NLS-EM20

OEM Scan Engine

User Guide

Disclaimer

© 2015-2017 Fujian Newland Auto-ID Tech. Co., Ltd. All rights reserved.

Please read through the manual carefully before using the product and operate it according to the manual. It is advised that you should keep this manual for future reference.

Do not disassemble the device or remove the seal label from the device, doing so will void the product warranty provided by Fujian Newland Auto-ID Tech. Co., Ltd.

All pictures in this manual are for reference only and actual product may differ. Regarding to the product modification and update, Fujian Newland Auto-ID Tech. Co., Ltd. reserves the right to make changes to any software or hardware to improve reliability, function, or design at any time without notice. The information contained herein is subject to change without prior notice.

The products depicted in this manual may include software copyrighted by Fujian Newland Auto-ID Tech. Co., Ltd or third party. The user, corporation or individual, shall not duplicate, in whole or in part, distribute, modify, decompile, disassemble, decode, reverse engineer, rent, transfer or sublicense such software without prior written consent from the copyright holders.

This manual is copyrighted. No part of this publication may be reproduced, distributed or used in any form without written permission from Newland.

Fujian Newland Auto-ID Tech. Co., Ltd. reserves the right to make final interpretation of the statement above.

Fujian Newland Auto-ID Tech. Co., Ltd.
3F, Building A, No.1, Rujiang West Rd., Mawei, Fuzhou, Fujian, China 350015
http://www.nlscan.com

Revision History

Version	Description	Date
V1.0.0	Initial release.	July 24, 2015

Table of Contents

Revision History ..... -3-

Chapter 1 Getting Started **1**

Introduction 1
About This Guide 1
Connecting EVK to PC 1
Barcode Scanning 2
Barcode Programming 2
Factory Defaults 3

Chapter 2 Communication Interfaces **4**

TTL-232 Interface 4
Baud Rate 5
Parity Check 6
Data Bit 6
Data Bit & Parity Check 7
Stop Bit 7
Hardware Flow Control 8
USB Interface 9
USB Enumeration 9
USB HID-KBW 9
USB Country Keyboard Types 10
Beep on Unknown Character 11
Inter-Keystroke Delay 11
Convert Case 12
USB COM Port Emulation 13
USB HID-POS 13
Introduction 13
Access the Engine with Your Program 13
Acquire Scanned Data 14
Send Data to the Engine 14
VID/PID 14

Chapter 3 Scan Mode **15**

Trigger Mode 15
Decode Session Timeout 15
Level Trigger/Pulse Trigger 16
Auto Sleep 16
Timeout between Decodes (Same Barcode) 17
Sense Mode 18
Decode Session Timeout 18
Image Stabilization Timeout 19
Continue after Good Read 19
Timeout between Decodes (Same Barcode) 20
Sensitivity 21
Continuous Mode 22
Decode Session Timeout 22
Timeout between Decodes 22

Chapter 4 Illumination 23

Illumination 23

Chapter 5 Beep & LED Notifications 24

Startup Beep 24
Good Read Beep for Non-programming Barcode 25
Good Read Beep Type 25
Good Read Beep Volume 26
Beep on Unknown Character 26
Good Read Beep for Programming Barcode 27
Good Read LED 27
Transmit NGR Message 28
Edit NGR Message 28

Chapter 6 Data Formatting 29

General Settings 30
Enable/Disable All Prefix/Suffix 30
Prefix Sequences 30
Custom Prefix 31
Enable/Disable Custom Prefix 31
Set Custom Prefix 31
AIM ID Prefix 32
Code ID Prefix 32

Restore All Default Code IDs 32
Modify Code ID 33
Custom Suffix 36
Enable/Disable Custom Suffix 36
Set Custom Suffix 36
Terminating Character Suffix 37
Enable/Disable Terminating Character Suffix 37
Set Terminating Character Suffix 38
Chapter 7 Symbologies 39
General Settings 39
Enable/Disable All Symbologies 39
Enable/Disable 1D Symbologies 39
Enable/Disable 2D Symbologies 39
Video Reverse 40
1D Symbologies 41
Code 128 41
Restore Factory Defaults 41
Enable/Disable Code 128 41
Set Length Range for Code 128 41
GS1-128 (UCC/EAN-128) 42
Restore Factory Defaults 42
Enable/Disable GS1-128 42
Set Length Range for GS1-128 42
AIM-128 43
Restore Factory Defaults 43
Enable/Disable AIM-128 43
Set Length Range for AIM-128 43
EAN-8 44
Restore Factory Defaults 44
Enable/Disable EAN-8 44
Transmit Check Digit 45
Add-On Code 45
Add-On Code Required 46
EAN-8 Extension 46
EAN-13 47
Restore Factory Defaults 47

Enable/Disable EAN-13 47
Transmit Check Digit 47
Add-On Code 48
Add-On Code Required 48
ISSN 49
Restore Factory Defaults 49
Enable/Disable ISSN 49
Add-On Code 50
Add-On Code Required 50
ISBN 51
Restore Factory Default 51
Enable/Disable ISBN 51
Set ISBN Format 51
Add-On Code 52
Add-On Code Required 52
UPC-E 53
Restore Factory Defaults 53
Enable/Disable UPC-E 53
Transmit Check Digit 53
Add-On Code 54
Add-On Code Required 54
Transmit System Character “0” 55
UPC-E Extension 55
UPC-A 56
Restore Factory Defaults 56
Enable/Disable UPC-A 56
Transmit Check Digit 56
Add-On Code 57
Add-On Code Required 57
Transmit Preamble Character 58
Interleaved 2 of 5 59
Restore Factory Defaults 59
Enable/Disable Interleaved 2 of 5 59
Set Length Range for Interleaved 2 of 5 59
Check Digit Verification 60
ITF-14 61
ITF-6 62

Matrix 2 of 5 63
Restore Factory Defaults 63
Enable/Disable Matrix 2 of 5 63
Set Length Range for Matrix 2 of 5 63
Check Digit Verification 64
Industrial 2 of 5 65
Restore Factory Defaults 65
Enable/Disable Industrial 2 of 5 65
Set Length Range for Industrial 2 of 5 65
Check Digit Verification 66
Standard 2 of 5（IATA 2 of 5） 67
Restore Factory Defaults 67
Enable/Disable Standard 25 67
Set Length Range for Standard 25 67
Check Digit Verification 68
Code 39 69
Restore Factory Defaults 69
Enable/Disable Code 39 69
Transmit Start/Stop Character 69
Set Length Range for Code 39 70
Check Digit Verification 70
Enable/Disable Code 39 Full ASCII 70
Codabar 71
Restore Factory Defaults 71
Enable/Disable Codabar 71
Set Length Range for Codabar 71
Check Digit Verification 72
Transmit Start/Stop Character 72
Start/Stop Character Format 73
Code 93 74
Restore Factory Defaults 74
Enable/Disable Code 93 74
Set Length Range for Code 93 74
Check Digit Verification 75
GS1-Databar (RSS) 76
Restore Factory Defaults 76
Enable/Disable GS1 Databar 76

Transmit Application Identifier “01” 76
Code 11 77
Restore Factory Defaults 77
Enable/Disable Code 11 77
Set Length Range for Code 11 77
Transmit Check Digit 78
Check Digit Verification 78
Plessey 79
Restore Factory Defaults 79
Enable/Disable Plessey 79
Set Length Range for Plessey 79
Check Digit Verification 80
MSI-Plessey 81
Restore Factory Defaults 81
Enable/Disable MSI-Plessey 81
Set Length Range for MSI-Plessey 81
Transmit Check Digit 82
Check Digit Verification 82
2D Symbologies 83
PDF 417 83
Restore Factory Defaults 83
Enable/Disable PDF 417 83
Set Length Range for PDF 417 83
QR Code 84
Restore Factory Defaults 84
Enable/Disable QR Code 84
Set Length Range for QR Code 84
Micro QR 84
Data Matrix 85
Restore Factory Defaults 85
Enable/Disable Data Matrix 85
Set Length Range for Data Matrix 85
Rectangular Barcode 86
Mirror Image 86

Chapter 8 Image Control 87

Ambient Illumination 87

Image Flipping 88
Flip 89
Flip Vertically 89
Flip Horizontally 89

Chapter 9 Troubleshooting 90

FAQ 90

Appendix 92

Appendix 1: Factory Defaults Table 92
Appendix 2: AIM ID Table 99
Appendix 3: Code ID Table 101
Appendix 4: ASCII Table 102
Appendix 5: Parameter Programming Examples 106
a. Program the Decode Session Timeout 106
b. Program the Time Period from Idle to Sleep 106
c. Program the Image Stabilization Timeout 106
d. Program the Timeout between Decodes (Same Barcode) 107
e. Program the Threshold Value of Illumination Change 107
f. Program the Timeout between Decodes 107
g. Program the Custom Prefix/Suffix 108
h. Program the Terminating Character Suffix 108
i. Program the Code ID 108
j. Program the NGR Message 109
k. Program the Length Range (Maximum/Minimum Lengths) for a Symbology 109
Appendix 6: Digit Barcodes 110
Appendix 7: Save/Cancel Barcodes 112

0006010

Enter Setup

Chapter 1 Getting Started

Introduction

The EM20 OEM scan engines, armed with the Newland patented UIMG®, a computerized image recognition system, bring about a new era of 2D barcode scan engines.

The EM20's 2D barcode decoder chip ingeniously blends UIMG® technology and advanced chip design & manufacturing, which significantly simplifies application design and delivers superior performance and solid reliability with low power consumption.

