## 

## PowerScan<sup>™</sup> 9300 Family

Industrial Corded Handheld Area Imager Bar Code Reader

PowerScan PD9330/PBT9300/PM9300





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# Chapter 1 Introduction

## **About this Manual**

This Product Reference Guide (PRG) is provided for users seeking advanced technical information, including connection, programming, maintenance and specifications. The Quick Reference Guide (QRG) and other publications associated with this product are downloadable free of charge from the website listed on the back cover of this manual.

## **Overview**

Chapter 1, (this chapter) presents information about manual conventions, and an overview of the reader, its features and operation.

Chapter 2, Setup presents information about unpacking, cable connection information and setting up the reader.

Chapter 3, Configuration Using Bar Codes provides instructions and bar code labels for customizing your reader. There are different sections for interface types, general features, data formatting, symbology-specific and model-specific features.

Chapter 4, References provides background information and detailed instructions for more complex programming items.

Chapter 5, Message Formatting gives details for programming options.

Appendix A, Technical Specifications lists physical and performance characteristics, as well as environmental and regulatory specifications. It also provides standard cable pinouts and LED/Beeper functions.

Appendix B, Sample Bar Codes offers sample bar codes for several common symbologies.

Appendix C, Standard Defaults references common factory default settings for reader features and options.

Appendix D, Keypad includes numeric bar codes to be scanned for certain parameter settings.

Appendix E, Scancode Tables lists control character emulation information for Wedge and USB Keyboard interfaces.

## **Manual Conventions**

The following conventions are used in this document:

The symbols listed below are used in this manual to notify the reader of key issues or procedures that must be observed when using the reader:



Notes contain information necessary for properly diagnosing, repairing and operating the reader.



The CAUTION symbol advises you of actions that could damage equipment or property.

## References

Current versions of this Product Reference Guide (PRG), Quick Reference Guide (QRG), the Datalogic Aladdin<sup>™</sup> Configuration application, and any other manuals, instruction sheets and utilities for this product can be down-loaded from the website listed below. Alternatively, printed copies or prod-uct support CDs for most products can be purchased through your Datalogic reseller.

## **Technical Support**

## **Datalogic Website Support**

The Datalogic website (www.datalogic.com) is the complete source for technical support and information for Datalogic products. The site offers product support, warranty information, product manuals, product tech notes, software updates, demos, and instructions for returning products for repair.

## **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) 349-8283 or check the back cover of your manual for more contact information.

## **About the Reader**

The PowerScan 9300 is a family of feature-rich and rugged laser readers. It is offered in several different models to better fit the different needs of each customer.

The main model categories are:

- PD9330-XX: Corded models.
- PM9300-XX: STAR-System(tm) models.
- PBT9300-XX: Bluetooth models.

Within each category, further differentiating features are available, described by the part number suffix:

- AR: Autorange optic, standard and low density code, long depth of field
- D: models equipped with display and 4-key keyboard
- DK: models equipped with display and 16-key keyboard

Typically, units are factory-programmed for the most common terminal and communications settings. If you need to modify any programmable settings, custom configuration can be done by scanning the programming barcodes within this guide or with Datalogic Aladdin<sup>™</sup>, available from the Datalogic website. See "Datalogic Aladdin<sup>™</sup> on page 6 for more information.

Whether used in Single Trigger or Continuous Mode, the ergonomic design of the reader will help to promote comfortable handling during extended periods of use.

See "Interface Selection" on page 14 for a listing and descriptions of available interface sets by model type.

#### PM8300 Compatible Mode:

Powerscan PM9300 offers a limited set of features compatible with the previous PM8300. To access those features, you have to program the system through the Compatibility Mode parameter (see "Compatibility Mode" on page 226 of the Wireless Configuration chapter).

When in normal mode, the same parameter can be used to configure the communication speed.

## The BC9xx0<sup>™</sup> Base Station/Charger

The BC9xx0 base station, when paired with one or more PowerScan<sup>™</sup> 9300 readers, builds a Cordless Reading System for the collection, decoding and transmission of bar code data. It can be connected to a Host PC via RS-232, USB, or KBD Wedge, and is suited for single-cradle layouts. The BC91x0 models also provide a spare battery charger slot.

The label on the cradle contains LED indicators and a multi-function button. When the button is pressed for less than 5 seconds, the cradle will transmit a "broast" message." When the broast is sent, all properly configured scanners (Radio RX Timeout set to keep the radio "awake") that are linked to that base and within radio range coverage will emit a beep and blink within 5 seconds. This functionality is useful to:

- verify which scanners are linked to a certain base station
- detect a scanner forgotten somewhere

When the button is pressed for longer than 5 seconds, all paired scanners will be unpaired.

RADIO
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The LEDs signal the BC9xx0-BT status, as shown in Table 1 on page 4.

LED	STATUS
Aux	Yellow On = BC9xx0 is powered through an external power supply.
Host	Yellow On = BC9xx0 is powered by the Host.
	Green On = the reader battery is completely charged.
Reader	Red On = the reader battery is charging.
Reduel	Orange Blinking = reader battery fault - replace battery.
	Off = reader not in the cradle or not properly inserted.
Spare	Green On = the spare battery is completely charged.
(BC91x0 models	Orange Blinking = spare battery fault - replace spare battery.
only)	Off = no spare battery in the housing or battery not fully inserted.
Radio	Yellow Blinking = radio activity.
Ethernet (Ethernet models only)	Green Blinking = Et14hernet activity.

#### Table 1. LED Status

See "Base Station Indications (Cordless Models ONLY)" on page 295 for more specific details on the LEDs.

## **Battery Safety**

To reinstall, charge and/or perform any other action on the battery, follow the instructions in this manual.



Before installing the Battery, read "Battery Safety" on this and the following pages. Datalogic recommends annual replacement of rechargeable battery packs to ensure maximum performance.



Do not discharge the battery using any device except for the scanner. When the battery is used in devices other than the designated product, it may damage the battery or reduce its life expectancy. If the device causes an abnormal current to flow, it may cause the battery to become hot, explode or ignite and cause serious injury.

Lithium-ion battery packs may get hot, explode or ignite and cause serious injury if exposed to abusive conditions. Be sure to follow the safety warnings listed below:

- Do not place the battery pack in fire or heat.
- Do not connect the positive terminal and negative terminal of the battery pack to each other with any metal object (such as wire).
- Do not carry or store the battery pack together with metal objects.
- Do not pierce the battery pack with nails, strike it with a hammer, step on it or otherwise subject it to strong impacts or shocks.
- Do not solder directly onto the battery pack.
- Do not expose the battery pack to liquids, or allow the battery to get wet.
- Do not apply voltages to the battery pack contacts.

In the event the battery pack leaks and the fluid gets into your eye, do not rub the eye. Rinse well with water and immediately seek medical care. If left untreated, the battery fluid could cause damage to the eye.



Always charge the battery at 32° – 104°F (0° - 40°C) temperature range.

Use only the authorized power supplies, battery pack, chargers, and docks supplied by your Datalogic reseller. The use of any other power supplies can damage the device and void your warranty.

Do not disassemble or modify the battery. The battery contains safety and protection devices, which, if damaged, may cause the battery to generate heat, explode or ignite.

Do not place the battery in or near fire, on stoves or other high temperature locations.

Do not place the battery in direct sunlight, or use or store the battery inside cars in hot weather. Doing so may cause the battery to generate heat, explode or ignite. Using the battery in this manner may also result in a loss of performance and a shortened life expectancy.

Do not place the battery in microwave ovens, high-pressure containers or on induction cookware.

Immediately discontinue use of the battery if, while using, charging or storing the battery, the battery emits an unusual smell, feels hot, changes color or shape, or appears abnormal in any other way.

Do not replace the battery pack when the device is turned on.

Do not remove or damage the battery pack's label.

Do not use the battery pack if it is damaged in any part.

Battery pack usage by children should be supervised.

As with other types of batteries, Lithium–Ion (LI) batteries will lose capacity over time. Capacity deterioration is noticeable after one year of service whether the battery is in use or not. It is difficult to precisely predict the finite life of a LI battery, but cell manufacturers rate them at 500 charge cycles. In other words, the batteries should be expected to take 500 full dis–

charge / charge cycles before needing replacement. This number is higher if partial discharging / recharging is adhered to rather than full / deep discharging,

The typical manufacturer advertised useful life of LI batteries is one to three years, depending on usage and number of charges, etc., after which they should be removed from service, especially in mission critical applications. Do not continue to use a battery that is showing excessive loss of capacity, it should be properly recycled / disposed of and replaced. For most applications, batteries should be replaced after one year of service to maintain customer satisfaction and minimize safety concerns.

Collect and recycle waste batteries separately from the device in compliance with European Directive 2006/66/EC, 2011/65/EU, 2002/96/EC and 2012/ 19/EU and subsequent modifications, US and China regulatory and others laws and regulations about the environment.

## **Programming the Reader**

## **Configuration Methods**

#### **Programming Bar Codes**

The reader is factory-configured with a standard set of default features. After scanning the interface bar code, you can select other options and customize your reader through use of the instructions and programming bar code labels available in the corresponding features section for your interface. Customizable settings for many features are found in "Configuration Parameters" starting on page 21.

Some programming labels, like "Restore Custom Defaults" on page 18, require only the scan of the single label to enact the change. Most, however, require the reader to be placed in Programming Mode prior to scanning them. Scan an ENTER/EXIT bar code once to enter Programming Mode. Once the reader is in Programming Mode, scan a number of parameter settings before scanning the ENTER/EXIT bar code a second time, which will then accept your changes, exit Programming Mode and return the reader to normal operation.



There are some exceptions to the typical programming sequence described above. Please read the description and setting instructions carefully when configuring each programmable feature.

## Datalogic Aladdin™

Datalogic Aladdin<sup>TM</sup> is a multi-platform utility program providing a quick and user-friendly configuration method via the RS-232/USB-COM interface. Aladdin allows you to program the reader by selecting configuration commands through a user-friendly graphical interface running on a PC. These commands are sent to the reader over the selected communication interface, or they can be printed as bar codes to be scanned. Aladdin also facilitates image capturing.

In addition, Aladdin makes it easy to upgrade the handheld's firmware, to attain the benefits of new reader features. Reference the Datalogic Aladdin™ Online Help for more details.

Aladdin is available for download free of charge on the Datalogic website.

# Chapter 2 Setup

## Unpacking

Check carefully to ensure the reader and any accessories ordered are present and undamaged. If any damage occurred during shipment, contact Datalogic Technical Support. Information is shown on page 2.

KEEP THE PACKAGING. Should the unit ever require service, it should be returned in its original shipping container.

## Setting Up the Reader

Follow the steps below to connect and get your reader up and communicating with its host.

- 1. Begin by Installing the Interface Cable (Corded) or Connecting the Base Station (Bluetooth and STAR)
- 2. Configure Interface Settings (see page 14).
- 3. Configure the Reader starting on page 17 (optional, depends on settings needed)

Connect the PowerScan by plugging directly into the host device as shown. The power can also be supplied through an external power supply via the Interface Cable supplied with a power jack.

## Connecting the Cable (Corded versions)



- A. Rubber gasket
- B. Cable Holder
- C. Cover
- D. Connector Holder
- 1. Slip the cable through the Cover.
- 2. Push the Rubber Gasket onto the Cable Holder.
- 3. Push the Cable Holder and gasket into the handle. Ensure that the "Front" marking on the Cable Holder is facing out, with the arrow pointing towards the front of the scanner.
- 4. Insert the end of the cable into the socket of the Cable Holder.
- 5. Push the Cover along the cable towards the reader, and hook it over the yellow "tooth" on the back of the handle.
- 6. Insert the cable through the Connector Holder, and push it up into the Cover.
- 7. Insert and tighten the screw to affix the cable assembly to the reader handle.



## **Configuring the Base Station**

To set up your BC9xx0 cradle you must:

- 1. Physically install the cradle.
- 2. Make all system connections.
- 3. Configure the BC9xx0 cradle.

## Mounting the BC9xx0 Cradle

The cradle package contains the following items:

BC9xx0 Base Station (with Desktop Mounting Bracket installed)	1 Metal Mounting plate
BC9xx0 Quick Reference Guide (this manual)	1 Wall Mounting Bracket

The cradle can be either mounted on a flat surface for desktop usage or affixed vertically to a wall.

## **Mounting Brackets**

The cradle comes with two different mounting brackets. The appropriate bracket is used depending on whether the cradle will be mounted on a horizontal or vertical surface. When shipped, the cradle has the Desktop Mounting Bracket installed. For vertical installation, the Wall Mounting Bracket must be attached instead.

#### Figure 1. Mounting Brackets



- Desktop mount bracket has ribs to keep the scanner in place when the cradle is horizontal.
- Wall mount bracket contains bosses to keep the scanner in place when the cradle is vertical.

#### To change the Bracket:

- 1. Remove the screw holding the Bracket in place. Retain the screw for re-use.
- 2. Carefully lift off the Bracket.
- 3. Install the other bracket by first slipping the end tab into place on the base station, then easing the tabs (shown in Figure 1 on page 9) into place on the sides.
- 4. Replace the screw to secure the Bracket to the Base Station.

#### Figure 2. Changing the Bracket





## **Permanent Mounting**

For either desktop or wall mounting, the cradle can be fastened directly to a flat surface using screws (not included).



When mounting on drywall, the base should be screwed to a wall stud or supporting beam for additional support.

#### Figure 3. Base Station Bottom



## **Mounting for Portable Use**

If portability of the cradle is required, the metal plate must be used. There are two ways this can be done: (1) by first mounting the metal plate on a flat surface so the cradle can be slid off and on, or (2) mounting the metal plate onto the back of the base station and then screwing both to the desired surface.



For additional security on wall mounting, it is strongly recommended that the cradle be secured into place using two auxiliary screws through the mounting holes on the side.

#### **Mounting the Metal Plate**

- 1. Affix the metal plate onto the desired mounting surface using the two center screw holes (see Figure 4 on page 11).
- 2. Remove the adhesive strips protecting the mounting tabs on the cradle, shown in Figure 3.
- 3. Slide the tabs on the back of the cradle onto the metal plate as shown in Figure 4.
- 4. After aligning the tabs, push up to lock into place.

#### Figure 4. Mounting Plate on Wall



#### Attaching the Metal Plate to Base

Alternatively, the mount can be attached first to the base, then both can be mounted to a wall as described above.

#### Figure 5. Attaching Mounting Plate to Base



## System Connections



Connections should always be made with power off!

The BC9xx0 cradle provides a multi-interface connector and a power supply connector as shown:



**Power Supply** 

**Multi-Interface Connector** 

## **Connecting and Disconnecting the Interface Cable**

The BC9xx0 can be connected to a Host by means of a multi-interface cable, which must be simply plugged into the Host connector, visible on the front panel of the cradle.

To disconnect the cable, insert a paper clip or other similar object into the hole corresponding to the Host connector on the body of the cradle. Push down on the clip while unplugging the cable. Refer to the following figures:



\*The power supply is optional, the cradle can be powered by the USB port. In this case the full charging of an empty battery will take about 10 hours. For intense usage and/or when the system is shut down during the night, the use of an external power supply is recommended.





## **BC9xx0** Configuration

The BC9xx0 configuration can be performed in three ways: by using the Datalogic Aladdin<sup>M</sup> software configuration program, by sending configuration strings from the Host PC via the RS-232 or USB-COM interface or by reading configuration bar codes with the PowerScan<sup>M</sup> 9300 reader.

#### **Serial Configuration**

By connecting the BC9xx0 to a PC through an RS-232 or USB-COM interface cable it is possible to send configuration strings from the PC to BC9xx0.

#### **Configuration Bar Codes**

Link the cradle and the reader using the procedures described in the Power-Scan<sup>™</sup> PM9300 or PBT9300 Quick Reference. Once the pairing is complete, you can configure the BC9xx0 cradle by reading configuration bar codes in this manual.

To configure the BC9xx0 using the PowerScan<sup>TM</sup> 9300 reader (paired to the cradle with the Bind command), follow the procedure according to the interface selected.

## **Interface Selection**

Upon completing the physical connection between the reader and its host, proceed to Table 2 on page 15 to select the interface type the reader is connected to (for example: RS-232, Keyboard Wedge, USB, etc.). Scan the appropriate bar code in that section to configure your system's correct interface type.

## Setting the Interface

Scan the programming bar code from this section which selects the appropriate interface type matching the system the reader will be connected to. Next, proceed to the corresponding section in this manual (also listed in Table 2 on page 15) to configure any desired settings and features associated with that interface.



Unlike some programming features and options, interface selections require that you scan only one programming bar code label. DO NOT scan an ENTER/EXIT bar code prior to scanning an interface selection bar code.

Some interfaces require the scanner to start in the disabled state when powered up. If additional scanner configuration is desired while in this state, pull the trigger and hold it for five seconds. The scanner will change to a state that allows programming with bar codes.

#### Table 2. Available Interfaces

RS-232		FEATURES
RS-232 standard interface	Select RS232-STD	Set RS-232
Select RS232-WN	RS-232 Wincor-Nixdorf	Interface Features starting on page 25
RS-232 for use with OPOS/UPOS/JavaPOS	Select RS-232 OPOS	
USB		FEATURES
Select USB COM-STD <sup>a</sup>	USB Com to simulate RS-232 standard interface	
USB-OEM (can be used for OPOS/UPOS/JavaPOS)	Select USB-OEM	Set USB-OEM Interface Features
Select USB Keyboard	USB Keyboard with standard key encoding	starting on page 47
USB Keyboard with alternate key encoding	Select USB Alternate Keyboard	

a. Download the correct USB Com driver from www.datalogic.com

KEYBOARD		FEATURES
AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Standard Key Encoding	Select KBD-AT	Set KEYBOARD WEDGE Interface Features starting on page 37
Select KBD-AT-NK	Keyboard Wedge for IBM AT PS2 with standard key encoding but without external keyboard	
AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Alternate Key	Select KBD-AT-ALT	
Select KBD-AT-ALT-NK	Keyboard Wedge for IBM AT PS2 with alternate key encoding but without external keyboard	

## **Customizing Configuration Settings**

## **Configure Interface Settings**

If after scanning the interface bar code from the previous table, your installation requires you to select options to further customize your reader, turn to the appropriate section for your interface type in "Configuration Parameters" starting on page 21.

## **Global Interface Features**

See "Global Interface Features" on page 23 for settings configurable by all interface types.

## **Configuring Other Features**

If your installation requires different programming than the standard factory default settings, the following sections of this manual allow configuration of non-interface-specific settings you might require. Go to Configuration Using Bar Codes, starting on page 21 for a complete list of available options.

## **Software Version Transmission**

The software version of the device can be transmitted over the RS-232 and Keyboard interfaces by scanning the following label.



Transmit Software Version

## **Resetting the Product Configuration to Defaults**

#### **Restore Custom Defaults**

If you aren't sure what programming options are in your imager, or you've changed some options and want to restore the Custom Default Configuration that may have been saved in the scanner, scan the Restore Custom Default Configuration bar code below. This will restore the custom configuration for the currently active interface.



Custom defaults are based on the interface type. Configure the imager for the correct interface before scanning this label.



Restore Custom Default Configuration

#### **Restore Factory Configuration**

The "Restore Custom Default Configuration" command above is normally enough to restart the machine from a known status (set in the factory or by the customer via configuration file). The machine is set as it arrived to you from the factory or according to the custom configuration file you loaded afterward.

If you want to **permanently cancel** the setup defined by the configuration file use "Restore Factory Configuration" on page 311 of this manual.

The programming items listed in the following sections show the factory default settings for each of the menu commands. If no configuration file has been loaded, the above command restores the factory default.

## Set Date and Time

1. Scan the Enter/Exit Programming bar code below to set date and time.



 Scan the Set Date bar code + six digits for Year, Month and Day (YYMMDD) from Appendix D, Keypad.





- Scan Set Time + six digits for Hours, Minutes and Seconds (HHMMSS) from Appendix D, Keypad.
- 4. Scan the Enter/Exit Programming bar code to complete.

## Linking the Reader

## Link Datalogic RF Devices to Base

For RF devices, before configuring the interface it is necessary to link the handheld with the base.

To link the handheld and the base, press the trigger to wake up the handheld and mount it into the base. If the reader was previously linked to another base, you must first press and hold the button on the base (>5 seconds), then scan the **Unlink** bar code before re-linking to the new base.



Unlink

## Linking to a Bluetooth Adapter in Serial Port Profile (Slave) Mode

- 1. Install any drivers provided with the Bluetooth adapter.
- 2. Scan the **Enable RF Link to Server** label below to make the scanner visible to the host computer.
- 3. Use the host computer's Bluetooth manager to "Discover new devices" and select "Datalogic Scanner." If you receive an error message, it may be necessary to disable security on the device.
- 4. Use an RS-232 terminal program to see incoming data on the port designated by the computer's Bluetooth manager.



Enable RF Link to Server

## Linking to a Bluetooth Adapter in Serial Port Profile (Master) Mode

- 1. Ensure the PC or terminal can network with Bluetooth devices and that it is powered on.
- 2. Ensure that a COM port is assigned under Services in the Bluetooth setup menu.
- 3. Create a Link label that contains the address of the PC Bluetooth adapter.

The link label is a Code 128 function 3 label with the following format:

#### <FN3 char>LnkB<12 character Bluetooth address>

4. Scan the link label you created in step 3.



The Bluetooth address can be found under "Properties" within the Bluetooth setup menu.

## Linking to a Bluetooth Adapter in HID mode

- 1. Install any drivers provided with the Bluetooth adapter.
- 2. Scan the Link to PC in HID label below.
- 3. Use the host computer's Bluetooth manager to "Discover new devices" and select "Datalogic Scanner." If you receive an error message, it may be necessary to disable security on the device.
- 4. Use a text editor to see incoming data on the port designated by the computer's Bluetooth manager.



Link to PC in HID



The Powerscan BT9500 can be set up to require a PIN code when connecting. If you want to set up a PIN, or when adding new equipment to a system that uses a custom security PIN, please see "Bluetooth PIN Code" starting on page 214 for more information.

## **Power Off**

Scan the bar code below to shut off power to the handheld until the next trigger pull. This function only applies to the wireless models.



Power Off

# 

## Chapter 3 Configuration Using Bar Codes

This and following sections provide programming bar codes to configure your reader by changing the default settings. For details about additional methods of programming, see "Configuration Methods" on page 6.



You must first enable your PowerScan to read bar codes in order to use this section. If you have not done this, go to Setup, starting on page 7 and complete the appropriate procedure.

## **Configuration Parameters**

Once the reader is set up, you can change the default parameters to meet your application needs. Refer to "Standard Defaults" starting on page 301 for initial configuration in order to set the default values and select the interface for your application.

The following configuration parameters are divided into logical groups, making it easy to find the desired function based on its reference group.

#### Interface Configuration:

- "RS-232 Only Interface" on page 25
- "RS-232/USB-Com Interfaces" on page 29
- "Keyboard EMULATION Settings" on page 37

#### Parameters common to all interface applications:

- "Data Format" on page 49 gives options to control the messages sent to the Host system by selecting parameters to control the message strings sent to the handheld.
- "Reading Parameters" on page 63 control various operating modes and indicators status functioning such as programming for scanning, beeper and LED indicators and other universal settings.
- "Motion Features" on page 205 provide the ability to configure motion settings for the handheld.

#### Wireless-Only Features

- Wireless Features, starting on page 195:
- PBT9300-Only Features, starting on page 213
- PM9300-Only Features, starting on page 223
- Display and Keyboard Features, starting on page 227



#### Symbology-specific parameters:

The Chapter Symbologies on page 75, provides configuration of a personalized mix of 1D codes, code families and their options.



You must first enable your reader to read bar codes in order to use this section. If you have not done this, go to Setup, starting on page 7 and complete the appropriate procedure.

#### To program features:

- 1. Scan the ENTER/EXIT PROGRAMMING bar code, available at the top of each programming page, when applicable.
- 2. Scan the bar code to set the desired programming feature. You may need to cover unused bar codes on the page, and possibly the facing page, to ensure that the reader reads only the bar code you intend to scan.
- 3. If additional input parameters are needed, go to Appendix D, Keypad, and scan the appropriate characters from the keypad.



Additional information about many features can be found in the "References" chapter.

If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

4. Complete the programming sequence by scanning the ENTER/EXIT PROGRAMMING bar code to exit Programming Mode.

For more detailed descriptions, programming information and examples for setting selected configuration items, see References, starting on page 253.



## **GLOBAL INTERFACE FEATURES**

The following interface features are configurable by all interface types.

## Host Commands — Obey/Ignore

This option specifies whether the reader will obey or ignore host commands. When set to ignore, the reader will ignore all host commands except those necessary for:

- service mode
- flash programming mode
- keeping the interface active
- transmission of labels.





(Do Not Ignore Host Commands)



Host Commands = Ignore

## NOTES

## **RS-232 ONLY INTERFACE**

**BAUD RATE** on page 26

STOP BITS on page 27

**PARITY** on page 27

HANDSHAKING CONTROL on page 28

Use the programming bar codes in this section if modifications to the standard RS-232 interface settings are necessary to meet your system's requirements. Additional settings which apply to both the RS-232 and USB interfaces are available in the next section, "RS-232/USB-Com Interfaces" starting on page 29.

Reference Appendix C, Standard Defaults for a listing of standard factory settings.



## **Baud Rate**

See page 254 for information on this feature.




















#### **Stop Bits**

Set the number of stop bits to match host device requirements. See page 254 for more information on this feature.







#### Parity

This feature specifies parity required for sending and receiving data. Select the parity type according to host device requirements. See page 254 for more information.





Parity = None



Parity = Even





# Handshaking Control

See page 254 for more information about this feature.











Handshaking Control = RTS On/CTS



Handshaking Control = RTS/CTS Scan Control



# **RS-232/USB-COM INTERFACES**

<b>INTERCHARACTER DELAY</b> on page 30
BEEP ON ASCII BEL on page 30
BEEP ON NOT ON FILE on page 31
ACK NAK OPTIONS on page 31
ACK CHARACTER on page 32
NAK CHARACTER on page 32
ACK NAK TIMEOUT VALUE on page 33
ACK NAK RETRY COUNT on page 33
ACK NAK ERROR HANDLING on page 34
<b>INDICATE TRANSMISSION FAILURE</b> on page 34
<b>DISABLE CHARACTER</b> on page 35
<b>ENABLE CHARACTER</b> on page 35

The programming bar codes in this chapter allow modifications to the standard RS-232 and USB-Com interfaces. Reference Appendix C, Standard Defaults for a listing of standard factory settings.



#### **Intercharacter Delay**

This parameter specifies the intercharacter delay between the end of one character and the beginning of the next. The delay can be set within a range of zero (0) to 990 milliseconds in 10ms increments. A setting of zero specifies no delay.

See page 264 for more information.



Intercharacter Delay = No Delay

To configure this feature, scan the ENTER/EXIT PROGRAMMING MODE bar code above, then the bar code at left followed by the digits from the Alphanumeric characters in **Appendix D**, **Keypad** representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.



Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





# **Beep On ASCII BEL**

When this parameter is enabled, the reader issues a beep when a  $\langle BEL \rangle$  character is detected on the RS-232 serial line.  $\langle BEL \rangle$  is issued to gain a user's attention to an illegal entry or other important event.







#### **Beep On Not on File**

This option enables/disables the action of the reader to sound a three beep sequence upon receiving a Not-On-File (NOF) host command.







#### **ACK NAK Options**

This enables/disables the ability of the reader to support the RS-232 ACK/ NAK protocol.

See page 257 for more information.







ACK/NAK Protocol = Enable for label transmission



ACK/NAK Protocol = Enable for host-command acknowledge



ACK/NAK Protocol = Enable for label transmission and host-command acknowledge



#### **ACK Character**

This setting specifies an ASCII character or hex value to be used as the ACK character. ASCII characters or any hex value from 0 to 0xFF can be selected. See page 257 for more information.



Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.





#### **NAK Character**

This setting specifies an ASCII character or hex value to be used as the NAK character. ASCII characters or any hex value from 0 to 0xFF can be selected.



Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.

See page 258 for more information.







