
NT-91 User Manual

Release v1.0.0

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1 System Settings

1.1 Default Parameter Settings

Scan the following setting barcodes to restore the factory default configuration, or switch to default configuration 1-5.



Note

The factory default configuration of the scan engine depends on the actual factory configuration.

Factory Default Configuration



Factory Default Configuration

Default Configuration 1-5

Configuration	Application Notes
Default Configuration 1	Mainly for POS parameter configuration; the communication mode is serial, the trigger mode is key hold, and the suffix is disabled.
Default Configuration 2	Mainly for self-service parameter configuration; the communication mode is USB KBW, the trigger mode is auto sensing, and the suffix is carriage return + line feed (<code>\r\n</code>).
Default Configuration 3	Mainly for scanner parameter configuration; the communication mode is USB KBW, the trigger mode is key hold, and the suffix is carriage return (<code>\r</code>).
Default Configuration 4	The communication mode is serial 9600, the trigger mode is key hold, and the suffix is carriage return + line feed (<code>\r\n</code>); for 2D barcodes, only QR and DM symbologies are enabled by default.
Default Configuration 5	Currently not enabled.



Default Configuration 1



Default Configuration 2



Default Configuration 3



Default Configuration 4



Default Configuration 5

1.2 Output Product Information



Output Product Information

1.3 Power Mode

This parameter determines the power mode of the engine.

In low power mode, the scan engine automatically enters sleep after being idle for 800 ms (and can be awakened by a wake-up command). In continuous power mode, the scan engine stays awake after each decode attempt.



Continuous Power



Low Power Mode

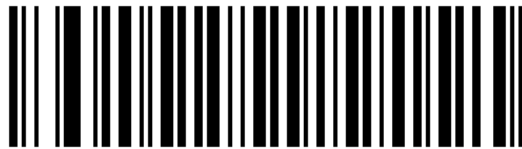
1.4 Beeper

Beeper Volume

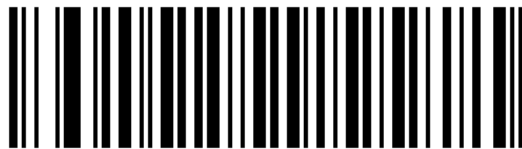
Scan the corresponding barcode below to set the beeper volume.



Low



Medium



* High



mute

Beeper Type



* Passive Buzzer

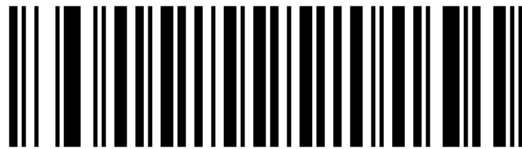


Beeper Type

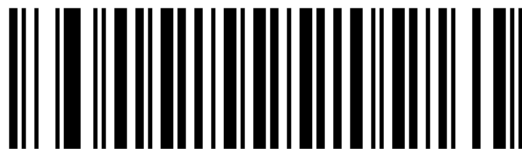
1.5 Successful Decode Beep

Active Buzzer

Scan the following barcode to set the success beep that sounds when the scan engine decodes successfully.



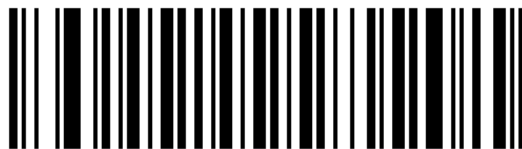
* Successful Decode Beep



Successful Decode Beep

1.6 mute

After mute is enabled, all prompt tones are turned off; after mute is disabled, the prompt tones are restored.



* Disable



Enable

1.7 Power-on Beep



Disable



Enable

1.8 Setting Barcode Parameter Beep



Disable



* Enable

1.9 Event Reporting

This manual does not include the SSI command table. For event-report instructions, refer to the `EVENT` section in the external SSI Commands documentation.

Power-On Event

Power-on event command: 05 F6 00 00 01 FF 04



* Disable

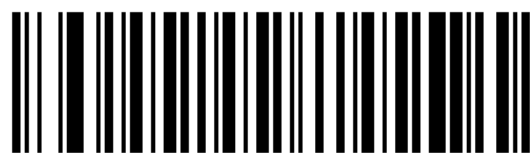


Enable

Trigger Decode Event

When the scan engine is triggered to decode, indication can be provided through commands or GPIO pins; the GPIO pin indication remains low until decoding ends.

Trigger decode event command: 05 F6 00 00 02 FF 03



* Disable



Enable Event



Enable Pin Event



Enable Event and GPIO Pin

1.10 Heartbeat Control

Heartbeat control supports the following operating modes.

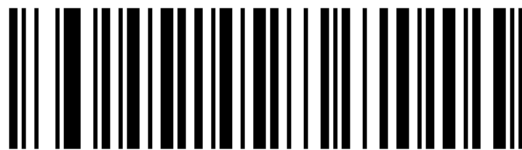
Parame- ter Value	Description
00	Disable the heartbeat function.
01	Send the heartbeat packet 04 50 00 00 FF AC every 9 seconds without requiring ACK.
02	Send the heartbeat packet 04 51 00 00 FF AB every 9 seconds. If ACK 04 D0 04 00 FF 28 is not received within 3 seconds, the device restarts.



* Disable



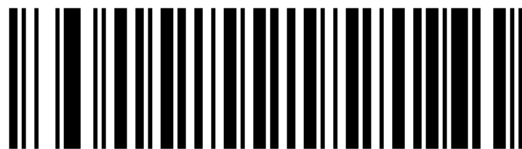
Heartbeat Without ACK



Heartbeat With ACK

1.11 Scan Configuration Barcodes

When disabled, normal setting barcodes are not decoded, but “Set Default Parameters” can still be decoded. Re-enable it by scanning “Enable Scan Configuration Barcodes”, setting default parameters, or using a serial command.



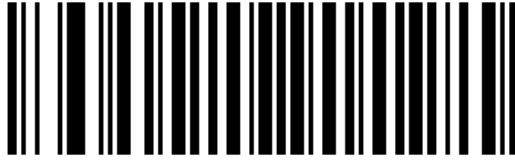
* Enable Scan Configuration Barcodes



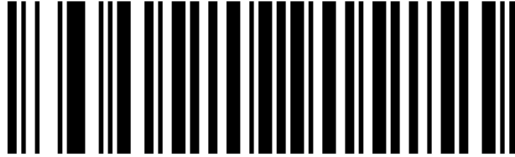
Disable Scan Configuration Barcodes

1.12 Transmit Setting Barcodes

When enabled, the device outputs the data value of the setting barcode while the barcode is scanned. Disabled by default.



Enable Transmit Setting Barcodes



* Disable Transmit Setting Barcodes

1.13 Setting Barcode Password Mode

Setting barcode password mode protects configuration operations with a lock. When enabled, you must first enter the correct setting barcode password to unlock the device before scanning normal setting barcodes. After one correct password entry, the device remains unlocked until the next power cycle.

Note

The password is 2 digits, ranging from 00 to 99.

Enable Setting Barcode Password Mode

When the device switches from disabled to enabled setting barcode password mode, password verification is required first. Password verification is also required before disabling this feature.



* Disable



Enable

Enter Setting Barcode Password

After scanning the following setting barcode, scan a 2-digit numeric setting barcode to enter the password; pad with leading 0 if fewer than 2 digits are entered.

Password Range

00–99



Enter Setting Barcode Password

i Example

To enter password 68: scan this setting barcode, then scan the numeric setting barcodes 6 and 8 in order.

To cancel an incorrect entry, scan *Cancel Barcode*.

Change Setting Barcode Password

The password can be changed only when setting barcode password mode is enabled and password verification has succeeded (the device is unlocked).



Change Setting Barcode Password

i Example

To set the new password to 96: scan this setting barcode, then scan the numeric setting barcodes 9 and 6 in order.

To cancel an incorrect entry, scan *Cancel Barcode*.

Log Out Password

After entering the correct password in password mode, scan this setting barcode to clear the current unlocked state. Password entry is required again for subsequent configuration operations.

Parameter number

0xF2 0xA9



Log Out Password

2 Device function settings

2.1 Indicator Function

Set which function the indicator represents.



* Decode Indication

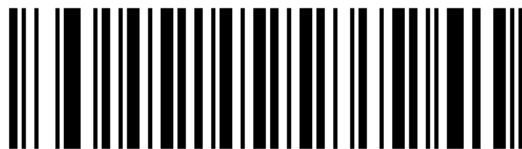


No Success Beep on Decode

2.2 Decode Success Indicator

Power Indication

The decode indicator stays on for a specified time after a successful decode, provided that the indicator is used for decode indication.



Disable



Power Indication

2.3 Decode Indicator Control

The decode indicator supports the following operating modes.

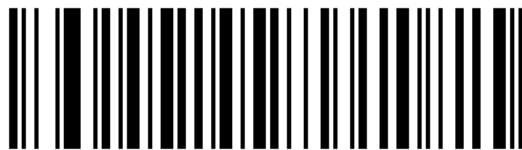
Mode	Indicator Logic
Mode 0	Off at power-on, on after a successful decode, and off again after the specified time.
Mode 1	On at power-on, off after a successful decode, and on again after the specified time; it also stays on in sleep mode.
Mode 2	On at power-on, off when decoding is triggered, on when decoding succeeds, and off again after the specified time.
Mode 3	The decode indicator is used as an illumination lamp. It turns on during decoding and turns off when decoding ends.



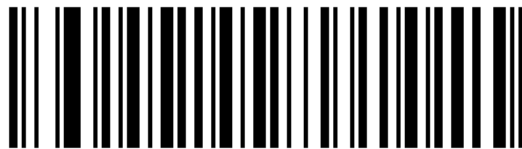
* Mode 0



Mode 1



Mode 2



Mode 3

2.4 Illumination Control



* On During Decode



Always On



Always Off

2.5 Aiming LED

Supported on 2D products

Aiming LED Control



* On During Decode

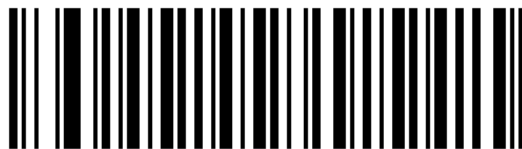


Always On



Always Off

Whether the aiming LED blinks



* Blink



Do Not Blink

2.6 URL blocking



* Disable



Enable

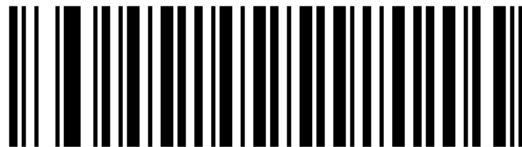
2.7 Invoice function

Turn on the invoice function and automatically turn off Code 128. If you need to read Code 128, you can turn on Code 128 again.

Automatic identification and output of VAT invoices



* Disable



Enable

Invoice type



* Special invoice



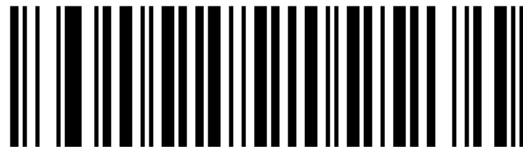
Ordinary invoice

3 Trigger Settings

3.1 Trigger Mode

Trigger Hold (Level)

Press the trigger button to start decoding, and release it to stop decoding. This decode cycle also ends after a successful decode or when the single-scan time times out.



* Key hold (level)

One-Shot Trigger (Pulse)

Decoding starts after a trigger-level change is detected and maintained for about 30 ms (the exact time depends on the product). Decoding ends when another trigger-level change is detected. This decode cycle also ends after a successful decode or when the single-scan time times out.



One-Shot Trigger (Pulse)

Continuous Mode

The scan engine operates continuously. After each successful decode or single-scan timeout, the current decode cycle ends and the next decode cycle starts automatically when the continuous decode interval is reached.



Continuous Mode

Auto-Sensing Mode

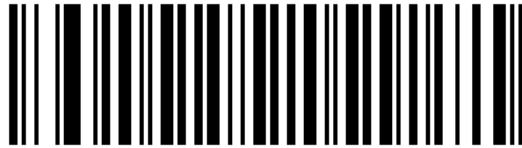
The scan engine monitors ambient brightness and starts decoding when the brightness changes. After a successful decode or a single-scan timeout, the current decode cycle ends and ambient-brightness monitoring resumes.



Auto-Sensing Mode

Host Mode

Decoding can be triggered by host commands, and it can also be stopped proactively by host commands. This decode cycle also ends after a successful decode or when the single-scan time times out.



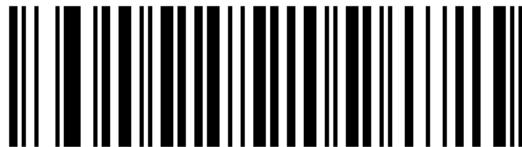
Host Mode

Note

Trigger-button activation (level and pulse) remains effective in other modes.

Trigger Continuous Mode

Press the trigger button to enter continuous decoding, and press it again to exit continuous decoding. The interval between the two button presses is one decode cycle, which differs from a single scan.



Trigger Continuous Mode

Trigger Auto-Sensing Mode

When the trigger button is held down, the device enters auto-sensing mode; release the button to stop scanning. The aimer turns on while pressed and turns off after release.



Trigger Auto-Sensing Mode

Single-Scan Time (Scan Duration)

Set the maximum duration of a single scan. After scanning this setup code, scan three numeric setup codes to enter the time coefficient. If the value has fewer than three digits, pad it with leading 0.

Default

3000 ms

Unit

100 ms

Range

500–25500 ms



Single-Scan Time

Example

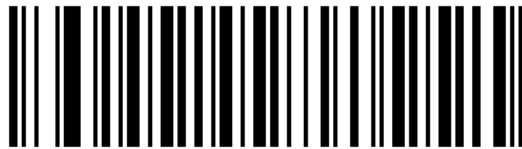
To set 500 ms, scan this setup code, then scan numeric setup codes 0, 0, and 5 in sequence.

To set 10500 ms, scan this setup code, then scan numeric setup codes 1, 0, and 5 in sequence.

