NT-91 Barcode Scanner User Manual

Release v1.1.1

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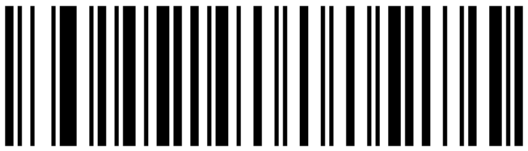
1 System Settings

1.1 Default Parameter Settings

Scan the following Parameter 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.

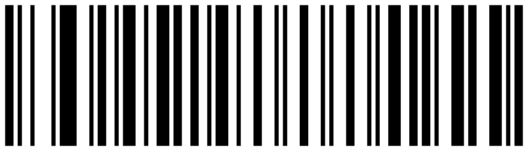
Factory Default Settings



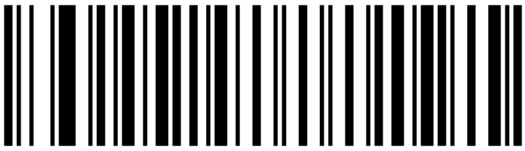
Factory Default Settings

Default Configuration 1-5

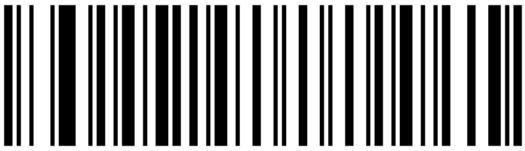
Configuration	Application Notes
Default Configuration 1	Mainly for POS parameter configuration; the communication mode is serial, the trigger mode is key hold, and the terminator is disabled.
Default Configuration 2	Mainly for self-service parameter configuration; the communication mode is USB KBW, the scan mode is Presentation Mode, and the terminator is carriage return + line feed (`\r\n`).
Default Configuration 3	Mainly for Barcode Reader parameter configuration; the communication mode is USB KBW, the trigger mode is key hold, and the terminator is carriage return (`\r`).
Default Configuration 4	The communication mode is serial 9600, the trigger mode is key hold, and the terminator is carriage return + line feed (`\r\n`); for 2D barcodes, only QR and DM symbologies are enabled by default.
Default Configuration 5	Currently not enabled.



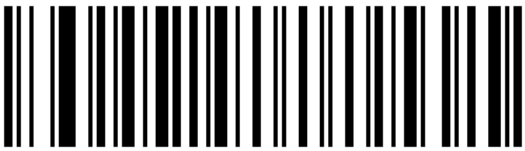
Default Configuration 1



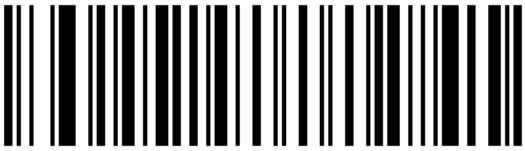
Default Configuration 2



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 Buzzer

Buzzer Volume

Scan the corresponding Parameter Barcode below to set the buzzer volume.

Low

Medium

* High

Mute

Buzzer Type

* Passive Buzzer

Active Buzzer

1.5 Successful Decode Beep

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

* Successful Decode Beep

No Beep on Successful Decode

1.6 Mute

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

* Disable

Enable

1.7 Power-on Beep

Disable

Enable

1.8 Parameter Entry 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.

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

* Enable Scan Configuration Barcodes

Disable Scan Configuration Barcodes

1.12 Transmit Parameter Barcodes

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

Enable Transmit Parameter Barcodes

* Disable Transmit Setting Barcodes

1.13 Parameter Barcode Lock Mode

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

> **Note**
>
> The password is a 2-digit number in the range `00–99`.

Enable Parameter Barcode Lock Mode

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

* Disable

Enable

Enter Parameter Barcode Password

After scanning the following Parameter Barcode, scan a 2-digit Numeric Barcode to enter the password; pad with leading `0` if fewer than 2 digits are entered.

Password Range

`00–99`

Enter Parameter Barcode Password

> **Example**
>
> To enter password `68`: scan this Parameter Barcode, then scan the Numeric Barcodes `6` and `8` in order.
>
> To cancel an incorrect entry, scan *Cancel Barcode*.

Change Parameter Barcode Password

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

Change Parameter Barcode Password

Example

To set the new password to `96`: scan this Parameter Barcode, then scan the Numeric 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 Parameter 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 Feature Settings

2.1 Indicator Function

Set which function the indicator represents.

