

ZBarcode Scanner

User Guide

(Common) v2. 5

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Revision History

Date	Version	Description
2021-05-27	2.0	Adjust PDF417 settings
2021-06-27	2.1	Refine NFC, Weigand
2024-05-18		Add NFC config

1. Getting Started

About This Guide

This guide provides programming instruction for barcode scanner device. User can configure the device by scanning the programming barcodes include in this manual to modify the parameters of the device, which are communication interface, scan mode, data processing and output format etc.

The barcode scanner has been properly configured for most applications and can be put into use without further configuration. Throughout the manual, asterisks (**) indicate factory default values.

Barcode Scanning

Powered by 2D area-imaging technology, the scanner features fast scanning and accurate decoding. Barcode rotated at any angle can still be read.

Factory Defaults

Scanning the following barcode can restore the scanner to the factory defaults, and the current settings will be lost.

Use this feature with discretion.



<AC>7601

327601

Restore All Factory Defaults

Disable Programming Barcode

When the programming barcode is scanned, the reader parameters will be changed by default. Meanwhile, programming barcode is disabled, the scanner stops processing the programming barcode to change parameter, as a normal barcode. When Disable Programming Barcode is enabled, only the Cancel Disable Programming Barcode is valid.



<AW>784203

21784203
Disable Programming Barcode



<AW>784200

21784200
Cancel Disable Programming Barcode**

2. Communication Interface

2.1. Introduction

The scan engine provide a TTL-232 interface and a USB interface, Weigand(optional) to communicate with the host device. The host device can receive scanned data and send commands to control the engine or write/read the configuration information of the engine via the interface.

2.2. RS232-TTL Interface

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

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



<AW>424000

21424000

Serial Communication

Data bit, and stop bit, Parity check is 8, 1, None in fixed, and following is Baud Rate settings:

Baud Rate

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



<AW>41410B

2141410B

** 115200



<AW>414106

21414106

4800



<AW>414107

21414107

9600



<AW>414108

21414108

19200



<AW>414109

21414109

38400



<AW>41410A

2141410A

57600



<AW>41410C

21414109
128000



<AW>41410D

2141410D
230400



<AW>41410E

2141410E
256000



<AW>41410F

2141410F
460800

RS485

Some devices provide RS485 interface with exchange chip. It like with RS232, and baud rate configuration is the same as above.



<AW>424004

21424004
RS485

UART Number

In ZD3120 series, 10PIN and 4PIN interfaces both provide RS232, there are two UART for these two interfaces separately. But only one RS232 is available at times, so which one is used should be configured.



<AW>414501

21414501
UART1



<AW>414500

21414500
UART0

2.3. USB Serial Port

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



<AW>424002

21424002
USB Serial Port

2.4. USB Keyboard

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



<AW>424001

21424001
USB Keyboard

USB Country Keyboard Types

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



<AW>434000

21434000
** U.S.



<AW>434001

21434001
Spain



<AW>434002

21434002
Germany



<AW>434004

21434004
France



<AW>434005

21434005
Italy



<AW>434006

21434006
Sweden



<AW>434008

21434008
UK



<AW>43400A

2143400A
Brazil



<AW>43400D

2143400D
South Korea



<AW>43400E

2143400E
Russia



<AW>43400F

2143400F
Turkey_Q



<AW>434010

21434010
Turkey_F



<AW>434011

21434011
Hungary



<AW>434012

21434012
Croatia

Keyboard Style

Make the output in the same way of some function keys are pressed on keyboard, for example Caps key.



<AW>434800

21434800
Normal



<AW>434801

21434801
Caps Lock

Encoded Output Method

Most barcode data is encoded in ASCII with visible characters such as characters numbers, and but output will be confused when the content is encoded in UTF-8. In Windows OS, Alt + keypad support output UTF-8 content directly.



<AW>434100

21434100
**ASCII



<AW>434101

21434101
GBK



<AW>434102

21434102
UTF-8

Inter-Keystroke Delay

This parameter specifies the delay between emulated keystrokes.



