NLS-FM305X-2X
Fixed Mount Barcode Scanner
User Guide
Disclaimer

© 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, Ruijiang West Rd., Mawei, Fuzhou, Fujian, China  350015
http://www.newlandaidc.com
## Revision History

<table>
<thead>
<tr>
<th>Version</th>
<th>Description</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1.0.0</td>
<td>Initial release.</td>
<td>July 27, 2017</td>
</tr>
<tr>
<td>V1.0.1</td>
<td>Added the <strong>Enable/Disable PDF417 ECI Output</strong>, <strong>Enable/Disable QR ECI Output</strong> and <strong>Enable/Disable Data Matrix ECI Output</strong> features in Chapter 8. Note: Firmware version V1.00.088 or later is required for the new features above.</td>
<td>November 10, 2017</td>
</tr>
</tbody>
</table>
# Table of Contents

Revision History .................................................................................................................. 3

## Chapter 1 Getting Started ................................................................................................ 1
  - Introduction ...................................................................................................................... 1
  - About This Guide ............................................................................................................ 1
  - Unpacking ....................................................................................................................... 1
  - FM30 Scanner ................................................................................................................ 2
  - Data Port Pinout ............................................................................................................. 2
  - Dimensions (unit: mm) .................................................................................................... 3
    - FM3056-2X Scanner ..................................................................................................... 3
    - FM3051-2X Scanner ..................................................................................................... 4
  - IR Triggering Range ........................................................................................................ 5
  - Optics .............................................................................................................................. 6
  - Connecting the FM30 to a Host Device ........................................................................ 8
    - Using USB Cable ......................................................................................................... 9
    - Using RS-232 Cable .................................................................................................... 10
  - Maintenance ................................................................................................................... 11
  - Scanning Instructions ..................................................................................................... 11
  - Barcode Programming ................................................................................................. 12
  - Factory Defaults ............................................................................................................ 13
  - Custom Defaults ........................................................................................................... 13
  - Query Product Information ........................................................................................... 13

## Chapter 2 Communication Interfaces ............................................................................. 14
  - RS-232 Interface ........................................................................................................... 14
    - Baud Rate .................................................................................................................. 15
    - Parity Check ............................................................................................................... 16
    - Data Bits .................................................................................................................... 16
    - Stop Bits ..................................................................................................................... 17
  - USB Interface ................................................................................................................ 18
    - USB HID-KBW .......................................................................................................... 18
      - USB Country Keyboard Types ............................................................................... 19
      - Beep on Unknown Character ................................................................................. 22
      - Inter-Keystroke Delay ............................................................................................. 22
      - Convert Case ......................................................................................................... 23
Chapter 3 Scan Mode .................................................................................................................. 31

Sense Mode ................................................................................................................................. 31
  Decode Session Timeout ................................................................................................................. 31
  Image Stabilization Timeout ......................................................................................................... 32
  Timeout between Decodes ............................................................................................................ 32
  Timeout between Decodes (Same Barcode) .................................................................................. 33
  Sensitivity .................................................................................................................................. 34
Continuous Mode .......................................................................................................................... 35
  Decode Session Timeout ................................................................................................................. 35
  Timeout between Decodes ............................................................................................................. 35
  Timeout between Decodes (Same Barcode) .................................................................................. 36

Chapter 4 Scanning Preferences .................................................................................................. 37

Introduction ................................................................................................................................. 37
Decode Area .................................................................................................................................. 37
  Whole Area Decoding ................................................................................................................... 37
  Specific Area Decoding .................................................................................................................. 37
  Specify Decoding Area .................................................................................................................. 38

Chapter 5 Illumination .................................................................................................................. 40

Illumination .................................................................................................................................. 40

Chapter 6 Notifications ............................................................................................................... 41

Power On Beep ............................................................................................................................. 41
Good Read Beep ............................................................................................................................. 41
  Beep Type .................................................................................................................................. 42
  Beep Volume ................................................................................................................................. 42
Beep on Unknown Character ................................................................. 43
Good Read Voice Prompt Volume .......................................................... 43
Bad Read Message .................................................................................. 44

Chapter 7 Prefix & Suffix ........................................................................ 45
Global Settings ......................................................................................... 46
   Enable/Disable All Prefixes/Suffixes ....................................................... 46
   Prefix Sequences ................................................................................... 46
Custom Prefix .......................................................................................... 47
   Enable/Disable Custom Prefix ............................................................... 47
   Set Custom Prefix ................................................................................ 47
AIM ID Prefix .......................................................................................... 48
Code ID Prefix ........................................................................................ 48
   Restore All Default Code IDs ............................................................... 48
   Modify Code ID .................................................................................... 49
Custom Suffix .......................................................................................... 52
   Enable/Disable Custom Suffix ............................................................... 52
   Set Custom Suffix ................................................................................ 52
Terminating Character Suffix .................................................................... 53
   Enable/Disable Terminating Character Suffix ......................................... 53
   Set Terminating Character Suffix ........................................................ 54

Chapter 8 Symbologies ........................................................................... 55
Global Settings ......................................................................................... 55
   Enable/Disable All Symbologies ............................................................ 55
   Enable/Disable 1D Symbologies ............................................................. 55
   Enable/Disable 2D Symbologies ............................................................. 55
   Video Reverse ....................................................................................... 56
1D Symbologies ......................................................................................... 57
   Code 128 ............................................................................................... 57
      Restore Factory Defaults ................................................................. 57
      Enable/Disable Code 128 ................................................................. 57
      Set Length Range for Code 128 ........................................................ 57
GS1-128 (UCC/EAN-128) ........................................................................ 58
   Restore Factory Defaults ................................................................. 58
   Enable/Disable GS1-128 ................................................................. 58
   Set Length Range for GS1-128 ............................................................ 58
AIM-128 ............................................................................................... 59
   Restore Factory Defaults ................................................................. 59
Enable/Disable AIM-128 .......................................................................................... 59
Set Length Range for AIM-128 ............................................................................... 59
EAN-8 ....................................................................................................................... 60
  Restore Factory Defaults ...................................................................................... 60
  Enable/Disable EAN-8 ......................................................................................... 60
  Transmit Check Character ................................................................................... 60
  Add-On Code ........................................................................................................ 61
  Add-On Code Required ......................................................................................... 62
EAN-13 ...................................................................................................................... 63
  Restore Factory Defaults ...................................................................................... 63
  Enable/Disable EAN-13 ...................................................................................... 63
  Transmit Check Character ................................................................................... 63
  Add-On Code ........................................................................................................ 64
  Add-On Code Required ......................................................................................... 64
  EAN-13 Beginning with 290 Add-On Code Required ........................................... 65
  EAN-13 Beginning with 378/379 Add-On Code Required .................................... 65
  EAN-13 Beginning with 414/419 Add-On Code Required .................................... 66
  EAN-13 Beginning with 434/439 Add-On Code Required .................................... 66
  EAN-13 Beginning with 977 Add-On Code Required ........................................... 67
  EAN-13 Beginning with 978 Add-On Code Required ........................................... 67
  EAN-13 Beginning with 979 Add-On Code Required ........................................... 68
ISSN .......................................................................................................................... 69
  Restore Factory Defaults ...................................................................................... 69
  Enable/Disable ISSN ......................................................................................... 69
  Add-On Code ........................................................................................................ 70
  Add-On Code Required ......................................................................................... 70
ISBN ......................................................................................................................... 71
  Restore Factory Default ...................................................................................... 71
  Enable/Disable ISBN ......................................................................................... 71
  Set ISBN Format .................................................................................................. 71
  Add-On Code ........................................................................................................ 72
  Add-On Code Required ......................................................................................... 72
UPC-E ......................................................................................................................... 73
  Restore Factory Defaults ...................................................................................... 73
  Enable/Disable UPC-E ......................................................................................... 73
  Transmit Check Character ................................................................................... 73
  Add-On Code ........................................................................................................ 74
  Add-On Code Required ......................................................................................... 74
  Transmit System Character .................................................................................. 75
UPC-A ............................................................................................................. 76
  Restore Factory Defaults ............................................................................... 76
  Enable/Disable UPC-A ............................................................................... 76
  Transmit Check Character ........................................................................... 76
  Add-On Code ................................................................................................ 77
  Add-On Code Required ................................................................................. 77
  Transmit Preamble Character ....................................................................... 78
Interleaved 2 of 5 ............................................................................................. 79
  Restore Factory Defaults ............................................................................... 79
  Enable/Disable Interleaved 2 of 5 ................................................................. 79
  Set Length Range for Interleaved 2 of 5 ....................................................... 79
  Check Character Verification ....................................................................... 80
Febraban ............................................................................................................ 81
  Disable/Enable Febraban ............................................................................... 81
  Transmit Delay .............................................................................................. 81
ITF-14 ............................................................................................................... 83
ITF-6 .................................................................................................................. 84
Matrix 2 of 5 ...................................................................................................... 85
  Restore Factory Defaults ............................................................................... 85
  Enable/Disable Matrix 2 of 5 ....................................................................... 85
  Set Length Range for Matrix 2 of 5 .............................................................. 85
  Check Character Verification ...................................................................... 86
Industrial 2 of 5 ................................................................................................. 87
  Restore Factory Defaults ............................................................................... 87
  Enable/Disable Industrial 2 of 5 ................................................................. 87
  Set Length Range for Industrial 2 of 5 ......................................................... 87
  Check Character Verification ...................................................................... 88
Standard 2 of 5 (IATA 2 of 5) .......................................................................... 89
  Restore Factory Defaults ............................................................................... 89
  Enable/Disable Standard 25 ......................................................................... 89
  Set Length Range for Standard 25 ............................................................... 89
  Check Character Verification ...................................................................... 90
Code 39 ............................................................................................................ 91
  Restore Factory Defaults ............................................................................... 91
  Enable/Disable Code 39 ............................................................................... 91
  Transmit Start/Stop Character .................................................................... 91
  Set Length Range for Code 39 ..................................................................... 92
  Check Character Verification ...................................................................... 92
  Enable/Disable Code 39 Full ASCII ........................................................... 92
Enable/Disable Code 32 ................................................................. 93
Code 32 Prefix ........................................................................ 93
Transmit Code 32 Check Character ........................................... 94
Transmit Code 32 Start/Stop Character ....................................... 94

Codabar .................................................................................. 95
Restore Factory Defaults .......................................................... 95
Enable/Disable Codabar ............................................................ 95
Set Length Range for Codabar .................................................. 95
Check Character Verification ..................................................... 96
Transmit Start/Stop Character ................................................... 96
Start/Stop Character Format ..................................................... 97

Code 93 .................................................................................. 98
Restore Factory Defaults .......................................................... 98
Enable/Disable Code 93 ............................................................ 98
Set Length Range for Code 93 .................................................. 98
Check Character Verification ..................................................... 99

GS1-Databar (RSS) .................................................................. 100
Restore Factory Defaults .......................................................... 100
Enable/Disable GS1 Databar ...................................................... 100
Transmit Application Identifier “01” .......................................... 100

Code 11 ................................................................................ 101
Restore Factory Defaults .......................................................... 101
Enable/Disable Code 11 ............................................................ 101
Set Length Range for Code 11 .................................................. 101
Transmit Check Character ....................................................... 102
Check Character Verification ..................................................... 102

Plessey .................................................................................. 103
Restore Factory Defaults .......................................................... 103
Enable/Disable Plessey ............................................................ 103
Set Length Range for Plessey .................................................. 103
Check Character Verification ..................................................... 104

MSI-Plessey .......................................................................... 105
Restore Factory Defaults .......................................................... 105
Enable/Disable MSI-Plessey ...................................................... 105
Set Length Range for MSI-Plessey .......................................... 105
Transmit Check Character ....................................................... 106
Check Character Verification ..................................................... 106

2D Symbologies .................................................................... 107
PDF417 ................................................................................. 107
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear Data Format</td>
<td></td>
</tr>
<tr>
<td>Data Format Selection</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable Data Formatter</td>
<td></td>
</tr>
<tr>
<td>Add a Data Format</td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>Add a Data Format</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable Data Formatter</td>
<td></td>
</tr>
<tr>
<td>Non-Match Error Beep</td>
<td></td>
</tr>
<tr>
<td>Data Format Selection</td>
<td></td>
</tr>
<tr>
<td>Change Data Format for a Single Scan</td>
<td></td>
</tr>
<tr>
<td>Clear Data Format</td>
<td></td>
</tr>
<tr>
<td>Query Data Formats</td>
<td></td>
</tr>
<tr>
<td>Image Flipping</td>
<td></td>
</tr>
<tr>
<td>Data Matrix</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable Data Matrix</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for Data Matrix</td>
<td></td>
</tr>
<tr>
<td>Rectangular Barcode</td>
<td></td>
</tr>
<tr>
<td>Data Matrix Twin Code</td>
<td></td>
</tr>
<tr>
<td>Character Encoding</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable Data Matrix ECI Output</td>
<td></td>
</tr>
<tr>
<td>Chinese Sensible Code</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable Chinese Sensible Code</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for Chinese Sensible Code</td>
<td></td>
</tr>
<tr>
<td>Restore Factory Defaults</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable QR Code</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for QR Code</td>
<td></td>
</tr>
<tr>
<td>Micro QR</td>
<td></td>
</tr>
<tr>
<td>QR Twin Code</td>
<td></td>
</tr>
<tr>
<td>Character Encoding</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable QR ECI Output</td>
<td></td>
</tr>
<tr>
<td>PDF 417 Twin Code</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for PDF417</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable PDF417 ECI Output</td>
<td></td>
</tr>
<tr>
<td>Restore Factory Defaults</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable PDF417</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for PDF417</td>
<td></td>
</tr>
<tr>
<td>PDF 417 Twin Code</td>
<td></td>
</tr>
<tr>
<td>Character Encoding</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable PDF417 ECI Output</td>
<td></td>
</tr>
<tr>
<td>QR ECI Output</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for QR ECI Output</td>
<td></td>
</tr>
<tr>
<td>Chinese Sensible Code</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for Chinese Sensible Code</td>
<td></td>
</tr>
<tr>
<td>Restore Factory Defaults</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable Chinese Sensible Code</td>
<td></td>
</tr>
<tr>
<td>Character Encoding</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable Chinese Sensible Code</td>
<td></td>
</tr>
<tr>
<td>Data Matrix</td>
<td></td>
</tr>
<tr>
<td>Restore Factory Defaults</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable Data Matrix</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for Data Matrix</td>
<td></td>
</tr>
<tr>
<td>Rectangular Barcode</td>
<td></td>
</tr>
<tr>
<td>Data Matrix Twin Code</td>
<td></td>
</tr>
<tr>
<td>Character Encoding</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable Data Matrix ECI Output</td>
<td></td>
</tr>
<tr>
<td>Chinese Sensible Code</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for Chinese Sensible Code</td>
<td></td>
</tr>
<tr>
<td>Restore Factory Defaults</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable QR Code</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for QR Code</td>
<td></td>
</tr>
<tr>
<td>Micro QR</td>
<td></td>
</tr>
<tr>
<td>QR Twin Code</td>
<td></td>
</tr>
<tr>
<td>Character Encoding</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable QR ECI Output</td>
<td></td>
</tr>
<tr>
<td>PDF 417 Twin Code</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for PDF417</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable PDF417 ECI Output</td>
<td></td>
</tr>
<tr>
<td>QR ECI Output</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for QR ECI Output</td>
<td></td>
</tr>
<tr>
<td>Chinese Sensible Code</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for Chinese Sensible Code</td>
<td></td>
</tr>
<tr>
<td>Restore Factory Defaults</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable QR Code</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for QR Code</td>
<td></td>
</tr>
<tr>
<td>Micro QR</td>
<td></td>
</tr>
<tr>
<td>QR Twin Code</td>
<td></td>
</tr>
<tr>
<td>Character Encoding</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable QR ECI Output</td>
<td></td>
</tr>
<tr>
<td>PDF 417 Twin Code</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for PDF417</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable PDF417 ECI Output</td>
<td></td>
</tr>
<tr>
<td>QR ECI Output</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for QR ECI Output</td>
<td></td>
</tr>
<tr>
<td>Chinese Sensible Code</td>
<td></td>
</tr>
<tr>
<td>Set Length Range for Chinese Sensible Code</td>
<td></td>
</tr>
</tbody>
</table>

**Chapter 9 Image Control** ........................................................................... 117

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image Flipping</td>
<td></td>
</tr>
</tbody>
</table>

**Chapter 10 Data Formatter** ...................................................................... 119

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>Add a Data Format</td>
<td></td>
</tr>
<tr>
<td>Enable/Disable Data Format</td>
<td></td>
</tr>
<tr>
<td>Non-Match Error Beep</td>
<td></td>
</tr>
<tr>
<td>Data Format Selection</td>
<td></td>
</tr>
<tr>
<td>Change Data Format for a Single Scan</td>
<td></td>
</tr>
<tr>
<td>Clear Data Format</td>
<td></td>
</tr>
<tr>
<td>Query Data Formats</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 1 Getting Started

Introduction

The NLS-FM305X-2X fixed mount barcode scanner (hereinafter referred to as “FM30 scanner” or “the FM30” or “the scanner”), armed with the world-leading Newland patented $UISG^*$, a computerized image recognition system-on-chip, bring about a new era of 2D barcode scanner.

