

Bluetooth 2D Long Range Barcode Scanner

- MS852B LR -



User's Manual

Version 1.2

Change Log

Date	Change Description	Version
2020/8/21	first published version	1.0
2020/9/10	Add Baud Rate	1.1
2021/09/09	LED / Beeper Indicator Update	1.2

Preface

About This Manual

Thank you for purchasing the unitech product.
This manual explains how to install, operate and maintain our product.
No part of this publication may be reproduced or used in any form, or by any electrical or mechanical means, such as photocopying, recording, or information storage and retrieval systems, without permission in writing from the manufacturer. The material in this manual is subject to change without notice. All product and company names are trademarks, service marks, or registered trademarks of their respective owners.

Regulatory Compliance Statements



FCC Warning Statement

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to

which the receiver is connected.

–Consult the dealer or an experienced radio/TV technician for help.

1. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. To maintain compliance with FCC RF exposure requirements, avoid direct contact to the transmitting antenna during transmitting.
3. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment.

Operation on the 5.15 - 5.25GHz frequency band is restricted to indoor use only. The FCC requires indoor use for the 5.15-5.25GHz band to reduce the potential for harmful interference to co-channel Mobile Satellite Systems. Therefore, it will only transmit on the 5.25-5.35 GHz, 5.47-5.725 GHz and 5.725 – 5.850 GHz band when associated with an access point (AP).

FCC Label Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

RF Radiation Exposure Statement

For body contact during operation, this device has been tested and meets FCC RF exposure guidelines when used with an accessory that contains no metal and that positions the handset a minimum of 1.5 cm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

Canadian Compliance Statement

This Class B Digital apparatus meets all requirements of the Canadian

Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe B respecte les exigences du Reglement sur le material brouilleur du Canada.

European Conformity Statement

unitech Electronics co., Ltd herewith declares that the unitech product is in compliance with the essential requirements and all other provisions of the RED 2014/53/EU directive, the EMC 2014/30/EU directive and the Low Voltage 2014/35/EU directive.

The declaration of conformity is available for download at :
<https://portal.unitech.eu/public/Safetyregulatorystatement>

CE RF Exposure Compliance

This device meets EU requirements (2014/53/EU) on the limitation of exposure of the general public to electromagnetic fields by way of health protection. For body-worn operation, this device has been tested and meets the ICNIRP guidelines and the European Standard EN 62209-2, for use with dedicated accessories, SAR is measured with this device at a separation of 0.5 cm to the body, while transmitting at the highest certified output power level in all frequency bands of this device. Use of other accessories which contain metals may not ensure compliance with ICNIRP exposure guidelines.

CE Mark Warning



This equipment complies with the requirements of Directive 2014/53/EU of the European Parliament and Commission from 24 May, 2014 governing Radio and Telecommunications Equipment and mutual recognition of conformity.

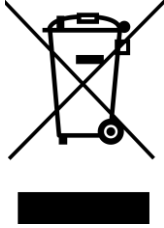
RoHS Statement



This device conforms to RoHS (Restriction of Hazardous Substances) European Union regulations that set maximum concentration limits on hazardous materials

used in electrical and electronic equipment.

Waste electrical and electronic equipment (WEEE)



unitech has set up a policy and process to meet the EU directive 2002/96/EC and update 2003/108/EC concerning electronic waste disposal.

For more detailed information of the electronic waste disposal of the products you have purchased from unitech directly or via unitech's resellers, you shall either contact your local supplier or visit us at :

<https://portal.unitech.eu/public/WEEE>

Taiwan NCC Warning Statement

低功率電波輻射性電機管理辦法

第十二條：經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條：低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。

低功率射頻電機需忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

注意事項：

1. 使用過度恐傷害視力。
2. 使用30分鐘請休息10分鐘；2歲以下幼兒不看螢幕，2歲以上每天看螢幕不要超過1小時。
3. 減少電磁波影響，請妥適使用。

Laser Information

The unitech product is certified in the U.S. to conform to the requirements of DHHS/CDRH 21CFR Subchapter J and to the requirements of IEC 825-1. Class II and Class 2 products are not considered to be hazardous. The unitech product contains internally a Visible Laser Diode (VLD) whose emissions do not exceed the maximum limits as set forth in the above regulations. The scanner is designed so that there is no human access to harmful laser light during normal operation, user maintenance or prescribed service operations.

The laser safety warning label required by the DHHS/IEC for the unitech product's optional laser scanner module is located on the memory compartment cover, on the back of the unit.

* Laser information only applies to the products with laser components.

CAUTION! Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light. Use of optical instruments with the scanner, including binoculars, microscopes, and magnifying glasses, with will increase eye damage. This does not include eyeglasses worn by the user.

LED Information

The unitech product contains LED indicator(s) or LED ring whose luminance is not harmful to human eyes during normal operation, user maintenance or prescribed service operations.

*LED information only applies to the products with LED components.

Battery Notice

1. To guarantee optimal performance, it is recommended that rechargeable batteries be replaced every year, or after 500 charging cycles are completed. It is normal for the battery to balloon or expand after one year or 500 cycles. Although it does not cause damage, it cannot be used again and must be disposed of according to the location's safe battery disposal procedures.
2. If a battery performance decreases more than 20%, the battery is at the end of its life cycle. Stop use and ensure the battery is disposed of properly.
3. The length of time that a battery lasts depends on the battery type and how the device is used. Conserve the battery life by doing the following:
 - Avoid fully uncharging the battery because this places additional strain on it. Several partial uncharges with frequent charges are better than a fully uncharged battery. Charging a partially charged battery does not cause harm to the unit.
 - Keep the battery cool. Avoid hot vehicles. For prolonged storage, keep the battery at a 40% charge level.
 - Do not leave the battery uncharged and unused for an extended period of time, the battery will wear out and the longevity of the battery will be at least half of one with frequent charges.
4. Protect battery life by not over or under charging the battery.
5. Please do not leave battery unused for long time without charging it. Despite unitech's safety precautions, the battery pack may begin to change shape. If so, stop using it immediately. Please check to see if you are using a proper power adapter to charge the battery or contact your service provider for service.
6. If you cannot charge the battery after it has been idle for an extended period of time and it begins to heat up, please do not try to charge it. It may not be functional anymore.
7. Please only use the original battery from unitech. Using a third party battery can damage our products. Please note that when such damage occurs, it is not covered by your warranty.

- CAUTION!**
- RISK OF EXPLOSION IF BATTERY IS REPLACED INCORRECTLY. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
 - 如果更換不正確之電池行事會有爆炸的風險
請依製造商說明書處理用過之電池
 - 如果更換不正確之電池行事會有爆炸的風險
請依製造商說明書處理用過之電池

Battery charge notice

It is important to consider temperature when the battery pack is charging. Charging is most efficient at normal room temperature or in a slightly cooler environment. It is essential that batteries are charged within the stated range of 0°C to 40°C. Charging batteries outside of the specified range could damage the batteries and shorten their life cycle.

CAUTION! Do not charge batteries at a temperature lower than 0°C. This will make the batteries unstable and dangerous. Please use a battery temperature detecting device for a charger to ensure a safe charging temperature range.

CAUTION! To ensure the unit working properly, please keep all connectors away from the contaminants staying inside of them such as dust, grease, mud, and water. The negligence may cause the unit with no communication, short circuited, overheated and so on.

CAUTION! If the connector is damaged, please ensure the connector is being fully repaired before use the unit to avoid causing short circuited.

Storage and safety notice

Although charged batteries may be left unused for several months, their capacity may be depleted due to build up of internal resistance. If this happens, they will require recharging prior to use. Batteries may be stored at temperatures between -20°C to 60°C, however they may deplete more rapidly at higher temperatures. It is recommended to store batteries at room temperature.

** The message above only applies to the usage of the removable batteries.
For the products with non-removable batteries / without batteries, please refer to the specification of each product.*

Product Operation and Storage Notice

The unitech product has applicable operation and storage temperature conditions. Please follow the limitation of suggested temperature conditions to avoid failure, damage or malfunction.

** For applicable temperature conditions, please refer to the specification of each product.*

Adapter Notice

1. Please do not leave the power adapter in the socket when it is not connected to your unitech product for charging.
2. Please remove the power adapter when the battery is fully recharged.
3. The bundled power adapter that comes with your unitech product is not meant to be used outdoors. An adapter exposed to water or rain, or a very humid environment can cause damage to both the adapter and the product.
4. Please only use the bundled power adapter or same specification of adapter to charge your unitech product. Using the wrong power adapter can damage your unitech product.

** The message above only applies to the product connected to the adapter.
For the products without using the adapters, please refer to the specification of each product.*

Hearing Damage Warning

Zx.3 Warning

The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following:

- the symbol of Figure 1 with a minimum height of 5 mm; and
- the following wording, or similar :

To prevent possible hearing damage, do not listen at high volume levels for long periods.



Figure 1 – Warning label (IEC 60417-6044)

Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.

Worldwide Support

unitech's professional support team is available to quickly answer questions or assist with technical-related issues. Should an equipment problem occur, please contact the nearest unitech regional service representative.

For complete contact information please visit the Web sites listed below:

<p>Taipei, Taiwan – Headquarters</p> <p>Tel: +886-2-89121122</p> <p>E-mail: info@hq.ute.com</p> <p>Address: 5F, No. 136, Lane 235, Baoqiao Road, Xindian District, New Taipei City 231, Taiwan (R.O.C.)</p> <p>Website: http://www.ute.com</p>	<p>Europe</p> <p>Tel: +31-13-4609292</p> <p>E-mail: info@eu.ute.com</p> <p>Address: Kapitein Hatterasstraat 19, 5015 BB, Tilburg, the Netherlands</p> <p>Website: http://eu.ute.com</p>
<p>China</p> <p>Tel: +86-59-2310-9966</p> <p>E-mail: info@cn.ute.com</p> <p>Address: Room401C, 4F, RIHUA International Mansion, Xinfeng 3rd Road, Huoju Hi-tech District, Xiamen, Fujan , China</p> <p>Website: http://cn.ute.com</p>	<p>Japan</p> <p>Tel: +81-3-35232766</p> <p>E-mail: info@jp.ute.com</p> <p>Address: Kayabacho Nagaoka Building 8F.,1-5-19 Shinkawa, Chuo-Ku, Tokyo, 104-0033, Japan</p> <p>Website: http://jp.ute.com</p>
<p>Asia & Pacific / Middle East</p> <p>Tel: +886-2-27911556</p> <p>E-mail: info@apac.ute.com info@india.ute.com info@mideast.ute.com</p> <p>Address: 4F., No. 236, ShinHu 2nd Rd., NeiHu Chiu, 114, Taipei,Taiwan</p> <p>Website: http://apac.ute.com / http://mideast.ute.com</p>	<p>Latin America</p> <p>Tel: +52-55-5171-0528</p> <p>E-mail: info@latin.ute.com</p> <p>Address: 17171 Park Row, Suite 210 Houston, TX 77084USA (Rep.)</p> <p>Website: http://latin.ute.com</p>
<p>North America</p> <p>Tel: +1-714-8926400</p> <p>E-mail: info@us.ute.com / info@can.ute.com</p> <p>Address: 6182 Katella Ave, Cypress, CA 90630, USA</p> <p>Website: http://us.ute.com</p>	<p>Please scan QR Code to visit us :</p> 

Warranty Policy

The items covered under the unitech Limited Warranty are free from defects during normal use.

The warranty period is varied from each country. Please consult with your supplier or unitech local office for actual length of warranty period to your purchased product.

Warranty becomes void if equipment is modified, improperly installed or used, damaged by accident or neglect, or if any parts are improperly installed or replaced by the user.

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Chapter 1 - Overview

1.1 Package

Please make sure the following contents are in the MS852B LR gift box. If something is missing or damaged, please contact your unitech representative.

The package contents (without cradle):

- MS852B LR Scanner with Battery
- USB Type C Charging Cable
- Quick Start Guide
- Regulatory Compliance Statements

Note: Charging with USB type C Cable

The package contents (with cradle):

- MS852B LR Scanner with Battery
- Interface Cable (USB cable or RS232 cable + Power Adapter)
- Charging Cradle
- Quick Start Guide
- Regulatory Compliance Statements

Note: Charging with cradle

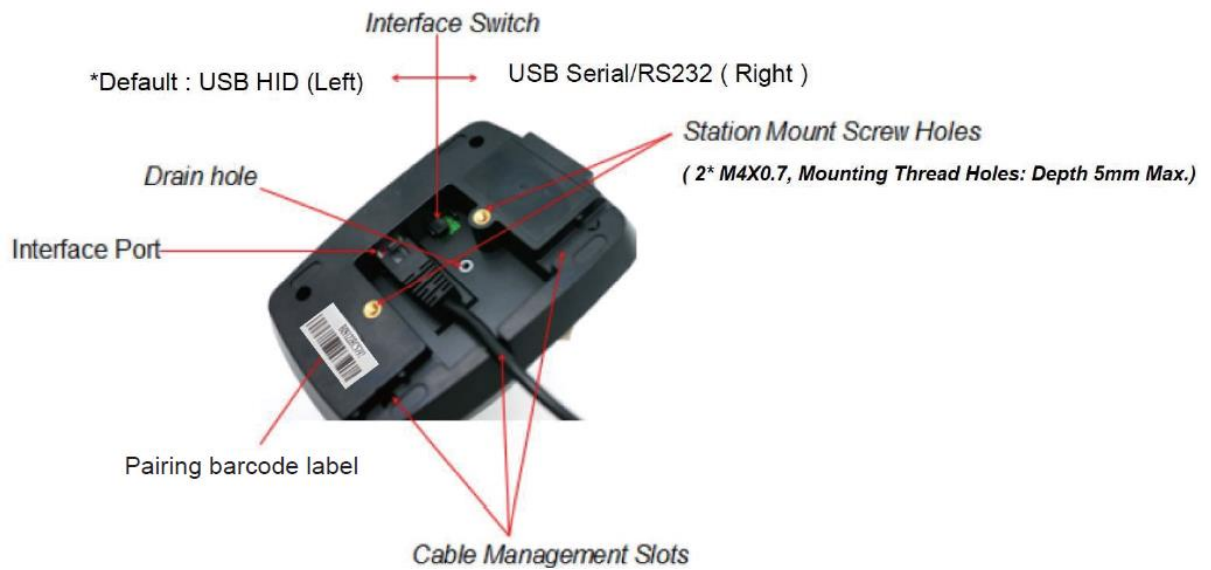
NOTE: The barcode with an asterisk (*) which appears in the following chapters indicates that it is the default option for the corresponding setting.

