

Fixed Mount Barcode Scanner RT230H

User Manual

Revision History

Version	Description	Date
V1.0.0	Initial release.	July 26, 2016

Table Of Contents

Revision History.....	1
Table Of Contents.....	2
Chapter 1 Getting Started.....	10
About This Guide.....	10
Introduction.....	10
Barcode Scanning.....	10
Barcode Programming.....	11
Factory Defaults.....	11
Custom Defaults.....	12
Chapter 2 Communication Interfaces.....	13
USB HID-KBW.....	13
USB Country Keyboard Types.....	13
Beep on Unknown Character.....	16
Inter-Keystroke Delay.....	16
Convert Case.....	17
Emulate ALT+Keypad.....	18
Function Key Mapping.....	19
Emulate Numeric Keypad.....	20
Code Page.....	20
USB COM Port Emulation.....	21
Send Data to the RT230H.....	21
VID/PID.....	21
RS232 Interface.....	22
Baud Rate.....	23
Parity Check.....	24
Data Bit.....	24
Data Bit & Parity Check.....	25
Stop Bit.....	25
Chapter 3 Scan Mode.....	26

Trigger Mode.....	26
Decode Session Timeout.....	26
Auto Sleep.....	27
Timeout between Decodes (Same Barcode).....	28
Sense Mode.....	29
Decode Session Timeout.....	29
Image Stabilization Timeout.....	29
Continue after Good Read.....	30
Timeout between Decodes (Same Barcode).....	30
Sensitivity.....	31
Continuous Mode.....	33
Decode Session Timeout.....	33
Timeout between Decodes.....	33
Cellphone Read Mode.....	34
Chapter 4 Scanning Preferences.....	35
Introduction.....	35
Decode Area.....	35
Whole Area Decoding.....	35
Central Area Decoding.....	35
Specify Central Area.....	36
Chapter 5 Illumination & Aiming.....	37
Illumination.....	37
Aiming.....	38
Chapter 6 Beep & LED Notifications.....	39
Startup Beep.....	39
Good Read Beep for Non-programming Barcode.....	40
Beep Type.....	40
Beep Volume.....	41
Beep on Unknown Character.....	41
Good Read Beep for Programming Barcode.....	42
Good Read LED.....	42
Transmit NGR Message.....	43
Edit NGR Message.....	43

Chapter 7 Data Formatting	44
General Settings.....	45
Enable/Disable All Prefix/Suffix.....	45
Prefix Sequences.....	45
Custom Prefix.....	46
Enable/Disable Custom Prefix.....	46
Set Custom Prefix.....	46
AIM ID Prefix.....	47
Code ID Prefix.....	47
Restore All Default Code IDs.....	47
Modify Code ID.....	48
Custom Suffix.....	51
Enable/Disable Custom Suffix.....	51
Set Custom Suffix.....	51
Terminating Character Suffix.....	52
Enable/Disable Terminating Character Suffix.....	52
Set Terminating Character Suffix.....	53
Chapter 8 Symbologies	54
General Settings.....	54
Enable/Disable All Symbologies.....	54
Enable/Disable 1D Symbologies.....	54
Enable/Disable 2D Symbologies.....	54
Video Reverse.....	55
1D Symbologies.....	56
Code 128.....	56
Restore Factory Defaults.....	56
Enable/Disable Code 128.....	56
Set Length Range for Code 128.....	56
GS1-128 (UCC/EAN-128).....	57
Restore Factory Defaults.....	57
Enable/Disable GS1-128.....	57
Set Length Range for GS1-128.....	57
AIM-128.....	58
Restore Factory Defaults.....	58
Enable/Disable AIM-128.....	58