The FM30 supports all mainstream 1D and standard 2D barcode symbologies (e.g., PDF417, QR Code M1/M2/Micro, Data Matrix and Chinese Sensible Code) as well as GS1-DataBar\textsuperscript{TM}(RSS) (Limited/Stacked/Expanded versions). It can read barcodes on virtually any medium - paper, plastic card, mobile phones and LCD displays.

Designed for fixed mount integrations, this scanner is easy to fit into various equipment such as self-service cabinets, vending machines, ATMs, access control, retail POS and fast food self-ordering kiosks.

About This Guide

This guide provides programming instructions for FM30 scanner. Users can configure the scanner by scanning the programming barcodes included in this manual.

The scanner 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.

Unpacking

Open the package and take out the scanner and its accessories. Check to make sure everything on the packing list is present and intact. If any contents are damaged or missing, please keep the original package and contact your dealer immediately for after-sales service.
FM30 Scanner

Data Port Pinout

<table>
<thead>
<tr>
<th>PIN</th>
<th>Signal</th>
<th>Type</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NC</td>
<td>-</td>
<td>NC</td>
</tr>
<tr>
<td>2</td>
<td>NC</td>
<td>-</td>
<td>NC</td>
</tr>
<tr>
<td>3</td>
<td>VCC</td>
<td>P</td>
<td>Power+ (DC5V)</td>
</tr>
<tr>
<td>4</td>
<td>TXD</td>
<td>O</td>
<td>RS-232 output</td>
</tr>
<tr>
<td>5</td>
<td>RXD</td>
<td>I</td>
<td>RS-232 input</td>
</tr>
<tr>
<td>6</td>
<td>CTS</td>
<td>I/O</td>
<td>Clear to send (RS-232)</td>
</tr>
<tr>
<td>7</td>
<td>RTS</td>
<td>I/O</td>
<td>Request to send (RS-232)</td>
</tr>
<tr>
<td>8</td>
<td>GND</td>
<td>P</td>
<td>Ground</td>
</tr>
<tr>
<td>9</td>
<td>D-</td>
<td>I/O</td>
<td>USB signal</td>
</tr>
<tr>
<td>10</td>
<td>D+</td>
<td>I/O</td>
<td></td>
</tr>
</tbody>
</table>
Dimensions (unit: mm)

FM3056-2X Scanner

- **Scan Window (31.5*46.5mm)**
- **Illumination LED**
- **IR LED**
- **RJ45 Port (Data Port)**
- **Four M2 self-tapping screws**
  - T 7mm MAX

**Dimensions:**
- Width: 78.2±0.5 mm
- Height: 67.2±0.5 mm
- Depth: 52.5±0.5 mm
- Depth (IR LED): 52.5±0.5 mm
- Depth (Scan Window): 58.71±0.3 mm
- Right side: 68.71±0.3 mm
- Left side: 46.6±0.5 mm
FM3051-2X Scanner

IR LED

Scan Window (38.3*60.4mm)

RJ45 Port (Data Port)

Four M2 self-tapping screws

Dimensions:
- Width: 60±0.3 mm
- Height: 70±0.3 mm
- Depth: 3.5±0.3 mm
- Width: 67.2±0.5 mm
- Height: 78.2±0.5 mm
- Width: 62±0.5 mm
- Height: 71.5±0.5 mm

Notes:
- 7 mm MAX
IR Triggering Range

30CM

28° 28°
Optics

Horizontal:

- 4 Illumination LEDs
- 4 IR LEDs

- FOV of LENs
- FOV of Illumination LEDs
- FOV of IR LEDs

- Dimensions: 39, 24, 23, -20, 47.6, 48.2
Vertical:
Connecting the FM30 to a Host Device

The scanner must be connected to a host device in actual application, such as PC, POS or any intelligent terminal with USB or RS-232 port, using a USB or RS-232 cable.

USB

[USB port on the host device]

RS-232

[RS-232 port on the host device]

**Note:** Please check the port on the host device and purchase the cable accordingly.
Using USB Cable

Connect the scanner to a host device with a USB cable with RJ45 and USB connectors:

1. Plug the cable’s RJ45 connector into the data port on the scanner.
2. Plug the cable’s USB connector into the USB port on the host device.
Using RS-232 Cable

Connect the scanner to a host device with an RS-232 cable with RJ45, RS-232 connector and a power jack:

1. Plug the cable’s RJ45 connector into the data port on the scanner.
2. Plug the cable’s RS-232 connector into the RS-232 port on the host device.
3. Plug the power adapter into the power jack of the cable.
4. Connect the power adapter to a power outlet.
Maintenance

✧ The scan window should be kept clean.
✧ Do not scratch the scan window.
✧ Use soft brush to remove the stain from the scan window.
✧ Use the soft cloth to clean the window, such as eyeglass cleaning cloth.
✧ Do not spray any liquid on the scan window.
✧ Do not use any detergent to clean other parts of the device except for water.

Note: The warranty DOES NOT cover damages caused by inappropriate care and maintenance.

Scanning Instructions

1. Present the barcode in front of the scan window of the scanner, adjusting the distance between them within the range of 1cm-5cm.

2. For a successful read, the scanner will beep and send the data to the host.
Barcode Programming

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

If the scanner 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.

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

Restarting the scanner will automatically disable the transmission of programming barcode data to the host device.
Factory Defaults

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

Note: Use this feature with discretion.

Custom Defaults

Custom defaults make it possible to save the frequently-used settings on the scanner.

Scanning the Save as Custom Defaults barcode can save the current settings as custom defaults. Once custom default settings are stored, they can be recovered at any time by scanning the Restore All Custom Defaults barcode.

Custom defaults are stored in the non-volatile memory. Restoring the scanner to the factory defaults will not remove the custom defaults from the scanner.

Query Product Information

After scanning the barcode below, the product information (such as firmware version, model number, serial number and manufacturing date) will be sent to the host device.
Chapter 2 Communication Interfaces

The scanner provides an RS-232 interface and a USB interface to communicate with the host device. The host device can receive scanned data and send commands to control the scanner or to access/alter the configuration information of the scanner via the interface.

RS-232 Interface

When the scanner is connected to the RS-232 port of a host device, the scanner will automatically enable RS-232 communication. However, you need to set communication parameters (including baud rate, parity check, data bit and stop bit) to match the host device.

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Factory Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baud Rate</td>
<td>115200</td>
</tr>
<tr>
<td>Parity Check</td>
<td>None</td>
</tr>
<tr>
<td>Data Bits</td>
<td>8</td>
</tr>
<tr>
<td>Stop Bits</td>
<td>1</td>
</tr>
<tr>
<td>Hardware Flow Control</td>
<td>None</td>
</tr>
</tbody>
</table>
**Baud Rate**

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

- 9600
- 1200
- 2400
- 4800
- 14400
- 19200
- 38400
- 57600
- **115200**
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.

![Parity Options](image)

Data Bits

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

![Data Bits Options](image)
## Stop Bits

- **1 Stop Bit**
  - @232STP0

- **2 Stop Bits**
  - @232STP1
USB Interface

USB HID-KBW

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

** USB HID-KBW
USB Country Keyboard Types

Keyboard layouts vary from country to country. The default setting is U.S. keyboard.
Enter Setup

@KBWCTY8
Germany, Austria

@KBWCTY9
Greece

@KBWCTY10
Hungary

@KBWCTY11
Israel

@KBWCTY12
Italy

@KBWCTY13
Latin America, South America

@KBWCTY14
Netherlands

@KBWCTY15
Norway

@KBWCTY16
Poland

@KBWCTY17
Portugal

** Exit Setup
Note: To program the scanner to get proper output for Russian encoded with Windows 1251 or UTF-8 (PDF417/QR Code/Data Matrix), see Appendix 5.
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 scanner 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.

![Barcode 1](image1.png)

Beep on Unknown Character

![Barcode 2](image2.png)

** Do Not Beep on Unknown Character

Inter-Keystroke Delay

This parameter specifies the delay between emulated keystrokes. It is programmable in 5ms increments from 0ms to 75ms. To learn how to set custom delay, see Appendix 5.

![Barcode 3](image3.png)

0ms

![Barcode 4](image4.png)

20ms

![Barcode 5](image5.png)

Custom Delay
Convert Case

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

** No Case Conversion

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”.
Emulate ALT+Keypad

This feature allows any ASCII character (0x00 - 0xFF) to be sent over the numeric keypad no matter which keyboard type is selected. Since sending a character involves multiple keystroke emulations, this method appears less efficient.

The following options are available:

- **Disable**: No ASCII character is sent in the ALT+Keypad way.
- **Mode 1**: ASCII characters not supported by the selected keyboard type but falling into 0x20~0xFF are sent in the ALT+Keypad way.
- **Mode 2**: ASCII characters falling into 0x20~0xFF are sent in the ALT+Keypad way.
- **Mode 3**: ASCII characters falling into 0x00~0xFF are sent in the ALT+Keypad way.

**Note**: In the event of a conflict between Function Key Mapping and Mode 3, Function Key Mapping shall govern.

**Example**: Supposing US keyboard is selected, barcode data "ADF" (65/208/70) is sent as below:

1. **Mode 1** is enabled:
   
   “A” -- Keystroke “A”
   “Д” -- “ALT Make” + “208” + “ALT Break”
   “F” -- Keystroke “F”

2. **Mode 3** is enabled:
   
   “A” -- “ALT Make” + “065” + “ALT Break”
   “Д” -- “ALT Make” + “208” + “ALT Break”
   “F” -- “ALT Make” + “070” + “ALT Break”
Function Key Mapping

When Function Key Mapping is enabled, function characters (0x00 - 0x1F) are sent as ASCII sequences over the keypad. For more information, see Appendix 8: ASCII Function Key Mapping Table.

Example: Barcode data 0x16

<table>
<thead>
<tr>
<th>Barcode</th>
<th>Function Key Mapping</th>
<th>Key Combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>Enable Function Key Mapping</td>
<td>Ctrl+V</td>
</tr>
<tr>
<td>T</td>
<td>Disable Function Key Mapping</td>
<td>F1</td>
</tr>
</tbody>
</table>

Enable Function Key Mapping

** Disable Function Key Mapping
Emulate Numeric Keypad

When this feature is disabled, sending barcode data is emulated as keystroke(s) on main keyboard.

To enable this feature, scan the Emulate Numeric Keypad barcode. Sending a number (0-9) is emulated as keystroke(s) on numeric keypad, whereas sending other characters like “+”, “-”, “*”, “/” and “.” is still emulated as keystrokes on main keyboard.

** Do Not Emulate Numeric Keypad

Emulate Numeric Keypad

Code Page

The Code Page programming feature is provided to support more international characters. This feature is only effective when ASCII characters are sent in the ALT+Keypad way.

** Windows 1252 (Latin I)

Windows 1251 (Cyrillic)
**Polling Rate**

This parameter specifies the polling rate for a USB keyboard. If the Host drops characters, change the polling rate to a bigger value.

<table>
<thead>
<tr>
<th>Polling Rate</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1ms</td>
<td><strong>1</strong></td>
</tr>
<tr>
<td>2ms</td>
<td><strong>2</strong></td>
</tr>
<tr>
<td>3ms</td>
<td><strong>3</strong></td>
</tr>
<tr>
<td>4ms</td>
<td><strong>4</strong></td>
</tr>
<tr>
<td>5ms</td>
<td><strong>5</strong></td>
</tr>
<tr>
<td>6ms</td>
<td><strong>6</strong></td>
</tr>
<tr>
<td>7ms</td>
<td><strong>7</strong></td>
</tr>
<tr>
<td>8ms</td>
<td><strong>8</strong></td>
</tr>
<tr>
<td>9ms</td>
<td><strong>9</strong></td>
</tr>
<tr>
<td>10ms</td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>
USB COM Port Emulation

If you connect the scanner to the host device 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.

---

**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.
Access the Scanner with Your Program

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

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

Acquire Scanned Data

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

<table>
<thead>
<tr>
<th>Byte</th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Report ID = 0x02</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Length of the barcode</td>
<td></td>
</tr>
<tr>
<td>2-57</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Decoded data (1-56)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58-60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AIM ID</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61-62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Send Data to the Scanner

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

<table>
<thead>
<tr>
<th>Byte</th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Report ID = 0x04</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Length of the output data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-63</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Output data (1-62)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Product</th>
<th>Interface</th>
<th>PID (Hex)</th>
<th>PID (Dec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FM30</td>
<td>USB HID-KBW</td>
<td>1A03</td>
<td>6659</td>
</tr>
<tr>
<td></td>
<td>USB COM Port Emulation</td>
<td>1A06</td>
<td>6662</td>
</tr>
<tr>
<td></td>
<td>USB HID-POS</td>
<td>1A10</td>
<td>6672</td>
</tr>
</tbody>
</table>
Chapter 3 Scan Mode

**Sense Mode**

The scanner waits for the image stabilization timeout to expire before activating a decode session every time it detects a change in ambient illumination. Decode session continues until the barcode is decoded or the decode session timeout expires.