1.2 Product Detail

■ Scanner details



■ Cradle details



1.3 Specifications

Optical & Performance	
Sensor	CMOS sensor
Aiming Element	655nm
Illumination	Hyper Red 660nm
Ambient Light	10000 ft. candles (107,639 lux)
Skew Angle	± 60°
Pitch Angle Sensor	± 60°
Roll Angle	0 - 360°
Minimum Resolution	3.0 mil (Code 39), 5.0 mil (PDF417)
Printing Contrast Scale	Minimum 25%
Imager Field of View	Near camera: 32° horizontal, 20° vertical Far camera: 12° horizontal, 7.6° vertical
Image Sensor Resolution	1280 horizontal X 800 vertical pixels
Depth of Field (DOF PCS=80%)	SYMBOLGY / X-DIM TYPICAL RANGE* Near Far(inches/centimeters) 10 mil Code 39 3.0/7.6 * 85.0/215.9 13 100% UPC 3.5/8.9 90.0/228.6 15 mil Code 128 6.0/15.2 * 100.0/254.0 20 mil Code 39 4.0/10.2 * 172.0/436.9 40 mil Code 39 6.0/15.2 * 340.0/863.6 ** 55 mil Code 39 7.0/17.8 * 430.0/1092.2 ** 100 mil Code 39 (paper) 20.0/50.8 * 700.0/1778.0 ** 100 mil Code 128 (reflective) 30.0/76.2 * 700.0/1778.0 DataMatrix 10 5.0/12.7 45.0/114.3 DataMatrix 55 5.0/12.7 250.0/635.0 15 mil Code 128 (4 in. wide) 8.0/20.3 * 100.0/254.0 100 mil QR Code 15.7in / 40.0 cm 820.7 in / 2085.0 cm
Communication	
Host Interface supported	USB / RS232

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Radio	Bluetooth LE® V4.2 Bluetooth® 2.1+EDR, Class1 Dual mode
Wireless Coverage	100m (line of sight)
Interface/ Profile	BT HID & SPP
Mechanical	
Scanner Dimension	87.8 mm x 177.7 mm x71.6 mm (L x H X W)
Cradle Dimension	120.6 mm x 86.0 mm x 88.7 mm (L x H X W)
Weight	253g without cradle
Trigger Switch Life	10 million times
Functionality	
Symbologies	<p>1D: Code 39, Full ASCII, Code 32, Italian Pharmacode, Trioptic, Code 128, EAN-128, ISBT-128, Codabar, Code 11, Matrix 2 of 5, Chinese Matrix 2 of 5, UPC/EAN, UPCA, UPCE, UPCE1, EAN-8, EAN-13, Bookland/ISBN, ISSN, Coupon Code, Interleaved 2 of 5, Discrete 2 of 5, IATA, Databar, Code 93, MSI, UK Plessy, Telepen</p> <p>2D: PDF Standard, Macro PDF, Micro PDF, Macro Micro PDF, Composite, TLC-39, Aztec, Data Matrix, QR Standard, Micro QR, GS1 QR, Maxicode, Han Xin, Grid Matrix, DotCode, OCR, Digimarc</p> <p>Postal Codes: Japan Postal, Australia Post, Canada Postal, Netherlands KIX Code, US Planet, USPS 4CB/One Code/Intelligent Mail, UPU FICS Postal, Mailmark, French Lottery, Posti4S, Korean 3 of 5</p>
Electrical	
Indicator	LED & Beeper & Vibrator

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Battery Type	Rechargeable and replaceable battery pack
Battery Capacity	2850mAh
Battery Charging time	<6.5 hours
Operating Time	>40 hours (Based on 1 scan/5 seconds)
Environmental	
ESD Protection	Functional after 8K Contact and 15K Air
Mechanical Shock	2.1M onto concrete (scanner only)
Operating Temperature	-10°C to 50°C (14°F to 122°F)
Storage Temperature	-40°C to +70°C (-40°F to +158°F)
Relative Humidity	95% non-condensing
IP Rating	IP42
Regulatory Approvals	
CE, FCC, BSMI, VCCI, NCC, TELEC, BQB	

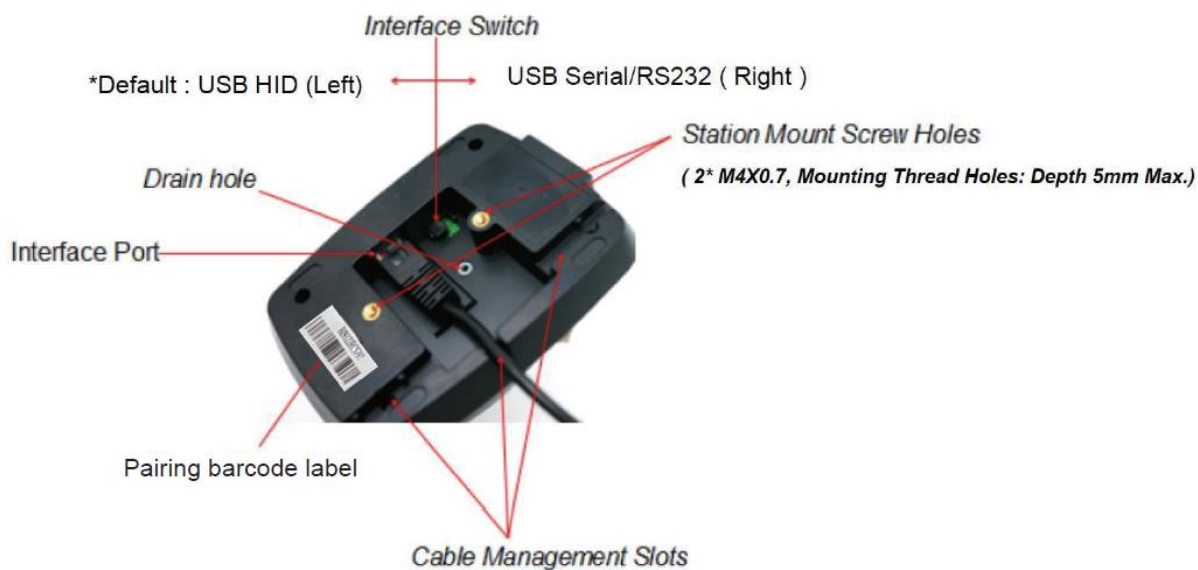
1.4 Getting Started

Scanner Turn on : Long press the trigger key for 2 seconds until you hear a long beep sound.

Scanner Turn off : Long press the trigger key for about 7 seconds until you hear a short beep sound.

■ How to pair the scanner with the cradle

1. Firstly, select the interface you want to communicate with your PC, for USB/RS232 cable connection, please switch the interface switch to the left/right side as below figure and then connect the cradle and the PC via the interface cable.
2. Long press trigger key for 2 seconds to turn on the scanner. And then put the scanner on the cradle to start the BT pairing automatically.
3. When the pairing is completed, both the scanner LED and the cradle LED will show solid blue light.



■ The definition of Cradle Button Operation

- Long press 2 seconds to un-pair with the scanner.
- Long press 5 seconds to do reset default to the cradle.
- Press the button to find the paired scanner.
- Press & power on (plug in USB cable): Enter bootloader mode for FW update.



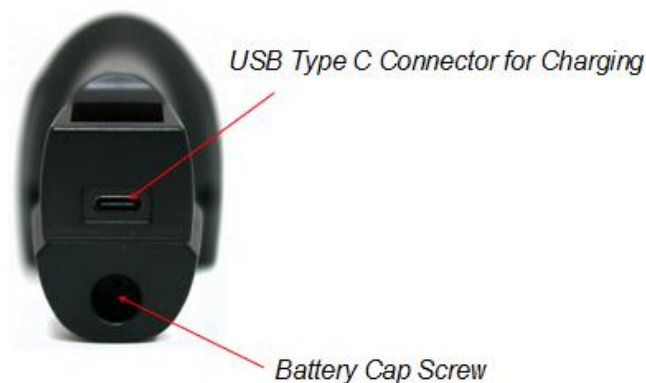
Cradle Button

1.5 Battery Charging

Before you use the MS852B LR for the first time, we strongly recommend charging the battery. It takes approximately 5 hours to fully charge the battery. To charge the scanner with / without a cradle, please follow the instructions below. Please only use the USB type C cable which came with the package.

■ Charging through USB type C cable

To charge MS852B LR, please connect scanner with host PC through USB type C cable.



■ Charging with the cradle

Please charge your scanner with the cradle.



1.6 How to Replace Battery

Please follow the below instruction to replace the scanner battery.

1. Loosen the screw



2. Remove the battery cap



3. Take out the battery



1.7 LED / Beeper Indicator

■ Scanner LED indicator

Description	Indication
Battery charging	Solid Red Light (LED is in the center of top housing)
Battery Low < 10%	Red LED blinking every 2 seconds (LED is in the outer ring)
Battery Low < 5%	Red LED blinking fast with all other LED indicators disabled (LED is in the outer ring)
System Warning /Error	Red LED toggling every second for 5 seconds or until trigger key pressed
BT is paired and disconnected to the host	Solid Green Light
Scanner in Auto Presentation Mode	Green LED blinking every 2 seconds
System busy with data scanning disabled	Green LED toggling every second
BT is connected to the host / cradle & ready to send data.	Solid Blue Light
Good read	Green LED flashing once
BT in pairing mode	Blue LED toggling every second
BT is connected to the host / cradle but its signal is too weak to send data Blue LED blinking fast	Blue LED blinking fast
In scanner Firmware Update Mode	White LED

■ **Cradle LED indicator**

Description	Indication
Power is on but host is not connected	Solid Red Light
Host is connected, BT is paired and disconnected	Solid Green Light
System busy with data sending/receiving disabled	Green LED toggling every second
Host is connected, BT is connected and cradle is ready to send/receive data	Solid Blue Light
BT in pairing mode	Blue LED toggling every second
In cradle Firmware Update Mode	White Light on
In scanner Firmware Update Mode	White LED toggling every second

■ **Scanner Beeper indicator**

Beeper Description	Indication
Scanner in Auto Operation Mode	Power On with 1 Beep
Scanner in Wedge Operation Mode	Power On with 2 Beeps
Scanner in Batch Operation Mode	Power On with 3 Beeps
Auto Power Off Alarm	3 short beeps at 15 seconds before power off
Power Off	Short beep
Good Read with BT Connected	Beep with medium sound
Good Read with BT Disconnected	Beep with short medium-high sound
BT Connection	Beep with low-medium-high sound

1.8 Firmware Update Procedure



How to update cradle firmware

Note: Tera Term (alternatively TeraTerm) is an open-source, free, software implemented, terminal emulator which can be downloaded from internet. The different version of Tera Term might not be executed firmware update properly. If you encounter this problem, please use Tera Term V4.72 for firmware update.

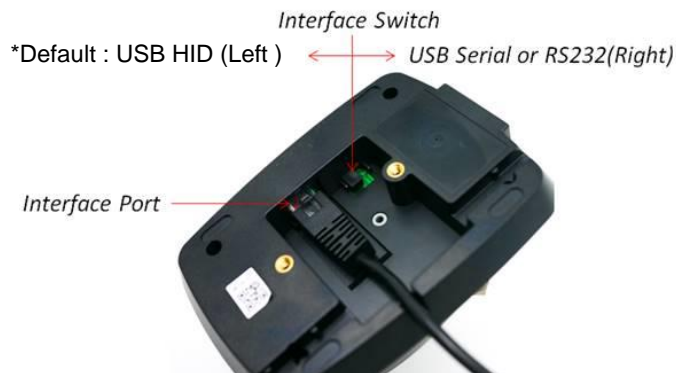
1. Switch Cradle interface to the USB serial interface (away from RJ45 port)
2. Press down the cradle button while plug-in the USB cable into the computer
3. Cradle LED flashing white color when entering cradle firmware update mode.
4. Open Tera Term and select Com port
5. The Tera Term screen pops up of cccc strings and ready to update firmware
6. Select from Tera Term menu: Transfer→ Y modem-→ Send
7. Select the Firmware to be updated to the cradle -> Confirm to perform the update
8. The Tera Term screen pops out of cccc strings → must see Cradle LED flashing blue color→ Success

How to update the scanner firmware

Note: *Before going to update the scanner firmware, please un-pair your scanner with the cradle first.*

1. Switch Cradle interface to the USB serial interface (away from RJ45 port),
2. Connect the cradle to the computer and wait till LED flashing blue color and then open the **Tera Term** and select the Com port to establish the connection.
3. No need to power on the scanner and insert into the cradle.
4. Press down" **Spacebar**" on the computer first while press down the scanner trigger key→ You will hear a Bi sound means scanner enters into the bootloader mode (scanner flashing white LED)
5. The **Tera Term** screen pops out of cccc of strings.
6. Select from **Tera term** menu: **Transfer**→ **Y modem**-→ **Send**
7. Select the firmware to be updated to the scanner -> Confirm to perform the update
8. The screen pops out of words and you will hear a Bi sound → wait till white LED turn off→ Success

How to check cradle firmware



1. Switch to USB HID interface (close to RJ45 port) and connect cradle to the computer and open word or note -> open Microsoft Word or note pad.
2. Press and hold the cradle button until seeing “**factory default** “ shown on the Screen.

How to check scanner firmware

Please scan “Send Info” barcode below for setting.

Send Info



1.9 Auto Presentation Mode

During the auto presentation mode, scanner will be performing this mode automatically when scanner is on the cradle.

The scanner will switch to manual trigger mode when the scanner is removed from the cradle.



To enable auto presentation mode :
Scan the barcode below "enable"

Disable*



Enable



Chapter 2 – Command Settings

2.1 Scanner Type

Note:

- *These settings are for cradleless mode only when the scanner connects to the host directly not through cradle.*
- *To switch the different scanner type, please do un-pair first and then select the scanner type and redo Bluetooth connection.*

BT Keyboard



BLE Keyboard



BT SPP



2.2 Operation Mode

Auto*



Wedge



Batch



2.3 System Reset & Info

Factory Default

(Reset setting and **Clean** Bluetooth Link-key information)



Reset Setting

(Reset setting but **Keep** Bluetooth Link-key information)



Send Info



2.4 Data & Memory

Note: To erase buffer, scan 'Enter Auto Buffer Erase' and then scan 'Erase'.

To erase batch file, scan 'Enter Batch File' and then scan 'Erase'.

Send Batch



Free Buffer / Drive Space



Erase



Enter Auto Buffer Erase



Enter Batch File Erase



Erase Last Data Entry



2.5 BT SPP Setting

Note: Data ACK/NAK is applied to Auto Operation Mode only.

Enable Auto Connection*



Disable Auto Connection



Disable Data ACK/NAK*



Enable Data ACK/NAK



2.6 Bluetooth

Note: If 'Higher Level RF Signal Checking' is selected, BLE communication will become more reliable but the distance will be shorter.

