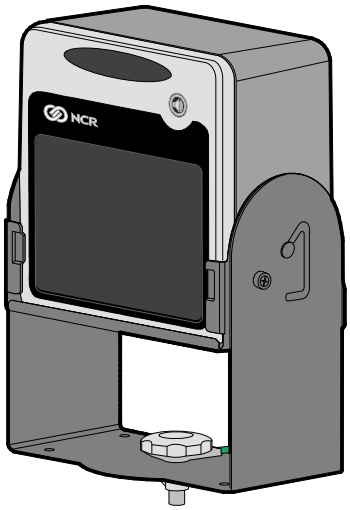
Note: Place the power supply in a position where spilled liquids cannot fall onto it.

Vertical Mount

To install the NCR 7884 using the vertical mount, perform the following procedure:

1. Prepare the checkstand.
2. Fasten the vertical mount into the screw holes. For a stationary base, attach the four (4) screws. For a swivel–type mount, attach the thumbscrew and T–nut tapped into a hole from below the checkstand for wooden counter tops. For metal counter tops, a thumbscrew and a regular nut is used.
3. Adjust the vertical mount holder to the desired height by sliding it into either of the two possible height configurations.

4. The vertical mount holder may be adjusted to face eight (8) different angles. Select the desired angle and use the two thumb screws on each side of the vertical mount to lock the vertical mount holder in place.
5. Connect the Power cable, Interface cable, USB cable, and RS232 peripheral cable (if present) to the NCR 7884.
6. Slide the NCR 7884 into the vertical mount holder. The following is a sample image of the NCR 7884 in a swivel–type mount.



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Step 5: Operational Unit Verification

When power is applied to the NCR 7884, the Scan Doctor software checks many of the scanner components.

After passing the Scan Doctor Power–On Wellness Check, the Scan Adviser starts out with five blue LEDs and transitions through a range of colors, and leaves only the three center LEDs lit in green. The NCR 7884 is now operational.

NCR 7884 Power–On Wellness Check

If an error occurs during the Power–On Wellness Check and speech is enabled, the NCR 7884 emits an audible description of the error and what action to take. There may be some simple steps that can be performed to correct the problem (refer to chapter 6 for more information). If the problem cannot be corrected, contact the maintenance provider for warranty and service information.

Checkout Reading Operation

The NCR 7884 comes from the factory with the programming parameters set to default values. The Communications Protocol is set to the specifications on the order. However, some parameter changes for a particular installation can be made. Refer to chapter 5 for more information.

Flash Latest Firmware

Although the latest firmware is loaded when the NCR 7884 is manufactured, newer firmware can be released after the unit is manufactured but before it is installed. NCR recommends checking the number of the firmware in the NCR 7884 and comparing it with the latest firmware available at the support link at *www.ncr.com* (Support→Drivers and Patches→Retail Support Files→ Retail RealScan Support Files).

To identify the firmware already in the scanner, scan the **Diagnostic Mode, Hex 4,** and **Hex A** programming tags. These must be the first tags scanned after applying power to the unit. The NCR 7884 gives a voice message containing the 497–xxxxxxx number of its firmware. Compare this number with the number of the firmware file at the support link at *www.ncr.com* (Support→Drivers and Patches→Retail Support Files→Retail Scanner). Perform the firmware flashing procedure if the 497–xxxxxxx number of the firmware file at the support link at *www.ncr.com* is higher than what is already loaded in the NCR 7884.

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

Note: There is a set of instructions for loading the appropriate NCR RealPOS Scanner Tool Suite based on the firmware currently in the scanner. Refer to the *Firmware Flashing* section in Chapter 5 for more detailed information.

Special Host Terminal Connections

Scanner Connected to IBM Host Terminals

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

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

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

Newer IBM host terminals no longer have this port; instead they use cable 1416–C070–0040 to plug into port 9x (the "x" varies depending on the host terminal model). This is a non–powered cable.

- A typical 4693/4682 uses port 9B for its scanner and/or scale devices.
- An IBM 4694–00x and 4694–02x have a port 9E for the scanner’s use, while a 4694–244/245 needs the RealPOS unit plugged into 9A.

SNI Beetle Host Terminal

For the NCR 7884 to communicate with an SNI Beetle Host Terminal, the communication parameters must be properly set. Scanning the following sequence of programming tags enables a typical installation; however, some variations may be necessary for any specific installation.

The following programming tags must be the first ones scanned after applying power to the NCR 7884.

1. **Program Mode**—enables programming mode
2. **Hex 3, Hex 4, Hex F, Hex 0, Hex 0**—chooses Wincor–Nixdorf Beetle parameters
3. **Save and Reset**—save Beetle parameters
4. **Default**—permanently store Beetle parameters as the default settings

The following settings are changed:

RS232 Communication
9600 Baud, 8–bit, Odd Parity, 1 Stop, Raise RTS – Wait for CTS
Scanner Only Protocol
Terminator = 0Dh
One Tag Output Buffer enabled (buffers only one tag)

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

25592

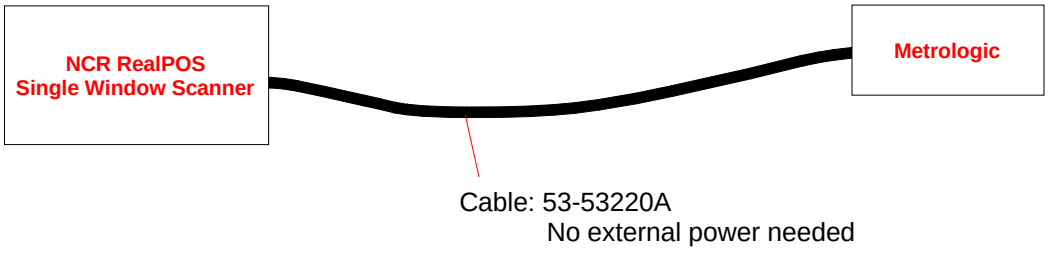
Peripheral Connections

Please be aware that these Hand-Held setup instructions assume Code 128, Code 39 and Interleaved 2 of 5 are enabled on the NCR 7884. Otherwise, if any of those bar code types are scanned with any of the Hand-Helds, and they are not also enabled on the NCR 7884, then the NCR 7884 produces a “bad” tone and will NOT transmit the barcode data.

Metrologic Hand-Held Scanner

A Metrologic Hand-Held Scanner can be connected to one of the auxiliary RS232 ports on the NCR 7884. If the Metrologic Hand-Held is the only peripheral device, it can be connected to either port. However, if connecting another peripheral device, there may be restrictions for the Metrologic port connection.

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

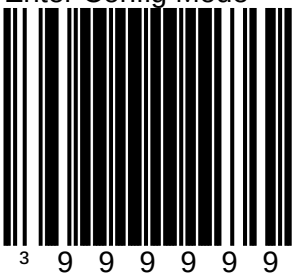


27057

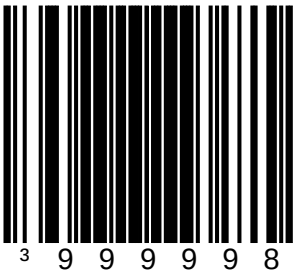
Programming the Metrologic Hand-Held Scanner if Connected through the Auxiliary RS232 Port

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

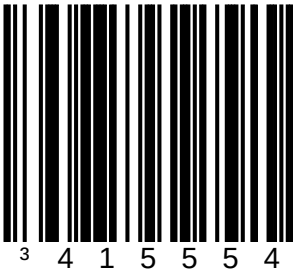
Enter Config Mode



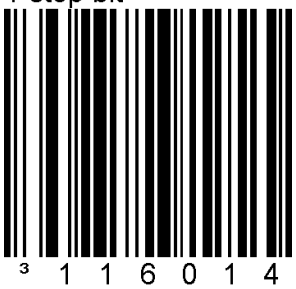
Recall Defaults



Enable RS232

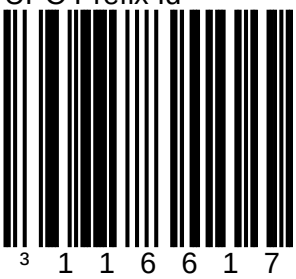


1 stop bit



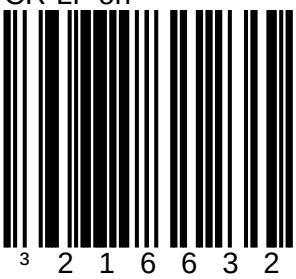
Even Parity

UPC Prefix Id

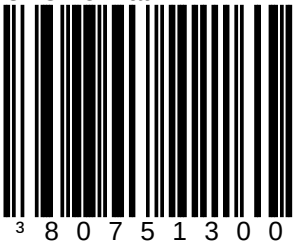


9600 Baud

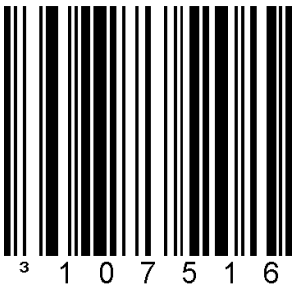
CR-LF on



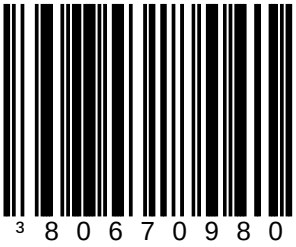
UPC Format



Transmit UPC-E checl

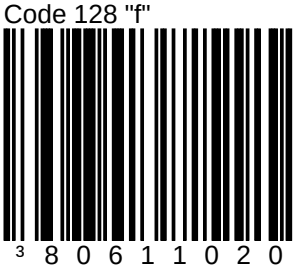


ITF "b"

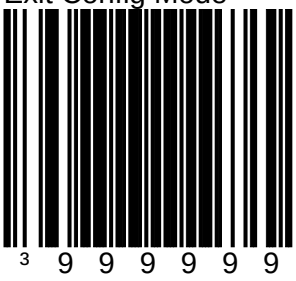


Code 39 "a"

Code 128 "f"



Exit Config Mode



Programming the NCR 7884

When installing a Metrologic Hand-Held Scanner, certain programming options must be set in the NCR 7884. Program these options as follows.

There are four options that must be programmed on the NCR 7884. Scan the following tags to set these options. These must be the first tags scanned after applying power to the NCR 7884.

Hand-Held Processing

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 4, Hex 0, Hex1, Save and Reset	Required
Disable	Programming Mode, Hex 4, Hex 0, Hex0, Save and Reset	

Hand-Held Port Selection

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

Hand-Held Beep on NCR 7884

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

Hand-Held Selection

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

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

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

When connecting a NCR RealScan 2357 Hand-Held Scanner, certain programming options must be set on both the NCR 7884 and the Handheld Scanner. These options are given as follows.

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

If the NCR RealScan 2357 Hand-Held Scanner (any model) is connected to the NCR 7884 through the auxiliary RS232 port, program the Hand-Held Products Scanner by scanning the following bar codes in order. If a triple beep is emitted from the Hand-Held scanner, start over with the first bar code.

FACTORY DEFAULT

7837-1300 RS232 9600, 7, even, 1

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

Default Data Format

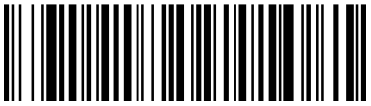
7837-1300 UPC-A Prefix A

7837-1300 UPC-E Prefix E

7837-1300 EAN-13 Prefix F

7837-1300 EAN-8 Prefix FF

Matrix RTS/CTS Mode 3 Enable



Programming the NCR 7884

There are four options that must be programmed on the NCR 7884. Scan the following programming tags to set these options. These must be the first tags scanned after applying power to the NCR 7884.

Hand-Held Processing

Selection	Programming Tag Sequence	Setting
Enable	Programming Mode, Hex 4, Hex 0, Hex1, Save and Reset	Required
Disable	Programming Mode, Hex 4, Hex 0, Hex0, Save and Reset	

Hand-Held Port Selection

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

Hand-Held Beep on NCR 7884

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

Hand-Held Selection

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

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

Prerequisites:

Firmware Levels:

- 7884, 497-0462644 - USB HH and USB HH pdf417.

Programming:

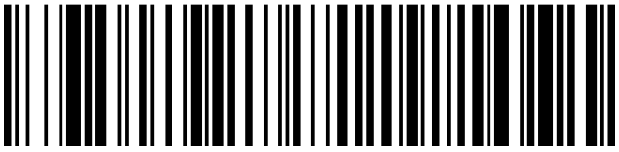
Use the following programming sequence if you want to make the scanner beep whenever it receives a valid barcode data through the USB host terminal port (the scanner does not beep by default):

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

If the NCR RealScan 2357 Hand-Held Scanner (any model) is connected to the NCR 7884 through the USB peripheral port, program NCR RealScan 2357 Hand-Held Scanner by scanning the following bar codes in order.

Factory Default

IBM Hand-Held USB



Note: There is NO programming necessary on the 7884 for this connection.

If it is desired to scan PDF 417 (2D) bar codes with the Hand-Held, you can enable the NCR 7884 to allow the pass-through of the data without the NCR 7884 itself having the capability to read that type of bar code.

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

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

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

For more information on connecting any 2356/ Symbol/ Motorola handheld scanner to any NCR bioptic scanner, go to the Scanner website: *http://www5.ncr.com/support/support_drivers_patches.asp?Class=External/Peripherals/Scanner/2356/display_Symbol*

You can find the instructions on connecting the RS232 AUX and USB Host through the Scanner website.

Chapter 4: Special Installations

The NCR 7884 can be configured for a variety of installations. Some of these installations require specific cables, specific programming, or special installation procedures.

Convenience Store Installations

The NCR 7884 Scanner; mounted either vertically or horizontally, is the scanner of choice for use in a convenience store. Convenience stores require high performance scanning because there are many small orders which can result in many customers in line. This often requires scanner performance similar to a supermarket. To help satisfy this market, the NCR 7884 can easily be programmed for use with four different non–NCR host terminals.

Gilbarco

Gilbarco Port Connection

Connect the interface cable (1416–C237–0040) to the Gilbarco port identified as Gilbarco Console J207 Wand Reader.

Programming the NCR 7884 Scanner

When programming the NCR 7884 to communicate with a Gilbarco host terminal, first set the parameters to default values, then change those parameters with incorrect values. This is done by scanning the following sequence of programming tags. These must be the first tags scanned after applying power to the unit.

1. **Default—**sets all parameters to default values.
2. **Programming Mode—**puts scanner in Base Programming State.
3. **Hex 1**, **Hex 0**, **Hex 5**—selects RS232 communication protocol.
4. **Hex 2**, **Hex 0**, **Hex 3**, **Hex 1**, **Hex 0**, **Hex 0**—sets RS232 communications to 2400 baud, even parity, 1 stop bit / 7–bit character, and RTS low / CTS ignored.
5. **Hex 2**, **Hex 3**, **Hex 1**, **Hex 0**, **Hex D—**enables terminator byte 0D.
6. **Save and Reset**—saves the program changes.

Alternate Programming

You can also set the NCR 7884 Scanner parameter values to those identified above, and then set these values as default values. Now when you scan the **Default** tag, these values are used instead of the factory defined values. Do this by scanning the following sequence of programming tags.

Programming Mode, Hex 3, Hex 4, Hex 5

To restore the default values to the factory defined values, scan the following sequence of programming tags.

Programming Mode, Hex 3, Hex 4, Hex 0

Siemens Nixdorf Beetle

Beetle Port Connection

Connect the interface cable (1416–C236–0040) to the Beetle port identified as COM 2.

Programming the NCR 7884

When programming the NCR 7884 to communicate with a Siemens Nixdorf Beetle host terminal, first set the parameters to default values, then change those parameters with incorrect values. This is done by scanning the following sequence of programming tags. These must be the first tags scanned after applying power to the unit.

1. **Default—**sets all parameters to default values.
2. **Programming Mode—**puts scanner in Base Programming State.
3. **Hex 1**, **Hex 0**, **Hex 5—**selects RS232 communication protocol.
4. **Hex 2**, **Hex 0**, **Hex C**, **Hex 1—**1 stop bit / 8–bit character.
5. **Hex 2**, **Hex 2**, **Hex A**, **Hex 1—**enables prefix byte 02.
6. **Save and Reset—**saves the program changes.

Alternate Programming

You can also set the NCR 7884 parameter values to those identified above, and then set these values as default values. Now when you scan the **Default** tag, these values are used instead of the factory defined values. Do this by scanning the following sequence of programming tags.

Programming Mode, Hex 3, Hex 4, Hex 9

To restore the default values to the factory defined values, scan the following sequence of programming tags.

Programming Mode, Hex 3, Hex 4, Hex 0

Verifone Ruby

Verifone Ruby System Port Connection

Connect the interface cable (1416–C254–0040) to the Beetle port identified as COM 6 or Com 1.

Programming the NCR 7884

When programming the NCR 7884 to communicate with a Verifone Ruby System, first set the parameters to default values, then change those parameters with incorrect values. This is done by scanning the following sequence of programming tags. These must be the first tags scanned after applying power to the unit.

1. **Default**—sets all parameters to default values.
2. **Programming Mode**—puts scanner in Base Programming State.
3. **Hex 1**, **Hex 0**, **Hex 5**—selects RS232 communication protocol.
4. **Hex 1**, **Hex 3**, **Hex D**, **Hex 1**—enables Extend UPC–E to UPC–A.
5. **Hex 2**, **Hex 0**, **Hex 2**, **Hex 4**, **Hex 1**, **Hex 4**—sets RS232 communications to 1200 baud, no parity, 1 stop bit / 8–bit character, and RTS low / wait for CTS.
6. **Hex 2**, **Hex 3**, **Hex 1**, **Hex 0**, **Hex A**—enables terminator byte 0A.
7. **Save and Reset**—saves the program changes.

Alternate Programming

You can also set the NCR 7884 parameter values to those identified above, and then set these values as default values. Now when you scan the **Default** tag, these values are used instead of the factory defined values. Do this by scanning the following sequence of programming tags.

Programming Mode, Hex 3, Hex 4, Hex 7

To restore the default values to the factory defined values, scan the following sequence of programming tags.

Programming Mode, Hex 3, Hex 4, Hex 0

Wayne

Wayne Plus 3 System Port Connection

Connect the interface cable (1416–C236–0040) to the Wayne host terminal Scanner Port.

Programming the NCR 7884

When programming the NCR 7884 to communicate with a Wayne Plus 3 system, first set the parameters to default values, then change those parameters with incorrect values. This is done by scanning the following sequence of programming tags. These must be the first tags scanned after applying power to the unit.

1. **Default—**sets all parameters to default values.
2. **Programming Mode—**puts scanner in Base Programming State.
3. **Hex 1**, **Hex 0**, **Hex 5**—selects RS232 communication protocol.
4. **Hex 1**, **Hex 3**, **Hex D**, **Hex 1**—enables Extend UPC–E to UPC–A.
5. **Save and Reset**—saves the program changes.

Alternate Programming

You can also set the NCR 7884 parameter values to those identified above, and then set these values as default values. Now when you scan the **Default** tag, these values are used instead of the factory defined values. Do this by scanning the following sequence of programming tags.

Programming Mode, Hex 3, Hex 4, Hex 6

To restore the default values to the factory defined values, scan the following sequence of programming tags.

Programming Mode, Hex 3, Hex 4, Hex 0

NCR 2170

Programming the NCR 7884

When programming the NCR 7884 to communicate with an NCR 2170 host terminal, first set the parameters to default values, then change those parameters with incorrect values. This is done by scanning the following sequence of programming tags. These must be the first tags scanned after applying power to the unit.

1. **Default—**sets all parameters to default values.
2. **Programming Mode—**puts scanner in Base Programming State.
3. **Hex 1**, **Hex 0**, **Hex 5**—selects RS232 communication protocol.
4. **Hex 2**, **Hex 0**, **Hex A**, **Hex 5**—sets baud rate to 9600 baud.
5. **Hex 2**, **Hex 1**, **Hex A**, **Hex 0**—disables BCC Options.
6. **Save and Reset**—saves the program changes.

Setting up the NCR 2170 Host Terminal

Set up the NCR 2170 host terminal according to the following procedure.

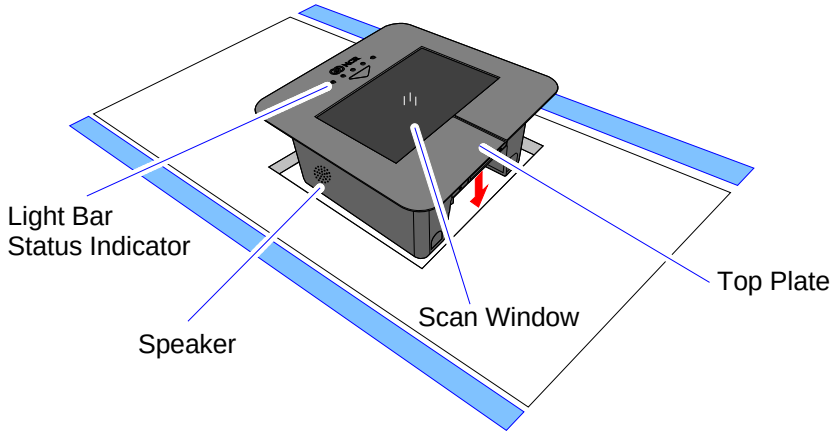
1. Connect the NCR 7884 cable to the NCR 2170 auxiliary RS232 port with an ID = 04.
2. Set the NCR 2170 to default RS232 options.
3. Perform a Master Reset on the NCR 2170 by turning the key to P2 until the menu is displayed.

Chapter 5: Operation

The NCR RealPOS Single Window Scanner requires very little attention during operation. It is designed to reduce the amount of barcode orientation prior to scanning an item.

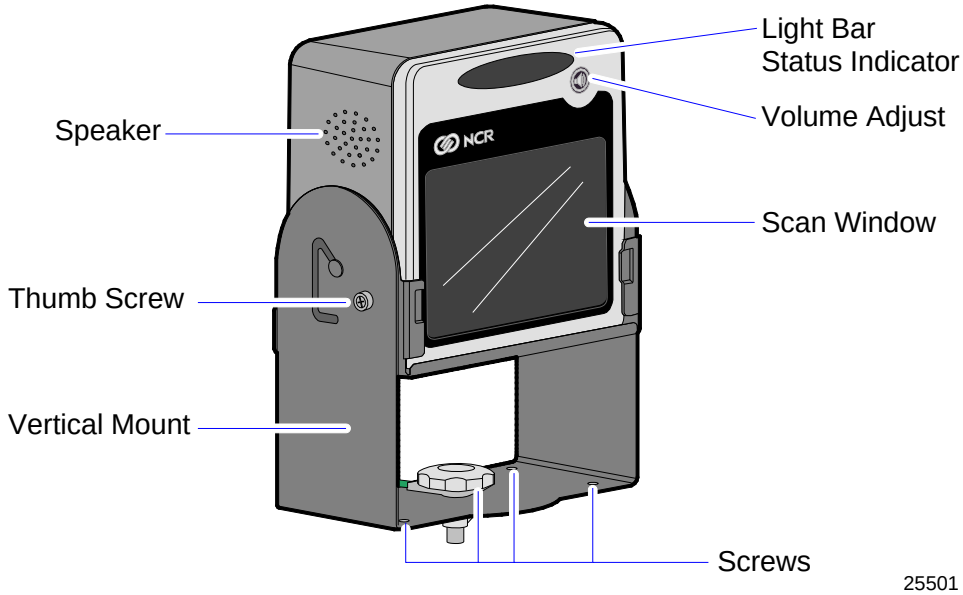
System Components

The following displays the NCR 7884 in a horizontal flange mount and its components.



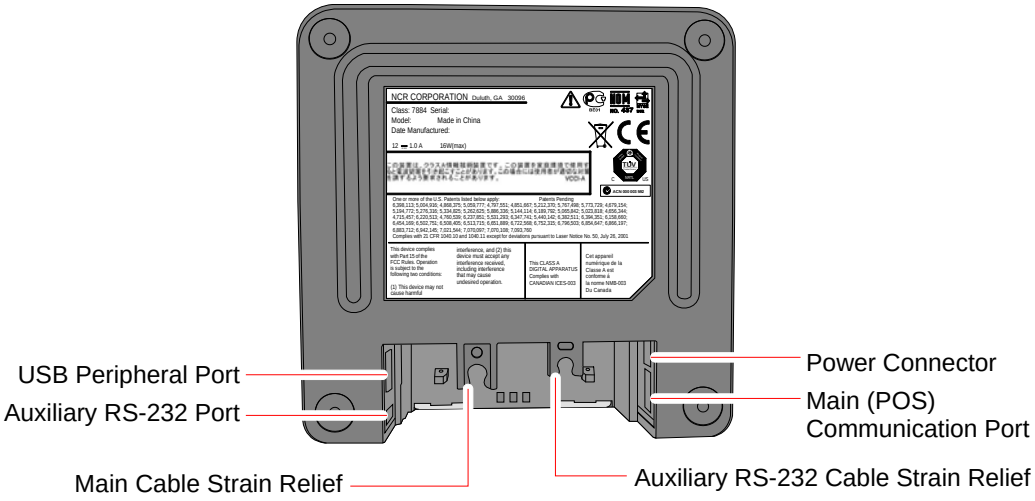
25362

The following displays the NCR 7884 using the optional Vertical Mount and its components.



25501

The following is a back view of the NCR 7884 and its components.



Operator Display Panel

The Operator Display Panel provides the interface to the operator. It contains the Scan Adviser and the Volume Adjust button.

Scan Adviser

The Scan Adviser's middle three LEDs turn dim green when the NCR 7884 is ready to read a bar code. When the scanner reads a bar code, all five LEDs light up brightly for an instant. If the unit goes into the Failure Mode during power–up, the Scan Adviser displays a distinct pattern of colors and number of lit LEDs to point to the probable scanner error code. This error code is used by the field engineer to repair the unit. Voice messages are used to indicate errors. The Scan Adviser displays one dimly–lit green LED in the center when the NCR 7884 shuts down due to operator inactivity.

When using IBM–485 communications, the Scan Adviser slowly flashes a red–green–green pattern nine times, then delays, then repeats indefinitely when the NCR 7884 does not detect the 12V TRMPWR voltage from the IBM host terminal. It is still possible to successfully scan and weigh items with this light bar pattern displayed. The following are possible causes for this red–green–green indication:

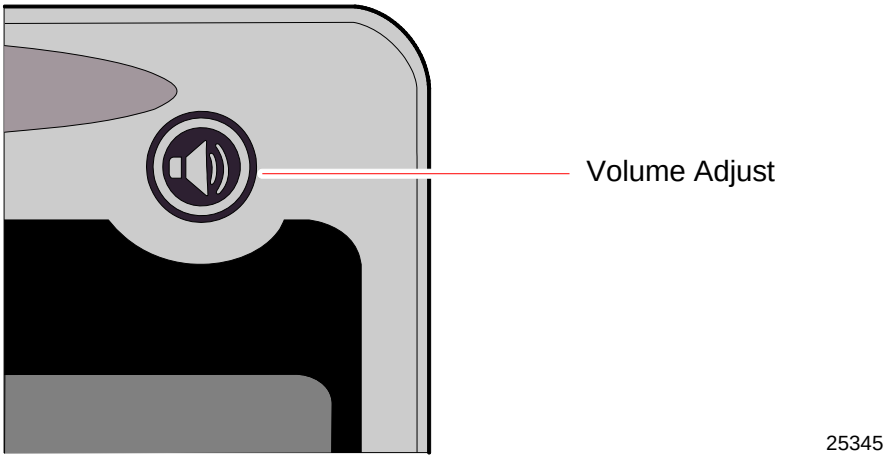
- Host IBM host terminal is not turned on.
- Interface cable is not connected between the host terminal and scanner.
- IBM port 9x being used by the scanner is not generating the 12V TRMPWR signal.
- Rarely, there could be an issue with the scanner digital board not detecting the 12V coming from the host terminal.

Other interfaces can also disable the scanner under software control, resulting in all five LEDs on the Scan Adviser turning bright RED.

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

Volume Adjust Button

The NCR 7884 has a Volume Adjust button located on the Operator Display Panel. A picture of a speaker emitting sound waves identifies the Volume Adjust button.



The Volume Adjust button is used for two operations:

- **Controlling Speaker Volume**—Volume is controlled by pressing and then releasing the button. The Speaker emits a sound for each press/release of the button.
- **Controlling Speaker Frequency**—Frequency is controlled by continuous pressing of the button. The Speaker emits a sound and cycles through all different frequencies when the button is pressed continuously.

Note: Permanent changes to tone volume require changing the program. Refer to Chapter 6 *Programming* for more information.

Motion Detector

The Motion Detector is located inside the scanner window. The laser diode and spinner motor turn off after an extended period of time of operator inactivity. The default non–active time is fifteen (15) minutes, but can be increased by programming. An item passing in front of the Motion Detector causes the NCR 7884 to turn on. This movement is the normal item scanning movement.

Scan Adviser LED Scanner State Indicators

Scanner State		LED color	Brightness	Activity	Number of LEDs
Scan	Idle (Enabled)	Green	Dim	Solid	3 Center
	Enabled and in Sleep Mode	Green	Dim	Solid	1 Center LED
	Good Scan	Green	Bright	Solid	5 LEDs
	Disabled and Awake	Red	Bright	Solid	5 LEDs
	Disabled and in Sleep Mode	Red	Dim	Solid	1 Center LED

Speaker

A tone can be programmed to sound when the NCR 7884 accurately reads a barcode. The tone provides a means of determining a good read without having to observe the Scan Adviser.

The Good Read Tone can be enabled or disabled through programming. If the tone is enabled, its frequency, volume, and duration may be specified. The details for programming the tone are described in *Programming* chapter. The NCR 7884 factory default has the tone enabled. To adjust the Good Read Tone volume temporarily, use the Volume Adjust button.

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

- When EAS goes online/offline (if enabled)
- When checking the communications protocol (Diagnostic Mode)
- When testing item tags using PACESETTER *Plus* (Diagnostic Mode)
- When certain scanner or scale (if available) error conditions occur
- When scanning any programming tag in the Programming Mode

Scan Window

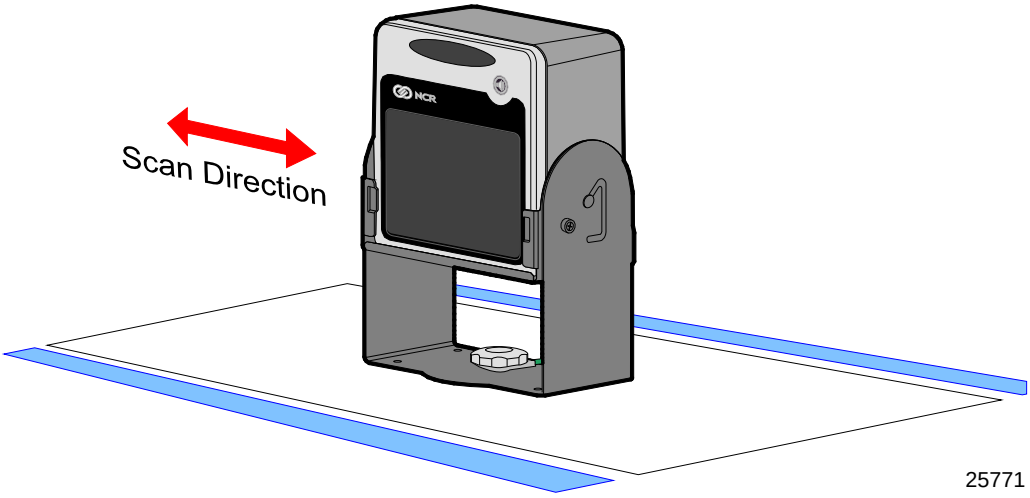
The scan window is mounted in the top cover of the scanner. For a horizontal configuration, the scan window is flush–mounted in the top cover.

The light beam comes through this window and contacts the barcode as it passes over the window. The glass may be replaced for horizontally mounted scanners if it’s scratched too badly; for vertical scanners, the whole top cover needs to be replaced.

Label Orientation

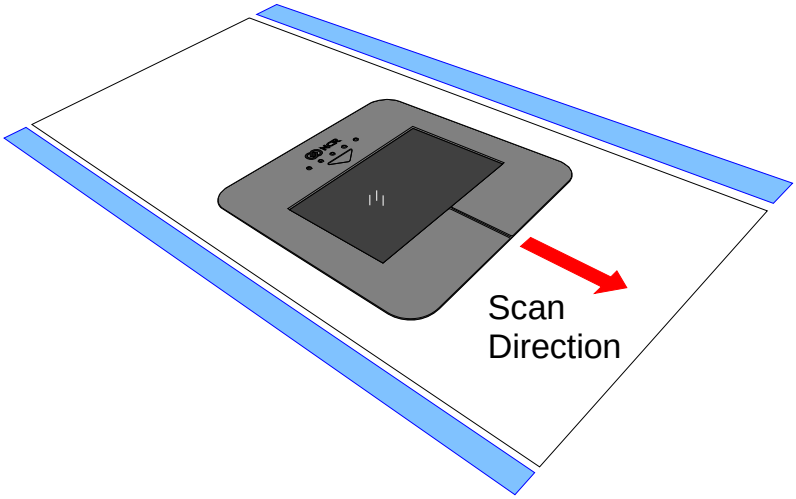
The NCR 7884 reads labels on the leading and bottom sides of an object as indicated in the following illustration.

The following image displays the proper scanning direction for a vertical mount configuration (displayed using a vertical mount).



25771

The following image displays the proper scanning direction for horizontal mount configuration.



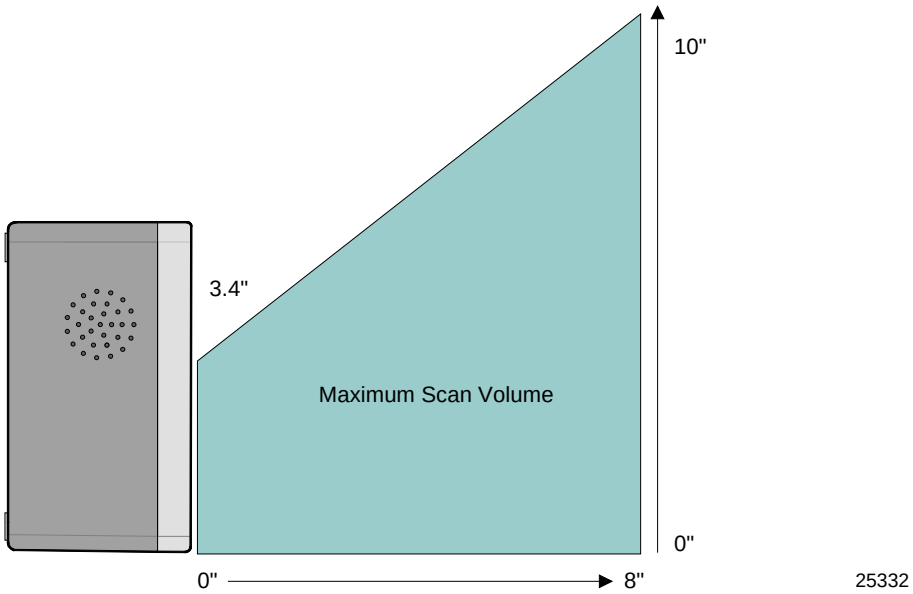
25772

Product labels are read from left–to–right or from right–to–left in the vertical position. When the NCR 7884 is installed using the Vertical Mount, the scan direction is dependent on the mounting position of the scanner.

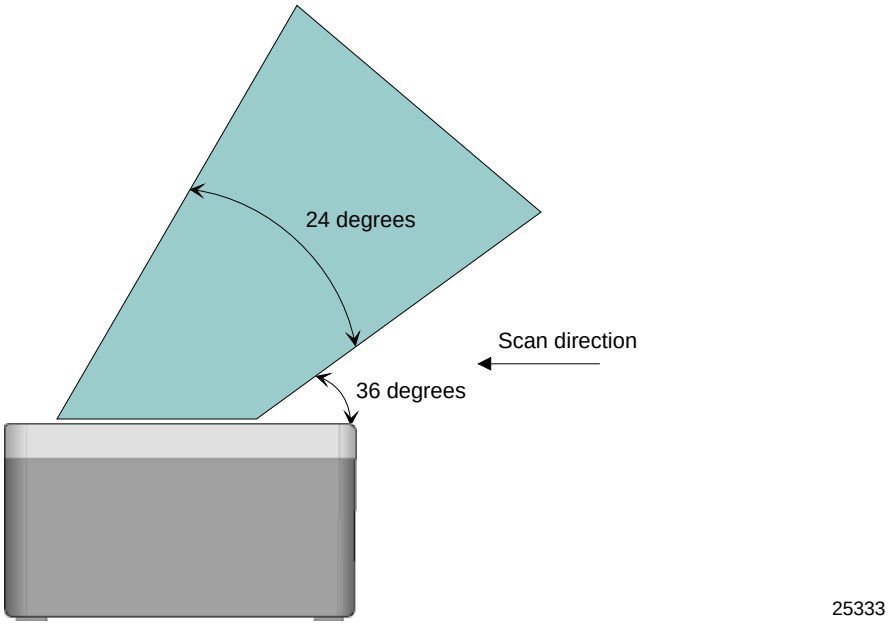
On horizontal position, product labels are read on the leading edge and bottom side. Use the indicated scan direction from the previous image displayed.

Active Scan Zone

The active scan zone is the area where the unit can read a barcode label. The following is a sample image of the scan zone for a Table Top mount configuration.

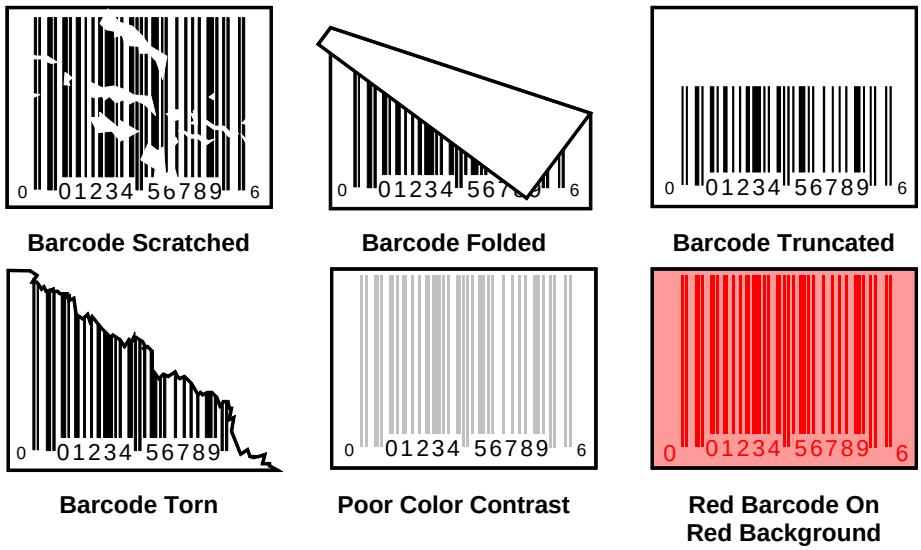


The following is a sample image of the scan zone for a horizontal mount configuration.



