⊕DATALOGIC™

PowerScan® RF

Programming Guide

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Introduction

Use the special programming bar codes contained in this manual to customize and configure features and settings for your PowerScan**®** RF bar code scanner. To ensure full compatibility and proper function, use only the programming bar codes in this manual or Configurator Express™ software (available from your Datalogic dealer) to program scanner features.

> **NOTE**
>
> **Visit the website listed on the back cover of this manual for more information about how to obtain kits, software and manuals for this product.**

This manual has been developed to make it quick and easy for users of all levels to find the information needed to understand and configure scanner features. The following descriptions will help you to determine where to go from here.

Conventions

The symbols listed below are used in this manual to notify the reader of key issues or procedures that must be observed when servicing the scanner and/or Base Station:

> **NOTE**
>
> **Notes contain information necessary for properly diagnosing, repairing and operating the scanner.**

Scanner vs. Base Station Features

Some programming features are specific to either the scanner (hand-held unit) or the Base Station, while others are applicable to both. Each feature in this manual is marked with an indicator as to which unit(s) it is applicable.

Table 1
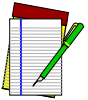
Feature is specific to scanner ONLY

Feature is specific to Base Station ONLY

Feature is applicable to scanner *and* Base Station.

> **NOTE**
>
> **When programming using bar codes via the scanner, it is important to remember that features affecting the Base Station WILL NOT be enabled until the new configuration is downloaded to the Base Station using the feature *Transmit Scanner Configuration to Base Station* on page 12**

Understanding the Basics

If you have little or no prior experience with programming using bar code labels, you should review this introductory section to familiarize yourself with the basics of scanner programming before performing any changes to your scanner's configuration. Contents of this section are:

- Integrating the PowerScan RF With Your Host System
  — Changing Interfaces
- Customizing Your Scanner's Operation
- Programming Overview
  — What Is Programming Mode?
  — The Programming Session
  — Programming Sequence
- Scanner vs. Base Station Features
- LED and Beeper Indications
- If You Make a Mistake...
  — Return to Factory Settings
- Where To Go From Here

Integrating the PowerScan RF With Your Host System

Your PowerScan RF Base Station MUST be equipped with the correct hardware (interface board, cable, etc.) to properly communicate with your host system. Contact your Datalogic dealer for information if you have questions about your Base Station's hardware compatibility.

You may also want to contact the dealer or your system administrator if you have no record of how your unit was pre-programmed at the factory. Units are typically programmed with the default settings for specific interface types, however, your unit may have been custom configured with settings that are unique to your company or application. You may find it useful to record your unit's known/required settings using the programmable feature table in *Appendix D: Record of Programmable Features* on page 195.

Once you know the unit's current settings, you can determine what changes will be required to allow communication with your host system and/or optional features you choose to modify to customize your installation. After recording the modifications needed, finish reading this section, then turn to the appropriate page and follow the instructions to program scanner and Base Station features. When all features are programmed to your satisfaction, the unit is ready to be placed into operation.

Changing Interfaces

When moving the PowerScan RF to a host terminal of a different interface type than previously connected, it may be necessary to alter its hardware and/or software to allow connection and communication between the devices[1].

Hardware

Interface Board An interface board swap is usually unnecessary, since multiple host interface protocols are supported in combination on most interface boards. For example, RS-232, Standard Keyboard Wedge, and Wand Emulation are all available on a single interface board. Activation of alternate available interfaces on this board requires only that you connect the Base Station to the new host using the appropriate interface cable. The Base Station will automatically change to the interface functions specific to that cable.

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1. If the interface types in the scanner and Base Station configurations are different at the beginning of the programming session, the session will not be successful.

To determine if your desired new interface is available on your scanner, check the following section titled *Software* on page 7. The section lists host interface types supported by each interface board available at the time of this writing. If you are still unsure of your scanner's available interface connectivity, consult your Datalogic dealer.

The Base Station will need to be sent to an authorized service repair depot if the interface board must be swapped; however, if necessary, you can change your Base Station's interface (I/F) cable by following these instructions. (Refer to Figure 1.):

1. Power down the system.

2. Disconnect the I/F cable from the host terminal.

3. Swing the I/F cable retainer up (as shown in Figure 1a) to free the cable.

4. Disconnect the cable (Figure 1b).

5. Connect the replacement I/F cable to the Base Station.

6. Rotate the cable retainer over the cable overmold until the retainer snaps in place (see Figure 1c).

NOTE	**It is important that the I/F cable be connected to the Base Station prior to applying power to the system. This is because the interface type (RS-232, IBM, Keyboard Wedge, etc.) is selected by the Base Station subject to the I/F cable it is connected to at the time of power-up.**

NOTE	**Once the system is connected and powered-on, link the scanner(s) by following the instructions given in the Section, *Linking the Scanner to a Base Station* on page 150. The Base Station will automatically download its new interface setting to the scanner during the process of linking.**

Figure 1. Removing/Replacing the Interface Cable
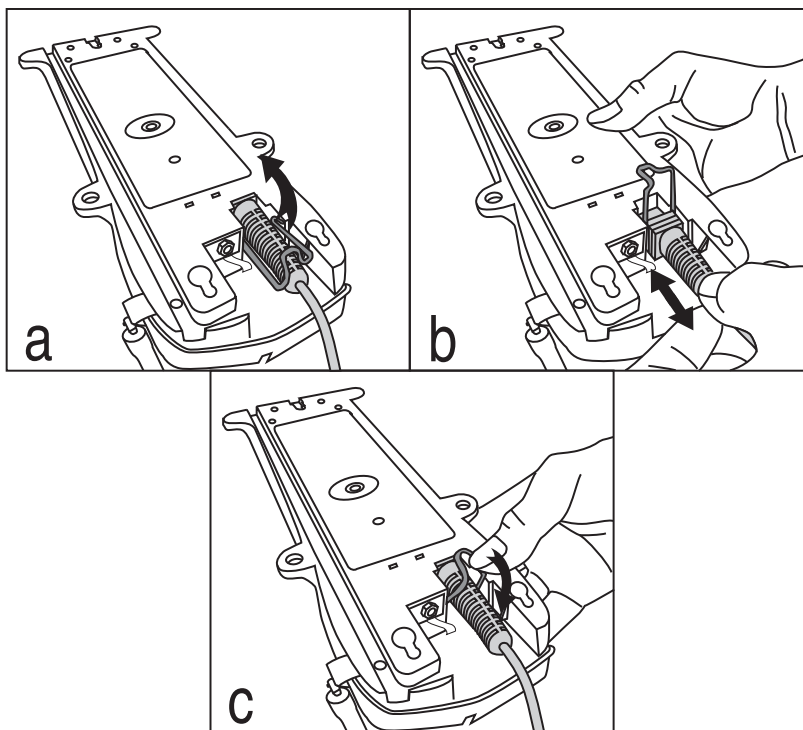
Software   Verify that your unit supports the desired interface[1]. The list below indicates the interface groupings supported. Contact your nearest Datalogic service depot if you don't know your unit's group, or need assistance to change the unit to another interface group.

The Standard Keyboard Wedge/Wand Em./RS-232 Group supports:

- I/F Type A — PC/XT w/Alternate Key Encoding
- I/F Type B — AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Alternate Key Encoding
- I/F Type C — PS/2 25 and 30 w/Alternate Key Encoding
- I/F Type D — PC/XT w/Standard Key Encoding
- I/F Type E — AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Standard Key Encoding
- I/F Type F — PS/2 25 and 30 w/Standard Key Encoding
- I/F Type H — IBM® 3xxx w/102 keyboard
- I/F Type I — PS/555530T w/104 keyboard
- I/F Type J — NEC®9801 keyboard
- Wand Emulation
- RS-232
- WN[2]—RS-232 (SNI)

The IBM/RS-232 Group supports:

- IBM Port 5B
- IBM Port 9B
- IBM Port 17
- IBM Port E
- RS-232
- WN-RS-232

The Universal [Keyboard] Wedge Group:

- Consult the *Universal Wedge Connectivity Guide*[3] for more information.
- For additional configuration/programming, refer to the *Universal Wedge Programming Guide*[3].

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1. Contact your dealer or sales representative if your desired interface is not listed. Interface group definitions are subject to change without notice.
2. Wincor Nixdorf® (formally SNI)
3. Contact your dealer or visit the website listed on the back cover of this manual for publications.

After familiarizing yourself with the basic programming procedures in this section, turn to the appropriate interface programming section (RS-232, Wand Emulation, etc.) of this manual to set other interface features, completing the conversion to a new interface type.

Upon changing the interface setting, scan a bar code to verify that the scanner communicates correctly with the new host system. Some sample bar codes are provided in *Appendix B: Sample Bar Codes* on page 191. If any changes to the scanner's factory settings are needed, consult *Customizing Your Scanner's Operation* on page 8.

Customizing Your Scanner's Operation

Most RF scanner programming falls within four general categories:

- **Interface Selection and Settings** — are the mandatory settings necessary to allow communication with your host terminal. Examples of these settings are: RS-232 baud rate and parity.

NOTE

> Ensure that your planned modifications are compatible with the current interface. For example, baud rate selections are only valid in the RS-232 interface. The scanner will sound an error tone when scanning programming labels for features invalid to the current interface group.

- **Symbology Selection and Settings** — gives the scanner the capability to autodiscriminate as few as one, and as many as all available symbologies. For optimal scanner performance enable only those symbologies required. Additionally the scanner may be programmed with the standard options available for the various symbologies, such as check digit, minimum label length, fixed and variable length bar codes, QuadraLogic Decoding, etc.

- **General Feature Settings** — are features common to all interface types. Examples include beeper adjustments such as volume and length, read verification settings, etc.

- **RF Feature Programming** — includes settings that are specific to the scanner's radio frequency capabilities.

If you experience difficulties, have questions or require additional information, contact your local distributor, or call your dealer or sales representative.

Programming Overview

The RF system's programmable feature settings can be modified to accommodate your unique requirements. Listed below are the various methods to configure scanner and Base Station units:

> **NOTE**
>
> **Base Stations and the scanners linked to them must possess compatible configuration files.**

Scanner

1. The Base Station's configuration files can be automatically downloaded to the scanner at the time of linking. See the sections, *Linking the Scanner to a Base Station* on page 150 and *Common Configuration* on page 174 for more details.

2. The easiest, most comprehensive way to program the scanner is to use the *Configurator Express™ On-Screen Programming Kit.* Contact Datalogic for more information about this product.

3. The scanner can be configured using special programming bar codes like those contained in this section. For the most part, the programming instructions and bar codes on the following pages address this method of scanner configuration.
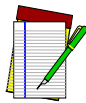
> **NOTE**
>
> **If you program the scanner using any of the methods above, the scanner will store the changes until reprogrammed or returned to factory defaults.**

Base Station

Base Station configuration is primarily performed by first program-
ming a scanner with the desired options, then downloading the config-
uration to the Base Station from that scanner via the barcode *Transmit
Scanner Configuration to Base Station* on page 11.

⚠️ **CAUTION**	**Verify that the scanner and Base Station host inter-
face types (RS-232, Keyboard Wedge, etc.) are
matched before attempting to download any config-
uration files or perform any custom programming
sessions. Go to the section *Interface Selection* and
set the scanner to the Base Station's I/F type.**

Transmit Scanner Configuration to Base Station

Feature is applicable to scanner *and* Base Station.

There are two reasons why a scanner's configuration would need to be downloaded to a Base Station:

• A configuration item affecting the Base Station is to be changed.

> **NOTE**
>
> **When configuring the system using programming bar codes, changes will not be implemented in the Base Station until they are transmitted from the scanner using the *Transmit Scanner Configuration to Base Station* bar code.**

• A new/replacement scanner may have a custom configuration or may have been modified with special programming. It may be desirable to download its configuration to the Base Station. If this is the circumstance, download configuration settings from a scanner to the Base Station following this procedure:

1. Using a scanner that is currently linked to the Base Station, scan the bar code, *DISABLE Common Configuration* on page 175.

2. Scan the bar code, *Transmit Scanner Configuration to Base StationTransmit Scanner Configuration to Base Station* on page 11.

3. Link the new scanner containing the desired configuration to the Base Station (see *Linking the Scanner to a Base Station* on page 150).

4. Download the new scanner's configuration to the Base Station by scanning the *Transmit Scanner Configuration to Base Station* bar code below.

⚠️ **CAUTION**	**After the Base Station receives the entire configuration, it will drop all links to scanners other than the scanner transmitting the new configuration. This will require the user to relink all other scanners (see *Linking the Scanner to a Base Station* on page 150). Prior to the time of relinking, it is advisable to consider enabling the feature, *Common Configuration* on page 174, ensuring that the Base Station will attempt to share the new configuration with scanners as they are linked.**

Transmit Scanner Configuration to Base Station   ---------

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What Is Programming Mode?

The scanner must be placed into the Programming Mode state in order to accept programming commands. When programming using the bar code labels in this manual, the scanner is placed in Programming Mode by scanning the "SET" label at the top of most programming feature pages.

While in Programming Mode, the scanner only recognizes special programming bar codes. See the *Appendix E: LED and Beeper Indications* on page 203 for information about scanner indications while in Programming Mode.

The Programming Session

Scanner programming allows you to customize the scanner's configuration to match your specific needs. A typical programming session is conducted as follows:

1. Scan the SET bar code at the top of the page. The scanner will emit one beep, indicating it has read the bar code and the green LED will flash on and off slowly while the scanner remains in Programming Mode. Normal scanning functions are disabled.

2. Scan the programming bar code(s) to make the desired changes. With few exceptions, the scanner will emit a triple beep each time you scan a valid programming bar code.

NOTE	**Not all features are available for all interfaces. The scanner will sound an error tone when scanning programming bar codes for features that cannot be used with the currently active interface. Only features supported by the currently active interface will be implemented.**

NOTE	**If you are enabling a different interface (I/F), we suggest/recommend that you change the I/F designation first and then proceed with other changes. Once a bar code is scanned that changes the scanner's I/F, all previous I/F configuration items scanned in the programming session are lost.**

3. Scan the END label at the bottom of the page to save any new settings and exit Programming Mode. The scanner will sound a beep and reset upon exiting Programming Mode, and the green LED will return to its usual state (on steady or off).

   The scanner will not exit Programming Mode unless the END bar code is scanned or the scanner's battery is removed. Removing power during Programming Mode, before scanning the END label, will cause all new settings to be ignored. On power-up, the scanner will return to previous settings.

4. **Maintain a record of all changes made** to ensure that you know if the original factory settings have been changed. Use the table in *Appendix D: Record of Programmable Features* on page 195 to log your custom configuration changes

Programming Sequence

To modify a scanner feature (item), the programming bar codes contained in this manual must be scanned in a given sequence depending upon the feature being programmed (as shown in Table 2). There are three possible programming sequences:

A. Programming sample A (the most commonly used format) demonstrates how three bar codes are scanned in sequence to do the following:

1. Place the scanner in Programming Mode (SET bar code).

2. Scan the Item Tag[1] that will enable the new feature.

3. End the programming session and reset the scanner (END bar code).

B. Sample B provides an example of a programming feature requiring the entry of a range value. Like sample A, the scanner is placed in Programming Mode and an Item Tag[1] is scanned. Then, a value must be entered before ending the programming session. In the example, three digits must be scanned from the number pad in *Appendix C: Keypad*. This type of format, requiring a total of as many as six programming bar codes, is necessary to allow flexible programming with larger item value numeric ranges.

C. The programming sequence shown in example C requires scanning of a single, extended length bar code. This special programming bar code contains all the data necessary to enter Programming Mode, set the Item Tag[1] and Item Value, and exit Programming Mode (all in one step).

---

1. An "Item Tag" is a term used to describe an assigned number, which is encoded in a programming bar code, that toggles (selects, enables, disables, etc.) a specific programming feature.

Table 2. Programming Sequence

	SET ⇨	ITEM TAG ⇨	ITEM VALUE ⇨	END/RESET
A	**1** SET	**2** ENABLE NEW FEATURE		**3** END
B	**1** SET	**2** ENABLE NEW FEATURE USING THE FOLLOWING SETTINGS...	**3 4 5** 0 / 0 / 8	**6** END
C	**1** — ONE BAR CODE CONTAINS SET + ITEM TAG + ITEM VALUE + END			
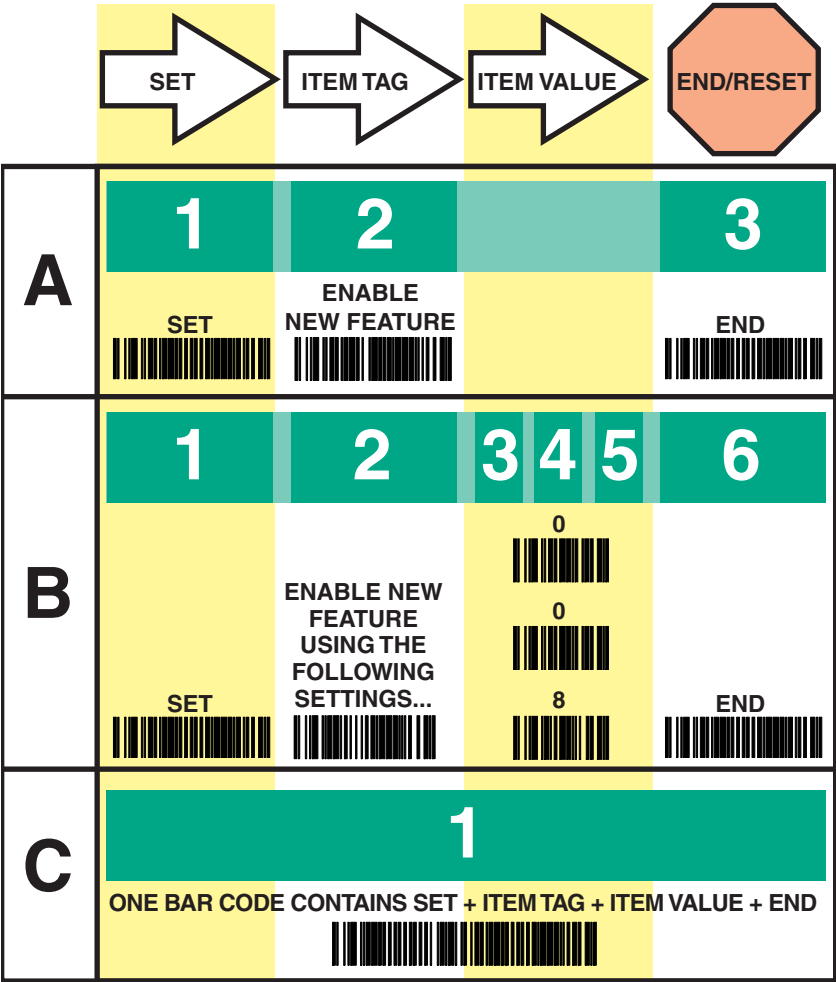
LED and Beeper Indications

The scanner and Base Station use a set of indicators to verify/announce the various system functions. See *Appendix E: LED and Beeper Indications* on page 203 for more information.

If You Make a Mistake...

If, during a programming session, you find that you are unsure of the RF system's settings or wish to reset its configuration, use the *Return to Factory Settings* on page 17 to return the configuration to the factory settings. Scanning this bar code will also reset any changes made during previous programming sessions.

Return to Factory Settings

Feature is applicable to scanner *and* Base Station.

Scan the bar codes below in sequence to return the scanner to the default settings configured at the factory. This label is typically used to return the RF unit to a "known" operating state when the present programming status is not known, faulty, or suspect.

> **CAUTION**
>
> **Use this bar code with caution, since it will reset ALL features that may have been programmed for that interface type since the RF unit's installation.**

SET ------------------------
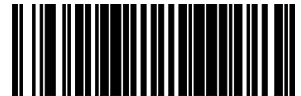
Return to Factory
Setting   ---------

END ------------------------
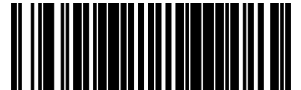
Transmit Scanner
Configuration to Base
Station   ---------

If you don't have a record of your site/system's original configuration, you may need to contact your sale representative for assistance to return the unit to normal function. Please be prepared to provide information about the company, location, host terminal system and other pertinent information about the unit being repaired.

Where To Go From Here

Programming is easy and straightforward if you follow these steps:

NOTE	**If you are changing some interface types (for example; if you are moving the RF unit from a Universal Keyboard Wedge to an RS-232 host) you must first change the hardware. Replace the Base Station's interface board (if required) and connect to the host terminal using the new interface cable BEFORE performing any programming changes. See *Hardware* on page 4 for more information.**

1. If you are changing the unit's interface type, follow the instructions in the section titled, *Changing Interfaces* on page 4 before proceeding.

2. Scan any feature bar codes that are unique to the interface you are currently programming.

3. Turn to *Symbologies Supported on page 73* if you are going to change any bar code symbologies or modify any symbology-related features.

4. Turn to the section, *General Features* if you wish to change or modify any of the scanner's other features.

Once the necessary changes have been made, and you have scanned the END bar code, you are ready to scan.

Interface Selection

It is very important that the scanner and Base Station are each config-
ured to operate with the same interface (I/F) type as the host terminal.
See *Changing Interfaces* on page 4 for more details.

> **NOTE**
>
> **The Base Station uses a "smart" cable, which auto-
> matically sets the Base Station to the correct I/F upon
> power-up and connection to the appropriate host.**

Turn to the appropriate section of the following pages to select your
required interface type and its available options:

- Wand Emulation Interface

- RS-232 Interface/WN-RS-232 (SNI) Interface

- Keyboard Wedge Interface

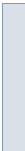- Universal Wedge Terminal Selection

- IBM Interface

Wand Emulation Interface

Feature is applicable to scanner *and* Base Station.

Scan these labels to enable the Wand Emulation Interface.

SET --------------------------

Enable Wand Emulation --------

END --------------------------
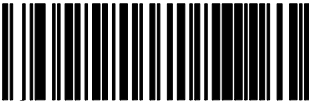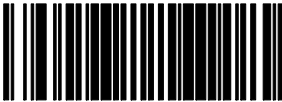
Transmit Scanner Configuration to Base Station --------

Wand Emulation Settings

Feature is specific to Base Station ONLY

Use these programming bar codes to configure the settings for the Wand Emulation Interface.

