



NLS-FM30 Series

2D CMOS Fixed Mount Barcode Scanner



User Guide

Disclaimer

© 2014 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. Otherwise, Fujian Newland Auto-ID Tech. Co., Ltd. does not assume responsibility for the warranty or replacement.

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 product to improve reliability, function, or design at any time without notice. Besides, 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 a third party. The user, corporation or individual, shall not duplicate, in whole or in part, distribute, modify, decompile, disassemble, decode, reverse engineer, rent, transfer or sublicense such software without prior written consent from the copyright holders.

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

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

Fujian Newland Auto-ID Tech. Co., Ltd.

3F, Building A, No.1, Rujiang West Rd., Mawei, Fuzhou, Fujian, P.R. China 350015

<http://www.nlscan.com>

Revision History

Version	Description	Date
V1.0	Initial release.	August 28, 2014

Table of Contents

1	Standard Configuration	1
2	Optional Configuration	2
3	Safety Information.....	3
3.1	Precautions	3
3.2	Maintenance	3
4	Product Features.....	4
5	Technical Specifications	5
6	FM30 Scanner	6
7	Wiring	7
8	Scanning Instructions	9
8.1	Reading a Digital Barcode off Mobile Phone	9
8.2	Reading a Barcode Printed on Paper.....	9
9	System Settings	10
9.1	Illumination.....	10
9.2	Notification	11
9.2.1	Mute Mode	11
9.2.2	Good Read Beep	11
9.2.3	Good Read Beep Frequency/Duration	12

9.3	Scan Mode.....	13
9.3.1	Sense Mode	13
9.4	Factory Defaults.....	13
9.5	Digit Barcodes	14
9.6	Save/Cancel Barcodes	17
10	RS-232 Interface	18
11	USB Interface.....	20
11.1	HID-POS	20
11.2	USB COM Port Emulation	20
11.3	USB HID-KBW	20
11.3.1	Standard Keyboard	21
11.3.2	Function Key Mapping	21
11.3.3	Emulate ALT+Keypad	23
11.3.4	USB Country Keyboard Types	24
12	Symbologies	29
12.1	Introduction	29
12.2	Global Settings	29
12.2.1	Disable All Symbologies.....	29
12.2.2	Enable All Symbologies	29
12.2.3	Enable 1D Symbologies.....	30
12.2.4	Disable 1D Symbologies	30
12.2.5	Enable 2D Symbologies.....	30
12.2.6	Disable 2D Symbologies	30
12.3	Code 128	31

12.3.1	Restore Factory Defaults	31
12.3.2	Enable/Disable Code 128	31
12.4	UCC/EAN-128	32
12.4.1	Restore Factory Defaults	32
12.4.2	Enable/Disable UCC/EAN-128	32
12.5	AIM 128.....	33
12.5.1	Restore Factory Defaults	33
12.5.2	Enable/Disable AIM 128.....	33
12.6	EAN-8	34
12.6.1	Restore Factory Defaults	34
12.6.2	Enable/Disable EAN-8	34
12.6.3	Transmit Check Digit.....	35
12.6.4	2-Digit Add-On Code.....	36
12.6.5	5-Digit Add-On Code.....	37
12.6.6	EAN-8 Extension.....	38
12.7	EAN-13	39
12.7.1	Restore Factory Defaults	39
12.7.2	Enable/Disable EAN-13	39
12.7.3	Transmit Check Digit.....	40
12.7.4	2-Digit Add-On Code.....	41
12.7.5	5-Digit Add-On Code.....	42
12.8	ISSN.....	43
12.8.1	Restore Factory Defaults	43
12.8.2	Enable/Disable ISSN	43
12.9	ISBN.....	44
12.9.1	Restore Factory Defaults	44

12.9.2	Enable/Disable ISBN	44
12.9.3	Set ISBN Format.....	45
12.10	UPC-E.....	46
12.10.1	Restore Factory Defaults	46
12.10.2	Enable/Disable UPC-E.....	46
12.10.3	Transmit Check Digit.....	47
12.10.4	2-Digit Add-On Code	48
12.10.5	5-Digit Add-On Code	49
12.10.6	Transmit System Character	50
12.10.7	UPC-E Extension	50
12.11	UPC-A.....	51
12.11.1	Restore Factory Defaults	51
12.11.2	Enable/Disable UPC-A.....	51
12.11.3	Transmit Check Digit.....	52
12.11.4	2-Digit Add-On Code	53
12.11.5	5-Digit Add-On Code	54
12.11.6	Transmit Preamble Character	55
12.12	Interleaved 2 of 5	56
12.12.1	Restore Factory Defaults	56
12.12.2	Enable/Disable Interleaved 2 of 5	56
12.12.3	Check Digit Verification	57
12.13	ITF-6	58
12.13.1	Restore Factory Defaults	58
12.13.2	Enable/Disable ITF-6	58
12.14	ITF-14	59
12.14.1	Restore Factory Defaults	59

12.14.2	Enable/Disable ITF-14	59
12.15	Matrix 2 of 5(European Matrix 2 of 5)	60
12.15.1	Restore Factory Defaults	60
12.15.2	Enable/Disable Matrix 2 of 5	60
12.15.3	Check Digit Verification	61
12.16	Industrial 25	62
12.16.1	Restore Factory Defaults	62
12.16.2	Enable/Disable Industrial 25	62
12.16.3	Check Digit Verification	63
12.17	Standard 25	64
12.17.1	Restore Factory Defaults	64
12.17.2	Enable/Disable Standard 25	64
12.17.3	Check Digit Verification	65
12.18	Code 39	66
12.18.1	Restore Factory Defaults	66
12.18.2	Enable/Disable Code 39	66
12.18.3	Transmit Start/Stop Character	67
12.18.4	Enable/Disable Code 39 Full ASCII	67
12.18.5	Check Digit Verification	68
12.19	Codabar	69
12.19.1	Restore Factory Defaults	69
12.19.2	Enable/Disable Codabar	69
12.19.3	Check Digit Verification	70
12.19.4	Transmit Start/Stop Character	71
12.20	Code 93	72
12.20.1	Restore Factory Defaults	72