* Decode Indication

Power Indication

2.2 Decode Success Indicator

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

Disable

* Enable

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

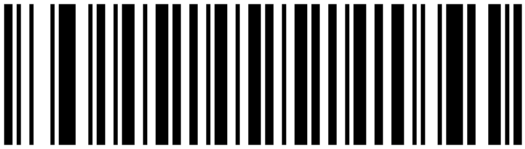
2.5 Aiming LED

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.

* Trigger 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

Presentation 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.

Presentation 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 Parameter Barcode, scan three Numeric Barcodes 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 Parameter Barcode, then scan Numeric Barcodes `0`, `0`, and `5` in sequence.

To set `10500 ms`, scan this Parameter Barcode, then scan Numeric Barcodes `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 Parameter 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 Parameter Barcode, scan two Numeric Barcodes 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 Parameter Barcode, then scan Numeric Barcodes `0` and `5` in sequence.
>
> To change the selection or cancel an incorrect setting, scan *Cancel Barcode*.

Same Symbol Timeout

To prevent the same barcode from being decoded repeatedly in Continuous Mode or Presentation Mode, configure the Scan Engine to accept the same barcode again only after the Same Symbol Timeout has elapsed.

After scanning this Parameter Barcode, scan two Numeric Barcodes 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`

Same Symbol Timeout

Example

To set `200 ms`, scan this Parameter Barcode, then scan Numeric Barcodes `0` and `2` in sequence.

To set `1500 ms`, scan this Parameter Barcode, then scan Numeric Barcodes `1` and `5` in sequence.

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

Same Symbol Timeout Quick Settings

To select a commonly used same symbol timeout directly, scan one of the quick Parameter 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

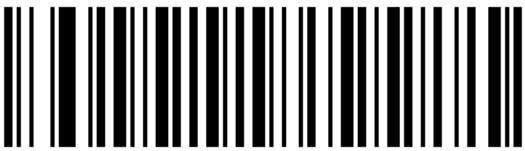
This feature applies to trigger hold (level), one-shot trigger (pulse), and host mode. In Continue Scanning mode, the continuous decode interval and Same Symbol Timeout still remain effective.

* Disable

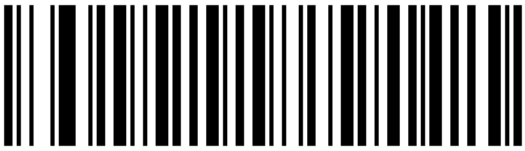
Enable

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

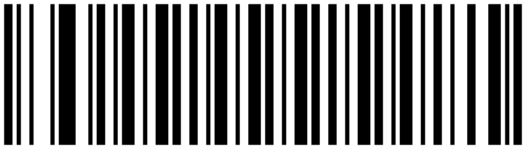
High Sensitivity

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

> **Example**
>
> To set the sensitivity to `2`: scan this Parameter Barcode, then scan the Numeric 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 Parameter Barcode, scan a 2-digit Numeric 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

Example

To set `200 ms`, scan this Parameter Barcode, then scan Numeric Barcodes `0` and `2` in sequence.

To set `1500 ms`, scan this Parameter Barcode, then scan Numeric Barcodes `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 an ACK or NAK response from the host before retransmitting the previous message. If the scan engine needs to send data but the host has not yet allowed transmission, it also waits for this timeout period.

default

`2000 ms`

Unit

`100 ms`

Range

`100-9900 ms`

Host Serial Response Timeout

Example

To set `3000 ms`: scan this Parameter Barcode, then scan the Numeric Barcodes `0` and `3` in order.

To set `9900 ms`: scan this Parameter Barcode, then scan the Numeric 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 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

Example

To set `100 us`: the factor is `01`; scan the Numeric Barcodes `0` and `1`.

To set `1000 us`: the factor is `10`; scan the Numeric 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 Parameter Barcode using `^380811xxxx`, where `xxxx` represents the 4-digit slave address value.

Slave Address 0001

RS485 Network Decoded Data Format

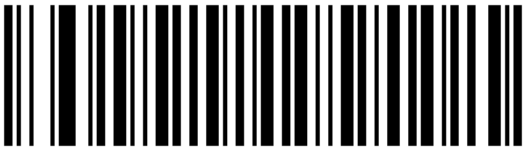
When disabled, decoded data is sent directly in the format `add + data`. When enabled, the RS485 network packet format is used. When this function is disabled, the packet format must remain Raw Data.