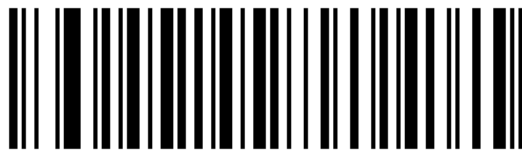
To change the selection or cancel an incorrect setting, scan *Cancel Barcode*.

Single Scan Time (Scan Duration) Quick Setup

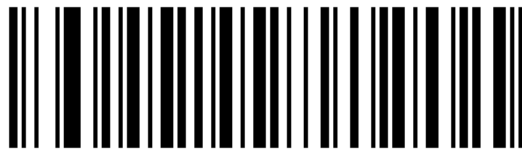
To select a commonly used duration directly, scan one of the quick setup barcodes below.



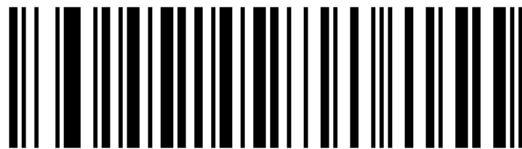
Unlimited



3 s



5 s



10 s



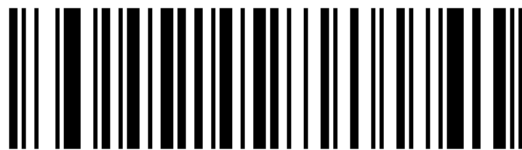
15 s



20 s



30 s



60 s

Continuous Decode Interval

In Continuous Mode, this parameter defines the wait time between two scan attempts. After the configured interval elapses, the next scan starts automatically whether the previous attempt succeeded or failed.

After scanning this setup code, scan two numeric setup codes to enter the time coefficient. If the value has fewer than two digits, pad it with a leading 0.

Default

500 ms

Unit

100 ms

Range

0–9900 ms



Continuous Decode Interval

Example

To set 500 ms, scan this setup code, then scan numeric setup codes 0 and 5 in sequence.

To change the selection or cancel an incorrect setting, scan *Cancel Barcode*.

Duplicate-Barcode Delay

To prevent the same barcode from being decoded repeatedly in Continuous Mode or Auto-sense Mode, you can require the decode engine to wait for the configured delay before reading the same barcode again.

After scanning this setup code, scan two numeric setup codes to enter the time coefficient. If the value has fewer than two digits, pad it with a leading 0.

Default

500 ms

Unit

100 ms

Range

0–9900 ms



Duplicate-Barcode Delay

Example

To set 200 ms, scan this setup code, then scan numeric setup codes 0 and 2 in sequence.

To set 1500 ms, scan this setup code, then scan numeric setup codes 1 and 5 in sequence.

To change the selection or cancel an incorrect setting, scan *Cancel Barcode*.

Quick Setup for Duplicate-Barcode Delay

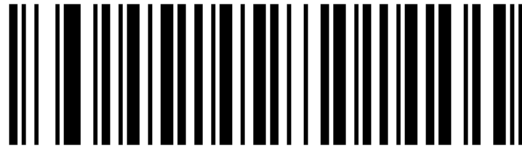
To select a commonly used same-code delay directly, scan one of the quick setup barcodes below. Six preset levels are available: 0 s, 1 s, 3 s, 5 s, 7 s, and unlimited delay.



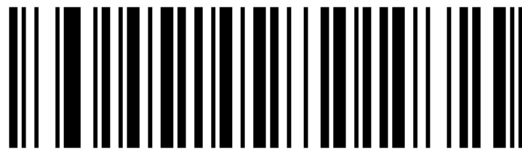
No Delay



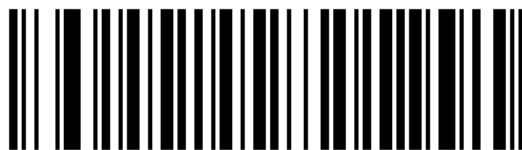
1 s Delay



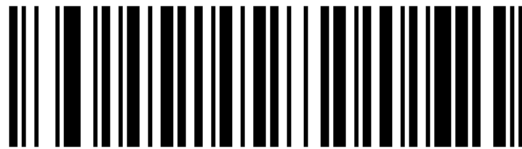
3 s Delay



5 s Delay



7 s Delay



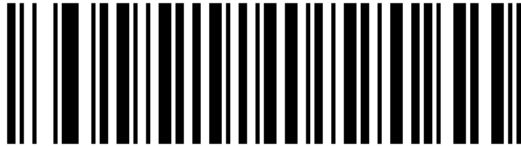
Unlimited Delay (Disable Same-Code Reads)

Continuous Decode Interval

This feature applies to trigger hold (level), one-shot trigger (pulse), and host mode. In Continue Scanning mode, the continuous decode interval and duplicate-barcode delay still remain effective.



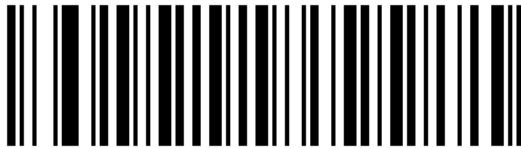
* Disable



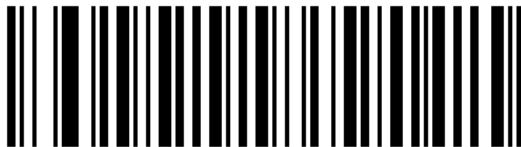
Enable

Do Not Output Duplicate Barcodes Within One Decode Cycle

When enabled, the same barcode is output only once within a single decode cycle, and up to 20 different decode results can be cached. This feature applies to modes such as continuous trigger and Continue Scanning.



* Disable



Enable

Disable Passive Trigger Scanning

When enabled, trigger-button scanning and host-triggered scanning are disabled. Disabled by default.



* Disable



Enable

Sensitivity Level

Parameter Number

0xF2 0x04

Default

High Sensitivity

Level	Parameter Value
Very High Sensitivity	0
High Sensitivity	1
Medium Sensitivity	8
Low Sensitivity	15



Very High Sensitivity



* High Sensitivity



Medium Sensitivity



Low Sensitivity

Custom Sensitivity

Set the sensitivity value for auto-sensing trigger. The smaller the value, the higher the sensitivity.

Default

01

Range

00-15



Custom Sensitivity

i Example

To set the sensitivity to 2: scan this setting barcode, then scan the numeric setting barcodes 0 and 2 in order.

Stable Detection Time

Set how long the environment must remain stable before auto-sensing mode enters detection. After scanning the setting barcode, scan a 2-digit numeric setting barcode to enter the time factor; pad with leading 0 if fewer than 2 digits are entered.

Default

500 ms

Unit

100 ms

Range

0-9900 ms



Stable Detection Time

i Example

To set 200 ms, scan this setup code, then scan numeric setup codes 0 and 2 in sequence.

To set 1500 ms, scan this setup code, then scan numeric setup codes 1 and 5 in sequence.

3.2 Send “No Read” Message

Before the trigger button is released, if the barcode cannot be decoded within the timeout period, a “No Read” message can be sent (the scan engine sends the characters NR). Any available prefix or suffix can be appended to this message.



Enable “No Read”



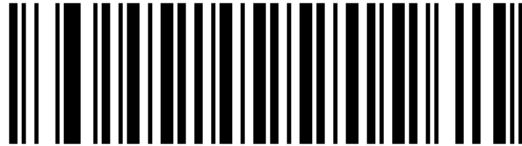
Disable “No Read” Message

4 Interface Settings

4.1 Communication Mode

1D modules do not currently support USB KBW or USB Serial.

Single Output Mode



* Serial, UART, TTL, RS232



USB KBW



USB Serial



Wiegand



RS485



PS2



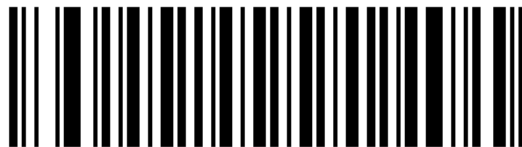
TTDATA



HID POS

Combined USB and Serial Output

model	Output Description
AUTO_UK	AUTO_UK mode: USB and serial output at the same time, and USB uses KBW.
AUTO_UV	AUTO_UV mode: USB and serial output at the same time, and USB uses USB Serial.
AUTO UK	USB and serial output at the same time, and USB uses KBW.
AUTO UV	USB and serial output at the same time, and USB uses USB Serial.
AUTO UT	USB and serial output at the same time, and USB uses TTDATA.
AUTO HU	USB and serial output at the same time, and USB uses HID POS.



AUTO UK



AUTO UV



TTDATA + Serial



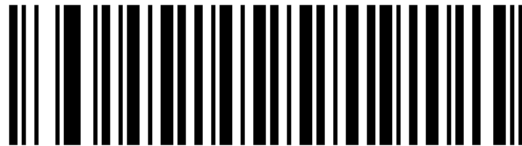
AUTO HU (HID POS + Serial)

Combined USB and Wiegand/RS485 Output

model	Output Description
AUTO UW	USB and Wiegand output at the same time, and USB uses USB Serial.
AUTO UR	USB and RS485 output at the same time, and USB uses USB Serial.
AUTO TW	USB and Wiegand output at the same time, and USB uses TTDATA.
AUTO TR	USB and RS485 output at the same time, and USB uses TTDATA.
AUTO KW	USB and Wiegand output at the same time, and USB uses KBW.
AUTO KR	USB and RS485 output at the same time, and USB uses KBW.
AUTO HW	USB and Wiegand output at the same time, and USB uses HID POS.
AUTO HR	USB and RS485 output at the same time, and USB uses HID POS.



AUTO UW



AUTO UR



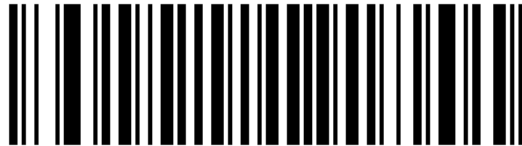
AUTO KW (KBW + Wiegand)



AUTO KR (KBW + RS485)



AUTO HW (HID POS + Wiegand)



AUTO HR (HID POS + RS485)

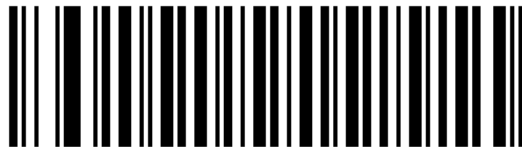
4.2 Serial Parameters

Baud Rate

Baud rate is the number of bits transmitted per second. The baud rate setting of the scan engine should match the data rate setting of the host device. If they do not match, the host may not receive the data or the data may be garbled.



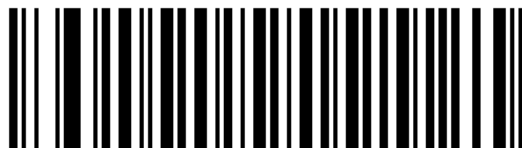
Baud Rate 1200



Baud Rate 2400



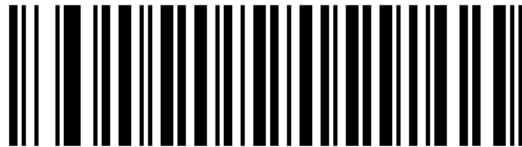
Baud Rate 4800



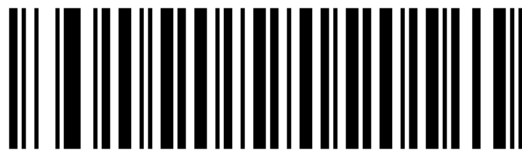
* Baud Rate 9600



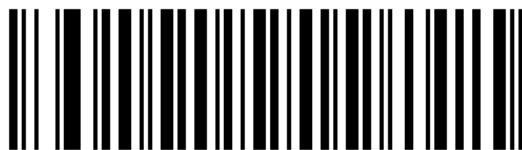
Baud Rate 19,200



Baud Rate 38,400



Baud Rate 57600



Baud Rate 115200

Data Bits

Data bits: this parameter defines the number of actual data bits used in communication.



7 Data Bits



* 8 Data Bits

Parity Bit

A parity bit is the most significant bit of each ASCII code character. Select the parity type according to host requirements. If odd parity is selected, the parity bit is set to 0 or 1 according to the data to ensure an odd number of 1 bits in the character.

If even parity is selected, the parity bit is set to 0 or 1 according to the data to ensure an even number of 1 bits in the character.

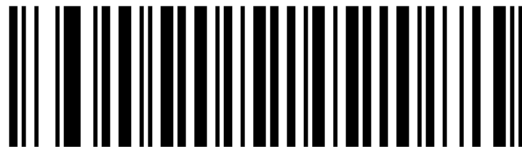


Odd



Even

Select MARK parity, where the parity bit is always 1.



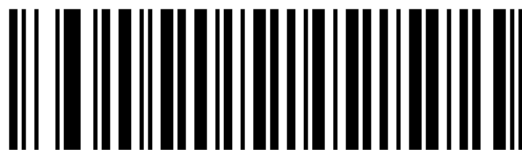
Mark

Select SPACE parity, where the parity bit is always 0.



Space

If parity is not required, select None.



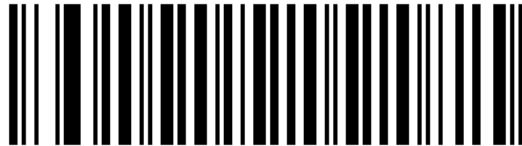
* None

Stop Bit Selection

At the end of each transmitted character, the stop bit (S) marks the end of that character and prepares the receiving device for the next character in the serial data stream. Set the number of stop bits (one or two) to match the host device requirements.



* One Stop Bit



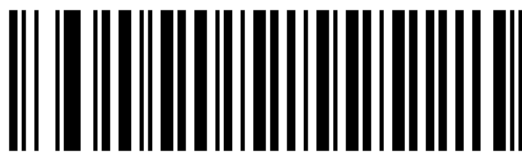
Two Stop Bits

Software Handshaking

This parameter provides data-transmission control in addition to hardware handshaking. Hardware handshaking is always enabled and cannot be disabled by the user.