BT/BLE Un-Pair / Pair



Enable Cradle Auto Pair*



Normal Level RF Signal Checking*



Higher Level RF Signal Checking



Disable Cradle Auto Pair



2.7 Data Terminator

CR*



CRLF



LF



None/ Null



TAB



2.8 Auto Power Off After Idle

15 Minutes *



5 Minutes



30 Minutes



2 Hours



4 Hours



6 Hours



1 Hour



Disable



2.9 Beeper Control

Medium Volume*



High Volume



Low Volume



Mute



2.10 Good Read Indicator

Beeper *



Vibrator



None



Beeper & Vibrator



2.11 Connection Indicator

None



Beeper *



Vibrator



Beeper & Vibrator



2.12 System Setting Indicator

None



Beeper *



Vibrator



Beeper & Vibrator



2.13 System Warning/Error Indicator

None



Beeper *



Vibrator



Beeper & Vibrator



2.14 Power On Indicator

None



Beeper *



Vibrator



Beeper & Vibrator



2.15 Power Off Alarm & Power Off Indicator

None



Beeper *



Vibrator



Beeper & Vibrator



2.16 Vibrator Control

Enable Vibrator*



Disable Vibrator



2.17 Data Sending Inter Block Delay

10 ms*



50 ms



100 ms



1 Sec.



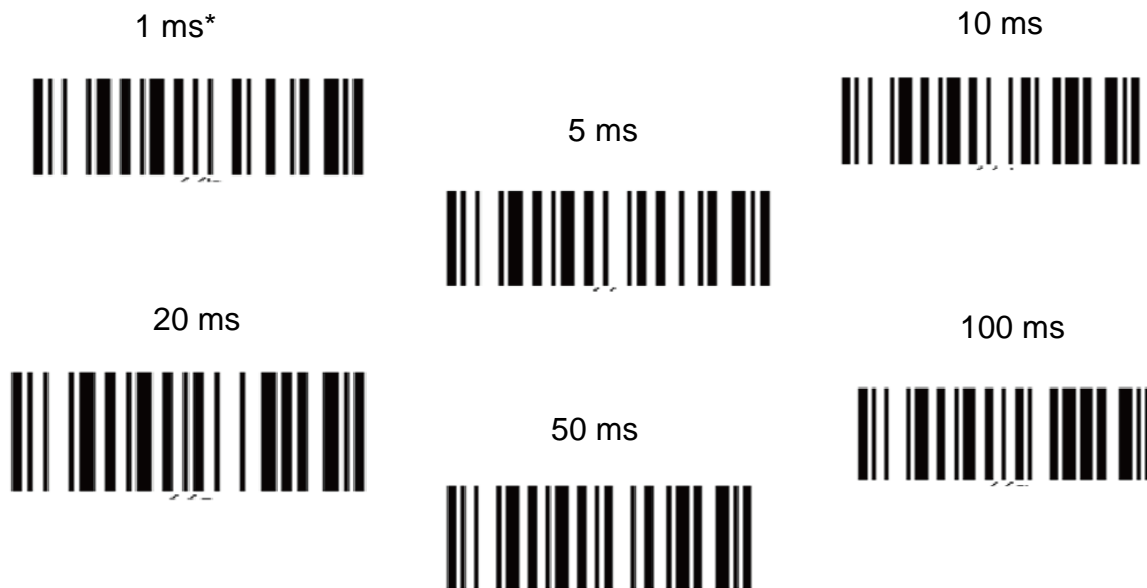
500 ms



3 Sec.



2.18 HID Keyboard Character Delay



2.19 HID Keyboard Case



2.20 HID Keyboard Language

German



Japanese



Danish



Spanish



US English*



UK English



Swiss



Swedish



French



ALT Mode



Belgian



Norwegian



Italian



2.21 Save Buffer When Power Off

Don't Save*



Save



2.22 Control Character in Bar Code

Note: Partial Send only sends characters BS (0x08), TAB (0x09), CR (0x0D) and ESC (0x1B).

Partial Send *



Send



Don't Send



2.23 End of Batch Sending Message

Note: If 'Send' is selected, the scanner will send message "# End of File Total=Number CS=0xHHHH #" before the end of batch file sending. Number is total entries in decimal format and 0xHHHH is 32-bit checksum in hex format.

Send



Don't Send *



2.24 Setting Bar Codes Enable /Disable

Enable *



Disable



2.25 Scan Mode

Scan one of the following bar codes to select a trigger mode for the engine:

- **Trigger (Level)** - A trigger press activates decode processing. Decode processing continues until the bar code decodes, you release the trigger.
- **Presentation (Blink)** - The engine activates decode processing when it detects a bar code in its field of view. After a period of non-use, the LEDs turn off until the engine senses motion.

- **Auto Aim** - The engine projects the aiming pattern when it senses motion. A trigger press activates decode processing. After two seconds of inactivity the aiming pattern shuts off.
- **Auto Aim with Illumination** - The engine turns on the aiming pattern and internal illumination LEDs when it senses motion. A trigger press activates decode processing. After two seconds of inactivity the aiming pattern and internal illumination LEDs automatically shut off.

Trigger (Level)*



Presentation (Blink)



Auto Aim



Auto Aim with Illumination



2.25.1 Illumination Capture

The engine can capture images with its near camera only. During image capture, the illumination subsystem may be turned on or off. It is recommended to turn off the LED illumination when taking images of documents. In this case, ensure ambient illumination provides a minimum of 30 fcd on the document surface.

2.26 Picklist Mode

Scan one of the following bar codes to select a **Picklist Mode**, which allows you to pick and decode a bar code from multiple bar codes printed close together.

NOTE: Enabling Picklist Mode overrides the Disable Decode Aiming Pattern options. You can not disable the decode aiming pattern when Picklist Mode is enabled.

- **Enable Picklist Mode Always** - Picklist Mode is always enabled.
- **Disable Picklist Mode Always** - Picklist Mode is always disabled.

Enable Picklist Mode Always



Disable Picklist Mode Always*



2.27 Continuous Bar Code Read

Scan **Enable Continuous Bar Code Read** to report every bar code while the trigger is pressed.

NOTE: We strongly recommend enabling Picklist Mode. Disabling Picklist Mode can cause accidental decodes when more than one bar code is in the engine's field of view.

Enable Continuous Bar Code Read



Disable Continuous Bar Code Read *



2.28 Unique Bar Code Reporting

Scan **Enable Continuous Bar Code Read Uniqueness** to report only unique bar codes while the trigger is pressed. This option only applies when Continuous Bar Code Read is enabled.

Enable Unique Bar Code Reporting



Disable Unique Bar Code Reporting *



2.29 Mirrored Image

Scan **Enable Mirrored Images** to scan images in reverse, or mirrored, as if seen through a mirror. This mode is useful in applications requiring scanning through a mirror and using symbologies that do not decode in reverse. Enabling this mode when using snapshot, video, or video viewfinder mode transmits images as mirrored images.

Disable Mirrored Image*



Enable Mirrored Image



2.30 Decode Session Timeout

This parameter sets the maximum time decode processing continues during a scan attempt. It is programmable in 0.1 second increments from 0.5 to 4 seconds. The default timeout is 4 seconds. To set a Decode Session Timeout, scan the following bar code, and then scan two bar codes from [Appendix B, Numeric Bar Codes](#) that correspond to the desired on time. Enter a leading zero for single digit numbers. For example, to set a Decode Session Timeout of 0.5 seconds, scan this bar code, and then scan the 0 and 5 bar codes. To correct an error or change the selection, [scan Cancel](#).

Decode Session Timeout



2.31 Timeout Between Decodes, Same Symbol

Use this option in presentation mode or Continuous Bar Code Read mode to prevent the engine from continuously decoding the same bar code when it is left in the engine's field of view. The bar code must be out of the field of view for the timeout period before the engine reads the same consecutive symbol. It is programmable in 0.1 second increments from 0.0 to 4 seconds. The default interval is 0.6 seconds. To select the timeout between decodes for the same symbol, scan the following bar code, and then scan two bar codes from [Appendix B, Numeric Bar Codes](#) that correspond to the desired interval, in 0.1 second increments.

Timeout Between Decodes, Same Symbol



2.32 Timeout Between Decodes, Different Symbols

Use this option in presentation mode or Continuous Bar Code Read to control the time the engine waits before decoding a different symbol. It is programmable in 0.1 second increments from 0.1 to 4 seconds. The default is 0.1 seconds. To select the timeout between decodes for different symbols, scan the following bar code, and then scan two bar codes from [Appendix B, Numeric Bar Codes](#) that correspond to the desired interval, in 0.1 second increments.

Timeout Between Decodes, Different Symbols



2.32.1 PDF Prioritization

Scan Enable PDF Prioritization to delay decoding certain 1D bar codes (see Note below) by the value specified in PDF Prioritization Timeout. During that time the engine attempts to decode a PDF417 symbol (e.g., on a US driver's license), and if successful, reports this only. If it does not decode (can not find) a PDF417 symbol, it reports the 1D symbol after the timeout. The 1D symbol must be in the device's field of view for the engine to report it. This parameter does not affect decoding other symbologies.

Enable PDF Prioritization



Disable PDF Prioritization*



2.32.2 PDF Prioritization Timeout

If you enabled PDF Prioritization, set this timeout to indicate how long the engine attempts to decode a PDF417 symbol before reporting the 1D bar code in the field of view. Scan the following bar code, and then scan four bar codes from [Appendix B, Numeric Bar Codes](#) that specify the timeout in milliseconds. For example, to enter 400 ms, scan the following bar code, and then scan 0400. The range is 0 to 5000 ms, and the default is 200 ms.

PDF Prioritization Timeout



2.32.3 Mobile Phone/Display Mode

This mode improves bar code reading performance off mobile phones and electronic displays. Scan one of the following bar codes to select the desired mode.

Disable Mobile Phone/Display Mode*



Enable Mobile Phone/Display Mode



2.33 Transmit “No Read” Message

Scan one of the following bar codes to set an option for transmitting the No Read (NR) characters:

- Enable No Read** - This transmits the characters NR when a successful decode does not occur before trigger release or the Decode Session Timeout expires.
- Disable No Read** - This sends nothing to the host if a symbol does not decode.

NOTE: If you enable Transmit No Read, and also enable Symbol Code ID Character or AIM Code ID Character for Transmit Code ID Character, the engine appends the code ID for Code 39 to the NR message.

This does not apply in presentation mode.

Enable No Read



Disable No Read*



2.34 Prefix/Suffix Values

You can append a prefix and/or one or two suffixes to scan data for use in data editing. To set a value for a prefix or suffix, scan one of the following bar codes, and then scan four bar codes from [Appendix B, Numeric Bar Codes](#) that correspond to that value. See [Appendix A, ASCII Character Sets](#) for the four-digit codes. When using host commands to set the prefix or suffix, set the key category parameter to 1, and then set the 3-digit decimal value. See [Appendix A, ASCII Character Sets](#) for the four-digit codes. The default prefix and suffix value is 7013 <CR><LF> (Enter key). To correct an error or change a selection, [scan Cancel](#).

NOTE: To use Prefix/Suffix values, first set the [Scan Data Transmission Format](#).

Scan Prefix



Scan Suffix 1



Scan Suffix 2



Data Format Cancel



2.35 Scan Data Transmission Format

To change the scan data format, scan one of the following bar codes corresponding to the desired format.

NOTE : If using this parameter do not use ADF rules to set the prefix/suffix.

Data As Is*



<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>



2.36 Transmit Code ID Character

A Code ID character identifies the code type of a scanned bar code. This is useful when decoding more than one code type. In addition to any single character prefix selected, the Code ID character is inserted between the prefix and the decoded symbol.

Select no Code ID character, a Symbol Code ID character, or an AIM Code ID character.

For Code ID characters, see Symbol Code Identifiers and AIM Code Identifiers.

Symbol Code ID Character



AIM Code ID Character



None*



2.37 Low Light Scene Detection

Scan one of the following bar codes to allow the engine to detect motion in dim to dark illumination environments when in presentation mode:

- **No Low Light Scene Detection** - The engine attempts to detect motion as best it can with the aim pattern and illumination turned off when the engine is idle.
- **Aiming Pattern Low Light Assist Scene Detection** – Illumination is off, but the aim pattern is on when the engine is idle to assist in scene detection.
- **Dim Illumination Low Light Assist Scene Detection** – The aim pattern is off, but illumination is on at a dim level to assist in scene detection.

No Low Light Assist Scene Detection*



Aiming Pattern Low Light Assist Scene Detection



Dim Illumination Low Light Assist Scene Detection



2.38 Cradle RS-232 Baud Rate

9600*



57600



19200



115200



38400



230400



2.39 Encoding

ASCII*



UTF-8



Big 5



2.40 HID Output for UTF-8 / Big 5 Encoding

Normal*



Special



Note: Special is for browsers with Traditional Chinese OS.

2.41 Cradle RS-232 Baud Rate

Baud Rate 9600*



Baud Rate 19,200



Baud Rate 38,400



Baud Rate 57,600



Baud Rate 115,200



Baud Rate 230,400



Chapter 3 – Symbology

3.1 UPC/EAN/JAN

3.1.1 UPC-A

Scan one of the following bar codes to enable or disable UPC-A.

Enable UPC-A*



Disable UPC-A



3.1.2 UPC-E

Scan one of the following bar codes to enable or disable UPC-E.

Enable UPC-E*



Disable UPC-E



3.1.3 UPC-E1

Scan one of the following bar codes to enable or disable UPC-E1.

Note : UPC-E1 is not a UCC (Uniform Code Council) approved symbology.

Enable UPC-E1



Disable UPC-E1*



3.1.4 EAN-8/JAN-8

Scan one of the following bar codes to enable or disable EAN-8/JAN-8.

Enable EAN-8/JAN-8*



Disable EAN-8/JAN-8



3.1.4.1 Transmit EAN-8 Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. Scan one of the following barcodes to transmit the barcode data with or without the EAN-8 check digit. It is always verified to guarantee the integrity of the data.

Transmit EAN-8 Check Digit*



Do Not Transmit EAN-8 Check Digit



3.1.5 EAN-13/JAN-13

Scan one of the following bar codes to enable or disable EAN-13/JAN-13.

Enable EAN-13/JAN-13*



Disable EAN-13/JAN-13



3.1.5.1 Transmit EAN-13 Check Digit

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The check digit is the last character of the symbol used to verify the

integrity of the data. Scan one of the following barcodes to transmit the barcode data with or without the EAN-13 check digit. It is always verified to guarantee the integrity of the data.

Transmit EAN-13 Check Digit *



Do Not Transmit EAN-13 Check Digit



3.1.6 Bookland EAN

Scan one of the following bar codes to enable or disable Bookland EAN.

Enable Bookland EAN



Disable Bookland EAN*



3.1.7 Bookland ISBN Format

If you enabled Bookland EAN, select one of the following formats for Bookland data:

- **Bookland ISBN-10** - The engine reports Bookland data starting with 978 in traditional 10-digit format with the special Bookland check digit for backward-compatibility. Data starting with 979 is not considered Bookland in this mode.
- **Bookland ISBN-13** - The engine reports Bookland data (starting with either 978 or 979) as EAN-13 in 13-digit format to meet the 2007 ISBN-13 protocol.

Bookland ISBN-10*



Bookland ISBN-13



3.1.8 ISSN EAN

Scan one of the following bar codes to enable or disable ISSN EAN.