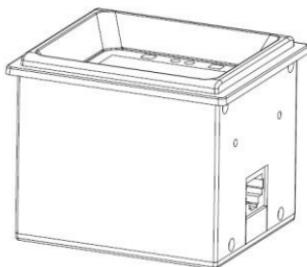
12.20.2	Enable/Disable Code 93	72
12.20.3	Check Digit Verification	73
12.21	Code 11	74
12.21.1	Restore Factory Defaults	74
12.21.2	Enable/Disable Code 11	74
12.21.3	Check Digit Verification	75
12.22	Plessey	77
12.22.1	Restore Factory Defaults	77
12.22.2	Enable/Disable Plessey	77
12.22.3	Check Digit Verification	78
12.23	MSI-Plessey	79
12.23.1	Restore Factory Defaults	79
12.23.2	Enable/Disable MSI-Plessey	79
12.23.3	Check Digit Verification	80
12.24	RSS-14	82
12.24.1	Restore Factory Defaults	82
12.24.2	Enable/Disable RSS-14	82
12.24.3	Transmit Application Identifier “01”	83
12.25	RSS-Limited	84
12.25.1	Restore Factory Defaults	84
12.25.2	Enable/Disable RSS- Limited	84
12.25.3	Transmit Application Identifier “01”	85
12.26	RSS-Expand	86
12.26.1	Restore Factory Defaults	86
12.26.2	Enable/Disable RSS-Expand	86
12.27	PDF417	87

12.27.1	Restore Factory Defaults	87
12.27.2	Enable/Disable PDF417	87
12.27.3	Macro PDF417	88
12.28	Data Matrix.....	89
12.28.1	Restore Factory Defaults	89
12.28.2	Enable/Disable Data Matrix.....	89
12.28.3	Enable/Disable Mirrored DM.....	90
12.28.4	Rectangular Barcodes.....	90
12.29	QR Code	91
12.29.1	Restore Factory Defaults	91
12.29.2	Enable/Disable QR Code	91
12.29.3	Micro QR	92
13	Data Formatting.....	93
13.1	AIM ID Prefix.....	93
13.2	CODE ID Prefix.....	99
13.3	Terminating Character Suffix	101
14	Troubleshooting	102

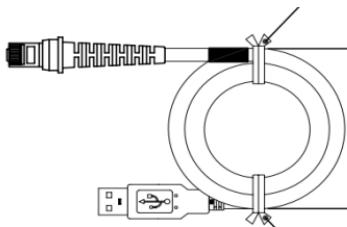
1

Standard Configuration

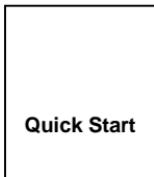
1. NLS-FM30 Series fixed mount barcode scanner



2. USB cable



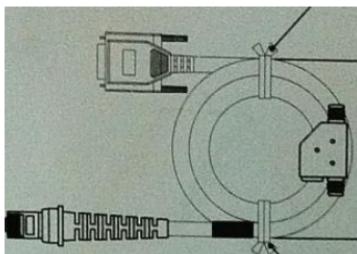
3. Quick Start Guide



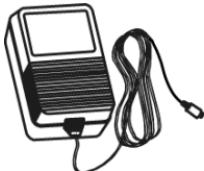
2

Optional Configuration

1. RS-232 cable



2. 5V power adapter



You should retain proof of purchase and ask your dealer for a warranty

Note: You should check to make sure that everything on the standard configuration list is present and intact after opening the package. If any contents are damaged or missing, please keep the original package and contact your dealer immediately for after-sale service.

3

Safety Information

3.1 Precautions

■ Disassembly and retrofit
● Do not disassemble or retrofit the device yourself. Artificial damages caused by failure to observe this precaution are not covered by the warranty.
■ External power supply
● Use only the supplied power adapter. Otherwise there is a risk of damage to the scanner.
■ Abnormal situation
● Keep the scanner away from fire or heat sources. If there is unusual odor, overheating or smoke, immediately cut off the power and disconnect the power adapter, and contact your dealer or Newland customer service center. Continued use in this case may result in fire or electric shock.
■ Drop damage
● If the scanner is damaged due to a drop from high place, immediately cut off the power and contact your dealer or Newland customer service center.
■ Mounting location
● Do not place the scanner on unstable or uneven surfaces.
● Do not expose the scanner to humidity, dust or direct sunlight.

3.2 Maintenance

● The scan window should be kept clean using soft cloth or lens cleaning tissue. Do not use detergent to clean it.
● Do not scratch the scan window.
● Sudden temperature drops may cause condensation on the shell which could degrade the performance of the device. If condensation occurs, dry the device before use.

4

Product Features

Designed primarily for such applications as electronic tickets/coupons, mobile marketing and office automation, the NLS-FM30 series fixed mount barcode scanner is able to read barcodes from paper and mobile phones.

It boasts the following features:

1. Digital barcode data capture

Capable of reading 1D and 2D barcodes off mobile phones.

2. Printed barcode data capture

Capable of reading 1D and 2D barcodes printed on paper.

3. Swift scanning

Delivers effortless, snappy and accurate reading of barcodes on various mobile phone LCD screens with different contrast ratios, colors and reflectances.

4. Easy to use

Simple configuration by scanning the programming barcodes provided in the user guide.