#### ACK NAK Timeout Value

This option specifies the amount of time the reader waits for an ACK character from the host following label transmission. The selectable timeout range is 200 milliseconds to 15,000ms (15 seconds) in 200ms increments. A selection of 0 disables the timeout.

See page 259 for more information on setting this feature.



To configure this feature, scan the ENTER/EXIT PROGRAMMING MODE bar code above, then the bar code at left followed by the digits from the Alphanumeric characters in **Appendix D**, **Keypad** representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





# **ACK NAK Retry Count**

This feature specifies the number of times the reader retries a label transmission due to a retry condition. The selectable range is from 1 to 254 retries. A selection of 0 disables the count, and a selection of 255 specifies unlimited retries. See page 260 for more information.



Select ACK NAK Retry Count Setting

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning. To configure this feature, scan the ENTER/EXIT PROGRAMMING MODE bar code above, then the bar code at left followed by the digits from the Alphanumeric characters in **Appendix D**, **Keypad** representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.







## **ACK NAK Error Handling**

This feature specifies the method the reader uses to handle receive errors detected while waiting for an ACK character from the host.



ACK NAK Error Handling = Process Error as Valid ACK Character



ACK NAK Error Handling = Ignore Errors Detected



ACK NAK Error Handling = Process Error as Valid NAK Character

# **Indicate Transmission Failure**

This option enables/disables the reader's ability to sound an error beep to indicate a transmission failure while in ACK/NAK mode.



Indicate Transmission Failure = Disable Indication



Indicate Transmission Failure = Enable Indication





#### **Disable Character**

Specifies the value of the RS-232 host command used to disable the reader. ASCII characters or any hex value from 0 to 0xFF can be selected.



Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.

See page 261 for more information on setting this feature.





## **Enable Character**

Specifies the value of the RS-232 host command used to enable the reader. ASCII characters or any hex value from 0 to 0xFF can be selected.



Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.

See page 262 in "References" for more information on setting this feature.







# NOTES

# **KEYBOARD EMULATION SETTINGS**



Use the programming bar codes in this chapter to select options for USB Keyboard and Wedge Interfaces. Reference Appendix C, Standard Defaults for a listing of standard factory settings.

Information about control character emulation which applies to keyboard interfaces is listed in Appendix E, Scancode Tables.



## **Country Mode**

This feature specifies the country/language supported by the keyboard. Several languages are supported:



Country Mode = Belgium





Country Mode = Britain







Country Mode = France



#### **Country Mode (continued)**











Country Mode = Japanese 106-key





Country Mode = Norway



#### **Country Mode (continued)**







Country Mode = Romania



Country Mode = Slovakia



Country Mode = Spain





Country Mode = Switzerland



#### Send Control Characters

This feature specifies how the reader transmits ASCII control characters to the host. Reference Appendix E, Scancode Tables for more information about control characters.

Options are as follows:

**Control Character 00 :** Characters from 00 to 0x1F are sent as control character Ctrl+Keys, special keys are located from 0x80 to 0xA1.

**Control Character 01 :** Characters from 00 to 0x1F are sent as control character Ctrl+Shift, special keys are located from 0x80 to 0xA1.

**Control Character 02 :** Special keys are located from 00 to 0x1F and characters from 0x80 to 0xFE are intended as an extended ASCII table.





Wedge Send Control Characters = 00



Wedge Send Control Characters = 01



Wedge Send Control Characters = 02



#### Wedge Quiet Interval

Specifies amount of time to look for keyboard activity before scanner breaks keyboard connection in order to transmit data to host. The selectable range for this setting is 00 to 990 milliseconds (00–0x63 by 01) in increments of ten milliseconds. See page 263 in "References" for detailed information and examples for setting this feature.



To configure this feature, scan the ENTER/EXIT PROGRAMMING MODE bar code above, then the bar code at left followed by the digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





#### Intercode Delay

Specifies the delay between labels transmitted to the host for this interface. The selectable range for this feature is from 0 to 99 seconds.

See page 265 in "References" for detailed information and examples for setting this feature.



Set Intercode Delav

To configure this feature, scan the ENTER/EXIT PROGRAMMING MODE bar code above, then the bar code at left followed by the digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



00 = No Wedge Intercode Delay





#### **Caps Lock State**

This option specifies the format in which the reader sends character data. This does not apply when an alternate key encoding keyboard is selected.







Caps Lock State = AUTO Caps Lock Enable

#### Numlock

This option specifies the setting of the NUMLOCK key in the Keyboard Wedge interface.





Numlock = NUMLOCK key unchanged



## **USB Keyboard Speed**

This option specifies the USB poll rate for a USB keyboard.



This feature applies ONLY to the USB Keyboard interface.





USB Keyboard Speed = 1ms













USB Keyboard Speed (continued)



USB Keyboard Speed = 7ms



USB Keyboard Speed = 8ms





## **USB Keyboard Numeric Keypad**

This option Controls whether numeric characters will be sent using standard keys or the numeric keypad.







# NOTES

# **USB-OEM INTERFACE**

**USB-OEM DEVICE USAGE** on page 48

**INTERFACE OPTIONS** on page 48

Feature settings for USB interfaces differ depending upon which host type the reader will be connected with. Use the feature settings in this chapter to specifically configure for the USB-OEM interface. Other USB interfaces are included in the appropriate chapter for their host type.

Reference Appendix C for a listing of standard factory settings.



#### **USB-OEM Device Usage**

The USB-OEM protocol allows for the reader to be identified as one of two different types of bar code scanners. Depending on what other scanners you may already have connected to a USB-OEM POS, you may need to change this setting to enable all devices to communicate.

Options are:

- Table Top Scanner
- Handheld Scanner



It may be necessary to switch device usage when connecting two readers/scanners of the same type to a POS system.



USB-OEM Device Usage = Table Top Scanner





**Interface Options** 

This feature provides for an interface-specific control mechanism.



**Obey Scanner Configuration Host Commands** 



Ignore Scanner Configuration Host Commands



# DATA FORMAT

**GLOBAL PREFIX/SUFFIX (HEADER/TERMINA-TOR)** on page 50

GLOBAL AIM ID on page 51

LABEL ID starting on page 54 •Label ID: Pre-Loaded Sets •Individually Set Label ID •Label ID Control •Label ID Symbology Selection

**CASE CONVERSION** on page 61

CHARACTER CONVERSION on page 61

The features in this chapter can be used to build specific user-defined data into a message string. See "References" starting on page 268 for more detailed instructions on setting these features.



# Global Prefix/Suffix (Header/Terminator)

This option sets up to 20 characters each from the set of ASCII characters or any hex value from 00 to FF. The characters may be added as a prefix (in a position before the bar code data, also called a header) and/or as a suffix (in a position following the bar code data, also called a terminator). See page 269 for more detailed instructions on setting this feature.

To configure this feature, scan the ENTER/EXIT PROGRAMMING MODE bar code above to place the unit in Programming Mode, then the "Set Global Prefix" or "Set Global Suffix," bar code followed by the digits (in hex) from the Alphanumeric characters in Appendix D Keypad representing your desired character(s). If less than the expected string of 20 characters are selected, scan the ENTER/EXIT bar code to terminate the string. Exit programming mode by scanning the ENTER/EXIT bar code twice.





Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.







# **Global AIM ID**



This feature enables/disables addition of AIM IDs for all symbology types.

AIM label identifiers (as opposed to custom characters you select yourself as with label identifiers) can be included with scanned bar code data. See Table 3 on page 3–51 for a listing of AIM IDs.

AIM label identifiers consist of three characters as follows:

- A close brace character (ASCII ']'), followed by...
- A code character (see some samples in the table below), followed by...
- A modifier character (the modifier character is symbol dependent).





#### Table 3. AIM IDs

Tag Name	AIM ID code character	AIM ID code ASCII value
AZTEC	z	7A
CHINA SENSIBLE CODE	Х	58
CODABAR	F	46
CODE11	Н	48
CODE128	С	43
CODE32	А	41
CODE39	А	41
CODE39 CIP	Х	58
CODE93	G	47
DATABAR 14	е	65
DATABAR 14 COMPOSITE	е	65



AIM IDs (continued)				
DATABAR EXPANDED	е	65		
DATABAR EXPANDED COMPOSITE	е	65		
DATABAR LIMITED	е	65		
DATABAR LIMITED COMPOSITE	е	65		
EAN128	С	43		
EAN128 COMPOSITE	С	43		
EAN13	E	45		
EAN13 P2	E	45		
EAN13 P5	E	45		
EAN13 COMPOSITE	E	45		
EAN8	E	45		
EAN8 P2	E	45		
EAN8 P5	E	45		
EAN8 COMPOSITE	E	45		
FOLLET 20F5	х	58		
I2OF5	1	49		
IATA INDUSTRIAL 2OF5 (Only standard optic models)	x	58		
INDUSTRIAL 20F5	х	58		
ISBN	х	58		
ISBT128 CONCAT	х	58		
ISSN	х	58		
MSI	М	4D		
PLESSEY (Only standard optic models)	Р	50		
S25	S	53		
TRIOPTIC	х	58		
UPCA	E	45		



AIM IDs (continued)			
UPCA P2	E	45	
UPCA P5	E	45	
UPCA COMPOSITE	E	45	
UPCE	E	45	
UPCE P2	E	45	
UPCE P5	E	45	
UPCE COMPOSITE	E	45	

## Set AIM ID Individually for GS1-128

This feature configures a Label ID individually for the GS1-128 symbology and the programming for this works the same way as Label ID. See Label ID: Set Individually Per Symbology, starting on page 273 for detailed instructions on setting this feature.



Set AIM ID Individually for GS1-128 = Disable



Set AIM ID Individually for GS1-128 = Enable





# Label ID

A Label ID is a customizable code of up to three ASCII characters (convert to Hex using the ASCII Chart on the inside back cover of this manual), used to identify a bar code symbology type. It can be appended previous to or following the transmitted bar code data depending upon how this option is enabled. This feature provides options for configuring custom Label IDs or individually per symbology (see "Individually Set Label ID" on page 55). If you wish to program the reader to always include an industry standard label identifier for ALL symbology types, see the previous feature "Global AIM ID" on page 51.

See Label ID, starting on page 271 of "References" for more information on setting this feature.

#### Label ID: Pre-Loaded Sets

The reader supports two pre-loaded sets of Label IDs. See Label ID: Preloaded Sets, starting on page 271 for details on the USA set and EU set.



When changing from one Label ID set to another, all other reader configuration settings, including the host interface type, will be erased and set to the standard factory defaults. Any custom configuration or custom defaults will be lost.



Label ID Pre-loaded Set = USA Set







#### Individually Set Label ID

This feature configures a Label ID individually for a single symbology. To set, first define whether you want it as a prefix or suffix by scanning a label below. Then turn to Label ID Symbology Selection, starting on page 56 to select the symbology you want to set, followed by up to 3 characters from the ASCII Chart at the back of this manual. See "Label ID: Set Individually Per Symbology" on page 273 for detailed instructions on setting this feature.

## Label ID Control

This option controls whether a Label ID is disabled, or sent as a prefix or suffix for a given symbology type.





Label ID Transmission = Enable as Suffix



Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



#### Label ID Symbology Selection

This option selects the symbology for which a Label ID is to be configured. See "Label ID" on page 54 or page 273 in "References" for more detailed instructions.



If less than the expected string of 3 characters are selected, scan the ENTER/EXIT bar code twice to accept the selection and exit Programming Mode.



(Only standard optic models)





Set Concatenated ISBT 128 Label ID Character(s)









(Only standard optic models)







Set EAN 13 Composite Label ID Character(s)

Set EAN 13 P2 Label ID Character(s)







(Only standard optic models)

et CE1 Data Par Evenended Come

Set GS1 DataBar Expanded Composite Label ID Character(s)













Set Follett 2 of 5 Label ID Character(s) (Only standard optic models)















Set GS1 Dat ID Character(s)





(Only standard optic models)







(Only standard optic models)



Set Industrial 2 of 5 Label ID Character(s) (Only standard optic models)





















(Only standard optic models)



#### **Advanced Formatting: User Label Edit**

Advanced formatting is available to create user label edit scripts. See the Datalogic Aladdin configuration application or contact Technical Support.

#### **Case Conversion**

This feature allows conversion of the case of all alphabetic characters to upper or lower case.



Case conversion affects ONLY scanned bar code data, and does not affect Label ID, Prefix, Suffix, or other appended data.





Case Conversion = Disable (no case conversion)



Case Conversion = Convert to lower case

## **Character Conversion**

Character conversion is an eight byte configuration item. The eight bytes are 4 character pairs represented in hexadecimal ASCII values. The first character in the pair is the character that will be converted. The second character in the pair is the character to convert to. If the character to convert in a pair is FF, then no conversion is done.



If less than the expected string of 16 characters are selected, scan the ENTER/EXIT bar code twice to accept the selections and exit Programming Mode.



Configure Character Conversion



# NOTES
# **READING PARAMETERS**

**DOUBLE READ TIMEOUT** on page 64

**LED AND BEEPER INDICATORS** on page 66

Power ON ALERT on page 66

GOOD READ: WHEN TO INDICATE on page 66

GOOD READ BEEP TYPE on page 67

**GOOD READ BEEP FREQUENCY** on page 67

**GOOD READ BEEP LENGTH** on page 68

GOOD READ BEEP VOLUME on page 69

GOOD READ LED DURATION on page 70

SCAN MODE on page 71

**SCANNING ACTIVE TIME** on page 72

PICK MODE on page 72

AIMING POINTER on page 73

**GREEN SPOT DURATION** on page 74

PARTIAL LABEL READING CONTROL on page 75

**DECODE NEGATIVE BARCODE** on page 76

MULTIPLE LABELS PER FRAME on page 77

MULTIPLE LABELS ORDERING BY CODE SYMBOLOGY on page 78

MULTIPLE LABELS ORDERING BY CODE LENGTH on page 78



#### **Double Read Timeout**

Double Read Timeout prevents a double read of the same label by setting the minimum time allowed between reads of labels of the same symbology and data. If the unit reads a label and sees the same label again within the specified timeout, the second read is ignored. Double Read Timeout does not apply to scan modes that require a trigger pull for each label read.



















# Double Read Timeout (continued)



Double Read Timeout = 0.8 Second







# LED AND BEEPER INDICATORS

#### **Power On Alert**

Disables or enables the indication (from the Beeper) that the reader is receiving power.



Power On Alert = Disable (No Audible Indication)





#### Good Read: When to Indicate

This feature specifies when the reader will provide indication (beep and/or flash its green LED) upon successfully reading a bar code.





Indicate Good Read = After Decode



After CTS goes inactive then active



#### Good Read Beep Type

Specifies whether the good read beep has a mono or bitonal beep sound.





Good Read Beep Frequency

Adjusts the good read beep to sound at a selectable low, medium or high frequency, selectable from the list below. (Controls the beeper's pitch/tone.)



Good Read Beep Frequency = Low









# Good Read Beep Length







Good

100 msec















# Good Read Beep Volume

Selects the beeper volume (loudness) upon a good read beep. There are three selectable volume levels.



Good Read Beep Volume = Beeper Off



Good Read Beep Volume = Low



Good Read Beep Volume = Medium

DEFAULT



Good Read Beep Volume = High



#### **Good Read LED Duration**

This feature specifies the amount of time that the Good Read LED remains on following a good read. The good read LED on time can be set within a range of 100 milliseconds to 25,500 milliseconds (0.1 to 25.5 seconds) in 100ms increments. A setting of 00 keeps the LED on until the next trigger pull.

See page 276 in "References" for detailed instructions and examples for setting this feature.



Good Read LED Duration Setting = Keep LED on until next trigger pull



To configure this feature, scan the ENTER/EXIT PROGRAMMING MODE bar code above, then the bar code at left followed by the digits from the Alphanumeric characters in **Appendix D**, **Keypad** representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.







Indicators are dimmed during sleep.



# **SCANNING FEATURES**

#### Scan Mode

Selects the reader's scan operating mode. See page 277 in "References" for descriptions.



Scan Mode = Trigger Single













#### **Scanning Active Time**

This setting specifies the amount of time that the reader stays in scan ON state once the state is entered. The range for this setting is from 1 to 255 seconds in 1-second increments. See page 277 in "References" for further description of this feature.



Scanning Active Time = 3 seconds







# Flash On Time

This feature specifies the ON time for the indicator LED while in Flash Mode. The selectable range is 100 to 9,900 milliseconds (0.1 to 9.9 seconds), in 100 millisecond increments. See page 278 in "References" for detailed information on setting this feature.



To configure this feature, scan the ENTER/EXIT PROGRAMMING MODE bar code above, then the bar code at left followed by the digits from the Alphanumeric characters in **Appendix D**, **Keypad** representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

DEFAULT



10 = Flash is ON for 1 Second





#### **Flash Off Time**

This feature specifies the OFF time for the indicator LED while in Flash Mode. The selectable range is 100 to 9,900 milliseconds (0.1 to 9.9 seconds), in 100 millisecond increments. See page 300 in "References" for detailed information on setting this feature.



To configure this feature, scan the ENTER/EXIT PROGRAMMING MODE bar code above, then the bar code at left followed by the digits from the Alphanumeric characters in **Appendix D**, **Keypad** representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





#### **Aiming Pointer**

Enables/disables the aiming pointer for all symbologies.









# **Green Spot Duration**

Specifies the duration of the good read pointer beam after a good read.



Green Spot Duration = Disable (Green Spot is Off)



Green Spot Duration = Short (300 msec)







# **SYMBOLOGIES**

The scanner supports the following symbologies (bar code types). Symbology-dependent options are included in each chapter.

Disable All Symbologies, page 76	Code ISBT 128, page 113
Code EAN/UPC, page 77	Interleaved 2 of 5 (I 2 of 5), page 115
UPC-E, page 81	Follett 2 of 5 (Only standard optic models), page 130 (only standard optic models)
GTIN Formatting, page 84	Standard 2 of 5, page 131
EAN 13 (Jan 13), page 84	Industrial 2 of 5 (Only Standard Optic Models), page 136 (only standard optic mod- els)
ISSN, page 86	Code IATA (Only standard optic models), page 141
UPC/EAN Global Settings, page 89	Codabar, page 142
Add-Ons, page 92	Code 11 (Only standard Optic Models), page 153
Code 39, page 95	GS1 DataBar™ Expanded, page 161
Code 32 (Ital Pharmaceutical Code), page 103	GS1 DataBar™ Limited, page 165
Code 39 CIP (French Pharmaceutical), page 104	Code 93, page 167
Code 128, page 105	MSI, page 185
GS1-128, page 112	Plessey (Only Standard Optic Models), page 190

Default settings are indicated at each feature/option with a green arrow. Also reference Appendix B, Standard Defaults for a listing of the most widely used set of standard factory settings. That section also provides space to record any custom settings needed or implemented for your system.

To set most features:

- 1. Scan the ENTER/EXIT PROGRAMMING bar code at the top of applicable programming pages.
- 2. Scan the correct bar code to set the desired programming feature or parameter. You may need to cover unused bar codes on the page, and possibly the facing page, to ensure that the reader reads only the bar code you intend to scan.
- 3. If additional input parameters are needed, go to Appendix D, Keypad, and scan the appropriate characters from the keypad.



Additional information about many features can be found in the "References" chapter.

If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



4. Complete the programming sequence by scanning the ENTER/EXIT PROGRAMMING bar code to exit Programming Mode.

# **DISABLE ALL SYMBOLOGIES**

Use this feature to disable all symbologies.

- 1. Scan the ENTER/EXIT PROGRAMMING Mode bar code.
- 2. Scan the Disable All Symbologies bar code.
- 3. Complete the programming sequence by scanning the ENTER/EXIT PROGRAMMING bar code.





This does not disable the reading of programming labels.



# CODE EAN/UPC

#### **Coupon Control**

This setting has no effect for AR models.

This feature is used to control the reader's method of processing coupon labels.

Options are:

- + Allow all allow all coupon bar codes to be decoded
- Enable only UPC/EAN enables only UPC/EAN coupon decoding
- Enable only GS1 DataBar enables only GS1 DataBar coupon decoding

To set this feature:

- 1. Scan the Enter/Exit bar code.
- 2. Scan either the enable or disable bar code below. You'll need to cover any unused bar codes on this and the facing page to ensure that the scanner sees only the bar code you intend to scan.
- 3. Complete the programming sequence by scanning the Enter/Exit bar code.



Coupon Control = Enable only UPC/EAN





Coupon Control = Enable only GS1 DataBar



# UPC-A

The following options apply to the UPC-A symbology.

# UPC-A Enable/Disable

When disabled, the reader will not read UPC-A bar codes.







#### **UPC-A Check Character Transmission**

Enable this option to transmit the check character along with UPC-A bar code data.



UPC-A Check Character Transmission = Don't Send



UPC-A Check Character Transmission = Send





#### Expand UPC-A to EAN-13

Expands UPC-A data to the EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.





UPC-A Number System Character Transmission

This feature enables/disables transmission of the UPC-A number system character.



UPC-A Number System Character = Do not transmit



UPC-A Number System Character = Transmit





#### In-Store Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times an in-store label must be decoded before it is accepted as good read.

In-store labels are defined as UPC-A labels with a number-system character of 2 or 4 as well as EAN 8 and EAN 13 labels with a Flag1 character of 2 or an EAN 13 label starting with the three characters '980'.







In-Store Minimum Reads = 3



In-Store Minimum Reads = 4



# UPC-E

The following options apply to the UPC-E symbology.

#### UPC-E Enable/Disable

When disabled, the reader will not read UPC-E bar codes.





# DEFAULT

# **UPC-E Check Character Transmission**

Enable this option to transmit the check character along with UPC-E bar code data.



UPC-E Check Character Transmission = Send





#### Expand UPC-E to EAN-13

Expands UPC-E data 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 data to the UPC-A data format.





JPC-E to UPC-A = Don't Expand



#### **UPC-E Number System Character Transmission**

This feature enables/disables transmission of the UPC-E system number character.



UPC-E Number System Character = Do not transmit



UPC-E Number System Character = Transmit



#### **UPC-E Minimum Read**

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times a UPC-E label must be decoded before it is accepted as good read.











# **GTIN FORMATTING**

This feature enables/disables the ability to convert UPC-E, UPC-A, and EAN 13 labels into the GTIN 14-character format.



If add-on information is present on the base label prior to the conversion taking place, the add-on information will be appended to the converted GTIN label.





GTIN Formatting = Disable



# EAN 13 (JAN 13)

The following options apply to the EAN 13 (Jan 13) symbology.

# EAN 13 Enable/Disable

When disabled, the reader will not read EAN 13/JAN 13 bar codes.









#### **EAN 13 Check Character Transmission**

Enable this option to transmit the check character along with EAN 13 bar code data.



EAN 13 Check Transmission = Don't Send





#### EAN-13 Flag 1 Character

Enables/disables transmission of an EAN/JAN13 Flag1 character. The Flag 1 character is the first character of the label.



DEFAULT



lag 1

#### **EAN-13 ISBN Conversion**

This option enables/disables conversion of EAN 13/JAN 13 Bookland labels starting with 978 to ISBN labels.









Conversion = Disable



# **ISSN**

The following options apply to the ISSN symbology.

# **ISSN Enable/Disable**

Enables/disables conversion of EAN/JAN13 Bookland labels starting with 977 to ISSN labels.





#### EAN 13 Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times an EAN 13 label must be decoded before it is accepted as good read.







Minimum Reads =



13 Minimum Reads = 3





# **EAN 8**

The following options apply to the ISSN symbology..

#### EAN 8 Enable/Disable

The following options apply to the ISSN symbology.







#### EAN 8 Check Character Transmission

Enable this option to transmit the check character along with EAN 8 barcode data



EAN 8 Check Character Transmission = Don't Send



EAN 8 Check Character Transmission = Send





#### EAN 8 to EAN 13

Enable this option to expand EAN 8/JAN 8 labels to EAN 13/Jan 13.





#### EAN 8 Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times an EAN 8 (Jan 8) label must be decoded before it is accepted as good read.



8 Minimum Reads



EAN 8 Minimum Reads = 1





EAN 8 Minimum Reads = 4



# **UPC/EAN GLOBAL SETTINGS**

This section provides configuration settings for UPC-A, UPC-E, EAN 13 symbologies, and affects all of these unless otherwise marked for each feature description.

# **UPC/EAN Decoding Level**

Decoding Levels are used to configure a bar code symbology decoder to be very aggressive to very conservative depending on a particular customer's needs



UPC/EAN Decoding Level = 1







UPC/EAN Decoding Level = 4



UPC/EAN Decoding Level = 3



JPC/EAN Decoding Level = 5



# **UPC/EAN Price Weight Check**

This setting has no effect for AR models.

This feature enables/disables calculation and verification of price/weight check digits.

Options are:

- Disabled
- Enable 4-digit price-weight check-digit calculation
- Enable 5-digit price-weight check-digit calculation
- Enable European 4-digit price-weight check-digit calculation
- Enable European 5-digit price-weight check-digit calculation





Price Weight Check = Disabled



Price Weight Check = 5-digit price-weight check



Price Weight Check = European 4-digit price-weight check



Price Weight Check = European 5-digit price-weight check



#### **UPC-A Minimum Reads**

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times a UPC-A label must be decoded before it is accepted as good read.





JPC-A Minimum Reads =





UPC-A Minimum Reads = 4

#### **UPC/EAN Quiet Zones**

This feature specifies the number of quiet zones for UPC/EAN labels. Quiet zones are blank areas at the ends of a bar code, typically 10 times the width of the narrowest bar or space in the label. The property applies to all EAN–UPC symbologies globally and to the ADDONs.





UPC/EAN Quiet Zones = Two Modules



# **ADD-ONS**

Contact Customer Support for advanced programming of optional and conditional add-ons.



Contact Customer Support for advanced programming of optional and conditional add-ons.

# **Optional Add-ons**

The reader can be enabled to optionally read the following add-ons (supple-mentals):





If a UPC/EAN base label and an add-on are both decoded, the reader will transmit the base label and add-on. If a UPC/EAN base label is decoded without an add-on, the base label will be transmitted without an add-on.

Conditional add-on settings (if enabled) are considered by the reader before optional add-on settings.





Optional Add-Ons = Disable P2







Optional Add-Ons = Disable P5



# **Optional Add-On Timer**

This setting has no effect for AR models.

This option sets the time the reader will look for an add-on when an add-on fragment has been seen and optional add-ons are enabled.



Optional Add-on Timer = 10ms



Optional Add-on Timer = 20ms



Optional Add-on Timer = 30ms





Optional Add-on Timer = 70ms



Optional Add-on Timer = 100ms



Optional Add-on Timer = 160ms



#### P2 Add-Ons Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of times a P2 add-on must be read before it is marked as valid and then combined with a base label.



()ns Minimiim Reads



DEFAULT



#### P5 Add-Ons Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of times a P5 add-on must be read before it is marked as valid and then combined with a base label.













# **CODE 39**

The following options apply to the Code 39 symbology.

# Code 39 Enable/Disable





# Code 39 Check Character Calculation

Enable this option to enables/disables calculation and verification of an optional Code 39 check character. When disabled, any check character in the label is treated as a data character.



Calculate Std Check

Calculation =



Code 39 Check Character Calculation = Don't Calculate



Code 39 Check Character Calculation = Calculate Mod 7 Check (no AR)

Code



# Code 39 Check Character Calculation (continued)



ode 39 Check Character Calculation = Enable Italian Post Check (no AR)



Enable Daimler Chrysler Check (no AR)

# Code 39 Check Character Transmission

Enable this option to transmit the check character along with Code 39 bar code data.



Code 39 Check Character Transmission = Don't Send



Code 39 Check Character Transmission = Send





# Code 39 Start/Stop Character Transmission

Enable this option to enable/disable transmission of Code 39 start and stop characters.





Code 39 Start/Stop Character Transmission = Don't Transmit



Code 39 Start/Stop Character Transmission = Transmit

# Code 39 Full ASCII

Enables/disables the translation of Code 39 characters to Code 39 full-ASCII characters.



Code 39 Full ASCII = Enable





#### Code 39 Quiet Zones

This setting has no effect for AR models.