<AW>434600

21434600
**No Delay



<AW>434601

21434601
Delay 2ms



<AW>434602

21434602
Delay 5ms



<AW>434603

21434603
Delay 8ms



<AW>434604

21434604

Delay 11ms



<AW>434605

21434605

Delay 16ms



<AW>434606

21434606

Delay 20ms



<AW>434607

21434607

Delay 30ms



<AW>434608

21434608

Delay 40ms



<AW>434609

21434609

Delay 50ms

2.5.USB HID-POS

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.



<AW>424003

21424003
USB HID-POS

Report Define

Acquire Scanned Data

Report ID 0x02	Available data length	Data block	Reserved data block	End of package
1 bytes	1 byte	56 bytes	5 bytes	1 byte

If the available data longer than 56 bytes, there will be more than one package: end of package = 1, means there is pending packages end of package = 0, means there is no pending package.

Send Data to the Scanner

Report ID 0x04	Available data length	Data block	Reserved data	End of package
1 bytes	1 byte	60 bytes	1 byte	1 byte

If the available data longer than 60 bytes, there will be more than one package: end of package = 1, means there is pending packages end of package = 0, means there is no pending package

HIDPOS Delay

This parameter specifies the delay between every report.



<AW>424200

21424200
**No Daley



<AW>424201

21424201
Daley 2ms



<AW>424202

21424202
Daley 5ms



<AW>424203

21424203
Daley 8ms



<AW>424204

21424204
Daley 11ms



<AW>424205

21424205
Daley 16ms



<AW>424206

Daley 21424206
20ms



<AW>424207

Daley 21424207
30ms



<AW>424208

21424208
Daley 40ms



<AW>424209

21424209
Daley 50ms

VID/PID

USB uses VID (Vendor ID) and PID (Product ID) to identify and locate a device. Scanner engine VID is 0x0525(HEX). A PID is assigned to each interface.

Interface	PID (Hex)	PID (Dec)
USB HID Keyboard	A401	41985
USB Serial Port	A407	41991
USB HID-POS	A402	41986

3. Scan Mode

3.1. Trigger Mode

Driving the TRIG pin on the host interface connector low activates a decode session. The session continues until the barcode is decoded or the active trigger signal is no longer present.

If the Trigger Mode is enabled, the command “Start Decode” and “Stop Decode” is in the same way of TRIG pin. Send “Start Decode” command to start decode session, and “Stop Decode” command to stop decode.



<AW>614100

21614100
Trigger Mode

Decoding Command Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt of command “Start Decode with Timeout” in Trigger Mode. When it is set to 0, the timeout is infinite.



<AW>618A0000

21618A0000
**No Timeout



<AW>618A03E8

21618A03E8
1s



<AW>618A07D0

21618A07D0

2s



<AW>618A2710

21618A2710

10s



<AW>618A0BB8

21618A0BB8

3s



<AW>618A1388

21618A1388

5s

3.2. Continuous Mode

When driving the TRIG pin on the host interface connector low activates a decode session, and the engine to scan/capture, decode and transmit over and over again. When driving the TRIG pin again the decode session will be stopped.

When the engine is operating in Continuous Mode, the command “Start Decode” and “Stop Decode” is in the same way.



<AW>614101

21614101

Continuous Mode

3.3.Auto Mode

When the engine is operating in Auto Mod, barcode reading will be all the time, and cannot be stopped.



<AW>614102

21614102
Auto Mode

3.4.Pulse Mode

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

When the engine is operating in Pulse Mode, the command “Start Decode” is also available.



<AW>614104

21614104
Pulse Mode

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt in Pulse Mode.



<AW>61821388

2161821388
**5s



<AW>61822710

2161822710
10s



<AW>618201F4

21618201F4

0.5s



<AW>618203E8

21618203E8

1s



<AW>618207D0

21618207D0

2s



<AW>61820BB8

2161820BB8

3s

3.5.Sense Mode

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

Driving the TRIG pin on the host interface connector low or send “Start Decode” command can also activate a decode session. When the barcode is decoded or no change in ambient illumination, the decode session will be stopped.