**Decode Session Timeout**

This parameter sets the maximum time decode session continues during a scan attempt. It is programmable in 1ms increments from 100ms to 3,600,000ms. When it is set to 0, the timeout is infinite. The default setting is 3,000ms. To learn how to program this parameter, see Appendix 5.
Image Stabilization Timeout

This parameter defines the amount of time that the scanner waits for the image to stabilize to a point that it can be decoded with more accuracy. It is programmable in 100ms increments from 0ms to 1,600ms. The default setting is 100ms. To learn how to program this parameter, see Appendix 5.

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 200ms. To learn how to program this parameter, see Appendix 5.
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 (Same Barcode): Do not allow the scanner to re-read same barcode before the timeout between decodes (same barcode) expires.

Disable Timeout between Decodes (Same Barcode): Allow the scanner to re-read same barcode.

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.
Sensitivity

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

- Medium Sensitivity (Threshold value: 8)
- Low Sensitivity (Threshold value: 14)
- ** High Sensitivity (Threshold value: 5)
- Enhanced Sensitivity (Threshold value: 2)

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

Illumination changes that reach or surpass the predefined threshold value will cause the scanner to start a decode session. The lower the threshold value, the greater the sensitivity of the scanner.

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

If the Continuous mode is enabled, the scanner automatically starts one decode session after another.

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. It is programmable in 1ms increments from 100ms to 3,600,000ms. When it is set to 0, the timeout is infinite. The default setting is 3,000ms. To learn how to program this parameter, see Appendix 5.

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 200ms. To learn how to program this parameter, see Appendix 5.
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 (Same Barcode):** Do not allow the scanner to re-read same barcode before the timeout between decodes (same barcode) expires.

**Disable Timeout between Decodes (Same Barcode):** Allow the scanner to re-read same barcode.

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.
Chapter 4 Scanning Preferences

Introduction

This chapter contains information as to how to adapt your scanner to various applications with preference setting. For instance, to narrow the field of view of the scanner to make sure it reads only those barcodes intended by the user.

Decode Area

Whole Area Decoding

When this option is enabled, the scanner attempts to decode barcode(s) within its field of view, from the center to the periphery, and transmits the barcode that has been first decoded.

Specific Area Decoding

The scanner attempts to read barcode(s) within a specified decoding area and transmits the barcode that has been first decoded. This option allows the scanner to narrow its field of view to make sure it reads only those barcodes intended by the user. For instance, if multiple barcodes are placed closely together, specific area decoding in conjunction with appropriate pre-defined decoding area will insure that only the desired barcode is read.
Specify Decoding Area

If **Specific Area Decoding** is enabled, the scanner only reads barcodes that intersect the predefined decoding area.

The default decoding area is an area of 40% top, 60% bottom, 40% left and 60% right of the scanner’s field of view, as shown in the figure below. In the following example, the white box is the decoding area. Since Barcode 1 passes through the decoding area, it will be read. Barcode 2 does not pass through the decoding area, so it will not be read.

You can define the decoding area using the **Top of Decoding Area**, **Bottom of Decoding Area**, **Left of Decoding Area** and **Right of Decoding Area** barcodes as well as numeric barcode(s) that represent(s) a desired percentage (0-100). To learn how to program decoding area, see Appendix 5.
Enter Setup

@SETUPN1

Exit Setup

@SETUPN0

Top of Decoding Area

@CADTOP

Bottom of Decoding Area

@CADBOT

Left of Decoding Area

@CADLEF

Right of Decoding Area

@CADRIG
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 scanner is powered on.

**OFF**: Illumination LEDs are OFF all the time.
Chapter 6 Notifications

Power On Beep

The scanner can be programmed to beep when it is powered on. Scan the Off barcode if you do not want a power on beep.

Good Read Beep

Scan the appropriate barcode below to enable or disable the emission of beep when a barcode is decoded. Beep type (frequency) and volume are also user programmable.
Enter Setup

Beep Type

- Type 1
  - @GRBFRQ4000

** Type 3
  - @GRBFRQ2700

Type 2
  - @GRBFRQ3040

Beep Volume

- Loud
  - @GRBVOL0

** Low
  - @GRBVOL2

Medium
  - @GRBVOL1

** Exit 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 (USB HID-KBW). As a result, the scanner 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.

- @KBWBUC1: Beep on Unknown Character
- @KBWBUC0: ** Do Not Beep on Unknown Character

Good Read Voice Prompt Volume

- @VOICEV0: ** Loud
- @VOICEV1: Medium
- @VOICEV2: Low

** Exit Setup
Bad Read Message

Scan a barcode below to select whether or not to transmit a user-defined bad read message when a barcode cannot be decoded.

![Barcode 1](image1)
![Barcode 2](image2)

**Bad Read Message ON**

**Bad Read Message OFF**

To set a bad read message, scan the **Set Bad Read Message** barcode and the numeric barcodes corresponding to the ASCII hex values of desired characters and then scan the **Save** barcode.

A bad read message can contain 0-7 characters.

![Barcode 3](image3)

**Set Bad Read Message**
Chapter 7 Prefix & Suffix

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 editing 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.
Global Settings

Enable/Disable All Prefixes/Suffixes

✧ **Disable All Prefixes/Suffixes**: Transmit barcode data with no prefix/suffix.

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

Prefix Sequences

- @APSENA1
  Enable All Prefixes/Suffixes
- @APSENA0
  Disable All Prefixes/Suffixes

- @PRESEQ0
  Code ID+Custom Prefix+AIM ID
- @PRESEQ1
  **Custom Prefix+Code ID+AIM ID**

** Exit 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 11 characters.

Enable Custom Prefix

Set Custom Prefix

To set a custom prefix, scan the Set Custom Prefix barcode and the numeric barcodes representing the hexadecimal value(s) of a desired prefix and then scan the Save barcode. Refer to Appendix 4: ASCII Table for hexadecimal values of characters. To view a setting example, see Appendix 5: Parameter Programming Examples.

Note: A custom prefix cannot exceed 11 characters.

Set Custom Prefix

** Exit 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 scanner 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
Modify Code ID

To change the Code ID of a symbology, scan the appropriate Modify Code ID barcode below and the numeric barcodes representing the hexadecimal value of a desired Code ID and then scan the Save barcode. Refer to Appendix 4: ASCII Table for hexadecimal values of characters. To view a setting example, see Appendix 5: Parameter Programming Examples.

Modify PDF417 Code ID

Modify Data Matrix Code ID

Modify QR Code Code ID

Modify Chinese Sensible Code ID

Modify Code 128 Code ID

Modify GS1-128 Code ID

Modify AIM-128 Code ID

Modify EAN-8 Code ID
Enter Setup

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

Modify ITF-6 Code ID

** Exit Setup
Modify Codabar Code ID
Modify Industrial 25 Code ID
Modify Standard 25 Code ID
Modify Matrix 25 Code ID
Modify Code 11 Code ID
Modify Plessey Code ID
Modify MSI-Plessey Code ID
Modify GS1 Databar Code ID
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 11 characters.

Set Custom Suffix

To set a custom suffix, scan the Set Custom Suffix barcode and the numeric barcodes representing the hexadecimal value(s) of a desired prefix and then scan the Save barcode. Refer to Appendix 4: ASCII Table for hexadecimal values of characters. To view a setting example, see Appendix 5: Parameter Programming Examples.

Note: A custom prefix cannot exceed 11 characters.
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 1-7 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
Set Terminating Character Suffix

The scanner provides a shortcut for setting the terminating character suffix to CR (0x0D) or CRLF (0x0D,0x0A) and enabling it by scanning the appropriate barcode below.

Terminating Character CR (0x0D)

Terminating Character CRLF (0x0D,0x0A)

To set a terminating character suffix, scan the Set Terminating Character Suffix barcode and the numeric barcodes representing the hexadecimal value(s) of a desired terminating character and then scan the Save barcode. Refer to Appendix 4: ASCII Table for hexadecimal values of terminating characters. To view a setting example, see Appendix 5: Parameter Programming Examples.

Note: A terminating character suffix cannot exceed 7 characters.
Chapter 8 Symbologies

Global Settings

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

Enable All Symbologies

Disable All Symbologies

Enable/Disable 1D Symbologies
If the Disable 1D Symbologies feature is enabled, the scanner will not be able to read any 1D barcodes.

Enable 1D Symbologies

Disable 1D Symbologies

Enable/Disable 2D Symbologies
If the Disable 2D Symbologies feature is enabled, the scanner will not be able to read any 2D barcodes.

Enable 2D Symbologies

Disable 2D Symbologies
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](image1)

![Inverse Barcode](image2)

Video Reverse allows the scanner to read barcodes that are inverted.

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

**Video Reverse OFF**: Read regular barcodes only.

The scanner shows a slight decrease in scanning speed when Video Reverse is ON.
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
GS1-128 (UCC/EAN-128)

Restore Factory Defaults

Restore the Factory Defaults of GS1-128

Enable/Disable GS1-128

** Enable GS1-128

Disable GS1-128

Set Length Range for GS1-128

Set the Minimum Length

Set the Maximum Length

** Exit 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
EAN-8

Restore Factory Defaults

Enable/Disable EAN-8

Transmit Check Character

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

Transmit EAN-8 Check Character

Do Not Transmit EAN-8 Check Character

Exit Setup
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.

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 scanner 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 scanner 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.
Add-On Code Required

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

@EA8REQ1
EAN-8 Add-On Code Required

@EA8REQ0
** EAN-8 Add-On Code Not Required
EAN-13

Restore Factory Defaults

Restore the Factory Defaults of EAN-13

Enable/Disable EAN-13

** Enable EAN-13

Disable EAN-13

Transmit Check Character

** Transmit EAN-13 Check Character

Do Not Transmit EAN-13 Check Character

** Exit 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.

Enable 2-Digit Add-On Code

Enable 5-Digit Add-On Code


Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The scanner 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 scanner will only read EAN-13 barcodes that contain add-on codes.

EAN-13 Add-On Code Required

** EAN-13 Add-On Code Not Required
EAN-13 Beginning with 290 Add-On Code Required

This setting programs the scanner to require an add-on code (2-digit or 5-digit) on EAN-13 barcodes that begin with “290”. The following settings can be programmed:

**Require Add-On Code:** All EAN-13 barcodes that begin with “290” must have a 2-digit or 5-digit add-on code. The EAN-13 barcode with the add-on code is then transmitted. If the required add-on code is not found, the EAN-13 barcode is discarded.

**Do Not Require Add-On Code:** If you have selected **Require Add-On Code**, and you want to disable this feature, scan **Do Not Require Add-On Code**. EAN-13 barcodes are handled, depending on your selection for the “Add-On Code Required” feature.

---

EAN-13 Beginning with 378/379 Add-On Code Required

This setting programs the scanner to require an add-on code (2-digit or 5-digit) on EAN-13 barcodes that begin with a “378” or “379”. The following settings can be programmed:

**Require Add-On Code:** All EAN-13 barcodes that begin with a “378” or “379” must have a 2-digit or 5-digit add-on code. The EAN-13 barcode with the add-on code is then transmitted. If the required add-on code is not found, the EAN-13 barcode is discarded.

**Do Not Require Add-On Code:** If you have selected **Require Add-On Code**, and you want to disable this feature, scan **Do Not Require Add-On Code**. EAN-13 barcodes are handled, depending on your selection for the “Add-On Code Required” feature.
EAN-13 Beginning with 414/419 Add-On Code Required

This setting programs the scanner to require an add-on code (2-digit or 5-digit) on EAN-13 barcodes that begin with a “414” or “419”. The following settings can be programmed:

Require Add-On Code: All EAN-13 barcodes that begin with a “414” or “419” must have a 2-digit or 5-digit add-on code. The EAN-13 barcode with the add-on code is then transmitted. If the required add-on code is not found, the EAN-13 barcode is discarded.

Do Not Require Add-On Code: If you have selected Require Add-On Code, and you want to disable this feature, scan Do Not Require Add-On Code. EAN-13 barcodes are handled, depending on your selection for the “Add-On Code Required” feature.

EAN-13 Beginning with 434/439 Add-On Code Required

This setting programs the scanner to require an add-on code (2-digit or 5-digit) on EAN-13 barcodes that begin with a “434” or “439”. The following settings can be programmed:

Require Add-On Code: All EAN-13 barcodes that begin with a “434” or “439” must have a 2-digit or 5-digit add-on code. The EAN-13 barcode with the add-on code is then transmitted. If the required add-on code is not found, the EAN-13 barcode is discarded.

Do Not Require Add-On Code: If you have selected Require Add-On Code, and you want to disable this feature, scan Do Not Require Add-On Code. EAN-13 barcodes are handled, depending on your selection for the “Add-On Code Required” feature.
EAN-13 Beginning with 977 Add-On Code Required

This setting programs the scanner to require an add-on code (2-digit or 5-digit) on EAN-13 barcodes that begin with “977”. The following settings can be programmed:

Require Add-On Code: All EAN-13 barcodes that begin with “977” must have a 2-digit or 5-digit add-on code. The EAN-13 barcode with the add-on code is then transmitted. If the required add-on code is not found, the EAN-13 barcode is discarded.

Do Not Require Add-On Code: If you have selected Require Add-On Code, and you want to disable this feature, scan Do Not Require Add-On Code. EAN-13 barcodes are handled, depending on your selection for the “Add-On Code Required” feature.

---

EAN-13 Beginning with 978 Add-On Code Required

This setting programs the scanner to require an add-on code (2-digit or 5-digit) on EAN-13 barcodes that begin with “978”. The following settings can be programmed:

Require Add-On Code: All EAN-13 barcodes that begin with “978" must have a 2-digit or 5-digit add-on code. The EAN-13 barcode with the add-on code is then transmitted. If the required add-on code is not found, the EAN-13 barcode is discarded.

Do Not Require Add-On Code: If you have selected Require Add-On Code, and you want to disable this feature, scan Do Not Require Add-On Code. EAN-13 barcodes are handled, depending on your selection for the “Add-On Code Required” feature.
** EAN-13 Beginning with 979 Add-On Code Required **

This setting programs the scanner to require an add-on code (2-digit or 5-digit) on EAN-13 barcodes that begin with “979”. The following settings can be programmed:

**Require Add-On Code:** All EAN-13 barcodes that begin with “979” must have a 2-digit or 5-digit add-on code. The EAN-13 barcode with the add-on code is then transmitted. If the required add-on code is not found, the EAN-13 barcode is discarded.

**Do Not Require Add-On Code:** If you have selected **Require Add-On Code**, and you want to disable this feature, scan **Do Not Require Add-On Code**. EAN-13 barcodes are handled, depending on your selection for the “Add-On Code Required” feature.

---

** Do Not Require Add-On Code

---

** Require Add-On Code

---

** Exit Setup
ISSN

Restore Factory Defaults

ISSN

Enable/Disable ISSN

Enable ISSN

** Disable ISSN
Add-On Code

An ISSN 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 5-Digit Add-On Code

** Disable 2-Digit Add-On Code

** Disable 5-Digit Add-On Code

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The scanner 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 scanner 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 scanner will only read ISSN barcodes that contain add-on codes.

ISSN Add-On Code Required

** ISSN Add-On Code Not Required

** Exit 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
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


Add-On Code Required

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

ISBN Add-On Code Required

** ISBN Add-On Code Not Required

** Exit Setup
UPC-E

Restore Factory Defaults

@UPEDEF

Restore the Factory Defaults of UPC-E

Enable/Disable UPC-E

@UPENA1
** Enable UPC-E

@UPENA0
Disable UPC-E

Transmit Check Character

@UPECHK2
** Transmit UPC-E Check Character

@UPECHK1
Do Not Transmit UPC-E Check Character
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  ** 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 scanner 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 scanner 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 scanner will only read UPC-E barcodes that contain add-on codes.