This feature specifies the number of quiet zones for Code 39 labels. Quiet zones are blank areas at the ends of a bar code, typically 10 times the width of the narrowest bar or space in the label.



Code 39 Quiet Zones = Quiet Zone on one side



Code 39 Quiet Zones = Quiet Zones on two sides



Code 39 Quiet Zones = Auto



Code 39 Quiet Zones = Virtual Quiet Zones on two sides



Code 39 Quiet Zones = Small Quiet Zones on two sides

#### Code 39 Minimum Reads

This setting has no effect for AR models. This feature specifies the minimum number of consecutive times a Code 39 label must be decoded before it is accepted as good read.



Code 39 Minimum Reads = 2








**Code 39 Decoding Levels** This setting has no effect for AR models.

Decoding Levels are used to configure a bar code symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.



Code 39 Decoding Level = Disabled





Code 39 Decoding Level = 3









e 39 Decoding Level = 5

#### **Code 39 Length Control**

This feature specifies either variable length decoding or fixed length decoding for the Code 39 symbology.

Variable Length. For variable length decoding, a minimum and maximum length may be set.

Fixed Length. For fixed length decoding, two different lengths may be set.





Code 39 Length Control = Variable Length



#### Code 39 Set Length 1

This feature specifies one of the bar code lengths for Code 39 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's data characters only. The length can be set from 0 to 50 characters.

Table 4 provides examples for setting Length 1. See page 266 for detailed instructions on setting this feature.

#### Table 4. Code 39 Length 1 Setting Examples

STEP	ACTION	EXAMPLES				
1	Desired Setting	00 Characters	07 Characters	15 Characters	50 Characters	
2	Scan ENTER/EXIT PROGRAMMING MODE					
3	Scan SELECT CODE 39 LENGTH 1 SETTING					
4	<b>Scan Two Characters From</b> Appendix D, Keypad	'0' and '0'	'O' and '7'	'1' and '5'	'5' AND '0'	
5	Scan ENTER/EXIT PROGRAMMING MODE					









#### Code 39 Set Length 2

This feature specifies one of the bar code lengths for Code 39 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the bar code's check, data, and full-ASCII shift characters. The length does not include start/stop characters.

Table 5 provides examples for setting Length 2. See page 267 for detailed instructions on setting this feature.

#### Table 5. Code 39 Length 2 Setting Examples

STEP	ACTION	EXAMPLES				
1	Desired Setting	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters	
2	Scan ENTER/EXIT PROGRAMMING MODE					
3	Scan SELECT CODE 39 LENGTH 2 SETTING					
4	<b>Scan Two Characters From</b> Appendix D, Keypad	'O' and 'O'	'O' and '7'	'1' and '5'	'5' AND '0'	
5	Scan ENTER/EXIT PROGRAMMING .MODE					









#### Code 39 Interdigit Ratio

This setting has no effect for AR models.

This feature specifies the ratio between an intercharacter space and module for Code 39 labels.



Code 39 Interdigit Ratio = Disable



Code 39 Interdigit Ratio = 1



Code 39 Interdigit Ratio = 2









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#### CODE 32 (ITAL PHARMACEUTICAL CODE)

The following options apply to the Code 32 (Italian Pharmaceutical Code) symbology.

#### Code 32 Enable/Disable

When disabled, the reader will not read Code 32 bar codes.







# Code 32 = Enable

#### Code 32 Feature Setting Exceptions



The following features are set for Code 32 by using these Code 39 settings:

"Code 39 Quiet Zones" on page 98 "Code 39 Length Control" on page 99

#### Code 32 Check Character Transmission

Enable this option to transmit the check character along with Code 32 bar code data.







Code 32 Check Character Transmission = Don't Send



#### Code 32 Start/Stop Character Transmission

This option enables/disables transmission of Code 32 start and stop characters.





Code 32 Start/Stop Character Transmission = Don't Transmit



Code 32 Start/Stop Character Transmission = Transmit

# **CODE 39 CIP (FRENCH PHARMACEUTICAL)**

The following options apply to the Code 39 CIP symbology.

#### Code 39 CIP Enable/Disable

This setting has no effect for AR models. Enables/Disables ability of the reader to decode Code 39 CIP labels.





Code 39 CIP = Disable



# **CODE 128**

The following options apply to the Code 128 symbology.

#### Code 128 Enable/Disable

When disabled, the reader will not read Code 128 bar codes.







#### Expand Code 128 to Code 39

This feature enables/disables expansion of Code 128 labels to Code 39 labels.





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#### Code 128 Check Character Transmission

This setting has no effect for AR models.

Enable this option to transmit the check character along with Code 128 bar code data.





Code 128 Check Character Transmission = Don't Send



Code 128 Check Character Transmission = Send

#### Code 128 Function Character Transmission

This setting has no effect for AR models.

 $Enables/disables\ transmission\ of\ Code128\ function\ characters\ 1,\ 2,\ 3,\ and\ 4.$ 





Code 128 Function Character Transmission = Don't Send





#### Code 128 Sub-Code Exchange Transmission

This setting has no effect for AR models.

Enables/disables the transmission of "Sub-Code Exchange" characters (NOT transmitted by standard decoding).





Code 128 Sub-Code Exchange Transmission = Disable

Code 128 Sub-Code Exchange Transmission = Enable

#### Code 128 Quiet Zones

This setting has no effect for AR models.

This feature specifies the number of quiet zones for Code 128 labels. Quiet zones are blank areas at the ends of a bar code and are typically 10 times the width of the narrowest bar or space in the label.



Code 128 Quiet Zones = No Quiet Zones



Code 128 Quiet Zones = Quiet Zone on one side



Code 128 Quiet Zones = Auto



Code 128 Quiet Zones = Quiet Zones on two sides



Code 128 Quiet Zones = Virtual Quiet Zones on two sides



#### Code 128 Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times a Code 128 label must be decoded before it is accepted as good read.



Code 128 Minimum Reads = 2



Code 128 Minimum Reads = 1



Code 128 Minimum Reads = 3



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#### Code 128 Decoding Level

This setting has no effect for AR models.

Decoding Levels are used to configure a bar code symbology decoder to be very aggressive to very conservative depending on a particular customer's needs. See "Decoding Levels" on page 239 for more detailed programming instructions.



Code 128 Decoding Level = Disabled



Code 128 Decoding Level = 1













#### **Code 128 Length Control**

This feature specifies either variable length decoding or fixed length decoding for the Code 128 symbology.

Variable Lenght. For variable length decoding, a minimum and maximum length may be set.

Fixed Lenght. For fixed length decoding, two different lengths may be set.





Code 128 Length Control = Variable Length

Code 128 Length Control = Fixed Length

#### Code 128 Set Length 1

Specifies one of the bar code lengths for Code 128 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's data characters only. The length can be set from 1 to 80 characters.

Table 6 provides some examples for setting Length 1. See page 266 for detailed instructions on setting this feature.

#### Table 6. Code 128 Length 1 Setting Examples

STEP	ACTION	EXAMPLES				
1	Desired Setting	01 Character	07 Characters	15 Characters	80 Characters	
2	Scan ENTER/EXIT PROGRAMMING MODE					
3	Scan SELECT CODE 128 LENGTH 1 SETTING					
4	<b>Scan Two Characters From</b> Appendix D, Keypad	'O' and '1'	'O' and '7'	'1' and '5'	'8' AND '0'	
5	Scan ENTER/EXIT PROGRAMMING MODE					



Select Code 128 Set Length 1 Setting

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.



01 = Length 1 is 1 Character



#### Code 128 Set Length 2

This feature specifies one of the bar code lengths for Code 128 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the bar code's data characters only.

The length can be set from 1 to 80 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Table 7 provides examples for setting Length 2. See page 267 for detailed instructions on setting this feature.

#### Table 7. Code 128 Length 2 Setting Examples

STEP	ACTION	EXAMPLES				
1	Desired Setting	00 (Ignore This Length)	07 Characters	15 Characters	80 Characters	
2	Scan ENTER/EXIT PROGRAMMING MODE					
3	Scan SELECT CODE 128 LENGTH 2 SETTING					
4	<b>Scan Two Characters From</b> Appendix D, Keypad	'O' and 'O'	'0' and '7'	'1' and '5'	'8' and 0'	
5	Scan ENTER/EXIT PROGRAMMING MODE					



To configure this feature, scan the ENTER/ EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.







#### GS1-128

The following options apply to the GS1-128 symbology. (Also known as USS-128, GS1-128, GTIN-128, UCC-128, EAN-128.)

#### GS1-128 Enable

This option enables/disables the ability of the reader to translate GS1-128 labels to the GS1-128 data format. Options are:

- Transmit GS1-128 labels in Code 128 data format.
- Transmit GS1-128 labels in GS1-128 data format.
- Do not transmit GS1-128 labels.





GS1-128 = Transmit in Code 128 data format



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## CODE ISBT 128

This setting has no effect for AR models. The following options apply to the ISBT 128 symbology.

#### **ISBT 128 Concatenation**

Use this option to enable/disable ISBT128 concatenation of 2 labels.





# ISBT 128 Force Concatenation

When enabled, this feature forces concatenation for ISBT.



This option is only valid when ISBT 128 Concatenation is enabled.







ISBT 128 Force Concatenation = Disable



#### **ISBT 128 Concatenation Mode**

Specifies the concatenation mode between Static and Dynamic.



This option is only valid when ISBT 128 Concatenation is enabled (see "ISBT 128 Concatenation" on page 113).





ISBT 128 Concatenation Mode = Static

#### **ISBT 128 Dynamic Concatenation Timeout**

This setting has no effect for AR models. Specifies the timeout used by the ISBT 128 Dynamic Concatenation Mode.



ISBT 128 Dynamic Concatenation Timeout = 50 msec



ISBT 128 Dynamic Concatenation Timeout = 100 msec



ISBT 128 Dynamic Concatenation Timeout = 500 msec



ISBT 128 Dynamic Concatenation Timeout = 200 msec



ISBT 128 Dynamic Concatenation Timeout = 750 msec



ISBT 128 Dynamic Concatenation Timeout = 1 second

#### **ISBT 128 Advanced Concatenation Options**



To set up pairs of label types for concatenation, use the Datalogic Aladdin configuration application or contact Datalogic Technical Support, as described on page 2.



#### INTERLEAVED 2 OF 5 (I 2 OF 5)

This setting has no effect for AR models. The following options apply to the I 2 of 5 symbology.



When reading this symbology, the settings for I 2 of 5 Length Control AND I 2 of 5 Check Character Calculation MUST be enabled to increase decoding safety.

#### I 2 of 5 Enable/Disable

When disabled, the reader will not read I 2 of 5 bar codes.





#### I 2 of 5 Check Character Calculation

This option enables/disables calculation and verification of an optional I 2 of 5 check character. Combinations of these settings are possible via the Aladdin configuration utility, or contact Technical Support.





I 2 of 5 Check Character Calculation = Disable

I 2 of 5 Check Character Calculation = Check Standard (Modulo 10) (no AR)



I 2 of 5 Check Character Calculation = Check German Parcel



I 2 of 5 Check Character Calculation = Check DHL (no AR)





I 2 of 5 Check Character Calculation = Check Daimler Chrysler



I 2 of 5 Check Character Calculation = Check Bosch (no AR)



I 2 of 5 Check Character Calculation = Check Italian Post

When disabled, any check character in label is treated as a data character.

#### I 2 of 5 Check Character Transmission

Enable this option to transmit the check character along with I 2 of 5 bar code data.



This feature is valid only when I 2 of 5 Check Character Calculation is enabled.



I 2 of 5 Check Character Transmission = Don't Send



I 2 of 5 Check Character Transmission = Send





#### I 2 of 5 Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times an I 2 of 5 label must be decoded before it is accepted as good read.



I 2 of 5 Minimum Reads = 1



I 2 of 5 Minimum Reads = 2





2 of 5 Minimum Reads = 4



# I 2 of 5 Decoding Level



This configuration item applies to Interleaved 2 of 5, Datalogic 2 of 5 and Standard 2 of 5.

This setting has no effect for AR models.

Decoding Levels are used to configure a bar code symbology decoder to be very aggressive to very conservative depending on a particular customer's needs. See "Decoding Levels" on page 239 for more detailed programming instructions.





2 of 5 Decoding Level = 1













#### I 2 of 5 Length Control

This feature specifies either variable length decoding or fixed length decoding for the I 2 of 5 symbology.

Variable Length: For variable length decoding, a minimum and maximum length may be set.

Fixed Length: For fixed length decoding, two different lengths may be set.





I 2 of 5 Length Control = Variable Length



#### I 2 of 5 Set Length 1

This feature specifies one of the bar code lengths for I 2 of 5 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. The length includes the bar code's check and data characters. The length can be set from 2 to 50 characters in increments of two.

Table 8 provides some examples for setting Length 1. See page 266 for detailed instructions on setting this feature.

#### Table 8. I 2 of 5 Length 1 Setting Examples

STEP	ACTION	EXAMPLES				
1	Desired Setting	2 Characters	6 Characters	14 Characters	50 Characters	
2	Pad with leading zeroes to yield two digits	02	06	14	50	
3	Scan ENTER/EXIT PROGRAMMING MODE					
4	Scan SELECT I 2 of 5 LENGTH 1 SETTING					
5	Scan Two Characters From Appendix D, Keypad	'0' and '2'	'O' and '6'	'1' and '4'	'5' AND '0'	
6	Scan ENTER/EXIT PROGRAMMING MODE					



Select I 2 of 5 Length 1 Setting

To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.







#### I 2 of 5 Set Length 2

This feature specifies one of the bar code lengths for I 2 of 5 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. The length includes the bar code's check and data characters.

The length can be set from 2 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Table 9 provides examples for setting Length 2. See page 267 for detailed instructions on setting this feature.

STEP	ACTION	EXAMPLES				
1	Desired Setting	lgnore This Length	4 Characters	14 Characters	50 Characters	
2	Pad with leading zeroes to yield two digits	00	04	14	50	
3	Scan ENTER/EXIT PROGRAMMING MODE					
4	Scan SELECT I 2 OF 5 LENGTH 2 SETTING					
5	Scan Two Characters From Appendix D, Keypad	'O' and 'O'	'O' and '4'	'1' and '4'	'5' AND '0'	
6	Scan ENTER/EXIT PROGRAMMING MODE					

#### Table 9. I 2 of 5 Length 2 Setting Examples



To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.







#### I 2 of 5 Zero Pattern

This setting has no effect for AR models.

Enables/disables ZERO-Digit decoding. This character does not represent any cipher. It allows encoding of an odd number of ciphers with Interleaved 2 of 5. It must be enabled to decode Code 2 of 5 CIP/HR.





l 2 of 5 Zero Pattern = Disable



#### **INTERLEAVED 2 OF 5 CIP HR**

This setting has no effect for AR models. The following options apply to the Interleaved 2 of 5 CIP HR symbology.

#### Interleaved 2 of 5 CIP HR Enable/Disable

Enables/Disables ability of reader to decode Interleaved 2 of 5 CIP HR labels.







# DATALOGIC 2 OF 5

This setting has no effect for AR models.

The following options apply to the Datalogic 2 of 5 symbology.

#### Datalogic 2 of 5 Enable/Disable

When disabled, the scanner will not read Datalogic 2 of 5 bar codes.





Datalogic 2 of 5 = Disable



# Datalogic 2 of 5 Check Character Calculation

This setting has no effect for AR models.

This option enables/disables calculation and verification of an optional Datalogic 2 of 5 check character.





Datalogic 2 of 5 Check Character Calculation = Disable



Datalogic 2 of 5 Check Character Calculation = Enable



# Datalogic 2 of 5 Check Character Transmission

This setting has no effect for AR models.

This option enables/disables transmission of an optional Datalogic 2 of 5 character.



Datalogic 2 of 5 Check Character Transmission = Don't Send

DEFAULT



Datalogic 2 of 5 Check Character Send

#### Datalogic 2 of 5 Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times an Datalogic 2 of 5 label must be decoded before it is accepted as good read.









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#### Datalogic 2 of 5 Decoding Level



The Datalogic 2 of 5 Decoding Level feature is set using "l  $2 \mbox{ of 5 Decoding Level" on page 135.}$ 

#### Datalogic 2 of 5 Length Control

This setting has no effect for AR models.

This feature specifies either variable length decoding or fixed length decoding for the Datalogic 2 of 5 symbology.

**Variable Length —** For variable length decoding, a minimum and maximum length may be set.

**Fixed Length** — For fixed length decoding, two different lengths may be set.





Datalogic 2 of 5 Length Control = Variable Length





#### Datalogic 2 of 5 Set Length 1

This setting has no effect for AR models.

This feature specifies one of the bar code lengths for Datalogic 2 of 5 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. The length includes the bar code's data characters only.

The length can be set from 2 to 50 characters in increments of two. See "Set Length 1" on page 239 for more detailed programming instructions.



Select Datalogic 2 of 5 Length 1 Setting

To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.







#### Datalogic 2 of 5 Set Length 2

This setting has no effect for AR models.

This feature specifies one of the bar code lengths for Datalogic 2 of 5 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. The length includes the bar code's data characters only.

The length can be set from 2 to 50 characters. A setting of 00 specifies to ignore this length (only one fixed length). See "Set Length 2" on page 241 for more detailed programming instructions.



To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.

Select Datalogic 2 of 5 Length 2 Setting







#### Datalogic 2 of 5 Interdigit Ratio

This setting has no effect for AR models.

This feature specifies the maximum ratio between intercharacter space and module for Datalogic 2 of 5.



Datalogic 2 of 5 Interdigit Ratio = Disable



Datalogic 2 of 5 Interdigit Ratio = 1



Datalogic 2 of 5 Interdigit Ratio = 2



Datalogic 2 of 5 Interdigit Ratio = 3





Datalogic 2 of 5 Interdigit Ratio = 5





# Datalogic 2 of 5 Interdigit Maximum Ratio









Datalogic 2 of 5 Interdigit Ratio =



#### FOLLETT 2 OF 5 (ONLY STANDARD OPTIC MODELS)

The following options apply to the Follett 2 of 5 symbology.

#### Follett 2 of 5 Enable/Disable

Enables/Disables ability of reader to decode 2 of 5 labels.









# **STANDARD 2 OF 5**

The following options apply to the Standard 2 of 5 symbology.

#### Standard 2 of 5 Enable/Disable

When disabled, the reader will not read Standard 2 of 5 bar codes.





#### Standard 2 of 5 Check Character Calculation

This setting has no effect for AR models.

This option enables/disables calculation and verification of an optional Standard 2 of 5 check character.





Standard 2 of 5 Check Character Calculation = Disable



Standard 2 of 5 Check Character Calculation = Enable



#### Standard 2 of 5 Check Character Transmission

This setting has no effect for AR models.

This feature enables/disables transmission of an optional Standard 2 of 5 check character.



Standard 2 of 5 Fransmission = Don't Send

DEFAULT



Standard 2 of 5 Check Transmission = Send

#### Standard 2 of 5 Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times a Standard 2 of 5 label must be decoded before it is accepted as good read.













#### Standard 2 of 5 Decoding Level



The Standard 2 of 5 Decoding Level feature is set using "I 2 of 5 Decoding Level" on page 135.

#### NOIL

#### Standard 2 of 5 Length Control

This feature specifies either variable length decoding or fixed length decoding for the Standard 2 of 5 symbology.

Variable Length: For variable length decoding, a minimum and maximum length may be set.

**Fixed Length:** For fixed length decoding, two different lengths may be set.





Standard 2 of 5 Length Control = Variable Length



Standard 2 of 5 Length Control = Fixed Length



#### Standard 2 of 5 Set Length 1

This feature specifies one of the bar code lengths for Standard 2 of 5 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's check and data characters. The length can be set from 1 to 50 characters.

Table 10 provides some examples for setting Length 1. See page 266 if you want detailed instructions on setting this feature.

#### Table 10. Standard 2 of 5 Length 1 Setting Examples

STEP	ACTION	EXAMPLES				
1	Desired Setting	01 Character	07 Characters	15 Characters	50 Characters	
2	Scan ENTER/EXIT PROGRAMMING MODE					
3	Scan SELECT STANDARD 2 OF 5 LENGTH 1 SETTING					
4	Scan Two Characters From Appendix D, Keypad'0' and '1''0' and '7''1' and '5''5' AND '0'					
5	Scan ENTER/EXIT PROGRAMMING MODE					



To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.






## Standard 2 of 5 Set Length 2

This feature specifies one of the bar code lengths for Standard 2 of 5 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the bar code's check and data characters.

The length can be set from 1 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Table 11 provides examples for setting Length 2. See page 267 for detailed instructions on setting this feature.

#### Table 11. Standard 2 of 5 Length 2 Setting Examples

STEP	ACTION	EXAMPLES				
1	Desired Setting (pad with leading zeroes)	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters	
2	Scan ENTER/EXIT PROGRAM	MING MODE				
3	Scan SELECT STANDARD 2 C	)F 5 LENGTH 2 9	SETTING			
4	Scan Two Characters From Appendix D, Keypad	'0' and '0'	'0' and '7'	'1' and '5'	'5' AND '0'	
5	Scan ENTER/EXIT PROGRAMMING MODE					



To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.







# **INDUSTRIAL 2 OF 5 (ONLY STANDARD OPTIC MODELS)**

The following options apply to the Industrial 2 of 5 symbology.

#### Industrial 2 of 5 Enable/Disable

Enables/Disables ability of reader to decode Industrial 2 of 5 labels.





Industrial 2 of 5 Check Character Calculation

Enables/Disables calculation and verification of an optional Industrial 2 of 5 check character.





Industrial 2 of 5 Check Character Calculation = Disable



Industrial 2 of 5 Check Character Calculation = Enable



#### Industrial 2 of 5 Check Character Transmission

Enables/disables transmission of an Industrial 2 of 5 check character.



Industrial 2 of 5 Check Character Transmission = Disable





## Industrial 2 of 5 Length Control

This feature specifies either variable length decoding or fixed length decoding for the Industrial 2 of 5 symbology.

Variable Length: For variable length decoding, a minimum and maximum length may be set.

**Fixed Length:** For fixed length decoding, two different lengths may be set.





Industrial 2 of 5 Length Control = Variable Length



Industrial 2 of 5 = Fixed Length



## Industrial 2 of 5 Set Length 1

This feature specifies one of the bar code lengths for Industrial 2 of 5 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's data characters only. The length can be set from 0 to 50 characters.

Table 12 provides some examples for setting Length 1. See page 266 if you want detailed instructions on setting this feature.

#### Table 12. Industrial 2 of 5 Length 1 Setting Examples

STEP	ACTION	EXAMPLES					
1	Desired Setting	00 Characters	07 Characters	15 Characters	50 Characters		
2	Scan ENTER/EXIT PROGRAMMING MODE						
3	Scan SELECT INDUSTRIAL 2	OF 5 LENGTH 1	SETTING				
4	Scan Two Characters From Appendix D, Keypad	'O' and 'O'	'O' and '7'	'1' and '5'	'5' AND '0'		
5	Scan ENTER/EXIT PROGRAMMING MODE						



To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.







## Industrial 2 of 5 Set Length 2

This feature specifies one of the bar code lengths for Industrial 2 of 5 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the bar code's check, data, and full-ASCII shift characters. The length does not include start/stop characters.

The length can be set from 1 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Table 13 provides examples for setting Length 2. See page 267 for detailed instructions on setting this feature.

#### Table 13. Industrial 2 of 5 Length 2 Setting Examples

STEP	ACTION	EXAMPLES				
1	Desired Setting	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters	
2	Scan ENTER/EXIT PROGRAMMING MODE					
3	Scan SELECT INDUSTRIAL 2	OF 5 LENGTH 2	SETTING			
4	Scan Two Characters From Appendix D, Keypad	'O' and 'O'	'O' and '7'	'1' and '5'	'5' AND '0'	
5	Scan ENTER/EXIT PROGRAMMING MODE					



Select Industrial 2 of 5 Length 2 Setting

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.





# Industrial 2 of 5 Minimum Reads

This feature specifies the minimum number of consecutive times an Industrial 2 of 5 label must be decoded before it is accepted as good read.





Industrial 2 of 5 Minimum Reads = 7







# CODE IATA (ONLY STANDARD OPTIC MODELS)

This setting has no effect for AR models. The following options apply to the IATA symbology.

#### IATA Enable/Disable

Enables/Disables the ability of the reader to decode IATA labels.







# IATA Check Character Transmission

 ${\sf Enables/Disables}$  calculation and verification of an optional Industrial 2 of 5 check character.



IATA Check Character Transmission = Disable



DEFAULT

ATA CHECK CHARACLER TRANSmission – Litabi



# CODABAR

The following options apply to the Codabar symbology.

## Codabar Enable/Disable

When disabled, the reader will not read Codabar bar codes.



odabar = Fnable



## **Codabar Check Character Calculation**

This setting has no effect for AR models.

Enable this option to enables/disables calculation and verification of an optional Codabar check character. When disabled, any check character in the label is treated as a data character





Codabar Check Character Calculation = Don't Calculate



Codabar Check Character Calculation = Enable AIM standard check char.



Codabar Check Character Calculation = Enable Modulo 10 check char.



#### **Codabar Check Character Transmission**

This setting has no effect for AR models.

Enable this option to transmit the check character along with Codabar bar code data.



Codabar Check Character Transmission = Don't Send



Transmission = Send

Codabar



#### Codabar Start/Stop Character Transmission

 $\label{eq:constraint} Enable \ this \ option \ to \ enable/disable \ transmission \ of \ Codabar \ start \ and \ stop \ characters.$ 



Codabar Start/Stop Character Transmission = Don't Transmit



Codabar Start/Stop Character Transmission = Transmit





## Codabar Start/Stop Character Set

This option specifies the format of transmitted Codabar start/stop charac-ters.



Codabar Check Character Set = ABCD/TN\*E



Codabar Check Character Set = ABCD/ABCD



Codabar Check Character Set = abcd/tn\*e





# Codabar Start/Stop Character Match

When enabled, this option requires that start and stop characters match.





Codabar Start/Stop Character Match = Don't Require Match



Codabar Start/Stop Character Match = Require Match



#### **Codabar Quiet Zones**

This setting has no effect for AR models.

Specifies the number of quiet zones for Codabar labels. Quiet zones are blank areas at the ends of a bar code and are typically 10 times the width of the narrowest bar or space in the label.



Codabar Quiet Zones = Quiet Zone on one side



Codabar Quiet Zones = Auto



Codabar Quiet Zones = Quiet Zones on two sides





Codabar Quiet Zones = Virtual Quiet Zones on two sides



Codabar Quiet Zones = Small Quiet Zones on two sides



## **Codabar Minimum Reads**

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times a Codabar label must be decoded before it is accepted as good read.





Codabar Minimum Reads = 1





Codabar Minimum Reads = 4



# **Codabar Decoding Level**

This setting has no effect for AR models.

Decoding Levels are used to configure a bar code symbology decoder to be very aggressive to very conservative depending on a particular customer's needs. See "Decoding Levels" on page 239 for more detailed programming instructions.



Codabar Decoding Level = Disabled



Codabar Decoding Level = 1













Codabar Decoding Level = 5

#### **Codabar Length Control**

This feature specifies either variable length decoding or fixed length decoding for the Codabar symbology.

Variable Length. For variable length decoding, a minimum and maximum length may be set.

Fixed Length: For fixed length decoding, two different lengths may be set.





Codabar Length Control = Variable Length



#### Codabar Set Length 1

This feature specifies one of the bar code lengths for Codabar Length ControlCodabar Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's start, stop, check and data characters. The length must include at least one data character. The length can be set from 3 to 50 characters.

Table 14 provides some examples for setting Length 1. See page 266 for detailed instructions on setting this feature.

#### Table 14. Codabar Length 1 Setting Examples

STEP	ACTION	EXAMPLES				
1	Desired Setting (and pad with leading zeroes)	03 Characters	09 Characters	15 Characters	50 Characters	
2	Scan ENTER/EXIT PROGRAMMING MODE					
3	Scan SELECT CODABAR LEN	GTH 1 SETTING				
4	<b>Scan Two Characters From</b> Appendix D, Keypad	'O' and '3'	'O' and '9'	'1' and '5'	'5' AND '0'	
5	Scan ENTER/EXIT PROGRAMMING MODE					



code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.