Barcode Quality

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



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

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

Multiple Reads

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

Operating Instructions

The NCR 7884 is extremely easy to operate. However, there are certain functions and procedures that the operator needs to understand in order to be proficient at operating the NCR 7884.

Turning NCR 7884 On and Off

The NCR 7884 does not have an ON/OFF switch. The checkout counter must have a circuit breaker switch that is accessible and located near the operator. Turn on the NCR 7884 by turning the circuit breaker switch ON. To turn off the NCR 7884, turn the circuit breaker switch to OFF.

When power is supplied to the NCR 7884, it performs specific diagnostics that check various components. If a scanner error occurs during these diagnostics, an error code tone sounds off and the Scan Adviser flashes an error code. Call a supervisor, the Service Company, or NCR for assistance.

Scanner Only Model

When power is applied, the Scan Adviser LEDs light up and a tone sounds off. The Scan Adviser's 3 center LEDs then turns green and the NCR 7884 is ready to use.

Scanning Procedure

To scan an item, the bar code label must pass through the active scan zone. Item orientation, motion, and sequential handling are required for proper scanner operation. Use the following procedure to scan items.

1. Verify the scanner is operable (Scan Adviser is displays 3 green LEDs).
2. Pick up the item and locate the bar code label.
3. Orient the label so that it faces the scanner window.
4. Pass the item across the Scan Window within the active scan zone.
5. If a good read occurs, the Scan Adviser turns on 5 green LEDs and a tone is emitted if programmed.
6. If a good read does not occur, no light or sound indication is given by the scanner.
   - Scan the item again.
   - If a good read still does not occur, manually enter information for the item. Then continue scanning.

Adjusting the Good Read Tone

The NCR 7884 has a Volume Adjust button that permits the operator to change the scanner's Good Read Tone Volume to a comfortable level depending on the ambient noise level at that time.

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

Note: See also *Volume Adjust Button* section in this chapter.

Note: Permanent changes to tone volume and tone frequency require changing the program. Refer to Chapter 6 for more information.

Not–On–File

The NCR 7884 has a Not–On–File feature that locks the scanner and causes the Scan Adviser 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 NCR 7884 is disabled from reading additional tags until the error is cleared. To clear, select the host terminal **CLEAR** key and manually enter the item and price.

Cleaning Instructions

The NCR 7884 should be kept in good operating condition by performing the following routine maintenance. Keeping the scan windows clean helps keep the read rate exceptionally high. During normal operation of the NCR 7884, the Horizontal Scan Window gets dirty. If dirt is permitted to accumulate, performance degrades to the point where the scanner can no longer read barcodes. The Horizontal Scan Window should be cleaned at least once a day.

Note: Before cleaning the NCR 7884, be sure to turn the circuit breaker switch OFF.

Note: When cleaning the NCR 7884, do not spray or pour lukewarm water directly onto the NCR 7884. Moisten a soft cloth with lukewarm water, and then wipe the components.

Scanner Body

Clean the scanner body using the following.

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

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

Chapter 6: Programming

The NCR 7884 can be programmed to meet most installation requirements. This includes communications with the host terminal and various NCR 7884 features and functions.

Programming Description

The NCR 7884 can be remotely programmed from its attached host terminal with no local intervention. To achieve this, special host terminal software must be purchased from NCR. This section describes programming a scanner with special barcode tags.

Programming the NCR 7884 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 NCR 7884 installation. This includes information about the communications protocol, the types of barcodes to be scanned, the use of good read tones, and scanner time–outs.

   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 6 for specific information about each parameter.

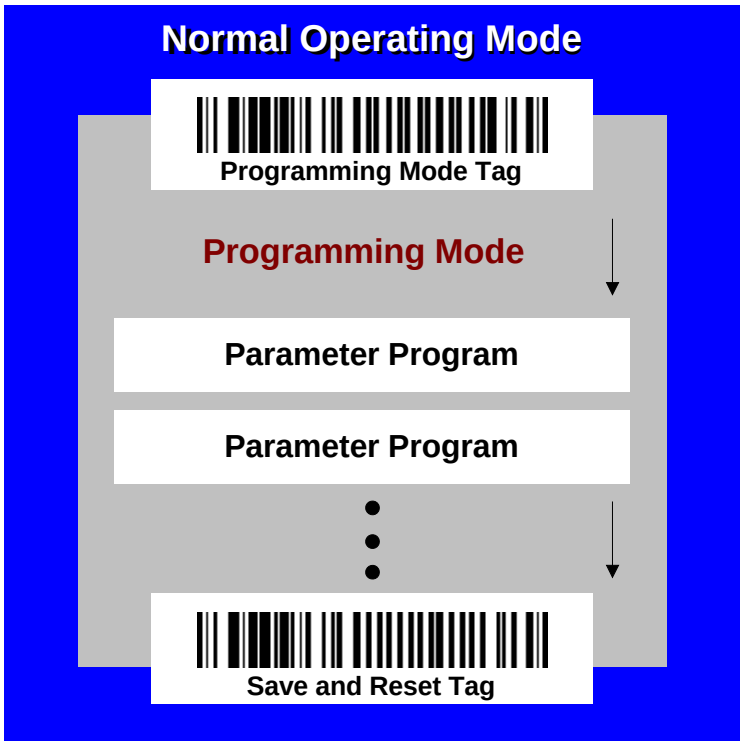
Enter the Program

1. *Enter the programming mode*. Scan the **Program Mode** tag. This must be the first tag scanned after supplying power to the NCR 7884 (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 NCR 7884 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 the support link at *www.ncr.com*. (The tags are also included in Appendix B 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

- Scan Adviser is initially 3 center LEDs dim green and then flashes bright green (5 LEDs) displaying the tag was read. Scanner reboots and performs power up sequence (the Scan Adviser turns off momentarily, then comes on with 5 bright blue LEDs followed by a gradual change to bright green, then back to normal state of the center three LEDs at dim green).
- Short beep as soon as tag is read—Good Read tone
- Motors stop momentarily while scanner reboots, then they come up to full speed

Function–In a Parameter Programming

If this tag is scanned in a Parameter Program sequence, only the parameter sequence which was aborted is not saved. Any prior sequence that successfully ended with the scanner saying "***Program Mode***" is saved and the NCR 7884 stays in Program Mode.

Indication–In a Parameter Program

- Scan Adviser flashes green (5 LEDs) once and then returns to 3 dim green LEDs in the center
- Short beep as soon as tag is read—Good Read tone
- Programming returns to Program Mode
- Scanner beeps to indicate it accepted the **Abort** tag, and then says "***Program Mode***".

DEFAULT

Function

This tag causes most parameters to reset to default values. However, scanning this tag does not change a few parameters, including the Communications Protocol. The **Default** tag must be scanned first after applying power to the NCR 7884

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

Indication

- Speaks "***Set new default parameter complete***", Scan Adviser flashes 5 LEDs bright green after speaking and beep once.
- Performs power up sequence (the Scan Adviser turns off momentarily, then comes on with 5 bright blue LEDs followed by a gradual change to bright green, then back to normal state of the center three LEDs at dim green).

END

Function

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

Indication

- Scan Adviser is initially 3 center LEDs dim green and then flashes bright green (5 LEDs) displaying the tag was read.
- Short beep as soon as tag is read—Good Read tone.
- Scanner beeps to indicate it read the **End** tag, and then it says "***Program Mode***" as it goes into Program Mode.

SPEAK BARCODES CURRENTLY ENABLED

Function

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

Indication

- The three center LEDs in the Scan Adviser stay dim green.
- Scanner begins speaking as soon as barcode is scanned. It talks and lists all the barcodes currently enabled in the scanner.

  Example: "***UPC EAN is ON, Periodical P2 is ON...Periodical P5 is ON...Code 128 is ON***."
- Scanner beeps when it is done speaking the enabled symbologies.

SPEAK SCANNER SERIAL NUMBER

Function

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

Indication

- The three center LEDs in the Scan Adviser light up bright green while it is speaking, then go back to dim green when it's done.
- As soon as the scanner reads the barcode, it says "***Scanner S N***" then speaks all 10 digits.
- If the scanner says "***Scanner S N 0 0 0 0 0 0 0 0 0 0***", then the actual serial number is NOT stored in memory.
- The scanner beeps when it is done speaking the serial number.

HEX 0–HEX F

Function

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

Indication

- **Hex 0—**Scanner says "***Zero***" with no beeps. If voice disabled, scanner produces a short beep, different frequency from Good Read tone.
- **Hex 1** through **Hex F**—Scanner says "<***tag value***>" with no beeps. If voice is disabled, the scanner produces a number of beeps according to the tag value. Multiples of 4 short beeps grouped together.

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

PROGRAM MODE

Function

This tag sets the NCR 7884 into Program Mode. It must be the first tag scanned after applying power to the NCR 7884, or after scanning the **Default** tag or the **Reset** tag.

Indication

- Scan Adviser is initially 3 center LEDs dim green and then flashes bright green (5 LEDs) displaying 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 NCR 7884 to save and start using the programming data. It is used in the Program Mode.

Indication

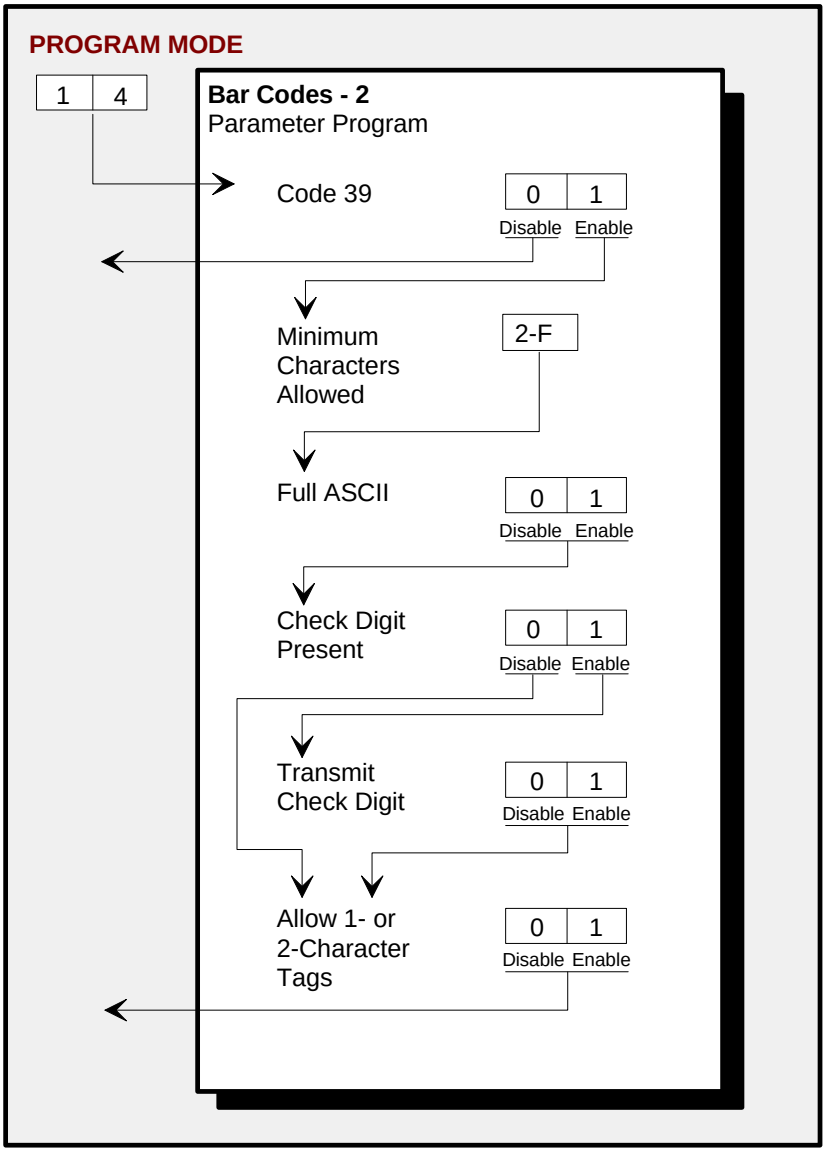
- Scan Adviser LEDs flashes five LEDs red twice, then Scanner reboots and performs power up sequence (the Scan Adviser turns off momentarily, then comes on with 5 bright blue LEDs followed by a gradual change to bright green, then back to normal state of the center three LEDs at dim green).
- Short beep as soon as tag is read—Good Read tone
- Motors stop momentarily while scanner reboots, then they come up to full speed.
- One beep when the scanner has completed power cycling.
- Reboots with no voice.

Program Entry Procedure

Enter All Parameters

To enter all parameters in a Parameter Program, scan the two Hex codes that set the NCR 7884 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 displays 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 displays how to proceed through the Parameter Program by entering all available parameters. Notice that (in this example) if Code 39 barcodes are disabled, programming immediately returns to Program Mode. However, if Code 39 barcodes are enabled, the scanner directs the user to continue entering parameter information.


PROGRAM MODE
1
4
Bar Codes - 2
Parameter Program
Code 39
0
1
Disable
Enable
Minimum
Characters
Allowed
2-F
Full ASCII
0
1
Disable
Enable
Check Digit
Present
0
1
Disable
Enable
Transmit
Check Digit
0
1
Disable
Enable
Allow 1- or
2-Character
Tags
0
1
Disable
Enable

11722

Program Entry Procedure

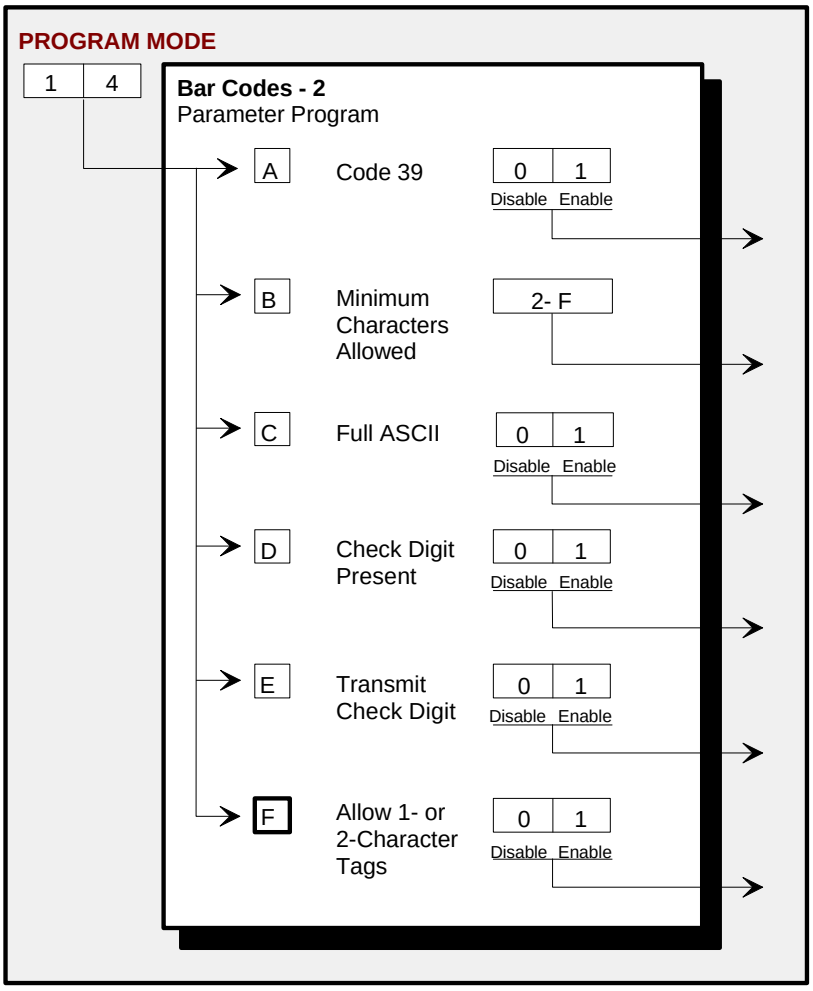
The following example is a typical program entry procedure.

1. Disconnect scanner from POS.
2. Apply power to the NCR 7884 (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 NCR 7884 is reset (goes through initial power up sequence). The NCR 7884 now operates using the new program.

Enter Specific Parameters (Shortcut Method)

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

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



Program Entry Procedure (Shortcut Method)

The following example is a typical program entry procedure.

1. Disconnect scanner from POS.
2. Apply power to the NCR 7884 (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 NCR 7884 is reset (goes through initial power–up sequence). The NCR 7884 now operates using the new program.

Parameter Defaults

Programming Mode	Program Parameters	Default Setting
Communications Protocol	Protocol	No default value—remains as programmed
Good Read Tone	Tone On/Off	On
	Tone Frequency	702 Hz
	Tone Length	45 ms
	Tone Volume	Third Lowest Volume
	Not–On–File Volume	Lowest Volume
Timers	Lockout Time	450 Milliseconds
	Restart Lockout Timer	On
	Active Time	15 Minutes
	900ms Lockout Timer Restart Limit	Off
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

Programming Mode	Program Parameters	Default Setting
Bar Codes–2	Code 39	Disable
	Minimum Characters Allowed	8
	Full ASCII	Disable
	Check Digit Present	Disable
	Transmit Check Digit	Disable
	Allow 1- or 2-Character Tags	Disable
	Code 39 Tone Control	Disable (uses UPC tone control)
	Tone Length	75 Milliseconds
	Tone Frequency	947 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
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 (uses UPC tone control)
	Tone Length	75 Milliseconds
	Tone Frequency	947 Hertz
	Scans Required	2 scans
	Overlap Characters	1
	Minimum Segment Size	3

Programming Mode	Program Parameters	Default Setting
Bar Codes–4	Code 128	Disable
	Minimum Data Character Allowed	3
	EAN/UCC 128	Disable
	Partial Decoding	Disable
	Code 128 Tone	Disable (uses UPC tone control)
	Tone Length	75 Milliseconds
	Tone Frequency	947 Hertz
	Stitch Tag	Disable
	Scans Required	1 scan
	Overlap Characters	2
	Minimum Segment Size	5
Bar Codes–5	GS1 DataBar Enable	Disable
	Scan Required on GS1 DataBar–14	1 Scan
	UCC-128 Emulation Mode	Normal Mode
Bar Codes–6	ISBN	Disable
	ISSN	Disable
Bar Codes–7	Pharmacode Decoding	Disable
	Pharmacode Check Digit Transmission	Enable
Bar Codes–8	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	947 Hz
	Codabar Decoding Tone	Disable (uses UPC tone control)
	Codabar Halves	Disable
	Codabar Stitch	Disable
	Codabar Require Start/Stop Match	Disable
	Codabar Require Quiet Zones	Disable
	Codabar Start/Stop Transmission	Enable

Programming Mode	Program Parameters	Default Setting
	Codabar Hard Correlation	Disable
	Number of Codabar Scans Required	1 Scan
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.	
Additional Bar Codes Options	UPC Number System Character	Send
	UPC–E Number System Character	Send
	UPC–A Number System Character	Send
RS232 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
RS232 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
RS232 Prefix Byte	Prefix Byte	Disable
	ASCII Code	0 2
RS232 Terminator Byte	Terminator Byte 1	Enable
	ASCII Code	0 3
	Terminator Byte 2	Disable
RS232 Communications Options	Message Delay	10 ms Delay
	Scanner or Scanner/Scale Format	No default value
	Good Weigh Tone	Disable

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

Programming Tips

The following are some tips to help when programming the NCR 7884.

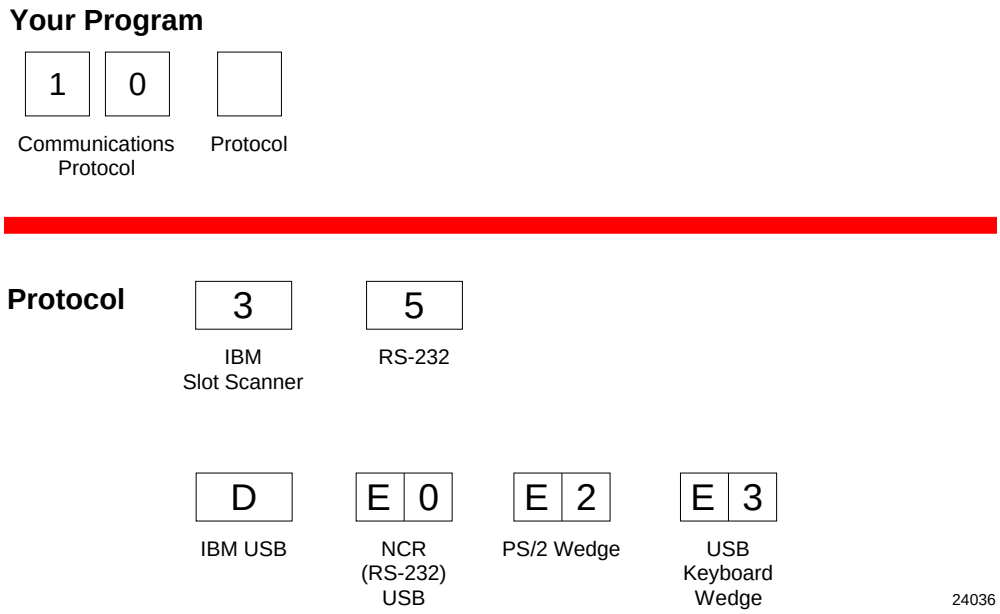
- Turn the host terminal Off or disconnect all interface cables to the NCR 7884 before entering the program. Some host terminals can corrupt the program if they are running and are connected to the NCR 7884 while entering the program.
- To exit a Parameter Program without entering all the parameters, 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 NCR 7884 goes through initial startup and operates using the old program.
- If unknown how the NCR 7884 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 NCR 7884. Next, scan the **Program Mode** tag to enter the Program Mode and enter the programming changes.

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

Program Parameter Descriptions

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

Communications Protocol



The Communications Protocol programming mode selects the protocol that the NCR 7884 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 NCR 7884 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.

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

IBM USB

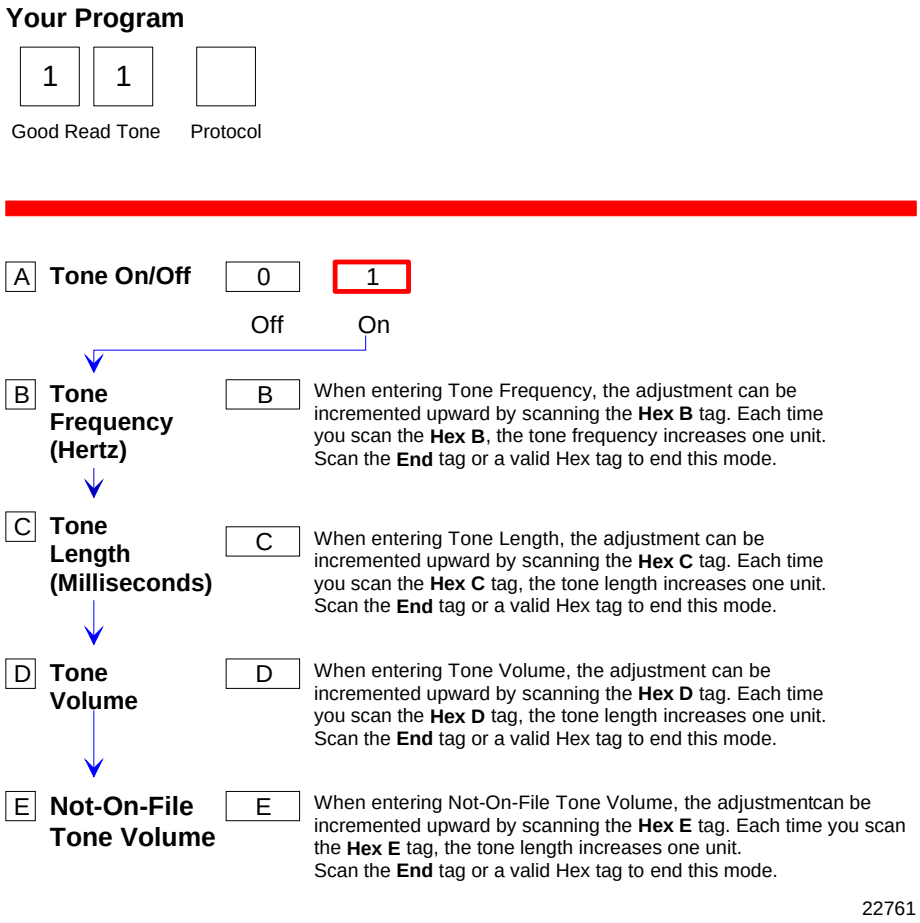
The NCR 7884 can communicate to the host terminal through a USB cable. This parameter enables the scanner to use IBM's proprietary version of HID–type USB protocol.

NCR (RS232 USB)

The NCR 7884 can communicate with the host terminal through a USB cable. This parameter enables the NCR (RS232) format.

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

Good Read Tone



The Good Read Tone programming mode selects the parameters for sounding a tone each time the NCR 7884 successfully reads a barcode. It also controls the volume of the Not-On-File tone. This mode contains five shortcuts: A, B, C, D, and E. After entering this programming mode, proceed directly to a specific parameter by scanning the appropriate shortcut Hex tag. This eliminates the need to enter all parameters when only one needs changing. Refer to the *Parameter Defaults* section earlier in this chapter for the factory defined default value of each programming parameter.

Tone On/Off

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

Tone Frequency (Hertz)

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

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

617 Hz
705 Hz
775 Hz
860 Hz
947 Hz
1250 Hz
524 Hz
572 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.

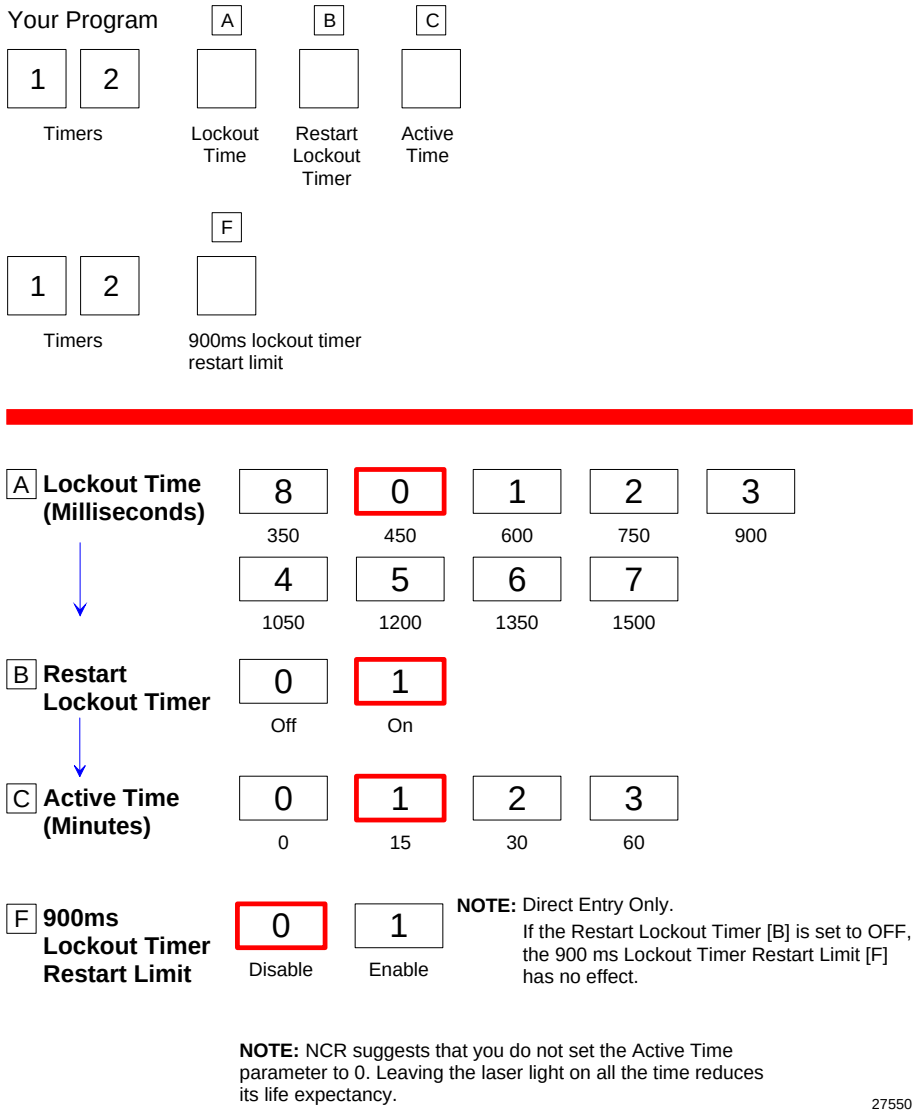
There are eight different volume settings available on the NCR 7884. However, there is a programming sequence which permits the user to access eleven volumes. Refer to the Volume Adjust section in this chapter for details on activating the eleven volumes and other functions of the volume button.

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 off 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 RS232 protocol, there is a Not–On–File command. Refer to the *NCR Scanner/Scale Interface Programmer's Guide* (BD20-1074-A) for more information about the Not-On-File command.

Timers



The Timers programming mode controls the two NCR 7884 timers: Lockout Time and Active Time. Refer to the *Parameter Defaults* section earlier in this chapter for the factory defined default value of each programming parameter.

Lockout Time

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

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

Restart Lockout Timer

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

Active Time

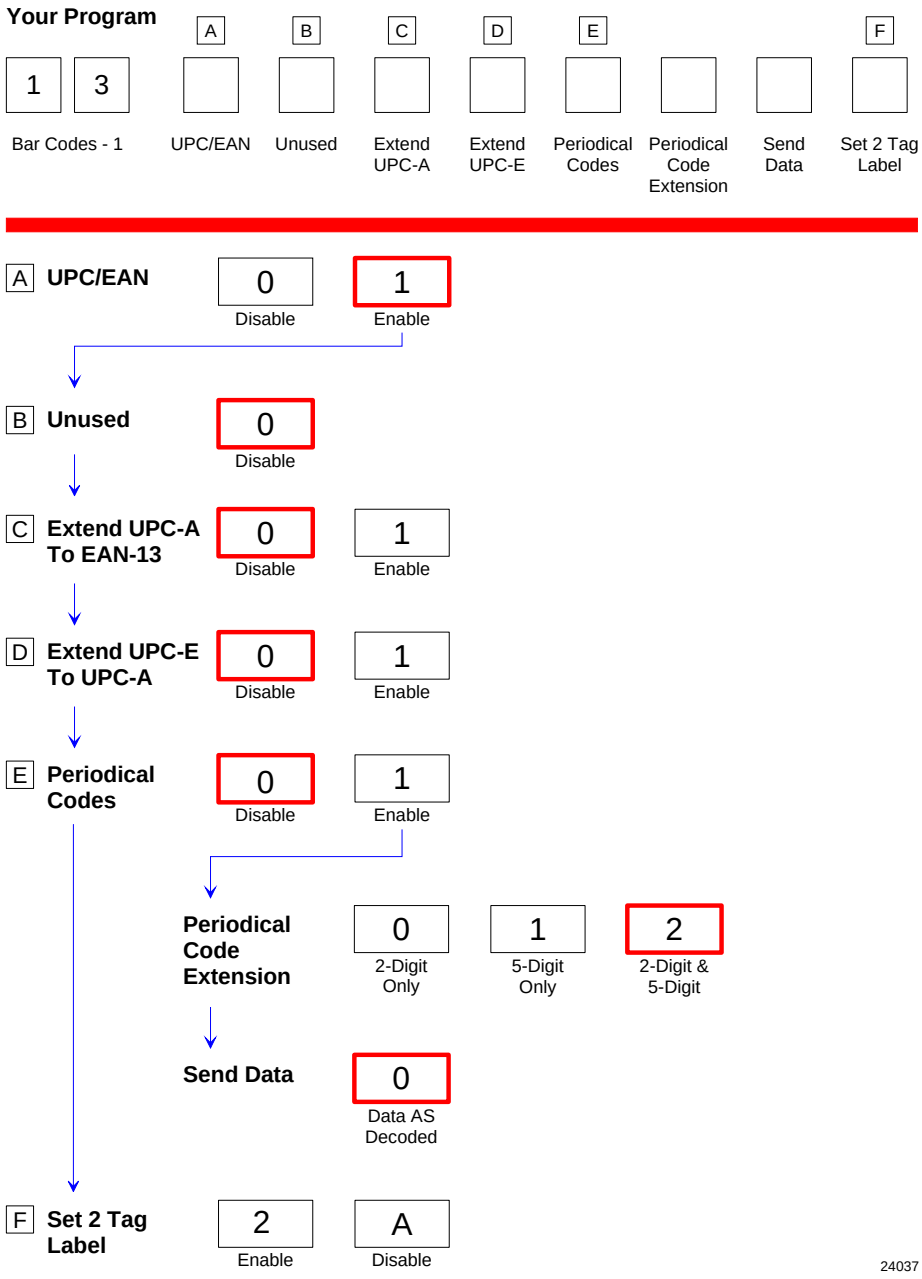
The specific lengths of time that the NCR 7884 stays ON after the last good read can be programmed. There are four options in the Active Time parameter: no shut down, shut down after 15 minutes, shut down after 30 minutes, and shut after 60 minutes. Select these times using the **Hex 0** through **Hex 3** tags, respectively.

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

900ms Lockout Timer Restart Limit

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

Bar Codes–1



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

UPC/EAN

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

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

Extend UPC–A to EAN–13

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

Extend UPC–E to UPC–A

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

Add-On Bar Codes

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

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

Add-On Code Length

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

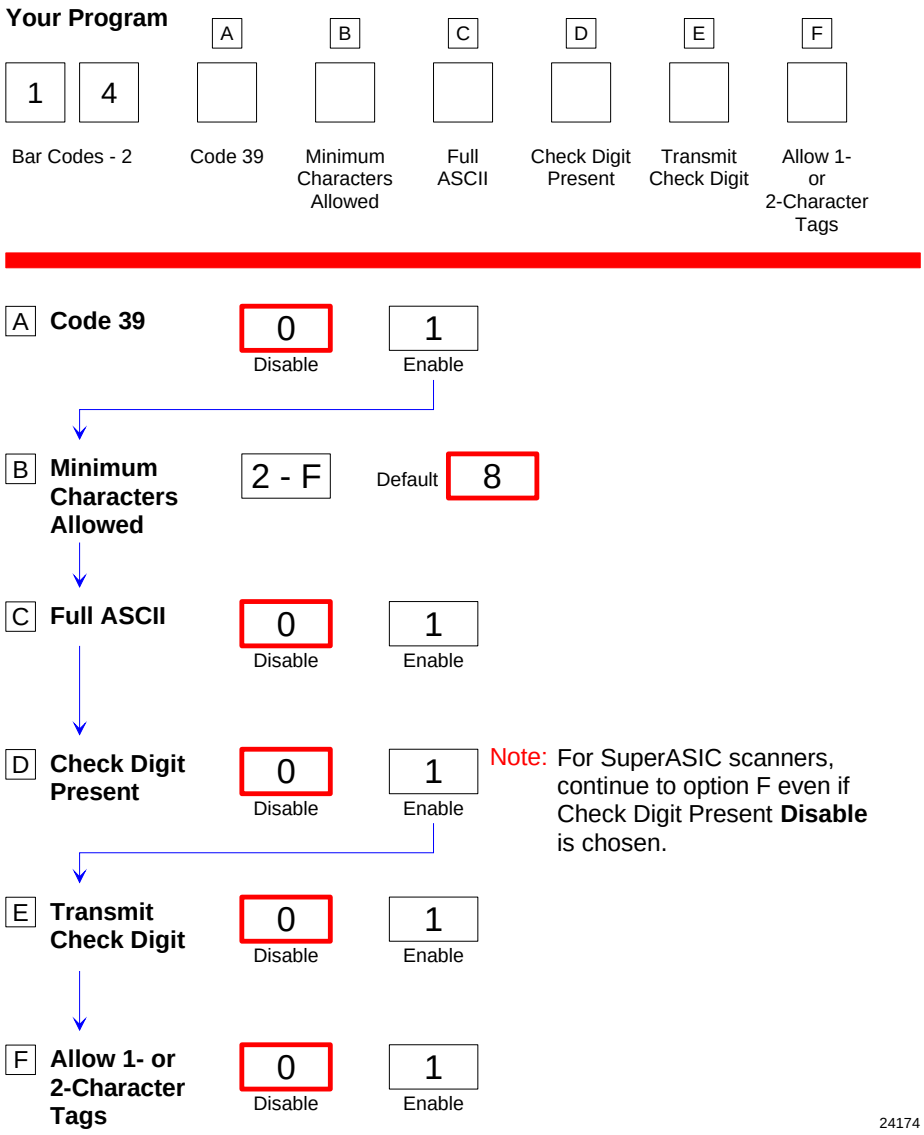
Send Data

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

Set 2 Tag Label

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

Bar Codes–2



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

Code 39

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

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

Minimum Characters

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

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

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

Full ASCII

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

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

Check Digit Present

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

Transmit Check Digit

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

Allow 1- or 2-Character Tags

The Allow One- or Two-Character Tags parameter selects whether or not to permit the scanner to read a 1- or 2-character Code 39 label. If the 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.

Note: Below are the parameters introduced in the new Super ASIC firmware versions—Programmed Firmware Chip (497–0455264) and Flash MEDIA (497–0459424).

Code 39 Tone Control

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	617 Hz
Hex 1	705 Hz
Hex 2	775 Hz
Hex 3	860 Hz
Hex 4	947 Hz
Hex 5	1250 Hz
Hex 6	524 Hz
Hex 7	572 Hz

Note: The default Code 39 tone frequency is 947 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. Options of this parameter include Stitching Code 39 Check Digit (C39_Stitch_CD_tags) and stitching the three longest tags scanned by a full strike across the whole tag (StitchScanned123).