Set Length Range for AIM-128.....	58
EAN-8.....	59
Restore Factory Defaults.....	59
Enable/Disable EAN-8.....	59
Transmit Check Digit.....	60
Add-On Code.....	60
Add-On Code Required.....	61
EAN-8 Extension.....	61
EAN-13.....	62
Restore Factory Defaults.....	62
Enable/Disable EAN-13.....	62
Transmit Check Digit.....	62
Add-On Code.....	63
Add-On Code Required.....	63
ISSN.....	64
Restore Factory Defaults.....	64
Enable/Disable ISSN.....	64
Add-On Code.....	65
Add-On Code Required.....	65
ISBN.....	66
Restore Factory Default.....	66
Enable/Disable ISBN.....	66
Set ISBN Format.....	66
Add-On Code.....	67
Add-On Code Required.....	67
UPC-E.....	68
Restore Factory Defaults.....	68
Enable/Disable UPC-E.....	68
Transmit Check Digit.....	68
Add-On Code.....	69
Add-On Code Required.....	69
Transmit System Character "0".....	70
UPC-E Extension.....	70
UPC-A.....	71
Restore Factory Defaults.....	71
Enable/Disable UPC-A.....	71

Transmit Check Digit.....	71
Add-On Code.....	72
Add-On Code Required.....	72
Transmit Preamble Character “0”.....	73
Interleaved 2 of 5.....	74
Restore Factory Defaults.....	74
Enable/Disable Interleaved 2 of 5.....	74
Set Length Range for Interleaved 2 of 5.....	74
Check Digit Verification.....	75
ITF-14.....	76
ITF-6.....	77
Matrix 2 of 5.....	78
Restore Factory Defaults.....	78
Enable/Disable Matrix 2 of 5.....	78
Set Length Range for Matrix 2 of 5.....	78
Check Digit Verification.....	79
Industrial 2 of 5.....	80
Restore Factory Defaults.....	80
Enable/Disable Industrial 2 of 5.....	80
Set Length Range for Industrial 2 of 5.....	80
Check Digit Verification.....	81
Standard 2 of 5 (IATA 2 of 5).....	82
Restore Factory Defaults.....	82
Enable/Disable Standard 25.....	82
Set Length Range for Standard 25.....	82
Check Digit Verification.....	83
Code 39.....	84
Restore Factory Defaults.....	84
Enable/Disable Code 39.....	84
Transmit Start/Stop Character.....	84
Set Length Range for Code 39.....	85
Check Digit Verification.....	85
Enable/Disable Code 39 Full ASCII.....	85
Codabar.....	86
Restore Factory Defaults.....	86
Enable/Disable Codabar.....	86

Set Length Range for Codabar.....	86
Check Digit Verification.....	87
Transmit Start/Stop Character.....	87
Start/Stop Character Format.....	88
Code 93.....	89
Restore Factory Defaults.....	89
Enable/Disable Code 93.....	89
Set Length Range for Code 93.....	89
Check Digit Verification.....	90
GS1-Databar (RSS).....	91
Restore Factory Defaults.....	91
Enable/Disable GS1 Databar.....	91
Transmit Application Identifier "01".....	91
Code 11.....	92
Restore Factory Defaults.....	92
Enable/Disable Code 11.....	92
Set Length Range for Code 11.....	92
Transmit Check Digit.....	93
Check Digit Verification.....	93
Plessey.....	94
Restore Factory Defaults.....	94
Enable/Disable Plessey.....	94
Set Length Range for Plessey.....	94
Check Digit Verification.....	95
MSI-Plessey.....	96
Restore Factory Defaults.....	96
Enable/Disable MSI-Plessey.....	96
Set Length Range for MSI-Plessey.....	96
Transmit Check Digit.....	97
Check Digit Verification.....	97
2D Symbolologies.....	98
PDF 417.....	98
Restore Factory Defaults.....	98
Enable/Disable PDF 417.....	98
Set Length Range for PDF 417.....	98
PDF 417 Twin Code.....	99