To configure this feature, scan the ENTER/EXIT bar

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.







## Codabar Set Length 2

This feature specifies one of the bar code lengths for Codabar Length ControlCodabar Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. The length includes the bar code's start, stop, check and data characters. The length must include at least one data character.

The length can be set from 3 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Table 15 provides examples for setting Length 2. See page 267 for detailed instructions on setting this feature.

#### Table 15. Codabar Length 2 Setting Examples

STEP	ACTION	EXAMPLES				
1	Desired Setting (and pad with leading zeroes)	00 Ignore This Length	07 Characters	15 Characters	50 Characters	
2	Scan ENTER/EXIT PROGRAMMING MODE					
3	Scan SELECT CODABAR LEN	GTH 2 SETTING				
4	Scan Two Characters From Appendix D, Keypad	'0' and '0'	'0' and '7'	'1' and '5'	'5' AND '0'	
5	Scan ENTER/EXIT PROGRAMMING MODE					



Select Codabar Length 2 Setting

To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.







**Codabar Interdigit Ratio** This setting has no effect for AR models. This feature specifies the maximum ratio between an intercharacter space and module for Codabar labels.





Codabar Interdigit Ratio = 1







Codabar Interdigit Ratio = 7





odabar Interdigit Ratio = 2.



Codabar Interdigit Ratio = 4



Lodabar Interdigit Ratio = 6



Codabar Interdigit Ratio = 10





# **ABC CODABAR**

This setting has no effect for AR models.

The following options apply to the ABC Codabar symbology.

## ABC Codabar Enable/Disable

Enables/Disables ability of scanner to decode ABC Codabar labels.





ABC Codabar = Disable

# ABC Codabar Concatenation Mode

Specifies the concatenation mode between Static and Dynamic.





ABC Codabar Concatenation Mode = Static





## ABC Codabar Dynamic Concatenation Timeout

This parameter specifies the timeout in 10-millisecond ticks used by the ABC Codabar Dynamic Concatenation Mode. The timeout can be set within a range of 05 to 255 in 10ms increments. A setting of zero specifies no delay.

ENTER/EXIT bar code again.



Select ABC Codabar Dynamic Concatenation Timeout Setting

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the



#### **ABC Codabar Force Concatenation**

Forces labels starting or ending with D to be concatenated.





ABC Codabar Force Concatenation = Disable



# CODE 11 (ONLY STANDARD OPTIC MODELS)

This setting has no effect for AR models. The following options apply to the Code 11 symbology.

#### Code 11 Enable/Disable

When disabled, the reader will not read Code 11 bar codes.





# **Code 11 Check Character Calculation**

This option enables/disables calculation and verification of optional Code  $11\ check\ character.$ 



Code 11 Check Character Calculation = Disable



Code 11 Check Character Calculation = Check C



Code 11 Check Character Calculation = Check K



Code 11 Check Character Calculation = Check C and K





#### Code 11 Check Character Transmission

This feature enables/disables transmission of an optional Code 11 check character.



Code 11 Check Character Transmission = Don't Send





## Code 11 Minimum Reads

This feature specifies the minimum number of consecutive times a Code 11 label must be decoded before it is accepted as good read.











ode 11 Minimum Reads = 4



#### **Code 11 Length Control**

This feature specifies either variable length decoding or fixed length decoding for the Code 11 symbology.

Variable Length. For variable length decoding, a minimum and maximum length may be set.

Fixed Length. For fixed length decoding, two different lengths may be set.





Code 11 Length Control = Variable Length

Code 11 Set Length 1

This feature specifies one of the bar code lengths for Code 11 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's check and data characters. The length can be set from 2 to 50 characters.

Table 16 provides some examples for setting Length 1. See page 266 for detailed instructions on setting this feature.

#### Table 16. Code 11 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting (pad with leading zeroes)	02 Characters	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMM	IING MODE			
3	Scan SELECT CODE 11 LENGTH	1 SETTING			
4	<b>Scan Two Characters From</b> Appendix D, Keypad	'0' and '2'	'O' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				



Select Code 11 Set Length 1 Setting

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

DEFAULT

To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.



04 = Length 1 is 4 Characters



#### Code 11 Set Length 2

This feature specifies one of the bar code lengths for Code 11 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the bar code's check and data characters.

The length can be set from 2 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Table 17 provides examples for setting Length 2. See page 267 for detailed instructions on setting this feature.

#### Table 17. Code 11 Length 2 Setting Examples

STEP	ACTION	EXAMPLES				
1	Desired Setting (pad with leading zeroes)	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters	
2	Scan ENTER/EXIT PROGRAMMING MODE					
3	Scan SELECT CODE 11 LENG	TH 2 SETTING				
4	Scan Two Characters From Appendix D, Keypad	'O' and 'O'	'0' and '7'	'1' and '5'	'5' and 0'	
5	Scan ENTER/EXIT PROGRAMMING MODE					



To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.







# Code 11 Interdigit Ratio

This feature specifies the ratio between an intercharacter space and module for Code 11 labels.



Code 11 Interdigit Ratio = 1



Code 11 Interdigit Ratio = 3





Code 11 Interdigit Ratio = 7



Code 11 Interdigit Ratio = 9



Code 11 Interdigit Ratio = Disable





Code 11 Interdigit Ratio = 4





Interdigit Ratio = 10



# **Code 11 Decoding Level**

Decoding Levels are used to configure a bar code symbology decoder to be very aggressive to very conservative depending on a particular customer's needs. See "Decoding Levels" on page 239 for more detailed programming instructions.



Code 11 Decoding Level = Disable



Code 11 Decoding Level = 1



Code 11 Decoding Level = 3









Code 11 Decoding Level = 5



# **GS1 DATABAR™ OMNIDIRECTIONAL**

The following options apply to the GS1 DataBar  $^{\rm TM}$  Omnidirectional (formerly RSS-14) symbology.

## GS1 DataBar™ Omnidirectional Enable/Disable

When disabled, the reader will not read GS1  $\mathsf{DataBar}^{\mathsf{m}}$  Omnidirectional bar codes.





GS1 DataBar™ Omnidirectional = Disable

#### GS1 DataBar™ Omnidirectional GS1-128 Emulation

When enabled, GS1 DataBar<sup>M</sup> Omnidirectional bar codes will be translated to the GS1-128 label data format.





GS1 DataBar™ Omnidirectional GS1-128 Emulation = Disable



GS1 DataBar<sup>™</sup> Omnidirectional GS1-128 Emulation = Enable



#### GS1 DataBar™ Omnidirectional Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times a GS1 DataBar Omnidirectional label must be decoded before it is accepted as good read.





GS1 DataBar Omnidirectional Minimum Reads = 1



GS1 DataBar Omnidirectional Minimum Reads = 3



GS1 DataBar Omnidirectional Minimum Reads = 4



# GS1 DATABAR™ EXPANDED

The following options apply to the GS1 DataBar  $\ensuremath{^{\rm TM}}$  Expanded (formerly RSS Expanded) symbology.

# GS1 DataBar™ Expanded Enable/Disable

When disabled, the reader will not read GS1 DataBar™ Expanded bar codes.





GS1 DataBar™ Expanded = Disable

#### GS1 DataBar™ Expanded GS1-128 Emulation

When enabled, GS1 DataBar  ${}^{\rm M}$  Expanded bar codes will be translated to the GS1-128 label data format.







GS1 DataBar™ Expanded GS1-128 Emulation = Enable



## GS1 DataBar™ Expanded Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times a GS1 DataBar Expanded label must be decoded before it is accepted as good read.



GS1 DataBar Expanded Minimum Reads = 1



GS1 DataBar Expanded Minimum Reads = 3



GS1 DataBar Expanded Minimum Reads = 4

# GS1 DataBar™ Expanded Length Control

This feature specifies either variable length decoding or fixed length decoding for the GS1 DataBar™ Expanded symbology.

Variable Length: For variable-length decoding, a minimum length may be set.

**Fixed Length:** For fixed-length decoding, two different lengths may be set.





GS1 DataBar™ Expanded Length Control = Variable Length





#### GS1 DataBar™ Expanded Set Length 1

This feature specifies one of the bar code lengths for GS1 DataBar<sup>™</sup> Expanded Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's data characters only. The length can be set from 1 to 74 characters.

Table 18 provides some examples for setting Length 1. See page 266 for detailed instructions on setting this feature.

#### Table 18. GS1 DataBar™ Expanded Length 1 Setting Examples

STEP	ACTION	EXAMPLES					
1	Desired Setting	01 Character	07 Characters	52 Characters	74 Characters		
2	Scan ENTER/EXIT PROGRAMMING MODE						
3	Scan SELECT GS1 DataBar™	EXPANDED LEN	NGTH 1SETTING	i			
4	Scan Two Characters From Appendix D, Keypad	'O' and '1'	'0' and '7'	'5' and '2'	'7' AND '4'		
5	Scan ENTER/EXIT PROGRAMMING MODE						



Select GS1 DataBar™ Expanded Set Length 1 Setting

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End

by scanning the ENTER/EXIT bar code again.





#### GS1 DataBar™ Expanded Set Length 2

This feature specifies one of the bar code lengths for GS1 DataBar™ Expanded Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the bar code's data characters only. The length can be set from 1 to 74 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Table 19 provides examples for setting Length 2. See page 267 for detailed instructions on setting this feature.

#### Table 19. GS1 DataBar™ Expanded Length 2 Setting Examples

STEP	ACTION	EXAMPLES				
1	Desired Setting	00 (ignore sec- ond length)	07 Characters	52 Characters	74 Characters	
2	Scan ENTER/EXIT PROGRAMMING MODE					
3	Scan SELECT GS1 DataBar™	EXPANDED LE	NGTH 2 SETTIN	G		
4	Scan Two Characters From Appendix D, Keypad	'O' and 'O'	'0' and '7'	'5' and '2'	'7' and '4'	
5	Scan ENTER/EXIT PROGRAMMING MODE					



Select GS1 DataBar™ Expanded Set Length 2 Setting

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End

by scanning the ENTER/EXIT bar code again.





# GS1 DATABAR™ LIMITED

The following options apply to the GS1 DataBar  $\ensuremath{^{\text{\tiny M}}}$  Limited (formerly RSS Limited) symbology.

## GS1 DataBar™ Limited Enable/Disable

When disabled, the reader will not read GS1 DataBar™ Limited bar codes.



l imited = Fnable



GS1 DataBar™ Limited = Disable

#### GS1 DataBar™ Limited GS1-128 Emulation

When enabled, GS1 DataBar  $\hfill Limited$  bar codes will be translated to the GS1-128 label data format.





GS1 DataBar<sup>™</sup> Limited GS1-128 Emulation = Disable



GS1 DataBar™ Limited GS1-128 Emulation = Enable

#### **GS1** DataBar<sup>™</sup> Limited Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times a GS1 DataBar Limited label must be decoded before it is accepted as good read.





GS1 DataBar Limited Minimum Reads = 1





# **CODE 93**

The following options apply to the Code 93 symbology.

# Code 93 Enable/Disable

Enables/Disables ability of reader to decode Code 93 labels.





**Code 93 Check Character Calculation** 

This setting has no effect for AR models.

 ${\sf Enables/disables}$  calculation and verification of an optional Code 93 check character.







Code 93 Check Character Calculation = Enable Check C





Code 93 Check Character Calculation = Enable Check C and K



#### Code 93 Check Character Transmission

This setting has no effect for AR models. Enables/disables transmission of an optional Code 93 check character.



Code 93 Check Character Transmission = Enable



# **Code 93 Length Control**

This feature specifies either variable length decoding or fixed length decoding for the Code 93 symbology.

Variable Length: For variable length decoding, a minimum and maximum length may be set.

**Fixed Length:** For fixed length decoding, two different lengths may be set.





#### Code 93 Set Length 1

Specifies one of the bar code lengths for Code 93 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's data characters only. The length can be set from 01 to 50 characters.

Table 20 provides some examples for setting Length 1. See page 266 for detailed instructions on setting this feature.

Table 20. Code 93 Length 1 Setting E	xamples
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STEP	ACTION	EXAMPLES					
1	Desired Setting	01 Characters	07 Characters	15 Characters	50 Characters		
2	Scan ENTER/EXIT PROGRAMMING MODE						
3	Scan SELECT CODE 93 LENG	TH 1 SETTING					
4	Scan Two Characters From Appendix D, Keypad	'O' and '1'	'O' and '7'	'1' and '5'	'5' AND '0'		
5	Scan ENTER/EXIT PROGRAMMING MODE						



To configure this feature, scan the ENTER/ EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





#### Code 93 Set Length 2

This feature specifies one of the bar code lengths for Code 93 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the bar code's check, data, and full-ASCII shift characters. The length does not include start/stop characters. The length can be set from 1 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Table 21 provides examples for setting Length 2. See page 267 for detailed instructions on setting this feature.

			6			
STEP	ACTION	EXAMPLES				
1	Desired Setting	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters	
2	Scan ENTER/EXIT PROGRAMMING MODE					
3	Scan SELECT CODE 93 LENG	TH 2 SETTING				
4	<b>Scan Two Characters From</b> Appendix D, Keypad	'O' and 'O'	'O' and '7'	'1' and '5'	'5' AND '0'	
5	Scan ENTER/EXIT PROGRAM	MMING MODE				

#### Table 21. CODE 93 Length 2 Setting Examples



Select Code 93 Length 2 Setting

To configure this feature, scan the ENTER/ EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.




### Code 93 Minimum Reads

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times a Code 93 label must be decoded before it is accepted as good read.





Code 93 Minimum Reads = 1





Code 93 Minimum Reads = 4

# Code 93 Decoding Level

This setting has no effect for AR models. Decoding Levels are used to configure a bar code symbology decoder to be very aggressive to very conservative depending on a particular customer's needs. See "Decoding Levels" on page 239 for more detailed programming instructions.





Code 93 Decoding Level = 1



Code 93 Decoding Level = 3



Code 93 Decoding Level = 2





#### **Code 93 Quiet Zones**

This setting has no effect for AR models. Enables/disables quiet zones for Code 93.



This feature is available only on the TD1130 model.



Code 93 Quiet Zones = No Quiet Zones



Code 93 Quiet Zones = Quiet Zones on one side



Code 93 Quiet Zones = Quiet Zones on two sides



Code 93 Quiet Zones = Auto





Code 93 Quiet Zones = Virtual Quiet Zones on two sides

# **CODABLOCK F**

This setting has no effect for AR models. The following options apply to the Codablock F symbology.

## Codablock F Enable/Disable

Enables/Disables ability of reader to decode Codablock F labels.



## Codablock F EAN Enable/Disable

This setting has no effect for AR models.

Enables/Disables the Codablock F EAN subtype (code with FNC1 in the first position).







This setting has no effect for AR models. Specifies if Check Digit calculation algorithm is AIM compliant or not.





Codablock F AIM Check = AIM compliant



#### Codablock F Length Control

This feature specifies either variable length decoding or fixed length decoding for the Codablock F symbology.

**Variable Length.** For variable length decoding, a minimum and maximum length may be set.

Fixed Length. For fixed length decoding, two different lengths may be set.





Codablock F Length Control = Variable Length

#### Codablock F Set Length 1

This feature specifies one of the bar code lengths for Codablock F Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's data characters only.

The length can be set from 003 to 255 characters. See "Set Length 1" on page 239 for more detailed programming instructions.

#### Table 22. Codablock F Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	01 Characters	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 93 LENGTH 1 SETTING				
4	Scan Two Characters From Appendix D, Keypad	'O' and '1'	'O' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				



Select Codablock F Set Length 1 Setting

To configure this feature, scan the ENTER/ EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.

CANCEL

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



003 = Length 1 is 3 Characters

### Codablock F Set Length 2

This feature specifies one of the bar code lengths for Codablock F Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the bar code's check, data, and full-ASCII shift characters. The length does not include start/stop characters.

The length can be set from 3 to 255 characters. A setting of 00 specifies to ignore this length (only one fixed length). See "Set Length 2" on page 241 for more detailed programming instructions.

STEP	ACTION	EXAMPLES			
1	Desired Setting	01 Characters	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 93 LENGTH 1 SETTING				
4	Scan Two Characters From Appendix D, Keypad	'O' and '1'	'O' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

#### Table 23. Codablock F Length 1 Setting Examples



Select Codablock F Set Length 2 Setting

To configure this feature, scan the ENTER/ EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





# CODE 4

This setting has no effect for AR models. The following options apply to the Code 4 symbology.

## Code 4 Enable/Disable

Enables/Disables ability of reader to decode Code 4 labels.



ode 4 = Enable

## Code 4 Check Character Transmission

This feature enables/disables transmission of an optional Code 4 check character.



Code 4 Check Character Transmission = Don't Send



Code 4 Check Character Transmission = Send



#### Code 4 Hex to Decimal Conversion

This feature enables/disables the conversion of hexadecimal label data to decimal label data.



Code 4 Hex to Decimal Conversion = Disable



Code 4 Hex to Decimal Conversion = Enable



# CODE 5

This setting has no effect for AR models. The following options apply to the Code 5 symbology.

## Code 5 Enable/Disable

Enables/Disables ability of reader to decode Code 5 labels.



Code 5 = Enable

## Code 5 Check Character Transmission

This feature enables/disables transmission of an optional Code 5 check character.



Code 5 Check Character Transmission = Don't Send

DEFAULT



Code 5 Check Character Transmission = Send

## Code 5 Hex to Decimal Conversion

This feature enables/disables the conversion of hexadecimal label data to decimal label data.



Code 5 Hex to Decimal Conversion = Disable



Code 5 Hex to Decimal Conversion = Enable



## **CODE 4 AND CODE 5 COMMON CONFIGURATION ITEMS**

The following options apply to both Code 4 and Code 5 symbologies.

#### Code 4 and 5 Deconding Level

This setting has no effect for AR models.

Decoding Levels are used to configure a bar code symbology decoder to be very aggressive to very conservative depending on a particular customer's needs. See "Decoding Levels" on page 239 for more detailed programming instructions.



This configuration item applies to Code 4 and Code 5.







Code 4 and Code 5 Decoding Level = 2







#### Code 4 and Code 5 Minimum Reads

This feature specifies the minimum number of consecutive times a Code 4 or Code 5 label must be decoded before it is accepted as good read







Code 4 or Code 5 Minimum Reads = 4

## BC412

This setting has no effect for AR models. The following options apply to the BC412 symbology.

#### BC412 Enable/Disable

Enables/Disables ability of scanner to decode BC412 labels.







Enable this option to enable/disable calculation and verification of an optional BC412 check character. When disabled, any check character in the label is treated as a data character





## **BC412 Minimum Reads**

This feature specifies the minimum number of consecutive times a BC412 label must be decoded before it is accepted as good read.





BC412 Minimum Reads = 1







BC412 Decoding Level =



BC412 Decoding Level = 5

#### **BC412 Length Control**

This feature specifies either variable length decoding or fixed length decoding for the BC412 symbology.

Variable Length. For variable length decoding, a minimum and maximum length may be set.

Fixed Length. For fixed length decoding, two different lengths may be set.





BC412 Length Control = Variable Length

## BC412 Set Length 1

This feature specifies one of the bar code lengths for Code 11 Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's check and data characters. The length can be set from 2 to 50 characters.

Table 16 provides some examples for setting Length 1. See page 266 for detailed instructions on setting this feature.

#### Table 24. BC412 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting (pad with leading zeroes)	02 Characters	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 11 LENGTH 1 SETTING				
4	Scan Two Characters From Appendix D, Keypad				
5	Scan ENTER/EXIT PROGRAMMING MODE				



Select BC412 Set Length 1 Setting

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.







04 = Length 1 is 4 Characters

#### BC412 Set Length 2

This feature specifies one of the bar code lengths for Code 11 Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the bar code's check and data characters.

The length can be set from 2 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Table 17 provides examples for setting Length 2. See page 267 for detailed instructions on setting this feature.

Table 25. BC412 Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting (pad with leading zeroes)	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 11 LENGTH 2 SETTING				
4	<b>Scan Two Characters From</b> Appendix D, Keypad	'0' and '0'	'0' and '7'	'1' and '5'	'5' and 0'
5	Scan ENTER/EXIT PROGRAMMING MODE				



To configure this feature, scan the ENTER/EXIT bar code above, then the bar code at left followed by digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code again.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





### MSI

The following options apply to the MSI symbology.

## MSI Enable/Disable

Enables/Disables ability of reader to decode MSI labels.





### **MSI Check Character Calculation**

 ${\sf Enables}/{\sf Disables}$  calculation and verification of an optional MSI check character.



MSI Check Character Calculation = Enable Mod10





MSI Check Character Calculation = Enable Mod11/10



MSI Check Character Calculation = Enable Mod10/10

### **MSI Check Character Transmission**

Enables/disables transmission of an MSI check character.



DEFAULT



**MSI Length Control** 

This feature specifies either variable length decoding or fixed length decoding for the MSI symbology.

Variable Length: For variable length decoding, a minimum and maximum length may be set.

Fixed Length: For fixed length decoding, two different lengths may be set.





Control = Variable Length

#### **MSI Set Length 1**

This feature specifies one of the bar code lengths for MSI Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's data characters only. The length can be set from 01 to 50 characters.

Table 26 provides some examples for setting Length 1. See page 266 for detailed instructions on setting this feature.

#### Table 26. MSI Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	01 Characters	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT MSI LENGTH 1 SETTING				
4	Scan Two Characters From Appendix D, Keypad	'O' and '1'	'O' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				



Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





#### **MSI Set Length 2**

This feature specifies one of the bar code lengths for MSI Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the bar code's check, data, and full-ASCII shift characters. The length does not include start/stop characters.

The length can be set from 1 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Table 27 provides examples for setting Length 2. See page 267 for detailed instructions on setting this feature.

#### Table 27. MSI Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT MSI LENGTH 2 SETTING				
4	<b>Scan Two Characters From</b> Appendix D, Keypad	'0' and '0'	'O' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				



Select MSI Length 2 Setting

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





#### **MSI Minimum Reads**

This setting has no effect for AR models.

This feature specifies the minimum number of consecutive times an MSI label must be decoded before it is accepted as good read.







DEFAULT



MSI Minimum Reads = 4

#### **MSI Decoding Level**

This setting has no effect for AR models.

Decoding Levels are used to configure a bar code symbology decoder to be very aggressive to very conservative depending on a particular customer's needs. See "Decoding Levels" on page 239 for more detailed programming instructions.



Decoding Level = Disable



Decoding Level =



MSI Decoding Level = 3







MSI Decoding Level =



#### **PLESSEY** (ONLY STANDARD OPTIC MODELS)

This setting has no effect for AR models. The following options apply to the Plessey symbology.

#### Plessey Enable/Disable

Enables/Disables ability of reader to decode Plessey labels.





Plessey = Disa

## **Plessey Check Character Calculation**

Enables/Disables calculation and verification of an optional Plessey check character.



Plessey Check Character Calculation = Enable Plessey std. check char. verification



Plessey Check Character Calculation = Disable





Plessey Check Character Calculation = Enable Anker check char. verification



Plessey Check Character Calculation = Enable Plessey std. and Anker check char verification

## Plessey Check Character Transmission

Enables/disables transmission of an MSI check character.



Plessey Check Character Transmission = Disable





# **Plessey Length Control**

This feature specifies either variable length decoding or fixed length decoding for the Plessey symbology.

Variable Length: For variable length decoding, a minimum and maximum length may be set.

**Fixed Length:** For fixed length decoding, two different lengths may be set.





Product Reference Guide

#### **Plessey Set Length 1**

This feature specifies one of the bar code lengths for Plessey Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's data characters only. The length can be set from 01 to 50 characters.

Table 28 provides some examples for setting Length 1. See page 266 for detailed instructions on setting this feature.

#### Table 28. Plessey Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	01 Characters	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT Plessey LENGTH 1 SETTING				
4	<b>Scan Two Characters From</b> Appendix D, Keypad	'O' and '1'	'O' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				



Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





#### **Plessey Set Length 2**

This feature specifies one of the bar code lengths for Plessey Length Control. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. Length includes the bar code's check, data, and full-ASCII shift characters. The length does not include start/stop characters.

The length can be set from 1 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Table 29 provides examples for setting Length 2. See page 267 for detailed instructions on setting this feature.

#### Table 29. Plessey Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT PLESSEY LENGTH 2 SETTING				
4	<b>Scan Two Characters From</b> Appendix D, Keypad	'O' and 'O'	'O' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				



Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





## **Plessey Minimum Reads**

This feature specifies the minimum number of consecutive times a Plessey label must be decoded before it is accepted as good read.





ssev Minimum Reads



DEFAULT

# **Plessey Decoding Level**

Specifies the decoding level for Plessey. Decoding Levels are used to configure a bar code symbology decoder to be very aggressive to very conservative depending on a particular customer's needs. See "Decoding Levels" on page 239 for more information on this feature.





Plessey Decoding Level = 1 (conservative)



Plessey Decoding Level = 3







# WIRELESS FEATURES

This section provides options and programming related to the reader's wireless communication features. Reference Appendix C, for a listing of standard factory settings.

WIRELESS BEEPER FEATURES starting on page 198 •"Good Transmission Beep" on page 198 •"Beep Frequency" on page 198 •"Beep Duration" on page 199 •"Beep Volume" on page 200 •"Disconnect Beep" on page 200 •"Docking Beep" on page 201 •"Leash Alarm" on page 201
<b>CONFIGURATION UPDATES</b> starting on page 203 •Automatic Configuration Update on page 203 •Copy Configuration to Scanner on page 203 •Copy Configuration to Base Station on page 203
BATCH FEATURES starting on page 204 •Batch Mode on page 204 •Send Batch on page 204 •Erase Batch Memory on page 205 •RF Batch Mode Transmit Delay on page 205
DIRECT RADIO AUTOLINK starting on page 206
<b>RF ADDRESS STAMPING</b> starting on page 206 •Source Radio Address Transmission on page 206 •Source Radio Address Delimiter Character on page 207
REAL TIME CLOCK (RTC) CONFIGURATION starting on page 208 •Current Date on page 208 •Current Time on page 208 •Date Tx Format on page 209 •Time Tx Format on page 209 •Date-Time Separator on page 210 •Date-Time Transmission Order on page 211 •Power Off on page 212
•Power Off on page 212 •Powerdown Timeout on page 212



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BLUETOOTH SECURITY FEATURES starting on page 213 •Bluetooth Security Mode on page 214 •Bluetooth PIN Code on page 214 •Select PIN Code Length on page 214 •Set PIN Code on page 215

OTHER BLUETOOTH FEATURES starting on page 216 •Reconnect Attempt Interval on page 216 •Bluetooth HID Variable PIN Code on page 217 •Bluetooth HID Alt Mode on page 218 •Bluetooth HID Send Unknown ASCII Char on page 230 •Bluetooth Max Client on page 218 •Bluetooth Friendly Name on page 219 •Bluetooth Reconnect Attempt Mode on page 220 •Power Class on page 233 •HID Country Mode on page 220

#### **PM9500-Only Features**

•STAR Radio Protocol Timeout on page 223 •STAR Radio Transmit Mode on page 224 •Changing System Speed on page 225 •Frequency Agility on page 226

COMPATIBILITY WITH PM8300 starting on page 226 •Compatibility Mode on page 226 •Changing from Normal to Compatible Mode on page 240 •Changing from Compatible Mode back to Normal on page 241 •Base Address Stamping on page 242 •Base Address Delimiter Character on page 242 •RS-485 Master Header/Terminator (Prefix/Suffix) on page 243 •RS-485 Cradle Address on page 243 •RS-485 Slave Minimum Address on page 244 •RS-485 Slave Maximum Address on page 244 •RS-485 Network Working Mode on page 245 •RS-485 Network Warning Message on page 246 •RS-485 Network Baud Rate on page 246



#### Display and Keyboard Features

•Display Operating Mode on page 227 •Display Off Timeout on page 228 •Backlight Enable on page 228 •Display Contrast on page 229 •Font Size on page 229 •Enable/disable buttons on page 230 •Arrow Keys Mode (4-key models only) on page 232 •Arrow Up String (4-key models only) on page 232 •Arrow Down String (4-key models only) on page 233 •Action Configuration for Function Keys on page 235 •Define Strings on page 238 •Set String ID on page 239 •Set String Header on page 239 •Set String Terminator on page 240 ADDITIONAL FEATURES FOR 16-KEY MODELS starting on page 241 •Last Code Shown Timeout on page 241 •Display Time Stamping Mode on page 241 •Mode Selection on page 242 •Quantity Field on page 242 •Quantity/Code Send Mode on page 243 •Quantity/Code Separator on page 243 Interkey Timeout on page 244 •Append Code on page 245 •Echo on page 246 •Keypress Sound on page 246

•SHIFT Enable/Disable on page 247

•SHIFT key association on page 247

•Lower Case on page 248

•Set Function Key Labels on page 248

•Barcode/Key Different Data Format on page 250

•Set Barcode Header on page 250

•Set Barcode Terminator on page 250 •Set Key Sequence ID on page 251

•Set Key Sequence Header on page 251

•Set Key Sequence Terminator on page 251



## WIRELESS BEEPER FEATURES

Several options are available to configure beeper behavior for RF operation.