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.

StitchScanned123

This parameter permits stitching of the three longest tags scanned by a full strike across the whole tag. Code 39 Stitch Enable must be 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)**.

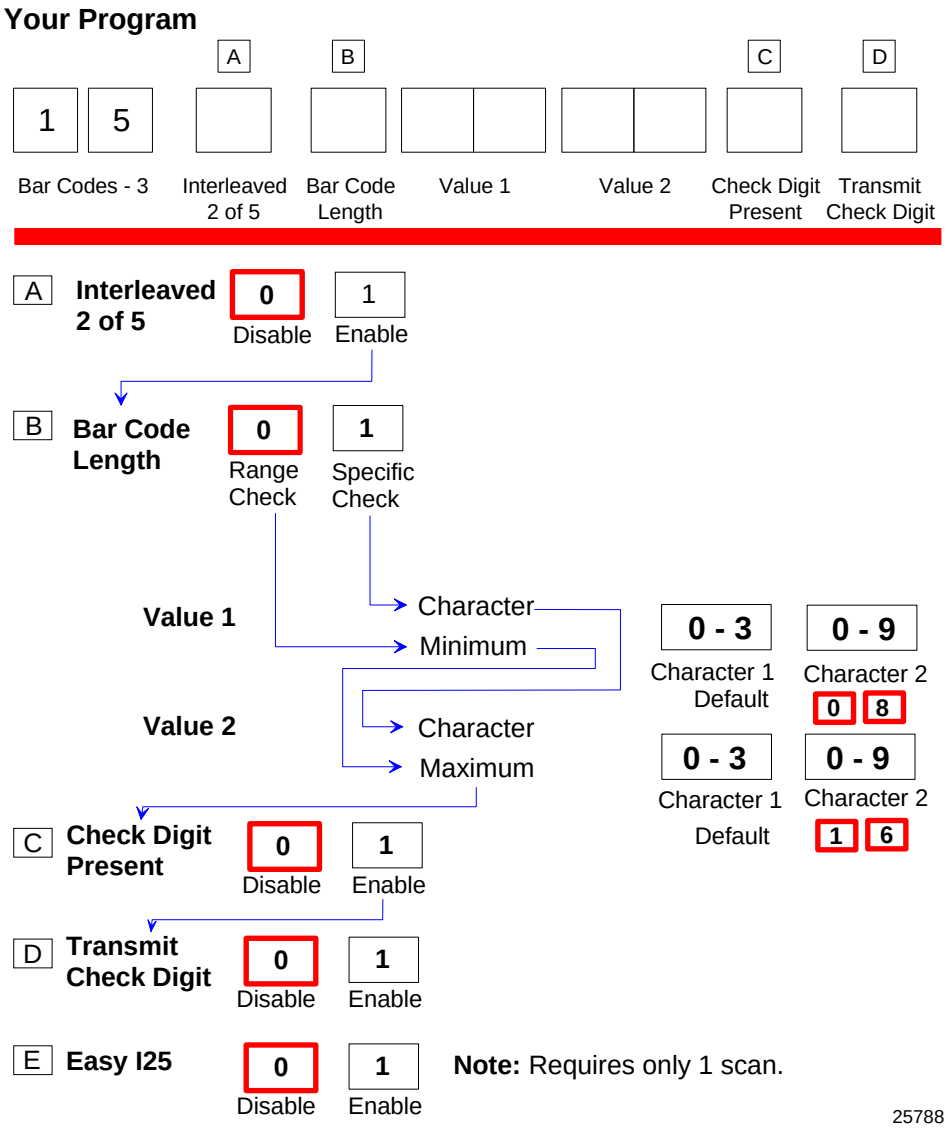
Overlap Characters

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



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 permitted for this parameter.

Bar Code Length

The Bar Code Length parameter selects the method for determining if an Interleaved 2 of 5 barcode 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 barcode 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	617 Hz
Hex 1	705 Hz
Hex 2	775 Hz
Hex 3	860 Hz
Hex 4	947 Hz
Hex 5	1250 Hz
Hex 6	524 Hz
Hex 7	572 Hz

Note: The default Interleaved 2 of 5 tone frequency is 947 Hertz (**Hex 4**).

Interleaved 2 of 5 Check Digit Length1

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

Interleaved 2 of 5 Check Digit Length2

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

Enable Interleaved 2 of 5 Stitching

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

Scans Required

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

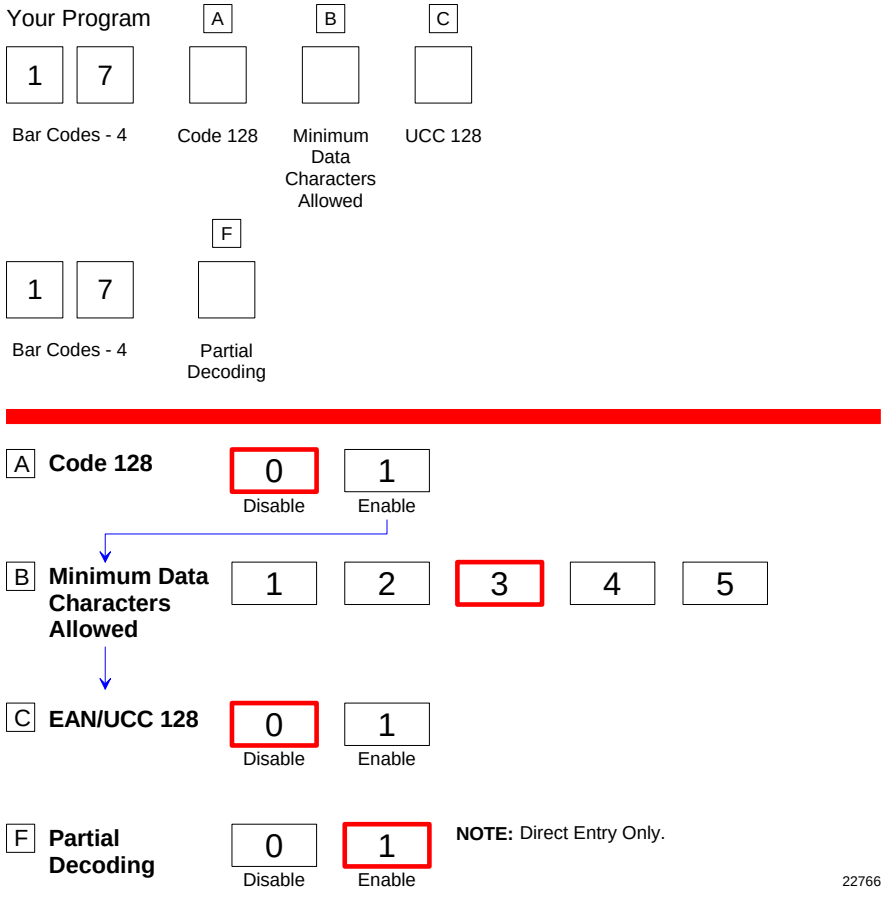
Overlap Characters

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

Minimum Segment Size

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

Bar Codes–4



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

Code 128

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

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	617 Hz
Hex 1	705 Hz
Hex 2	775 Hz
Hex 3	860 Hz
Hex 4	947 Hz
Hex 5	1250 Hz
Hex 6	524 Hz
Hex 7	572 Hz

Note: The default Code 128 tone frequency is 947 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)**.

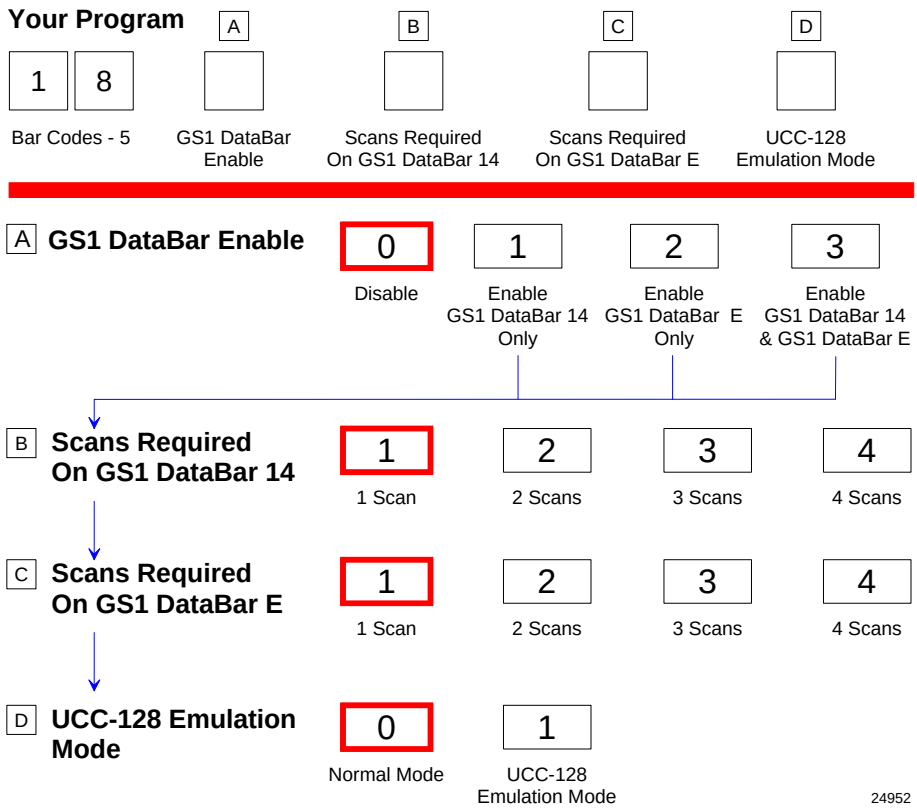
Overlap Characters

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 Porgram 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

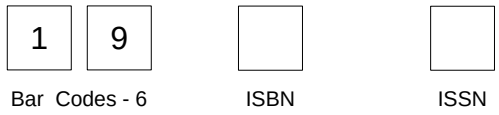
Other DataBar AIs can be substituted or added to the programming sequences in the examples above.

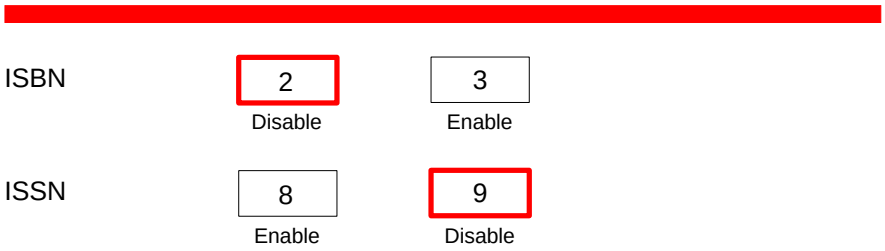
The following are all the other available programming options:

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

Your Program





Note:

1. If the tag is an ISBN tag and it is enabled, the output will be the 10-digit ISBN. The 10th digit will be replaced by the ISBN checkdigit (modulo 11 with weights 10 to 2).
2. If the tag is an ISSN tag and it is enabled, the output will be the 8-digit ISSN. The 8th digit will be replaced by the ISSN checkdigit (modulo 11 with weights 8 to 2).
3. The LabelID used is still the LabelID for EAN-13.

Note:

For SuperASIC firmware versions (below) and upcoming releases:
Programmed Firmware Chip (497-0443786)
Flash MEDIA (497-0443785)

23484

International Standard Book Number (ISBN)

ISBN (International Standard Book Number) is a unique ten-digit number assigned to every printed book. These 13-digit numbers are used internationally.

As of January 1, 2007, all book and book-related products must carry 13-digit ISBNs. All 10-digit ISBNs in circulation will have the 3-digit EAN prefix "978" added (which currently represents the book industry). This 13-digit ISBN is already represented, and will be identical, to current EAN bar codes carrying ISBN with the "978" prefix. Every ISBN registered will automatically be converted to 13-digits. The EAN prefix "979" cannot be used on existing 10-digit ISBNs.

ISSN (International Standard Serial Number) is a unique eight-digit number assigned to all serial publications, including electronic ones. Serial publications include newspapers, newsletters, annual reports, yearbooks, directories, and journals. It is the publications' equivalent to the ISBN, and like the ISBN, these numbers are used internationally.

ISBN-10 and ISBN-13

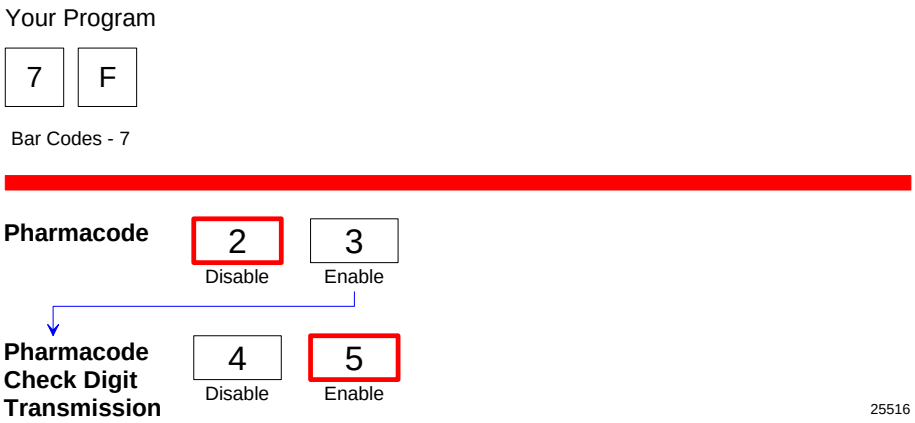
An EAN-13 bar code having a prefix of 978 is considered as an ISBN-10 tag. With the ISBN feature enabled, this tag outputs the ISBN-10 equivalent instead of EAN-13.

An ISBN-13 is exactly the same as an EAN-13 tag. It may have a prefix of either 978 or 979. With the ISBN feature enabled, the ISBN tag with a prefix of 978 is sent in its ISBN-10 equivalent while the tag with the prefix of 979 is sent as an EAN-13. The default setting for this option is **2**(Disabled).

ISSN

An EAN-13 tag with a prefix of 977 is an ISSN tag. With the ISSN feature enabled, scanning this tag automatically outputs the ISSN equivalent of the EAN-13 tag. The default setting for this option is **9** (Disabled).

Bar Codes–7



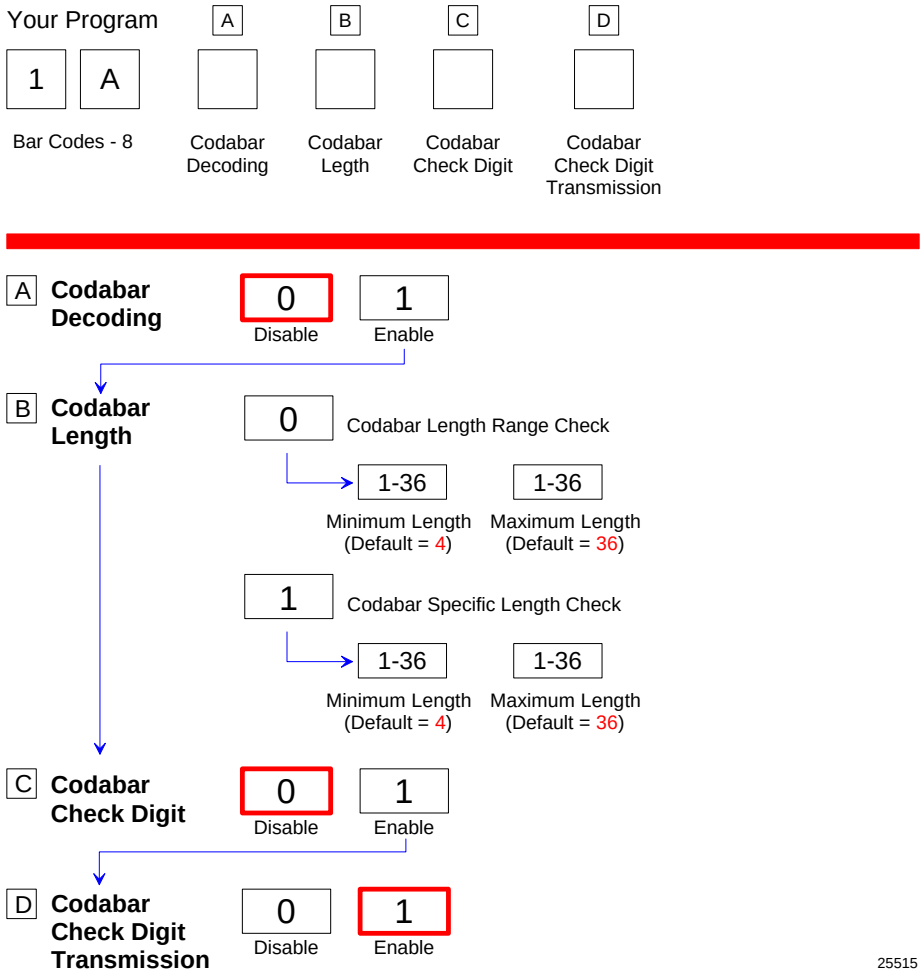
The Bar Codes 7 programming mode contains programming parameters for Pharmacode bar codes. Refer to the *Parameter Defaults* section earlier in this chapter for the factory defined default value of each programming parameter.

Pharmacode Enable

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.

Bar Codes-8



Note: The Bar Codes 8 programming mode contains programming parameters for Codabar bar codes. Refer to the *Parameter Defaults* section earlier in this chapter for the factory defined default value of each programming parameter.

Codabar Enable

Codabar Check Digit

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

Codabar Check Digit Transmission

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

Codabar Tone Length

The Codabar Tone Length parameter permits you to set the length of the 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**).

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	617 Hz
Hex 1	705 Hz
Hex 2	775 Hz
Hex 3	860 Hz
Hex 4	947 Hz
Hex 5	1250 Hz
Hex 6	524 Hz
Hex 7	572 Hz

Note: The default Codabar tone frequency is 947 Hertz (**Hex 4**).

Codabar Decoding 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 Codabar Decoding 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.

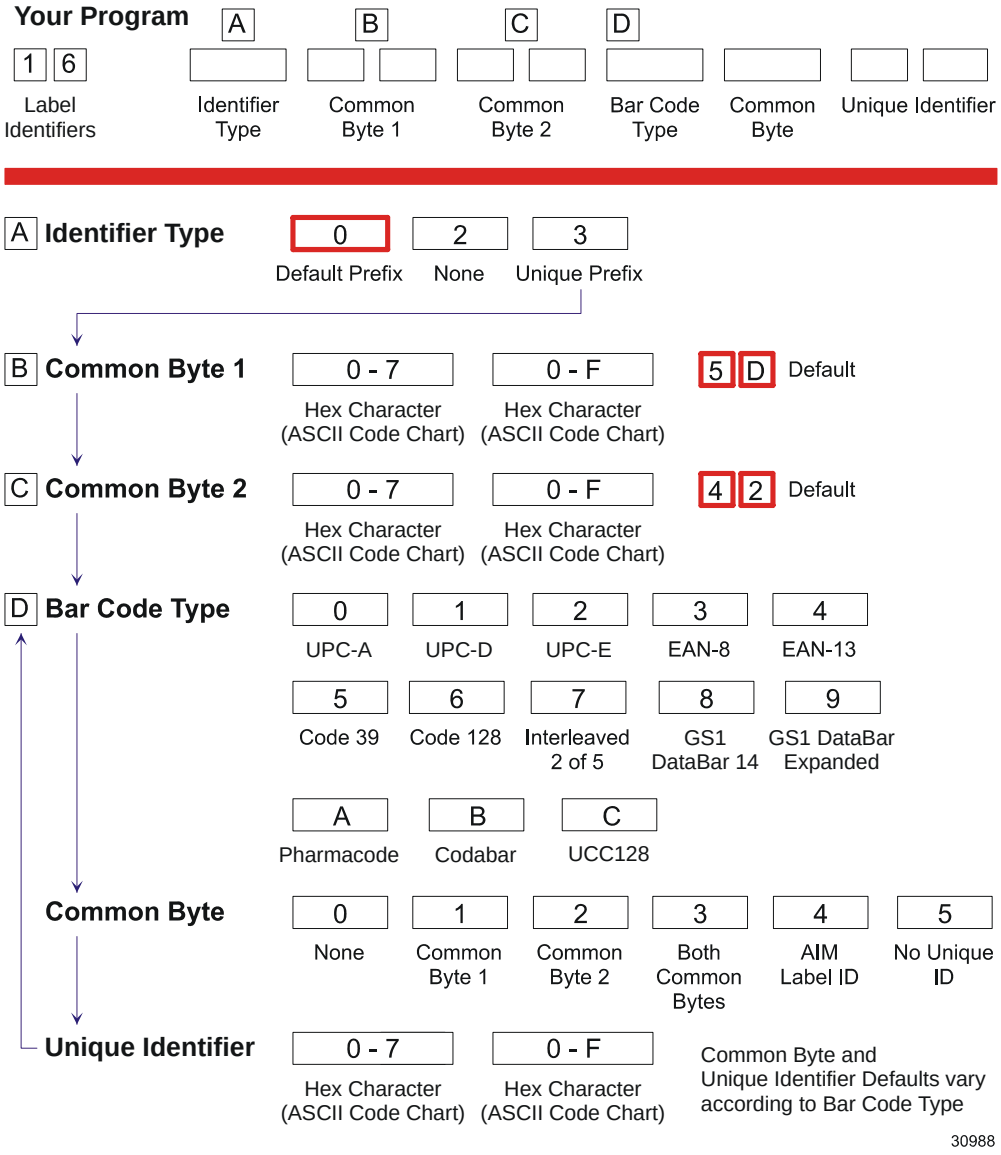
Codabar Stitch

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 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)**.

Label Identifiers



The Label Identifiers programming mode selects the parameters for adding label identifiers to communication messages. These identifiers apply to the RS232 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	]e0
GS1 DataBar-Expanded	5DH 65H 30H	]e0
Pharmacode	41H	A
Codabar	4EH	N
ISBN	46H	F
ISSN	46H	F

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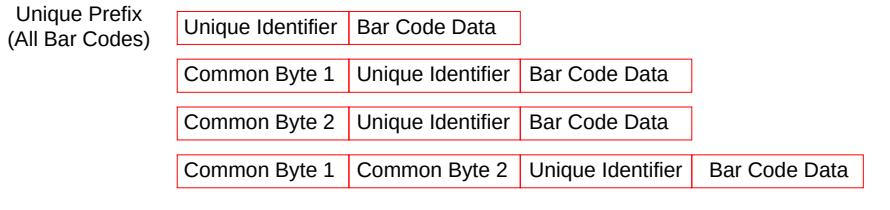
Scan the **Hex 2** tag to select none. No label identifiers are added to the message data.

Unique Prefix

To use a unique prefix, scan the **Hex 3** tag. A Unique Identifier is associated with each bar code type. Also, one, two, or no Common Bytes may be used. The following figure displays the possible message formats when using a unique prefix. The formats do not display other elements programmed in the other RS232 programming modes.

Unique Label Identifiers



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Common Byte 1 and Common Byte 2

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

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

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

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

Bar Code Type

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

Note: UPC Version D is always disabled.

Common Byte

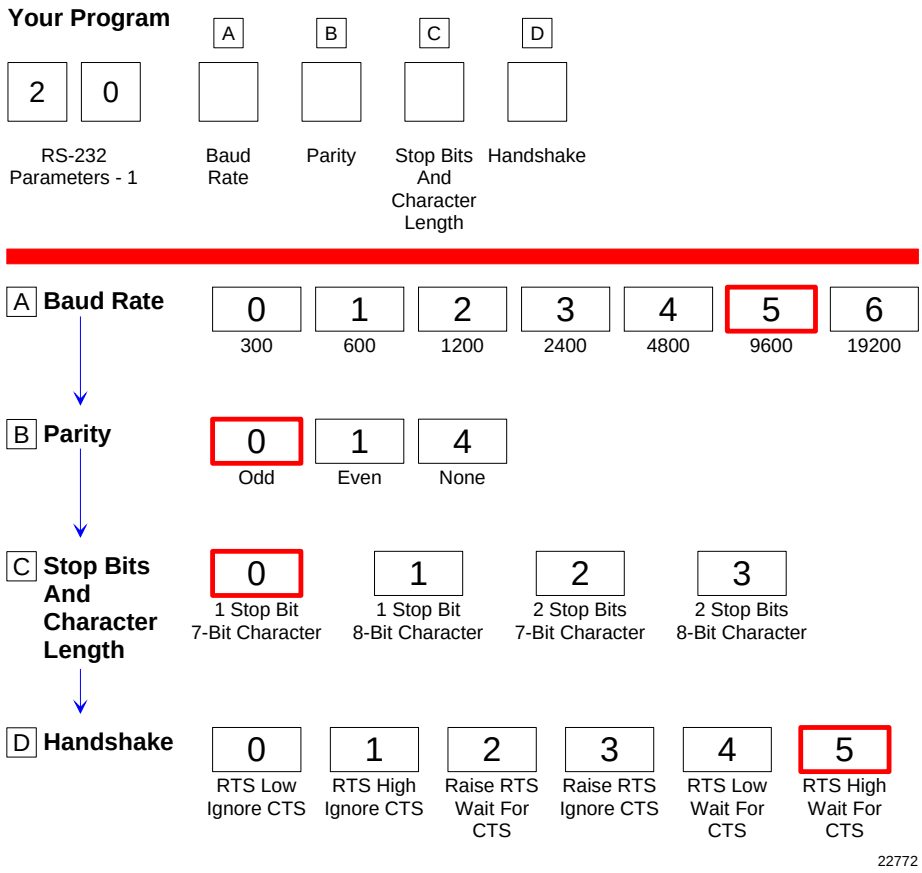
The Common Byte parameter selects which common bytes, if any, to add to the bar code data message. Each entry is unique to the previously specified Bar Code Type. Scan the **Hex 0** tag for no Common Bytes, the **Hex 1** tag for Common Byte 1, the **Hex 2** tag for Common Byte 2, the **Hex 3** tag for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

Unique Identifier

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

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

RS232 Parameters 1



The RS232 Parameters 1 programming mode contains four of the parameters required for RS232 communications. From this programming mode the Baud Rate, Parity, Stop Bits and Character Length, and Handshake Options can be selected. Refer to the *Parameter Defaults* section earlier in this chapter for the factory defined default value of each programming parameter.

Baud Rate

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

Parity

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

Note: When power is applied to a NCR 7884 that includes a scale, the reset function checks the RS232 Communications Parity programming. If the selection is **None**, it is ignored and Odd parity is used. If **Odd** or **Even** is selected, that selection is used.

Stop Bits and Character Length

The Stop Bits and Character Length parameter contains four selections: 1 Stop Bit and 7-bit Character Length, 1 Stop Bit and 8-bit Character Length, 2 Stop Bits and 7-bit Character Length, and 2 Stop Bits and 8-bit Character Length. Choosing no parity and 7-bit Character Length causes the NCR 7884 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.

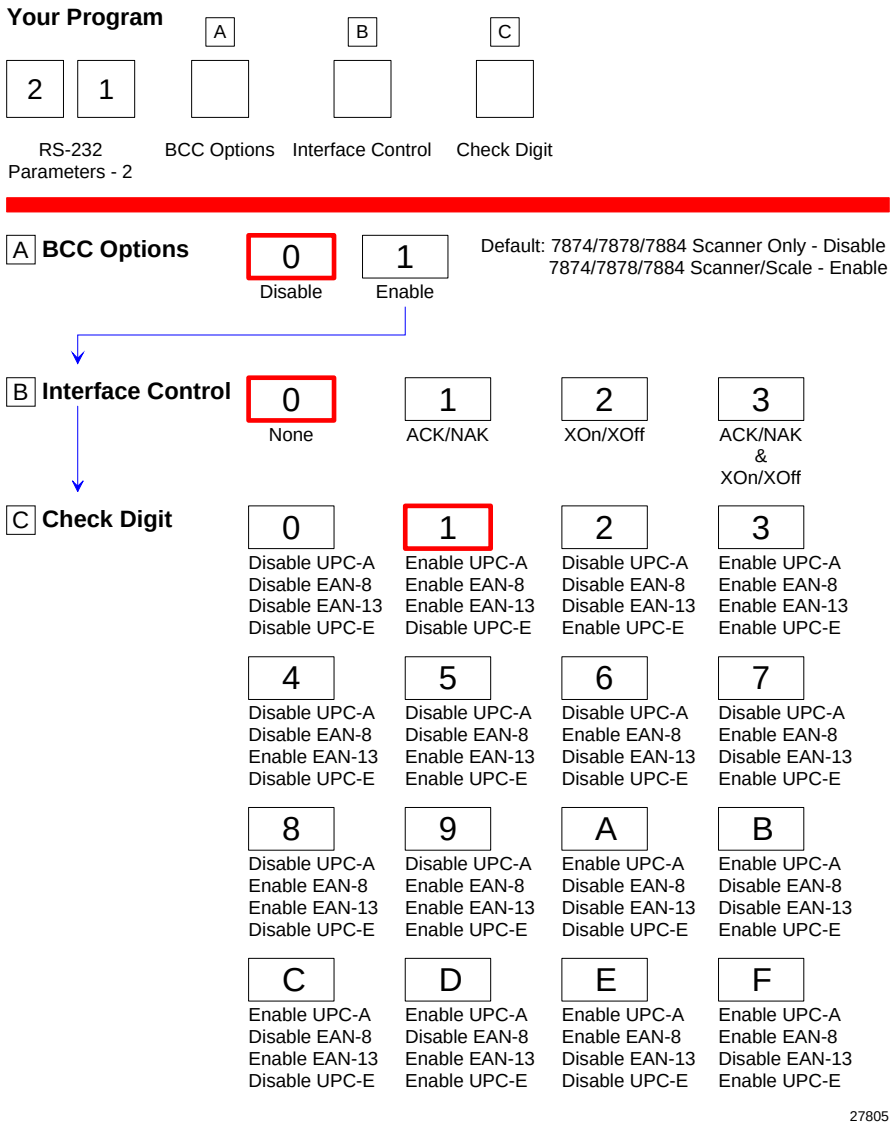
Handshake

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.

RS232 Parameters 2



The RS232 Parameters 2 programming mode contains some of the parameters required for RS232 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.

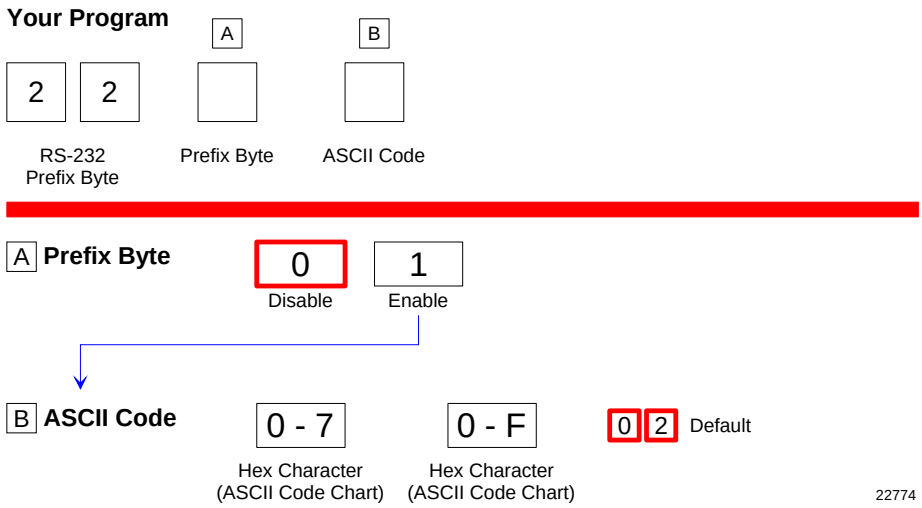
An XOff message turns the scanner transmitter off until the scanner receives an XOn message. An XOn message can be received at any time. If the scanner is sending a message when it receives an XOff, since these messages can be received any time, data transmission stops after sending the current byte. 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.

RS232 Prefix Byte



The RS232 Prefix Byte programming mode controls the use of prefix bytes. If an RS232 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

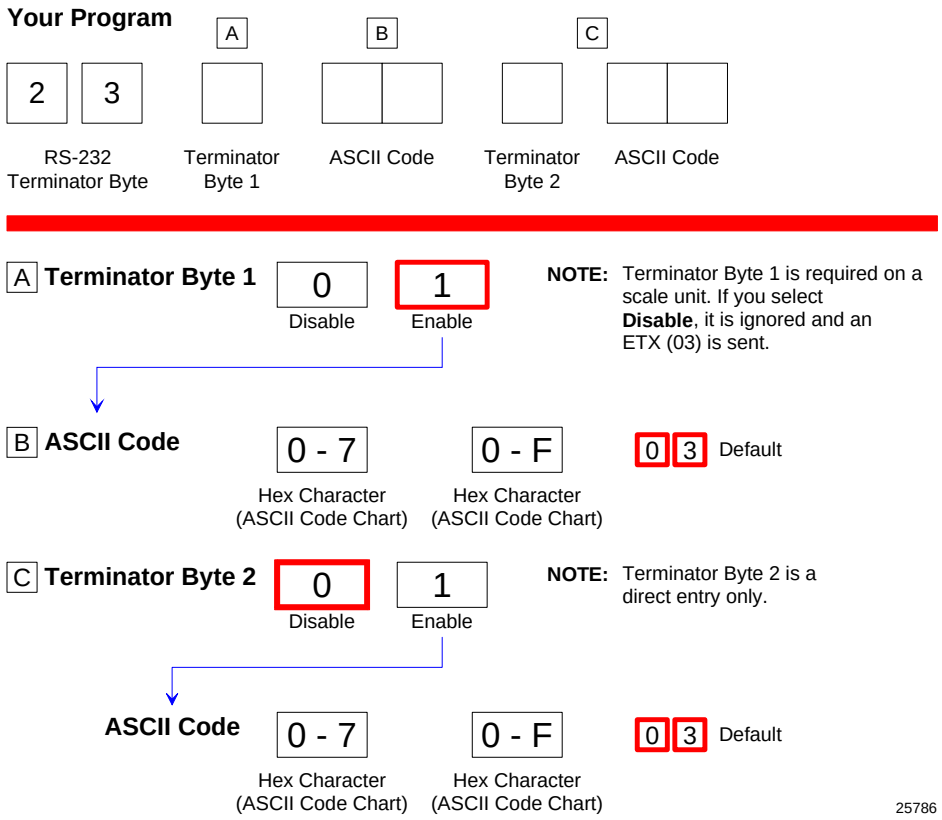
The Prefix Byte parameter contains two selections: Disable and Enable. Scan the **Hex 0** tag to disable the Prefix Byte, or the **Hex 1** tag to enable it.

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 (displayed 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 RS232 Terminator Byte has the same function.

RS232 Terminator Byte



The RS232 Terminator Byte programming mode controls the use of terminator bytes. If an RS232 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.

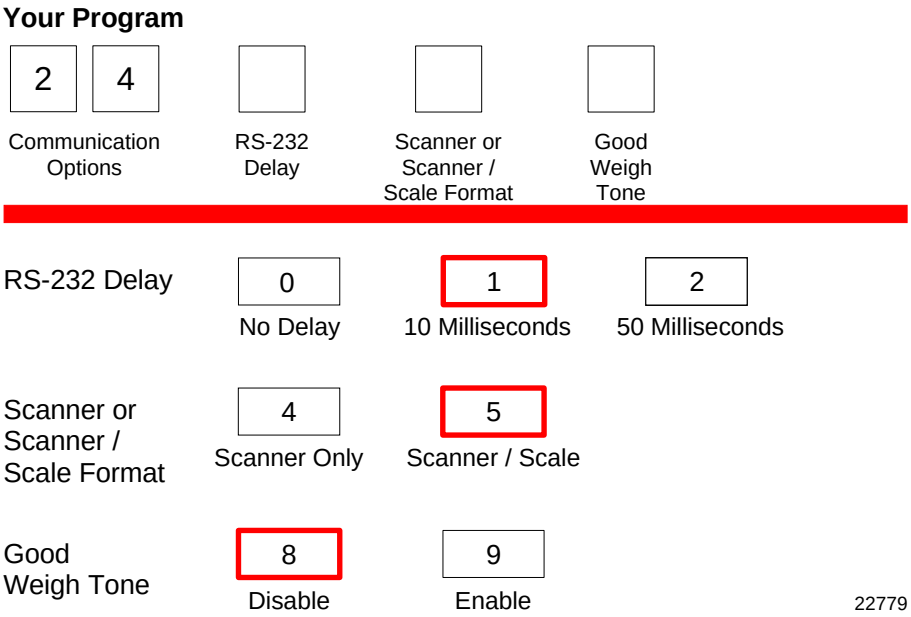
Terminator Byte

There are two RS232 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 RS232 Terminator Byte and Prefix Byte has the same function. Refer to the *RS232 Prefix Byte* section of this chapter for more information.

RS232 Communications Options



The RS232 Communications Options parameters control the delay between messages, and the format in which the scanner and host terminal exchange tag data messages. The firmware is programmed to accept one parameter at a time and then leave this programming mode. Therefore, each of the parameters must be programmed separately. Refer to the *Parameter Defaults* section earlier in this chapter for the factory defined default value of each programming parameter.

Message Delay

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

Messages can be delayed as follows:

- **Hex 0** for no delay
- **Hex 1** for a 10 ms delay
- **Hex 2** for a 50 ms delay

Scanner/Scale Format

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

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

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

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

- Scanner-Only Tag Data
- Message Format

Shading indicates optional information.

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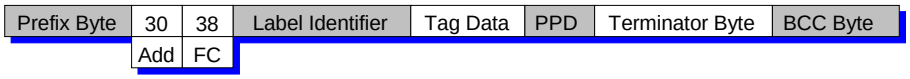
The normal (default) format for scanner/scale tag data messages is as follows:

- Scanner/Scale Tag Data
- Message Format



Shading indicates optional information.

