Tipcode Industrial Series

TP65 Industrial 2D Scan Module

User Manual

Tipcode (Shenzhen) Technology Co., Ltd.

Revision History

Version	Description	Date
V1.0	Initial Release	2021-8-16

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Chapter 1 About TP65

The TP65 is a high-performance fixed-mount industrial barcode scanner designed for industrial automation lines. With an IP65 rating and a 1280 x 800 1 MP CMOS sensor, it delivers excellent reading performance and maintains reliable operation even in damp or dusty working environments.

Key Features

●Intelligent Lighting System

Built-in intelligent lighting adjustment meets complex reading needs across different materials (e.g. reflective), shapes (curved), backgrounds and barcode colors.

●Flexible I/O Expansion Interface

External trigger scanning via the I/O expansion interface, with 1 opto-isolated input (NPN/PNP/relay) and 2 opto-isolated outputs (Good; NG) for external devices.

●IP65 Protection Rating

Prevents ingress of foreign objects and water splashes from all directions.

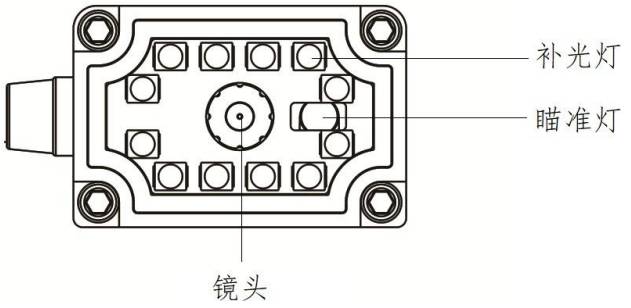
Specifications

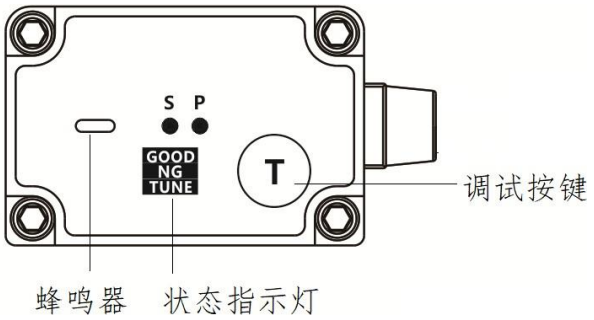
Scan Performance	Resolution	1280 x 800 pixels		
	Field of View	Horizontal 46° (H), Vertical 29° (V)		
	Illumination	High-brightness red / white light source		
	Focus	Green LED aiming		
	Reading Mode	Auto-sensing, external pulse trigger, continuous scan, serial command		
	Supported Barcodes	1D	UPC A , UPC E , EAN 8 , EAN 13 , CODE 128 , CODE 39 , CODE 93 , CODE 32 , CODE11 , CODABAR ,PLESSEY , MSI , INTERLEAVED 2 OF 5 , IATA 2 OF 5 , MATRIX 2 OF 5 , STRAIGHT 2 OF 5 , PHARMACODE , RSS-14 , RSS-14 EXPANDED , RSS-14 LIMITED , COMPOSITE CODE-A , COMPOSITE CODE-B , COMPOSITE CODE-C	
		2D	PDF 417 , MICRO PDF 417 , DATA MATRIX , QR , MICRO QR , AZTEC , MAXICODE	
	Typical Reading	Model	TP65-SR	TP65-HD
		DOF	CODE 39 (5MIL) : 60 MM ~ 250 MM EAN-13 (13MIL) : 50 MM ~400 MM QR (10 MIL) : 35 MM ~ 130 MM	CODE 39 (3 MIL) : 50 MM ~ 90 MM DATA MATRIX (10 MIL) : 40 MM ~ 150 MM QR (7 MIL) : 35 MM ~ 120 MM
		Precision	1D : ≥4 MIL ; 2D : ≥9 MIL	1D : ≥3 MIL ; 2D : ≥7 MIL
	Print Contrast	≥20% (UPC/EAN 100% , PCS 90%)		
Mechanical / Electrical	Dimensions	36（W）×43（D）×24（H）(MM)		
	Housing Material	Aluminum alloy		
	Enclosure Rating	IP65		
	Notification	Buzzer, LED indicator		
	Communication	RS232, USB (HID; CDC), Ethernet (TCP/UDP/Modbus)		
	Power Supply	5-36 VDC		
	External Input	1 opto-isolated input (NPN/PNP/relay)		
	External Output	2 opto-isolated outputs (GOOD; NG)		
	Current @ 5 VDC	Operating 300 mA ±5% (typ.), 450 mA ±5% (max.) Standby 100 mA ±5%		
Environmental	Storage Temperature	-40℃~+70℃		
	Operating Temperature	-20℃~+50℃		
	ESD Protection	±20 kV (air discharge), ±8 kV (direct discharge)		
Safety Compliance	CE EN55022 , FCC PART 15 CLASS B , CE EMC CLASS B			

*Test conditions: ambient temperature 23°C; ambient light 300 lux incandescent

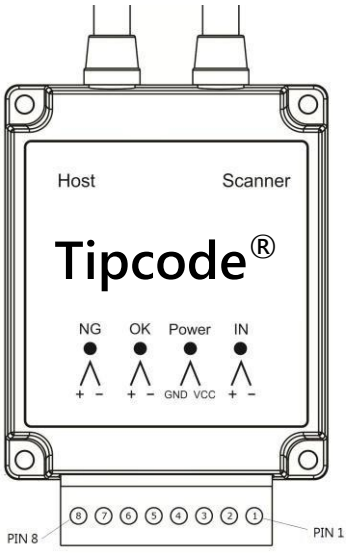
Depth-of-field data may change with process and application. Subject to change without notice.

Exterior View



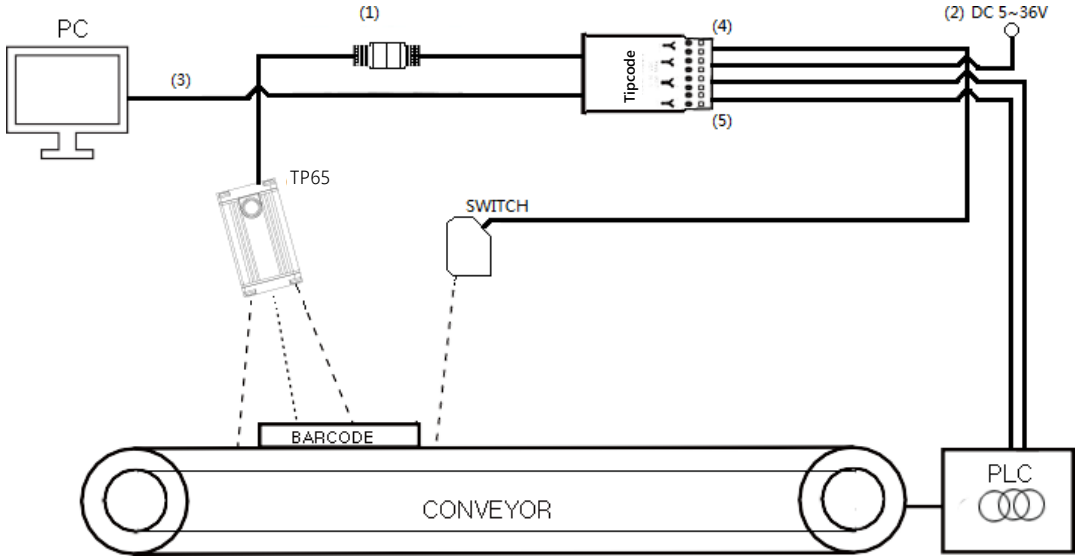


Status LED	
Status	Color
Decode success LED / GOOD	Green
Decode failure LED / NG	Red
Tuning mode LED / TUNE	Blue



Pin	Signal	Function
1	Photoelectric switch input (-)	Trigger signal input
2	Photoelectric switch input (+)	
3	Power VCC (+)	5-36 VDC
4	Power GND (-)	
5	Decode success (-)	Decode success signal output
6	Decode success (+)	
7	Decode failure (-)	Decode failure signal output
8	Decode failure (+)	

Installation Diagram



For first use, connect the scanner as shown above:

(1) Connect the aviation plug between the scanner and the cable

(2) Connect 5-36 VDC external power; not required when using a USB cable

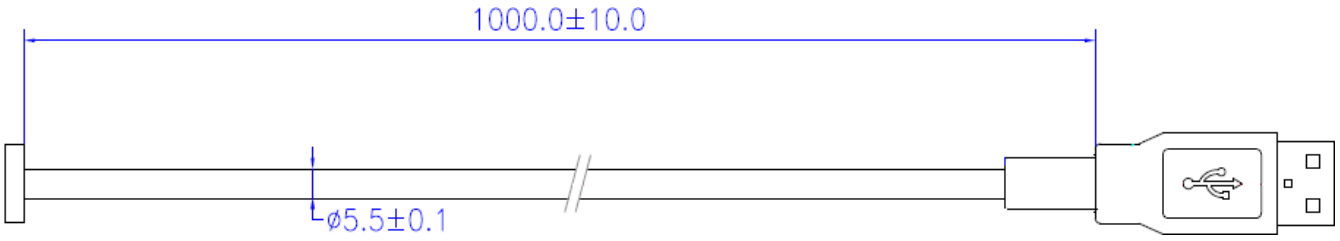
(3) Connect the communication port to a PC or data terminal (RS232, USB or Ethernet)

(4) For external trigger input mode, connect an external sensor / PLC

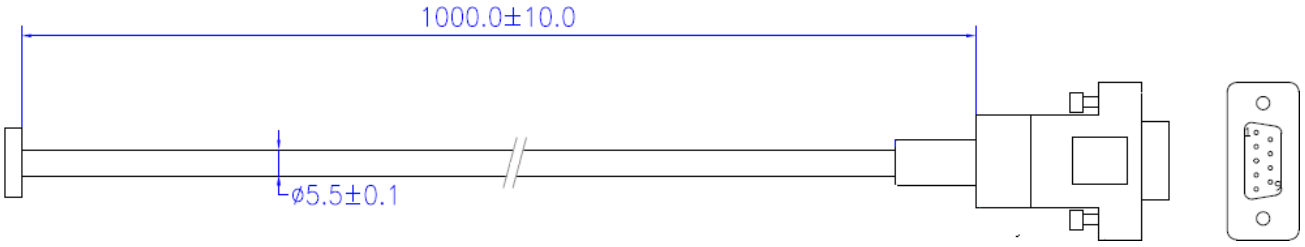
(5) For OK/NG feedback outputs, connect pins 5-8 to the external device