Option	Description
Disable ACK/NAK Handshaking	The scan engine neither generates nor requires ACK/NAK handshaking packets.
Enable ACK/NAK Handshaking	After sending data, the scan engine expects an ACK or NAK response from the host; the scan engine can also send ACK or NAK messages to the host.

When enabled, the scan engine waits for the host serial response until the configured timeout expires. If no ACK or NAK is received within that time, the scan engine retransmits the data up to two times before discarding it and reporting a transmission error.



Disable ACK/NAK Handshaking



* Enable ACK/NAK

Host Serial Response Timeout

This parameter specifies how long the scan engine waits for a host response before retransmitting or timing out on ACK/NAK handling. If the scan engine needs to send data but the host has not yet allowed transmission, it also waits according to this timeout.

Default

2000 ms

Unit

100 ms

Range

100–9900 ms



Host Serial Response Timeout

i Example

To set 3000 ms: scan this setting barcode, then scan the numeric setting barcodes 0 and 3 in order.

To set 9900 ms: scan this setting barcode, then scan the numeric setting barcodes 9 and 9 in order.

4.3 Wiegand

Wiegand Protocol Type



* AUTO



WG26



WG34



WG66



Custom Wiegand Transmission 1



Custom Wiegand Transmission 2



WG64

Wiegand 26 Output Mode



Wiegand 26 Output Mode



* 3+5

Raw Data

Wiegand Output Interval Setup

Scan a 2-digit numeric setting barcode according to the desired time to enter the time factor; pad with leading 0 if fewer than 2 digits are entered.

Default

800 us

Unit

100 us

Range

100–1000 us



Wiegand Output Interval

i Example

To set 100 μ s: the factor is 01; scan the numeric setting barcodes 0 and 1.

To set 1000 μ s: the factor is 10; scan the numeric setting barcodes 1 and 0.

4.4 RS485 Network Function



* Disable



Enable

Change RS485 Device Slave Address

Used for quickly setting the RS485 slave address to 0001.

For other addresses, generate a setting barcode using ^380811xxxx, where xxxx represents the 4-digit slave address value.



Slave Address 0001

RS485 Network Decoded Data Format

When disabled, decoded data is sent directly in the format add + data. When enabled, the RS485 network packet format is used. When this function is disabled, the packet format must remain Raw Data.



* Disable

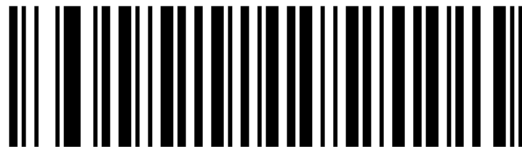


Enable

RS485 Network Heartbeat Toggle



Disable



* Enable

Save RS485 Network Decoded Data to Buffer



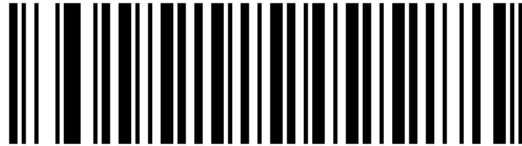
* Disable



Enable

4.5 Modbus RTU Network Function

Modbus RTU Function Toggle

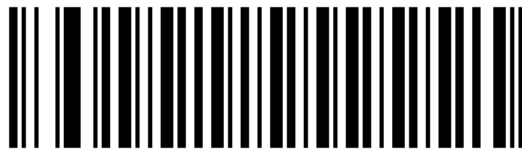


* Disable

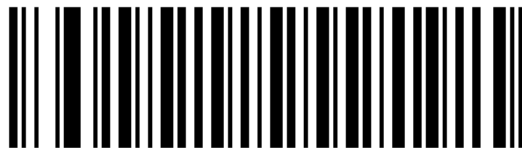


Enable

Barcode Buffer Toggle



* Direct Output (Modbus RTU Format)



Buffer

Slave Address Setup

Important

The factory-default slave address is 0x00. It must be configured to another address (1–255) before use.

After scanning the “Set Slave Address” setting barcode, scan a 3-digit numeric setting barcode to enter the decimal slave address.

Default

0x00

Range

1–255

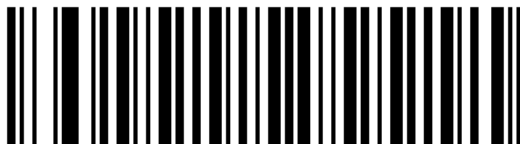


Set Slave Address

Example

To set the slave address to 0x0A (decimal 10): scan this setting barcode, then scan the numeric setting barcodes 0, 1, and 0 in order.

Quick Slave Address Setup



* Address 0x00



Address 0x01



Address 0x02



Address 0x03



Address 0xAA



Address 0xBB

Note

The factory-default slave address is 0x00 and must be configured to 1–255 before use.

4.6 USB type

For USB type, 0 indicates USB 1.1 (full speed) and 1 indicates USB 2.0 (high speed). The default is USB 1.1.



* USB 1.1 (Full Speed)

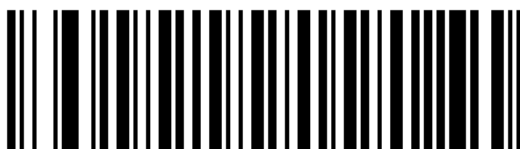


USB 2.0 (High Speed)

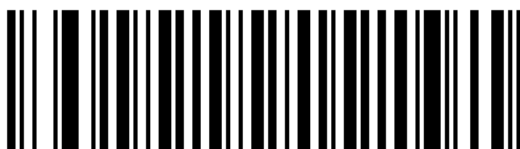
5 Keyboard Settings

5.1 Keyboard

Country/Language Keyboard Layout Selection



* US Keyboard



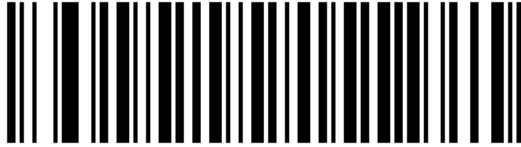
Belgium



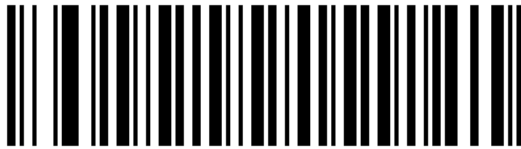
Brazil (ABNT2)



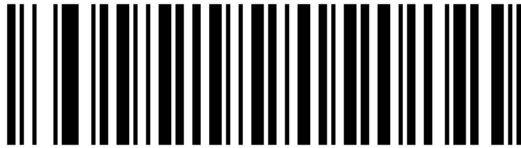
Denmark



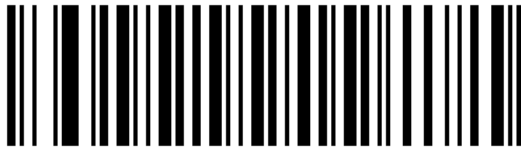
Finland



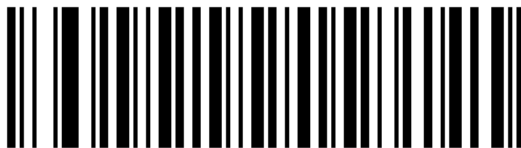
France



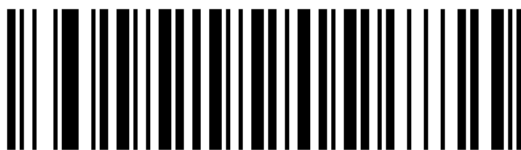
Austria / Germany



Greece



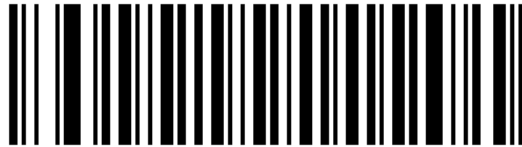
Hungary



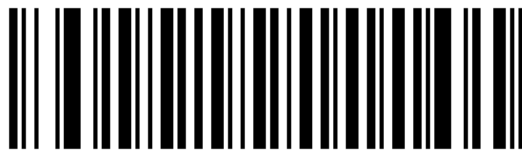
Italy



Netherlands



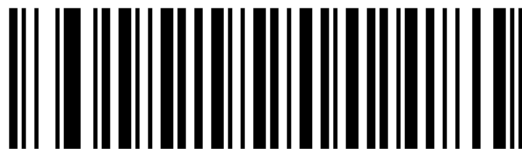
Norway



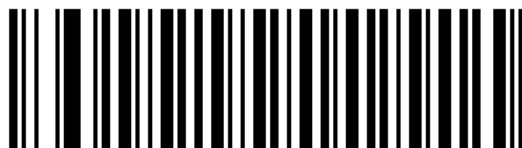
Poland (214)



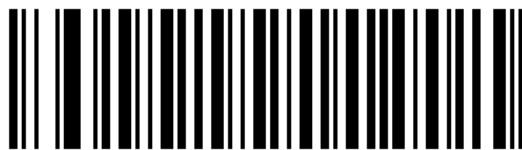
Portugal



Romania (Standard)



Russia



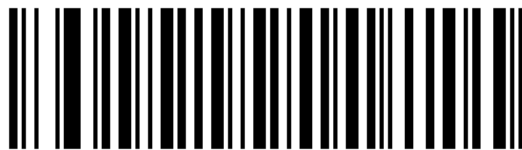
Slovakia



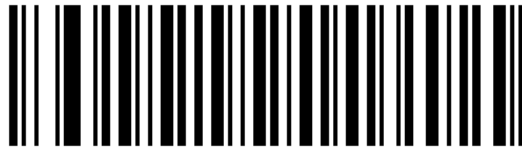
Sweden



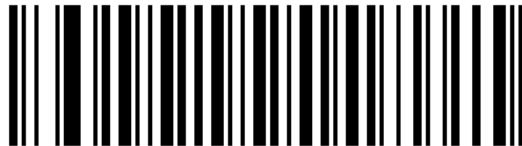
Turkey_F



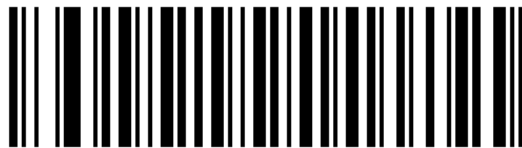
Turkey_Q



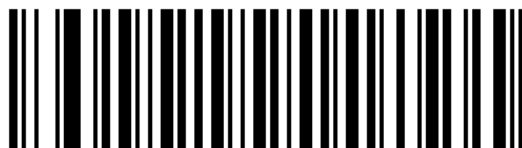
United Kingdom



Japan



Thai Keyboard Kedmanee



Ukraine

This keyboard layout (Arabic_101) supports: Saudi Arabia, United Arab Emirates, Oman, Egypt, Bahrain, Qatar, Kuwait, Lebanon, Libya, Syria, Yemen, Iraq, and Jordan.



Arabic_101



Croatia



Korea



Bulgaria



Czech Republic

Note

Some keyboard layouts require the WIN plug-in to be installed.

Note

In principle, “Multilingual” requires the output character set to be set to UTF-8. The setting barcode below is used for the multilingual / Vietnamese keyboard layout.



Multilingual / Vietnamese

Keyboard Output Character Interval

Set the interval between keyboard output characters. After scanning the setting barcode, scan the 3-digit numeric setting barcode to enter the time factor.

Default

5 ms

Unit

5 ms

Range

0–1000 ms



Keyboard Output Character Interval

Example

To set the output interval to 100 ms: scan this setting barcode, then scan the numeric setting barcodes 0, 2, and 0 in order.

Keyboard Output Interval Quick Setting



0 ms



5 ms



10 ms



50 ms

Forced Letter Case Conversion for Keyboard Output



* Normal Letter Case



Convert All Letters to Uppercase



Convert All Letters to Lowercase



Invert Letter Case

Keyboard Type



* Standard Keyboard



Virtual Keyboard



Disable



* Enable

ASCII Control Character Output Method Selection

Select the output method for control characters in the ASCII range (0x00-0x20).

(0) Output function keys: control characters are used as custom function keys. See *Character Reference Table* for details.

(1) Output Ctrl key combinations: control characters are output as Ctrl key combinations. See *Character Reference Table* for details.

(2) Output control characters by ALT method: in Chinese environments, full control character output is supported. Refer to the standard ASCII table for details.

(3) Output Enter and DownArrow: other control characters are masked, and only the following are output: 0x07 outputs Enter, 0x0A outputs DownArrow, and 0x0D

outputs Enter.

(4) Output Ctrl key combinations, but exclude keys already present on the keyboard: Enter.



Output Function Keys



Output Ctrl Key Combinations



Output Control Characters by ALT Method



Output Enter and DownArrow



Output CTRL+ key combinations, excluding keys already present on the keyboard

6 Data Editing

6.1 Decoded Data Packet Format

This parameter selects whether decoded data is transmitted in raw (unwrapped) format or in the packet format defined by the serial protocol. If raw format is selected, ACK/NAK handshaking cannot be used for decoded data.



* Send Raw Decoded Data



Send Packetized Decoded Data

6.2 Transport code ID characters

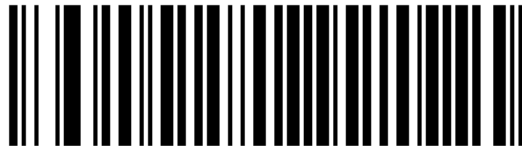
Parameter number

0x2D

Default

None

Code ID characters identify the barcode type. When the device may decode multiple barcode types, Code ID or AIM ID can be inserted between the prefix characters and the decoded data. See [Code ID](#) for Code ID characters and [AIM code identifier](#) for AIM ID characters.



Code ID



AIM ID



* None

6.3 Terminator settings

The end character is a character format added after the decoded data: decoded data + end character.



* Disable



Carriage return and line feed CR LF



Carriage Return CR



TAB



Enter Enter Enter CR CR



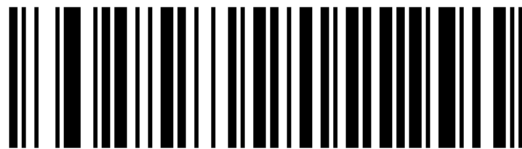
Carriage return and line feed Carriage return and line feed CR LF CR LF

6.4 Prefix/Suffix

Prefix/Suffix Values

Prefixes and suffixes can be appended to decoded data. To set a character value, look up the ASCII value in *Character Reference Table* and scan the corresponding 4-digit numeric setting barcode. Numeric setting barcodes are listed in *Numeric Setup Codes*.

