MT850
2D Wireless Scanner
User's Manual

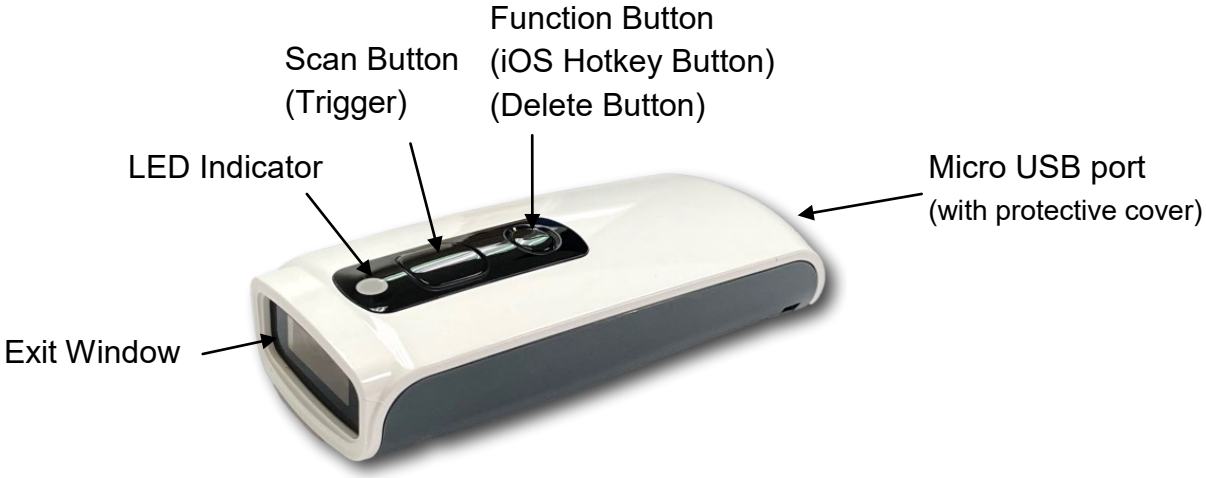
Version 1.9

DATE: 2023/11/24

Table of Content

Chapter 1 Introduction

This user's manual is dedicated to MT850, a portable 2D scanner that can send data to the host up to 20 meters away. This economical, ergonomic pocket-sized wireless 2D barcode scanner is a high efficient companion for users who work with laptops, tablets, smart phones and other mobile devices with iOS®, Android® and Windows®.



Specifications

Optic & Performance	
Light Source	White LED Visible red LED
Sensor	1280 x 800
Resolution	3mil / 0.075mm
Scan Angle	Horizontal 40° Vertical 30°
Pitch Angle	±60°
Skew Angle	±50°
Roll Angle	360°
Print Contrast Ratio	20%
Width of Field	141mm (13Mil Code39)
Memory	2MB (20,000 barcodes)
Guaranteed D.O.F (Environment : 800 lux)	3 Mil Code 39 : 65 ~ 95mm
	5 Mil Code 39 : 35 ~ 155mm
	13 Mil UPC/EAN : 45 ~ 285mm

	15 Mil QR Code : 40 ~ 210mm
	6.67 Mil PDF417 : 50 ~ 145mm
	10 Mil Data Matrix : 40 ~ 140mm
Physical Characteristics	
Dimension	W42.5 x L102 x H21.5 mm
Weight	71g
Color	White
Material	PC
Cable	Micro(M) to USB A(M) Cable, 1.5M
Trigger	Scan Button (Trigger) Function Button (iOS Hotkey/Delete Button)
Indicator	LED, Buzzer, Vibrator
Electrical	
Operation Voltage	3.7 VDC ± 5%
Working Current	< 330mA
Standby Current	< 60mA
Battery	3.7V, 1000mAh, Li-Polymer Battery
Number of Scan (per full charge)	> 10,000 scans (1 scan/ 5 secs, Bluetooth connected)
Connectivity	
Radio	Bluetooth 5.0 dual mode (Class 2)
Range	66 ft/ 20m (line of sight)
Interface/ Profile	BT HID BT SPP USB HID USB VCP Memory
User Environment	
Operating Temperature	-10 ~ 50˚C
Storage Temperature	-20 ~ 60˚C
Humidity	0% ~ 95%RH (Non-condensing)
Drop Durability	1.5M
Sealing	IP55
Ambient Light	70,000 Lux (Sunlight)
1D Symbologies	UPC-A/ UPC-E, EAN-8/ EAN-13, Code128, GS1-128, Code 39, Code32, Code 93, Code11, Interleaved 2 of 5, Matrix 2 of 5, Industrial 2 of 5, Codabar, MSI, GS1 Databar
2D Symbologies	QR Code, Micro QR Code, Data Matrix, PDF417, MicroPDF417, Aztec, MaxiCode

Regulatory	
ESD	Functional after 4KV contact, 8KV air discharge
EMC/RF	TELEC
Safety Approval	TBA
Environmental	WEEE, RoHS 2.0
Medical Compliance	ISO 22196 (JIS Z 2801), ISO 11737-1/2

Beeper Indication

Beeper	Status
Single beep	Good read
Single short beep	The scanner reads a Code39 ASCII during multi-step configuration
Two beeps	Wireless connection
	The scanner successfully reads a configuration barcode
Three beeps	Wireless disconnection
Three short beeps	The scanner reads a barcode while disconnected
	The scanner reads an unexpected barcode during multi-step configuration. (Please scan "**Abort**" and start over)
	Memory Full
Four beeps (Hi-Lo-Hi-Lo)	Out of range / Poor connection
Five beeps	Low power

LED Indication

LED	Status
Off	Power off / Standby / Connected
Flashing blue	Disconnected / Discoverable
One green flash	Good read
Flashing red	Low power
Solid red	Charging

Chapter 2 General Settings

Barcode Configurability

Scanning below configuration barcodes will allow/prohibit user to change settings by scanning configuration barcodes in this manual.