**UPC-E Add-On Code Required  ** UPC-E Add-On Code Not Required
Transmit System Character

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

** Transmit System Character

Do Not Transmit System Character
UPC-A

Restore Factory Defaults

Enable/Disable UPC-A

Enable UPC-A

Disable UPC-A

Transmit Check Character

Transmit UPC-A Check Character

Do Not Transmit UPC-A Check Character

** Exit 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.

Enable 2-Digit Add-On Code

Enable 5-Digit Add-On Code

** Disable 2-Digit Add-On Code

** Disable 5-Digit Add-On Code

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The scanner 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 scanner 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 scanner will only read UPC-A barcodes that contain add-on codes.

UPC-A Add-On Code Required

** UPC-A Add-On Code Not Required
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
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
Check Character Verification

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

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

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

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

Enable/Disable Febraban

** Disable Febraban

Enable Febraban, Do Not Expand

Enable Febraban, Expand

Transmit Delay

This feature is available only when USB HID-KBW is enabled. **Transmit Delay per Character** applies to both Expanded and Unexpanded Febraban while **Transmit Delay per 12 Characters** applies to Expanded Febraban only.

** Disable Transmit Delay per Character

Enable Transmit Delay per Character

** Disable Transmit Delay per 12 Characters

Enable Transmit Delay per 12 Characters

** Exit Setup
Transmit Delay per Character: This parameter is programmable in 5ms increments from 0ms to 75ms. To set it, scan the Set Transmit Delay per Character barcode, numeric barcode(s) that represent a desired value and the Save barcode. See Appendix 5 for more information. The default value is 70ms.

Transmit Delay per 12 Characters: Set the transmit delay per 12 characters by scanning the appropriate barcode below, according to your actual needs.

** Set Transmit Delay per 12 Characters to 500ms

Set Transmit Delay per 12 Characters to 300ms

Set Transmit Delay per 12 Characters to 600ms

Set Transmit Delay per 12 Characters to 800ms

Set Transmit Delay per 12 Characters to 0ms

Set Transmit Delay per 12 Characters to 400ms

Set Transmit Delay per 12 Characters to 700ms

Set Transmit Delay per 12 Characters to 900ms
**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 Character**
- **Enable ITF-14 and Transmit Check Character**

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

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

Restore Factory Defaults

Enable/Disable Matrix 2 of 5

Set Length Range for Matrix 2 of 5

** Exit Setup
Check Character Verification

- ** @M25CHK0 Disable**
- ** Do Not Transmit Check Character After Verification **
- ** Transmit Check Character After Verification **
Industrial 2 of 5

Restore Factory Defaults

Enable/Disable Industrial 2 of 5

Set Length Range for Industrial 2 of 5
Check Character Verification

** Disable

Transmit Check Character After Verification

Do Not Transmit Check Character After Verification

** Exit 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

** Enable Standard 25

Disable Standard 25

Set Length Range for Standard 25

Set the Minimum Length

Set the Maximum Length
Check Character Verification

@S25CHK0
** Disable

Transmit Check Character After Verification
Do Not Transmit Check Character After Verification
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
Set Length Range for Code 39

- Set the Minimum Length
  - @C39MIN

- Set the Maximum Length
  - @C39MAX

Check Character Verification

- ** Disable
  - @C39CHK0

- Transmit Check Character After Verification
  - @C39CHK2

- Do Not Transmit Check Character After Verification
  - @C39CHK1

Enable/Disable Code 39 Full ASCII

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

- ** Enable Code 39 Full ASCII
  - @C39ASC1

- Disable Code 39 Full ASCII
  - @C39ASC0

** Exit Setup
Enable/Disable Code 32

Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry. Scan the appropriate bar code below to enable or disable Code 32. Code 39 must be enabled and Code 39 check character verification must be disabled for this parameter to function.

** Disable Code 32

Enable Code 32

Code 32 Prefix

Scan the appropriate barcode below to enable or disable adding the prefix character “A” to all Code 32 barcodes. Code 32 must be enabled for this parameter to function.

** Disable Code 32 Prefix

Enable Code 32 Prefix
Transmit Code 32 Check Character

Code 32 must be enabled for this parameter to function.

** Do Not Transmit Code 32 Check Character

Transmit Code 32 Check Character

Transmit Code 32 Start/Stop Character

Code 32 must be enabled for this parameter to function.

** Do Not Transmit Code 32 Start/Stop Character

Transmit Code 32 Start/Stop Character
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
Check Character Verification

** Disable

Transmit Check Character After Verification

Do Not Transmit Check Character After Verification

Transmit Start/Stop Character

** Do Not Transmit Start/Stop Character

** Exit 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
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
Check Character Verification

- Disable
- ** Do Not Transmit Check Character After Verification
- Transmit Check Character After Verification
GS1-Databar (RSS)

Restore Factory Defaults

Restore the Factory Defaults of GS1-Databar

Enable/Disable GS1 Databar

** Enable GS1-Databar

** Disable GS1-Databar

Transmit Application Identifier “01”

** Transmit Application Identifier “01”

Do Not Transmit Application Identifier “01”

** Exit Setup
Code 11

Restore Factory Defaults

Restore the Factory Defaults of Code 11

Enable/Disable Code 11

** Enable Code 11

** Enable Code 11

Set Length Range for Code 11

Set the Minimum Length

Set the Maximum Length
Transmit Check Character

- Transmit Check Character
  - @C11TCK0
  - ** Do Not Transmit Check Character

Check Character Verification

- Disable
  - @C11CHK0

- Two Check Characters, MOD11/MOD11
  - @C11CHK2

- Two Check Characters, MOD11/MOD9
  - @C11CHK3

- One Check Character, MOD11 (Len<=10)
  - Two Check Characters, MOD11/MOD11 (Len>10)
  - @C11CHK4

- One Check Character, MOD11 (Len<=10)
  - Two Check Characters, MOD11/MOD9 (Len>10)
  - @C11CHK5

** Exit Setup
Plessey

Restore Factory Defaults

![](barcode)

**FLYDEF**

Restore the Factory Defaults of Plessey

Enable/Disable Plessey

![](barcode)

**FLYENA1**

Enable Plessey

![](barcode)

**FLYENA0**

Disable Plessey

Set Length Range for Plessey

![](barcode)

**FLYMIN**

Set the Minimum Length

![](barcode)

**FLYMAX**

Set the Maximum Length
Check Character Verification

@PLYCHK0
Disable

@PLYCHK1
** Do Not Transmit Check Character After Verification

@PLYCHK2
Transmit Check Character After Verification

** Exit Setup
MSI-Plessey

Restore Factory Defaults

@MSIDEF

Restore the Factory Defaults of MSI-Plessey

Enable/Disable MSI-Plessey

@MSIENA1

** Enable MSI-Plessey

@MSIENA0

Disable MSI-Plessey

Set Length Range for MSI-Plessey

@MSIMIN

Set the Minimum Length

@MSIMAX

Set the Maximum Length
Transmit Check Character

- **Transmit Check Character**
- **Do Not Transmit Check Character**

Check Character Verification

- **Disable**
- **One Check Character, MOD10**
- **Two Check Characters, MOD10/MOD10**
- **Two Check Characters, MOD10/MOD11**
2D Symbologies

PDF417

Restore Factory Defaults

Enable/Disable PDF417

** Enable PDF417

** Disable PDF417

Set Length Range for PDF417

Set the Minimum Length

Set the Maximum Length
PDF 417 Twin Code

PDF417 twin code is 2 PDF417 barcodes paralleled vertically or horizontally. They must both be either regular or inverse barcodes. They must have similar specifications and be placed closely together.

There are 3 options for reading PDF417 twin codes:

**Single PDF417 Only:** Read either PDF417 code.

**Twin PDF417 Only:** Read both PDF417 codes.

**Both Single & Twin:** Read both PDF417 codes. If successful, transmit as twin PDF417 only. Otherwise, try single PDF417 only.

Character Encoding

**Default Character Encoding**

**UTF-8**
Enable/Disable PDF417 ECI Output

@PDFECI0  Disable PDF417 ECI Output

@PDFECI1  ** Enable PDF417 ECI Output
QR Code

Restore Factory Defaults

![Barcode for Restore Factory Defaults]

Enable/Disable QR Code

- ![Barcode for Enable QR Code]
  ** Enable QR Code
- ![Barcode for Disable QR Code]
  Disable QR Code

Set Length Range for QR Code

- ![Barcode for Set Minimum Length]
  Set the Minimum Length
- ![Barcode for Set Maximum Length]
  Set the Maximum Length

Micro QR

- ![Barcode for Enable Micro QR]
  ** Enable Micro QR
- ![Barcode for Disable Micro QR]
  Disable Micro QR

** Exit Setup
QR Twin Code

QR twin code is 2 QR barcodes paralleled vertically or horizontally. They must both be either regular or inverse barcodes. They must have similar specifications and be placed closely together.

There are 3 options for reading QR twin codes:

**Single QR Only**: Read either QR code.

**Twin QR Only**: Read both QR codes.

**Both Single & Twin**: Read both QR codes. If successful, transmit as twin QR only. Otherwise, try single QR only.

Character Encoding

**Default Character Encoding**

**UTF-8**
Enable/Disable QR ECI Output

Enable QR ECI Output

Exit 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
Rectangular Barcode

** Enable Rectangular Barcode

---

Data Matrix Twin Code

Data Matrix twin code is 2 Data Matrix barcodes paralleled vertically or horizontally. They must both be either regular or inverse barcodes. They must have similar specifications and be placed closely together.

There are 3 options for reading Data Matrix twin codes:

** Single Data Matrix Only: ** Read either Data Matrix code.

** Twin Data Matrix Only: ** Read both Data Matrix codes. Transmission order: Data Matrix code on the left (in the upper position) followed by the one on the right (in the lower position).

** Both Single & Twin: ** Read both Data Matrix codes. If successful, transmit as twin Data Matrix only. Otherwise, try single Data Matrix only.

---

** Exit Setup"
Character Encoding

** Default Character Encoding

Enable/Disable Data Matrix ECI Output

Disable Data Matrix ECI Output

** Enable Data Matrix ECI Output
Chinese Sensible Code

Restore Factory Defaults

Restore the Factory Defaults of Chinese Sensible Code

Enable/Disable Chinese Sensible Code

Enable Chinese Sensible Code

** Disable Chinese Sensible Code

Set Length Range for Chinese Sensible Code

Set the Minimum Length

Set the Maximum Length

** Exit Setup
Image Flipping

You may flip the image captured by the scanner to meet actual need by scanning the appropriate barcode on the next page. The following figures illustrate original image and three flipped images.
Chapter 10 Data Formatter

Introduction

You may use the Data Formatter to modify the scanner’s output. For example, you can use the Data Formatter to insert characters at certain points in barcode data or to suppress/replace/send certain characters in barcode data as it is scanned.

Normally, when you scan a barcode, it gets outputted automatically; however, when you create a format, you must use a “send” command (see the “Send Commands” section in this chapter) within the format programming to output data. The maximum size of formatter commands in a data format is 112 characters. By default, the data formatter is disabled. Enable it when required. If you have changed data format settings, and wish to clear all formats and return to the factory defaults, scan the Default Data Format code below.

Add a Data Format

Data format is used to edit barcode data only. You can program up to four data formats, i.e. Format_0, Format_1, Format_2 and Format_3. When you create a data format, you must specify the application scope of your data format (such as barcode type and data length) and include formatter commands. When scanned data does not match your data format requirements, you will hear the non-match error beep (if the non-match error beep is ON).

The following explains how to program a data format by scanning the specific barcodes. Scanning any irrelevant barcode or failing to follow the setting procedure will result in programming failure. To find the alphanumeric barcodes needed to create a data format, see Appendix 6: Digit Barcodes.
Step 1: Scan the **Enter Setup** barcode.

Step 2: Scan the **Add Data Format** barcode.

**Add Data Format**

Step 3: Select data format.
Scan a numeric barcode 0 or 1 or 2 or 3 to set this to Format_0 or Format_1 or Format_2 or Format_3.

Step 4: Select formatter command type.
Specify what type of formatter commands will be used. Scan a numeric barcode “6” to select formatter command type 6. (See the “Formatter Command Type 6” section in this chapter for more information)

Step 5: Set interface type
Scan 999 for any interface type.

Step 6: Set Symbology ID Number
Refer to **Appendix 10: Symbology ID Number** and find the ID number of the symbology to which you want to apply the data format. Scan three numeric barcodes for the symbology ID number. If you wish to create a data format for all symbologies, scan 999.

Step 7: Set barcode data length
Specify what length of data will be acceptable for this symbology. Scan the four numeric barcodes that represent the data length. 9999 is a universal number, indicating all lengths. For example, 32 characters should be entered as 0032.

Step 8: Enter formatter command
Refer to the “Formatter Command Type 6” section in this chapter. Scan the alphanumeric barcodes that represent the command you need to edit data. For example, when a command is F141, you should scan F141. A command can contain up to 112 characters.

Step 9: Scan the **Save** barcode from **Appendix 7: Save/Cancel Barcodes** to save your data format.
To streamline the programming process, you may as well generate a batch barcode by inputting the command (e.g. @DFMSET069990020010F141;) used to create a data format. See the “Use Batch Barcode” section in Chapter 11 to learn how to put a batch barcode into use.

**Example:** Program format_0 using formatter command type 6, Code 128 containing 10 characters applicable, send all characters followed by “A”.

1. Scan the **Enter Setup** barcode
   Enter the Setup mode
2. Scan the **Add Data Format** barcode
   Add a data format
3. Scan the **0** barcode
   Select format_0
4. Scan the **6** barcode
   Select formatter command type 6
5. Scan the **9** barcode three times
   All interface types applicable
6. Scan the barcodes **002**
   Only Code 128 applicable
7. Scan the barcodes **0010**
   Only a length of 10 characters applicable
8. Scan the alphanumerical barcodes **F141**
   Send all characters followed by “A” (HEX: 41)
9. Scan the **Save** barcode
   Save the data format
Enable/Disable Data Formatter

When Data Formatter is disabled, the data format you have enabled becomes invalid.

** Disable Data Formatter

You may wish to require the data to conform to a data format you have created. The following settings can be applied to your data format:

** Enable Data Formatter, Required, Keep Prefix/Suffix:** Scanned data that meets your data format requirements is modified accordingly and gets outputted along with prefixes and suffixes (if prefix and suffix are enabled). Any data that does not match your data format requirements generates an error beep (if Non-Match Error Beep is turned ON) and the data in that barcode is not transmitted.

** Enable Data Formatter, Required, Drop Prefix/Suffix:** Scanned data that meets your data format requirements is modified accordingly and gets outputted without prefixes and suffixes (even if prefix and suffix are enabled). Any data that does not match your data format requirements generates an error beep (if Non-Match Error Beep is turned ON) and the data in that barcode is not transmitted.

** Enable Data Formatter, Not Required, Keep Prefix/Suffix:** Scanned data that meets your data format requirements is modified accordingly and gets outputted along with prefixes and suffixes (if prefix and suffix are enabled). Barcode data that does not match your data format requirements is transmitted as read along with prefixes and suffixes (if prefix and suffix are enabled).