To change the selection or cancel an incorrect entry, scan *Cancel Barcode*. When setting prefix/suffix values through serial commands, refer to the corresponding serial command description.



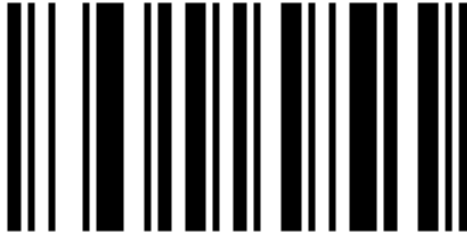
Prefix



Suffix 1



Suffix 2



Clear Data Format

Note

To make prefix/suffix values take effect, the corresponding data transmission format must be set.

Continuous Multiple Prefix/Suffix Setup Mode

Continuous setup mode is used to configure multiple prefixes or suffixes at one time. Set the prefix/suffix values first, then set the data transmission format.

Continuous Multiple Prefix Setup

By default, 1 prefix is supported, with a maximum of 10 prefixes. After scanning the corresponding setting barcode to enter continuous setup mode, scan the 4-digit numeric setting barcode for each prefix character according to the character table. The process ends automatically after 10 prefixes, or you can scan “Finish Continuous Prefix/Suffix Setup” to complete it earlier.

Note

Multiple prefixes take effect only with the “Multiple Prefixes + Data” or “Multiple Prefixes + Data + Multiple Suffixes” data transmission format.



Continuous Multiple Prefix Setup



Quick multiple-prefix example: AB (ASCII values: 0x41 and 0x42)

Continuous Multiple Suffix Setup

By default, 2 suffixes are supported, with a maximum of 10 suffixes. After scanning the corresponding setting barcode to enter continuous setup mode, scan the 4-digit numeric setting barcode for each suffix character according to the character table. The process ends automatically after 10 suffixes, or you can scan “Finish Continuous Prefix/Suffix Setup” to complete it earlier.

Note

Multiple suffixes take effect only with the “Data + Multiple Suffixes” or “Multiple Prefixes + Data + Multiple Suffixes” data transmission format.



Continuous Multiple Suffix Setup



Quick multiple-suffix example: AB (ASCII values: 0x41 and 0x42)

Finish or Exit Setup

Scan “Finish Continuous Multiple Prefix/Suffix Setup” or “Exit Prefix/Suffix Setup” to save the currently configured prefixes or suffixes and exit continuous setup mode.



Finish Continuous Multiple Prefix/Suffix Setup



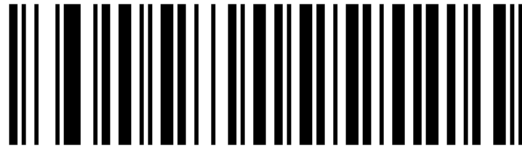
Exit Prefix/Suffix Setup

Data Transmission Format

Scan the corresponding barcodes below to set the desired data transmission format. Each time a prefix or suffix is configured, scan the corresponding data transmission format again to make that prefix or suffix take effect. For example, if the original format is “Data + Suffix 1”, after setting a prefix you must scan “Prefix + Data” or “Prefix + Data + Suffix” to enable the prefix.



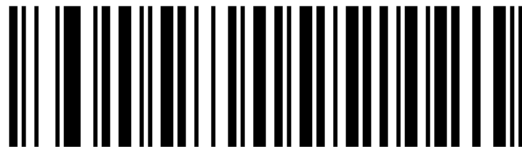
* Raw Data



Data + Suffix 1



Data + Suffix 2



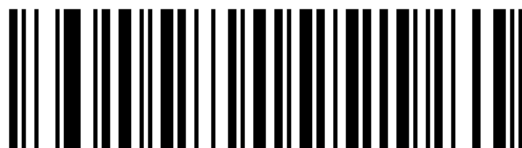
Data + Suffix 1 + Suffix 2



Prefix + Data



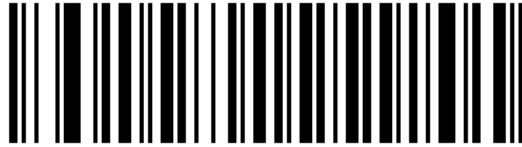
Prefix + Data + Suffix 1



Prefix + Data + Suffix 2



Prefix + Data + Suffix 1 + Suffix 2



Data + Multiple Suffixes



Multiple Prefixes + Data

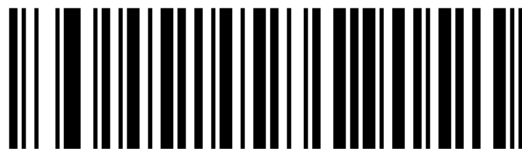


Multiple Prefixes + Data + Multiple Suffixes

STX and ETX Settings



* Disable



STX (Prefix)



ETX (Suffix 1)

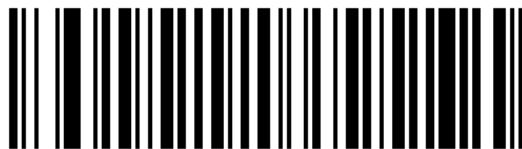


STX (Prefix) + ETX (Suffix 1)

Suffix Modifier-Key Function

This feature applies when the communication mode is USB KBW. You can set one or more modifier-key functions. For example, to use Ctrl+Shift, enable both the Suffix Ctrl modifier-key function and the Suffix Shift modifier-key function.

Suffix Alt Modifier-Key Function



* Disable



Enable

Suffix Ctrl Modifier-Key Function



* Disable



Enable

Suffix Shift Modifier-Key Function



* Disable



Enable

Suffixes and terminators are not affected by the ASCII control-character output mode.



* Disable



Enable

6.5 Set Prefix/Suffix by Barcode Type

Prefixes and suffixes can be set or cleared separately for a specified barcode type. To configure them, first scan the function setting barcode, then enter the barcode type index and the character values to be set.

Set Prefix

1. Scan the “Set Prefix by Barcode Type” setting barcode.
2. According to the barcode type index and *Character Reference Table*, scan the corresponding numeric setting barcodes. For example, for the QR Code type index $0xF1$, scan 1, 2, 4, and 1.
3. Scan the prefix character to be set. For example, if the prefix is the digit 1, scan 1049 (0×31).
4. Scan “Exit Prefix/Suffix Setup” to finish the configuration.



Set Prefix by Barcode Type

Set Suffix

The steps for setting a suffix are the same as for setting a prefix: scan the following setting barcode first, then enter the barcode type index and suffix character values.



Set Suffix by Barcode Type

Clear Prefix/Suffix

To clear the prefix or suffix for a specified barcode type, first scan the corresponding clear setting barcode, then enter the barcode type index. For QR Code, for example, after entering the numeric setting barcodes corresponding to 0xF1, the QR Code prefix information is cleared.

Note

To clear prefixes for all barcode types, scan 1, 2, 5, and 5 (0xFF).



Clear Prefix by Barcode Type



Clear Suffix by Barcode Type

Prefix/Suffix Toggle

Scan the barcodes below to set the desired data transmission format.



* No Prefix or Suffix (Raw Data)



Add Prefix (Prefix + Data)



Add Suffix (Data + Suffix)



Add Prefix and Suffix (Prefix + Data + Suffix)

6.6 Custom Barcode Data Hiding

Hide Leading Data

Hide a specified number of leading characters from the decoded output. If the configured length exceeds the barcode data length, the entire barcode content is hidden.



* Disable



Enable

Set Leading Hidden Data Length

After scanning the following setting barcode, scan a 3-digit numeric setting barcode to enter the hidden length; pad with leading 0 if fewer than 3 digits are entered.

Range

1-255

Example

To hide 16 leading characters, scan this setting barcode and then scan the numeric setting barcodes 0, 1, and 6 in order.



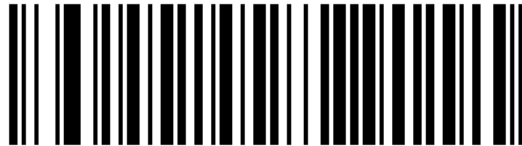
Set Leading Hidden Data Length

Hide Middle Data

Hide a specified number of characters in the middle of the decoded output. If the start position exceeds the barcode data length, no data is hidden. If the configured length exceeds the remaining barcode data length, all data after the start position is hidden.



* Disable



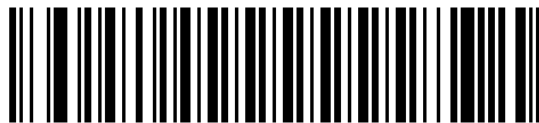
Enable

Set Middle Hidden Data Start Position

After scanning the following setting barcode, scan a 3-digit numeric setting barcode to enter the start position; pad with leading 0 if fewer than 3 digits are entered.

Range

1–255



Set Middle Hidden Data Start Position

Set Middle Hidden Data Length

After scanning the following setting barcode, scan a 3-digit numeric setting barcode to enter the hidden length; pad with leading 0 if fewer than 3 digits are entered.

Range

1–255

Example

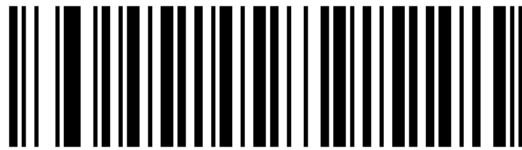
To hide 16 middle characters, scan this setting barcode and then scan the numeric setting barcodes 0, 1, and 6 in order.



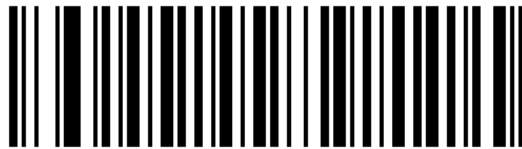
Set Middle Hidden Data Length

Hide Trailing Data

Hide a specified number of trailing characters from the decoded output. If the configured length exceeds the barcode data length, the entire barcode content is hidden.



* Disable



Enable

Set Trailing Hidden Data Length

After scanning the following setting barcode, scan a 3-digit numeric setting barcode to enter the hidden length; pad with leading 0 if fewer than 3 digits are entered.

Range

1-255

Example

To hide 16 trailing characters, scan this setting barcode and then scan the numeric setting barcodes 0, 1, and 6 in order.



Set Trailing Hidden Data Length

6.7 Custom Barcode Data Retention

Retain Leading Data

Retain only a specified number of leading characters from the decoded output. If the configured length exceeds the barcode data length, the entire barcode content is retained.



* Disable



Enable

Set Leading Retained Data Length

After scanning the following setting barcode, scan numeric setting barcodes to enter the retained length.

Range

1-65535



Set Leading Retained Data Length

Quick Setup for Leading Retained Data Length



Retain 1 Leading Byte



Retain 9999 Leading Bytes



Retain 65535 Leading Bytes

Retain Middle Data

Retain only a specified number of characters in the middle of the decoded output. If the start position exceeds the barcode data length, no data is retained (no output). If the configured length exceeds the remaining barcode data length, all data after the start position is retained.

Example

If the barcode data is 12345ABC, when the start position is 5 and the length is 2, the output is AB.

If the barcode data is 12345ABC, when the start position is 5 and the length is 5, the output is ABC.



* Disable



Enable

Set Middle Retained Data Start Position

After scanning the following setting barcode, scan numeric setting barcodes to enter the start position.

Range

1-65535



Set Middle Retained Data Start Position

Quick Setup for Middle Retained Data Start Position

You can use the barcode generation tool to create a custom start-position setting barcode.

Range

1-65535 (0x0001-0xFFFF)

Format

80829XXXX, where XXXX is a 4-digit uppercase hexadecimal value.

Example

To begin retaining data after byte 15, the setting barcode value is 80829000F.



Retain Data After Byte 1



Retain Data After Byte 9999



Retain Data After Byte 65535

Set Middle Retained Data Length

After scanning the following setting barcode, scan numeric setting barcodes to enter the retained length.

Range

1-65535



Set Middle Retained Data Length

Quick Setup for Middle Retained Data Length

You can use the barcode generation tool to create a custom retained-length setting barcode.

Range

1-65535 (0x0001-0xFFFF)

Format

8082AXXXX, where XXXX is a 4-digit uppercase hexadecimal value.

Example

To retain 15 bytes after the start position, the setting barcode value is 8082A000F.



Retain 1 Byte After the Start Position



Retain 9999 Bytes After the Start Position



Retain 65535 Bytes After the Start Position

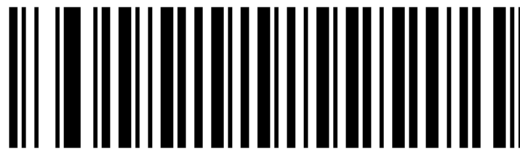
Retain Trailing Data

Retain only a specified number of trailing characters from the decoded output. If the configured length exceeds the barcode data length, the entire barcode content is retained.

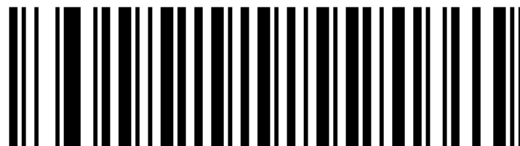
Example

If the barcode data is 12345ABC, retaining the last 3 bytes outputs ABC.

If the barcode data is 12345ABC, retaining the last 5 bytes outputs 45ABC.



* Disable



Enable

Set Trailing Retained Data Length

After scanning the following setting barcode, scan numeric setting barcodes to enter the retained length.

Range

1-65535



Set Trailing Retained Data Length

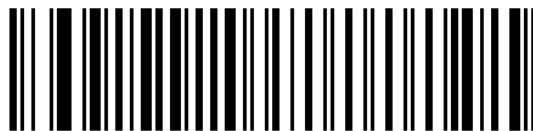
Quick Setup for Trailing Retained Data Length



Retain 1 Trailing Byte



Retain 9999 Trailing Bytes



Retain 65535 Trailing Bytes

6.8 Hide Custom Data Strings in Barcodes

Toggle

You can configure 1 to 32 bytes of custom hidden data. All matching data strings in the barcode are hidden before output.