The EM20 supports all mainstream 1D and standard 2D barcode symbologies (e.g., PDF417, QR Code M1/M2/Micro and Data Matrix) as well as GS1-DataBar™(RSS) (Limited/Stacked/Expanded versions). It can read barcodes on virtually any medium - paper, plastic card, mobile phones and LCD displays.

This compact, lightweight engine fits easily into even the most space-constrained equipment such as data collectors, meter readers, ticket validators and PDAs.

About This Guide

This guide provides programming instructions for the EM20. Users can configure the EM20 by scanning the programming barcodes included in this manual.

The EM20 has been properly configured for most applications and can be put into use without further configuration. Users may check ***Appendix 1: Factory Defaults Table*** for reference. Throughout the manual, asterisks (**) indicate factory default values.

Connecting EVK to PC

The EVK tool is provided to assist users in application development for the EM20. You can connect the EVK to PC via a USB connection or an RS-232 connection. In case of USB connection, a driver is required if EVK wants to communicate with EM20 and receive decoded data through virtual serial port.

0006000

**** Exit Setup**

Enter Setup

Barcode Scanning

Powered by area-imaging technology and Newland patented UIMG® technology, the EM20 features fast scanning and accurate decoding. Barcodes rotated at any angle can still be read with ease. When scanning a barcode, simply center the aiming beam or pattern projected by the EM20 over the barcode.

Barcode Programming

Scanning the **Enter Setup** barcode can enable the engine to enter the setup mode. Then you can scan a number of programming barcodes to configure your engine. To exit the setup mode, scan the **Exit Setup** barcode.

If the engine has exited the setup mode, only some special programming barcodes, such as the **Enter Setup** barcode and **Restore All Factory Defaults** barcode, can be read.

Enter Setup

**** Exit Setup**

Programming barcode data (i.e. the characters under programming barcode) can be transmitted to the Host. Scan the appropriate barcode below to enable or disable the transmission of programming barcode data to the Host.

Restarting the engine will automatically disable the transmisison of programming barcode data to the Host.

Transmit Programming Barcode Data

**** Do Not Transmit Programming Barcode Data**

**** Exit Setup**

Enter Setup

Factory Defaults

Scanning the following barcode can restore the engine to the factory defaults. See ***Appendix 1: Factory Defaults Table*** for more information.

Note: Use this feature with discretion.

Restore All Factory Defaults

**** Exit Setup**

0006010

Enter Setup

Chapter 2 Communication Interfaces

The EM20 provides a TTL-232 interface and a USB interface (optional) to communicate with the host device. The host device can receive scanned data and send commands to control the engine or to access/alter the configuration information of the engine via the TTL-232 or USB interface.

TTL-232 Interface

Serial communication interface is usually used when connecting the engine to a host device (like PC, POS). However, to ensure smooth communication and accuracy of data, you need to set communication parameters (including baud rate, parity check, data bit and stop bit) to match the host device.

The serial communication interface provided by the engine is based on TTL-level signals. TTL-232 can be used for most application architectures. For those requiring RS-232, an external conversion circuit is needed. The conversion circuit is available only to some models.

1100000

**** Serial Communication**

Default serial communication parameters are listed below. Make sure all parameters match the host requirements.

Parameter	Factory Default
Serial Communication	Standard TTL-232
Baud Rate	9600
Parity Check	None
Number of Data Bits	8
Number of Stop Bits	1
Hardware Flow Control	None

0006000

**** Exit Setup**

0006010

Enter Setup

Baud Rate

Baud rate is the number of bits of data transmitted per second. Set the baud rate to match the Host requirements.

0100030

**** 9600**

0100000

1200

0100050

19200

0100010

2400

0100060

38400

0100020

4800

0100070

57600

0100040

14400

0100080

115200

0006000

**** Exit Setup**

Enter Setup

Parity Check

When the number of data bits is set to 7, you can only select either **Even Parity** or **Odd Parity**. The **None** option will be regarded as **Even Parity** in this case.

**** None**

Even Parity

Odd Parity

Data Bit

When the number of data bits is set to 7, you can only select either **Even Parity** or **Odd Parity**.

7 Data Bits

**** 8 Data Bits**

**** Exit Setup**

0006010

Enter Setup

Data Bit & Parity Check

7 Data Bits/Even Parity

7 Data Bits/Odd Parity

**** 8 Data Bits/ No Parity**

8 Data Bits/Even Parity

8 Data Bits/Odd Parity

Stop Bit

**** 1 Stop Bit**

2 Stop Bits

0006010

Enter Setup

Hardware Flow Control

If CTS flow control is enabled, the engine determines whether to transmit data based on CTS signal level. When CTS signal is at low level which means the serial port's cache memory of receiving device (such as PC) is full, the engine stops sending data through serial port until CTS signal is set to high level by receiving device. If RTS flow control is enabled, whether the engine receives data or not is dependent on RTS signal level. If the engine is not ready for receiving, it will set RTS signal to low level. When sending device (such as PC) detects it, it will not send data to the engine any more to prevent data loss.

If **No Flow Control** is selected, reception/transmission of serial data will not be influenced by RTS/CTS signal.

0104100

**** No Flow Control**

0104110

RTS Flow Control

0104120

CTS Flow Control

0104130

CTS/RTS Flow Control

Note: Before enabling hardware flow control, make sure that RTS/CTS signal line is contained in RS-232 cable. Without the signal line, serial communication errors will occur.

0006000

**** Exit Setup**

Enter Setup

USB Interface

USB Enumeration

If the engine is connected to the Host via a USB connection, the engine will be enumerated using S/N or “00000000” after power-up. **Enumeration using S/N** enables the Host to distinguish between engines of same model. **Enumeration using “00000000”** disables the Host from distinguishing between engines of same model.

Driver installation is required for each USB device distinguished from others by the Host in the process of enumeration.

Enumeration Using S/N

**** Enumeration Using “00000000”**

USB HID-KBW

When you connect the engine to the Host via a USB connection, you can enable the **USB HID-KBW** feature by scanning the barcode below. Then engine’s transmission will be simulated as USB keyboard input. The Host receives keystrokes on the virtual keyboard. It works on a Plug and Play basis and no driver is required.

USB HID-KBW

**** Exit Setup**

Enter Setup

USB Country Keyboard Types

Keyboard layouts vary from country to country. The default setting is 1-U.S. keyboard.

**** 1 - U.S.**

2 - Japan

3 - Denmark

4 - Finland

5 - France

6 - Turkey_F

7 - Italy

8 - Norway

**** Exit Setup**

Enter Setup

Beep on Unknown Character

Due to the differences in keyboard layouts, some characters contained in barcode data may be unavailable on the selected keyboard. As a result, the engine fails to transmit the unknown characters.

Scan the appropriate barcode below to enable or disable the emission of beep when an unknown character is detected.

Beep on Unknown Character

** **Do Not Beep on Unknown Character**

Inter-Keystroke Delay

This parameter specifies the delay between emulated keystrokes.

**** No Delay**

Short Delay (20ms)

Long Delay (40ms)

** **Exit Setup**

Enter Setup

Convert Case

Scan the appropriate barcode below to convert barcode data to your desired case.

**** No Case Conversion**

Invert Upper and Lower Case Characters

Convert All to Upper Case

Convert All to Lower Case

Example: When the **Convert All to Lower Case** feature is enabled, barcode data “AbC” is transmitted as “abc”.

**** Exit Setup**

0006010

Enter Setup

USB COM Port Emulation

If you connect the engine to the Host via a USB connection, the **USB COM Port Emulation** feature allows the Host to receive data in the way as a serial port does. A driver is required for this feature.

1100060

USB COM Port Emulation

USB HID-POS

Introduction

The USB HID-POS interface is recommended for new application programs. It can send up to 56 characters in a single USB report and appears more efficient than keyboard emulation.

Features:

- ✧ HID based, no custom driver required.
- ✧ Way more efficient in communication than keyboard emulation and traditional RS-232 interface.

Note: USB HID-POS does not require a custom driver. However, a HID interface on Windows 98 does. All HID interfaces employ standard driver provided by the operating system. Use defaults when installing the driver.

1100080

USB HID-POS

Access the Engine with Your Program

Use CreateFile to access the engine as a HID device and then use ReadFile to deliver the scanned data to the application program. Use WriteFile to send data to the engine.

For detailed information about USB and HID interfaces, go to www.USB.org.

0006000

**** Exit Setup**

0006010

Enter Setup

Acquire Scanned Data

After scanning and decoding a barcode, the engine sends the following input report:

	Bit							
Byte	7	6	5	4	3	2	1	0
0	Report ID = 0x02							
1	Length of the barcode							
2-57	Decoded data (1-56)							
58-60	AIM ID							
61-62	Reserved							
63	-	-	-	-	-	-	-	Decoded Data Continued

Send Data to the Engine

This output report is used to send data to the device. All programming commands can be used.

	Bit							
Byte	7	6	5	4	3	2	1	0
0	Report ID = 0x04							
1	Length of the output data							
2-63	Output data (1-62)							

VID/PID

USB uses VID (Vendor ID) and PID (Product ID) to identify and locate a device. The VID is assigned by USB Implementers Forum. Newland's vendor ID is 1EAB (Hex). A PID is assigned to each interface.

Product	Interface	PID (Hex)	PID (Dec)
EM20	USB HID-KBW	1303	4867
	USB COM Port Emulation	1306	4870
	USB HID-POS	1310	4880

0006000

**** Exit Setup**

0006010

Enter Setup

Chapter 3 Scan Mode

Trigger Mode

If the Trigger Mode is enabled, driving the nTrig pin on the host interface connector low activates a decode session. The session continues until the barcode is decoded or decode session timeout expires or the active trigger signal is no longer present. For good read, the engine transmits decoded data via communication port. To activate another session, the Host needs to first negate the trigger, wait 20ms or longer and then drive the nTrig pin low.