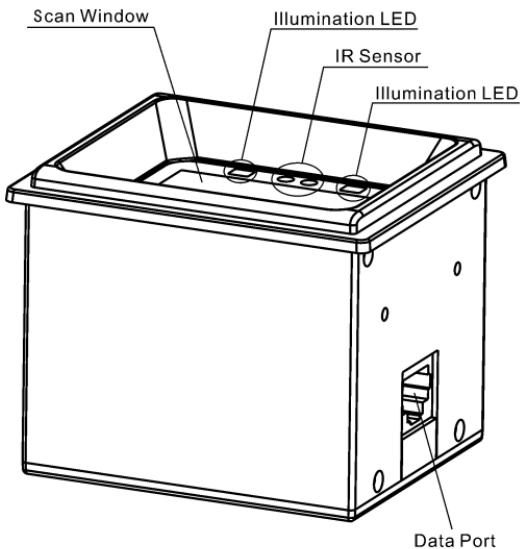
5

Technical Specifications

Processor	IOTC 0370 CHIP
Interface	RS-232 (9.6~115.2Kbps)
	USB 1.1 (HID-KBW, HID-POS)
Image Sensor	752×480 CMOS
Symbologies	2D: PDF417, Data Matrix, QR Code 1D: EAN-13, EAN-8, UPC-A, UPC-E, ISSN, ISBN, Codabar, Code 128, Code 93, ITF-6, ITF-14, Interleaved 2 of 5, Industrial 2 of 5, Standard 2 of 5, Matrix 2 of 5, GS1 Databar (RSS-Expand, RSS-Limited, RSS-14), Code 39, Code 11, MSI-Plessey, Plessey
Scan Mode	Sense mode
Resolution	10 mil
Light Source	White LED
Scan Window	38.3mm*60.4mm
PCS	≥30%
FOV	Diagonal: 85°, Horizontal: 63.7°, Vertical: 70°
Ambient Light	0 ~ 100,000 LUX
Power Consumption	1.75W (max.)
Power Adapter	Output: DC5V, 0.5A, Input: AC100~240V, 50~60Hz
Notification	Beep
Dimensions	78.2mm(L) X 67.2mm (W) X 62mm(H)
Weight	300g
Operating Temperature	-10°C to + 50°C
Storage Temperature	-20°C to + 60°C
Humidity	5% - 95% (non-condensing)
Certification	FCC Part15 Class B, CE EMC Class B

6

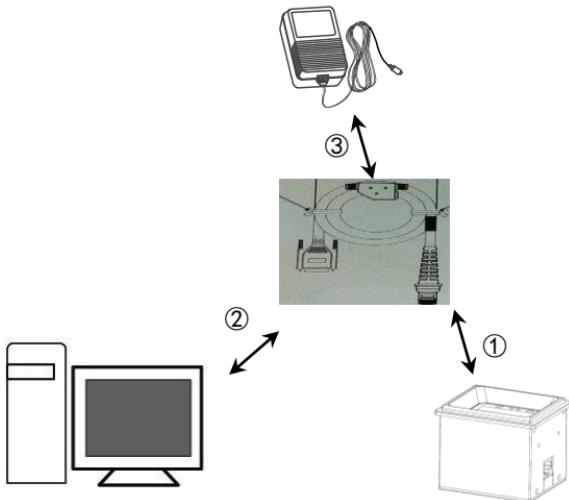
FM30 Scanner



7

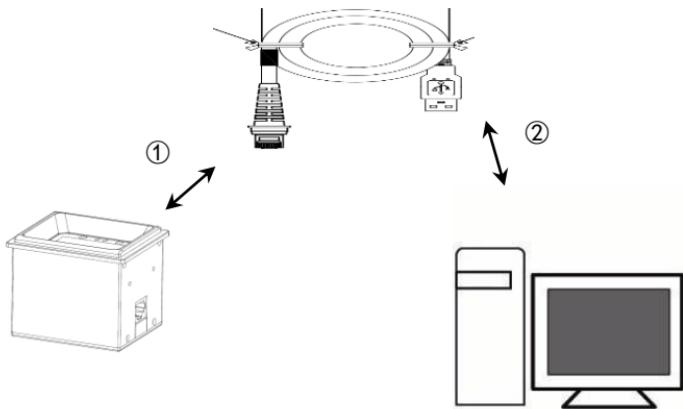
Wiring

1. If your scanner is equipped with an RS-232 interface:
 - ① Plug the supplied 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 PC.
 - ③ Plug the power adapter into the cable's power jack.



- ④ Connect the power adapter to a power outlet. After 0.5s the scanner will be powered on with a beep.

2. If your scanner is equipped with a USB interface:
 - ① Plug the supplied cable's RJ45 connector into the data port on the scanner.
 - ② Plug the cable's USB connector into the USB port on PC.



- ③ After 0.5s the scanner will be powered on with a beep..

8

Scanning Instructions

8.1 Reading a Digital Barcode off Mobile Phone

- ① Place the mobile phone screen close to the scan window and present the barcode to the center of the window, adjusting the distance between them within the range of 1cm-5cm.
- ② For a successful read, the scanner will beep. After sending the data to the host, it will enter standby mode.

8.2 Reading a Barcode Printed on Paper

- ① Place the paper close to the scan window and present the barcode to the center of the window, adjusting the distance between them within the range of 1cm-5cm.
- ② For a successful read, the scanner will beep. After sending the data to the host, it will enter standby mode.

9

System Settings

9.1 Illumination

Always ON: Illumination LED keeps ON after the scanner is powered on.

Normal: Illumination LED is turned on when the scanner is reading barcode.

OFF: Illumination LED is OFF all the time.



W0C0004



W0C0000

** Normal

OFF



W0C000C

Always ON

9.2 Notification

9.2.1 Mute Mode

Scanning the **Enable Mute Mode/Disable Mute Mode** can turn off/on all notification beeps.



W400000

Enable Mute Mode



W400040

**** Disable Mute Mode**

9.2.2 Good Read Beep



W040E04

**** Good Read Beep On**



W040E00

Good Read Beep Off

9.2.3 Good Read Beep Frequency/Duration



WFF09DA

Low Frequency



WFF094B

** Medium Frequency



WFF0925

High Frequency



WFF0A1F

40ms



WFF0A3E

** 80ms



WFF0A5D

120ms

9.3 Scan Mode

9.3.1 Sense Mode

The scanner activates a decode session every time when it detects a change in ambient illumination.



**** Sense Mode**

9.4 Factory Defaults

Scanning the following barcode can restore the scanner to the factory defaults.

You may need to reset your scanner when:

1. scanner is not properly configured so that it fails to decode barcodes;
2. you forget previous configuration and want to avoid its impact;
3. functions that are rarely used have been enabled for the time being.



Restore All Factory Defaults

9.5 Digit Barcodes

After scanning numeric barcode(s), you need to scan the **Save** barcode to save the data.