SET ----------------------------
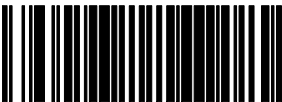
Polarity
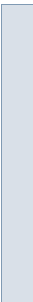
Space Low, Bar High ---------

Space High, Bar Low ---------

Signal Speed
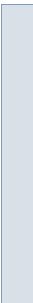
Low (660 µs) ---------

High (330 µs) ---------
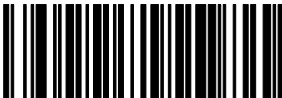
Data Format
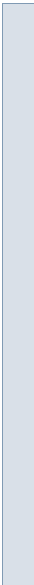
Transmit in Normal Format ---------

Transmit in C39 Format ---------

Transmit in C39 Full ASCII Format ---------

Transmit in C128 Format ---------

Idle State
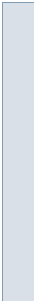
Low ---------

High ---------

END --------------------------
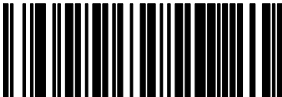
Transmit Scanner Configuration to Base Station ---------

Wand Emulation Pre-/ Post-Noise Settings

Feature is specific to Base Station ONLY

The number of noise transitions generated prior to or following label transitions are independently configurable options. To set noise transitions, enter Programming Mode by scanning the SET bar code, then follow these steps.

1. Scan Don't Transmit Pre-Noise or Don't Transmit Post-Noise, followed by the END bar code to disable noise transitions, or...

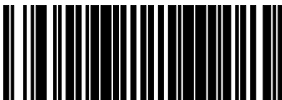2. Scan the Set Pre- or Post-Noise Transitions bar code followed by the digits from *Appendix C: Keypad* that represent the desired number of noise transitions. Select from one to twenty[1] noise transitions for either pre- or post-noise. Complete the programming sequence by scanning the END bar code.

NOTE	**Settings for this feature have been enhanced since the product was originally released, adding the option to select a specific quantity of noise transitions. If your scanner was built prior to February of 2001, pre-noise/post-noise transitions are enabled by following Step 2 above, EXCEPT the single digit selected from *Appendix C: Keypad* MUST be one (1). This will either set the pre-noise transitions to one or the post-noise transitions to three depending on which feature is being programmed. The feature is disabled in the same manner as Step 1 above.**

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1. Scanners built prior to February of 2001 MUST select the digit one (1). See the note on this page for details.

SET --------------------------

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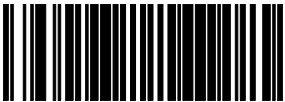
Post-Noise

**Don't Transmit Post-
Noise** ---------

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

**Set Post-Noise
Transitions** ---------

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Scan two digits representing the desired number of Post-Noise Transitions
using the number pad from Appendix C: Keypad, padded with leading zeros
(example: 03 = three transitions, 08 = eight, 15 = fifteen, etc.)

Pre-Noise

**Don't Transmit
Pre-Noise** ---------

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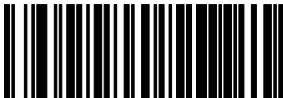
**Set Pre-Noise
Transitions** ---------

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Scan two digits representing the desired number of Pre-Noise Transitions
using the number pad from Appendix C: Keypad, padded with leading zeros
(example: 03 = three transitions, 08 = eight, 15 = fifteen, etc.)

END --------------------------

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
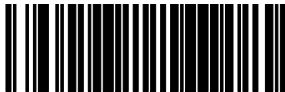
**Transmit Scanner
Configuration to
Base Station** ---------

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RS-232 Interface/WN-RS-232 (SNI) Interface

Feature is applicable to scanner *and* Base Station.

Scan these labels to enable either the standard RS-232 interface (Datalogic RS-232) or the WN-RS-232 (SNI) Interface.

SET --------------------------
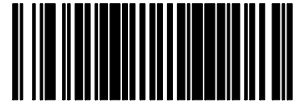
Enable Standard
RS-232   ---------

Enable WN-RS-
232   ---------

END --------------------------
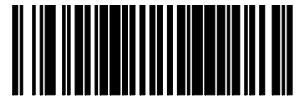
Transmit Scanner
Configuration to
Base Station   ---------

RS-232 Communication Parameters

RS-232 Communication Parameters are specific to Base Station ONLY

This section contains the following RS-232 communication parameters in the order listed:

- Baud Rate
- Data Format Settings
    - Data Bit
    - Parity Bit
    - Stop Bit(s)
- Handshaking
    - Hardware Handshaking (CTS/RTS)
    - Software Handshaking (Xon/Xoff)
- ACK/NAK Options
- Intercharacter Delay

Go to the sections titled *Symbology Options* on page 79 and *General Features* on page 181 if you want to change any other settings for this interface.

Baud Rate   Use the bar codes on this page to select the communications Baud Rate. Only one Baud Rate selection may be active at any one time. The last Baud Rate label you scan during a programming session will be the setting that is stored when you scan the END label.

SET ------------------------
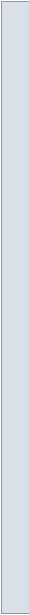
Baud Rate =
1200   ---------
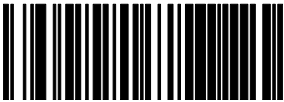
Baud Rate =
2400   ---------
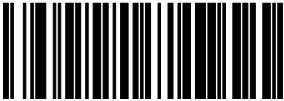
Baud Rate =
4800   ---------

Baud Rate =
9600   ---------
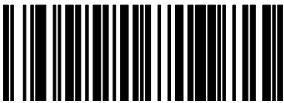
Baud Rate = 19200 ---------

Baud Rate = 38400 ---------

END --------------------------
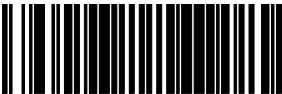
Transmit Scanner Configuration to Base Station ---------

Data Format Settings The Data Format bar codes can be used to select the data format configuration needed to communicate with your system. Refer to Table 3 below for acceptable combinations of these setting.

Data Format Table There are many possible data format configurations for an RS-232 interface. Check your host system manual to find out your system's communications requirements.

Table 3. RS-232 Data Format

| Data Bit	Parity Bit	Stop Bit(s)	Start Bit
Seven	0	2	1
Seven	1	1	1
Seven	1	2	1
Eight	0	0	1
Eight	0	2	1
Eight	1	1	1

Use these bar codes to set the Data Format options desired.

SET ---------------------------
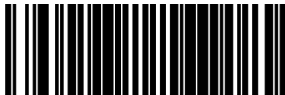
Data Bit
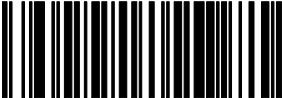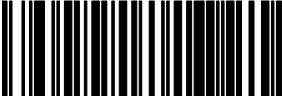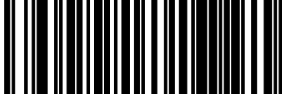
Seven ---------
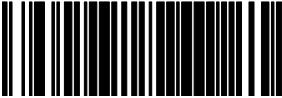
Eight ---------

Parity Bit

None   ---------

Even   ---------

Odd   ---------

Mark   ---------

Space   ---------

Stop Bit(s)

One   ---------

Two   ---------

END ---------------------------

Transmit Scanner
Configuration to
Base Station   ---------

Handshaking   Review your system documentation to identify handshaking require-
ments, and use these labels to change the settings if required. The fol-
lowing brief descriptions explain each selection.

**Hardware
Handshaking**   **CTS/RTS Flow Control** - is hardware handshaking. The scanner acti-
vates the RTS (Request to Send) line when it is ready to send data to the
host. The scanner waits for an active Clear to Send (CTS) signal from
the host before transmitting data. If hardware control is disabled, CTS/
RTS communication will not take place. If the host deactivates the CTS
line during data transmission, the host will receive additional charac-
ters for no more than 2ms[1].
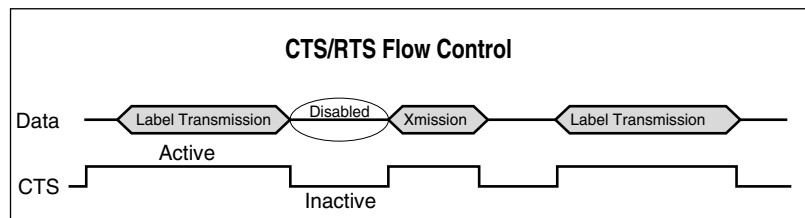
CTS Scan Control - is also a hardware handshaking. When scan con-
trol is enabled, label scanning is disabled until CTS is asserted and de-
asserted as illustrated below.

---
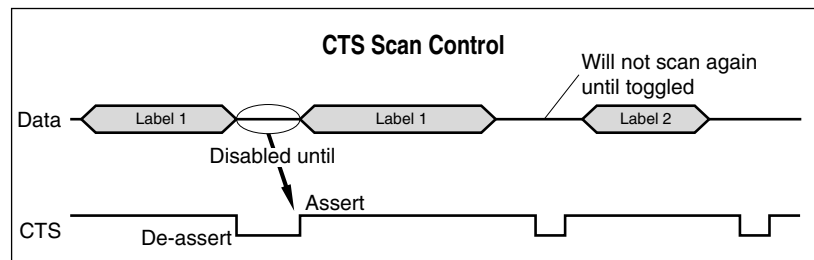
1. Timing varies slightly depending upon the baud rate selected.

Handshaking controls are mutually exclusive. The settings below allow only one of these features to be enabled at a time, as enabling multiple controls will produce unpredictable results.

> **NOTE**
>
> **Each of the handshaking features requires a series of bar codes to be read (Step #1, Step #2) in the sequence given. That is, you must enter Programming Mode by scanning the SET bar code, scan the bar codes required to set one handshaking feature, then scan the END bar code.**

Scan the SET bar code label then the Step #1, Step #2 below, followed by the END bar code labels to enable CTS/RTS Flow Control.

Enable CTS/RTS Flow Control

SET ----------------------------

Step #1   ---------

Step #2   ---------

END --------------------------
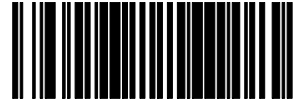
Transmit Scanner
Configuration to
Base Station   ---------

Scan the SET bar code label then the Step #1, Step #2 below, followed by the END bar code labels to enable CTS Scan Control.

Enable CTS Scan Control

SET -------------------------------

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

Step #1 ---------

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

Step #2 ---------

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

END ----------------------------

||||||||||||||||||||||||||||||||||
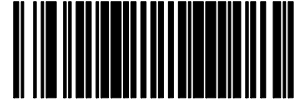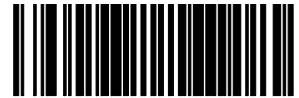
Transmit Scanner Configuration to Base Station ---------

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

Software Handshaking

Xon/Xoff - is software handshaking that allows the host to control data transmission. If the host sends an Xoff command to the scanner, the scanner will not send the bar code data until it receives an Xon command from the host. If the host sends the Xoff command during data transmission, the host will receive additional characters for no more than 2ms[1].

Scan the SET bar code label then the Step #1, Step #2 below, followed by the END bar code labels to enable Xon/Xoff Control.

Enable Xon/Xoff Control

SET ---------------------------

Step #1   ---------

Step #2   ---------

END ---------------------------
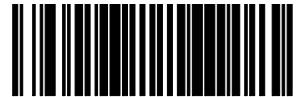
Transmit Scanner
Configuration to
Base Station   ---------

---

1. Timing varies slightly depending upon the baud rate selected.

Disable both CTS/RTS and Xon/Xoff Controls - disables both the CTS/RTS and Xon/Xoff software controls.

Scan the SET bar code label then the Step #1, Step #2 below, followed by the END bar code labels to disable both CTS/RTS and Xon/Xoff Control.

> **NOTE**
>
> **To disable either CTS/RTS or Xon/Xoff, you must first DISABLE BOTH CRTS/RTS and Xon/Xoff Control using the programming labels below. Then ENABLE the desired handshaking feature from page 32 or page 34.**

Disable both CTS/RTS and Xon/Xoff Control

SET ----------------------------

Step #1   ---------

Step #2   ---------

END --------------------------
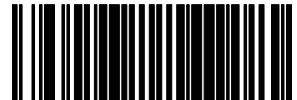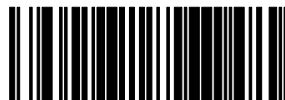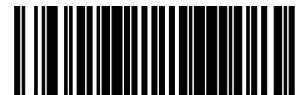
Transmit Scanner
Configuration to
Base Station   ---------

RS-232 ACK/ NAK Options

Several ACK/NAK parameters can be set for your scanner.

Options for RS-232 ACK/NAK are:

- Disable ACK/NAK
- Enable ACK/NAK for bar code transmission
- Enable ACK/NAK for host command acknowledge
- Enable ACK/NAK for bar code transmission and host command acknowledge

RS-232 ACK/NAK Options

SET ----------------------------
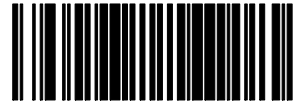
Disable ACK/ NAK   ---------

Enable for Bar Code Transmission   ---------

Enable for Host Command Acknowledge   ---------

Enable for Bar Code Transmission and Host Command Acknowledge   ---------

END ----------------------------
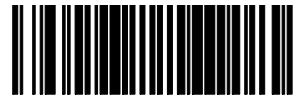
Transmit Scanner Configuration to Base Station   ---------

**RS-232
Intercharacter
Delay**

Intercharacter Delay refers to the pause, if any, between each character before it is sent to the host. This time delay is used to control the flow of data from the scanner.

SET ----------------------------

None   ---------

10 Milliseconds ---------

20 Milliseconds ---------

30 Milliseconds ---------

40 Milliseconds ---------

50 Milliseconds ---------

100
Milliseconds   ---------

200 Milliseconds --------- |||||||||||||||||||||||||

500 Milliseconds --------- |||||||||||||||||||||||||

1 Second --------- |||||||||||||||||||||||||

END --------------------------- |||||||||||||||||||||||||

Transmit Scanner Configuration to Base Station --------- |||||||||||||||||||||||||
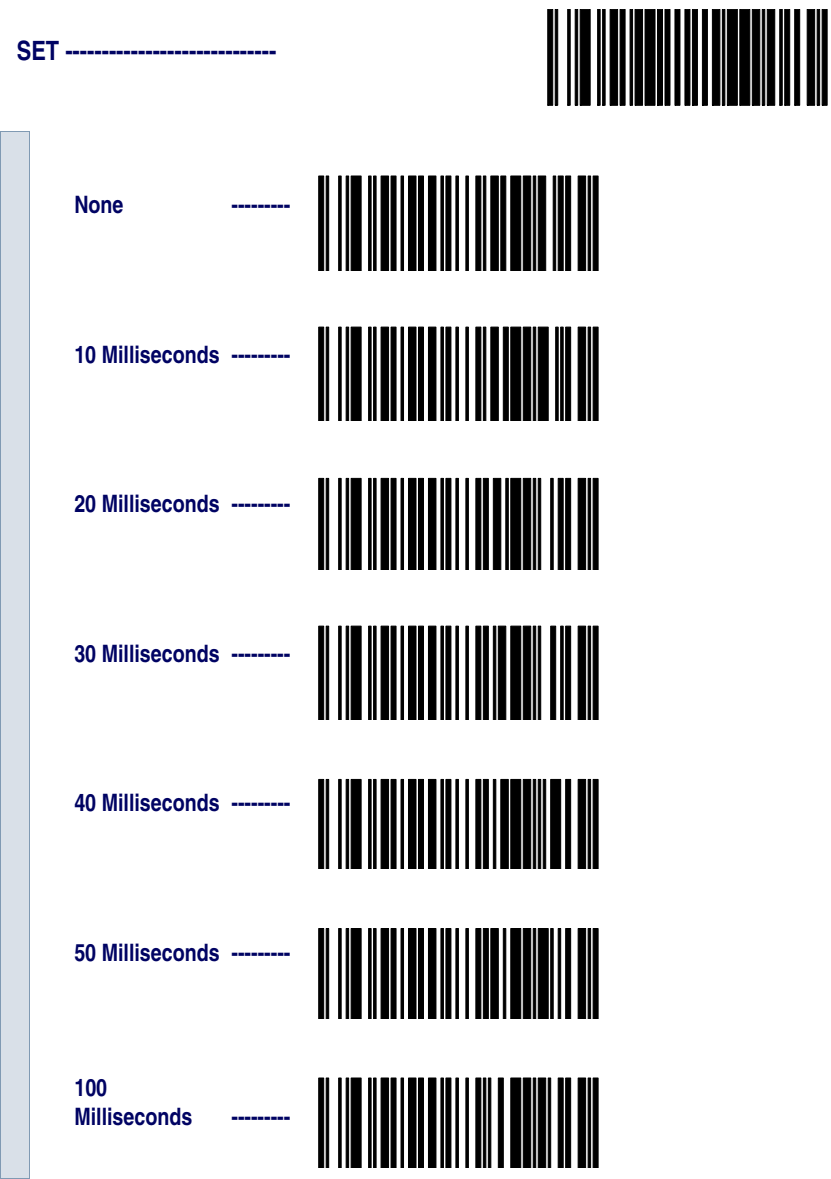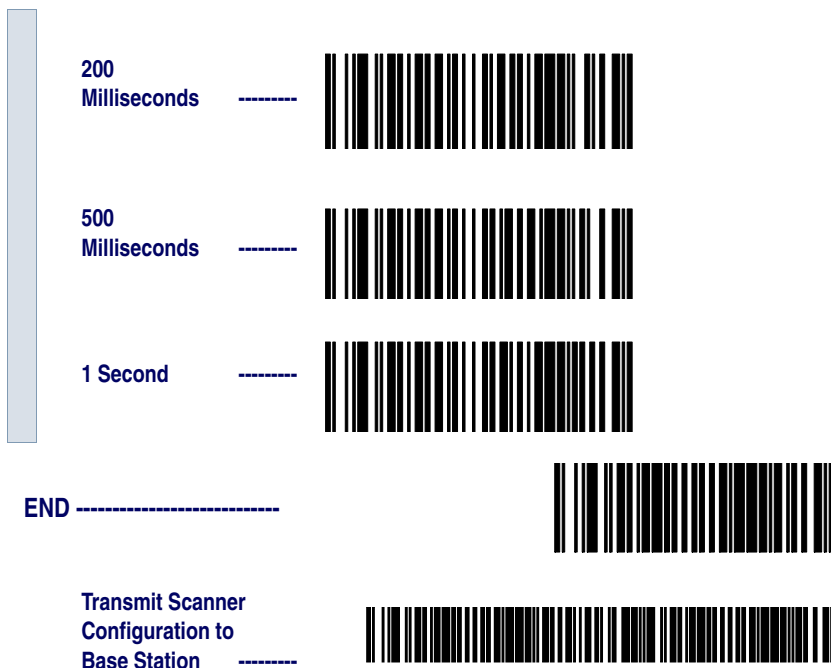
Keyboard Wedge Interface

This section contains the following PC Keyboard Wedge interface parameters in the order listed:

- Interface Selection
- Connect to a Laptop
- Caps Lock
- Country Mode
- Intercharacter Delay
- Quiet Interval

Go to the sections titled *Symbology Options* on page 79 and *General Features* on page 181 if you want to change any other settings.

> **NOTE**
>
> **If the transmission parameters are configured such that a label results in no actual data to send, the label will be accepted, beeped, and no data transmitted.**

PC Keyboard Wedge Interface Selection

 Feature is applicable to scanner *and* Base Station.

This scanner supports a variety of PC Keyboard interfaces. The table below defines the different interface selections. Scan the corresponding bar code starting on page 40 to select the desired keyboard interface.

I/F Type	PCs Supported
A	PC/XT w/Alternate Key Encoding
B	AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Alternate Key Encoding
C	PS/2 25 and 30 w/Alternate Key Encoding
D	PC/XT w/Standard Key Encoding
E	AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Standard Key Encoding
F	PS/2 25 and 30 w/Standard Key Encoding
G	IBM 3xxx w/122 keyboard
H	IBM 3xxx w/102 keyboard
I	PS/55 5530T w/104 keyboard
J	NEC 9801

NOTE

We recommend that you disconnect power before plugging/unplugging cables to avoid any possibility of equipment damage.

Scan the bar codes corresponding to the applicable Keyboard type listed on page 39.

PC Keyboard Interface Type

SET ---------------------------
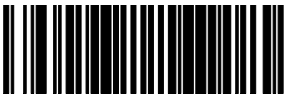
A ---------

B ---------

C ---------

D ---------

E ---------

F ---------

G ---------
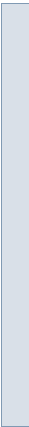
H   -------- ||| || ||| ||||| || ||| || |||
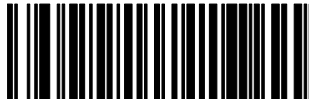
I   -------- ||| || ||| ||||| || ||| || |||
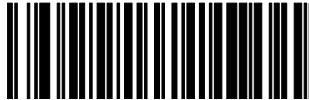
J   -------- ||| || ||| ||||| || ||| || |||

END ---------------------------- || | ||| ||||||||||||||| ||||
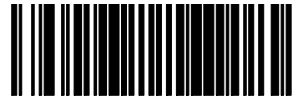
**Transmit Scanner
Configuration to
Base Station**   -------- || ||| |||||||| ||| ||| ||| | ||| || |||||||||| |||

Keyboard Wedge Options

Keyboard Wedge options are specific to Base Station ONLY

Connect to a Laptop/No Keyboard Attached

If no keyboard is attached, the scanner must provide the acknowledge signal to the PC. In this case, enable the "Laptop/No External Keyboard" mode. If a keyboard is attached, enable "Keyboard Attached."

Laptop (integrated keyboard) — provides the acknowledge signal to the PC when the scanner is connected to a laptop computer or when the scanner is operated with no external keyboard.

PC (external keyboard) — is enabled when the scanner is connected to a standard PC.

Send Control Characters — transmits all ASCII characters except NUL (00h) . Disabling this feature limits transmission of ASCII characters to the following:

- Only ASCII characters between 20h and 127h, plus.
    - Carriage Return (CR=0Dh)
    - BackSpace (BS=08h)
    - Right Tab (HT=09h)
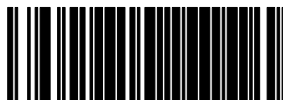   - Left Tab (0Bh)
    - Esc (1Bh)

Send Function Character — transmits characters between 00H - IFH which are not in the normal ASCII set. Scan the bar code below to select the applicable option for connecting to a laptop or PC.

SET ----------------------------

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

Connect to Laptop or PC

Laptop/No external Keyboard ---------

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

Keyboard Attached ---------

||| | ||| ||||| ||| || |||
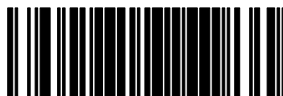
Send Control/Function Characters

Enable Control Characters ---------

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

Enable Function Characters ---------

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

Disable ---------

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

END --------------------------

|| | ||||| ||||| ||| ||| |||
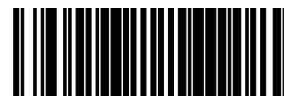
Transmit Scanner Configuration to Base Station ---------

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

Caps Lock Three caps lock settings are available. These are:

- Caps Lock Off - sends character data (to the host in normal format.

