



NLS-FM30 Series
Fixed Mount Barcode Scanner
User Guide



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

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

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Revision History

Version	Description	Date
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V1.1	Added the “Data Port Pinout” section in Chapter 6.	May 3, 2016
V1.1.1	Changed the model number FM25/FM30 to FM3055/FM3050 respectively.	September 20, 2016
V1.2.0	Added a new chapter – Chapter 9 Configuring the FM30	February 7, 2017
V1.2.1	Added the “Optics” section in Chapter 6.	May 2, 2017

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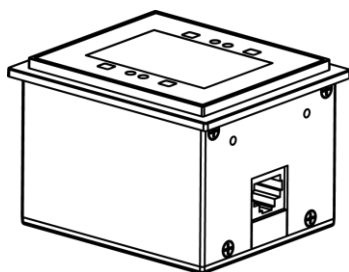
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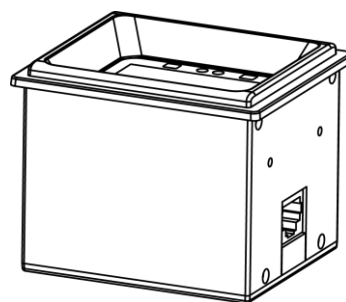
Chapter 1 Standard Configuration

1. FM30 series fixed mount barcode scanner

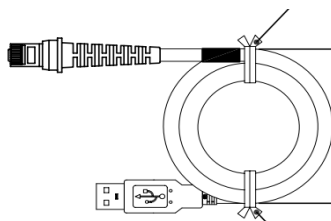
FM3055:



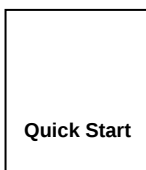
FM3050:



2. USB cable

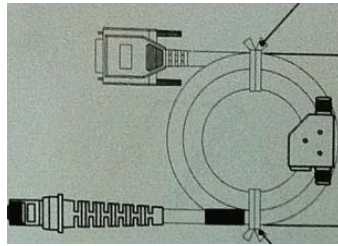


3. Quick Start Guide



Chapter 2 Optional Configuration

1. RS-232 cable



2. 5V power adapter



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

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.

Chapter 3 Safety Information

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.

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.

Chapter 4 Product Features

Designed primarily for such applications as electronic tickets/coupons, mobile marketing and office automation, 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.

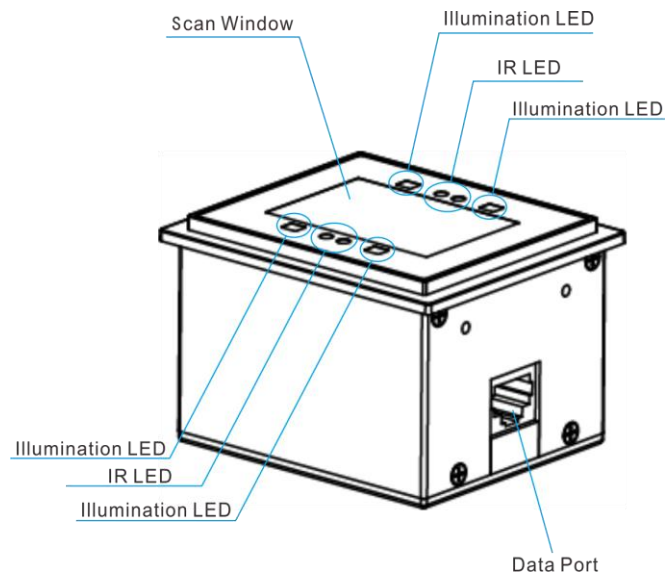
Chapter 5 Technical Specifications

	FM3055	FM3050
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	≥10mil	
Light Source	White LED	
Scan Window	31.5mm×46.5mm	38.3mm*60.4mm
Symbol Contrast	≥30%	
FOV	Diagonal: 85°, Horizontal: 63.7°, Vertical: 70°	
Ambient Light	0 ~ 100,000 LUX	
Max. Power Consumption	1.75W	
Power Adapter	Output: DC5V, 0.5A, Input: AC100~240V, 50~60Hz	
Notification	Beep	
Dimensions (L×W×H)	78.2mm X 67.2mm X 52.3mm	78.2mm X 67.2mm X 62mm
Weight	300g	
Operating Temperature	-10℃ to + 50℃	
Storage Temperature	-20℃ to + 60℃	
Humidity	5% - 95% (non-condensing)	
Certification	FCC Part15 Class B, CE EMC Class B	