D 0 0 0 0 0

0



D 0 0 0 0 0 1

1



D 0 0 0 0 0 2

2



D 0 0 0 0 0 3

3



D 0 0 0 0 0 4

4



D000005

5



D000006

6



D000007

7



D000008

8



D000009

9



D00000A

A



D00000B

B



D00000C

C



D00000D

D



D00000E

E



D00000F

F

9.6 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 the Last Digit** barcode and then the correct digit, or scan the **Cancel All Digits** barcode and then the digits you want.

For instance, after reading the **Decode Session Timeout** barcode and numeric barcodes “1”, “2” and “3”, you scan:

Cancel the Last Digit: The last digit “3” will be removed.

Cancel All Digits: All digits “123” will be removed.



D 0 0 0 0 1 2

Save



D 0 0 0 0 1 0

Cancel the Last Digit



D 0 0 0 0 1 1

Cancel All Digits

10

RS-232 Interface

When the scanner is connected to a host device through its RS-232 interface, serial communication is enabled by default. However, to ensure smooth communication and accuracy of data, you need to set the scanner's communication parameters (including baud rate) to match the host's settings. The default settings of the scanner are 9600bps, no parity check, 8 data bits and 1 stop bit.



WFFD9D3

Baud Rate 9600



WFFD9D0

Baud Rate 1200



WFFD9D1

Baud Rate 2400



WFFD9D2

Baud Rate 4800



WFFD9D4

Baud Rate 14400



WFFD9D5

Baud Rate 19200



WFFD9D6

Baud Rate 38400



WFFD9D7

Baud Rate 57600



WFFD9D8

Baud Rate 115200

11

USB Interface

When the scanner is connected to a host device through its USB interface, **USB HID-KBW** is enabled by default. You may switch to **HID-POS** or **USB COM Port Emulation** by scanning the appropriate barcode below.

11.1 HID-POS



W030D03

HID-POS

11.2 USB COM Port Emulation



W030D02

USB COM Port Emulation

11.3 USB HID-KBW



W030D01

** USB HID-KBW

Three methods of input are provided for USB HID-KBW: Standard Keyboard, Function Key Mapping, Emulate ALT+Keypad.

11.3.1 Standard Keyboard



W066000

**** Standard Keyboard**

11.3.2 Function Key Mapping

When **Function Key Mapping** is enabled, function character (0x00 - 0x1F) are sent as ASCII sequences over the numeric keypad.

1. CTRL Make
2. Press function key (Refer to the **ASCII Function Key Mapping Table** on the following page)
3. CTRL Break



W066002

Function Key Mapping

ASCII Function Key Mapping Table

ASCII(HEX)	Function key	ASCII(HEX)	Function key
00	2	10	P
01	A	11	Q
02	B	12	R
03	C	13	S
04	D	14	T
05	E	15	U
06	F	16	V
07	G	17	W
08	H	18	X
09	I	19	Y
0A	J	1A	Z
0B	K	1B	[
0C	L	1C	\
0D	M	1D]
0E	N	1E	6
0F	O	1F	.

11.3.3 Emulate ALT+Keypad

When **Emulate ALT+Keypad** is enabled, any ASCII character (0x00 - 0xFF) is sent over the numeric keypad no matter which keyboard type is selected.

1. ALT Make
2. Enter the number corresponding to the ASCII character on the keypad.
3. ALT Break



W066004

Emulate ALT+Keypad

11.3.4 USB Country Keyboard Types



WFF6B00

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



WFF6B01

2 - Belgium



WFF6B02

3 - Brazil



WFF6B03

4 - Canada



WFF6B04

5 - Czech



WFF6B05

6 - Denmark



WFF6B06

7 - Finland



WFF6B07

8 - France



WFF6B08

9 - Austria



WFF6B09

10 - Greece



WFF6B0A

11 - Hungary



WFF6B0B

12 - Israel



WFF6B0C

13 - Italy



WFF6B0D

14 - Latin America



WFF6B0E

15 - Netherland



WFF6B0F

16 - Norway



WFF6B10

17 - Poland



WFF6B11

18 - Portugal



WFF6B12

19 - Romania



WFF6B13

20 - Russia



WFF6B15

21 - Slovakia



WFF6B16

22 - Spain



WFF6B17

23 - Sweden



WFF6B18

24 - Switzerland



WFF6B19

25 - Turkey1



WFF6B1A

26 - Turkey 2



WFF6B1B

27 - UK



WFF6B1C

28 - Japan

12 Symbologies

12.1 Introduction

Every symbology (barcode type) has its own unique attributes. This chapter provides programming barcodes for configuring the scanner so that it can identify various barcode symbologies. It is recommended to disable those that are rarely used to increase the efficiency of the scanner.

12.2 Global Settings

12.2.1 Disable All Symbologies

If all symbologies are disabled, the scanner can only identify programming barcodes.



WFFD982

Disable All Symbologies

12.2.2 Enable All Symbologies



WFFD981

Enable All Symbologies

12.2.3 Enable 1D Symbologies



WFFD983

Enable 1D Symbologies

12.2.4 Disable 1D Symbologies



WFFD984

Disable 1D Symbologies

12.2.5 Enable 2D Symbologies



WFFD985

Enable 2D Symbologies

12.2.6 Disable 2D Symbologies



WFFD986

Disable 2D Symbologies

12.3 Code 128

12.3.1 Restore Factory Defaults



WFFD990

Restore the Factory Defaults of Code 128

12.3.2 Enable/Disable Code 128



W011601

**** Enable Code 128**



W011600

Disable Code 128

12.4 UCC/EAN-128

12.4.1 Restore Factory Defaults



WFFD991

Restore the Factory Defaults of UCC/EAN-128

12.4.2 Enable/Disable UCC/EAN-128



W011701

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



W011700

Disable UCC/EAN-128

12.5 AIM 128

12.5.1 Restore Factory Defaults



WFFD992

Restore the Factory Defaults of AIM 128

12.5.2 Enable/Disable AIM 128



W101610

**** Enable AIM 128**



W101600

Disable AIM 128

12.6 EAN-8

12.6.1 Restore Factory Defaults



WFFD994

Restore the Factory Defaults of EAN-8

12.6.2 Enable/Disable EAN-8



W011301

**** Enable EAN-8**



W011300

Disable EAN-8

12.6.3 Transmit Check Digit

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



W041304

**** Transmit Check Digit**



W041300

Do Not Transmit Check Digit

12.6.4 2-Digit Add-On Code

An EAN-8 barcode can be augmented with a two-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**

12.6.5 5-Digit Add-On Code

An EAN-8 barcode can be augmented with a 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 5-Digit Add-On Code



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

12.6.6 EAN-8 Extension

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

Enable EAN-8 Zero Extend: Add five leading zeros to decoded EAN-8 barcodes to extend to 13 digits.