<AW>614105
21614105
Sense Mode

Sensitivity

Sensitivity specifies the level of acuteness of the engine’s response to changes in ambient illumination. The higher the sensitivity, the lower requirement in illumination change to trigger the engine. You can select an appropriate degree of sensitivity that fits the ambient environment. Default level is 3.



<AW>614403
21614403
**3



<AW>614401
21614401
1



<AW>614402
21614402
2



<AW>614404
21614404
4



<AW>614405

21614405

5

Continue after Good Read

Continue after Good Read: The engine starts next decode session after good read, continue to decode until no code decoded in timeout time.

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



<AW>614B00

21614B00

** Pause after Good Read



<AW>614B01

21614B01

Continue after Good Read

Continue Timeout

This parameter sets the maximum time decode when Continue after Good Read is enabled. That will be restart count timer when a new decoded happen during this time. The decode will pause when there is no decoded and timeout, and the engine comes to the detecting stage.



<AW>618C0032

21618C0032

**5s



<AW>618C000A

21618C000A

1s



<AW>618C0014

21618C0014

2s



<AW>618C001E

21618C001E

3s



<AW>618C000A

21618C0064

10s

Timeout between decode

This parameter sets the timeout between the change detected and to start decode session.



<AW>61850000

2161850000
No Timeout



<AW>61850320

2161850320
**800ms



<AW>618503E8

21618503E8
1s



<AW>618507D0

21618507D0
2s



<AW>61850BB8

2161850BB8
3s



<AW>61851388

2161851388
5s

4. Reading Parameters

4.1. Illumination (LED)

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

- Decoding ON: Illumination LEDs are turned on during decode session.
- Always ON: Illumination LEDs keep ON after the engine is powered on.
- OFF: Illumination LEDs are OFF all the time.



<AW>624102

21624102

** Decoding ON



<AW>624100

21624100

OFF



<AW>624103

21624103

Always ON

Enable in Detecting Sense Mode

Enable in Detecting Sense Mode: set illumination led on in detecting stage of Sense Mode, which is the checking change stage. When the ambient light is wake, led enabled can improve the ability of change detection.

Disable in Sense Mode: it is default setting of turn off led in detecting stage of Sense Mode.



<AW>624400

21624400

**Disable



<AW>624401

21624401

Enable

Brightness

If This parameter sets the brightness of LED in detecting stage of Sense Mod.



<AW>624C05

21624C05

5



<AW>624C0A

21624C0A

10



<AW>624C1E

21624C1E

30

Decode Brightness

This parameter sets the LED brightness percentage in decode session.



<AW>624800
21624800
**Default



<AW>62480A
2162480A
10%



<AW>624814
21624814
20%



<AW>62481E
2162481E
30%



<AW>624828
21624828
40%



<AW>624832
21624832
50%



<AW>62483C

2162483C%
60%



<AW>624846

21624846%
70%



<AW>624850

21624850
80%



<AW>62485A

2162485A
90%

4.2.Aiming Led

When scanning/capturing image, the engine projects an aiming pattern which allows positioning the target barcode within its field of view and thus makes decoding easier.

- Decoding Flash: Aiming pattern ON and OFF alternately in decode session.
- Decoding ON: Aiming pattern is constantly ON in decode session.
- OFF: Aiming pattern is OFF all the time.



<AW>624201

21624201

**Flash



<AW>624202

21624202

Decoding ON



<AW>624200

21624200

OFF

Enable in Detecting Sense Mode

Enable in Detecting Sense Mode: set the aiming led on in detecting stage of Sense Mode.

Disable in Sense Mode: aiming led is off in detecting stage of Sense Mode.



<AW>624500

21624500
**Disable



<AW>624501

21624501
Enable

4.3. Beep

Good Read Beep

The engine can provide a PWM output to an external driver circuit to drive a beeper after decoding a non-programming barcode. Scan the appropriate barcode below to enable or disable the emission of good read beep.



