

Programming Guide

Unitech Bluetooth Service API

For Unitech Scanner Utility version 1.0.18 and above

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Revision History

Release	Revision	Date	Changes
1	0	2019-04-30	First release
1	1	2019-05-28	1. Add new command to configure scanner BT signal checking level 2. Revise appendix A
1	2	2019-06-05	1. Fix typo of extended data of Scanner BT Signal Checking Level 2. Add notes of Data Ack and Auto Connection
1	3	2019-07-05	1. Add interface to start Unitech Scanner Utility without GUI in Section 1 2. Add three new APIs of Unitech Scanner Utility settings in Section 5
1	4	2019-07-18	1. Revise the format of Appendix A
1	5	2019-08-12	1. Update sample code of starting Unitech Scanner Utility without GUI
1	6	2019-08-23	1. Fix some typos
1	7	2019-10-28	1. Add new command to receive Code Type of Data, get/set scanned data format
1	8	2020-02-10	1. Remove commands 1. Get Scanner Connection List 2. Set Target Scanner 2. Add commands 1. Get Target Scanner 2. Get Target Scanner Callback 3. Change the rule for generated barcode
1	9	2020-02-11	1. Add command 1. Get Pairing Barcode
1	10	2020-05-07	1. Add new command to configure scanner Data Terminator

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1. Preface

This document is to describe scanner management API for managing unitech Bluetooth scanners from Android devices using Unitech Scanner Utility. Unitech Scanner Utility works for scanners in BT SPP mode and requests and responses are through Android broadcast.

To start Unitech Scanner Utility without GUI, developers can startActivity with extra parameter “ismoveTaskToBack” = true. Below the sample code segment:

```
Intent sendIntent = getPackageManager().getLaunchIntentForPackage("com.unitech.scanner.utility");
sendIntent.setFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP|Intent.FLAG_ACTIVITY_NEW_TASK);
sendIntent.putExtra("ismoveTaskToBack", true);
startActivity(sendIntent);
```

To generate barcode in user application for the scanner to scan to connect to the device, the barcode format is //.USU{Android device MAC address}. For example, if the BT MAC address of Android device is ab:22:33:44:55:66, the barcode should present

//.USU**AB**2233445566

Make sure that the every MAC address character present in generated bar code is Upper case.

2. Scanner information and connection

2.1 Get Pairing Barcode

Description	Get the Barcode for Bluetooth Pairing and generate barcode(apply from USU version 1.1.0, F/W V1.46)
Request Action	unitech.scanservice.bluetooth.get_pairing_barcode
Response Action	unitech.scanservice.bluetooth.get_pairing_barcode_reply
Extended data	Name: "PairingBarcodeContent" Type: String

2.2 Get Target Scanner

Description	Get the serial number and connection status of target scanner(apply from USU version 1.1.0, F/W V1.46)
Request Action	unitech.scanservice.bluetooth.get_target_scanner
Response Action	unitech.scanservice.bluetooth.get_target_scanner_reply
Extended data	Name: "serialNo" Type: String Name: "IsConnected" Type: Boolean

2.3 Get Target Scanner Callback

Description	Auto receive the serial number and connection status of target scanner once connection status(connected/disconnected) change(apply from USU version 1.1.0, F/W V1.46)
Add Action	unitech.scanservice.bluetooth.target_scanner_callback
Extended data	Name: "serialNo" Type: String

	Name: "IsConnected" Type: Boolean
--	--------------------------------------

2.4 Ask Scanner to un-pair

Description	Ask scanner to forget the pairing information with current Android device
Request Action	unitech.scanservice.bluetooth.unpair

2.5 Get Scanner Serial Number

Description	Get scanner serial number
Request Action	unitech.scanservice.bluetooth.get_sn
Response Action	unitech.scanservice.bluetooth.get_sn_reply
Extended data	Name: "sn" Type: String

2.6 Get Scanner Bluetooth Name

Description	Get scanner BT MAC address
Request Action	unitech.scanservice.bluetooth.get_name
Response Action	unitech.scanservice.bluetooth.get_name_reply
Extended data	Name: "name" Type: String

2.7 Get Scanner Bluetooth MAC address

Description	Get scanner BT MAC address
Request Action	unitech.scanservice.bluetooth.get_address
Response Action	unitech.scanservice.bluetooth.get_address_reply
Extended data	Name: "address" Type: String

2.8 Get Scanner Firmware Version

Description	Get scanner firmware version
Request Action	unitech.scanservice.bluetooth.get_fw
Response Action	unitech.scanservice.bluetooth.get_fw_reply
Extended data	Name: "fw" Type: String

2.9 Get Scanner Battery Level

Description	Get scanner battery level
Request Action	unitech.scanservice.bluetooth.get_battery
Response Action	unitech.scanservice.bluetooth.get_battery_reply
Extended data	Name: "battery" Type: Integer (0=charging, 1=very low, 2=low, 3=ok, 4=full)

3. Scanner configuration

3.1 Enable/Disable Scanner Trigger Key

Description	Enable or disable scanner trigger key. When the trigger key is disable, the scanner does not scan when users press trigger key.
Default value	Enabled
GET API	
Request Action	unitech.scanservice.bluetooth.get_trig
Response Action	unitech.scanservice.bluetooth.get_trig_reply
Extended data	Name: "trig" Type: Boolean (true=ON, false= OFF)
SET API	
Request Action	unitech.scanservice.bluetooth.set_trig
Extended data	Name: "trig"

	Type: Boolean (true=ON, false= OFF)
--	-------------------------------------

3.2 Start Decode

Description	Ask scanner to start decode which is the same as users press the physical scanner trigger key. Together with Stop Decode can achieve remote trigger capability.
Request Action	unitech.scanservice.bluetooth.start_decode

3.3 Stop Decode

Description	Ask scanner to stop decode which is the same as users release the physical scanner trigger key. Together with Start Decode can achieve remote trigger capability.
Request Action	unitech.scanservice.bluetooth.stop_decode

3.4 Enable/Disable Data ACK/NAK

Description	Configure Scanner to require ACK or not. When Data ACK/NAK is configured as ON, scanner waits for ACK/NAK while transmitting each data to the host. If scanner does not receive ACK in three seconds, it will retransmit data at most three times. <i>Note: this configuration is valid only when the scanner is in BT SPP mode and Auto Connection is ON. <u>Data ACK must be enabled to get scanned data via API.</u></i>
Default value	OFF
GET API	
Request Action	unitech.scanservice.bluetooth.get_ack
Response Action	unitech.scanservice.bluetooth.get_ack_reply
Extended data	Name: "ack" Type: Boolean (true=ON, false= OFF)
SET API	
Request Action	unitech.scanservice.bluetooth.set_ack
Extended data	Name: "ack"