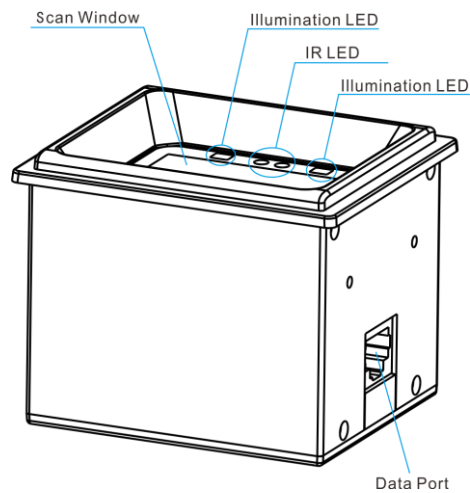
Chapter 6 FM30 Scanner

Overview

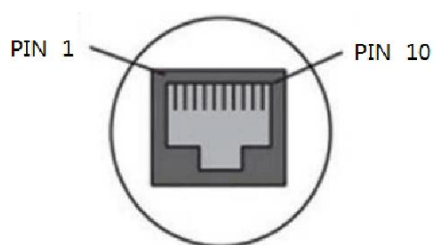
FM3055 Scanner



FM3050 Scanner



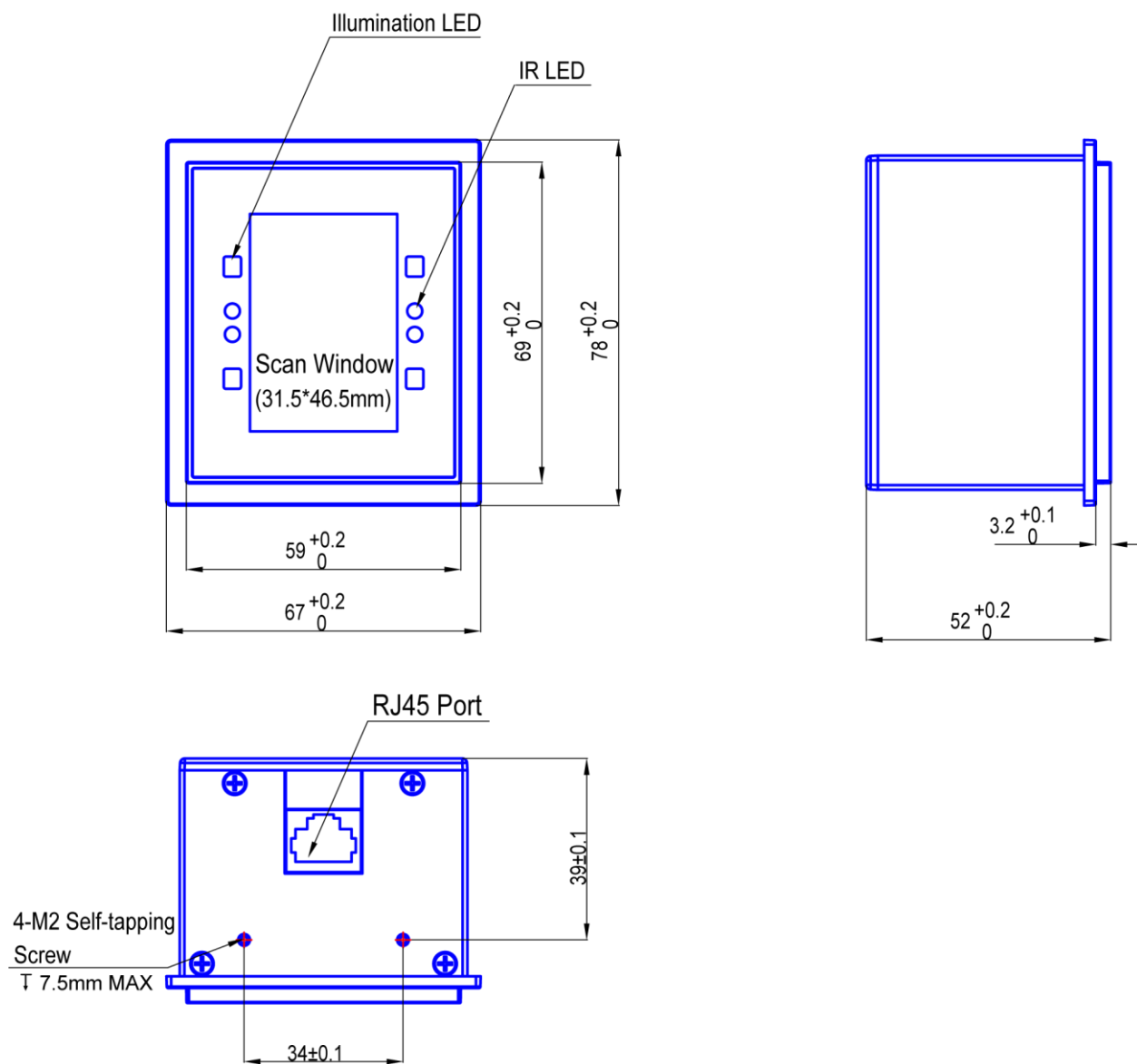
Data Port Pinout



PIN	Definition	Type	Description
1	NC	-	Not connected
2	NC	-	Not connected
3	VCC	P	Power+ (+5V)
4	TXD	O	RS-232 Output
5	RXD	I	RS-232 Input
6	NC	-	Not connected
7	NC	-	Not connected
8	GND	P	Ground
9	D-	I/O	USB signal
10	D+	I/O	

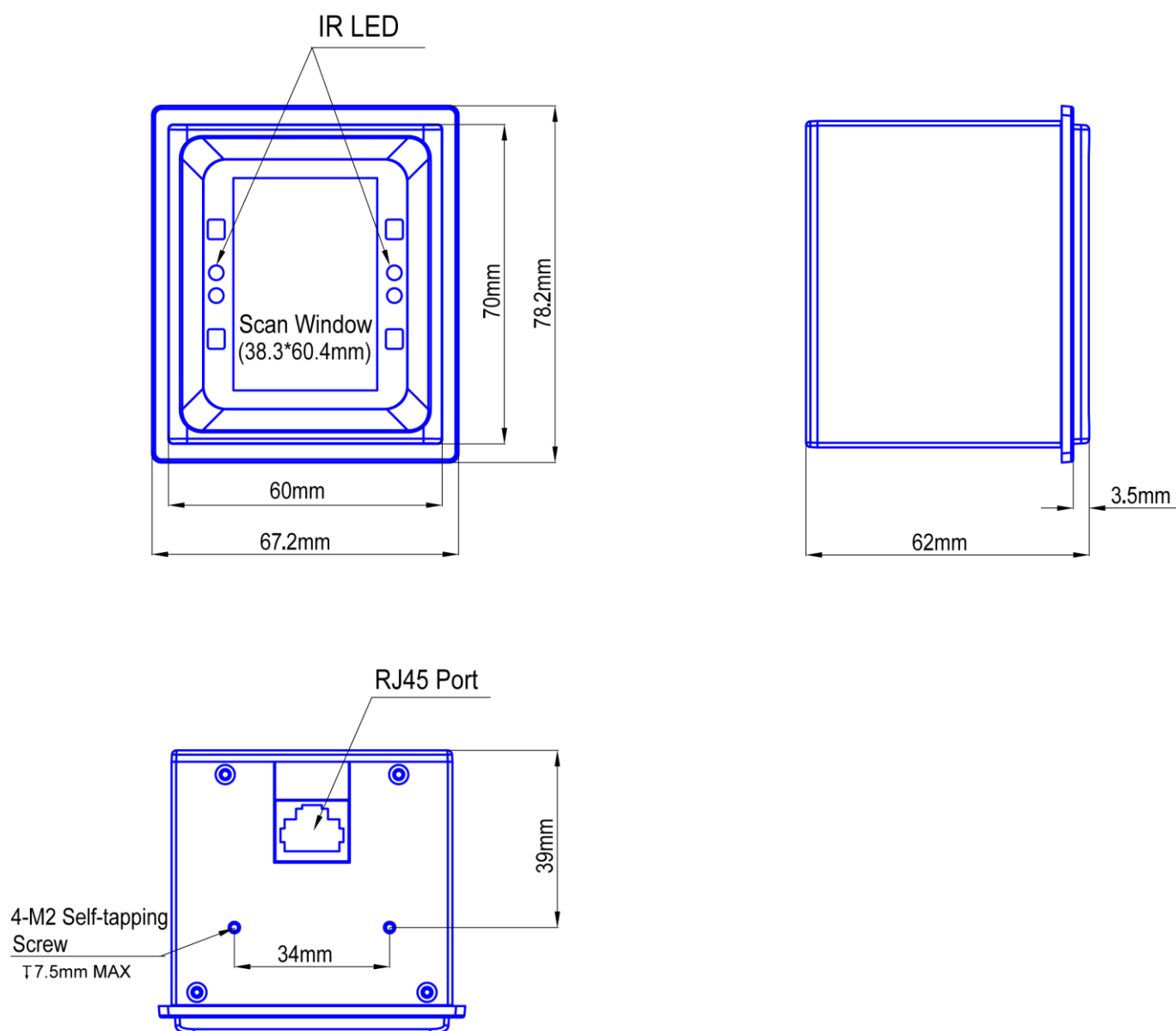
Dimensions

FM3055 Scanner



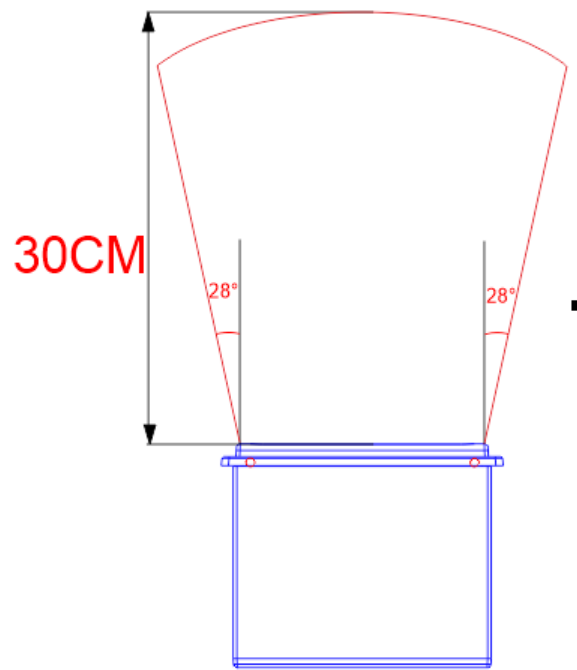
Note: M2 self-tapping screws should be used when mounting the scanner. The part of the screws into the shell of the scanner cannot exceed 7.5mm.