<AW>634600

21634600

Good Read Beep Off



<AW>634601

21634601

**** Good Read Beep On**

Good Read Beep Times

Set the times of good read beep



<AW>634201

21634201

**** 1 Times**



<AW>634202

21634202

2 Times

Good Read Beep Type



<AW>634101

21634101
**Default



<AW>634100

21634100
Short



<AW>634102

21634102
Long

Startup Beep

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



<AW>634501

21634501
Enable 4 Beep



<AW>634500

21634500
Disable



<AW>634502

21634502
Enable 2 Beep

4.4.Timeout between Decodes

Same Barcode

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



<AW>64820000

2164820000

**** Disable**



<AW>648201F4

21648201F4

Timeout 500ms



<AW>648203E8

21648203E8

Timeout 1s



<AW>648207D0

21648207D0

Timeout 2s



<AW>64821388

2164821388

Timeout 5s



<AW>64822710

2164822710

Timeout 10s

Ignore Same Barcode Timeout In Sense Mode

Maintain Timeout: there must be a timeout when Timeout between same barcode is enable

Ignore Timeout: If detecting image changed in Sense Mode, the same barcode also can be decoded even if not reaching the timeout.



<AU>644300

21644300

** Maintain Timeout



<AU>644301

21644301

Ignore Timeout

4.5. Multiple Barcode Reading

When Multiple Reading Mode is enabled, the scanner keeps on processing the image until all the barcodes are decoded, which the number barcode of configured is reached. The reader then transmits all barcode data at once.



<AW>314000

21314000

**Disable Multiple Reading



<AW>314001

21314001

Enable Multiple Reading

The number of multiple barcodes

Define the number of bar codes in your multiple barcodes. You can select up to 6 bar codes in a Multiple Reading.



<AW>31810002

2131810002

**2



<AW>31810003

2131810003

3



<AW>31810004

2131810004

4



<AW>31810005

2131810005

5



<AW>31810006

2131810006
6

Incomplete Transmission

Enable or disable transmission of an incomplete multicode. When enabled the incomplete multicode is transmitted when the incomplete transmission timeout expires.



<AW>314200

21314200
** Disable Incomplete
transmission



<AW>314201

21314201
Enable Incomplete
transmission

Incomplete Transmission Timeout

Set the timeout (milliseconds) used when incomplete transmission is enabled. The timeout starts after the last bar code is read.



<AW>31830000

2131830000
**None



<AW>318301F4

21318301F4
500ms



<AW>318303E8

2131830E8

1s



<AW>318307D0

21318307D0

2s



<AW>31830BB8

2131830BB8

3s



<AW>31831388

2131831388

5s



<AW>31832710

2131832710

10s

4.1.NFC Reader

Read engine that supports reading the ID number data of IC card (M1 13.56MHz), Functions such as card reading and output data format definition can be set. Which IC card choose from the common 4 byte UID card or the newer 7 byte UID card.

Default read NFC card number function is disabled, when enabled, the card is close to the device to read the card area range, read the card successfully buzzer will sound, prompting to read the card successfully, and the UID will be sent according to the communication interface output.



<AW>454001

21454001
Enable NFC



<AW>454000

21454000
**Disable NFC

UID Bytes Order

The UID bytes will be output in a certain byte order. Here we set the IC card bytes output arrangement order。

Positive order (MSB): Data bytes are output in the order that the high byte comes first and the low byte comes last.

Reverse order (LSB): Data bytes are output in the order that the lower byte comes first and the higher byte comes last.



<AW>454200

21454200
** MSB



<AW>454201

21454201
LSB

For example, read card data is 0x12345678, positive order output 12 34 56 78, reverse order output 78 56 34 12

Output Format

When the output communication interface is set to serial, virtual serial, or HID-POS, the UID is output as byte data. It is also possible to convert the ID byte data into a decimal value by converting the byte data into a numeric string.