- Caps Lock On - sends character data (to the host) in reverse case:

    (a.z) = (A.Z)

    (A.Z) = (a.z)

Use this feature if your keyboard's caps lock key is on.

- Caps Lock = Shift-Lock - sends character data (to the host) in shifted case. Use this feature if you choose to use the keyboard with the shift lock key left on. **For use with interface type G (IBM 3xxx 122-keyboard) ONLY.**

SET --------------------------

Caps Lock OFF ---------
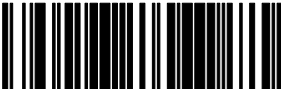
Caps Lock ON ---------

Cap Locks =
Shift Lock ---------

END --------------------------

Transmit Scanner
Configuration to
Base Station ---------

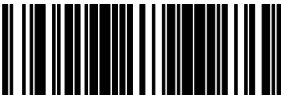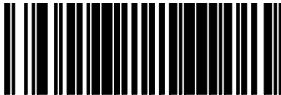**Country Mode**   The following country/languages can be selected when configured for I/F Type E only:

• USA	• France	• Portugal	• Japanese 106-Key
• Belgium	• Germany	• Spain	
• Britain	• Italy	• Sweden	
• Denmark	• Norway	• Switzerland	

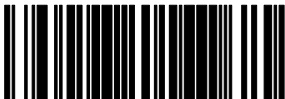Scan the bar code below to selected the desired country.

SET --------------------------

USA   --------

Belgium   --------

Britain   --------

Denmark   --------

France   --------
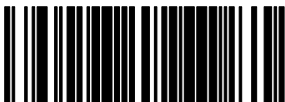
Germany	---------	
Italy	---------	
Norway	---------	
Portugal	---------	
Spain	---------	
Sweden	---------	
Switzerland	---------	
Japanese 106-Key	---------	
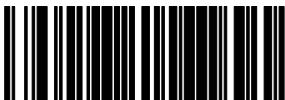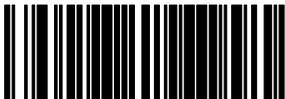
END ----------------------------

Transmit Scanner Configuration to Base Station ---------

Keyboard Wedge Intercharacter Delay

Intercharacter Delay refers to the pause, if any, between each character before it is sent to the host. This time delay is used to control the flow of data from the scanner. Use these labels to select the desired Intercharacter Delay.

SET ---------------------------
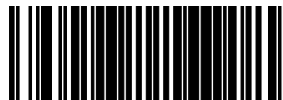
None ---------

5 Milliseconds ---------

10 Milliseconds ---------

20 Milliseconds ---------

30 Milliseconds ---------

40 Milliseconds ---------

60 Milliseconds ---------

80 Milliseconds ---------

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

90 Milliseconds ---------

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

END ----------------------------

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

Transmit Scanner Configuration to Base Station ---------

|| |||||||||||||||||| ||| || |||||||||||| |||
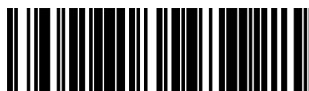
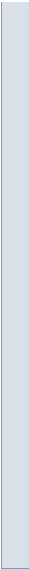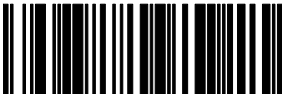**Quiet Interval**   Quiet Interval is the amount of time to look for keyboard activity before the scanner breaks the keyboard connection in order to transmit data to the host.

SET ----------------------------

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

10 Milliseconds ---------

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

20 Milliseconds ---------

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

50 Milliseconds ---------

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

**100
Milliseconds** ---------

**200
Milliseconds** ---------

**500
Milliseconds** ---------

1 Second ---------

END --------------------------
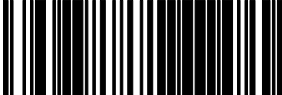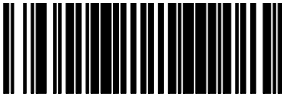
**Transmit Scanner
Configuration to
Base Station** ---------

Universal Wedge Terminal Selection

To activate the Universal Wedge interface, follow these instructions:

1. Scan the START bar code.

2. Determine the I.D. of the terminal/keyboard. Refer to the *Terminal/Keyboard Settings* section below for more information plus a listing of the most common keyboard I.D.s.

3. Scan the Activate Universal Wedge Interface bar code.

4. Use the Universal Wedge Number Pad to scan in the digits for the keyboard I.D. number you determined in step 2.

5. Scan the END bar code.

START-------------------------------------

Activate Universal Wedge Interface   ---------

Scan the digit(s) representing the desired keyboard I/F type using the Universal Wedge Number Pad, then scan the END bar code.

END --------------------------------------

Terminal/ Keyboard Settings

The list below contains the most common terminal/keyboard types. If your specific system is not listed below, consult the Universal Keyboard Wedge Connectivity Guide for a detailed listing of terminal/keyboard types. A copy of the guide can be obtained from the internet at the website listed on the back cover of this manual, or call your dealer for customer support information.

Keyboard	Terminal I.D.
High Speed PC/AT, PS2	591
PC AT, PS2	11
MAC	25

The default communication mode (factory settings) is Keyboard Wedge of PC AT (keyboard I.D. 11). Use the codes on this page to select the I. D. corresponding to your computer or terminal (reference the Universal Keyboard Wedge Connectivity Guide for this product or call Datalogic Customer Support).

0 →

1 →

2 →

3 →

4 →

5 →

6 →

7 →

8 →

9 →

IBM Interface

Feature is applicable to scanner *and* Base Station.

The IBM Group supports:

- Port 5B•Port 17•Port 9B•Port E

Scan the SET bar code to enter the programming mode, then scan the programming bar code below to activate the desired interface, followed by the END bar code to exit the programming mode and reset the scanner.

SET ----------------------------

Enable Port 5B ---------

Enable Port 9B ---------

Enable Port 17 ---------

Enable Port E ---------

END --------------------------

Transmit Scanner
Configuration to
Base Station ---------

Transmit Labels in Code 39 Format

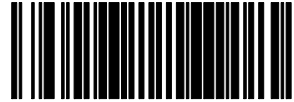Feature is specific to Base Station ONLY

When this feature is enabled, the symbology identifier for the specified label will be set to Code 39 and the label will be transmitted. No data checking or conversion is done. Table 4 below shows the symbologies converted.

Table 4. Symbologies Converted to Code 39

Port	Symbology Converted
Port 5B	Code 128, Code 93, Codabar
Port 9B	Code 93, Codabar
Port 17	No Effect
Port E	No Effect

Scan the bar codes below to enable/disable the Conversion to Code 39 option.
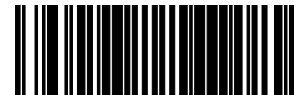
SET ---------------------------

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

Enable Conversion to Code 39 ---------

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

Disable Conversion to Code 39 ---------

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

END ---------------------------

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

Transmit Scanner Configuration to Base Station ---------

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

Label Transmit Configuration (RS-232 and Keyboard Wedge Interfaces only)

Label Transmit Configuration features are specific to Base Station ONLY

If you need to send information in addition to bar code label data, the scanner can be configured to transmit Global Prefixes (also known as preambles), Global Suffixes (also known as postambles), and symbology specific identifier characters (termed Label ID).

Prefix, Suffix, and Label ID

The table below shows examples of how Prefix, Suffix, and Label ID characters can be applied. The third column contains the label data, while the first, second, fourth and fifth columns contain the additional characters added by way of the Prefix, Label ID as Prefix, Label ID as Suffix, and Global Suffix respectively. The last column shows the resulting data that will be transmitted when the additional characters are applied.

	NOTE	Using this feature requires a thorough understanding of your specific system requirements. If you have questions or need assistance with these features, call your system specialist or Datalogic technical support.

Table 5. Prefix, Suffix, Label ID Examples

Global Prefix (00 = No Char)		Label ID as Prefix		Label Data	Label ID as Suffix		Global Suffix (00 - No Char)		
1st Char	2nd Char	1st Char	2nd Char	(Examples)	1st Char	2nd Char	1st Char	2nd Char	Resulting Label Format
00	00	None		0998875	None		00	00	0998875
P	Q	None		0011223344	None		000	000	PQ0011223344
00	00	F	F	00210126	None		00	00	FF00210126
P	Q	A	00[a]	00210126	None		00	00	PQA00210126
00	00	None		$99.95	%	00[a]	00	00	$99.95%
P	Q	None		998875	%	00[a]	00	00	PQ998875%
00	00	None		101234567891	None		S	W	101234567891SW
P	Q	None		Code39Test	None		S	W	PQCode39TestSW
00	00	E	00[a]	Code128	None		S	00	ECode128S
P	00	E	F	0998875	None		S	W	PEF09988875SW
00	00	None		0998875	F	F	S	W	0998875FFSW
P	Q	None		0011223344	F	00[a]	S	W	PQ0011223344FSW

a. No second character

Setting Global Prefix(es)

One or two prefix characters may be added to the standard label format when desired. For the addition of more than two prefix characters, contact your distributor or technical support representative for Full Label Edit (FLE) options.

Identify your specific system requirements before adding or modifying these settings, then follow these steps:

1. Look at the ASCII chart shown on the inside back cover of this manual, and identify the ASCII character(s) and the corresponding Hex Code(s) for the ASCII characters you will use as prefixes.

For example, if you are going to send two prefix characters as 'STX' (start transmit) and 'SP' (Space), the ASCII chart shows that 'STX' equals 02 hex and 'SP' equals 20 hex.

2. Scan the SET bar code on page 58.

3. Scan the SET PREFIX bar code.

4. Turn to *Appendix C: Keypad on page 193*, and scan the four digits corresponding to the hex values determined in step one above. (For the example, scan 0, 2, 2, 0). Return to this page and go to step five.

NOTE

Successful programming of a prefix requires 4 digits.
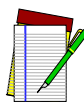
NOTE

If you make a mistake or lose your place while setting this option, scan the END bar code to exit Programming Mode. The scanner will sound a two-beep error tone to indicate that programming was incomplete, and the setting will remain as it was before entering Programming Mode.

---

5. Scan the END bar code.

You have added a two character prefix to all bar code data, regardless of label symbology, that will be added to the label data before it is sent to the host.
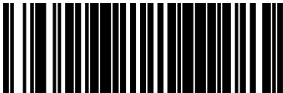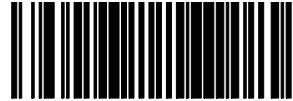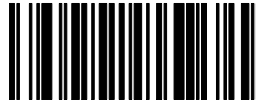

Setting Global Prefix(es)

SET -------------------------------

‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Set Prefix   ---------

‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖

Turn to *Appendix C: Keypad on page 193*, and scan the four digits corresponding to the hex values determined in step one above.

END -----------------------------

‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

**Transmit Scanner
Configuration to
Base Station**   ---------

‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Setting Global Suffix(es)

One or two suffix characters may be added to the standard label format when desired. For the addition of more than two suffix characters, contact your distributor or technical support representative for Full Label Edit (FLE) options.

Identify your specific system requirements before adding or modifying these settings, then follow these steps:

1. Look at the ASCII chart shown on the inside back cover of this manual, and identify the ASCII character(s) and the corresponding Hex Code(s) for the ASCII characters you will use as suffixes.

For example, if you are going to send two suffix characters as 'LF' (Line Feed) and 'CR' (Carriage Return). The ASCII chart shows that 'LF' equals 0A hex and 'CR' equals 0D hex.

2. Scan the SET bar code on page 60.

3. Scan the Set Suffix bar code.

4. Turn to *Appendix C: Keypad on page 193*, and scan the four digits corresponding to the Hex Values determined in step one above. (For the example, scan 0, A, 0, D), then go to step five.

<table>
<tr><td>IMPORTANT NOTE</td><td>**If you are using the Universal Wedge interface, do not modify the suffix setting. Refer to the Universal Wedge Programming Guide to modify the suffix setting.**</td></tr>
</table>

<table>
<tr><td>NOTE</td><td>**If you make a mistake or lose your place while setting this option, scan the END bar code to exit Programming Mode. The scanner will sound a two-beep error tone to indicate that programming was incomplete, and the setting will remain as it was before entering Programming Mode.**</td></tr>
</table>

<table>
<tr><td>NOTE</td><td>**Successful programming of a suffix requires 4 digits.**</td></tr>
</table>

5. Scan the END bar code. You have added a two character suffix to all bar code data, regardless of label symbology, that will be added to the label data before it is sent to the host

Setting Global Suffix(es)

SET -----------------------------

Set Suffix ---------	
Turn to *Appendix C: Keypad on page 193*, and scan the four digits corresponding to the Hex Values determined in step one above.	

END ----------------------------
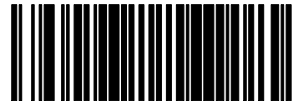
Transmit Scanner Configuration to Base Station ---------

Single Character Prefix or Suffix

The scanner will not transmit a prefix or suffix character if its hex value is set to zero. To set a prefix or suffix that has only one character, follow these steps:

1. Scan the SET bar code on page 62.

2. Scan SET PREFIX or SET SUFFIX bar code.

3. Turn to the keypad (*Appendix C: Keypad on page 193*) and scan the two-digit hex code that represents your desired character (refer to the ASCII chart on the inside back cover of this manual for this conversion).

4. Scan the digit '0' two times to disable transmission of a second character.

For example, if 'Space' (SP) is desired, the chart shows that the corresponding hex code for 'SP' is 20, thus you would scan the digit 2, then the digit 0 for the first character, followed by 00 digits from the keypad for the second character, (e.g., scan 2,0,0,0). Return to this page and go to step five.

NOTE	**Successful programming of a prefix or suffix requires 4 digits.**

NOTE	**If you make a mistake or lose your place while setting this option, scan the END bar code to exit Programming Mode. The scanner will sound a two-beep error tone to indicate that programming was incomplete, and the setting will remain as it was before entering Programming Mode.**

5.   Scan the END bar code on page 62.

Setting a Single Character Prefix/Suffix

SET ----------------------------
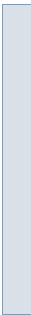
Set Prefix ---------

Set Suffix ---------

END ---------------------------

Transmit Scanner Configuration to Base Station ---------

Disabling Prefix or Suffix

To disable global prefix or suffix characters, follow these instructions:

1. Scan the SET bar code below.

2. Scan SET PREFIX or SET SUFFIX.

3. Scan the digit '0' four times to disable the prefix or suffix characters. Go to step four.

4. Scan the END bar code.

Disabling Global Prefix/Suffix Characters

SET --------------------------
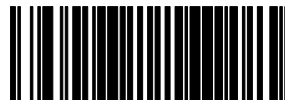
Set Prefix   ---------

Set Suffix   ---------

0   ---------

END --------------------------
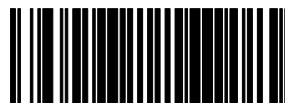
Transmit Scanner
Configuration to
Base Station   ---------

Setting Label ID

Setting the Label ID feature can be a complex task requiring multiple steps to enable all necessary options. You'll want to familiarize yourself with the contents of this section before proceeding. Here is a brief listing of the order of its contents:

- Label Identifiers
- Setting Label ID Locations
- Setting Label ID Characters by Symbology
- Label ID Symbology Selection
- Setting Single Character Label ID
- Disabling Label ID for a Specific Symbology

Label Identifiers

Symbology-specific label identifiers comprise one or two ASCII characters that can precede or follow bar code label data as it is transmitted to the host. The host may use these characters as a means of distinguishing between symbologies.

Industry standards have been established for symbology-specific label identifiers, and are listed in the table below. Most scanners will have factory default identifiers preset to these standards.

Table 6. Industry Standard Label Identifiers (all are prefixes)

Symbology	ID	Symbology	ID
UPC-A	A	EAN-8 (8 Add-ons)	FF
UPC-E	E	EAN-13 (2 Add-ons)	F
EAN-8	FF	EAN-13 (5 Add-ons)	F
EAN-13	F	EAN-13 (8 Add-ons)	F
UPC-A (2 Add-ons)	A	Code 39	*
UPC-A (5 Add-ons)	A	PharmaCode	A
UPC-A (8 Add-ons)	A	Codabar	%
UPC-E (2 Add-ons	E	Interleaved 2 of 5	i
UPC-E (5 Add-ons)	E	Standard 2 of 5	i
UPC-E (8 Add-ons)	E	Code 93	&
EAN-8 (2 Add-ons)	FF	Code 128	#
EAN-8 (5 Add-ons)	FF	UCC/EAN 128	None
		MSI/Plessey	@

Setting Label ID Location   Use the following bar codes to choose the position where Label ID characters will be placed in relation to scanned label data:

- None (no Label ID), (e.g., prefix, label data, suffix)

- Prefix (before), (e.g., prefix, **label ID**, label data, suffix)

- Suffix (after) , (e.g., prefix, label data, **label ID**, suffix).

> **NOTE**
>
> **Your selection (prefix, suffix, or none) will apply universally to all symbologies and cannot be individually selected for each.**

1. Scan the SET bar code.

2. Scan the bar code for the desired position.

3. Scan the END bar code.

Setting Label ID Location

SET -----------------------------
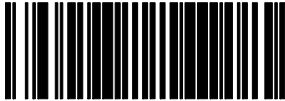
Label ID = None ---------
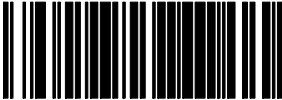
Position Label ID as
Prefix   ---------
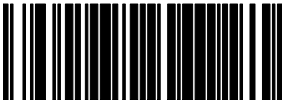
Position Label ID as
Suffix   ---------

END -----------------------------
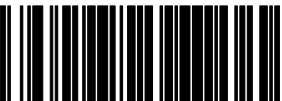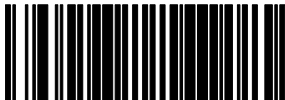
Transmit Scanner
Configuration to
Base Station   ---------

Setting Label ID by Symbology

To set symbology-specific label identifiers (Label ID):

1. Look at the ASCII chart on the inside back cover, and identify the ASCII character(s) and the corresponding Hex Code(s) for the ASCII characters you will use as identifiers.

For example: You need to change the Label ID for UPC-A to 'A1'.

2. Scan the SET bar code on page 68.

3. Scan the bar code starting on page 68 representing the symbology whose Label ID you wish to modify. Scan only one symbology type per programming session. The last symbology scanned is the one used.

In our example, we would scan the 'UPC-A' symbology bar code.

4. Identify and scan the four digits from the *Appendix C: Keypad on page 193* that correspond to the Hex Values you determined in step one above. Return to this page and go to step five.

The hex values from the ASCII chart that correspond to 'A1' from our example are as follows: 41 hex = 'A', and 31 hex = '1'. Thus, we would scan digit programming bar codes in this order: 4, 1, 3, 1.

5. Scan the END bar code on page 70.

NOTE

Successful programming requires 4 digits for the Label ID

You have changed the default Label ID for UPC-A from 'A' to 'A1'.

Scan the bar code representing the symbology whose label you want to modify. Scan only one symbology type per programming session.

Setting Label ID Characters by Symbology

SET ----------------------------
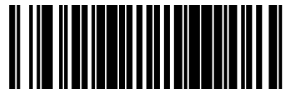
Code 39   ---------
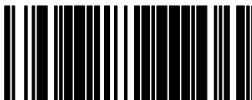
PharmaCode 39 ---------

Code 128   ---------
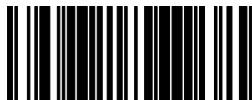
UCC/EAN 128   ---------
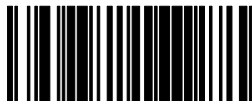
Interleaved 2 of 5 ---------
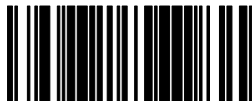
Codabar   ---------
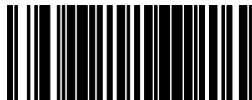
UPC-A   ---------

UPC-A w/2 digit
Add-ons   ---------

UPC-A w/5 digit Add-ons ---------
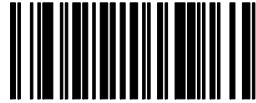
UPC-A w/C128 Add-ons ---------

UPC-E ---------
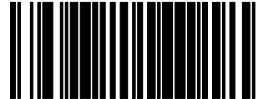
UPC-E w/2 digit Add-ons ---------

UPC-E w/5 digit Add-ons ---------
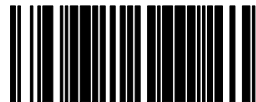
UPC-E w/C128 Add-ons ---------

EAN-13 ---------
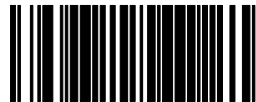
EAN-13 w/2 digit Add-ons ---------
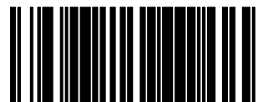
EAN-13 w/5 digit Add-ons ---------
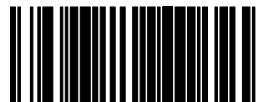
EAN-13 w/C128 Add-ons ---------

EAN-8 ---------
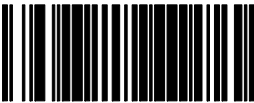
EAN-8 w/2 digit Add-ons ---------

EAN-8 w/5 digit Add-ons ---------

EAN-8 w/C128 Add-ons ---------

Code 93 ---------

Standard 2 of 5 ---------

MSI/Plessey ---------

END ----------------------------
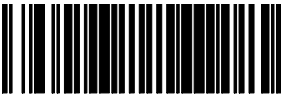
Transmit Scanner Configuration to Base Station ---------

Setting Single Character Label ID

The scanner will not transmit a label ID character if its hex value is set to zero. If you have determined that you need a Label ID that contains only a single character, follow this modified procedure:

1. Scan the SET bar code on page on page 68.

2. Scan your selection from the list starting on page 68 for the symbology identifier you plan to change.

For example, scan the EAN-8 bar code to select that symbology.

3. Turn to the keypad (*Appendix C: Keypad on page 193*) and scan the two-digit hex code that represents your desired character (refer to the ASCII chart on the inside back cover of this manual for this conversion).