Enable ISSN EAN



Disable ISSN EAN *



3.1.9 Decode UPC/EAN/JAN Supplementals

Decode UPC/EAN/JAN With Supplementals Only



Ignore UPC/EAN/JAN Supplementals *



Autodiscriminate UPC/EAN/JAN with Supplementals



Enable 378/379 Supplemental Mode



Enable 978/979 Supplemental Mode



Enable 977 Supplemental Mode



Enable 414/419/434/439 Supplemental Mode



Enable Smart Supplemental Mode



Supplemental User-Programmable Type 1 and 2



Smart Supplemental Plus User-Programmable 1 and 2



Smart Supplemental Plus User-Programmable 1



Supplemental User-Programmable Type 1



Enable 491 Supplemental Mode



3.1.10 User-Programmable Supplementals

If you selected a Supplemental User-Programmable option, scan User-Programmable Supplemental 1, and then scan three bar codes from [Appendix B, Numeric Bar Codes](#) to set the 3-digit prefix.

To set a second 3-digit prefix, scan User-Programmable Supplemental 2, and then scan three bar codes from [Appendix B, Numeric Bar Codes](#). The default is 000 (zeroes).

User-Programmable Supplemental 1



User-Programmable Supplemental 2



3.1.11 UPC/EAN/JAN Supplemental

Redundancy

If you selected Autodiscriminate UPC/EAN/JAN with Supplementals, this option sets the number of times to decode a symbol without supplementals before transmission. The range is from 2 to 16. Five or above is recommended when decoding a mix of UPC/EAN/JAN symbols with and without supplementals. The default is 10. To set a redundancy value, scan the following bar code, and then scan two bar codes from [Appendix B, Numeric Bar Codes](#). Enter a leading zero for single digit numbers. To correct an error or change a selection, [scan Cancel](#).

UPC/EAN/JAN Supplemental Redundancy



3.1.12 UPC/EAN/JAN Supplemental AIM ID

Format

If Transmit Code ID Character is set to AIM Code ID Character, scan one of the following bar codes to select an output format when reporting UPC/EAN/JAN bar codes with supplementals:

- **Separate** - Transmit UPC/EAN/JAN with supplementals with separate AIM IDs but one transmission, i.e.,]E<0 or 4><data>]E<1 or 2>[supplemental data]
- **Combined** – Transmit UPC/EAN/JAN with supplementals with one AIM ID and one transmission, i.e.,]E3<data+supplemental data>
- **Separate Transmissions** - Transmit UPC/EAN/JAN with supplementals with separate AIM IDs and separate transmissions, i.e.,
]E<0 or 4><data>
]E<1 or 2>[supplemental data]

Separate



Combined*



Separate Transmissions



3.1.13 Transmit UPC-A Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. Scan one of the following bar codes to transmit the bar code data with or without the UPC-A check digit. It is always verified to guarantee the integrity of the data.

Transmit UPC-A Check Digit *



Do Not Transmit UPC-A Check Digit



3.1.14 Transmit UPC-E Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. Scan one of the following bar codes to transmit the bar code data with or without the UPC-E check digit. It is always verified to guarantee the integrity of the data.

Transmit UPC-E Check Digit *



Do Not Transmit UPC-E Check Digit



3.1.15 Transmit UPC-E1 Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. Scan one of the following bar codes to transmit the bar code data with or without the UPC-E1 check digit. It is always verified to guarantee the integrity of the data.

Transmit UPC-E1 Check Digit *



Do Not Transmit UPC-E1 Check Digit

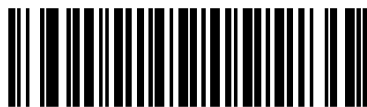


3.1.16 UPC-A Preamble

Preamble characters are part of the UPC symbol, and include Country Code and System Character. Select the appropriate option for transmitting a UPC-A preamble to match the host system:

- Transmit System Character only
- Transmit System Character and Country Code ("0" for USA)
- Transmit no preamble.

No Preamble (<DATA>)



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



**System Character & Country Code(< COUNTRY CODE>
<SYSTEM CHARACTER> <DATA>)**



3.1.17 UPC-E Preamble

Preamble characters are part of the UPC symbol, and include Country Code and System Character. Select the appropriate option for transmitting a UPC-E preamble to match the host system:

- Transmit System Character only
- Transmit System Character and Country Code ("0" for USA)
- Transmit no preamble.

No Preamble (<DATA>)



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



**System Character & Country Code(< COUNTRY CODE>
<SYSTEM CHARACTER> <DATA>)**



3.1.18 UPC-E1 Preamble

Preamble characters are part of the UPC symbol, and include Country Code and System Character. Select the appropriate option for transmitting a UPC-E1 preamble to match the host system:

- Transmit System Character only
- Transmit System Character and Country Code ("0" for USA)
- Transmit no preamble.

No Preamble (<DATA>)



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



**System Character & Country Code(< COUNTRY CODE>
<SYSTEM CHARACTER> <DATA>)**



3.1.19 Convert UPC-E to UPC-A

Enable this to convert UPC-E (zero suppressed) decoded data to UPC-A format before transmission. After conversion, the data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit).

Disable this to transmit UPC-E decoded data as UPC-E data, without conversion.

Convert UPC-E to UPC-A (Enable)



Do Not Convert UPC-E to UPC-A (Disable)*



3.1.20 Convert UPC-E1 to UPC-A

Scan Convert **UPC-E1 to UPC-A (Enable)** to convert UPC-E1 decoded data to UPC-A format before transmission. After conversion, the data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit). Scan Do Not **Convert UPC-E1 to UPC-A (Disable)** to transmit UPC-E1 decoded data as UPC-E1 data, without conversion.

Convert UPC-E1 to UPC-A (Enable)



Do Not Convert UPC-E1 to UPC-A (Disable)*



3.1.21 EAN/JAN Zero Extend

Scan **Enable EAN/JAN Zero Extend** to add five leading zeros to decoded EAN-8 symbols to make them compatible in length to EAN-13 symbols.

Scan **Disable EAN/JAN Zero Extend** to transmit EAN-8 symbols as is.

Enable EAN/JAN Zero Extend



Disable EAN/JAN Zero Extend*



3.1.22 UCC Coupon Extended Code

Scan **Enable UCC Coupon Extended Code** to decode UPC-A bar codes starting with digit '5', EAN-13 bar codes starting with digit '99', and UPC-A/GS1-128 coupon codes. UPC-A, EAN-13, and GS1-128 must be enabled to use this feature.

Enable UCC Coupon Extended Code



Disable UCC Coupon Extended Code*



3.1.23 Coupon Report

Scan one of the following bar codes to select the type of coupon format to support.

- **Old Coupon Format** - Support UPC-A/GS1-128 and EAN-13/GS1-128.
- **New Coupon Format** - An interim format to support UPC-A/GS1-DataBar and EAN-13/GS1-DataBar.
- **Autodiscriminate Format** - Support both Old Coupon Format and New Coupon Format.

Old Coupon Format



New Coupon Format*



Auto discriminate Coupon Format



3.1.24 UPC Reduced Quiet Zone

Scan one of the following bar codes to enable or disable decoding UPC bar codes with reduced quiet zones (the margins on either side of the bar code). If you select **Enable**, select a [1D Quiet Zone Level](#).

Enable UPC Reduced Quiet Zone



Disable UPC Reduced Quiet Zone*



3.1.25 Code 128

Scan one of the following bar codes to enable or disable Code 128.

Enable Code 128*



Disable Code 128



3.1.25.1 Set Lengths for Code 128

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 128 to any length, one or two discrete lengths, or lengths within a specific range. The default is **Any Length**.

Note: When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only Code 128 symbols containing a selected length. Select the length using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only Code 128 symbols with 14 characters, scan Code 128 - One Discrete Length, and then scan 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Two Discrete Lengths** - Decode only Code 128 symbols containing either of two lengths. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only Code 128 symbols containing either 2 or 14 characters, scan Code 128 - Two Discrete Lengths, and then scan 0, 2, 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Length Within Range** - Decode Code 128 symbols with a specific length range. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode Code 128 symbols containing between 4 and 12 characters, scan Code 128 - Length Within Range, and then scan 0, 4, 1, 2. To correct an error or change the selection, [scan Cancel](#).
- **Any Length** - Decode Code 128 symbols containing any number of characters within the engine's capability.

3.1.26 Set Lengths for Code 128

Code 128 - One Discrete Length



Code 128 - Two Discrete Lengths



Code 128 - Length Within Range



Code 128 - Any Length*



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

Scan one of the following bar codes to enable or disable GS1-128.

Enable GS1-128*



Disable GS1-128



3.1.28 ISBT 128

ISBT 128 is a variant of Code 128 used in the blood bank industry. Scan one of the following bar codes to enable or disable ISBT 128.

Enable ISBT 128*



Disable ISBT 128



3.1.29 ISBT Concatenation

Select an option for concatenating pairs of ISBT code types:

- **Enable ISBT Concatenation –**

There must be two ISBT codes in order for the engine to decode and perform concatenation. The engine does not decode single ISBT symbols.

- **Disable ISBT Concatenation –**

The engine does not concatenate pairs of ISBT codes it encounters.

- **Autodiscriminate ISBT Concatenation –**

The engine decodes and concatenates pairs of ISBT codes immediately. If only a single ISBT symbol is present, the engine must decode the symbol the number of times set via ISBT Concatenation Redundancy before transmitting its data to confirm that there is no additional ISBT symbol.

Enable ISBT Concatenation



Disable ISBT Concatenation*



Autodiscriminate ISBT Concatenation



3.1.30 Check ISBT Table

The ISBT specification includes a table that lists several types of ISBT bar codes that are commonly used in pairs. If you set **ISBT Concatenation to Enable**, enable **Check ISBT Table** to concatenate only those pairs found in this table. Other types of ISBT codes are not concatenated.

Enable Check ISBT Table*



Disable Check ISBT Table



3.1.31 ISBT Concatenation Redundancy

If you set ISBT Concatenation to Autodiscriminate (the default), use this parameter to set the number of times the engine must decode an ISBT symbol before determining that there is no additional symbol. Scan the following bar code, and then scan bar codes in [Appendix B, Numeric Bar Codes](#) to set a value between 2 and 20. Enter a leading zero for single digit numbers. To correct an error or change a selection, [scan Cancel](#). The default is 10.

ISBT Concatenation Redundancy



3.1.32 Code 128 <FNC4>

This feature applies to Code 128 bar codes with an embedded <FNC4> character. Select **Ignore Code 128 <FNC4>** to strip the <FNC4> character from the decode data. The remaining characters are sent to the host unchanged. When disabled, the <FNC4> character is processed normally as per Code 128 standard.

Honor Code 128 <FNC4>*



Ignore Code 128 <FNC4>



3.1.33 Code 128 Security Level

Code 128 bar codes are vulnerable to misdecodes, particularly when Code 128 Lengths is set to **Any Length**. The engine offers four levels of decode security for Code 128 bar codes. There is an inverse relationship between security and engine aggressiveness. Increasing the level of security can reduce scanning aggressiveness, so select only the level of security necessary.

- **Code 128 Security Level 0** - The engine operates in its most aggressive state, while providing sufficient security in decoding most in-spec bar codes.
- **Code 128 Security Level 1** - This option eliminates most misdecodes while maintaining reasonable aggressiveness.
- **Code 128 Security Level 2** - This option applies greater bar code security requirements if Security Level 1 fails to eliminate misdecodes.
- **Code 128 Security Level 3** - If you selected Security Level 2, and misdecodes still occur, select this security level to apply the highest safety requirements.

NOTE: Selecting this option is an extreme measure against mis-decoding severely out-of-spec bar codes, and significantly impairs the decoding ability of the engine. If this level of security is required, try to improve the quality of the bar codes.

3.1.34 Code 128 Security Level (continued)

Code 128 Security Level 0



Code 128 Security Level 1*



Code 128 Security Level 2



Code 128 Security Level 3



3.1.35 Code 128 Reduced Quiet Zone

Scan one of the following bar codes to enable or disable decoding Code 128 bar codes with reduced quiet zones (the margins on either side of the bar code). If you select Enable, select a [1D Quiet Zone Level](#).

Enable Code 128 Reduced Quiet Zone



Disable Code 128 Reduced Quiet Zone*



3.2 Code 39

3.2.1 Code 39

Scan one of the following bar codes to enable or disable Code 39.

Enable Code 39*



Disable Code 39



3.2.2 Trioptic Code 39

Trioptic Code 39 is a variant of Code 39 used in the marking of computer tape cartridges. Trioptic Code 39 symbols always contain six characters.

Scan one of the following bar codes to enable or disable Trioptic Code 39.

NOTE: You cannot enable Trioptic Code 39 and Code 39 Full ASCII simultaneously.

Enable Trioptic Code 39



Disable Trioptic Code 39*



3.2.3 Convert Code 39 to Code 32

Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry.

Scan one of the following bar codes to enable or disable converting Code 39 to Code 32.

NOTE: Code 39 must be enabled for this parameter to function.

Enable Convert Code 39 to Code 32



Disable Convert Code 39 to Code 32*

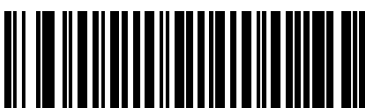


3.2.4 Code 32 Prefix

Scan one of the following bar codes to enable or disable adding the prefix character "A" to all Code 32 bar codes.

NOTE: Convert Code 39 to Code 32 must be enabled for this parameter to function.

Enable Code 32 Prefix



Disable Code 32 Prefix*



3.2.5 Set Lengths for Code 39

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 39 to any length, one or two discrete lengths, or lengths within a specific range. If Code 39 Full ASCII is enabled, Length Within Range or Any Length are the preferred options. The default is Length Within Range: 2 to 55.

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only Code 39 symbols containing a selected length. Select the length using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only Code 39 symbols with 14 characters, scan Code 39 - One Discrete Length, and then scan 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Two Discrete Lengths** - Decode only Code 39 symbols containing either of two lengths. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only Code 39 symbols containing either 2 or 14 characters, scan Code 39 - Two Discrete Lengths, and then scan 0, 2, 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Length Within Range** - Decode Code 39 symbols with a specific length range. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode Code 39 symbols containing between 4 and 12 characters, scan Code 39 - Length Within Range, and then scan 0, 4, 1, 2. To correct an error or change the selection, [scan Cancel](#).
- **Any Length** - Decode Code 39 symbols containing any number of characters within the engine's capability.

Note : When setting lengths, enter a leading zero for single digit numbers.

3.2.6 Set Lengths for Code 39

Code 39 - One Discrete Length



Code 39 - Two Discrete Lengths



Code 39 - Length Within Range *



Code 39 - Any Length



3.2.7 Code 39 Check Digit Verification

Scan Enable Code 39 Check Digit to check the integrity of all Code 39 symbols to verify that the data complies with specified check digit algorithm. Only Code 39 symbols which include a modulo 43 check digit are decoded. Enable this feature if the Code 39 symbols contain a Modulo 43 check digit.

Enable Code 39 Check Digit



Disable Code 39 Check Digit *



3.2.8 Transmit Code 39 Check Digit

Scan one of the following bar codes to transmit Code 39 data with or without the check digit.

NOTE: Code 39 Check Digit Verification must be enabled for this parameter to function.