.B015$

Enable Barcode Configurability*

.B016$

Disable Barcode Configurability

Factory Default

Scanning below configuration barcode will reset all parameters to factory default settings (the ones with * asterisk mark)

.A001$

Factory Default

Check Version

To check firmware version, please scan below configuration barcode.

.A007$

Check Version

Good Read Indicator

Beep Tone

.F012$

Off

.F022$

Beep Low (2.0KHz)

.F018$

Beep Medium (2.7KHz)

.F019$

Beep High (4.0KHz)*

Beep Mode

.F023$

Normal*

.F024$

Warning Beep Only

.F025$

Mute

Vibrator

.D035$

Off*

.D034$

On

Data Format

UTF-8/Shift-JIS to Unicode Conversion

.C044$

Disable*

.C045$

UTF-8 to Unicode (Word)

.C054$

Shift-JIS (Notepad)

.C055$

Shift-JIS to Unicode (Word)

HT/CR/ESC Converts to TAB/ENTER/ESCAPE

.D026$

Off*

.D025$

On

Note:

1. By default, HT [$I], CR [$M] and ESC [%A] is transmitted as <0x09>, <0x0D> and <0x1B> respectively.
2. When enabled, HT [$I], CR [$M] and ESC [%A] is transmitted as <TAB>, <ENTER> and <ESCAPE> on keyboard respectively.

Function Code Conversion

.C020$

Off

.C019$

On*

Note:

Once disabled, the scanner will output the original encoded data of the barcodes in Appendix – Function/Navigation/Modifier Keys.

Control Code Output Method

.D028$

Ctrl Mode*

.D029$

Alt Mode

.D027$

Disable Output

Note:

Control code (0x01 ~ 0x1F) can be sent by two methods:

(1) Ctrl Mode:

A barcode of "A<HT>F" (0x41/0x09/0x46) is scanned, the output sequence is:

a. Enter "A" – Press A key
b. Enter "Ctrl + I" – Since 0x09 corresponds to "Ctrl + I", virtual keyboard will press and hold Ctrl key, press I key, and release Ctrl key and I key
c. Enter "F" – Press F key

Since "Ctrl+I" is shortcut for italicizing text in some software applications, the result of above output sequence can be a regular A plus an italic F.

(2) Alt Mode:

For <HT>, the output sequence of virtual keyboard is:

Enter "Alt + 0 + 0 + 0 + 9" – Virtual keyboard will press and hold Alt key, press "0", "0", "0" and "9" on numeric keypad respectively, and release Alt key.

Control Code Table

ASCII	Hex	Dec	Ctrl Mode	Alt Mode
NUL	00	0	Ctrl+Shift+2	Alt+0+0+0+0
SOH	01	1	Ctrl+a	Alt+0+0+0+1
STX	02	2	Ctrl+b	Alt+0+0+0+2
ETX	03	3	Ctrl+c	Alt+0+0+0+3
EOT	04	4	Ctrl+d	Alt+0+0+0+4
ENQ	05	5	Ctrl+e	Alt+0+0+0+5
ACK	06	6	Ctrl+f	Alt+0+0+0+6
BEL	07	7	Ctrl+g	Alt+0+0+0+7
BS	08	8	Ctrl+h	Alt+0+0+0+8
HT	09	9	Ctrl+i	Alt+0+0+0+9
LF	0A	10	Ctrl+j	Alt+0+0+1+0
VT	0B	11	Ctrl+k	Alt+0+0+1+1
FF	0C	12	Ctrl+l	Alt+0+0+1+2
CR	0D	13	Ctrl+m	Alt+0+0+1+3
SO	0E	14	Ctrl+n	Alt+0+0+1+4
SI	0F	15	Ctrl+o	Alt+0+0+1+5
DLE	10	16	Ctrl+p	Alt+0+0+1+6
DC1	11	17	Ctrl+q	Alt+0+0+1+7
DC2	12	18	Ctrl+r	Alt+0+0+1+8
DC3	13	19	Ctrl+s	Alt+0+0+1+9
DC4	14	20	Ctrl+t	Alt+0+0+2+0
NAK	15	21	Ctrl+u	Alt+0+0+2+1
SYN	16	22	Ctrl+v	Alt+0+0+2+2
ETB	17	23	Ctrl+w	Alt+0+0+2+3
CAN	18	24	Ctrl+x	Alt+0+0+2+4
EM	19	25	Ctrl+y	Alt+0+0+2+5
SUB	1A	26	Ctrl+z	Alt+0+0+2+6
ESC	1B	27	Ctrl+[	Alt+0+0+2+7

FS	1C	28	Ctrl+\	Alt+0+0+2+8
GS	1D	29	Ctrl+]	Alt+0+0+2+9
RS	1E	30	Ctrl+Shift+6	Alt+0+0+3+0
US	1F	31	Ctrl+Shift+-	Alt+0+0+3+1

Numeric Key

.D017$

Numeric Key

.D018$

Alphanumeric Key*

Note:

1. By default, the alphanumeric key is used for 14ecommended14 digits. Scan NUMERIC KEY if you want to use the keys on the numeric keypad.
2. If you select NUMERIC KEY, the Num Lock status of the physical keyboard should be ON.

Capslock Mode

.A005$

Capslock Off*

.A004$

Capslock On

.A006$

Capslock Free

Note:

When barcode scanner is set to Capslock Free mode, no matter keyboard Capslock LED indicator is ON or OFF, output will be always the same as the Original barcode. In other words, what you see is what output is.

Keyboard Layout

.C010$

English (US)*

.C018$

English (UK)

.C027$

Danish

.C013$

Spanish

.C021$

Hungarian (QWERTZ)

.C024$

Hungarian (QWERTY)

.C025$

Canadian French

.C028$

Dutch

.C014$

Italian

.C012$

French

.C011$

German

.C016$

Swiss German

.C023$

Swiss French

.C026$

Swedish

.C022$

Czech (QWERTZ)

.C017$

Czech (QWERTY)

.C029$

Norwegian

.C030$

Belgian

.C031$

Portuguese

.C032$

Slovak

.C033$

Brazilian (QWERTY)

.C034$

Canadian (Traditional)

.C009$

Japanese

.C015$

Alt Code

Intercharacter Delay

The configurable range is from 0 to 255ms. The larger the number, the longer the delay.