4. Scan the digit '0' *two* times to disable transmission of a second character. Return to this page.

As an example, assume that you want to change the Label ID for EAN-8 from the default setting "FF" to the single character "8". In this example, note that the chart shows that the ASCII character '8' is equivalent to 38 hex, therefore the digits 3, then 8 should be scanned followed by two zeros (00) to indicate a single character ID (e.g., scan 3,8,0,0)

5. Scan the END bar code on page 70.

NOTE	**Successful programming requires 4 digits for the Label ID**

NOTE	**If you make a mistake or lose your place while setting this option, scan the END bar code to exit Programming Mode. The scanner will sound a two-beep error tone to indicate that programming was incomplete, and the setting will remain as it was before entering Programming Mode.**

Disabling Label ID for a Specific Symbology

This procedure is the same as Setting Single Character Label ID above, except you should scan *four* zeros before scanning the END bar code.

Symbologies Supported

Symbology selection (bar code type) determines which symbologies the scanner will decode. The chart below shows the symbologies that are supported by each interface. Once you have identified the symbologies you wish to enable, turn to the following pages, enable those symbologies and set the data format options (e.g. check digit, start/stop characters) required by your host system for each symbology type. You must enable the symbology format options settings that are compatible with your host system.

The factory settings for each interface were chosen to meet the standard industry requirements and in most cases you will not need to change the symbology format settings. If you are unsure of your system requirements, test the scanner using the factory settings before making any changes.

SYMBOLOGIES SUPPORTED

● = Supports this symbology

INTERFACE TYPE	Code 39/PharmaCode	Code128	EAN 128	Interleaved 2 of 5	Codabar	UPC-A & E, EAN-13 & 8	UPC/EAN w/P2 Add-ons	UPC/EAN w P5 Add-ons	UPC/EAN w/C128 Add-ons	Code 93	Standard 2 of 5/IATA	MSI/Plessey
RS-232-STD	●	●	●	●	●	●	●	●	●	●	●	●
WN*-RS-232	●	●	●	●	●	●	●	●	●	●	●	●
Wand Emulation	●	●	●	●	●	●	●	●	●	●	●	●
Keyboard Wedge (all subtypes)	●	●	●	●	●	●	●	●	●	●	●	●
IBM Port 5B	●	●		●	●	●	●	●	●	●		
IBM Port 9B	●	●		●	●	●	●	●	●	●	●	
IBM Port 17	●	●		●	●	●	●	●	●	●		
IBM Port E	●	●		●	●	●	●	●	●	●		

*Wincor Nixdorf

Symbology Overview

This section provides a brief descriptions of each of the many symbology features and options available.

Enable Code 39 - selects Code 39 as an active symbology and allows selection of Check Digit, Start/Stop and Single Digit options.

Enable PharmaCode 39 - is a symbology subset of Code 39. Enabling PharmaCode 39 allows the scanner to read both PharmaCode 39 and Standard Code 39 labels.
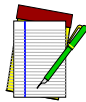
> **NOTE**
>
> **Standard Code 39 must be enabled before PharmaCode can be enabled.**

Enable Code 128 - selects Code 128 as an active symbology. The scanner is preset to recognize all Code 128 bar codes that have between 1 and 50 characters.

Enable UCC/EAN 128 - chooses EAN 128 as an active symbology. The Automatic Identification Manufacturers, Inc. of the United States (AIM USA) have standardized the reporting of data sources from bar code reading devices. Sending the AIM symbology prefix identifies the symbology to the host terminal, allowing it to specifically differentiate between UCC/EAN-128 (Code 128 with Function Character 1 in the first position) and standard Code 128 symbols. When this feature is disabled, the host cannot differentiate between these symbols.

Enable Interleaved 2 of 5 - selects Interleaved 2 of 5 as an active symbology. Allows change of Check Digit or label format (fixed or variable length) options.

Enable Codabar - selects Codabar as an active symbology. Allows selection of Check Digit, Start/Stop character and format, or label format (fixed or variable length) options.

Enable UPC-A - enables UPC-A as an active symbology. If you enable this symbology, additional options for symbology expansion and reading add-ons are available.

Enable UPC-E - tells the scanner to recognize UPC-E as an active symbology. Like UPC-A, UPC-E offers options for symbology expansion and reading of add-ons.

Enable EAN-13 - selects EAN-13 as an active symbology. EAN-13 options are similar to those of the EAN-8 symbology.

Enable EAN-8 - selects EAN-8 as an active symbology. EAN-8 symbology selection also allows options for symbology expansion and reading of add-ons.

Enable Code 93 - enables Code 93 as an active symbology. The scanner is preset to recognize all Code 93 bar codes that have between 1 and 50 characters.

Enable Standard 2 of 5 - selects Standard 2 of 5 as an active symbology. Options for this symbology are similar to Interleaved 2 of 5 features.

IATA - is a special symbology subset of Standard 2 of 5. Enabling IATA selects this custom code as the active Standard 2 of 5 symbology (superseding any other Standard 2 of 5 features).

> **NOTE**
>
> **Standard 2 of 5 must be enabled in order for IATA to be active, however, when IATA is enabled, Standard 2 of 5 will not be decoded.**

Enable MSI/Plessey - selects MSI/Plessey as an active symbology. Allows selection of Check Digit or label format (fixed or variable length) options.

Symbology Selection

Symbology selection is applicable to both the scanner *and* Base Station.

The bar code programming labels on the following pages allow you to enable specific symbologies or disable all symbologies.

NOTE	**If you enable a symbology that has additional features that should be set, turn to the pages that support that symbology and its programmable features.**

SET --------------------------------------
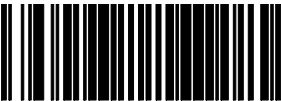
NOTE	**To optimize your scanner's performance, first disable all symbologies by scanning the DISABLE ALL SYMBOLOGIES bar code, then enable ONLY those symbologies required by your site.**

Disable all Symbologies ---------

Symbology Selections

Enable Code 39 ---------

Enable PharmaCode 39[a]   ---------

Enable Code 128   ---------

Enable UCC/EAN 128   ---------

Enable Interleaved 2 of 5   ---------

Enable Codabar   ---------

Enable UPC-A   ---------

Enable UPC-E   ---------

Enable EAN-13   ---------

Enable EAN-8   ---------

a. Code 39 must first be enabled for the scanner to read PharmaCode 39 labels.

Enable Code 93 --------- ||| || ||||| |||| ||| ||||| ||||

Enable Standard 2 of 5 --------- ||| ||||||| ||| |||||| |||

Enable IATA[a] --------- ||| |||| |||||| ||||||| |||

Enable MSI/ Plessey --------- ||| ||| ||| |||| |||||

END ---------------------------- ||| ||| ||||||||||||||||||

Transmit Scanner Configuration to Base Station --------- |||||||||||||||||||||||||||||||||

a. Standard 2 of 5 must first be enabled for IATA to be active, however, when IATA is enabled, Standard 2 of 5 will not be decoded.

Symbology Options

After enabling the desired symbology, you can use the bar code labels in this section to configure the specific options/features required for your site.

Code 39/PharmaCode 39

Code 39 Options The Code 39 symbology has the following programmable features:

- Check Digit
- Start/Stop Characters
- Code 39 Full ASCII
- Minimum Label Length
- Read Verification
- QuadraLogic™ II Decoding

Check Digit Check Digit calculates the Check Digit to verify that the Check Digit contained in the bar code label is correct. If you enable this feature, your bar codes must contain a Check Digit.

Start/Stop Characters Start/Stop Characters selects either Send or Don't Send depending on your host's interface requirement.

Code 39 Full ASCII Code 39 Full ASCII enables or disables the ability to decode Code 39 Full ASCII labels.

Minimum Label Length Minimum Label Length sets the minimum label length required for the Code 39 symbology. This feature causes the scanner to ignore small label segments, reducing the possibility that a portion of a good label is incorrectly seen as an entire label.

Read Verification Read Verification is the number of times the scanner is required to read the bar code data before sending the label data to the host.

QuadraLogic™ II Decoding QuadraLogic™ II Decoding directs the scanner to decode labels with widespread problems of spots, voids, and/or non-uniform widths.

To optimize your scanner's performance activate this option only for symbologies for which it is necessary.

There are many additional ways to configure the scanner to read and decode extremely poor labels. Contact your sales representative or service provider for other advanced QuadraLogic™ II Decoding settings.

Configuring the Code 39 Options

Code 39 options are all applicable only to the scanner, with the exception of Check Digit Transmission, which applies only to the Base Station.

Use the special bar codes in this section to configure the Code 39 options

SET ----------------------------
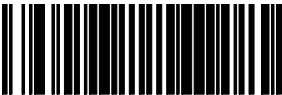
Check Digit
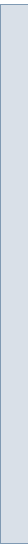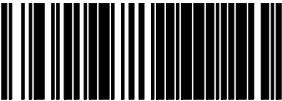
Don't Calculate ---------

Calculate ---------
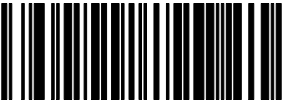
Don't Transmit ---------

Transmit ---------

Start/ Stop

Don't Transmit --------- ||| ||| ||||||| ||||| ||||| |||
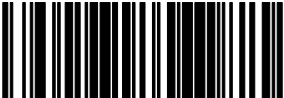
Transmit --------- ||| ||| |||||||| |||||| |||| |||

Code 39 Full ASCII
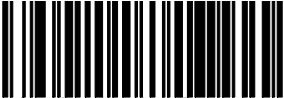
Enable --------- ||| ||| |||||||| ||||| |||| |||

Disable --------- ||| ||| |||||||||| ||||| |||| |||

END ---------------------------- ||| ||| ||||||||||||| |||||||

Transmit Scanner
Configuration to
Base Station --------- ||| ||||||||| ||||||||| |||| ||| |||||||| |||

Follow these steps to set Code 39 Minimum Label Length:

1. Identify the minimum label length setting you want to make. The selectable range is 00 to 48[1] characters.

2. Scan the SET bar code.

3. Scan the SET MINIMUM LABEL LENGTH bar code.

4. Set the minimum label length by scanning the applicable digits from the bar codes on page 83. Return to this page and go to step five.
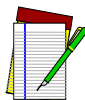
> **NOTE**
>
> **If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**

5. Scan the END barcode.

Minimum Label Length

SET --------------------------------------

Set Minimum Label Length ---------

END --------------------------------------

---
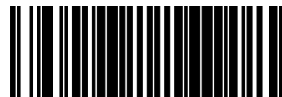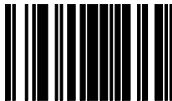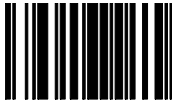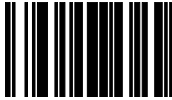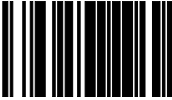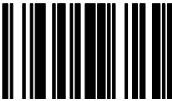
1. For this symbology, the scanner will decode up to 48 characters, but the actual length read will vary depending upon interface type, and bar code physical size and quality. Code 39 bar codes containing one or more full ASCII characters can also limit the amount of characters that will be decoded (in these circumstances, the scanner will decode at least 24 data characters).

Digits

0   --------   ‖‖|‖‖|‖‖|‖‖|‖‖

1   --------   ‖‖|‖‖|‖‖|‖‖|‖‖

2   --------   ‖‖|‖‖|‖‖|‖‖|‖‖

3   --------   ‖‖|‖‖|‖‖|‖‖|‖‖

4   --------   ‖‖|‖‖|‖‖|‖‖|‖‖

5   --------   ‖‖|‖‖|‖‖|‖‖|‖‖

6   --------   ‖‖|‖‖|‖‖|‖‖|‖‖

7   --------   ‖‖|‖‖|‖‖|‖‖|‖‖

8   --------   ‖‖|‖‖|‖‖|‖‖|‖‖

9   --------   ‖‖|‖‖|‖‖|‖‖|‖‖

Scan the bar codes below to set the minimum number of reads required to verify Code 39/Pharmacode 39 symbologies.

> **NOTE**
>
> **The more times the scanner is required to read and compare the bar codes data, the longer the scanner will take to validate and transmit a label.**

SET --------------------------------------

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

Set to One read   ---------

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

Set to Two reads   ---------

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

Set to Three reads   ---------

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

Set to Four reads   ---------

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

END --------------------------------------

||||||||||||||||||||||||||||
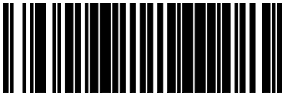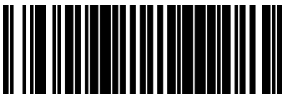
QuadraLogic™ II Decoding
Scan these bar codes to activate/deactivate the QuadraLogic™ II Decoding feature for Code 39/PharmaCode 39 symbologies.

SET --------------------------------------

||| |||| ||| ||||| ||| ||| |||
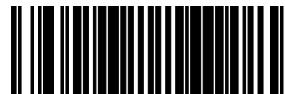
Activate for Code 39/
PharmaCode 39   ---------

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

Deactivate for Code 39/
PharmaCode 39   ---------

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

END --------------------------------------

||| |||| ||| ||||| ||| ||| |||
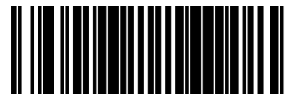
PharmaCode 39 Options
PharmaCode 39 symbology has the following programmable features:

- Transmit Check Digit
- Start/Stop Characters

Transmit Check Digit
Transmit Check Digit selects whether the Check Digit will/won't be transmitted to the host terminal.

Start/Stop Characters
Start/Stop Characters directs the scanner to either Send or Don't Send depending on your host's interface requirement.

> **NOTE**
> **In order for PharmaCode 39 labels to be read and transmitted as PharmaCode 39, the Code 39 symbology must first be enabled.**

These features are specific to the Base Station ONLY

Scan the bar codes below to configure the PharmaCode 39 options for Check Digit and Start/Stop Characters.

SET ------------------------------
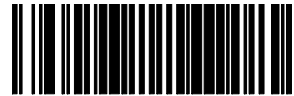
Check Digit

Don't Transmit ---------
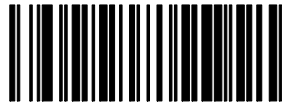
Transmit ---------

Start/Stop

Don't Transit ---------

Transmit ---------

END ---------------------------
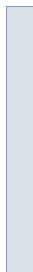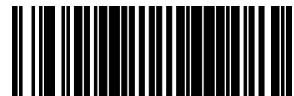
Transmit Scanner Configuration to Base Station ---------

Code128 and UCC/EAN 128 Options

These Code 128 and UCC/EAN 128 features are specific to the scanner ONLY

The Code 128 and UCC/EAN 128 symbologies have the following programmable feature.

- Minimum Label Length
- Read Verification
- QuadraLogic™ II Decoding

Setting Minimum Label Length Setting Minimum Label Length sets the minimum length required for Code 128 and UCC/EAN symbology. This feature causes the scanner to ignore small label segments, reducing the possibility that a portion of a good label is incorrectly seen as an entire label.

Read Verification Read Verification is the number of times the scanner is required to read the bar code data before sending the label data to the host.

QuadraLogic™ II Decoding QuadraLogic™ II Decoding directs the scanner to decode labels with widespread problems of spots, voids, and/or non-uniform widths.

To optimize your scanner's performance activate this option only for symbologies for which it is necessary.

There are many additional ways to configure the scanner to read and decode extremely poor labels. Contact your sales representative or service provider for other advanced QuadraLogic™ II Decoding settings.

Use the bar codes in this section to configure the Code 128 and UCC/EAN 128 options.

**Minimum
Label Length**

Follow these steps to set Code 128 and UCC/EAN 128 Minimum Label Length.

1. Identify the minimum length setting you want to make. The selectable range is 00 to 80[1] characters.

2. Scan the SET bar code on page 88.

3. Scan the SET MINIMUM LABEL LENGTH bar code.

4. Set the minimum label length by scanning the applicable digits from the bar codes on page 89. Return to this page and go to step five

> **NOTE**
>
> **If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**

5. Scan the END bar code

Minimum Label Length

SET --------------------------------------
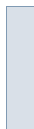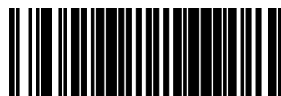
Set Minimum Label Length ---------

END --------------------------------------

---
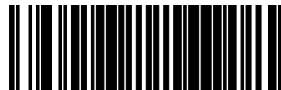
1. The scanner will decode up to 80 characters, but the actual length read will vary depending upon interface type, the physical size of the bar codes, print quality and whether the bar code data consists of Code 128 code set A, set B, or set C characters. (The C128 character set C allows for more densely packed data, thus if the bar code includes all or mostly C128 set C characters, more characters can be decoded).

Digits

0   --------

1   --------

2   --------

3   --------

4   --------

5   --------

6   --------

7   --------

8   --------

9   --------

Scan the bar codes below to set the minimum number of reads required to verify Code 128 and UCC/EAN symbologies.

> **NOTE** The more times the scanner is required to read and compare the bar codes data, the longer the scanner will take to validate and transmit a label.
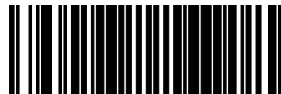
SET --------------------------------------

Set to One read ---------

Set to Two reads ---------

Set to Three reads ---------

Set to Four reads ---------

END --------------------------------------
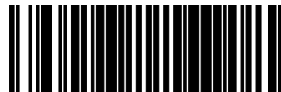
QuadraLogic™ II Decoding Scan these bar codes to activate/deactivate the QuadraLogic™ II Decoding feature for the Code 128 and UCC/EAN 128 symbologies.

SET --
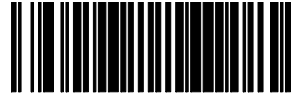
Activate for C128 and
UCC/EAN 128   ---------

Deactivate for C128 and
UCC/EAN 128   ---------

END --
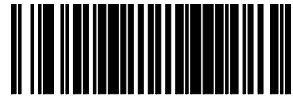
Interleaved 2 of 5 Options

The Interleaved 2 of 5 symbology has the following programmable features:

- Check Digit
- Label Length Format
- Read Verification
- QuadraLogic™ II Decoding

Check Digit
Check Digit calculates the Check Digit to verify that the Check Digit contained in the bar code label is correct. If you enable this feature, your bar codes must contain a Check Digit.

If the Check Digit is not calculated, the digit will be sent regardless of settings for transmit or don't transmit. For example, if you choose to Transmit Check Digit, but not calculate, the scanner sends the Check Digit encoded in the bar code without verifying its accuracy.

Label Length Format
Label length format permits the selection between variable length or fixed length formats. For best performance it is recomended to use the Fixed Length settings when your application requires only one or two label lengths.

Variable Length Format - directs the scanner to read all labels from the minimum label length to 50. Set Minimum Length as high as your application allows.

> **Minimum Label Length** - selects the minimum label length that the scanner will recognize. The minimum label length for this symbology must be an *even* number of characters between 02 and 50[1].

Fixed Length Format - directs the scanner to read only one or two label lengths.

If you select fixed length format, there are three bar code labels for programming your scanner to read either one or two fixed lengths. The labels are:

> **Set First Fixed Length** - instructs the scanner that the next two programming labels scanned will define the first fixed label length. This setting can be any *even* number of characters between 02 and 50[1] characters.

---

1. For this symbology, the scanner will decode up to 50 characters, but the actual length read will vary depending upon the interface type, and bar code physical size and quality.

Set Second Fixed Length - instructs the scanner that the next two programming labels scanned will define the second fixed label length. This setting can be any *even* number of characters between 02 and 50[1] characters.

No Second Fixed Length - configures the scanner to recognize only the first fixed length.

Read Verification

Read Verification is the number of times the scanner is required to read the bar code data before sending the label data to the host.

QuadraLogic™ II Decoding

QuadraLogic™ II Decoding directs the scanner to decode labels with widespread problems of spots, void, and/or non-uniform widths.

To optimize your scanner's performance activate this option only for symbologies for which it is necessary.

There are many additional ways to configure the scanner to read and decode extremely poor labels. Contact your sales representative or service provider for other advanced QuadraLogic™ II Decoding settings.

---

1. For this symbology, the scanner will decode up to 50 characters, but the actual length read will vary depending upon the interface type, and bar code physical size and quality.

I 2 of 5 options are all applicable only to the scanner, with the
exception of Check Digit Transmission, which applies only to
the Base Station.

Use the special bar codes in this section to configure the Interleaved
2 of 5 symbology options.
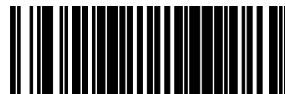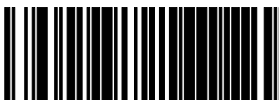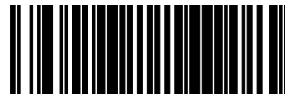
Check Digit

SET ----------------------------

Don't Calculate ---------

Calculate   ---------

Don't Transmit ---------

Transmit   ---------

END ---------------------------

Transmit Scanner
Configuration to
Base Station   ---------

Follow the steps below to set the Interleaved 2 of 5 label Length Format to select either the *Variable Length* or *Fixed Length Format.*

Variable Length Format Follow the steps below to set the Interleaved 2 of 5 symbology to Variable Length Format.

1. Identify the minimum length setting you want to make. The selectable range is any *even* number from 02 to 50^1 characters.

2. Scan the SET bar code below.

3. Scan the ENABLE VARIABLE LENGTH FORMAT bar code.

4. Scan the SET MINIMUM LABEL LENGTH bar code.

5. Set the minimum label length by scanning the correct digits from page 98. Return to this page and go to step six.

NOTE

If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).

---

6. Scan the END bar code.

Variable Length Format

SET --------------------------------------

Enable Variable Length
Format ---------

Set Minimum Label
Length ---------

END --------------------------------------

---
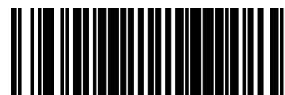
1. For this symbology, the scanner will decode up to 50 characters, but the actual length read will vary depending upon the interface type, and bar code physical size and quality.

Fixed Length Format

All interfaces that are shipped with the standard factory configuration are set to read variable length labels. If you switch from the variable to fixed length format, the default label lengths are 14 characters and 8 digits. All fixed length settings must be an *even* number.

Follow the steps below to set Interleaved 2 of 5 symbology to Fixed Length Format.

1. Identify the fixed length settings you want to make.

2. Scan the SET bar code.

3. Scan the ENABLE FIXED LENGTH FORMAT bar code.

4. Scan the SET FIRST FIXED LENGTH bar code.

5. Set the first fixed label length by scanning the digit bar codes from page 98 (even number only). Return to this page.

> **NOTE**
>
> **If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**

If you need to set a second fixed length, continue to step six. If you do not need to set a second fixed length skip to step nine.