	Type: Boolean (true=ON, false= OFF)
--	-------------------------------------

3.5 Enable/Disable Auto Connection

Description	Configure Scanner to automatically connect to the host or not. When Auto Connection is configured as OFF, scanner will not proactively connect to any device but waiting for other devices to connect. <i>Note: this configuration is valid when the scanner is in BT SPP mode. <u>Auto Connection must be enabled to work with Scanner Utility.</u></i>
Default value	ON
GET API	
Request Action	unitech.scanservice.bluetooth.get_auto_conn
Response Action	unitech.scanservice.bluetooth.get_auto_conn_reply
Extended data	Name: "autoConn" Type: Boolean (true=ON, false= OFF)
SET API	
Request Action	unitech.scanservice.bluetooth.set_auto_conn
Extended data	Name: "autoConn" Type: Boolean (true=ON, false= OFF)

3.6 Scanner Symbology Configuration

Description	Configure Scanner Symbology via SSI command. Detailed configuration items please refer to appendix A.
Default value	NA
GET API	
Request Action	unitech.scanservice.bluetooth.get_config
Response Action	unitech.scanservice.bluetooth.get_config_reply
Extended data	Name: (refer to Appendix A) Type: Integer (refer to Appendix A)
SET API	
Request Action	unitech.scanservice.bluetooth.set_config
Extended data	Name: (refer to Appendix A) Type: Integer (refer to Appendix A)

3.7 Scanner BT Signal Checking Level

Description	Configure Scanner Bluetooth signal checking level. Higher Level requires higher threshold for data sending.
Default value	0 (Normal Level)
GET API	
Request Action	unitech.scanservice.bluetooth.get_bt_signal_checking_level
Response Action	unitech.scanservice.bluetooth.get_bt_signal_checking_level_reply
Extended data	Name: "btSignalCheckingLevel" Type: Integer (0= Normal Level, 1= Higher Level)
SET API	
Request Action	unitech.scanservice.bluetooth.set_bt_signal_checking_level
Extended data	Name: "btSignalCheckingLevel" Type: Integer (0= Normal Level, 1= Higher Level)

3.8 Scanner Data Terminator

Description	Configure Scanner Data Terminator(apply from USU version 1.1.7, F/W V1.47)
Default value	1 (CR)
GET API	
Request Action	unitech.scanservice.bluetooth.get_data_terminator
Response Action	unitech.scanservice.bluetooth.get_data_terminator_reply
Extended data	Name: "DataTerminator" Type: Integer (0= None/Null, 1=CR, 2=LF, 3=CRLF, 4=TAB)
SET API	
Request Action	unitech.scanservice.bluetooth.set_data_terminator
Extended data	Name: "DataTerminator" Type: Integer (0= None/Null, 1=CR, 2=LF, 3=CRLF, 4=TAB)

Scan Data

3.9 Received Scanned Data

Enter into SSI mode(apply from USU version 1.0.23, F/W V1.44)	
Description	Enter into SSI mode for getting bar code type with data
Action	com.unitech.bluetooth.changeToSSI
Enter into RAW mode(apply from USU version 1.0.23, F/W V1.44)	
Description	Enter into RAW mode for getting data only
Action	com.unitech.bluetooth.changeToRAW
Receive current data mode(apply from USU version 1.0.23, F/W V1.44)	
Description	Get the current scanned data mode, RAW or SSI
Request Action	com.unitech.bluetooth.getFormat
Response Action	com.unitech.bluetooth.getFormat_reply
Extended data	Name: "format" Type: Integer(0=RAW , 1=SSI)
Receive Code Type of Data(apply from USU version 1.0.23, F/W V1.44)(In SSI Mode only)	
Action	com.unitech.bluetooth.dataCodeType
Extended data	Name: "codeType" Type: byte e.g. if code type is Code39, the value is 0x01 Detail to see Appendix D
Receive Data	
Action	unitech.scanservice.data
Extended data	Name: "text" Type: String
Receive Data Length	
Action	unitech.scanservice.datalength
Extended data	Name: "text" Type: Integer
Receive Data Bytes	
Action	unitech.scanservice.databyte

Extended data	Name: "text" Type: byte[] <i>Note: "databyte" will return unmodified raw data from the engine, which might be different from the String "data". Thus need to use databytelength to get the correct length.</i>
Receive Length of Data Bytes	
Action	unitech.scanservice.databytelength
Extended data	Name: "text" Type: Integer
Receive All	
Action	unitech.scanservice.dataall
Extended data	Name: "databyte" Type: byte[] Name: "databytelength" Type: Integer

3.10 Send ACK/Indicator

Description	When scanner DATA ACK/NAK is enabled, ACK is required to be sent to the scanner. Some indicators can be sent along with the ACK or can be sent to the scanner independently.
Action	unitech.scanservice.bluetooth.set_indicator
Extended data	Name: "dataAck" Type: Boolean (true= with Data ACK, false = indicator only) Name: "beepTime" Type: Integer (0=no beep, 1=beep once, 2=beep twice, 3=beep 3 times) Name: "vibrate" Type: Boolean (false= no vibrate, true=vibrate) Name: "ledColor" Type: String ("none"=no led, "red"=red led, "green"=green led, "blue"=blue led)

	<i>Note: beepTime, vibrate, and ledColor are optional parameters. Only ACK will be transmitted if dataAck = true without beepTime, vibrate, and ledColor specified.</i>
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4. Unitech Scanner Utility Settings

4.1 Export Settings

Description	Export Unitech Scanner Utility Settings (Scanner configuration, Application settings) to files <ul style="list-style-type: none"> • /sdcard/USUConfig.001 • /sdcard/USUConfig.002
Request Action	unitech.scanservice.bluetooth.export_settings

4.2 Import Settings

Description	Import Unitech Scanner Utility Settings (Scanner configuration, Application settings) from files <ul style="list-style-type: none"> • /sdcard/USUConfig.001 • /sdcard/USUConfig.002
Request Action	unitech.scanservice.bluetooth.import_settings

4.3 Upload Settings

Description	Upload Unitech Scanner Utility Settings (Scanner configuration) to the connected scanner
Request Action	unitech.scanservice.bluetooth.upload_all_settings

Appendix A

Appendix A shows the parameters of each configuration item that developers can set through Scanner Symbology Configuration command mentioned in Section 3.6.

Note the description started with * is the default value.

1.1 UPC/EAN

1. To enable or disable UPC-A

Name	Value	Description
UPC-A	0	Disable
	1	*Enable

2. To enable or disable UPC-E

Name	Value	Description
UPC-E	0	Disable
	1	*Enable

3. To enable or disable UPC-E1

Name	Value	Description
UPC-E1	0	*Disable
	1	Enable

4. To enable or disable EAN-8/JAN-8

Name	Value	Description
EAN-8/JAN-8	0	Disable
	1	*Enable

5. To enable or disable EAN-13/JAN-13

Name	Value	Description
EAN-13/JAN-13	0	Disable
	1	*Enable

6. To enable or disable Bookland EAN

Name	Value	Description
Bookland EAN	0	*Disable
	1	Enable

7. To Set Bookland ISBN Format (valid when bookland EAN is enabled)

Name	Value	Description
Bookland ISBN Format	0	*Bookland ISBN-10 - The decoder 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.
	1	Bookland ISBN-13 - The decoder reports Bookland data (starting with either 978 or 979) as EAN-13 in 13-digit format to meet the 2007 ISBN-13 protocol.

