ZBarcode Scanner

User Guide

(Common)v2.5

V2024.05.18

Table Of Contents

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.

327601
Restore All Factory Defaults

Disable Programing Barcode

When the programing barcode is scanned, the reader parameters will be changed by default. Meanwhile, programing 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.

21784203
Disable Programming Barcode

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.

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.

2141410B
** 115200

21414106
4800

21414107
9600

21414108
19200

21414109
38400

2141410A
57600

21414109
128000

2141410D
230400

2141410E
256000

2141410F
460800

RS485

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

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.

21414501
UART1

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.

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.

21424001
USB Keyboard

USB Country Keyboard Types

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

21434000
** U.S.

21434001
Spain

21434002
Germany

21434004
France

21434005
Italy

21434006
Sweden

21434008
UK

2143400A
Brazil

2143400D
South Korea

2143400E
Russia

2143400F
Turkey_Q

21434010
Turkey_F

21434011
Hungary

21434012
Croatia

Keyboard Style

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

21434800
Normal

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.

21434100
**ASCII

21434101
GBK

21434102
UTF-8

Inter-Keystroke Delay

This parameter specifies the delay between emulated keystrokes.

21434600
**No Delay

21434601
Delay 2ms

21434602
Delay 5ms

21434603
Delay 8ms

21434604
Delay 11ms

21434605
Delay 16ms

21434606
Delay 20ms

21434607
Delay 30ms

21434608
Delay 40ms

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.

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.

21424200
**No Daley

21424201
Daley 2ms

21424202
Daley 5ms

21424203
Daley 8ms

21424204
Daley 11ms

21424205
Daley 16ms

Daley 21424206
20ms

Daley 21424207
30ms

21424208
Daley 40ms

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.

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.

21618A0000
**No Timeout

21618A03E8
1s

21618A07D0
2s

21618A2710
10s

21618A0BB8
3s

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.

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.

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.

21614104
Pulse Mode

Decode Session Timeout

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

2161821388
**5s

2161822710
10s

21618201F4
0.5s

21618203E8
1s

21618207D0
2s

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.

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.

21614403
**3

21614401
1

21614402
2

21614404
4

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.

21614B00
** Pause after Good Read

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.

21618C0032
**5s

21618C000A
1s

21618C0014
2s

21618C001E

3s

21618C0064

10s

Timeout between decode

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

2161850000
No Timeout

2161850320
**800ms

21618503E8
1s

21618507D0
2s

2161850BB8
3s

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.

21624102
** Decoding ON

21624100
OFF

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.

21624400
**Disable

21624401
Enable

Brightness

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

21624C05
5

21624C0A
10

21624C1E
30

Decode Brightness

This parameter sets the LED brightness percentage in decode session.

21624800
**Default

2162480A
10%

21624814
20%

2162481E
30%

21624828
40%

21624832
50%

2162483C%
60%

21624846%
70%

21624850
80%

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.

21624201

**Flash

21624202

Decoding ON

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.

21624500
**Disable

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.

21634600
Good Read Beep Off

21634601
** Good Read Beep On

Good Read Beep Times

Set the times of good read beep

21634201
**1 Times

21634202
2 Times

Good Read Beep Type

21634101
**Default

21634100
Short

21634102
Long

Startup Beep

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

21634501
Enable 4 Beep

21634500
Disable

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.

2164820000
** **Disable**

21648201F4
Timeout 500ms

21648203E8
Timeout 1s

21648207D0
Timeout 2s

2164821388
Timeout 5s

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.

21644300
** Maintain Timeout

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.

21314000
**Disable Multiple Reading

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.

2131810002
**2

2131810003
3

2131810004
4

2131810005
5

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.

21314200
** Disable Incomplete transmission

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.

2131830000
**None

21318301F4
500ms

2131830E8
1s

21318307D0
2s

2131830BB8
3s

2131831388
5s

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.

21454001
Enable NFC

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.

21454200
** MSB

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.

21454501
Bytes Data

21454500
** 10D Numeric String

21454502
10D Numeric String -
No Patch 0

21454503
Bytes Hex String

Byte Position for Wiegand

Weigand outputs NFC card reading dat a, 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

21454700
**Wg 26 Last 3 Bytes

21454701
Wg 26 First 3 Bytes

NFC card number data location under Weigand 34

21454800
** Wg 34 Last 4 Bytes

21454801
Wg 34 First 4 Bytes

NFC card number data location under Weigand 66

21454900
** Wg 66 Last 8 Bytes

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.

21454100
** motion sensing

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

21514C01
** **Enable Suffixes**

21514C00
Disable Suffixes

21514C02
Enable Barcode Suffixes

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

2151C20000
Barcode Suffix None

2151C200020D0A
CR/LR

2151C200010D
CR

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

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

21514B01
** **Enable Prefixes**

21514B00
Disable Prefixes

21514B02
Enable Barcode Prefixes

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

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

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.

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.**

21514301
Format 1

21514302
Format 2

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.

21514800
** Disable (no case conversion)

21514801
Convert to upper case

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.

32764203
Enable All Symbologies

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

32764204
Enable 1D Symbologies

32764206
Disable 1D Symbologies

Enable/Disable 2D Symbologies

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

32764205
Enable 2D Symbologies

32764207
Disable 2D Symbologies

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.