Communication Cables

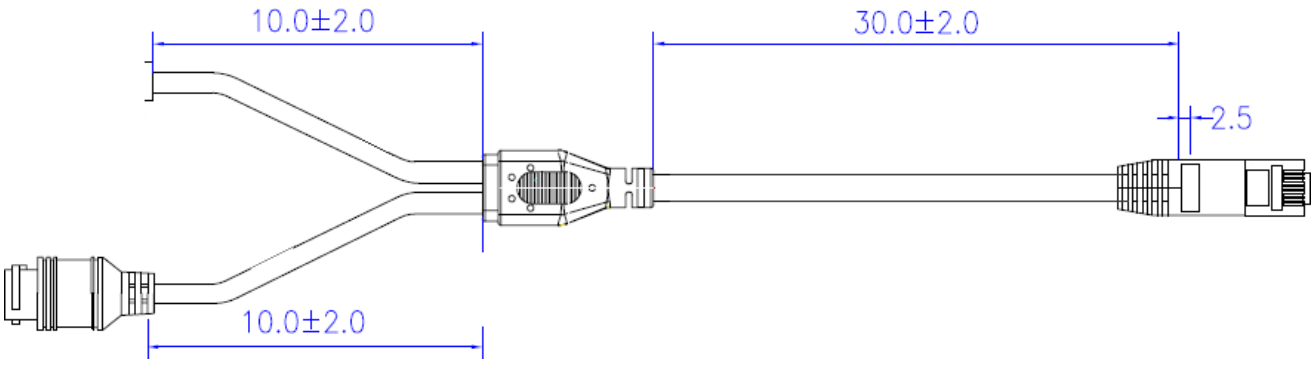
USB (HID ; CDC)



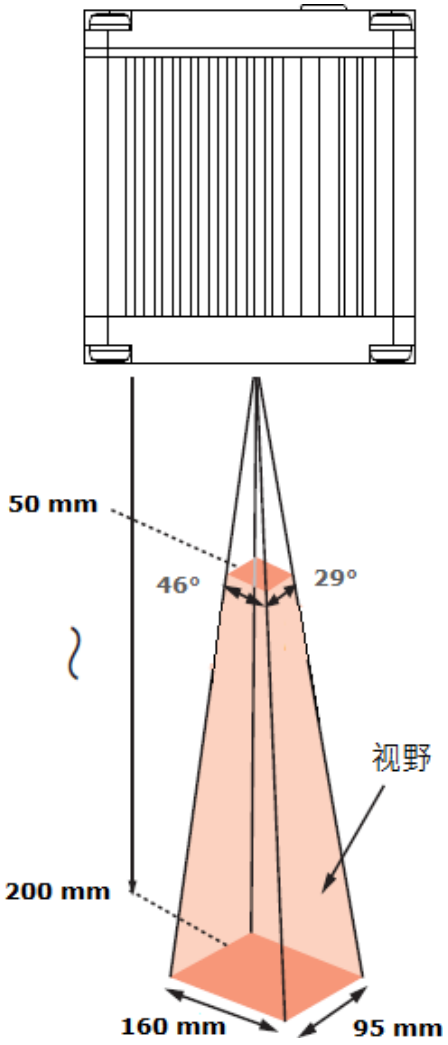
RS232 Serial



Ethernet (TCP/UDP/Modbus)



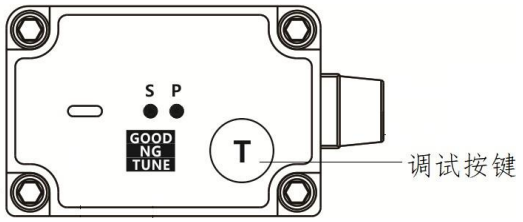
Field of View



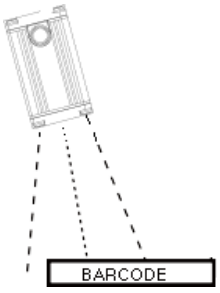
Reading Distance (mm)	Field of View (mm)	
	Horizontal (mm)	Vertical (mm)
100	85	55
150	130	70
200	160	95

Smart Tuning Procedure

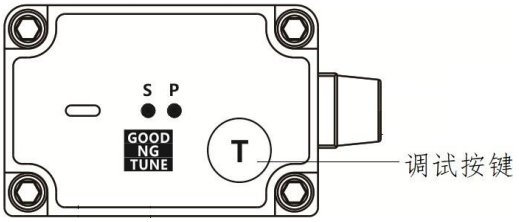
(1) Press the tuning button to enter tuning mode



(2) Aim the scanner at the barcode to be read

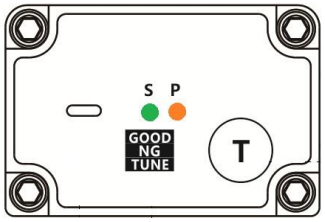


(3) Press the tuning button to start smart tuning



(4) When tuning finishes, the LED shows the result: green = success, red = failure.

Successful settings are saved automatically and available after power cycle; no retuning needed.



(5) Press the tuning button to return to scanning mode

Chapter 2 System Settings

Restore Defaults

Restores all scanner properties to factory defaults



Enter Setup



Restore Defaults



Exit Setup

Custom Settings

Save Custom Settings: saves frequently used configurations

Load Custom Settings: Loads previously saved custom configurations

Enter Setup

Save Custom Settings

Load Custom Settings

Exit Setup

Scan Mode

Continuous Scan:

Reads one or multiple barcodes continuously (reading order defined by the duplicate-read interval); press and release the scan button to start or stop scanning.

Pulse Trigger / External Trigger:

Starts scanning on a pulse signal (default: high-to-low transition; the trigger level can be changed); stops when the read time expires (default decode time: 3 s, configurable).

Auto-Sensing:

Starts scanning when the image changes; stops when the read time expires (default 3 s, configurable).

Continuous Scan Mode



Enter Setup



Continuous Scan (Default)



Exit Setup

Pulse Trigger Mode



Enter Setup



Pulse Trigger (External Trigger)



Exit Setup

Pulse Trigger Level

Enter Setup

Trigger on High-to-Low (Default)

Trigger on Low-to-High

Exit Setup

Auto-Sensing Mode



Enter Setup



Auto-Sensing



Exit Setup

Auto-Sensing Sensitivity

Enter Setup

Low Sensitivity

Medium Sensitivity (Default)

High Sensitivity

Exit Setup

Duplicate Barcode Reading Mode

Duplicate barcode handling in auto-sensing, continuous and pulse trigger modes

By default, the same barcode is not re-read within 500 ms; adjustable 0-5000 ms, where 0 means no interval.

●Do Not Read Duplicate Barcodes Within Interval

Repeated reads of the same barcode within the set interval are ignored and not output, preventing duplicate reads.

Example: suppress the same barcode re-read within 100 ms

Scan "Enter Setup"
Scan "Do Not Read Duplicate Barcodes Within Interval"
Scan "Read Time"
Scan "1" from Appendix I Decimal Digits
Scan "0" from Appendix I Decimal Digits
Scan "0" from Appendix I Decimal Digits
Scan "Exit Setup"

●Do Not Re-read the Last Barcode

Do not re-read the last decoded barcode

●Do Not Re-read the Last Two Barcodes

Do not re-read the last two decoded barcodes

Duplicate Barcode Reading Mode

Enter Setup

Ignore Duplicates Within Interval (Default)

Do Not Re-read Last Barcode

Do Not Re-read Last Two Barcodes

Exit Setup

Duplicate Barcode Read Time



Enter Setup



Read Time (ms)



Exit Setup

Decode Time

Read time after trigger in button, pulse and auto-sensing modes; if no barcode is read in time, decoding stops and the unit enters standby. Default 3000 ms, adjustable 0-3,600,000 ms; 0 means continuous decoding until a read succeeds.

Example: set the maximum read time to 5 seconds

Scan "Enter Setup"
Scan "Decode Time"
Scan "5" from Appendix I Decimal Digits
Scan "0" from Appendix I Decimal Digits
Scan "0" from Appendix I Decimal Digits
Scan "0" from Appendix I Decimal Digits
Scan "Exit Setup"



Enter Setup



Decode Time (ms)



Exit Setup

Reset Decode Time

Resets the decode time after a successful read and continues decoding; if the decode time is 0, decoding stops after a successful read.