W401300

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



W401340

Enable EAN-8 Zero Extend

12.7 EAN-13

12.7.1 Restore Factory Defaults



WFFD995

Restore the Factory Defaults of EAN-13

12.7.2 Enable/Disable EAN-13



W011101

**** Enable EAN-13**



W011100

Disable EAN-13

12.7.3 Transmit Check Digit

EAN-13 is 13 digits in length with the last one as its check digit used to verify the integrity of the data.



W041104

**** Transmit Check Digit**



W041100

Do Not Transmit Check Digit

12.7.4 2-Digit Add-On Code

An EAN-13 barcode can be augmented with a two-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.



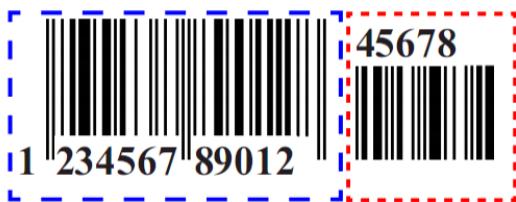
Enable 2-Digit Add-On Code



** Disable 2-Digit Add-On Code

12.7.5 5-Digit Add-On Code

An EAN-13 barcode can be augmented with a 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 5-Digit Add-On Code



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

12.8 ISSN

12.8.1 Restore Factory Defaults



WFFD996

Restore the Factory Defaults of ISSN

12.8.2 Enable/Disable ISSN



W401140

Enable ISSN



W401100

**** Disable ISSN**

12.9 ISBN

12.9.1 Restore Factory Defaults



WFFD997

Restore the Factory Defaults of ISBN

12.9.2 Enable/Disable ISBN



W011201

**** Enable ISBN**



W011200

Disable ISBN

12.9.3 Set ISBN Format



W041200

**** ISBN-13**



W041204

ISBN-10

12.10 UPC-E

12.10.1 Restore Factory Defaults



WFFD998

Restore the Factory Defaults of UPC-E

12.10.2 Enable/Disable UPC-E



W011501

**** Enable UPC-E**



W011500

Disable UPC-E

12.10.3 Transmit Check Digit

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



W041504

**** Transmit Check Digit**



W041500

Do Not Transmit Check Digit

12.10.4 2-Digit Add-On Code

A UPC-E barcode can be augmented with a two-digit add-on code to form a new one. In the examples below, the part surrounded by blue dotted line is a UPC-E barcode while the part circled by red dotted line is add-on code.



W201520

Enable 2-Digit Add-On Code



W201500

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

12.10.5 5-Digit Add-On Code

A UPC-E barcode can be augmented with a five-digit add-on code to form a new one. In the examples below, the part surrounded by blue dotted line is a UPC-E barcode while the part circled by red dotted line is add-on code.



W401540

Enable 5-Digit Add-On Code



W401500

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

12.10.6 Transmit System Character



W081508

**** Transmit System Character “0”**



W081500

Do Not Transmit System Character “0”

12.10.7 UPC-E Extension

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

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



W081580

Enable UPC-E Extend



W081500

**** Disable UPC-E Extend**

12.11 UPC-A

12.11.1 Restore Factory Defaults



WFFD999

Restore the Factory Defaults of UPC-A

12.11.2 Enable/Disable UPC-A



W011401

**** Enable UPC-A**



W011400

Disable UPC-A

12.11.3 Transmit Check Digit

UPC-A is 13 digits in length with the last one as its check digit used to verify the integrity of the data.



W041404

**** Transmit Check Digit**



W041400

Do Not Transmit Check Digit

12.11.4 2-Digit Add-On Code

A UPC-A barcode can be augmented with a two-digit add-on code to form a new one. In the examples below, the part surrounded by blue dotted line is a UPC-E barcode while the part circled by red dotted line is add-on code.



W201420

Enable 2-Digit Add-On Code



W201400

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

12.11.5 5-Digit Add-On Code

A UPC-A barcode can be augmented with a five-digit add-on code to form a new one. In the examples below, the part surrounded by blue dotted line is a UPC-E barcode while the part circled by red dotted line is add-on code.



Enable 5-Digit Add-On Code



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

12.11.6 Transmit Preamble Character



W081408

**** Transmit Preamble Character “0”**



W08140

Do Not Transmit Preamble Character “0”

12.12 Interleaved 2 of 5

12.12.1 Restore Factory Defaults



WFFD99A

Restore the Factory Defaults of Interleaved 2 of 5

12.12.2 Enable/Disable Interleaved 2 of 5



W011801

**** Enable Interleaved 2 of 5**



W011800

Disable Interleaved 2 of 5

12.12.3 Check Digit Verification

A check digit is optional for Interleaved 2 o 5 and can be added as the last digit. 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 Digit after Verification: The scanner checks the integrity of all Interleaved 2 of 5 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted except the last digit, whereas those failing it will not be transmitted.