FM3050 Scanner

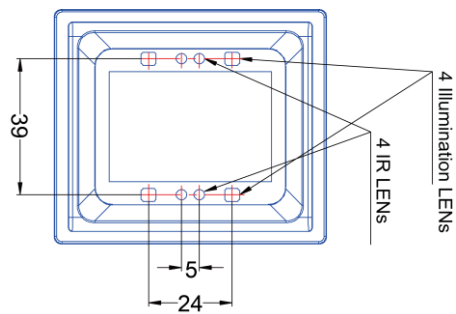


Note: M2 self-tapping screws should be used when mounting the scanner. The part of the screws into the shell of the scanner cannot exceed 7.5mm.

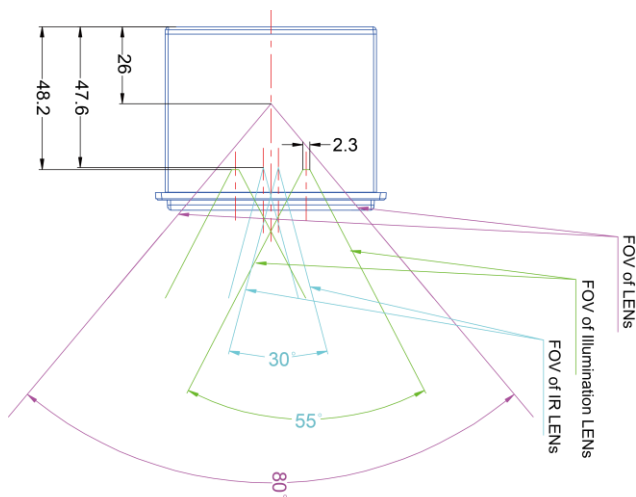
IR Triggering Range



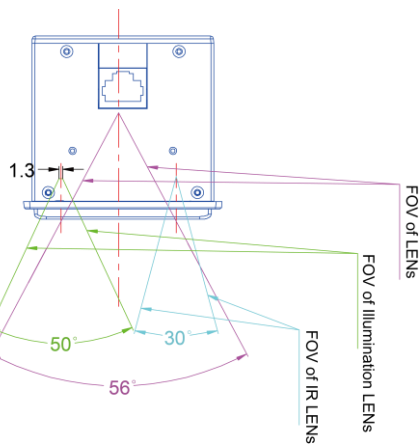
Optics



Horizontal:



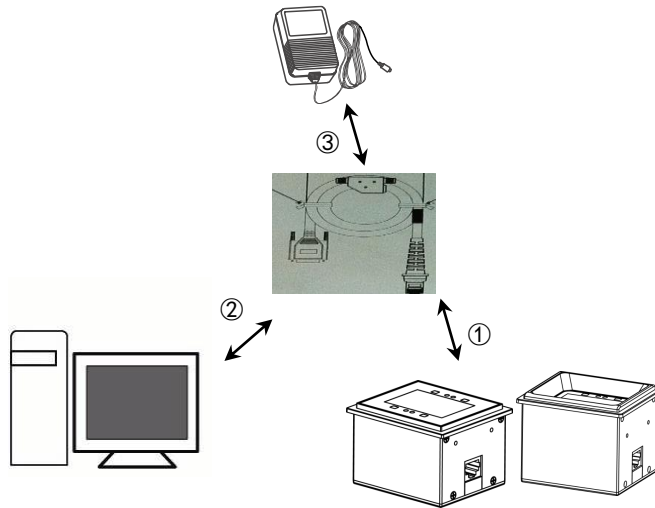
Vertical:



Chapter 7 Wiring

1. If your scanner is equipped with an RS-232 interface:

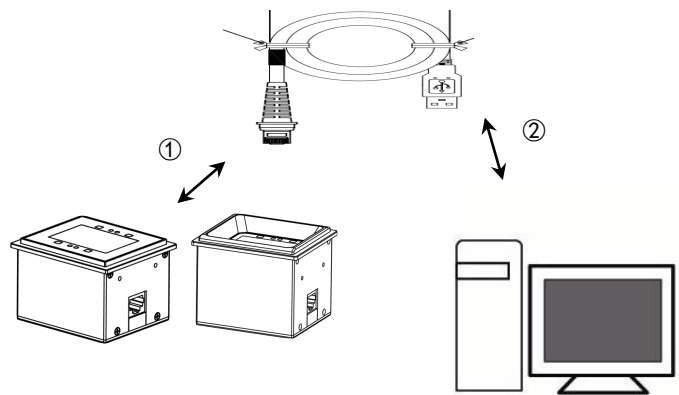
- 1) Plug the supplied cable's RJ45 connector into the data port on the scanner.
- 2) Plug the cable's RS-232 connector into the RS-232 port on PC.
- 3) Plug the power adapter into the cable's power jack.



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.

Chapter 8 Scanning Instructions

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.

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.

Chapter 9 Configuring the FM30

There are two ways to configure the scanner: barcode programming and command programming.

Barcode Programming

The FM30 can be configured by scanning programming barcodes. All user programmable features/options are described along with their programming barcodes/commands in the following chapters.



Command Programming

Besides the barcode programming method, the FM30 can also be configured by serial commands sent from the host device. Note that communication parameters on the scanner and the host must match so that two devices can communicate with each other. The default settings of the scanner are 9600bps, no parity check, 8 data bits, 1 stop bit, and no flow control. The scanner uses 8-bit registers.

Read Register

The read command is used to read the contents of 1 to 256 contiguous registers in the scanner.

Syntax: {Prefix1} {Types} {Lens} {Address} {Datas} {FCS}

Prefix1 : 0x7E 0x00

Types : 0x07

Lens : 0x01

Address: 0x0000~0x00FF, starting register address.

Datas : 0x00~0xFF, number of registers to be read. When Datas=0x00, 256 contiguous registers are to be read.

FCS : CRC-CCITT checksum, 2 bytes.

Computation sequence: Types+ Lens+Address+Datas;
polynomial: $X^{16}+X^{12}+X^5+1$ (0x1021), initial value: 0x0000.

The following C language program is provided for reference.

```
unsigned int crc_cal_by_bit(unsigned char* ptr, unsigned int len)
{
    unsigned int crc = 0;
    while(len-- != 0)
    {
        for(unsigned char i = 0x80; i != 0; i /= 2)
        {
            crc *= 2;
            if((crc&0x10000) != 0)
                crc ^= 0x11021;
            if((*ptr&i) != 0)
                crc ^= 0x1021;
        }
        ptr++;
    }
    return crc;
}
```

Reply: {Prefix2} {Types} {Lens} {Datas} {FCS}

1) Success message:

Prefix2 : 0x02 0x00

Types : 0x00 (success)

Lens : The number of data returned. If Lens=0x00, that means values of 256 contiguous registers are returned.

Datas : 0x00~0xFF, data that are returned.

FCS : CRC-CCITT checksum.

2) CRC check failure message:

Prefix2 : 0x02 0x00

Types : 0x01 (CRC check failure)

Lens : 0x01

Datas : 0x00

FCS : CRC-CCITT checksum (0x04 0x01)

3) Invalid command message:

Prefix2 : 0x02 0x00

Types : 0x03 (invalid command)

Lens : 0x01

Datas : 0x00

FCS : CRC-CCITT checksum (0x6A 0x61)

Example:

Read the content (0x3E) of register 0x000A

1) Read operation succeeds:

Command sent: 0x7E 0x00 0x07 0x01 0x00 0x0A 0x01 0xEE 0x8A

Message received: 0x02 0x00 0x00 0x01 0x3E 0xE4 0xAC

2) CRC check fails:

Command sent: 0x7E 0x00 0x07 0x01 0x00 0x0A 0x01 0x11 0x22

Message received: 0x02 0x00 0x01 0x01 0x00 0x04 0x01

3) Situations that may cause the scanner to respond with an invalid command message: Command sent is shorter than the required length, or the third byte is not sent out within 400ms after the first two bytes "0x7e 0x00" are sent

Command sent: 0x7E 0x00 0x07 0x01 0x00 0x0A 0x01

Message received: 0x02 0x00 0x03 0x01 0x00 0x6A 0x61

Write Register

The write command is used to write contiguous registers (1 to 256 registers) in the scanner.