.B009$

Set Intercharacter Delay
(Default = 10ms)

Example: Set Intercharacter Delay to 8ms
Step1: Scan Set Intercharacter Delay
Step2: Scan "**0**" "**0**" "**8**" in Appendix – Numbers
Step3: Scan Set Intercharacter Delay

Interblock Delay

The configurable range is from 0 to 2550ms. The larger the number, the longer the delay.

.B007$

Set Interblock Delay
(Default = 0ms)

Example: Set Interblock Delay to 20ms
Step1: Scan Set Interblock Delay
Step2: Scan "**0**" "**0**" "**2**" in Appendix – Numbers
Step3: Scan Set Interblock Delay

Imaging Settings

Inverse Barcode

.D021$

Disable Inverse Barcode*

.D022$

Enable Inverse Barcode

Centering

.F073$

Disable Centering*

.F074$

Enable Centering

Note:
When enabled, the scanner only decodes the barcodes marked by aimer dot.

Chapter 3 Interface

BT HID

Getting Connected

1. Press the scan button to power up the scanner.
2. Scan "**Disconnect**", the scanner will emit two beeps. Alternatively you may press and hold function for 5 seconds until two beeps.

.E031$

Disconnect

3. Scan "**BT HID**", the scanner will emit two beeps.

.E043$

BT HID

4. Select "Wireless Scanner" from discovered device list.
5. If Bluetooth application prompts you to enter a pincode, please follow the steps in **Pincode Setup** section.
6. The scanner will emit two beeps as indication that the Bluetooth connection has established successfully.
7. While conneted with the scanner as physical keyboard, the touch keyboard on iOS/Android device might disappear. To resolve this issue please do the following:
   (1) For iOS device, simply press the function button once.
   (2) For Android device, go to "Settings" > "Language & Input", tap on "Default keyboard" and turn off "Physical keyboard" or turn on "On-screen keyboard".

Pincode Setup

If Bluetooth application prompts you to enter a pincode, please follow the steps:

1. Scan "**Pincode Start**"

.E032$

Pincode Start

2. Scan numeric barcodes below according to the pincode generated by the Bluetooth application.

0 **1**

2 **3**

4 **5**

6 **7**

8 **9**

3. Scan "**Enter**"

$TX

Enter

4. Scan "**Pincode Stop**"

.E033$

Pincode Stop

BT SPP

Getting Connected

1. Press the scan button to power up the scanner.
2. Scan "**Disconnect**", the scanner will emit two beeps.

.E031$

Disconnect

3. Scan "**BT SPP Master**"(recommended) or "**BT SPP Slave**", the scanner will emit two beeps. If host can't auto-reconnect, use BT SPP Master. If host can auto-reconnect, use BT SPP Slave to avoid conflict.

.E042$

BT SPP Master
(Auto-reconnect)

.E052$

BT SPP Slave
(No Auto-reconnect)

4. Select "Wireless Scanner" from discovered device list.
5. If Bluetooth application prompts you to enter a pincode, enter "1234" from the host.
6. Enter serial communication software on your host and open the port occupied by the scanner.

7. The scanner will emit two beeps as indication that the Bluetooth connection has established successfully.

Set SPP Pincode

By default, the pincode under BT SPP profile for the scanner is "1234". It is configurable up to 8 numbers.

.B024$

Set SPP Pincode

Example: Set SPP Pincode to 0000.
Step1: Scan "**Set SPP Pincode**"
Step2: Scan "**0**" "**0**" "**0**" "**0**" in Appendix – Numbers
Step3: Scan "**Set SPP Pincode**"

General Bluetooth Settings

Power Off Timeout

The power off timeout is 3 minutes & 0 second by default. They are configurable from a minimum of 10 seconds (00:10) to a maximum of 60 minutes and 59 seconds (60:59)

.B030$

Set Minute
(Default = 03)

.B029$

Set Second
(Default = 00)

Example: Set Power Off Timeout to 5 minnutes and 30 seconds.
Step1: Scan "**Set Minute**"
Step2: Scan "**0**" "**5**" in Appendix – Numbers
Step3: Scan "**Set Minute**"
Step4: Scan "**Set Second**"
Step5: Scan "**3**" "**0**" in Appendix – Numbers
Step6: Scan "**Set Second**"

To disable Power Off Timeout (make scanner always on), scan below barcode:

.B021$

Disable Timeout

Set Bluetooth Device ID

Bluetooth device name is configurable up to 16 alphanumeric characters:

.B023$

Set Bluetooth Device ID

Example: Set XYZ123 as Bluetooth Device ID
Step 1: Scan "**Set Bluetooth Device ID**"
Step 2: Scan "**X**" "**Y**" "**Z**" "**1**" "**2**" "**3**" in Appendix – Upper Case Alphabets & Numbers
Step 3: Scan "**Set Bluetooth Device ID**"

To reset Bluetooth Device ID to "Wireless Scanner", scan below barcode:

.B022$

Reset Bluetooth Device ID

Check Bluetooth Firmware Version

.E037$

Check Bluetooth Firmware Version

Check Device MAC Address

.E038$

Check Device MAC Address

Check Host MAC Address

.E039$

Check Host MAC Address

ScanLink

ScanLink is a connection method that turns the scanner into a master device, which initiates the Bluetooth connection with the target host device (now a slave device). This, as a result, saves user the trouble of going through numerous setup procedures on the host device to establish connection.

Simply generate ScanLink barcode for the target slave device in below rule:

For BT HID profile, please encode:
HID<MAC Address> in Code39 without checksum or QR Code.

For BT SPP profile, please encode:
SPP<MAC Address> in Code39 without checksum or QR Code.

Example: Target Slave Device MAC Address = 00:15:83:52:2C:3B, Profile = BT HID
Encode **HID001583522C3B** in Code39 without checksum or QR Code.