QR Code.....	100
Restore Factory Defaults.....	100
Enable/Disable QR Code.....	100
Set Length Range for QR Code.....	100
Micro QR.....	100
QR Twin Code.....	101
Data Matrix.....	103
Restore Factory Defaults.....	103
Enable/Disable Data Matrix.....	103
Set Length Range for Data Matrix.....	103
Rectangular Barcode.....	104
Mirror Image.....	104
Data Matrix Twin Code.....	105
Chinese Sensible Code.....	106
Restore Factory Defaults.....	106
Enable/Disable Chinese Sensible Code.....	106
Set Length Range for Chinese Sensible Code.....	106
Chapter 9 Image Control.....	107
Ambient Illumination.....	107
Image Flipping.....	108
Flip.....	109
Flip Vertically.....	109
Flip Horizontally.....	109
Chapter 10 Troubleshooting.....	110
FAQ.....	110
Appendix.....	112
Appendix 1: Factory Defaults Table.....	112
Appendix 2: AIM ID Table.....	120
Appendix 3: Code ID Table.....	122
Appendix 4: ASCII Table.....	123
Appendix 5: Parameter Programming Examples.....	127
a. Program the Decode Session Timeout.....	127
b. Program the Time Period from Idle to Sleep.....	127
c. Program the Image Stabilization Timeout.....	127

d. Program the Timeout between Decodes (Same Barcode).....	128
e. Program the Threshold Value of Illumination Change.....	128
f. Program the Timeout between Decodes.....	128
g. Program the Central Area.....	129
h. Program the Custom Prefix/Suffix.....	129
i. Program the Terminating Character Suffix.....	129
j. Program the Code ID.....	130
k. Program the NGR Message.....	130
l. Program the Length Range (Maximum/Minimum Lengths) for a Symbology.....	131
m. Program the Code Page.....	131
Appendix 6: Digit Barcodes (numeric barcodes).....	132
Appendix 7: Save/Cancel Barcodes.....	134
Appendix 8: ASCII Function Key Mapping Table.....	135
Appendix 9: Code Pages List.....	137



0006010
Enter Setup

Chapter 1 Getting Started

About This Guide

This guide provides programming instructions for the RT230H. Users can configure the RT230H by scanning the programming barcodes included in this manual.

The RT230H has been properly configured for most applications and can be put into use without further configuration. Users may check the **Factory Defaults Table** in **Appendix** for reference. Throughout the manual, asterisks (**) indicate factory default values.

Introduction

Steps to setup the scanner:

Scan the “Enter Setup” > scan setting codes(one or more) > Scan “Exit Setup” setting code

Barcode Scanning

Powered by area-imaging technology and RTscan new technology, the RT230H features fast scanning and accurate decoding. Barcodes rotated at any angle can still be read with ease. When scanning a barcode, simply center the aiming beam or pattern projected by the RT230H over the barcode.



0006000
** Exit Setup

0006010
Enter Setup

Barcode Programming

Scanning the **Enter Setup** barcode can enable the RT230H to enter the setup mode. Then you can scan a number of programming barcodes to configure your RT230H. To exit the setup mode, scan the **Exit Setup** barcode.

If the RT230H has exited the setup mode, only some special programming barcodes, such as the **Enter Setup** barcode and **Restore All Factory Defaults** barcode, can be read.



0006010

Enter Setup

0006000

**** Exit Setup**

Programming barcode data can be transmitted to the Host. Scan the appropriate barcode below to enable or disable the transmission of programming barcode data (i.e. the characters under programming barcode) to the Host.

Restarting the RT230H will automatically disable the transmission of programming barcode data to the Host.



0002010

Transmit Programming Barcode Data

0002000

**** Do Not Transmit Programming Barcode Data**

Factory Defaults

Scanning the following barcode can restore the RT230H to the factory defaults. See **Appendix 1: Factory Defaults Table** for more information.

Note: Use this feature with discretion.



0006000

**** Exit Setup**



0006010
Enter Setup



0001000
Restore All Factory Defaults

Custom Defaults

Custom defaults make it possible to save the frequently-used settings on the RT230H.

Scanning the **Save as Custom Defaults** barcode can save the current settings as custom defaults. Once custom default settings are stored, they can be recovered at any time by scanning the **Restore All Custom Defaults** barcode.