Syntax: {Prefix1} {Types} {Lens} {Address} {Datas} {FCS}

Prefix1 : 0x7E 0x00 (2 bytes)

Types : 0x08 (1 byte)

Lens : 0x00~0xFF (1 byte), byte count, i.e. number of registers written. When Lens=0x00, 256 contiguous registers are to be written.

Address : 0x0000~0xFFFF (2 bytes), starting register address.

Datas : 0x00~0xFF (1~256 bytes), data to be written into the register(s)

FCS : CRC-CCITT checksum, 2 bytes.

Computation sequence: Types+ Lens+Address+Ddatas; polynomial: $X^{16}+X^{12}+X^5+1$ (0x1021), initial value: 0x0000.

The following C language program is provided for reference.

```
unsigned int crc_cal_by_bit(unsigned char* ptr, unsigned int len)
{
    unsigned int crc = 0;
    while(len-- != 0)
    {
        for(unsigned char i = 0x80; i != 0; i /= 2)
        {
            crc *= 2;
            if((crc&0x10000) != 0)
                crc ^= 0x11021;
            if((*ptr&i) != 0)
                crc ^= 0x1021;
        }
        ptr++;
    }
    return crc;
}
```

Reply: {Prefix2} {Types} {Lens} {Datas} {FCS}

1) Success message:

Prefix2 : 0x02 0x00

Types : 0x00 (success)

Lens : 0x01

Datas : 0x00

FCS : CRC-CCITT checksum (0x33 0x31)

2) CRC check failure message:

Prefix2 : 0x02 0x00

Types : 0x01 (CRC check failure)

Lens : 0x01

Datas : 0x00

FCS : CRC-CCITT checksum (0x04 0x01)

3) Invalid command message:

Prefix2 : 0x02 0x00

Types : 0x03 (invalid command)

Lens : 0x01

Datas : 0x00

FCS : CRC-CCITT checksum (0x6A 0x61)

Example:

Write 0x3E into register 0x000A

1) Write operation succeeds:

Command sent: 0x7E 0x00 0x08 0x01 0x00 0x0A 0x3E 0x4C 0xCF

Message received: 0x02 0x00 0x00 0x01 0x00 0x33 0x31

2) CRC check fails:

Command sent: 0x7E 0x00 0x08 0x01 0x00 0x0A 0x3E 0x11 0x22

Message received: 0x02 0x00 0x01 0x01 0x00 0x04 0x01

3) Situations that may cause the scanner to respond with an invalid command message: Command sent is shorter than the required length, or the third byte is not sent out within 400ms after the first two bytes "0x7e 0x00" are sent

Command sent: 0x7E 0x00 0x08 0x01 0x00 0x0A 0x3E

Message received: 0x02 0x00 0x03 0x01 0x00 0x6A 0x61

Save Register Data in EEPROM

The save command is used to save register data into an external EEPROM.

Syntax: {Prefix1} {Types} {Lens} {Address} {Datas} {FCS}

Prefix1 : 0x7E 0x00

Types : 0x09

Lens : 0x01

Address: 0x0000

Datas : 0x00

FCS : CRC-CCITT checksum (0xDE 0xC8)

Reply: {Prefix2} {Types} {Lens} {Datas} {FCS}

1) Success message:

Prefix2 : 0x02 0x00

Types : 0x00 (success)

Lens : 0x01

Datas : 0x00

FCS : CRC-CCITT checksum (0x33 0x31)

2) CRC check failure message:

Prefix2 : 0x02 0x00

Types : 0x01 (CRC check failure)

Lens : 0x01

Datas : 0x00

FCS : CRC-CCITT checksum (0x04 0x01)

3) Invalid command message:

Prefix2 : 0x02 0x00

Types : 0x03 (invalid command)

Lens : 0x01

Datas : 0x00

FCS : CRC-CCITT checksum (0x6A 0x61)

Relationship between Programming Command and Serial Command

1. Program general parameter with serial command

A programming command (i.e. the characters under programming barcode) contains 7 characters. The function of each character is described in the table below.

1st Char	2nd Char ~3rd Char	4th Char~5th Char	6th Char~7th Char	Remark
CMD	BITPOSITION	ADDR	DATA	
"W"	"00"~"FF"	"00"~"FF"	"00"~"FF"	Write a value (DATA) to the specified bits (BITPOSITION) of the register (ADDR).

Note:1. **CMD**: Command type.

2. **ADDR**: Address of register to be written.

3. **BITPOSITION**: Bit(s) the value is written to. For example, if only bit 3 is to be written, the BITPOSITION should be "08"; if all bits are to be written, the BITPOSITION should be "FF".

4. **DATA**: Value written to the BITPOSITION.

The **ADDR** and **DATA** in programming command correspond to **Address** and **Datas** in serial command, respectively:

1) If BITPOSITION="FF", the values of ADDR and DATA can be used directly in the write command.

e.g., programming command: WFFD9D8 (write value 0xD8 to register 0x00D9)

serial command sent : 0x7E 0x00 0x08 0x01 0x00 0xD9 0xD8 0x91 0x53

reply received : 0x02 0x00 0x00 0x01 0x00 0x33 0x31

2) If BITPOSITION≠"FF", users need to read the register content, calculate the value (Datas) and then write the value into the register, as shown in the following example.

e.g., programming command: W030002 (write value 0x02 to bit1and bit0 of register 0x0000)

Step 1: Read the content of register 0x0000.

serial command sent : 0x7E 0x00 0x07 0x01 0x00 0x00 0x01 0x01 0x41

reply received : 0x02 0x00 0x00 0x01 0xD4 0xB8 0xC8

Step 2: Calculate the value written to the register.

$$\text{Datas} = (0xD4 \& (! 0x03)) + 0x02 = 0xD6$$

Step 3: Write the value into the register.

serial command sent : 0x7E 0x00 0x08 0x01 0x00 0x00 0xD6 0xDF 0x22

reply received : 0x02 0x00 0x00 0x01 0x00 0x33 0x31

2. Program special parameter with serial command

The serial commands used for programming the following parameters are practically irrelevant to their programming commands.

Feature	Serial Command
Program the sensitivity level	0x7E 0x00 0x08 0x01 0x00 0x03 0xTT 0xSS 0xSS
Program the image stabilization timeout	0x7E 0x00 0x08 0x01 0x00 0x04 0xTT 0xSS 0xSS
Program the timeout between decodes	0x7E 0x00 0x08 0x01 0x00 0x05 0xTT 0xSS 0xSS
Program the decode session timeout	0x7E 0x00 0x08 0x01 0x00 0x06 0xTT 0xSS 0xSS

Note: Red: Address of register.

Blue: Value written to register. For example, to set the sensitivity level to 10, 0xTT should be 0x0A.

Pink: CRC checksum calculated.