* Disable

Enable

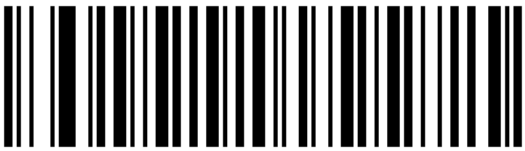
RS485 Network Heartbeat Toggle

Disable



* Enable

Save RS485 Network Decoded Data to Buffer

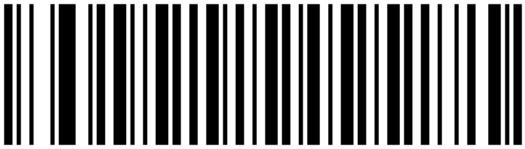


* Disable

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” Parameter Barcode, scan a 3-digit Numeric Barcode to enter the decimal slave address.

default

`0x00`

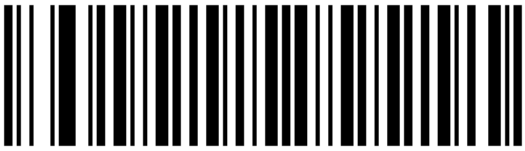
Range

`1-255`

Set Slave Address

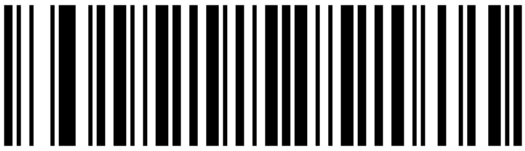
> **Example**
>
> To set the slave address to `0x0A` (decimal `10`): scan this Parameter Barcode, then scan the Numeric Barcodes `0`, `1`, and `0` in order.

Quick Slave Address Setup

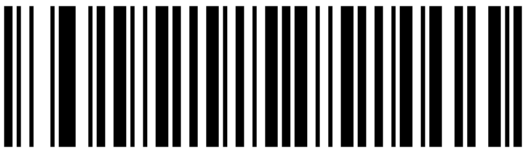


* Address 0x00

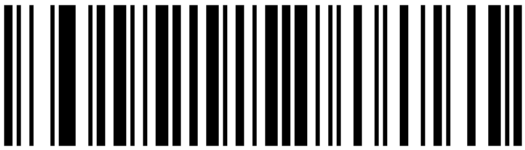
Address 0x01



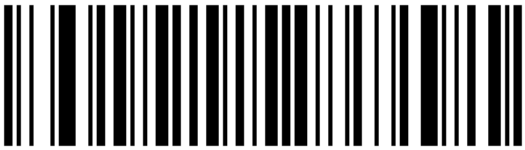
Address 0x02



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

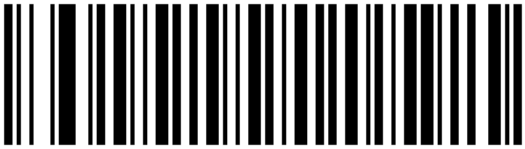
This keyboard layout (Arabic_101) supports: Saudi Arabia, United Arab Emirates, Oman, Egypt, Bahrain, Qatar, Kuwait, Lebanon, Libya, Syria, Yemen, Iraq, and Jordan.

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 Parameter 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 Parameter Barcode, scan the 3-digit Numeric 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 Parameter Barcode, then scan the Numeric 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.

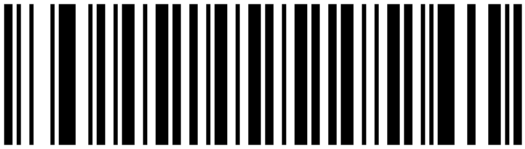
Code ID

AIM ID

* None

6.3 Terminator Settings

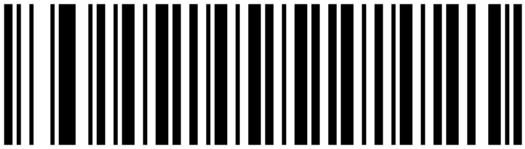
A Terminator is a control character appended to the Output Data. The output format is: Output Data + Terminator.



* 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 Output Data. To set a character value, look up the ASCII value in *Character Reference Table* and scan the corresponding 4-digit Numeric Barcode. Numeric Barcodes are listed in *Numeric Barcode*.