8. To set decode UPC/EAN/JAN Supplementals

Name	Value	Description
Decode UPC/EAN/JAN Supplemental	0	*Ignore Supplementals
	1	Decode UPC/EAN/JAN Only With Supplementals
	2	Autodiscriminate UPC/EAN/JAN Supplementals
	3	Enable Smart Supplemental Mode
	4	Enable 378/379 Supplemental Mode
	5	Enable 978/979 Supplemental Mode
	6	Enable 414/419/434/439 Supplemental Mode
	7	Enable 977 Supplemental Mode
	8	Enable 491 Supplemental Mode

9. To set Transmit UPC-A Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. It is always verified to guarantee the integrity of the data.

Name	Value	Description
Transmit UPC-A Check Digit	0	Do Not Transmit UPC-A Check Digit
	1	*Transmit UPC-A Check Digit

10. To set Transmit UPC-E Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. It is always verified to guarantee the integrity of the data.

Name	Value	Description
Transmit UPC-E Check Digit	0	Do Not Transmit UPC-E Check Digit
	1	*Transmit UPC-E Check Digit

11. To set Transmit UPC-E1 Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. It is always verified to guarantee the integrity of the data.

Name	Value	Description
Transmit UPC-E1 Check Digit	0	Do Not Transmit UPC-E Check Digit
	1	* Transmit UPC-E Check Digit

12. To set UPC-A Preamble

Preamble characters are part of the UPC symbol, and include Country Code and System Character. There are three options for transmitting a UPC-A preamble to the host device: transmit System Character only, transmit System Character and Country Code ("0" for USA), and transmit no preamble. Select the appropriate option to match the host system.

Name	Value	Description
UPC-A Preamble	0	No Preamble (<DATA>)
	1	* System Character (<SYSTEM CHARACTER> <DATA>)
	2	System Character & Country Code (< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)<DATA>)

13. To set UPC-E Preamble

Preamble characters are part of the UPC symbol, and include Country Code and System Character. There are three options for transmitting a UPC-E preamble to the host device: transmit System Character only, transmit System Character and Country Code ("0" for USA), and transmit no preamble. Select the appropriate option to match the host system.

Name	Value	Description
UPC-E Preamble	0	No Preamble (<DATA>)
	1	* System Character (<SYSTEM CHARACTER> <DATA>)
	2	System Character & Country Code (< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)<DATA>)

14. To set UPC-E1 Preamble

Preamble characters are part of the UPC symbol, and include Country Code and System Character. There are three options for transmitting a UPC-E1 preamble to the host device: transmit System Character only, transmit System Character and Country Code ("0" for USA), and transmit no preamble. Select the appropriate option to match the host system.

Name	Value	Description
UPC-E1 Preamble	0	No Preamble (<DATA>)
	1	* System Character (<SYSTEM CHARACTER> <DATA>)
	2	System Character & Country Code (< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)<DATA>)

15. To enable 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.

Name	Value	Description
Convert UPC-E to UPC-A	0	*Do Not Convert UPC-E to UPC-A (Disable)
	1	Convert UPC-E to UPC-A (Enable)

16. To enable Convert UPC-E1 to UPC-A

Enable this 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).

Disable this to transmit UPC-E1 decoded data as UPC-E1 data, without conversion.

Name	Value	Description
Convert UPC-E1 to UPC-A	0	*Do Not Convert UPC-E1 to UPC-A (Disable)
	1	Convert UPC-E1 to UPC-A (Enable)

17. To enable EAN-8/JAN-8 Extend

Enable this parameter to add five leading zeros to decoded EAN-8 symbols to make them compatible in format to EAN-13 symbols.

Disable this to transmit EAN-8 symbols as is.

Name	Value	Description
EAN-8/JAN-8 Extend	0	*Disable EAN/JAN Zero Extend
	1	Enable EAN/JAN Zero Extend

18. To enable UCC Coupon Extended Code

Enable this parameter 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. UPCA, EAN-13, and GS1-128 must be enabled to scan all types of Coupon Codes.

Name	Value	Description
UCC Coupon Extended Code	0	*Disable UCC Coupon Extended Code
	1	Enable UCC Coupon Extended Code

19. To enable ISSN EAN

Name	Value	Description
ISSN EAN	0	*Disable ISSN EAN
	1	Enable ISSN EAN

1.2 Code 128

1. To enable Code 128

Name	Value	Description
Code 128	0	Disable Code 128
	1	*Enable Code 128

2. To set lengths of 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.

- a. **Set lengths to any length:** decode Code 128 symbols in any length

Name	Value
Code 128 Length Parameter 1	0
Code 128 Length Parameter 2	0

- b. **Set lengths to one discrete length:** Decode only Code 128 symbols containing a selected length.

Name	Value
Code 128 Length Parameter 1	The selected length (1 ~ 55)
Code 128 Length Parameter 2	0

- c. **Set lengths to two discrete lengths:** Decode only Code 128 symbols containing either of two lengths

Name	Value
Code 128 Length Parameter 1	The larger selected length (1 ~ 55)
Code 128 Length Parameter 2	The smaller selected length (1 ~ 55)

- d. **Set lengths within a specific range:** Decode Code 128 symbols with a specific length range.

Name	Value
Code 128 Length Parameter 1	The smaller selected length (1 ~ 55)
Code 128 Length Parameter 2	The larger selected length (1 ~ 55)

3. To enable GS1-128

Name	Value	Description
GS1-128	0	Disable GS1-128
	1	*Enable GS1-128

4. To enable ISBT 128

Name	Value	Description
ISBT 128	0	Disable ISBT 128
	1	*Enable ISBT 128

1.3 Code 39

1. To enable Code 39

Name	Value	Description
Code 39	0	Disable Code 39
	1	*Enable Code 39

2. To enable 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.

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

Name	Value	Description
Trioptic Code 39	0	*Disable Trioptic Code 39
	1	Enable Trioptic Code 39

3. To convert Code 39 to Code 32

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

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

Name	Value	Description
Convert Code 39 to Code 32	0	*Disable Convert Code 39 to Code 32
	1	Enable Convert Code 39 to Code 32

4. To set Code 32 Prefix

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.

Name	Value	Description
Code 32 Prefix	0	*Disable Code 32 Prefix
	1	Enable Code 32 Prefix

5. To set lengths of 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.

- a. **Set lengths to any length:** decode Code 39 symbols in any length

Name	Value
Code 39 Length Parameter 1	0
Code 39 Length Parameter 2	0

- b. **Set lengths to one discrete length:** Decode only Code 39 symbols containing a selected length.

Name	Value
Code 39 Length Parameter 1	The selected length (1 ~ 55)
Code 39 Length Parameter 2	0

- c. **Set lengths to two discrete lengths:** Decode only Code 39 symbols containing either of two lengths

Name	Value
Code 39 Length Parameter 1	The larger selected length (1 ~ 55)
Code 39 Length Parameter 2	The smaller selected length (1 ~ 55)

- d. **Set lengths within a specific range:** Decode Code 39 symbols with a specific length range.

Name	Value
Code 39 Length Parameter 1	The smaller selected length (1 ~ 55)
Code 39 Length Parameter 2	The larger selected length (1 ~ 55)

5. To set Code 39 Check Digit Verification

Enable this feature 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.