<AW>454501

21454501

Bytes Data



<AW>454500

21454500

** 10D Numeric String



<AW>454502

21454502

10D Numeric String -

No Patch 0



<AW>454503

21454503

Bytes Hex String

Byte Position for Wiegand

Weigand outputs NFC card reading data, and when the card data exceeds the currently set Weigand output protocol data range, the number of valid output bytes needs to be set.

For example: IC card is 4 bytes of data, set the positive order output originally is 0x11223344, when Weigand output protocol is 26, because 26 maximum 3 bytes, configure the last 3 bytes, then the output data is 0x223344; configure the first 3 bytes, then the output data is 0x112233.

NFC card number data location under Weigand 26



<AW>454700

21454700

**Wg 26 Last 3 Bytes



<AW>454701

21454701

Wg 26 First 3 Bytes

NFC card number data location under Weigand 34



<AW>454800

21454800

** Wg 34 Last 4 Bytes



<AW>454801

21454801

Wg 34 First 4 Bytes

NFC card number data location under Weigand 66



<AW>454900

21454900

** Wg 66 Last 8 Bytes



<AW>454901

21454901

Wg 66 First 8 Bytes

Card Reading Mode

Set the NFC reading mode, image sensing is when the reading mode is set to motion sensing mode, when there is an object moving in the reading field of view, it triggers the NFC reading, and turns off the card reading mechanism when it is idle. When it is idle, the card reading mechanism is switched off. When it is always on, it is always in the card reading state.



<AW>454100

21454100

** motion sensing



<AW>454101

21454101

Always On

5. Data Editing

5.1. Suffix

Append custom suffix after the decoded data or NFC ID data

Enable/Disable

Disable Suffixes: Transmit barcode data or NFC ID data with no suffix.

Enable Suffixes: Allow user to append Code character to the barcode data before the transmission.

Enable Barcode Suffixes: Only transmit barcode data with suffix

Enable NFC Suffixes: Only transmit NFC ID data with suffix



<AW>514C01

21514C01

**** Enable Suffixes**



<AW>514C00

21514C00

Disable Suffixes



<AW>514C02

21514C02

Enable Barcode Suffixes



<AW>514C03

21514C03

Enable NFC Suffixes

Set Barcode Suffix

The default barcode suffix content is none, user can append any characters with following config code.
The Config Tools can be used to set a custom suffix



<AW>51C20000

2151C20000
Barcode Suffix None



<AW>51C200020D0A

2151C200020D0A
CR/LR



<AW>51C200010D

2151C200010D
CR



<AW>51C200010A

2151C200010A
LR

Set NFC Suffix

The default nfc suffix content is none, user can append any characters with following config code. The Config Tools can be used to set a custom suffix



<AW>51D20000

2151D20000
** NFC Suffix None

5.2. Prefix

Add custom prefix before the decoded data or NFC ID data

Enable/Disable

Disable Prefixes: Transmit barcode data or NFC ID data with no prefix.

Enable Prefixes: Allow user to append code character to the barcode data before the transmission.

Enable Barcode Prefixes: Only transmit barcode data with prefix

Enable NFC Prefixes: Only transmit NFC ID data with prefix



<AW>514B01

21514B01

**** Enable Prefixes**



<AW>514B00

21514B00

Disable Prefixes



<AW>514B02

21514B02

Enable Barcode Prefixes



<AW>514B03

21514C03

Enable NFC Prefixes

Set Barcode Prefix

The default barcode prefix content is none, user can append any characters with following config code.

The Config Tools can be used to set a custom prefix



<AW>51C10000

2151C10000

** Barcode Prefix None

Set NFC Prefix

The default nfc prefix content is none, user can append any characters with following config code. The Config Tools can be used to set a custom prefix



<AW>51D10000

2151D10000

** NFC Prefix None

5.3.Data Packing

Data packing is designed for a specific group of users who want to have the data packed before transmission. Data packing influences data format, so it is advised to disable this feature when it is not required.