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



W0C1800

**** Disable**



W0C1804

Do Not Transmit Check Digit after Verification



W0C180C

Transmit Check Digit after Verification

12.13 ITF-6

12.13.1 Restore Factory Defaults



WFFD99B

Restore the Factory Defaults of ITF-6

12.13.2 Enable/Disable ITF-6



W011900

**** Disable ITF-6**



W051901

Enable ITF-6 But Do Not Transmit Check Digit



W051905

Enable ITF-6 and Transmit Check Digit

12.14 ITF-14

12.14.1 Restore Factory Defaults



WFFD99C

Restore the Factory Defaults of ITF-14

12.14.2 Enable/Disable ITF-14



W201800

Disable ITF-14



WA01820

Enable ITF-14 But Do Not Transmit Check Digit



WA018A0

**** Enable ITF-14 and Transmit Check Digit**

12.15 Matrix 2 of 5(European Matrix 2 of 5)

12.15.1 Restore Factory Defaults



WFFD99F

Restore the Factory Defaults of Matrix 2 of 5

12.15.2 Enable/Disable Matrix 2 of 5



W011A01

**** Enable Matrix 2 of 5**



W011A00

Disable Matrix 2 of 5

12.15.3 Check Digit Verification

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

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

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

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



W041A00

**** Disable**



W0C1A04

Do Not Transmit Check Digit after Verification



W0C1A0C

Transmit Check Digit after Verification

12.16 Industrial 25

12.16.1 Restore Factory Defaults



WFFD9A0

Restore the Factory Defaults of Industrial 25

12.16.2 Enable/Disable Industrial 25



W081908

**** Enable Industrial 25**



W081900

Disable Industrial 25

12.16.3 Check Digit Verification

A check digit is optional for Industrial 25 and can be added as the last digit. It is a calculated value used to verify the integrity of the data.

Disable: The scanner transmits Industrial 25 barcodes as is.

Do Not Transmit Check Digit after Verification: The scanner checks the integrity of all Industrial 25 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted except the last digit, whereas those failing it will not be transmitted.

Transmit Check Digit after Verification: The scanner checks the integrity of all Industrial 25 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted, whereas those failing it will not be transmitted.



W201900

**** Disable**



W601920

Do Not Transmit Check Digit after Verification



W601960

Transmit Check Digit after Verification

12.17 Standard 25

12.17.1 Restore Factory Defaults



WFFD9A1

Restore the Factory Defaults of Standard 25

12.17.2 Enable/Disable Standard 25



W101A10

**** Enable Standard 25**



W101A00

Disable Standard 25

12.17.3 Check Digit Verification

A check digit is optional for Standard 25 and can be added as the last digit. It is a calculated value used to verify the integrity of the data.

Disable: The scanner transmits Standard 25 barcodes as is.

Do Not Transmit Check Digit after Verification: The scanner checks the integrity of all Standard 25 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted except the last digit, whereas those failing it will not be transmitted.

Transmit Check Digit after Verification: The scanner checks the integrity of all Standard 25 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted, whereas those failing it will not be transmitted.



W401A00

**** Disable**



WC01A40

Do Not Transmit Check Digit after Verification



WC01AC0

Transmit Check Digit after Verification

12.18 Code 39

12.18.1 Restore Factory Defaults



WFFD9A2

Restore the Factory Defaults of Code 39

12.18.2 Enable/Disable Code 39



W011C01

**** Enable Code 39**



W011C00

Disable Code 39

12.18.3 Transmit Start/Stop Character

Code 39 uses an asterisk (*) for both the start and the stop characters. You can choose whether or not to transmit the start/stop characters by scanning the appropriate barcode below.



W041C04

Transmit Start/Stop Character



W041C00

**** Do Not Transmit Start/Stop Character**

12.18.4 Enable/Disable Code 39 Full ASCII

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



W201C00

**** Disable Code 39 Full ASCII**



W201C20

Enable Code 39 Full ASCII

12.18.5 Check Digit Verification

A check digit is optional for Code 39 and can be added as the last digit.

It is a calculated value used to verify the integrity of the data.

Disable: The scanner transmits Code 39 barcodes as is.

Do Not Transmit Check Digit after Verification: The scanner checks the integrity of all Code 39 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted except the last digit, whereas those failing it will not be transmitted.

Transmit Check Digit after Verification: The scanner checks the integrity of all Code 39 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted, whereas those failing it will not be transmitted.



W081C00

**** Disable**



W181C08

Do Not Transmit Check Digit after Verification



W181C18

Transmit Check Digit after Verification

12.19 Codabar

12.19.1 Restore Factory Defaults



WFFD9A3

Restore the Factory Defaults of Codabar

12.19.2 Enable/Disable Codabar



W011E01

**** Enable Codabar**



W011E00

Disable Codabar

12.19.3 Check Digit Verification

Check digits are optional for Code 93 and can be added as the last two digits, which are calculated values used to verify the integrity of the data.

Disable: The scanner transmits Code 93 barcodes as is.

Do Not Transmit Check Digit after Verification: The scanner checks the integrity of all Code 93 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the checks will be transmitted except the last two digits, whereas those failing them will not be transmitted.

Transmit Check Digit after Verification: The scanner checks the integrity of all Code 93 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the checks will be transmitted, whereas those failing them will not be transmitted.



W101E00

**** Disable**



W301E10

Do Not Transmit Check Digit after Verification



W301E30

Transmit Check Digit after Verification

12.19.4 Transmit Start/Stop Character



W021E00

Do Not Transmit Start/Stop Character



W021E02

**** Transmit Start/Stop Character**



W0C1E00

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



W0C1E04

ABCD/TN*E as the Start/Stop Character



W0C1E08

abcd/abcd as the Start/Stop Character



W0C1E0C

abcd/tn*e as the Start/Stop Character

12.20 Code 93

12.20.1 Restore Factory Defaults



WFFD9A4

Restore the Factory Defaults of Code 93

12.20.2 Enable/Disable Code 93



W081208

**** Enable Code 93**



W081200

Disable Code 93

12.20.3 Check Digit Verification

Check digits are optional for Code 93 and can be added as the last two digits, which are calculated values used to verify the integrity of the data.

Disable: The scanner transmits Code 93 barcodes as is.

Do Not Transmit Check Digit after Verification: The scanner checks the integrity of all Code 93 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the checks will be transmitted except the last two digits, whereas those failing them will not be transmitted.

Transmit Check Digit after Verification: The scanner checks the integrity of all Code 93 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the checks will be transmitted, whereas those failing them will not be transmitted.



W201200

Disable



W601220

**** Do Not Transmit Check Digit after Verification**



W601260

Transmit Check Digit after Verification

12.21 Code 11

12.21.1 Restore Factory Defaults



WFFD9A5

Restore the Factory Defaults of Code 11

12.21.2 Enable/Disable Code 11



W011D01

**** Enable Code 11**



W011D00

Disable Code 11

12.21.3 Check Digit Verification

Check digits are optional for Code 11 and can be added as the last one or two digits, which are calculated values used to verify the integrity of the data.