Name	Value	Description
Code 39 Check Digit Verification	0	*Disable Code 39 Check Digit
	1	Enable Code 39 Check Digit

6. To set Transmit Code 39 Check Digit

Transmit Code 39 data with or without the check digit.

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

Name	Value	Description
Transmit Code 39 Check Digit	0	*Do Not Transmit Code 39 Check Digit (Disable)
	1	Transmit Code 39 Check Digit (Enable)

7. To enable 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.

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

Name	Value	Description
Code 39 Full ASCII Conversion	0	*Disable Code 39 Full ASCII
	1	Enable Code 39 Full ASCII

1.4 Code 93

1. To enable Code 93

Name	Value	Description
Code 93	0	*Disable Code 93
	1	Enable Code 93

2. To set lengths of Code 93

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**.

a. Set lengths to any length: decode Code 93 symbols in any length

Name	Value
Code 93 Length Parameter 1	0
Code 93 Length Parameter 2	0

b. Set lengths to one discrete length: Decode only Code 93 symbols containing a selected length.

Name	Value
Code 93 Length Parameter 1	The selected length (1 ~ 55)
Code 93 Length Parameter 2	0

- c. **Set lengths to two discrete lengths:** Decode only Code 93 symbols containing either of two lengths

Name	Value
Code 93 Length Parameter 1	The larger selected length (1 ~ 55)
Code 93 Length Parameter 2	The smaller selected length (1 ~ 55)

- d. **Set lengths within a specific range:** Decode Code 93 symbols with a specific length range.

Name	Value
Code 93 Length Parameter 1	The smaller selected length (1 ~ 55)
Code 93 Length Parameter 2	The larger selected length (1 ~ 55)

1.5 Code 11

1. To enable Code 11

Name	Value	Description
Code 11	0	*Disable Code 11
	1	Enable Code 11

2. To set lengths of 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**.

- a. **Set lengths to any length:** decode Code 11 symbols in any length

Name	Value
Code 11 Length Parameter 1	0
Code 11 Length Parameter 2	0

- b. **Set lengths to one discrete length:** Decode only Code 11 symbols containing a selected

length.

Name	Value
Code 11 Length Parameter 1	The selected length (1 ~ 55)
Code 11 Length Parameter 2	0

- c. **Set lengths to two discrete lengths:** Decode only Code 11 symbols containing either of two lengths

Name	Value
Code 11 Length Parameter 1	The larger selected length (1 ~ 55)
Code 11 Length Parameter 2	The smaller selected length (1 ~ 55)

- d. **Set lengths within a specific range:** Decode Code 11 symbols with a specific length range.

Name	Value
Code 11 Length Parameter 1	The smaller selected length (1 ~ 55)
Code 11 Length Parameter 2	The larger selected length (1 ~ 55)

3. To set Code 11 Check Digit Verification

This feature allows the decoder to check the integrity of all Code 11 symbols to verify that the data complies with the specified check digit algorithm. This selects the check digit mechanism for the decoded Code 11 bar code. The options are to check for one check digit, check for two check digits, or disable the feature.

Name	Value	Description
Code 11 Check Digit Verification	0	*Disable
	1	One Check Digit
	2	Two Check Digits

4. To set Transmit Code 11 Check Digit

This feature allows the decoder to check the integrity of all Code 11 symbols to verify that the data complies with the specified check digit algorithm. This selects the check digit mechanism for the decoded Code 11 bar code. The options are to check for one check digit, check for two check digits, or disable the feature.

NOTE Code 11 Check Digit Verification must be enabled for this parameter to function.

Name	Value	Description
Transmit Code 11 Check Digit	0	*Do Not Transmit Code 11 Check Digit(s) (Disable)
	1	Transmit Code 11 Check Digit(s) (Enable)

1.6 Interleaved 2 of 5 (ITF)

- To enable Interleaved 2 of 5

Name	Value	Description
Interleaved 2 of 5	0	*Disable Interleaved 2 of 5
	1	Enable Interleaved 2 of 5

- To set lengths of 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 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.

- Set lengths to any length:** decode I 2 of 5 symbols in any length

Name	Value
Interleaved 2 of 5 Length Parameter 1	0
Interleaved 2 of 5 Length Parameter 2	0

- Set lengths to one discrete length:** Decode only I 2 of 5 symbols containing a selected length.

Name	Value
Interleaved 2 of 5 Length Parameter 1	The selected length (1 ~ 55)
Interleaved 2 of 5 Length Parameter 2	0

- Set lengths to two discrete lengths:** Decode only I 2 of 5 symbols containing either of two lengths

Name	Value
Interleaved 2 of 5 Length Parameter 1	The larger selected length (1 ~ 55)
Interleaved 2 of 5 Length Parameter 2	The smaller selected length (1 ~ 55)

d. **Set lengths within a specific range:** Decode I 2 of 5 symbols with a specific length range.

Name	Value
Interleaved 2 of 5 Length Parameter 1	The smaller selected length (1 ~ 55)
Interleaved 2 of 5 Length Parameter 2	The larger selected length (1 ~ 55)

3. To set Interleaved 2 of 5 Check Digit Verification

Enable this feature 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.

Name		Value
Interleaved 2 of 5 Check Digit Verification	0	*Disable
	1	USS Check Digit
	2	OPCC Check Digit

4. To set Transmit Interleaved 2 of 5 Check Digit

Transmit I 2 of 5 data with or without the check digit.

Name		Value
Transmit Interleaved 2 of 5 Check Digit	0	*Do Not Transmit I 2 of 5 Check Digit (Disable)
	1	Transmit I 2 of 5 Check Digit (Enable)

5. To Convert Interleaved 2 of 5 to EAN-13

Enable this parameter 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.

Name		Value
Convert I 2 of 5 to EAN-13	0	*Do Not Convert I 2 of 5 to EAN-13 (Disable)
	1	Convert I 2 of 5 to EAN-13 (Enable)

1.7 Discrete 2 of 5 (DTF)

1. To enable Discrete 2 of 5

Name		Value
Discrete 2 of 5	0	*Disable Discrete 2 of 5
	1	Enable Discrete 2 of 5

2. To set lengths of 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 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.

- a. **Set lengths to any length:** decode D 2 of 5 symbols in any length

Name	Value
Discrete 2 of 5 Length Parameter 1	0
Discrete 2 of 5 Length Parameter 2	0

- b. **Set lengths to one discrete length:** Decode only D 2 of 5 symbols containing a selected length.

Name	Value
Discrete 2 of 5 Length Parameter 1	The selected length (1 ~ 55)
Discrete 2 of 5 Length Parameter 2	0

- c. **Set lengths to two discrete lengths:** Decode only D 2 of 5 symbols containing either of two lengths

Name	Value
Discrete 2 of 5 Length Parameter 1	The larger selected length (1 ~ 55)
Discrete 2 of 5 Length Parameter 2	The smaller selected length (1 ~ 55)

- d. **Set lengths within a specific range:** Decode D 2 of 5 symbols with a specific length

range.