Memory Mode

.C035$

Memory Mode

After scanning the above barcode, the scanner will be able to collect barcode data off-line. The barcode data will be stored in the format of:

<Date>, <Time>, <Barcode Data> <CR>

To retrieve stored data, please connect the scanner to the host with USB cable, access removable storage device "**MiniScan**" from which you may open or copy the file "**BARCODE.txt**" to your computer.

To exit Memory Mode, simply scan any interface barcode (e.g. "**BT HID**", "**BT SPP Master/Slave**", "**USB HID**", "**USB VCP**") other than memory mode.

Delete Last Record

To delete last memory data, please press function button once when the scanner is in memory mode.

Clear All Record

To delete all memory data, please connect the scanner to the host with USB cable, access removable storage device "**MiniScan**", and delete the file "**BARCODE.txt**". The scanner will emit two beeps as indication that the file has been successfully deleted.

Data Format

The default Data Format in memory mode is **<Date>**, **<Time>**, **<Barcode Data>**.

.R011$

Data Format

Below are configurable items and their setup codes:

Code	Item
2	Date
3	Time
4	Barcode Data

Example: Set Data Format as <Barcode Data>, <Date>, <Time>
Step1: Scan "**Data Format**"
Step2: Scan "**4**" "**3**" "**2**" respectively in Appendix – Numbers
Step3: Scan "**Data Format**"

Field Separator

The field separator in memory mode is comma (,) by default. It can be replaced by any alphanumeric characters.

.R010$

Field Separator

Example: Set Field Separator as Semicolon (;)
Step1: Scan "**Field Separator**"
Step2: Scan " **;** " in Appendix – Symbols
Step3: Scan "**Field Separator**"

Date Format

The default Date Format is **DD/MM/YYYY** (Code = 09)

.R008$

Date Format

Below are available Date Format and their setup codes:

Code	Date Format	Code	Date Format
01	DD-MM-YYYY	09	DD/MM/YYYY
02	MM-DD-YYYY	10	MM/DD/YYYY
03	DD-MM-YY	11	DD/MM/YY
04	MM-DD-YY	12	MM/DD/YY
05	YYYY-MM-DD	13	YYYY/MM/DD
06	YY-MM-DD	14	YY/MM/DD
07	DD-MM	15	DD/MM
08	MM-DD	16	MM/DD

Example: Set Date Format as MM/DD/YY (Code = 12)
Step1: Scan "**Date Format**"
Step2: Scan "**1**" "**2**" respectively in Appendix – Numbers
Step3: Scan "**Date Format**"

Time Format

The default Time Format is HH:MM:SS (Code = 01)

.R009$

Time Format

Below are available Time Format and their setup codes:

Code	Time Format
01	HH:MM:SS
02	HH:MM

Example: Set Time Format as HH:MM (Code = 02)

Step1: Scan "**Time Format**"

Step2: Scan "**0**" "**2**" respectively in Appendix – Numbers

Step3: Scan "**Time Format**"

Date & Time Setup

.R006$

Set Date

.R007$

Set Time

Example: Set date as 2021-07-27, set time as 08:10:30 am (HH:MM:SS)

Step1: Scan "**Set Date**"

Step2: Scan "**2**" "**1**" "**0**" "**7**" "**2**" "**7**" in Appendix – Numbers

Step3: Scan "**Set Date**"

Step4: Scan "**Set Time**"

Step5: Scan "**0**" "**8**" "**1**" "**0**" "**3**" "**0**" in Appendix – Numbers

Step6: Scan "**Set Time**"

USB HID

.C008$

USB HID

USB VCP

.C006$

USB VCP

Chapter 4 Reading Mode

Trigger Mode

In Trigger Mode the LED will stay on once trigger is pressed and held, and will turn off automatically after a barcode is read or 10 seconds of idleness.

.F002$

Trigger Mode*

Auto-sensing Mode

In Auto-sensing Mode the LED will turn on if any image change is detected, and turn off automatically after a barcode is read or 3 seconds of idleness.

.F007$

Auto-sensing Mode

Chapter 5 Data Format

By default data format is as follows:

<Preamble> <Code ID> <Barcode Length> <Barcode Data> <Postamble> <Terminator>

Code ID

.A009$

Disable Code ID*

.A008$

Enable Factory ID

.A015$

Enable Set ID

Set ID

Set ID can be 0 ~ 2 alphanumerics for each symbology.

.P005$

Set ID – Code39

.P007$

Set ID – Codabar

.P006$

Set ID – Interleaved 2 of 5

.P017$

Set ID – Matrix 2 of 5

.P018$

Set ID – Industrial 2 of 5

.P009$

Set ID – Code11

.P014$

Set ID – MSI Plessey

.P001$

Set ID – EAN-13

.P004$

Set ID – UPC-A

.P002$

Set ID – EAN-8

.P003$

Set ID – UPC-E

.P013$

Set ID – Code93

.P010$

Set ID – Code128

.P024$

Set ID – GS1 Databar

.P026$

Set ID – QR Code

.P027$

Set ID – Data Matrix

.P025$

Set ID – PDF417

.P029$

Set ID – MicroPDF417

.P033$

Set ID – Aztec

.P030$

Set ID – MaxiCode

Example: Set Code39 Set ID as XY
Step1: Scan "**Set ID – Code39**"
Step2: Scan "**X**" "**Y**" in Appendix – Upper Case Alphabets
Step3: Scan "**Set ID – Code39**"

Data Length

.D020$

Send Data Length Off*

.D019$

Send Data Length On

Preamble

Preamble can be up to 16 bytes of data.

.A012$

Set Preamble

Example: Set Preamble as XYZ123
Step 1: Scan "**Set Preamble**"
Step 2: Scan "**X**" "**Y**" "**Z**" "**1**" "**2**" "**3**" in Appendix – Upper Case Alphabets & Numbers
Step 3: Scan "**Set Preamble**"

Postamble

Postamble can be up to 16 bytes of data.