** Enable Data Formatter, Not Required, Drop Prefix/Suffix:** Scanned data that meets your data format requirements is modified accordingly and gets outputted without prefixes and suffixes (even if prefix and suffix are enabled). Barcode data that does not match your data format requirements is transmitted as read along with prefixes and suffixes (if prefix and suffix are enabled).
Non-Match Error Beep

If Non-Match Error Beep is turned ON, the scanner generates an error beep when a barcode is encountered that does not match your required data format.
Data Format Selection

After enabling the Data Formatter, you may select a data format you want to use by scanning the appropriate barcode below.

Format_0

Format_1

Format_2

Format_3

Change Data Format for a Single Scan

You can switch between data formats for a single scan. The next barcode is scanned using the data format selected here, then reverts to the format you have selected above. For example, you may have set your scanner to the data format you saved as Format_3. You can switch to Format_1 for a single scan by scanning the Single Scan – Format_1 barcode below. The next barcode that is scanned uses Format_1, then reverts back to Format_3.

Note: This setting will be lost by removing power from the scanner, or turning off/ rebooting the device.
Clear Data Format

There are two methods to remove data format from your scanner:

Delete one data format: Scan the Clear One barcode, a numeric barcode (0-3) and the Save barcode. For example, to delete Format_2, you should scan the Clear One barcode, the 2 barcode and the Save barcode.

Delete all data formats: Scan the Clear All barcode.

Query Data Formats

You may scan the appropriate barcode below to get the information of data format(s) created by you or preset by manufacturer. For instance, if you have added Format_0 as per the example in the “Add a Data Format” section in this chapter, scanning the Query Current Data Formats barcode, you will get the result: Data Format0:069990020010F141;.
Formatter Command Type 6

When working with the Data Formatter, a virtual cursor is moved along your input data string. The following commands are used to both move this cursor to different positions, and to select, replace, and insert data into the final output. For the hex value of ASCII characters involved in the commands, refer to Appendix 4: ASCII Table.

Send Commands

F1 Send all characters

Syntax=F1xx (xx: The insert character’s hex value)

Include in the output message all of the characters from the input message, starting from current cursor position, followed by an insert character.

F2 Send a number of characters

Syntax=F2nnxx (nn: The numeric value (00-99) for the number of characters; xx: The insert character’s hex value)

Include in the output message a number of characters followed by an insert character. Start from the current cursor position and continue for “nn” characters or through the last character in the input message, followed by character “xx.”

F2 Example: Send a number of characters

Send the first 10 characters from the barcode above, followed by a carriage return.

Command string: F2100D

F2 is the “Send a number of characters” command
10 is the number of characters to send
0D is the hex value for a CR

The data is output as: 1234567890ABCDEF <CR>
**F3 Send all characters up to a particular character**

Syntax=F3ssxx (ss: The particular character’s hex value; xx: The insert character’s hex value)

Include in the output message all characters from the input message, starting with the character at the current cursor position and continuing to, but not including, the particular character “ss,” followed by character “xx.” The cursor is moved forward to the “ss” character.

**F3 Example: Send all characters up to a particular character**

Using the barcode above, send all characters up to but not including “D,” followed by a carriage return.

Command string: **F3440D**

F3 is the “Send all characters up to a particular character” command

44 is the hex value for a “D”

0D is the hex value for a CR

The data is output as: **1234567890ABC**

<CR>

**E9 Send all but the last characters**

Syntax=E9nn (nn: The numeric value (00-99) for the number of characters that will not be sent at the end of the message)

Include in the output message all but the last “nn” characters, starting from the current cursor position. The cursor is moved forward to one position past the last input message character included.

**F4 Insert a character multiple times**

Syntax=F4xxnn (xx: The insert character’s hex value; nn: The numeric value (00-99) for the number of times it should be sent)

Send “xx” character “nn” times in the output message, leaving the cursor in the current position.
E9 and F4 Example: Send all but the last characters, followed by 2 tabs

Send all characters except for the last 8 from the barcode above, followed by 2 tabs.

Command string: **E908F40902**

E9 is the “Send all but the last characters” command

08 is the number of characters at the end to ignore

F4 is the “Insert a character multiple times” command

09 is the hex value for a horizontal tab

02 is the number of times the tab character is sent

The data is output as: **1234567890AB<tab><tab>**

**B3 Insert symbology name**

Insert the name of the barcode’s symbology in the output message, without moving the cursor.

**B4 Insert barcode length**

Insert the barcode’s length in the output message, without moving the cursor. The length is expressed as a numeric string and does not include leading zeros.
B3 and B4 Example: Insert the symbology name and length

Send the symbology name and length before the barcode data from the barcode above. Break up these insertions with spaces. End with a carriage return.

Command string: **B3F42001B4F42001F10D**

B3 is the “Insert symbology name” command

F4 is the “Insert a character multiple times” command

20 is the hex value for a space

01 is the number of time the space character is sent

B4 is the “Insert barcode length” command

F4 is the “Insert a character multiple times” command

20 is the hex value for a space

01 is the number of time the space character is sent

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as: **Code128 20 1234567890ABCDEFGHIJ**

**<CR>**

**Move Commands**

**F5 Move the cursor forward a number of characters**

Syntax=F5nn (nn: The numeric value (00-99) for the number of characters the cursor should be moved ahead)

Move the cursor ahead “nn” characters from current cursor position.
F5 Example: Move the cursor forward and send the data

Move the cursor forward 3 characters, then send the rest of the barcode data from the barcode above. End with a carriage return.

Command string: **F503F10D**

F5 is the "Move the cursor forward a number of characters" command
03 is the number of characters to move the cursor
F1 is the "Send all characters" command
0D is the hex value for a CR

The data is output as: **4567890ABCDEFGHIJ <CR>**

F6 Move the cursor backward a number of characters

Syntax=F6nn (nn: The numeric value (00-99) for the number of characters the cursor should be moved back)

Move the cursor back “nn” characters from current cursor position.

F7 Move the cursor to the beginning

Syntax=F7

Move the cursor to the first character in the input message.

EA Move the cursor to the end

Syntax=EA

Move the cursor to the last character in the input message.
Search Commands

F8 Search forward for a character

Syntax = \texttt{F8xx} (xx: The search character’s hex value)

Search the input message forward for “xx” character from the current cursor position, leaving the cursor pointing to the “xx” character.

**F8 Example: Send barcode data that starts after a particular character**

Search for the letter “D” in barcodes and send all the data that follows, including the “D”. Using the barcode above:

Command string: \texttt{F844F10D}

F8 is the “Search forward for a character” command
44 is the hex value for “D”
F1 is the “Send all characters” command
0D is the hex value for a CR

The data is output as: \texttt{DEFGHIJ}

\texttt{<CR>}

F9 Search backward for a character

Syntax = \texttt{F9xx} (xx: The search character’s hex value)

Search the input message backward for “xx” character from the current cursor position, leaving the cursor pointing to the “xx” character.
B0 Search forward for a string

Syntax=B0nnnnS (nnnn: The string length (up to 9999); S: The ASCII hex value of each character in the string)

Search forward for “S” string from the current cursor position, leaving cursor pointing to “S” string. For example, B0000454657374 will search forward for the first occurrence of the 4-character string “Test.”

B0 Example: Send barcode data that starts after a string of characters

Search for the letters “FGH” in barcodes and send all the data that follows, including “FGH.” Using the barcode above:

Command string: B00003464748F10D

B0 is the “Search forward for a string” command
0003 is the string length (3 characters)
46 is the hex value for “F”
47 is the hex value for “G”
48 is the hex value for “H”
F1 is the “Send all characters” command
0D is the hex value for a CR

The data is output as: FGH
<CR>

B1 Search backward for a string

Syntax=B1nnnnS (nnnn: The string length (up to 9999); S: The ASCII hex value of each character in the string)

Search backward for “S” string from the current cursor position, leaving cursor pointing to “S” string. For example, B1000454657374 will search backward for the first occurrence of the 4-character string “Test.”
**E6 Search forward for a non-matching character**

Syntax=E6xx (xx: The search character’s hex value)

Search the input message forward for the first non-“xx” character from the current cursor position, leaving the cursor pointing to the non-“xx” character.

**E6 Example: Remove zeros at the beginning of barcode data**

![Barcode Image]

This example shows a barcode that has been zero filled. You may want to ignore the zeros and send all the data that follows. E6 searches forward for the first character that is not zero, then sends all the data after, followed by a carriage return. Using the barcode above:

Command string: **E630F10D**

E6 is the “Search forward for a non-matching character” command

30 is the hex value for 0

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as: **37692 <CR>**

**E7 Search backward for a non-matching character**

Syntax=E7xx (xx: The search character’s hex value)

Search the input message backward for the first non-“xx” character from the current cursor position, leaving the cursor pointing to the non-“xx” character.
Miscellaneous Commands

FB Suppress characters

Syntax = FBnnxxyy..zz (nn: The numeric value (00-15) for the number of suppressed characters; xxyy..zz: The hex value of the characters to be suppressed)

Suppress all occurrences of up to 15 different characters, starting at the current cursor position, as the cursor is advanced by other commands.

FB Example: Remove spaces in barcode data

```
345 678 90
```

This example shows a barcode that has spaces in the data. You may want to remove the spaces before sending the data. Using the barcode above:

Command string: **FB0120F10D**

FB is the “Suppress characters” command

01 is the number of the characters to be suppressed

20 is the hex value for a space

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as: **34567890**

  <CR>
E4 Replace characters

Syntax = E4nnxx1xx2yy1yy2…zz1zz2 (nn: The total count of the number of characters (characters to be replaced plus replacement characters; xx1: The characters to be replaced, xx2: The replacement characters, continuing through zz1 and zz2)

Replace up to 15 characters in the output message, without moving the cursor.

E4 Example: Replace zeros with CRs in barcode data

If the barcode has characters that the host application does not want included, you can use the E4 command to replace those characters with something else. In this example, you will replace the zeros in the barcode above with carriage returns.

Command string: E402300DF10D

E4 is the “Replace characters” command

02 is the total count of characters to be replaced, plus the replacement characters (0 is replaced by CR, so total characters=2)

30 is the hex value for 0

0D is the hex value for a CR (the character that will replace the 0)

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as: 1234
5678
ABC
<CR>
BA Replace a string with another

Syntax = BA nn SS1 NN1 SS2 NN2

nn: The count of replacements to be made, if nn=00 or nn>=the number of occurrences of a string to be replaced, then replace all occurrences of that string.

NN1: The length of the string to be replaced, NN1>0.

SS1: The ASCII hex value of each character in the string to be replaced.

NN2: The length of replacement string, NN2>=0. To replace string “SS1” with NUL (i.e. delete string “SS1”), you should set NN2 to 00 and leave out SS2.

SS2: The ASCII hex value of each character in the replacement string

From the current cursor position, search forward for the occurrence of “SS1” string (of length “NN1”) and replace the string with “SS2” string (of length “NN2”) in the output message until every “SS1” string is replaced or the count of replacements made reaches “nn” times, without moving the cursor.

BA Example: Replace “23”s with “ABC”s in barcode data

Command string: BA 00 00 02 23 00 03 41 42 43 00

If the barcode has a string of characters that the host application does not want included, you can use the BA command to replace the string with something else. In this example, you will replace the “23”s in the barcode above with “ABC”s.

Command string: BA 00 02 32 33 00 34 14 24 3 F 00

BA is the “Replace a string with another” command

00 is the count of replacements to be made, 00 means to replace all occurrences of that string

02 is the length of the string to be replaced
32 is the hex value for 2 (character in the string to be replaced)

33 is the hex value for 3 (character in the string to be replaced)

03 is the length of the replacement string

41 is the hex value for A (character in the replacement string)

42 is the hex value for B (character in the replacement string)

43 is the hex value for C (character in the replacement string)

F1 is the “Send all characters” command

00 is the hex value for a NUL

The data is output as: cd1ABCabcABCbc12abABC2

**BA Example: Remove only the first occurrence of “23”s in barcode data**

If the barcode has a string of characters that the host application wants removed, you can use the BA command to replace the string with NUL. In this example, you will remove the first occurrence of “23” in the barcode above.

Command string: **BA0102323300F100**

BA is the “Replace a string with another” command

01 is the count of replacements to be made

02 is the length of the string to be replaced

32 is the hex value for 2 (character in the string to be replaced)

33 is the hex value for 3 (character in the string to be replaced)

00 is the length of the replacement string, 00 means to replace the string to be replaced with NUL

F1 is the “Send all characters” command

00 is the hex value for a NUL

The data is output as: cd1abc23bc12ab232
**EF Insert a delay**

Syntax = EFnnnn (nnnn: The delay in 5ms increments, up to 9999)

Inserts a delay of up to 49,995 milliseconds (in multiples of 5), starting from the current cursor position. This command can only be used with USB HID-KBW.

**EF Example: Insert a delay of 1s in between the 5th and 6th character**

Send the first 5 characters in a barcode, wait for 1s, then send the rest of the barcode data.

Command string: **F20500EF0200E900**

F2 is the “Send a number of characters” command

05 is the number of characters to send

00 is the hex value for a Null character

EF is the “Insert a delay” command

0200 is the delay value (5msX200=1000ms=1s)

E9 is the “Send all but the last characters” command

00 is the number of characters that will not be sent at the end of the message
Chapter 11 Batch Programming

Introduction

Batch programming enables users to integrate a batch of commands into a single batch barcode.

Listed below are batch programming rules:


2. Each command is terminated by a semicolon (;). Note that there is no space between a command and its terminator semicolon.

3. Use the barcode generator software to generate a 2D batch barcode.

Example: Create a batch barcode for **Illumination Always On, Sense Mode, Decode Session Timeout = 2s**:

1. Input the commands:
   
   @ILLSCN2;SCNMOD2;ORTSET2000;

2. Generate a batch barcode.

   When setting up a scanner with the above configuration, scan the **Enable Batch Barcode** barcode and then the batch barcode generated.
Create a Batch Command

A batch command may contain a number of individual commands each of which is terminated by a semicolon (;).

For more information, refer to the *Serial Programming Command Manual*.

Create a Batch Barcode

Batch barcodes can be produced in the format of PDF417, QR Code or Data Matrix.

Example: Create a batch barcode for *Illumination Always On, Sense Mode, Decode Session Timeout = 2s*:

1. Input the following commands:
   
   @ILLSCN2;SCNMOD2;ORTSET2000;

2. Generate a PDF417 batch barcode.
Use Batch Barcode

To put a batch barcode into use, scan the following barcodes. (Use the example above.)
Chapter 12 Troubleshooting

FAQ

Problem: Some barcodes cannot be read.

Solution:
1. Find out the barcode type and verify that the barcode type is enabled. If the barcode parameters include check character 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.

Problem: Incorrect output.

Solution:
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 character 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.

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

Solution: Verify that the serial port parameter (such as baud rate, data bit and stop bit) settings match the host requirements.
Problem: Illumination beam is OFF.

Solution:
1. Verify that the scanner is properly powered up.
2. Send “?” to the scanner. If the scanner returns a reply of “!”, then send programming commands to turn illumination on.

Problem: Carriage Return/Line Feed settings.