0302000

**** Trigger Mode**

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. It is programmable in 1ms increments from 0ms to 3,600,000ms. The default setting is 3,000ms. To learn how to program this parameter, see ***Appendix 5***.

0313000

Decode Session Timeout

0006000

**** Exit Setup**

Enter Setup

Level Trigger/Pulse Trigger

Level trigger: Decode session is activated and continued by constant active trigger signal. The decode session ends once the barcode is decoded or decode session timeout expires.

Pulse trigger: Decode session is activated by electric pulse of trigger signal. The decode session continues until the barcode is decoded or decode session timeout expires.

**** Level Trigger**

Pulse Trigger

Auto Sleep

Auto Sleep allows the engine in the Trigger Mode to automatically enter the sleep or low power mode if no operation or communication is performed for a time period (user programmable). When the engine is in the sleep mode, receiving trigger signal or communication from the Host can awake the engine. The engine returns to full operation within 100ms.

**** Enable Auto Sleep**

Disable Auto Sleep

The parameter below specifies how long the engine remains idle (no operation or communication occurs) before it is put into sleep mode. It is programmable in 1ms increments from 0ms to 65,535ms. The default setting is 500ms. To learn how to program this parameter, see ***Appendix 5***.

Time Period from Idle to Sleep

**** Exit Setup**

0006010

Enter Setup

Timeout between Decodes (Same Barcode)

Timeout between Decodes (Same Barcode) can avoid undesired rereading of same barcode in a given period of time.

To enable/disable the Timeout between Decodes (Same Barcode), scan the appropriate barcode below.

Enable Timeout between Decodes: Do not allow the engine to re-read same barcode before the timeout between decodes (same barcode) expires.

Disable Timeout between Decodes: Allow the engine to re-read same barcode.

0313161

**** Disable Timeout between Decodes**

0313171

Enable Timeout between Decodes

The following parameter sets the timeout between decodes for same barcode. It is programmable in 1ms increments from 0ms to 65,535ms. The default setting is 1,500ms.

To learn how to program this parameter, see **Appendix 5**.

0313010

Timeout between Decodes (Same Barcode)

0006000

**** Exit Setup**

0006010

Enter Setup

Sense Mode

If the Sense Mode is enabled, the engine activates a decode session every time it detects a change in ambient illumination. The decode session continues until the barcode is decoded or the decode session timeout expires.

Driving the nTrig pin on the host interface connector low can also activate a decode session. The decode session continues until the active trigger signal is no longer present or the barcode is decoded or the decode session timeout expires. The trigger signal needs to be negated before the engine is able to monitor ambient illumination again.

0302010

Sense Mode

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. If the timeout expires or the barcode is decoded, the engine goes back to monitoring ambient illumination. It is programmable in 1ms increments from 0ms to 3,600,000ms. The default setting is 3,000ms. To learn how to program this parameter, see ***Appendix 5***.

0313000

Decode Session Timeout

0006010

Enter Setup

Image Stabilization Timeout

Image Stabilization Timeout defines the amount of time that the engine waits for the image to stabilize to a point that it can be decoded with more accuracy. This parameter is programmable in 1ms increments from 0ms to 1,600ms. The default setting is 500ms.To learn how to program this parameter, see ***Appendix 5***.

0313120

Image Stabilization Timeout

Continue after Good Read

Continue after Good Read: The engine starts next decode session after a good read.

Pause after Good Read: The engine starts another round of illumination monitoring and image stabilization after a good read.

0313130

**** Pause after Good Read**

0313131

Continue after Good Read

0006000

**** Exit Setup**

Enter Setup

Timeout between Decodes (Same Barcode)

Timeout between Decodes (Same Barcode) can avoid undesired rereading of same barcode in a given period of time.

To enable/disable the Timeout between Decodes (Same Barcode), scan the appropriate barcode below.

Enable Timeout between Decodes: Do not allow the engine to re-read same barcode before the timeout between decodes (same barcode) expires.

Disable Timeout between Decodes: Allow the engine to re-read same barcode.

**** Disable Timeout between Decodes**

Enable Timeout between Decodes

The following parameter sets the timeout between decodes for same barcode. It is programmable in 1ms increments from 0ms to 65,535ms. The default setting is 1,500ms.

To learn how to program this parameter, see ***Appendix 5***.

Timeout between Decodes (Same Barcode)

**** Exit Setup**

Enter Setup

Sensitivity

Sensitivity specifies the degree of acuteness of the engine's response to changes in ambient illumination. The higher the sensitivity, the lower requirement in illumination change to trigger the engine. You can select an appropriate degree of sensitivity that fits the ambient environment.

Medium Sensitivity

Low Sensitivity

High Sensitivity

Enhanced Sensitivity

If the above four options fail to meet your needs, you may program the threshold value of illumination change.

Illumination changes that reaches or surpasses the predefined threshold value will cause the engine to start a decode session. The lower the threshold value, the greater the sensitivity of the engine. The default threshold value is 2.

To learn how to program this parameter, see ***Appendix 5***.

Threshold Value of Illumination Change (1-20)

**** Exit Setup**

0006010

Enter Setup

Continuous Mode

This mode enables the engine to scan/capture, decode and transmit over and over again.

When the engine is operating in Continuous Mode, barcode reading can be suspended/resumed through control over the trigger signal. When barcode reading is in progress, negating the trigger signal after having maintained it for 30ms or longer will suspend barcode reading; when barcode reading is suspended, performing the same control over the trigger signal will resume barcode reading.

0302020

Continuous Mode

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. It is programmable in 1ms increments from 0ms to 3,600,000ms. The default setting is 3,000ms. To learn how to program this parameter, see ***Appendix 5***.

0313000

Decode Session Timeout

Timeout between Decodes

This parameter sets the timeout between decode sessions. When a decode session ends, next session will not happen until the timeout between decodes expires. It is programmable in 1ms increments from 0ms to 65,535ms. The default setting is 1,000ms. To learn how to program this parameter, see ***Appendix 5***.

0313040

Timeout between Decodes

Enter Setup

Chapter 4 Illumination

Illumination

A couple of illumination options are provided to improve the lighting conditions during every image capture:

Normal: Illumination LEDs are turned on during image capture.

Always ON: Illumination LEDs keep ON after the engine is powered on.

OFF: Illumination LEDs are OFF all the time.

**** Normal**

OFF

Always ON

**** Exit Setup**

Enter Setup

Chapter 5 Beep & LED Notifications

Startup Beep

If startup beep is enabled, the engine will beep after being turned on.

**** Enable Startup Beep**

Disable Startup Beep

**** Exit Setup**

Enter Setup

Good Read Beep for Non-programming Barcode

The engine can provide a PWM output to an external driver circuit to drive a beeper after decoding a non-programming barcode. Scan the appropriate barcode below to enable or disable the emission of good read beep. Beep type (frequency) and volume are also user programmable.

**** Good Read Beep On for Non-programming barcode**

Good Read Beep Off for Non-programming barcode

Good Read Beep Type

Type 1

**** Type 3**

Type 2

**** Exit Setup**

Enter Setup

Good Read Beep Volume

**** Loud**

Low

Medium

Beep on Unknown Character

Due to the differences in keyboard layouts, some characters contained in barcode data may be unavailable on the selected keyboard (USB HID-KBW). As a result, the engine fails to transmit the unknown characters.

Scan the appropriate barcode below to enable or disable the emission of beep when an unknown character is detected.

Beep on Unknown Character

**** Do Not Beep on Unknown Character**

**** Exit Setup**

0006010

Enter Setup

Good Read Beep for Programming Barcode

**** Good Read Beep On for Programming Barcode**

Good Read Beep Off for Programming Barcode

Good Read LED

**** Good Read LED On**

Good Read LED Off

0006000

**** Exit Setup**

Enter Setup

Transmit NGR Message

Scan a barcode below to select whether or not to transmit a user-defined NGR (Not Good Read) message when a barcode is not decoded.

Transmit NGR Message

**** Do Not Transmit NGR Message**

Edit NGR Message

To edit an NGR message, scan the **Edit NGR Message** barcode and the numeric barcodes corresponding to the ASCII values (decimal) of desired characters and then scan the **Save** barcode.

An NGR message can contain 0-7 characters (ASCII value of character: 0-255).

Edit NGR Message

**** Exit Setup**

Enter Setup

Chapter 6 Data Formatting

In many applications, barcode data needs to be edited and distinguished from one another.

Usually AIM ID and Code ID can be used as identifiers, but in some special cases customized prefix and terminating character suffix like Carriage Return or Line Feed can also be the alternatives.

Data formatting may include:

- ✧ Append AIM ID/Code ID/custom prefix before the decoded data
- ✧ Append custom suffix after the decoded data
- ✧ Append terminating character to the end of the data

The following formats can be used when editing barcode data:

- ✧ [Code ID] + [Custom Prefix] + [AIM ID] + [DATA] + [Custom Suffix] + [Terminating Character]
- ✧ [Custom Prefix] + [Code ID] + [AIM ID] + [DATA] + [Custom Suffix] + [Terminating Character]

Note: [DATA] must be transmitted while user can decide whether to transmit any of the rest parts.

**** Exit Setup**

Enter Setup

General Settings

Enable/Disable All Prefix/Suffix

Disable All Prefix/Suffix: Transmit barcode data with no prefix/suffix.

Enable All Prefix/Suffix: Allow user to append Code ID prefix, AIM ID prefix, custom prefix/suffix and terminating character to the barcode data before the transmission.