#### **Good Transmission Beep**

Enables/disables the Good Transmission Beep indication. When enabled, a beep occurs when a Label is correctly transmitted to the base.







## **Beep Frequency**

Adjusts radio-specific beep indications to sound at a low, medium or high frequency, selectable from the list below (controls the beeper's pitch/tone).











#### **Beep Duration**

This feature controls the duration of radio-specific beep indications.















Beep Duration = 160 msec







#### **Beep Volume**

Selects the beeper volume (loudness) of radio-specific beep indications. There are three selectable volume levels.



Beep Volume = Low





Beep Volume = High



#### **Disconnect Beep**

Enables/disables the beep indication that a handheld has become connected or disconnected from a Base Station.



The defaults are different for the STAR and Bluetooth models.





Disconnect Beep = Enable





#### **Docking Beep**

Enables/disables a beep indication when the handheld is placed in the Base Station.





DEFAULT





#### Leash Alarm

This setting specifies the number of seconds to sound the Leash Mode beeps (three per second) when the handheld goes out of range. This is especially useful in instances where the reader might inadvertently have been placed in a bag or cart.

For this mode to be effective, the reader must be linked to the Base Station. If the reader is asleep or disconnected from the Base Station, there is no way for it to know where it is relative to the Base Station because communication is not active between the devices.









l each Δlarm = 7 Seconds



Leash Alarm (continued)















## CONFIGURATION UPDATES

See page 279 in "References" for detailed information and examples of these features.

#### Automatic Configuration Update

When this feature is enabled, a reader and its linked Base Station can automatically ensure they stay in sync with regard to application hardware and/ or configuration. See page 279 for more information on this feature.







## **Copy Configuration to Scanner**

Scan the following label to copy the current Base Station configuration to the scanner. Use this method when the Auto Configuration Update feature is disabled and you want a one-time configuration update to be performed on the scanner.



Do not scan an ENTER/EXIT PROGRAMMING MODE label with this bar code.



Copy Configuration to Scanner

#### **Copy Configuration to Base Station**

Scan the following label to copy the current scanner configuration to the Base Station. Use this method when the Auto Configuration Update feature is disabled and you want a one-time configuration update to be performed on the Base Station.



Copy Configuration to Base Station



Do not scan an ENTER/EXIT PROGRAMMING MODE label with this bar code.



# **BATCH FEATURES**

#### **Batch Mode**

This option specifies whether to store labels in the handheld while disconnected from the base. Options are as follows:

- Disabled The handheld will not store/batch labels.
- Automatic The handheld will store labels when the handheld goes out of range and is disconnected from the remote device.
- Manual The handheld will always store labels. The user must manually send the stored labels to the remote device using a special "batch send" label.









Batch Mode = Manual

#### Send Batch

When the scanner is configured in Manual Batch Mode, use the following bar code to initiate sending of labels stored in batch memory.



Do not scan an ENTER/EXIT PROGRAMMING MODE label in conjunction with this bar code.





#### **Erase Batch Memory**

When the scanner is configured in Manual Batch Mode, use the following bar code to erase any labels stored in batch memory.



Do not scan an ENTER/EXIT PROGRAMMING MODE label in conjunction with this bar code.



#### **RF Batch Mode Transmit Delay**

Specifies the delay in 10 msec increments between transmitting labels stored in batch memory.











RF Batch Mode Transmit Delay = 0.5 seconds



RF Batch Mode Transmit Delay = 1 second



RF Batch Mode Transmit Delay = 2.5 seconds



# **DIRECT RADIO AUTOLINK**

This feature enables/disables the ability to link a wireless handheld to a base station without scanning the Unlink label first.







## **RF ADDRESS STAMPING**

These features allow configuration of source radio data inclusion.

#### Source Radio Address Transmission

Enables/disables the ability of source radio address information to be transmitted to the host and, if so, at what position with respect to the label data. See page 279 in "References" for detailed information and examples for setting this feature.



When included as a prefix, the source-radio ID is displayed after all label formatting has been applied. The 6 byte hex address is sent as 12 ascii characters, i.e., an address of 00 06 66 00 1A ED will be sent as (shown in hex): 30 30 30 36 36 36 30 30 31 41 45 44





Source Radio Address Transmission = Do Not Include




#### Source Radio Address Delimiter Character

This option specifies the delimiter character to be placed between the label data and radio address when address stamping is enabled.



This feature only applies if "Source Radio Address Transmission" on page 206 is enabled.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by the digits from the Alphanumeric characters in **Appendix D**, **Keypad** representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





00 = No Delimiter Character



# **REAL TIME CLOCK (RTC) CONFIGURATION**

#### Current Date

Sets the date of the internal Real Time Clock (RTC)



Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning. To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by the digits from the Alphanumeric characters in **Appendix D**, **Keypad** representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.



# **Current Time**

Sets the time of the internal Real Time Clock (RTC). HH = 24 hours format



Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning. To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by the digits from the Alphanumeric characters in **Appendix D**, **Keypad** representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.





#### Date Tx Format

Sets the format of the date.











**Time Tx Format** Sets the format of the time.









#### **Date-Time Separator**

Sets the character used to separate Date and Time from the next field in message.





Set Character Separator =

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 2 digits from the Alphanumeric characters in **Appendix D**, **Keypad** representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.





# **Date-Time Transmission Order**

Allows the selection of the order of date and time transmission.

















#### **Power Off**

See "Power Off" on page 20 for information about this feature.

#### **Powerdown Timeout**

The Powerdown Timeout feature sets the time for automatically switching the unit off when the imager has been idle.



Powerdown Timeout = Disable











Powerdown Timeout = 120 Minutes (2 Hours)



# **PBT9300-ONLY FEATURES**

The features in this section are valid only for PBT9300 Bluetooth models. Also reference the Setup section for instructions on "Linking the Reader," starting on page 19.

# **BLUETOOTH SECURITY FEATURES**

On the Bluetooth system, it is possible to set a (configurable) PIN code to authenticate/connect Bluetooth devices, and encrypt the data.

The Bluetooth PIN code can be enabled and configured by reading the bar codes in the following sections.



If you are using a Bluetooth scanner directly connected to a host through a Bluetooth dongle, verify that the scanner and the Bluetooth driver used by the dongle share the same PIN code and the same security level. Otherwise the connection cannot be established.

Follow these steps to set the PIN code for a scanner:

- 1. Enable Bluetooth Security Mode by scanning the "Enable" bar code below.
- 2. Select a PIN code length of either 4 or 16 characters by scanning the appropriate bar code in "Select PIN Code Length" on page 214.
- 3. Scan the relevant bar code from "Set PIN Code" on page 215, then scan the desired alphanumeric characters from the keypad in Appendix D, Keypad to set the PIN code.

See page 281 in "References" for more detailed information and examples for this feature.



#### **Bluetooth Security Mode**

This feature enables/disables authentication and encryption of the Bluetooth link. Use the feature "Bluetooth PIN Code" on page 214 to specify the length and digits in the PIN code used to authenticate the Bluetooth Link.



Changing the security mode setting will unlink the devices. If the Automatic Configuration Update is set to the default "Enabled" setting, the devices must only be relinked. If the Automatic Configuration Update is set to "Disabled," the Security Mode setting must also be updated in the Base Station using Aladdin. After the Base Station has been updated, the devices must be relinked.





**Bluetooth PIN Code** 

After enabling Security Mode (see "Bluetooth Security Mode" on page 214), specify whether you want to set a 4-digit or a 16-digit PIN Code. See page 281 for detailed information and examples for setting this feature.

#### Select PIN Code Length



Select 4-character Bluetooth PIN Code



Select 16-character Bluetooth PIN Code



#### Set PIN Code

Determine the desired characters for the PIN code, then convert to hexadecimal using the ASCII Chart on page 1 on the inside back cover of this manual. See page 281 for detailed information and examples for setting this feature.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by the hexadecimal digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.





Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



31323334 = Default PIN Code is 1234



# **OTHER BLUETOOTH FEATURES**

# **Reconnect Attempt Interval**

This feature specifies the interval time between reconnection attempts.





5 minutes









## **Bluetooth HID Variable PIN Code**

Specifies the selection available for Static or Variable Pin Code, when Blue-tooth HID profile is configured.

Some Bluetooth drivers on the Host (such as WIDCOMM and BlueSoleil 8) require a Variable PIN Code. When attempting connection, the application presents a window that includes a PIN Code which is to be input using the PowerScan BT9300. Scan the bar code "Variable PIN Code" below, then use the host computer's Bluetooth manager to "Discover new devices" and select "Datalogic Scanner." Use a text editor to see incoming data on the port des-ignated by the computer's Bluetooth manager.



If you receive an error message, it may be necessary to disable security on the device.

When you hear the beep and see the Green LED blinking indicating the reader is waiting for an alphanumeric entry, enter the required variable PIN Code by scanning the corresponding bar codes in Appendix D, Keypad for alphanumeric entry. Finish by scanning the Exit HID Variable PIN Code label.



Set Static Pin Code



Set Variable Pin code



Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





#### **Bluetooth HID Alt Mode**

Enable/Disable the ability to correctly transmit a label to the host regardless of the Bluetooth HID Country Mode selected, when Bluetooth HID Profile is configured.

Read the configuration command label below for the HID Alt Mode feature.



HID Alt Mode = OFF



# **Bluetooth Max Client**

Set the number of Readers that can connect to the Base in a Piconet network.













Bluetooth Max Client = 5







Bluetooth Max Client = 7

## **Bluetooth Friendly Name**

You can set a meaningful name for PowerScan BT9300 that will appear in the application during device discovery.

To set a new Bluetooth Friendly Name, scan the barcode below and follow the instructions.



Set Bluetooth Friendly Name

To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by a maximum 64 digits from the Alphanumeric characters in **Appendix D**, **Keypad**. The digits must be the hexadecimal ASCII representation of the desired characters. If less than the expected string of 32 characters are selected, scan the ENTER/ EXIT bar code to terminate the string.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.







# **Bluetooth Reconnect Attempt Mode**

Enable/Disable reconnection by trigger pull.



Bluetooth Reconnect Attempt Mode = Disable



Bluetooth Reconnect Attempt Mode = Enable



# **HID Country Mode**

When the Reader is connected with a Bluetooth Adapter in HID mode, you may want to set the country for which your PC is localized. In order to do that, read one of the configuration command labels below.



Country Mode = U.S.





Country Mode = Britain



Country Mode = Croatia



# HID Country Mode (continued)







Country Mode = France











ountry Mode = Lithuanian

Country Mode = Italy



# HID Country Mode (continued)



















# **PM9300-ONLY FEATURES**

The features in this section are valid only for the PowerScan PM9300 Star model:

- STAR Radio Protocol Timeout on page 223
- STAR Radio Transmit Mode on page 224

#### **STAR Radio Protocol Timeout**

This parameter sets the valid wait time before transmission between the handheld reader and Base Station is considered failed.

When setting this parameter, take into consideration the radio traffic (number of readers in the same area). The selectable range for this feature is from 02 to 25 seconds. See page 280 in "References" for detailed information and examples for setting this feature.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by two digits from the Alphanumeric characters in **Appendix D**, **Keypad** representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.







#### STAR Radio Transmit Mode

Specifies the transmission protocol for Star communications.

Options are:

- ACK from cradle to scanner signals a good transmission as soon as the Base Station receives a label
- ACK when sent to host scanner signals a good transmission as soon as the Base Station has sent the label to the host
- ACK from host scanner signals a good transmission as soon as the Base Station has sent the label to the host and host has replied with an acknowledge message.





ACK from cradle







ACK from host works only for RS-232 or USB-COM interfaces with ACK/NACK disabled. If ACK from host is configured with any other interface conditions, it works like ACK when sent to host. See "Message Formatting" on page 283 for details. For this feature to be operational, the scanner must be set to Ignore Host Commands (see page 23).

#### **Radio Sleep**

This feature disables the radio when the scanner is in standby mode in order to save the battery power. When Radio sleep is enabled, the scanner cannot receive asynchronous messages nor paging button requests from the base. The scanner is still able to receive ACK From Host message. See Transmit mode.





Sleep Enable







## **Changing System Speed**

- 1. Link the PM9300 with a BC9xxx Base.
- 2. With the PM9300, read a New System Speed programming label.
- 3. Place the PM9300 into the BC9xxx.



DEFAULT

Normal Mode: Low Speed (1)



The Reader and Base will now be linked at the new programmed speed.

This feature can also be programmed using Datalogic Aladdin.

- 1. On the BC9xxx Base, change the System Speed.
- 2. Place an unlinked PM9300 onto the BC9xxx base.

The Reader and base will link at the new programmed speed.



Restore Default command does not modify this parameter.



### **Frequency Agility**

In exceptionally noisy environments or in case of a high concentration of radio devices, Star system performance may be improved by configuring Frequency Agility. Frequency Agility parameters change the way the radio frequencies are used in a Star communication system.

As when changing the System Speed, use the following procedure:

- 1. Link the PM9300 with a BC9xxx Base.
- 2. With the PM9300, read one of the "Frequency Agility" programming labels below.
- 3. Place the PM9300 into the BC9xxx.

Reader and Base will then be linked and the new frequencies handling will be operational.





Enable frequency hopping The channel is changed automatically



Restore Default command does not modify this parameter.

NOTE

it is possible to select a fixed channel with a frequency different from the default; please contact Datalogic Technical Support for information about this feature.

For the 910 models, the radio range can change depending on the Frequency Agility parameter value; in particular, at low speed, the radio range is shorter when a fixed channel is programmed. See the Radio Range values in "Radio Features" on page 291 of Technical Specifications.

# **COMPATIBILITY WITH PM8300**

#### **Compatibility Mode**

Powerscan PM9300 offers a limited set of features compatible with the previous PM8300 family. To access those features, see the dedicated Compatible Mode Manual.



# **DISPLAY AND KEYBOARD FEATURES**

Two keyboard models are available, the 4-key model and the 16-key model. The following section contains configuration parameters that are common and applicable to both keypad models, unless specifically labeled as "4-key models only" or "16-key models only".

For more items for the 16-key model, see "Additional Features for 16-key models," starting on page 241.

## **Display Operating Mode**

Select the operating mode of the display. Options are:

- Normal Mode: Display not cleared, no echo of the code on Display.
- Local Echo: Display cleared after decode, echo of the code on display.
- Clear display after decode: Display is cleared after decode, no echo.



Normal Mode = Display not cleared





Clear display after decode



# **Display Off Timeout**

Sets the timeout for display, backlight and keyboard.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by two digits from the Alphanumeric characters in Appendix D, Keypad representing your desired character(s). End by scanning the ENTER/



at the beginning.

EXIT bar code twice. Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again





08 = 8 second delay

# **Backlight Enable**

Enables/Disables the display backlight.









# **Display Contrast**

Adjust the contrast of the display.



Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning. To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by two digits (00-32 by 01) from the Alphanumeric characters in **Appendix D**, **Keypad** representing your desired character(s). End by scanning the ENTER/EXIT bar code twice.



# Font Size

Select the font size<sup>1</sup>.





Font Size = Small



Font Size = Larg

1. 4-keys models only.



### Enable/disable buttons

This feature offers the ability to enable or disable the keypad.

#### Figure 6. PowerScan 9300 Keypad Models



#### **Key Programming**





All keys disabled

To configure this feature, scan the ENTER/EXIT PRO-



Enable a combination of keys (4-key models only)

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

GRAMMING MODE bar code above, then the bar code at left followed by 4 digits from the Alphanumeric characters in **Appendix D**, **Keypad**.





**4-key models only**: the first digit is used to enable or disable the four keys, the other three digit must be zero. To enable a combination of keys, sum each key's related weight, the result is the value to read using the Alphanumeric characters in Appendix D, keypad.

FIRST DIGIT FOR 4K MODEL				
KEY	WEIGHT			
Arrow Up	8			
F2	4			
F1	2			
Arrow Down	1			

**16-key models only**: all the four digit are used to enable or disable keys. To enable a combination of keys, sum each key's related weight, the result is the value to read using the Alphanumeric characters in Appendix D, keypad.

FIRST DIGIT FOR 16K MODEL				
KEY	WEIGHT			
Shift	8			
F4	4			
4	2			
8	1			

THIRD DIGIT FOR 16K MODEL			
KEY	WEIGHT		
F2	8		
2	4		
6	2		
0	1		

FOURTH DIGIT FOR 16K MODEL			
KEY	WEIGHT		
F3	8		
3	4		
7	2		
RETURN	1		



### Arrow Keys Mode (4-key models only)

Configure the Arrow Keys functionality type. Two options are available:

**Function Keys Action Select mode:** When in this mode, arrow keys are used to select one of the 3 possible actions associated to the Function Keys. To associate actions to the Function keys, see "Configure Actions for Function keys" on page 234.

**String Association Mode:** When in this mode, each one of the arrow keys can be programmed to display and transmit a pre-defined string (see "Arrow Up String (4-key models only)" on page 232 and "Arrow Down String (4-key models only)" on page 233. Default string for Up and Down is "=".





# Arrow Up String (4-key models only)

Associate a pre-defined string to the Arrow Up key



Set string for Arrow Up Key

To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left. Define the label string by further scanning 32 digits from the Alphanumeric characters in Appendix D, Keypad.

The digits must be the hexadecimal ASCII representation of the desired characters; if less than the expected string of 16 characters are selected, scan the ENTER/ EXIT bar code to terminate the string.

End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





# Arrow Down String (4-key models only)

Associate a pre-defined string to the Arrow Down key



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left. Define the label string by further scanning 32 digits from the Alphanumeric characters in **Appendix D**, **Keypad**.

The digits must be the hexadecimal ASCII representation of the desired characters; if less than the expected string of 16 characters are selected, scan the ENTER/ EXIT bar code to terminate the string.

End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



# **CONFIGURE ACTIONS FOR FUNCTION KEYS**

Each of the function keys can be programmed to perform a user-assigned function. This is done by associating a function key with either a predefined command or your own custom string. See the "Define Strings" on page 238command to define customized strings.

Each function key has an associated label which shows in the display when active. The default labels are shown in the table below. To program the function key labels, see "Set String ID" on page 239.

The following table shows the list of predefined commands and available strings.

#### Table 30. Keyboard Programming

CMD_ID	Name	Function	Default Label	16K	4K
0	Not configured	Not configured action. If a key must be kept enabled but isn't required in normal mode , this function can be selected to keep it ineffective. Whenever an unconfigured function key is pressed, an error message appears on the display and an error beep is emitted.	<none></none>	✓	~
1	Enter CMD	Same as ENTER_KEY.	Ent	$\checkmark$	×
2	String 1	Display and transmit string 1.	S1T	$\checkmark$	$\checkmark$
3	String 2	Display and transmit string 2.	S2T	$\checkmark$	$\checkmark$
4	String 3	Display and transmit string 3.	S3T	$\checkmark$	$\checkmark$
5	String 4	Display and transmit string 4.	S4T	$\checkmark$	$\checkmark$
6	String 5	Display and transmit string 5.	S5T	$\checkmark$	$\checkmark$
7	Backlight CMD	Toggle backlight on/off.	Blt	$\checkmark$	$\checkmark$
8	Clear CMD	Clears the screen	CLR	$\checkmark$	$\checkmark$
9	Backspace CMD	Same as Backspace key.	÷	$\checkmark$	×
А	Recall	If pressed once, it recalls the last code sent out. If pressed twice, resends the last code.	Rcl	$\checkmark$	~
В	Show Date/Time	Display the internal date, time.	Tim	$\checkmark$	$\checkmark$
С	Scroll Up	Scroll up display content by row	Up	$\checkmark$	$\checkmark$
D	Scroll Down	Scroll down display content by row	Dwn	$\checkmark$	$\checkmark$
E	Dot char	Display dot [.] char	[.]	$\checkmark$	×
F	Dynamic Quantity	Dynamic Quantity Code function	Qty	$\checkmark$	×



#### **ACTION CONFIGURATION FOR FUNCTION KEYS**

Configure actions (up to three for 4K model when configured with "Function Keys Action Select Mode") for the function keys

# **Configure Actions for F1**



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code for the Function Key you want to program. Next scan 4 digits from the Alphanumeric characters in **Appendix D**, **Keypad**.

The first digit must be 0, the second is used by 4K and 16K model, the remaining third and fourth are used only by 4K model. Second, third and fourth digit must be configured according to the CMD\_ID numbers in Table 27 on page 253. Confirm the inserted value by scanning the ENTER/EXIT bar code.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

**Configure Actions for F2** 





F2 No Actions Configured





To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code for the Function Key you want to program. Next scan 4 digits from the Alphanumeric characters in **Appendix D**, **Keypad**.

The first digit must be 0, the second is used by 4K and 16K model, the remaining third and fourth are used only by 4K model. Second, third and fourth digit must be configured according to the CMD\_ID numbers in Table 27 on page 253. Confirm the inserted value by scanning the ENTER/EXIT bar code.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



#### FUNCTION KEYS CONFIGURATION (16-KEY MODELS ONLY)

Function Keys F3 through F5 are available on 16-key models only. For more 16-key programming, see "Additional Features for 16-key models" on page 241.

# Configure Actions for F3 (16-key models only)



F3 No Actions Configured

To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code for the Function Key you want to program. Next scan 4 digits from the Alphanumeric characters in **Appendix D**, **Keypad**.

The first digit must be 0, the second digit must be configured according to the CMD\_ID numbers in Table 27 on page 253 . The third and fourth must be zero. Confirm the inserted value by scanning the ENTER/EXIT bar code.



Configure Actions for F3



# Configure Actions for F4 (16-key models only)



Configure Actions for F4



F4 No Actions Configured

To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code for the Function Key you want to program. Next scan 4 digits from the Alphanumeric characters in **Appendix D**, **Keypad**.

The first digit must be 0, the second digit must be configured according to the CMD\_ID numbers in Table 27 on page 253. The third and fourth must be zero. Confirm the inserted value by scanning the ENTER/EXIT bar code

# Configure Actions for Shift (16-key models only)



Configure Actions for Shift



Shift No Actions Configured

To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, disable the SHIFT by reading "Disable SHIFT function" on page 266, then read "Configure Actions for Shift" on the left. Next scan 4 digits from the Alphanumeric characters in Appendix D, Keypad. The first digit must be 0, the second digit must be configured according to the CMD\_ID numbers in Table 27 on page 253. The third and fourth digit must be zero.



# **Define Strings**

#### Configure string 1-5.

To configure this feature, scan the ENTER/EXIT PROGRAMMING MODE bar code at the top of the page, then the bar code for the String you want to set. Define the label string by scanning 32 digits from the Alphanumeric characters in Appendix D, Keypad.

The digits must be the hexadecimal ASCII representation of the desired characters; if less than the expected string of 16 characters are selected, scan the ENTER/EXIT bar code to terminate the string.

End by scanning the ENTER/EXIT bar code twice.













Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





# Set String ID

Sets the identifier of the predefined strings.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 6 digits from the Alphanumeric characters in **Appendix D**, **Keypad**.

The ID characters must be represented by their hexadecimal ASCII code; if the first 2 digits are 0, this feature is disabled. End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



## Set String Header

Sets the header of the predefined strings.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 32 digits from the Alphanumeric characters in **Appendix D**, **Keypad**.

The digits must be the hexadecimal ASCII representation of the desired characters. If less than the expected string of 16 characters are selected, scan the ENTER/EXIT bar code to terminate the string.

If the first 2 digits are 0, the feature is disabled. End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





# Set String Terminator

Sets the terminator of the predefined strings.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 32 digits from the Alphanumeric characters in **Appendix D**, **Keypad**.

The digits must be the hexadecimal ASCII representation of the desired characters. If less than the expected string of 16 characters are selected, scan the ENTER/EXIT bar code to terminate the string.

If the first 2 digits are 0, the feature is disabled. End by scanning the ENTER/EXIT bar code twice.

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.





# **ADDITIONAL FEATURES FOR 16-KEY MODELS**

See also "Function Keys Configuration (16-key models only)" on page 236.

#### Last Code Shown Timeout

After the CODE transmission, the last code read will be shown on the display for a configurable timeout (LAST CODE SHOWN TOUT). .



The standard DISPLAY OFF TIMEOUT (see page 228) has a higher priority than the LAST CODE SHOWN TOUT, so the two parameters should be combined to get the desired result.



Last Code Shown Timeout

Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 2 digits (00-63 by 01) from the Alphanu-

meric characters in **Appendix D**, **Keypad**. End by scanning the ENTER/EXIT bar code twice.

# **Display Time Stamping Mode**

Time Stamping Mode can be applied when entering data from either a barcode, from the keyboard, or both.



Applied to both





Applied only to keyboard data



#### **Mode Selection**

This feature allows the PowerScan 16K model to operate in one of two basic operative modes:

- Normal Mode data entered, either on the keypad or read via barcode, is transmitted to the host once the enter key is pressed, following the configured formatting.
- Quantity/Code Mode Can be further configured. See the next sections for Qty/Code operations. .





# **Quantity Field**

This feature defines the behavior of the scanner if no data is entered in the QTY field so that it is left empty. Options are:

- code is transmitted with default QTY ('1')
- code is transmitted alone (without any quantity information)
- code is discarded and an error beep is generated



ansmit code with default qty (1)



Fransmit Code only



iscard Code


## Quantity/Code Send Mode

This feature defines the rules that will be used to send a QTY/CODE pair:

- 0. Code is transmitted with QTY field (and its predefined format) preceding CODE field (and its predefined format)
- 1. Code is transmitted with CODE field (and its predefined format) preceding QTY field (and its predefined format)
- 2. Code in CODE field is sent out for the number of times defined in the QTY field



DEFAULT



Code transmitted Qty times

## Quantity/Code Separator

This feature allows the insertion of a separator between Qty/Code pairs.





To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the barcode at left. Next scan 1 digit from **Appendix D**, **Keypad** (in the range 1-8) representing the number of characters to be used as separator.

Finally, define the separator string by reading the desired characters from the ASCII table at the back of this manual, expressed in hexadecimal form. End by scanning the ENTER/EXIT bar code twice.



## **Interkey Timeout**

The 16-key keypad is organized like a cell phone, with multi-tap access to alpha characters on numeric keys. In alphabetic mode (entered by toggling the SHIFT key), the keys must be pressed once, twice, or more to obtain the desired letter.

This command allows you to specify the time which occurs between a key press, and the confirmation of the letter by the scanner (when in alpha mode). The timeout can be configured in increments of 0.5 second.







1.0 seconds



2.0 seconds



## Append Code

This function defines how a scanned barcode interacts with a pre-edited CODE field, or with a string entered by a preprogrammed FUNC KEY. Options are:

- 0. Barcode data overwrites what is written in the CODE field by keyboard and the code is transmitted;
- 1. Barcode data is appended to any text in the CODE field and the code is transmitted;
- 2. Barcode data is appended to any text in the CODE field but the code IS NOT transmitted. Data is transmitted when the enter key is pressed.









## Echo

This function enables/disables the keypad echo. It works only when the scanner is in simple data input mode (no QTY/CODE).







No echo on any key

## **Keypress Sound**

Enables/disables the KEY press sound ('click').