<AW>514300

21514300

**** Disable Data Packing**

Format 1: [0x03] + LEN + DATA

LEN: Full output data length is expressed in 2 bytes ranging from 0x0000 (0) to 0xFFFF (65535)

DATA: Full output data, include raw barcode data, prefix, suffix

Format 2: [0x03] + LEN + Code Num + Code1 LEN + Code1 DATA +... + CRC

LEN: Total length after this LEN data. 2 bytes ranging from 0x0000 (0) to 0xFFFF (65535)

Code Num: Decoded barcode numbers of. 1 byte.

Code1 LEN: The first barcode data length. 2 bytes ranging from 0x0000 (0) to 0xFFFF (65535)

Code1 DATA: The first barcode data

CRC: All above data CRC check data. 2 bytes. CRC calculation algorithm is CRC-16 BUYPASS, Refer to **Appendix B**.

Format 3: [0x03] + LEN + Code Num + Code1 ID + Code1 LEN + Code1 DATA + ... + CRC

LEN: Total length after this LEN data. 2 bytes ranging from 0x0000 (0) to 0xFFFF (65535)

Code Num: Decoded barcode numbers of. 1 byte.

Code1 ID: The defined Barcode ID. 1 byte

Code1 LEN: The first barcode data length. 2 bytes ranging from 0x0000 (0) to 0xFFFF (65535)

Code1 DATA: The first barcode data

CRC: All above data CRC check data. 2 bytes. CRC calculation algorithm is CRC-16 BUYPASS, Refer to **Appendix B**.



<AW>514301

21514301

Format 1



<AW>514302

21514302

Format 2



<AW>514303

21514303

Format 3

5.4.Case Conversion

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

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



<AW>514800

21514800

** Disable (no case conversion)



<AW>514801

21514801

Convert to upper case



<AW>514802

21514802

Convert to lower case

6. Symbologies

6.1. Global Settings

Enable/Disable All Symbologies

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



<AC>764203

32764203

Enable All Symbologies



<AC>764200

32764200

Disable All Symbologies

Enable/Disable 1D Symbologies

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



<AC>764204

32764204

Enable 1D Symbologies



<AC>764206

32764206

Disable 1D Symbologies

Enable/Disable 2D Symbologies

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



<AC>764205

32764205

Enable 2D Symbolologies



<AC>764207

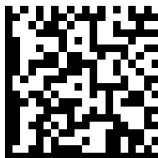
32764207

Disable 2D Symbolologies

Video Reverse

The **Video Reverse** feature only applies to 2D barcodes.
Regular barcode: Dark image on a bright background.
Inverse barcode: Bright image on a dark background.

The examples of regular barcode and inverse barcode are shown below



Regular Barcode



Inverse Barcode

Video Reverse is used to allow the engine to read barcodes that are inverted.
Video Reverse ON: Read both regular barcodes and inverse barcodes.
Video Reverse OFF: Read regular barcodes only.
The engine shows a slight decrease in scanning speed when Video Reverse is ON.



<AW>714402

21714402

Video Reverse ON



<AW>714400

21714400

****Video Reverse OFF**

6.2.2D Symbolologies

QR Code

Enable/Disable QR Code



<AW>104001

21104001

****Enable QR Code**



<AW>104000

21104000

Disable QR Code

Mirror



<AW>104200

21104200

****Disable QR Mirror**



<AW>104001

21104201

**** Enable QR Mirror**

PDF417

Enable/Disable PDF 417



<AW>114001

21114001

**** Enable PDF 417**



<AW>114000

21114000

Disable PDF 417

Chinese Sensible Code (HanXin)