Enter Setup

Stop Scanning Immediately After Success (Default)

Reset Decode Time and Continue Reading Different Barcodes

Exit Setup

Decode Area

Full-area decoding: the entire image is used for decoding

Center-area decoding: the barcode center must lie within the defined area



Enter Setup



Full-Area Decoding (Default)



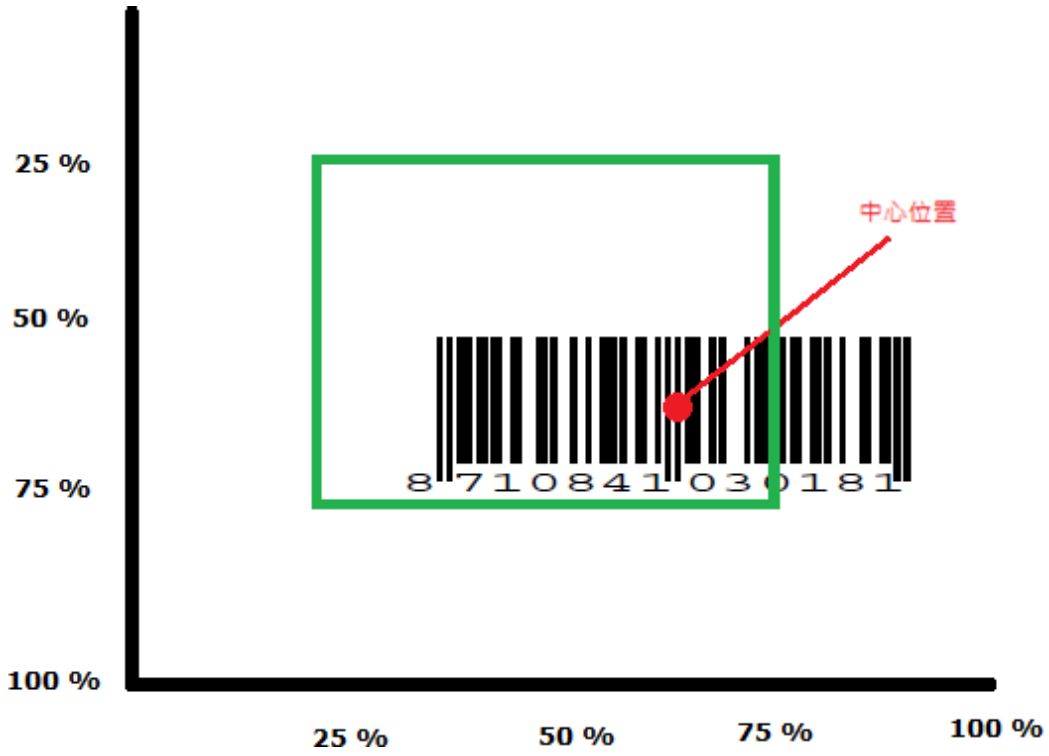
Center-Area Decoding



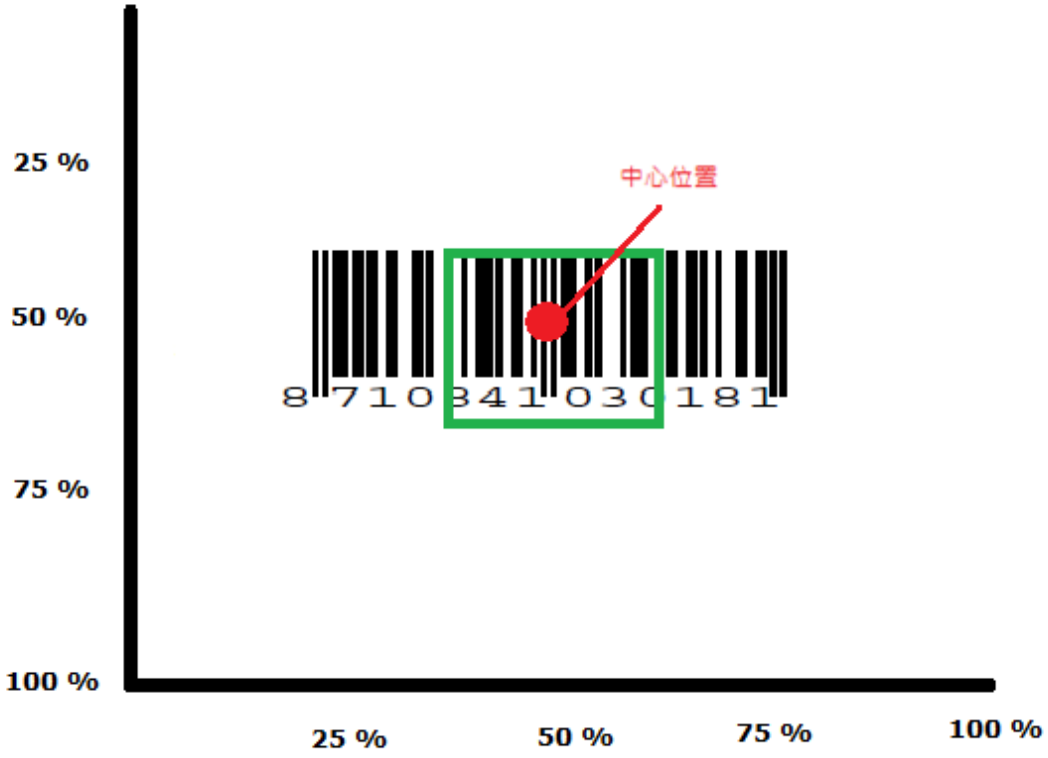
Exit Setup

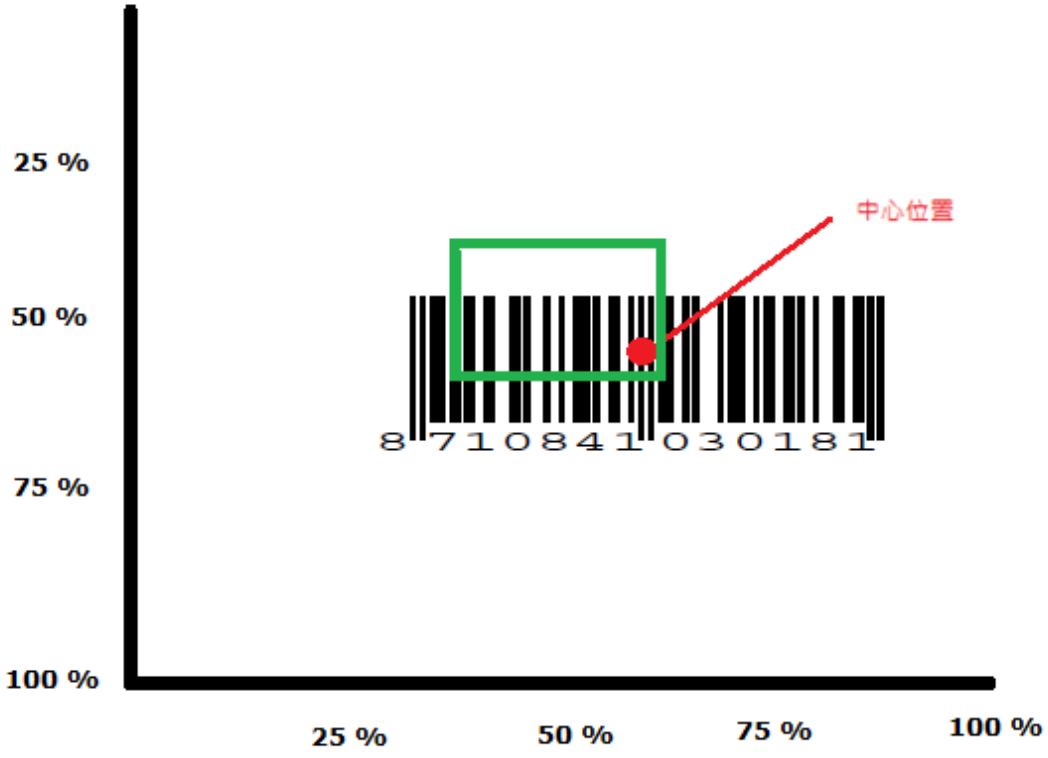
75% Center Area





25% Center Area





Center Area Size

Enter Setup

75% Center Area (Default)

50% Center Area

25% Center Area

Exit Setup

Decoded Data Verification

Enter Setup

Disable (Default)

Output After Two Reads

Output After Three Reads

Exit Setup

Read Failure Message

Enter Setup

- In serial mode, outputs a failure message when scanning ends with no barcode read

Disable Read Failure Message

Enable Read Failure Message

●Default failure message is "NG"; up to 8 ASCII characters can be set

Example: set the failure message to "Bad"

1. Scan "Set Read Failure Message"

3. Scan "B" from the ASCII Code table

3. Scan "a" from the ASCII Code table

3. Scan "d" from the ASCII Code table

4. Scan "Exit Setup"

Set Read Failure Message

Exit Setup

Good / NG Signal Output Duration

Good/NG signal duration in button, pulse and auto-sensing modes; default 250 ms, adjustable 1-500 ms.

Example: set the signal output duration to 500 ms

Scan "Enter Setup"
Scan "Decode Time"
Scan "5" from Appendix I Decimal Digits
Scan "0" from Appendix I Decimal Digits
Scan "0" from Appendix I Decimal Digits
Scan "Exit Setup"



Enter Setup



Signal Output Duration (ms)



Exit Setup

Aiming Light

Enter Setup

Always On (Default)

On During Scan

Disable

Exit Setup

Fill Light Mode

Enter Setup

On During Scan (Default)

Always On

Fade Up

Disable

Exit Setup

Fill Light Intensity

Enter Setup

Low Brightness

Medium Brightness

High Brightness (Default)

Exit Setup

Fill Light Area



Enter Setup



All Light Sources (Default)



Center Light Source



Upper Light Source



Lower Light Source



Exit Setup

Fill Light Area

Enter Setup

Upper + Center Light Sources

Lower + Center Light Sources

Upper + Lower Light Sources

Exit Setup

Power-On Beep

Enter Setup

Enable (Default)

Disable

Exit Setup

Decode Beep



Enter Setup



Enable (Default)



Disable



Exit Setup

Decode Beep Frequency

Enter Setup

Lowest - 800 Hz

Low - 1600 Hz

Medium - 2730 Hz (Default)

High - 4200 Hz

Exit Setup

Tuning Button

Enter Setup

Enable (Default)

Disable

Exit Setup

Chapter 3 Output Mode

USB Keyboard



Enter Setup



USB Keyboard Output (Default)



Exit Setup

USB Virtual COM Port



Enter Setup



USB Virtual COM Output



Exit Setup

Serial Port



Enter Setup



Serial Output



Exit Setup

Serial Baud Rate

Enter Setup

9600 (Default)

19200

38400

57600

115200

230400

Exit Setup

Serial Data Bits

Enter Setup

7 Data Bits

**8 Data Bits

Exit Setup

Serial Parity

Enter Setup

**No Parity

Odd Parity

Even Parity

Exit Setup

Serial Stop Bits

Enter Setup

**1 Stop Bit

2 Stop Bits

Exit Setup

Code Page Encoding

Enter Setup

Simplified Chinese (GB2312) - Unicode / Excel; Notepad

Simplified Chinese (GB2312) - Code Page / Word

Exit Setup

Chapter 4 Barcode Settings

Supported Symbologies

UPC A	Enabled by Default
UPC E	Enabled by Default
EAN 8	Enabled by Default
EAN 13	Enabled by Default
Code 128 / GS1-128	Enabled by Default
Code 39	Enabled by Default
Code 93	Disable
Code 32	Disable
Code 11	Disable
Codabar	Disable
Plessey	Disable
MSI Plessey	Disable
Interleaved 2 of 5	Enabled by Default
IATA 2 of 5	Disable
Matrix 2 of 5	Disable