## SHIFT Enable/Disable

This function enables/disables the SHIFT function.







## SHIFT key association

This function allows the association of the SHIFT function to one of the following keys: F1, F2, F3, F4,  $\uparrow$  (up arrow key).



Associate SHIFT to F1



Associate SHIFT to F2



Associate SHIFT to Fa



Associate SHIFT to F4







#### Lower Case

This function enables/disables the capability to use the SHIFT key to switch to Lower Case (alphanumeric) mode. When enabled, the indication in the upper right corner of display is 'ab'.



Disable Lower Case



Enable Lower Case

#### **SET FUNCTION KEY LABELS**

## Set F1 Label

This item allows the user to change the default mnemonic label associated to each individual function key. This is done by programming a short acronym 4-character string to be shown in the bottom of the display. The purpose of the label is to serve as an indication of the programmed function of the Function Key below it.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 8 digits from the **Appendix D**, **Key– pad**. The digits must be the hexadecimal ASCII representation of the desired characters.

End by scanning the ENTER/EXIT bar code twice.

## Set F2 Label

This item allows the user to change the default mnemonic label associated to each individual function key. This is done by programming a short acronym 4-character string to be shown in the bottom of the display. The purpose of the label is to serve as an indication of the programmed function of the Function Key below it.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 8 digits from the **Appendix D**, **Key– pad**. The digits must be the hexadecimal ASCII representation of the desired characters.

End by scanning the ENTER/EXIT bar code twice.



## Set F3 Label

This item allows the user to change the default mnemonic label associated to each individual function key. This is done by programming a short acronym 4-character string to be shown in the bottom of the display. The purpose of the label is to serve as an indication of the programmed function of the Function Key below it.



GRAMMING MODE bar code above, then the bar code at left followed by 8 digits from the **Appendix D**, **Key**–**pad**. The digits must be the hexadecimal ASCII representation of the desired characters.

To configure this feature, scan the ENTER/EXIT PRO-

End by scanning the ENTER/EXIT bar code twice.

## Set F4 Label

This item allows the user to change the default mnemonic label associated to each individual function key. This is done by programming a short acronym 4-character string to be shown in the bottom of the display. The purpose of the label is to serve as an indication of the programmed function of the Function Key below it.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 8 digits from the **Appendix D**, **Key**– **pad**. The digits must be the hexadecimal ASCII representation of the desired characters.

End by scanning the ENTER/EXIT bar code twice.



## Barcode/Key Different Data Format

If this parameter is enabled, barcode and keyboard entered data can be formatted separately. More specifically: if this parameter is disabled, barcode and keyboard data will share the same Header and Terminator defined using "Set Barcode Header" and "Set Barcode Terminator" below. If this parameter is enabled, keyboard entered data are treated differently, as their format must be programmed through the parameters "Set String Header", "Set String Terminator", "Set Key Sequence Header" and "Set Key Sequence Terminator".





## Set Barcode Header

Sets the header for barcode and keyboard composed strings.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 32 digits from the Alphanumeric characters in **Appendix D**, **Keypad**. The digits must be the hexadecimal ASCII representation of the desired characters.

If less than the expected string of 16 characters are selected, scan the ENTER/EXIT bar code to terminate the string. If the first 2 digits are 0, the feature is disabled. End by scanning the ENTER/EXIT bar code twice.

## Set Barcode Terminator

Sets the terminator for barcode and keyboard composed strings.



Set barcode terminator

To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 32 digits from the Alphanumeric characters in **Appendix D**, **Keypad**. The digits must be the hexadecimal ASCII representation of the desired characters.

If less than the expected string of 16 characters are selected, scan the ENTER/EXIT bar code to terminate the string. If the first 2 digits are 0, the feature is disabled. End by scanning the ENTER/EXIT bar code twice.



## Set Key Sequence ID

Sets the identifier for keyboard composed strings.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 6 digits from Appendix D, Keypad.

The ID characters must be represented by their hexadecimal ASCII code; if the first 2 digits are 0, this feature is disabled. End by scanning the ENTER/EXIT bar code twice.

## Set Key Sequence Header

Sets the header for keyboard composed strings.



To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 32 digits from the Alphanumeric characters in Appendix D, Keypad. The digits must be the hexadecimal ASCII representation of the desired characters.

If less than the expected string of 16 characters are selected, scan the ENTER/EXIT bar code to terminate the string.

If the first 2 digits are 0, the feature is disabled. End by scanning the ENTER/EXIT bar code twice.

## Set Key Sequence Terminator

Sets the terminator for keyboard composed strings.



ev sequence terminato

To configure this feature, scan the ENTER/EXIT PRO-GRAMMING MODE bar code above, then the bar code at left followed by 32 digits from the Alphanumeric characters in Appendix D, Keypad. The digits must be the hexadecimal ASCII representation of the desired characters.

If less than the expected string of 16 characters are selected, scan the ENTER/EXIT bar code to terminate the string.

If the first 2 digits are 0, the feature is disabled. End by scanning the ENTER/EXIT bar code twice.



# NOTES

# 

## Chapter 4 References

This section contains explanations and examples of selected bar code features. See Configuration Using Bar Codes, starting on page 21 for the actual bar code labels used to configure the reader.

RS-232 PARAMETERS on page 254 RS-232 Only on page 254 RS-232/USB COM Parameters on page 256
KeyBOARD INTERFACE on page 263 • Wedge Quiet Interval on page 263 • Intercharacter Delay on page 264 • Intercode Delay on page 265
<ul> <li>SYMBOLOGIES on page 266</li> <li>Datamatrix DPM Decoding Safety on page 283</li> <li>Set Length on page 266</li> </ul>
DATA EDITING on page 268 • Global Prefix/Suffix on page 269 • Global AIM ID on page 269 • Label ID on page 271 • Character Conversion on page 275
<b>READING PARAMETERS</b> on page 276 • Good Read LED Duration on page 276
<ul> <li>SCANNING FEATURES on page 277 <ul> <li>Scan Mode on page 277</li> <li>Stand Mode Off Time on page 296</li> <li>No trigger pull is required to read a bar code. Scanning is continually on. If the trigger is pulled, the reader acts as if it is in Trigger Single Mode. Double Read Timeout prevents undesired multiple reads of the same label while in this mode. on page 277</li> <li>Symbology Hex Values on page 278</li> <li>Symbology Hex Values on page 278</li> <li>Flash Off Time on page 300</li> <li>Multiple Labels Ordering by Code Symbology on page 301</li> </ul> </li> </ul>

#### WIRELESS FEATURES starting on page 279

- Automatic Configuration Update
- RF Address Stamping
- RF Address Stamping
- Bluetooth–Only Features
- Bluetooth–Only Features

WIRELESS FEATURES on page 279

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## **RS-232** Parameters

## RS-232 Only

#### Baud Rate

Baud rate is the number of bits of data transmitted per second. Set the reader's baud rate to match the baud rate setting of the host device. With an improper baud rate setting, data may not reach the host correctly.

#### **Stop Bits**

The stop bit(s) at the end of each transmitted character marks the end of transmission of one character and prepares the receiving device for the next character in the serial data stream. The number of stop bits selected (one or two) depends on the number the receiving terminal is programmed to accommodate. Set the number of stop bits to match host device requirements.

#### Parity

This feature specifies parity required for sending and receiving data. A parity check bit is the most significant bit of each ASCII coded character. Select the parity type according to host device requirements.

- Select None when no parity bit is required.
- Select Odd parity and the parity bit value is set to 0 or 1, based on data, to ensure that an odd number of 1 bits are contained in the coded character.
- Select Even parity and the parity bit value is set to 0 or 1, based on data, to ensure that an even number of 1 bits are contained in the coded character.

#### Handshaking Control

The data interface consists of an RS-232 port designed to operate either with or without the hardware handshaking lines, *Request to Send* (RTS), and *Clear to Send* (CTS). Handshaking Control includes the following options:

- RTS RTS is asserted during transmissions. CTS is ignored.
- RTS/CTS RTS is asserted during transmissions. CTS gates transmissions.
- RTS/XON/XOFF RTS is asserted during transmissions. CTS is ignored. XON and XOFF gate transmissions.
- RTS On/CTS RTS is always asserted. CTS gates transmissions.

RTS/CTS Scan Control — RTS is asserted during transmissions. CTS gates transmissions and controls enable and disable state of scanner.

## RS-232/USB COM Parameters

#### **Intercharacter Delay**

This parameter specifies the intercharacter delay between the end of one character and the beginning of the next. The delay can be set within a range of zero (0) to 990 milliseconds in 10ms increments. A setting of zero specifies no delay.

To set the delay:

- 1. Determine the desired setting in milliseconds.
- 2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
- 3. Scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode.
- 4. Go to page 30 and scan the bar code: SELECT INTERCHARACTER DELAY SETTING.
- 5. Scan the appropriate two digits from the keypad in Appendix D, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit.

This completes the procedure. See Table 31 for some examples of how to set this feature.

#### Table 31. Intercharacter Delay Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	50ms	150ms	600ms	850ms
2	Divide by 10 (pad with leading zeroes to yield two-digits)	05	15	60	85
3	Scan ENTER/EXIT PROGRAM	MING MODE			
4	Scan SELECT INTERCHARAC	TER DELAY SET	TING		
5	Scan Two Characters From Appendix D, Keypad	'O' and '5'	'5' and '0'	'6' and '0'	'8' and '5'
6	Scan ENTER/EXIT PROGRAMMING MODE				

#### **ACK NAK Options**

This enables/disables the ability of the reader to support the RS-232 ACK/ NAK protocol. When configured, the reader and/or host sends an "ACK" when it receives data properly, and sends "NAK" when the data is in error.

Options are:

- Disable
- Enable for label transmission The reader expects an ACK/NAK response from the host when a label is sent.
- Enable for host-command acknowledge The reader will respond with ACK/NAK when the host sends a command.
- Enable for label transmission and host-command acknowledge

#### **ACK Character**

This setting specifies an ASCII character or hex value to be used as the ACK character. ASCII characters or any hex value from 0 to 0xFF can be selected.



Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.

- 1. Determine the desired character or value.
- 2. Use the ASCII Chart on the inside back cover of this manual to find the hex equivalent for the desired character/value.
- 3. Go to page 32 and scan ENTER/EXIT PROGRAMMING MODE to enter Programming Mode.
- 4. Scan the bar code: SELECT ACK CHARACTER SETTING.
- 5. Scan the appropriate two alphanumeric characters from the keypad in Appendix D, Keypad, that represent the desired character/value in step 1 above. The second character will cause a two-beep indication.
- 6. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit.

See Table 32 for some examples of how to set this feature.

STEP	ACTION	EXAMPLES			
1	Desired Character/Value	ACK	\$	Ø	>
2	Hex equivalent from ASCII Chart	0x06	0x24	0x40	0x3E
3	Scan ENTER/EXIT PROGRAM	MMING MODE			
4	Scan SELECT ACK CHARACT	ER SETTING			
5	<b>Scan Two Characters from</b> Appendix D, Keypad	'O' and '6'	'2' and '4'	'4' and '0'	'3' AND 'E'
6	Scan ENTER/EXIT PROGRAMMING MODE				

#### Table 32. ACK Character Setting Examples

#### NAK Character

This setting specifies an ASCII character or hex value to be used as the NAK character. ASCII characters or any hex value from 0 to 0xFF can be selected.

I	
4	P

Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.

To set this feature:

- 1. Determine the desired character or value.
- 2. Use the ASCII Chart on the inside back cover of this manual to find the hex equivalent for the desired character/value.
- 3. Go to page 32 and scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode.
- 4. Scan the bar code: SELECT NAK CHARACTER SETTING.
- 5. Scan the appropriate two alphanumeric characters from the keypad in Appendix D, Keypad, that represent the desired character/value in step 1 above. The second character will cause a two-beep indication.
- 6. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit Programming Mode.

This completes the procedure. See Table 33 for some examples of how to set this feature.

#### Table 33. NAK Character Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Character/Value	NAK	\$	0	>
2	<b>Hex equivalent from</b> ASCII Chart	0x15	0x24	0x40	0x3E
3	Scan ENTER/EXIT PROGRAM	MMING MODE			
4	Scan SELECT NAK CHARACT	ER SETTING			
5	Scan Two Characters From Appendix D, Keypad	'1' and '5'	'2' and '4'	'4' and '0'	'3' AND 'E'
6	Scan ENTER/EXIT PROGRAMMING MODE				

#### ACK NAK Timeout Value

This option specifies the amount of time the reader waits for an ACK character from the host following label transmission. The selectable timeout range is 200 milliseconds to 15,000ms (15 seconds) in 200ms increments. A selection of 0 disables the timeout.

To set this value:

- 1. Determine the desired setting in milliseconds.
- 2. Divide the desired setting by 200 (setting is in 200ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
- 3. Go to page 33 and scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode.
- 4. Scan the bar code: SELECT ACK NAK TIMEOUT VALUE SETTING.
- 5. Scan the appropriate two digits from the keypad in Appendix D, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit Programming Mode.

This completes the procedure. See Table 34 for some examples of how to set this feature.

STEP	ACTION	EXAMPLES			
1	Desired Setting	200ms	1,000ms (1 sec.)	5200ms (5.2 sec.)	15,000ms (15 sec.)
2	Divide by 200	01	05	26	75
3	Scan ENTER/EXIT PROGRAM	MMING MODE			
4	Scan SELECT ACK NAK TIME	OUT VALUE SE	TTING		
5	<b>Scan Two Characters From</b> Appendix D, Keypad	'O' and '1'	'O' and '5'	'2' and '6'	'7' and '5'
6	Scan ENTER/EXIT PROGRAMMING MODE				

#### Table 34. ACK NAK Timeout Value Setting Examples

#### **ACK NAK Retry Count**

This feature specifies the number of times the reader retries a label transmission due to a retry condition. The selectable range is from 1 to 254 retries. A selection of 0 disables the count, and a selection of 255 specifies unlimited retries.

To set this feature:

- 1. Determine the desired setting.
- 2. Pad the number with leading zeroes to yield three digits. For example: 0 = 000, 5 = 005, 20 = 020, etc.
- 3. Go to page 33 and scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode.
- 4. Scan the bar code: SELECT ACK NAK RETRY COUNT SETTING.
- 5. Scan the appropriate three digits from the keypad in Appendix D, Keypad, that represent the number which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit Programming Mode.

This completes the procedure. See Table 35 for some examples of how to set this feature.

STEP	ACTION	EXAMPLES			
1	Desired Setting	Disable Retry Count	3 Retries	54 Retries	Unlimited Retries
2	Pad with leading zero(es)	000	003	054	255
3	Scan ENTER/EXIT PROGRAM	MMING MODE			
4	Scan SELECT ACK NAK RETR		NG		
5	<b>Scan Three Characters From</b> Appendix D, Keypad	'O', 'O' and 'O'	'0', '0' and '3'	'0', '5' and '4'	'2', '5' and '5'
6	Scan ENTER/EXIT PROGRAMMING MODE				

#### Table 35. ACK NAK Retry Count Setting Examples

#### **Disable Character**

Specifies the value of the RS-232 host command used to disable the reader. ASCII characters or any hex value from 0 to 0xFF can be selected.



Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.

To set the value:

- 1. Determine the desired character or value. A setting of 0xFF indicates the Disable Character is not used (not available).
- 2. Use the ASCII Chart on the inside back cover of this manual to find the hex equivalent for the desired character/value.
- 3. Go to page 35 and scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode.
- 4. Scan the bar code: SELECT DISABLE CHARACTER SETTING.
- 5. Scan the appropriate two alphanumeric characters from the keypad in Appendix D, Keypad, that represent the desired character/value in step 1 above. The second character will cause a two-beep indication.
- 6. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit Programming Mode.

This completes the procedure. See Table 36 for some examples of how to set this feature.

STEP	ACTION	EXAMPLES			
1	Desired character/value	'd'	'}'	'D'	Disable Command Not Used
2	<b>Hex equivalent from</b> ASCII Chart	0x64	0x7D	0x44	0xFF
3	Scan ENTER/EXIT PROGRAM	MMING MODE			
4	Scan SELECT DISABLE CHAF	ACTER VALUE	SETTING		
5	<b>Scan Two Characters From</b> Appendix D, Keypad	'6' and '4'	'7' and 'D'	'4' and '4'	'F' AND 'F'
6	Scan ENTER/EXIT PROGRAMMING MODE				

#### **Table 36. Disable Character Setting Examples**

#### **Enable Character**

Specifies the value of the RS-232 host command used to enable the reader. ASCII characters or any hex value from 0 to 0xFF can be selected.

	NOTE
1	
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Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.

#### To set this feature:

Determine the desired character or value. A setting of 0xFF indicates the Enable Character is not used (not available).

- 1. Determine the desired character or value.
- 2. Use the ASCII Chart on the inside back cover of this manual to find the hex equivalent for the desired character/value.
- 3. Go to page 35 and scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode.
- 4. Scan the bar code: SELECT ENABLE CHARACTER SETTING.
- 5. Scan the appropriate two alphanumeric characters from the keypad in Appendix D, Keypad, that represent the desired character/value in step 2 above. The second character will cause a two-beep indication.
- 6. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit Programming Mode.

This completes the procedure. See Table 37 for some examples of how to set this feature.

STEP	ACTION	EXAMPLES			
1	Desired character/value	'e'	3'	'E'	Enable Command Not Used
2	<b>Hex equivalent from</b> ASCII Chart	0x65	0x7D	0x45	OxFF
3	Scan ENTER/EXIT PROGRAM	MMING MODE			
4	Scan SELECT ENABLE CHAR	ACTER VALUE	SETTING		
5	Scan Two Characters From Appendix D, Keypad	'6' and '5'	'7' and 'D'	'4' and '5'	'F' AND 'F'
6	Scan ENTER/EXIT PROGRAMMING MODE				

#### **Table 37. Enable Character Setting Examples**

## **Keyboard Interface**

## Wedge Quiet Interval

Specifies the amount of time the reader looks for keyboard activity before it breaks the keyboard connection in order to transmit data to host. The range is from 0 to 990ms in 10ms increments.



This feature applies ONLY to the Keyboard Wedge interface.

- 1. Determine the desired setting in milliseconds.
- 2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
- 3. Go to page 42 and scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Prog. Mode.
- 4. Scan the bar code: SELECT WEDGE QUIET INTERVAL SETTING.
- 5. Scan the appropriate two digits from the keypad in Appendix D, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit.

This completes the procedure to set the Wedge Quiet Interval. See Table 38 for some examples of how to set this feature.

STEP	ACTION	EXAMPLES			
1	Desired Setting	10ms	150ms	600ms	850ms
2	Divide by 10 (and pad with leading zeroes)	01	15	60	85
3	Scan ENTER/EXIT PROGRAM	MMING MODE			
4	Scan SELECT WEDGE QUIET	INTERVAL SET	TING		
5	Scan Two Characters From Appendix D, Keypad	'0' and '1'	'1' and '5'	'6' and '0'	'8' and '5'
6	Scan ENTER/EXIT PROGRAMMING MODE				

#### Table 38. Wedge Quiet Interval Setting Examples

## **Intercharacter Delay**

This parameter specifies the intercharacter delay between the end of one character and the beginning of the next. The delay can be set within a range of zero (0) to 990 milliseconds in 10ms increments. A setting of zero specifies no delay.



This feature applies ONLY to the Keyboard Wedge interface.

To set the delay:

- 1. Determine the desired setting in milliseconds.
- 2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
- 3. Go to page 30 and scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode.
- 4. Scan the bar code: SELECT INTERCHARACTER DELAY SETTING.
- 5. Scan the appropriate two digits from the keypad in Appendix D, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit Programming Mode.

This completes the procedure. See Table 39 for some examples of how to set this feature.

#### STEP ACTION **EXAMPLES** 1 Desired Setting 50ms 150ms 600ms 850ms Divide by 10 (and pad with leading zeroes to yield 2 05 15 60 85 two-digits) 3 Scan ENTER/EXIT PROGRAMMING MODE Scan SELECT INTERCHARACTER DELAY SETTING 4 Scan Two Characters From 5 '0' and '5' '1' and '5' '6' and '0' '8' and '5' Appendix D, Keypad 6 Scan ENTER/EXIT PROGRAMMING MODE

#### Table 39. Intercharacter Delay Setting Examples

### Intercode Delay

Specifies the delay between labels transmitted to the host for this interface. The selectable range for this feature is from 0 to 99 seconds.

Follow these instructions to set this feature:

- 1. Determine the desired setting.
- 2. Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc
- 3. Go to page 42 and scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode.
- 4. Scan the bar code: SELECT INTERCODE DELAY SETTING.
- 5. Scan the appropriate two digits from the keypad in Appendix D, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit Programming Mode.

This completes the procedure. See Table 40 for some examples of how to set this feature.

#### Table 40. Wedge Intercode Delay Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	No Delay	5 Seconds	60 Seconds	99 Seconds
2	Pad with leading zero(es)	00	05	60	99
3	Scan ENTER/EXIT PROGRAM	MMING MODE			
4	Scan SELECT INTERCODE DE	LAY SETTING			
5	<b>Scan Two Characters From</b> Appendix D, Keypad	'O' and 'O'	'O' and '5'	'6' and '0'	'9' AND '9'
6	Scan ENTER/EXIT PROGRAMMING MODE				

## Symbologies

## **Decoding Safety**

Decoding Safety is used to configure a decoder to be very aggressive to very conservative, depending on a particular customer's needs.

- Level 1 results in a very aggressive decoder.
- Level 5 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.

There are many factors that determine when to change the decoding safety. These factors include spots, voids, non-uniform backgrounds, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, decrease the decoding safety to be more aggressive. In case of rigorous reliability application requirements it is suggested to use higher decoding safety values (conservative).

## Set Length

Length Control allows you to select either variable length decoding or fixed length decoding for the specified symbology.

**Variable Length:** For variable length decoding, a minimum and maximum length may be set.

Fixed Length: For fixed length decoding, two different lengths may be set.

#### Set Length 1

This feature specifies one of the bar code lengths for Length Control. Length 1 is the minimum label length if in Variable Length Mode, or the first fixed length if in Fixed Length Mode. Length includes the bar code's data characters only.

The number of characters that can be set varies, depending on the symbology. Reference the page for your selected symbology to see specific variables.

- 1. Determine the desired character length (varies depending on symbology). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
- 2. Go to the Set Length page for your selected symbology and scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode.
- 3. Scan the bar code to SELECT LENGTH 1 SETTING for your selected symbology.
- 4. Scan the appropriate two digits from the keypad in Appendix D, Keypad, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning. 5. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit Prog Mode.

## Set Length 2

This feature allows you to set one of the bar code lengths for the specified symbology. Length 2 is the maximum label length if in Variable Length Mode, or the second fixed length if in Fixed Length Mode. See the page for the specific symbology for parameters.

The length that can be set varies depending on the symbology. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

- 1. Determine the desired character length (from 1 to 50 or 0 to ignore this length). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
- 2. Go to the Set Length page for your selected symbology and scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode.
- 3. Scan the bar code to SELECT LENGTH 2 SETTING for your selected symbology.
- 4. Scan the appropriate two digits from the keypad in Appendix D, Keypad that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake, before the last character scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

5. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit Programming Mode.

This completes the procedure.

## **Data Editing**

When a bar code is scanned, additional information can be sent to the host computer along with the bar code data. This combination of bar code data and supplementary user-defined data is called a "message string." The Data Editing features can be used to build specific user-defined data into a message string.

There are several types of selectable data characters that can be sent before and after scanned data. You can specify if they should be sent with all symbologies, or only with specific symbologies. Figure 7 shows the available elements you can add to a message string:

#### Figure 7. Breakdown of a Message String





Additional advanced editing is available. See the Advanced formatting features in the Datalogic Aladdin configuration software, or contact Technical Support (as described on page 2) for more information.

#### Please Keep In Mind...

- Modifying a message string is not a mandatory requirement. Data editing is a sophisticated feature allowing highly customizable output for advanced users. Factory default settings for data editing is typically set to NONE.
- A prefix or suffix may be applied only to a specified symbology (reference Symbologies, starting on page 75 or across all symbologies (set via the Global features in this chapter).
- You can add any character from the ASCII Chart (from 00-FF) on the inside back cover of this manual as a prefix, suffix or Label ID.
- Enter prefixes and suffixes in the order in which you want them to appear on the output.

## **Global Prefix/Suffix**

Up to 20 ASCII characters may be added as a prefix (in a position before the bar code data) and/or as a suffix (in a position following the bar code data) as indicated in Figure 8.

#### **Figure 8. Prefix and Suffix Positions**



#### **Example: Setting a Prefix**

In this example, we'll set a prefix for all symbologies.

- 1. Determine which ASCII character(s) are to be added to scanned bar code data. In this example, we'll add a dollar sign ('\$') as a prefix.
- 2. Go to page 50 and scan the ENTER/EXIT PROGRAMMING MODE bar code, then scan the SET GLOBAL PREFIX bar code.
- 3. Reference the ASCII Chart on the inside back cover of this manual to find the hex value assigned to the desired character. The corresponding hex number for the '\$' character is 24. To enter this selection code, scan the '2' and '4' bar codes from Appendix D, Keypad.



If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

- 4. If less than the expected string of 20 characters are selected, scan the ENTER/EXIT bar code to terminate the string.
- 5. Scan the ENTER/EXIT bar code once again to exit Programming Mode.
- 6. The resulting message string would appear as follows: Scanned bar code data: 12345 Resulting message string output: \$12345

## **Global AIM ID**



This feature enables/disables addition of AIM IDs for all symbology types.

AIM label identifiers (as opposed to custom characters you select yourself as with label identifiers) can be included with scanned bar code data. AIM label identifiers consist of three characters as follows:

- A close brace character (ASCII ']'), followed by...
- A code character (see the table below), followed by...

- CHAR SYMBOLOGY CHAR **SYMBOLOGY** UPC/EAN Code 128/GS1-128 С Ea DataBar Omnidirec-Code 39 and А tional, DataBar е Code 32 Expanded Codabar F Standard 2 of 5 S Interleaved 2 of 5 I ISBN Хp Code 93 G Code 11 Н
- A modifier character (the modifier character is symbol dependent).

- a. UPC-A and UPC-E labels are converted to EAN 13 when adding AIM IDs.
- b. ISBN (X with a 0 modifier character)

#### Figure 9. AIM ID



## Label ID

A Label ID is a customizable code of up to three ASCII characters (each can be one of hex 0x01-0xFF), used to identify a bar code (symbology) type. It can be appended previous to or following the transmitted bar code data depending upon how this option is enabled. This feature provides options for configuring custom Label IDs as a pre-loaded set (see "Label ID: Preloaded Sets" below) or individually per symbology (see "Label ID: Set Individually Per Symbology" on page 273). If you wish to program the reader to always include an industry standard label identifier for ALL symbology types, see "Global AIM ID" on page 51.

#### Label ID: Pre-loaded Sets

The reader supports two pre-loaded sets of Label IDs. Table 41 shows the USA and the EU sets.



When changing from one Label ID set to another, all other reader configuration settings, including the host interface type, will be erased and set to the standard factory defaults. Any custom configuration or custom defaults will be lost.