3. Save register data in EEPROM

Scanning a programming barcode can change register value and save register data in EEPROM as well. As for command programming, it requires a write command and a save command to perform these two tasks. To save register data in an external EEPROM, users need to send the save command to the scanner.

save command sent: 0x7E 0x00 0x09 0x01 0x00 0x00 0x00 0xDE 0xC8

reply received : 0x02 0x00 0x00 0x01 0x00 0x33 0x31

Registers

Register	0x0000			
Bit	Feature			
Bit 7	1: Good read LED on		0: Good read LED off	
Bit 6	1: Disable the mute mode		0: Enable the mute mode	
Bit 5-4	Aiming: 00: OFF 01: Normal 10/11: Always ON			
Bit 3-2	Illumination: 00: OFF 01: Normal 10/11: Always ON			
Bit 1-0	Scan Mode: 00: Manual Mode 01: Command Trigger Mode 10: Continuous Mode 11: Sense Mode			
Register	0x0002			
Bit	Feature			
Bit 7	1: Enable CODE ID prefix for all symbologies		0: Disable CODE ID prefix for all symbologies	
Bit 6	1: Enable decode result notification		0: Disable decode result notification	
Bit 5	Reserved			
Bit 4	1: Video reverse ON		0: Video reverse OFF	
Bit 3-0	Reserved			
Register	0x0004			
Bit	Feature			
Bit 7-0	Image Stabilization Timeout: 0x00-0xFF: 0.0-25.5s			
Register	0x0005			
Bit	Feature			
Bit 7-0	Timeout between Decodes: 0x00-0xFF: 0.0-25.5s			
Register	0x0006			
Bit	Feature			
Bit 7-0	Decode Session Timeout: 0x00-0xFF: 0.0-25.5s			

Register	<i>0x0009</i>	
Bit	Feature	
Bit 7-0	Good Read Beep Frequency 0xDA: Low 0x4B: Medium 0x25: High	
Register	<i>0x000A</i>	
Bit	Feature	
Bit 7-0	Good Read Beep Duration 0x1F: 40ms 0x3E: 80ms 0x5D: 120ms	
Register	<i>0x000C</i>	
Bit	Feature	
Bit 7-4	Reserved	
Bit 3	1: Enable Data Matrix	0: Disable Data Matrix
Bit 2	1: Enable 1D symbologies	0: Disable 1D symbologies
Bit 1	1: Enable AIM ID prefix for PDF417	0: Disable AIM ID prefix for PDF417
Bit 0	1: Enable PDF417	0: Disable PDF417
Register	<i>0x000D</i>	
Bit	Feature	
Bit 7	1: Enable QR Code	0: Disable QR Code
Bit 6-2	Reserved	
Bit 1-0	00: USB DATAPIPE 10: USB COM Port Emulation	01: USB HID-KBW 11: HID-POS
Register	<i>0x000E</i>	
Bit	Feature	
Bit 7-4	Reserved	
Bit 3	1: Beep on unknown character	0: Do not beep on unknown character
Bit 2	1: Good read beep on	0: Good read beep off
Bit 1-0	Reserved	

Register	0x0010
Bit	Feature
Bit 7-5	Reserved
Bit 4-3	00: Disable AIM ID prefix for 1D symbologies 01: Allow to enable/disable AIM ID prefix for individual 1D symbology 10/11: Enable AIM ID prefix for 1D symbologies
Bit 2-0	Reserved
Register	0x0011
Bit	Feature
Bit 7	1: Enable AIM ID prefix for ISSN 0: Disable AIM ID prefix for ISSN Note: Bit4 and Bit3 of register 0x0010 must be set to “01” in order for this parameter to function.
Bit 6	1: Enable ISSN 0: Disable ISSN
Bit 5	1: Enable EAN-13 5-digit add-on code 0: Disable EAN-13 5-digit add-on code
Bit 4	1: Enable EAN-13 2-digit add-on code 0: Disable EAN-13 2-digit add-on code
Bit 3	1: EAN-13 add-on code required 0: EAN-13 add-on code not required
Bit 2	1: Transmit EAN-13 check digit 0: Do not transmit EAN-13 check digit
Bit 1	1: Enable AIM ID prefix for EAN-13 0: Disable AIM ID prefix for EAN-13 Note: Bit4 and Bit3 of register 0x0010 must be set to “01” in order for this parameter to function.
Bit 0	1: Enable EAN-13 0: Disable EAN-13
Register	0x0012
Bit	Feature
Bit 7	Reserved
Bit 6	1: Transmit Code 93 check digit 0: Do not transmit Code 93 check digit Note: Code 93 check digit must be enabled for this parameter to function.
Bit 5	1: Enable Code 93 check digit 0: Disable Code 93 check digit
Bit 4	1: Enable AIM ID prefix for Code 93 0: Disable AIM ID prefix for Code 93 Note: Bit4 and Bit3 of register 0x0010 must be set to “01” in order for this parameter to function.
Bit 3	1: Enable Code 93 0: Disable Code 93
Bit 2	ISBN Format 1: ISBN-10 0: ISBN-13
Bit 1	1: Enable AIM ID prefix for ISBN 0: Disable AIM ID prefix for ISBN Note: Bit4 and Bit3 of register 0x0010 must be set to “01” in order for this parameter to function.
Bit 0	1: Enable ISBN 0: Disable ISBN

Register	0x0013	
Bit	Feature	
Bit 7	Reserved	
Bit 6	1: Enable EAN-8 zero extend	0: Disable EAN-8 zero extend
Bit 5	1: Enable EAN-8 5-digit add-on code	0: Disable EAN-8 5-digit add-on code
Bit 4	1: Enable EAN-8 2-digit add-on code	0: Disable EAN-8 2-digit add-on code
Bit 3	1: EAN-8 add-on code required	0: EAN-8 add-on code not required
Bit 2	1: Transmit EAN-8 check digit	0: Do not transmit EAN-8 check digit
Bit 1	1: Enable AIM ID prefix for EAN-8 Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.	0: Disable AIM ID prefix for EAN-8
Bit 0	1: Enable EAN-8	0: Disable EAN-8
Register	0x0014	
Bit	Feature	
Bit 7	Reserved	
Bit 6	1: Enable UPC-A 5-digit add-on code	0: Disable UPC-A 5-digit add-on code
Bit 5	1: Enable UPC-A 2-digit add-on code	0: Disable UPC-A 2-digit add-on code
Bit 4	1: UPC-A add-on code required	0: UPC-A add-on code not required
Bit 3	Transmit UPC-A preamble character 1: System character & country code	0: System character
Bit 2	1: Transmit UPC-A check digit	0: Do not transmit UPC-A check digit
Bit 1	1: Enable AIM ID prefix for UPC-A Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.	0: Disable AIM ID prefix for UPC-A
Bit 0	1: Enable UPC-A	0: Disable UPC-A
Register	0x0015	
Bit	Feature	
Bit 7	1: Enable UPC-E extend	0: Disable UPC-E extend
Bit 6	1: Enable UPC-E 5-digit add-on code	0: Disable UPC-E 5-digit add-on code
Bit 5	1: Enable UPC-E 2-digit add-on code	0: Disable UPC-E 2-digit add-on code
Bit 4	1: UPC-E add-on code required	0: UPC-E add-on code not required
Bit 3	1: Transmit UPC-E system character	0: Do not transmit UPC-E system character
Bit 2	1: Transmit UPC-E check digit	0: Do not transmit UPC-E check digit
Bit 1	1: Enable AIM ID prefix for UPC-E Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.	0: Disable AIM ID prefix for UPC-E
Bit 0	1: Enable UPC-E	0: Disable UPC-E