Custom defaults are stored in the non-volatile memory. Restoring the RT230H to the factory defaults will not remove the custom defaults from the RT230H.



0001150
Save as Custom Defaults



0001160
Restore All Custom Defaults



0006000
**** Exit Setup**



0006010
Enter Setup

Chapter 2 Communication Interfaces

The RT230H provides USB HID-KBW, or USB-Virtual Com, or RS232 interface to communicate with the host device. Different interface matches relevant/corresponding cable, the cable is fixed on the scanner and it is not changeable.

USB HID-KBW

When you buy the scanner with **USB HID-KBW** interface, then the scanner's transmission will be simulated as USB keyboard input. The Host receives keystrokes on the virtual keyboard. It works on a Plug and Play basis and no driver is required.

USB Country Keyboard Types

Keyboard layouts vary from country to country. The default setting is U.S. keyboard.



1103001

**** U.S.**



1103002

Japan



1103003

Denmark



1103004

Finland



0006000

**** Exit Setup**



0006010
Enter Setup



1103005

France



1103006

Turkey_F



1103007

Italy



1103008

Norway



0006000
**** Exit Setup**



0006010
Enter Setup



1103222

Spain



1103226

Turkey_Q



1103227

UK



1103209

Austria, Germany



1103202

Belgium



1103220

Russia



1103223

Sweden



1103218

Portugal



0006000
**** Exit Setup**



0006010
Enter Setup

Beep on Unknown Character

Due to the differences in keyboard layouts, some characters contained in barcode data may be unavailable on the selected keyboard. As a result, the RT230H fails to transmit the unknown characters.

Scan the appropriate barcode below to enable or disable the emission of beep when an unknown character is detected.



1103031

Beep on Unknown Character



1103030

**** Do Not Beep on Unknown Character**

Inter-Keystroke Delay

This parameter specifies the delay between emulated keystrokes.



1103050

**** No Delay**



1103051

Short Delay (20ms)



1103052

Long Delay (40ms)



0006000
**** Exit Setup**



0006010
Enter Setup

Convert Case

Scan the appropriate barcode below to convert barcode data to your desired case.



1103040

**** No Case Conversion**



1103043

Invert Upper and Lower Case Characters



1103041

Convert All to Upper Case



1103042

Convert All to Lower Case

Example: When the **Convert All to Lower Case** feature is enabled, barcode data “AbC” is transmitted as “abc”.



0006000
**** Exit Setup**



0006010
Enter Setup

Emulate ALT+Keypad

This feature allows any ASCII character (0x00 - 0xFF) to be sent over the numeric keypad no matter which keyboard type is selected. Since sending a character involves multiple keystroke emulations, this method appears less efficient.

The following options are available:

- **Disable:** No ASCII character is sent in the ALT+Keypad way.
- **Mode 1:** ASCII characters not supported by the selected keyboard type but falling into 0x20~0xFF are sent in the ALT+Keypad way.
- **Mode 2:** ASCII characters falling into 0x20~0xFF are sent in the ALT+Keypad way.
- **Mode 3:** All ASCII characters (0x00~0xFF) are sent in the ALT+Keypad way.

Note: In the event of a conflict between **Function Key Mapping** and **Mode 3, Function Key Mapping** shall govern.



1103060
** Disable



1103061
Mode 1



1103062
Mode 2



1103063
Mode 3

Example: Supposing US keyboard is selected, barcode data "AÐF" (65/208/70) is sent as below:

(1) **Mode 1** is enabled:

"A" -- Keystroke "A"

"Ð" -- "ALT Make" + "208" + "ALT Break"

"F" -- Keystroke "F"

(2) **Mode 3** is enabled:

"A" -- "ALT Make" + "065" + "ALT Break"

"Ð" -- "ALT Make" + "208" + "ALT Break"

"F" -- "ALT Make" + "070" + "ALT Break"



0006000
** Exit Setup

0006010
Enter Setup

Function Key Mapping

When Function Key Mapping is enabled, function characters (0x00 - 0x1F) are sent as ASCII sequences over the keypad. For more information, see **Appendix 8: ASCII Function Key Mapping Table**.