Name	Value
Discrete 2 of 5 Length Parameter 1	The smaller selected length (1 ~ 55)
Discrete 2 of 5 Length Parameter 2	The larger selected length (1 ~ 55)

1.8 Codabar (NW - 7)

1. To enable Codabar

Name	Value	Description
Codabar	0	*Disable Codabar
	1	Enable Codabar

2. To set lengths of 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**.

a. Set lengths to any length: decode Codabar symbols in any length

Name	Value
Codabar Length Parameter 1	0
Codabar Length Parameter 2	0

b. Set lengths to one discrete length: Decode only Codabar symbols containing a selected length.

Name	Value
Codabar Length Parameter 1	The selected length (1 ~ 55)
Codabar Length Parameter 2	0

c. Set lengths to two discrete lengths: Decode only Codabar symbols containing either of two lengths

Name	Value
Codabar Length Parameter 1	The larger selected length (1 ~ 55)
Codabar Length Parameter 2	The smaller selected length (1 ~ 55)

- d. **Set lengths within a specific range:** Decode Codabar symbols with a specific length range.

Name	Value
Codabar Length Parameter 1	The smaller selected length (1 ~ 55)
Codabar Length Parameter 2	The larger selected length (1 ~ 55)

3. To enable CLSI Editing

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

Name	Value	Description
CLSI Editing	0	*Disable CLSI Editing
	1	Enable CLSI Editing

4. To enable NOTIS Editing

Enable this parameter to strip the start and stop characters from a decoded Codabar symbol. Enable this feature if the host system requires this data format.

NOTE Symbol length does not include start and stop characters.

Name	Value	Description
NOTIS Editing	0	*Disable NOTIS Editing
	1	Enable NOTIS Editing

1.9 MSI

1. To enable MSI

Name	Value	Description
MSI	0	*Disable MSI
	1	Enable MSI

2. To set lengths of 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 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.

a. **Set lengths to any length:** decode MSI symbols in any length

Name	Value
MSI Length Parameter 1	0
MSI Length Parameter 2	0

b. **Set lengths to one discrete length:** Decode only MSI symbols containing a selected length.

Name	Value
MSI Length Parameter 1	The selected length (1 ~ 55)
MSI Length Parameter 2	0

c. **Set lengths to two discrete lengths:** Decode only MSI symbols containing either of two lengths

Name	Value
MSI Length Parameter 1	The larger selected length (1 ~ 55)
MSI Length Parameter 2	The smaller selected length (1 ~ 55)

d. **Set lengths within a specific range:** Decode MSI symbols with a specific length range.

Name	Value
MSI Length Parameter 1	The smaller selected length (1 ~ 55)
MSI Length Parameter 2	The larger selected length (1 ~ 55)

3. **To set MSI Check Digit**

With MSI symbols, one check digit is mandatory and always verified by the reader. The second check digit is optional.

Name		Value
MSI Check Digit	0	*One MSI Check Digit
	1	Two MSI Check Digits

4. To set transmit MSI Check Digit

Name	Value	Description
Transmit MSI Check Digit	0	*Do Not Transmit MSI Check Digit(s) (Disable)
	1	Transmit MSI Check Digit(s) (Enable)

5. To set MSI Check Digit Algorithm

Two algorithms are possible for the verification of the second MSI check digit.

Name	Value	Description
MSI Check Digit Algorithm	0	MOD 10/MOD 11
	1	*MOD 10/MOD 10

1.10 Chinese 2 of 5

1. To enable Chinese 2 of 5

Name	Value	Description
Chinese 2 of 5	0	*Disable Chinese 2 of 5
	1	Enable Chinese 2 of 5

1.11 Matrix 2 of 5

1. To enable Matrix 2 of 5

Name	Value	Description
Matrix 2 of 5	0	*Disable Matrix 2 of 5
	1	Enable Matrix 2 of 5

2. To set lengths of 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.

- a. **Set lengths to any length:** decode Matrix 2 of 5 symbols in any length

Name	Value
Matrix 2 of 5 Length Parameter 1	0
Matrix 2 of 5 Length Parameter 2	0

- b. **Set lengths to one discrete length:** Decode only Matrix 2 of 5 symbols containing a selected length.

Name	Value
Matrix 2 of 5 Length Parameter 1	The selected length (1 ~ 55)
Matrix 2 of 5 Length Parameter 2	0

- c. **Set lengths to two discrete lengths:** Decode only Matrix 2 of 5 symbols containing either of two lengths

Name	Value
Matrix 2 of 5 Length Parameter 1	The larger selected length (1 ~ 55)
Matrix 2 of 5 Length Parameter 2	The smaller selected length (1 ~ 55)

- d. **Set lengths within a specific range:** Decode Matrix 2 of 5 symbols with a specific length range.

Name	Value
Matrix 2 of 5 Length Parameter 1	The smaller selected length (1 ~ 55)
Matrix 2 of 5 Length Parameter 2	The larger selected length (1 ~ 55)

3. To set Matrix 2 of 5 Check Digit

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

Name	Value	Description
Matrix 2 of 5 Check Digit	0	*Disable Matrix 2 of 5 Check Digit
	1	Enable Matrix 2 of 5 Check Digit

4. To set transmit Matrix 2 of 5 Check Digit

Name	Value	Description
Transmit Matrix 2 of 5 Check Digit	0	*Do Not Transmit Matrix 2 of 5 Check Digit
	1	Transmit Matrix 2 of 5 Check Digit

1.12 Inverse 1D

1. To set 1D inverse decoder setting

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

Name	Value	Description
Inverse 1D	0	*Regular - the decoder decodes regular 1D bar codes only.
	1	Inverse Only - the decoder decodes inverse 1D bar codes only.
	2	Inverse Autodetect - the decoder decodes both regular and inverse 1D bar codes.

1.13 Postal Codes

1. To enable US Postnet

Name	Value	Description
US Postnet	0	*Disable US Postnet
	1	Enable US Postnet

2. To enable US Planet

Name	Value	Description
US Planet	0	*Disable US Planet
	1	Enable US Planet

3. To set Transmit US Postal Check Digit

Select whether to transmit US Postal data, which includes both US Postnet and US Planet, with or without the check digit.