Transmit Code 39 Check Digit (Enable)



Do Not Transmit Code 39 Check Digit (Disable) *



3.2.9 Code 39 Full ASCII Conversion

Code 39 Full ASCII is a variant of Code 39 which pairs characters to encode the full ASCII character set. Scan one of the following bar codes to enable or disable Code 39 Full ASCII.

NOTE: You cannot enable Trioptic Code 39 and Code 39 Full ASCII simultaneously.

Enable Code 39 Full ASCII



Disable Code 39 Full ASCII *



3.2.10 Code 39 Security Level

The engine offers four levels of decode security for Code 39 bar codes. There is an inverse relationship between security and engine aggressiveness. Increasing the level of security can reduce scanning aggressiveness, so select only the level of security necessary.

- **Code 39 Security Level 0:** The engine operates in its most aggressive state, while providing sufficient security in decoding most in-spec bar codes.
- **Code 39 Security Level 1:** This default setting eliminates most misdecodes.
- **Code 39 Security Level 2:** This option applies greater bar code security requirements if Security Level 1 fails to eliminate misdecodes.
- **Code 39 Level 3:** If you selected Security Level 2, and misdecodes still occur, select this security level to apply the highest safety requirements.

NOTE Selecting this option is an extreme measure against mis-decoding severely out-of-spec bar codes, and significantly impairs the decoding ability of the engine. If this level of security is required, try to improve the quality of the bar codes.

3.2.11 Code 39 Security Level

Code 39 Security Level 0



Code 39 Security Level 1*



Code 39 Security Level 2



Code 39 Security Level 3



3.2.12 Code 39 Reduced Quiet Zone

Scan one of the following bar codes to enable or disable decoding Code 39 bar codes with reduced quiet zones (the margins on either side of the bar code). If you select Enable, select a [1D Quiet Zone Level](#).

Enable Code 39 Reduced Quiet Zone



Disable Code 39 Reduced Quiet Zone*



3.3 Code 93

Scan one of the following bar codes to enable or disable Code 93.

Enable Code 93*



Disable Code 93



3.3.1 Set Lengths for Code 39

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 93 to any length, one or two discrete lengths, or lengths within a specific range. The default is Length Within Range: 4 to 55.

Note: When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only Code 93 symbols containing a selected length. Select the length using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only Code 93 symbols with 14 characters, scan Code 93 - One Discrete Length, and then scan 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Two Discrete Lengths** - Decode only Code 93 symbols containing either of two lengths. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only Code 93 symbols containing either 2 or 14 characters, scan Code 93 - Two Discrete Lengths, and then scan 0, 2, 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Length Within Range** - Decode Code 93 symbols with a specific length range. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode Code 93 symbols containing between 4 and 12 characters, scan Code 93 - Length Within Range, and then scan 0, 4, 1, 2. To correct an error or change the selection, [scan Cancel](#).
- **Any Length** - Decode Code 93 symbols containing any number of characters within the engine's capability.

Code 93 - One Discrete Length



Code 93 - Two Discrete Lengths



Code 93 - Length Within Range*



Code 93 - Any Length



3.4 Code 11

Scan one of the following bar codes to enable or disable Code 93.

Enable Code 11



Disable Code 11*



3.4.1 Set Lengths for Code 11

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 11 to any length, one or two discrete lengths, or lengths within a specific range. The default is Length Within Range: 4 to 55.

Note: When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only Code 11 symbols containing a selected length. Select the length using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only Code 11 symbols with 14 characters, scan Code 11 - One Discrete Length, and then scan 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Two Discrete Lengths** - Decode only Code 11 symbols containing either of two lengths. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only Code 11 symbols containing either 2 or 14 characters, scan Code 11 - Two Discrete Lengths, and then scan 0, 2, 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Length Within Range** - Decode Code 11 symbols with a specific length range. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode Code 11 symbols containing between 4 and 12 characters, scan Code 11 - Length Within Range, and then scan 0, 4, 1, 2. To correct an error or change the selection, [scan Cancel](#).
- **Any Length** - Decode Code 11 symbols containing any number of characters within the engine's capability.

Code 11 - One Discrete Length



Code 11 - Two Discrete Lengths



Code 11 - Length Within Range*



Code 11 - Any Length



3.4.2 Code 11 Check Digit Verification

This feature allows the engine to check the integrity of all Code 11 symbols to verify that the data complies with the specified check digit algorithm. Scan one of the following bar codes to specify the number of check digits encoded in the Code 11 symbols, or to disable this feature.

Disable*



One Check Digit



Two Check Digits



3.4.3 Transmit Code 11 Check Digits

Scan one of the following bar codes to select whether or not to transmit the Code 11 check digit(s).

Do Not Transmit Code 11 Check Digit(s) (Disable)*



Transmit Code 11 Check Digit(s) (Enable)



3.5 Interleaved 2 of 5 (ITF)

Scan one of the following bar codes to enable or disable Interleaved 2 of 5.

Enable Interleaved 2 of 5 *



Disable Interleaved 2 of 5



3.5.1 Set Lengths for Interleaved 2 of 5

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for I 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range. The default is One Discrete Length: 14.

Note: When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only I 2 of 5 symbols containing a selected length. Select the length using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only I 2 of 5 symbols with 14 characters, scan I 2 of 5 - One Discrete Length, and then scan 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Two Discrete Lengths** - Decode only I 2 of 5 symbols containing either of two lengths. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only I 2 of 5 symbols containing either 2 or 14 characters, scan I 2 of 5 - Two Discrete Lengths, and then scan 0, 2, 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Length Within Range** - Decode I 2 of 5 symbols with a specific length range. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode I 2 of 5 symbols containing between 4 and 12 characters, scan I 2 of 5 - Length Within Range, and then scan 0, 4, 1, 2. To correct an error or change the selection, [scan Cancel](#).
- **Any Length** - Decode I 2 of 5 symbols containing any number of characters within the engine's capability

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Note: Due to the construction of the I 2 of 5 symbology, it is possible for a scan line covering only a portion of the code to transmit as a complete scan, yielding less data than is encoded in the bar code. To prevent this, select specific lengths (I 2 of 5 - One Discrete Length, Two Discrete Lengths) for I 2 of 5 applications, or increase the I 2 of 5 Security Level.

I 2 of 5 - One Discrete Length*



I 2 of 5 - Length Within Range



I 2 of 5 - Two Discrete Lengths



I 2 of 5 - Any Length



3.5.2 I 2 of 5 Check Digit Verification

Scan one of the following bar codes to check the integrity of all I 2 of 5 symbols to verify the data complies with either the specified Uniform Symbology Specification (USS), or the Optical Product Code Council (OPCC) check digit algorithm.

Disable*



USS Check Digit



OPCC Check Digit



3.5.3 Transmit I 2 of 5 Check Digit

Scan one of the following bar codes to transmit I 2 of 5 data with or without the check digit.

Transmit I 2 of 5 Check Digit (Enable)



Do Not Transmit I 2 of 5 Check Digit (Disable)*



3.5.4 Convert I 2 of 5 to EAN-13

Scan Convert I 2 of 5 to EAN-13 (Enable) to convert 14-character I 2 of 5 codes to EAN-13, and transmit to the host as EAN-13. To accomplish this, the I 2 of 5 code must be enabled, and the code must have a leading zero and a valid EAN-13 check digit.

Convert I 2 of 5 to EAN-13 (Enable)



Do Not Convert I 2 of 5 to EAN-13 (Disable)*



3.5.5 Febraban

Febraban is an I 2 of 5 barcode of length 44 that requires special check characters to be inserted in the transmitted data stream. When enabled, the I 2 of 5 internal check digit calculation and transmission is disabled. When disabled, all I 2 of 5 functionality works as usual.

Recommendations for Length Setting

I 2 of 5 Length 1: Larger of the fixed length and the FEBRABAN length (==44).

I 2 of 5 Length 2: Smaller of the fixed length and the FEBRABAN length (==44).

Enable Febraban



Disable Febraban*



3.5.6 I 2 of 5 Security Level

Interleaved 2 of 5 bar codes are vulnerable to misdecodes, particularly when I 2 of 5 Lengths is set to Any Length. The engine offers four levels of decode security for Interleaved 2 of 5 bar codes. There is an inverse relationship between security and engine aggressiveness. Increasing the level of security can reduce scanning aggressiveness, so select only the level of security necessary.

- **I 2 of 5 Security Level 0:** The engine operates in its most aggressive state, while providing sufficient security in decoding most in-spec bar codes.
- **I 2 of 5 Security Level 1:** A bar code must be successfully read twice, and satisfy certain safety requirements before being decoded. This default setting eliminates most misdecodes.
- **I 2 of 5 Security Level 2:** This option applies greater bar code security requirements if Security Level 1 fails to eliminate misdecodes.
- **I 2 of 5 Security Level 3:** If you selected Security Level 2, and misdecodes still occur, select this security level. The highest safety requirements are applied. A bar code must be successfully read three times before being decoded.

Note: Selecting this option is an extreme measure against mis-decoding severely out-of-spec bar codes, and significantly impairs the decoding ability of the engine. If this level of security is required, try to improve the quality of the bar codes.

I 2 of 5 Security Level 0



I 2 of 5 Security Level 1*



I 2 of 5 Security Level 2



I 2 of 5 Security Level 3



3.5.7 I 2 of 5 Reduced Quiet Zone

Scan one of the following bar codes to enable or disable decoding I 2 of 5 bar codes with reduced quiet zones (the margins on either side of the bar code). If you select Enable, select a [1D Quiet Zone Level](#).

Enable I 2 of 5 Reduced Quiet Zone



Disable I 2 of 5 Reduced Quiet Zone*



3.6 Discrete 2 of 5 (DTF)

Scan one of the following bar codes to enable or disable Discrete 2 of 5.

Enable Discrete 2 of 5



Disable Discrete 2 of 5*



3.6.1 Set Lengths for Discrete 2 of 5

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for D 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range. The default is One Discrete Length: 12.

Note: When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only D 2 of 5 symbols containing a selected length. Select the length using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only D 2 of 5 symbols with 14 characters, scan D 2 of 5 - One Discrete Length, and then scan 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Two Discrete Lengths** - Decode only D 2 of 5 symbols containing either of two lengths. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only D 2 of 5 symbols containing either 2 or 14 characters, scan D 2 of 5 - Two Discrete Lengths, and then scan 0, 2, 1, 4. To correct an error or change the selection, [scan Cancel](#).

- **Length Within Range** - Decode D 2 of 5 symbols with a specific length range. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode D 2 of 5 symbols containing between 4 and 12 characters, scan D 2 of 5 - Length Within Range, and then scan 0, 4, 1, 2. To correct an error or change the selection, [scan Cancel](#).
- **Any Length** - Decode D 2 of 5 symbols containing any number of characters within the engine's capability.

Note: Due to the construction of the D 2 of 5 symbology, it is possible for a scan line covering only a portion of the code to transmit as a complete scan, yielding less data than is encoded in the bar code. To prevent this, select specific lengths (D 2 of 5 - One Discrete Length, Two Discrete Lengths) for D 2 of 5 applications.

D 2 of 5 - One Discrete Length*



D 2 of 5 - Two Discrete Lengths



D 2 of 5 - Length Within Range



D 2 of 5 - Any Length



3.7 Codabar (NW - 7)

Scan one of the following bar codes to enable or disable Codabar.

Enable Codabar*



Disable Codabar



3.7.1 Set Lengths for Codabar

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Codabar to any length, one or two discrete lengths, or lengths within a specific range. The default is Length Within Range: 5 to 55.

Note: When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only Codabar symbols containing a selected length. Select the length using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only Codabar symbols with 14 characters, scan Codabar - One Discrete Length, and then scan 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Two Discrete Lengths** - Decode only Codabar symbols containing either of two lengths. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only Codabar symbols containing either 2 or 14 characters, scan Codabar - Two Discrete Lengths, and then scan 0, 2, 1, 4. To correct an error or change the

selection, [scan Cancel](#).

- **Length Within Range** - Decode Codabar symbols with a specific length range. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode Codabar symbols containing between 4 and 12 characters, scan Codabar - Length Within Range, and then scan 0, 4, 1, 2. To correct an error or change the selection, [scan Cancel](#).
- **Any Length** - Decode Codabar symbols containing any number of characters within the engine's capability.

Codabar - One Discrete Length



Codabar - Two Discrete Lengths



Codabar - Length Within Range*



Codabar - Any Length



3.7.2 CLSI Editing

Scan **Enable CLSI Editing** to strip the start and stop characters and insert a space after the first, fifth, and tenth characters of a 14-character Codabar symbol if the host system requires this data format.

NOTE: Symbol length does not include start and stop characters.

Enable CLSI Editing



Disable CLSI Editing*



3.7.3 NOTIS Editing

Scan **Enable NOTIS Editing** to strip the start and stop characters from a decoded Codabar symbol if the host system requires this data format.

Enable NOTIS Editing



Disable NOTIS Editing*



3.7.4 Codabar Upper or Lower Case Start/Stop Characters

Scan one of the following bar codes to select whether to transmit upper case or lower case Codabar start/stop characters.

Lower Case



Upper Case*



3.7.4.1 Codabar Mod 16 Check Digit Verification

Enable this feature to check the Codabar Mod 16 Check Digit to verify that the data complies with the specified check digit algorithm.

Enable Codabar Mod 16 Check Digit



Disable Codabar Mod 16 Check Digit *



3.7.4.2 Transmit Codabar Check Digit

Scan one of the following barcodes to select whether or not to transmit the Codabar check digit(s).

Enable Codabar Check Digit Transmission



Disable Codabar Check Digit Transmission *



3.8 MSI

Scan one of the following bar codes to enable or disable MSI.

Enable MSI



Disable MSI *



3.8.1 Set Lengths for MSI

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for MSI to any length, one or two discrete lengths, or lengths within a specific range. The default is Length Within Range: 4 to 55.

Note: When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only MSI symbols containing a selected length. Select the length using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only MSI symbols with 14 characters, scan MSI - One Discrete Length, and then scan 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Two Discrete Lengths** - Decode only MSI symbols containing either of two lengths. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only MSI symbols containing either 2 or 14 characters, scan MSI - Two Discrete Lengths, and then scan 0, 2, 1, 4. To correct an error or change the selection, [scan Cancel](#).

- **Length Within Range** - Decode MSI symbols with a specific length range. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode MSI symbols containing between 4 and 12 characters, scan MSI - Length Within Range, and then scan 0, 4, 1, 2. To correct an error or change the selection, [scan Cancel](#).
- **Any Length** - Decode MSI symbols containing any number of characters within the engine's capability.

Note: Due to the construction of the MSI symbology, it is possible for a scan line covering only a portion of the code to transmit as a complete scan, yielding less data than is encoded in the bar code. To prevent this, select specific lengths (MSI - One Discrete Length, Two Discrete Lengths) for MSI applications.

MSI - One Discrete Length



MSI - Two Discrete Lengths



MSI - Length Within Range*



MSI - Any Length



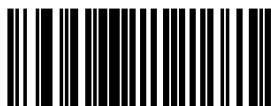
3.8.2 MSI Check Digits

With MSI symbols, one check digit is mandatory and always verified by the reader. The second check digit is optional. If the MSI codes include two check digits, scan the Two MSI Check Digits bar code to enable verification of the second check digit. See [MSI Check Digit Algorithm](#) to select second digit algorithms.