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

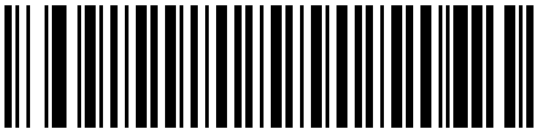
Continuous setup mode is used to configure multiple prefixes or suffixes at one time. Set the prefix/suffix values first, then set the data transmission format.

Continuous Multiple Prefix Setup

By default, 1 prefix is supported, with a maximum of 10 prefixes. After scanning the corresponding Parameter Barcode to enter continuous setup mode, scan the 4-digit Numeric 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 Parameter Barcode to enter continuous setup mode, scan the 4-digit Numeric 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)

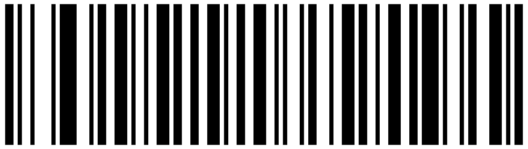
STX (Prefix) + ETX (Suffix 1)

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 Parameter Barcode, then enter the barcode type index and the character values to be set.

Set Prefix

1. Scan the “Set Prefix by Barcode Type” Parameter Barcode.
2. According to the barcode type index and *Character Reference Table*, scan the corresponding Numeric 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` (`0x31`).
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 Parameter 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 Parameter Barcode, then enter the barcode type index. For QR Code, for example, after entering the Numeric 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 Parameter Barcode, scan a 3-digit Numeric 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 Parameter Barcode and then scan the Numeric 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 Parameter Barcode, scan a 3-digit Numeric 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 Parameter Barcode, scan a 3-digit Numeric 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 Parameter Barcode and then scan the Numeric 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 Parameter Barcode, scan a 3-digit Numeric 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 Parameter Barcode and then scan the Numeric 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 Parameter Barcode, scan Numeric 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

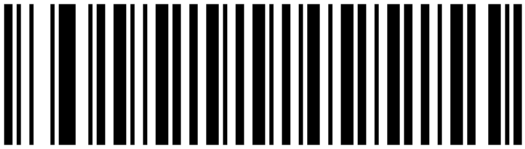
Retain Middle Data

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.

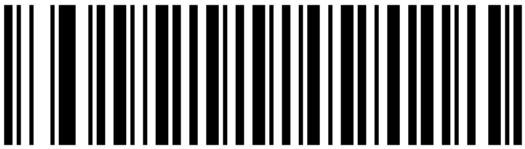
Example

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 Parameter Barcode, scan Numeric 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 Parameter 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 Parameter 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 Parameter Barcode, scan Numeric 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 Parameter 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 Parameter 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

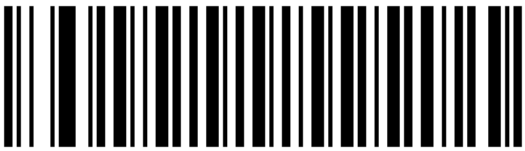
Retain Trailing Data

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 Parameter Barcode, scan Numeric 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

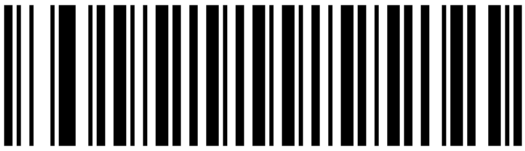
Retain 9999 Trailing Bytes

Retain 65535 Trailing Bytes

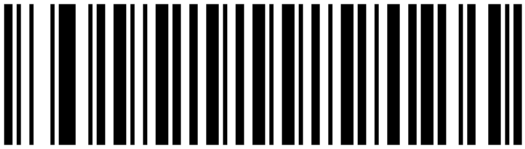
6.8 Hide Custom Data Strings in Barcodes

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 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" Parameter Barcode, scan a 4-digit Numeric 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 Output Data. When the position is greater than the Output 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 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 Parameter 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. Set the replacement target to `XY`

Scan “Set Replacement Target”