If the **Disable** option is enabled, the scanner transmits Code 11 barcodes as is.



W1C1D00

Disable



W1C1D04

**** One Check Digit, MOD11**



W1C1D08

Two Check Digits, MOD11/MOD11



W1C1D0C

Two Check Digits, MOD11/MOD9



W1C1D10

One Check Digit, MOD11 (Len <= 11)

Two Check Digits, MOD11/MOD11 (Len > 11)



W1C1D14

One Check Digit, MOD11 (Len <= 11)

Two Check Digits, MOD11/MOD9 (Len > 11)



W201D00

Do Not Transmit Check Digit



W201D20

**** Transmit Check Digit**

12.22 Plessey

12.22.1 Restore Factory Defaults



WFFD9A6

Restore the Factory Defaults of Plessey

12.22.2 Enable/Disable Plessey



W011F01

**** Enable Plessey**



W011F00

Disable Plessey

12.22.3 Check Digit Verification

Check digits are optional for Plessey and can be added as the last one or two digits, which are calculated values used to verify the integrity of the data.

Disable: The scanner transmits Plessey barcodes as is.

Do Not Transmit Check Digit after Verification: The scanner checks the integrity of all Plessey barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the checks will be transmitted except the last two digits, whereas those failing them will not be transmitted.

Transmit Check Digit after Verification: The scanner checks the integrity of all Plessey barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the checks will be transmitted, whereas those failing them will not be transmitted.



W021F00

Disable



W061F02

**** Do Not Transmit Check Digit after Verification**



W061F06

Transmit Check Digit after Verification

12.23 MSI-Plessey

12.23.1 Restore Factory Defaults



WFFD9A7

Restore the Factory Defaults of MSI-Plessey

12.23.2 Enable/Disable MSI-Plessey



W081F08

**** Enable MSI-Plessey**



W081F00

Disable MSI-Plessey

12.23.3 Check Digit Verification

Check digits are optional for MSI-Plessey and can be added as the last one or two digits, which are calculated values used to verify the integrity of the data.

If the **Disable** option is enabled, the scanner transmits MSI-Plessey barcodes as is.



W301F00

Disable



W301F10

**** One Check Digit, MOD10**



W301F20

Two Check Digits, MOD10/MOD10



W301F30

Two Check Digits, MOD10/MOD11



W401F00

Do Not Transmit Check Digit



W401F40

**** Transmit Check Digit**

12.24 RSS-14

12.24.1 Restore Factory Defaults



WFFD9A8

Restore the Factory Defaults of RSS-14

12.24.2 Enable/Disable RSS-14



W011B01

**** Enable RSS-14**



W011B00

Disable RSS-14

12.24.3 Transmit Application Identifier “01”



W041B04

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



W041B00

Do Not Transmit Application Identifier “01”

12.25 RSS-Limited

12.25.1 Restore Factory Defaults



WFFD9A9

Restore the Factory Defaults of RSS-Limited

12.25.2 Enable/Disable RSS- Limited



W081B08

**** Enable RSS-Limited**



W081B00

Disable RSS-Limited

12.25.3 Transmit Application Identifier “01”



W201B20

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



W201B00

Do Not Transmit Application Identifier “01”

12.26 RSS-Expand

12.26.1 Restore Factory Defaults



WFFD9AA

Restore the Factory Defaults of RSS-Expand

12.26.2 Enable/Disable RSS-Expand



W401B40

**** Enable RSS-Expand**



W401B00

Disable RSS-Expand

12.27 PDF417

12.27.1 Restore Factory Defaults



WFFD9B0

Restore the Factory Defaults of PDF417

12.27.2 Enable/Disable PDF417



W010C01

**** Enable PDF417**



W010C00

Disable PDF417

12.27.3 Macro PDF417



W100C10

Enable Macro PDF417



W100C00

**** Disable Macro PDF417**

12.28 Data Matrix

12.28.1 Restore Factory Defaults



WFFD9B1

Restore the Factory Defaults of Data Matrix

12.28.2 Enable/Disable Data Matrix



W080C08

**** Enable Data Matrix**



W080C00

Disable Data Matrix

12.28.3 Enable/Disable Mirrored DM



W024A02

Enable Mirrored DM



W024A00

**** Disable Mirrored DM**

12.28.4 Rectangular Barcodes

Data Matrix has two formats:

Square barcodes having the same amount of modules in length and width: 10*10, 12*12.... 144*144.

Rectangular barcodes having different amounts of models in length and width: 6*16, 6*14... 14*22.



W034B03

**** Decode Rectangular Barcodes**



W034B00

Do Not Decode Rectangular Barcodes

12.29 QR Code

12.29.1 Restore Factory Defaults



WFFD9B2

Restore the Factory Defaults of QR Code

12.29.2 Enable/Disable QR Code



W800D80

**** Enable QR Code**



W800D00

Disable QR Code

12.29.3 Micro QR

This parameter is valid only when QR Code is enabled.



W049904

**** Enable Micro QR**



W049900

Disable Micro QR

13 Data Formatting

13.1 AIM ID Prefix

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



WFFD9C1

**** Disable AIM ID Prefix**



WFFD9C0

Enable AIM ID Prefix

AIM ID Table

Symbology	AIM ID	Remark
Code 128	]C0	Standard Code 128
UCC/EAN 128 (GS1-128)	]C1	FNC1 is the character right after the start character
AIM 128	]C2	FNC1 is the 2nd character after the start character
EAN-8	]E4	Standard EAN-8
	]E4....]E1...	EAN-8 + 2-Digit Add-On Code
	]E4....]E2...	EAN-8 + 5-Digit Add-On Code
EAN-13	]E0	Standard EAN-13
	]E3	EAN-13 + 2/5-Digit Add-On Code
ISSN	]X5	
ISBN	]X4	
UPC-E	]E0	Standard UPC-E
	]E3	UPC-E + 2/5-Digit Add-On Code
UPC-A	]E0	Standard UPC-A
	]E3	UPC-A + 2/5-Digit Add-On Code
Interleaved 2 of 5	]I0	No check digit verification
	]I1	Transmit check digit after verification
	]I3	Do not transmit check digit after verification
ITF-6	]I1	Transmit check digit
	]I3	Do not transmit check digit