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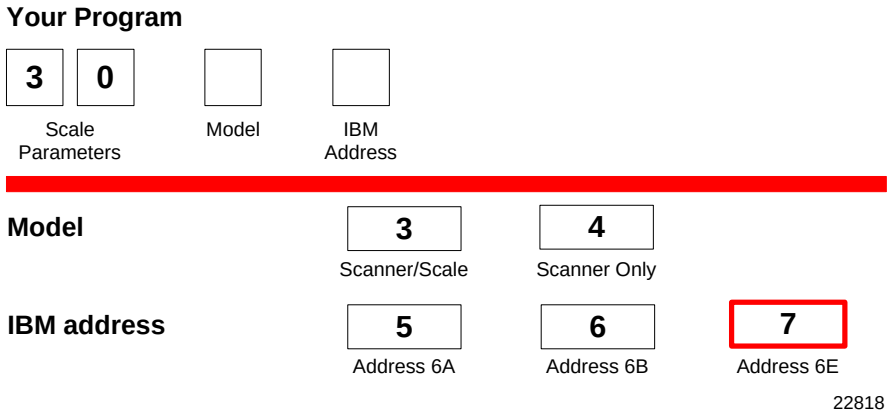
The difference between the scanner only and the scanner/scale format is that the scanner/scale format has an address and a function code following the optional Prefix Byte. For more detailed information on message formats refer to the *NCR Scanner/Scale Interface Programmer's Guide* (BD20-1074-A).

Good Weigh Tone

The NCR 7884 can be programmed to sound a tone following a successful item weigh function. Scan the **Hex 8** tag to disable this function and the **Hex 9** tag to enable it.

Scale Parameters



The Scale Parameters programming mode controls specific parameters associated with a NCR 7884 that has a scale. This mode can be used to identify if the NCR 7884 includes a scale and to define the address if the scale is connected to an IBM host terminal. Refer to the *Parameter Defaults* section earlier in this chapter for the factory defined default value of each programming parameter.

Model

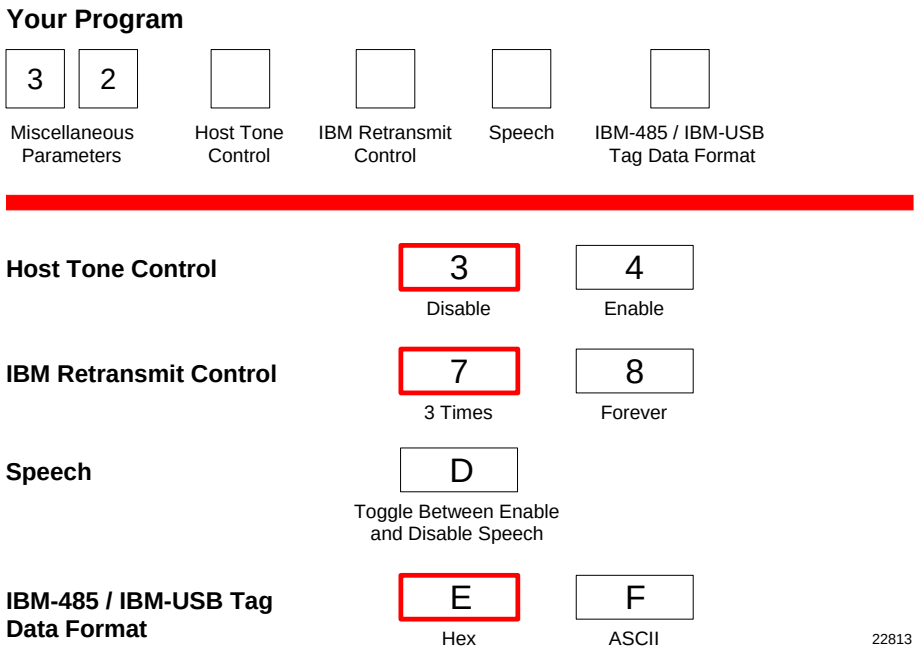
The Model parameter specifies if the NCR 7884 is a Scanner/Scale or a Scanner only. This parameter is set at the factory and should not need changing under normal circumstances. Scan the **Hex 3** tag to specify that the unit is a Scanner/Scale, or scan the **Hex 4** tag to specify that the unit is a Scanner only. If the scale is disabled on a Scanner/Scale unit by scanning the **Hex 4** tag, the BCC option also changes to the appropriate state.

IBM Address

When programming a NCR 7884 for IBM communications, the proper scale communications address must be selected. Selecting the IBM 468x communications protocol sets the scale address to 6E; however, it may need to be changed to 6A or 6B, depending on the IBM configuration in the particular IBM Host Terminal Software. Scan the **Hex 5** tag for address 6A, the **Hex 6** tag for address 6B, or the **Hex 7** tag for address 6E.

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

Miscellaneous Parameters



The Miscellaneous Parameters programming mode controls parameters associated with the NCR 7884 Scale that do not fit easily into any of the other categories. The NCR 7884 firmware is programmed to accept one parameter at a time and then leave this programming mode. Therefore, each of the parameters must be programmed separately. Refer to the *Parameter Defaults* section earlier in this chapter for the factory defined default value of each programming parameter.

Host Tone Control

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

IBM Retransmit Control

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

Enable/Disable Voice Messages

The NCR 7884 uses voice messages for diagnostics, scale calibration, and clerk messages. If voice messages are enabled, the messages are heard at the appropriate time; if they are disabled, the beep tones are heard instead. When voice messages are disabled, the NCR 7884 uses the scale display to indicate error conditions. To enable or disable voice messages, scan the following sequence of programming tags. These tags must be the first tags scanned after applying power to the unit.

All Voice Messages Off/On

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

Clerk Messages On

- Program Mode
- Hex 3
- Hex 3
- Hex 1
- Save and Reset

Clerk Messages Off

- Program Mode
- Hex 3
- Hex 3
- Hex 0
- Save and Reset

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

The three clerk messages are:

a. Scale failed, clean under scale deck

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

   Next, do scale calibration

   Next, change scale

c. Scale failed, code 4

   Stop checkstand mechanical vibration

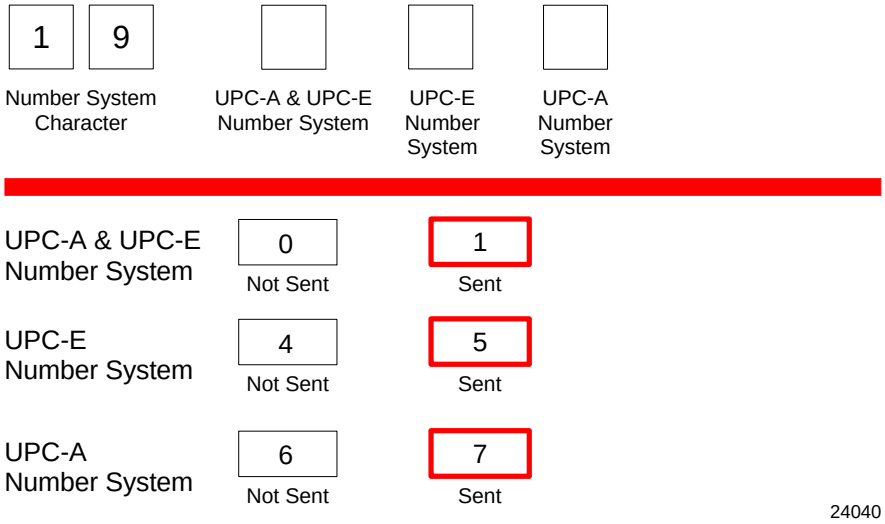
   Next, change scale

IBM–485 / IBM–USB Tag Data Format

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

Number System Character Parameter

Your Program



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

- **Hex 0**—UPC–A and UPC–E Number System Character Not Sent
- **Hex 1**—UPC–A and UPC–E Number System Character Sent
- **Hex 4**—UPC–E Number System Character Not Sent
- **Hex 5**—UPC–E Number System Character Sent
- **Hex 6**—UPC–A Number System Character Not Sent
- **Hex 7**—UPC–A Number System Character Sent

Dual Cable Interface

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

The scale type normally does not need changing unless you are connecting the NCR 7884 to a competitive host terminal.

Avery Scale Emulation

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

- **Program Mode**, **Hex 4**, **Hex 0**, **Hex 1**—enable AUX port processing
- **Hex 4, Hex 0, Hex 2**—enable AUX port 1
- **Hex 5, Hex 5, Hex 6**—enable Avery Scale Emulation
- **Hex 2, Hex 4, Hex 4**—change barcode data to Scanner–only format

Programming Worksheets

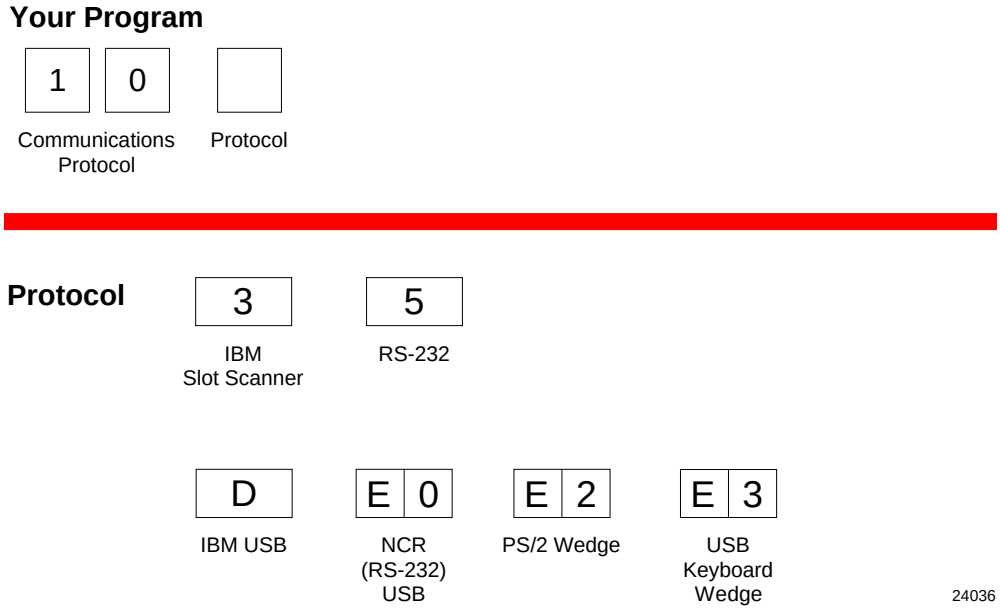
The programming worksheets provide a convenient method of defining the NCR 7884 program before loading it into the unit. Each worksheet relates to a Parameter Program.

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

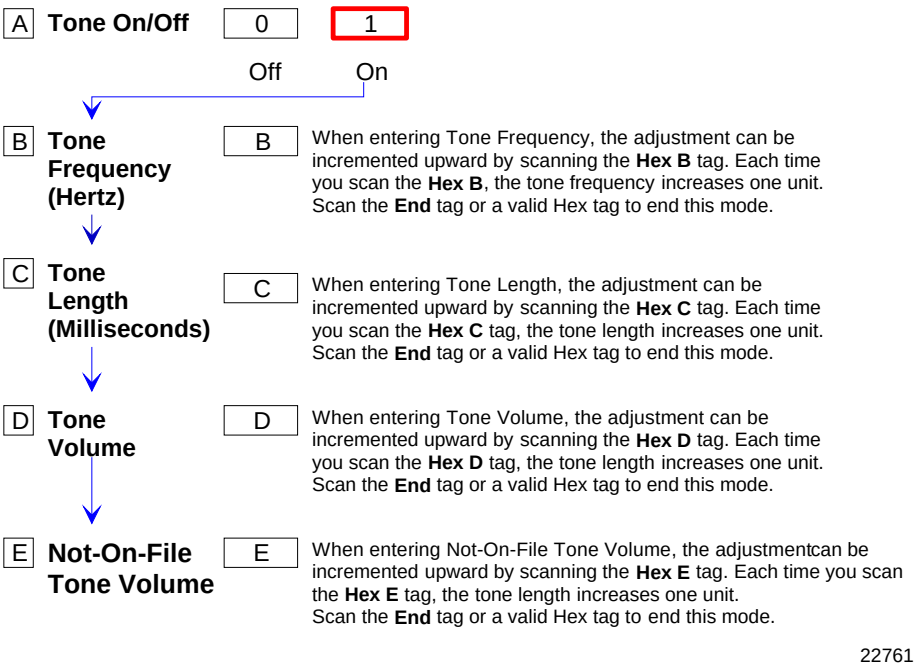


Caution: The NCR 7884 must be programmed for IBM interface before connecting it to the IBM host terminal.

Good Read Tone

Your Program

1	1	
Good Read Tone		Protocol



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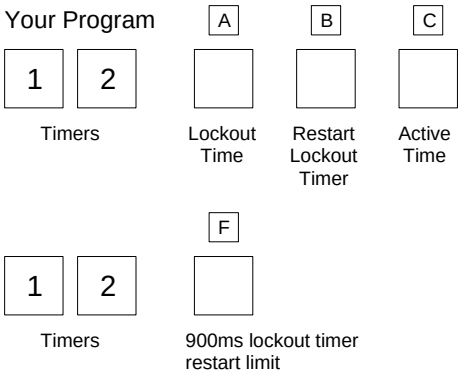
Timers



A Lockout Time (Milliseconds)

8	0	1	2	3
350	450	600	750	900
4	5	6	7	
1050	1200	1350	1500	

B Restart Lockout Timer

0	1
Off	On

C Active Time (Minutes)

0	1	2	3
0	15	30	60

F 900ms Lockout Timer Restart Limit

0	1
Disable	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.

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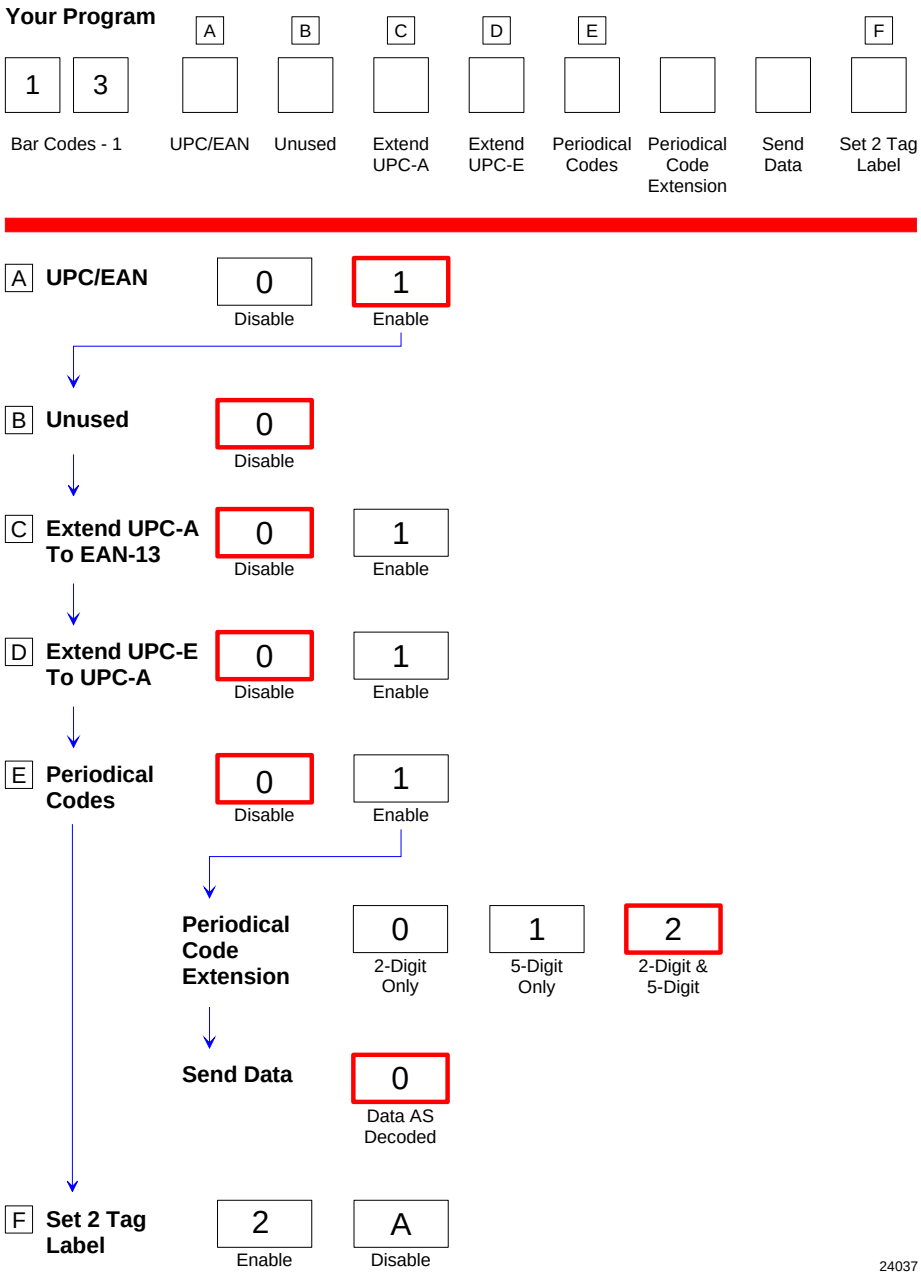
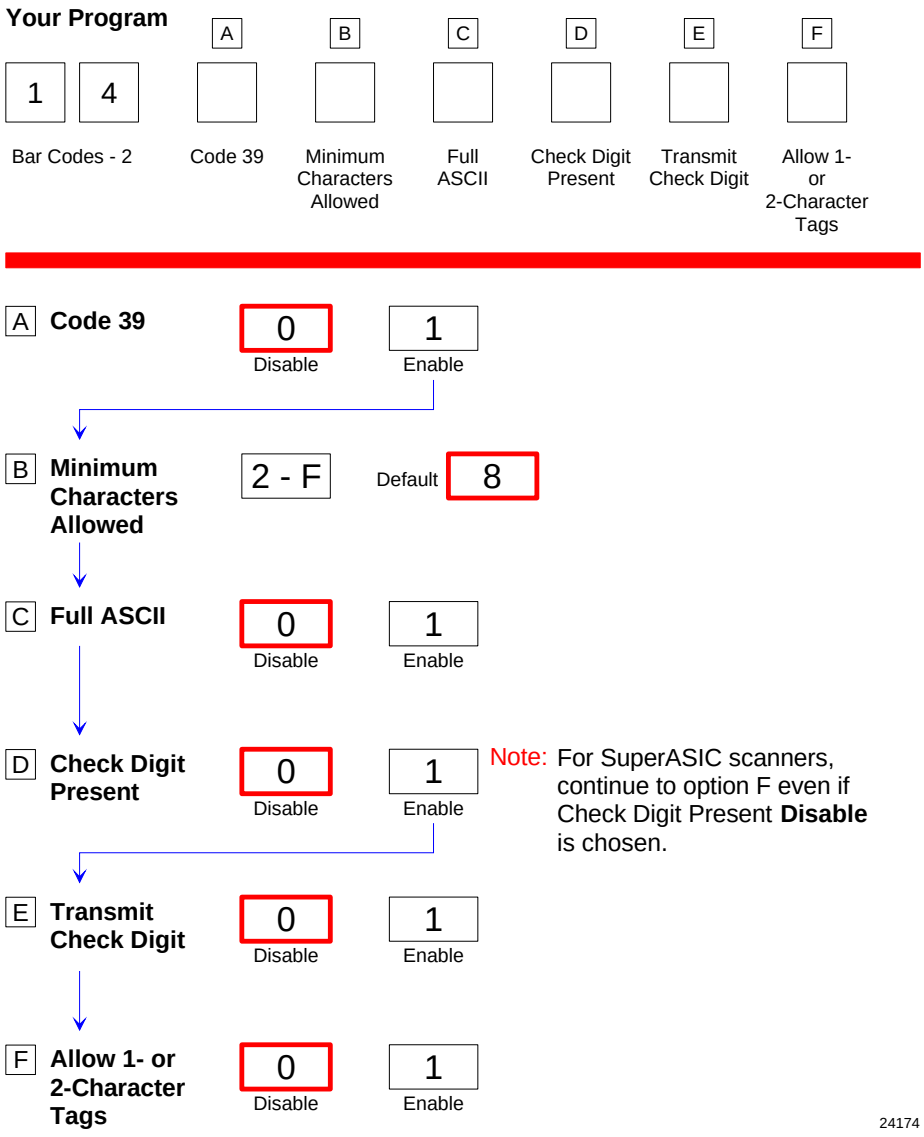
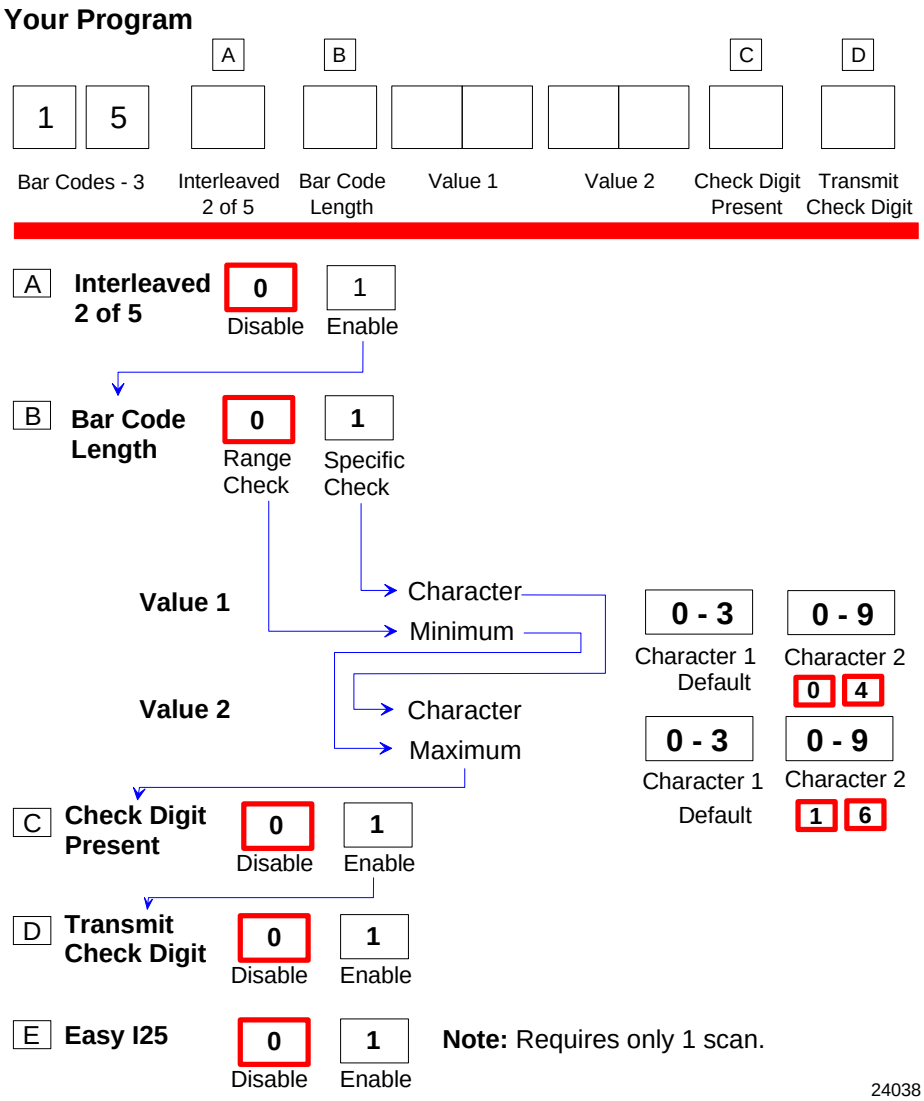
Bar Codes–1


Your Program
1
3
Bar Codes - 1
A
UPC/EAN
B
Unused
C
Extend UPC-A
D
Extend UPC-E
E
Periodical Codes
Periodical Code Extension
Send Data
F
Set 2 Tag Label
A UPC/EAN
0
Disable
1
Enable
B Unused
0
Disable
C Extend UPC-A To EAN-13
0
Disable
1
Enable
D Extend UPC-E To UPC-A
0
Disable
1
Enable
E Periodical Codes
0
Disable
1
Enable
Periodical Code Extension
0
2-Digit Only
1
5-Digit Only
2
2-Digit & 5-Digit
Send Data
0
Data AS Decoded
F Set 2 Tag Label
2
Enable
A
Disable
24037

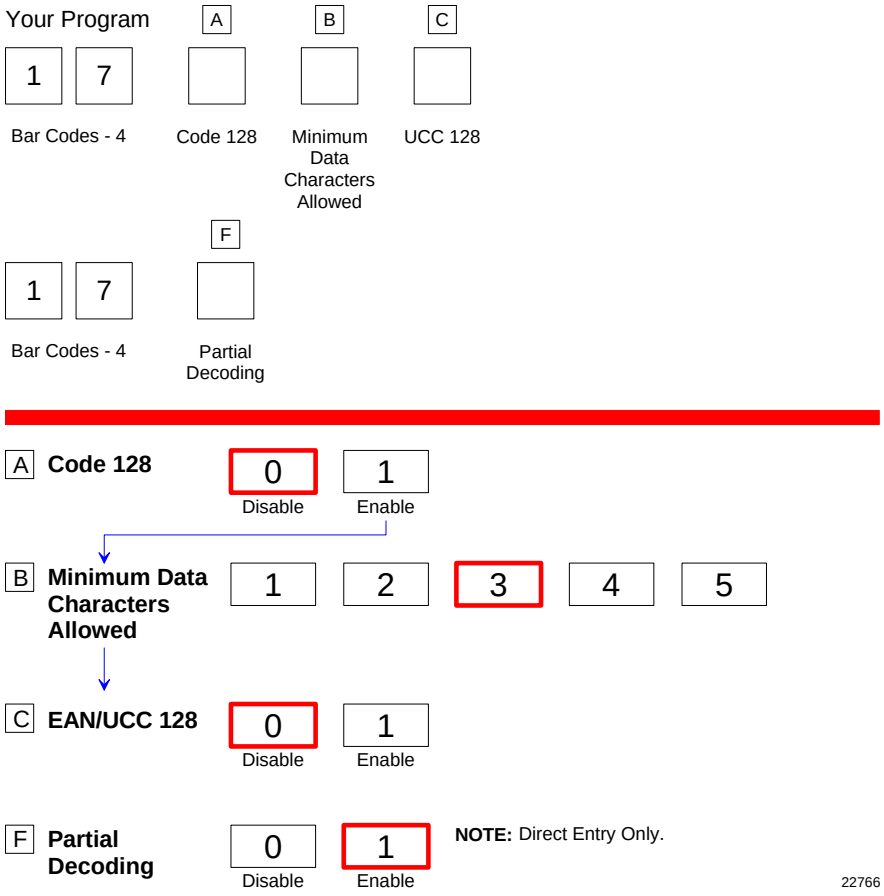
Bar Codes–2


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
2 - F
Default
8
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

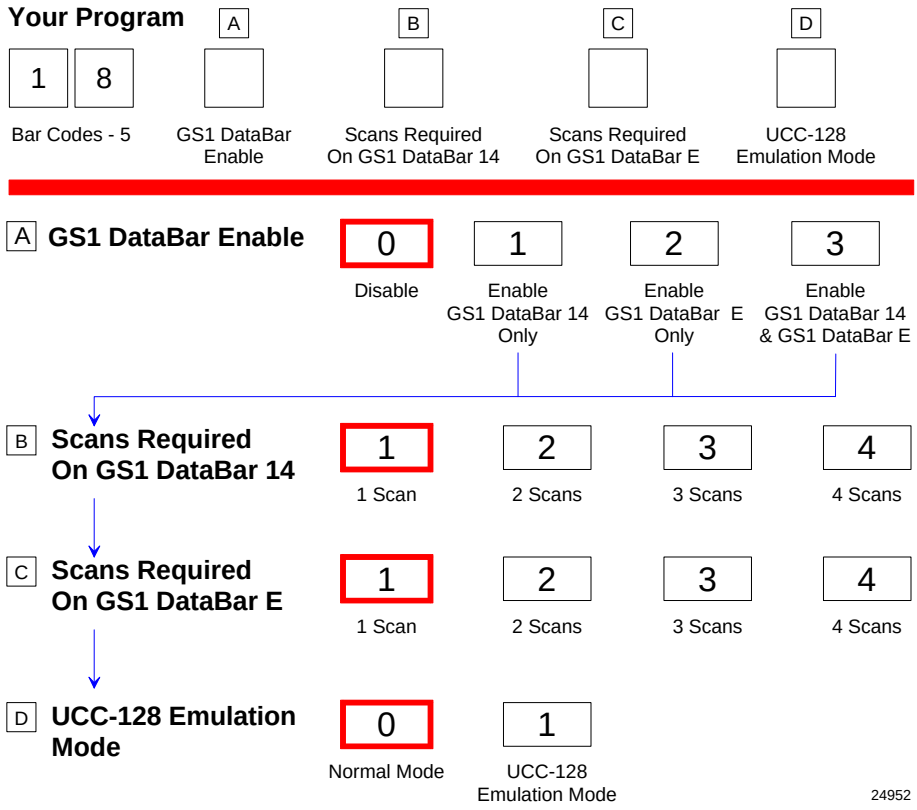
Bar Codes–3


Your Program
A
B
C
D
1
5
Bar Codes - 3
Interleaved 2 of 5
Bar Code Length
Value 1
Value 2
Check Digit Present
Transmit Check Digit
A Interleaved 2 of 5
0 Disable
1 Enable
B Bar Code Length
0 Range Check
1 Specific Check
Value 1
Character
Minimum
Value 2
Character
Maximum
0 - 3
Character 1
Default
0
0 - 9
Character 2
4
0 - 3
Character 1
Default
1
0 - 9
Character 2
6
C Check Digit Present
0 Disable
1 Enable
D Transmit Check Digit
0 Disable
1 Enable
E Easy I25
0 Disable
1 Enable
Note: Requires only 1 scan.
24038

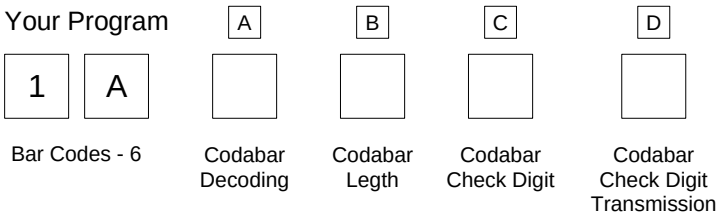
Bar Codes–4

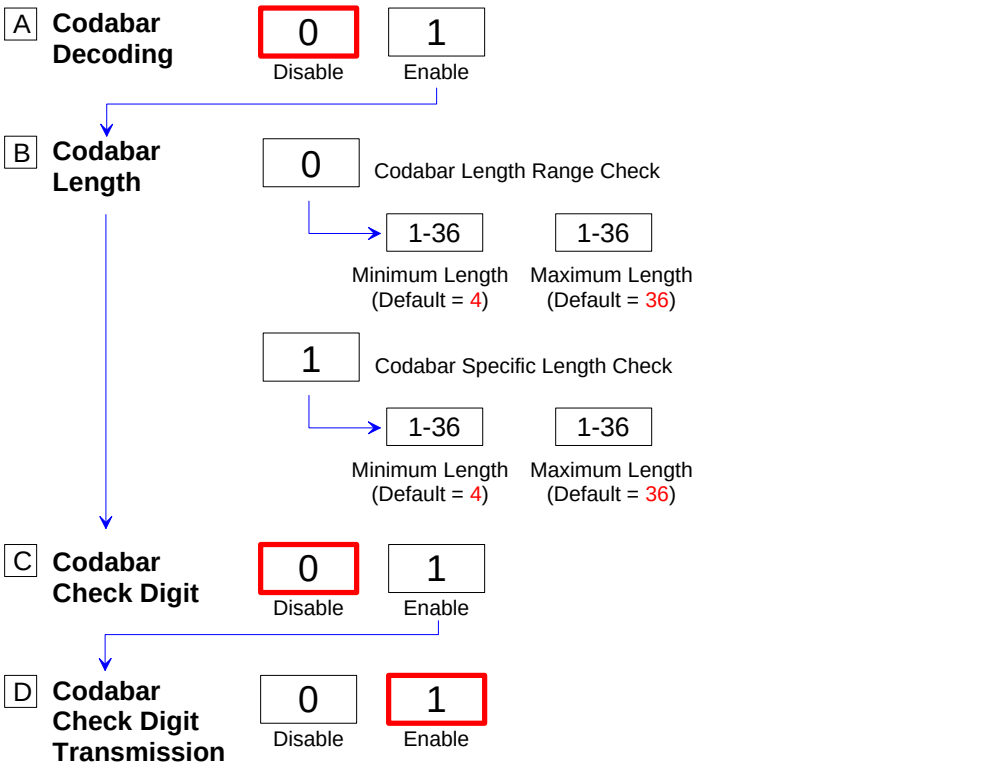

Your Program
A
B
C
1
7
Bar Codes - 4
Code 128
Minimum Data Characters Allowed
UCC 128
F
1
7
Bar Codes - 4
Partial Decoding
A Code 128
0
Disable
1
Enable
B Minimum Data Characters Allowed
1
2
3
4
5
C EAN/UCC 128
0
Disable
1
Enable
F Partial Decoding
0
Disable
1
Enable
NOTE: Direct Entry Only.
22766

Bar Codes–5


Your Program
A
B
C
D
1
8
Bar Codes - 5
GS1 DataBar Enable
Scans Required On GS1 DataBar 14
Scans Required On GS1 DataBar E
UCC-128 Emulation Mode
A GS1 DataBar Enable
0
1
2
3
Disable
Enable GS1 DataBar 14 Only
Enable GS1 DataBar E Only
Enable GS1 DataBar 14 & GS1 DataBar E
B Scans Required On GS1 DataBar 14
1
2
3
4
1 Scan
2 Scans
3 Scans
4 Scans
C Scans Required On GS1 DataBar E
1
2
3
4
1 Scan
2 Scans
3 Scans
4 Scans
D UCC-128 Emulation Mode
0
1
Normal Mode
UCC-128 Emulation Mode
24952

Bar Codes–6



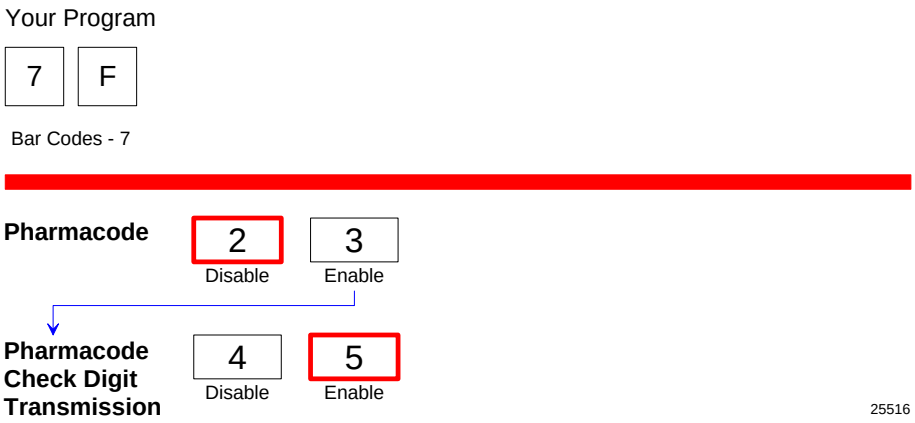


Note:

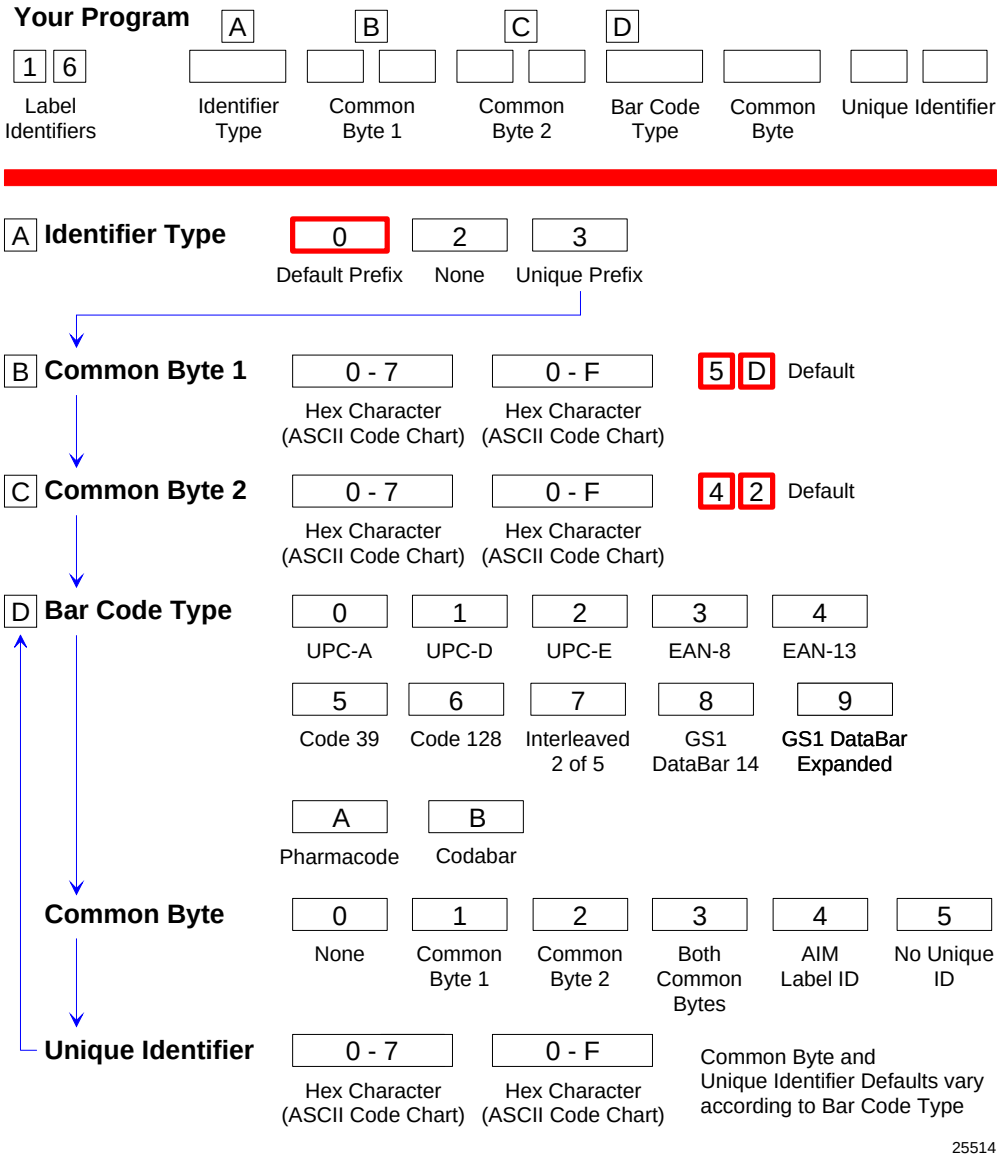
The following sequence is HIGHLY RECOMMENDED to be added when any Codabar barcode is enabled:
Require Codabar Quiet Zones should be programmed
"enabled" = Program Mode, Hex 6, Hex B, Hex 2, Hex 3, Save and Reset.