Numeric Barcode 1

Numeric Barcode 0

Numeric Barcode 8

Numeric Barcode 8

Numeric Barcode 1

Numeric Barcode 0

Numeric Barcode 8

Numeric Barcode 9

Finish Setup

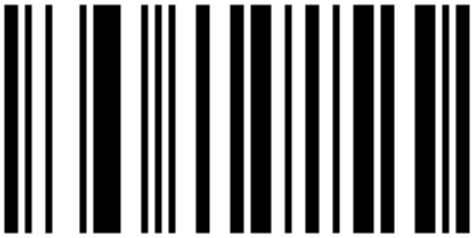
2. Set the replacement data to `AB`

Scan “Set Replacement Data”

Numeric Barcode 1

Numeric Barcode 0

Numeric Barcode 6



Numeric Barcode 5

Numeric Barcode 1

Numeric Barcode 0

Numeric Barcode 6

Numeric Barcode 6

Finish Setup

3. Enable replacement and verify the result

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 Types	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 Types	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 Types	AIM ID	Description
Code 128	]C0	Normal data
GS1-128(UCC/EAN-128)	]C1	FNC1 is at the 1st code word position.
AIM 128	]C2	FNC1 is at the 2nd code word position.
ISBT-128	]C0	
EAN-8	]E4	Normal data
	]E4⋯]E1⋯	EAN-8 data plus a 2-digit additional code.
	]E4⋯]E2⋯	EAN-8 data plus a 5-digit additional code.

continues on next page

Table 2 – continued from previous page

Barcode Types	AIM ID	Description
EAN-13	]E0	Normal data
	]E3	EAN-13 data plus 2/5 digit additional code.
ISSN	]X0	Normal data
ISBN/Bookland EAN	]X0	Normal data
UPC-E	]E0	Normal data
	]E3	UPC-E data plus a 2/5-digit add-on code.
UPC-A	]E0	Ordinary data.
	]E3	UPC-A data plus a 2/5-digit add-on code.
Interleaved 2 of 5/ITF	]I0	Normal data
	]I1	Verify and output check characters.
	]I3	Verify but do not output the check character.
ITF-14	]I1	Output check characters.
	]I3	Check characters are not output.
Deutsche Post 14	]X0	Normal data
Deutsche Post 12	]X0	Normal data
NEC-25(COOP 2 of 5)	]X0	Normal data
Matrix 2 of 5	]X0	Normal data
Industrial 2 of 5/ Discrete 2 of 5/IND25	]S0	Normal data
Standard 2 of 5 (IATA 25)	]R0	Normal data
Code 39	]A0	No parity, no Full ASCII extension, data output as it is.
	]A1	MOD43 check and output check characters.
	]A3	MOD43 checks, but does not output check characters.
	]A4	Full ASCII extension, but no parity.
	]A5	Full ASCII expansion is performed, and check characters are output.
	]A7	Full ASCII expansion is performed, but check characters are not output.
Code 93	]G0	Normal data
Codabar	]F0	Normal data
	]F2	Verification, and output verification characters.
	]F4	Verification, but does not output the verification character.
Code 11	]H3	Normal data

continues on next page

Table 2 – continued from previous page

Barcode Types	AIM ID	Description
	]H0	MOD11 single character verification and output verification characters.
	]H3	MOD11 single character verification, but does not output the verification character.
Plessey	]P0	Normal data
MSI-Plessey	]M0	Normal data
	]M0	MOD10 verification, and output verification characters
	]M1	MOD10 verification, but does not output verification characters
GS1-DataBar（RSS）	]e0	Standard data package
PDF417	]L0	No options specified at this time, always transmit 3
QR	]Q0	QR Code Mode 1 (Complies with AIM ISS 97-001)
	]Q1	QR Code mode 2 (2005 symbol), not using ECI protocol
	]Q2	QR Code mode 2 (2005 symbol), using the ECI protocol
	]Q3	QR Code mode 2 (2005 symbol), ECI protocol not used, FNC1 in position 1
	]Q4	QR Code mode 2 (2005 symbol), using ECI protocol, FNC1 is in position 1
	]Q5	QR Code mode 2 (2005 symbol), ECI protocol not used, FNC1 in position 2
	]Q6	QR Code mode 2 (2005 symbol), using ECI protocol, FNC1 is in position 2
AZTEC(Aztec Code)	]z0	No options specified at this time, always transmit 3
Data Matrix (DM)	]d0	ECC 000 - 140
	]d1	ECC 200
	]d2	ECC 200, FNC1 in position 1 or 5
	]d3	ECC 200, FNC1 in position 2 or 6
	]d4	ECC 200 supports ECI protocol
	]d5	ECC 200, FNC1 in position 1 or 5 and supports ECI protocol
	]d6	ECC 200, FNC1 in position 2 or 6 and supports ECI protocol
MaxiCode	]U1	No options specified at this time, always transmit 3