Solution: See the “Terminating Character Suffix” section in Chapter 7.
## Appendix 1: Factory Defaults Table

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Factory Default</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Programming Barcode</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barcode Programming</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Programming Barcode Data</td>
<td>Do not send</td>
<td></td>
</tr>
<tr>
<td><strong>Communication Settings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RS-232</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baud Rate</td>
<td>115200</td>
<td></td>
</tr>
<tr>
<td>Parity Check</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Data Bits</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Stop Bits</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>HID-KBW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USB Country Keyboard Type</td>
<td>U.S.</td>
<td></td>
</tr>
<tr>
<td>Beep on Unknown Character</td>
<td>Do not beep</td>
<td></td>
</tr>
<tr>
<td>Inter-Keystroke Delay</td>
<td>10ms</td>
<td></td>
</tr>
<tr>
<td>Convert Case</td>
<td>No conversion</td>
<td></td>
</tr>
<tr>
<td>Emulate ALT + Keypad</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Function Key Mapping</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Emulate Numeric Keypad</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Code Page</td>
<td>Windows 1252 (Latin I)</td>
<td></td>
</tr>
<tr>
<td>Polling Rate</td>
<td>1ms</td>
<td></td>
</tr>
<tr>
<td><strong>Scan Mode</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default Scan Mode</td>
<td>Sense mode</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Factory Default</td>
<td>Remark</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-----------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Sense Mode</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decode Session Timeout</td>
<td>3,000ms</td>
<td>Applicable to Sense mode and Continuous mode. 100~3,600,000ms; 0: Infinite</td>
</tr>
<tr>
<td>Image Stabilization Timeout</td>
<td>100ms</td>
<td>0~1,600ms</td>
</tr>
<tr>
<td>Timeout between Decodes</td>
<td>200ms</td>
<td>Applicable to Sense mode and Continuous mode. 0~65,535ms</td>
</tr>
<tr>
<td>Timeout between Decodes (Same Barcode)</td>
<td>Enabled 1,500ms</td>
<td>Applicable to Sense mode and Continuous mode. 0~65,535ms</td>
</tr>
<tr>
<td>Threshold Value of Illumination Change</td>
<td>5 ( )</td>
<td>1~16</td>
</tr>
<tr>
<td><strong>Continuous Mode</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decode Session Timeout</td>
<td>3,000ms</td>
<td>Applicable to Sense mode and Continuous mode. 100~3,600,000ms; 0: Infinite</td>
</tr>
<tr>
<td>Timeout between Decodes</td>
<td>200ms</td>
<td>Applicable to Sense mode and Continuous mode. 0~65,535ms</td>
</tr>
<tr>
<td>Timeout between Decodes (Same Barcode)</td>
<td>Enabled 1,500ms</td>
<td>Applicable to Sense mode and Continuous mode. 0~65,535ms</td>
</tr>
<tr>
<td><strong>Scanning Preferences</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decode Area</td>
<td>Whole Area Decoding</td>
<td></td>
</tr>
<tr>
<td>Specify Decoding Area</td>
<td>40% top, 60% bottom, 40% left, 60% right</td>
<td></td>
</tr>
<tr>
<td><strong>Illumination</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illumination</td>
<td>Normal</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Factory Default</td>
<td>Remark</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td><strong>Notifications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power On Beep</td>
<td>On</td>
<td></td>
</tr>
<tr>
<td>Good Read Beep</td>
<td>Notification: On</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beep Type: Type 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beep Volume: Loud</td>
<td></td>
</tr>
<tr>
<td>Good Read Voice Prompt Volume</td>
<td>Loud</td>
<td></td>
</tr>
<tr>
<td>Bad Read Message</td>
<td>Off</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0-7 characters</td>
</tr>
<tr>
<td><strong>Prefix &amp; Suffix</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prefix Sequence</td>
<td>Custom Prefix+Code ID+AIM ID</td>
<td></td>
</tr>
<tr>
<td>Custom Prefix</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>AIM ID Prefix</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Code ID Prefix</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Custom Suffix</td>
<td>Disabled</td>
<td>None</td>
</tr>
<tr>
<td>Terminating Character Suffix</td>
<td>Enabled</td>
<td>0x0D,0x0A (CRLF)</td>
</tr>
<tr>
<td><strong>Image Control</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image Flipping</td>
<td>Do not flip</td>
<td></td>
</tr>
<tr>
<td><strong>Data Formatter</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Formatter</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Data Format Selection</td>
<td>Format_0</td>
<td></td>
</tr>
<tr>
<td>Non-Match Error Beep</td>
<td>On</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Factory Default</td>
<td>Remark</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td><strong>Symbologies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Reverse</td>
<td>Off</td>
<td>Applicable to all symbologies.</td>
</tr>
<tr>
<td><strong>Code 128</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code 128</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>GS1-128 (UCC/EAN-128)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GS1-128</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>AIM-128</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIM-128</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>EAN-8</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAN-8</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Transmit</td>
<td></td>
</tr>
<tr>
<td>2-Digit Add-On Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>5-Digit Add-On Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Add-On Code</td>
<td>Not required</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Factory Default</td>
<td>Remark</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>EAN-13</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAN-13</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Transmit</td>
<td></td>
</tr>
<tr>
<td>2-Digit Add-On Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>5-Digit Add-On Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Add-On Code</td>
<td>Not required</td>
<td></td>
</tr>
<tr>
<td><strong>ISSN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISSN</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>2-Digit Add-On Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>5-Digit Add-On Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Add-On Code</td>
<td>Not required</td>
<td></td>
</tr>
<tr>
<td><strong>ISBN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISBN</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>2-Digit Add-On Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>5-Digit Add-On Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Add-On Code</td>
<td>Not required</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Factory Default</td>
<td>Remark</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>UPC-E</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UPC-E</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Transmit</td>
<td></td>
</tr>
<tr>
<td>2-Digit Add-On Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>5-Digit Add-On Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Add-On Code</td>
<td>Not required</td>
<td></td>
</tr>
<tr>
<td>System Character “0”</td>
<td>Transmit</td>
<td></td>
</tr>
<tr>
<td><strong>UPC-A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UPC-A</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Transmit</td>
<td></td>
</tr>
<tr>
<td>2-Digit Add-On Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>5-Digit Add-On Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Add-On Code</td>
<td>Not required</td>
<td></td>
</tr>
<tr>
<td>System Character</td>
<td>Transmit</td>
<td></td>
</tr>
<tr>
<td>Country Code</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td><strong>Interleaved 2 of 5</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interleaved 2 of 5</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character Verification</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>Febraban</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Febraban</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Transmit Delay per Character</td>
<td>Disabled</td>
<td>70ms</td>
</tr>
<tr>
<td>Transmit Delay per 12 Characters</td>
<td>Disabled</td>
<td>500ms</td>
</tr>
<tr>
<td><strong>ITF-6</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITF-6</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Factory Default</td>
<td>Remark</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>ITF-14</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITF-14</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td><strong>Matrix 2 of 5</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matrix 2 of 5</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Check Character Verification</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>Industrial 2 of 5</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial 2 of 5</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character Verification</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>Standard 2 of 5</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard 2 of 5</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character Verification</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>Code 39</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code 39</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character Verification</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Start/Stop Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Code 39 Full ASCII</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Code 32</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Code 32 Prefix</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Code 32 Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Code 32 Start/Stop Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Factory Default</td>
<td>Remark</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Codabar</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Codabar</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character Verification</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Start/Stop Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Start/Stop Character Format</td>
<td>ABCD/ABCD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Uppercase</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Code 93</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code 93</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character Verification</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>GS1 Databar</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GS1 Databar</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Application Identifier &quot;01&quot;</td>
<td>Transmit</td>
<td></td>
</tr>
<tr>
<td><strong>Code 11</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code 11</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character Verification</td>
<td>One check character,</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Plessey</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plessey</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character Verification</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Factory Default</td>
<td>Remark</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>MSI-Plessey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSI-Plessey</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Check Character Verification</td>
<td>One check character, MOD10</td>
<td></td>
</tr>
<tr>
<td>Check Character</td>
<td>Do not transmit</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>PDF 417</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDF 417</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>2710</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PDF 417 Twin Code</td>
<td>Read single PDF417 only</td>
<td></td>
</tr>
<tr>
<td>Character Encoding</td>
<td>Default Character Encoding</td>
<td></td>
</tr>
<tr>
<td>PDF417 ECI Output</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>QR Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QR Code</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Micro QR</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>7089</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>QR Twin Code</td>
<td>Read single QR only</td>
<td></td>
</tr>
<tr>
<td>Character Encoding</td>
<td>Default Character Encoding</td>
<td></td>
</tr>
<tr>
<td>QR ECI Output</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Data Matrix</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Matrix</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Rectangular Barcode</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Mirror Image</td>
<td>Decode</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>3116</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>DM Twin Code</td>
<td>Read single DM only</td>
<td></td>
</tr>
<tr>
<td>Character Encoding</td>
<td>Default Character Encoding</td>
<td></td>
</tr>
<tr>
<td>Data Matrix ECI Output</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Chinese Sensible Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese Sensible Code</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Maximum Length</td>
<td>7827</td>
<td></td>
</tr>
<tr>
<td>Minimum Length</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix 2: AIM ID Table

<table>
<thead>
<tr>
<th>Symbology</th>
<th>AIM ID</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EAN-13</strong></td>
<td>]E0</td>
<td>Standard EAN-13</td>
</tr>
<tr>
<td></td>
<td>]E3</td>
<td>EAN-13 + 2/5-Digit Add-On Code</td>
</tr>
<tr>
<td><strong>EAN-8</strong></td>
<td>]E4</td>
<td>Standard EAN-8</td>
</tr>
<tr>
<td></td>
<td>]E4…]E1…</td>
<td>EAN-8 + 2-Digit Add-On Code</td>
</tr>
<tr>
<td></td>
<td>]E4…]E2…</td>
<td>EAN-8 + 5-Digit Add-On Code</td>
</tr>
<tr>
<td><strong>UPC-E</strong></td>
<td>]E0</td>
<td>Standard UPC-E</td>
</tr>
<tr>
<td></td>
<td>]E3</td>
<td>UPC-E + 2/5-Digit Add-On Code</td>
</tr>
<tr>
<td><strong>UPC-A</strong></td>
<td>]E0</td>
<td>Standard UPC-A</td>
</tr>
<tr>
<td></td>
<td>]E3</td>
<td>UPC-A + 2/5-Digit Add-On Code</td>
</tr>
<tr>
<td><strong>Code 128</strong></td>
<td>]C0</td>
<td>Standard Code 128</td>
</tr>
<tr>
<td><strong>GS1-128 (UCC/EAN-128)</strong></td>
<td>]C1</td>
<td>FNC1 is the character right after the start character</td>
</tr>
<tr>
<td><strong>AIM-128</strong></td>
<td>]C2</td>
<td>FNC1 is the 2nd character after the start character</td>
</tr>
<tr>
<td><strong>ISBT-128</strong></td>
<td>]C4</td>
<td></td>
</tr>
<tr>
<td><strong>Interleaved 2 of 5</strong></td>
<td>]I0</td>
<td>No check character verification</td>
</tr>
<tr>
<td><strong>Febraban</strong></td>
<td>]I1</td>
<td>Transmit check character after verification</td>
</tr>
<tr>
<td></td>
<td>]I3</td>
<td>Do not transmit check character</td>
</tr>
<tr>
<td><strong>ITF-6</strong></td>
<td>]I1</td>
<td>Transmit check character</td>
</tr>
<tr>
<td></td>
<td>]I3</td>
<td>Do not transmit check character</td>
</tr>
<tr>
<td><strong>ITF-14</strong></td>
<td>]I1</td>
<td>Transmit check character</td>
</tr>
<tr>
<td></td>
<td>]I3</td>
<td>Do not transmit check character</td>
</tr>
<tr>
<td><strong>Industrial 2 of 5</strong></td>
<td>]S0</td>
<td>Not specified</td>
</tr>
<tr>
<td><strong>Standard 2 of 5</strong></td>
<td>]R0</td>
<td>No check character verification</td>
</tr>
<tr>
<td></td>
<td>]R8</td>
<td>MOD10; do not transmit check character</td>
</tr>
<tr>
<td></td>
<td>]R9</td>
<td>MOD10; transmit check character</td>
</tr>
<tr>
<td><strong>Code 39</strong></td>
<td>]A0</td>
<td>Transmit barcodes as is; Full ASCII disabled; no check character verification</td>
</tr>
<tr>
<td></td>
<td>]A1</td>
<td>MOD43; transmit check character</td>
</tr>
<tr>
<td><strong>Code 32</strong></td>
<td>]A3</td>
<td>MOD43; do not transmit check character</td>
</tr>
<tr>
<td><strong>Codabar</strong></td>
<td>]A4</td>
<td>Full ASCII enabled; no check character verification</td>
</tr>
<tr>
<td></td>
<td>]A5</td>
<td>Full ASCII enabled; transmit check character</td>
</tr>
<tr>
<td></td>
<td>]A7</td>
<td>Full ASCII enabled; do not transmit check character</td>
</tr>
<tr>
<td></td>
<td>]F0</td>
<td>Standard Codabar</td>
</tr>
<tr>
<td></td>
<td>]F2</td>
<td>Transmit check character after verification</td>
</tr>
<tr>
<td></td>
<td>]F4</td>
<td>Do not transmit check character after verification</td>
</tr>
<tr>
<td>Symbology</td>
<td>AIM ID</td>
<td>Remark</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Code 93</td>
<td>G0</td>
<td>Standard Code 93</td>
</tr>
<tr>
<td></td>
<td>H0</td>
<td>MOD11; transmit check character</td>
</tr>
<tr>
<td></td>
<td>H1</td>
<td>MOD11/MOD11; transmit check character</td>
</tr>
<tr>
<td></td>
<td>H3</td>
<td>Do not transmit check character after verification</td>
</tr>
<tr>
<td></td>
<td>H9</td>
<td>No check character verification</td>
</tr>
<tr>
<td>GS1-DataBar (RSS)</td>
<td>E0</td>
<td>Standard GS1-DataBar</td>
</tr>
<tr>
<td>Plessey</td>
<td>P0</td>
<td>Standard Plessey</td>
</tr>
<tr>
<td></td>
<td>M0</td>
<td>MOD10; transmit check character</td>
</tr>
<tr>
<td></td>
<td>M1</td>
<td>MOD10; do not transmit check character</td>
</tr>
<tr>
<td></td>
<td>M7</td>
<td>MOD10/ MOD11; do not transmit check character</td>
</tr>
<tr>
<td></td>
<td>M8</td>
<td>MOD10/ MOD11; transmit check character</td>
</tr>
<tr>
<td></td>
<td>M9</td>
<td>No check character verification</td>
</tr>
<tr>
<td>MSI-Plessey</td>
<td>X0</td>
<td>Specified by the manufacturer</td>
</tr>
<tr>
<td></td>
<td>X1</td>
<td>No check character verification</td>
</tr>
<tr>
<td></td>
<td>X2</td>
<td>MOD10; transmit check character</td>
</tr>
<tr>
<td></td>
<td>X3</td>
<td>MOD11; do not transmit check character</td>
</tr>
<tr>
<td>Matrix 2 of 5</td>
<td>X4</td>
<td>Standard ISBN</td>
</tr>
<tr>
<td>ISBN</td>
<td>X5</td>
<td>Standard ISSN</td>
</tr>
<tr>
<td>PDF417</td>
<td>L0</td>
<td>Comply with 1994 PDF417 specifications</td>
</tr>
<tr>
<td></td>
<td>d0</td>
<td>ECC000 - ECC140</td>
</tr>
<tr>
<td></td>
<td>d1</td>
<td>ECC200</td>
</tr>
<tr>
<td></td>
<td>d2</td>
<td>ECC200, FNC1 is the 1st or 5th character after the start character</td>
</tr>
<tr>
<td></td>
<td>d3</td>
<td>ECC200, FNC1 is the 2nd or 6th character after the start character</td>
</tr>
<tr>
<td></td>
<td>d4</td>
<td>ECC200, ECI included</td>
</tr>
<tr>
<td></td>
<td>d5</td>
<td>ECC200, FNC1 is the 1st or 5th character after the start character,ECI included</td>
</tr>
<tr>
<td></td>
<td>d6</td>
<td>ECC200, FNC1 is the 2nd or 6th character after the start character,ECI included</td>
</tr>
<tr>
<td>QR Code</td>
<td>Q0</td>
<td>QR1</td>
</tr>
<tr>
<td></td>
<td>Q1</td>
<td>2005 version, ECI excluded</td>
</tr>
<tr>
<td></td>
<td>Q2</td>
<td>2005 version, ECI included</td>
</tr>
<tr>
<td></td>
<td>Q3</td>
<td>QR Code 2005, ECI excluded,FNC1 is the 1st character after the start character</td>
</tr>
<tr>
<td></td>
<td>Q4</td>
<td>QR Code 2005, ECI included,FNC1 is the 1st character after the start character</td>
</tr>
<tr>
<td></td>
<td>Q5</td>
<td>QR Code 2005,ECI excluded,FNC1 is the 2nd character after the start character</td>
</tr>
<tr>
<td></td>
<td>Q6</td>
<td>QR Code 2005, ECI included, FNC1 is the 2nd character after the start character</td>
</tr>
<tr>
<td>Chinese Sensible Code</td>
<td>X0</td>
<td></td>
</tr>
</tbody>
</table>