<AW>124001

21124001

**** Enable HanXin**



<AW>124000

21124000

Disable HanXin

Data Matrix



<AW>134001

21134001

**** Enable Data Matrix**



<AW>134000

21134000

Disable Data Matrix

Aztec



<AW>144001

21144001

Enable Aztec



<AW>144000

21144000

**** Disable Aztec**

MicroQR



<AW>154001

21154001

Enable MicroQR



<AW>154000

21154000

**** Disable MicroQR**

MicroPDF417



<AW>164001

21164001

Enable MicroPDF417



<AW>164000

21164000

**** Disable MicroPDF417**

Grid Matrix



<AW>174001

21174001

Enable Grid Matrix



<AW>174000

21174000

**** Disable Grid Matrix**

6.3.1D Symbolologies

Code 11



<AW>294001

21294001

****Enable Code 11**



<AW>294000

21294000

Disable Code 11

Check Digit Verification



<AW>294100

21294100

Disable



<AW>294101

21294101

One Check Digit, MOD11



<AW>294102

21294102

**Two Check Digits,
MOD11/MOD11**



<AW>294103

21294103

Auto Check

Transmit Check Digit



<AW>294201

21294201

Transmit Check Digit



<AW>294200

21294200

Do Not Transmit Check Digit

Code 39



<AW>234001

21234001

****Enable Code 39**



<AW>234000

21234000

Disable Code 39

Check Digit Verification



<AW>234100

21234100

Disable



<AW>234102

21234102

Enable Verification



<AW>234101

21234101

Code 32 Verification

Enable/Disable Code 39 Full ASCII



<AW>234201

21234201

Enable Code 39 Full ASCII



<AW>234200

21234200

Disable Code 39 Full ASCII

Transmit Start/Stop Character



<AW>234301

21234301

Transmit Start/Stop Character



<AW>234300

21234300

Do Not Transmit Start/Stop Character

Transmit Check Digit



<AW>234401

21234401

Transmit Check Digit



<AW>234400

21234400

Do Not Transmit Check Digit

Code 93



<AW>224001

21224001

****Enable Code 93**



<AW>224000

21224000

Disable Code 93

Enable/Disable Code 93 Full ASCII



<AW>224101

21224101

Enable Code 93 Full ASCII



<AW>224100

21224100

Disable Code 93 Full ASCII

Code 128



<AW>214001

21214001

**** Enable Code 128**



<AW>214000

21214000

Disable Code 128

UPC-A



<AW>244101

21244101

Enable UPC-A



<AW>244100

21244100

Disable UPC-A

Transmit Check Digit



<AW>245101

21245101

Transmit Check Digit



<AW>245100

21245100

Do Not Transmit Check Digit

UPC-E



<AW>244201

21244201
Enable UPC-E



<AW>244200

21244200
Disable UPC-E

Transmit Check Digit



<AW>245201

21245201
Transmit Check Digit



<AW>245200

21245200
Do Not Transmit Check Digit

EAN-13



<AW>244301

21244301
Enable EAN-13



<AW>244300

21244300
Disable EAN-13

Transmit Check Digit



<AW>245301

21245301
Transmit Check Digit



<AW>245300

21245300
Do Not Transmit Check Digit

EAN-8



<AW>244401

21244401
Enable EAN-8



<AW>244400

21244400
Disable EAN-8

Transmit Check Digit



<AW>245401

21245401
Transmit Check Digit



<AW>245400

21245400
Do Not Transmit Check Digit

Codabar



<AW>254001

21254001

Enable Codabar



<AW>254000

21254000

Disable Codabar

Check Digit Verification



<AW>254101

21254101

Enable Check Verification



<AW>254100

21254100

Disable

Transmit Check Digit



<AW>254201

21254201

Transmit Check Digit



<AW>254200

21254200

Do Not Transmit Check Digit

Transmit Start/Stop Character



<AW>254300

21254300



<AW>254301

21254301

Do not Transmit Start/Stop
Character

Transmit Start/Stop Character:
ABCD



<AW>254302

21254302
Transmit Start/Stop
Character: abcd