Enable All Prefix/Suffix

Disable All Prefix/Suffix

Prefix Sequences

Code ID+Custom Prefix+AIM ID

**** Custom Prefix+Code ID+AIM ID**

**** Exit Setup**

0006010

Enter Setup

Custom Prefix

Enable/Disable Custom Prefix

If custom prefix is enabled, you are allowed to append to the data a user-defined prefix that cannot exceed 10 characters.

0305010

Enable Custom Prefix

0305000

**** Disable Custom Prefix**

Set Custom Prefix

To set a custom prefix, scan the **Set Custom Prefix** barcode and the numeric barcodes representing the hexadecimal values of a desired prefix and then scan the **Save** barcode. Refer to ***Appendix 4: ASCII Table*** for hexadecimal values of characters.

Note: A custom prefix cannot exceed 10 characters.

0300000

Set Custom Prefix

Example: Set the custom prefix to "CODE"

1. Check the hex values of "CODE" in the ASCII Table. ("CODE": 43, 4F, 44, 45)
2. Scan the **Enter Setup** barcode.
3. Scan the **Set Custom Prefix** barcode.
4. Scan the numeric barcodes "4", "3", "4", "F", "4", "4", "4" and "5".
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode.

0006000

**** Exit Setup**

Enter Setup

AIM ID Prefix

AIM (Automatic Identification Manufacturers) IDs and ISO/IEC 15424 standards define symbology identifiers and data carrier identifiers. (For the details, see ***Appendix 2: AIM ID Table***). If AIM ID prefix is enabled, the engine will add the symbology identifier before the scanned data after decoding.

Enable AIM ID Prefix

**** Disable AIM ID Prefix**

Code ID Prefix

Code ID can also be used to identify barcode type. Unlike AIM ID, Code ID is user programmable. Code ID can only consist of one or two English letters.

Enable Code ID Prefix

**** Disable Code ID Prefix**

Restore All Default Code IDs

For the information of default Code IDs, see ***Appendix 3: Code ID Table***.

Restore All Default Code IDs

**** Exit Setup**

Enter Setup

Modify Code ID

Code ID of each symbology can be programmed separately. See the following example to learn how to program a Code ID.

Example: Set the Code ID of PDF417 to “p”

1. Check the hex value of “p” in the ASCII Table. (“p”: 70)
2. Scan the **Enter Setup** barcode.
3. Scan the **Modify PDF417 Code ID** barcode.
4. Scan the numeric barcodes “7” and “0”.
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode.

Modify PDF417 Code ID

Modify Data Matrix Code ID

Modify QR Code Code ID

Modify Code 128 Code ID

Modify GS1-128 Code ID

Modify AIM-128 Code ID

**** Exit Setup**

Enter Setup

Modify EAN-8 Code ID

Modify EAN-13 Code ID

Modify UPC-E Code ID

Modify UPC-A Code ID

Modify ISBN Code ID

Modify ISSN Code ID

Modify Code 39 Code ID

Modify Code 93 Code ID

Modify Interleaved 2 of 5 Code ID

Modify ITF-14 Code ID

**** Exit Setup**

Enter Setup

Modify ITF-6 Code ID

Modify Codabar Code ID

Modify Industrial 25 Code ID

Modify Standard 25 Code ID

Modify Matrix 25Code ID

Modify Code 11

Modify Plessey Code ID

Modify MSI/Plessey Code ID

Modify GS1 Databar Code ID

** **Exit Setup**

Enter Setup

Custom Suffix

Enable/Disable Custom Suffix

If custom suffix is enabled, you are allowed to append to the data a user-defined suffix that cannot exceed 10 characters.

Enable Custom Suffix

** **Disable Custom Suffix**

Set Custom Suffix

To set a custom suffix, scan the **Set Custom Suffix** barcode and the numeric barcodes representing the hexadecimal values of a desired suffix and then scan the **Save** barcode. Refer to ***Appendix 4: ASCII Table*** for hexadecimal values of characters.

Note: A custom suffix cannot exceed 10 characters.

Set Custom Suffix

Example: Set the custom suffix to “CODE”

1. Check the hex values of “CODE” in the ASCII Table. (“CODE”: 43, 4F, 44, 45)
2. Scan the **Enter Setup** barcode.
3. Scan the **Set Custom Suffix** barcode.
4. Scan the numeric barcodes “4”, “3”, “4”, “F”, “4”, “4”, “4” and “5”.
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode.

** **Exit Setup**

Enter Setup

Terminating Character Suffix

A terminating character can be used to mark the end of data, which means nothing can be added after it.

A terminating character suffix can contain one or two characters.

Enable/Disable Terminating Character Suffix

To enable/disable terminating character suffix, scan the appropriate barcode below.

** **Enable Terminating Character Suffix**

Disable Terminating Character Suffix

** **Exit Setup**

Enter Setup

Set Terminating Character Suffix

The engine provides a shortcut for setting the terminating character suffix to 0x0D (CR) or 0x0D,0x0A (CRLF) by scanning the following barcode.

Terminating Character 0x0D

**** Terminating Character 0x0D,0x0A**

To set a terminating character suffix, scan the **Set Terminating Character Suffix** barcode and the numeric barcodes representing the hexadecimal value of a desired terminating character and then scan the **Save** barcode. Refer to ***Appendix 4: ASCII Table*** for hexadecimal values of terminating characters.

Note: A terminating character suffix cannot exceed 2 characters.

Set Terminating Character Suffix

Example: Set the terminating character suffix to 0x0D

1. Scan the **Enter Setup** barcode.
2. Scan the **Set Terminating Character Suffix** barcode.
3. Scan the numeric barcodes “0” and “D”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode.

**** Exit Setup**

0006010

Enter Setup

Chapter 7 Symbologies

General Settings

Enable/Disable All Symbologies

If the **Disable All Symbologies** feature is enabled, the engine will not be able to read any non-programming barcodes except the programming barcodes.

0001020

Enable All Symbologies

0001010

Disable All Symbologies

Enable/Disable 1D Symbologies

If the **Disable 1D Symbologies** feature is enabled, the engine will not be able to read any 1D barcodes.

0001040

Enable 1D Symbologies

0001030

Disable 1D Symbologies

Enable/Disable 2D Symbologies

If the **Disable 2D Symbologies** feature is enabled, the engine will not be able to read any 2D barcodes.

0001060

Enable 2D Symbologies

0001050

Disable 2D Symbologies

0006000

**** Exit Setup**

0006010

Enter Setup

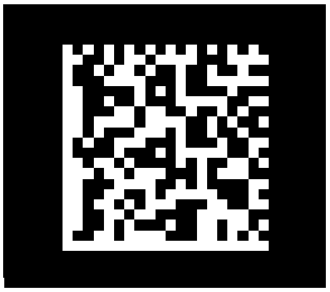
Video Reverse

Regular barcode: Dark image on a bright background.

Inverse barcode: Bright image on a dark background.

The examples of regular barcode and inverse barcode are shown below.

Regular Barcode



Inverse Barcode

Video Reverse is used to allow the engine to read barcodes that are inverted.

Video Reverse ON: Read both regular barcodes and inverse barcodes.

Video Reverse OFF: Read regular barcodes only.

The engine shows a slight decrease in scanning speed when Video Reverse is ON.

0001021

Video Reverse ON

0001011

**** Video Reverse OFF**

0006000

**** Exit Setup**

0006010

Enter Setup

1D Symbologies

Code 128

Restore Factory Defaults

Restore the Factory Defaults of Code 128

Enable/Disable Code 128

**** Enable Code 128**

Disable Code 128

Set Length Range for Code 128

Set the Minimum Length

Set the Maximum Length

**** Exit Setup**

0006010

Enter Setup

GS1-128 (UCC/EAN-128)

Restore Factory Defaults

0412000

Restore the Factory Defaults of GS1-128

Enable/Disable GS1-128

0412020

** **Enable GS1-128**

0412010

Disable GS1-128

Set Length Range for GS1-128

0412030

Set the Minimum Length

0412040

Set the Maximum Length

0006000

** **Exit Setup**

0006010

Enter Setup

AIM-128

Restore Factory Defaults

Restore the Factory Defaults of AIM-128

Enable/Disable AIM-128

**** Enable AIM-128**

Disable AIM-128

Set Length Range for AIM-128

Set the Minimum Length

Set the Maximum Length

0006010

Enter Setup

EAN-8

Restore Factory Defaults

Restore the Factory Defaults of EAN-8

Enable/Disable EAN-8

**** Enable EAN-8**

Disable EAN-8

0006010

Enter Setup

Transmit Check Digit

EAN-8 is 8 digits in length with the last one as its check digit used to verify the integrity of the data.

0401040

**** Transmit EAN-8 Check Digit**

0401030

Do Not Transmit EAN-8 Check Digit

Add-On Code

An EAN-8 barcode can be augmented with a two-digit or five-digit add-on code to form a new one. In the examples below, the part surrounded by blue dotted line is an EAN-8 barcode while the part circled by red dotted line is add-on code.

0401060

Enable 2-Digit Add-On Code

0401050

**** Disable 2-Digit Add-On Code**

0401080

Enable 5-Digit Add-On Code

0401070

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The engine decodes a mix of EAN-8 barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The engine decodes EAN-8 and ignores the add-on code when presented with an EAN-8 plus add-on barcode. It can also decode EAN-8 barcodes without add-on codes.

0006000

**** Exit Setup**

0006010

Enter Setup

Add-On Code Required

When **EAN-8 Add-On Code Required** is selected, the engine will only read EAN-8 barcodes that contain add-on codes.