## Appendix 3: Code ID Table

<table>
<thead>
<tr>
<th>Symbology</th>
<th>Code ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code 128</td>
<td>j</td>
</tr>
<tr>
<td>GS1-128 (UCC/EAN-128)</td>
<td>j</td>
</tr>
<tr>
<td>AIM-128</td>
<td>f</td>
</tr>
<tr>
<td>EAN-8</td>
<td>d</td>
</tr>
<tr>
<td>EAN-13</td>
<td>d</td>
</tr>
<tr>
<td>ISSN</td>
<td>n</td>
</tr>
<tr>
<td>ISBN</td>
<td>B</td>
</tr>
<tr>
<td>UPC-E</td>
<td>c</td>
</tr>
<tr>
<td>UPC-A</td>
<td>c</td>
</tr>
<tr>
<td>Interleaved 2 of 5, Febraban</td>
<td>e</td>
</tr>
<tr>
<td>ITF-6</td>
<td>e</td>
</tr>
<tr>
<td>ITF-14</td>
<td>e</td>
</tr>
<tr>
<td>Matrix 2 of 5</td>
<td>v</td>
</tr>
<tr>
<td>Industrial 2 of 5</td>
<td>D</td>
</tr>
<tr>
<td>Standard 2 of 5</td>
<td>s</td>
</tr>
<tr>
<td>Code 39, Code 32</td>
<td>b</td>
</tr>
<tr>
<td>Codabar</td>
<td>a</td>
</tr>
<tr>
<td>Code 93</td>
<td>i</td>
</tr>
<tr>
<td>Code 11</td>
<td>H</td>
</tr>
<tr>
<td>Plessey</td>
<td>p</td>
</tr>
<tr>
<td>MSI-Plessey</td>
<td>m</td>
</tr>
<tr>
<td>GS1 Databar</td>
<td>R</td>
</tr>
<tr>
<td>PDF417</td>
<td>r</td>
</tr>
<tr>
<td>QR Code</td>
<td>Q</td>
</tr>
<tr>
<td>Data Matrix</td>
<td>u</td>
</tr>
<tr>
<td>Chinese Sensible Code</td>
<td>h</td>
</tr>
</tbody>
</table>
Appendix 4: ASCII Table

<table>
<thead>
<tr>
<th>Hex</th>
<th>Dec</th>
<th>Char</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>0</td>
<td>NUL (Null char.)</td>
</tr>
<tr>
<td>01</td>
<td>1</td>
<td>SOH (Start of Header)</td>
</tr>
<tr>
<td>02</td>
<td>2</td>
<td>STX (Start of Text)</td>
</tr>
<tr>
<td>03</td>
<td>3</td>
<td>ETX (End of Text)</td>
</tr>
<tr>
<td>04</td>
<td>4</td>
<td>EOT (End of Transmission)</td>
</tr>
<tr>
<td>05</td>
<td>5</td>
<td>ENQ (Enquiry)</td>
</tr>
<tr>
<td>06</td>
<td>6</td>
<td>ACK (Acknowledgment)</td>
</tr>
<tr>
<td>07</td>
<td>7</td>
<td>BEL (Bell)</td>
</tr>
<tr>
<td>08</td>
<td>8</td>
<td>BS (Backspace)</td>
</tr>
<tr>
<td>09</td>
<td>9</td>
<td>HT (Horizontal Tab)</td>
</tr>
<tr>
<td>0a</td>
<td>10</td>
<td>LF (Line Feed)</td>
</tr>
<tr>
<td>0b</td>
<td>11</td>
<td>VT (Vertical Tab)</td>
</tr>
<tr>
<td>0c</td>
<td>12</td>
<td>FF (Form Feed)</td>
</tr>
<tr>
<td>0d</td>
<td>13</td>
<td>CR (Carriage Return)</td>
</tr>
<tr>
<td>0e</td>
<td>14</td>
<td>SO (Shift Out)</td>
</tr>
<tr>
<td>0f</td>
<td>15</td>
<td>SI (Shift In)</td>
</tr>
<tr>
<td>10</td>
<td>16</td>
<td>DLE (Data Link Escape)</td>
</tr>
<tr>
<td>11</td>
<td>17</td>
<td>DC1 (XON) (Device Control 1)</td>
</tr>
<tr>
<td>12</td>
<td>18</td>
<td>DC2 (Device Control 2)</td>
</tr>
<tr>
<td>13</td>
<td>19</td>
<td>DC3 (XOFF) (Device Control 3)</td>
</tr>
<tr>
<td>14</td>
<td>20</td>
<td>DC4 (Device Control 4)</td>
</tr>
<tr>
<td>15</td>
<td>21</td>
<td>NAK (Negative Acknowledgment)</td>
</tr>
<tr>
<td>16</td>
<td>22</td>
<td>SYN (Synchronous Idle)</td>
</tr>
<tr>
<td>17</td>
<td>23</td>
<td>ETB (End of Trans. Block)</td>
</tr>
<tr>
<td>18</td>
<td>24</td>
<td>CAN (Cancel)</td>
</tr>
<tr>
<td>19</td>
<td>25</td>
<td>EM (End of Medium)</td>
</tr>
<tr>
<td>1a</td>
<td>26</td>
<td>SUB (Substitute)</td>
</tr>
<tr>
<td>1b</td>
<td>27</td>
<td>ESC (Escape)</td>
</tr>
<tr>
<td>1c</td>
<td>28</td>
<td>FS (File Separator)</td>
</tr>
<tr>
<td>1d</td>
<td>29</td>
<td>GS (Group Separator)</td>
</tr>
<tr>
<td>Hex</td>
<td>Dec</td>
<td>Char</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>---------------</td>
</tr>
<tr>
<td>1e</td>
<td>30</td>
<td>RS (Request to Send)</td>
</tr>
<tr>
<td>1f</td>
<td>31</td>
<td>US (Unit Separator)</td>
</tr>
<tr>
<td>20</td>
<td>32</td>
<td>SP (Space)</td>
</tr>
<tr>
<td>21</td>
<td>33</td>
<td>! (Exclamation Mark)</td>
</tr>
<tr>
<td>22</td>
<td>34</td>
<td>&quot; (Double Quote)</td>
</tr>
<tr>
<td>23</td>
<td>35</td>
<td># (Number Sign)</td>
</tr>
<tr>
<td>24</td>
<td>36</td>
<td>$ (Dollar Sign)</td>
</tr>
<tr>
<td>25</td>
<td>37</td>
<td>% (Percent)</td>
</tr>
<tr>
<td>26</td>
<td>38</td>
<td>&amp; (Ampersand)</td>
</tr>
<tr>
<td>27</td>
<td>39</td>
<td>` (Single Quote)</td>
</tr>
<tr>
<td>28</td>
<td>40</td>
<td>( (Left / Opening Parenthesis)</td>
</tr>
<tr>
<td>29</td>
<td>41</td>
<td>) (Right / Closing Parenthesis)</td>
</tr>
<tr>
<td>2a</td>
<td>42</td>
<td>* (Asterisk)</td>
</tr>
<tr>
<td>2b</td>
<td>43</td>
<td>+ (Plus)</td>
</tr>
<tr>
<td>2c</td>
<td>44</td>
<td>, (Comma)</td>
</tr>
<tr>
<td>2d</td>
<td>45</td>
<td>- (Minus / Dash)</td>
</tr>
<tr>
<td>2e</td>
<td>46</td>
<td>. (Dot)</td>
</tr>
<tr>
<td>2f</td>
<td>47</td>
<td>/ (Forward Slash)</td>
</tr>
<tr>
<td>30</td>
<td>48</td>
<td>0</td>
</tr>
<tr>
<td>31</td>
<td>49</td>
<td>1</td>
</tr>
<tr>
<td>32</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>33</td>
<td>51</td>
<td>3</td>
</tr>
<tr>
<td>34</td>
<td>52</td>
<td>4</td>
</tr>
<tr>
<td>35</td>
<td>53</td>
<td>5</td>
</tr>
<tr>
<td>36</td>
<td>54</td>
<td>6</td>
</tr>
<tr>
<td>37</td>
<td>55</td>
<td>7</td>
</tr>
<tr>
<td>38</td>
<td>56</td>
<td>8</td>
</tr>
<tr>
<td>39</td>
<td>57</td>
<td>9</td>
</tr>
<tr>
<td>3a</td>
<td>58</td>
<td>: (Colon)</td>
</tr>
<tr>
<td>3b</td>
<td>59</td>
<td>; (Semi-colon)</td>
</tr>
<tr>
<td>3c</td>
<td>60</td>
<td>&lt; (Less Than)</td>
</tr>
<tr>
<td>3d</td>
<td>61</td>
<td>= (Equal Sign)</td>
</tr>
<tr>
<td>Hex</td>
<td>Dec</td>
<td>Char</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>----------------</td>
</tr>
<tr>
<td>3e</td>
<td>62</td>
<td>&gt; (Greater Than)</td>
</tr>
<tr>
<td>3f</td>
<td>63</td>
<td>? (Question Mark)</td>
</tr>
<tr>
<td>40</td>
<td>64</td>
<td>@ (AT Symbol)</td>
</tr>
<tr>
<td>41</td>
<td>65</td>
<td>A</td>
</tr>
<tr>
<td>42</td>
<td>66</td>
<td>B</td>
</tr>
<tr>
<td>43</td>
<td>67</td>
<td>C</td>
</tr>
<tr>
<td>44</td>
<td>68</td>
<td>D</td>
</tr>
<tr>
<td>45</td>
<td>69</td>
<td>E</td>
</tr>
<tr>
<td>46</td>
<td>70</td>
<td>F</td>
</tr>
<tr>
<td>47</td>
<td>71</td>
<td>G</td>
</tr>
<tr>
<td>48</td>
<td>72</td>
<td>H</td>
</tr>
<tr>
<td>49</td>
<td>73</td>
<td>I</td>
</tr>
<tr>
<td>4a</td>
<td>74</td>
<td>J</td>
</tr>
<tr>
<td>4b</td>
<td>75</td>
<td>K</td>
</tr>
<tr>
<td>4c</td>
<td>76</td>
<td>L</td>
</tr>
<tr>
<td>4d</td>
<td>77</td>
<td>M</td>
</tr>
<tr>
<td>4e</td>
<td>78</td>
<td>N</td>
</tr>
<tr>
<td>4f</td>
<td>79</td>
<td>O</td>
</tr>
<tr>
<td>50</td>
<td>80</td>
<td>P</td>
</tr>
<tr>
<td>51</td>
<td>81</td>
<td>Q</td>
</tr>
<tr>
<td>52</td>
<td>82</td>
<td>R</td>
</tr>
<tr>
<td>53</td>
<td>83</td>
<td>S</td>
</tr>
<tr>
<td>54</td>
<td>84</td>
<td>T</td>
</tr>
<tr>
<td>55</td>
<td>85</td>
<td>U</td>
</tr>
<tr>
<td>56</td>
<td>86</td>
<td>V</td>
</tr>
<tr>
<td>57</td>
<td>87</td>
<td>W</td>
</tr>
<tr>
<td>58</td>
<td>88</td>
<td>X</td>
</tr>
<tr>
<td>59</td>
<td>89</td>
<td>Y</td>
</tr>
<tr>
<td>5a</td>
<td>90</td>
<td>Z</td>
</tr>
<tr>
<td>5b</td>
<td>91</td>
<td>[ (Left / Opening Bracket)</td>
</tr>
<tr>
<td>5c</td>
<td>92</td>
<td>\ (Back Slash)</td>
</tr>
<tr>
<td>5d</td>
<td>93</td>
<td>] (Right / Closing Bracket)</td>
</tr>
<tr>
<td>Hex</td>
<td>Dec</td>
<td>Char</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>--------------------------</td>
</tr>
<tr>
<td>5e</td>
<td>94</td>
<td>^ (Caret / Circumflex)</td>
</tr>
<tr>
<td>5f</td>
<td>95</td>
<td>_ (Underscore)</td>
</tr>
<tr>
<td>60</td>
<td>96</td>
<td>' (Grave Accent)</td>
</tr>
<tr>
<td>61</td>
<td>97</td>
<td>a</td>
</tr>
<tr>
<td>62</td>
<td>98</td>
<td>b</td>
</tr>
<tr>
<td>63</td>
<td>99</td>
<td>c</td>
</tr>
<tr>
<td>64</td>
<td>100</td>
<td>d</td>
</tr>
<tr>
<td>65</td>
<td>101</td>
<td>e</td>
</tr>
<tr>
<td>66</td>
<td>102</td>
<td>f</td>
</tr>
<tr>
<td>67</td>
<td>103</td>
<td>g</td>
</tr>
<tr>
<td>68</td>
<td>104</td>
<td>h</td>
</tr>
<tr>
<td>69</td>
<td>105</td>
<td>i</td>
</tr>
<tr>
<td>6a</td>
<td>106</td>
<td>j</td>
</tr>
<tr>
<td>6b</td>
<td>107</td>
<td>k</td>
</tr>
<tr>
<td>6c</td>
<td>108</td>
<td>l</td>
</tr>
<tr>
<td>6d</td>
<td>109</td>
<td>m</td>
</tr>
<tr>
<td>6e</td>
<td>110</td>
<td>n</td>
</tr>
<tr>
<td>6f</td>
<td>111</td>
<td>o</td>
</tr>
<tr>
<td>70</td>
<td>112</td>
<td>p</td>
</tr>
<tr>
<td>71</td>
<td>113</td>
<td>q</td>
</tr>
<tr>
<td>72</td>
<td>114</td>
<td>r</td>
</tr>
<tr>
<td>73</td>
<td>115</td>
<td>s</td>
</tr>
<tr>
<td>74</td>
<td>116</td>
<td>t</td>
</tr>
<tr>
<td>75</td>
<td>117</td>
<td>u</td>
</tr>
<tr>
<td>76</td>
<td>118</td>
<td>v</td>
</tr>
<tr>
<td>77</td>
<td>119</td>
<td>w</td>
</tr>
<tr>
<td>78</td>
<td>120</td>
<td>x</td>
</tr>
<tr>
<td>79</td>
<td>121</td>
<td>y</td>
</tr>
<tr>
<td>7a</td>
<td>122</td>
<td>z</td>
</tr>
<tr>
<td>7b</td>
<td>123</td>
<td>{ (Left/ Opening Brace)</td>
</tr>
<tr>
<td>7c</td>
<td>124</td>
<td></td>
</tr>
<tr>
<td>7d</td>
<td>125</td>
<td>} (Right/Closing Brace)</td>
</tr>
<tr>
<td>7e</td>
<td>126</td>
<td>~ (Tilde)</td>
</tr>
<tr>
<td>7f</td>
<td>127</td>
<td>DEL (Delete)</td>
</tr>
</tbody>
</table>
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 from the “ Decode Session Timeout” section in Chapter 3.
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 Image Stabilization Timeout