continues on next page

Table 2 – continued from previous page

Barcode Types	AIM ID	Description
Han Xin Code/Han Xin Code	]X0	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	*UPC-A*
UPC-E	*UPC-E*
EAN-8	*EAN-8*
EAN-13	*EAN-13*
Bookland EAN	*Enable/disable Bookland EAN (ISBN)*
Code 128	*Code 128*
GS1-128	*GS1-128 (formerly UCC/EAN-128)*
Code 39	*Code 39*
Code 93	*Code 93*
Code 11	*Code 11*
Interleaved 2 of 5	*Interleaved 2 of 5/ITF/Crossed 25 yards*
Codabar	*Codabar*
MSI	*MSI/MSI PLESSEY*
PDF417	*PDF417*
QR Code	*QR Code*
Data Matrix	*Data Matrix (DM)*
Maxi Code	*Maxi Code*
Aztec Code	*Aztec Code*
Han Xin Code	*Han Xin Code*

8.2 1D Barcode Inverse Reading

* Disable

Enable

8.3 Barcode global switch

1D Barcode Switch

Disable

Enable

2D Barcode Switch

Disable

Enable

All barcode switches

Disable all barcodes

Enable all barcodes

8.4 Linear Symbology Security Level

The scan engine provides four security levels for decoding linear symbologies. As the security level increases, tolerance for poor-quality barcodes decreases. Select a level appropriate for the 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 digit.

* 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

Require UPC-A Supplemental

Enable UPC-A Supplemental Requirement

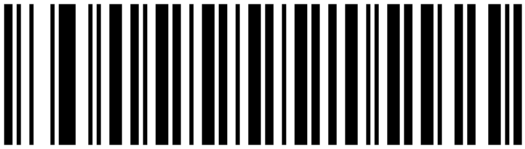
Disable UPC-A Supplemental Requirement

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

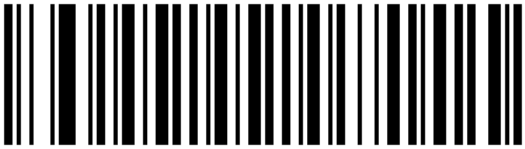
This parameter allows this parameter to be converted from UPC-E (zero suppression) decoded data to UPC-A format before transmission. After conversion, the data follows UPC-A format and is protected by UPC-A

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

Require UPC-E Supplemental

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 enabled, this parameter prepends five `0` characters to the decoded EAN-8 data to make it compatible with the EAN-13 format. When disabled, the original EAN-8 data 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

Require EAN-8 Supplemental

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

Require EAN-13 Supplemental

Enable

* Disable

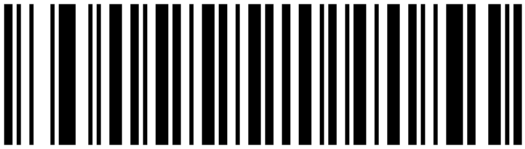
EAN-13 send check character

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.

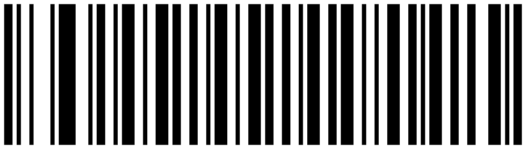
Enable/disable Code 128

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 Parameter Barcode, scan the 4-digit Numeric 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" Parameter Barcode, any length can be read, and there is no need to scan the Numeric 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 Barcode `0`, `4`, `0`, `8`, or `0`, `8`, `0`, `4`.

Fixed reading of `12` characters: Scan the Numeric Barcodes `1`, `2`, `1`, `2`.

Code 128 any length

Code 128 specifies the length

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

Scan the appropriate Parameter Barcode below to enable or disable GS1-128.

* 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 Parameter Barcode, scan the 4-digit Numeric 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" Parameter Barcode, any length can be read, and there is no need to scan the Numeric 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 Barcode `0`, `4`, `0`, `8`, or `0`, `8`, `0`, `4`.