25515

Bar Codes–7


Your Program
7
F
Bar Codes - 7
Pharmacode
2
Disable
3
Enable
Pharmacode
Check Digit
Transmission
4
Disable
5
Enable
25516

Label Identifiers



Number System Character

Your Program

1	9			
Number System Character		UPC-A & UPC-E Number System	UPC-E Number System	UPC-A Number System

UPC-A & UPC-E Number System	0 Not Sent	1 Sent
UPC-E Number System	4 Not Sent	5 Sent
UPC-A Number System	6 Not Sent	7 Sent

24040

Sensormatic Deactivation Tone Frequency

Your Program

7	B	X
		1-F

X The tone is a series of five pulses. The values of 1-8 generates 1 to 8 pulses of the frequency. The values 9-F generates 1 to 7 pulses of the frequency modulated with a second tone. The eight frequencies are: 570 Hz(default), 637 Hz, 721 Hz, 829 Hz, 976 Hz, 1186 Hz, 1512 Hz, and 2083 Hz.

25912

Sensormatic Deactivation Tone Pulse

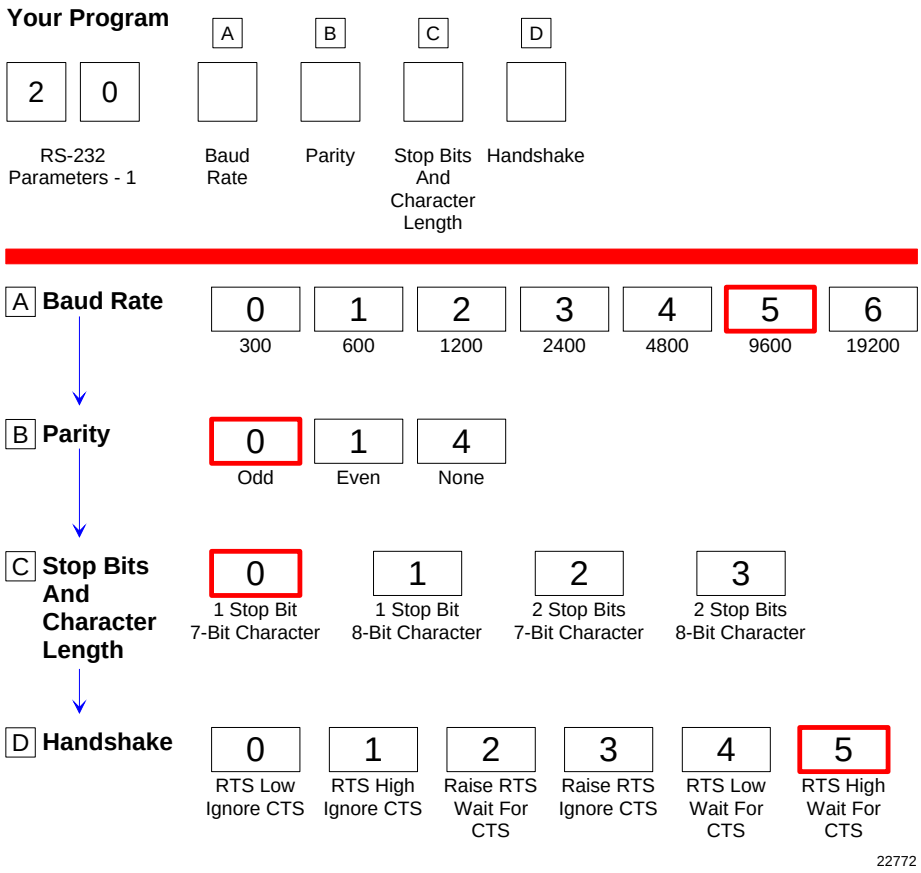
Your Program

7	B	X
		1-F

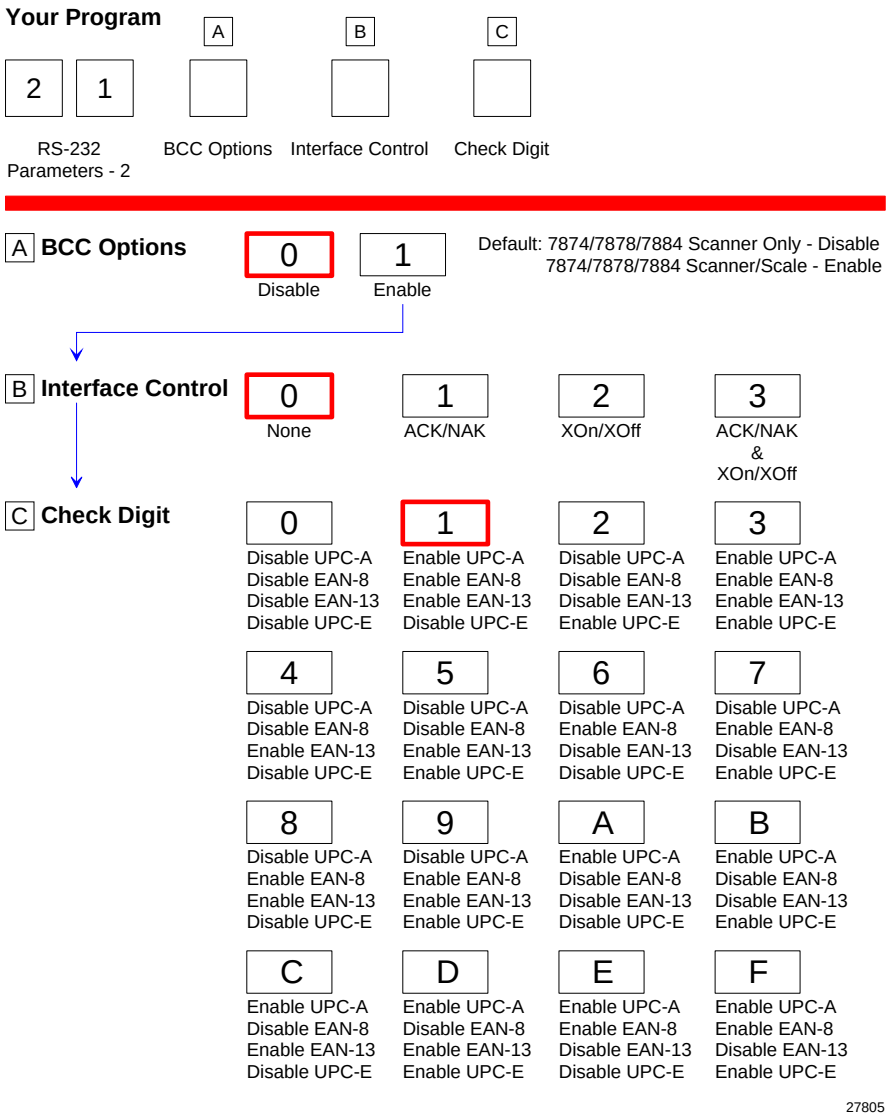
X The tone is a series of five pulses. The values of 1-8 generates 1 to 8 pulses of the frequency. The values 9-F generates 1 to 7 pulses of the frequency modulated with a second tone. The eight frequencies are: 570 Hz(default), 637 Hz, 721 Hz, 829 Hz, 976 Hz, 1186 Hz, 1512 Hz, and 2083 Hz.

25912

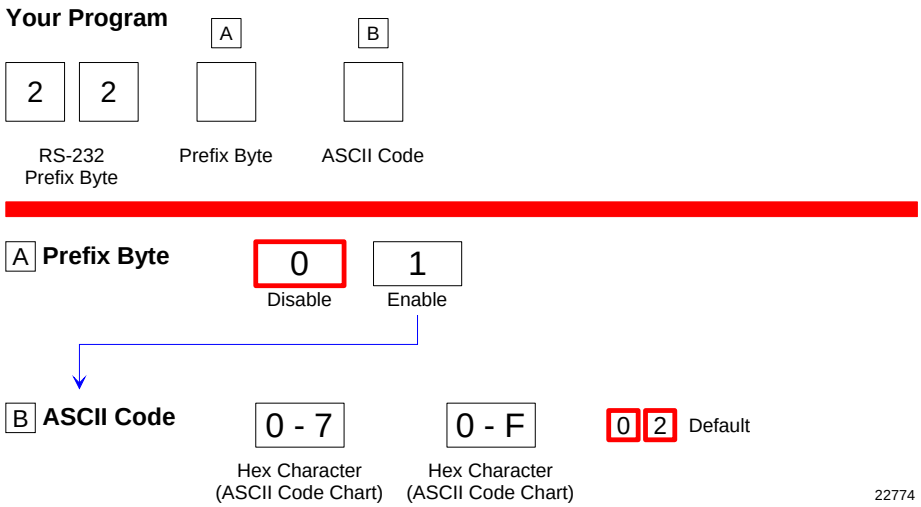
RS232 Parameters 1



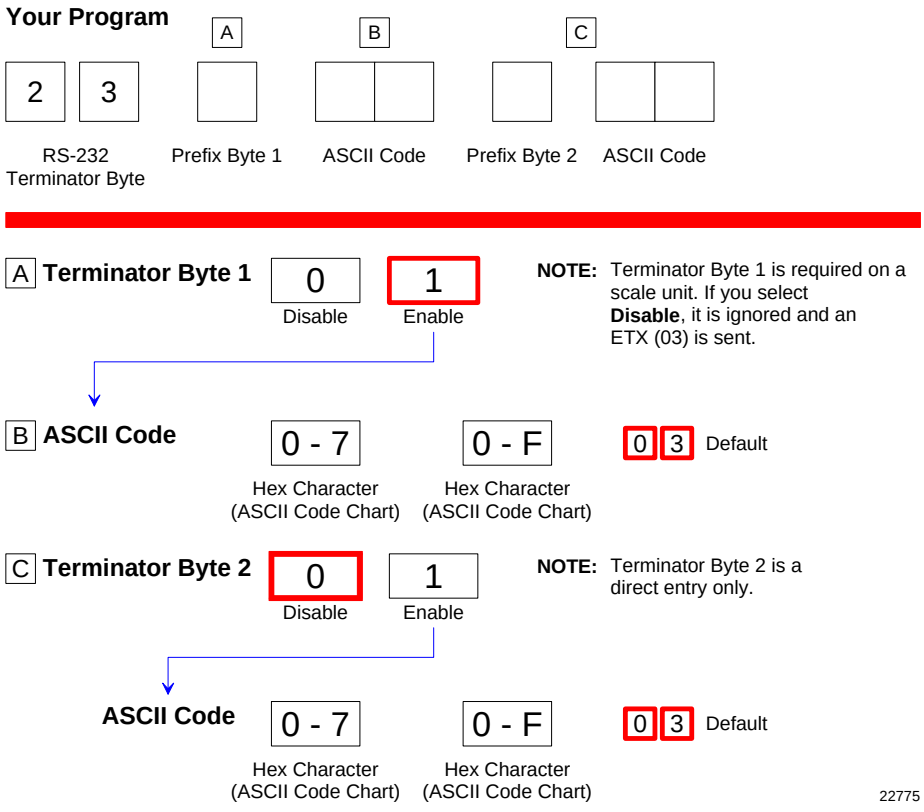
RS232 Parameters 2



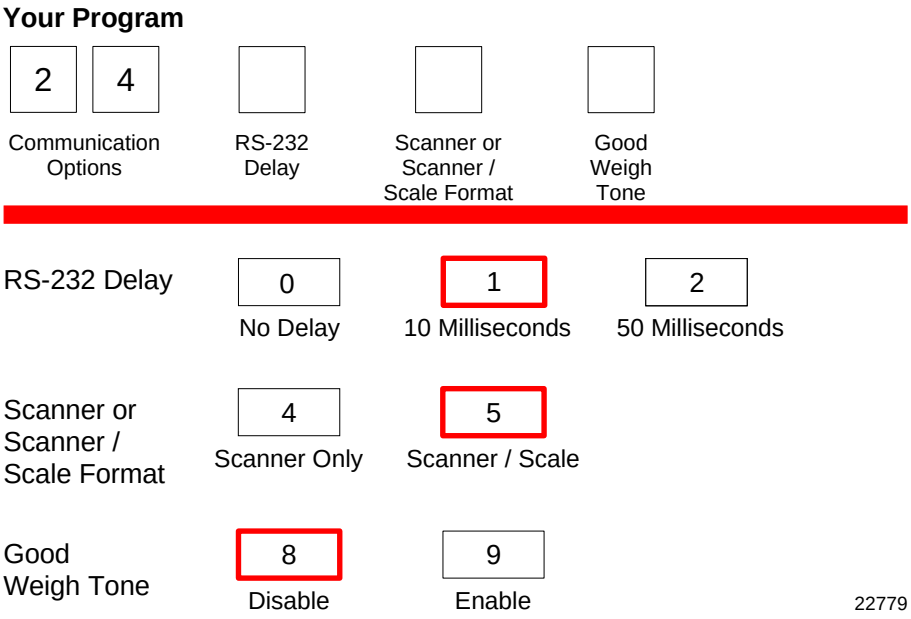
RS232 Prefix Byte



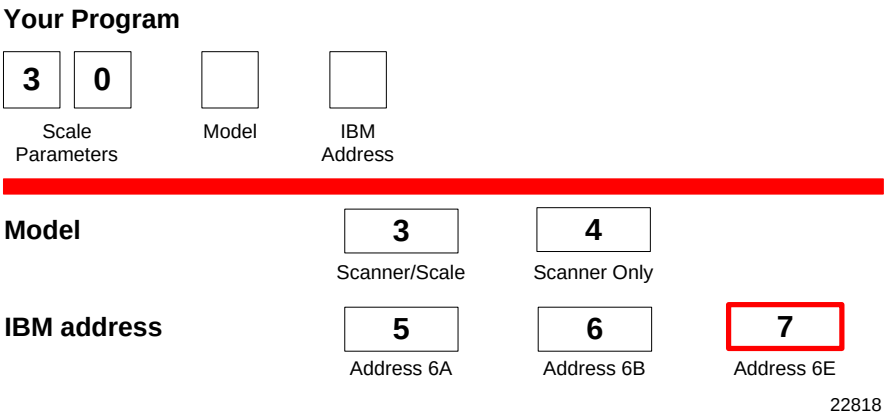
RS232 Terminator Byte



RS232 Communications Options



Scale Parameters



Miscellaneous Options

Miscellaneous Parameters

Your Program

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

Host Tone Control	3 Disable	4 Enable
IBM Retransmit Control	7 3 Times	8 Forever
Speech	D Toggle Between Enable and Disable Speech	
IBM-485 / IBM-USB Tag Data Format	E Hex	F 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

Code 128 Tone Frequency

Selection	Programming Tag Sequence	Setting
617 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 0, Save and Reset	
705 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 1, Save and Reset	
775 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 2, Save and Reset	
860 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 3, Save and Reset	
947 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 4, Save and Reset	Default
1250 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 5, Save and Reset	
524 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 6, Save and Reset	
572 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 7, Save and Reset	

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

Code 128 Minimum and Maximum Tag Length

Selection	Programming Tag Sequence
Format	Programming Mode, Hex 7, Hex 2, a, v, w, x, y, Save and Reset where a = Ø (Range of formats) or 1 (Specific Format) 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 the Default Tag to set this option to Off

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
195 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex D, Save and Reset
165 ms	Programming Mode, Hex 7, Hex 0, Hex 3, Hex B, 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

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

Code 39 Tone Frequency

Selection	Programming Tag Sequence	Setting
617 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 0, Save and Reset	
705 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 1, Save and Reset	
775 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 2, Save and Reset	
860 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 3, Save and Reset	
947 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 4, Save and Reset	Default
1250 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 5, Save and Reset	
524 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 6, Save and Reset	
572 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 7, Save and Reset	

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

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

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

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

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

Code 39 CD Length1

Selection	Programming Tag Sequence	Setting
Format	Programming Mode, Hex 7, Hex 0, Hex B, x, y, Save and Reset CD Format 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

Code 39 CD Length2

Selection	Programming Tag Sequence	Setting
Format	Programming Mode, Hex 7, Hex 0, Hex C, x, y, Save and Reset CD Format 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

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

Interleaved 2 of 5 Tone Frequency

Selection	Programming Tag Sequence	Setting
617 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 0, Save and Reset	
705 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 1, Save and Reset	
775 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 2, Save and Reset	
860 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 3, Save and Reset	
947 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 4, Save and Reset	Default
1250 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 5, Save and Reset	
524 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 6, Save and Reset	
572 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 7, Save and Reset	

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

Interleaved 2 of 5 CD Length1

Selection	Programming Tag Sequence	Setting
Format	Programming Mode, Hex 7, Hex 0, Hex D, x, y, Save and Reset CD Format 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

Interleaved 2 of 5 CD Length2

Selection	Programming Tag Sequence	Setting
Format	Programming Mode, Hex 7, Hex 0, Hex E, x, y, Save and Reset CD Format 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

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.

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.

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.

Enable/Disable Interleaved 2 of 5 Partials

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 6, Hex C, Hex C, Save and Reset	Default
Enable	Programming Mode, Hex 6, Hex C, Hex D, Save and Reset	

Note: This is an Advanced Programming Feature and should only be done under the recommendation and direction of NCR; otherwise, unexpected results may occur.

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	

GS1 DataBar Tone Frequency

Selection	Programming Tag Sequence	Setting
617 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 0, Save and Reset	
705 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 1, Save and Reset	
775 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 2, Save and Reset	
860 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 3, Save and Reset	
947 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 4, Save and Reset	Default
1250 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 5, Save and Reset	
524 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 6, Save and Reset	
572 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 7, Save and Reset	

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	

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	

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	

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	

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	

Codabar Tone Length

Selection	Programming Tag Sequence
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
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

Codabar Tone Frequency

Selection	Programming Tag Sequence	Setting
617 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 0, Save and Reset	
705 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 1, Save and Reset	
775 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 2, Save and Reset	
860 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 3, Save and Reset	
947 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 4, Save and Reset	Default
1250 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 5, Save and Reset	
524 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 6, Save and Reset	
572 Hz	Programming Mode, Hex 7, Hex 4, Hex 1, Hex 7, Save and Reset	

Codabar Tone

Selection	Programming Tag Sequence
Disable	Programming Mode, Hex 7, Hex 4, Hex 5, Hex 0, Save and Reset
Enable	Programming Mode, Hex 7, Hex 4, Hex 5, Hex 1, Save and Reset

Codabar Halves

Selection	Programming Tag Sequence
Disable	Programming Mode, Hex 7, Hex 4, Hex 5, Hex 2, Save and Reset
Enable	Programming Mode, Hex 7, Hex 4, Hex 5, Hex 3, Save and Reset

Codabar Stitch

Selection	Programming Tag Sequence
Disable	Programming Mode, Hex 7, Hex 4, Hex 5, Hex 4, Save and Reset
Enable	Programming Mode, Hex 7, Hex 4, Hex 5, Hex 5, Save and Reset

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

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

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

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

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	

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

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

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

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

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

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	

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	

Ignore RS232 Commands from POS

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 0, Hex A, Hex 0	Default
Enable	Programming Mode, Hex 7, Hex 0, Hex A, Hex 1	

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	

GS1 DataBar AI 8110 coupons

GS1 DataBar 8110 Specific Disable

Selection	Programming Tag Sequence	Setting
Don't 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	

GS1 DataBar–E AI 8110 Specific Enable

Selection	Programming Tag Sequence	Setting
Don't Enable	Programming Mode, Hex 7, Hex 1, Hex 2, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 1, Hex 3, Save and Reset	

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	

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	

Expand E to EAN13

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	

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	

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.

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	

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	

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	

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	

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

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

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

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

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

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

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

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

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	

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	

Ignore RS232 Commands from POS

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 0, Hex A, Hex 0	Default
Enable	Programming Mode, Hex 7, Hex 0, Hex A, Hex 1	

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	

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	

GS1 DataBar–E AI 8110 Specific Enable

Selection	Programming Tag Sequence	Setting
Disable	Programming Mode, Hex 7, Hex 1, Hex 2, Save and Reset	Default
Enable	Programming Mode, Hex 7, Hex 1, Hex 3, Save and Reset	

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	

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	

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	

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

ASCII Code Chart

00	NULL	**10**	DLE	**20**	SP	**30**	0	**40**	@	**50**	P	**60**		**70**	p
01	SOH	**11**	DC1	**21**	!	**31**	1	**41**	A	**51**	Q	**61**	a	**71**	q
02	STX	**12**	DC2	**22**	"	**32**	2	**42**	B	**52**	R	**62**	b	**72**	r
03	ETX	**13**	DC3	**23**	#	**33**	3	**43**	C	**53**	S	**63**	c	**73**	s
04	EOT	**14**	DC4	**24**	$	**34**	4	**44**	D	**54**	T	**64**	d	**74**	t
05	ENQ	**15**	NAK	**25**	%	**35**	5	**45**	E	**55**	U	**65**	e	**75**	u
06	ACK	**16**	SYN	**26**	&	**36**	6	**46**	F	**56**	V	**66**	f	**76**	v
07	BEL	**17**	ETB	**27**	'	**37**	7	**47**	G	**57**	W	**67**	g	**77**	w
08	BS	**18**	CAN	**28**	(	**38**	8	**48**	H	**58**	X	**68**	h	**78**	x
09	HT	**19**	EM	**29**	)	**39**	9	**49**	I	**59**	Y	**69**	i	**79**	y
0A	LF	**1A**	SUB	**2A**	*	**3A**	:	**4A**	J	**5A**	Z	**6A**	j	**7A**	z
0B	VT	**1B**	ESC	**2B**	+	**3B**	;	**4B**	K	**5B**	[	**6B**	k	**7B**	{
0C	FF	**1C**	FS	**2C**	,	**3C**	<	**4C**	L	**5C**	\	**6C**	l	**7C**	|
0D	CR	**1D**	GS	**2D**	-	**3D**	=	**4D**	M	**5D**	]	**6D**	m	**7D**	}
0E	S0	**1E**	RS	**2E**	.	**3E**	>	**4E**	N	**5E**	^	**6E**	n	**7E**	~
0F	S1	**1F**	US	**2F**	/	**3F**	?	**4F**	O	**5F**	_	**6F**	o	**7F**	DEL

R0040

Special Programming

Some of the NCR 7884 features require programming that is somewhat different than the normal programming. The following sections describe the Special Programming options.

Set Current Parameters to Default Values

The NCR 7884 comes from the factory with specific default values already determined for the various programming parameters. Sometimes other default values are desired. This function permits the current parameter settings to be stored as soft default values. When this is done, scanning the **Default** tag sets the parameters to these values rather than the factory defined values.

Enable Soft Defaults

Scan the following sequence of programming tags.

1. **Diagnostic Mode**, **Hex 5**, and **Hex E**—sets current parameters as soft defaults
2. **Program Mode**, **Hex 3**, **Hex 4**, and **Hex E**—enables Soft Default option
3. **Save and Reset**—saves the program change

   One of three voice messages is given.

   - "***Set New Default Parameter 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 1, Hex 3**, **Hex F**, **Hex 1**, **Save and Reset**
- Disable Converting UPC–E to EAN–13—**Program Mode**, **Hex 1**, **Hex 3**, **Hex F, Hex 0, Save and Reset**

Check Digits on Price Fields

UPC–A and EAN–13 barcodes which begin with a Number System 2 can contain either a 4 or 5–digit price or weight value.

To increase the security of reading a price or weight 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 does NOT read it. It is 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	

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	

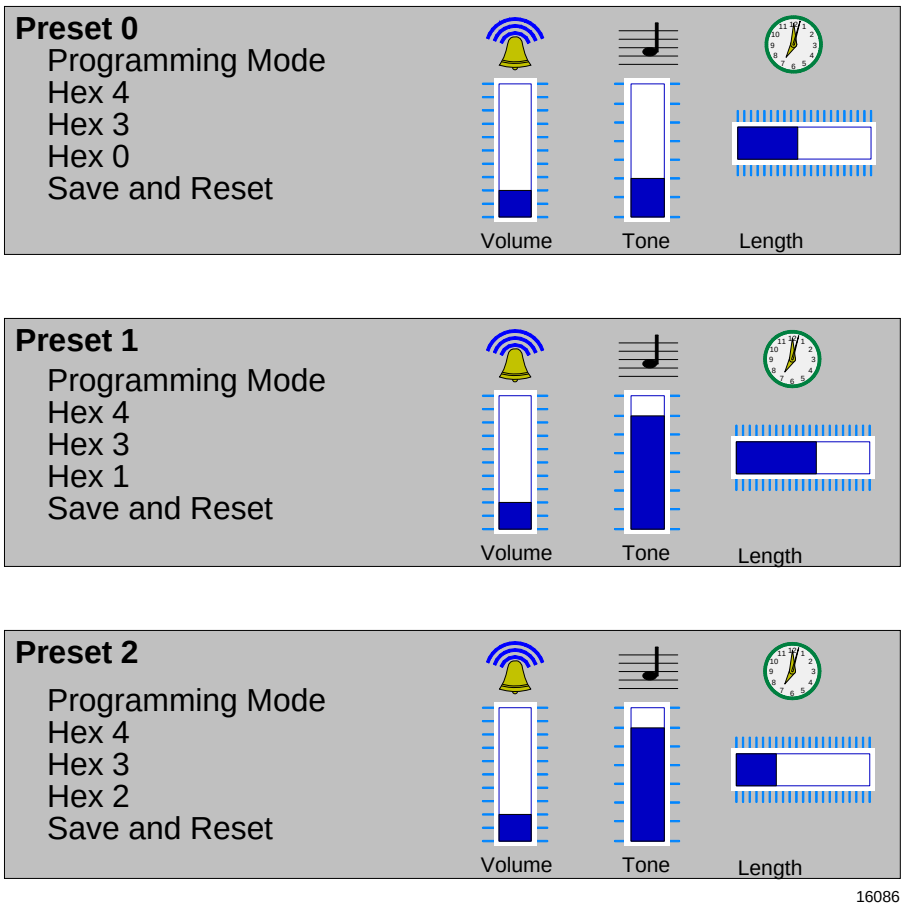
Enable/Disable Code–128 Partials

When decoding Code 128 using partial scans, sometimes a Decode error is generated. However, several conditions must occur to cause the misread. If having problems reading Code 128 bar codes, try disabling partials.

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

Good Read Tone

The Good Read tone is composed of three elements: volume, frequency (tone), and length. Three different presets, each with a different combination of volume, tone, and tone length settings, are available that permit the Good Read tone to be set by scanning just one sequence of Programming Tags. Preset 0 is the default for this parameter.



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 NCR 7884 can read four types of GS1 Databar barcodes.

GS1 Databar–14

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

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. RSS 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 to 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

Enable/Disable GS1 DataBar

When programming the GS1 DataBar feature, the programming tags must be the first tags scanned after applying power to the NCR 7884.

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

Send GS1 DataBar–14 as EAN–13 Data

When enabled, the scanner sends the last 13 digits of the GS1 DataBar–14 data to the host terminal. The **Default** tag does not change this parameter.

- Enable—**Program Mode**, **Hex 6**, **Hex 0**, **Hex 5**, and **Save and Reset**.
- Disable—**Program Mode**, **Hex 6**, **Hex 0**, **Hex 4**, and **Save and Reset**.

Host Terminal Coupon Interface Parameters

Certain parameters must be set to permit the unit to transmit coupon data to the host terminal. These are in addition to the general parameters that are required for other scanner/scale functions.

Note: Selection of optional Add-On bar codes may require additional programming.

To set the Coupon Interface Parameters, perform a series of steps in a designated order. First, set the Host Terminal Coupon Select 1 parameters, and then set the Host Terminal Coupon Select 2 parameters. Select one of the parameters below to display the procedure.

Host Terminal Coupon Select 1

1. Scan the **Program Mode** tag.
2. Scan the **Hex 3** and **Hex 8** tags to select this parameter.
3. Scan a **Hex 0** through **Hex F** tag to set a Coupon Select 1 parameter.

Coupon Select 1 Parameter	Disable	Enable
Coupon with P5 optional	Hex 0	Hex 1
Coupon with 128 Add–On optional	Hex 2	Hex 3
Coupon with 128 Add–On mandatory	Hex 4	Hex 5

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

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

Suggested Programming Sequence

- Program Mode
- Hex 3 and Hex 8
- Hex 1
- Save and Reset
- Program Mode
- Hex 3 and Hex 8
- Hex 3

Scan **Program Mode**, **Hex 1**, **Hex 7**, **Hex F**, **Hex 0**, and **Save and Reset** tags to complete the programming function.

Note: Scanning the **Default** tag resets all options.

Host Terminal Coupon Select 2

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

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

4. Scan the **Save and Reset** tag to save the program.

   Note: Repeat steps 1 through 4 to set the other option, if needed.

5. Scan **Program Mode**, **Hex 1**, **Hex 7**, **Hex F**, **Hex 0**, and **Save and Reset** tags to complete the programming function.

Note: Scanning the **Default** tag resets all options.

Voice Messages—Enable/Disable

The NCR 7884 uses voice messages for diagnostics, scale calibration, and clerk messages. If voice messages are enabled, they are heard at the appropriate time; if they are disabled, the beep tones are heard instead. When voice messages are disabled, the NCR 7884 uses the scale display to indicate error conditions. To enable or disable voice messages, scan the following sequence of programming tags. These tags must be the first tags scanned after applying power to the unit.

All Voice Messages Off/On

1. **Program Mode**
2. **Hex 3**
3. **Hex 3**
4. **Hex D**
5. **Save and Reset**

Clerk Messages On

1. **Program Mode**
2. **Hex 3**
3. **Hex 3**
4. **Hex 1**
5. **Save and Reset**

Clerk Messages Off

1. **Program Mode**
2. **Hex 3**
3. **Hex 3**
4. **Hex 0**
5. **Save and Reset**

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

Following are the three clerk messages.

- Scale failed, clean under scale deck
- Scale failed, code 5, clean under scale deck
  - Next, do scale calibration
  - Next, change scale
- Scale failed, code 4
  - Stop checkstand mechanical vibration
  - Next, change scale

Voice Volume

To change the volume of the voice (speech) on the NCR 7884, scan the following tags.

- **Program Mode, Hex 5, Hex 7, Hex 0, Save and Reset**—Maximum voice volume
- **Program Mode, Hex 5, Hex 7, Hex 1, Save and Reset**—High voice volume
- **Program Mode, Hex 5, Hex 7, Hex 2, Save and Reset**—Medium voice volume
- **Program Mode, Hex 5, Hex 7, Hex 3, Save and Reset**—Minimum voice volume

Volume Adjust Button

The Volume Adjust Button on the Operator Display Panel changes the Good Read tone volume and frequency (tone). This button can be programmed to work in various ways.

Volume Levels

There are eight standard volume settings in the NCR 7884. 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 NCR 7884 is shipped from the factory with this parameter disabled. The default setting of the NCR 7884 is eight volume levels.

- Enable—**Program Mode, Hex 4, Hex 2, Hex 5, and Save and Reset**
- Disable—**Program Mode, Hex 4, Hex 2, Hex 4, and Save and Reset**

Enable/Disable Volume Adjust Button

Through programming, the Volume Adjust button can be enabled or disabled. If disabled, the Good Read tone volume and tone are set using the various programming tags; and pressing the button does not change the Good Read tone. If the Volume Adjust Button is disabled, be sure to set the volume, tone, and tone length to the desired settings first.

Note: Scanning the **Default** tag enables the Volume Adjust Button.

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

Enable Volume Adjust Button

To enable the Volume Adjust button, scan the following sequence of programming tags. These tags must scanned first after applying power to the NCR 7884.

1. **Program Mode**—puts scanner in the programming mode
2. **Hex 3**, **Hex E**, **Hex 1**—enables the Volume Adjust button
3. **Save and Reset—**stores the enabled setting, and then resets the scanner

Disable Volume Adjust Button

If you are happy with the current volume, frequency and tone length, then power cycle the scanner, scan the Program Mode barcode, and go to step 5, below.

Otherwise, scan the following barcodes to change the desired parameter(s):

1. Program Mode - starts the scanner in the programming mode
   - Hex 1, Hex 1 — go to mode for changing Good Tone parameters
   - Hex A, Hex 1 — turns on Good Read tone if was previously turned off.

   (Scanner enters base program mode here).
2. Hex 1, Hex 1 — go to mode for changing Good Tone parameters
   - Hex B — repeatedly scan this tag until you reach the desired tone frequency
   - END — goes back to base program mode
3. Hex 1, Hex 1 — go to mode for changing Good Tone parameters.
   - Hex C — repeatedly scan this tag until you reach the desired tone length
   - END — goes back to base program mode
4. Hex 1, Hex 1 — go to mode for changing Good Tone parameters.
   - Hex D — repeatedly scan this tag until you reach the desired tone volume
   - END — go back to base program mode
5. Hex 3, Hex E, Hex 0 — Disables the volume adjust button
6. Save & Reset tag — Stores the Good Tone parameters and the Volume adjust settings.

Scanner then performs a reset after that.

Single Volume Adjust Barcode

There is a single Volume Adjustment barcode in the Programming Tag booklet, NCR Scanner Programming Tags (BST0–2121–74) available at the support link at www.ncr.com. (The tags are also included in Appendix B of this document.). This barcode functions exactly in the same manner as pressing the volume adjust button, except the disable Volume Adjust Button sequence has no effect when reading this barcode. The volume obtained by using this barcode is temporary. That is, if used outside a Program Mode/Save & Reset sequence, the original programmed volume level returns when the scanner is power cycled. But if the Volume Adjustment barcode is scanned within a Program Mode/Save&Reset sequence, or the Reset barcode from the booklet is scanned, the volume is saved as if it had been changed by using Worksheet 11.

PACESETTER Functions

The PACESETTER function increases the performance of the NCR 7884. It can also identify and fix certain bar code problems. Two versions of PACESETTER are available. PACESETTER III is a standard feature on the NCR 7884.

PACESETTER III

The PACESETTER III feature of the NCR 7884 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.

Firmware Flashing

Firmware flashing permits updates to be installed to the scanner firmware without replacing the actual chip on the Digital Board. The NCR 7884 must be connected to a PC through an RS-232 cable or USB cable. Also, the PC must contain the NCR RealPOS Scanner Tool Suite and the new scanner firmware file.

Obtaining the Utility and New Firmware

New firmware for the NCR 7884 is available on the NCR web site. It is flashed to the NCR 7884 using the Scanner Tool Suite. No version of the NCR 7884 scanner uses the older EasyFlash utility.

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 NCR 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 NCR Flash Tool and all its components will be located at `C:\Program Files\NCR\RealScan\NCRRSFlash` directory, and a shortcut to the Flash ToolI 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.

Firmware Version

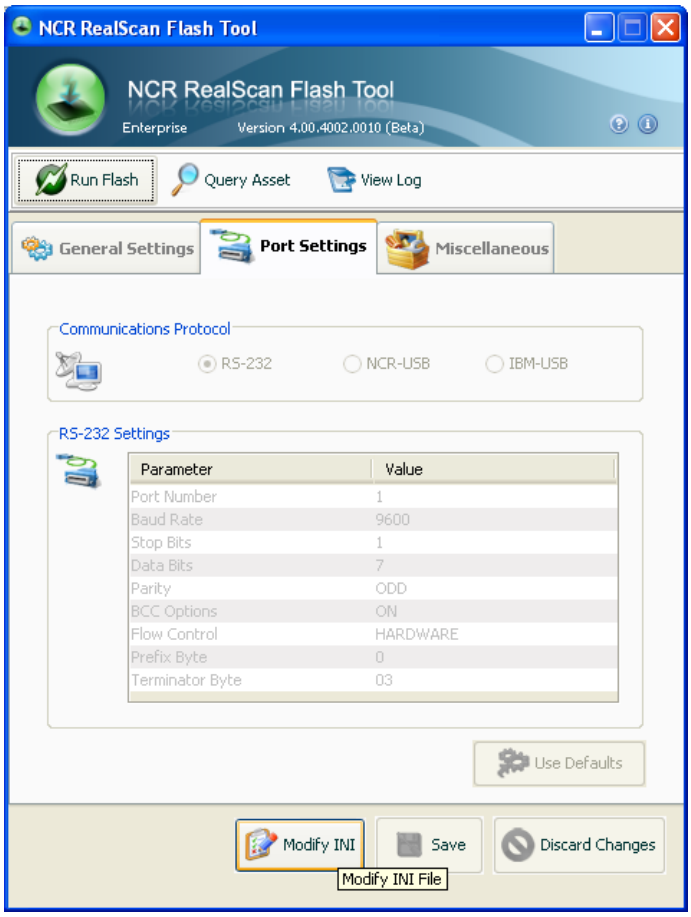
To identify the firmware already in the scanner, scan the **Diagnostic Mode**, **Hex 4**, and **Hex A** programming tags. These must be the first tags scanned after applying power to the unit. The NCR 7884 gives a voice message containing the 497–xxxxxxx number of its firmware.

Firmware Flashing Procedure

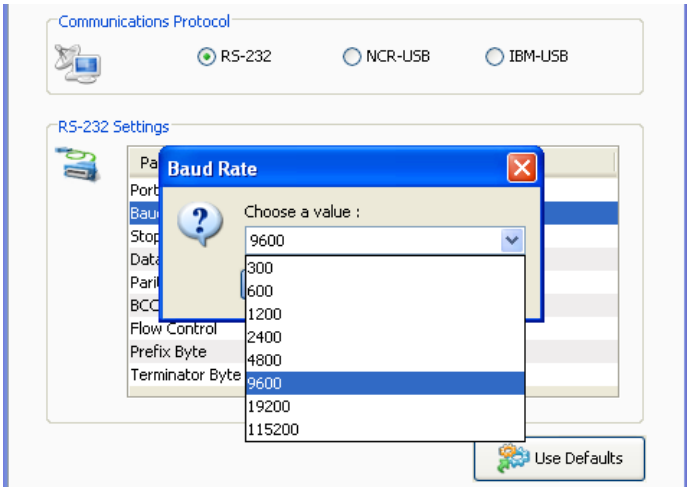
Perform the following procedure to flash firmware on the NCR 7884:

1. Apply power to the NCR 7884.
2. Connect the scanner to the PC host terminal using an RS-232 cable or USB cable appropriate for NCR 7884 scanner. The RS232 cable is part number 497-0300422 (1416-C019-004), and the USB cable is 497-0445079 (1432-C158-0040).
3. Run NCR Flash Tool.