.A013$

Set Postamble

Example: Set Postamble as XYZ123
Step 1: Scan "**Set Postamble**"
Step 2: Scan "**X**" "**Y**" "**Z**" "**1**" "**2**" "**3**" in Appendix – Upper Case Alphabets & Numbers
Step 3: Scan "**Set Postamble**"

Clear Preamble/Postamble

.A011$

Clear Preamble/Postamble

Terminator

.D010$

None

.D011$

<LF>

.D012$

<CR>*

.D013$

<CR><LF>*

.D014$

<TAB>

.D015$

<Space>

.D016$

<ESC>

Note:

1. For USB HID/BT HID interface the default terminator is CR.
2. For USB VCP/BT SPP interface the default terminator is CR+LF

Chapter 6 Symbologies

General Settings

.A002$

Enable All Symbologies

.A003$

Disable All Symbologies

.G036$

Enable All 1D Symbologies

.G035$

Disable All 1D Symbologies

.G038$

Enable All 2D Symbologies

.G037$

Disable All 2D Symbologies

Note: When all symbologies are disabled, configuration barcodes are still readable.

UPC-A

Enable/Disable UPC-A

.H001$

Enable UPC-A*

.H002$

Disable UPC-A

Check Digit

.H005$

Send Check Digit*

.H006$

Not Send Check Digit

UPC-A to EAN-13

.H068$

Enable UPC-A to EAN-13

.H067$

Disable UPC-A to EAN-13*

UPC-E0

Enable/Disable UPC-E0

.H007$

Enable UPC-E0*

.H008$

Disable UPC-E0

Check Digit

.H011$

Send Check Digit*

.H012$

Not Send Check Digit

UPC-E0 to UPC-A

.H053$

Enable UPC-E0 to UPC-A

.H054$

Disable UPC-E0 to UPC-A*

EAN-8

Enable/Disable EAN-8

.H019$

Enable EAN-8*

.H020$

Disable EAN-8

Check Digit

.H024$

Not Send Check Digit

.H023$

Send Check Digit*

EAN-13

Enable/Disable EAN-13

.H013$

Enable EAN-13*

.H014$

Disable EAN-13

Check Digit

.H018$

Not Send Check Digit

.H017$

Send Check Digit*

ISBN

.H049$

On

.H050$

Off*

ISSN

.H051$

On

.H052$

Off*

UPC/EAN Supplement

.H091$

Enable 2/5-digit Supplement

.H090$

Disable 2/5-digit Supplement*

.H092$

Auto 2/5-digit Supplement

Code 128

Enable/Disable Code 128

.J010$

Enable Code 128*

.J011$

Disable Code 128

GS1-128(UCC/EAN 128)

Enable/Disable GS1-128

.M001$

Enable GS1-128*

.M002$

Disable GS1-128

Code128/GS1-128 Min/Max Length

.J012$

Set Min Length
(Default = 04)

.J013$

Set Max Length
(Default = 50)

Example: Set Min Length as 8, Max Length as 12 for Code128/GS1-128
Step1: Scan "**Set Min Length**"
Step2: Scan "**0**" "**8**" in Appendix – Numbers
Step3: Scan "**Set Min Length**"
Step4: Scan "**Set Max Length**"
Step5: Scan "**1**" "**2**" in Appendix – Numbers
Step6: Scan "**Set Max Length**"

Note: Configurable range for Min/Max Length is 01 ~ 50.

Code 39

Enable/Disable Code 39

.G008$

Enable Code 39*

.G009$

Disable Code 39

Verification

.G003$

Disable CDV*

.G004$

CDV & Send CD

.G005$

CDV & Not Send CD

Start/Stop

.G015$

Not Send Start/Stop*

.G014$

Send Start/Stop*

Full ASCII Code39

.G001$

Enable Full ASCII Code39*

.G002$

Disable Full ASCII Code39

Code39 Min/Max Length

.G006$

Set Min Length
(Default = 01)

.G007$

Set Max Length
(Default = 50)

Example: Set Min Length as 8, Max Length as 12 for Code39
Step1: Scan "**Set Min Length**"
Step2: Scan "**0**" "**8**" in Appendix – Numbers
Step3: Scan "**Set Min Length**"
Step4: Scan "**Set Max Length**"
Step5: Scan "**1**" "**2**" in Appendix – Numbers
Step6: Scan "**Set Max Length**"

Note: Configurable range for Min/Max Length is 01 ~ 50.

Code 32

Enable/Disable Code 32

.K010$

Enable Code 32

.K011$

Disable Code 32*

Notw: Please make sure Code39 is enabled with verification disabled before enabling Code32.

Leading/Tailing

.K012$

Not Send Leading & Tailing

.K013$

Send Leading Only

.K014$

Send Tailing Only

.K015$

Send Leading & Tailing*

Code 93

Enable/Disable Code 93

.G010$

Enable Code 93*

.G011$

Disable Code 93

Code 93 Min/Max Length

.G012$

Set Min Length
(Default = 04)

.G013$

Set Max Length
(Default = 50)

Example: Set Min Length as 8, Max Length as 12 for Code93
Step1: Scan "**Set Min Length**"
Step2: Scan "**0**" "**8**" in Appendix – Numbers
Step3: Scan "**Set Min Length**"
Step4: Scan "**Set Max Length**"
Step5: Scan "**1**" "**2**" in Appendix – Numbers
Step6: Scan "**Set Max Length**"

Note: Configurable range for Min/Max Length is 01 ~ 50.

Code 11

Enable/Disable Code 11

.I010$

Enable Code 11

.I011$

Disable Code 11*

Verification

.I012$

Disable CDV*

.I042$

Single Digit

.I043$

Double Digits

Check Digit

.I013$

Send Check Digit

.I014$

Not Send Check Digit*

Code 11 Min/Max Length

.I015$

Set Min Length
(Default = 04)

.I016$

Set Max Length
(Default = 50)

Example: Set Min Length as 8, Max Length as 12 for Code11
Step1: Scan "**Set Min Length**"
Step2: Scan "**0**" "**8**" in Appendix – Numbers
Step3: Scan "**Set Min Length**"
Step4: Scan "**Set Max Length**"
Step5: Scan "**1**" "**2**" in Appendix – Numbers
Step6: Scan "**Set Max Length**"

Note: Configurable range for Min/Max Length is 01 ~ 50.