Fixed reading of `12` characters: Scan the Numeric Barcodes `1`, `2`, `1`, `2`.

UCC/EAN-128 any length

UCC/EAN-128 specified length

8.12 ISBT 128

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

* Enable ISBT 128

Disable ISBT 128

8.13 Code 39

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 Parameter Barcode, scan the 4-digit Numeric 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" Parameter Barcode, any length can be read, and there is no need to scan the Numeric 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 Barcode `0`, `4`, `0`, `8`, or `0`, `8`, `0`, `4`.

Fixed reading of `12` characters: Scan the Numeric Barcodes `1`, `2`, `1`, `2`.

Code 39 any length

Code 39 specifies the length

Code 39 check digit verification

When enabled, the Scan Engine verifies that Code 39 data conforms to the specified check-digit algorithm. Only Code 39 barcodes containing one 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

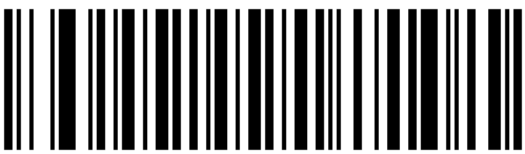
Code 32 Check Digit Verification

* 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 Parameter Barcode, scan the 4-digit Numeric 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" Parameter Barcode, any length can be read, and there is no need to scan the Numeric 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 Barcode `0`, `4`, `0`, `8`, or `0`, `8`, `0`, `4`.

Fixed reading of `12` characters: Scan the Numeric 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 Parameter Barcode, scan the 4-digit Numeric 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" Parameter Barcode, any length can be read, and there is no need to scan the Numeric 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 Barcode `0`, `4`, `0`, `8`, or `0`, `8`, `0`, `4`.

Fixed reading of `12` characters: Scan the Numeric Barcodes `1`, `2`, `1`, `2`.

Code 11 any length

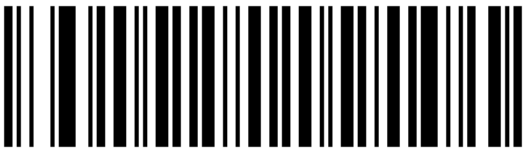
Code 11 specifies the length

Check Digit Verification

This feature allows the Scan Engine to verify that Code 11 data conforms to the specified check-digit algorithm. Select one check digit, two check digits, or disable check-digit verification.

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

* Disable Check Digit Verification



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**
>
> To use this parameter, enable Code 11 check digit verification.

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 Parameter Barcode, scan the 4-digit Numeric 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" Parameter Barcode, any length can be read, and there is no need to scan the Numeric 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 Barcode `0`, `4`, `0`, `8`, or `0`, `8`, `0`, `4`.

Fixed reading of `12` characters: Scan the Numeric Barcodes `1`, `2`, `1`, `2`.

Interleaved 2 of 5 any length

Interleaved 2 of 5 specified length

Interleaved 2 of 5 Check Digit 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 Parameter Barcode, scan the 4-digit Numeric 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" Parameter Barcode, any length can be read, and there is no need to scan the Numeric 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 Barcode `0`, `4`, `0`, `8`, or `0`, `8`, `0`, `4`.

Fixed reading of `12` characters: Scan the Numeric 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 Parameter Barcode, scan the 4-digit Numeric 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" Parameter Barcode, any length can be read, and there is no need to scan the Numeric 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 Barcode `0`, `4`, `0`, `8`, or `0`, `8`, `0`, `4`.

Fixed reading of `12` characters: Scan the Numeric 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 Parameter Barcode, scan the 4-digit Numeric 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” Parameter Barcode, any length can be read, and there is no need to scan the Numeric 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 Barcode 0, 4, 0, 8, or 0, 8, 0, 4.

Fixed reading of 12 characters: Scan the Numeric 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 Parameter Barcode, scan the 4-digit Numeric 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" Parameter Barcode, any length can be read, and there is no need to scan the Numeric 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 Barcode `0`, `4`, `0`, `8`, or `0`, `8`, `0`, `4`.

Fixed reading of `12` characters: Scan the Numeric 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

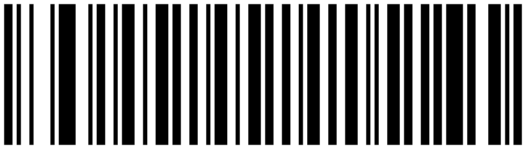
Start and stop character format

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.