* Disable



Enable

Set Hidden Data String

After scanning “Set Hidden Data”, scan numeric setting barcodes in groups of 4 digits. For character values, refer to *Character Reference Table*. For example, to hide carriage return 0x0D, scan 1013; to hide carriage return + line feed 0x0D 0x0A, scan 1013 and 1010 in order.

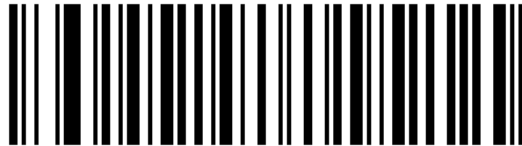
Whether the operation succeeds or fails, after scanning this barcode you must scan “Finish Setup” to exit the continuous data-setup state.



Set Hidden Data

Finish Setup

After hidden-data configuration is complete, scan this barcode to save the setting. Up to 32 bytes are supported. The process exits automatically and saves the configured content when 32 bytes are reached.



Finish Setup

Read Back and Clear

Incorrect entries may occur during setup. Use the read-back function to confirm the currently configured data. Read-back does not interrupt the current setup session, and you can continue setting the next character afterward.



Read Back Configured Content



Clear Configured Content

6.9 Insert Custom Data

Custom data can be inserted at any position in the barcode, with up to 10 bytes supported.

Enable/Disable Insert Custom Data



* Disable Insert Custom Data



Enable Insert Custom Data

Set Insert-Data Position

After scanning the “Set Insert-Data Position” setting barcode, scan a 4-digit numeric setting barcode. If fewer than 4 digits are entered, pad with leading 0. For example, to insert after the 3rd character, scan 0, 0, 0, and 3.

When the position is 0, the data is inserted at the beginning of the decoded data. When the position is greater than the decoded data length, the data is inserted at the end. Supported positions range from 0 to 5000.



Set Insert-Data Position

Set Data to Insert

After scanning “Set Data to Insert” , scan the 4-digit numeric setting barcode for each character continuously according to *Character Reference Table*. For example, to insert QR, scan 1081 and 1082 in order. Up to 10 bytes are supported, and the process exits automatically after 10 bytes.



Set Data to Insert

Exit Custom Data Setup

To finish early, scan the following setting barcode to exit and save the currently configured data.



Exit Custom Data Setup

6.10 Replace-Data Setup Instructions

The replace function is completed in three steps: first set the target to be replaced, then set the replacement data, and finally enable replacement. Both the target and the replacement data support up to 32 bytes.

Set Replacement Target and Replacement Data



Set Replacement Target



Set Replacement Data

If fewer than 32 bytes are entered, scan “Finish Setup” to save. When 32 bytes are reached, the process exits automatically and saves the configuration.

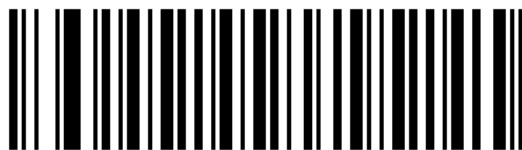


Finish Setup

Enable/Disable Replacement



Enable Replacement



Disable Replacement

Read Back and Clear Replacement Data



Read Back “Replacement Target”



Read Back “Replacement Data”



Clear “Replacement Target”



Clear “Replacement Data”

Example: Replace **xy** with **ab**

In the following example, the scan values for **x**, **y**, **A**, and **B** are entered according to the character table. **x** is 1088, **y** is 1089, **A** is 1065, and **B** is 1066.

1. 设置被替换对象 **xy**



Scan “Set Replacement Target”



Numeric Setup Code 1



Numeric Setup Code 0



Numeric Setup Code 8



Numeric Setup Code 8



Numeric Setup Code 1



Numeric Setup Code 0



Numeric Setup Code 8



Numeric Setup Code 9



Finish Setup

2. 设置替换数据 AB



Scan "Set Replacement Data"



Numeric Setup Code 1



Numeric Setup Code 0



Numeric Setup Code 6



Numeric Setup Code 5



Numeric Setup Code 1



Numeric Setup Code 0



Numeric Setup Code 6



Numeric Setup Code 6



Finish Setup

3. 启用替换并验证效果



Enable Replacement



Disable Replacement

If the example barcode content is 0123XY45YX6YXY89, replacing XY with AB outputs 0123AB45YX6YAB89.



Example Result: Before Replacement



Example Result: After Replacement

Serial Command Setup

Set the replacement target data: `0xF3 0x25 + target byte 1 + target byte 2 + ... + target byte n`. Up to 32 bytes are supported. For character values, refer to [Character Reference Table](#).

Set the replacement data: `0xF3 0x26 + replacement byte 1 + replacement byte 2 + ... + replacement byte n`. Up to 32 bytes are supported. For character values, refer to [Character Reference Table](#).

Operation	Command
Finish Setup	0xF2 0xF6 0x00
Disable Replacement	0xF2 0xE6 0x00
Enable Replacement	0xF2 0xE6 0x01
Read Back Replacement Target	0xF2 0xE7 0x00
Read Back Replacement Data	0xF2 0xE7 0x01

Example Commands:

Target	Command
Set Replacement Target to XY	0E C6 04 08 00 F3 25 58 F3 25 59 F2 F6 00 FA 57
Set Replacement Data to AB	0E C6 04 08 00 F3 26 41 F3 26 42 F2 F6 00 FA 83
Enable Replacement	08 C6 04 08 00 F2 E6 01 FD 4D
Replace XY with AB Using One Command	1A C6 04 08 00 F3 25 58 F3 25 59 F2 F6 00 F3 26 41 F3 26 42 F2 F6 00 F2 E6 01 F3 D5

6.11 Support for GS1 rules using brackets to include AI fields

Currently supporting GS1 rules, the supported AI segments are: (00) Transport container serial number, (01) Commodity transaction item, (02) Commodity transaction item, (10) Batch number, (11) Production date, (13) Packaging date, (15) Best date, (17) Expiration date, (21) Serial number, (30) Quantity, (240) Internal code, (712) National medical insurance reimbursement number - Spain CN, (8012) software version, (90) consistent information between trading partners



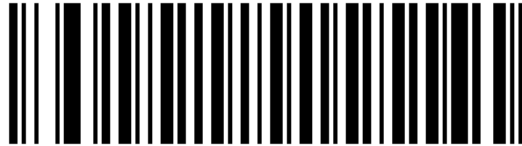
* Disable



Enable

6.12 Convert to Hex

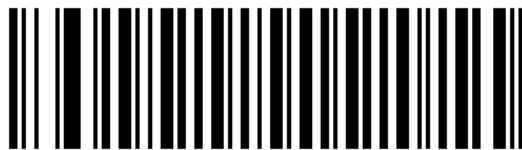
Hex Output



* Disable

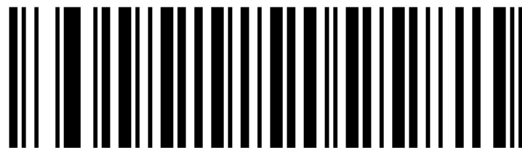


Uppercase Hex



Lowercase Hex

Hex Output Separator



* Disable Separator



Space

6.13 Code ID

Barcode Type	Code ID
Code 128	D
GS1-128(UCC/EAN-128)	K
AIM 128	D
ISBT-128	D
EAN-8	A
EAN-13	A
ISSN	L
ISBN/Bookland EAN	L

continues on next page

Table 1 – continued from previous page

Barcode Type	Code ID
UPC-E	A
UPC-A	A
Interleaved 2 of 5/ITF	F
ITF-14	F
Deutsche Post 14	w
Deutsche Post 12	l
NEC-25(COOP 2 of 5)	o
Matrix 2 of 5	V
Industrial 2 of 5/Discrete 2 of 5/IND25	G
Standard 2 of 5 (IATA 25)	G
Code 39	B
Code 93	E
Codabar	C
Code 11	H
Plessey	J
MSI-Plessey	J
GS1-DataBar (RSS)	R
PDF417	r
QR	q
AZTEC(Aztec Code)	a
Data Matrix (DM)	u
MaxiCode	x
Han Xin Code/Han Xin Code	c
Code 32	B
Trioptic Code 39	M
Coupon Code	N
GS1 DataBar-14	R
GS1 DataBar Limited	R
GS1 DataBar Expanded	R
SETUP128	S
Veri Code	v

6.14 AIM code identifier

Barcode Type	AIM ID	Description
Code 128	JC0	Normal data
GS1-128(UCC/EAN-128)	JC1	FNC1 is at the 1st code word position.
AIM 128	JC2	FNC1 is at the 2nd code word position.
ISBT-128	JC0	
EAN-8	JE4	Normal data
	JE4···JE1···	EAN-8 data plus a 2-digit additional code.
	JE4···JE2···	EAN-8 data plus a 5-digit additional code.

continues on next page

Table 2 – continued from previous page

Barcode Type	AIM ID	Description
EAN-13	JE0	Normal data
	JE3	EAN-13 data plus 2/5 digit additional code.
ISSN	JX0	Normal data
ISBN/Bookland EAN	JX0	Normal data
UPC-E	JE0	Normal data
	JE3	UPC-E data plus a 2/5-digit add-on code.
UPC-A	JE0	Ordinary data.
	JE3	UPC-A data plus a 2/5-digit add-on code.
Interleaved 2 of 5/ITF	JI0	Normal data
	JI1	Verify and output check characters.
	JI3	Verify but do not output the check character.
ITF-14	JI1	Output check characters.
	JI3	Check characters are not output.
Deutsche Post 14	JX0	Normal data
Deutsche Post 12	JX0	Normal data
NEC-25(COOP 2 of 5)	JX0	Normal data
Matrix 2 of 5	JX0	Normal data
Industrial 2 of 5/ Discrete 2 of 5/IND25	JS0	Normal data
Standard 2 of 5 (IATA 25)	JR0	Normal data
Code 39	JA0	No parity, no Full ASCII extension, data output as it is.
	JA1	MOD43 check and output check characters.
	JA3	MOD43 checks, but does not output check characters.
	JA4	Full ASCII extension, but no parity.
	JA5	Full ASCII expansion is performed, and check characters are output.
	JA7	Full ASCII expansion is performed, but check characters are not output.
Code 93	JG0	Normal data
Codabar	JO0	Normal data
	JO2	Verification, and output verification characters.
	JO4	Verification, but does not output the verification character.
Code 11	JH3	Normal data

continues on next page

Table 2 – continued from previous page

Barcode Type	AIM ID	Description
	JH0	MOD11 single character verification and output verification characters.
	JH3	MOD11 single character verification, but does not output the verification character.
Plessey	JP0	Normal data
MSI-Plessey	JM0	Normal data
	JM0	MOD10 verification, and output verification characters
	JM1	MOD10 verification, but does not output verification characters
GS1-DataBar (RSS)	Je0	Standard data package
PDF417	JL0	No options specified at this time, always transmit 3
QR	JQ0	QR Code Mode 1 (Complies with AIM ISS 97-001)
	JQ1	QR Code mode 2 (2005 symbol), not using ECI protocol
	JQ2	QR Code mode 2 (2005 symbol), using the ECI protocol
	JQ3	QR Code mode 2 (2005 symbol), ECI protocol not used, FNC1 in position 1
	JQ4	QR Code mode 2 (2005 symbol), using ECI protocol, FNC1 is in position 1
	JQ5	QR Code mode 2 (2005 symbol), ECI protocol not used, FNC1 in position 2
	JQ6	QR Code mode 2 (2005 symbol), using ECI protocol, FNC1 is in position 2
AZTEC(Aztec Code)	jz0	No options specified at this time, always transmit 3
Data Matrix (DM)	jd0	ECC 000 - 140
	jd1	ECC 200
	jd2	ECC 200, FNC1 in position 1 or 5
	jd3	ECC 200, FNC1 in position 2 or 6
	jd4	ECC 200 supports ECI protocol
	jd5	ECC 200, FNC1 in position 1 or 5 and supports ECI protocol
	jd6	ECC 200, FNC1 in position 2 or 6 and supports ECI protocol
MaxiCode	JU1	No options specified at this time, always transmit 3

continues on next page

Table 2 – continued from previous page

Barcode Type	AIM ID	Description
Han Xin Code/Han Xin Code	JX0	No options specified at this time, always transmit 3

7 Character Settings

7.1 Output Character Set Type

The output character set type specifies which character set the scan engine uses to output decoded data.

Setting Value	Character Set
0	primitive type
1	GBK (GB2312)
2	UTF-8

Default

0 (Raw Type)



* Raw Type



GBK (GB2312)



UTF-8



EUC-KR Korean (special versions only)



DEC MCS



BIG5

7.2 Input Character Set Type



* AUTO



GBK (GB2312)



UTF-8



ASCII



Japanese



Korean (special versions only)



DEC Multinational Character Set (MCS)



ISO8859-1 Character Set



Japanese Single-byte (special versions only)



Cyrillic Character Set (Windows 1251)



KOI8-R Character Set



BIG5 Character Set



ISO8859-2 Character Set

8 Barcode Settings

8.1 Common Symbology Entries

Symbology	Entry
UPC-A	<i>UPC-A</i>
UPC-E	<i>UPC-E</i>
EAN-8	<i>EAN-8</i>
EAN-13	<i>EAN-13</i>
Bookland EAN	<i>Enable/disable Bookland EAN (ISBN)</i>
Code 128	<i>Code 128</i>
GS1-128	<i>GS1-128 (formerly UCC/EAN-128)</i>
Code 39	<i>Code 39</i>
Code 93	<i>Code 93</i>
Code 11	<i>Code 11</i>
Interleaved 2 of 5	<i>Interleaved 2 of 5/ITF/Crossed 25 yards</i>
Codabar	<i>Codabar</i>
MSI	<i>MSI/MSI PLESSEY</i>
PDF417	<i>PDF417</i>
QR Code	<i>QR Code</i>
Data Matrix	<i>Data Matrix (DM)</i>
Maxi Code	<i>Maxi Code</i>
Aztec Code	<i>Aztec Code</i>
Han Xin Code	<i>Han Xin Code</i>

8.2 1D inverted barcode reading



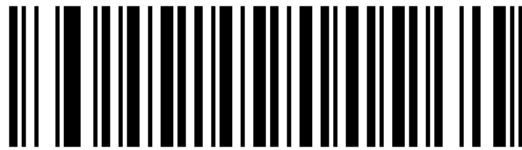
* Disable



Enable

8.3 Barcode global switch

One-dimensional code switch



Disable



Enable

QR code switch



Disable



Enable

All barcode switches



Disable all barcodes



Enable all barcodes

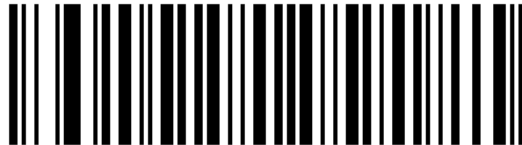
8.4 Linear code type safety level

The reading engine provides four levels of decoded security linear encoding types. Select a higher security level for declining barcode quality levels. Follow

As the security level increases, the reading engine becomes less aggressive. Choose the security level that suits your barcode quality.