Codabar (NW-7)

Enable/Disable Codabar

.I001$

Enable Codabar*

.I002$

Disable Codabar

Start/Stop

.I003$

Send Start/Stop

.I004$

Not Send Start/Stop*

Codabar Min/Max Length

.I008$

Set Min Length
(Default = 04)

.I009$

Set Max Length
(Default = 50)

Example: Set Min Length as 8, Max Length as 12 for Codabar
Step1: Scan "**Set Min Length**"
Step2: Scan "**0**" "**8**" in Appendix – Numbers
Step3: Scan "**Set Min Length**"
Step4: Scan "**Set Max Length**"
Step5: Scan "**1**" "**2**" in Appendix – Numbers
Step6: Scan "**Set Max Length**"

Note: Configurable range for Min/Max Length is 01 ~ 50.

Interleaved 2 of 5

Enable/Disable Interleaved 2 of 5

.J001$

Enable Interleaved 2 of 5*

.J002$

Disable Interleaved 2 of 5

Verification

.J003$

Disable CDV*

.J004$

CDV & Send CD

.J005$

CDV & Not Send CD

Interleaved 2 of 5 Min/Max Length

.J006$

Set Min Length
(Default = 05)

.J007$

Set Max Length
(Default = 50)

Example: Set Min Length as 8, Max Length as 12 for Interleaved 2 of 5
Step1: Scan "**Set Min Length**"
Step2: Scan "**0**" "**8**" in Appendix – Numbers
Step3: Scan "**Set Min Length**"
Step4: Scan "**Set Max Length**"
Step5: Scan "**1**" "**2**" in Appendix – Numbers
Step6: Scan "**Set Max Length**"

Note: Configurable range for Min/Max Length is 01 ~ 50.

Matrix 2 of 5

Enable/Disable Matrix 2 of 5

.M010$

Enable Matrix 2 of 5*

.M011$

Disable Matrix 2 of 5

Matrix 2 of 5 Min/Max Length

.M015$

Set Min Length
(Default = 04)

.M016$

Set Max Length
(Default = 24)

Example: Set Min Length as 8, Max Length as 12 for Matrix 2 of 5
Step1: Scan "**Set Min Length**"
Step2: Scan "**0**" "**8**" in Appendix – Numbers
Step3: Scan "**Set Min Length**"
Step4: Scan "**Set Max Length**"
Step5: Scan "**1**" "**2**" in Appendix – Numbers
Step6: Scan "**Set Max Length**"

Note: Configurable range for Min/Max Length is 01 ~ 50.

Industrial 2 of 5

Enable/Disable Industrial 2 of 5

.N001$

Enable Industrial 2 of 5*

.N002$

Disable Industrial 2 of 5

Industrial 2 of 5 Min/Max Length

.N006$

Set Min Length
(Default = 04)

.N007$

Set Max Length
(Default = 24)

Example: Set Min Length as 8, Max Length as 12 for Industrial 2 of 5
Step1: Scan "**Set Min Length**"
Step2: Scan "**0**" "**8**" in Appendix – Numbers
Step3: Scan "**Set Min Length**"
Step4: Scan "**Set Max Length**"
Step5: Scan "**1**" "**2**" in Appendix – Numbers
Step6: Scan "**Set Max Length**"

Note: Configurable range for Min/Max Length is 01 ~ 50.

.

MSI Plessey

Enable/Disable MSI Plessey

.L001$

Enable MSI Plessey

.L002$

Disable MSI Plessey*

Verification

.L004$

Send Check Digit*

.L003$

Not Send Check Digit

.L009$

Single Check Digit MOD10*

.L007$

Double Check Digits MOD10

.L008$

Double Check Digits MOD10/MOD11

MSI Plessey Min/Max Length

.L005$

Set Min Length
(Default = 04)

.L006$

Set Max Length
(Default = 50)

Example: Set Min Length as 8, Max Length as 12 for MSI Plessey
Step1: Scan "**Set Min Length**"
Step2: Scan "**0**" "**8**" in Appendix – Numbers
Step3: Scan "**Set Min Length**"
Step4: Scan "**Set Max Length**"
Step5: Scan "**1**" "**2**" in Appendix – Numbers
Step6: Scan "**Set Max Length**"

Note: Configurable range for Min/Max Length is 01 ~ 50.

GS1 DataBar (RSS-14)

Enable/Disable GS1 DataBar

.N032$

Enable GS1 DataBar*

.N033$

Disable GS1 DataBar

GS1 DataBar Limited (RSS-Limited)

Enable/Disable GS1 DataBar Limited

.N010$

Enable GS1 DataBar Limited*

.N011$

Disable GS1 DataBar Limited

GS1 DataBar Expanded (RSS-Expanded)

Enable/Disable GS1 DataBar Expanded

.N026$

Enable GS1 DataBar Expanded*

.N027$

Disable GS1 DataBar Expanded

QR Code

Enable/Disable QR Code

.G025$

Enable QR Code*

.G026$

Disable QR Code

Micro QR Code

Enable/Disable Micro QR Code

.G027$

Enable Micro QR Code*

.G028$

Disable Micro QR Code

Data Matrix

Enable/Disable Data Matrix

.G031$

Enable Data Matrix*

.G032$

Disable Data Matrix

PDF417

Enable/Disable PDF417

.G021$

Enable PDF417*

.G022$

Disable PDF417

MicroPDF417

Enable/Disable MicroPDF417

.G039$

Enable MicroPDF417*

.G040$

Disable MicroPDF417

Aztec

Enable/Disable Aztec

.G055$

Enable Aztec*

.G056$

Disable Aztec

MaxiCode

Enable/Disable MaxiCode

.G043$

Enable MaxiCode

.G044$

Disable MaxiCode*

Chapter 7 Appendix

Appendix – Numbers

0

1

2

3

4

5

6

7

8

9

Appendix – Upper Case Alphabets

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

X

Y

Z

Appendix – Lower Case Alphabets

+A

a

+B

b

+C

c

+D

d

+E

e

+F

f

+G

g

+H

h

+I

i

+J

j

+K

k

+L

l

+M

m

+N

n

+O

o

+P

p

+Q

q

+R

r

+S

s

+T

t

+U

u

+V

v

+W

w

+X

x

+Y

y

+Z

z

Appendix – Control Codes

%U

NUL

$A

SOH

$B

STX

$C

ETX

$D

EOT

$E

ENQ

$F

ACK

$G

BEL

$H

BS

$I

HT

$J

LF

$K

VT

$L

FF

$M

CR

$N

SO

$O

SI

$P

DLE

$Q

DC1

$R

DC2

$S

DC3

$T

DC4

$U

NAK

$V

SYN

$W

ETB

$X

CAN

$Y

EM

$Z

SUB

%A

ESC

%B

FS

%C

GS

%D

RS

%E

US

Appendix – Symbols

+

-

.