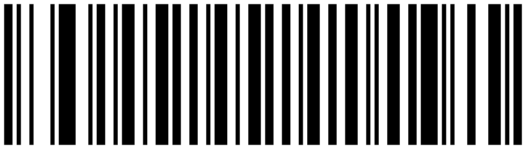
* ABCD/ABCD

ABCD/TN*E

Start and stop character letter case



* uppercase letter

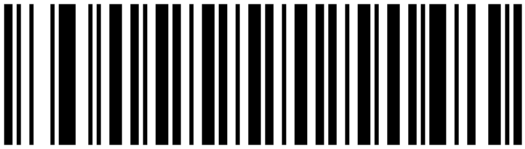


lowercase letters

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 Parameter Barcode, scan the 4-digit Numeric 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” Parameter Barcode, any length can be read, and there is no need to scan the Numeric 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 Barcode `0`, `4`, `0`, `8`, or `0`, `8`, `0`, `4`.

Fixed reading of `12` characters: Scan the Numeric 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 Digit

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

Transmit MSI Check Digit

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

* Do Not Transmit MSI Check Digit

MSI Check Digit Algorithm

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

MOD 10 / MOD 11

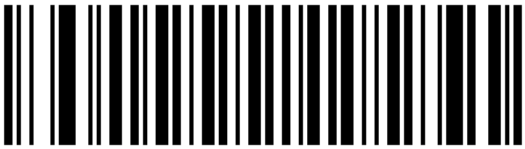
* MOD 10 / MOD 10

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 Inverse Reading

* read only positive

Read only invert

Read Normal and Inverse Barcodes

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 Code Inverse Reading

* read only positive

Read only invert

Read Normal and Inverse Barcodes

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

Inverse Reading

* read only positive

Read only invert

Read Normal and Inverse Barcodes

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

Inverse Reading

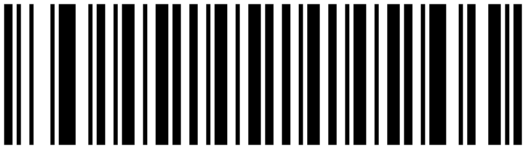
* read only positive

Read only invert

Read Normal and Inverse Barcodes

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 Parameter Barcode, scan the 4-digit Numeric 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” Parameter Barcode, any length can be read, and there is no need to scan the Numeric 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 Barcode `0`, `4`, `0`, `8`, or `0`, `8`, `0`, `4`.

Fixed reading of `12` characters: Scan the Numeric Barcodes `1`, `2`, `1`, `2`.

NEC-25 any length

NEC-25 specified length

8.31 COMPOSITE

Enable/disable COMPOSITE

* Disable

Enable

9 Appendix

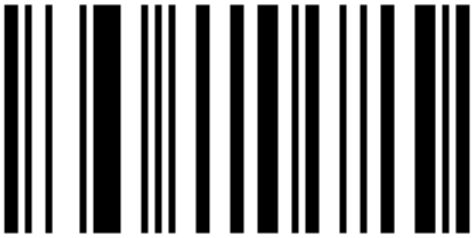
The appendix combines Numeric Barcodes and the character reference table for reuse and referencing in single-model manuals.

9.1 Numeric Barcode

For parameters requiring an exact numerical value, scan the appropriate Numeric Barcode.

0

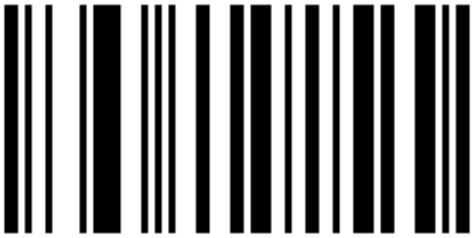
1



2

3

4



5

6

7

8

9

Cancel Barcode

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

Parameter Barcode: 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 Operations	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 Operations	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 Operations
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 Operations
1056	38h	8
1057	39h	9
1058	3Ah	:
1059	3Bh	;

continues on next page

Table 3 – continued from previous page

Scan Value	Hex Value	Keyboard Function Key Operations
1060	3Ch	<
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 Operations
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

continues on next page

Table 4 – continued from previous page

Scan Value	Hex Value	Keyboard Function Key Operations
1102	66h	f
1103	67h	g
1104	68h	h
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 Operations
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.