Linear safety level 1

All code types must be successfully read 1 time before being decoded



* Linear safety level 1

Linear safety level 2

All code types must be read successfully 2 times before being decoded.



Linear safety level 2

Linear safety level 3

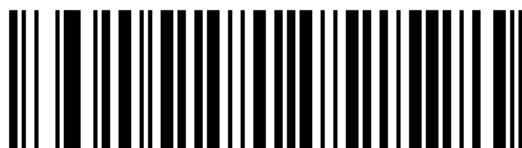
All code types must be successfully read 3 times before being decoded.



Linear safety level 3

Linear safety level 4

All code types must be successfully read 4 times before being decoded



Linear safety level 4

8.5 UPC-A

Enable/disable UPC-A

Scan the corresponding barcode below to enable or disable UPC-A.



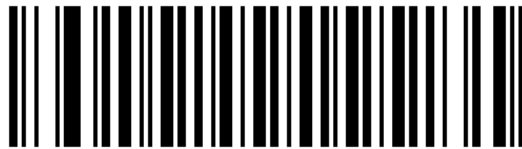
* Enable UPC-A



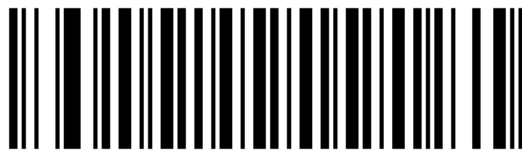
Disable UPC-A

UPC-A preamble

Preamble characters (country code and system characters) may be transmitted as part of the UPC-A code system. Select one of the following options to set and transmit the UPC-A preamble to the host: transmit system characters only, transmit system characters and country code (“0” for United States), or transmit no preamble.



No preamble (<DATA>)



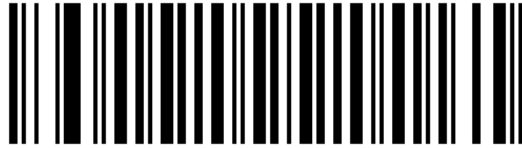
* System characters (<SYSTEM CHARACTER> <DATA>)



System characters & country code (<COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)

Transmit UPC-A check digit

Scan the corresponding barcode below to set whether to transmit the UPC-A check code.



* Transmit UPC-A check digit



Do not transmit UPC-A check digit

UPC-A 2-digit add-on code



Enable



* Disable

UPC-A 5-digit add-on code

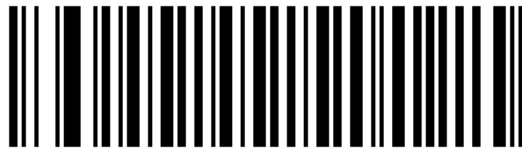


Enable

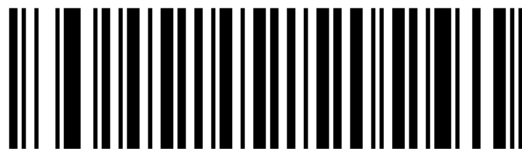


* Disable

UPC-A must read additional code



To enable UPC-A, the additional code must be read

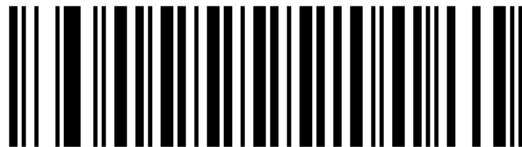


Disable UPC-A Additional code must be read

8.6 UPC-E

Enable/disable UPC-E

Scan the corresponding barcode below to enable or disable UPC-E.



* Enable UPC-E



Disable UPC-E

UPC-E preamble



No preamble (<DATA>)



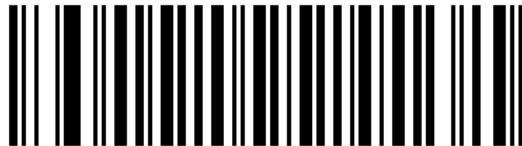
* System characters (<SYSTEM CHARACTER> <DATA>)



System characters & country code (<COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)

Transmit UPC-E check digit

Scan the corresponding barcode below to set whether to transmit the UPC-E check digit.



* Transmit UPC-E check digit

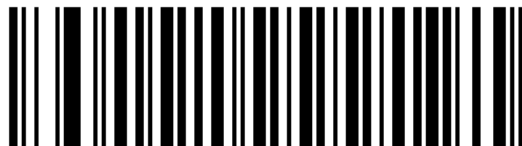


Do not transmit UPC-E check digit

Convert UPC-E to UPC-A

This parameter allows this parameter to be converted from UPC-E (zero suppression) decoded data to UPC-A format before transmission. After conversion, the data follows UPC-A format and is protected by UPC-A

Impact of programming choices (eg: preamble, checksum).



Convert UPC-E to UPC-A

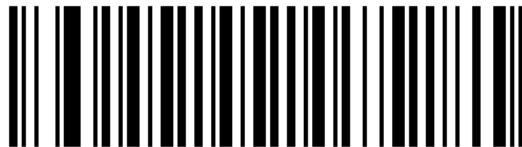


* Does not convert UPC-E to UPC-A

UPC-E 2-digit add-on code



Enable



* Disable

UPC-E 5-digit add-on code



Enable



* Disable

UPC-E must read additional codes

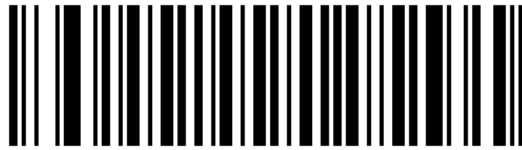


Enable

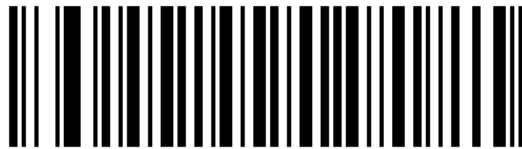


* Disable

UPC-E1 switch



* Disable UPC-E1



Enable UPC-E1

8.7 EAN-8

Enable/disable EAN-8

Scan the corresponding barcode below to enable or disable EAN-8.



* Enable EAN-8



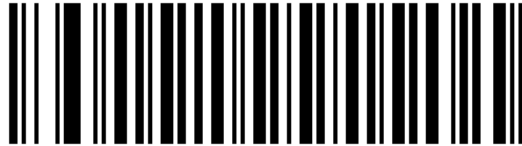
Disable EAN-8

EAN-8 zero extension

When this parameter is enabled, this parameter plus 5 leading 0s decodes EAN-8 to make it compatible with the EAN-13 format. When this parameter is disabled, the EAN-8 code system is transmitted



Enable EAN-8 zero extension



* Disable EAN-8 zero extension

EAN-8 2-digit additional code

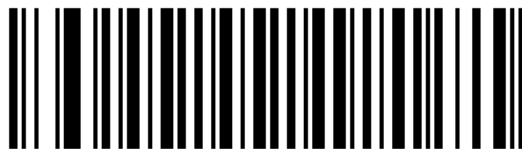


Enable



* Disable

EAN-8 5-digit add-on code



Enable



* Disable

EAN-8 must read additional code



Enable

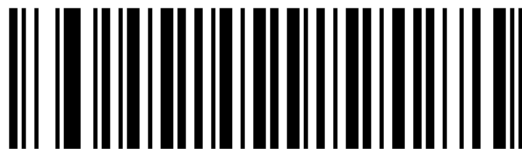


* Disable

EAN-8 sends check digit



Disable



* Enable

8.8 EAN-13

Enable/disable EAN-13

Scan the corresponding barcode below to enable or disable EAN-13.



* Enable EAN-13



Disable EAN-13

EAN-13 2-digit additional code



Enable



* Disable

EAN-13 5-digit add-on code



Enable



* Disable

EAN-13 must read additional code



Enable

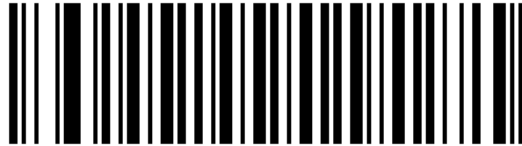


* Disable

EAN-13 send check character



Disable EAN-13 sending check characters



Enable EAN-13 to send check characters

8.9 Enable/disable Bookland EAN (ISBN)

Scan the corresponding barcode below to enable or disable Bookland EAN (ISBN).



Enable Bookland EAN



* Disable Bookland EAN

8.10 Code 128

Note

The enable/disable control of Code 128 also applies to AIM128; the output type identification of AIM128 is different from that of ordinary Code 128.

Enable/disable Code 128

Scan the corresponding barcode below to enable or disable Code 128.



* Enable Code 128



Disable Code 128

Code 128 Send check character



Enable



* Disable

Code 128 length setting

Allows reading of Code 128 codes of a specific length. After scanning the length setting barcode, scan the 4-digit setting barcode to set L1 and L2; L1 and L2 each occupy 2 digits. If there are less than 2 digits, add 0 in front.

When scanning the “Code 128 Any Length” setting barcode, any length can be read, and there is no need to scan the numeric setting barcode.

Default

0-99

Set range

01-99

condition	Description
L1 < L2	L1 is the minimum length, L2 is the maximum length
L1 > L2	L1 is the maximum length, L2 is the minimum length
L1 = L2	Only read fixed length

Example

Only 4-8 characters are allowed to be read: scan the numeric setting barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the numeric setting barcodes 1, 2, 1, 2.



Code 128 any length



Code 128 specifies the length

8.11 GS1-128 (formerly UCC/EAN-128)



GS1-128 (formerly UCC/EAN-128)

any length



* Enable GS1-128

Disable GS1-128

UCC/EAN-128 sending check characters



Enable



* Disable

UCC/EAN-128 length setting

Allows reading of UCC/EAN-128 codes of specific lengths. After scanning the length setting barcode, scan the 4-digit setting barcode to set L1 and L2; L1 and L2 each occupy 2 digits. If there are less than 2 digits, add 0 in front.

When scanning the “UCC/EAN-128 Any Length” setting barcode, any length can be read, and there is no need to scan the numeric setting barcode.

Default

0-99

Set range

01–99

condition	Description
L1 < L2	L1 is the minimum length, L2 is the maximum length
L1 > L2	L1 is the maximum length, L2 is the minimum length
L1 = L2	Only read fixed length

Example

Only 4–8 characters are allowed to be read: scan the numeric setting barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the numeric setting barcodes 1, 2, 1, 2.



UCC/EAN-128 any length



UCC/EAN-128 specified length

8.12 ISBT 128

any length

Scan the appropriate barcode below to enable or disable ISBT 128.



* Enable ISBT 128



any length

8.13 Code 39

Disable ISBT 128

Enable/disable Code 39

Scan the corresponding barcode below to enable or disable Code 39.



* Enable Code 39



Disable Code 39

Code 39 length setting

Allows reading of Code 39 codes of a specific length. After scanning the length setting barcode, scan the 4-digit setting barcode to set L1 and L2; L1 and L2 each occupy 2 digits. If there are less than 2 digits, add 0 in front.

When scanning the “Code 39 Any Length” setting barcode, any length can be read, and there is no need to scan the numeric setting barcode.

Default

0-99

Set range

01-99

condition	Description
L1 < L2	L1 is the minimum length, L2 is the maximum length
L1 > L2	L1 is the maximum length, L2 is the minimum length
L1 = L2	Only read fixed length

Example

Only 4-8 characters are allowed to be read: scan the numeric setting barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the numeric setting barcodes 1, 2, 1, 2.



Code 39 any length



Code 39 specifies the length

Code 39 check digit verification

When this feature is enabled, the reading engine checks the integrity of all Code 39 encodings to verify that the data conforms to the specified check digit algorithm. Only Code 39 encodings containing a modulo 43 check digit can be decoded. This feature can only be enabled if the Code 39 code format containing the modulo 43 check digit can be decoded.



Verify Code 39 check digit



* Do not verify Code 39 check digit

Transmit Code 39 Check Digit Scan this barcode to transmit the data check digit.



Transmit Code 39 check digit

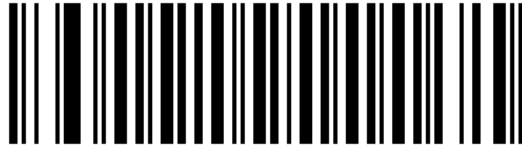


* Do not transmit Code 39 check digit

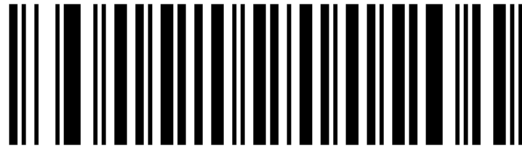
Enable/disable Code 39 Full ASCII

Code 39 Full ASCII is evolved from Code 39 and can encode double characters into Full ASCII characters. Scan the corresponding barcode below to enable or disable Code 39 Full ASCII.

See the mapping between Code 39 characters and ASCII values in [Character Reference Table](#).