6. Scan the SET SECOND FIXED LENGTH bar code.

7. Set the second fixed label length by scanning the applicable digit bar codes from page 98.

8. Return to this page and go to step ten.

> **NOTE**
>
> **If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**

9. Scan the NO SECOND FIXED LENGTH bar code.

10. Scan the END bar code.

Fixed Length Format

SET --------------------------------------- ||| ||||||||||||||||||||||

Enable Fixed Length
Format   --------- ||| ||||||||||||||| ||| |||

Set First Fixed Length   --------- ||| |||||||||||| ||||||| |||

Set Second Fixed Length --------- ||| |||||||||| ||||||| |||

No Second Fixed Length --------- ||| ||||||| |||||||||||| |||

END --------------------------------------- ||| ||||||||||||||||||||||

Digits

0	--------	‖ ‖‖‖‖‖‖‖‖
1	--------	‖ ‖‖‖‖‖‖‖‖
2	--------	‖ ‖‖‖‖‖‖‖‖
3	--------	‖ ‖‖‖‖‖‖‖‖
4	--------	‖ ‖‖‖‖‖‖‖‖
5	--------	‖ ‖‖‖‖‖‖‖‖
6	--------	‖ ‖‖‖‖‖‖‖‖
7	--------	‖ ‖‖‖‖‖‖‖‖
8	--------	‖ ‖‖‖‖‖‖‖‖
9	--------	‖ ‖‖‖‖‖‖‖‖
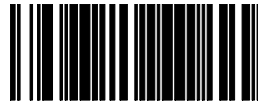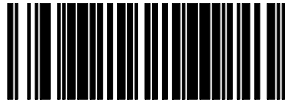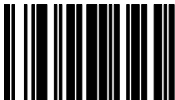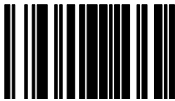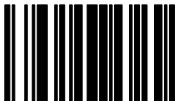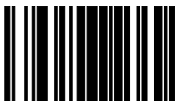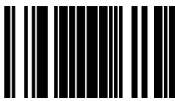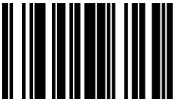
Read Verification Scan the bar codes below to set the number of reads desired to verify Interleaved 2 of 5 symbology.

> **NOTE**
>
> **The more times the scanner is required to read and compare the bar codes data, the longer the scanner will take to validate and transmit a label.**
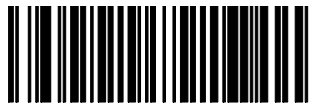
SET --
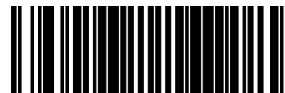
```
||| ||||||||||||||||||||||
```

Set to One read   ---------

```
||| ||||||||| ||| ||||| |||
```

Set to Two reads   ---------

```
||| ||||||||| ||| ||||| |||
```

Set to Three reads   ---------

```
||| ||||||||| ||| ||||| |||
```

Set to Four reads   ---------

```
||| ||||||||| ||| ||||||| |||
```

END --
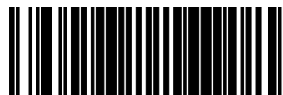
```
||| ||||||||||||||||||||||
```

QuadraLogic™ II Decoding Scan these bar codes to activate/deactivate the QuadraLogic™ II Decoding feature for Interleaved 2 of 5 symbology.
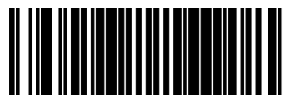
SET --

Activate for Interleaved 2 of 5 ---------

Deactivate for Interleaved 2 of 5 ---------

END --

Codabar Options

The Codabar symbology has the following programmable features:

- Check Digit
- Gap Check
- Label Length Format
- Start/Stop Character
- Start/Stop Match
- Start/Stop Format
- Read Verification
- QuadraLogic™ II Decoding

Check Digit   Check Digit calculates the Check Digit to verify the label's contents have been read correctly. If you enable this feature, your labels must include a Check Digit. You may also choose to transmit or not transmit the Check Digit.

If the Check Digit is not calculated, the digit will be sent regardless of settings for transmit or don't transmit. For example, if you choose to Transmit Check Digit, but not calculate, the scanner sends the Check Digit encoded in the label without verifying its accuracy.

Gap Check   Disabling Gap Check allows the scanner to combine two label halves printed in close proximity to each other that may have been printed at different times and perhaps different locations.

Label Length Format   Label length format permits the selection between variable length or fixed length formats. For best performance it is recomended to use the Fixed Length settings when your application requires only one or two label lengths.

Variable Length Format - directs the scanner to read all labels from minimum label length to 50. Set Minimum Length as high as your application allows.

> **Minimum Label Length** - selects the minimum label length that the scanner will recognize. The minimum label length for this symbology must be between 03 and 50[1].

Fixed length Format - directs the scanner to read only one or two label lengths.

---

1. For this symbology, the scanner will decode up to 50 characters, but the actual length read will vary depending upon the interface type, and bar code physical size and quality.

If you select fixed length format, there are three bar code labels for programming your scanner to read either one or two fixed lengths. The labels are:

Set First Fixed Length - instructs the scanner that the next two programming labels scanned will define the first fixed label length. This setting must be between 03 and 50[1] characters.

Set Second Fixed Length - instructs the scanner that the next two programming labels scanned will define the second fixed label length. This setting must be between 03 and 50[1] characters.

No Second Fixed Length - configures the scanner to recognize only the first fixed length.

---

1. For this symbology, the scanner will decode up to 50 characters, but the actual length read will vary depending upon the interface type, and bar code physical size and quality.

| Start/Stop Characters | Start/Stop Characters can be either Send or Don't Send depending on your host's interface requirement. Refer to your host user's manual to identify your system requirements. |

Start/Stop Match — Start/Stop Match can be enabled or disabled.

Start/Stop Format — Start/Stop Format can be set to one of four standard format options: ABCD/TN*E, ABCD/ABCD, abcd/tn*e, or abcd/abcd. This setting must match your system requirements. If you select one of these options, it determines how the ASCII characters A, B, C, D (used for Start/Stop characters) are translated before being sent to the host.

Read Verification — Read Verification is the number of times the scanner is required to read the bar code data before sending the label data to the host.

QuadraLogic™ II Decoding — QuadraLogic™ II Decoding directs the scanner to decode labels with widespread problems of spots, voids, and/or non-uniform widths.

To optimize your scanner's performance activate this option only for symbologies for which it is necessary.

There are many additional ways to configure the scanner to read and decode extremely poor labels. Contact your sales representative or service provider for other advanced QuadraLogic™ II Decoding settings.

Configuring the Codabar Options

Codabar options are all applicable only to the scanner, with the exception of the features for setting Check Digit Transmission and Start/Stop Characters, which apply only to the Base Station.

Use the special bar codes in this section to configure the Codabar symbology options.
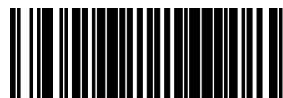
SET ----------------------------
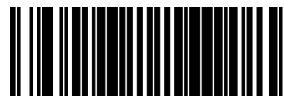
Check Digit
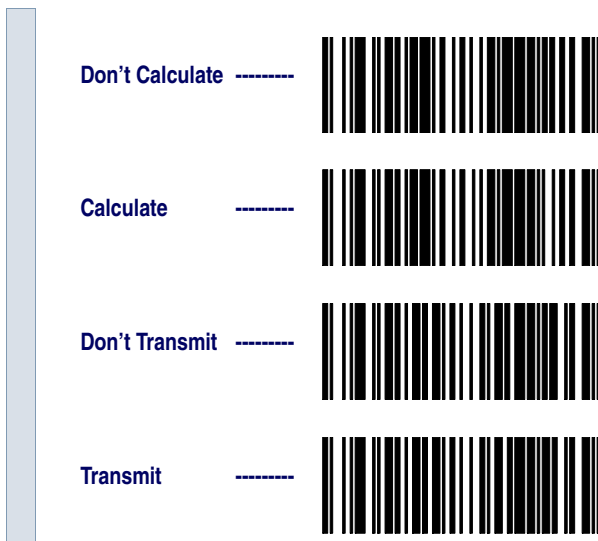
Don't Calculate ----------

Calculate ----------

Don't Transmit ----------

Transmit ----------

Gap Check

Enable ----------

Disable ----------

END ----------------------------

Transmit Scanner
Configuration to
Base Station ----------

Label Length Format   Follow the steps below to set the Codabar label Length Format to select either the *Variable Length* or *Fixed Length Format*.

Variable Length Format

Follow the steps below to set the Codabar symbology to Variable Length Format.

1. Identify the minimum length setting you want to make. The selectable range is 03 to 50[1] characters.

2. Scan the SET bar code below.

3. Scan the ENABLE VARIABLE LENGTH FORMAT bar code.

4. Scan the SET MINIMUM LABEL LENGTH bar code.

5. Set the minimum label length by scanning the correct digits from page 108. Return to this page and go to step six.

> **NOTE**
>
> **If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**

6. Scan the END bar code.

Variable Length Format

SET --------------------------------------

Enable Variable Length
Format   ---------

Set Minimum Label
Length   ---------

END -------------------------------------

---
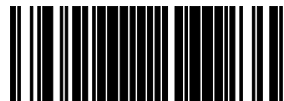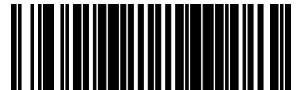
1. For this symbology, the scanner will decode up to 50 characters, but the actual length read will vary depending upon the interface type, and bar code physical size and quality.

Fixed Length Format The scanner offers the option of requiring Codabar labels to have one or two fixed lengths in the Fixed Label Format. Follow the steps below to set Codabar symbology to Fixed Length Format.

1. Identify the fixed length settings you want to make.

2. Scan the SET bar code.

3. Scan the ENABLE FIXED LENGTH FORMAT bar code.

4. Scan the SET FIRST FIXED LENGTH bar code.

5. Set the first fixed label length by scanning the applicable digit bar codes from the page 108. Return to this page.

> **NOTE**
> **If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**

If you need to set a second fixed length, continue with step six. If you do not need to set a second fixed length, skip to step nine.

6. Scan the SET SECOND FIXED LENGTH bar code.

7. Set the second fixed label length by scanning the applicable digits bar codes from the page 108.

8. Return to this page and go to step ten.

> **NOTE**
> **If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**

9. Scan the NO SECOND FIXED LENGTH bar code.

10. Scan the END bar code.

Fixed Length Format

SET ---------------------------------------

Enable Fixed Length Format ---------

Set First Fixed Length ---------

Set Second Fixed Length ---------

No Second Fixed Length ---------

END ---------------------------------------
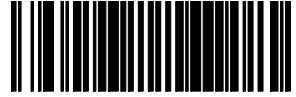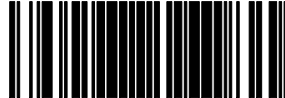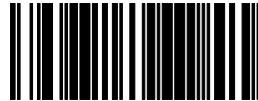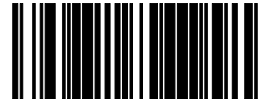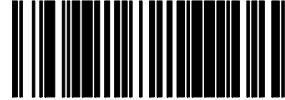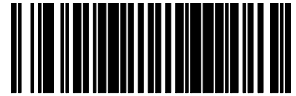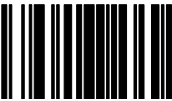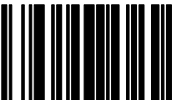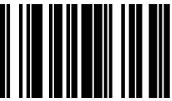
Digits
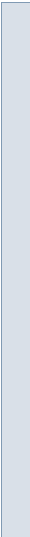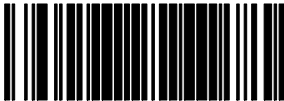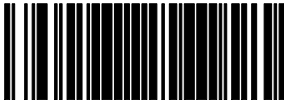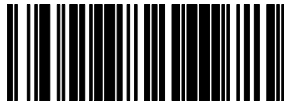
0   ---------

1   ---------

2   ---------

3   ---------

4   ---------

5   ---------

6   ---------

7   ---------

8   ---------

9   ---------

Feature is specific to Base Station ONLY

Start/Stop Characters

SET --

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

Match not required ---------

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

Match Required ---------

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

Don't Transmit ---------

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

Transmit [a]
(requires Format) ---------

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

a. Choosing Transmit **Start/Stop** characters requires selecting one of these four data format selections: ABCD/TN*E, abcd/tn*e, ABCD/ABCD, or abcd/abcd.
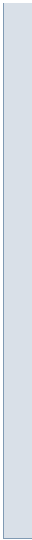
Format = ABCD/ TN*E ---------
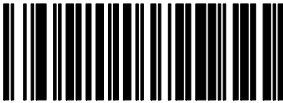
Format = abcd/ tn*e ---------
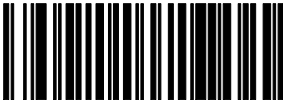
Format = ABCD/ ABCD ---------
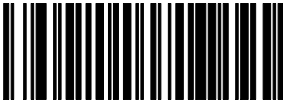
Format = abcd/ abcd ---------

END ----------------------------
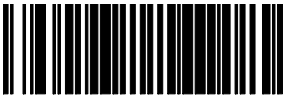
Transmit Scanner Configuration to Base Station ---------

Read Verification Scan the bar codes below to set the number of reads desired to verify Codabar symbology.

> **NOTE**
>
> **The more times the scanner is required to read and compare the bar codes data, the longer the scanner will take to validate and transmit a label.**

SET --

Set Read to One read   ---------

Set to Two reads   ---------

Set Read to Three reads   ---------

Set to Four reads   ---------

END --

QuadraLogic ™ II Decoding Scan these bar codes to activate/deactivate the QuadraLogic™ II Decoding feature for the Codabar symbology.

SET --

Activate for Codabar ---------

Deactivate for Codabar ---------

END --

UPC/EAN Options

The UPC/EAN symbologies have the following programmable features:

- Data Format Settings
- UPC/EAN Expansion
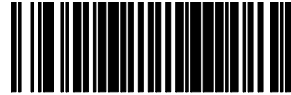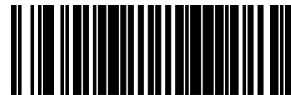- UPC/EAN Add-ons
- Price/Weight Check Digit
- Read Verification
- QuadraLogic™ II Decoding.

Data Format Settings

UPC/EAN Data Format Settings provides options for transmitting Check Digits or Number System Digits (NSD).

UPC/EAN Expansion

Expand UPC-A to EAN-13 adds a leading zero to a UPC-A label which 'expands' the label to the EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.

Expand UPC-E to UPC-A expands UPC-E labels to UPC-A data format. Selecting this feature also changes the symbology ID to match those required for UPC-A.

Expand EAN-8 to EAN-13 adds five zeros in front of an EAN-8 label. Data is sent in EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.

Expand UPC-E to EAN-13 expands UPC-E labels to EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.

UPC/EAN Add-ons

UPC-A or UPC-E and EAN-8 or EAN-13 Two and Five Digit Add-ons filters

> **Required** means UPC/EAN bar codes must have add-ons or label will not be read.
>
> **Optional** means scanner will read UPC/EAN bar codes with or without add-ons.
>
> **Disable** directs the scanner not to recognize/read add-on portions of UPC/EAN labels, but will read the main body of the label.

Price/Weight Check Digit   Price/Weight Check Digit provides options for enabling price/weight check digits. The feature includes selections for domestic four or five digit, and European four or five digit, as well as the option to disable the price/weight check.

Read Verification   Read Verification is the number of times the scanner is required to read the bar code data before sending the label data to the host.

QuadraLogic™ II Decoding   QuadraLogic™ II Decoding directs the scanner to decode labels with widespread problems of spots, voids, and/or non-uniform widths.

To optimize your scanner's performance activate this option only for symbologies for which it is necessary.

There are many additional ways to configure the scanner to read and decode extremely poor labels. Contact your sales representative or service provider for other advanced QuadraLogic™ II Decoding settings.

UPC/EAN Options

Use the special bar codes in this section to configure the UPC/ EAN options.
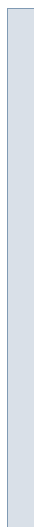
UPC Data Format Settings

UPC Data Format Settings are specific to Base Station ONLY

These settings affect UPC data format. Number System Digit (NSD) settings operate with RS-232 and Keyboard Wedge interfaces ONLY. Scan the bar codes below to send or not send the Check Digit/NSD.

SET ----------------------------
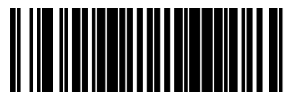
UPC-A

Send Check Digit   ---------

Don't Send Check Digit   ---------

Send NSD[a]   ---------

Don'tSendNSD[a] ---------

a. NSD = Number System Digit. The NSD character is the character that pre-
     cedes the UPC bar code. The NSD for regular UPC-A bar codes is a zero.
     Other commonly used Number System Digits used with UPC-A are:
     "2" - used for random weight items such as meat and produce.
     "3" - used for the drug and health items.
     "4" - used for in-store non-food items.
     "5" - used for coupons.

UPC-E

Send Check Digit[a] ---------

Don't Send Check Digit[a] ---------

Send NSD[a] ---------

Don'tSendNSD[a] ---------

END ----------------------------

Transmit Scanner Configuration to Base Station ---------

a. If UPC-E is expanded to UPC-A, the transmission of Check Digit (CD) and NSD will be determined by the UPC-A settings on this page.
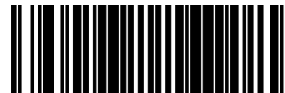
EAN Data Format Settings   These settings affect EAN data format.

EAN Data Format Settings are specific to Base Station ONLY

SET --------------------------------------

EAN-13

Send Check Digit ---------

Don't Send Check Digit ---------

Send NSD[a] ---------

Don't Send NSD[a] ---------
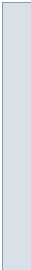
a. NSD = Number System Digit. The NSD character is the character that precedes the EAN bar code, as in this example.

Example: EAN with NSD

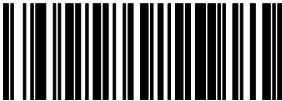NSD 2 XXXXXX XXXXXX

EAN-8

Send Check Digit ---------

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

Don't Send Check Digit ---------

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

END -----------------------------

|| ||| |||||||||| ||||||||| ||
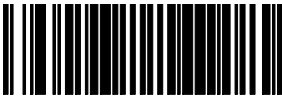
Transmit Scanner Configuration to Base Station ---------

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

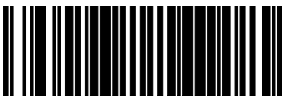UPC/EAN Expansion is specific to Base Station ONLY

Use these labels to activate:

- Expand UPC-A to EAN-13
- Expand EAN-8 to EAN-13
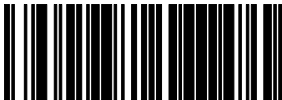- Expand UPC-E to UPC-A
- Expand UPC-E to EAN-13

SET -------------------------------------

UPC-A to EAN-13 Expansion

Expand[a]   ---------

Don't Expand   ---------

UPC-E to UPC-A Expansion

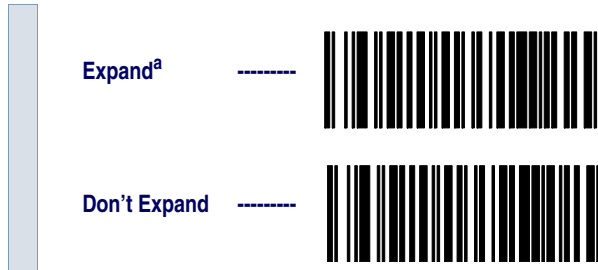**Expand**[a]   ---------

Don't Expand   ---------

a. When any expansion features is activated, the transmission of the Prefix,
    Suffix, Check Digit and Number System Digit (NSD) are controlled by
    your selections for the symbology 'expanded to' rather than the symbol-
    ogy 'expanded from'. For example, if you expand UPC-E to UPC-A, set-
    tings for UPC-A determine how the scanner sends a bar code's contents.

**EAN-8 to EAN-13
Expansion**

Expand[a]   --------- ||| ||||||||||||||||||||||||||

Don't Expand   --------- ||| |||||||||||||||||||||

**UPC-E to EAN-13
Expansion**

Expand[a]   --------- ||| |||||||||||||||||||||

Don't Expand   --------- ||| ||||||||||||||||||||||

END -------------------------- ||| |||||||||||||||||||

**Transmit Scanner
Configuration to
Base Station   ---------** |||||||||||||||||||||| ||| |||||||||||||||||

a. When any expansion features is activated, the transmission of the Prefix,
    Suffix, Check Digit and Number System Digit (NSD) are controlled by your
    selections for the symbology 'expanded to' rather than the symbology
    'expanded from'. For example, if you expand UPC-E to UPC-A, settings for
    UPC-A determine how the scanner sends a bar code's contents.

UPC/EAN Add-ons There are many ways to configure the scanner to handle add-ons. The scanner uses four filters that can be specified to define how add-ons will be handled. The following is true for each filter.

- Each add-on type can be disabled, required or optional.
- Any combination of the four UPC/EAN symbologies can be affected.
- The 2-digit, 5-digit and C128 add-ons can be individually configured.
- The leading digits of the base labels affected can be specified.

> **NOTE**
>
> **The settings below represent only a small portion of the options available for this feature. Contact your sales representative or service provider if you need more assistance with advanced add-on settings.**

This programming guide supports the following add-on filters for UPC/EAN:

- **Required** means that UPC/EAN labels MUST contain a 2-digit, 5-digit or C128 add-on segment in order for the scanner to recognize or decode them.
- **Optional** directs the scanner to recognize UPC/EAN bar codes with or without P2, P5 or C128 2-digit add-on segments.
- **Disable Add-ons** means the scanner will not recognize or decode any add-on segment of UPC/EAN labels, but will read and decode the standard UPC/EAN portion of the label.

> **NOTE**
>
> **Due to the structure of add-on codes, selecting the optional setting makes it impossible to ensure that the scanner will always read the add-on portion of the label. Datalogic makes no guarantee, either written or implied, that scanners with optional add-on decoding enabled will perform with the speed and accuracy required for any given application.**

The following bar codes affect all four UPC/EAN symbologies, and will be applied to all labels regardless of the leading digits of the base label.
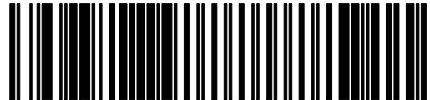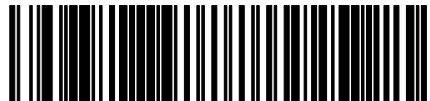
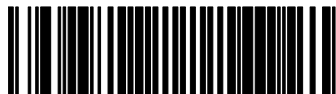 Feature is specific to scanner ONLY

SET ---------------------------------------
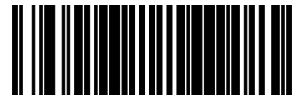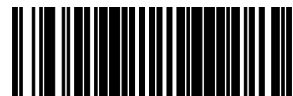
Add-ons Required   ---------

Add-ons Option   ---------

Disable Add-ons   ---------

END ---------------------------------------

Custom Add-ons   A wide array of add-on options are available to streamline your installation to its best advantage. Call your sales representative or service provider for assistance in customizing your scanner's add-on capabilities to your own unique specifications.