Register	0x0018	
Bit	Feature	
Bit 7	1: Transmit ITF-14 check digit	0: Do not transmit ITF-14 check digit
Bit 6	1: Enable AIM ID prefix for ITF-14 Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.	0: Disable AIM ID prefix for ITF-14
Bit 5	1: Enable ITF-14	0: Disable ITF-14
Bit 4	1: Transmit appended "0" of Interleaved 2 of 5 0: Do not transmit appended "0" of Interleaved 2 of 5	
Bit 3	1: Transmit Interleaved 2 of 5 check digit Note: Interleaved 2 of 5 check digit must be enabled for this parameter to function.	0: Do not transmit Interleaved 2 of 5 check digit
Bit 2	1: Enable Interleaved 2 of 5 check digit	0: Disable Interleaved 2 of 5 check digit
Bit 1	1: Enable AIM ID prefix for Interleaved 2 of 5 Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.	0: Disable AIM ID prefix for Interleaved 2 of 5
Bit 0	1: Enable Interleaved 2 of 5	0: Disable Interleaved 2 of 5
Register	0x0019	
Bit	Feature	
Bit 7	Reserved	
Bit 6	1: Transmit Industrial 2 of 5 check digit Note: Industrial 2 of 5 check digit must be enabled for this parameter to function.	0: Do not transmit Industrial 2 of 5 check digit
Bit 5	1: Enable Industrial 2 of 5 check digit	0: Disable Industrial 2 of 5 check digit
Bit 4	1: Enable AIM ID prefix for Industrial 2 of 5 Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.	0: Disable AIM ID prefix for Industrial 2 of 5
Bit 3	1: Enable Industrial 2 of 5	0: Disable Industrial 2 of 5
Bit 2	1: Transmit ITF-6 check digit	0: Do not transmit ITF-6 check digit
Bit 1	1: Enable AIM ID prefix for ITF-6 Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.	0: Disable AIM ID prefix for ITF-6
Bit 0	1: Enable ITF-6	0: Disable ITF-6

Register	0x001A
Bit	Feature
Bit 7	1: Transmit Standard 2 of 5 check digit 0: Do not transmit Standard 2 of 5 check digit Note: Standard 2 of 5 check digit must be enabled for this parameter to function.
Bit 6	1: Enable Standard 2 of 5 check digit 0: Disable Standard 2 of 5 check digit
Bit 5	1: Enable AIM ID prefix for Standard 2 of 5 0: Disable AIM ID prefix for Standard 2 of 5 Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.
Bit 4	1: Enable Standard 2 of 5 0: Disable Standard 2 of 5
Bit 3	1: Transmit Matrix 2 of 5 check digit 0: Do not transmit Matrix 2 of 5 check digit Note: Matrix 2 of 5 check digit must be enabled for this parameter to function.
Bit 2	1: Enable Matrix 2 of 5 check digit 0: Disable Matrix 2 of 5 check digit
Bit 1	1: Enable AIM ID prefix for Matrix 2 of 5 0: Disable AIM ID prefix for Matrix 2 of 5 Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.
Bit 0	1: Enable Matrix 2 of 5 0: Disable Matrix 2 of 5
Register	0x001B
Bit	Feature
Bit 7	1: Enable AIM ID prefix for RSS-Expand 0: Disable AIM ID prefix for RSS-Expand Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.
Bit 6	1: Enable RSS-Expand 0: Disable RSS-Expand
Bit 5	1: Transmit RSS-Limited application identifier 0: Do not transmit RSS-Limited application identifier
Bit 4	1: Enable AIM ID prefix for RSS-Limited 0: Disable AIM ID prefix for RSS-Limited Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.
Bit 3	1: Enable RSS-Limited 0: Disable RSS-Limited
Bit 2	1: Transmit RSS-14 application identifier 0: Do not transmit RSS-14 application identifier
Bit 1	1: Enable AIM ID prefix for RSS-14 0: Disable AIM ID prefix for RSS-14 Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.
Bit 0	1: Enable RSS-14 0: Disable RSS-14

Register	0x001C	
Bit	Feature	
Bit 7-6	Reserved	
Bit 5	1: Enable Code 39 Full ASCII	0: Disable Code 39 Full ASCII
Bit 4	1: Transmit Code 39 check digit 0: Do not transmit Code 39 check digit Note: Code 39 check digit must be enabled for this parameter to function.	
Bit 3	1: Enable Code 39 check digit	0: Disable Code 39 check digit
Bit 2	1: Transmit Code 39 start/stop characters	0: Do not transmit Code 39 start/stop characters
Bit 1	1: Enable AIM ID prefix for Code 39 0: Disable AIM ID prefix for Code 39 Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.	
Bit 0	1: Enable Code 39	0: Disable Code 39
Register	0x001D	
Bit	Feature	
Bit 7-6	Reserved	
Bit 5	1: Transmit Code 11 check digit 0: Do not transmit Code 11 check digit Note: Code 11 check digit verification must be enabled for this parameter to function.	
Bit 4-2	Code 11 Check Digit Verification: 000: Disable 001: One check digit, MOD11 010: Two check digits, MOD11/MOD11 011: Two check digits, MOD11/MOD9 100: One check digit, MOD11 (Len <= 11); two check digits, MOD11/MOD11 (Len > 11) 101: One check digit, MOD11 (Len <= 11); two check digits, MOD11/MOD9 (Len > 11)	
Bit 1	1: Enable AIM ID prefix for Code 11 0: Disable AIM ID prefix for Code 11 Note: Bit4 and Bit3 of register 0x0010 must be set to "01" in order for this parameter to function.	
Bit 0	1: Enable Code 11	0: Disable Code 11

Register	<i>0x001E</i>	
Bit	Feature	
Bit 7-6	Reserved	
Bit 5	1: Transmit Codabar check digit 0: Do not transmit Codabar check digit Note: Codabar check digit verification must be enabled for this parameter to function.	
Bit 4	1: Enable Codabar check digit 0: Disable Codabar check digit	
Bit 3-2	Codabar Start/Stop Character Format: 00: ABCD/ABCD 01: ABCD/TN*E 10: abcd/abcd 11: abcd/tn*e	
Bit 1	1: Transmit Codabar start/stop characters 0: Do not transmit Codabar start/stop characters	
Bit 0	1: Enable Codabar 0: Disable Codabar	
Register	<i>0x001F</i>	
Bit	Feature	
Bit 7	Reserved	
Bit 6	1: Transmit MSI-Plessey check digit 0: Do not transmit MSI-Plessey check digit Note: MSI-Plessey check digit verification must be enabled for this parameter to function.	
Bit 5-4	MSI-Plessey Check Digit Verification: 00: Disable 01: One check digit, MOD10 10: Two check digits, MOD10/MOD10 11: Two check digits, MOD10/MOD11	
Bit 3	1: Enable MSI-Plessey 0: Disable MSI-Plessey	
Bit 2	1: Transmit Plessey check digit 0: Do not transmit Plessey check digit Note: Plessey check digit must be enabled for this parameter to function.	
Bit 1	1: Enable Plessey check digit 0: Disable Plessey check digit	
Bit 0	1: Enable Plessey 0: Disable Plessey	

Register	0x0020
Bit	Feature
Bit 7-3	Reserved
Bit 2	1: Enable AIM ID prefix for MSI-Plessey 0: Disable AIM ID prefix for MSI-Plessey Note: Bit4 and Bit3 of register 0x0010 must be set to “01” in order for this parameter to function.
Bit 1	1: Enable AIM ID prefix for Plessey 0: Disable AIM ID prefix for Plessey Note: Bit4 and Bit3 of register 0x0010 must be set to “01” in order for this parameter to function.
Bit 0	1: Enable AIM ID prefix for Codabar 0: Disable AIM ID prefix for Codabar Note: Bit4 and Bit3 of register 0x0010 must be set to “01” in order for this parameter to function.
Register	0x002B, 0x2A
Bit	Feature
Bit 15-13	Reserved
Bit 12-0	0x09C4: Baud rate 1200 0x04E2: Baud rate 2400 0x0271: Baud rate 4800 0x0139: Baud rate 9600 0x00D0: Baud rate 14400 0x009C: Baud rate 19200 0x004E: Baud rate 38400 0x0034: Baud rate 57600 0x001A: Baud rate 115200
Register	0x004A
Bit	Feature
Bit 7-4	Reserved
Bit 3-2	00: Decode unmirrored Data Matrix only 01: Decode mirrored Data Matrix only 10/11: Decode both
Bit 1	1: Decode Data Matrix starting with the character whose ASCII value is 129 0: Do not decode Data Matrix starting with the character whose ASCII value is 129
Bit 0	1: Decode Data Matrix with FNC1 0: Do not decode Data Matrix with FNC1