21714402
Video Reverse ON

21714400
****Video Reverse OFF**

6.2.2D Symbologies

QR Code

Enable/Disable QR Code

21104001
**Enable QR Code

21104000
Disable QR Code

Mirror

21104200
**Disable QR Mirror

21104201
** Enable QR Mirror

PDF417

Enable/Disable PDF 417

21114001
** Enable PDF 417

21114000
Disable PDF 417

Chinese Sensible Code (HanXin)

21124001
** Enable HanXin

21124000
DIsable HanXin

Data Matrix

21134001
** Enable Data Matrix

21134000
Disable Data Matrix

Aztec

21144001
Enable Aztec

21144000
** DIsable Aztec

MicroQR

21154001
Enable MicroQR

21154000
** **Disable MicroQR**

MicroPDF417

21164001
Enable MicroPDF417

21164000
** **Disable MicroPDF417**

Grid Matrix

21174001
Enable Grid Matrix

21174000
** **Disable Grid Matrix**

6.3.1D Symbologies

Code 11

21294001
****Enable Code 11**

21294000
Disable Code 11

Check Digit Verification

21294100
Disable

21294101
One Check Digit, MOD11

21294102
Two Check Digits, MOD11/MOD11

21294103
Auto Check

Transmit Check Digit

21294201
Transmit Check Digit

21294200
Do Not Transmit Check Digit

Code 39

21234001
****Enable Code 39**

21234000
Disable Code 39

Check Digit Verification

21234100
Disable

21234102
Enable Verification

21234101
Code 32 Verification

Enable/Disable Code 39 Full ASCII

21234201
Enable Code 39 Full ASCII

21234200
Disable Code 39 Full ASCII

Transmit Start/Stop Character

21234301
Transmit Start/Stop Character

21234300
Do Not Transmit Start/Stop Character

Transmit Check Digit

21234401
Transmit Check Digit

21234400
Do Not Transmit Check Digit

Code 93

21224001
****Enable Code 93**

21224000
Disable Code 93

Enable/Disable Code 93 Full ASCII

21224101
Enable Code 93 Full ASCII

21224100
Disable Code 93 Full ASCII

Code 128

21214001
** Enable Code 128

21214000
Disable Code 128

UPC-A

21244101
Enable UPC-A

21244100
Disable UPC-A

Transmit Check Digit

21245101
Transmit Check Digit

21245100
Do Not Transmit Check Digit

UPC-E

21244201
Enable UPC-E

21244200
Disable UPC-E

Transmit Check Digit

21245201
Transmit Check Digit

21245200
Do Not Transmit Check Digit

EAN-13

21244301
Enable EAN-13

21244300
Disable EAN-13

Transmit Check Digit

21245301
Transmit Check Digit

21245300
Do Not Transmit Check Digit

EAN-8

21244401
Enable EAN-8

21244400
Disable EAN-8

Transmit Check Digit

21245401
Transmit Check Digit

21245400
Do Not Transmit Check Digit

Codabar

21254001
Enable Codabar

21254000
Disable Codabar

Check Digit Verification

21254101
Enable Check Verification

21254100
Disable

Transmit Check Digit

21254201
Transmit Check Digit

21254200
Do Not Transmit Check Digit

Transmit Start/Stop Character

21254300

21254301

Do not Transmit Start/Stop Character

Transmit Start/Stop Character: ABCD

21254302
Transmit Start/Stop Character：abcd

Industrial 2 of 5

21264001
Enable Industrial 2 of 5

21264000
**Disable Industrial 2 of 5

Check Digit Verification

21264100
Disable Check Verification

21264101
Enable Check Verification

Transmit Start/Stop Character

21264201
Transmit Start/Stop Character

21264200
Do not Transmit Start/Stop Character

Matrix 2 of 5

21274001
Enable Matrix 2 of 5

21274000
**Disable Matrix 2 of 5

Check Digit Verification

21274101
Enable Check Verification

21274100
Disable Check Verification

Transmit Start/Stop Character

21274201
Transmit Start/Stop Character

21274200
Do not Transmit Start/Stop Character

Interleaved 2 of 5

21284001
Enable Interleaved 2 of 5

21284000
**Disable Interleaved 2 of 5

Check Digit Verification

21284101
Enable Check Verification

21284100
Disable Check Verification

Transmit Start/Stop Character

21284201
Transmit Start/Stop Character

21284200
Do not Transmit Start/Stop Character

MSI

212A4001
Enable MSI

212A4000
**Disable MSI

Check Digit Verification

212A4100
**Disable

212A4101
One Check Digit, MOD10

212A4102
One Check Digit, MOD11

212A4103
Two Check Digits, MOD10/MOD10

212A4104
Two Check Digits,
MOD10/MOD11

Transmit Start/Stop Character

212A4201
Transmit Start/Stop Character

212A4200
Do not Transmit Start/Stop
Character

GS1 Databar(Omni-Directional)

212B4001
Enable

212B4000
**Disable

GS1 Databar(Limited)

212B4101
Enable

212B4100
**Disable

GS1 Databar(Expanded)

212B4201
Enable

212B4200
**Disable

Plessey

212C4001
Enable

212C4000
**Disable

Transmit Start/Stop Character

212C4101
Transmit Check Digit

212C4100
Do Not Transmit Check Digit

China Post

212D4001
Enable China Post

212D4000
**Disable China Post

Telepen

212E4001
Enable

212E4000
**Disable

Character Set

212E4100
Default

212E4101
ASCII

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;
}
```