Enable Code 39 Full ASCII

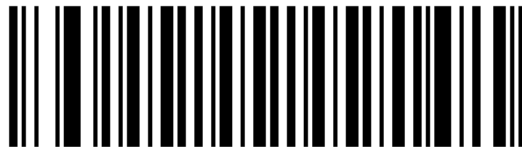


* Disable Code 39 Full ASCII

Transmit Code 39 start and stop characters



* Disable



Enable

Convert Code 39 to Code 32 (Italian Medical Code)

Code 32 is a Code 39 variant used in the Italian pharmaceutical industry. Scan the corresponding barcode below to enable or disable conversion from Code 39 to Code 32.



* Disable



Enable

Code 32 prefix

Enabling this parameter adds the prefix character “A” to all Code 32. Code 39 must be converted to Code 32 (Italian pharmaceutical code) before enabling this parameter.

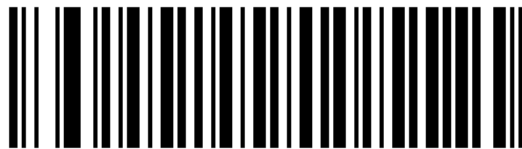


* Disable



Enable

Code 32 check code verification



* Disable



Enable

Transmit Code 32 check digit



* Transmit check digit 0x00



Enable transmission of Code 32 check digits

8.14 Code 93

Transmit start character, stop character, and check digit

0x01

Enable/disable Code 93

Scan the corresponding barcode below to enable or disable Code 93.



Enable Code 93



* Disable Code 93

Set Code 93 length

Allows reading of Code 93 codes of a specific length. After scanning the length setting barcode, scan the 4-digit setting barcode to set L1 and L2; L1 and L2 each occupy 2 digits. If there are less than 2 digits, add 0 in front.

When scanning the “Code 93 Any Length” setting barcode, any length can be read, and there is no need to scan the numeric setting barcode.

Default

0–99

Set range

01–99

condition	Description
L1 < L2	L1 is the minimum length, L2 is the maximum length
L1 > L2	L1 is the maximum length, L2 is the minimum length
L1 = L2	Only read fixed length

Example

Only 4–8 characters are allowed to be read: scan the numeric setting barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the numeric setting barcodes 1, 2, 1, 2.



Code 93 any length



Code 93 specifies the length

8.15 Code 11

Enable/disable Code 11

Scan the corresponding barcode below to enable or disable Code 11.



Enable Code 11



* Disable Code 11

Code 11 length setting

Allows reading of Code 11 codes of a specific length. After scanning the length setting barcode, scan the 4-digit setting barcode to set L1 and L2; L1 and L2 each occupy 2 digits. If there are less than 2 digits, add 0 in front.

When scanning the “Code 11 Any Length” setting barcode, any length can be read, and there is no need to scan the numeric setting barcode.

Default

4-99

Set range

01-99

condition	Description
L1 < L2	L1 is the minimum length, L2 is the maximum length
L1 > L2	L1 is the maximum length, L2 is the minimum length
L1 = L2	Only read fixed length

Example

Only 4–8 characters are allowed to be read: scan the numeric setting barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the numeric setting barcodes 1, 2, 1, 2.



Code 11 any length

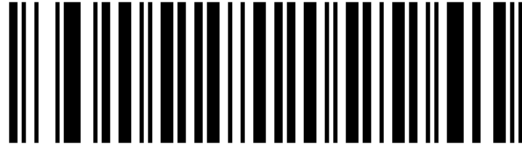


Code 11 specifies the length

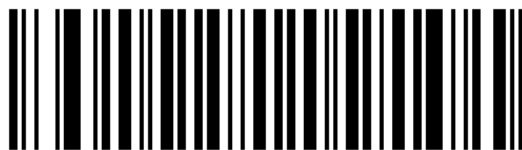
Check code verification

This feature allows the reading engine to check the integrity of all Code 11 encodings to verify that the data complies with the specified check digit algorithm. This will select the check digit mechanism for the decoded Code 11 barcode. Options include checking one parity digit, checking two parity digits, or disabling the feature.

To enable this feature, scan the Code 11 barcode below that matches the required number of check digits.



* Enable



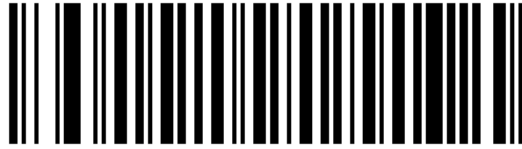
a check digit



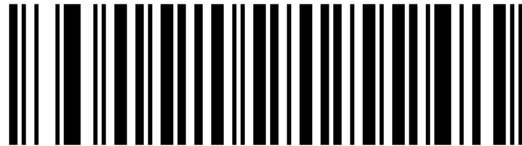
two check digits

Transmit Code 11 check digit

Scan the barcode below to choose whether to transmit the Code 11 check digit.



Transmit Code 11 check digit



* Code 11 check digit is not transmitted

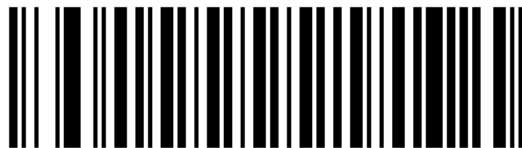
Note

In order for this parameter function to be implemented, Code 11 check code verification must be enabled.

8.16 Interleaved 2 of 5/ITF/Crossed 25 yards

Enable/Disable Interleaved 2 of 5

Scan the corresponding barcode below to enable or disable Interleaved 2 of 5.



* Enable Interleaved 2 of 5



Disable Interleaved 2 of 5

Interleaved 2 of 5 Length Settings

Allows reading of Interleaved 2 of 5 codes of a specific length. After scanning the length setting barcode, scan the 4-digit setting barcode to set L1 and L2; L1 and L2 each occupy 2 digits. If there are less than 2 digits, add 0 in front.

When scanning the “Interleaved 2 of 5 arbitrary length” setting barcode, any length can be read, and there is no need to scan the numeric setting barcode.

Default

4-99

Set range

01-99

condition	Description
$L1 < L2$	L1 is the minimum length, L2 is the maximum length
$L1 > L2$	L1 is the maximum length, L2 is the minimum length
$L1 = L2$	Only read fixed length

Example

Only 4–8 characters are allowed to be read: scan the numeric setting barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the numeric setting barcodes 1, 2, 1, 2.



Interleaved 2 of 5 any length



Interleaved 2 of 5 specified length

I 2 of 5 check code verification

When enabled, this parameter checks the integrity of the I 2 of 5 symbology to ensure compliance with specified algorithms, including USS (Uniform Symbol Specification) or OPCC (Optical Product Code Council)



* Disable



Enable

Transmit I 2 of 5 check digits

Scanning this barcode transmits a checksum of the data.



Transmit I 2 of 5 check digits

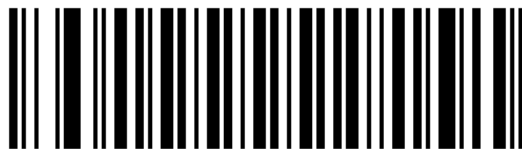


* Do not transmit I 2 of 5 check digits

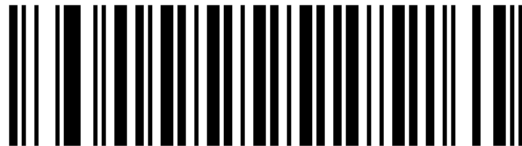
8.17 Discrete 2 of 5/Industrial 2 of 5/IND25/Industrial 25 yards

Enable/disable Discrete 2 of 5

Scan the corresponding barcode below to enable or disable Discrete 2 of 5.



Enable Discrete 2 of 5



* Disable Discrete 2 of 5

Discrete 2 of 5 Length Settings

Allows reading of Discrete 2 of 5 codes of a specific length. After scanning the length setting barcode, scan the 4-digit setting barcode to set L1 and L2; L1 and L2 each occupy 2 digits. If there are less than 2 digits, add 0 in front.

When scanning the “Discrete 2 of 5 arbitrary length” setting barcode, any length can be read, and there is no need to scan the numeric setting barcode.

Default

4-99

Set range

01-99

condition	Description
L1 < L2	L1 is the minimum length, L2 is the maximum length
L1 > L2	L1 is the maximum length, L2 is the minimum length
L1 = L2	Only read fixed length

Example

Only 4–8 characters are allowed to be read: scan the numeric setting barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the numeric setting barcodes 1, 2, 1, 2.

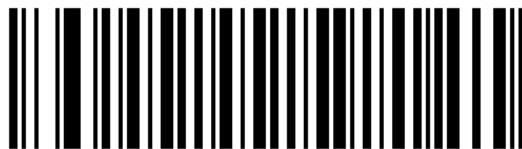


Discrete 2 of 5 any length



Discrete 2 of 5 specified length

Discrete 2 of 5 Verification



Enable



* Disable

Discrete 2 of 5 Send check character



Enable Discrete 2 of 5 to send check characters



Disable Discrete 2 of 5 Send check characters

8.18 Matrix 25(Matrix 25)

Enable/disable Matrix 25



Enable Matrix 25



* Disable Matrix 25

Matrix 25 check digit verification



Enable Matrix 25 checksum confirmation



* Disable Matrix 25 checksum confirmation

Transmitting Matrix 25 check characters



Enable Matrix 25 transmission check characters



* Disable Matrix 25 transmission check characters

Matrix 25 length setting

Allows reading of Matrix 25 codes of specific lengths. After scanning the length setting barcode, scan the 4-digit setting barcode to set L1 and L2; L1 and L2 each occupy 2 digits. If there are less than 2 digits, add 0 in front.

When scanning the “Matrix 25 Any Length” setting barcode, any length can be read, and there is no need to scan the numeric setting barcode.

Default

4-99

Set range

01-99

condition	Description
L1 < L2	L1 is the minimum length, L2 is the maximum length
L1 > L2	L1 is the maximum length, L2 is the minimum length
L1 = L2	Only read fixed length

Example

Only 4-8 characters are allowed to be read: scan the numeric setting barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the numeric setting barcodes 1, 2, 1, 2.



Matrix 25 any length



Matrix 25 specifies the length

8.19 Standard 25/IATA 25(Standard 25)

Enable/disable Standard 25

Scan the corresponding barcode below to enable or disable Standard 25.



* Disable



Enable

Standard 25 check digit verification



* Disable Standard 25 checksum confirmation



Enable Standard 25 checksum confirmation

Transmission check character



* Disable Standard 25 transmission check characters



Enable Standard 25 transmission check characters

Standard 25 length setting

Allows reading of Standard 25 codes of specific lengths. After scanning the length setting barcode, scan the 4-digit setting barcode to set L1 and L2; L1 and L2 each occupy 2 digits. If there are less than 2 digits, add 0 in front.

When scanning the “Standard 25 Any Length” setting barcode, any length can be read, and there is no need to scan the numeric setting barcode.

Default

4-99

Set range

01-99

condition	Description
L1 < L2	L1 is the minimum length, L2 is the maximum length
L1 > L2	L1 is the maximum length, L2 is the minimum length
L1 = L2	Only read fixed length

Example

Only 4–8 characters are allowed to be read: scan the numeric setting barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the numeric setting barcodes 1, 2, 1, 2.



Standard 25 any length



Standard 25 specified length

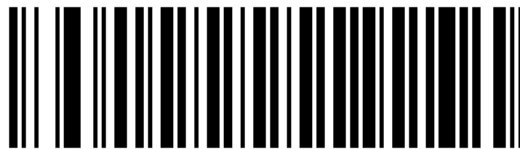
8.20 Codabar

Enable/disable Codabar

Scan the corresponding barcode below to enable or disable Codabar.



Enable Codabar



* Disable Codabar

Codabar length setting

Allows reading of Codabar codes of a specific length. After scanning the length setting barcode, scan the 4-digit setting barcode to set L1 and L2; L1 and L2 each occupy 2 digits. If there are less than 2 digits, add 0 in front.

When scanning the “Codabar Any Length” setting barcode, any length can be read, and there is no need to scan the numeric setting barcode.

Default

2–99

Set range

01–99

condition	Description
L1 < L2	L1 is the minimum length, L2 is the maximum length
L1 > L2	L1 is the maximum length, L2 is the minimum length
L1 = L2	Only read fixed length

Example

Only 4–8 characters are allowed to be read: scan the numeric setting barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the numeric setting barcodes 1, 2, 1, 2.



Codabar any length



Codabar specifies the length

Codabar verification

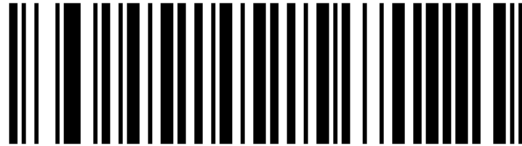


Enable



* Disable

Codabar sends check characters

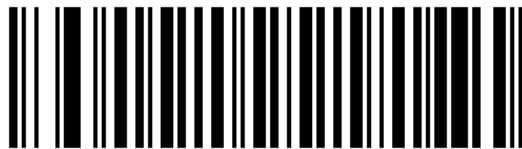


Enable

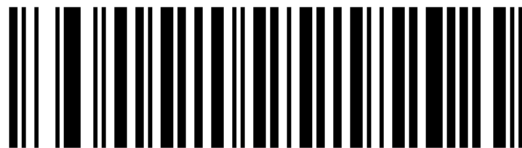


* Disable

NOTICE Edit



Enable NOTIS editing



* Disable NOTIS editing

Start and stop character format

The start and stop characters can each be one of A, B, C, or D. The stop character can also be one of T, N, *, or E.



* ABCD/ABCD



ABCD/TN*E

Start and stop character letter case



* uppercase letter

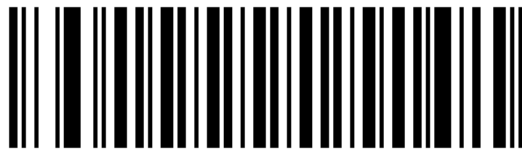


lowercase letters

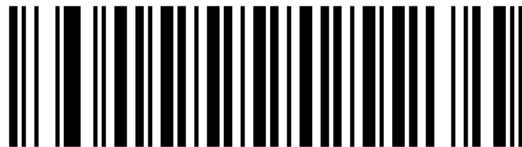
8.21 MSI/MSI PLESSEY

Enable/disable MSI

Scan the corresponding barcode below to enable or disable MSI.