Name	Value	Description
Transmit US Postal Check Digit	0	Do Not Transmit US Postal Check Digit
	1	*Transmit US Postal Check Digit

4. To set enable UK Postal

Name	Value	Description
UK Postal	0	*Disable UK Postal
	1	Enable UK Postal

5. To set Transmit UK Postal Check Digit

Name	Value	Description
Transmit UK Postal Check Digit	0	Do Not Transmit UK Postal Check Digit
	1	*Transmit UK Postal Check Digit

6. To enable Japan Postal

Name	Value	Description
Japan Postal	0	*Disable Japan Postal
	1	Enable Japan Postal

7. To enable Australia Post

Name	Value	Description
Australia Post	0	*Disable Australia Post
	1	Enable Australia Post

8. To enable Netherlands KIX Code

Name	Value	Description
Netherlands KIX Code	0	*Disable Netherlands KIX Code
	1	Enable Netherlands KIX Code

9. To enable USPS 4CB/One Code/Intelligent Mail

Name	Value	Description
USPS 4CB/One Code/Intelligent Mail	0	*Disable USPS 4CB/One Code/Intelligent Mail
	1	Enable USPS 4CB/One Code/Intelligent Mail

10. To enable UPU FICS Postal

Name	Value	Description
UPU FICS Postal	0	*Disable UPU FICS Postal
	1	Enable UPU FICS Postal

1.14 GS1 DataBar

1. To enable GS1 DataBar

Enable or disable the following code types:

- GS1 DataBar Omnidirectional
- GS1 DataBar Truncated
- GS1 DataBar Stacked
- GS1 DataBar Stacked Omnidirectional,

Name	Value	Description
GS1 DataBar	0	Disable GS1 DataBar
	1	*Enable GS1 DataBar

2. To enable GS1 DataBar Limited

Name	Value	Description
GS1 DataBar Limited	0	*Disable GS1 DataBar Limited
	1	Enable GS1 DataBar Limited

3. To enable GS1 DataBar Expanded

Name	Value	Description
GS1 DataBar Expanded	0	Disable GS1 DataBar Expanded
	1	*Enable GS1 DataBar Expanded

4. To convert GS1 DataBar to UPC/EAN

This parameter only applies to GS1 DataBar and GS1 DataBar Limited symbols not decoded as part of a Composite symbol. Enable this to strip the leading '010' from DataBar 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 two or more zeros but not six zeros, this parameter strips the leading '0100' and reports the bar code as UPC-A. The UPC-A Preamble parameter 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.

Name	Value	Description
Convert GS1 DataBar to UPC/EAN	0	*Disable Convert GS1 DataBar to UPC/EAN
	1	Enable Convert GS1 DataBar to UPC/EAN

1.15 Composite

1. To enable Composite CC-C

Enable or disable Composite bar codes of type CC-C.

Name	Value	Description
Composite CC-C	0	*Disable CC-C
	1	Enable CC-C

2. To enable Composite CC-A/B

Enable or disable Composite bar codes of type CC-A/B.

NOTE if you enable this code type, also see UPC Composite Mode.

Name	Value	Description
Composite CC-A/B	0	*Disable CC- A/B
	1	Enable CC-A/B

3. To enable Composite TLC-39

Enable or disable Composite bar codes of type TLC-39.

Name	Value	Description
Composite TLC-39	0	*Disable TLC-39
	1	Enable TLC-39

4. To enable UPC Composite Mode

If you enable Composite CC-A/B, select an option for linking UPC symbols with a 2D symbol during transmission as if they were one symbol:

- Select **UPC Never Linked** to transmit UPC bar codes regardless of whether a 2D symbol is detected.
- Select **UPC Always Linked** to transmit UPC bar codes and the 2D portion.
If 2D is not present, the UPC bar code does not transmit.
- If you select **Autodiscriminate UPC Composites**, the decoder determines if there is a 2D portion, then transmits the UPC, as well as the 2D portion if present.

Name	Value	Description
UPC Composite Mode	0	UPC Never Linked
	1	*UPC Always Linked
	2	Autodiscriminate UPC Composites

1.16 2D Symbologies

1. To enable PDF417

Name	Value	Description
PDF417	0	Disable PDF417
	1	*Enable PDF417

2. To enable MicroPDF417

Name	Value	Description
MicroPDF417	0	*Disable MicroPDF417
	1	Enable MicroPDF417

3. To enable Code 128 Emulation

Enable this parameter to transmit data from certain MicroPDF417 symbols as Code 128. AIM Code ID

Character (01h) must be enabled for this parameter to work.

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

]C1 if the first codeword is 903-905

]C2 if the first codeword is 908 or 909

]C0 if the first codeword is 910 or 911

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

]L3 if the first codeword is 903-905

]L4 if the first codeword is 908 or 909

]L5 if the first codeword is 910 or 911

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

Name	Value	Description
Code 128 Emulation	0	*Disable Code 128 Emulation
	1	Enable Code 128 Emulation

4. To enable Data Matrix

Name	Value	Description
Data Matrix	0	Disable Data Matrix
	1	*Enable Data Matrix

5. To set Data Matrix Inverse

Name	Value	Description
Data Matrix Inverse	0	*Regular Only - the decoder decodes regular Data Matrix bar codes only.
	1	Inverse Only - the decoder decodes inverse Data Matrix bar codes only.
	2	Inverse Autodetect - the decoder decodes both regular and inverse Data Matrix bar codes.

6. To enable Maxicode

Name	Value	Description
Maxicode	0	*Disable Maxicode
	1	Enable Maxicode

7. To enable QR Code

Name	Value	Description
QR Code	0	Disable QR Code
	1	*Enable QR Code

8. To enable MicroQR

Name	Value	Description
MicroQR	0	Disable MicroQR
	1	*Enable MicroQR

9. To enable Aztec

Name	Value	Description
Aztec	0	Disable Aztec
	1	*Enable Aztec

10. To set Aztec Inverse

Name	Value	Description
Aztec Inverse	0	Regular Only - the decoder decodes regular Aztec bar codes only.
	1	Inverse Only - the decoder decodes inverse Aztec bar codes only.
	2	*Inverse Autodetect - the decoder decodes both regular and inverse Aztec bar codes.

11. To enable Han Xin

Name	Value	Description
Han Xin	0	*Disable Han Xin
	1	Enable Han Xin

12. To set Han Xin Inverse

Name	Value	Description
Han Xin Inverse	0	*Regular Only - the decoder decodes Han Xin bar codes with normal reflectance only.
	1	Inverse Only - the decoder decodes Han Xin bar codes with inverse reflectance only.
	2	Inverse Autodetect - the decoder decodes both regular and inverse Han Xin bar codes.

1.17 Others

1. To set Trigger Modes

Name	Value	Description
Trigger Modes	0	*Level - A trigger event activates decode processing, which continues until the trigger event ends, a valid decode, or the Decode Session Timeout occurs.
	7	Presentation Mode - When the decoder detects an object in its field of view, it triggers and attempt to decode. The range of object detection does not vary under normal lighting conditions. This applies to decode mode only. In this mode the unit does not enter Low Power mode.
	8	Host - A host command issues the triggering signal. The decoder interprets an actual trigger pull as a Level triggering option.
	9	Auto Aim - This trigger mode turns on the aiming pattern when the decoder senses motion. A trigger pull activates decode processing. After 2 seconds of inactivity the aiming pattern automatically shuts off.
	10	Auto Aim with Illumination - This trigger mode turns on the aiming pattern and internal illumination LEDs when the decoder senses motion. A trigger pull activates decode processing. After 2 seconds of inactivity the aiming pattern and internal illumination LEDs automatically shut off.

2. To set Picklist Mode

Picklist mode enables the decoder to decode only bar codes aligned under the center of the aiming pattern.

NOTE With Picklist Mode enabled, the decode aiming pattern turns on even when the Decode Aiming Pattern

is disabled.

Name	Value	Description
Picklist Mode	0	*Disabled Always - Picklist mode is always disabled.
	2	Enabled Always - Picklist mode is always enabled.

3. To set decode session timeout

This parameter sets the maximum time decode processing continues during a scan attempt.