Industrial 2 of 5



<AW>264001

21264001
Enable Industrial 2 of 5



<AW>264000

21264000
**Disable Industrial 2 of 5

Check Digit Verification



<AW>264100

21264100
Disable Check Verification



<AW>264101

21264101
Enable Check Verification

Transmit Start/Stop Character



<AW>264201

21264201
Transmit Start/Stop Character



<AW>264200

21264200
Do not Transmit Start/Stop
Character

Matrix 2 of 5



<AW>274001

21274001
Enable Matrix 2 of 5



<AW>274000

21274000
**Disable Matrix 2 of 5

Check Digit Verification



<AW>274101

21274101
Enable Check Verification



<AW>274100

21274100
Disable Check Verification

Transmit Start/Stop Character



<AW>274201

21274201
Transmit Start/Stop Character



<AW>274200

21274200
Do not Transmit Start/Stop
Character

Interleaved 2 of 5



<AW>284001

21284001
Enable Interleaved 2 of 5



<AW>284000

21284000
**Disable Interleaved 2 of 5

Check Digit Verification



<AW>284101

21284101
Enable Check Verification



<AW>284100

21284100
Disable Check Verification

Transmit Start/Stop Character



<AW>284201

21284201
Transmit Start/Stop Character



<AW>284200

21284200
Do not Transmit Start/Stop
Character

MSI



<AW>2A4001

212A4001
Enable MSI



<AW>2A4000

212A4000
**Disable MSI

Check Digit Verification



<AW>2A4100

212A4100
**Disable



<AW>2A4101

212A4101
One Check Digit, MOD10



<AW>2A4102

212A4102
One Check Digit, MOD11



<AW>2A4103

212A4103
Two Check Digits,
MOD10/MOD10



<AW>2A4104

212A4104
Two Check Digits,
MOD10/MOD11

Transmit Start/Stop Character



<AW>2A4201

212A4201
Transmit Start/Stop Character



<AW>2A4200

212A4200
Do not Transmit Start/Stop
Character

GS1 Databar(Omni-Directional)



<AW>2B4001

212B4001
Enable



<AW>2B4000

212B4000
**Disable

GS1 Databar(Limited)



<AW>2B4101

212B4101
Enable



<AW>2B4100

212B4100
**Disable

GS1 Databar(Expanded)



<AW>2B4201

212B4201
Enable



<AW>2B4200

212B4200
**Disable

Plessey



<AW>2C4001

212C4001
Enable



<AW>2C4000

212C4000
**Disable

Transmit Start/Stop Character



<AW>2C4101

212C4101

Transmit Check Digit



<AW>2C4100

212C4100

Do Not Transmit Check Digit

China Post



<AW>2D4001

212D4001

Enable China Post



<AW>2D4000

212D4000

**Disable China Post

Telepen



<AW>2E4001

212E4001
Enable



<AW>2E4000

212E4000
**Disable

Character Set



<AW>2E4100

212E4100
Default



<AW>2E4101

212E4101
ASCII



<AW>2E4102

212E4102
Numeric

7. Appendix

Appendix A: Symbology ID Number

Symbology	ID Number
Code 39	1
Codabar	2
Code 128	3
Interleaved 2 of 5	6
Code 93	7
UPCA	8
UPCE	9
EAN8	10
EAN13	11
MSI	14
Databar Limited	35
Databar Omni	36
Databar Expanded	37
Code 11	38
Standard 2 of 5	39
Matrix 2 of 5	40
Plessey	42
China Post	43
Telepen	44
Data Matrix	81
PDF417	82
MicroPDF417	83
QR Code	87
Micro QR	88
Aztec	89
Chinese Sensible Code	96
GM Code	97

Appendix B: CRC Algorithm in Data Packing

```
//0x18005 CRC-16 BUYPASS poly=0x8005 init=0x0000
unsigned short crc16_ccitt(const unsigned char *ptr, int len){
    unsigned char i;
    unsigned int ca_crc=0;
    while(len-- != 0){
        for(i=0x80; i != 0; i >>= 1){
            if((ca_crc & 0x8000) != 0){
                ca_crc <<= 1;
                ca_crc ^= 0x18005;
            }else{
                ca_crc <<= 1;
            }
            if((*ptr&i) != 0) ca_crc^=0x18005;
        }
        ptr++;
    }
    return ca_crc;
}
```