0401110

EAN-8 Add-On Code Required

0401120

**** EAN-8 Add-On Code Not Required**

EAN-8 Extension

Disable EAN-8 Zero Extend: Transmit EAN-8 barcodes as is.

Enable EAN-8 Zero Extend: Add five leading zeros to decoded EAN-8 barcodes to extend to13 digits.

0401100

Enable EAN-8 Zero Extend

0401090

**** Disable EAN-8 Zero Extend**

0006010

Enter Setup

EAN-13

Restore Factory Defaults

Restore the Factory Defaults of EAN-13

Enable/Disable EAN-13

**** Enable EAN-13**

Disable EAN-13

Transmit Check Digit

**** Transmit EAN-13 Check Digit**

Do Not Transmit EAN-13 Check Digit

**** Exit Setup**

0006010

Enter Setup

Add-On Code

An EAN-13 barcode can be augmented with a two-digit or five-digit add-on code to form a new one.

0402060

Enable 2-Digit Add-On Code

0402050

**** Disable 2-Digit Add-On Code**

0402080

Enable 5-Digit Add-On Code

0402070

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The engine decodes a mix of EAN-13 barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The engine decodes EAN-13 and ignores the add-on code when presented with an EAN-13 plus add-on barcode. It can also decode EAN-13 barcodes without add-on codes.

Add-On Code Required

When **EAN-13 Add-On Code Required** is selected, the engine will only read EAN-13 barcodes that contain add-on codes.

0402090

EAN-13 Add-On Code Required

0402100

**** EAN-13 Add-On Code Not Required**

0006010

Enter Setup

ISSN

Restore Factory Defaults

Restore the Factory Defaults of ISSN

Enable/Disable ISSN

Enable ISSN

**** Disable ISSN**

0006010

Enter Setup

Add-On Code

An ISSN barcode can be augmented with a two-digit or five-digit add-on code to form a new one.

0421030

Enable 2-Digit Add-On Code

0421040

**** Disable 2-Digit Add-On Code**

0421050

Enable 5-Digit Add-On Code

0421060

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The engine decodes a mix of ISSN barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The engine decodes ISSN and ignores the add-on code when presented with an ISSN plus add-on barcode. It can also decode ISSN barcodes without add-on codes.

Add-On Code Required

When **ISSN Add-On Code Required** is selected, the engine will only read ISSN barcodes that contain add-on codes.

0421070

ISSN Add-On Code Required

0421080

**** ISSN Add-On Code Not Required**

0006010

Enter Setup

ISBN

Restore Factory Default

Restore the Factory Defaults of ISBN

Enable/Disable ISBN

**** Enable ISBN**

Disable ISBN

Set ISBN Format

****ISBN-13**

ISBN-10

**** Exit Setup**

Enter Setup

Add-On Code

An ISBN barcode can be augmented with a two-digit or five-digit add-on code to form a new one.

Enable 2-Digit Add-On Code

**** Disable 2-Digit Add-On Code**

Enable 5-Digit Add-On Code

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The engine decodes a mix of ISBN barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The engine decodes ISBN and ignores the add-on code when presented with an ISBN plus add-on barcode. It can also decode ISBN barcodes without add-on codes.

Add-On Code Required

When **ISBN Add-On Code Required** is selected, the engine will only read ISBN barcodes that contain add-on codes.

ISBN Add-On Code Required

**** ISBN Add-On Code Not Required**

**** Exit Setup**

0006010
Enter Setup

UPC-E

Restore Factory Defaults

0403000

Restore the Factory Defaults of UPC-E

Enable/Disable UPC-E

0403020

**** Enable UPC-E**

0403010

Disable UPC-E

Transmit Check Digit

0403040

**** Transmit UPC-E Check Digit**

0403030

Do Not Transmit UPC-E Check Digit

0006000
**** Exit Setup**

Enter Setup

Add-On Code

A UPC-E barcode can be augmented with a two-digit or five-digit add-on code to form a new one.

Enable 2-Digit Add-On Code

Enable 2-Digit Add-On Code

Enable 5-Digit Add-On Code

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The engine decodes a mix of UPC-E barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The engine decodes UPC-E and ignores the add-on code when presented with a UPC-E plus add-on barcode. It can also decode UPC-E barcodes without add-on codes.

Add-On Code Required

When **UPC-E Add-On Code Required** is selected, the engine will only read UPC-E barcodes that contain add-on codes.

UPC-E Add-On Code Required

**** UPC-E Add-On Code Not Required**

**** Exit Setup**

Enter Setup

Transmit System Character “0”

The first character of UPC-E barcode is the system character “0”.

Transmit System Character “0”

**** Do Not Transmit System Character “0”**

UPC-E Extension

Disable UPC-E Extend: Transmit UPC-E barcodes as is.

Enable UPC-E Extend: Extend UPC-E barcodes to make them compatible in length to UPC-A.

Enable UPC-E Extend

**** Disable UPC-E Extend**

**** Exit Setup**

0006010

Enter Setup

UPC-A

Restore Factory Defaults

Restore the Factory Defaults of UPC-A

Enable/Disable UPC-A

**** Enable UPC-A**

Disable UPC-A

Transmit Check Digit

**** Transmit UPC-A Check Digit**

Do Not Transmit UPC-A Check Digit

0006010
Enter Setup

Add-On Code

A UPC-A barcode can be augmented with a two-digit or five-digit add-on code to form a new one.

0404060
Enable 2-Digit Add-On Code

0404050
**** Disable 2-Digit Add-On Code**

0404080
Enable 5-Digit Add-On Code

0404070
**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The engine decodes a mix of UPC-A barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The engine decodes UPC-A and ignores the add-on code when presented with a UPC-A plus add-on barcode. It can also decode UPC-A barcodes without add-on codes.

Add-On Code Required

When **UPC-A Add-On Code Required** is selected, the engine will only read UPC-A barcodes that contain add-on codes.

0404110
UPC-A Add-On Code Required

0404120
**** UPC-A Add-On Code Not Required**

0006000
**** Exit Setup**

Enter Setup

Transmit Preamble Character

Preamble characters (Country Code and System Character) can be transmitted as part of a UPC-A barcode. Select one of the following options for transmitting UPC-A preamble to the host device: transmit system character only or transmit system character and country code (“0” for USA).

System Character & Country Code

**** System Character**

**** Exit Setup**

0006010

Enter Setup

Interleaved 2 of 5

Restore Factory Defaults

Restore the Factory Defaults of Interleaved 2 of 5

Enable/Disable Interleaved 2 of 5

**** Enable Interleaved 2 of 5**

Disable Interleaved 2 of 5

Set Length Range for Interleaved 2 of 5

Set the Minimum Length

Set the Maximum Length

**** Exit Setup**

0006010

Enter Setup

Check Digit Verification

A check digit is optional for Interleaved 2 of 5 and can be added as the last digit. It is a calculated value used to verify the integrity of the data.

Disable: The engine transmits Interleaved 2 of 5 barcodes as is.

Do Not Transmit Check Digit After Verification: The engine checks the integrity of all Interleaved 2 of 5 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted except the last digit, whereas those failing it will not be transmitted.

Transmit Check Digit After Verification: The engine checks the integrity of all Interleaved 2 of 5 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted, whereas those failing it will not be transmitted.

0405050

**** Disable**

0405060

Do Not Transmit Check Digit After Verification

0405070

Transmit Check Digit After Verification

Note: If the **Do Not Transmit Check Digit After Verification** option is enabled, Interleaved 2 of 5 barcodes with a length that is less than the configured minimum length after having the check digit excluded will not be decoded. (For example, when the **Do Not Transmit Check Digit After Verification** option is enabled and the minimum length is set to 4, Interleaved 2 of 5 barcodes with a total length of 4 characters including the check digit cannot be read.)

0006000

**** Exit Setup**

0006010

Enter Setup

ITF-14

ITF-14 is a special kind of Interleaved 2 of 5 with a length of 14 characters and the last character as the check character.

Restore the Factory Defaults of ITF-14

Disable ITF-14

** **Enable ITF-14 But Do Not Transmit Check Digit**

Enable ITF-14 and Transmit Check Digit

Note: It is advisable not to enable ITF-14 and Interleaved 2 of 5 at the same time.

0006000

** **Exit Setup**

0006010

Enter Setup

ITF-6

ITF-6 is a special kind of Interleaved 2 of 5 with a length of 6 characters and the last character as the check character.

0405270

Restore the Factory Defaults of ITF-6

0405110

**** Disable ITF-6**

0405120

Enable ITF-6 But Do Not Transmit Check Digit

0405130

Enable ITF-6 and Transmit Check Digit

Note: It is advisable not to enable ITF-6 and Interleaved 2 of 5 at the same time.