One MSI Check Digit *



Two MSI Check Digits



No MSI Check Digit



3.8.3 Transmit MSI Check Digit(s)

Scan one of the following bar codes to transmit MSI data with or without the check digit.

Transmit MSI Check Digit(s) (Enable)



Do Not Transmit MSI Check Digit(s) (Disable)*



3.8.4 MSI Check Digit Algorithm

Two algorithms are available for verifying the second MSI check digit. Scan one of the following bar codes to select the algorithm used to encode the check digit.

MOD 11/MOD 10



MOD 10/MOD 10*



3.8.5 MSI Reduced Quiet Zone

Scan one of the following bar codes to enable or disable decoding MSI bar codes with reduced quiet zones. If you select Enable, select a [1D Quiet Zone Level](#).

Disable MSI Reduced Quiet Zone*



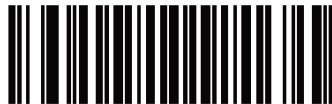
Enable MSI Reduced Quiet Zone



3.9 Chinese 2 of 5

Scan one of the following bar codes to enable or disable Chinese 2 of 5.

Enable Chinese 2 of 5



Disable Chinese 2 of 5*



3.10 Matrix 2 of 5

Scan one of the following bar codes to enable or disable Matrix 2 of 5.

Enable Matrix 2 of 5



Disable Matrix 2 of 5*



3.10.1 Set Lengths for Matrix 2 of 5

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Matrix 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range. The default is One Discrete Length: 14.

Note: When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only Matrix 2 of 5 symbols containing a selected length. Select the length using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only Matrix 2 of 5 symbols with 14 characters, scan Matrix 2 of 5 - One Discrete Length, and then scan 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Two Discrete Lengths** - Decode only Matrix 2 of 5 symbols containing either of two lengths. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode only Matrix 2 of 5 symbols containing either 2 or 14 characters, scan Matrix 2 of 5 - Two Discrete Lengths, and then scan 0, 2, 1, 4. To correct an error or change the selection, [scan Cancel](#).
- **Length Within Range** - Decode Matrix 2 of 5 symbols with a specific length range. Select lengths using the bar codes in [Appendix B, Numeric Bar Codes](#). For example, to decode Matrix 2 of 5 symbols containing between 4 and 12 characters, scan Matrix 2 of 5 - Length Within Range, and then scan 0, 4, 1, 2. To correct an error or change the selection, [scan Cancel](#).
- **Any Length** - Decode Matrix 2 of 5 symbols containing any number of characters within the engine's capability.

Matrix 2 of 5 - One Discrete Length



Matrix 2 of 5 - Two Discrete Lengths



Matrix 2 of 5 - Length Within Range *



Matrix 2 of 5 - Any Length



3.10.2 Matrix 2 of 5 Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. Scan one of the following bar codes to determine whether to include the Matrix 2 of 5 check digit with the bar code data.

Enable Matrix 2 of 5 Check Digit



Disable Matrix 2 of 5 Check Digit*



3.10.3 Transmit Matrix 2 of 5 Check Digit

Scan one of the following bar codes to transmit Matrix 2 of 5 data with or without the check digit.

Transmit Matrix 2 of 5 Check Digit



Do Not Transmit Matrix 2 of 5 Check Digit*



3.11 Inverse 1D

Scan one of the following bar codes to set the 1D inverse decoder setting:

- Regular Only** - The engine decodes regular 1D bar codes only
- Inverse Only** - The engine decodes inverse 1D bar codes only
- Inverse Autodetect** - The engine decodes both regular and inverse 1D barcodes.

Note: This parameter does not apply to GS1 DataBar code types

The Inverse 1D setting may impact Composite or Inverse Composite decoding. See Composite Inverse.

Regular*



Inverse Only



Inverse Autodetect



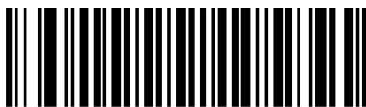
3.12 GS1 DataBar

The variants of GS1 DataBar are DataBar-14, DataBar Expanded, and DataBar Limited. The limited and expanded versions have stacked variants. Scan the appropriate bar codes to enable or disable each variant of GS1 DataBar.

Enable GS1 DataBar Omnidirectional *



Disable GS1 DataBar Omnidirectional



3.12.1 GS1 DataBar Limited

Enable GS1 DataBar Limited*



Disable GS1 DataBar Limited



3.12.2 GS1 DataBar Expanded

Enable GS1 DataBar Expanded*



Disable GS1 DataBar Expanded



3.12.3 Convert GS1 DataBar to UPC/EAN/JAN

This parameter only applies to GS1 DataBar-14 and GS1 DataBar Limited symbols not decoded as part of a Composite symbol. Scan Enable Convert GS1 DataBar to UPC/EAN/JAN to strip the leading '010' from DataBar-14 and DataBar Limited symbols encoding a single zero as the first digit, and report the bar code as EAN-13.

For bar codes beginning with between two and five zeros, this strips the leading '0100' and reports the bar code as UPC-A. The UPC-A Preamble option that transmits the system character and country code applies to converted bar codes. Note that neither the system character nor the check digit can be stripped.

Enable Convert GS1 DataBar to UPC/EAN/JAN



Disable Convert GS1 DataBar to UPC/EAN/JAN*



3.12.4 GS1 DataBar Security Level

The engine offers four levels of decode security for GS1 DataBar (GS1 DataBar-14, GS1 DataBar Limited, GS1 DataBar Expanded) bar codes.

- **Security Level 0** - The engine operates in its most aggressive state, while providing sufficient security decoding most in-spec bar codes.
- **Security Level 1** - This setting eliminates most misdecodes while maintaining reasonable aggressiveness.
- **Security Level 2** - Select this option with greater bar code security requirements if Security Level 1 fails to eliminate misdecodes
- **Security Level 3** - If you selected Security Level 2 and misdecodes still occur, select this security level to apply the highest safety requirements.

GS1 DataBar Security Level 0



GS1 DataBar Security Level 1*



GS1 DataBar Security Level 2



GS1 DataBar Security Level 3



3.12.5 GS1 DataBar Limited Margin Check

The engine offers four levels of decode security for GS1 DataBar Limited bar codes. There is an inverse relationship between the level of margin check and engine aggressiveness. Increasing the level of margin check can reduce scanning aggressiveness, so select only the level of margin check necessary.

- **Margin Check Level 1** – No clear margin required. This complies with the original GS1 standard, yet can result in erroneous decoding of a DataBar Limited bar code when scanning some UPC symbols that start with digits 9 and 7.
- **Margin Check Level 2** – Automatic risk detection. This level of margin check can result in erroneous decoding of DataBar Limited bar codes when scanning some UPC symbols. If a misdecode is detected, the engine operates in Level 3 or Level 1.
- **Margin Check Level 3** – Margin check level reflects the newly proposed GS1 standard that requires a five times trailing clear margin.
- **Margin Check Level 4** – Security level extends beyond the standard required by GS1. This level of margin check requires a five times leading and trailing clear margin.

GS1 DataBar Limited Margin Check Level 1



GS1 DataBar Limited Margin Check Level 2



GS1 DataBar Limited Margin Check Level 3*



GS1 DataBar Limited Margin Check Level 4



3.12.6 GS1 DataBar Expanded Security Level

The engine offers four levels of decode security for GS1 DataBar Expanded bar codes.

- **Security Level 0** - The engine operates in its most aggressive state, while providing sufficient security decoding most in-spec bar codes.
- **Security Level 1** - This setting eliminates most misdecodes while maintaining reasonable aggressiveness.
- **Security Level 2** - Select this option with greater bar code security requirements if Security Level 1 fails to eliminate misdecodes.
- **Security Level 3** - If you selected Security Level 2 and misdecodes still occur, select this security level to apply the highest safety requirements.

GS1 DataBar Expanded Security Level 0



GS1 DataBar Expanded Security Level 1*



GS1 DataBar Expanded Security Level 2



GS1 DataBar Expanded Security Level 3



3.13 Symbology-Specific Security Features

3.13.1 Redundancy Level

The engine offers four levels of decode redundancy. Select higher redundancy levels for decreasing levels of bar code quality.

As redundancy levels increase, the engine's aggressiveness decreases.

Scan one of the following bar codes to select the redundancy level appropriate for the bar code quality:

- **Redundancy Level 1** - The engine must read the following code types twice before decoding:
 - ◆ Codabar (8 characters or less)
 - ◆ MSI (4 characters or less)
 - ◆ D 2 of 5 (8 characters or less)
 - ◆ I 2 of 5 (8 characters or less)
- **Redundancy Level 2** - The engine must read all code types twice before decoding.
- **Redundancy Level 3** - The engine must read code types other than the following twice before decoding, but must read the following codes three times:
 - ◆ Codabar (8 characters or less)
 - ◆ MSI (4 characters or less)
 - ◆ D 2 of 5 (8 characters or less)
 - ◆ I 2 of 5 (8 characters or less)
- **Redundancy Level 4** - The engine must read all code types three times before decoding.

Redundancy Level 1*



Redundancy Level 2



Redundancy Level 3



Redundancy Level 4



3.13.2 Security Level

The engine offers four levels of decode security for delta bar codes, which include the Code 128 family, UPC/EAN/JAN, and Code 93. Select increasing levels of security for decreasing levels of bar code quality. There is an inverse relationship between security and engine aggressiveness, so choose only that level of security necessary for the application.

- Security Level 0** - The engine operates in its most aggressive state, while providing sufficient security decoding most in-spec bar codes.
- Security Level 1** - This default setting eliminates most misdecodes.
- Security Level 2** - Select this option if Security Level 1 fails to eliminate misdecodes
- Security Level 3** - If you selected Security Level 2 and misdecodes still occur, select this security level.

Note: Selecting this option is an extreme measure against mis-decoding severely out-of-spec bar codes, and significantly impairs the decoding ability of the engine. If this level of security is required, try to improve the quality of the bar codes.

Security Level 0



Security Level 1*



Security Level 2



Security Level 3



3.13.3 1D Quiet Zone Level

This feature sets the level of aggressiveness when decoding bar codes with a reduced quiet zone (the margin on either side of a bar code), and applies to symbologies enabled by a Reduced Quiet Zone parameter. Because higher levels increase the decoding time and risk of misdecodes, Zebra strongly recommends enabling only the symbologies which require higher quiet zone levels, and leaving Reduced Quiet Zone disabled for all other symbologies. Options are:

- 1D Quiet Zone Level 0** - The engine performs normally in terms of quiet zone.
- 1D Quiet Zone Level 1** - The engine performs more aggressively in terms of quiet zone.
- 1D Quiet Zone Level 2** - The engine only requires a quiet zone at the end of bar code for decoding.
- 1D Quiet Zone Level 3** - The engine decodes anything in terms of quiet zone or end of bar code.

1D Quiet Zone Level 0



1D Quiet Zone Level 1*



1D Quiet Zone Level 2



1D Quiet Zone Level 3



3.13.4 Intercharacter Gap Size

The Code 39 and Codabar symbologies have an intercharacter gap that is typically quite small. Due to various bar code printing technologies, this gap can grow larger than the maximum size allowed, preventing the engine from decoding the symbol. If this problem occurs, scan the **Large Intercharacter Gaps** parameter to tolerate these out-of-specification bar codes.

Normal Intercharacter Gaps*



Large Intercharacter Gaps



3.14 Composite

3.14.1 Composite CC-C

Scan one of the following bar codes to enable or disable Composite bar codes of type CC-C.

Enable CC-C



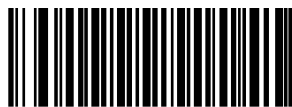
Disable CC-C*



3.14.2 Composite CC-A/B

Scan one of the following bar codes to enable or disable Composite bar codes of type CC-A/B.

Enable CC-A/B



Disable CC-A/B*



3.14.3 Composite TLC-39

Scan one of the following bar codes to enable or disable Composite bar codes of type TLC-39.

Enable TLC39



Disable TLC39*



3.14.4 Composite Inverse

Select an option to set Composite for either regular decode or inverse decode.

- **Regular Only** - The engine decodes regular Composite bar codes only. Before selecting this, set Inverse 1D to Regular Only or Inverse Autodetect.
- **Inverse Only** - The engine decodes inverse Composite bar codes only. This mode only supports Composite Inverse that includes DataBar combined with CCAB, and does not support other 1D/2D combinations. Before selecting this, first enable Composite CC-A/B , and set Inverse 1D to Inverse Only or Inverse Autodetect.

Regular Only*



Inverse Only



3.14.5 UPC Composite Mode

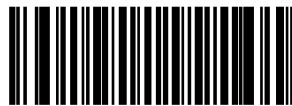
Select an option for linking UPC symbols with a 2D symbol during transmission as if they were one symbol:

- **UPC Never Linked** –
Transmit UPC bar codes regardless of whether a 2D symbol is detected.
- **UPC Always Linked** –
Transmit UPC bar codes and the 2D portion. If 2D is not present, do not transmit the bar code
- **Autodiscriminate UPC Composites** –
The engine determines if there is a 2D portion, then transmits the UPC, as well as the 2D portion if present.

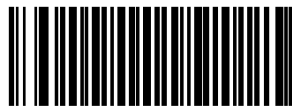
UPC Never Linked*



UPC Always Linked



Autodiscriminate UPC Composites



3.15 GS1-128 Emulation Mode for UCC/EAN Composite Codes

Scan one of the following barcodes to enable or disable this mode.

Enable GS1-128 Emulation Mode for UCC/EAN Composite Codes



Disable GS1-128 Emulation Mode for UCC/EAN Composite Codes *



3.16 Korean 3 of 5

Scan one of the following barcodes to enable or disable Korean 3 of 5.

Enable Korean 3 of 5



Disable Korean 3 of 5 *



3.17 2D Symbologies

3.17.1 PDF417

Scan one of the following bar codes to enable or disable PDF417.

Enable PDF417*



Disable PDF417



3.17.2 MicroPDF417

Scan one of the following bar codes to enable or disable MicroPDF417.

Enable MicroPDF417



Disable MicroPDF417 *



3.17.3 Code 128 Emulation

Enable this parameter to transmit data from certain MicroPDF417 symbols as Code 128. You must enable AIM Code ID Character (1) for this parameter to work.

Enable Code 128 Emulation to transmit these MicroPDF417 symbols with one of the following prefixes:

JC1 if the first codeword is 903-905

JC2 if the first codeword is 908 or 909

JC0 if the first codeword is 910 or 911

Disable Code 128 Emulation to transmit these MicroPDF417 symbols with one of the following prefixes:

JL3 if the first codeword is 903-905

JL4 if the first codeword is 908 or 909

JL5 if the first codeword is 910 or 911

Scan one of the following bar codes to enable or disable Code 128 Emulation.

Note: Linked MicroPDF codewords 906, 907, 912, 914, and 915 are not supported. Use GS1 Composites instead.