Straight 2 of 5	Disable
Pharmacode	Disable
GS1 DataBar 14	Disable
GS1 DataBar 14 Stacked	Disable
GS1 DataBar Expanded	Disable
GS1 DataBar Expanded Stacked	Disable
GS1 DataBar Limited	Disable
Composite Code-A	Disable
Composite Code-B	Disable
Composite Code-C	Disable
PDF417	Disable
Micro PDF417	Disable
Data Matrix	Enabled by Default
QR	Enabled by Default
Micro QR	Disable
Aztec	Disable
MaxiCode	Disable

Enable All Barcodes



Enter Setup



Enable All Barcodes



Exit Setup

Enable 1D Only



Enter Setup



Enable 1D Only



Exit Setup

Enable 2D Only



Enter Setup



Enable 2D Only



Exit Setup

Disable All Barcodes



Enter Setup



Disable All Barcodes



Exit Setup

Disable 1D Barcodes



Enter Setup



Disable 1D Barcodes



Exit Setup

Disable 2D Barcodes



Enter Setup



Disable 2D Barcodes



Exit Setup

UPC A

Enter Setup

Enable UPC A (Default)

Disable UPC A

Exit Setup

Transmit First Character

Enter Setup

Transmit First Character (Default)

Do Not Transmit First Character

Exit Setup

Check Digit

Enter Setup

Enable Check Digit (Default)

Disable Check Digit

Exit Setup

Convert to EAN 13

Enter Setup

Enable EAN 13 Conversion

Disable EAN 13 Conversion (Default)

Exit Setup

Enable/Disable 2/5-Digit Add-On

Enter Setup

Enable UPC A 2/5-Digit Add-On

Disable UPC A 2/5-Digit Add-On (Default)

Exit Setup

Read Add-On Only

Enter Setup

Read UPC A Add-On Only

Read UPC A and Add-On (Default)

Exit Setup

UPC E

Enter Setup

Enable UPC E (Default)

Disable UPC A

Exit Setup

Transmit First Character

Enter Setup

Transmit First Character (Default)

Do Not Transmit First Character

Exit Setup

Check Digit

Enter Setup

Enable Check Digit (Default)

Disable Check Digit

Exit Setup

Convert to UPC A

Enter Setup

Enable UPC A Conversion

Disable UPC A Conversion (Default)

Exit Setup

Enable/Disable 2/5-Digit Add-On

Enter Setup

Enable UPC E 2/5-Digit Add-On

Disable UPC E 2/5-Digit Add-On (Default)

Exit Setup

Read Add-On Only

Enter Setup

Read UPC E Add-On Only

Read UPC E and Add-On (Default)

Exit Setup

EAN 8

Enter Setup

Enable EAN 8 (Default)

Disable EAN 8

Exit Setup

Transmit Check Digit

Enter Setup

Transmit Check Digit (Default)

Do Not Transmit Check Digit

Exit Setup

Convert to EAN 13

Enter Setup

Enable EAN 13 Conversion

Disable EAN 13 Conversion (Default)

Exit Setup

Enable/Disable 2/5-Digit Add-On

Enter Setup

Enable EAN 8 2/5-Digit Add-On

Disable EAN 8 2/5-Digit Add-On (Default)

Exit Setup

Read Add-On Only

Enter Setup

Read EAN 8 Add-On Only

Read EAN 8 and Add-On (Default)

Exit Setup

EAN 13

Enter Setup

Enable EAN 13 (Default)

Disable EAN 13

Exit Setup

Transmit Check Digit

Enter Setup

Transmit Check Digit (Default)

Do Not Transmit Check Digit

Exit Setup

ISBN Conversion

Enter Setup

Enable ISBN Conversion

Disable ISBN Conversion (Default)

Exit Setup

ISSN Conversion

Enter Setup

Enable ISSN Conversion

Disable ISSN Conversion (Default)

Exit Setup

Enable/Disable 2/5-Digit Add-On

Enter Setup

Enable EAN 13 2/5-Digit Add-On

Disable EAN 13 2/5-Digit Add-On (Default)

Exit Setup

Read Add-On Only

Enter Setup

Read EAN 13 Add-On Only

Read EAN 13 and Add-On (Default)

Exit Setup

Code 128 / GS1 -128

Enter Setup

Enable Code 128 / GS1-128 (Default)

Disable Code 128 / GS1-128

Exit Setup

Code 128 Length Setting

Configuration Example:

Example: restrict Code 128 to 5-18 characters

Scan "Enter Setup"

Scan "Code 128 Limit Length Range"

Scan "0" from the ASCII Code table

Scan "5" from the ASCII Code table

Scan "1" from the ASCII Code table

Scan "8" from the ASCII Code table

Scan "Exit Setup"

No Length Limit

Scan "Enter Setup"

Scan "Code 128 Any Length"

Scan "Exit Setup"

Code 128 Length Setting

Enter Setup

Limit to One Length

Limit to Two Lengths

Limit Length Range

No Length Limit (Default)

Exit Setup

Code 39

Enter Setup

Enable Code 39 (Default)

Disable Code 39

Exit Setup

Full ASCII

Enter Setup

Enable Code 39 Full ASCII

Disable Code 39 Full ASCII (Default)

Exit Setup

Start/Stop Characters

Enter Setup

Transmit Start/Stop Characters

Do Not Transmit Start/Stop (Default)

Exit Setup

Checksum

Enter Setup

No Checksum (Default)

Check and Transmit

Check Without Transmission

Exit Setup

Code 39 Length Setting

Configuration Example:

Example: restrict Code 39 to 5-18 characters

Scan "Enter Setup"

Scan "Code 39 Limit Length Range"

Scan "0" from the ASCII Code table

Scan "5" from the ASCII Code table

Scan "1" from the ASCII Code table

Scan "8" from the ASCII Code table

Scan "Exit Setup"

No Length Limit

Scan "Enter Setup"

Scan "Code 39 Any Length"

Scan "Exit Setup"

Code 39 Length Setting

Enter Setup

Limit to One Length

Limit to Two Lengths

Limit Length Range

No Length Limit (Default)

Exit Setup

Code 32

Enter Setup

Enable Code 32

Disable Code 32 (Default)

Exit Setup

Start/Stop Characters

Enter Setup

Transmit Start/Stop Characters

Do Not Transmit Start/Stop (Default)

Exit Setup

Code 93

Enter Setup

Enable Code 93

Disable Code 93 (Default)

Exit Setup

Code 93 Length Setting

Configuration Example:

Example: restrict Code 93 to 5-18 characters

Scan "Enter Setup"

Scan "Code 93 Limit Length Range"

Scan "0" from the ASCII Code table

Scan "5" from the ASCII Code table

Scan "1" from the ASCII Code table

Scan "8" from the ASCII Code table

Scan "Exit Setup"

No Length Limit

Scan "Enter Setup"

Scan "Code 93 Any Length"

Scan "Exit Setup"

Code 93 Length Setting

Enter Setup

Limit to One Length

Limit to Two Lengths

Limit Length Range

No Length Limit (Default)

Exit Setup

Code 11

Enter Setup

Enable Code 11

Disable Code 11 (Default)

Exit Setup

Transmit Check Digit

Enter Setup

Transmit Check Digit (Default)

Do Not Transmit Check Digit

Exit Setup

Code 11 Length Setting

Configuration Example:

Example: restrict Code 11 to 5-18 characters

Scan "Enter Setup"

Scan "Code 11 Limit Length Range"

Scan "0" from the ASCII Code table

Scan "5" from the ASCII Code table

Scan "1" from the ASCII Code table

Scan "8" from the ASCII Code table

Scan "Exit Setup"

No Length Limit

Scan "Enter Setup"

Scan "Code 11 Any Length"

Scan "Exit Setup"

Code 11 Length Setting

Enter Setup

Limit to One Length

Limit to Two Lengths

Limit Length Range

No Length Limit (Default)

Exit Setup

Codabar

Enter Setup

Enable Codabar

Disable Codabar (Default)

Exit Setup

Checksum

Enter Setup

No Checksum (Default)

Check and Transmit

Check Without Transmission

Exit Setup

Start/Stop Characters

Enter Setup

Transmit Start/Stop Characters

Do Not Transmit Start/Stop (Default)

Exit Setup

Codabar Length Setting

Configuration Example:

Example: restrict Codabar to 5-18 characters

Scan "Enter Setup"

Scan "Codabar Limit Length Range"

Scan "0" from the ASCII Code table

Scan "5" from the ASCII Code table

Scan "1" from the ASCII Code table

Scan "8" from the ASCII Code table

Scan "Exit Setup"

No Length Limit

Scan "Enter Setup"

Scan "Codabar Any Length"

Scan "Exit Setup"

Codabar Length Setting

Enter Setup

Limit to One Length

Limit to Two Lengths

Limit Length Range

No Length Limit (Default)

Exit Setup

Plessey

Enter Setup

Enable Plessey

Disable Plessey (Default)

Exit Setup

Plessey Length Setting

Configuration Example:

Example: restrict Plessey to 5-18 characters

Scan "Enter Setup"

Scan "Plessey Limit Length Range"

Scan "0" from the ASCII Code table

Scan "5" from the ASCII Code table

Scan "1" from the ASCII Code table

Scan "8" from the ASCII Code table

Scan "Exit Setup"

No Length Limit

Scan "Enter Setup"

Scan "Plessey Any Length"

Scan "Exit Setup"

Plessey Length Setting

Enter Setup

Limit to One Length

Limit to Two Lengths

Limit Length Range

No Length Limit (Default)

Exit Setup

MSI Plessey

Enter Setup

Enable MSI Plessey

Disable MSI Plessey (Default)

Exit Setup

Checksum

Enter Setup

No Checksum

Mod 10 Check (Default)

Exit Setup

Checksum

Enter Setup

Mod 10/10 Check

Mod 11/10 Check

Exit Setup

Transmit Check Digit

Enter Setup

Transmit Check Digit (Default)

Do Not Transmit Check Digit

Exit Setup

MSI Plessey Length Setting

Configuration Example:

Example: restrict MSI Plessey to 5-18 characters

Scan "Enter Setup"

Scan "MSI Plessey Limit Length Range"

Scan "0" from the ASCII Code table

Scan "5" from the ASCII Code table

Scan "1" from the ASCII Code table

Scan "8" from the ASCII Code table

Scan "Exit Setup"

No Length Limit

Scan "Enter Setup"

Scan "MSI Plessey Any Length"

Scan "Exit Setup"

MSI Plessey Length Setting

Enter Setup

Limit to One Length

Limit to Two Lengths

Limit Length Range

No Length Limit (Default)

Exit Setup

Interleaved 2 of 5

Enter Setup

Enable Interleaved 2 of 5 (Default)

Disable Interleaved 2 of 5

Exit Setup

Checksum

Enter Setup

No Checksum (Default)

Check and Transmit

Exit Setup

Interleaved 2 of 5 Length Setting

Configuration Example:

Example: restrict Interleaved 2 of 5 to 5-18 characters

Scan "Enter Setup"

Scan "Interleaved 2 of 5 Limit Length Range"

Scan "0" from the ASCII Code table

Scan "5" from the ASCII Code table

Scan "1" from the ASCII Code table

Scan "8" from the ASCII Code table

Scan "Exit Setup"

No Length Limit

Scan "Enter Setup"

Scan "Interleaved 2 of 5 Any Length"

Scan "Exit Setup"

Interleaved 2 of 5 Length Setting

Enter Setup

Limit to One Length

Limit to Two Lengths

Limit Length Range

No Length Limit (Default)

Exit Setup

Matrix 2 of 5

Enter Setup

Enable Matrix 2 of 5

Disable Matrix 2 of 5 (Default)

Exit Setup

Matrix 2 of 5 Length Setting

Configuration Example:

Example: restrict Matrix 2 of 5 to 5-18 characters

Scan "Enter Setup"

Scan "Matrix 2 of 5 Limit Length Range"

Scan "0" from the ASCII Code table

Scan "5" from the ASCII Code table

Scan "1" from the ASCII Code table

Scan "8" from the ASCII Code table;

then scan "Exit Setup"

No Length Limit

Scan "Enter Setup"

Scan "Matrix 2 of 5 Any Length"

Scan "Exit Setup"

Matrix 2 of 5 Length Setting

Enter Setup

Limit to One Length

Limit to Two Lengths

Limit Length Range

No Length Limit (Default)

Exit Setup

IATA 2 of 5

Enter Setup

Enable IATA 2 of 5

Disable IATA 2 of 5 (Default)

Exit Setup

Straight 2 of 5

Enter Setup

Enable Straight 2 of 5

Disable Straight 2 of 5 (Default)

Exit Setup

Pharmacode

Enter Setup

Enable Pharmacode

Disable Pharmacode (Default)

Exit Setup

GS1 DataBar 14

Enter Setup

Enable GS1 DataBar 14

Disable GS1 DataBar 14 (Default)

Exit Setup

GS1 DataBar 14 Stacked

Enter Setup

Enable GS1 DataBar 14 Stacked

Disable GS1 DataBar 14 Stacked (Default)

Exit Setup

AI (01) Character Transmission

Enter Setup

Transmit AI (01) (Default)

Do Not Transmit AI (01)

Exit Setup

GS1 DataBar Expanded

Enter Setup

Enable GS1 DataBar Expanded

Disable GS1 DataBar Expanded (Default)

Exit Setup

GS1 DataBar Expanded Stacked

Enter Setup

Enable GS1 DataBar Expanded Stacked

Disable GS1 DataBar Expanded Stacked (Default)

Exit Setup

AI (01) Character Transmission

Enter Setup

Transmit AI (01) (Default)

Do Not Transmit AI (01)

Exit Setup

GS1 DataBar Limited

Enter Setup

Enable GS1 DataBar Limited

Disable GS1 DataBar Limited (Default)

Exit Setup

AI (01) Character Transmission

Enter Setup

Transmit AI (01) (Default)

Do Not Transmit AI (01)

Exit Setup

Composite Code-A

Enter Setup

Enable Composite Code-A

Disable Composite Code-A (Default)

Exit Setup

Composite Code-B

Enter Setup

Enable Composite Code-B

Disable Composite Code-B (Default)

Exit Setup

Composite Code-C

Enter Setup

Enable Composite Code-C

Disable Composite Code-C (Default)

Exit Setup

PDF417

Enter Setup

Enable PDF417

Disable PDF417 (Default)

Exit Setup

Micro PDF417

Enter Setup

Enable Micro PDF417

Disable Micro PDF417 (Default)

Exit Setup

Data Matrix

Enter Setup

Enable Data Matrix (Default)

Disable Data Matrix

Exit Setup

Rectangular Data Matrix

Enter Setup

Enable Rectangular Data Matrix (Default)

Disable Rectangular Data Matrix

Exit Setup

Mirror Decoding

Enter Setup

Enable Mirror Decoding (Default)

Disable Mirror Decoding

Exit Setup

QR

Enter Setup

Enable QR (Default)

Disable QR

Exit Setup

Mirror Decoding

Enter Setup

Enable Mirror Decoding (Default)

Disable Mirror Decoding

Exit Setup

Micro QR

Enter Setup

Enable Micro QR

Disable Micro QR (Default)

Exit Setup

Aztec

Enter Setup

Enable Aztec

Disable Aztec (Default)

Exit Setup

Mirror Decoding

Enter Setup

Enable Mirror Decoding (Default)

Disable Mirror Decoding

Exit Setup

MaxiCode

Enter Setup

Enable MaxiCode

Disable MaxiCode (Default)

Exit Setup

Chapter 5 Data Editing

Output Format

The data output format is as follows:

Barcode Message (4 bytes)	Prefix (4 bytes)	AIM ID	Barcode Content	Suffix (4 bytes)	Terminating Character (1 byte)

Barcode Message

1. Barcode message output is disabled by default
2. Enable/disable via serial command or by scanning a setup barcode
3. Serial mode only; not supported on USB keyboard

Format definition:

Start flag 0x03 (1 byte)	Symbology code (1 byte) Hex	Barcode length (2 bytes) 0x0001 ~0xFFFF

Symbology codes:

Code	2D Barcode	Code	1D Barcode	Code	1D Barcode
0x 41	PDF417	0x61	UPC A	0x71	Pharmacode
0x 42	Micro PDF417	0x 62	UPC E	0x72	GS1 DataBar 14
0x 43	Data Matrix	0x63	EAN 8	0x73	GS1 DataBar Expanded
0x 44	QR	0x64	EAN 13	0x74	GS1 DataBar Limited
0x 45	Micro QR	0x65	Code 128	0x75	Composite Code-A
0x 46	Aztec	0x66	Code 39	0x76	Composite Code-B
0x 47	MaxiCode	0x67	Code 93	0x77	Composite Code-C
0x 48	DotCode	0x68	Code 32		
		0x69	Code 11		
		0x6A	Codabar		
		0x6B	Plessey		
		0x6C	MSI Plessey		
		0x6D	Interleaved 2 of 5		
		0x6E	IATA 2 of 5		
		0x6F	Matrix 2 of 5		

		0x70	Straight 2 of 5		

Barcode Message



Enter Setup



Disable (Default)



Open



Exit Setup

Barcode ID



Enter Setup



Disable Barcode ID (Default)



Enable AIM ID



Enable Tipcode ID



Exit Setup

Barcode ID Table

Symbology	Tipcode	AIM
UPC-A	A	E
UPC-E	E	E
EAN-8	FF	E
EAN-13	F	E
Code 128	K	C
Code 39	M	A
Code 93	L	G
Code 32	M	A
Code 11	O	H
Codabar	N	F
Plessey	P	P
MSI / Plessey	a	M
Interleaved 2 of 5	I	I
IATA 2 of 5	Z	R
Matrix 2 of 5	G	X
Straight 2 of 5	S	S
Pharmacode	H	X
GS1 DataBar 14	RS	e
GS1 DataBar Expanded	RX	e
GS1 DataBar Limited	RL	e
Composite CC-A	m	e
Composite CC-B	n	e
Composite CC-C	i	e
PDF417	r	L
Micro PDF417	s	L
Data Matrix	t	d
QR	u	Q
Micro QR	j	Q
Aztec	e	Z
MaxiCode	v	U

Prefix

Adds up to 4 output characters before barcode data

Example: add "a" before all barcode data

1. Scan "Enter Setup"
2. Scan "Set Prefix for All Codes"
3. Scan "a" from Appendix III ASCII Code table
4. Scan "Exit Setup"

To remove a barcode prefix:

1. Scan "Enter Setup"
2. Scan "Disable Prefix for All Codes"
3. Scan "Exit Setup"

Example: add "&1" before EAN 13 data

1. Scan "Enter Setup"
2. Scan "Set Barcode Prefix"
3. Scan "EAN 13" from Appendix II Barcode Setup Codes
4. Scan "&" from Appendix III ASCII Code table
5. Scan "1" from Appendix III ASCII Code table
7. Scan "Exit Setup"

To remove the EAN 13 prefix:

1. Scan "Enter Setup"
2. Scan "Set Barcode Prefix"
3. Scan "EAN 13" from Appendix II Barcode Setup Codes
3. Scan "Exit Setup"

Enter Setup

Disable Prefix for All Codes (Default)

Set Prefix for All Codes

Set Barcode Prefix

Disable Barcode Prefix

Exit Setup

Suffix

Adds up to 4 output characters after barcode data

Example: add "S" after all barcode data

1. Scan "Enter Setup"
2. Scan "Set Suffix for All Codes"
3. Scan "S" from Appendix III ASCII Code table
4. Scan "Exit Setup"

To remove a barcode suffix:

1. Scan "Enter Setup"
2. Scan "Disable Suffix for All Codes"
3. Scan "Exit Setup"

Example: add "+2" after Code 128 data

1. Scan "Enter Setup"
2. Scan "Set Barcode Suffix"
3. Scan "Code 128" from Appendix II Barcode Setup Codes
4. Scan "+" from Appendix III ASCII Code table
5. Scan "2" from Appendix III ASCII Code table
7. Scan "Exit Setup"

To remove the Code 128 suffix:

1. Scan "Enter Setup"
2. Scan "Set Barcode Suffix"
3. Scan "Code 128" from Appendix II Barcode Setup Codes
3. Scan "Exit Setup"

Enter Setup

Disable Suffix for All Codes (Default)

Set Suffix for All Codes

Set Barcode Suffix

Disable Barcode Suffix

Exit Setup

Remove Leading Characters

Removes up to 20 leading characters from barcode data

Example: remove the first 3 characters from all barcodes

1. Scan "Enter Setup"
2. Scan "Remove Leading Characters from All Codes"
3. Scan "3" from Appendix I Decimal Digits
4. Scan "Exit Setup"

To keep all leading characters:

1. Scan "Enter Setup"
2. Scan "Remove Leading Characters from All Codes"
3. Scan "0" from Appendix I Decimal Digits
4. Scan "Exit Setup"

Example: remove the first 2 characters from QR data

1. Scan "Enter Setup"
2. Scan "Remove Leading Characters from Barcode"
3. Scan "QR" from Appendix II Barcode Setup Codes
4. Scan "2" from Appendix I Decimal Digits
5. Scan "Exit Setup"

To restore QR leading characters:

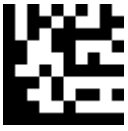
1. Scan "Enter Setup"
2. Scan "Remove Leading Characters from Barcode"
3. Scan "QR" from Appendix II Barcode Setup Codes
4. Scan "0" from Appendix I Decimal Digits
5. Scan "Exit Setup"



Enter Setup



Remove Leading Characters from All Codes



Remove Leading Characters from Barcode



Exit Setup

Remove Trailing Characters

Removes up to 20 trailing characters from barcode data

Example: remove the last 5 characters from all barcodes

1. Scan "Enter Setup"
2. Scan "Remove Trailing Characters from All Codes"
3. Scan "5" from Appendix I Decimal Digits
4. Scan "Exit Setup"

To keep all trailing characters:

1. Scan "Enter Setup"
2. Scan "Remove Trailing Characters from All Codes"
3. Scan "0" from Appendix I Decimal Digits
4. Scan "Exit Setup"

Example: remove the last 2 characters from Code 39 data

1. Scan "Enter Setup"
2. Scan "Remove Trailing Characters from Barcode"
3. Scan "Code 39" from Appendix II Barcode Setup Codes
4. Scan "2" from Appendix I Decimal Digits
5. Scan "Exit Setup"

To restore Code 39 trailing characters:

1. Scan "Enter Setup"
2. Scan "Remove Trailing Characters from Barcode"
3. Scan "Code 39" from Appendix II Barcode Setup Codes
4. Scan "0" from Appendix I Decimal Digits
5. Scan "Exit Setup"

Enter Setup

Remove Trailing Characters from All Codes

Remove Trailing Characters from Barcode

Exit Setup

Terminating Character

Enter Setup

None

Enter / CR (Default)

Exit Setup

Terminating Character



Enter Setup



CR / LF



TAB



Exit Setup

Caps Lock



Enter Setup



Disable Caps Lock (Default)



Enable Caps Lock



Exit Setup

GS Character Conversion

Convert GS to another ASCII code in keyboard mode

Example: convert GS to "#"

1. Scan "Enter Setup"
2. Scan "Convert GS Character"
3. Scan "#" from the ASCII Code table
4. Scan "Exit Setup"

Example: convert GS to Enter

1. Scan "Enter Setup"
2. Scan "Convert GS Character"
3. Scan "Enter" from the ASCII Code table
4. Scan "Exit Setup"

Restore GS Default

1. Scan "Enter Setup"
2. Scan "Disable GS Conversion"
3. Scan "Exit Setup"

GS Character Conversion



Enter Setup



Disable GS Conversion (Default)



Convert GS Character



Exit Setup

Function Key Mapping



Enter Setup



Disable



Enable (Default)



Exit Setup

Function Key Mapping

Enter Setup

Ctrl Char Mode (Default)

Alt + Unicode Mode

Exit Setup

Chapter 6 Serial Commands

Transmit/Receive Format and Response Messages

Command Format:

Data Length (1 byte)	Transmitter (1 byte)	ID (1 byte)	Command (1 byte)	Data (up to 32 bytes)	Check Digit	
					High Byte (1 byte)	Low Byte (1 byte)

Data length excluding checksum (min. 5 bytes; max. 36 bytes)

Transmitter: **0x57 = host to decoder; 0x52 = decoder to host**

ID: Command ID

Command: Configuration command

Data: Configuration content

Checksum: 0x10000 - [Length] - [Transmitter] - [ID] - [Command] - [D1+D2+D3+...]

Response Message:

After receiving a command, the device returns a message indicating success or failure

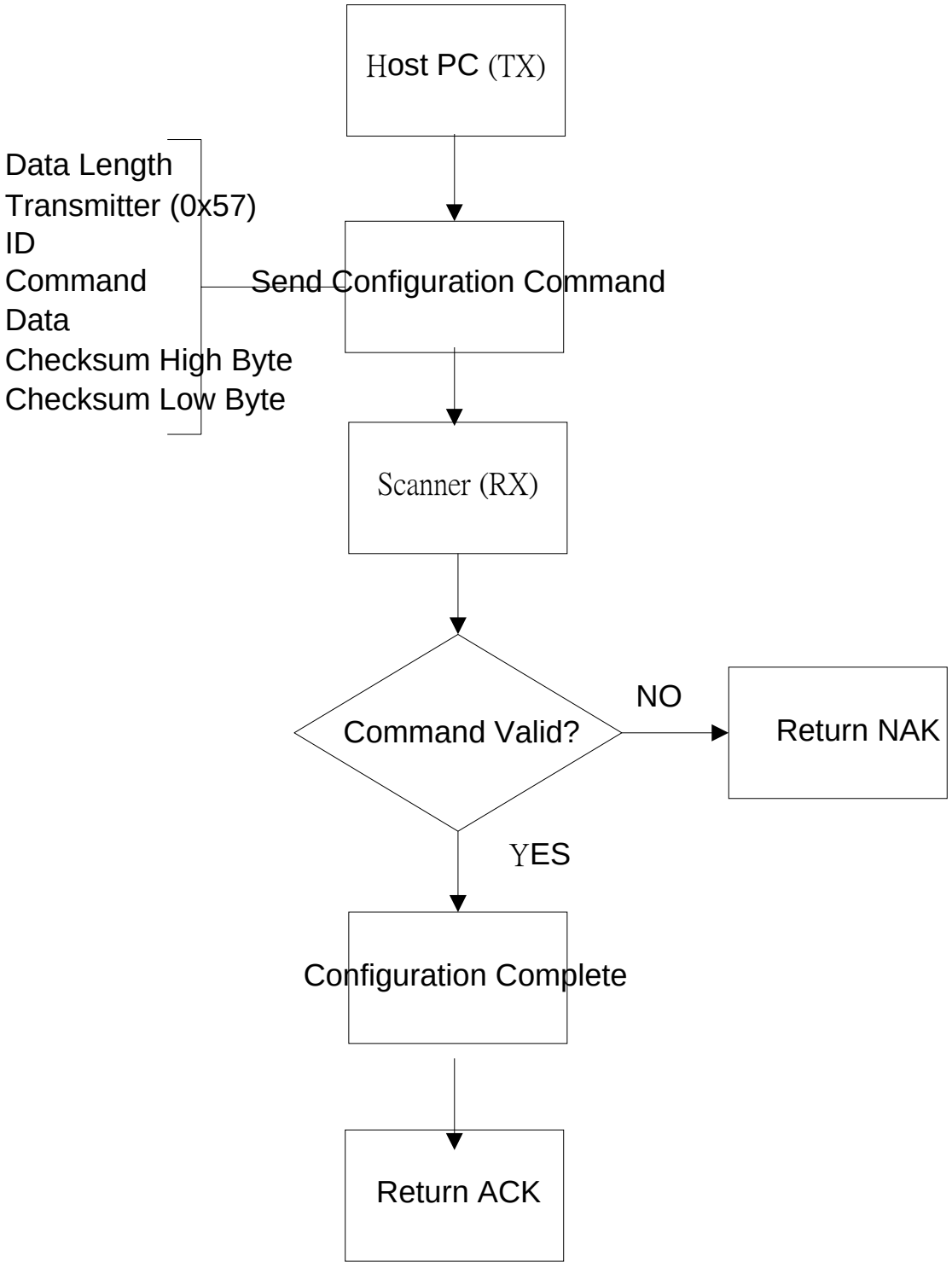
On success, the following 5 hex bytes (ACK) are returned:

52	A0	EC	FE	74

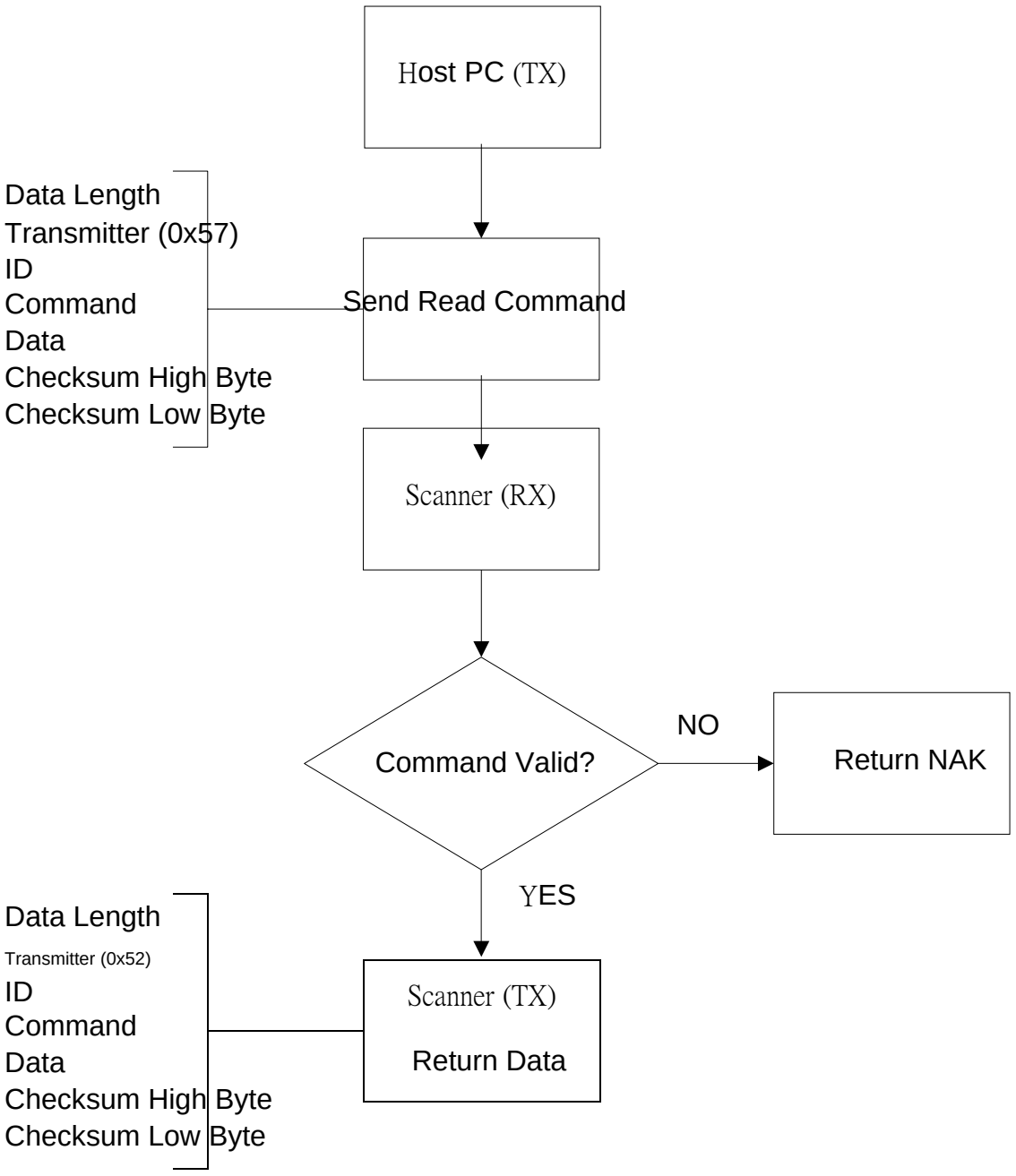
On failure, the following 5 hex bytes (NAK) are returned:

52	A0	E0	FE	80

Configuration Flow



Read Flow


Host PC (TX)
Data Length
Transmitter (0x57)
ID
Command
Data
Checksum High Byte
Checksum Low Byte
Send Read Command
Scanner (RX)
Command Valid?
NO
Return NAK
YES
Data Length
Transmitter (0x52)
ID
Command
Data
Checksum High Byte
Checksum Low Byte
Scanner (TX)
Return Data

Command Examples

Start Scanning

Data Length	Transmitter ID	Command	Data	Checksum High Byte	Checksum Low Byte
05	57 A0	01	01	FF	02

Checksum = 0x10000 - 0x05 - 0x057 - 0xa0 - 0x01 - 0x01 = 0xFF02 (hex)

Stop Scanning

Data Length	Transmitter ID	Command	Data	Checksum High Byte	Checksum Low Byte
05	57 A0	01	00	FF	03

Checksum = 0x10000 - 0x05 - 0x057 - 0xa0 - 0x01 - 0x00 = 0xFF03 (hex)

Start Scan Command - ACK Response

Data Length	Transmitter ID	Command	Data	Checksum High Byte	Checksum Low Byte
05	57 A0	00	01	FF	03

Checksum = 0x10000 - 0x05 - 0x057 - 0xa0 - 0x00 - 0x01 = 0xFF03 (hex)

Set decode time to 1 s (1000 ms) - 2-byte data length

Data Length	Transmitter ID	Command	Data	Checksum High Byte	Checksum Low Byte
06	57 A1	16	03E8 (1000 ms)	FE	01

Checksum = 0x10000 - 0x06 - 0x057 - 0xa1 - 0x15 - 0x03 - 0xE8 = 0xFE01 (hex)

Save Settings

Data Length	Transmitter ID	Command	Data	Checksum High Byte	Checksum Low Byte
05	57 A0	08	01	FE	FB

Checksum = 0x10000 - 0x05 - 0x057 - 0xa0 - 0x08 - 0x01 = 0xFEFB (hex)

Set Scan Trigger String

Enter Setup

Disable

1 to 8 ASCII characters can be set

Set the scan trigger string to "TRG"

1. Scan "Set Scan Trigger String"

3. Scan "T" from the ASCII Code table

3. Scan "R" from the ASCII Code table

3. Scan "G" from the ASCII Code table

4. Scan "Exit Setup"

Set Scan Trigger String

Exit Setup

Set Stop Scan String



Enter Setup



Disable

1 to 8 ASCII characters can be set

Set the stop scan string to "OFF"

1. Scan "Set Stop Scan String"

3. Scan "O" from the ASCII Code table

3. Scan "F" from the ASCII Code table

3. Scan "F" from the ASCII Code table

4. Scan "Exit Setup"



Set Scan Trigger String



Exit Setup

Command Set

Function		ID	Command	Data
Check Communication Status		0E	0D	01
Read Version		0E	0D	02
Read Scan Mode		0E	0D	03
Read Scan Status		0E	0D	04
Read Decode Result		0E	0D	05
Scan ACK / NAK Response	Open	A0	00	01
	Disable	A0	00	00
Command ACK / NAK Response	Open	A0	00	10
	Disable	A0	00	11
Scan Control	Start Scanning	A0	01	01
	Stop Scanning	A0	01	00
Save Settings		**A0**	**08**	**01**
Restore Defaults		A1	01	0F
Save Custom Settings		A1	01	08
Load Custom Settings		A1	01	CF
Scan Mode	Button Scan	A1	02	01
	Auto Scan	A1	02	02
	Continuous Scan	A1	02	03
	Pulse Mode	A1	02	04
Auto-Sensing Mode	IR Trigger	A1	02	11
	Image Trigger	A1	02	12
	Image and IR Trigger	A1	02	13

Function		ID	Command	Data
Aiming Light	Disable	A1	03	00
	On During Scan	A1	03	01
	Always On	A1	03	02
Fill Light Mode	Disable	A1	04	00
	On During Scan	A1	04	01
	Always On	A1	04	02
Fill Light Intensity	Low Brightness	A1	04	11
	Medium Brightness	A1	04	12
	High Brightness	A1	04	13
Decode Beep	Enable	A1	05	0E
	Disable	A1	05	0D
Decode Time (2-byte data length) 0 = decode continuously until a read succeeds		A1	16	00~FFFF
Duplicate Barcode Reading Mode	No Duplicate Read	A1	08	01
	Interval Read	A1	08	02
	Do not read the same barcode twice	A1	08	03
	Do not read the same barcode twice	A1	08	04
Duplicate Barcode Read Time (2-byte data length) 0 = no interval		A1	18	00~FFFF

Function		ID	Command	Data
Auto-Sensing Sensitivity	Low Sensitivity	A1	0A	01
	Medium Sensitivity	A1	0A	02
	High Sensitivity	A1	0A	03
Decoded Data Verification	Disable	A1	0B	01
	Read Twice	A1	0B	02
	Read Three Times	A1	0B	03
Decode Message	Enable	A2	01	0E
	Disable	A2	01	0D
Barcode ID	Disable	A2	02	00
	AIM ID	A2	02	01
	Tipcode ID	A2	02	02
Terminating Character	None	A2	03	01
	CR/LF	A2	03	02
	CR	A2	03	03
	TAB	A2	03	04

Function		ID	Command	Data
Enable All Symbologies		B0	01	0E
Disable All Barcodes		B0	01	0D
Enable 1D Only		B0	01	01
Enable 2D Only		B0	01	02
Disable 1D Barcodes		B0	01	03
Disable 2D Barcodes		B0	01	04
UPC/EAN Add-On	Enable	B0	02	0E
	Disable	B0	02	0D
UPC A	Enable	B1	01	0E
	Disable	B1	01	0D
	Transmit First Character	B1	02	0E
	Do Not Transmit First Character	B1	02	0D
	Enable Check Digit	B1	03	0E
	Disable Check Digit	B1	03	0D
	Enable EAN-13 Conversion	B1	04	0E
	Disable EAN-13 Conversion	B1	04	0D

Function		ID	Command	Data
UPC E	Enable	B2	01	0E
	Disable	B2	01	0D
	Transmit First Character	B2	02	0E
	Do Not Transmit First Character	B2	02	0D
	Enable Check Digit	B2	03	0E
	Disable Check Digit	B2	03	0D
	Enable UPC A Conversion	B2	04	0E
	Disable UPC A Conversion	B2	04	0D
EAN 8	Enable	B3	01	0E
	Disable	B3	01	0D
	Transmit Check Digit	B3	02	0E
	Do Not Transmit Check Digit	B3	02	0D
	Enable EAN-13 Conversion	B3	03	0E
	Disable EAN-13 Conversion	B3	03	0D

Function		ID	Command	Data
EAN 13	Enable	B4	01	0E
	Disable	B4	01	0D
	Transmit Check Digit	B4	02	0E
	Do Not Transmit Check Digit	B4	02	0D
	Enable ISBN Conversion	B4	03	0E
	Disable ISBN Conversion	B4	03	0D
	Enable ISSN Conversion	B4	04	0E
	Disable ISSN Conversion	B4	04	0D
Code 128	Enable	B5	01	0E
	Disable	B5	01	0D
Code 39	Enable	B6	01	0E
	Disable	B6	01	0D
	Enable ASCII	B6	02	0E
	Disable ASCII	B6	02	0D
	Transmit Start/Stop Characters	B6	03	0E
	Do Not Transmit Start/Stop	B6	03	0D

Function		ID	Command	Data
Code 39	No Checksum	B6	04	01
	Check and Transmit	B6	04	02
	Check Without Transmission	B6	04	03
Code 93	Enable	B7	01	0E
	Disable	B7	01	0D
Code 32	Enable	B8	01	0E
	Disable	B8	01	0D
Code 11	Enable	B9	01	0E
	Disable	B9	01	0D
Codabar	Enable	BA	01	0E
	Disable	BA	01	0D
	No Checksum	BA	02	01
	Check and Transmit	BA	02	02
	Check Without Transmission	BA	02	03
	Transmit Start/Stop Characters	BA	03	0E
	Do Not Transmit Start/Stop	BA	03	0D