Feature is specific to scanner ONLY

The price/weight check digit selections allow you to specify whether the scanner should calculate an extra check digit based on a four or five-digit price/weight block and compare it with the price/weight check digit contained in the bar code. If the calculated check digit does not match the value of the check digit contained in the bar code, the label will be rejected as invalid. Select domestic four or five digit, European four or five digit, or disable the price/weight check.

SET --------------------------------------

Disable P/W Check ---------

Enable 4-Digit Check ---------

Enable 5-Digit ---------

Enable Euro 4-Digit ---------

Enable Euro 5-Digit ---------

END --------------------------------------

Feature is specific to scanner ONLY

Follow the steps below to set the number of minimum reads required to verify UPC/EAN symbologies.

To set the minimum read requirement for a desired symbology:

1. Scan the SET bar code.

2. Scan one symbology label from the list below to be verified.

3. Scan the bar code on page 125 that represents the number of times you wish a bar codes label of that symbology type to be read before transmission to the host from the list.

4. Repeat steps two through three above until read verification has been modified for each of the the desired symbologies.
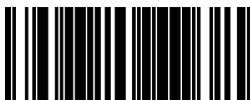
5. Scan the END bar code on page 125.
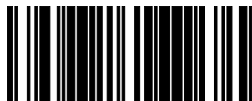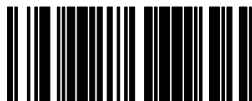
Read Verification

SET ----------------------------------

Verify UPC-A ---------
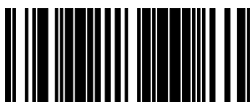
Verify UPC-E ---------

Verify EAN-13 --------- ||||||||||||||||||||||||||||||||

Verify EAN-8 --------- ||||||||||||||||||||||||||||||||

Verify Instore Label --------- ||||||||||||||||||||||||||||||||
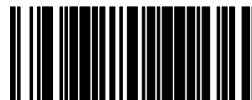
Number of Reads to Verify

One Read --------- ||||||||||||||||||||||||

Two Reads --------- ||||||||||||||||||||||||
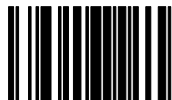
Three Reads --------- ||||||||||||||||||||||||

Four Reads --------- ||||||||||||||||||||||||

END -------------------------------------- |||||||||||||||||||||||||||||||||||||
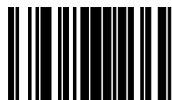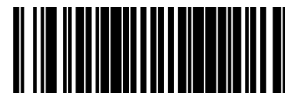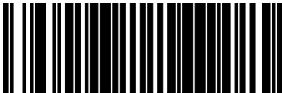
Feature is specific to scanner ONLY

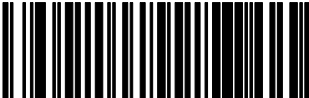Scan these bar codes to activate/deactivate the QuadraLogic™ II Decoding feature for the UPC/EAN symbologies.

> **To optimize your scanner's performance activate this option only for symbologies for which it is necessary.**
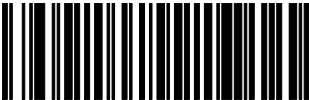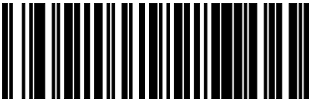>
> **NOTE**

SET -------------------------------------

**Activate for UPC-A/
EAN-13** ---------

**Deactivate for UPC-A/
EAN-13** ---------

Activate for UPC-E ---------

Deactivate for UPC-E ---------

Activate for EAN-8 ---------

Deactivate for EAN-8   --------

END --------------------------------------
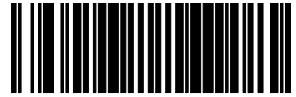
Code 93 Options

The Code 93 symbology has the following programmable features:

- Minimum Label Length
- Read Verification

Minimum Label Length Minimum Label Length sets the minimum label length required for Code 93 symbology. This feature causes the scanner to ignore small label segments, reducing the possibility that a portion of a good label is incorrectly seen as an entire label.

Read Verification Read Verification is the number of times the scanner is required to read the bar code data before sending the label data to the host.

Configuring the Code 93 Options

Code 93 options are specific to scanner ONLY

Use these special bar codes to configure the Code 93 options.

Minimum Label Length

1. Identify the minimum length setting you want to make. The selectable range is 01 to 50[1] characters.

2. Scan the SET bar code.

3. Scan the SET MINIMUM LABEL LENGTH bar code.

4. Set the minimum label length by scanning the applicable digits from page 130. The range is 01 to 50[1] characters. Return to this page and go to step five.

> **NOTE**
>
> **If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**

5. Scan the END bar code.

SET ---------------------------------------

**SetMinimumLabelLength** ---------

---

1. For this symbology, the scanner will decode up to 50 characters, but the actual length read will vary depending upon interface type, and bar code physical size and quality. The IBM POS interface is limited to 32 character labels. Code 93 bar codes containing one or more shift characters can also limit the amount of characters that will be decoded (in these circumstances, the scanner will decode at least 39 data characters).
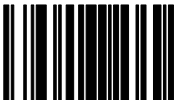
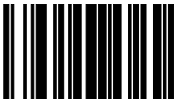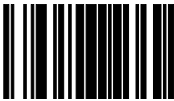END --------------------------------------
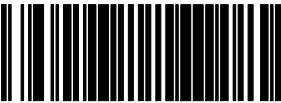
Digits
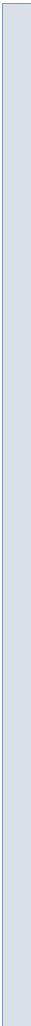
0 ---------

1 ---------

2 ---------

3 ---------

4 ---------

5 ---------

6 ---------

7 ---------
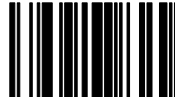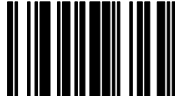
8 --------- ‖‖‖‖‖‖‖‖‖‖‖‖‖
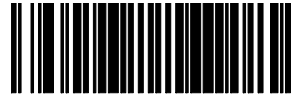
9 --------- ‖‖‖‖‖‖‖‖‖‖‖‖‖

Read Verification Scan the bar codes below to set the number of reads desired to verify Code 93 symbology.

> **The more times the scanner is required to read and compare the bar codes data, the longer the scanner will take to validate and transmit a label.**
>
> **NOTE**

SET --------------------------------------- ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Set to One read --------- ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Set to Two reads --------- ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Set to Three reads --------- ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Set to Four reads --------- ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

END --------------------------------------- ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
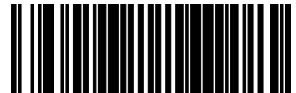
Standard 2 of 5/IATA Options

The Standard 2 of 5/IATA symbologies have the following programmable features:

- Check Digit
- Label Length Format
- Read Verification

Check Digit Check Digit calculates the Check Digit to verify that the Check Digit contained in the bar code label is correct. If you enable this feature, your bar codes must contain a Check Digit.

If the Check Digit is not calculated, the digit will be sent regardless of settings for transmit or don't transmit. For example, if you choose to Transmit Check Digit, but not calculate, the scanner sends the Check Digit encoded in the bar code without verifying its accuracy.

Label Length Format Label length format permits the selection between variable length or fixed length formats. For best performance it is recommended to use the Fixed Length settings when your application requires only one or two label lengths.

Variable Length Format — directs the scanner to read all labels from the minimum label length to 50. Set Minimum Length as high as your application allows.

> **Minimum Label Length** — selects the minimum label length that the scanner will recognize. The minimum label length for this symbology must be between 01 and 50[1].

Fixed length Format — directs the scanner to read only one or two label lengths.

If you select fixed length format, there are three bar code labels for programming your scanner to read either one or two fixed lengths. The labels are:

> **Set First Fixed Length** — instructs the scanner that the next two programming labels scanned will define the first fixed label length. This setting must be between 01 and 50[1] characters.

---

1. For this symbology, the scanner will decode up to 50 characters, but the actual length read will vary depending upon the interface type, and bar code physical size and quality.

Set Second Fixed Length — instructs the scanner that the next two programming labels scanned will define the second fixed label length. This setting must be between 01 and 50[1] characters.

No Second Fixed Length — configures the scanner to recognize only the first fixed length.

Read Verification

Read Verification is the number of times the scanner is required to read the bar code data before sending the label data to the host.

---

1. For this symbology, the scanner will decode up to 50 characters, but the actual length read will vary depending upon the interface type, and bar code physical size and quality.
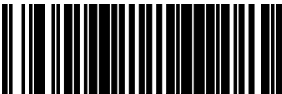
Standard 2 of 5 options are all applicable only to the scanner, with the exception of Check Digit Transmission, which applies only to the Base Station.
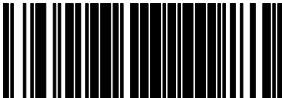
Use the special bar codes in this section to configure the Standard 2 of 5/IATA symbology options.
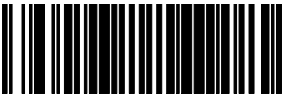
Check Digit

SET ------------------------------

Don't Calculate ---------

Calculate ---------

Don't Transmit ---------

Transmit ---------

END ------------------------------

Transmit Scanner
Configuration to
Base Station ---------

Label Length Format

Follow the steps below to set the Standard 2 of 5/IATA label length format to select either *Variable Length* or *Fixed Length* format.

Variable Length Format

Follow the steps below to set the Standard 2 of 5/IATA symbology to read Variable Length Format.

1. Identify the minimum length setting you want to make. The selectable range is 02 to 50[1] characters.

2. Scan the SET bar code below.

3. Scan the ENABLE VARIABLE LENGTH FORMAT bar code.

4. Scan the SET MINIMUM LABEL LENGTH bar code.

5. Set the minimum label length by scanning the applicable digits on page 138. Return to this page and go to step six.

NOTE

If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).

---

6. Scan the END bar code.

Variable Length Format

SET ---------------------------------------

Enable Variable Length
Format   ---------

Set Minimum Label
Length   ---------

END ---------------------------------------

---

1. For this symbology, the scanner will decode up to 50 characters, but the actual length read will vary depending upon the interface type, and bar code physical size and quality.

Fixed Length Format   All interfaces that are shipped with the standard factory configuration are set to read variable length labels. If you switch from variable length to fixed length format, the default fixed labels are 14 characters and 8 digits. Follow the steps below to change these defaults for the Standard 2 of 5/IATA symbology.

1. Identify the fixed length settings you want to make.

2. Scan the SET bar code.

3. Scan the ENABLE FIXED LENGTH FORMAT bar code .

4. Scan the SET FIRST FIXED LENGTH bar code.

5. Set the first fixed label length by scanning the applicable digits bar codes on page 138, then return to this page.

<table>
<tr><td></td><td>**If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**</td></tr>
<tr><td>**NOTE**</td><td></td></tr>
</table>

If you need to set a second fixed length, continue with step six. If you do not need to set a second fixed length skip to step nine.

6. Scan the SET SECOND FIXED LENGTH bar code.

7. Set the second fixed label length by scanning the applicable digits bar codes on page 138.
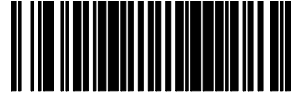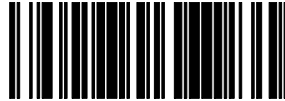
8. Return to this page and go to step ten.

<table>
<tr><td></td><td>**If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**</td></tr>
<tr><td>**NOTE**</td><td></td></tr>
</table>

9. Scan the NO SECOND FIXED LENGTH bar code.
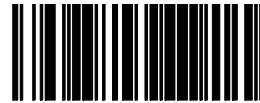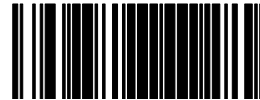
10. Scan the END bar code.

Fixed Length Format

SET -------------------------------------- ‖ ‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖‖

**Enable Fixed Length
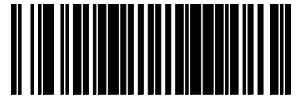Format** -------- ‖‖‖‖‖‖‖‖‖ ‖‖‖ ‖‖‖‖‖ ‖‖‖

Set First Fixed Length -------- ‖ ‖‖ ‖‖‖‖ ‖ ‖‖‖‖‖ ‖‖‖

Set Second Fixed Length -------- ‖ ‖‖ ‖‖‖ ‖ ‖‖‖‖‖‖ ‖‖‖

No Second Fixed Length -------- ‖ ‖‖ ‖‖‖ ‖ ‖‖‖‖‖‖ ‖‖ ‖

END -------------------------------------- ‖ ‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖‖

Digits

0 --------- ||||||||||||||||||||

1 --------- ||||||||||||||||||||

2 --------- ||||||||||||||||||||

3 --------- ||||||||||||||||||||

4 --------- ||||||||||||||||||||

5 --------- ||||||||||||||||||||

6 --------- ||||||||||||||||||||

7 --------- ||||||||||||||||||||

8 --------- ||||||||||||||||||||

9 --------- ||||||||||||||||||||
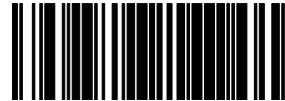
Scan the bar codes below to set the number of reads desired to verify Standard 2 of 5/IATA symbologies.

> **NOTE**
>
> **The more times the scanner is required to read and compare the bar code data, the longer the scanner will take to validate and transmit a label.**
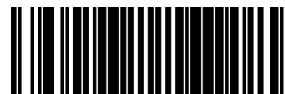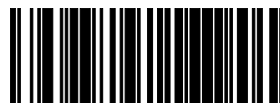
SET ---------------------------------------

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

Set to One read   **---------**

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

Set to Two reads   **---------**

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

Set to Three reads   **---------**

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

Set to Four reads   **---------**

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

END ---------------------------------------
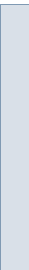
|||||||||||||||||||||||||||

IATA

Feature is applicable to scanner *and* Base Station.

IATA is a special symbology subset of Standard 2 of 5. Enabling IATA selects this custom code as the active Standard 2 of 5 symbology. When IATA is enabled, Standard 2 of 5 labels will not be read. Scan the bar code labels below to enable/disable IATA.
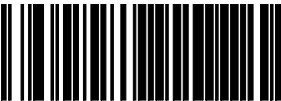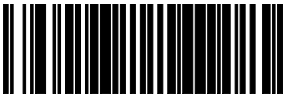
SET ----------------------------

Enable   ---------

Disable   ---------

END ----------------------------

**Transmit Scanner
Configuration to
Base Station   ---------**

MSI/Plessey Options

MSI/Plessey options are all applicable only to the scanner, with the exception of Check Digit Transmission, which applies only to the Base Station.

The MSI/Plessey symbology has the following programmable features:

- Check Digit
- Label Length Format
- Read Verification

Check Digit Check Digit calculates the Check Digit(s) to verify the labels contents have been read correctly. If you enable this feature, your bar codes must include a Check Digit(s). You may also choose to transmit or not transmit the Check Digit(s).

> **Check Digit Calculation** - enables or disables calculation of the Check Digit(s).
>
> **Transmit Check Digit** - enables or disables transmission of MSI/Plessey Check Digit(s).
>
> **Number of Check Digits** - specifies either one or two Check Digits.

Label Length Format Label length format permits the selection between variable length or fixed length formats. For best performance it is recommended to use the Fixed Length settings when your application requires only one or two label lengths.

Variable Length Format - directs the scanner to read all labels from the minimum label length to 16. Set Minimum Length as high as your application allows.

> **Minimum Label Length** - selects the minimum label length that the scanner will recognize. The minimum label length for this symbology must be between 04 and 16.

Fixed Length Format - directs the scanner to read only one or two label lengths.

If you select fixed length format, there are three bar code labels for programming your scanner to read either one or two fixed lengths. The labels are:

Set First Fixed Length - instructs the scanner that the next two programming labels scanned will define the first fixed label length. This setting must be between 04 and 16 characters.

Set Second Fixed Length - instructs the scanner that the next two programming labels scanned will define the second fixed label length. This setting must be between 04 and 16 characters.

No Second Fixed Length - configures the scanner to recognize only the label length chosen as the first fixed length.
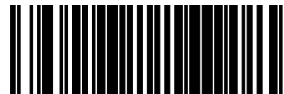
Read Verification   Read Verification is the number of times the scanner is required to read the bar code data before sending the label data to the host.

Configuring the MSI / Plessey Options

Use the special bar codes in this section to configure the MSI/Plessey symbology options.
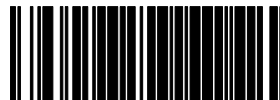
Check Digit

SET ----------------------------

‖‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖‖‖‖‖

Calculate   ---------

‖‖ ‖‖‖‖‖‖‖ ‖‖‖‖‖ ‖‖

Don't Calculate ---------

‖‖ ‖‖‖‖‖‖ ‖‖‖‖‖‖ ‖

Transmit   ---------

‖‖ ‖‖‖‖‖‖ ‖‖‖‖‖‖ ‖

Don't Transmit ---------

‖‖ ‖‖‖‖‖‖ ‖‖‖‖‖‖ ‖

One Check
Digit   ---------

‖‖ ‖‖‖‖‖‖ ‖‖‖‖‖ ‖‖

Two Check
Digits   ---------

‖‖ ‖‖‖‖‖‖‖ ‖‖‖‖‖ ‖

END ----------------------------
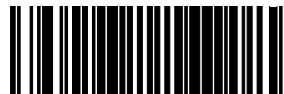
‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖ ‖

Transmit Scanner
Configuration to
Base Station   ---------

‖‖‖‖‖‖ ‖‖‖‖‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖

Label Length Format Follow the steps below to set the MSI/Plessey label length format to either the *Variable Length* or *Fixed Length* format.

Variable Length Format Follow the steps below to set the MSI/Plessey to read Variable Length Format.

1. Identify the minimum length setting you want to make. The selectable range is 04 to 16 characters.

2. Scan the SET bar code.

3. Scan the ENABLE VARIABLE LENGTH FORMAT bar code.

4. Scan the SET MINIMUM LABEL LENGTH bar code.

5. Set the minimum label length by scanning the applicable digits bar codes on page 147, then return to this page.
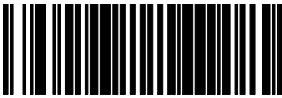
> **If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**
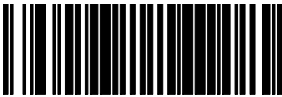>
> **NOTE**

6. Scan the END bar code.

Variable Length

SET -------------------------------------

Enable Variable Length
Format   ---------

Set Minimum Label
Length   ---------

END -------------------------------------

| Fixed Length Format | The scanner offers the option of requiring MSI/Plessey labels to have one or two fixed length(s) in the Fixed Label Format. Follow the steps below to set the MSI/Plessey symbology to fixed length format. |

1. Identify the fixed length setting(s) you wish to make. Fixed lengths can be set from 04 to 16 characters.

2. Scan the SET bar code on page 146.

3. Scan the ENABLE FIXED LENGTH FORMAT bar code.

4. Scan the SET FIRST FIXED LENGTH bar code.

5. Set the first fixed label length by scanning the applicable digits on page 147. Return to this page.

> **NOTE**
>
> **If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**

If you need to set a second fixed length, continue with step six. If you do not need a second fixed length skip to step nine.

6. Scan the SET SECOND FIXED LENGTH bar code.

7. Set the second fixed label length by scanning the applicable digits on page 147.
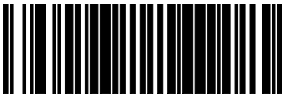
8. Return to this page and go to step ten.

> **NOTE**
>
> **If you are setting a label length less than ten, you must scan a zero digit first and then the length digit (e.g., 04, 06, 08).**
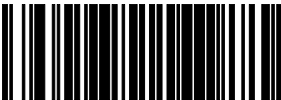
9. Scan the NO SECOND FIXED LENGTH bar code.
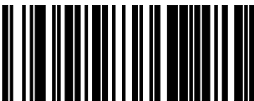
10. Scan the END bar code on page 146.

Fixed Length

SET -------------------------------------- ||| ||| || ||| || ||| ||| |||

Enable Fixed Length
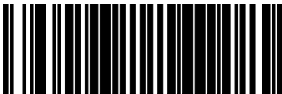Format   --------- ||| ||| ||| || |||||| ||
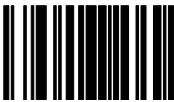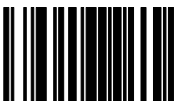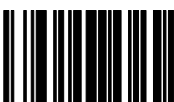
Set First Fixed Length   --------- ||| ||| ||| || ||| |||

Set Second Fixed Length --------- ||| ||| ||| ||| | ||| |||

No Second Fixed
Length   --------- ||| ||| ||| || ||| ||| |||

END -------------------------------------- ||| ||| || ||| || ||| |||

Digits

0   --------   ‖‖‖‖‖‖‖‖‖

1   --------   ‖‖‖‖‖‖‖‖‖

2   --------   ‖‖‖‖‖‖‖‖‖

3   --------   ‖‖‖‖‖‖‖‖‖

4   --------   ‖‖‖‖‖‖‖‖‖

5   --------   ‖‖‖‖‖‖‖‖‖

6   --------   ‖‖‖‖‖‖‖‖‖

7   --------   ‖‖‖‖‖‖‖‖‖

8   --------   ‖‖‖‖‖‖‖‖‖

9   --------   ‖‖‖‖‖‖‖‖‖

Read Verification Scan the bar codes below to set the number of reads desired to verify MSI/Plessey symbologies.

> **NOTE**
>
> **The more times the scanner is required to read and compare the bar codes data, the longer the scanner will take to validate and transmit a label.**

SET --------------------------------------

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

Set to One read   ---------

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

Set to Two reads   ---------

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

Set to Three reads   ---------

|||||||||||||||||||||||
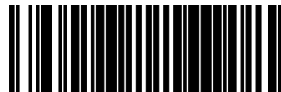
Set to Four reads   ---------

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

END --------------------------------------

|||||||||||||||||||||||
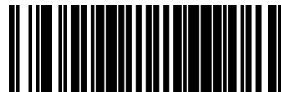
RF Feature Programming

Use the special programming bar codes contained in this section to set features that are unique to RF models of PowerScan® bar code scanners.