Enable Code 128 Emulation



Disable Code 128 Emulation *



3.17.4 Data Matrix

Scan one of the following bar codes to enable or disable Data Matrix.

Enable Data Matrix*



Disable Data Matrix



3.17.5 GS1 Data Matrix

Scan one of the following barcodes to enable or disable GS1 Data Matrix.

Enable GS1 Data Matrix



Disable GS1 Data Matrix *



3.17.6 Data Matrix Inverse

Scan one of the following bar codes to select the Data Matrix inverse decoder setting:

- **Regular Only** - The engine decodes regular Data Matrix bar codes only.
- **Inverse Only** - The engine decodes inverse Data Matrix bar codes only.
- **Inverse Autodetect** - The engine decodes both regular and inverse Data Matrix bar codes.

Regular Only *



Inverse Only



Inverse Autodetect



3.17.7 Decode Data Matrix Mirror Images

Scan one of the following bar codes to select an option for decoding mirror image Data Matrix bar codes:

- **Never** - Do not decode Data Matrix bar codes that are mirror images.
- **Always** - Decode only Data Matrix bar codes that are mirror images.
- **Auto** - Decode both mirrored and unmirrored Data Matrix bar codes.

Never



Always



Auto*



3.17.8 Maxicode

Scan one of the following bar codes to enable or disable Maxicode.

Enable Maxicode



Disable Maxicode*



3.17.9 QR Code

Scan one of the following bar codes to enable or disable QR Code.

Note: Enabling this also enables QR Inverse, QR Mirrored, and Linked QR.

Enable QR Code*



Disable QR Code



3.17.9.1 GS1 QR

Scan one of the following barcodes to enable or disable GS1 QR.

Enable GS1 QR *



Disable GS1 QR



3.17.9.2 MicroQR

Scan one of the following barcodes to enable or disable MicroQR.

Enable MicroQR *



Disable MicroQR



3.17.9.3 Linked QR Mode

Scan one of the following barcodes to select a linked QR mode.

- **Linked QR Only** - Does not decode individual QRs from a set of linked QR codes.
- **Individual QR With Headers** - Decodes individual QRs from a set of linked QR codes and keeps the header information and data.
- **Individual QR No Headers** - Decodes individual QRs from a set of linked QR codes and just transmits data without header information.

Linked QR Only *



Individual QR No Headers



Individual QR With Headers



3.17.10 Aztec

Scan one of the following bar codes to enable or disable Aztec.

Note: Enabling this also enables Linked Aztec.

Enable Aztec *



Disable Aztec



3.17.11 Aztec Inverse

Scan one of the following bar codes to select the Aztec inverse decoder setting:

- Regular Only** - The engine decodes regular Aztec bar codes only.
- Inverse Only** - The engine decodes inverse Aztec bar codes only.
- Inverse Autodetect** - The engine decodes both regular and inverse Aztec bar codes.

Regular Only



Inverse Only



Inverse Autodetect *



3.17.12 Han Xin

Scan one of the following bar codes to enable or disable Han Xin.

Enable Han Xin



Disable Han Xin *



3.17.12.1 Han Xin Inverse

Scan one of the following bar codes to select a Han Xin inverse decoder setting:

- **Regular Only** - The engine decodes Han Xin bar codes with normal reflectance only.
- **Inverse Only** - The engine decodes Han Xin bar codes with inverse reflectance only.
- **Inverse Autodetect** - The engine decodes both regular and inverse Han Xin bar codes.

Regular Only*



Inverse Only



Inverse Autodetect



3.17.13 Grid Matrix

Scan one of the following barcodes to enable or disable Grid Matrix.

Enable



Disable *



3.17.14 Grid Matrix Inverse

Scan one of the following barcodes to select a Grid Matrix inverse decoder setting:

- **Regular Only** - The decoder decodes regular Grid Matrix barcodes only.
- **Inverse Only** - The decoder decodes inverse Grid Matrix barcodes only.
- **Autodiscriminate** - The decoder decodes both regular and inverse Grid Matrix barcodes.

Regular Only *



Inverse Only



Autodiscriminate



3.17.15 Grid Matrix Mirror

Scan one of the following barcodes to select a Grid Matrix mirror decoder setting:

- Regular Only** - The decoder decodes regular Grid Matrix barcodes only.
- Mirrored Only** - The decoder decodes mirrored Grid Matrix barcodes only.
- Auto-discriminate** - The decoder decodes both regular and mirrored Grid Matrix barcodes.

Regular Only *



Mirrored Only



Autodiscriminate



3.18 Macro PDF Features

Macro PDF is a special feature for concatenating multiple PDF symbols into one file. The engine can decode symbols encoded with this feature, and can store more than 64 Kb of decoded data from up to 50 MacroPDF symbols.

CAUTION! When printing, keep each Macro PDF sequence separate, as each sequence has unique identifiers. Do not mix bar codes from several Macro PDF sequences, even if they encode the same data. When scanning a Macro PDF sequence, scan the entire sequence without interruption. When scanning a mixed sequence, two long low beeps (low / low) indicate an inconsistent file ID or inconsistent symbology error.

● Macro PDF User Indications

User Scans	Passthrough All Symbols		Transmit Any Symbol in Set		Buffer All Symbols	
	Beep	T	Beep	T	Beep	T
Last Macro PDF in set	Decode Beep	Y	Decode Beep	Y	Decode Beep	Y
Any Macro PDF in set except last	Decode Beep	Y	Decode Beep	Y	2 Short Low	N
Macro PDF is not in current Set	Decode Beep	Y	2 Long Low	N	2 Long Low	N
Invalid formatted Macro PDF	Decode Beep	Y	2 Long Low	N	2 Long Low	N
Macro PDF from a set has already been scanned	Decode Beep	Y	4 Long Low	N	4 Long Low	N
Out of Macro PDF memory	N/A		3 Long Low	N	3 Long Low	N
Any non-Macro PDF scanned during a set	N/A	-	4 Long Low	N	4 Long Low	N
Flush Macro PDF	Low High	N	5 Long Low	N	5 Long Low	Y
Abort Macro PDF	High Low High Low	N	High Low High Low	N	High Low High Low	N

Notes:
1. The beep only sounds if the *BEEPER_ON signal is connected.
2. The column marked T indicates whether the symbol is transmitted to the host.
N = No transmission.

3.18.1 Macro PDF Transmit / Decode Mode

Symbols

Select one of the following options for handling Macro PDF decoding. In Buffer All Symbols the decoder can handle sets of up to 50 maximum-sized Macro PDF symbols. In all other modes there is no limit to the size of the MacroPDF set.

- Buffer All Symbols / Transmit Macro PDF When Complete:** This transmits all decode data from an entire Macro PDF sequence only when the entire sequence is scanned and decoded. Use the beeper and LED signals provided with the PL5000 when using this mode to ensure proper user feedback. If the decode data exceeds the limit of 50 symbols, there is no transmission because the entire sequence was not scanned. Use the parameter Flush Macro Buffer to purge the buffer.

- Transmit Any Symbol in Set / No Particular Order:** This transmits data from each Macro PDF symbol as decoded, regardless of the sequence (although some error handling is performed; When selecting this mode, enable Transmit Macro PDF Control Header.

- Passthrough All Symbols:** This transmits and decodes all Macro PDF symbols and performs no processing. In this mode the host is responsible for detecting and parsing the Macro PDF sequences.

Use this mode when the decoder's BEEPER_ON signal is not used to drive a beeper (see the appropriate signal descriptions tables and the appropriate Imager Engine Signal Descriptions). In the other modes, some Macro PDF scanning sequences provide audible feedback only, so if BEEPER_ON is not used no user feedback is provided. All actions marked No Transmission provide no feedback unless the BEEPER_ON signal is used. By using Passthrough All Symbols mode every user decode is transmitted to the host where the host software can provide the appropriate feedback

Buffer All Symbols / Transmit Macro PDF When Complete



Transmit Any Symbol in Set / No Particular Order



Passthrough All Symbols *



3.18.2 Transmit Macro PDF Control Header

When enabled, this activates transmission of the control header, which contains the segment index and the file ID, in Macro PDF symbols. For example, the field may be: \92800000\725\120\343. The five digits after the \928 are the segment index (or block index), and \725\120\343 is the file ID.

Enable Macro PDF Control Header Transmit *



Disable Macro PDF Control Header Transmit



3.18.3 Escape Characters

This enables the backslash (\) character as an Escape character for systems that can process transmissions containing special data sequences. Scan one of the following barcodes to either format special data according to the GLI (Global Label Identifier) protocol, or to disable this parameter. This parameter only affects the data portion of a Macro PDF symbol transmission; the Macro PDF Control Header (if enabled) is always sent with GLI formatting.

GLI Protocol



None *



3.18.4 Flush Macro Buffer

Scan the following bar code to clear all currently-stored Macro PDF data in the buffer without transmission and abort from Macro PDF mode.

Flush Macro PDF Buffer



3.18.5 Abort Macro PDF Entry

Scan the following barcode to clear all currently stored Macro PDF data in the buffer without transmission and abort from Macro PDF mode.

Abort Macro PDF Entry



3.18.6 Postal Codes

Scan one of the following bar codes to enable or disable US Postnet.

Enable US Postnet



Disable US Postnet*



3.18.7 US Planet

Scan one of the following bar codes to enable or disable US Planet.

Enable US Planet



Disable US Planet*



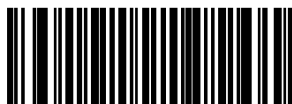
3.18.8 Transmit US Postal Check Digit

Scan one of the following bar codes to select whether to transmit US Postal data, which includes both US Postnet and US Planet, with or without the check digit.

Enable US Planet Transmit US Postal Check Digit*



Do Not Transmit US Postal Check Digit



3.18.9 UK Postal

Scan one of the following bar codes to enable or disable UK Postal.

Enable UK Postal



Disable UK Postal*



3.18.10 Transmit UK Postal Check Digit

Scan one of the following bar codes to select whether to transmit UK Postal data with or without the check digit.

Transmit UK PostalCheck Digit*



Do Not Transmit UK Postal Check Digit



3.18.11 Japan Postal

Scan one of the following bar codes to enable or disable Japan Postal.

Enable Japan Postal



Disable Japan Postal *



3.18.12 Australia Post

Scan one of the following bar codes to enable or disable Australia Post.

Enable Australia Post



Disable Australia Post*



3.18.13 Australia Post Format

Scan one of the following bar codes to select a format for Australia Post:

Autodiscriminate (or Smart mode) - Decode the Customer Information Field using the N and C Encoding Tables.

NOTE : This option increases the risk of misdecodes because the encoded data format does not specify the Encoding Table used for encoding.

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- **Raw Format** - Output raw bar patterns as a series of numbers 0 through 3.
- **Alphanumeric Encoding** - Decode the Customer Information Field using the C Encoding Table.
- **Numeric Encoding** - Decode the Customer Information Field using the N Encoding Table.

Autodiscriminate*



Raw Format



Alphanumeric Encoding



Numeric Encoding



3.18.14 Netherlands KIX Code

Scan one of the following bar codes to enable or disable Netherlands KIX Code.

Enable Netherlands KIX Code



Disable Netherlands KIX Code*



3.18.15 UPU FICS Postal

Scan one of the following bar codes to enable or disable UPU FICS Postal.

Enable UPU FICS Postal



Disable UPU FICS Postal*



3.19 DotCode

Scan one of the following barcodes to enable or disable DotCode.

Disable DotCode *



Enable DotCode



3.19.1 DotCode Inverse

Scan one of the following barcodes to select a DotCode Inverse decoder setting. Setting options are:

- Regular Only** - Decoder decodes DotCode barcodes with normal reflectance only.
- Inverse Only** - Decoder decodes DotCode barcodes with inverse reflectance only.
- Inverse Autodetect** - Decoder decodes both regular and inverse DotCode barcodes.

Regular



Inverse Only



Autodetect *



3.19.2 DotCode Mirrored

Scan one of the following barcodes to select a DotCode Mirror decoder setting:

- Non-Mirrored Only** - Digital decoder decodes non-mirrored DotCode barcodes only.
- Mirrored Only** - Digital decoder decodes mirrored DotCode barcodes only.
- Autodetect** - Digital decoder decodes both mirrored and non-mirrored DotCode barcodes.

Never



Always



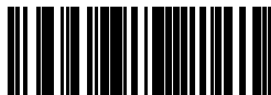
Autodetect *



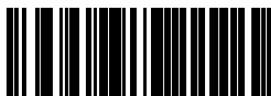
3.19.3 DotCode Prioritize

Enable DotCode Prioritize to give priority to DotCode decoding as compared to other symbologies.

Disable



Enable *



Appendix A – ASCII Character Sets

A-1 ASCII Character Set

ASCII Value (Prefix/Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
1000	%U	CTRL 2	NUL
1001	\$A	CTRL A	SOH
1002	\$B	CTRL B	STX
1003	\$C	CTRL C	ETX
1004	\$D	CTRL D	EOT
1005	\$E	CTRL E	ENQ
1006	\$F	CTRL F	ACK
1007	\$G	CTRL G	BELL
1008	\$H	CTRL H/ BACKSPACE ¹	BCKSPC
1009	\$I	CTRL I/ HORIZONTAL TAB ¹	HORIZ TAB
1010	\$J	CTRL J	LF/NW LN
1011	\$K	CTRL K	VT
1012	\$L	CTRL L	FF
1013	\$M	CTRL M/ ENTER ¹	CR/ENTER
1014	\$N	CTRL N	SO
1015	\$O	CTRL O	SI
1016	\$P	CTRL P	DLE
1017	\$Q	CTRL Q	DC1/XON
1018	\$R	CTRL R	DC2

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ASCII Value (Prefix/Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
1019	\$S	CTRL S	DC3/XOFF
1020	\$T	CTRL T	DC4
1021	\$U	CTRL U	NAK
1022	\$V	CTRL V	SYN
1023	\$W	CTRL W	ETB
1024	\$X	CTRL X	CAN
1025	\$Y	CTRL Y	EM
1026	\$Z	CTRL Z	SUB
1027	%A	CTRL [ESC
1028	%B	CTRL \	FS
1029	%C	CTRL]	GS
1030	%D	CTRL 6	RS
1031	%E	CTRL -	US
1032	Space	Space	Space
1033	/A	!	!
1034	/B	"	"
1035	/C	#	#
1036	/D	\$	\$
1037	/E	%	%
1038	/F	&	&
1039	/G	'	'
1040	/H	((
1041	/I))
1042	/J	*	*
1043	/K	+	+
1044	/L	,	,
1045	-	-	-
1046	.	.	.
1047	/o	/	/
1048	0	0	0
1049	1	1	1
1050	2	2	2
1051	3	3	3
1052	4	4	4
1053	5	5	5