0006010

Enter Setup

Matrix 2 of 5

Restore Factory Defaults

Restore the Factory Defaults of Matrix 2 of 5

Enable/Disable Matrix 2 of 5

Enable Matrix 2 of 5

**** Disable Matrix 2 of 5**

Set Length Range for Matrix 2 of 5

Set the Minimum Length

Set the Maximum Length

**** Exit Setup**

Enter Setup

Check Digit Verification

Disable

**** Do Not Transmit Check Digit After Verification**

Transmit Check Digit After Verification

**** Exit Setup**

0006010

Enter Setup

Industrial 2 of 5

Restore Factory Defaults

Restore the Factory Defaults of Industrial 2 of 5

Enable/Disable Industrial 2 of 5

**** Enable Industrial 2 of 5**

Disable Industrial 2 of 5

Set Length Range for Industrial 2 of 5

Set the Minimum Length

Set the Maximum Length

**** Exit Setup**

Enter Setup

Check Digit Verification

**** Disable**

Transmit Check Digit After Verification

Do Not Transmit Check Digit After Verification

**** Exit Setup**

0006010

Enter Setup

Standard 2 of 5（IATA 2 of 5）

Restore Factory Defaults

Restore the Factory Defaults of Standard 25

Enable/Disable Standard 25

**** Enable Standard 25**

Disable Standard 25

Set Length Range for Standard 25

Set the Minimum Length

Set the Maximum Length

0006010

Enter Setup

Check Digit Verification

**** Disable**

Transmit Check Digit After Verification

Do Not Transmit Check Digit After Verification

**** Exit Setup**

Enter Setup

Code 39

Restore Factory Defaults

Restore the Factory Defaults of Code 39

Enable/Disable Code 39

**** Enable Code 39**

Disable Code 39

Transmit Start/Stop Character

**** Transmit Start/Stop Character**

Do not Transmit Start/Stop Character

**** Exit Setup**

Enter Setup

Set Length Range for Code 39

Set the Minimum Length

Set the Maximum Length

Check Digit Verification

**** Disable**

Transmit Check Digit After Verification

Do Not Transmit Check Digit After Verification

Enable/Disable Code 39 Full ASCII

The engine can be configured to identify all ASCII characters by scanning the appropriate barcode below.

**** Enable Code 39 Full ASCII**

Disable Code 39 Full ASCII

**** Exit Setup**

0006010

Enter Setup

Codabar

Restore Factory Defaults

Restore the Factory Defaults of Codabar

Enable/Disable Codabar

**** Enable Codabar**

Disable Codabar

Set Length Range for Codabar

Set the Minimum Length

Set the Maximum Length

**** Exit Setup**

0006010

Enter Setup

Check Digit Verification

**** Disable**

Transmit Check Digit After Verification

Do Not Transmit Check Digit After Verification

Transmit Start/Stop Character

**** Transmit Start/Stop Character**

Do not Transmit Start/Stop Character

**** Exit Setup**

Enter Setup

Start/Stop Character Format

You can choose your desired start/stop character format by scanning the appropriate barcode below.

**** ABCD/ABCD as the Start/Stop Character**

ABCD/TN*E as the Start/Stop Character

Start/Stop Character in Uppercase

Start/Stop Character in Lowercase

**** Exit Setup**

Enter Setup

Code 93

Restore Factory Defaults

Restore the Factory Defaults of Code 93

Enable/Disable Code 93

**** Enable Code 93**

Disable Code 93

Set Length Range for Code 93

Set the Minimum Length

Set the Maximum Length

**** Exit Setup**

Enter Setup

Check Digit Verification

Disable

**** Do Not Transmit Check Digit After Verification**

Transmit Check Digit After Verification

**** Exit Setup**

0006010

Enter Setup

GS1-Databar (RSS)

Restore Factory Defaults

0413000

Restore the Factory Defaults of GS1-Databar

Enable/Disable GS1 Databar

0413020

**** Enable GS1-DataBar**

0413010

Disable GS1-DataBar

Transmit Application Identifier “01”

0413060

**** Transmit Application Identifier “01”**

0413050

Do Not Transmit Application Identifier “01”

0006010

Enter Setup

Code 11

Restore Factory Defaults

Restore the Factory Defaults of Code 11

Enable/Disable Code 11

**** Enable Code 11**

Disable Code 11

Set Length Range for Code 11

Set the Minimum Length

Set the Maximum Length

**** Exit Setup**

Enter Setup

Transmit Check Digit

Transmit Check Digit

**** Do Not Transmit Check Digit**

Check Digit Verification

Disable

**** One Check Digit, MOD11**

Two Check Digits, MOD11/MOD11

Two Check Digits, MOD11/MOD9

One Check Digit, MOD11 (Len<=10)

Two Check Digits, MOD11/MOD11 (Len>10)

One Check Digit, MOD11 (Len<=10)

Two Check Digits, MOD11/MOD9 (Len>10)

**** Exit Setup**

0006010

Enter Setup

Plessey

Restore Factory Defaults

Restore the Factory Defaults of Plessey

Enable/Disable Plessey

**** Enable Plessey**

Disable Plessey

Set Length Range for Plessey

Set the Minimum Length

Set the Maximum Length

**** Exit Setup**

0006010

Enter Setup

Check Digit Verification

Disable

**** Do Not Transmit Check Digit After Verification**

Transmit Check Digit After Verification

0006010

Enter Setup

MSI-Plessey

Restore Factory Defaults

Restore the Factory Defaults of MSI-Plessey

Enable/Disable MSI-Plessey

**** Enable MSI-Plessey**

Disable MSI-Plessey

Set Length Range for MSI-Plessey

Set the Minimum Length

Set the Maximum Length

Enter Setup

Transmit Check Digit

Transmit Check Digit

**** Do Not Transmit Check Digit**

Check Digit Verification

Disable

**** One Check Digit, MOD10**

Two Check Digits, MOD10/MOD10

Two Check Digits, MOD10/MOD11

**** Exit Setup**

0006010

Enter Setup

2D Symbologies

PDF 417

Restore Factory Defaults

Restore the Factory Defaults of PDF 417

Enable/Disable PDF 417

**** Enable PDF 417**

Disable PDF 417

Set Length Range for PDF 417

Set the Minimum Length

Set the Maximum Length

Enter Setup

QR Code

Restore Factory Defaults

Restore the Factory Defaults of QR Code

Enable/Disable QR Code

**** Enable QR Code**

Disable QR Code

Set Length Range for QR Code

Set the Minimum Length

Set the Maximum Length

Micro QR

**** Enable Micro QR**

Disable Micro QR

**** Exit Setup**

0006010

Enter Setup

Data Matrix

Restore Factory Defaults

Restore the Factory Defaults of Data Matrix

Enable/Disable Data Matrix

**** Enable Data Matrix**

Disable Data Matrix

Set Length Range for Data Matrix

Set the Minimum Length

Set the Maximum Length

Enter Setup

Rectangular Barcode

**** Enable Rectangular Barcode**

Disable Rectangular Barcode

Mirror Image

**** Decode Mirror Images**

Do Not Decode Mirror Images

**** Exit Setup**

0006010

Enter Setup

Chapter 8 Image Control

Ambient Illumination

Ambient lighting conditions may vary from one operating environment to another, such as fluorescent lit warehouses or sunlit open spaces. Fluorescent lights may flicker when using AC power source in 50-60Hz. Usually indoor illuminance is around 1,000 lux while outdoor illuminance may reach 60,000 lux or even over 100,000 lux.

Two options are provided for ambient illumination settings:

Normal Illuminance: applicable to most indoor/outdoor environments.

High Illuminance: applicable to special enviroments with super-intense light source.

Change to this settings will not take effect until the engine reboots or wakes up from sleep.

0313150

**** Normal Illuminance (0~60000lux)**

0313151

High Illuminance (60000~120000lux)

0006000

**** Exit Setup**

Image Flipping

The user may get reversed images when the engine is installed in non-standard ways. When it happens, image flipping can be used to right the “wrong”.

The following figures illustrate standard image and three flipped images.

- ✧ Fig.8-1 Standard Image: Image the engine should get when it is installed properly and no reflector is used in its optical imaging system.
- ✧ Fig.8-2 Horizontal Flipped Image: It happens when horizontal reflection occurs along the optical path. To get standard images, enable the **Flip Horizontally** option.
- ✧ Fig.8-3 Vertical Flipped Image: It happens when vertical reflection occurs along the optical path. To get standard images, enable the **Flip Vertically** option.
- ✧ Fig.8-4 Horizontal and Vertical Flipped Image: It happens when the engine is installed upside down. To get standard images, enable the **Flip Horizontally and Vertically** option.

Fig.8-1 Standard Image

Fig.8-2 Horizontal Flipped Image

Fig.8-3 Vertical Flipped Image

Fig.8-4 Horizontal and Vertical Flipped Image

0006010

Enter Setup

Flip

0202000

**** Do Not Flip**

0202030

Flip Vertically

0202031

Flip Horizontally

0202032

Flip Horizontally and Vertically

Flip Vertically

0202033

Flip Vertically

0202034

Do Not Flip Vertically

Flip Horizontally

0202035

Flip Horizontally

0202036

Do Not Flip Horizontally

0006000

**** Exit Setup**

Chapter 9 Troubleshooting

FAQ

Q: Barcodes cannot be read.

A:

1. Find out the barcode type and verify that the barcode type is enabled. If the barcode parameters include check digit verification, select the **Disable** option.
2. If you do not know the barcode type, enable all symbologies.
3. If they are inverse barcodes (bright images on a dark background), enable the **Video Reverse** feature.

Q: Incorrect output.

A:

1. If this problem happens to all barcodes and additional characters appear before/after barcode data, disable all prefix/suffix.
2. If this problem only happens to some barcodes and matches one of the following situations:

a) incomplete barcode data: Enable the check digit verification

b) both the first and last characters are asterisks (*): Disable the transmission of start/stop characters of Code 39.

c) “a” transmitted as “+A”: Enable Code 39 Full ASCII.

Q: Barcodes can be read, but cannot be displayed.

A: Modify the serial port properties or change the communication mode.

1. Serial communication:

   Verify that the parameters (such as baud rate, data bit and stop bit) settings match the host requirements.

2. USB communication:

a. USB HID-KBW: No driver is required. It can provide output to a text file, but only alphanumeric characters can be displayed.

b. USB COM Port Emulation: A driver is required. You can get the output via a serial port utility.

Q: Illumination beam is OFF.