Register	0x004B		
Bit	Feature		
Bit 7-2	Reserved		
Bit 1-0	11: Decode rectangular Data Matrix	00: Do not decode rectangular Data Matrix	
Register	0x0060		
Bit	Feature		
Bit 7	Reserved		
Bit 6-5	Terminating Character Suffix: 00/11: CR (0x0D)01: CRLF (0x0D,0x0A)10: TAB (0x09)		
Bit 4	Reserved		
Bit 3	1: Caps Lock ON		0: Caps Lock OFF
Bit 2-1	00: Standard Keyboard 10/11: Function Key Mapping		01: Emulate ALT+Keypad
Bit 0	1: Enable terminating character suffix		0: Disable terminating character suffix
Register	0x006B		
Bit	Feature		
Bit 7-0	USB country keyboard types		
	00: U.S.	01: Belgium	02: Brazil
	03: Canada	04: Czech	05: Denmark
	06: Finland	07: France	08: Austria, Germany
	09: Greece	0A: Hungary	0B: Israel
	0C: Italy	0D: Latin America	0E: Netherland
	0F: Norway	10: Poland	11: Portugal
	12: Romania	13: Russia	15: Slovakia
	16: Spain	17: Sweden	18: Switzerland
	19: Turkey1	1A: Turkey2	1B: UK
	1C: Japan		

Register	<i>0x006F</i>		
Bit	Feature		
Bit 7-6	Inter-keystroke delay 00: No delay 01: Short delay (5ms) 10: Medium delay (10ms) 11: Long delay (15ms)		
Bit 5-4	Convert case 00: No case conversion 10: Convert All to Upper Case 11: Convert All to Lower Case		
Bit 3	Reserved		
Bit 2	1: Emulate numeric keypad 0: Do not emulate numeric keypad		
Bit 1-0	Reserved		
Register	<i>0x008A</i>		
Bit	Feature		
Bit 7-1	Reserved		
Bit 0	1: Visible Code ID (original+0x40) 0: Original Code ID		
Register	<i>0x0099</i>		
Bit	Feature		
Bit 7-4	Reserved		
Bit 3	1: Decode mirrored Micro QR 0: Do not decode mirrored Micro QR		
Bit 2	1: Enable Micro QR 0: Disable Micro QR		
Bit 1	1: Enable AIM ID prefix for QR 0: Disable AIM ID prefix for QR		
Bit 0	Reserved		

Chapter 10 System Settings

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

** Normal



W0C0000

OFF



W0C000C

Always ON

Notification

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

Good Read Beep



W040E04

** Good Read Beep On



W040E00

Good Read Beep Off

Good Read Beep Frequency/Duration



WFF09DA

Low Frequency



WFF094B

** Medium Frequency



WFF0925

High Frequency



WFF0A1F

40ms



WFF0A3E

** 80ms



WFF0A5D

120ms

Scan Mode

Sense Mode

IR trigger: The scanner activates a decode session every time when it detects a barcode presented to it. This feature is always enabled.

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



**** Light Trigger On**



Light Trigger Off

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.



WFFD980

Restore All Factory Defaults

Digit Barcodes

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





A



B



C



D



E



F

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

Chapter 11 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 115200bps, 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**

Chapter 12 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.

HID-POS



USB COM Port Emulation



USB HID-KBW



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

Standard Keyboard



**** Standard Keyboard**

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



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	.

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

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, Germany



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

Chapter 13 Symbologies

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.

Global Settings

Disable All Symbologies

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



WFFD982

Disable All Symbologies

Enable All Symbologies



WFFD981

Enable All Symbologies

Enable 1D Symbologies



Enable 1D Symbologies

Disable 1D Symbologies



Disable 1D Symbologies

Enable 2D Symbologies



Enable 2D Symbologies

Disable 2D Symbologies



Disable 2D Symbologies

Code 128

Restore Factory Defaults



WFFD990

Restore the Factory Defaults of Code 128

Enable/Disable Code 128



W011601

**** Enable Code 128**



W011600

Disable Code 128

UCC/EAN-128 (GS1-128)

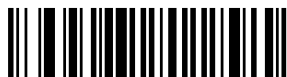
Restore Factory Defaults



WFFD991

Restore the Factory Defaults of UCC/EAN-128

Enable/Disable UCC/EAN-128



W011701

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



W011700

Disable UCC/EAN-128

AIM-128

Restore Factory Defaults



WFFD992

Restore the Factory Defaults of AIM-128

Enable/Disable AIM-128



W101610

**** Enable AIM-128**



W101600

Disable AIM-128

EAN-8

Restore Factory Defaults



WFFD994

Restore the Factory Defaults of EAN-8

Enable/Disable EAN-8



W011301

**** Enable EAN-8**



W011300

Disable EAN-8

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

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

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

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

EAN-13

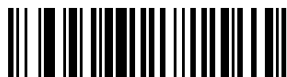
Restore Factory Defaults



WFFD995

Restore the Factory Defaults of EAN-13

Enable/Disable EAN-13



W011101

** Enable EAN-13



W011100

Disable EAN-13

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

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

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

ISSN

Restore Factory Defaults



WFFD996

Restore the Factory Defaults of ISSN

Enable/Disable ISSN



W401140

Enable ISSN



W401100

** Disable ISSN

ISBN

Restore Factory Defaults



WFFD997

Restore the Factory Defaults of ISBN

Enable/Disable ISBN



W011201

** Enable ISBN



W011200

Disable ISBN

Set ISBN Format



W041200

** ISBN-13



W041204

ISBN-10

UPC-E

Restore Factory Defaults



WFFD998

Restore the Factory Defaults of UPC-E

Enable/Disable UPC-E



W011501

** Enable UPC-E



W011500

Disable UPC-E

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

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.



Enable 2-Digit Add-On Code



** Disable 2-Digit Add-On Code

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.



Enable 5-Digit Add-On Code



** Disable 5-Digit Add-On Code

Transmit System Character



Transmit System Character "0"



** Do Not Transmit System Character "0"

UPC-E Extension

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

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



Enable UPC-E Extend



** Disable UPC-E Extend

UPC-A

Restore Factory Defaults



WFFD999

Restore the Factory Defaults of UPC-A

Enable/Disable UPC-A



W011401

** Enable UPC-A



W011400

Disable UPC-A

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

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.



Enable 2-Digit Add-On Code



** Disable 2-Digit Add-On Code

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

Transmit Preamble Character

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



W081408

System Character & Country Code



W081400

**** System Character**

Interleaved 2 of 5

Restore Factory Defaults



WFFD99A

Restore the Factory Defaults of Interleaved 2 of 5

Enable/Disable Interleaved 2 of 5



W011801

** Enable Interleaved 2 of 5



W011800

Disable Interleaved 2 of 5

Check Digit Verification

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

Disable: The 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

ITF-6

Restore Factory Defaults



WFFD99B

Restore the Factory Defaults of ITF-6

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

ITF-14

Restore Factory Defaults



WFFD99C

Restore the Factory Defaults of ITF-14

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

Matrix 2 of 5 (European Matrix 2 of 5)

Restore Factory Defaults



WFFD99F

Restore the Factory Defaults of Matrix 2 of 5

Enable/Disable Matrix 2 of 5



W011A01

** Enable Matrix 2 of 5



W011A00

Disable Matrix 2 of 5

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.