Function		ID	Command	Data
Plessey	Enable	BB	01	0E
	Disable	BB	01	0D
MSI Plessey	Enable	BC	01	0E
	Disable	BC	01	0D
	No Checksum	BC	02	01
	Mod 10 Check	BC	02	02
	Mod 10/10 Check	BC	02	03
	Mod 11/10 Check	BC	02	04
	Transmit Check Digit	BC	03	0E
	Do Not Transmit Check Digit	BC	03	0D
Interleaved 2 of 5	Enable	BD	01	0E
	Disable	BD	01	0D
	No Checksum	BD	02	01
	Check and Transmit	BD	02	02
	Check Without Transmission	BD	02	03

Function		ID	Command	Data
IATA 2 of 5	Enable	BE	01	0E
	Disable	BE	01	0D
Matrix 2 of 5	Enable	BF	01	0E
	Disable	BF	01	0D
Straight 2 of 5	Enable	D0	01	0E
	Disable	D0	01	0D
Pharmacode	Enable	D1	01	0E
	Disable	D1	01	0D
GS1 DataBar 14	Enable	D2	01	0E
	Disable	D2	01	0D
GS1 DataBar 14 Stacked	Enable	D2	02	0E
	Disable	D2	02	0D
GS1 DataBar Expanded	Enable	D3	01	0E
	Disable	D3	01	0D
GS1 DataBar Expanded Stacked	Enable	D3	02	0E
	Disable	D3	02	0D

Function		ID	Command	Data
GS1 DataBar Limited	Enable	D4	01	0E
	Disable	D4	01	0D
CC-A	Enable	D5	01	0E
	Disable	D5	01	0D
CC-B	Enable	D6	01	0E
	Disable	D6	01	0D
CC-C	Enable	D7	01	0E
	Disable	D7	01	0D
PDF 417	Enable	D8	01	0E
	Disable	D8	01	0D
Micro PDF 417	Enable	D9	01	0E
	Disable	D9	01	0D
Data Matrix	Enable	DA	01	0E
	Disable	DA	01	0D
Rectangular Data Matrix	Enable	DA	03	0E
	Disable	DA	03	0D

Function		ID	Command	Data
QR	Enable	DB	01	0E
	Disable	DB	01	0D
Micro QR	Enable	DC	01	0E
	Disable	DC	01	0D
Aztec	Enable	DD	01	0E
	Disable	DD	01	0D
MaxiCode	Enable	DE	01	0E
	Disable	DE	01	0D

Appendix I Decimal Digits



0



1



2



3



4



5



6



7



8



9

Appendix II Barcode Setup Codes



UPC A



UPC E



EAN 8



EAN 13



Code 128



Code 39



Code 93



Code 32



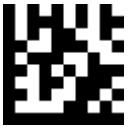
Code 11



Codabar



Plessey



MSI Plessey



Interleaved 2 of 5



IATA 2 of 5



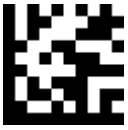
Matrix 2 of 5



Straight 2 of 5



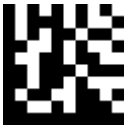
Pharmacode



GS1 DataBar 14



GS1 DataBar Expanded



GS1 DataBar Limited



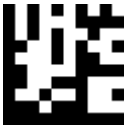
GS1 DataBar 14 Stacked



GS1 DataBar Expanded Stacked



Composite Code-A



Composite Code-B



Composite Code-C



PDF417



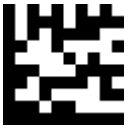
Micro PDF417



Data Matrix



QR



Micro QR



Aztec



MaxiCode

Appendix III ASCII Code Table

Hex	Decimal	ASCII	Function Key Mapping		
			Disable	**Ctrl Char**	**Alt+Unicode**
00 (NUL)	0	 NUL	**Disable**	Ctrl+@	Alt + 000
01 (SOH)	1	 SOH	Home	Ctrl+A	Alt + 001
02 (STX)	2	 STX	End	Ctrl+B	Alt + 002
03 (ETX)	3	 ETX	Up Arrow	Ctrl+C	Alt + 003

Hex	Decimal	ASCII	Function Key Mapping		
			Disable	Ctrl Char	Alt+Unicode
04 (EOT)	4	 EOT	Down Arrow	Ctrl+D	Alt + 004
05 (ENQ)	5	 ENQ	Left Arrow	Ctrl+E	Alt + 005
06 (ACK)	6	 ACK	Right Arrow	Ctrl+F	Alt + 006
07 (BEL)	7	 BEL	Null	Ctrl+G	Alt + 007

Hex	Decimal	ASCII	Function Key Mapping		
			Disable	Ctrl Char	Alt+Unicode
08	8	 BS	Backspace	Backspace	Alt + 008
09	9	 TAB	TAB	TAB	Alt + 009
0A (LF)	10	 LF	Null	Ctrl+J	Alt + 010
0B (VT)	11	 VT	Null	Ctrl+K	Alt + 011

Hex	Decimal	ASCII	Function Key Mapping		
			Disable	**Ctrl Char**	**Alt+Unicode**
0C (FF)	12	 FF	Null	Ctrl+L	Alt + 012
0D (CR)	13	 **CR**	**Enter**	**Enter**	**Enter**
0E (SO)	14	 SO	Page Up	Ctrl+N	Alt + 014
0F (SI)	15	 SI	Page Down	Ctrl+O	Alt + 015

Hex	Decimal	ASCII	Function Key Mapping		
			Disable	Ctrl Char	Alt+Unicode
10 (DLE)	16	 DLE	F11	Ctrl+P	Alt + 016
11 (DC1)	17	 DC1	Null	Ctrl+Q	Alt + 017
12 (DC2)	18	 DC2	Null	Ctrl+R	Alt + 018
13 (DC3)	19	 DC3	Null	Ctrl+S	Alt + 019

Hex	Decimal	ASCII	Function Key Mapping		
			Disable	Ctrl Char	Alt+Unicode
14 (DC4)	20	 DC4	Null	Ctrl+T	Alt + 020
15 (NAK)	21	 NAK	F12	Ctrl+U	Alt + 021
16 (SYN)	22	 SYN	F1	Ctrl+V	Alt + 022
17 (ETB)	23	 ETB	F2	Ctrl+W	Alt + 023

Hex	Decimal	ASCII	Function Key Mapping		
			Disable	Ctrl Char	Alt+Unicode
18 (CAN)	24	 CAN	F3	Ctrl+X	Alt + 024
19 (CAN)	25	 EM	F4	Ctrl+Y	Alt + 025
1A (SUB)	26	 SUB	F5	Ctrl+Z	Alt + 026
1B (ESC)	27	 ESC	F6	Ctrl+[	Alt + 027

Hex	Decimal	ASCII	Function Key Mapping		
			Disable	Ctrl Char	Alt+Unicode
1C (FS)	28	 FS	F7	Ctrl+\	Alt + 028
1D (GS)	29	 GS	F8	Ctrl+]	Alt + 029
1E (US)	30	 RS	F9	Ctrl+^	Alt + 030
1F (US)	31	 US	F10	Ctrl+_	Alt + 031

Hex	Decimal	ASCII	
20	32	SPACE	
21	33	!	
22	34	"	
23	35	#	

Hex	Decimal	ASCII	
24	36	$	
25	37	%	
26	38	&	
27	39	'	

Hex	Decimal	ASCII	
28	40	(	
29	41	)	
2A	42	*	
2B	43	+	

Hex	Decimal	ASCII	
2C	44	,	
2D	45	-	
2E	46	.	
2F	47	/	

Hex	Decimal	ASCII	
30	48	0	
31	49	1	
32	50	2	
33	51	3	

Hex	Decimal	ASCII	
34	52	4	
35	53	5	
36	54	6	
37	55	7	

Hex	Decimal	ASCII	
38	56	8	
39	57	9	
3A	58	:	
3B	59	;	

Hex	Decimal	ASCII	
3C	60	<	
3D	61	=	
3E	62	>	
3F	63	?	

Hex	Decimal	ASCII	
40	64	@	
41	65	A	
42	66	B	
43	67	C	

Hex	Decimal	ASCII	
44	68	D	
45	69	**E**	
46	70	**F**	
47	71	**G**	

Hex	Decimal	ASCII	
48	72	H	
49	73	I	
4A	74	J	
4B	75	K	

Hex	Decimal	ASCII	
4C	76	L	
4D	77	M	
4E	78	N	
4F	79	O	

Hex	Decimal	ASCII	
50	80	P	
51	81	Q	
52	82	R	
53	83	S	

Hex	Decimal	ASCII	
54	84	T	
55	85	U	
56	86	V	
57	87	W	

Hex	Decimal	ASCII	
58	88	X	
59	89	Y	
5A	90	Z	
5B	91	[	

Hex	Decimal	ASCII	
5C	92	\	
5D	93	]	
5E	94	^	
5F	95	_	

Hex	Decimal	ASCII	
60	96	`	
62	97	a	
62	98	b	
63	99	c	

Hex	Decimal	ASCII	
64	100	d	
65	101	e	
66	102	f	
67	103	g	

Hex	Decimal	ASCII	
68	104	h	
69	105	i	
6A	106	j	
6B	107	k	

Hex	Decimal	ASCII	
6C	108	l	
6D	109	m	
6E	110	n	
6F	111	o	

Hex	Decimal	ASCII	
70	112	p	
71	113	q	
72	114	r	
73	115	s	

Hex	Decimal	ASCII	
74	116	t	
75	117	u	
76	118	v	
77	119	w	

Hex	Decimal	ASCII	
78	120	x	
79	121	y	
7A	122	z	
7B	123	{	

Hex	Decimal	ASCII	
7C	124	|	
7D	125	}	
7E	126	~	
7F	127	Delete	

Appendix IV Function Keys



Insert



Delete



Home



End



Up Arrow



Down Arrow



Left Arrow



Right Arrow



Shift



ESC



Ctrl



Alt



Page Up



Page Down



F1



F2



F3



F4



F5



F6



F7



F8



F9



F10



F11



F12