$

%

/

\

!

@

#

^

~

&

*

_

=

%Q

|

%P

{

%R

}

%K

[

%M

]

/ H

(

/ I

)

%G

<

%I

>

%W

`

/ B

“

/ G

‘

/ L

,

%F

;

/ Z

:

%J

?

SP

%T

DEL

Appendix – Function Keys

$TA

F1

$TB

F2

$TC

F3

$TD

F4

$TE

F5

$TF

F6

$TG

F7

$TH

F8

$TI

F9

$TJ

F10

$TK

F11

$TL

F12

$TM

Home

$TN

End

$T+D

Enter (Numeric Key)

$T+O

App

Appendix – Navigation Keys

$TP

Cursor Left

$TO

Cursor Right

$TQ

Cursor Up

$TR

Cursor Down

$TS

Page Up

$TT

Page Down

$TU

Tab

$TV

Back Tab

$TW

Esc

$TX

Enter

$TY

BS

$TZ

Ins

$T%K

Del

Appendix – Modifier Keys

$T%L

Alt (Left) make *1

$T%M

Alt (Left) break

$T+E

Alt (Right) make

$T+F

Alt (Right) break

$T%N

Shift (Left) make *2

$T%O

Shift (Left) break

$T+I

Shift (Right) make

$T+J

Shift (Right) break

$T+K

Win (Left) make

$T+L

Win (Left) break

$T+M

Win (Right) make

$T+N

Win (Right) break

$T%W

Ctrl (Left) make *3

$T+A

Ctrl (Left) break

$T+G

Ctrl (Right) make

$T+H

Ctrl (Right) break

Note:
*1: When "Alt (Left) make" is programmed, please scan "Alt (Left) break" to resume barcode setting.
*2: When "Shift (Left) make" is programmed, please scan "Shift (Left) break" to resume barcode setting.
*3: When "Ctrl (Left) make" is programmed, please scan "Ctrl (Left) break" to resume barcode setting.

Appendix – Abort

If there is an error reading data barcode during multi-step configuration, you may cancel configuration by scanning below configuration barcode.

.P023$

Abort

Appendix – Default Table

Function	Default	Remark
General Settings		
Barcode Configurability	ON	
Beep Tone	High (4.0KHz)	
Beep Mode	Normal	
Vibrator	OFF	
Data Format		
UTF-8/Shift-JIS to Unicode Conversion	OFF	
HT/CR/ESC Converts to TAB/ENTER/ESCAPE	OFF	
Function Code Conversion	ON	
Numeric Key	Alphanumeric Key	
Contorl Code Output Method	Ctrl Mode	
Capslock Mode	OFF	
Keyboard Layout	English (US)	
Intercharacter Delay	10ms	
Interblock Delay	0ms	
Image Settings		
Inverse Barcode	OFF	
Centering	OFF	
Interface		
BT HID		
Getting Connected	N/A	
BT SPP		
Getting Connected	N/A	
Set SPP Pincode	1234	
General Bluetooth Settings		
Power Off Timeout	03:00	
Set Bluetooth Device ID	Wireless Scanner	
Memory Mode		
Data Format	<Date>,<Time>,<Barcode Data>	
Field Separator	,	
Date Format	DD/MM/YYYY	
Time Format	HH:MM:SS	
Date & Time Setup	N/A	
USB HID	N/A	

USB VCP	N/A
Reading Mode	
Trigger Mode	Trigger Mode
Auto-sensing Mode	N/A
Data Format	
Code ID	Disable
Set ID	N/A
Data Length	OFF
Preamble	N/A
Postamble	N/A
Terminator	CR (BT HID / USB HID) CR+LF (BT SPP / USB VCP)
Symbologies	
General Settings	N/A
UPC-A	
Enable/Disable	ON
Check Digit	Send
UPC-A to EAN-13	OFF
UPC-E0	
Enable/Disable	ON
Check Digit	Send
UPC-E0 to UPC-A	OFF
EAN-8	
Enable/Disable	ON
Check Digit	Send
EAN-13	
Enable/Disable	ON
Check Digit	Send
ISBN	OFF
ISSN	OFF
UPC/EAN Supplement	OFF
Code 128	
Enable/Disable	ON
GS1-128	
Enable/Disable	ON
Min Length	04
Max Length	50
Code 39	
Enable/Disable	ON
Verification	Disable CDV

Start/Stop	Not Send
Full ASCII Code39	ON
Min Length	01
Max Length	50
Code 32	
Enable/Disable	OFF
Leading/Tailing	Send Leading & Tailing
Code 93	
Enable/Disable	ON
Min Length	04
Max Length	50
Code 11	
Enable/Disable	OFF
Verification	Disable CDV
Check Digit	Not Send
Min Length	04
Max Length	50
Codabar	
Enable/Disable	ON
Start/Stop	Not Send
Min Length	04
Max Length	50
Interleaved 2 of 5	
Enable/Disable	ON
Verification	Disable CDV
Min Length	05
Max Length	50
Matrix 2 of 5	
Enable/Disable	ON
Min Length	04
Max Length	24
Industrial 2 of 5	
Enable/Disable	ON
Min Length	04
Max Length	24
MSI Plessey	
Enable/Disable	OFF
Verification	Send Check Digit, Single Check Digit MOD10
Min Length	04