Name	Value	Description
Decode Session Timeout	0.5 to 9.9	It is programmable in 0.1 second increments from 0.5 to 9.9 seconds. The default timeout is 9.9 seconds.

4. To set Low Light Motion Detection Assist

In **Presentation Mode**, this feature allows motion detection in dim to dark illumination environments by using the aiming dot or dim illumination to assist in the detection of motion by providing a low light source.

NOTE If this parameter is enabled and *Decoding Illumination* is disabled, this parameter takes precedence.

Name	Value	Description
Low Light Motion Detection Assist	0	*Disable Low Light Motion Detection Assist
	1	Enable Aiming Dot for Low Light Motion Detection Assist
	2	Enable Dim Illumination for Low Light Motion Detection Assist

5. To set 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 already selected, the Code ID character is inserted between the prefix and the decoded symbol.

Name	Value	Description
Transmit Code ID Character	0	*None
	1	AIM Code ID Character
	2	Symbol Code ID Character

Appendix B Symbol Code Identifiers

Code Character	Code Type	Code Character	Code Type
A	UPC-A, UPC-E, UPC-E1, EAN-8, EAN-13	P00	Data Matrix
B	Code 39, Code 32	P01	QR Code, MicroQR
C	Codabar	P02	Maxicode
D	Code 128, ISBT 128, ISBT 128 Concatenated	P03	US Postnet
E	Code 93	P04	US Planet
F	Interleaved 2 of 5	P05	Japan Postal
G	Discrete 2 of 5, or Discrete 2 of 5 IATA	P06	UK Postal
H	Code 11	P08	Netherlands KIX Code
J	MSI	P09	Australia Post
K	GS1-128	P0A	USPS 4CB/One Code/Intelligent Mail
L	Bookland EAN	P0B	UPU FICS Postal
M	Trioptic Code 39	P0H	Han Xin
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		

Appendix C AIM Code Identifiers

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

-] = Flag Character (ASCII 93)
- c = Code Character (see Aim Code Character Table)
- m = Modifier Character (see Modifier Character Table)

Aim Code Character Table

Aim Code Character	Code Type
A	Code 39, Code 39 Full ASCII, Code 32
C	Code 128, ISBT 128, ISBT 128 Concatenated, GS1-128, Coupon
d	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
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

The modifier character is the sum of the applicable option values based on the Modifier Character table below.

Modifier Character Table

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 bar code with check character W, A+I+MI+DW, is transmitted as]A7AIMID where 7 = (3+4).	
Trioptic Code 39	0	No option specified at this time. Always transmit 0.
	Example: A Trioptic bar code 412356 is transmitted as]X0412356	
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 bar code with Function 1 character(FNC1) in the first position, AIMID is transmitted as]C1AIMID	
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 bar code without check digit, 4123, is transmitted as]I04123	
Codabar	0	No check digit processing.
	1	Reader has checked check digit.
	3	Reader has stripped check digit before transmission.
	Example: A Codabar bar code without check digit, 4123, is transmitted as]F04123	
Code 93	0	No options specified at this time. Always transmit 0.
	Example: A Code 93 bar code 012345678905 is transmitted as]G0012345678905	
MSI	0	Check digits are sent.
	1	No check digit is sent.

	Example: An MSI bar code 4123, with a single check digit checked, is transmitted as]M14123	
D 2 of 5	0	No options specified at this time. Always transmit 0.
	Example: A D 2 of 5 bar code 4123, is transmitted as]S04123	
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 bar code 012345678905 is transmitted as]E00012345678905	
Bookland EAN	0	No options specified at this time. Always transmit 0.
	Example: A Bookland EAN bar code 123456789X is transmitted as]X0123456789X	
ISSN EAN	0	No options specified at this time. Always transmit 0.
	Example: An ISSN EAN bar code 123456789X is transmitted as]X0123456789X	
Code 11	0	Single check digit
	1	Two check digits
	3	Check characters validated but not transmitted.
GS1 DataBar Family	0	No option specified at this time. Always transmit 0. GS1 DataBar 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.,]C1).
	Example: A GS1 DataBar bar code 0110012345678902 is transmitted as]e00110012345678902.	
EAN.UCC Composites (GS1 DataBar, GS1-128, 2D portion of composite)	0	Native mode transmission. Note: UPC portion of composite is transmitted using UPC rules. Standard data packet.
	1	Data packet containing the data following an encoded symbol UPC 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.

	1	GS1-128 emulation Note: UPC portion of composite is transmitted using UPC rules. Data packet is a GS1-128 symbol (i.e., data is preceded with]JC1).
PDF417	0	Reader set to conform to protocol defined in 1994 PDF417 Micro PDF417 symbology specifications. Note: When this option is transmitted, the receiver cannot reliably determine whether ECIs have been invoked or whether data byte 92DEC has been doubled in transmission.
	1	Reader set to follow the ECI protocol (Extended Channel Interpretation). All data characters 92DEC are doubled.
	2	Reader set for Basic Channel operation (no escape character transmission protocol). Data characters 92DEC 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 bar code contains a GS1-128 symbol, and the first codeword is 903-907, 912, 914, 915.
	4	The bar code contains a GS1-128 symbol, and the first codeword is in the range 908-909.
	5	The bar code contains a GS1-128 symbol, and the first codeword is in the range 910-911.
	Example: A PDF417 bar code 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.
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.
Aztec	0	Aztec symbol.
	C	Aztec Rune symbol.

Appendix D Code Type By SSI ID

Table D-0

Symbology	SSI ID	Code ID	AIM ID Letter	AIM ID Modifier
Code 39	0x01	B	A	0 - no check digit 1 (3) - check digit included (excluded)
Codabar	0x02	C	F	0 (1) - standard (ABC)
Code 128	0x03	D	C	0 (also see GS1-128)
D25	0x04	G	S	0
IATA	0x05	G	S	0
ITF	0x06	F	I	Same rules as for Code 39
Code 93	0x07	E	G	0
UPCA	0x08	A	E	0
UPCE³	0x09	A	E	0
EAN-8	0x0A	A	E	4
EAN-13	0x0B	A	E	0
Code 11	0x0C	H	H	0 (1) [2] - 1 (2) [0] check digits included
Code 49	0x0D	X	X	0
MSI	0x0E	J	M	0 - Modulo 10 symbol check character validated and transmitted 1 - Modulo 10 symbol check character validated but not transmitted
GS1-128	0x0F	K	C	1 (2) - character 1 (2) is Function 1 (F1)
UPCE1	0x10	A	E	0
PDF-417	0x11	X	L	0 - Conforms with 1994 PDF-417 spec 1 - Backslash characters doubled 2 - Backslash characters not doubled
Code 16K	0x12			
Code 39 Full ASCII	0x13	B	A	4 - no check digit 5 (7) - check digit included (excluded)