Example: Set the image stabilization timeout to 500ms
1. Scan the Enter Setup barcode.
2. Scan the Image Stabilization Timeout barcode from the “ Image Stabilization Timeout” section in Chapter 3.
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 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 from the “Timeout between Decodes (Same Barcode)” section in Chapter 3.
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.)
d. 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 from the “Sensitivity” section in Chapter 3.
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.)

e. 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 from the “Timeout between Decodes” section in Chapter 3.
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.)
f. Program the Decoding Area

Example: Set the decoding area to 20% top, 80% bottom, 20% left and 80% right.
1. Scan the Enter Setup barcode.
2. Scan the Specific Area Decoding barcode from the “Specific Area Decoding” section in Chapter 4.
3. Scan the Top of Decoding Area barcode from the “Specify Decoding Area” section in Chapter 4.
4. Scan the numeric barcodes “2” and “0”.
5. Scan the Save barcode.
6. Scan the Bottom of Decoding Area barcode from the “Specify Decoding Area” section in Chapter 4.
7. Scan the numeric barcodes “8” and “0”.
8. Scan the Save barcode.
9. Scan the Left of Decoding Area barcode from the “Specify Decoding Area” section in Chapter 4.
10. Scan the numeric barcodes “2” and “0”.
11. Scan the Save barcode.
12. Scan the Right of Decoding Area barcode from the “Specify Decoding Area” section in Chapter 4.
13. Scan the numeric barcodes “8” and “0”.
14. Scan the Save barcode.
15. 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 from the “Set Custom Prefix” section in Chapter 6.
4. Scan the numeric barcodes “4”, “3”, “4”, “F”, “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 from the “Set Terminating Character Suffix” section in Chapter 6.
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 from the “Modify Code ID” section in Chapter 6.
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 Bad Read Message

Example: Set the bad read 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 Set Bad Read Message barcode from the “Bad Read Message” section in Chapter 5.
4. Scan the numeric barcodes “2”, “1”, “4”, “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:** If minimum length is set to be greater than maximum length, the scanner 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 scanner 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 from the “Set Length Range for Code 128” section in Chapter 7.
3. Scan the numeric barcode “8”.
4. Scan the **Save** barcode.
5. Scan the **Set the Maximum Length** barcode from the “Set Length Range for Code 128” section in Chapter 7.
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.)
I. Program the Custom Inter-keystroke Delay

Example: Set the inter-keystroke delay to 5ms
1. Scan the Enter Setup barcode.
2. Scan the Custom Delay barcode from the “Inter-Keystroke Delay” section in Chapter 2.
3. Scan the numeric barcodes “5”.
4. Scan the Save barcode.
5. Scan the Exit Setup barcode. (If you still need to program other parameter/feature, skip this step.)

m. Program the scanner to get proper output for Russian encoded with Windows 1251

1. Scan the Enter Setup barcode.
2. Scan the Windows 1251 (Cyrillic) barcode from the “Code Page” section in Chapter 2.
3. Scan the appropriate Default Character Encoding barcode according to the symbology your application needs from the “Character Encoding” section in Chapter 8.
4. Scan the Mode 3 barcode from the “Emulate ALT+Keypad” section in Chapter 2.
5. Scan the Exit Setup barcode. (If you still need to program other parameter/feature, skip this step.)

n. Program the scanner to get proper output for Russian encoded with UTF-8

1. Scan the Enter Setup barcode.
2. Scan the Windows 1251 (Cyrillic) barcode from the “Code Page” section in Chapter 2.
3. Scan the appropriate UTF-8 barcode according to the symbology your application needs from the “Character Encoding” section in Chapter 8.
4. Scan the Mode 3 barcode from the “Emulate ALT+Keypad” section in Chapter 2.
5. Scan the Exit Setup barcode. (If you still need to program other parameter/feature, skip this step.)
o. Program the Custom Transmit Delay per Character for Febraban

Example: Set the transmit delay per character to 5ms

1. Scan the Enter Setup barcode.
2. Scan the Set Transmit Delay per Character barcode from the “Transmit Delay” section in Chapter 8.
3. Scan the numeric barcode “5”.
4. Scan the Save barcode.
5. Scan the Enable Transmit Delay per Character barcode from the “Transmit Delay” section in Chapter 8.
6. Scan the Exit Setup barcode. (If you still need to program other parameter/feature, skip this step.)
Appendix 6: Digit Barcodes

0-9
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 scanner is still in the setup mode.
### Appendix 8: ASCII Function Key Mapping Table

<table>
<thead>
<tr>
<th>ASCII Function</th>
<th>ASCII Value (HEX)</th>
<th>No Function Key Mapping</th>
<th>Function Key Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUL (Null char.)</td>
<td>00</td>
<td>Null</td>
<td>Ctrl+2</td>
</tr>
<tr>
<td>SOH (Start of Header)</td>
<td>01</td>
<td>Keypad Enter</td>
<td>Ctrl+A</td>
</tr>
<tr>
<td>STX (Start of Text)</td>
<td>02</td>
<td>Caps Lock</td>
<td>Ctrl+B</td>
</tr>
<tr>
<td>ETX (End of Text)</td>
<td>03</td>
<td>Null</td>
<td>Ctrl+C</td>
</tr>
<tr>
<td>EOT (End of Transmission)</td>
<td>04</td>
<td>Null</td>
<td>Ctrl+D</td>
</tr>
<tr>
<td>ENQ (Enquiry)</td>
<td>05</td>
<td>Null</td>
<td>Ctrl+E</td>
</tr>
<tr>
<td>ACK (Acknowledgment)</td>
<td>06</td>
<td>Null</td>
<td>Ctrl+F</td>
</tr>
<tr>
<td>BEL (Bell)</td>
<td>07</td>
<td>Enter</td>
<td>Ctrl+G</td>
</tr>
<tr>
<td>BS (Backspace)</td>
<td>08</td>
<td>Left Arrow</td>
<td>Ctrl+H</td>
</tr>
<tr>
<td>HT (Horizontal Tab)</td>
<td>09</td>
<td>Horizontal Tab</td>
<td>Ctrl+I</td>
</tr>
<tr>
<td>LF (Line Feed)</td>
<td>0A</td>
<td>Down Arrow</td>
<td>Ctrl+J</td>
</tr>
<tr>
<td>VT (Vertical Tab)</td>
<td>0B</td>
<td>Vertical Tab</td>
<td>Ctrl+K</td>
</tr>
<tr>
<td>FF (Form Feed)</td>
<td>0C</td>
<td>Delete</td>
<td>Ctrl+L</td>
</tr>
<tr>
<td>CR (Carriage Return)</td>
<td>0D</td>
<td>Enter</td>
<td>Ctrl+M</td>
</tr>
<tr>
<td>SO (Shift Out)</td>
<td>0E</td>
<td>Insert</td>
<td>Ctrl+N</td>
</tr>
<tr>
<td>SI (Shift In)</td>
<td>0F</td>
<td>Esc</td>
<td>Ctrl+O</td>
</tr>
<tr>
<td>DLE (Data Link Escape)</td>
<td>10</td>
<td>F11</td>
<td>Ctrl+P</td>
</tr>
<tr>
<td>DC1 (XON) (Device Control 1)</td>
<td>11</td>
<td>Home</td>
<td>Ctrl+Q</td>
</tr>
<tr>
<td>DC2 (Device Control 2)</td>
<td>12</td>
<td>Print Screen</td>
<td>Ctrl+R</td>
</tr>
<tr>
<td>DC3 (XOFF) (Device Control 3)</td>
<td>13</td>
<td>Backspace</td>
<td>Ctrl+S</td>
</tr>
<tr>
<td>DC4 (Device Control 4)</td>
<td>14</td>
<td>tab+shift</td>
<td>Ctrl+T</td>
</tr>
<tr>
<td>NAK (Negative Acknowledgment)</td>
<td>15</td>
<td>F12</td>
<td>Ctrl+U</td>
</tr>
<tr>
<td>SYN (Synchronous Idle)</td>
<td>16</td>
<td>F1</td>
<td>Ctrl+V</td>
</tr>
<tr>
<td>ETB (End of Trans. Block)</td>
<td>17</td>
<td>F2</td>
<td>Ctrl+W</td>
</tr>
<tr>
<td>CAN (Cancel)</td>
<td>18</td>
<td>F3</td>
<td>Ctrl+X</td>
</tr>
<tr>
<td>EM (End of Medium)</td>
<td>19</td>
<td>F4</td>
<td>Ctrl+Y</td>
</tr>
<tr>
<td>SUB (Substitute)</td>
<td>1A</td>
<td>F5</td>
<td>Ctrl+Z</td>
</tr>
<tr>
<td>ESC (Escape)</td>
<td>1B</td>
<td>F6</td>
<td></td>
</tr>
<tr>
<td>FS (File Separator)</td>
<td>1C</td>
<td>F7</td>
<td></td>
</tr>
<tr>
<td>GS (Group Separator)</td>
<td>1D</td>
<td>F8</td>
<td></td>
</tr>
<tr>
<td>RS (Request to Send)</td>
<td>1E</td>
<td>F9</td>
<td></td>
</tr>
<tr>
<td>US (Unit Separator)</td>
<td>1F</td>
<td>F10</td>
<td></td>
</tr>
</tbody>
</table>

*See the following table*
ASCII Function Key Mapping Table (Continued)

The function key mappings of the last five characters in the previous table differ from one keyboard layout to another.

<table>
<thead>
<tr>
<th>Country/Keyboard Layout</th>
<th>Function Key Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1B</td>
</tr>
<tr>
<td>United States</td>
<td>Ctrl+[</td>
</tr>
<tr>
<td>Belgium</td>
<td>Ctrl+[</td>
</tr>
<tr>
<td>Scandinavia</td>
<td>Ctrl+8</td>
</tr>
<tr>
<td>France</td>
<td>Ctrl+^</td>
</tr>
<tr>
<td>Germany</td>
<td>Ctrl+Å</td>
</tr>
<tr>
<td>Italy</td>
<td>Ctrl+\</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Ctrl+&lt;</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Ctrl+[</td>
</tr>
<tr>
<td>Denmark</td>
<td>Ctrl+8</td>
</tr>
<tr>
<td>Norway</td>
<td>Ctrl+8</td>
</tr>
<tr>
<td>Spain</td>
<td>Ctrl+[</td>
</tr>
</tbody>
</table>
## Appendix 9: Code Pages List

<table>
<thead>
<tr>
<th>Numeric Barcode Needed</th>
<th>Code Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Windows 1252 (Latin I)</td>
</tr>
<tr>
<td>1</td>
<td>Windows 1251 (Cyrillic)</td>
</tr>
</tbody>
</table>
Appendix 10: Symbology ID Number

<table>
<thead>
<tr>
<th>Symbology</th>
<th>ID Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code 128</td>
<td>002</td>
</tr>
<tr>
<td>UCC/EAN128</td>
<td>003</td>
</tr>
<tr>
<td>EAN-8</td>
<td>004</td>
</tr>
<tr>
<td>EAN-13</td>
<td>005</td>
</tr>
<tr>
<td>UPC-E</td>
<td>006</td>
</tr>
<tr>
<td>UPC-A</td>
<td>007</td>
</tr>
<tr>
<td>Interleaved 2 of 5, Febraban</td>
<td>008</td>
</tr>
<tr>
<td>ITF-14</td>
<td>009</td>
</tr>
<tr>
<td>ITF-6</td>
<td>010</td>
</tr>
<tr>
<td>Matrix 2 of 5</td>
<td>011</td>
</tr>
<tr>
<td>Code 39, Code 32</td>
<td>013</td>
</tr>
<tr>
<td>Codabar</td>
<td>015</td>
</tr>
<tr>
<td>Code 93</td>
<td>017</td>
</tr>
<tr>
<td>AIM-128</td>
<td>020</td>
</tr>
<tr>
<td>ISSN</td>
<td>023</td>
</tr>
<tr>
<td>ISBN</td>
<td>024</td>
</tr>
<tr>
<td>Industrial 25</td>
<td>025</td>
</tr>
<tr>
<td>Standard 25</td>
<td>026</td>
</tr>
<tr>
<td>Plessey</td>
<td>027</td>
</tr>
<tr>
<td>Code11</td>
<td>028</td>
</tr>
<tr>
<td>MSI-Plessey</td>
<td>029</td>
</tr>
<tr>
<td>GS1 Databar</td>
<td>031</td>
</tr>
<tr>
<td>PDF417</td>
<td>032</td>
</tr>
<tr>
<td>QR Code</td>
<td>033</td>
</tr>
<tr>
<td>Data Matrix</td>
<td>035</td>
</tr>
<tr>
<td>Chinese Sensible Code</td>
<td>039</td>
</tr>
</tbody>
</table>
Newland Auto-ID Tech. Co., Ltd. (Headquarters)
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: contact@nlscan.com
Web: www.newlandaidc.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.
46559 Fremont Blvd., Fremont, CA 94538, USA
Tel: 510 490 3888
Fax: 510 490 3887
Email: info@newlandna.com
Web: www.newlandamerica.com

Newland Latin America
Tel: +1 (239) 598 0068
Fax: +1 (239) 280 1238
Email: info@newlandla.com
Web: www.newlandamerica.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

Newland Korea
Biz. Center Best-one, Jang-eun
Medical Plaza 6F, Bojeong-dong 1261-4, Kihung-gu, Yongin-City, Kyunggi-do, South Korea
Tel: +82 10 8990 4838
Fax: +82 70 4369 0009
Email: th.sunq@newland-id.com.tw
Web: www.newlandaidc.com/kor/