Max Length	50
GS1 DataBar (RSS-14)	
Enable/Disable	ON
GS1 DataBar Limited (RSS-Limited)	
Enable/Disable	ON
GS1 DataBar Expanded (RSS-Expanded)	
Enable/Disable	ON
QR Code	
Enable/Disable	ON
Micro QR Code	
Enable/Disable	ON
Data Matrix	
Enable/Disable	ON
PDF 417	
Enable/Disable	ON
MicroPDF417	
Enable/Disable	ON
Aztec	
Enable/Disable	ON
MaxiCode	
Enable/Disable	OFF

Appendix – Factory ID

#	Symbology	Code ID	HEX
0	UPC-E0	E	45
1	UPC-A	A	41
2	EAN-8	S	53
3	EAN-13	F	46
4	Code 128/GS1-128/ISBT 128	K	4B
5	Code 39/Code32	M	4D
6	Code 93	L	4C
7	Code 11	J	4A
8	Codabar	N	4E
9	Interleaved 2 of 5	I	49
10	Matrix 2 of 5	Y	59
11	Industrial 2 of 5	V	56
12	GS1 DataBar	G	47
13	MSI Plessey	O	4F
14	PDF 417	Z	5A
15	Micro PDF 417	r	72
16	Data Matrix	X	58
17	QR Code/Micro QR Code	W	57
18	Aztec	z	7A
19	MaxiCode	u	75

Appendix – ASCII Table

Note: ASCII 0~31 are non-printable characters, ASCII 32~127 are printable characters.

Hex	Dec	ASCII
00	00	NUL (Null char.)
01	01	SOH (Start of Header)
02	02	STX (Start of Text)
03	03	ETX (End of Text)
04	04	EOT (End of Transmission)
05	05	ENQ (Enquiry)
06	06	ACK (Acknowledgment)
07	07	BEL (Bell)
08	08	BS (Backspace)
09	09	HT (Horizontal Tab)
0A	10	LF (Line Feed)
0B	11	VT (Vertical Tab)
0C	12	FF (Form Feed)
0D	13	CR (Carriage Return)
0E	14	SO (Shift Out)
0F	15	SI (Shift In)
10	16	DLE (Data Link Escape)
11	17	DC1 (XON) (Device Control 1)
12	18	DC2 (Device Control 2)
13	19	DC3 (XOFF) (Device Control 3)
14	20	DC4 (Device Control 4)
15	21	NAK (Negative Acknowledgment)
16	22	SYN (Synchronous Idle)
17	23	ETB (End of Trans. Block)
18	24	CAN (Cancel)
19	25	EM (End of Medium)
1A	26	SUB (Substitute)
1B	27	ESC (Escape)
1C	28	FS (File Separator)
1D	29	GS (Group Separator)
1E	30	RS (Request to Send)
1F	31	US (Unit Separator)
20	32	SP (Space)
21	33	! (Exclamation Mark)
22	34	“ (Double Quote)

23	35	# (Number Sign)
24	36	$ (Dollar Sign)
25	37	% (Percent)
26	38	& (Ampersand)
27	39	` (Single Quote)
28	40	((Right / Closing Parenthesis)
29	41	) (Right / Closing Parenthesis)
2A	42	* (Asterisk)
2B	43	+ (Plus)
2C	44	, (Comma)
2D	45	- (Minus / Dash)
2E	46	. (Dot)
2F	47	/ (Forward Slash)
30	48	0
31	49	1
32	50	2
33	51	3
34	52	4
35	53	5
36	54	6
37	55	7
38	56	8
39	57	9
3A	58	: (Colon)
3B	59	; (Semi-colon)
3C	60	< (Less Than)
3D	61	= (Equal Sign)
3E	62	> (Greater Than)
3F	63	? (Question Mark)
40	64	@ (AT Symbol)
41	65	A
42	66	B
43	67	C
44	68	D
45	69	E
46	70	F
47	71	G
48	72	H
49	73	I
4A	74	J

4B	75	K
4C	76	L
4D	77	M
4E	78	N
4F	79	O
50	80	P
51	81	Q
52	82	R
53	83	S
54	84	T
55	85	U
56	86	V
57	87	W
58	88	X
59	89	Y
5A	90	Z
5B	91	[(Left / Opening Bracket)
5C	92	\ (Back Slash)
5D	93	] (Right / Closing Bracket)
5E	94	^ (Caret / Circumflex)
5F	95	_ (Underscore)
60	96	‘ (Grave Accent)
61	97	a
62	98	b
63	99	c
64	100	d
65	101	e
66	102	f
67	103	g
68	104	h
69	105	I
6A	106	j
6B	107	k
6C	108	l
6D	109	m
6E	110	n
6F	111	o
70	112	p
71	113	q
72	114	r

73	115	s
74	116	t
75	117	u
76	118	v
77	119	w
78	120	x
79	121	y
7A	122	z
7B	123	{ (Left/ Opening Brace)
7C	124	| (Vertical Bar)
7D	125	} (Right/Closing Brace)
7E	126	~ (Tilde)
7F	127	DEL (Delete)

Version History

Rev	Date	Description	Issued
1.0	2021.08.25	Initial Release	Shaw
1.1	2021.08.31	Revised configurable range for Min/Max length	Shaw
1.2	2021.10.05	Revised number of scan to > 10,000 scans	Shaw
1.3	2021.12.02	Updated Range to 66ft/20m	Shaw
1.4	2022.07.05	Added Control Code Output Method Added MaxiCode Deleted BCC (Binary Check Character)	Shaw
1.5	2022.09.08	Removed Scan Rate	Shaw
1.6	2022.12.05	Updated Regulatory (TELEC)	Shaw
1.7	2022.12.22	Updated Trigger Mode & Auto-sensing Mode	Shaw
1.8	2022.12.30	FW: HM3-r-1.03.BTA.T1 Added Shift-JIS to Unicode Conversion	Shaw
1.9	2023.11.24	Updated Control Code Table	Shaw