4. 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.

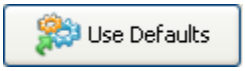


5. Select one of the radio buttons under the Communications Protocol Group within the Port Settings tab. For RS-232 communication protocol, you can configure more settings under the RS-232 Settings group. Right-click on one of the cells in the table to either change the parameter value or restore it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

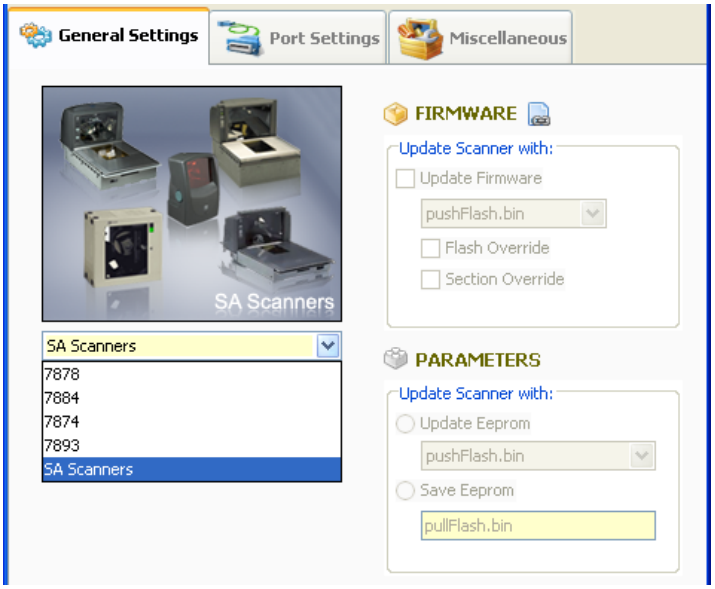


6. Select **Save** after making changes to the settings.

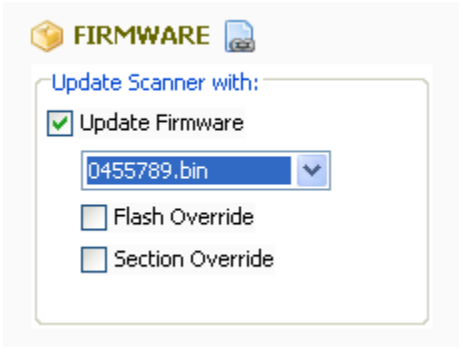
7. Select **Use Defaults** if default settings are preferred. A message box will display informing that all settings will be set to default. Select **Yes** to confirm.



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

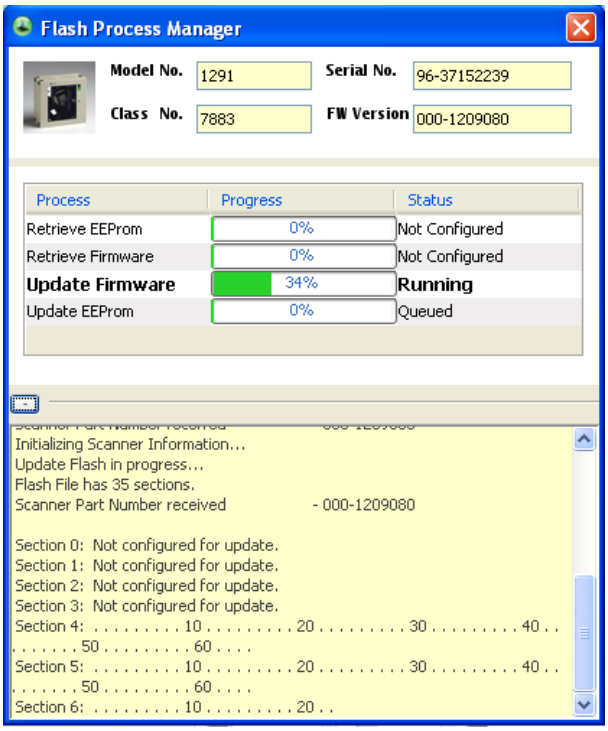


9. Select **Modify INI** after a scanner model has been chosen. Select the **Update Firmware** checkbox and choose the firmware BIN file you want to flash to the scanner. For your preference you may enable Flash Override and Section Override by selecting their checkboxes. Select **Save** to save and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



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

11. 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.



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

NCR RealPOS Single Window Scanner Flash Drive Support

The NCR 7884 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 RealPOS remote flash update and configuration tools (NCR RealPOS Scanner Tool Suite). The major difference being that the required scanner support files exists 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 is 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 is to 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).

Flash Drive Types

The following flash drive has been tested and certified by NCR to work with the USB peripheral port of the NCR 7884.

- NCR 603–9014783 Flash Drive (1GB, Imation Pivot Model 18408)

Other USB mass storage Flash drives ideally also work; however, NCR recommends comprehensive integration testing before deploying any device other than the one listed above.

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

Note: Do not use an external USB Hard Drive (3.5" or 2.5") to prep the scanner. The Host Terminal Software may crash or may freeze up the whole system.

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. The Host Terminal Software 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

This chapter contains troubleshooting charts that are designed to locate and correct certain problems without the aid of a trained technician. If the problem cannot be corrected using these charts, a trained technician can use Scan Doctor to help identify a faulty component.

NCR 7884 Diagnostics and Troubleshooting

There are two kinds of diagnostics that run on each scanner unit.

- Level 0 Diagnostics
- Operational Diagnostics

Level 0 Diagnostics run every time the scanner unit is powered up. This determines if the unit is operational. The Operational Diagnostics continuously check laser diode, spinner motor, communications, and barcode reading.

Scanner Diagnostic Codes

Level 0 diagnostics are run every time the NCR 7884 is powered up. This diagnostic determines if the unit is operational. This diagnostic also runs when the unit is in **Base Programming Mode** and when the **Default**, **Save and Reset**, or **Abort** tag is read.

The following table lists the scanner error codes and problems that may be found by the Level 0 or Operational diagnostics:

Error Codes	Problem	Suspect Component/s	Light Bar Patterns
2	RAM - Write/Read failure	Digital Board	LED 1 = red LED 2 = orange LED 3 = orange LED 4 = orange
5	Motor - Not running at proper speed	Optics Engine	LED 1 = red LED 2 = blue LED 3 = blue
6	EEPROM - Cannot load contents into memory	Digital Board	LED 1 = red LED 2 = blue LED 3 = blue LED 4 = blue
9	IBM mode - scanner does not detect POS terminal TRMPWR voltage, scanner may still scan or weigh	Cable not connected from Scanner to POS POS not turned on IBM Port problem	LED 1 = red LED 2 = green LED 3 = green
11	Laser - Not turned on	Digital Board Optics Engine	LED 1 = red LED 2 = green LED 3 = green LED 4 = green LED 5 = green
12	ROM - Sum check failure	Digital Board	LED 1 = red LED 2 = red
13	FPGA Failure (missing/failed part)	Digital Board	LED 1 = red LED 2 = red LED 3 = red

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Note: LED 1 may be on the right or the left hand side of your scanner, depending on the scanner model and customer mounting configuration. When asking a remote user for the diagnostic code, consider that they may be reading the code backwards. The codes have been designed so that it is not possible to misinterpret the code when reversed.

Isolating Sensormatic® Problems

Problem	Possible Cause	Corrective Action
Does not deactivate tags	Sensormatic ® ScanMax ™ Pro Controller not turned on	Check the On/Off switch on the ScanMax ™ Pro Controller if it is turned on.
Does not deactivate tags	Faulty Sensormatic ® Interlock Cable	Replace Sensormatic ® Interlock Cable.
Does not deactivate tags	Faulty Sensormatic ® ScanMax ™ Antenna or Antenna Cable	Replace Sensormatic ® ScanMax ™ Antenna or Antenna Cable.
Does not deactivate tags	Faulty Controller	Replace Sensormatic ® ScanMax ™ Pro Controller.
Red Status Indicator flashes rapidly	Sensormatic ® ScanMax ™ Pro Controller not turned on	Check the On/Off switch on the Sc anMax ™ Pro Contoller if it is turned on.

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A

Appendix A: Imager Feature (F150)

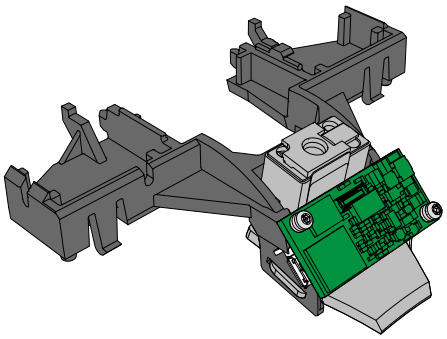
Introduction

The Imaging Assembly feature (7884–F150) provides imaging capabilities for the NCR RealPOS™ Single Window Scanner (7884).

30983

Components

The 7884-F150 provides the following components:



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Item	Part Number	Quantity	Part Description
1	497–0475823	1	Hybrid Front Bezel
2	006–8617134	1	Imager
3	497–0476123	1	Collector Mount
4	497–0473049	1	Decoder Board
5	497–0475721	1	Imager Cable
6	006–8616770	1	Imager Flex Circuit
7	006–8616902	1	Imager Flex Keeper
8	006–8617311	4	Screw—M2.2x5 mm Oval head, Zinc–plated, Thread–Forming, Plastite
9	497–0475724	1	Connector Boot

Programming Instructions

Imager Module (F150) Firmware Functions

The cashier–facing Imager Module of the 7884 scanner provides several functionalities to interact well with the 7884.

Imager Interlock

The Imager Interlock is a feature of the Imager that activates whenever both the imager and the laser see the same bar code at the same one time. Only one bar code is sent to the POS by the scanner. This feature must not be confused with the EAS Interlock or Same Item Lockout.

Laser Gate Control

The Laser Gate Control is a configurable feature of the Imager in which the laser does not enable or activate the imager unless the laser sees activity in the laser scan field.

Note: For more information on the imager module, see *NCR K150/F150 Imaging Module Programming Guide* (B005–0000–2166) at http://info.ncr.com.

Firmware Requirements

Note: The minimum firmware version is **497–0475946.**

Before performing any programming procedures to the 7884 and Imager Module:

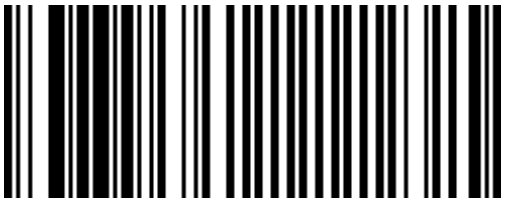
1. Make sure to identify the firmware version of your 7884.
2. If the firmware installed on your scanner is not the required version, re–flash the required firmware to the scanner,
   - using a PC or a host terminal — requires Flash Tool
   - using a USB flash drive — requires Flash Drive Prep Tool

The procedures are explained in the following sections.

Identify the Firmware Version of 7884

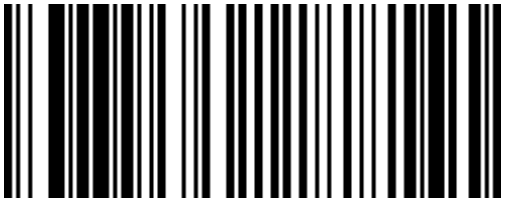
To identify the firmware already in the scanner, scan the **Diagnostic Mode**, **Hex 4**, and **Hex A** programming tags. These must be the first tags scanned after applying power to the unit. The NCR 7884 gives a voice message containing the 497–xxxxxxx number of its firmware.

Diagnostic Mode



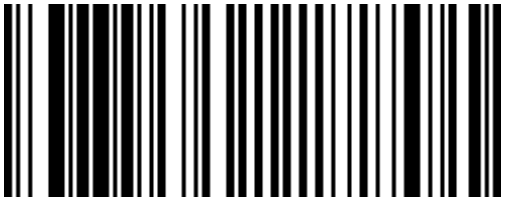
R0041

Hex 4



R0052

Hex A



R0058

Re–flash the Required Firmware to the 7884

You can perform firmware flashing using a PC/host terminal or a USB flash drive. The procedures are explained in the next sections. For detailed information, refer to the following:

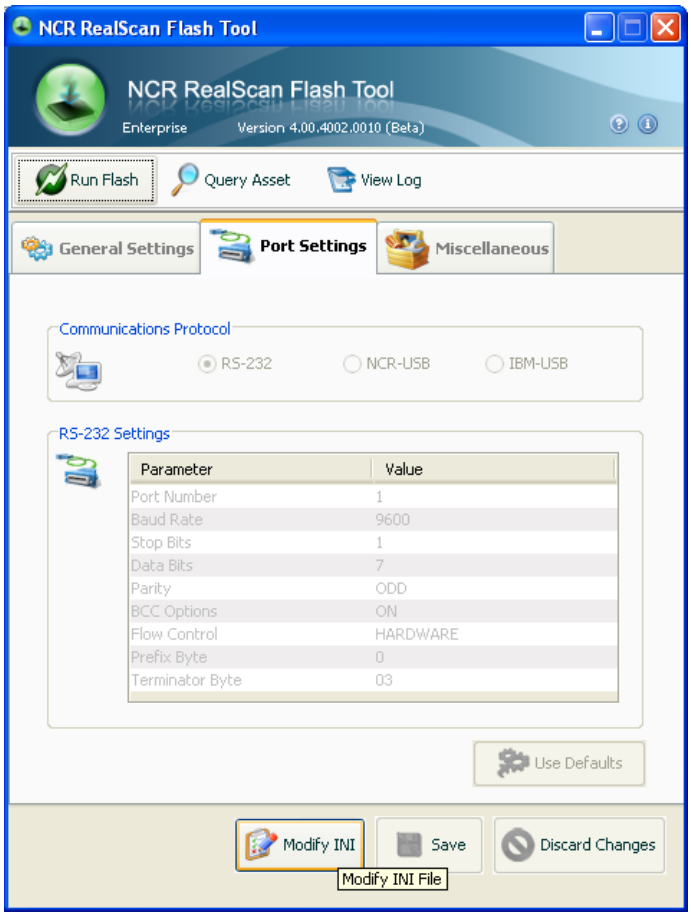
- *NCR RealPOS™ Scanner Tool Suite Guide* (B005–0000–1883)
- *NCR RealPOS™ Single Window Scanner (7884) User Guide* (B005–0000–1819)
- http://www5.ncr.com/support/support_drivers_patches.asp?Class=retail_RealScan

  This website contains the software tools needed for firmware flashing: Flash Tool and Flash Drive Prep Tool.

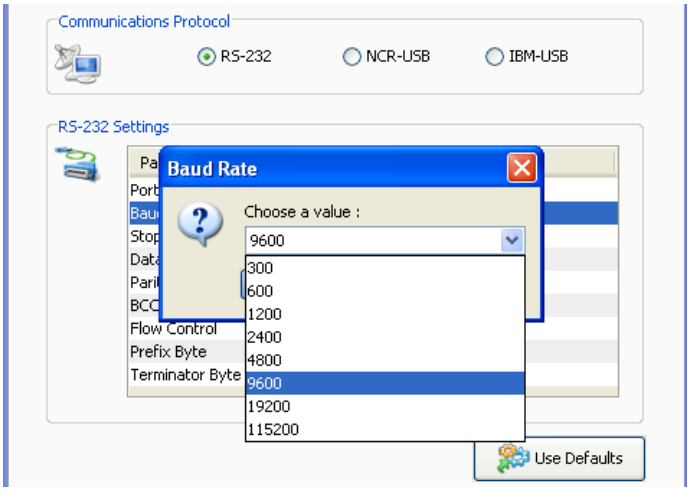
Firmware Flashing using a PC or Host Terminal

1. Apply power to the NCR 7884.
2. Connect the scanner to the PC host terminal using an RS-232 cable or USB cable appropriate for NCR 7884 scanner.
   - RS232 cable — part number 497-0300422 (1416-C019-004)
   - USB cable — 497-0445079 (1432-C158-0040)
3. Run NCR Flash Tool.

4. 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.

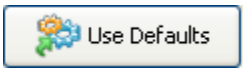


5. Select one of the radio buttons under the Communications Protocol Group within the Port Settings tab. For RS-232 communication protocol, you can configure more settings under the RS-232 Settings group. Right-click on one of the cells in the table to either change the parameter value or restore it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

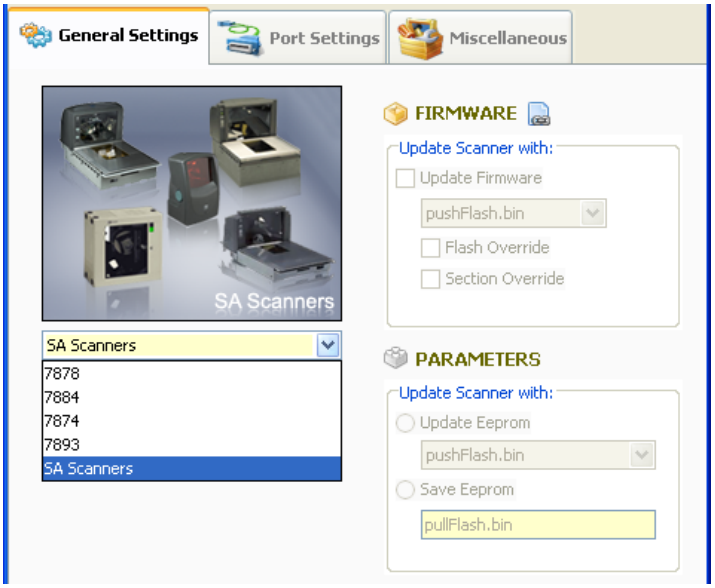


6. Select **Save** after making changes to the settings.

7. 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.



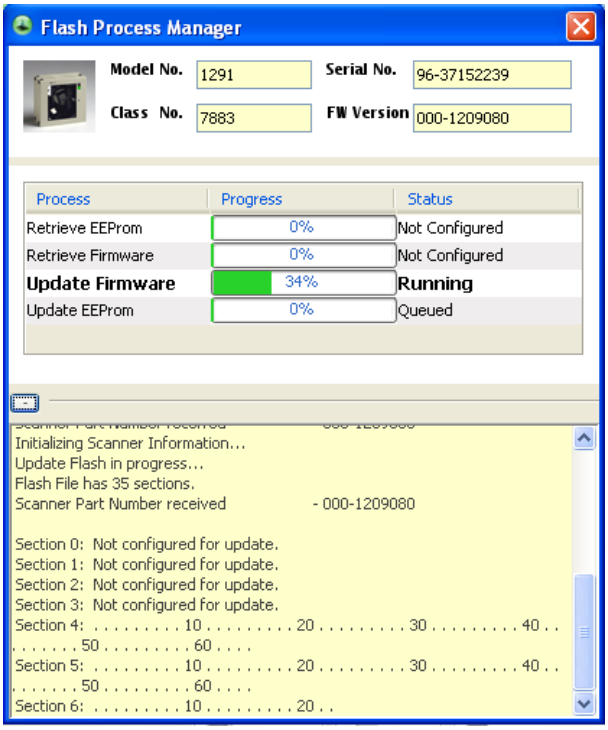
8. After configuring the necessary port settings, choose the scanner you want to flash the firmware to.



9. 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.

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

11. 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.



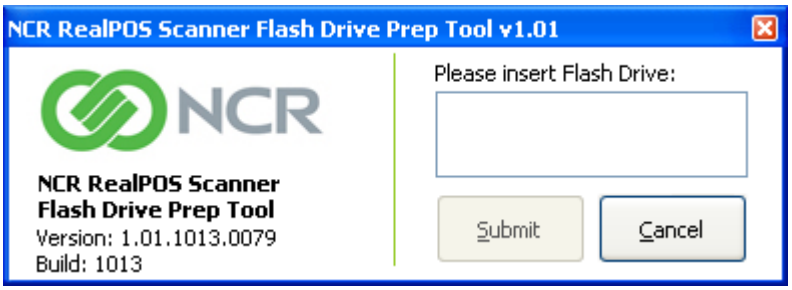
12. Exit the NCR Flash Tool application and disconnect the scanner from the host terminal once firmware flashing is finished.

Firmware Flashing using a USB Flash Drive

In order to minimize the need for a PC at the scanner site, the 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.

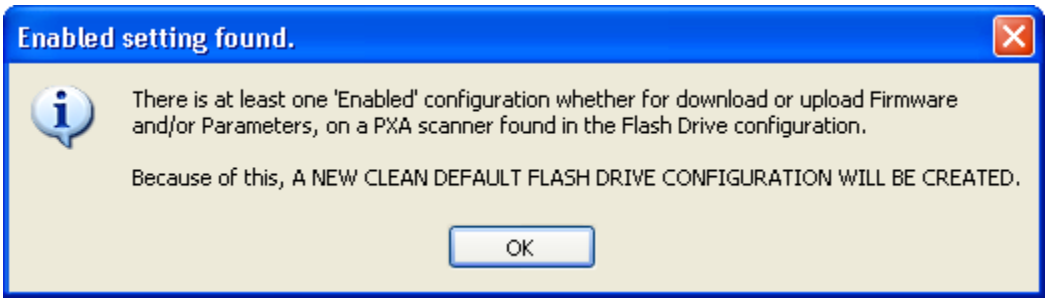
Servicing or installing a scanner by flash drive is not a remote operation. A technician will be needed on-site to attach the flash drive to the scanner. A flash drive firmware upgrade is the fastest available means for upgrading the firmware of a scanner.

1. Select the Flash Drive Prep Tool icon. The following window displays.

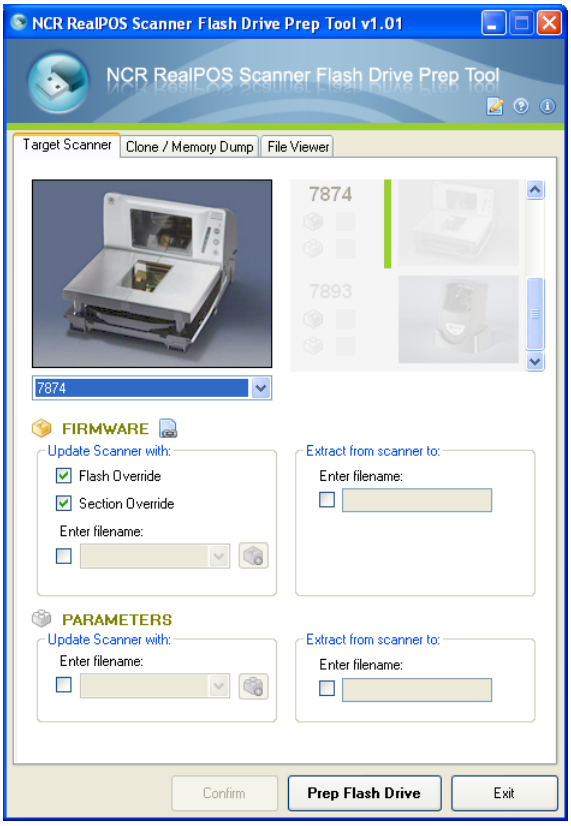


2. Insert the flash drive to be used. The application automatically detects the flash drive installed.

3. Select **Submit**. The following window displays.

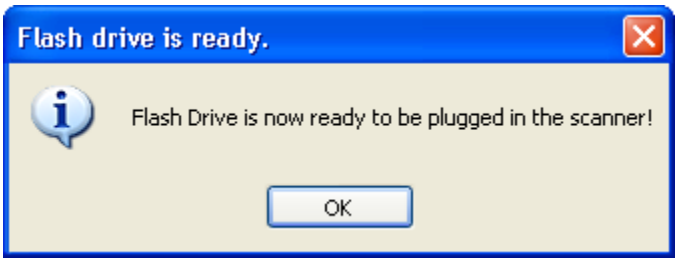


4. Select **OK**. The following window displays.



5. On the **Target Scanner** tab, select **7884**.
6. On the **FIRMWARE** groupbox, select the checkbox under **Update scanner with:**.
7. Select the Firmware from the dropdown menu.

8. Select the **Prep Flash Drive** button. The application then preps the flash drive. The following message box displays after a successful flash drive prep.



   The **Down** arrow of the 1st line in the Scanner Configuration Preview Panel for the 7884 highlights.

9. Right-click the **Safely Remove Hardware** icon on the system tray to safely remove the flash drive. A Safe to Remove Hardware balloon message displays near the system tray.
10. Plug the flash drive in the scanner's USB peripheral port. The following lists the different actions the scanner initiates:

    a. The scanner gives off a triple beep of ascending frequency, indicating that the USB peripheral port recognized the flash drive and was able to enumerate. The triple beep sound off regardless of the contents of the flash drive. If the scanner fails to give off the triple beep, this indicates a USB peripheral port failure or the USB peripheral port was not able to communicate with the flash drive.

    b. The scanner speaks "Load program in 3 seconds...2...1...0...". The scanner resets after this message.

    c. The scanner beeps and a triple beep of ascending frequency follows.

    d. The five LEDs light up from bottom to top (for the 7884) while in flash mode. The scanner reboots after a successful firmware download.

    e. The scanner beeps and a triple beep of ascending frequency follows.

    f. The scanner gives off a low frequency triple beep, which indicates that the flash drive can be safely removed.

11. Unplug the flash drive from the scanner's USB peripheral port. The scanner then gives off a descending triple beep sound, which indicates a successful shutdown of the flash drive's firmware.

Program the 7884

The 7884 must be programmed so it can perform the following:

- Beep whenever 7884 receives valid bar code data from the new Imager module through the USB host port; by default, the scanner does not beep when Imager receives bar codes
- Permit the pass–through of 2D data to the POS without the 7884 scanner itself having the capability to read that type of bar code
- Enable Imager (F150) mode

IMPORTANT

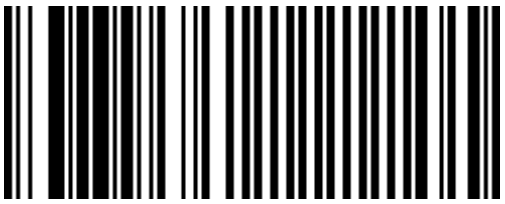
The following 7884 programming instructions are ONLY meant to enable the newly installed imager module.

They are NOT intended to be a substitute for the customer's already-programmed parameters.

Do NOT scan the NCR 7884 DEFAULT barcode at any time when installing the Imager Module or the Customer's original parameters will be lost and their scanners will stop working.

To program the 7884 scanner, scan the following bar codes:

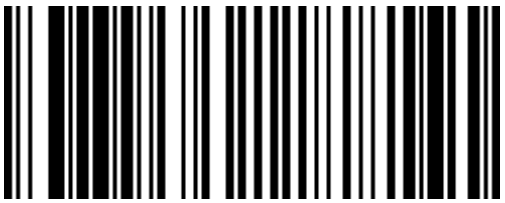
Programming Mode



R0042

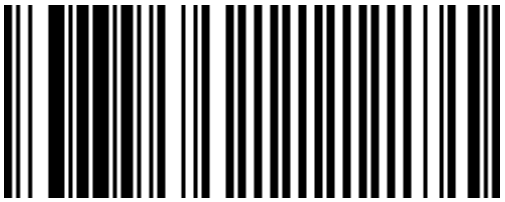
Activate Beep Soundsat HH Input

Hex 4



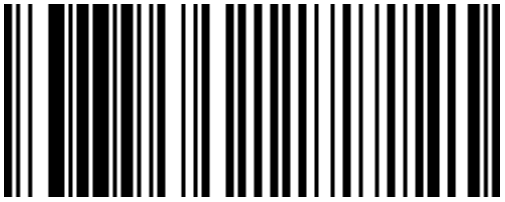
R0052

Hex 0



R0048

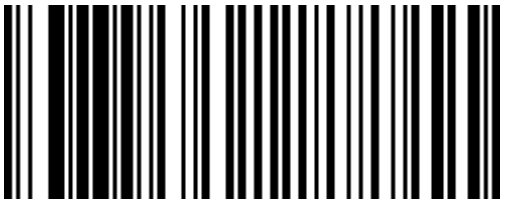
Hex 5



R0053

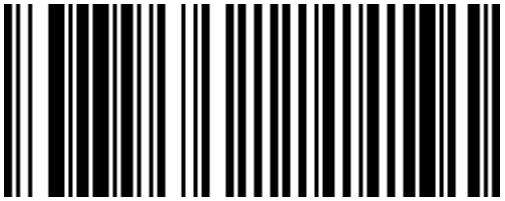
Enable Pass–Through of 2D Bar Codes

Hex 7



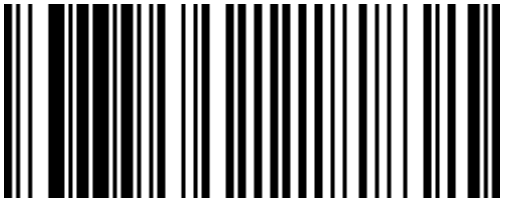
R0055

Hex F



R0063

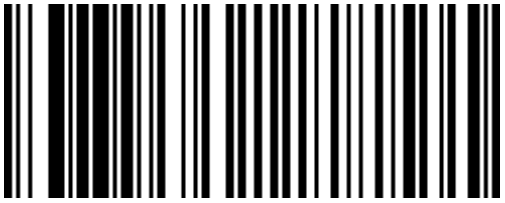
Hex 9



R0057

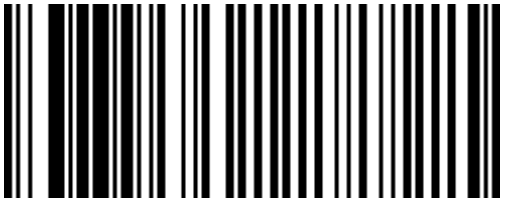
Enable Imager Feature F150

Hex 8



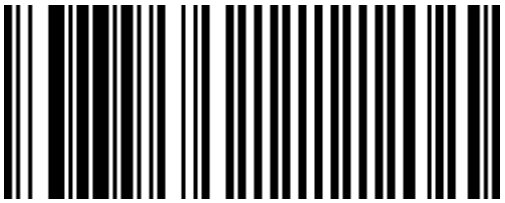
R0056

Hex B



R0059

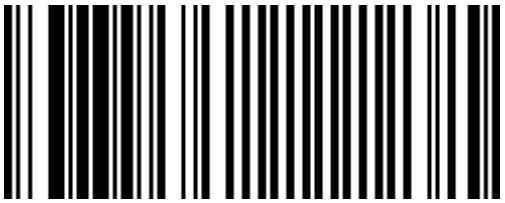
Hex 1



R0049

Enable 2D Pass–Through Function of All 2D Data

Save and Reset



R0044

Note: The pass–through PDF data is transmitted in ASCII format when RS–232 Serial or NCR USB is in use. This is the data format required by NCR OPOS for 2D barcodes.

IMPORTANT

BEWARE OF THIS

If the imager has 128 enabled, it is possible it sees, reads, and transmits the NCR programming tag to the 7884 USB port as data.

When this happens, the 7884 gives a *Bad Tone* when you scan a programming barcode. If this happens, cover up the imager's camera with your finger so only the laser scanner (7884) can see the programming barcode.

Program the Imager Module

The Imager provides only a limited number of symbologies enabled from the factory which includes the following:

- **UPC–A**
- **UPC–E**
- **EAN–8**
- **EAN–13**
- **PDF417**
- **GS1 Databar 14 (RSS–14)**
- **GS1 Databar Expanded (RSS–14 Expanded)**
- **GS1 Databar Coupons**

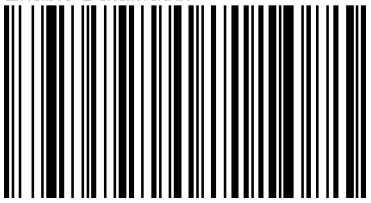
To enable other symbologies, you need to scan the corresponding bar codes in the following pages. Take note of the following reminders when scanning the bar codes.

- Scan the bar codes in the window of the 7884 so the integrated Imager can see and read them.
- You might need to fold the pages such that only one bar code shows at a time.
- You do NOT need to scan all of the bar codes, scan only the ones you need.
- There is **NO** audible feedback (beep) when the imager reads these bar codes, so hold the programming bar code in front of the Imager for a couple of seconds.
- To verify that the Imager successfully reads the programming tags, scan any sample 2D symbologies found in the "Sample 2D Bar Codes" section.

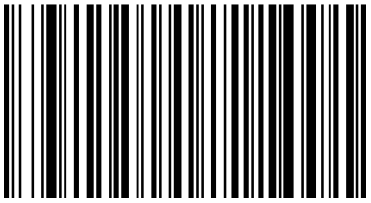
Note: For advanced configurations, see *NCR K150/F150 Imaging Module User Guide* (B005-0000-2166) on *http://info.ncr.com.*

Enable other Bar Code Symbologies

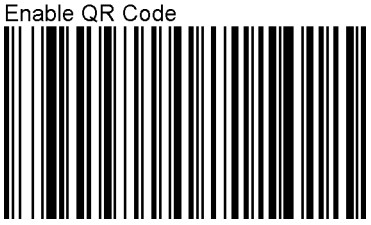
Enable DataMatrix



Enable Aztec

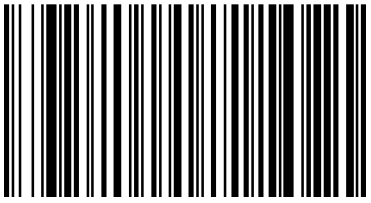


Enable QR Code

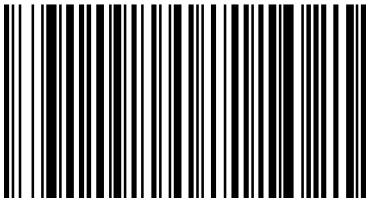


Note: This bar code also enables MicroQR.

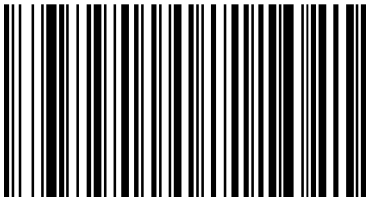
Enable MaxiCode



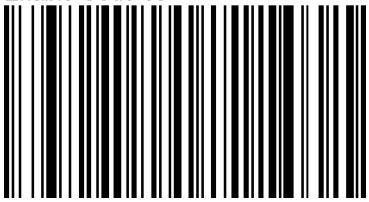
Enable Code 128



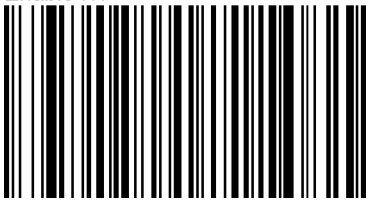
Enable UCC/EAN-128



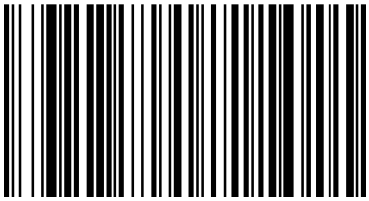
Enable Code 39



Enable ITF



Enable MicroPDF417



Linear codes are combined with a unique 2D composite component to form a new class called GS1 Composite symbology. GS1 Composite symbologies permit the co–existence of symbologies already in use.

You need to scan the following two bar codes to enable this function.

Enable GS1 Composite

Enable GS1 Composite with UPC

Sample 2D Bar Codes

Composite

Composite Symbology

(01) 9 9012345 67890 9
(17) 060912 (21) 19AN47954769

Aztec

Sample Aztec

PDF417

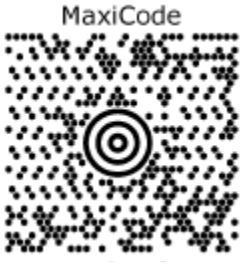
Customer 3

DataMatrix

Sample DataMatrix

QR Code

MaxiCode



B

Appendix B: Kits and Cables

Various kits and cables are available for use with the NCR 7884.

Kits

This section lists the different kits available for the NCR 7884.

Power Supply

The following power supplies are available for the NCR 7884.

Corporate ID	Description
7892–K111	Kit, US Power Supply
7892–K118	Kit, International Power Supply
7892–K119	Kit, UK Power Supply
7892–K125	Kit, Australia Power Supply
7892–K127	Kit, China/Philippines Power Supply
7892–K128	Kit, SEV Power Supply
7892–K129	US Power Supply with Twist Lock Power Cord
1416–C419–0030	US Twist Lock Cord (12xx Model)
1416–C420–0030	Japan Twist Lock Cord (12xx Model)
1416–C422–0030	Australia Twist Lock Cord (12xx Model)
1416–C408–0030	Swiss Twist Lock Cord (12xx Model)
1416–C321–0030	UK Twist Lock Cord (12xx Model)

Scanner Mount/Adapter Accessories

The following kits are available for different scanner mounts/adapters for the NCR 7884.

Corporate ID	Description
7884–K887	NCR RealPOS Single Window Scanner Vertical Bracket/Riser Mount
7880–K012	NCR 7883 Horizontal Mounting Adapter for 7880–K852 or 7880–K853 to an NCR 7880 size hole
7884–K918	NCR RealPOS Single Window Scanner Horizontal Plastic Mounting Adapter for an NCR 7880 size hole

Horizontal Top Cover

The following table lists the different glass options available for the Top Cover in Horizontal Mount configurations.

Corporate ID	Description
7884–F593	Everscan Glass Top Cover Assembly
7884–F602	Sapphire Glass Top Cover Assembly

Cables

The following section lists the different cables used to connect to the NCR 7884 using different host terminals.

NCR Host Terminals

The following table lists the different cables available to connect a NCR 7884 to NCR Host Terminals.

Host Terminal	Interface	Corporate ID	Length
NCR 7445, 7882	RS232	1416–C019–0040	4 meters (13.1 feet)
NCR 7448, 7451, 7455, 7460	RS232 & Power	1416–C653–0040	4 meters (13.1 feet)
NCR 7452, 7453	RS232 & Power	1416–C663–0040	4 meters (13.1 feet)

IBM Host Terminals

The following table lists the different cables available to connect a NCR 7884 to an IBM Host Terminal.