Enable MSI



* Disable MSI

MSI length settings

Allows reading MSI codes of a specific length. After scanning the length setting barcode, scan the 4-digit setting barcode to set L1 and L2; L1 and L2 each occupy 2 digits. If there are less than 2 digits, add 0 in front.

When scanning the “MSI Any Length” setting barcode, any length can be read, and there is no need to scan the numeric setting barcode.

Default

2-99

Set range

01-99

condition	Description
$L1 < L2$	L1 is the minimum length, L2 is the maximum length
$L1 > L2$	L1 is the maximum length, L2 is the minimum length
$L1 = L2$	Only read fixed length

Example

Only 4–8 characters are allowed to be read: scan the numeric setting barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the numeric setting barcodes 1, 2, 1, 2.



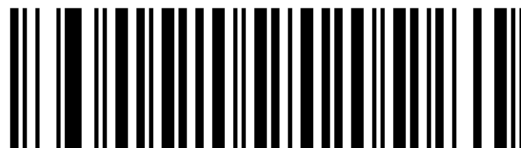
MSI arbitrary length



MSI specified length

MSI check digit

These check digits at the end of the barcode verify data integrity. At least one check digit is always required, and check digits are not transmitted with the data automatically. If you select two check digits, you must also set the MSI check digit algorithm.



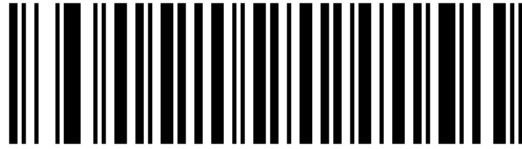
* An MSI check digit



Two MSI check digits

Transmit MSI check code

Scan this barcode to be set to transmit a checksum with data.



Transmit MSI check code

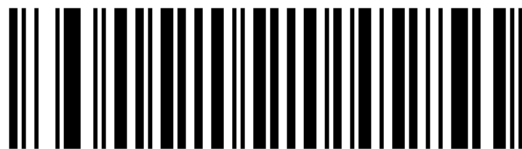
Scan this barcode to set up data transmission without a checksum.



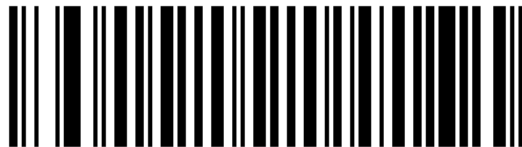
* MSI check code is not transmitted

MSI check code algorithm

When selecting two MSI check digits, one of the following algorithms needs to be selected.



MOD 10 / MOD 11



* MOD 10 / MOD 10

8.22 GS1 DataBar/RSS

Enable/disable GS1 DataBar/RSS

Scan the corresponding barcode below to enable or disable GS1 DataBar/RSS.



Enable GS1 DataBar/RSS

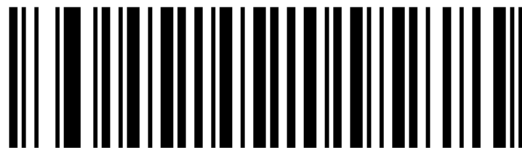


* Disable GS1 DataBar/RSS

RSS AI characters



* Enable

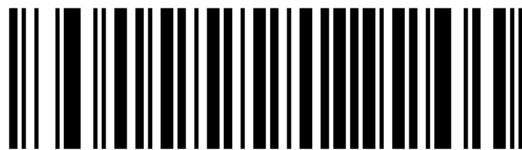


Disable

8.23 PDF417

Enable/disable PDF417

Scan the corresponding barcode below to enable or disable PDF417.



Disable PDF417



* Enable PDF417

PDF417 positive/negative reading



* read only positive



Read only invert



Both forward and reverse phases can be read.

8.24 QR Code

Enable/disable QR Code

Scan the corresponding barcode below to enable or disable QR Code.



Disable QR Code



* Enable QR Code

ECI control



* ECI does not output



ECI output

QR positive/reverse phase reading



* read only positive



Read only invert



Both forward and reverse phases can be read.

Remove UTF-8 BOM encoding format of QR Code

When enabled, UTF-8 BOM encoding format is removed when outputting QR Code data.



* Disable



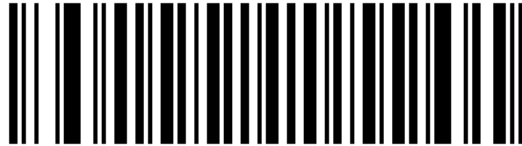
Enable

8.25 Data Matrix (DM)

Both normal images and mirror images can be read.

Enable/disable Data Matrix (DM)

Scan the corresponding barcode below to enable or disable the Data Matrix (DM).



Disable Data Matrix

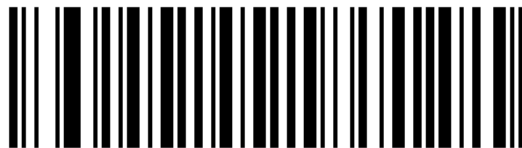


* Enable Data Matrix

Positive/negative reading



* read only positive



Read only invert



Both forward and reverse phases can be read.

ECI control



* ECI does not output



ECI output

8.26 Maxi Code

Enable/disable Maxi Code

Scan the corresponding barcode below to enable or disable Maxi Code.



* Disable Maxi Code



Enable Maxi Code

8.27 Aztec Code

Enable/disable Aztec Code

Scan the corresponding barcode below to enable or disable Aztec Code.



* Disable Aztec Code



Enable Aztec Code

8.28 Han Xin Code

Enable/disable Han Xin Code

Scan the corresponding barcode below to enable or disable Han Xin Code.



* Disable Han Xin Code

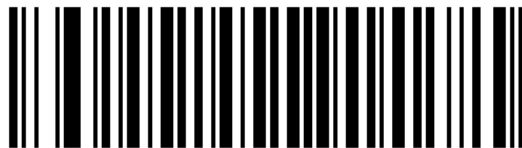


Enable Han Xin Code

Positive/negative reading



* read only positive



Read only invert



Both forward and reverse phases can be read.

8.29 ISSN

Converts to EAN-13 when disabled.



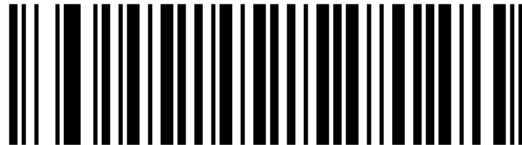
* Disable



Enable

8.30 NEC-25(COOP25)

NEC-25(COOP25) switch



Enable



* Disable

NEC-25(COOP25) Verification



Enable



* Disable

NEC-25(COOP25) Send check character



Enable



* Disable

NEC-25 (COOP 25) length setting

Allows reading of NEC-25 codes of specific lengths. After scanning the length setting barcode, scan the 4-digit setting barcode to set L1 and L2; L1 and L2 each occupy 2 digits. If there are less than 2 digits, add 0 in front.

When scanning the “NEC-25 Any Length” setting barcode, any length can be read, and there is no need to scan the numeric setting barcode.

Default

4-99

Set range

01-99

condition	Description
L1 < L2	L1 is the minimum length, L2 is the maximum length
L1 > L2	L1 is the maximum length, L2 is the minimum length
L1 = L2	Only read fixed length

Example

Only 4-8 characters are allowed to be read: scan the numeric setting barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the numeric setting barcodes 1, 2, 1, 2.



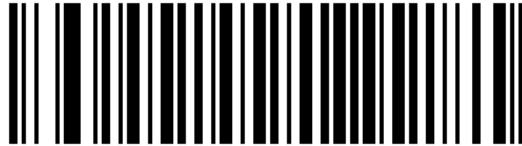
NEC-25 any length



NEC-25 specified length

8.31 COMPOSITE

Enable/disable COMPOSITE



* Disable



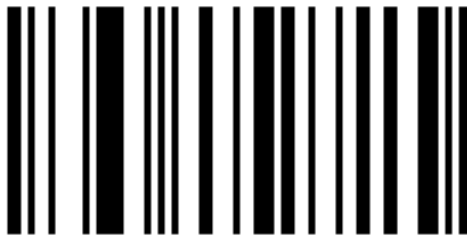
Enable

9 Appendix

The appendix combines numeric setting barcodes and the character reference table for reuse and referencing in single-model manuals.

9.1 Numeric Setup Codes

Parameters requiring exact numerical values Scan the appropriate numeric setup code.



0



1



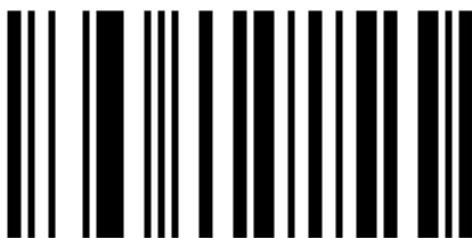
2



3



4



5



6



7



8



9

Cancel Barcode

To change a selection or cancel an incorrect entry, scan the barcode below.



Setup code: Cancel

9.2 Character Reference Table

When appending prefixes and suffixes to decoded data, follow these steps to select character values:

1. Set Output Data Transmission Format (parameter 0xE2) to the required option.
2. Query the ASCII code value to be set according to the table, and enter it into prefix (0x69), suffix 1 (0x68) or suffix 2 (0x6A) in hexadecimal form.

Character Reference Table (Control Characters)

Scan Value	Hex Value	Character	Keyboard Function Key	Keyboard Ctrl Key Combination
1000	00h	NUL	Null	CTRL 2
1001	01h	SOH	Keypad Enter	CTRL A
1002	02h	STX	Caps lock	CTRL B
1003	03h	ETX	Right Arrow	CTRL C
1004	04h	EOT	Up Arrow	CTRL D
1005	05h	ENQ	Null	CTRL E
1006	06h	ACK	Null	CTRL F
1007	07h	BEL	Enter	CTRL G
1008	08h	BS	Left Arrow	CTRL H
1009	09h	HT	Horizontal Tab	CTRL I
1010	0Ah	LF	Down Arrow	CTRL J
1011	0Bh	VT	Vertical Tab	CTRL K
1012	0Ch	FF	Delete	CTRL L
1013	0Dh	CR	Enter	CTRL M
1014	0Eh	SO	Insert	CTRL N
1015	0Fh	SI	Esc	CTRL O
1016	10h	DLE	F11	CTRL P
1017	11h	DC1	Home	CTRL Q
1018	12h	DC2	Print Screen	CTRL R
1019	13h	DC3	Backspace	CTRL S
1020	14h	DC4	tab+shift	CTRL T
1021	15h	NAK	F12	CTRL U
1022	16h	SYN	F1	CTRL V
1023	17h	ETB	F2	CTRL W

Scan Value	Hex Value	Character	Keyboard Function Key	Keyboard Ctrl Key Combination
1024	18h	CAN	F3	CTRL X
1025	19h	EM	F4	CTRL Y
1026	1Ah	SUB	F5	CTRL Z
1027	1Bh	ESC	F6	CTRL [
1028	1Ch	FS	F7	CTRL \
1029	1Dh	GS	F8	CTRL]
1030	1Eh	RS	F9	CTRL 6
1031	1Fh	US	F10	CTRL -
1032	20h	(space)	Space	Space

Character comparison table (visible characters) (continued table)

Scan Value	Hex Value	Keyboard Function Key
1033	21h	!
1034	22h	'
1035	23h	#
1036	24h	\$
1037	25h	%
1038	26h	&
1039	27h	'
1040	28h	(
1041	29h	)
1042	2Ah	*
1043	2Bh	+
1044	2Ch	,
1045	2Dh	-
1046	2Eh	.
1047	2Fh	/
1048	30h	0
1049	31h	1
1050	32h	2
1051	33h	3
1052	34h	4
1053	35h	5
1054	36h	6
1055	37h	7

Scan Value	Hex Value	Keyboard Function Key
1056	38h	8
1057	39h	9
1058	3Ah	:
1059	3Bh	;
1060	3Ch	<

continues on next page

Table 3 – continued from previous page

Scan Value	Hex Value	Keyboard Function Key
1061	3Dh	=
1062	3Eh	>
1063	3Fh	?
1064	40h	@
1065	41h	A
1066	42h	B
1067	43h	C
1068	44h	D
1069	45h	E
1070	46h	F
1071	47h	G
1072	48h	H
1073	49h	I
1074	4Ah	J
1075	4Bh	K
1076	4Ch	L
1077	4Dh	M
1078	4Eh	N
1079	4Fh	O
1080	50h	P
1081	51h	Q
1082	52h	R
1083	53h	S
1084	54h	T
1085	55h	U
1086	56h	V

Scan Value	Hex Value	Keyboard Function Key
1087	57h	W
1088	58h	X
1089	59h	Y
1090	5Ah	Z
1091	5Bh	[
1092	5Ch	\
1093	5Dh	]
1094	5Eh	^
1095	5Fh	_
1096	60h	‘
1097	61h	a
1098	62h	b
1099	63h	c
1100	64h	d
1101	65h	e
1102	66h	f
1103	67h	g
1104	68h	h

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Table 4 – continued from previous page

Scan Value	Hex Value	Keyboard Function Key
1105	69h	i
1106	6Ah	j
1107	6Bh	k
1108	6Ch	l
1109	6Dh	m
1110	6Eh	n
1111	6Fh	o
1112	70h	p
1113	71h	q
1114	72h	r
1115	73h	s
1116	74h	t
1117	75h	u

Scan Value	Hex Value	Keyboard Function Key
1118	76h	v
1119	77h	w
1120	78h	x
1121	79h	y
1122	7Ah	z
1123	7Bh	{
1124	7Ch	
1125	7Dh	}
1126	7Eh	~
1127	7Fh	Undefined

Values from 1128 to 1255 can also be set; hexadecimal values 80h to FFh are used for SSI.