Symbology	AIM ID	Remark
ITF-14	]I1	Transmit check digit
	]I3	Do not transmit check digit
Matrix 2 of 5	]X1	No check digit verification
	]X2	Transmit check digit after verification
	]X3	Do not transmit check digit after verification
Industrial 25	]S0	Not specified
Standard 25	]R0	No check digit verification
	]R8	One check digit, MOD 7; do not transmit check digit
	]R9	One check digit, MOD 7; transmit check digit
Code 39	]A0	Transmit barcodes as is; Full ASCII disabled; no check digit verification
	]A1	One check digit, MOD 43; transmit check digit
	]A3	One check digit, MOD 43; do not transmit check digit
	]A4	Full ASCII enabled; no check digit verification
	]A5	Full ASCII enabled; MOD43; transmit check digit
	]A7	Full ASCII enabled; MOD43; do not transmit check digit

Symbology	AIM ID	Remark
Codabar	]F0	Standard Codabar
	]F1	ABC Codabar
	]F2	Transmit check digit after verification
	]F4	Do not transmit check digit after verification
Code 93	]G0	Not specified
Code 11	]H0	One check digit, MOD11; transmit check digit
	]H1	Two check digits, MOD11/MOD11; transmit check digit
	]H3	Do not transmit check digit after verification
	]H8	Two check digits, MOD11/MOD9; transmit check digit
	]H9	No check digit verification
Plessey	]P0	Not specified
MSI-Plessey	]M0	One check digit, MOD10; transmit check digit
	]M1	One check digit, MOD10; do not transmit check digit
	]M7	Two check digits, MOD10 /MOD11; do not transmit check digit

Symbology	AIM ID	Remark
	]M8	Two check digits, MOD10 /MOD11; transmit check digit
	]M9	No check digit verification
RSS-14 RSS-Limited RSS-Expand	]e0	Standard
	]e1	User-defined
	]e2	User-defined
	]e3	User-defined
PDF417	]L0	Comply with 1994 PDF417 specifications
Data Matrix	]d0	ECC 000 - 140
	]d1	ECC 200
	]d2	ECC 200; FNC1 is the 1st or 5th character after the start character
	]d3	ECC 200; FNC1 is the 2nd or 6th character after the start character
	]d4	ECC 200, ECI protocol supported
	]d5	ECC 200; FNC1 is the 1st or 5th character after the start character; ECI supported
	]d6	ECC 200; FNC1 is the 2nd or 6th character after the start character; ECI supported

Symbology	AIM ID	Remark
QR Code	]Q0	QR1 (comply with AIM ISS 97-001 specifications)
	]Q1	QR2 (2005 symbol), ECI protocol not supported
	]Q2	QR2 (2005 symbol), ECI protocol supported
	]Q3	QR2 (2005 symbol), ECI protocol not supported; FNC1 is the character right after the start character
	]Q4	QR2 (2005 symbol), ECI protocol supported; FNC1 is the character right after the start character
	]Q5	QR2 (2005 symbol), ECI protocol not supported; FNC1 is the 2nd character right after the start character
	]Q6	QR2 (2005 symbol), ECI protocol supported; FNC1 is the 2nd character right after the start character

13.2 CODE ID Prefix

Code ID can also be used to identify barcode type. For the details, see the **CODE ID Table**.



W800200

**** Disable CODE ID Prefix**



W800280

Enable CODE ID Prefix

You can choose to transmit original CODE ID or visible CODE ID by scanning the appropriate barcode below.



W018A00

**** Original CODE ID**



W018A01

Visible CODE ID

CODE ID Table

Symbology	Original Code ID	Visible Code ID
Code 128 FNC3	1	A(0x41)
Code 128	2	B(0x42)
UCC/EAN 128	3	C(0x43)
EAN-8	4	D(0x44)
EAN-13	5	E(0x45)
UPC-E	6	F(0x46)
UPC-A	7	G(0x47)
Interleaved 2 of 5	8	H(0x48)
ITF-14	9	I(0x49)
ITF-6	10	J(0x4A)
Code 39	13	M(0x4D)
Codabar	15	O(0x4F)
Standard 25	16	P(0x50)
Code 93	17	Q(0x51)
AIM 128	21	U(0x55)
MSI-Plessey	22	V(0x56)
ISBN	23	W(0x57)
Industrial 25	24	X(0x58)
Matrix 2 of 5	25	Y(0x59)
RSS-14	26	Z(0x5A)
RSS-Limited	27	[(0x5B)
RSS-Expand	28	\ (0x5C)
Code 11	29	] (0x5D)
Plessey	30	^ (0x5E)
ISSN	31	_ (0x5F)
PDF417	32	` (0x60)
QR Code	33	a (0x61)
Data Matrix	35	c (0x63)

13.3 Terminating Character Suffix

A terminating character such as carriage return (CR) or carriage return/line feed pair (CRLF) or horizontal tab (TAB) can be used to mark the end of data.



W616000

**** Disable Terminating Character Suffix**



W616001

Append CR



W616021

Append CRLF



W616041

Append TAB

14

Troubleshooting

Problem	Solution
Does not respond to input.	Disconnect the power adapter and then reconnect it.
Scanned data is not displayed on the host.	Ensure the scanner's communication parameters (such as baud rate, interface) match the host's settings.
Cannot read barcodes.	<ol style="list-style-type: none">1. Follow the scanning instructions in this manual to scan barcode.2. Ensure the barcode type is enabled.3. Ensure the barcode is not defaced. Wrinkled, soiled or torn barcodes might be unreadable.



HQ/ Fujian Newland Auto-ID Tech. Co., Ltd.
No.1 Ruijiang West Rd., Mawei, Fuzhou, Fujian
350001, China
TEL: +86 - (0) 591-83979222
FAX: +86 - (0) 591-83979208
E-mail: marketing@nlscan.com
WEB: www.nlscan.com

Newland EMEA
Rolweg 25, 4104 AV Culemborg, The Netherlands
TEL: +31 (0) 345 87 00 33
FAX: +31 (0) 345 87 00 39
Email: sales@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.newlandna.com

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