Programming features included in this section are:

- Linking the Scanner to a Base Station
- RF Beeper Settings
- Radio Transmit Power
- RF Channel Selection
- Transmission Retries Before Message Time-out
- Wait Time for ACK
- Wait Time For Scanner Power Shutdown
- Wait Time Between Retries of Failed Transmission
- HACK Transmit Options
- Wait Time For HACK From Host
- Drop Links on Reset Option
- Drop Oldest Links Option
- Common Configuration
- Set Maximum Linked Scanners
- Source-Radio Identification (ID)
- Low Battery LED Indication

Linking the Scanner to a Base Station

To link a scanner to a Base Station, simply scan the Base Station ID bar code located on the top of the desired Base Station (see Figure 2). As the scanner searches for the Base Station, a short beep is heard as it seeks for the correct channel. When the Base Station responds to the request, the scanner's beeper will either sound a "Link Granted," or "Link Denied" signal (see *Appendix E: LED and Beeper Indications* on page 203 for more information).

The existing Base Station system configuration can be automatically downloaded to the scanner. This automatic download feature is configurable and can be disabled. See the section, *Common Configuration* for more information about this feature. If downloading occurs, a slight delay with link verification announcement will occur.

⚠️ **CAUTION**	**Since a new/replacement scanner may have been shipped with a custom configuration or may have been modified with other special programming, it may not be desirable to download a potentially older configuration from an existing Base Station. In this case, reference *Transmit Scanner Configuration to Base Station* on page 11 and consider uploading the scanner's newer configuration to the Base Station.**

Figure 2. The Base ID Bar Code

Base ID Bar Code
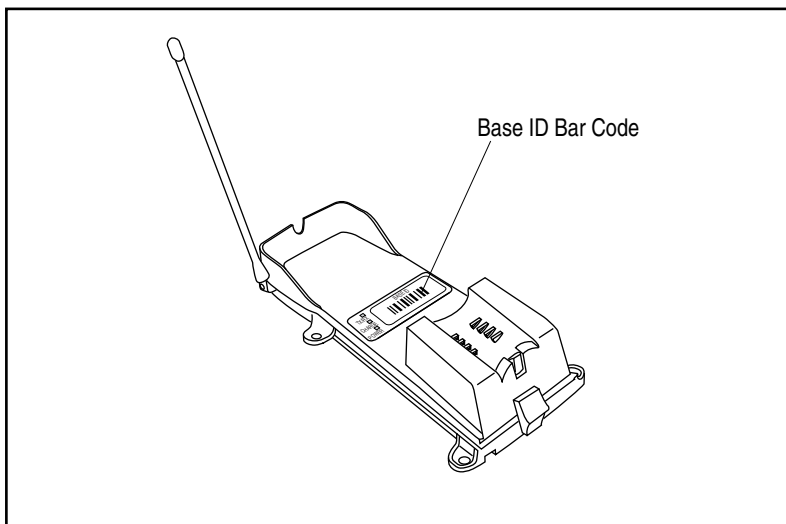
Here are reasons why your scanner may not be linked with the Base Station:

- There may be too many scanners attempting a link with the same Base Station. A maximum of eight scanners may link with one Base Station at a given time. Reference the section, *Set Maximum Linked Scanners* for more information.

⚠ **CAUTION**

The limit imposed for linked scanners is selectable to either: 1) disallow any new, additional scanner to be linked beyond the set limit (this is the default), or 2) drop the link with the scanner *least* recently used. Be aware that in linking additional scanners to a single Base Station, you may inadvertently unlink another scanner from the Base Station.

Links may be dropped by the Base Station if it has been reset (power cycled). It may be necessary to relink all scanners upon system reset. See also, *Drop Links on Reset Option*.

RF Beeper Settings

The RF version of the scanner exhibits different beeper behavior than standard (non-RF) models. For more information about RF beeper indications, see *Appendix E: LED and Beeper Indications*.

NOTE

The following descriptions highlight configurable beeper functions that are unique to RF handheld scanners. All other beeper functions supported by the standard version of the scanner are supported by RF models.

Good Read Beep — When good read beep is enabled, this beep sounds at the time the scanner successfully reads a bar code. Selectable settings for the good read beep include:

- RF When to Beep
- Beeper Volume
- Good Read Beep Frequency
- Beep Duration

ACK Beep — The scanner can sound an acknowledgement (ACK) beep to indicate when the Base Station has acknowledged to the scanner that is has received a successful data transmission from the scanner. This beep is also sounded upon a successful channel change sequence or a successful configuration transmission.

Transmission Error Beep — Another selectable indicator beep is the transmission error beep. This beep sounds to indicate an error in transmission between the RF devices.

Link Beep — The handheld scanner will sound a special link beep upon successfully linking with a Base Station. This indication cannot be disabled and is not programmable, other than that it shares the same Beeper Volume setting as other beeper indications set using that feature.

Unlink Beep — When a scanner is successfully unlinked from a Base Station, a unique unlink beep is sounded. This beep is not programmable, and also sounds at the same volume set for Beeper Volume.

RF When to Beep

Feature is specific to scanner ONLY

Several options are available to specify how the RF handheld scanner will beep to indicate a good read. Settings are based on the enable/disable status desired for three selectable beep indications:

- Good Read Beep
- Acknowledgement (ACK) Beep
- Transmission Error Beep

The available options are described and numbered in Table 7 to correspond with the programming bar codes provided for this feature.

These settings supersede any settings made using the generic "When to Beep" feature listed in the PowerScan Programming Manual.

NOTE

Table 7. RF When to Beep Options

#	Good Read Beep	ACK Beep	Transmission Error Beep
0	Disabled	Disabled	Disabled
1	Disabled	Disabled	Enabled
2	Disabled	Enabled	Disabled
3	Disabled	Enabled	Enabled
4	Enabled	Disabled	Disabled
5	Enabled	Disabled	Enabled
6	Enabled	Enabled	Disabled
7	Enabled	Enabled	Enabled

SET --------------------------------------
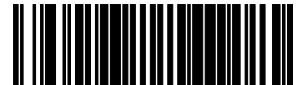
When to Beep Option #0 ---------

When to Beep Option #1 ---------

When to Beep Option #2 ---------
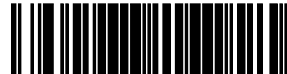
When to Beep Option #3 ---------

When to Beep
Option #4   --------
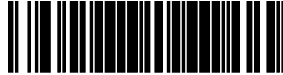
When to Beep
Option #5   --------

When to Beep
Option #6   --------

When to Beep
Option #7   --------

END --------------------------------------
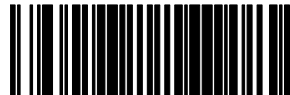
RF Beeper
Volume

Feature is specific to scanner ONLY

The volume at which the beeper sounds for ACK, transmission error, link, or unlink beeps (but not the good read beep[1]) are all affected by this setting. Select volume #1 (25% duty cycle), volume #2 (35% duty cycle), or volume #3 (50% duty cycle).

SET --------------------------------------

---
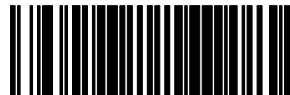
1. Good read beep volume is selectable via the features available in the PowerScan Programming Manual (P/N R44-1840). Visit the website listed on the back cover of this manual for information about acquiring other manuals.

RF Beeper Volume #1   --------

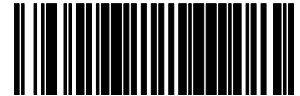||| ||| ||||||| |||||| ||| ||||| || |

RF Beeper Volume #2   --------

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

RF Beeper Volume #3   --------

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

END --------------------------------------

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

RF Beeper Frequency

Feature is specific to scanner ONLY

This setting affects the frequency at which the ACK beep is sounded, and is independent of the frequency setting for the good read beep. When the ACK beep is sounded at a different frequency than the good read beep, this can provide a clearer distinction between the tones. Select low frequency (760Hz), medium frequency (1250Hz), or high frequency (2400Hz).

SET --------------------------------------
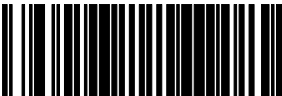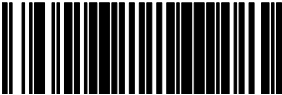
RF Beeper Low
Frequency   ---------

RF Beeper Medium
Frequency   ---------

RF Beeper High
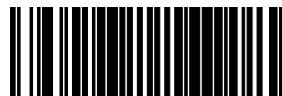Frequency   ---------

END --------------------------------------

Feature is specific to scanner ONLY

The duration of time that an ACK beep is sounded is selectable using this setting. RF beep duration can be set in increments of 10 ms (tolerance of +/- 10%) from 0 to 2.55 seconds.

SET --------------------------------------- |||| || ||| ||| || ||| ||||

Set RF Beep Duration --------- ||| || ||| ||| ||| ||| |||
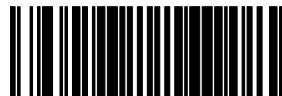
Scan three digits representing the desired duration using the Number Pad in *Appendix C: Keypad on page 193*, padded with leading zeros (example: 008 = 80ms, 025 = 250ms, 100 = 1 second, etc.), then scan the END bar code.

END --------------------------------------- |||| || ||| ||| || ||| ||||

Radio Transmit Power
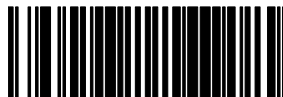
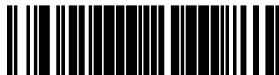Feature is applicable to scanner *and* Base Station.

> **Remember, programming changes to the Base Station have no effect until the new configuration is downloaded via the feature *Transmit Scanner Configuration to Base Station* on page 11.**
>
> **NOTE**

The power level at which the radio signal is transmitted between the devices is selectable to be either low or high. This setting allows adjustment to a low setting to minimize potential radio interference caused by communication between the devices, or provides a high setting to increase the signal power which would enable clearer communication over longer distances.

SET ----------------------------

Radio Transmit Power = Low ---------

Radio Transmit Power = High ---------
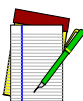
END ----------------------------

Transmit Scanner Configuration to Base Station ---------
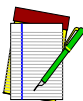
RF Channel Selection

Feature is applicable to scanner *and* Base Station.

NOTE

Channel selection bar codes are of the type C programming sequence category (see *Programming Sequence* on page 14), and do not require you to scan accompanying SET or END bar codes.

Radio communications between the handheld scanner and its linked Base Station can be carried over one of ten different allowable frequencies (channels). Select alternate channels to improve communications between devices in noisy RF environments.

NOTE

Available channel frequencies will vary according to the country/model of the scanner.

Expect an approximate two-second delay upon scanning a channel selection bar code.

When a new channel is selected, the scanner sends a change-of-channel message to the Base Station. After the Base Station has acknowledged receipt of the message, both the scanner and the Base Station switch their radio channels to the new channel (reference *Appendix E: LED and Beeper Indications* for information regarding scanner and Base Station acknowledgement signals at this point). All further communication is done on the new channel.

NOTE

Any other scanner that happens to be linked to that Base Station will be unable to communicate with the Base Station until it has switched to the new channel. To accomplish this, scan the Base ID label with each scanner you desire to be linked to the Base Station. This action will automatically set each scanner to the correct new channel.

**Select Radio Channel
0**   --------
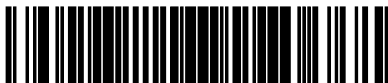
**Select Radio Channel
1**   --------
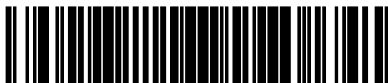
**Select Radio Channel
2**   --------
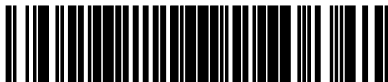
**Select Radio Channel
3**   --------
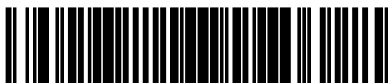
**Select Radio Channel
4**   --------
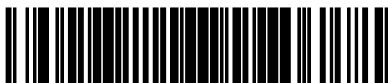
**Select Radio Channel
5**   --------
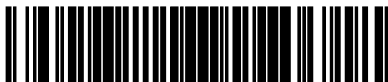
**Select Radio Channel
6**   --------
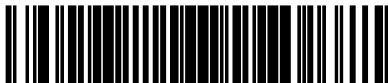
**Select Radio Channel
7**   --------
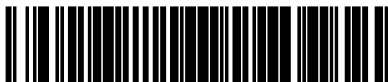
**Select Radio Channel
8**   --------
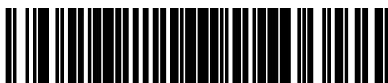
**Select Radio Channel
9**   --------

Transmission Retries Before Message Time-out

Feature is applicable to scanner *and* Base Station.

NOTE

Remember, programming changes to the Base Station have no effect until the new configuration is downloaded via the feature *Transmit Scanner Configuration to Base Station* on page 11.

When the scanner attempts to transmit data to the Base Station, communication may not always occur on the first try due to interference, signals from other scanners in the queue, etc. This setting defines the number of transmission retries the scanner/Base Station will attempt before the message gives up tryng to successfully resend/transmit the message (times out). If the specified retry count is exceeded, the scanner will sound a transmission error beep (when transmission error beep is enabled).

In a noisy RF environment, a large number of retries may allow a transmission to get through to the Base Station, but at the cost of increased time-out (should the transmission fail). To maximize battery life, set this feature to the *lowest* optimal number of retries.

Selectable range for this setting is 0-15 retries.

SET ----------------------------
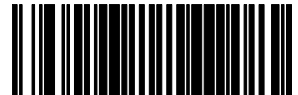
0 Retries   ---------

1 Retry   ---------

2 Retries   ---------

**3 Retries (recom-
mended)**   ---------

4 Retries   ---------

5 Retries   ---------

6 Retries   ---------

7 Retries   ---------

8 Retries   ---------

9 Retries   ---------

10 Retries   ---------

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

11 Retries   ---------

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

12 Retries   ---------

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

13 Retries   ---------

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

14 Retries   ---------

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

15 Retries   ---------

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

END ---------------------------

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

Transmit Scanner
Configuration to
Base Station ---------

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

Feature is applicable to scanner *and* Base Station.

> **NOTE**
>
> **Remember, programming changes to the Base Station have no effect until the new configuration is downloaded via the feature *Transmit Scanner Configuration to Base Station* on page 11.**

This setting defines a time period allowed once the scanner has sent data to the Base Station for that Base Station to send an acknowledgement (ACK) back to the scanner, signalling receipt of the data. This feature is used to streamline the scanning speed of your system.
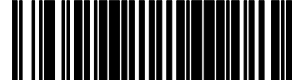
The range for this delay is 0.08 - 2.55 seconds in 10ms increments.

> **Selecting longer values for this feature will decrease the battery life between charges.**
>
> **NOTE**

SET ----------------------------

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

Set Wait Time for
ACK   ---------

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

Scan three digits representing the desired delay using the Number Pad in *Appendix C: Keypad*. Be sure the number is padded with leading zeros (example: 008 = 80ms, 025 = 250ms, 100 = 1 second, etc.), then scan the END bar code.

END ----------------------------

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

Transmit Scanner
Configuration to
Base Station ---------

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

Wait Time For Scanner Power Shutdown

Feature is specific to scanner ONLY

To conserve battery life, the handheld scanner can be automatically shut down when it has not been in use for a given period. A trigger pull or other stimulus will then be required to reactivate the scanner. The idle duration determines how long the scanner stays on/active after each use. Range for this feature is a setting of 1 to 120 seconds in one-second increments. A setting of one second is recommended.

> **NOTE**
>
> Selecting higher values for this feature will effect the length of battery life.

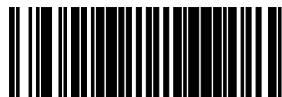SET --
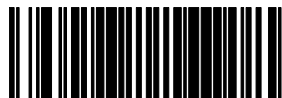
Set Wait Time for Scanner
Power Shutdown   ---------

Scan three digits representing the desired delay using the Number Pad in *Appendix C: Keypad*. **Be sure the number is padded with leading zeros (example: 001 = 1 second, 025 = 25 seconds, 100 = 100 seconds, etc.), then scan the END bar code.**

END --

Wait Time Between Retries of Failed Transmission

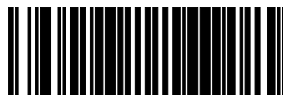Feature is applicable to scanner *and* Base Station.

NOTE

Remember, programming changes to the Base Station have no effect until the new configuration is downloaded via the feature *Transmit Scanner Configuration to Base Station* on page 11.

In conjunction with the previous feature, *Transmission Retries Before Message Time-out*, this feature defines the duration of time the system must wait before re-trying a transmission of data between the scanner and the Base Station. Consideration for this setting would be to ensure that enough time elapses between tries to avoid encountering the source of the original transmission conflict, while being short enough to avoid causing a substantial increase in the time required to successfully transmit the message.

Wait range can be set from 5ms to 255ms in one-millisecond increments, and is multiplied by the amount of retries selected via the feature, *Transmission Retries Before Message Time-out* (TRBMTO) to determine the total duration. For example, if this feature (*Wait Time Between Retries of Failed Transmission*) is selected to be 80 ms, and TRBMTO feature is selected to be 3, the resulting total duration between retries would be 80 x 3, or 240ms total.
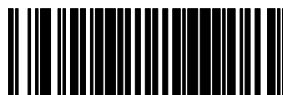
SET ------------------------------

Set Wait Time Between Retries of Failed Transmission ---------

Scan three digits representing the desired delay using the Number Pad in *Appendix C: Keypad***. Be sure the number is padded with leading zeros (example: 005 = 5ms, 065 = 65ms, 250 = 250ms, etc.), then scan the END bar code.**

END ----------------------------

Transmit Scanner Configuration to Base Station ---------

Feature is applicable to scanner *and* Base Station.

NOTE	**Remember, programming changes to the Base Station have no effect until the new configuration is downloaded via the feature *Transmit Scanner Configuration to Base Station* on page 11.**

A Host Acknowledgement (HACK) message is a signal sent to the scanner via the Base Station indicating the host has received bar code data previously transmitted by that scanner. This feature determines when the Base Station should send the HACK to the scanner. Choices are:

- Send HACK as soon as the Base Station receives the scanner's transmission. This option is recommended for installations where multiple scanners are linked to one Base Station.

- Send HACK as soon as the Base Station completes transmission to the host. This option is recommended for installations where only a single scanner is linked to one Base Station.

- Send HACK after the host transitions the CTS line from inactive to activate (using CTS scan control). RS-232 ONLY.

- Send HACK after host returns ACK to Base Station. RS-232 with ACK/NAK turned on ONLY.

SET ------------------------------
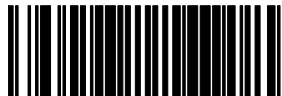
HACK upon receipt of scanner transmission ---------

HACK upon Base Station transmission to the host ---------

HACK after host transitions CTS line (RS-232ONLY) ---------

HACK after host returns ACK (RS-232 ONLY) ---------

END ------------------------------
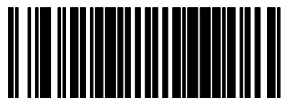
Transmit Scanner Configuration to Base Station ---------

Feature is specific to scanner ONLY

This setting specifies the time the scanner must wait to receive a HACK message back from the host before giving up and registering a transmission error. Selectable range for this wait time is 20ms to 5.1 seconds in 20ms increments. It is recommended that this value be set at no less than one second.

|	
NOTE	**Host turnaround (ACK) time is variable. This item (HACK) should be set based on settings for the features *Wait Time for ACK* and *Transmission Retries Before Message Time-out*. For example, if ACK is set to one second and retries are set to three, HACK should be set at three seconds.**

SET --
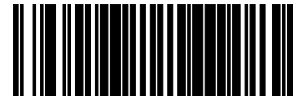
Set Wait Time For HACK ---------

Scan three digits representing the desired delay using the Number Pad in *Appendix C: Keypad*. Be sure the number is padded with leading zeros (example: 001 = 20ms, 100 = 2 seconds, 255 = 5.1 seconds, etc.), then scan the END bar code.

END --
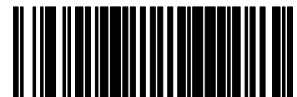
Feature is specific to Base Station ONLY

> **NOTE**
>
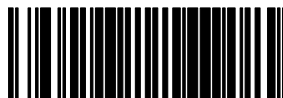> **Remember, programming changes to the Base Station have no effect until the new configuration is downloaded via the feature *Transmit Scanner Configuration to Base Station* on page 11.**

When enabled, this option causes the Base Station to drop its links to any and all scanners whenever power is reset/cycled. This provides a simple way to ensure that when reconfiguring a system, scanners do not need to be located and individually unlinked.
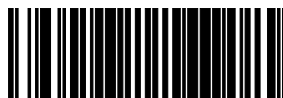
SET ----------------------------

**Drop all links on
reset
(ENABLE) ---------**

**Do not drop all links
on reset
(DISABLE) ---------**

END ----------------------------

**Transmit Scanner
Configuration to
Base Station ---------**

Drop Oldest Links Option

Feature is specific to Base Station ONLY

This feature can be enabled to better manage the linking of new scanners to a multi-point system. Here's how it works: When a new scanner is linked to a Base Station that is already linked to its maximum amount of scanners, the earlier-linked scanner that has been inactive for the longest period of time will be automatically unlinked from the system to make room for the new scanner.

When this feature is disabled, scanners can be linked up to the maximum number set via the programming feature, *Set Maximum Linked Scanners*, or the default maximum, which is eight scanners. Attempts to link additional scanners beyond these limits will fail.

SET ------------------------------

Drop oldest links (ENABLE) ---------

Do not drop oldest links (DISABLE) ---------

END ------------------------------

Transmit Scanner Configuration to Base Station ---------

Common Configuration

Feature is applicable to scanner *and* Base Station.

NOTE

Remember, programming changes to the Base Station have no effect until the new configuration is downloaded via the feature *Transmit Scanner Configuration to Base Station* on page 11.

When this option is enabled, the Base Station attempts to share its configuration with a scanner as that scanner links to the Base Station. If, during linking, a scanner's configuration file does not match the Base Station's current settings, the Base Station attempts to transmit to the scanner and overwrite the configuration file with its own.
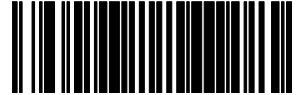

NOTE

Since a new/replacement scanner may have been shipped with a custom configuration or may have been modified with other special programming, it may not be desirable to download a potentially older configuration from an existing Base Station. Reference *Transmit Scanner Configuration to Base Station* on page 11 for more information.