A:

1. Verify that the engine is properly powered up.

2. Send “?” to the engine. If the engine returns a reply of “!”, then send programming commands to turn on illumination.

Q: Carriage Return/Line Feed settings.

A: See the ***Terminating Character Suffix*** in Chapter 7.

Appendix

Appendix 1: Factory Defaults Table

Parameter		Factory Default	Remark
Programming Barcode			
Barcode Programming		Disabled	
Programming Barcode Data		Do not send	
Communication Settings			
Interface		TTL-232	Other options: USB HID-KBW, USB COM Port Emulation
TTL-232	Baud Rate	9600	
	Parity Check	None	
	Number of Data Bits	8	
	Number of Stop Bits	1	
	Hardware Flow Control	No flow control	
HID-KBW	USB Country Keyboard Type	U.S.	
	Convert Case	No conversion	
	Inter-Keystroke Delay	No delay	
	Beep on Unknown Character	Do not beep	
Scan Mode			
Scan Mode		Trigger mode	Other options: sense mode, Continuous mode.
Trigger Mode	Decode Session Timeout	3,000ms	Applicable to all three scan modes. 0~3,600,000ms
	Trigger Condition	Electric level	
	Auto Sleep	Enabled	
	Time Period from Idle to Sleep	500ms	0~65,535ms
	Timeout between Decodes (Same Barcode)	Disabled	
		1,500ms	0~65,535ms
Sense Mode	Decode Session Timeout	3,000ms	Applicable to all three scan modes. 0~3,600,000ms
	Image Stabilization Timeout	500ms	0~1,600ms
	Operation after Good Read	Pause after good read	
	Timeout between Decodes (Same Barcode)	Disabled	
		1,500ms	0~65,535ms
	Threshold Value of Illumination Change	2	1~20

Parameter		Factory Default	Remark
Continuous Mode	Decode Session Timeout	3,000ms	Applicable to all three scan modes. 0~3,600,000ms
	Timeout between Decodes	1,000ms	0~65,535ms
Illumination			
Illumination		Normal	
Beep & LED Notifications			
Startup Beep		Enabled	
Good Read Beep (Non-Programming Barcode)	Notification	Enabled	
	Beep Type	Type 3	
	Beep Volume	Loud	
Good Read Beep (Programming Barcode)		Enabled	
Good Read LED Notification		Enabled	
NGR (Not Good Read) Message		Do not transmit	
		None	
Data Formatting			
Prefix Sequence		Custom Prefix+Code ID+AIM ID	
Custom Prefix		Disabled	
		None	
AIM ID Prefix		Disabled	
Code ID Prefix		Disabled	
Custom Suffix		Disabled	
		None	
Terminating Character Suffix		Enabled	
		0x0D, 0x0A	Carriage Return /Line Feed
Image Control			
Ambient Illumination		Normal illuminance	
Image Flipping		Do not flip	

Parameter	Factory Default	Remark
Symbologies		
Video Reverse	Disabled	Applicable to all symbologies.
Code 128		
Code 128	Enabled	
Maximum Length	127	
Minimum Length	1	
GS1-128（UCC/EAN-128）		
GS1-128	Enabled	
Maximum Length	127	
Minimum Length	1	
AIM-128		
AIM-128	Enabled	
Maximum Length	127	
Minimum Length	1	
EAN-8		
EAN-8	Enabled	
Check Digit	Transmit	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
Extend to EAN-13	Disabled	
EAN-13		
EAN-13	Enabled	
Check Digit	Transmit	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
ISSN		
ISSN	Disabled	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	

Parameter	Factory Default	Remark
ISBN		
ISBN	Enabled	
ISBN Format	ISBN-13	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
UPC-E		
UPC-E	Enabled	
Check Digit	Transmit	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
Extend to UPC-A	Disabled	
System Character “0”	Do not transmit	
UPC-A		
UPC-A	Enabled	
Check Digit	Transmit	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
System Character	Transmit	
Country Code	Do not transmit	
Interleaved 2 of 5		
Interleaved 2 of 5	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Maximum Length	100	
Minimum Length	6	
ITF-6		
ITF-6	Disabled	
Check Digit	Do not transmit	

Parameter	Factory Default	Remark
ITF-14		
ITF-14	Enabled	
Check Digit	Do not transmit	
Matrix 2 of 5		
Matrix 2 of 5	Disabled	
Check Digit Verification	Enabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	6	
Industrial 2 of 5		
Industrial 2 of 5	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	6	
Standard 2 of 5		
Standard 2 of 5	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	6	
Code 39		
Code 39	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Start/Stop Character	Transmit	
Code 39 Full ASCII	Enabled	
Maximum Length	127	
Minimum Length	4	

Parameter	Factory Default	Remark
Codabar		
Codabar	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Start/Stop Character	Do not transmit	
Start/Stop Character Format	ABCD/ABCD	
Maximum Length	127	
Minimum Length	1	
Code 93		
Code 93	Enabled	
Check Digit Verification	Enabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	3	
GS1 Databar		
GS1 Databar	Enabled	
Application Identifier “01”	Transmit	
Code 11		
Code 11	Enabled	
Check Digit Verification	One check digit, MOD11	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	2	
Plessey		
Plessey	Enabled	
Check Digit Verification	Enabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	1	

Parameter	Factory Default	Remark
MSI-*Plessey*		
MSI-Plessey	Enabled	
Check Digit Verification	One check digit, MOD10	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	2	
PDF 417		
PDF 417	Enabled	
Maximum Length	2710	
Minimum Length	1	
QR Code		
QR Code	Enabled	
Micro QR	Enabled	
Maximum Length	7089	
Minimum Length	1	
Data Matrix		
Data Matrix	Enabled	
Rectangular Barcode	Enabled	
Mirror Image	Decode	
Maximum Length	3116	
Minimum Length	1	

Appendix 2: AIM ID Table

Symbology	AIM ID	Remark
EAN-13	]E0	Standard EAN-13
	]E3	EAN-13 + 2/5-Digit Add-On Code
EAN-8	]E4	Standard EAN-8
	]E4…]E1…	EAN-8 + 2-Digit Add-On Code
	]E4…]E2…	EAN-8 + 5-Digit Add-On Code
UPC-E	]E0	Standard UPC-E
	]E3	UPC-E + 2/5-Digit Add-On Code
UPC-A	]E0	Standard UPC-A
	]E3	UPC-A + 2/5-Digit Add-On Code
Code 128	]C0	Standard Code 128
GS1-128 (UCC/EAN-128)	]C1	FNC1 is the character right after the start character
AIM-128	]C2	FNC1 is the 2nd character after the start character
ISBT-128	]C4	
Interleaved 2 of 5	]I0	No check digit verification
	]I1	Transmit check digit after verification
	]I3	Do not transmit check digit after verification
ITF-6	]I1	Transmit check digit
	]I3	Do not transmit check digit
ITF-14	]I1	Transmit check digit
	]I3	Do not transmit check digit
Industrial 2 of 5	]S0	Not specified
Standard 2 of 5	]R0	No check digit verification
	]R8	One check digit, MOD10; do not transmit check digit
	]R9	One check digit, MOD10; transmit check digit
Code 39	]A0	Transmit barcodes as is; Full ASCII disabled; no check digit verification
	]A1	One check digit, MOD43; transmit check digit
	]A3	One check digit, MOD43; do not transmit check digit
	]A4	Full ASCII enabled; no check digit verification
	]A5	Full ASCII enabled; transmit check digit
	]A7	Full ASCII enabled; do not transmit check digit
Codabar	]F0	Standard Codabar
	]F2	Transmit check digit after verification
	]F4	Do not transmit check digit after verification

Symbology	AIM ID	Remark
Code 93	]G0	Standard Code 93
Code 11	]H0	One check digit MOD11; transmit check digit
	]H1	Two check digits, MOD11/MOD11; transmit check digit
	]H3	Do not transmit check digit after verification
	]H9	No check digit verification
GS1-DataBar (RSS)	]e0	Standard GS1-DataBar
Plessey	]P0	Standard Plessey
MSI-Plessey	]M0	One check digit, MOD10; transmit check digit
	]M1	One check digit, MOD10; do not transmit check digit
	]M8	Two check digits
	]M9	No check digit verification
Matrix 2 of 5	]X0	Specified by the manufacturer
	]X1	No check digit verification
	]X2	One check digit, MOD10; transmit check digit
	]X3	One check digit, MOD11; do not transmit check digit
ISBN	]X4	Standard ISBN
ISSN	]X5	Standard ISSN
PDF417	]L0	Comply with 1994 PDF417 specifications
Data Matrix	]d0	ECC000 - ECC140
	]d1	ECC200
	]d2	ECC200, FNC1 is the 1st or 5th character after the start character
	]d3	ECC200, FNC1 is the 2nd or 6th character after the start character
	]d4	ECC200, ECI included
	]d5	ECC200, FNC1 is the 1st or 5th character after the start character, ECI included
	]d6	ECC200, FNC1 is the 2nd or 6th character after the start character, ECI included
QR Code	]Q0	QR1
	]Q1	2005 version, ECI excluded
	]Q2	2005 version, ECI included
	]Q3	QR Code 2005, ECI excluded, FNC1 is the 1st character after the start character
	]Q4	QR Code 2005, ECI included, FNC1 is the 1st character after the start character
	]Q5	QR Code 2005,ECI excluded,FNC1 is the 2nd character after the start character
	]Q6	QR Code 2005, ECI included, FNC1 is the 2nd character after the start character

Reference: ISO/IEC 15424:2008 Information technology – Automatic identification and data capture techniques – Data Carrier Identifiers (including Symbology Identifiers).