Table 41.	Label ID	Pre-loaded	Sets
-----------	----------	------------	------

	USA Label ID set		EU Label ID set	
Symbology	Default Character	Default ASCII	Default Character	Default ASCII
CODABAR	%	250000	R	520000
CODE11	CE	434500	b	620000
CODE128	#	230000	Т	540000
CODE32	А	410000	Х	580000
CODE39	*	2A0000	V	560000
CODE39 CIP	Y	590000	Y	590000
CODE93	&	260000	U	550000
DATABAR 14	R4	523400	u	750000
DATABAR 14 COMPOSITE	R4	523400	С	523400
DATABAR EXPANDED	RX	525800	t	740000
DATABAR EXPANDED COMPOSITE	RX	525800	d	525800
DATABAR LIMITED	RL	524C00	V	760000
DATABAR LIMITED COMPOSITE	RL	524C00	i	524C00
EAN128		000000	k	6B0000
EAN128 COMPOSITE		000000	\$E	244500
EAN13	F	460000	В	420000
EAN13 P2	F	460000	L	4C0000

	USA Label ID set		EU Label ID set	
Symbology	Default Character	Default ASCII	Default Character	Default ASCII
EAN13 P5	F	460000	М	4D0000
EAN13 COMPOSITE	F	460000	\$F	244600
EAN8	FF	464600	А	410000
EAN8 P2	FF	464600	J	4A0000
EAN8 P5	FF	464600	К	4B0000
EAN8 COMPOSITE	FF	464600	\$G	244700
FOLLET 20F5	0	4F0000	0	4F0000
GTIN	G	470000	\$A	244100
GTIN2	G2	473200	\$B	244200
GTIN5	G5	473500	\$C	244300
120F5	i	690000	Ν	4E0000
IATA INDUSTRIAL 20F5 (Only standard optic models)	IA	494100	&	260000
INDUSTRIAL 20F5	W	570000	W	570000
ISBN	I	490000	0	400000
ISBT128 CONCAT	f	660000	f	660000
ISSN	n	6E0000	n	6E0000
MSI	0	400000	Z	5A0000
PLESSEY	а	610000	a	610000
S25	S	730000	Р	500000
UPCA	А	410000	С	430000
UPCA P2	А	410000	F	460000
UPCA P5	А	410000	G	470000
UPCA COMPOSITE	А	410000	\$H	244800
UPCE	E	450000	D	440000
UPCE P2	E	450000	Н	480000
UPCE P5	E	450000	I	490000
UPCE COMPOSITE	E	450000	\$J	244A00

#### Label ID: Set Individually Per Symbology

To configure a Label ID individually for a single symbology:

- 1. Go to page 55 and scan the ENTER/EXIT bar code.
- 2. Select Label ID position as either BEFORE (Enable as Prefix) or AFTER (Enable as suffix) by scanning the appropriate bar code in the section "Label ID Control" on page 55. Reference Figure 10 for Label ID positioning options if multiple identification features are enabled.
- 3. Scan a bar code to select the symbology for which you wish to configure a custom Label ID from the section "Label ID Symbology Selection" on page 56.
- 4. Determine the desired character(s) (you may choose up to three) which will represent the Label ID for the selected symbology.
- 5. Turn to the ASCII Chart on the inside back cover of this manual and find the equivalent hex digits associated with your choice of Label ID. For example, if you wish to select an equal sign (=) as a Label ID, the chart indicates its associated hex characters as 3D. Turn to Keypad, starting on page 313 and scan the bar codes representing the hex characters determined. For the example given, the characters '3' and 'D' would be scanned. More examples of Label ID settings are provided in Table 42.



If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

- 6. Scan the ENTER/EXIT bar code to exit Label ID entry.
- 7. Scan the ENTER/EXIT bar code once again to exit Programming Mode.

This completes the steps to configure a Label ID for a given symbology.

#### Figure 10. Label ID Position Options



Table 42. Label ID Examples					
STEP	ACTION	EXAMPLES			
1.	Scan the ENTER/EXIT bar code	(Scanner enters Programming Mode)			
2.	Determine placement of the Label ID characters BEFORE or AFTER with regard to scanned data using Label ID Control, starting on page 55	Enable as Prefix	Enable as Suffix	Enable as Prefix	Enable as Suffix
3.	Scan the bar code selecting the symbology type you wish to designate label ID characters for using Label ID Symbology Selection, starting on page 56.	DataBar Omnidirectional	Code 39	Interleaved 2 of 5	Code 32
4.	Custom Label ID example (desired characters):	D B *	= C 3	+	ΡH
5.	Find hex equivalents from the ASCII Chart(inside back cover), then scan in these digits/characters using the bar codes in the section: Keypad, starting on page 313. If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.	44 42 2A	3D 43 33	28	50 48
6.	Scan the ENTER/EXIT bar code	(Scanner exits Label ID entry)			
7.	Scan the ENTER/EXIT bar code once again	(Scanner exits Programming Mode)			
Result	:	DB*[bar code data]     [bar code data]     +[bar code data]       [bar code     [bar code data]			

#### Table 42. Label ID Examples

#### **Character Conversion**

Character conversion is an eight byte configuration item. The eight bytes are 4 character pairs represented in hexadecimal ASCII values. The first character in the pair is the character that will be converted. The second character in the pair is the character to convert to. If the character to convert in a pair is FF, then no conversion is done.

For example, if you have the character conversion configuration item set to the following: 41423132FFFFFFF

The first pair is 4142 or AB (41 hex is an ASCII capital A, 42 hex is an ASCII capital B) and the second pair is 3132 or 12 (31 hex is an ASCII 1, 32 is an ASCII 2). The other two pairs are FFFF and FFFF.

With the label, AB12BA21, it would look as follows after the character conversion: BB22BB22.

The A characters were converted to B characters and the 1 characters were converted to 2 characters. Nothing is done with the last two character pairs, since they are all FF.

To set Character Conversion:

- 1. Go to page 61 and scan the ENTER/EXIT bar code.
- 2. Scan the "Configure Character Conversion" bar code.
- 3. Determine the desired string. Sixteen positions must be determined as in the above example. Next, turn to the ASCII Chart on the inside back cover of this manual and find the equivalent hex digits needed to fulfill the string.
- 4. Turn to Appendix D, Keypad and scan the bar codes representing the hex characters determined in the previous step.
- 5. Scan the ENTER/EXIT bar code to exit Programming Mode.



If less than the expected string of 16 characters are selected, scan the ENTER/EXIT bar code twice to accept the selections and exit Programming Mode.

## **Reading Parameters**

## **Good Read LED Duration**

This feature specifies the amount of time that the Good Read LED remains on following a good read. The good read LED on time can be set within a range of 10 milliseconds to 2,550 milliseconds (0.001 to 2.55 seconds) in 100ms increments.

Follow these instructions to set this feature:

- 1. Determine the desired setting in milliseconds. A setting of 0 means that the good read LED stays on until the next time the trigger is pulled.
- 2. Divide the desired setting by 10 (setting is in 100ms increments). Pad the result with leading zeroes to yield three digits. For example: 0 = 000, 5 = 000, 20 = 020, etc.
- 3. Go to page 70 and scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode.
- 4. Scan the bar code: SELECT GOOD READ LED DURATION SETTING.
- 5. Scan the appropriate three digits from the keypad in Appendix D, Keypad representing the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit Programming Mode.

This completes the procedure. See Table 43 for some examples of how to set this feature.

STEP	ACTION	EXAMPLES			
1	Desired Setting	Good Read LED stays on until next trigger pull (00)	20ms	150ms	2550ms (2.55 sec.)
2	Divide by 10 (and pad with leading zeroes)	000	002	015	255
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT GOOD READ LED DURATION SETTING				
5	<b>Scan Three Characters</b> <b>From</b> Appendix D, Keypad	'0', '0' and '0'	'0', '0' and '2'	'0', '1' and '5'	'2', '5' and '5'
6	Scan ENTER/EXIT PROGRAMMING MODE				

#### Table 43. Good Read LED Duration Setting Examples

## **Scanning Features**

## Scan Mode

This mode is associated with typical handheld reader operation. Selects the scan operating mode for the reader. The following selections are valid for all models:

**Trigger Single:** When the trigger is pulled, scanning is activated until one of the following occurs:

- No trigger pull is required to read a bar code. Scanning is continually on. If the trigger is pulled, the reader acts as if it is in Trigger Single Mode. Double Read Timeout prevents undesired multiple reads of the same label while in this mode. has elapsed
- a label has been read
- the trigger is released

**Trigger Hold Multiple:** When the trigger is pulled, scanning starts and the product scans until the trigger is released or No trigger pull is required to read a bar code. Scanning is continually on. If the trigger is pulled, the reader acts as if it is in Trigger Single Mode. Double Read Timeout prevents undesired multiple reads of the same label while in this mode. has elapsed. Reading a label does not disable scanning. Double Read Timeout prevents undesired multiple reads of the same label while in this mode.

**Trigger Pulse Multiple:** When the trigger is pulled, continuous scanning is activated until No trigger pull is required to read a bar code. Scanning is continually on. If the trigger is pulled, the reader acts as if it is in Trigger Single Mode. Double Read Timeout prevents undesired multiple reads of the same label while in this mode. has elapsed or the trigger has been released and pulled again. Double Read Timeout prevents undesired multiple reads of the same label while in this mode.

**Flashing:** The reader flashes on and off regardless of the trigger status. When Flash is ON the scanner reads continuously; when Flash is OFF scanning is deactivated.

**Always On:** No trigger pull is required to read a bar code. Scanning is continually on. If the trigger is pulled, the reader acts as if it is in Trigger Single Mode. Double Read Timeout prevents undesired multiple reads of the same label while in this mode.

## Table 44. Symbology Hex Values

00         Don't care         2C         GTIN5           01         UPC-A         2D         GTIN8           02         UPC-E         2E         S20F5           03         EAN8         2F         PDF417           04         EAN13         30         CODE11           05         UPC2         31         IATA           06         UPC5         32         MICR0_PDF           07         C128_ADDON         33         GS1 DataBar_LIM_ID           0A         EAN128         34         GS1 DataBar LIM_COMP	Hex Value	Symbology ID	Hex Value	Symbology ID
02         UPC-E         2E         S20F5           03         EAN8         2F         PDF417           04         EAN13         30         CODE11           05         UPC2         31         IATA           06         UPC5         32         MICR0_PDF           07         C128_ADDON         33         GS1 DataBar_LIM_ID	00	Don't care	2C	GTIN5
03       EAN8       2F       PDF417         04       EAN13       30       CODE11         05       UPC2       31       IATA         06       UPC5       32       MICRO_PDF         07       C128_ADDON       33       GS1 DataBar_LIM_ID	01	UPC-A	2D	GTIN8
04         EAN13         30         CODE11           05         UPC2         31         IATA           06         UPC5         32         MICRO_PDF           07         C128_ADDON         33         GS1 DataBar_LIM_ID	02	UPC-E	2E	S20F5
05         UPC2         31         IATA           06         UPC5         32         MICRO_PDF           07         C128_ADDON         33         GS1 DataBar_LIM_ID	03	EAN8	2F	PDF417
06         UPC5         32         MICR0_PDF           07         C128_ADDON         33         GS1 DataBar_LIM_ID	04	EAN13	30	CODE11
07         C128_ADDON         33         GS1 DataBar_LIM_ID	05	UPC2	31	IATA
	06	UPC5	32	MICRO_PDF
0A FAN128 34 GS1 DataBar LIM COMP	07	C128_ADDON	33	GS1 DataBar_LIM_ID
	0A	EAN128	34	GS1 DataBar_LIM_COMP
OB         C128_PROGRAMMING_LABEL         35         GS1 DataBar_Omnidirectional_COMP	OB	C128_PROGRAMMING_LABEL	35	GS1 DataBar_Omnidirectional_COMP
OC         CODE128         36         GS1 DataBar_EXP_COMP	0C	CODE128	36	GS1 DataBar_EXP_COMP
ODFNC3_C128_LABEL37GENERIC_DATA	0D	FNC3_C128_LABEL	37	GENERIC_DATA
OE DATA MATRIX 38 CC_A	OE	DATA MATRIX	38	CC_A
OF MAXICODE 39 CC_B	OF	MAXICODE	39	CC_B
<b>10</b> QRCODE <b>3A</b> CC_C	10	QRCODE	3A	CC_C
11Reserved3BLABELIMAGE	11	Reserved	3B	LABELIMAGE
12   Reserved   3C   CAPTURE_IMAGE_LABEL	12	Reserved	3C	CAPTURE_IMAGE_LABEL
13CODE493DReserved	13	CODE49	3D	Reserved
<b>14</b> UPC-E2 <b>3E</b> M2OF5	14	UPC-E2	3E	M2OF5
<b>15</b> UPC-E5 <b>3F</b> D20F5	15	UPC-E5	3F	D2OF5
16Reserved40PLESSEY65	16	Reserved	40	PLESSEY65
<b>17</b> UPC-A2 <b>42</b> ISSN	17	UPC-A2	42	ISSN
<b>18</b> UPC-A5 <b>43</b> ISBT	18	UPC-A5	43	ISBT
19Reserved44Reserved	19	Reserved	44	Reserved
1AEAN8245TIMER_EXPIRED_EVENT	1A	EAN82	45	TIMER_EXPIRED_EVENT
1B         EAN85         46         FOLLETT_20F5	1B	EAN85	46	FOLLETT_20F5
1CReserved47Reserved	1C	Reserved	47	Reserved
<b>1D</b> EAN132 <b>48</b> Reserved	1D	EAN132	48	Reserved
1E         EAN135         49         CODE39_CIP	1E	EAN135	49	CODE39_CIP
1FEAN1384AABC_CODABAR	1F	EAN138	4A	ABC_CODABAR
<b>20</b> ISBN_ID <b>4B</b> I20F5_CIP	20	ISBN_ID	4B	I2OF5_CIP
<b>21</b> TWO_LABEL_PAIR <b>4C</b> C20F5	21	TWO_LABEL_PAIR	4C	C20F5
<b>22</b> I2OF5 <b>4D</b> IND2OF5	22	120F5	4D	IND2OF5
23 CODABAR 4E AZTEC	23	CODABAR	4E	AZTEC
<b>24</b> CODE39 <b>4F</b> UPC-E_COMP	24	CODE39	4F	UPC-E_COMP
<b>25</b> PHARMAC39 <b>50</b> UPC-A_COMP	25	PHARMAC39	50	UPC-A_COMP
26 MSI_PLESSEY 51 EAN8_COMP	26	MSI_PLESSEY	51	EAN8_COMP
<b>27</b> CODE93 <b>52</b> EAN13_COMP	27	CODE93	52	EAN13_COMP
28RSS_EXP_ID53EAN128_COMP	28	RSS_EXP_ID	53	EAN128_COMP
29   RSS_14_ID   54   DATA MATRIX_PROGRAMMING_LABEL	29	RSS_14_ID	54	DATA MATRIX_PROGRAMMING_LABEL
2AGTIN55LABEL_ID_MAX	2A	GTIN	55	LABEL_ID_MAX
2B GTIN2 FF INVALID_LABEL_TYPE	2B	GTIN2	FF	INVALID_LABEL_TYPE
### **Wireless Features**

### Automatic Configuration Update

When this feature is enabled, the base station and reader will keep their configurations synchronized. If a reader's configuration is altered by reading programming labels, this change is automatically transferred and updated in a linked base station. Likewise, if the base station's configuration is changed using Aladdin or by host commands, then the reader's configuration will automatically be updated if this feature is enabled.

#### **RF Address Stamping**

#### Source Radio Address Delimiter Character

This option specifies the delimiter character to be placed between the label data and radio address when address stamping is enabled.



This feature only applies if "Source Radio Address Transmission" on page 206 is enabled.

Follow these instructions to select the delimiter character:

- 1. Determine the desired character, then find its hexadecimal equivalent on the ASCII Chart on the inside back cover. A setting of 00 specifies no delimiter character.
- 2. Go to page 207 and scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode.
- 3. Scan the bar code: SET SOURCE RADIO ADDRESS DELIMITER CHARAC-TER.
- 4. Scan the appropriate two digits from the keypad in Appendix D, Keypad, that represent the hexadecimal characters which were determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

5. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit.

#### Table 45. Source Radio Address Delimiter Character Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	No delimiter character	, (comma)	- (dash)	/ (slash)
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SET SOURCE RADIO ADDRESS DELIMITER CHARACTER				
4	<b>Scan Two Characters From</b> Appendix D, Keypad	'O' and 'O'	'2' and 'C'	'2' and 'D'	'2' AND 'F'
5	Scan ENTER/EXIT PROGRAMMING MODE				

#### **STAR Radio Protocol Timeout**

This parameter sets the valid wait time before transmission between the handheld reader and Base Station is considered failed.

When setting this parameter, take into consideration the radio traffic (number of readers in the same area). The selectable range for this feature is from 02 to 25 seconds.

Follow these instructions to set this feature:

- 1. Determine the desired setting.
- 2. Pad the number with leading zeroes to yield two digits. For example: 2 = 02, 5 = 05, 25 = 25, etc
- 3. Go to page 223 and scanScan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
- 4. Scan the barcode: SELECT RADIO PROTOCOL TIMEOUT.
- 5. Scan the appropriate two digits from the keypad in Appendix D, Keypad, that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 46 for some examples of how to set this feature.

STEP	ACTION	EXAMPLES			
1	Desired Setting	2 Seconds	5 Seconds	10 Seconds	25 Seconds
2	Pad with leading zero(es)	02	05	10	25
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECTSTAR RADIO PROTOCOL TIMEOUT SETTING				
5	Scan Two Characters From Appendix D, Keypad'0' and '2''0' and '5''1' and '0''2' AND '5'				
6	Scan ENTER/EXIT PROGRAMMING MODE				

#### **Bluetooth-Only Features**

#### **Bluetooth Pin Code**

This option specifies the 4-character or 16-character pin code to be used for authentication of the Bluetooth link. To set the pin code:

- 1. Scan the ENTER/EXIT PROGRAMMING MODE bar code to enter Programming Mode, then enable "Bluetooth Security Mode" on page 214.
- 2. Specify the desired pin code length (4 or 16) by scanning the appropriate bar code in "Select PIN Code Length" on page 214.
- 3. Determine the desired characters. For example, D254 or STOR12345678135M.
- 4. Convert the characters to hexadecimal using the ASCII Chart on the inside back cover of this manual.
- 5. Go to page 214 and Scan the bar code: SET 4 CHAR PIN CODE or SET 16-CHAR PIN CODE.
- 6. Scan the appropriate alphanumeric characters from the keypad in Appendix D, Keypad, representing the hexadecimal entries determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.

7. Scan the ENTER/EXIT PROGRAMMING MODE bar code to exit Programming Mode.



Changing the pin code setting will unlink the devices. If the Automatic Configuration Update is set to the default enabled setting, the devices must only be relinked. If the Automatic Configuration Update is set to the disabled setting, the Pin Code setting must also be updated in the Base Station using Aladdin. After the Base Station has been updated, the devices must be relinked.

#### Table 47. Bluetooth Pin Code Setting Examples

STEP	ACTION	EXAMPLES		
1	Desired Setting	D254	STOR12345678135M	
2	Convert the characters to hexadecimal	44 32 35 34	53 54 4F 52 31 32 33 34 35 36 37 38 31 33 35 4D	
3	Scan ENTER/EXIT PROG	T PROGRAMMING MODE		
4	Scan SET Bluetooth PIN CODE			
5	Scan 8 or 32 Alphanumeric Characters From Appendix D, Keypad	44323534	53544F5231323334353637383133354D	
6	Scan ENTER/EXIT PROGRAMMING MODE			

# Chapter 5 Message Formatting



Message Formatting is available for PM9300 models only.

For this feature to be operational, the scanner must be set to Ignore Host Commands (see page 23).

A message from the Host to the base must follow these rules:

- If Address stamping options or address delimiter are enabled on the base, the Host replay must have address field and delimiter too. Otherwise the message will be ignored. Address delimiter is present only when address stamping is enabled.
- Address stamping is necessary to correctly route the message to the PM9300, especially when more than one handheld is linked to the same base. Address stamping could be disabled if the system is in point to point configuration. If address stamping is not enabled, the messages are addressed to the first handheld linked to the base.
- The maximum character length for messages is 48.
- Messages end with "CR" 0x0D ASCII character. The CR character cannot be contained in the middle.
- Messages cannot start with '\$' or # because these are reserved for Service mode command
- Base station can receive host message only if Host Commands Obey/ Ignore is set to Ignore.
- Message could be sent to the handheld in response to a Label when "Transmit mode" require Ack from Host (see transmit mode parameter) or at any time. When messages are sent not in response to a label must start with DC2 0x12 ASCII character and could be sent in any transmit mode setting.
- Message could be sent to all handhelds linked to the base by using a Multicast message:
  - "00 00 00 00 2A AA"
- In order to receive a message, handhelds must not be in sleep state.

The format of the ACK from Host message (used for transmission mode 02) is: [Scanner\_Addr] [Scanner\_Addr\_delimiter] MESSAGE <CR> The format of a generic message From Host to HH is:

[Scanner\_Addr] [Scanner\_Addr\_delimiter] DC2 MESSAGE <CR> where DC2 is ASCII 0x12 (^R) character.

[Items in square brackets are optional.]

• If you want to control the Scanner's beeper from the host, you will also probably want to disable the good transmission beep that is emitted when the code is received from the cradle. (See "Wireless Beeper Features" on page 198).

The message field can store plain text and escape sequences.

• Escape sequences are interpreted as commands.

### **Cursor Control**

ESC [ <i>n</i> A	Up <b>n</b> rows, no scroll
ESC [ n B	Down <b>n</b> rows, no scroll
ESC [ n C	Right <b>n</b> columns
ESC [ n D	Left <b>n</b> columns
ESC [ G	CR
ESC[r;cH	Move to row <b>r</b> , column <b>c</b> (ESC[1;1H is the upper left character position of the display)
ESC D	Down 1 row, with scroll
ESC E	CR and cursor down 1 row with scroll
ESC M	Up 1 row and scroll



- Since CR is used as the message terminator, you must use ESC [G or ESC E to print a CR.
- The cursor row position is not affected by the currently selected font. The display always has 6 rows, so when writing with the large font, actually three rows are written. You will need <u>two</u> ESC E commands to step from one row to the next when using the large font.
- The cursor column position is affected by the currently selected font. Therefore, <u>column 6</u> is 36 pixels from the left border only if you last selected the 6x8 font; otherwise it could be 48 or 72 pixels from the left border.

## **Font Selection**

ESC [ 0 m	Normal mode
ESC [ 7 m	Reverse mode
ESC # 4	Large font: subsequent characters are written on the current row and the row below it using the 12x16 font which allows for two rows of eight characters on the display.
ESC # 5	Normal font: subsequent characters are written using the 6x8 font, which allows for four rows of sixteen characters on the display.
ESC # 7	Medium font: subsequent characters are written using the 8x8 font, which allows for four rows of twelve characters on the display.

## **Clearing Display**

ESC [ 0 K	From cursor position to end of line inclusive
ESC [ 1 K	From beginning of line to cursor position (not inclusive)
ESC [ 2 K	Entire line
ESC [ 0 J	From cursor position to end of display inclusive
ESC [ 1 J	From beginning of display to cursor position (not inclusive)
ESC [ 2 J	Entire display; moves cursor to upper left corner on display

#### **LED and Beeper Control**

- **ESC [ 0 q** Emit short High tone + short delay
- **ESC [ 1 q** Emit short Low tone + short delay
- **ESC [ 2 q** Emit long Low tone + short delay
- **ESC [ 3 q** Emit good read tone
- ESC [ 4 q Emit bad tx tone
- **ESC [ 5 q** Wait 100 ms
- **ESC [ 6 q** Turn on the green LED
- **ESC [ 7 q** Turn off the green LED
- ESC [ 8 q Turn on the red LED
- ESC [ 9 q Turn off the red LED

The LED control escape sequences are intended to activate the LEDs for <u>short periods</u> of time and can be used in combination with the Beeper. The LED and Beeper will be controlled by the system after the entire command sequence is interpreted.

#### **Example:**

ESC [ 6 q ESC [ 3 q ESC [ 7 q	Turns on the green LED, emits a good read tone, and turns off the green LED.
ESC [ 6 q ESC [ 5 q ESC [ 7 q	Turns on the green LED for 100 ms and then turns off the green LED.

## Setting RTC

ESC [ 0 p <i>d d m m y y</i>	Set date to day, month, year	
ESC[1phhmm	Set time to hours, minutes; seconds are automatically	
	set to 00.	

## NOTES

## 

## Appendix A Technical Specifications

The tables that follow contain Physical and Performance Characteristics, User Environment and Regulatory information. Table 49 provides Standard Cable Pinouts.

#### Table 48. Technical Specifications

ltem	Description		
<b>Physical Characteristics</b>			
Dimensions	Height: 212 mm Length: 110 mm Width: 74 mm		
Weight (without cable)	PD9330: 340g; PD9330-AR: 375g PM/PBT9300-XX: 405g; PM/PBT9300-ARXX, PM/PBT9300-DXX, PM/PBT9300-DKXX: 435g; PM/PBT9300-DARXX, PM/PBT9300-DKARXX: 465g		
Electrical Characteristics	5		
	PD9330 models		
Voltage & Current	PD9330	PD9330-AR	
Input Voltage	4.5 / 30 VDC	4.5 / 30 VDC	
Input Current			
	110 mA @ 4.5 V	180 mA @ 4.5 V	
Operating (typical, scan-	105 mA @ 5 V	170 mA @ 5 V	
ning)	45 mA @ 12 V	70 mA @ 12 V	
	25 mA @ 30 V	40 mA @ 30 V	
	420 mA @ 4.5 V	480 mA @ 4.5 V	
	360 mA @ 5 V	420 mA @ 5 V	
Operating (max, reading)	140 mA @ 12 V	160 mA @ 12 V	
	65 mA @ 30 V	80 mA @ 30 V	
	45 mA @ 4.5 V	45 mA @ 4.5 V	
Idle (Chandley (hymigs))	40 mA @ 5 V	40 mA @ 5 V	
Idle/Standby (typical)	20 mA @ 12 V	20 mA @ 12 V	
	12 mA @ 30 V	12 mA @ 30 V	

#### **Technical Specifications**

Item Description		
PBT9300 and PM9300 models		
Battery Type	Li-lon battery pack	
Charge time for full charge from full dis-	4 hours with external power supply adapter <sup>a</sup>	
charge	Typical 10 hours with Host power (in this case no supply adapter is needed) <sup>a</sup>	
Operating autonomy (continuous reading)	50,000 reads (typical)	
Cradle consumption and	Volt 10-30 VDC; Power <8W <sup>b</sup> ;	
DC input supply range	Max 500 mA when in host/bus powered mode <sup>b</sup> .	

a. Charge Times are much lower when battery is within daily typical operating condition.b. Typical input current measured under factory default configuration.

Performance Characteristics			
Light Source	Laser		
	PX9300-XX	PX9300-XXAR	
Roll (Tilt) Tolerance	± 35°	± 10°	
Pitch Tolerance	± 40°	± 60°	
Skew (Yaw) Tolerance	± 65°	± 65°	
Print Contrast Minimum	25% minimum reflectance		
Resolution	3 mils	7.5 mils	
Scan Rate	104 (± 12) scans / sec	35 (± 5) scans / sec	
Scan Angle	47° max	13.5° (± 0.7°) max	

Depth of Field (Typical)			
Symbology	PX9X00-XX		
Code 39			
5 mils	1.5 - 28 cm / 0.6 - 11″		
7.5 mils	1.5 - 42 cm / 0.6 - 16.5"		
10 mils	2 - 50 cm / 0.8 - 19.7"		
20 mils	2 - 110 cm / 0.8 - 43.3"		
40 mils	2 - 160 cm / 0.8 - 63″		
EAN 13	2.5 - 65 cm / 1 - 25.6″		
Symbology	PX9X00-XXARXX		

Code 39	
7.5 mils	9 - 50 cm / 3.5 - 19.7"
10 mils	14 - 85 cm / 5.5 - 33.5"
15 mils	15 - 155 cm / 5.9 - 61"
20 mils	15 - 220 cm / 5.9 - 86.6″
40 mils	20 - 340 cm / 7.9 - 133.9"
55 mils	25 - 420 cm / 9.8 - 165.4"
Reflective Label	
Code 39	
70 mils	Up to 9 m / 29 ft
100 mils	Up to 11.5 m / 37 ft

Note: the reading performances may change with different symbologies.

#### **Decode Capability**

#### PM9300-XX

GS1 Databar linear codes, UPC/EAN (A,E,13,8), UPC/EAN with P2/P5 Addons, UPC/EAN Coupons, ISBN, Code128, EAN128, Code39, Code39 Full ASCII, Code39 CIP, Code 32, Codabar, Interleaved 2 of 5, IATA, Industrial 2 of 5, Standard 2 of 5, Code11, MSI, Plessey, Code 93, Follet 2/5, Code 4, Code 5, Datalogic 2 of 5, Codablock F

#### PM9300-XXARXX

GS1 Databar linear codes, UPC/EAN, UPC/EAN with P2/P5 Addons, UPC/EAN Coupons, ISBN, Code128, EAN128, Code39, Code39 Full ASCII, Code 32, Codabar, Interleaved 2 of 5, Standard 2 of 5, MSI, Code 93

Interfaces Supported<sup>a</sup>

RS-232, Keyboard Wedge, and USB.

a. See "Interface Selection" on page 14 for a listing of available interface sets by model type.