Host Terminal	Interface	Corporate ID	Length
PC	RS232, 9–Pin	1416–C019–0040	4 meters (13.1 feet)
IBM 4682, 4683, 4684, 4693	IBM Port 9B	1416–C070–0040	4 meters (13.1 feet)
IBM 46xx	IBM, Port 9B, & Power	1432–C694–0040	4 meters (13.1 feet)
IBM 4683, 4684	IBM 4683 Port 17	1432–C152–0040	4 meters (13.1 feet)
IBM 4694	IBM Port 9E	1416–C070–0040	4 meters (13.1 feet)

ICL Host Terminals

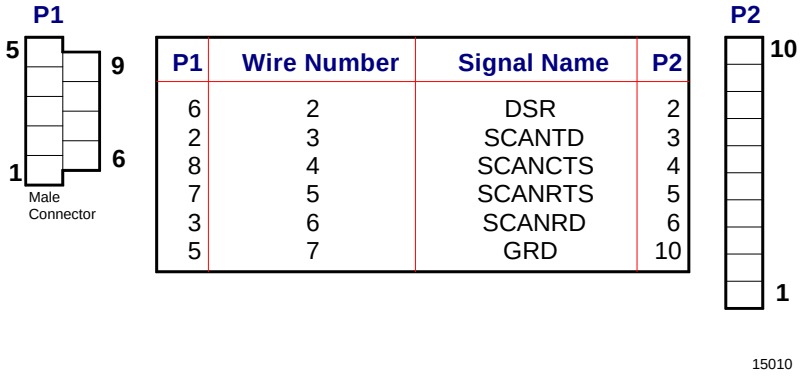
The following table lists the different cables available to connect a NCR 7884 to ICL Host Terminals.

Host Terminal	Interface	Corporate ID	Length
ICL Swift	RS232	1432–C512–0040	4 meters (13.1 feet)
Team POS 5000	RS232	1416–C019–0040	4 meters (13.1 feet)

Siemens Nixdorf Host Terminals

Only one cable is available to connect a NCR 7884 to Siemens Nixdorf Host Terminals.

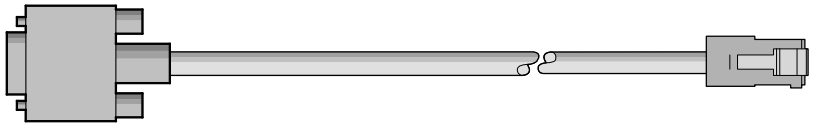
Host Terminal	Interface	Corporate ID	Length
Beetle	RS232	1416–C263–0040	4 meters (13.1 feet)

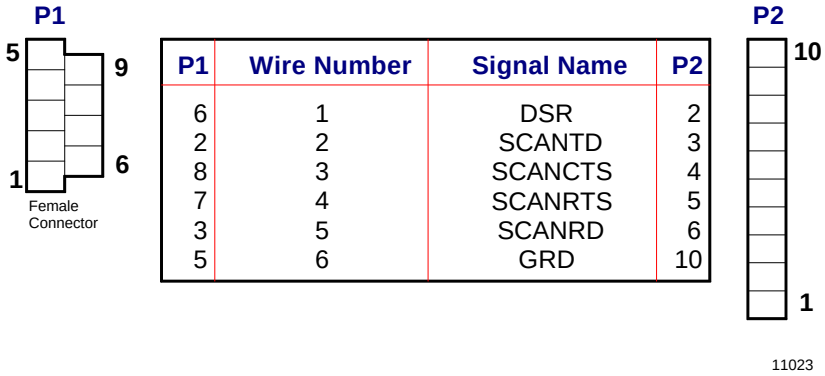


TEC Host Terminals

Only one cable is available to connect a NCR 7884 to TEC host terminals.

Host Terminal	Interface	Corporate ID	Length
ST–5500	RS232	1416–C019–0040	4 meters (13.1 feet)





P1	Wire Number	Signal Name	P2
6	1	DSR	2
2	2	SCANTD	3
8	3	SCANCTS	4
7	4	SCANRTS	5
3	5	SCANRD	6
5	6	GRD	10

USB Peripheral Port

Three cables are available to connect the NCR 7884 to the USB peripheral port on a host terminal.

Cable Type	Interface	Corporate ID	Length
USB – IBM Non–Powered	USB	1432–C895–0050	5 meters (16.4 feet)
USB – A to PC	USB–A	1416–C896–0050	5 meters (16.4 feet)

Wedge Host Terminals

Only one cable is available to connect a NCR 7884 to Wedge host terminals.

Host Terminal	Interface	Corporate ID	Length
Keyboard Wedge	PS/2 Keyboard Wedge	1432–C676–0030	3 meters (9.8 feet)

Note: The Keyboard Wedge cable connects both the scanner and the keyboard to the host terminal through the 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.

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

Wincor Host Terminals

Only one cable is available to connect a NCR 7884 to Wincor Host Terminals.

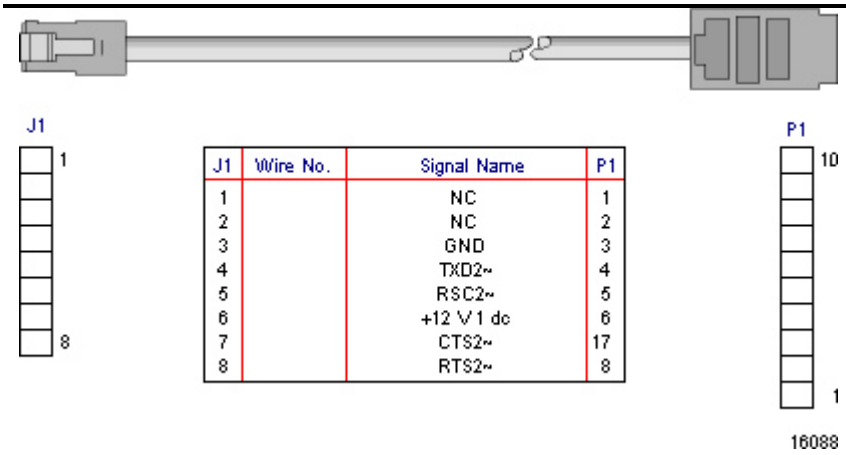
Host Terminal	Interface	Corporate ID	Length
Wincor	RS232 & Power	1432–C696–0040	4 meters (13.1 feet)

RS232 Peripheral Cables

Peripheral cables are used when connecting an RS232 peripheral device to the NCR 7884.

RS232 Peripheral Cable Extension

Corporate ID	Part Number	Length
1432–C140–0010	497–0444399	1 meter (39 inches)

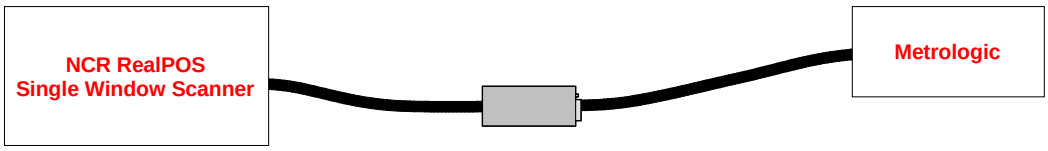


J1	Wire No.	Signal Name	P1
1		NC	1
2		NC	2
3		GND	3
4		TXD2~	4
5		RSC2~	5
6		+12 V 1 dc	6
7		CTS2~	17
8		RTS2~	8

Metrologic Hand–Held Scanner

A Metrologic hand–held scanner can be connected to the auxiliary RS232 port on the NCR 7884.

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



Extension Cable
1432-C140-0010
497-0444399

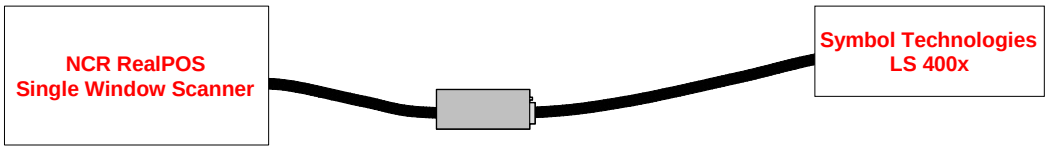
Metrologic Cable
Contact Metrologic for this cable.

Note: The Extension Cable is not required, but can be used if additional cable length is needed.

25641

Symbol Technologies LS 400x

A Symbol Technologies LS 400x hand–held scanner can be connected to the auxiliary RS232 port on the NCR 7884.



Extension Cable
1432-C140-0010
497-0444399

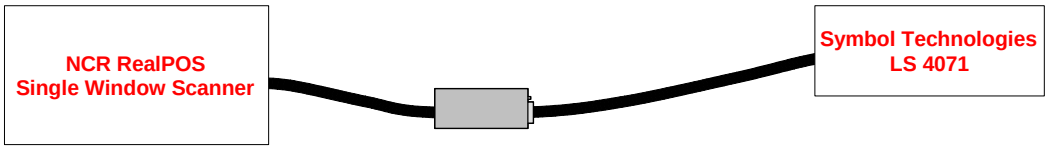
Symbol Technologies LS 400x Cable
Symbol Number: 25-17960-01

Note: The Extension Cable is not required, but can be used if additional cable length is needed.

25648

Symbol Technologies LS 4071 Wireless Hand–Held

A Symbol Technologies LS 4071 Wireless hand–held scanner can be connected to the auxiliary RS232 port on the NCR 7884.



Extension Cable
1416-C140-0010
497-0444399

Symbol Technologies LS 4071 Cable
Symbol Number: 25-35977-01

Note: The Extension Cable is not required, but can be used if additional cable length is needed.

25649

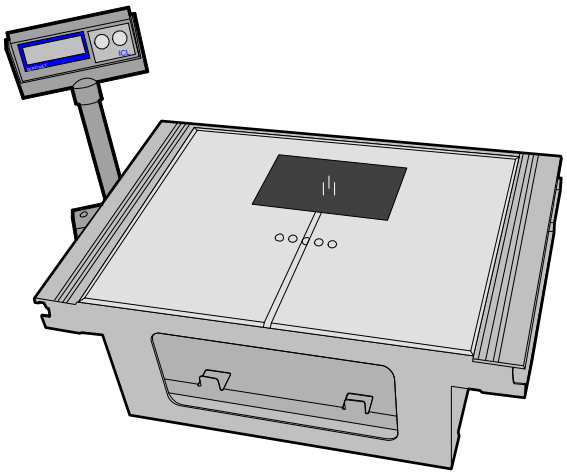
Optional Kits

The NCR 7884 has an option for Electronic Article Surveillance (EAS) and Mettler Toledo® Scale. This section lists the different kits available for each option.

EAS Kits and Cables

Corporate ID	Description
7884–K941	Checkpoint Antenna
1432–C283–0030	Checkpoint Interlock Interface Cable (3 meters/9.84 feet)
1416–C770–0040	RS232 Scale with Power and EAS Interlock
1416–xxxx–xxxx	Sensormatic Interface Interlock Cable (3 meters/9.84 feet)

Mettler Toledo® Scale



25714

The NCR 7884 scanner and Mettler Toledo® 8217AS system is composed of components from two companies. NCR manufactures the scanner and Mettler Toledo® manufactures the scale.

The following table lists the different options available for the Mettler Toledo® scale.

Corporate ID	Description
1432–C769–0040	Mettler Toledo® Scale/Checkpoint Interlock Interface Cable (4 meters/13.1 feet)
2334–K370	(Offset Bridge, 11.5 x 17 flipper door mount) Sapphire Top, ADT ready (no display) RS232
2334–K371	(Offset Bridge, 11 x 20 F–mount fill kit) Everscan Top (no display)RS232
2334–K375	11.5 x 17 Flipper door mount kit with Everscan top, ADT ready (no display) RS232
2334–K393	(Offset Bridge, 11x20 F–mount) Everscan Top, Plus 0264–300A–300 Dual Display with Tower

Corporate ID	Description
2334–K394	(11.5 x 17 Flipper door mount) Everscan Top, Plus 0264–300A–300 Dual Display Tower
2334–K396	Dual Display with Tower
2334–K397	Single Display with wall mount
2334–K398	(Offset Bridge, F–mount) Sapphire Top, ADT ready (no display) RS232
2334–K399	Single Display with Tower

C

Appendix C: 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 keyboard clock and data lines without affecting standard operations between keyboard and host terminal. When the wedge has data to send to the host terminal it can put the 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 keyboard from hold. The keyboard and host terminal are then able to communicate as before.

At the hardware level the keyboard interface consists of two open-collector lines: clock and data. The 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 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 keyboard) use the same bit packaging but with a single acknowledge bit appended by the wedge (or 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 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 Keyboard Emulation programming bit (see *Programmables* section below). 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 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.

Keyboard Emulation

The wedge uses the existing keyboard interface to send data to the host terminal. The standard keyboard – host terminal interaction is bidirectional, meaning that the host terminal can send commands and data to the keyboard and the 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 Keyboard Emulation enable bit determines the way that the wedge responds to host terminal commands.

Keyboard Emulation Disabled

When Keyboard Emulation is disabled the wedge responds 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 only responds to the RESEND command when in Wedge-In state. If a command other than RESEND is received by the wedge when Keyboard Emulation is Disabled, the wedge transitions to Wedge-Out state and wait for the keyboard interface to be idle. Once in Wedge-In state again the wedge resumes transmission of any unsent data.

Keyboard Emulation Enabled

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

Host Terminal Command	Keyboard and Scanner Wedge Response	Detail
RESET (0xFF)	ACK (0xFA)	As a result of RESET a 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 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 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. 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 is transmitted first)

   DATA Tag Sequence = 3 + 1 + 2 + 1 + 2 + D

Tag Translation Scan Code Table

US 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

US Keyboard Scan Codes	International Scan Codes	Num Lock Option On	ASCII Characters	ASCII Shifted Characters	System Scan Codes
43			i	I	17
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 are used to represent a 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
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

Key	Make Code	Break Code	Key	Make Code	Break Code	Key	Make Code	Break Code
\	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
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--

Note: * All values are in hexadecimal

Tag Message Format

The Tag Message consists 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

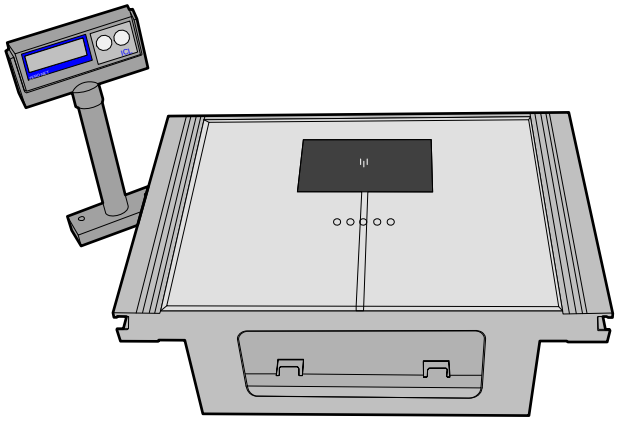
The scanner can be connected to a PC with or without using a keyboard, using a NCR cable.

D

Appendix D: Mettler Toledo® Scale

Introduction

The NCR RealPOS Single Window Scanner and Mettler Toledo® 8217 AS are composed of components from two companies; NCR manufactures the scanner and Mettler Toledo manufactures the scale. Depending upon the customer's requirements, any one of these companies, or a combination of them, may fill an order for the system and may install or service it. Therefore, the system may be delivered in two separate boxes or all together in one box.



25709

Specifications

This section lists the different specifications of the NCR 7884 scanner and the Mettler Toledo® scale.

NCR RealPOS Single Window Scanner

The following is a list of specifications of the NCR 7884.

- RS232/IBM RS–485/USB/Keyboard Wedge connectivity
- Autodiscrimination of different barcodes
- PACESETTER
- Powered auxiliary RS232 port
- USB host terminal and USB peripheral ports available

Mettler Toledo® Scale

The following is a list of specifications of the Mettler Toledo® scale.

- 30 lb. (15 kg) capacity

- ± 0.1 lb. (±0.005 kg)
- Less than 500 ms settling time
- 14.6" x 10.9" top plate

System Components

This section lists the different components of the NCR 7884 and the Mettler Toledo® scale.

NCR Components

The following NCR components are needed:

- NCR RealPOS Single Window Scanner unit
- Power supply
- Power cord
- Interface cable
- Reset scale tag
- Scale/interlock cable
- Velcro Mounting Strips

Reset Scale Tag

The following is a sample image of the reset scale tag.

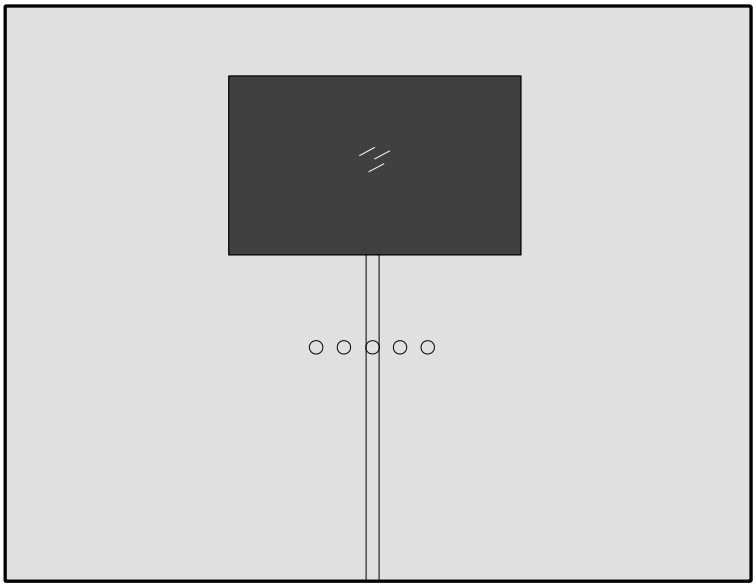
Reset

11818

Mettler Toledo® Scale Components

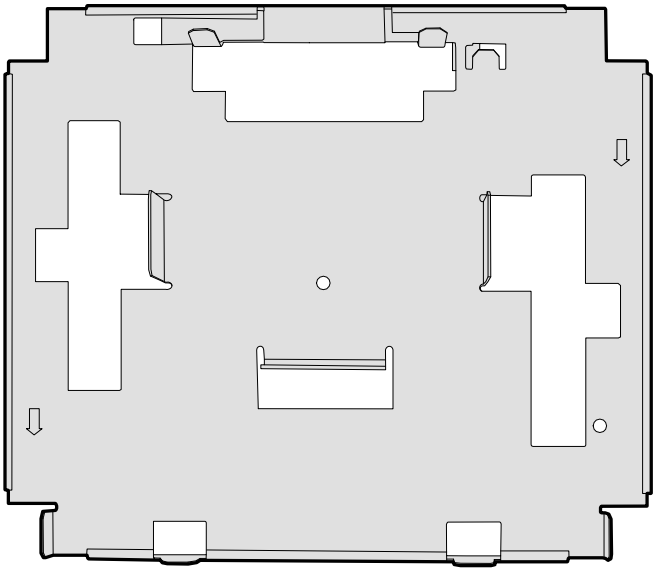
The following are the components for the Mettler Toledo® scale.

Top Plate



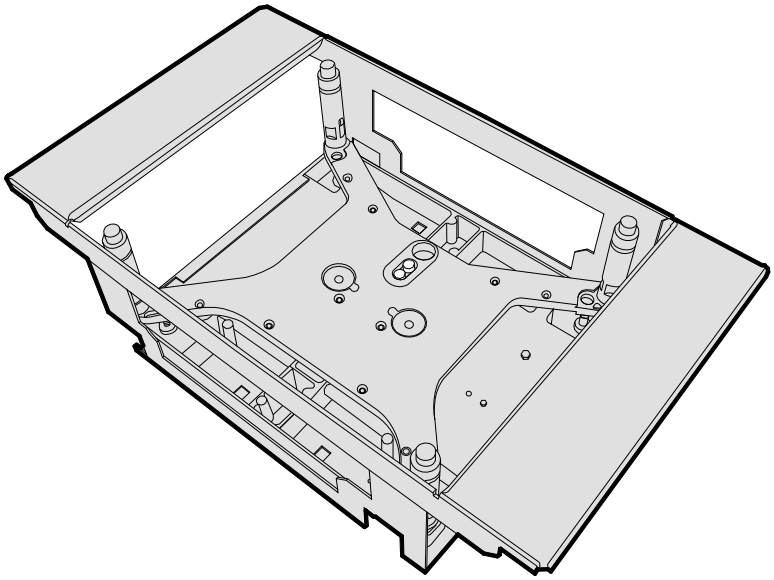
25627

Bridge Plate



25628

Mounting Bracket

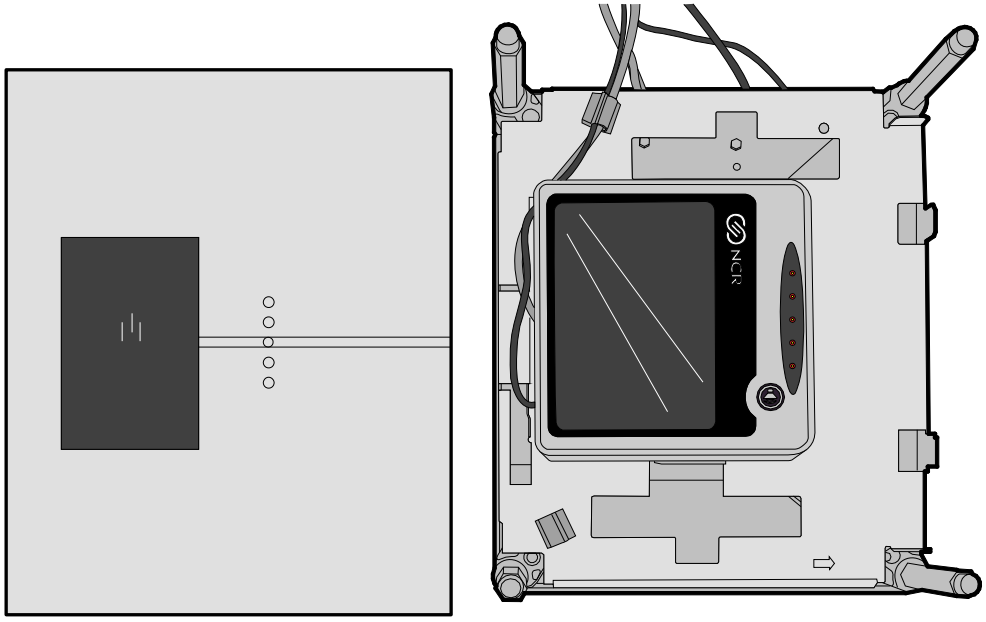


25626

System Construction

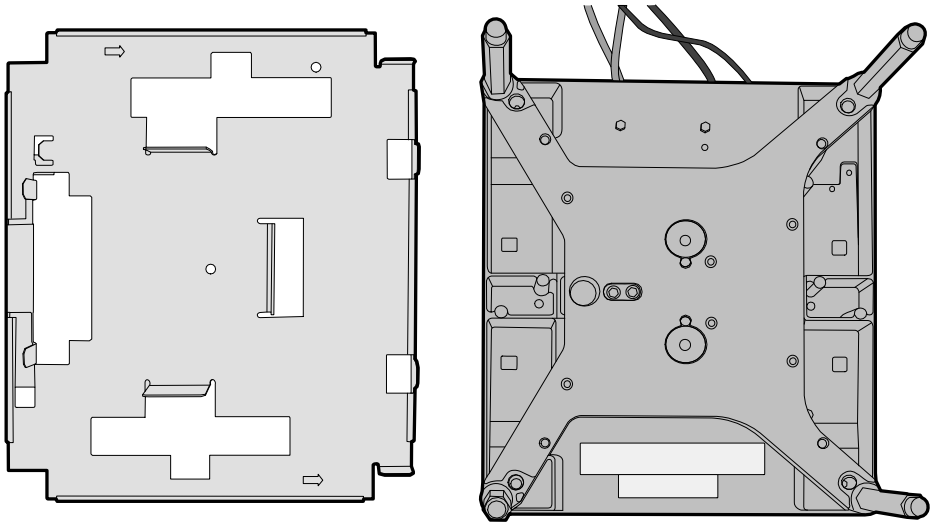
The NCR 7884 and Mettler Toledo® scale may be constructed for right–to–left scanning or left–to–right scanning. This is accomplished through the orientation of the bridge plate within the scale unit.

Right–to–Left Scanning



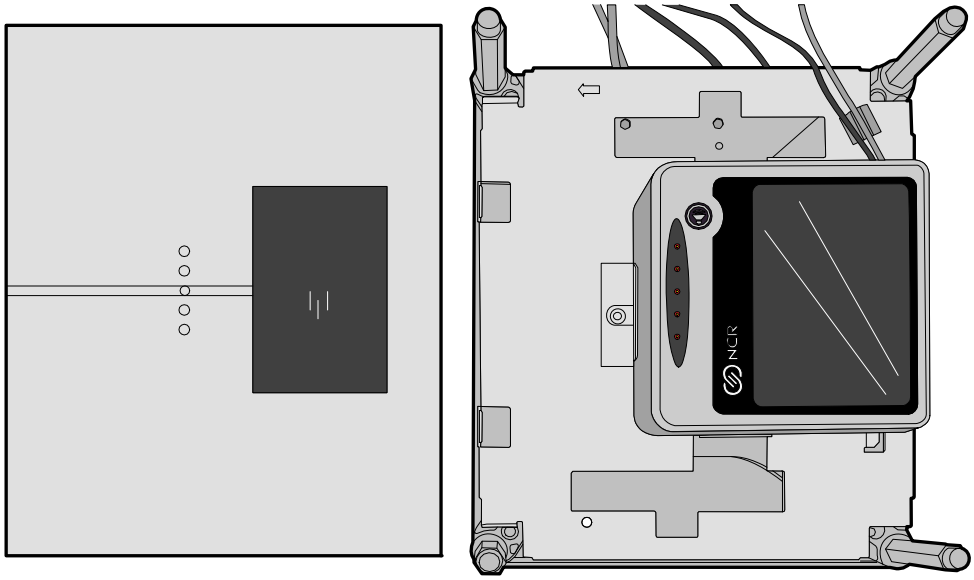
25629

The following image displays the right–to–left scanning plate's orientation.



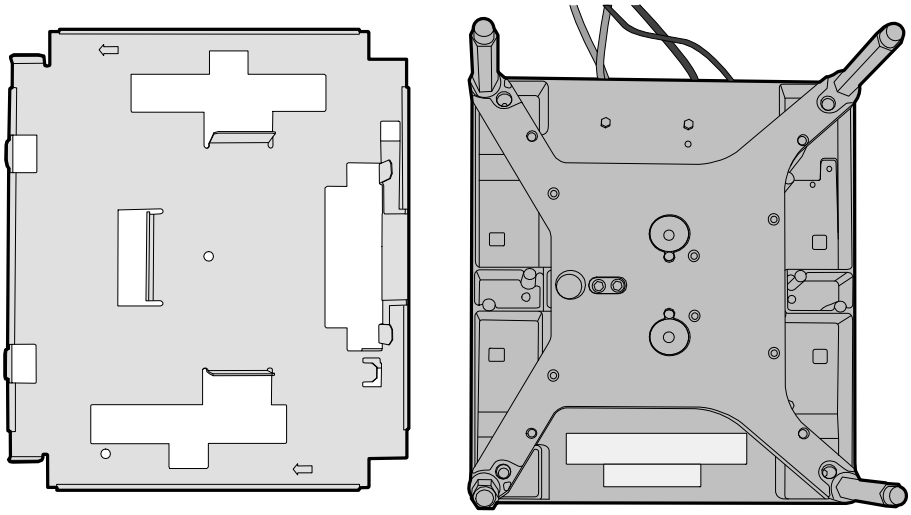
25630

Left–to–Right Scanning



25631

The following image displays the left–to–right scanning plate's orientation.



25632

Installation Procedures

Configure the Scale

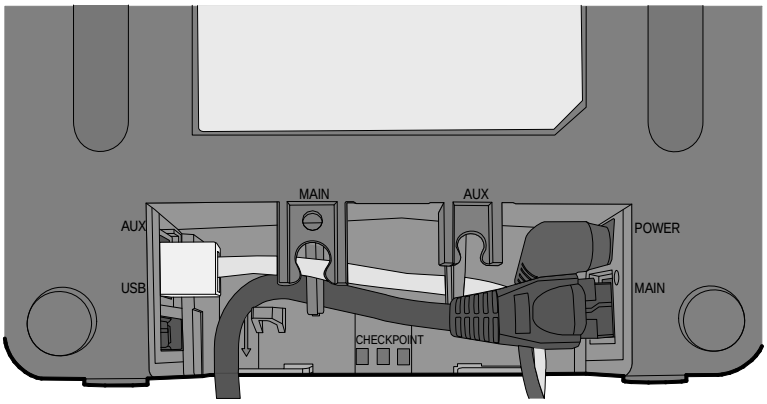
To configure the scale, perform the following procedure.

1. Determine if the system needs to be configured for scanning from right–to–left or left–to–right.
2. Install the bridge plate on the scale unit inside the mounting bracket accordingly.

Scanner Installation

Perform the following procedure to install the scanner into the scale.

1. Connect the power cable, interface cable, scale cable, and Sensormatic interlock cable to the NCR 7884 scanner.



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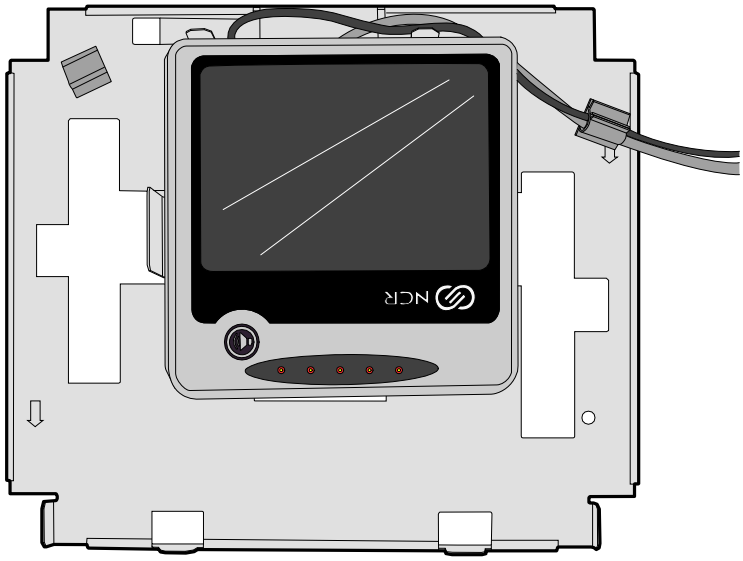
Note: The cables must be routed for horizontal scanning.

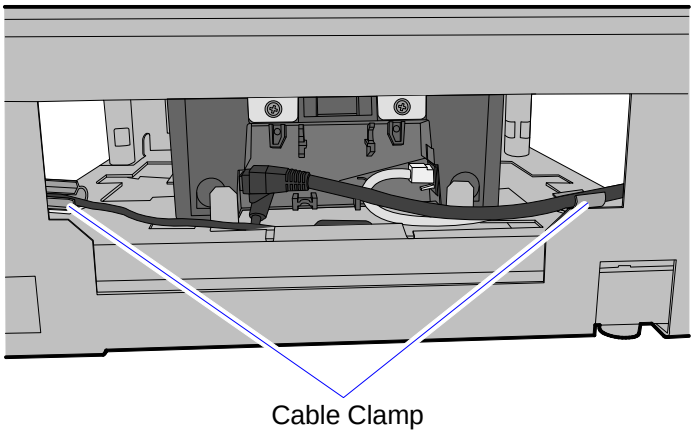
2. Position the NCR 7884 on top of the bridge plate. The scan cable runs through a slot in the bridge plate.



25776

Cable Routing

The cables are routed depending on the scanning configuration; either right–to–left or left–to–right. In both cases the cables are held in place with a cable clamp attached to the bridge plate.



25701

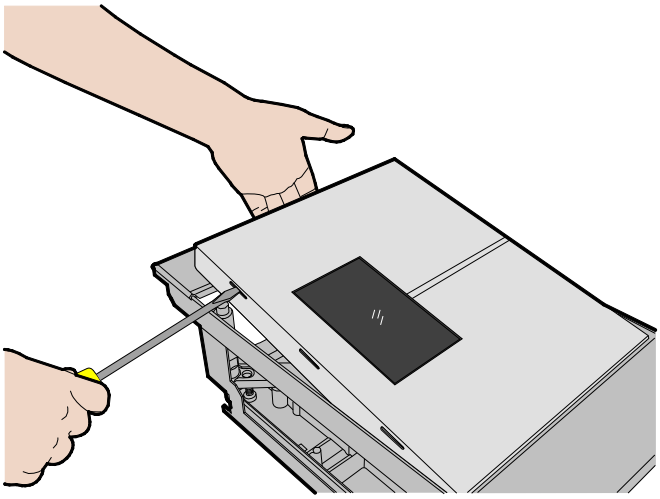
Completing the Installation

Position the unit inside the cutout in the self–checkout host terminal, and then install the top plate. Ensure that the top plate is positioned correctly for the type of scanning.

Calibrating the Scale

Perform the following procedure to calibrate the scale.

1. Use a flat–headed screwdriver to pry up the top plate until you can get hold of it, and lift it off the scale unit.

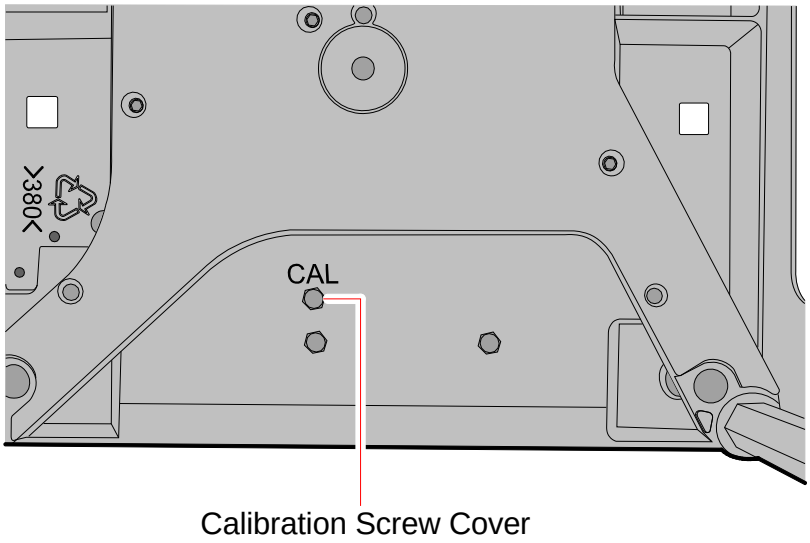


25634

Note: The top plate has notches along the sides which can be used to pry up by a screwdriver.

2. Remove the Calibration Switch Cover screw. The scanner speaks "***Scale Calibration Scale Communication Failed***"—this is not a failure. The scale then sounds off one short beep per second.

   The following is a sample image of the calibration screw cover.



25703

3. Press the Calibration button. The scanner speaks "***Scale calibration scale communication failed***"—this is not a failure. The scale then sounds off one short beep per second.
4. Place the top plate on the scale.

   Note: Do not put anything on the top plate.

5. Scan the Reset Scale tag. The scanner speaks "***Scale calibration scale communication failed***". This is not a failure. The scale then sounds off two short beeps per second.
6. Place a 20–lb weight on the top plate.
7. Scan the Reset Scale tag. The scanner speaks "***Scale calibration scale communication failed***"—this is not a failure. The scale then sounds off one long beep per second.
8. Remove the 20–lb weight off the top plate.
9. Scan the Reset Scale tag. The scanner does not speak and all beeps stop.
10. Replace the Calibration Switch Cover screw.

Troubleshooting

For the most part, the functions of each of the units work independently from each other. However, there are some interactions. This section lists some basic things to check if the system is not working properly. You may need to refer to the manufacturer's documentation for each unit.

Scanner Problems

If the scanner does not operate, check the following.

- Power cable connections
- Interface cable connections
- Red laser light is being generated
- Spinner mirrors are rotating
- Diagnostic failure

Note: Refer to NCR RealPOS Single Window Scanner User Guide (B005–0000–1819) for more information.

Scale Problems

Check the following if the scale is not weighing properly.

- Scanner power cable connections
- Scanner interface cable connections
- Scale cable connection to the NCR 7884
- Program scanner to enable scale by scanning the following tag sequence:
  - Programming Mode
  - Hex 3
  - Hex 0
  - Hex 3
  - Save and Reset

Perform the following procedure if the scale is still not weighing items properly.

1. Remove all items from the top plate.
2. Scan the **Reset Scale** tag. The scale should read 0.00.
3. Put some weight on the top plate. The scale reads the weight of the item placed in the top plate (not 0.00).
4. Remove all items from the top plate. The scale should now read 0.00.
5. Remove the top plate.
6. Remove any debris from the scale mechanism or top plate posts.

E

Appendix E: Checkpoint Installation

Introduction

Installing the Checkpoint feature to the NCR 7884 consists of installing the checkpoint antenna around the scanner.

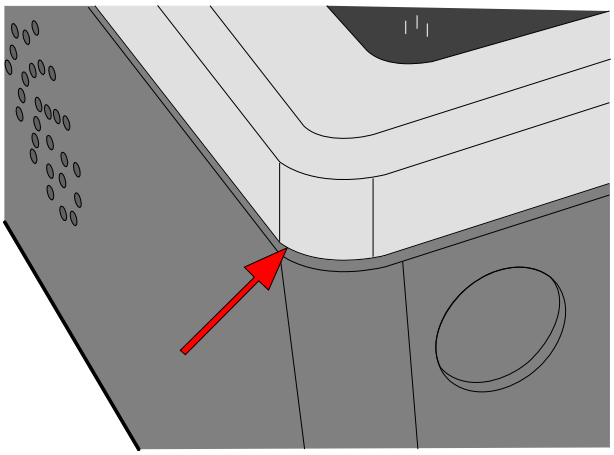
Note: The scanner may still be mounted vertically, horizontally, as well as use the Mettler Toledo® scale. The same removal and installation procedures apply. Refer to Chapter 3 *Installation* and to Appendix D: *Mettler Toledo® Scale* sections in this book for further information.