UPCD	0x14	X	X	0
Trioptic	0x15	M	X	0
Bookland	0x16	L	X	0
Coupon Code	0x17	N	E+C ¹	0+1
NW7	0x18	X	X	0
ISBT-128	0x19	D	C	0
Micro PDF	0x1A	X	L	3 - Code 128 emul: implied F1 in 1st position 4 - Code 128 emul: F1 after 1st letter/digits 5 - Code 128 emul: no implied F1
Data Matrix	0x1B	P00	d	4 (1) - ECC 200 with (w/o) ECI
QR Code	0x1C	P01	Q	0
Micro PDF CCA	0x1d	X	X	0
Postnet (US)	0x1E	P03	X	0
Planet (US)	0x1F	P04	X	
Code 32	0x20	B	A	Same rules as for Code 39
ISBT-128 Concat.	0x21	D	C	4
Postal (Japan)	0x22	P05	X	0
Postal (Australia)	0x23	P09	X	0
Postal (Dutch)	0x24	P08	X	0
Maxicode	0x25	P02	U	1 - Mode 0, 2 or 3, without ECI 3 (1) - Extended EC with (w/o) ECI
Postbar (CA)	0x26	P07	X	0
Postal (UK)	0x27	P06	X	0
Macro PDF-417	0x28	X	L	Same rules as for PDF-417
Macro QR Code	0x29	X	X	0
Micro QR Code	0x2C	P01	Q	1
Aztec Code	0x2D	z	z	0
Aztec Rune Code	0x2E	z	z	C
French Lottery	0x2F	X	X	0
GS1 DataBar-14	0x30	R		

GS1 DataBar Limited	0x31	R		
GS1 DataBar Expanded	0x32	R		
Parameter (FNC3)	0x33	N/A	N/A	
4State US	0x34	P0A	X	0
4State US4	0x35	P0B	X	0
Scanlet Webcode	0x37	W	X	0
Cue CAT Code	0x38	Q	X	0
UPCA + 2	0x48	A	$E + E^2$	0 for main block; 1 for supplemental
UPCE + 2	0x49	A	$E + E^2$	0 for main block; 1 for supplemental
EAN-8 + 2	0x4A	A	$E + E^2$	4 for main block; 1 for supplemental
EAN-13 + 2	0x4B	A	$E + E^2$	0 for main block; 1 for supplemental
UPCE1 + 2	0x50	A	$E + E^2$	0 for main block; 1 for supplemental
Composite (CC-A + GS1-128)	0x51	T	See Table D-1	
Composite (CC-A + EAN-13)	0x52	T	See Table D-1	
Composite (CC-A + EAN-8)	0x53	T	See Table D-1	
Composite (CC-A + GS1 DataBar Expanded)	0x54	T	See Table D-1	
Composite (CC-A + GS1 DataBar Limited)	0x55	T	See Table D-1	
Composite (CC-A + GS1 DataBar-14)	0x56	T	See Table D-1	
Composite (CC-A + UPC-A)	0x57	T	See Table D-1	
Composite (CC-A + UPC-E)	0x58	T	See Table D-1	
Composite (CC-C + GS1-128)	0x59	T	See Table D-1	
TLC-39	0x5A	T	See Table D-1	

Composite (CC-B + GS1-128)	0x61	T	See Table D-1	
Composite (CC-B + EAN-13)	0x62	T	See Table D-1	
Composite (CC-B + EAN-8)	0x63	T	See Table D-1	
Composite (CC-B + GS1 DataBar Expanded)	0x64	T	See Table D-1	
Composite (CC-B + GS1 DataBar Limited)	0x65	T	See Table D-1	
Composite (CC-B + GS1 DataBar-14)	0x66	T	See Table D-1	
Composite (CC-B + UPC-A)	0x67	T	See Table D-1	
Composite (CC-B + UPC-E)	0x68	T	See Table D-1	
Signature	0x69	P0X	X	0
Matrix 2 of 5	0x71	S	X	0
C 2 of 5	0x72	U	X	0
Korean 3 of 5	0x73	V	X	0
UPCA + 5	0x88	A	$E + E^2$	0 for main block; 2 for supplemental
UPCE + 5	0x89	A	$E + E^2$	0 for main block; 2 for supplemental
EAN-8 + 5	0x8A	A	$E + E^2$	4 for main block; 2 for supplemental
EAN-13 + 5	0x8B	A	$E + E^2$	0 for main block; 2 for supplemental
UPCE1 + 5	0x90	A	$E + E^2$	0 for main block; 2 for supplemental
Multipacket Format	0x99	N/A	N/A	Data is packeted; SSI ID is embedded in decode data.
Macro Micro PDF	0x9A	X	L	Same rules as for Micro PDF-417
OCRB	0xA0			
RSS (GS1 Databar) Expanded Coupon	0xB4	R	X	0

Han Xin	0xB7	P0H	X	0
GS1 Datamatrix	0xC1	P0G	d	2
RFID Raw	0xE0	X	0	0
RFID URI	0xE1	X	0	0

Notes:

1. E+C denotes 2 AIM IDs are transmitted: one for the UPC/EAN block; the second prefixes the extended GS1-128 data.
2. E+E denotes 2 AIM IDs are transmitted: the first prefixes the main UPC/EAN block; the second prefixes the supplemental block.
3. UPCE, UPCE1, and UPCA are converted to EAN-13 for AIM ID.

Table D-1

1D Component	Data Format	
	Standard Mode	GS1-128 Emulation Mode
EAN-13, UPC-A, UPC-E	1D:]E0 2D:]e0 See note 5 below.	1D:]E0 2D:]C1 before each GS1-128 split transmission See notes 3 -5 below.
EAN-8	1D:]E4 2D:]e0 See note 5 below.	1D:]E4 2D:]C1 before each GS1-128 split transmission See notes 3 -5 below.
GS1 DataBar-14 GS1 DataBar Limited	1D:]e0 2D:]e1 See note 2 below.]C1 before each GS1-128 split transmission See notes 3 -5 below.
Code 39 (TLC39)	ANSI MH10.8.3M syntax: 06 Format: $] >^R_{\text{S}} 06^G_{\text{S}} P 1D^G_{\text{S}} 2D^R_{\text{S}} EQT$ 05 Format: $] >^R_{\text{S}} 05^G_{\text{S}} 906P 1D^G_{\text{S}} 8004 2D^R_{\text{S}} EQT$ See note 6 below.	
GS1-128 GS1 DataBar Expanded	If the last AI in the GS1-128 is a predefined, fixed length:]e0 Otherwise,]e0 GS See note 2 below.]C1 before each GS1-128 split transmission See notes 3 and 4 below.

Notes:

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1. All Function 1 characters in the 1D and 2D are sent as s (29_{10}); the first Function 1 in the GS1-128 is not transmitted.
2. In standard mode, the data following symbol separator begins with AIM ID "]e1". The data following the composite component escape mechanism begins with AIM ID "]e2" if ECI interpretation is enabled, "]e3" if ECI interpretation is not enabled.
3. In GS1-128 emulation mode, each packet is split on an AI boundary and limited to less than 48 characters.
4. In GS1-128 emulation mode, data is discarded after the first symbol separator or escape mechanism.
5. If the UPC/EAN component has a supplemental ,]E1 precedes a 2-digit supplemental and]E2 precedes the 5-digit supplemental
6. RS is character 30_{10} and EOT is character 04. The transmitted format (05 or 06) is data dependent.