Item	Description			
User Environment	User Environment			
Operating Temperature	-4° to 122° F (-20° to +50° C)			
Storage Temperature	-40° to 158° F (-40° to 70° C)			
Humidity	0 to 95% non-condensing			
Drop Specifications	Scanner withstands >50 times 6.5' (2 m) drops to concrete			
Ambient Light Immunity	PX9300-XX         PX9300-XXARXX           100,000 Lux         43,000 Lux			
Contaminants Spray/ Rain/Dust/Particulates	IP65			
ESD Level	20 KV			

ltem	Description			
Regulatory	PD9330 PBT9300 PM9300 (Corded Models)			
Electrical Safety	UL 60950, CSA C22.2 No. 60950, IEC 60950	UL 60950, CSA C22.2 No. 60950, IEC 60950	UL 60950, CSA C22.2 No. 60950, IEC 60950	

EMI/RFI	North America (FCC) : Part 15 Class B; Can- ada (IC) : ICES-003 Class B; Russia (Gost); European Union EMC Directive; VCCI-Japan; Korean KCC; Taiwan EMC (BSMI); Australia (ACMA); Mexico (NOM Nyce)	North America (FCC) : Canada ( IC); Russia (Gost); European Union R&TTE Direc- tive; Japan; Korean KCC; Taiwan; Austra- lia; Mexico	433 MHz model Europe - CE, Russia – Gost; Australia – Ctick; China – SRRC; Singa- pore – IDA, Anatel Brazil 910 MHz model USA/Canada – FCC/ IC; Mexico – NOM + Cofetel	
Laser Safety	IEC Class 2	IEC Class 2	IEC Class 2	
Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.				

Radio Features	
	PBT9300
Frequency working center	2400 to 2483.5 MHz
Range (in open air)	up to 100 m
Max number of devices per base station	7

PM9300				
Frequency working center	433 MHz	910 MHz		
Programmable Speed	19.2 kb/s 115.2 kb/s 500 kb/s (default)	36.8 kb/s 500 kb/s (default)		
Typical Range (in open air)	50 m (at 500 kb/s) 100 m (at 19.2 kb/s)	150 m (at 500 kb/s) 400 m (at 36.8 kb/s, frequency hopping) 50 m (at 36.8 kb/s, fixed channel)		
Max number of devices per base station	16			

## **Imager Labeling**

Sample labels are shown for illustrative purposes only. Please view the labels on your product for actual details, as they may vary from those depicted.



## **Standard Cable Pinouts**

The data below provides standard pinout information for the interface cable.

#### Figure 11. Standard Cable Pinouts: Handheld



The signal descriptions in Table 49 apply to the connector on the reader and are for reference only.

#### Table 49. Standard Cable Pinouts

Pin	RS-232	USB	Keyboard Wedge
1	RTS (out)		
2		D+	CLKIN (KBD side)
3		D-	DATAIN (KBD side)
4	GND	GND	GND
5	RX		
6	ТХ		
7	VCC	VCC	VCC
8			CLKOUT (PC side)
9			DATAOUT (PC side)
10	CTS (in)		

## **LED and Beeper Indications**

The reader's beeper sounds and its LED illuminates to indicate various functions or errors on the reader. An optional "Green Spot" also performs useful functions. The tables below list these indications. One exception to the behaviors listed in the tables is that the reader's functions are programmable, and may or may not be turned on. For example, certain indications such as the power-up beep can be disabled using programming bar code labels.

INDICATION	DESCRIPTION	LED	BEEPER
Power-up Beep	The reader is in the pro- cess of powering-up.		Reader beeps four times at highest fre- quency and volume upon power-up.
Good Read Beep	A label has been suc- cessfully scanned by the reader.	LED behavior for this indication is configurable via the feature 'Good Read: When to Indicate"	The reader will beep once at current fre- quency, volume, tonal setting and duration upon a successful label scan.
Green Spot <sup>a</sup> flashes momentarily	Upon successful read of a label, the software turns the green spot on for the time specified by the configured value.	N/A	N/A

#### Table 50. LED and Beeper Indications

a. Except when in sleep mode or when a Good Read LED Duration other than 00 is selected

#### Table 51. Programming Mode Indications

**Programming Mode** - The following indications ONLY occur when the reader is in Programming Mode.

INDICATION	DESCRIPTION	LED	BEEPER
Label Program- ming Mode Entry	A valid programming label has been scanned.	LED blinks con- tinuously	Reader sounds four low frequency beeps.
Label Program- ming Mode Rejec- tion of Label	A label has been rejected.	N/A	Reader sounds three times at low- est frequency & current volume.
Label Program- ming Mode Accep- tance of Partial Label	In cases where multiple labels must be scanned to program one feature, this indication acknowl- edges each portion as it is successfully scanned.	N/A	Reader sounds one short beep at high- est frequency & current volume.
Programming Mode Indications (continued)			
INDICATION	DESCRIPTION	LED	BEEPER

Label Program- ming Mode Accep- tance of Programming	Configuration option(s) have been successfully programmed via labels and the reader has exited Programming Mode.	N/A	Reader sounds one high frequency beep and 4 low fre- quency beeps fol- lowed by reset beeps.
Label Program- ming Mode Cancel Item Entry	Cancel label has been scanned.	N/A	Reader sounds two times at low fre- quency and current volume.

## **Base Station Indications (Cordless Models ONLY)**

#### **Base Station Button Indicators**

BUTTON PUSH	CORDLESS	RED	GREEN
EVENT		INDICATOR(**)	INDICATOR(**)
Push at power-up	force device connection (Aladdin)	Off	Slow blink Fast blink
< 5 sec	Paging	Off	Fast blink
5 to 10 sec	Unlink (Only Bluetooth)	Off	Slow blink

# Appendix B Sample Bar Codes

The sample bar codes in this appendix are typical representations for their symbology types.



EAN-13



978033029095

Code 39



Code 128



Code 128



## Sample Bar Codes (continued)



Codabar



13579



Code 11



123456789

## GS1 DataBar™ (RSS)



GS1 DataBar<sup>™</sup> variants must be enabled to read the bar codes below.



1234890hjio9900mnb

GS1 DataBar™ Limited

08672345650916

#### GS1 DataBar™-14

GS1 DataBar™ Omnidirectional Truncated

#### 

55432198673467

## in a state of the second s

## Appendix C Standard Defaults

The most common configuration settings are listed in the "Default" column of the table below. Page references are also provided for feature descriptions and programming bar codes for each parameter. A column has also been provided for recording of your preferred default settings for these same configurable features.

#### Table 52. Standard Defaults

Parameter	Default	Your Setting	Page Number						
GLOBAL INTERFACE FEATURES									
Host Commands — Obey/Ignore	Obey		23						
	Disable		23						
RS-232 ONLY									
Baud Rate	115200		26						
Data Bits	8 Data Bits		27						
Stop Bits	1 Stop Bit		27						
Parity	None		27						
Handshaking Control	RTS		28						
RS-232/USB-Com	-								
Intercharacter Delay	No Delay		30						
Beep On ASCII BEL	Disable		30						
Beep On Not on File	Enable		31						
ACK NAK Options	Disable		31						
ACK Character	'ACK'		32						
NAK Character	'NAK'		32						
ACK NAK Timeout Value	200 ms		33						
ACK NAK Retry Count	3 Retries		33						
ACK NAK Error Handling	Ignore Errors Detected		34						

Parameter	Default	Your Setting	Page Number
Indicate Transmission Failure	Enable		34
Disable Character	'D'		35
Enable Character	Έ'		35
KEYBOARD WEDGE			
Country Mode	U.S. Keyboard		38
Send Control Characters	00		41
Wedge Quiet Interval	100 ms		42
Intercode Delay	No Delay		42
Caps Lock State	Caps Lock OFF		43
Numlock	NumLock Key Unchanged		43
USB Keyboard Speed	1 ms		44
USB Keyboard Numeric Keypad	Standard Keys		45
USB-OEM			
USB-OEM Device Usage	Handheld		48
Interface Options	Ignore Scanner Configu- ration Host Commands		48
Data Format			1
Global Prefix/Suffix (Header/Terminator)	No Global Prefix Global Suffix = 0x0D (CR)		50
Global AIM ID	Disable		51
Set AIM ID Individually for GS1-128	Enable		53
Label ID: Pre-Loaded Sets	EU Set		54
Individually Set Label ID	Disable		55
Case Conversion	Disable		61
Character Conversion	No Char Conversion		61
READING PARAMETERS			
Double Read Timeout	0.6 Second		63
Power On Alert	Power-up Beep		66
Good Read: When to Indicate	After Decode		66
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	GS1 DataBar™ Expanded Enable/Disable	Disable		161

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GS1 DataBar™ Expanded Length Control	Variable		162
GS1 DataBar™ Expanded Set Length 1	1		163
GS1 DataBar™ Expanded Set Length 2	74		164
GS1 DataBar™ Limited	1		
GS1 DataBar™ Limited Enable/Disable	Disable		165
GS1 DataBar™ Limited GS1-128 Emulation	Disable		165
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Code 93 Enable/Disable	Disable		167
Code 93 Check Character Calculation	Enable Check C and K		167
Code 93 Check Character Transmission	Enable		168
Code 93 Length Control	Variable		168
Code 93 Set Length 1	1		169
Code 93 Set Length 2	50		170
Code 93 Quiet Zones	Small Quiet Zones on two sides		172
MSI			
MSI Enable/Disable	Disable		185
MSI Check Character Calculation	Enable Mod10		185
MSI Check Character Transmission	Enable		186
MSI Length Control	Variable		187
MSI Set Length 1	1		187
MSI Set Length 2	50		188
Plessey (Only standard optic models)			
Plessey Enable/Disable	Disable		190
Plessey Check Character Calculation	Enable Plessey std. check char. verification		190
Plessey Check Character Transmission	Enable		191
Plessey Length Control	Variable		191
Plessey Set Length 1	1		192
Plessey Set Length 2	50		193
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Parameter	Default	Your Setting	Page Number
Good Transmission Beep	Enable		198
Beep Frequency	Low		198
Beep Duration	80 msec		199
Beep Volume	High		200
Disconnect Beep	Enable		200
Docking Beep	Enable		201
Leash Alarm	Disable		201
Automatic Configuration Update	Enable		203
Copy Configuration to Scanner	N/A		203
Copy Configuration to Base Station	N/A		203
Batch Mode	Disable		204
Send Batch	N/A		204
Erase Batch Memory	N/A		205
RF Batch Mode Transmit Delay	No Delay		205
Direct Radio Autolink	Unlink Label Required		206
Source Radio Address Transmission	Do not include		206
Source Radio Address Delimiter Character	No Delimiter Character		207
Current Date	YYMMDD		208
Current Time	HHMMSS		208
Date Tx Format	YYYY-MM-DD (ISO 8601)		209
Time Tx Format	hh:mm:ss (ISO 8601)		209
Date-Time Separator	Disable		210
Date-Time Transmission Order	Disable		211
Powerdown Timeout	30 minutes		212
Features for PBT9300 Models Only	·		
Bluetooth Security Mode	Disable		214
Bluetooth PIN Code	N/A		214
Select PIN Code Length	4-Character		214
Set PIN Code	1234		215
Reconnect Attempt Interval	1 minute		216
Bluetooth HID Variable PIN Code	Static		217
Bluetooth HID Alt Mode	Off		218
Bluetooth HID Send Unknown ASCII Char	Disable		230

Parameter	Default	Your Setting	Page Number
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Bluetooth Friendly Name	[SERIAL_NUMBER_ SCANNER]		219
Bluetooth Reconnect Attempt Mode	Enable		220
Power Class	Power Class 1		233
HID Country Mode	US		220
Features for PM9500 Models Only			
STAR Radio Protocol Timeout	02		223
STAR Radio Transmit Mode	Ack from cradle		224
Frequency Agility	Use default fixed channel		226
Compatibility with PM8300			I
Compatible Mode System Speed	High Speed		240
Base Address Stamping	Do Not Include		242
Base Address Delimiter Character	No Delimiter Character		242
RS-485 Master Header/Terminator ( Prefix/Suffix)	N/A		243
RS-485 Cradle Address	N/A		243
RS-485 Slave Minimum Address	N/A		244
RS-485 Slave Maximum Address	N/A		244
RS-485 Network Working Mode	Disable		245
RS-485 Network Warning Message	Not Transmitted		246
RS-485 Transmission Warning Message	Not Transmitted		246
RS-485 Network Baud Rate	9600		246
Display and Keyboard Features			
Display Operating Mode	Local echo mode		227
Display Off Timeout	8 second delay		228
Backlight Enable	Disable		228
Display Contrast			229
Font Size	Small		229
Enable/disable buttons	All 4 keys enabled		230
Arrow Keys Mode (4-key models only)	Function Keys Action Select mode		232
Arrow Up String (4-key models only)	N/A		232
Arrow Down String (4-key models only)	N/A		233

Parameter	Default	Your Setting	Page Number
Configure Actions for F1	No Actions Configured		235
Configure Actions for F2	No Actions Configured		235
Configure Actions for F3 (16-key models only)	No Actions Configured		236
Configure Actions for F4 (16-key models only)	No Actions Configured		237
Configure Actions for Shift (16-key models only)	No Actions Configured		237
Define Strings	N/A		238
Set String ID	N/A		239
Set String Header	No Header		239
Set String Terminator	No Terminator		240
Display Time Stamping Mode	Applied to both		241
Mode Selection	Set Normal Mode		242
Quantity Field	Transmit code with default qty (1)		242
Quantity/Code Send Mode	Qty precedes Code		243
Quantity/Code Separator	No separator		243
Interkey Timeout	1.0 seconds		244
Append Code	Overwrite always		245
Echo	Full Keypad echo		246
Keypress Sound	Enable		246
SHIFT Enable/Disable	Enable SHIFT function		247
Lower Case	Disable Lower Case		248
Barcode/Key Different Data Format	Disable		250

#### **Restore Factory Configuration**

If you want to restore the Factory Configuration for your imager, scan either the Restore USA Factory Configuration bar code or the Restore EU Factory Configuration bar code below. Both labels restore the scanner configuration to the factory settings, including the interface type.



Scanning either of the "Restore Factory Configuration" commands below will result in the loss of any custom configuration settings for your device. Go to "Restore Custom Defaults" on page 18 if you want to restore your custom configuration settings.

The USA label restores Label IDs to those historically used in the USA. The EU label restores Label IDs to those historically used in Europe. The Label ID sets for USA and EU are shown in Label ID: Pre-loaded Sets, starting on page 271 of this manual.



Restore USA Factory Configuration



Restore EU Factory Configuration

# Appendix D Keypad

Use the bar codes in this appendix to enter numbers as you would select digits/characters from a keypad.



#### Keypad (continued)



Make a mistake? Scan the CANCEL bar code to abort and not save the entry string. You can then start again at the beginning.



# Appendix E Scancode Tables

## **Control Character Emulation**

Control character emulation selects from different scancode tables as listed in this appendix. Each of the control character sets below are detailed by interface type in the tables. These apply to Wedge and USB Keyboard platforms.

**Control Character 00**: Characters from 00 to 0x1F are sent as control character Ctrl+Keys, special keys are located from 0x80 to 0xA1.

**Control Character 01**: Characters from 00 to 0x1F are sent as control character Ctrl+Capital Key, special keys are located from 0x80 to 0xA1.

**Control Character 02**: Special keys are located from 00 to 0x1F and characters from 0x80 to 0xFE are intended as an extended ASCII table.

#### **Single Press and Release Keys**

In the following tables, Ar $\downarrow$  means Alt right pressed and Ar $\uparrow$  means Alt right released and so on. Definitions for other keys are Al (Alt left), Cr (Control Right) Cl (Control Left) Sh (shift). This method can be used for combining Alt, Control or Shift with other keys.

Example: Consider a Control character set to 00. If AltRight+A is required before sending a label to the host, it could be done by setting three Prefix keys in this way: 0x99 0x41 0x9A.

## Interface Type PC AT PS/2, USB-Keyboard

Table 53. Scancode Set When Control Character is 00 or 01

	x0	x1	x2	x3	x4	x5	X6	x7	x8	x9	хА	хB	xC	xD	хE	xF
0x	NULL C+@	SOH C(S)+A	STX C(S)+B	ETX C(S)+C	EOT C(S)+D	ENQ C(S)+E	ACK C(S)+F	BEL C(S)+G	BS	HT TAB	LF C(S)+J	VT C(S)+K	FF C(S)+L	CR Enter	SO C(S)+N	SI C(S)+O
1x	DLE C(S)+P	DC1 C(S)+Q	DC2 C(S)+R	DC3 C(S)+S	DC4 C(S)+T	NAK C(S)+U	SYN C(S)+V	ETB C(S)+W	CAN C(S)+X	EM C(S)+Y	SUB C(S)+Z	ESC Esc	FS C+\	GS C+]	RS C+^	US C(S)+_
2x	SP	!	"	#	\$	%	&	'	(	)	*	+	,	-		/
Зx	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	А	В	C	D	Е	F	G	Н	Ι	J	K	L	М	Ν	0
5x	Р	Q	R	S	Т	U	V	W	Х	Y	Z	]	\	]	^	_
6x	`	а	b	c	d	e	f	g	h	i	j	k	1	m	n	0
7x	р	q	r	s	t	u	v	W	х	у	Z	{		}	~	Del
8x	€	Sh↓	Sh↑	Ins	Ent (keyp)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
9x	F12	Home	End	Pg Up	Pg Dwn	1	$\checkmark$	÷	$\rightarrow$	Ar↓	Ar↑	Al↓	Al↑	Cl↓	Cl↑	Cr↓
Ax	Cr ↑		د	f	"		†	*	^	‰	Š	<	Ś	<	Œ	
Bx	0	±	2	3	,	μ	¶		د	1	0	»	1/4	1/2	3/4	i
Сх	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Í	Í	Î	Ï
Dx	Đ		Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
Fx	ð	ñ	ò	ó	ô	õ	Ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Extended characters (sky blue) are sent through dedicated keys (when available in the selected country mode) or by using an Alt Mode sequence.

## Interface Type PC AT PS/2, USB-Keyboard (continued)

 Table 54. Scancode Set When Control Character is 02

	x0	x1	x2	x3	x4	x5	X6	x7	x8	x9	хА	хB	xC	xD	хE	xF
0x	Ar↓	Ar↑	AI↓	AI ↑	CI ↓	CI ↑	Cr ↓	Cr ↑	BS	Tab	÷	S+ Tab	Enter Keypd	Enter	Ins	Pg Up
1x	Pg Dwn	Home	÷	$\checkmark$	$\uparrow$	F6	F1	F2	F3	F4	F5	ESC	F7	F8	F9	F10
2x	Space	!	"	#	\$	%	&	د	(	)	*	+	,	-		/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	А	В	С	D	Е	F	G	Н	Ι	J	K	L	М	Ν	0
5x	Р	Q	R	S	Т	U	V	W	Х	Y	Z	[	\	]	^	_
6x	`	а	b	с	d	e	f	g	h	i	j	k	1	m	n	0
7x	р	q	r	S	t	u	v	W	х	у	Z	{		}	~	Del
8x	€		د	f	"		Ť	*	^	‰	Š	<	Ś	<	Œ	
9x		د	,	"	"	•	-		~	ТМ	š	>	œ		ž	Ÿ
Ax	NBSP	i	¢	£	¤	¥	-	§	-	©	а	«	_	-	®	-
Bx	0	±	2	3	,	μ	¶		د	1	0	»	1⁄4	1/2	3⁄4	j
Сх	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Dx	Đ		Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	Ï
Fx	ð	ñ	ò	ó	ô	õ	ö	÷	Ø	ù	ú	û	ü	ý	þ	ÿ

## Interface Type PC AT PS/2 Alt Mode or USB-Keyboard Alt Mode

#### Table 55. Scancode Set When Control Character is 00 or 01

	x0	x1	x2	x3	x4	x5	X6	x7	x8	x9	хА	хB	хС	хD	хE	Xf
0x	Alt+000	Alt+001	Alt+002	Alt+003	Alt+004	Alt+005	Alt+006	Alt+007	BS	HT TAB	Alt+010	Alt+011	Alt+012	CR Enter	Alt+014	Alt+015
1x	Alt+016	Alt+017	Alt+018	Alt+019	Alt+020	Alt+021	Alt+022	Alt+023	Alt+024	Alt+025	Alt+026	ESC Esc	Alt+028	Alt+029	Alt+030	Alt+031
2x	A+032	A+033	A+034	A+035	A+036	A+037	A+038	A+039	A+040	A+041	A+042	A+043	A+044	A+045	A+046	A+047
3x	A+048	A+049	A+050	A+051	A+052	A+053	A+054	A+055	A+056	A+057	A+058	A+059	A+060	A+061	A+062	A+063
4x	A+064	A+065	A+066	A+067	A+068	A+069	A+070	A+071	A+072	A+073	A+074	A+075	A+076	A+077	A+078	A+079
5x	A+080	A+081	A+082	A+083	A+084	A+085	A+086	A+087	A+088	A+089	A+090	A+091	A+092	A+093	A+094	A+095
6x	A+096	A+097	A+098	A+099	A+100	A+101	A+102	A+103	A+104	A+105	A+106	A+107	A+108	A+109	A+110	A+111
7x	A+112	A+113	A+114	A+115	A+116	A+117	A+118	A+119	A+120	A+121	A+122	A+123	A+124	A+125	A+126	A+127
8x	€	Sh↓	Sh↑	Ins	Ent (keyp)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
9x	F12	Home	End	Pg Up	Pg Dwn	$\uparrow$	$\downarrow$	÷	$\rightarrow$	Ar↓	Ar↑	Al↓	Al ↑	Cl↓	Cl↑	Cr↓
Ax	Cr ↑	A+0161	A+0162	A+0163	A+0164	A+0165	A+0166	A+0167	A+0168	A+0169	A+0170	A+0171	A+0172	A+0173	A+0174	A+0175
Bx	A+0176	A+0177	A+0178	A+0179	A+0180	A+0181	A+0182	A+0183	A+0184	A+0185	A+0186	A+0187	A+0188	A+0189	A+0190	A+0191
Сх	A+0192	A+0193	A+0194	A+0195	A+0196	A+0197	A+0198	A+0199	A+0200	A+0201	A+0202	A+0203	A+0204	A+0205	A+0206	A+0207
Dx	A+0208	A+0209	A+0210	A+0211	A+0212	A+0213	A+0214	A+0215	A+0216	A+0217	A+0218	A+0219	A+0220	A+0221	A+0222	A+0223
Ex	A+0224	A+0225	A+0226	A+0227	A+0228	A+0229	A+0230	A+0231	A+0232	A+0233	A+0234	A+0235	A+0236	A+0237	A+0238	A+0239
Fx	A+0240	A+0241	A+0242	A+0243	A+0244	A+0245	A+0246	A+0247	A+0248	A+0249	A+0250	A+0251	A+052	A+0253	A+0254	A+0255

## Interface Type PC AT PS/2 Alt Mode or USB-Keyboard Alt Mode (continued)

 Table 56. Scancode Set When Control Character is 02

	x0	x1	x2	x3	x4	x5	X6	x7	x8	x9	хА	хB	хС	xD	хE	xF
0x	Ar↓	Ar↑	AI↓	AI ↑	CI ↓	Cl ↑	Cr ↓	Cr ↑	BS	Tab	÷	S+ Tab	Enter Keypd	Enter	Ins	Pg Up
1x	Pg Dwn	Home	÷	$\checkmark$	$\uparrow$	F6	F1	F2	F3	F4	F5	ESC	F7	F8	F9	F10
2x	A+032	A+033	A+034	A+035	A+036	A+037	A+038	A+039	A+040	A+041	A+042	A+043	A+044	A+045	A+046	A+047
3x	A+048	A+049	A+050	A+051	A+052	A+053	A+054	A+055	A+056	A+057	A+058	A+059	A+060	A+061	A+062	A+063
4x	A+064	A+065	A+066	A+067	A+068	A+069	A+070	A+071	A+072	A+073	A+074	A+075	A+076	A+077	A+078	A+079
5x	A+080	A+081	A+082	A+083	A+084	A+085	A+086	A+087	A+088	A+089	A+090	A+091	A+092	A+093	A+094	A+095
6x	A+096	A+097	A+098	A+099	A+100	A+101	A+102	A+103	A+104	A+105	A+106	A+107	A+108	A+109	A+110	A+111
7x	A+112	A+113	A+114	A+115	A+116	A+117	A+118	A+119	A+120	A+121	A+122	A+123	A+124	A+125	A+126	A+127
8x	A+0128	A+0129	A+0130	A+0131	A+0132	A+0133	A+0134	A+0135	A+0136	A+0137	A+0138	A+0139	A+0140	A+0141	A+0142	A+0143
9x	A+0144	A+0145	A+0146	A+0147	A+0148	A+0149	A+0150	A+0151	A+0152	A+0153	A+0154	A+0155	A+0156	A+0157	A+0158	A+0159
Ax	A+0160	A+0161	A+0162	A+0163	A+0164	A+0165	A+0166	A+0167	A+0168	A+0169	A+0170	A+0171	A+0172	A+0173	A+0174	A+0175
Bx	A+0176	A+0177	A+0178	A+0179	A+0180	A+0181	A+0182	A+0183	A+0184	A+0185	A+0186	A+0187	A+0188	A+0189	A+0190	A+0191
Сх	A+0192	A+0193	A+0194	A+0195	A+0196	A+0197	A+0198	A+0199	A+0200	A+0201	A+0202	A+0203	A+0204	A+0205	A+0206	A+0207
Dx	A+0208	A+0209	A+0210	A+0211	A+0212	A+0213	A+0214	A+0215	A+0216	A+0217	A+0218	A+0219	A+0220	A+0221	A+0222	A+0223
Ex	A+0224	A+0225	A+0226	A+0227	A+0228	A+0229	A+0230	A+0231	A+0232	A+0233	A+0234	A+0235	A+0236	A+0237	A+0238	A+0239
Fx	A+0240	A+0241	A+0242	A+0243	A+0244	A+0245	A+0246	A+0247	A+0248	A+0249	A+0250	A+0251	A+052	A+0253	A+0254	A+0255

## **ASCII Chart**

ASCII Char.	Hex No.	ASCII Char.	Hex No.	ASCII Char.	Hex No.	ASCII Char.	Hex No.
NUL	00	SP	20	0	40	1	60
SOH	01	1	21	A	41	а	61
STX	02	1	22	В	42	b	62
ETX	03	#	23	С	43	с	63
EOT	04	\$	24		44	d	64
ENQ	05	%	25	D E F G	45	е	65
ACK	06	&	26	F	46	f	66
BEL	07	I.	27	G	47	g	67
BS	08	(	28	Н	48	h	68
HT	09	)	29	1	49	i	69
LF	OA	*	2A	J	4A	j	6A
VT	OB	+	2B	К	4B	k	6B
FF	OC	,	2C	L	4C		6C
CR	OD	-	2D	Μ	4D	m	6D
SO	OE		2E	N	4E	n	6E
SI	OF	/	2F	0	4F	0	6F
DLE	10	0	30	Р	50	р	70
DC1	11	1	31	Q	51	q	71
DC2	12	2	32	R	52	r	72
DC3	13	3	33	S T	53	S	73
DC4	14	4	34		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	Х	58	Х	78
EM	19	9	39	Y	59	У	79
SUB	1A	1	ЗA	Z	5A	Z	7A
ESC	1B	;	3B	[	5B	{	7B
FS	1C	<	3C	Ν	5C		7C
GS	1D	=	ЗD	]	5D	}	7D
RS	1E	> ?	ЗE	^	5E	~	7E
US	1F	?	ЗF	-	5F	DEL	7F

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