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ASCII Value (Prefix/Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
1054	6	6	6
1055	7	7	7
1056	8	8	8
1057	9	9	9
1058	/Z	:	:
1059	%F	;	;
1060	%G	<	<
1061	%H	=	=
1062	%I	>	>
1063	%J	?	?
1064	%V	@	@
1065	A	A	A
1066	B	B	B
1067	C	C	C
1068	D	D	D
1069	E	E	E
1070	F	F	F
1071	G	G	G
1072	H	H	H
1073	I	I	I
1074	J	J	J
1075	K	K	K
1076	L	L	L
1077	M	M	M
1078	N	N	N
1079	O	O	O
1080	P	P	P
1081	Q	Q	Q
1082	R	R	R
1083	S	S	S
1084	T	T	T
1085	U	U	U
1086	V	V	V
1087	W	W	W
1088	X	X	X

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ASCII Value (Prefix/Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
1089	Y	Y	Y
1090	Z	Z	Z
1091	%K	[[
1092	%L	\	\
1093	%M]]
1094	%N	^	^
1095	%O	-	-
1096	%W	'	'
1097	+A	a	a
1098	+B	b	b
1099	+C	c	c
1100	+D	d	d
1101	+E	e	e
1102	+F	f	f
1103	+G	g	g
1104	+H	h	h
1105	+I	i	i
1106	+J	j	j
1107	+K	k	k
1108	+L	l	l
1109	+M	m	m
1110	+N	n	n
1111	+O	o	o
1112	+P	p	p
1113	+Q	q	q
1114	+R	r	r
1115	+S	s	s
1116	+T	t	t
1117	+U	u	u
1118	+V	v	v
1119	+W	w	w
1120	+X	x	x
1121	+Y	y	y
1122	+Z	z	z
1123	%P	{	{
1124	%Q		
1125	%R	}	}
1126	%S	~	~
1127			Undefined
7013			ENTER

A-2 ALT Key Character Set

ALT Keys	Keystroke
2064	ALT 2
2065	ALT A
2066	ALT B
2067	ALT C
2068	ALT D
2069	ALT E
2070	ALT F
2071	ALT G
2072	ALT H
2073	ALT I
2074	ALT J
2075	ALT K
2076	ALT L
2077	ALT M
2078	ALT N
2079	ALT O
2080	ALT P
2081	ALT Q
2082	ALT R
2083	ALT S

2084	ALT T
2085	ALT U
2086	ALT V
2087	ALT W
2088	ALT X
2089	ALT Y
2090	ALT Z

A-3 GUI Key Character Set

GUI Key	Keystroke
3000	Right Control Key
3048	GUI 0
3049	GUI 1
3050	GUI 2
3051	GUI 3
3052	GUI 4
3053	GUI 5
3054	GUI 6
3055	GUI 7
3056	GUI 8
3057	GUI 9
3065	GUI A
3066	GUI B
3067	GUI C
3068	GUI D
3069	GUI E
3070	GUI F
3071	GUI G
3072	GUI H
3073	GUI I
3074	GUI J
3075	GUI K
3076	GUI L
3077	GUI M
3078	GUI N
3079	GUI O
3080	GUI P
3081	GUI Q
3082	GUI R
3083	GUI S
3084	GUI T
3085	GUI U
3086	GUI V
3087	GUI W
3088	GUI X
3089	GUI Y
3090	GUI Z

A-4 PF Key Character Set

PF Keys	Keystroke
4001	PF 1
4002	PF 2
4003	PF 3
4004	PF 4
4005	PF 5
4006	PF 6
4007	PF 7
4008	PF 8
4009	PF 9
4010	PF 10
4011	PF 11
4012	PF 12
4013	PF 13
4014	PF 14
4015	PF 15
4016	PF 16

A-5 F Key Character Set

F Keys	Keystroke
5001	F 1
5002	F 2
5003	F 3
5004	F 4
5005	F 5
5006	F 6
5007	F 7
5008	F 8
5009	F 9
5010	F 10

5011	F 11
5012	F 12
5013	F 13
5014	F 14
5015	F 15
5016	F 16
5017	F 17
5018	F 18
5019	F 19
5020	F 20
5021	F 21
5022	F 22
5023	F 23
5024	F 24

A-6 Numeric Key Character Set

Numeric Keypad	Keystroke
6042	*
6043	+
6044	Undefined
6045	-
6046	.
6047	/
6048	0
6049	1
6050	2
6051	3
6052	4
6053	5
6054	6
6055	7
6056	8
6057	9
6058	Enter
6059	Num Lock

A-7 Extended Key Character Set

Extended Keypad	Keystroke
7001	Break
7002	Delete
7003	Pg Up
7004	End
7005	Pg Dn
7006	Pause
7007	Scroll Lock
7008	Backspace
7009	Tab
7010	Print Screen
7011	Insert
7012	Home
7013	Enter
7014	Escape
7015	Up Arrow
7016	Dn Arrow
7017	Left Arrow
7018	Right Arrow

Appendix B – Numeric Barcodes

B-1 Cancel

To correct an error or change a selection, scan the bar code below.

Cancel



B-2 Numeric Barcodes

For parameters requiring specific numeric values, scan the appropriately numbered bar code(s).

0



5



1



6



2



7



3



8



4















9



















Appendix C – Alphanumeric BarCodes

C-1 Alphanumeric Barcodes

For parameters requiring specific numeric values, scan the appropriately numbered bar code(s).

Space	#
	
\$	%
	
*	+
	
-	.
	
/	!
	
“	&
	

'	(
	
)	:
	
;	<
	
=	>
	
?	@
	
[\
	
]	^
	
_	`
	

NOTE: Do not confuse the following bar codes with those on the numeric keypad.

0



5



1



6



2



7



3



8



4



9



End of Message



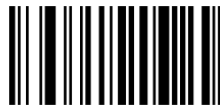
Cancel



A



B



C



D



E



F



G



H



I



J



K



L



M



N



O



P



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Q



S



U



W



Y



R



T



V



X



Z



MS852B LR User's Manual

a



b



c



d



e



f



g



h



i



j



k



l



m



n



o



p



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q



r



s



t



u



v



w



x



y



z



{



|



}



~



Appendix D – Programming Reference

D-1 Symbol Code Identifiers

Code Character	Code Type
A	UPC-A, UPC-E, UPC-E1, EAN-8, EAN-13
B	Code 39, Code 32
C	Codabar
D	Code 128, ISBT 128, ISBT 128 Concatenated
E	Code 93
F	Interleaved 2 of 5
G	Discrete 2 of 5, or Discrete 2 of 5 IATA
H	Code 11
J	MSI
K	GS1-128
L	Bookland EAN
M	Trioptic Code 39
N	Coupon Code
R	GS1 DataBar Family
S	Matrix 2 of 5
T	UCC Composite, TLC 39
U	Chinese 2 of 5
V	Korean 3 of 5
X	ISSN EAN, PDF417, Macro PDF417, Micro PDF417
z	Aztec, Aztec Rune
P00	Data Matrix
P01	QR Code, MicroQR
P02	Maxicode
P03	US Postnet
P04	US Planet
P05	Japan Postal
P06	UK Postal
P08	Netherlands KIX Code
P09	Australia Post
P0A	USPS 4CB/One Code/Intelligent Mail
P0B	UPU FICS Postal
P0C	Mailmark
P0D	Grid Matrix, Grid Matrix Inverse, Grid Matrix Mirror
P0G	GS1 Data Matrix
P0H	Han Xin
P0Q	GS1 QR
P0X	Signature Capture

D-2 AIM Code Identifiers

Each AIM Code Identifier contains the three-character string]cm where:

] = Flag Character (ASCII 93)

c = Code Character

m = Modifier Character

■ Aim Code Characters

Code Character	Code Type
A	Code 39, Code 39 Full ASCII, Code 32
C	Code 128, ISBT 128, ISBT 128 Concatenated, GS1-128, Coupon (Code 128 portion)
d	Data Matrix, GS1 Data Matrix
E	UPC/EAN, Coupon (UPC portion)
e	GS1 DataBar Family
F	Codabar
G	Code 93
H	Code 11
h	Han Xin
I	Interleaved 2 of 5
L	PDF417, Macro PDF417, Micro PDF417
L2	TLC 39
M	MSI
Q	QR Code, MicroQR, GS1 QR
S	Discrete 2 of 5, IATA 2 of 5
U	Maxicode
z	Aztec, Aztec Rune
X	Bookland EAN, ISSN EAN, Trioptic Code 39, Chinese 2 of 5, Matrix 2 of 5, Korean 3 of 5, US Postnet, US Planet, UK Postal, Japan Postal, Australia Post, Netherlands KIX Code, USPS 4CB/One Code/ Intelligent Mail, UPU FICS Postal, Mailmark, Signature Capture
]g	Grid Matrix, Grid Matrix Inverse, Grid Matrix Mirror

■ Modifier Characters

The modifier character is the sum of the applicable option values.

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Reader has checked one check character.
	3	Reader has checked and stripped check character.
	4	Reader has performed Full ASCII character conversion.
	5	Reader has performed Full ASCII character conversion and checked one check character.
	7	Reader has performed Full ASCII character conversion and checked and stripped check character.
	Example: A Full ASCII barcode with check character W, A+I+MI+DW , is transmitted as JA7AIMID where 7 = (3+4).	
Trioptic Code 39	0	No option specified at this time. Always transmit 0.
	Example: A Trioptic barcode 412356 is transmitted as JX0412356	
Code 128	0	Standard data packet, no Function code 1 in first symbol position.
	1	Function code 1 in first symbol character position.
	2	Function code 1 in second symbol character position.
	Example: A Code (EAN) 128 barcode with Function 1 character ^{FNC1} in the first position, AIMID is transmitted as JC1AIMID	
I 2 of 5	0	No check digit processing.
	1	Reader has validated check digit.
	3	Reader has validated and stripped check digit.
	Example: An I 2 of 5 barcode without check digit, 4123, is transmitted as J104123	
Codabar	0	No check digit processing.
	1	Reader has checked check digit.
	3	Reader has stripped check digit before transmission.
	Example: A Codabar barcode without check digit, 4123, is transmitted as JF04123	
Code 93	0	No options specified at this time. Always transmit 0.
	Example: A Code 93 barcode 012345678905 is transmitted as JG0012345678905	

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Code Type	Option Value	Option
MSI	0	Check digits are sent.
	1	No check digit is sent.
	Example: An MSI barcode 4123, with a single check digit checked, is transmitted as JM14123	
D 2 of 5	0	No options specified at this time. Always transmit 0.
	Example: A D 2 of 5 barcode 4123, is transmitted as JS04123	
UPC/EAN	0	Standard data packet in full EAN format, i.e., 13 digits for UPC-A, UPC-E, and EAN-13 (not including supplemental data).
	1	Two digit supplemental data only.
	2	Five digit supplemental data only.
	3	Combined data packet comprising 13 digits from EAN-13, UPC-A or UPC-E symbol and 2 or 5 digits from supplemental symbol.
	4	EAN-8 data packet.
	Example: A UPC-A barcode 012345678905 is transmitted as JE00012345678905	
Bookland EAN	0	No options specified at this time. Always transmit 0.
	Example: A Bookland EAN barcode 123456789X is transmitted as JX0123456789X	
ISSN EAN	0	No options specified at this time. Always transmit 0.
	Example: An ISSN EAN barcode 123456789X is transmitted as JX0123456789X	
Code 11	0	Single check digit
	1	Two check digits
	3	Check characters validated but not transmitted.
GS1 DataBar Family		No option specified at this time. Always transmit 0. GS1 DataBar Omnidirectional and GS1 DataBar Limited transmit with an Application Identifier "01". Note: In GS1-128 emulation mode, GS1 DataBar is transmitted using Code 128 rules (i.e., JC1).
	Example: A GS1 DataBar Omnidirectional barcode 0110012345678902 is transmitted as Je00110012345678902 .	
EAN.UCC Composites (GS1 DataBar, GS1-128, 2D portion of UPC composite)		Native mode transmission. Note: UPC portion of composite is transmitted using UPC rules.
	0	Standard data packet.
	1	Data packet containing the data following an encoded symbol separator character.
	2	Data packet containing the data following an escape mechanism character. The data packet does not support the ECI protocol.
	3	Data packet containing the data following an escape mechanism character. The data packet supports the ECI protocol.
		GS1-128 emulation Note: UPC portion of composite is transmitted using UPC rules.
1	Data packet is a GS1-128 symbol (i.e., data is preceded with JJC1).	

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Code Type	Option Value	Option
PDF417, Micro PDF417	0	Reader set to conform to protocol defined in 1994 PDF417 symbology specifications. Note: When this option is transmitted, the receiver cannot reliably determine whether ECIs have been invoked or whether data byte 92 _{DEC} has been doubled in transmission.
	1	Reader set to follow the ECI protocol (Extended Channel Interpretation). All data characters 92 _{DEC} are doubled.
	2	Reader set for Basic Channel operation (no escape character transmission protocol). Data characters 92 _{DEC} are not doubled. Note: When decoders are set to this mode, unbuffered Macro symbols and symbols requiring the decoder to convey ECI escape sequences cannot be transmitted.
	3	The barcode contains a GS1-128 symbol, and the first codeword is 903-907, 912, 914, 915.
	4	The barcode contains a GS1-128 symbol, and the first codeword is in the range 908-909.
	5	The barcode contains a GS1-128 symbol, and the first codeword is in the range 910-911.
	Example: A PDF417 barcode ABCD, with no transmission protocol enabled, is transmitted as]L2ABCD.	
Data Matrix	0	ECC 000-140, not supported.
	1	ECC 200.
	2	ECC 200, FNC1 in first or fifth position.
	3	ECC 200, FNC1 in second or sixth position.
	4	ECC 200, ECI protocol implemented.
	5	ECC 200, FNC1 in first or fifth position, ECI protocol implemented.
	6	ECC 200, FNC1 in second or sixth position, ECI protocol implemented.

GS1 Data Matrix	2	ECC 200, FNC1 in first or fifth position.
MaxiCode	0	Symbol in Mode 4 or 5.
	1	Symbol in Mode 2 or 3.
	2	Symbol in Mode 4 or 5, ECI protocol implemented.
	3	Symbol in Mode 2 or 3, ECI protocol implemented in secondary message.
QR Code	0	Model 1 symbol.
	1	Model 2 / MicroQR symbol, ECI protocol not implemented.
	2	Model 2 symbol, ECI protocol implemented.
	3	Model 2 symbol, ECI protocol not implemented, FNC1 implied in first position.
	4	Model 2 symbol, ECI protocol implemented, FNC1 implied in first position.
	5	Model 2 symbol, ECI protocol not implemented, FNC1 implied in second position.
	6	Model 2 symbol, ECI protocol implemented, FNC1 implied in second position.
GS1 QR	3	Model 2 symbol, ECI protocol not implemented, FNC1 implied in first position.

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Code Type	Option Value	Option
Aztec	0	Aztec symbol.
	C	Aztec Rune symbol.
Han Xin	0	Generic data, no special features are set. The transmitted data does not follow the AIM ECI protocol.
	1	ECI protocol enabled. There is at least one ECI mode encoded. Transmitted data must follow the AIM ECI protocol.
Grid Matrix, Grid Matrix Inverse, Grid Matrix Mirror	0	No options specified at this time. Always transmit 0.
Mailmark	0	No option specified at this time. Always transmit 0.