Note: Before installation, please call Checkpoint service support at 1–800–253–7580 or you can refer to the company's website at *http://www.checkpointsystems.com/*.

Installation

Perform the following procedure to install the Checkpoint feature.

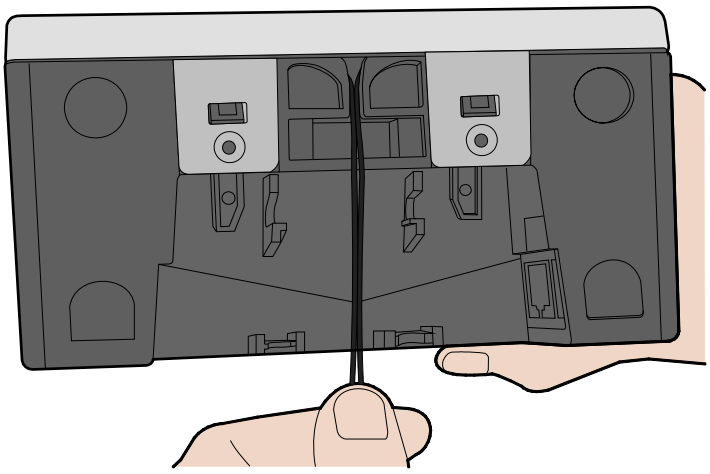
1. Remove and unravel the 6–feet checkpoint antenna wire.
2. Fold the antenna wire in half to locate the midpoint of the whole length.
3. Insert the wire into the groove found between the top plate and scanner housing. This groove is the gap between the bezel/top plate and the housing.



25783

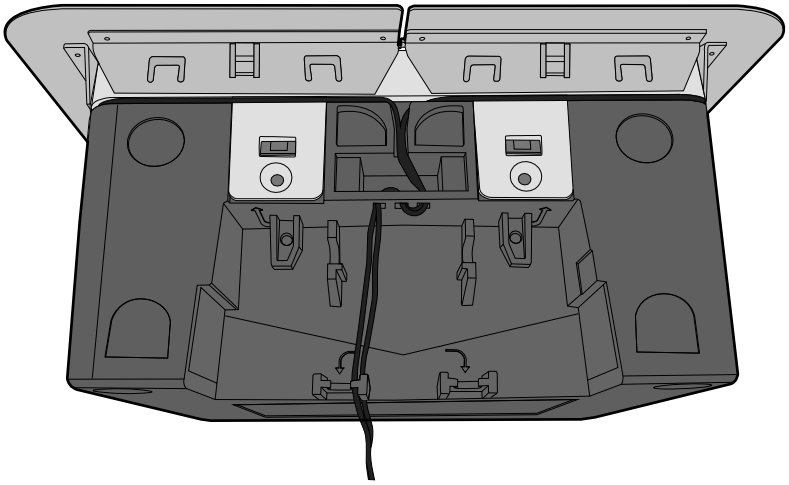
Note: Wire routing is the same regardless of the mounting configuration (vertical or horizontal).

The following is a sample image of the checkpoint antenna wire inserted into the groove for a vertical–mount scanner.



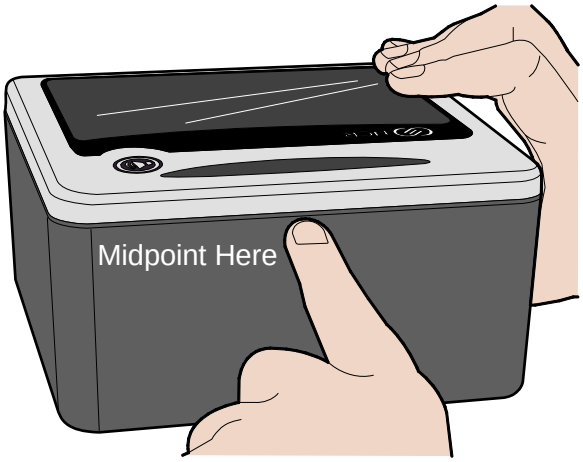
25635

The following is a sample image of the checkpoint antenna wire inserted into the groove for a horizontal–mount scanner.



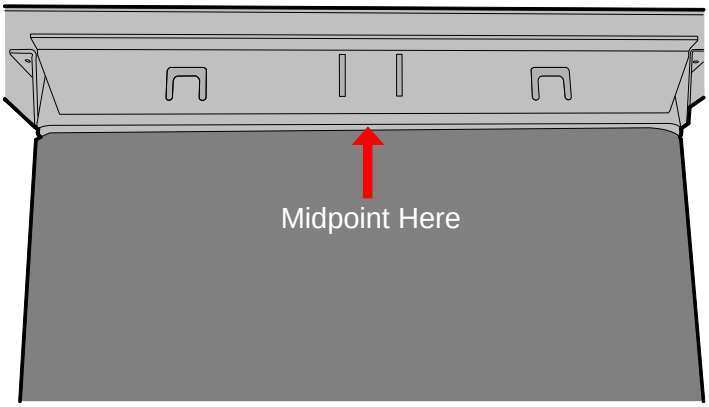
25640

The midpoint of the wire must coincide with the approximate midpoint of the side adjacent to the surface with the LED feature, as the image below displays.



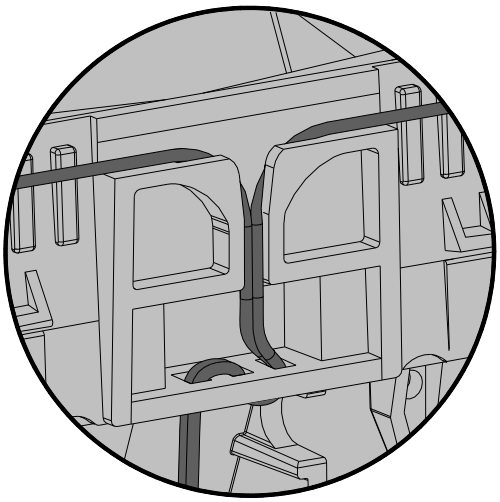
25636

The following displays the midpoint for horizontal mounted configuration.



25639

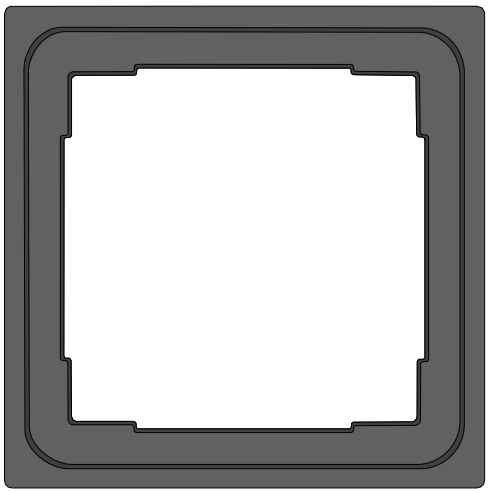
4. Insert the wire in an S–like manner into the holes in the checkpoint feature of the NCR 7884. The following image is a detailed view of the checkpoint feature hole.



25781

5. For the remaining length of the wire, make six or more twists per foot.
6. Cut the twisted wire to 18 inches from the NCR 7884.
7. Insert the ends of the antenna wire into the Checkpoint Host Terminal Block of the Checkpoint EAS.

Note: If the NCR 7884 is to be installed horizontally, the horizontal Top Plate Plastic adapter (7884–K918) must be used as well.



25698

Operation

The Checkpoint system operates in two modes:

- Interlocked
- Non Interlocked

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.

Interlock Mode

This mode ties the security tag deactivation to the bar code scanning and the y are only deactivated if a bar code has been scanned. The interlock mode requires another cable from the scanner to the Checkpoint controller. The Checkpoint antenna is also connected to the Checkpoint controller but the hardware is not enabled all the time. When the scanner reads an item bar code it sends an electrical signal to the Checkpoint controller which enables the controller for a programmable time. This time is controlled by dip switches in the checkpoint control box. Now when a Checkpoint security tag is detected it is deactivated by the controller.

Checkpoint programming

Scan the following sequence of programming tags to enable the Checkpoint communications. These must be the first tags scanned after applying power to the NCR 7884.

1. **Program Mode**—puts scanner in the programming mode.
2. **Hex 4**, **Hex 2**, and **Hex B**—enables the Checkpoint Interlock Signal.
3. **Save and Reset—**saves the enabled setting, and then resets the NCR 7884.

F

Appendix F: Sensormatic® ScanMax™HS

Introduction

The Sensormatic® tag deactivation system must be connected to the auxiliary RS232 Ports. When the NCR 7884 scanner reads a tag, the Sensormatic® hardware needs to receive an interlock signal for it to function. When the system is installed, the Sensormatic® Interlock Signal must be enabled.

There are two modes of Sensormatic operation: Interlocked and non–interlocked. The mode is controlled by the Scan Enable time which is a setting in the Sensormatic controller. When the scan enable time is set to a value between 1 and 29 the system runs in the interlock mode. If the value is 0 or 30 the system runs in the non–interlock mode.

Interlock Mode

The scanner reads the scan enable time from the controller—if it is 1 to 29, it enables the controller for deactivation for this many seconds after a bar code is read and then disables the controller until the next bar code. Interlock mode is used in self service lanes and cashier assisted lanes.

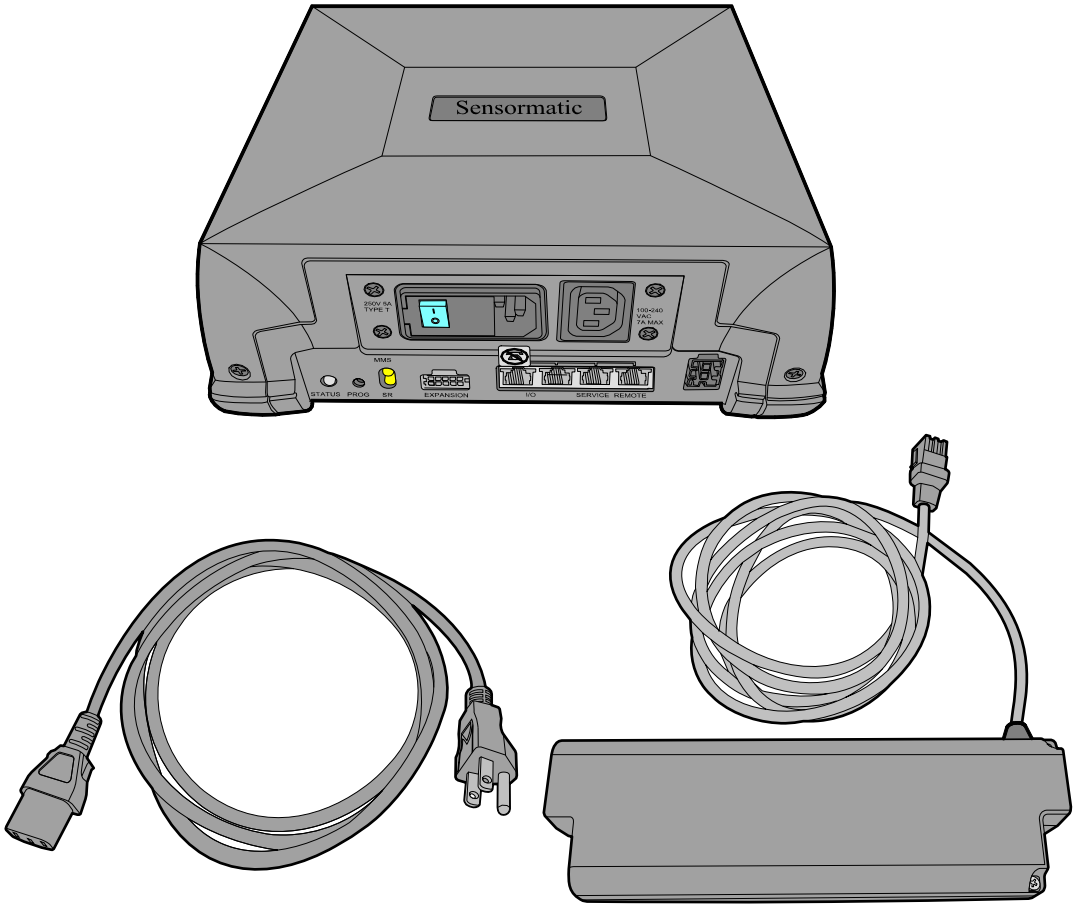
Non-Interlock Mode

If the **scan enable** value is 0 or 30, the scanner enables the Sensormatic controller for deactivation any time the scanner is enabled to read tags. In most systems this corresponds to the time the cashier is signed into the Host terminal. The terminal sends and enable to the scanner at cashier sign in and this is passed on to the Sensormatic controller. At cashier sign out the host terminal sends a disable to the scanner and the Sensormatic controller is disabled. This is non–interlock mode. Non–interlock mode is designed for the cashier lanes.

Components

The system is composed of the following components:

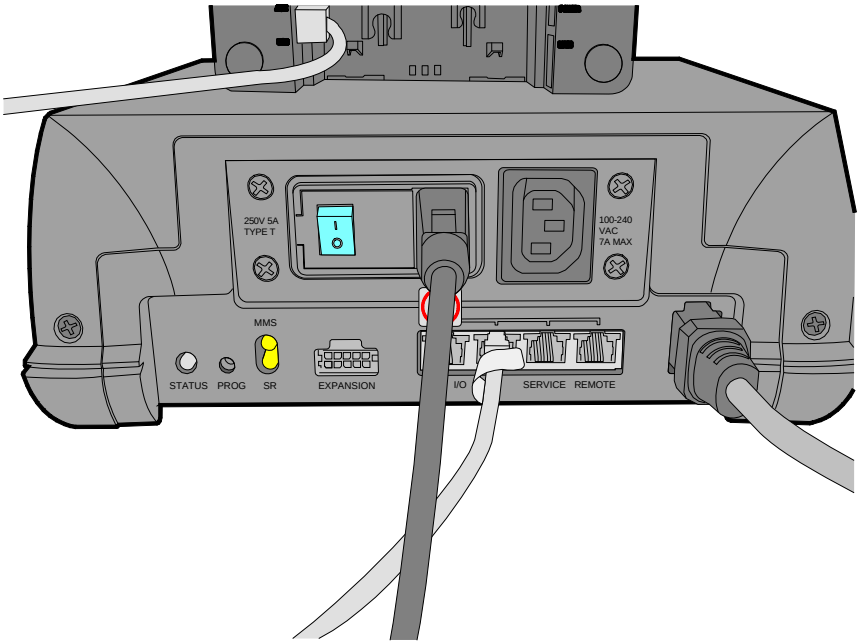
- Controller Box
- Deactivation Brick
- Power Cord



25774

Cable Connections

The following image displays the different cable connections at the controller box.



25778

The host terminal port of the controller box connects to the auxiliary RS232 port of the NCR 7884.

Sensormatic Functions

This section describes the different functionalities available in the Sensormatic ScanMax™HS.

Enable Sensormatic® Communications

Scan the following sequence of programming tags to enable the Sensormatic® communications. These must be the first tags scanned after applying power to the NCR 7884.

1. **Program Mode**—puts scanner in the programming mode.
2. **Hex 4**, **Hex 2**, and **Hex B**—enables Sensormatic® Interlock Signal.
3. **Save and Reset—**saves the enabled setting, and then resets the NCR 7884.

Disable Sensormatic® Communications

Scan the following sequence of programming tags to disable the Sensormatic® communications. These must be the first tags scanned after applying power to the NCR 7884.

1. **Program Mode**—puts scanner in the programming mode.
2. **Hex 4**, **Hex 2**, and **Hex A—**disables Sensormatic® Interlock Signal.
3. **Save and Reset—**stores the disabled setting, then resets the NCR 7884.

Sensormatic® Deactivation Tones

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

1. **Program Mode**—puts scanner in the programming mode.
2. **2. Hex 5, Hex 8, Hex B—**increments to the next frequencies. Continue Scanning Hex B to get the desired frequency. There are eight frequencies to choose from:
   - 570 Hz (default)
   - 637 Hz
   - 721 Hz
   - 829 Hz
   - 976 Hz
   - 1186 Hz
   - 1512 Hz
   - 2083 Hz
3. **End Tag**—completes the programming sequence.
4. **Save and Reset**—stores the setting and resets the NCR 7884.

Sensormatic® Deactivation Tone Pulse Length

Scan the following sequence of programming tags to change the number of pulses in the deactivation tone of the NCR 7884.

1. Program Mode—puts scanner in programming mode.
2. Hex 7, Hex B, Hex x—where x is the number of desired pulses. With 1-8 pulses there is a single frequency tone. With 9-15 there are 1 to 7 pulses of dual tone frequency
3. Save and Reset—stores the setting and resets the NCR 7884.

Special Function Programming

There are several Sensormatic® Security Tag Deactivation functions that can be programmed at the NCR 7884.

Manual Deactivation

The Manual Deactivation function permits the user to disable scanning and enable Sensormatic® security tag deactivating for three seconds with each touch of the Volume Adjust Button on the NCR 7884 Operator Display Panel. A bar code can also be sent to the host terminal to report the manual deactivation. The bar code is sent after the button is pressed and the deactivation signal is received from the controller.

The following conditions apply:

- If the tone volume increases when the Volume Adjust button is pressed, the Manual Deactivation function is disabled.
- If the tone volume does not change when the Volume Adjust button is pressed, the Manual Deactivation function is enabled and the NCR 7884 does not scan for three seconds after pressing the Volume Adjust button.
- If the Volume Adjust button is pressed and the EAS system is malfunctioning, the NCR 7884 gives the voice message "***EAS Offline***."

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

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

- 1 Beep - Manual Deactivation function is disabled
- 2 Beeps - Manual Deactivation function is enabled - Factory Default
- 3 Beeps - Function is enabled plus 048589999977 bar code sent

After enabling or disabling the Manual Deactivation function, the following **Reset** tag must be scanned to make the setting permanent in the NCR 7884.

Reset

11818

Barcode Label Hold-Off

The purpose of the Barcode Label Hold-Off function is to force the user to bring the barcode closer to the scanner when a live EAS tag is present on the item being scanned. When the NCR 7884 detects a live EAS tag it emits a clicking sound and sets a ½-second timer (optional). As long as the EAS tag is detected the timer is restarted and does not expire. During this time the NCR 7884 does not beep or send barcode data to the host terminal even though it may read the barcode. Once the EAS tag is deactivated the timer is not restarted. After the timer expires, the NCR 7884 beeps and sends barcode data to the host terminal. If the barcode has been removed from the scan field it may have to be returned to the field to be read and sent to the host terminal.

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

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

- 1 Beep - Barcode Label Hold-Off function is disabled
- 2 Beeps - Barcode Label Hold-Off function is enabled - Factory default

After enabling or disabling the Barcode Label Hold-Off function, the **Reset** tag must be scanned to make the setting permanent in the NCR 7884.

Audible Detection

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

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

- 1 Beep—Audible Detection function is disabled
- 2 Beeps–Audible Detection function is enabled – Factory default
- 3 Beeps–Audible Detection function is enabled plus deactivation tone

EAS Optional Communications

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

- The NCR 7884 sends the Error barcode (048589999999) if an EAS detection signal occurs after a barcode is read by the scanner. (i.e., the Sensormatic® tag is still live.)The Error Barcode Timer defines the window for permitting a deactivation to occur after a barcode is read. The timer can be set from ½ second to 4 seconds in ½-second increments. If the timer expires and no EAS deactivation has occurred, the Error barcode is sent to the Host Terminal Software.
- The NCR 7884 can send a Detect barcode (048589999988) every four seconds when EAS detections are occurring (a live EAS tag is in the detection field).
- The NCR 7884 can send both barcodes if both conditions are met.

The EAS Optional Communications function is set by scanning the following EAS Communications Function tag.

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

- 1 Beep—EAS Communications function is disabled - Factory Default
- 2 Beeps–NCR 7884 sends Error barcode (048589999999)
- 3 Beeps–NCR 7884 sends Error Barcode (048589999999) and Detect Barcode (048589999988)
- 4 Beeps–NCR 7884 sends Detect barcode (048589999988)

The following tag increments the Error Barcode timer. Each time the tag is read, the time is incremented ½ second until the maximum time is reached. It then starts over with the least time. The number of beeps indicates how the timer is set.

- 1 Beep—½ second
- 2 Beeps–1 second
- 3 Beeps–1½ seconds
- 4 Beeps–2 seconds
- 5 Beeps–2½ seconds
- 6 Beeps–3 seconds
- 7 Beeps–3½ seconds
- 8 Beeps–4 seconds

After setting the EAS Optional Communication function and the Error Barcode timer, the **Reset** tag must be scanned to make the setting permanent in the NCR 7884.

Error and Detect Barcodes

Following are the Error, Detect and Manual Deactivation barcodes. These barcodes can be used for testing the host terminal system. Scan the barcode to simulate the effect on the host terminal system.

- Error Bar Code—048589999999
- Detect Bar Code—048589999988
- Manual Deactivation Bar Code—048589999977

Check Sensormatic® Deactivation System

Check the System

Position a Hard Tag above the NCR 7884 top plate. As the tag moves within 4 inches of the Top Plate a clicking sound can be heard, if programmed. (See the section *Specific Function Programming: Audible Detection* for instructions for enabling the clicking sound.) If the Hard Tag is less than four inches from the top plate, consult the Sensormatic® Card - ***Before You Call About...***

Next, obtain a security tag that has not been deactivated. Scan a bar code and immediately pass the security tag through the deactivation zone. The Good Read Tone should sound indicating a good read of the bar code and deactivation of the security tag.

Call Sensormatic®

After the NCR 7884 Sensormatic® configuration is installed call Sensormatic® to have them test, tune, and phase their system.

Troubleshooting

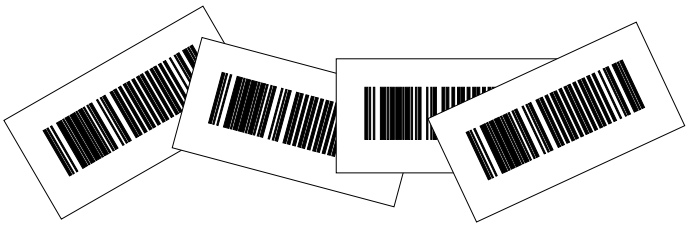
If the Sensormatic deactivation is not working, check the following.

- Controller Box Power Cable connections.
- Scanner Power Cable connections
- Deactivation Brick Cable connection.
- Key Switch Alarm Box Cable connections.
- Interlock Cable connection (from NCR 7883 Scanner).
- Program scanner to enable interlock by scanning the following sequence of tags: **Programming Mode, Hex 4, Hex 2, Hex B, Save and Reset**.

G

Appendix G: NCR Scanner Programming Tags

Scanner Programming Tags



BST0-2121-74 Release O

27064

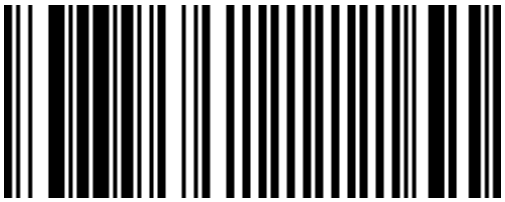
Volume Adjustment

11817

Reset

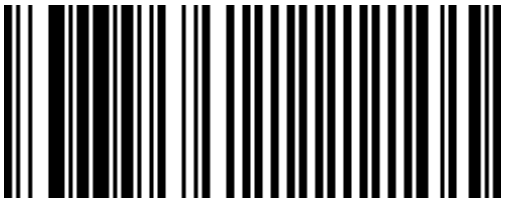
11818

Default



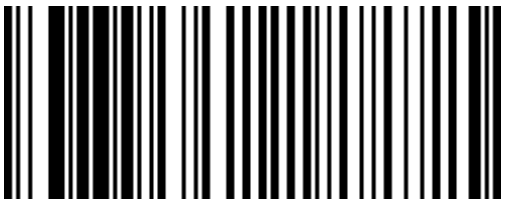
R0046

Programming Mode



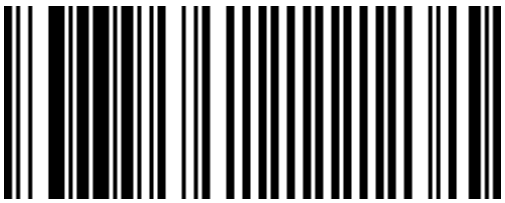
R0042

End



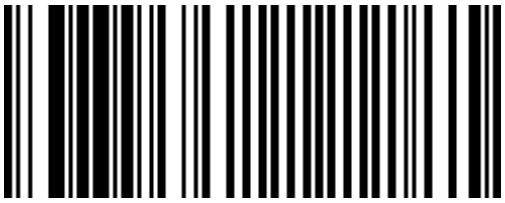
R0043

Save and Reset



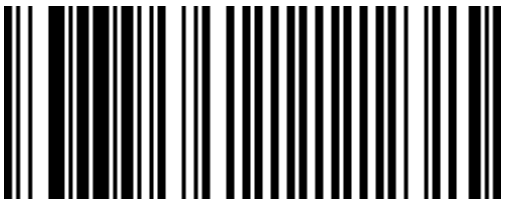
R0044

Abort



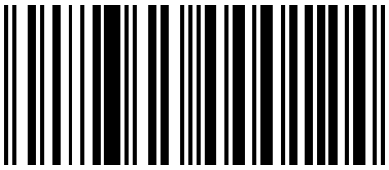
R0045

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)

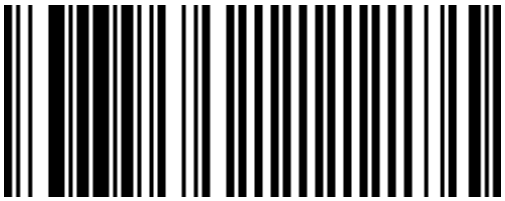
11502

Firmware Flashing

Super ASIC Models

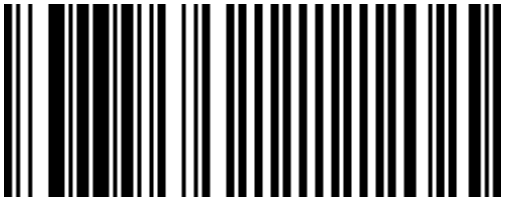
20600

Hex 0



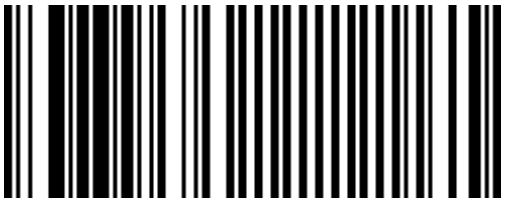
R0048

Hex 1



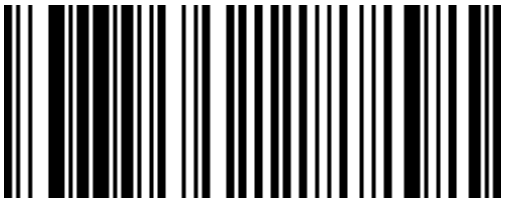
R0049

Hex 2



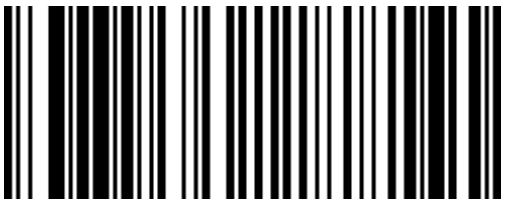
R0050

Hex 3



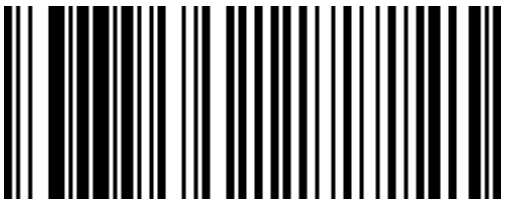
R0051

Hex 4



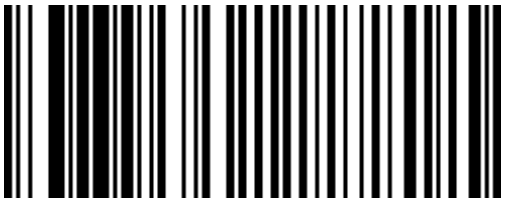
R0052

Hex 5



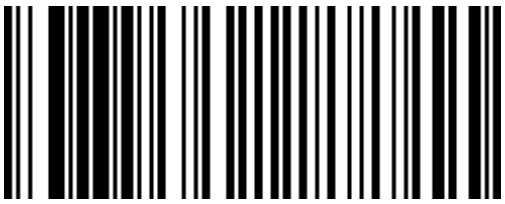
R0053

Hex 6



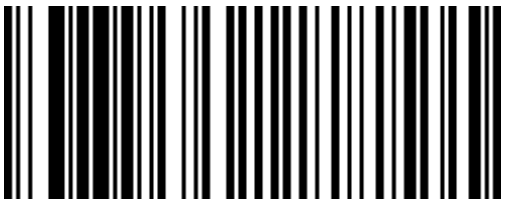
R0054

Hex 7



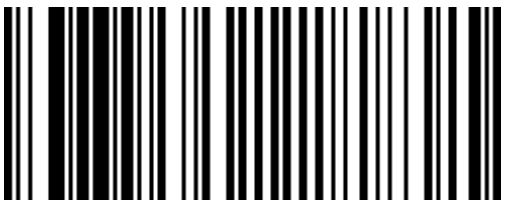
R0055

Hex 8



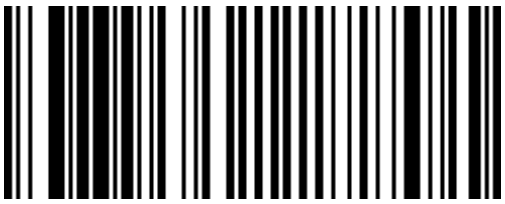
R0056

Hex 9



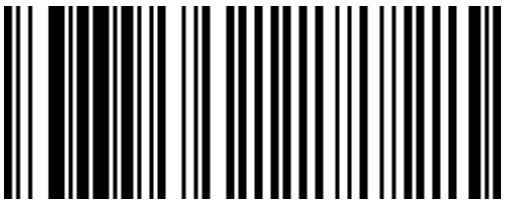
R0057

Hex A



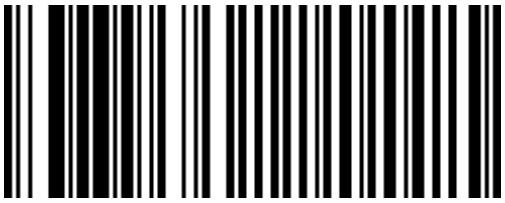
R0058

Hex B



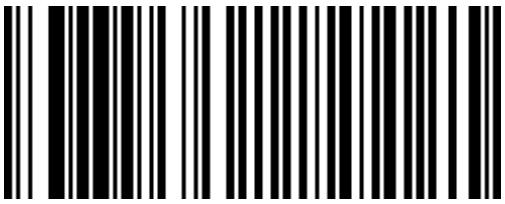
R0059

Hex C



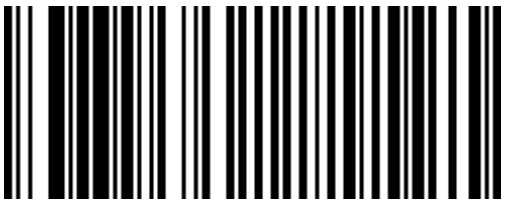
R0060

Hex D



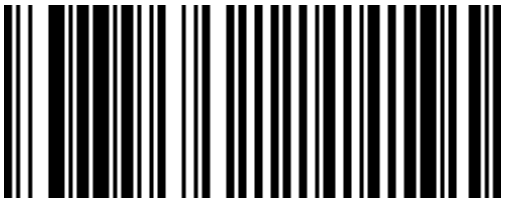
R0061

Hex E



R0062

Hex F



R0063

ASCII Code Chart															
00	NULL	**10**	DLE	**20**	SP	**30**	0	**40**	@	**50**	P	**60**		**70**	p
01	SOH	**11**	DC1	**21**	!	**31**	1	**41**	A	**51**	Q	**61**	a	**71**	q
02	STX	**12**	DC2	**22**	"	**32**	2	**42**	B	**52**	R	**62**	b	**72**	r
03	ETX	**13**	DC3	**23**	#	**33**	3	**43**	C	**53**	S	**63**	c	**73**	s
04	EOT	**14**	DC4	**24**	$	**34**	4	**44**	D	**54**	T	**64**	d	**74**	t
05	ENQ	**15**	NAK	**25**	%	**35**	5	**45**	E	**55**	U	**65**	e	**75**	u
06	ACK	**16**	SYN	**26**	&	**36**	6	**46**	F	**56**	V	**66**	f	**76**	v
07	BEL	**17**	ETB	**27**	'	**37**	7	**47**	G	**57**	W	**67**	g	**77**	w
08	BS	**18**	CAN	**28**	(	**38**	8	**48**	H	**58**	X	**68**	h	**78**	x
09	HT	**19**	EM	**29**	)	**39**	9	**49**	I	**59**	Y	**69**	i	**79**	y
0A	LF	**1A**	SUB	**2A**	*	**3A**	:	**4A**	J	**5A**	Z	**6A**	j	**7A**	z
0B	VT	**1B**	ESC	**2B**	+	**3B**	;	**4B**	K	**5B**	[	**6B**	k	**7B**	{
0C	FF	**1C**	FS	**2C**	,	**3C**	<	**4C**	L	**5C**	\	**6C**	l	**7C**	|
0D	CR	**1D**	GS	**2D**	-	**3D**	=	**4D**	M	**5D**	]	**6D**	m	**7D**	}
0E	S0	**1E**	RS	**2E**	.	**3E**	>	**4E**	N	**5E**	^	**6E**	n	**7E**	~
0F	S1	**1F**	US	**2F**	/	**3F**	?	**4F**	O	**5F**	_	**6F**	o	**7F**	DEL

R0040

H

Appendix H: Additional Diagnostic Functions

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 NCR 7884. This causes the NCR 7884 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 NCR 7884.

Note: If the NCR 7884 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 2	RS232 Turnaround
	Hex 1	Toad Test

Communication Protocol

Perform the following procedure to determine the communications protocol programmed in your NCR 7884.

1. Scan the **Diagnostic Mode** tag to enter Base Diagnostic state— this must be the first tag scanned after applying power to the NCR 7884.

2. Scan the **Hex 3** tag. The Good Read tone for this tag sounds (three beeps). If the NCR 7884 has the Voice feature enabled, the scanner speaks its communications protocol type.
   - RS232
   - RS232 USB
   - IBM 4A
   - IBM 4A USB
   - Keyboard Wedge

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

Display Firmware Version

This routine displays the version level of the firmware on the NCR 7884 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 NCR 7884.
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 x x***", where the x x x x x x x refers to the firmware release number.
4. After taking a note of the firmware version, the scanner must power cycle (power off, then power on) to put it back into operational state. A **Reset** tag may be used.

RS-232 Turnaround

The RS-232 Turnaround test checks the RS-232 interface in the NCR 7884. An RS-232 turnaround plug is needed to run this test.

1. Remove power from the NCR 7884.
2. Install the turnaround plug.
   - Lift the NCR 7884 out of the checkstand and disconnect the Interface cable.
   - Install turnaround plug into the connector where you removed the interface cable.
3. Supply power to the NCR 7884.
4. Scan the **Diagnostic Mode** tag to enter the Base Diagnostic state – must be the first tag scanned after applying power to the NCR 7884.

5. Scan the **Hex 2** tag to start the RS-232 Turnaround test.
   - Test Passes – a Good Read tone is emitted, the scanner speaks "***RS232 Passed***".
   - Test Fails – the scanner speaks "***RS232 Failed***".
6. Repeat steps 4 and 5 to repeat the test.
7. Remove power from the NCR 7884.
8. Disconnect the turnaround plug.
   - Connect interface cable to connector where you removed the turnaround plug.
   - Set the NCR 7884 into the hole in the checkstand and install the Top Cover.
9. Supply power the NCR 7884.

Possible Bad Component
- Digital Board

Toad Test

The Toad test checks the scanner's ability to read UPC bar codes in various parts of the scan pattern. The test repeats until ended by removing power from the NCR 7884.

1. Scan the **Diagnostic Mode** tag to enter the Base Diagnostic state—must be the first tag scanned after applying power to the NCR 7884.
2. Scan the **Hex 1** tag to enter the Toad test mode.
3. Position a good UPC or EAN tag within the scan pattern.
   a. The green status Indicator displays and the Good Read tone sounds off if the scanner can read the bar code.
   b. The red status Indicator displays if the scanner cannot read the bar code.
4. Repeat Step 3 for various areas of the scan pattern.
5. Remove power from the NCR 7884 to end this test.

Possible Bad Components
- Optics Engine
- Digital Board

Appendix I: Obtaining Information Products

Additional information about the NCR RealPOS Single Window Scanner 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, select **QuickLook Services**, **Forms and Templates**, and then select **Information Products Order Form**.

Web Site

- *http://inforetail.AtlantaGA.NCR.COM* (NCR only)
- *http://www.ncr.com* (Anyone)

Online Order

Connect System (NCR only)

Phone Order

800-543-2010 (select option #2)

Fax Order

770-831-2821

Email

ERI210013@exchange.DaytonOH.NCR.COM

Mail Order

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

J

Appendix J: Technical Support

Sometimes situations arise that require more information than what is provided in this NCR RealPOS Single Window Scanner User Guide. Technical support is available as follows:

- In the United States : 1-800-262-7842
- In other countries : call the local NCR office
- To order parts : 1-800-438-8430

K

Appendix K: User Feedback

Please print this page, answer the questions, and fax it to us at 770-813-3963.

Information Product : NCR 7884 User Guide

Order Number : B005-0000-1724

Issue Level : A

Please enter your rating by circling the appropriate number.

How do you rate the technical accuracy of this document?

Poor 1 2 3 4 5 Excellent

How you rate the organization of this document?

Poor 1 2 3 4 5 Excellent

How easy is it for you to locate specific information in this document?

Very Difficult 1 2 3 4 5 Excellent

How well did this document help you perform your job?

Not Well 1 2 3 4 5 Excellent

How do you rate this document overall?

Poor 1 2 3 4 5 Excellent

Please enter any additional comments.

Please enter the following so we can contact you concerning your comments.

Name :

Address :

Phone : Fax :

Email :