Appendix 3: Code ID Table

Symbology	Code ID
Code 128	j
GS1-128(UCC/EAN-128)	j
AIM-128	f
EAN-8	d
EAN-13	d
ISSN	n
ISBN	B
UPC-E	c
UPC-A	c
Interleaved 2 of 5	e
ITF-6	e
ITF-14	e
Matrix 2 of 5	v
Industrial 2 of 5	D
Standard 2 of 5	s
Code 39	b
Codabar	a
Code 93	i
Code 11	H
Plessey	p
MSI-Plessey	m
GS1 Databar	R
PDF417	r
QR Code	Q
Data Matrix	u

Appendix 4: ASCII Table

Hex	Dec	Char
00	0	NUL (Null char.)
01	1	SOH (Start of Header)
02	2	STX (Start of Text)
03	3	ETX (End of Text)
04	4	EOT (End of Transmission)
05	5	ENQ (Enquiry)
06	6	ACK (Acknowledgment)
07	7	BEL (Bell)
08	8	BS (Backspace)
09	9	HT (Horizontal Tab)
0a	10	LF (Line Feed)
0b	11	VT (Vertical Tab)
0c	12	FF (Form Feed)
0d	13	CR (Carriage Return)
0e	14	SO (Shift Out)
0f	15	SI (Shift In)
10	16	DLE (Data Link Escape)
11	17	DC1 (XON) (Device Control 1)
12	18	DC2 (Device Control 2)
13	19	DC3 (XOFF) (Device Control 3)
14	20	DC4 (Device Control 4)
15	21	NAK (Negative Acknowledgement)
16	22	SYN (Synchronous Idle)
17	23	ETB (End of Trans. Block)
18	24	CAN (Cancel)
19	25	EM (End of Medium)
1a	26	SUB (Substitute)
1b	27	ESC (Escape)
1c	28	FS (File Separator)
1d	29	GS (Group Separator)

Hex	Dec	Char
1e	30	RS (Request to Send)
1f	31	US (Unit Separator)
20	32	SP (Space)
21	33	! (Exclamation Mark)
22	34	" (Double Quote)
23	35	# (Number Sign)
24	36	$ (Dollar Sign)
25	37	% (Percent)
26	38	& (Ampersand)
27	39	` (Single Quote)
28	40	((Left / Opening Parenthesis)
29	41	) (Right / Closing Parenthesis)
2a	42	* (Asterisk)
2b	43	+ (Plus)
2c	44	, (Comma)
2d	45	- (Minus / Dash)
2e	46	. (Dot)
2f	47	/ (Forward Slash)
30	48	0
31	49	1
32	50	2
33	51	3
34	52	4
35	53	5
36	54	6
37	55	7
38	56	8
39	57	9
3a	58	: (Colon)
3b	59	; (Semi-colon)
3c	60	< (Less Than)
3d	61	= (Equal Sign)

Hex	Dec	Char
3e	62	> (Greater Than)
3f	63	? (Question Mark)
40	64	@ (AT Symbol)
41	65	A
42	66	B
43	67	C
44	68	D
45	69	E
46	70	F
47	71	G
48	72	H
49	73	I
4a	74	J
4b	75	K
4c	76	L
4d	77	M
4e	78	N
4f	79	O
50	80	P
51	81	Q
52	82	R
53	83	S
54	84	T
55	85	U
56	86	V
57	87	W
58	88	X
59	89	Y
5a	90	Z
5b	91	[(Left / Opening Bracket)
5c	92	\ (Back Slash)
5d	93	] (Right / Closing Bracket)

Hex	Dec	Char
5e	94	^ (Caret / Circumflex)
5f	95	_ (Underscore)
60	96	' (Grave Accent)
61	97	a
62	98	b
63	99	c
64	100	d
65	101	e
66	102	f
67	103	g
68	104	h
69	105	i
6a	106	j
6b	107	k
6c	108	l
6d	109	m
6e	110	n
6f	111	o
70	112	p
71	113	q
72	114	r
73	115	s
74	116	t
75	117	u
76	118	v
77	119	w
78	120	x
79	121	y
7a	122	z
7b	123	{ (Left/ Opening Brace)
7c	124	| (Vertical Bar)
7d	125	} (Right/Closing Brace)
7e	126	~ (Tilde)
7f	127	DEL (Delete)

Appendix 5: Parameter Programming Examples

The following examples show you how to program parameters by scanning programming barcodes.

a. Program the Decode Session Timeout

Example: Set the decode session timeout to 1500ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Decode Session Timeout** barcode.
3. Scan the numeric barcodes “1”, “5”, “0” and “0”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

b. Program the Time Period from Idle to Sleep

Example: Set the time period from idle to sleep to 500ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Time Period from Idle to Sleep** barcode.
3. Scan the numeric barcodes “5”, “0” and “0”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

c. Program the Image Stabilization Timeout

Example: Set the image stabilization timeout to 500ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Image Stabilization Timeout** barcode.
3. Scan the numeric barcodes “5”, “0” and “0”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

d. Program the Timeout between Decodes (Same Barcode)

Example: Set the timeout between decodes (same barcode) to 1000ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Timeout between Decodes (Same Barcode)** barcode.
3. Scan the numeric barcodes “1”, “0”, “0” and “0”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

e. Program the Threshold Value of Illumination Change

Example: Set the threshold value of illumination change to 4

1. Scan the **Enter Setup** barcode.
2. Scan the **Threshold Value of Illumination Change** barcode.
3. Scan the numeric barcode “4”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

f. Program the Timeout between Decodes

Example: Set the timeout between decodes to 500ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Timeout between Decodes** barcode.
3. Scan the numeric barcodes “5”, “0” and “0”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

g. Program the Custom Prefix/Suffix

Example: Set the custom prefix to “CODE”

1. Check the hex values of “CODE” in the ASCII Table. (“CODE”: 43, 4F, 44, 45)
2. Scan the **Enter Setup** barcode.
3. Scan the **Set Custom Prefix** barcode.
4. Scan the numeric barcodes “4”, “3”, “4”, “F”, “4”, “4”, “4” and “5”.
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

h. Program the Terminating Character Suffix

Example: Set the terminating character suffix to 0x0D

1. Scan the **Enter Setup** barcode.
2. Scan the **Set Terminating Character Suffix** barcode.
3. Scan the numeric barcodes “0” and “D”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

i. Program the Code ID

Example: Set the Code ID of PDF 417 to “p”

1. Check the hex value of “p” in the ASCII Table. (“p”: 70)
2. Scan the **Enter Setup** barcode.
3. Scan the **Modify PDF417 Code ID** barcode.
4. Scan the numeric barcodes “7” and “0”.
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

j. Program the NGR Message

Example: Set the NGR message to "!ERR"

1. Check the hex values of "!ERR" in the ASCII Table. ("!ERR": 21, 45, 52, 52)
2. Scan the **Enter Setup** barcode.
3. Scan the **Edit NGR Message** barcode.
4. Scan the numeric barcodes "2", "1", "4", "5", "5", "2", "5" and "2".
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

k. Program the Length Range (Maximum/Minimum Lengths) for a Symbology

Note: For 1D symbologies, if minimum length is set to be greater than maximum length, the engine only decodes barcodes with either the minimum or maximum length. If you only want to read barcodes with a specific length, set both minimum and maximum lengths to be that desired length.

Example: Set the engine to decode Code 128 barcodes containing between 8 and 12 characters

1. Scan the **Enter Setup** barcode.
2. Scan the **Set the Minimum Length** barcode.
3. Scan the numeric barcode "8".
4. Scan the **Save** barcode.
5. Scan the **Set the Maximum Length** barcode.
6. Scan the numeric barcodes "1" and "2".
7. Scan the **Save** barcode.
8. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

Appendix 6: Digit Barcodes

0-9

0

5

1

6

2

7

3

8

4

9

A-F

A

B

C

D

E

F

Appendix 7: Save/Cancel Barcodes

After reading numeric barcode(s), you need to scan the **Save** barcode to save the data. If you scan the wrong digit(s), you can either scan the **Cancel** barcode and then start the configuration all over again, or scan the **Delete the Last Digit** barcode and then the correct digit, or scan the **Delete All Digits** barcode and then the digits you want.

For instance, after reading the **Maximum Length** barcode and numeric barcodes “1”, “2” and “3”, you scan:

- **Delete the Last Digit:** The last digit “3” will be removed.
- **Delete All Digits:** All digits “123” will be removed.
- **Cancel:** The maximum length configuration will be cancelled. And the engine is still in the setup mode.

Save

Delete the Last Digit

Delete All Digits

Cancel

Headquarters
Fujian Newland Auto-ID Tech. Co., Ltd.
3F, Building A, No.1, Rujiang West Rd., Mawei, Fuzhou, Fujian, China 350015
TEL: +86 - (0) 591-83978605
FAX: +86 - (0) 591-83979216
E-mail: marketing@nlscan.com
WEB：www.nlscan.com

Newland Europe BV
Rolweg 25, 4104 AV Culemborg, The Netherlands
TEL: +31 (0) 345 87 00 33
FAX: +31 (0) 345 87 00 39
Email: info@newland-id.com
WEB: www.newland-id.com
Tech Support: tech-support@newland-id.com

Newland North America Inc.
Address: 46559 Fremont Blvd., Fremont, CA 94538, USA
TEL: 510 490 3888
Fax: 510 490 3887
Email: info@newlandna.com
WEB: www.newlandna.com

Newland Taiwan Inc.
7F-6, No. 268, Liancheng Rd., Jhonghe Dist. 235, New Taipei City, Taiwan
TEL: +886 2 7731 5388
FAX: +886 2 7731 5389
Email: info@newland-id.com.tw
WEB: www.newland-id.com.tw