Do Not Transmit Check Digit after Verification



Transmit Check Digit after Verification

Industrial 25

Restore Factory Defaults



WFFD9A0

Restore the Factory Defaults of Industrial 25

Enable/Disable Industrial 25



W081908

**** Enable Industrial 25**



W081900

Disable Industrial 25

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

Standard 25

Restore Factory Defaults



WFFD9A1

Restore the Factory Defaults of Standard 25

Enable/Disable Standard 25



W101A10

**** Enable Standard 25**



W101A00

Disable Standard 25

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

Code 39

Restore Factory Defaults



WFFD9A2

Restore the Factory Defaults of Code 39

Enable/Disable Code 39



W011C01

**** Enable Code 39**



W011C00

Disable Code 39

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**

Enable/Disable Code 39 Full ASCII

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



**** Disable Code 39 Full ASCII**



Enable Code 39 Full ASCII

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

Codabar

Restore Factory Defaults



WFFD9A3

Restore the Factory Defaults of Codabar

Enable/Disable Codabar



W011E01

** Enable Codabar



W011E00

Disable Codabar

Check Digit Verification

Check digits are optional for Codabar 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 Codabar barcodes as is.

Do Not Transmit Check Digit after Verification: The scanner checks the integrity of all Codabar 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 Codabar 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.



Do Not Transmit Check Digit after Verification



Transmit Check Digit after Verification

Transmit Start/Stop Character



Do Not Transmit Start/Stop Character



** Transmit Start/Stop Character



** ABCD/ABCD as the Start/Stop Character



ABCD/TN*E as the Start/Stop Character



abcd/abcd as the Start/Stop Character



abcd/tn*e as the Start/Stop Character

Code 93

Restore Factory Defaults



WFFD9A4

Restore the Factory Defaults of Code 93

Enable/Disable Code 93



W081208

** Enable Code 93



W081200

Disable Code 93

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.



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



Transmit Check Digit after Verification

Code 11

Restore Factory Defaults



WFFD9A5

Restore the Factory Defaults of Code 11

Enable/Disable Code 11



W011D01

** Enable Code 11



W011D00

Disable Code 11

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

Plessey

Restore Factory Defaults



WFFD9A6

Restore the Factory Defaults of Plessey

Enable/Disable Plessey



W011F01

** Enable Plessey



W011F00

Disable Plessey

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

MSI-Plessey

Restore Factory Defaults



WFFD9A7

Restore the Factory Defaults of MSI-Plessey

Enable/Disable MSI-Plessey



W081F08

** Enable MSI-Plessey



W081F00

Disable MSI-Plessey

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

RSS-14

Restore Factory Defaults



WFFD9A8

Restore the Factory Defaults of RSS-14

Enable/Disable RSS-14



W011B01

** Enable RSS-14



W011B00

Disable RSS-14

Transmit Application Identifier “01”



W041B04

** Transmit Application Identifier “01”



W041B00

Do Not Transmit Application Identifier “01”

RSS-Limited

Restore Factory Defaults



WFFD9A9

Restore the Factory Defaults of RSS-Limited

Enable/Disable RSS-Limited



W081B08

** Enable RSS-Limited



W081B00

Disable RSS-Limited

Transmit Application Identifier “01”



W201B20

** Transmit Application Identifier “01”



W201B00

Do Not Transmit Application Identifier “01”

RSS-Expand

Restore Factory Defaults



WFFD9AA

Restore the Factory Defaults of RSS-Expand

Enable/Disable RSS-Expand



W401B40

** Enable RSS-Expand



W401B00

Disable RSS-Expand

PDF417

Restore Factory Defaults



WFFD9B0

Restore the Factory Defaults of PDF417

Enable/Disable PDF417



W010C01

** Enable PDF417



W010C00

Disable PDF417

Macro PDF417



W100C10

Enable Macro PDF417



W100C00

** Disable Macro PDF417

Data Matrix

Restore Factory Defaults



WFFD9B1

Restore the Factory Defaults of Data Matrix

Enable/Disable Data Matrix



W080C08

** Enable Data Matrix



W080C00

Disable Data Matrix

Enable/Disable Mirrored DM



W0C4A0C

Enable Mirrored DM



W0C4A00

** Disable Mirrored DM

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.



**** Decode Rectangular Barcodes**



Do Not Decode Rectangular Barcodes

QR Code

Restore Factory Defaults



WFFD9B2

Restore the Factory Defaults of QR Code

Enable/Disable QR Code



W800D80

** Enable QR Code



W800D00

Disable QR Code

Micro QR

This parameter is valid only when QR Code is enabled.



W049904

** Enable Micro QR



W049900

Disable Micro QR

Chapter 14 Prefix & Suffix

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 scanner 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
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

Symbology	AIM ID	Remark
Code 39	JA0	Transmit barcodes as is; Full ASCII disabled; no check digit verification
	JA1	One check digit, MOD 43; transmit check digit
	JA3	One check digit, MOD 43; do not transmit check digit
	JA4	Full ASCII enabled; no check digit verification
	JA5	Full ASCII enabled; MOD43; transmit check digit
	JA7	Full ASCII enabled; MOD43; do not transmit check digit
Codabar	JF0	Standard Codabar
	JF1	ABC Codabar
	JF2	Transmit check digit after verification
	JF4	Do not transmit check digit after verification
Code 93	JG0	Not specified
Code 11	JH0	One check digit, MOD11; transmit check digit
	JH1	Two check digits, MOD11/MOD11; transmit check digit
	JH3	Do not transmit check digit after verification
	JH8	Two check digits, MOD11/MOD9; transmit check digit
	JH9	No check digit verification
Plessey	JP0	Not specified
MSI-Plessey	JM0	One check digit, MOD10; transmit check digit
	JM1	One check digit, MOD10; do not transmit check digit
	JM7	Two check digits, MOD10 /MOD11; do not transmit check digit
	JM8	Two check digits, MOD10 /MOD11; transmit check digit
	JM9	No check digit verification
RSS-14 RSS-Limited RSS-Expand	Je0	Standard
	Je1	User-defined
	Je2	User-defined
	Je3	User-defined
PDF417	JL0	Comply with 1994 PDF417 specifications
Data Matrix	jd0	ECC 000 - 140
	jd1	ECC 200
	jd2	ECC 200; FNC1 is the 1st or 5th character after the start character

Symbology	AIM ID	Remark
	]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
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

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	0x01	A(0x41)
Code 128	0x02	B(0x42)
UCC/EAN 128	0x03	C(0x43)
EAN-8	0x04	D(0x44)
EAN-13	0x05	E(0x45)
UPC-E	0x06	F(0x46)
UPC-A	0x07	G(0x47)
Interleaved 2 of 5	0x08	H(0x48)
ITF-14	0x09	I(0x49)
ITF-6	0x0A	J(0x4A)
Code 39	0x0D	M(0x4D)
Codabar	0x0F	O(0x4F)
Standard 25	0x10	P(0x50)
Code 93	0x11	Q(0x51)
AIM 128	0x15	U(0x55)
MSI-Plessey	0x16	V(0x56)
ISBN	0x17	W(0x57)
Industrial 25	0x18	X(0x58)
Matrix 2 of 5	0x19	Y(0x59)
RSS-14	0x1A	Z(0x5A)
RSS-Limited	0x1B	[(0x5B)
RSS-Expand	0x1C	\(0x5C)
Code 11	0x1D	](0x5D)
Plessey	0x1E	^(0x5E)
ISSN	0x1F	_(0x5F)
PDF417	0x20	`(0x60)
QR Code	0x21	a(0x61)
Data Matrix	0x23	c(0x63)

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

Chapter 15 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.	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.



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