If the need is to share the scanner's configuration files to the Base Station, reference the section, *Transmit Scanner Configuration to Base Station* on page 11.
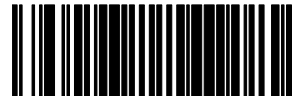
SET -----------------------------

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

ENABLE Common Configuration ---------

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

DISABLE Common Configuration ---------

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

END -----------------------------

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Transmit Scanner Configuration to Base Station ---------

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Feature is specific to Base Station ONLY

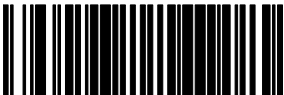> **Remember, programming changes to the Base Station have no effect until the new configuration is downloaded via the feature *Transmit Scanner Configuration to Base Station* on page 11.**
>
> **NOTE**

By default, as many as eight scanners can be linked to one Base Station. This feature allows you to further limit allowable linked scanners. Designate a number of scanners that can link from one to eight.

SET ----------------------------

Maximum Linked
Scanners = 1 --------

Maximum Linked
Scanners = 2 --------

Maximum Linked
Scanners = 3 --------
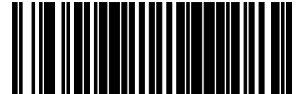
Maximum Linked
Scanners = 4 --------

Maximum Linked Scanners = 5 ---------

Maximum Linked Scanners = 6 ---------

Maximum Linked Scanners = 7 ---------

Maximum Linked Scanners = 8 ---------

END ----------------------------

Transmit Scanner Configuration to Base Station ---------

Feature is specific to Base Station ONLY

> **Remember, programming changes to the Base Station have no effect until the new configuration is downloaded via the feature *Transmit Scanner Configuration to Base Station* on page 11.**
>
> **NOTE**

This feature allows you to include source-radio identification[1] (represented by six ASCII bytes) along with bar code data transmitted to the host. Enable this feature to identify the individual scanner sending a given data transmission. Options for this feature are:

- Do not include source-radio ID
- Include source-radio ID as prefix
- Include source-radio ID as suffix

---

1. Each scanner has been pre-configured at the factory with its own unique six-character identification (source-radio ID).

> **NOTE**
>
> When included as a prefix or suffix, the source-radio ID is displayed immediately adjacent to the bar code data. If an additional prefix or suffix is included (e.g., other global prefix or suffixes are included), any source-radio ID prefix or suffix remains adjacent to (and is considered part of) the bar code data.

SET ----------------------------

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

Do not include source-radio ID ---------

||| ||||||||||||||| || ||| |||
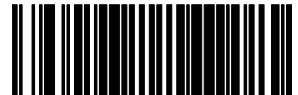
Include source-radio as prefix ---------

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

Include source-radio as suffix ---------

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

END ----------------------------

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

Transmit Scanner Configuration to Base Station ---------

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

Low Battery LED Indication

Feature is specific to scanner ONLY

If this feature is enabled and the battery power in the scanner is low, the scanner's green LED flashes twice every time the trigger is pulled.

SET --

ENABLE Low Battery LED Indication ---------

DISABLE Low Battery LED Indication ---------

END --
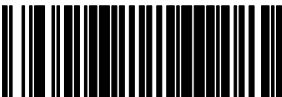
General Features

 General Features are all specific to scanner ONLY

The following section contains the general features that are common to all interfaces. These features allow modification of the scanner's behavior to accommodate user preferences.

- Green LED Lamp Idle State
- Marker Beam Settings
- Low Power Mode
- Low Power Shut-down Delay
- Half-Angle
- Read Mode

Programming the General Features

Use the special bar codes on the following pages to configure the features common to all interfaces.

Green LED Lamp Idle State

When the scanner is idle, its green LED lamp can be programmed to indicate this in one of two ways:

- LED lamp is OFF when the scanner is idle.
- LED lamp is ON when the scanner is idle.

SET-------------------------------------

LED OFF   --------

LED ON   --------

END -------------------------------------

Marker Beam Settings

The Marker Beam feature provides the user with a spotter beam for improved aiming at distant bar code labels and/or in extremely bright environments. A Marker Beam can also be useful when scanning through showcase glass or bar code menus containing bar codes printed with little space between them.

To enable the Marker Beam:

1. Scan the SET bar code.

2. Scan the ENABLE MARKER BEAM bar code.

3. Scan the desired time duration setting for the Marker Beam to be illuminated.

4. Scan the END bar code on page 184.

SET --
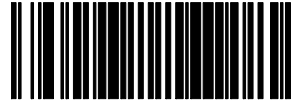
Marker Beam Enable/Disable

Marker Beam Enabled ---------
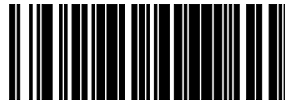
Marker Beam Disabled ---------

Marker Beam Duration

0 Seconds ---------

0.2 Seconds ---------
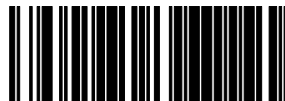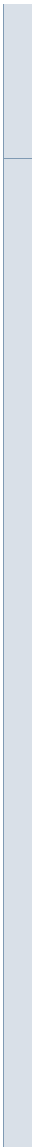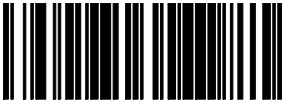
0.3 Seconds --------	|||||||||||||||||||||||
0.4 Seconds --------	|||||||||||||||||||||||
0.5 Seconds --------	|||||||||||||||||||||||
0.6 Seconds --------	|||||||||||||||||||||||
0.8 Seconds --------	|||||||||||||||||||||||
1 Seconds --------	|||||||||||||||||||||||
1.2 Seconds --------	|||||||||||||||||||||||
1.5 Seconds --------	|||||||||||||||||||||||
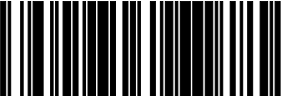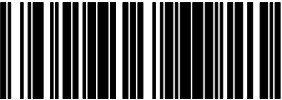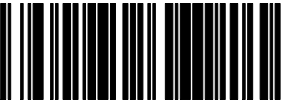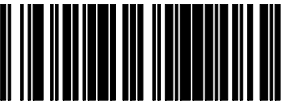
END --

Low Power Mode When enabled, Low Power Mode causes the scanner to powerdown completely between trigger pulls. This results in very low idle current, lowering the energy needs of the scanner. It does, however, require the scanner's microcontroller to reboot with every trigger pull. This will introduce a very small delay in scanning when this mode is enabled. Therefore, it is recommended that this mode only be used when the scanner is connected to a battery powered terminal.

> **NOTE** **The state of this feature is not affected by the RETURN TO FACTORY DEFAULTS programming bar code. It must be manually enabled or disabled using the programming bar codes below.**

Scan these labels to enable and set the Low Power Mode.

SET --------------------------------------

Enable Step #1 ---------
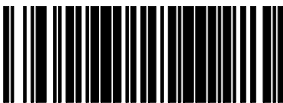
Enable Step #2 ---------

Disable Step #1 ---------
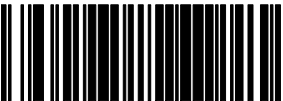
Disable Step #2 ---------

END --------------------------------------
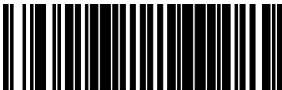
Low Power Shut-down Delay

This feature allows for quick successive reads in the Low Power Mode. Low Power Shut-down Delay (LPSD) is the amount of delay after the trigger is released before the scanner transitions into shut-down. The programming bar codes below provide for transition times of 0 (no delay), 2, 5, or 10 seconds delay.

For other LPSD settings contact your sales or service representative.

Scan these bar codes to set the LPSD option.

1. Scan the SET bar code.
2. Scan the bar code for delay desired.
3. Scan the END bar code.

SET --------------------------------------

0 Seconds (No Delay) ---------

2 Seconds ---------

5 Seconds ---------

10 Seconds ---------

END --------------------------------------

Half-Angle When enabled, the Half-Angle feature causes the scanner to scan with a scan angle that is approximately half the standard setting. Disabling the feature returns the scanner to the standard scan width.

Scan these bar codes to set the Half Angle options.

1. Scan the SET bar code.

2. Scan the bar code to enable/disable the option.
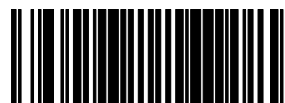
3. Scan the END bar code.

SET ---------------------------------------
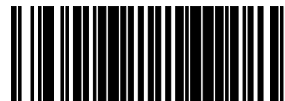
Enable ---------

Disable ---------

END ---------------------------------------

Read Mode   Three selections are available for Read Mode.

Single Read Mode — Single Read Mode is the normal operating mode for the scanner. When the trigger is pulled, the scanner stays on until one label is read.

Multiple Read Mode — When enabled, Multiple Read Mode allows the reading of multiple labels with one trigger pull.

Triggerless Mode — When Triggerless Mode is enabled, the scanner behaves as if its trigger is always actuated. Upon initially pulling the trigger, the scanner will continue to be "ON" unless power is removed, or the scanner is idle for the period of time defined by the feature *Wait Time For Scanner Power Shutdown* on page 166. To reactivate the scanner in Triggerless Mode after it has shut down, simply pull and release the trigger.

Enable Single Read Mode

Enable Multiple Read Mode

Enable Triggerless Mode
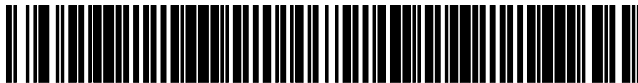
Appendix A: Additional Information

RS-232 Host Commands

The RS-232 interface will accept commands from the host. Available commands are:

- Disable Scanner
- Enable Scanner
- Reset Scanner
- ~~Beep Good Read Tone~~[1]
- ~~Force Good Read~~[1]

Disable Scanner (ASCII 'D') — bar codes scanned by the handheld (scanner) unit are beeped as good scans and sent off to the Base Station which rejects the bar code, causing the handheld unit to sound an error beep.

Enable Scanner (ASCII 'E') — an operational mode in which bar codes scanned by the handheld unit are accepted by the Base Station.

Reset Scanner (ASCII 'R') — for RF systems, only the Base Station is reset. Any bar code data the device may be holding in buffers is discarded. NOTE: After reset is executed, additional host commands may be ignored for 30 seconds.

Beep Good Read Tone (ASCII 'B') — for RF systems, this command is ignored.

Force Good Read Tone (Hex '01') — this command is also ignored by RF systems.

---

1. Good Read Tone commands are available for standard (non-RF) PowerScan models, but are not available for RF units.

Technical Support

Datalogic Website Support

The Datalogic website (www.scanning.datalogic.com) is the complete source for technical support and information for Datalogic products. The site offers the Datalogic TekForum, product support, product registration, warranty information, product manuals, product tech notes, software updates, demos, and instructions for returning products for repair.

Datalogic Website TekForum

Search for information on the TekForum by clicking on the Support link on the Datalogic home page. Browse the TekForum to find answers to your questions about common technical issues.

Reseller Technical Support

An excellent source for technical assistance and information is an authorized Datalogic reseller. A reseller is acquainted with specific types of businesses, application software, and computer systems and can provide individualized assistance.

Telephone Technical Support

If you do not have internet or email access, you may contact Datalogic technical support at (541) 349-8281.

Appendix B: Sample Bar Codes

Code 39

Code 128

Interleaved
2 of 5

Codabar

UPC-A

UPC-A w/2 digit
Add-ons

UPC-A w/5 digit Add-ons

0   08029 51041   8   6 9 0 0 0

UPC-E

0   998875   0

EAN-13

1   101234 567891

EAN-8

0021 0126

Code 93

Code 93.test

Standard 2 of 5

9 8 7 6 5 4 3 2 1 0

MSI/Plessey

14476925
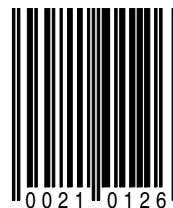
Appendix C: Keypad

Some of the features in this manual require selection of numerals and letters from the set below. Carefully read the instructions for such features, then scan these bar codes as directed.

1   --------
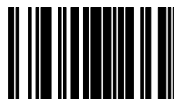
2   --------

3   --------

4   --------

5   --------

6   --------

7   --------

8   --------

9 -------- |||||||||||||||||||||

0 -------- |||||||||||||||||||||

A -------- |||||||||||||||||||||

B -------- |||||||||||||||||||||
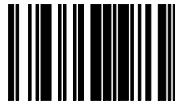
C -------- |||||||||||||||||||||

D -------- |||||||||||||||||||||

E -------- |||||||||||||||||||||

F -------- |||||||||||||||||||||
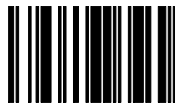
Appendix D: Record of Programmable Features

Maintain a record of all changes made to ensure that you know if the original factory settings have been changed. Use the following table to log your custom configuration changes.

NOTE

The factory default settings listed below represent the most common settings used. There are some customer-specific PowerScan configuration settings that differ from the defaults listed.

Table 8

Programmable Feature	Factory Default Setting	Your Setting	Comment
Interface Selection			
Wand Emulation	(If enabled)		
Polarity	Space low/ Bar High		
Signal Speed	High		
Data Format	Normal		
Idle State	Low		
Pre-Noise	None		
Post-Noise	7		
Transmit C128 Function Characters	Disable		
RS-232 Interface	(If enabled)		
Baud Rate	9600		
Data Bit	8		
Parity Bit	No Parity		

Table 8

Stop Bit(s)	1		
Hardware Handshaking	Disable		
Software Handshaking	Disable		
ACK/NAK Options	Disable		
Intercharacter Delay	0		
Keyboard Wedge I/F	(If enabled)		
Connect to Laptop/No Keyboard Attached	Disable		
Send Control/Function Characters	Don't Send		
Caps Lock	Off		
Country Mode	USA		
Intercharacter Delay	0		
Quiet Interval	100 ms		
Universal Keyboard Wedge I/F[a]	(If enabled)		
Terminal/Keyboard Settings	11		
IBM Interface	(If enabled)		
Transmit Labels in Code 39 Format	Disable		
Label Transmit Configuration (for RS-232 and Keyboard Wedge ONLY)			
Universal Prefix	0000		
Universal Suffix	0D00		

Table 8

Single Character Prefix/Suffix	Disable		
Label ID	As prefix[b]		
Symbology Options			
Code 39	Enable		
Calculate Check Digit	Don't Calculate		
Transmit Check Digit	Transmit		
Start/Stop	Don't Transmit		
Code 39 Full ASCII	Disable		
Minimum Label Length	2		
Read Verification	1		
Quadralogic™ II Decoding	Deactivate		
PharmaCode 39	Disable		
Calculate Check Digit	Don't Calculate		
Transmit Check Digit	Transmit		
Start/Stop	Don't Transmit		
Code 128 UCC/EAN 128	Disable		
Minimum Label Length	2		
Read Verification	1		
Quadralogic™ II Decoding	Deactivate		
Interleaved 2 of 5	Enable		
Calculate Check Digit	Don't Calculate		

Table 8

Transmit Check Digit	Transmit		
Minimum Label Length	8		
Read Verification	1		
Quadralogic™ II Decoding	Deactivate		
Codabar	Disable		
Calculate Check Digit	Don't Calculate		
Transmit Check Digit	Transmit		
Gap Check	Enable		
Minimum Label Length	3		
Start/Stop	abcd/abcd		
Start/Stop Match Req't	Disable		
Start/Stop Transmission	Enable		
Read Verification	1		
Quadralogic™ II Decoding	Deactivate		
UPC-A	Disable		
Check Digit	Send		
NSD Option	Send NSD		
Read Verification	1		
Quadralogic™ II Decoding	Deactivate		
UPC-E	Disable		
Check Digit	Send		
NSD Option	Send NSD		

Table 8

Read Verification	2		
Quadralogic™ II Decoding	Deactivate		
EAN-13	Disable		
Check Digit	Send		
NSD Option	Send NSD		
Read Verification	1		
Quadralogic™ II Decoding	Deactivate		
EAN-8	Disable		
Check Digit	Send		
NSD Option	Send NSD		
Read Verification	1		
Quadralogic™ II Decoding	Deactivate		
UPC/EAN			
UPC/EAN Expansions	Don't Expand		
Addons	Disable		
Price/Weight Check Digit	Disable		
Code 93	Disable		
Minimum Label Length	1		
Read Verification	1		
Standard 2 of 5/IATA	Disable		
Calculate Check Digit	Don't Calculate		

Table 8

Transmit Check Digit	Transmit		
Minimum Label Length	8		
Read Verification	1		
IATA	Disable		
MSI/Plessey	Disable		
Calculate Check Digit	Calculate		
Transmit Check Digit	Transmit		
# of Check Chars.	1		
Minimum Label Length	4		
Read Verification	1		
RF Features			
RF When to Beep	Option 7		
RF Beeper Volume	Vol 3		
RF Beeper Frequency	High		
RF Beep Duration	100ms		
Radio Transmit Power	High		
RF Channel Selection	Channel 1		
Transmission Retries Before Message Time-out	3 Retries		
Wait Time for ACK	80ms		
Wait Time for Scanner Power Shutdown	1 Second		
Wait Time Between Retries of Failed Transmission	90ms		

Table 8

HACK Transmit Options	HACK upon Base Station transmission to host		
Wait Time for HACK From Host	1 Second		
Drop Links on Reset Option	Disable		
Drop Oldest Links Option	Enable		
Common Configuration	Disable		
Set Maximum Linked Scanners	8		
Source-Radio Identification (ID)	Don't Include		
Low Battery LED Indication	Enable		

a. The Universal Keyboard Wedge interface offers its own complete set of programmable features. Reference the PowerScan Universal Wedge Programming Guide for details.

b. See Table 6 on page 65 for industry standard label identifiers.

NOTES

Appendix E: LED and Beeper Indications

The Base Station LED indicators and the scanner's LEDs and beeper are used to announce system status and perform other useful signals. The tables below list the default function of each of the various indicators.
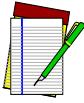
> **NOTE**
>
> **Some LED and beeper indications can be disabled or modified via scanner programming. The tables indicate the default behavior of the indicators, with shaded rows representing features that are programmable.**

Table 9. Scanner GREEN LED Functions

LED INDICATION	DURATION	COMMENT
Disable Indication	100ms on, 900 ms off	Indicates the scanner has been disabled.
Good Read Indication	500 ms on	Indicates a bar code has been read and decoded.
Program Mode Indication	500 ms on, 500 ms off Continuous flashing	Indicates the scanner is in Programming Mode.
Field Replaceable Unit (FRU) Indications	Varies. Consists of a long flash followed by multiple short flashes.	Enables service technicians to identify Field Replaceable Unit (FRU) errors.
Low Battery Indication	Two flashes at 100 ms on, 350 ms off.	Occurs at trigger pull before the laser is enabled. Indicates the battery is in need of recharging.

Table 10. Scanner YELLOW LED Functions

LED INDICATION	DURATION	COMMENT
Laser on indication	On Steady	The yellow LED illuminates whenever the laser is on.

Table 11. Scanner BEEPER Functions

SPEAKER INDICATION	DURATION	COMMENT
Scanner Not Currently Linked	Six beeps consisting of 20 ms on, 20 ms off	Indicates a bar code was read before the scanner was linked to a Base Station.
Good Read Beep	100 ms on (short) 250 ms on (medium) 500 ms on (long)	Three programmable functions are available. This indicates a bar code has been read and decoded.
Partial Read Bip	20 ms on	A very short beep ("bip") is sounded when one bar code of a two-bar code pair has been successfully decoded.
Base Station Acknowledgement Beep	100 ms on (short) 250 ms on (medium) 500 ms on (long)	Indicates a successful bar code transmission to the host (configurable), a successful change of channel, or a successful transmission of a new configuration to the host.
Transmission Error Beep	High, then low, then high, then low.	Indicates unsuccessful transmission to the host.
Link Beep	Low, then medium, then high.	Indicates a scanner has been successfully linked to a base station.
Unlink Beep	High, then medium, then low.	Indicates a scanner has been successfully unlinked from a base station.

SPEAKER INDICATION	DURATION	COMMENT
Field Replaceable Unit (FRU) Indications	Varies. Consists of a long tone followed by multiple short tones.	Enables service technicians to identify Field Replaceable Unit (FRU) errors.

Table 12. Base Station LED Functions

LED INDICATION	DURATION	COMMENT
TX/RX (Transmit/Receive)	Lit for variable time[a]	Indicates communications activity to or from the Base Station.
	Continuous rapid flashing at power-up	Indicates a broken radio.
	Varies. Consists of a long flash followed by multiple short flashes.	Enables service technicians to identify Field Replaceable Unit (FRU) errors.
Charge (Battery)	Continuous flashing	When a scanner is nested in the station, this indicates its battery is being quick charged.
	Lit Constantly	When a scanner is nested in the station, this indicates its battery is at or near full charge.
	Not Lit	A scanner is not present or incorrectly inserted into the station. It can also mean the battery is below 0°C (too cold for charge)
Power	Lit Constantly	Indicates that power is on.

a. The LED remains on while the unit is actively processing code which requires a TX/RX to occur. The duration of the LED is dependent upon the length of the message.

NOTES

NOTES

ASCII Character Set

The table on this page shows a set of ASCII characters and their corresponding Hex Values. The Hex Values in this table are needed for setting symbology specific label identifiers, as well as enabling custom prefix and suffix characters.

ASCII Char.	Hex No.	ASCII Char.	Hex No.	ASCII Char.	Hex No.	ASCII Char.	Hex No.
NUL	00	SP	20	@	40	'	60
SOH	01	!	21	A	41	a	61
STX	02	"	22	B	42	b	62
ETX	03	#	23	C	43	c	63
EOT	04	$	24	D	44	d	64
ENQ	05	%	25	E	45	e	65
ACK	06	&	26	F	46	f	66
BEL	07	'	27	G	47	g	67
BS	08	(	28	H	48	h	68
HT	09	)	29	I	49	i	69
LF	0A	*	2A	J	4A	j	6A
VT	0B	+	2B	K	4B	k	6B
FF	0C	,	2C	L	4C	l	6C
CR	0D	-	2D	M	4D	m	6D
SO	0E	.	2E	N	4E	n	6E
SI	0F	/	2F	O	4F	o	6F
DLE	10	0	30	P	50	p	70
DC1	11	1	31	Q	51	q	71
DC2	12	2	32	R	52	r	72
DC3	13	3	33	S	53	s	73
DC4	14	4	34	T	54	t	74
NAK	15	5	35	U	55	u	75
SYN	16	6	36	V	56	v	76
ETB	17	7	37	W	57	w	77
CAN	18	8	38	X	58	x	78
EM	19	9	39	Y	59	y	79
SUB	1A	:	3A	Z	5A	z	7A
ESC	1B	;	3B	[	5B	{	7B
FS	1C	<	3C	\	5C			7C
GS	1D	=	3D	]	5D	}	7D
RS	1E	>	3E	^	5E	~	7E
US	1F	?	3F	_	5F	DEL	7F

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