1103140

Enable Function Key Mapping

1103130

**** Disable Function Key Mapping**

Example: Barcode data 0x16

 T	Enable Function Key Mapping	Ctrl+V
	Disable Function Key Mapping	F1

0006000
** Exit Setup



0006010
Enter Setup

Emulate Numeric Keypad

When this feature is disabled, sending barcode data is emulated as keystroke(s) on main keyboard.

To enable this feature, scan the **Emulate Numeric Keypad** barcode. Sending a number (0-9) is emulated as keystroke(s) on numeric keypad, whereas sending other characters like "+", "_", "*", "/" and "." is still emulated as keystrokes on main keyboard.



** Do Not Emulate Numeric Keypad



Emulate Numeric Keypad

Code Page

In order to support more international characters, the **Code Page** programming feature is provided. This feature is only effective when ASCII characters are sent in the ALT+Keypad way. Programming a code page requires scanning numeric barcode (For more information, see **Appendix 9: Code Pages List**). The default code page is Windows 1252 (Latin I). To learn how to program it, see **Appendix 5**.



Set the Code Page



0006000
** Exit Setup



0006010
Enter Setup

USB COM Port Emulation

If you got the RT230H with the **USB COM Port Emulation** cable, then this interface allows the Host to receive data in the way as a serial port does. A driver is required for this feature.

Send Data to the RT230H

This output report is used to send data to the device. All programming commands can be used.

	Bit							
Byte	7	6	5	4	3	2	1	0
0	Report ID = 0x04							
1	Length of the output data							
2-63	Output data (1-62)							

VID/PID

USB uses VID (Vendor ID) and PID (Product ID) to identify and locate a device. The VID is assigned by USB Implementers Forum. RTscan's vendor ID is 1EAB (Hex). A PID is assigned to each interface.

Product	Interface	PID (Hex)	PID (Dec)
RT230H	USB HID-KBW	1303	4867
	USB COM Port Emulation	1306	4870



0006000
** Exit Setup



0006010
Enter Setup

RS232 Interface

RS232 Serial communication interface is usually used when connecting the scanner to a host device (like PC, POS) which with RS232 port. However, to ensure smooth communication and accuracy of data, you need to set communication parameters (including baud rate, parity check, data bit and stop bit) to match the host device.

Default serial communication parameters are listed below. Make sure all parameters match the host requirements.

Parameter	Factory Default
Serial Communication	Standard RS232
Baud Rate	9600
Parity Check	None
Data Bits	8
Stop Bits	1
Hardware Flow Control	None



0006000
**** Exit Setup**



0006010
Enter Setup

Baud Rate

Baud rate is the number of bits of data transmitted per second. Set the baud rate to match the Host requirements.



0100030

**** 9600**



0100000

1200



0100050

19200



0100010

2400



0100060

38400



0100020

4800



0100070

57600



0100040

14400



0100080

115200



0006000
**** Exit Setup**



0006010
Enter Setup

Parity Check

When the number of data bits is set to 7, you can only select either **Even Parity** or **Odd Parity**. The **None** option will be regarded as **Even Parity** in this case.



0101000
**** None**



0101010
Even Parity



0101020
Odd Parity

Data Bit

When the number of data bits is set to 7, you can only select either **Even Parity** or **Odd Parity**.



0103020
7 Data Bits



0103030
**** 8 Data Bits**



0006000
**** Exit Setup**



0006010
Enter Setup

Data Bit & Parity Check



0105010

7 Data Bits/Even Parity



0105020

7 Data Bits/Odd Parity



0105030

**** 8 Data Bits/ No Parity**



0105040

8 Data Bits/Even Parity



0105050

8 Data Bits/Odd Parity

Stop Bit



0102000

**** 1 Stop Bit**



0102010

2 Stop Bits



0006000
** Exit Setup



0006010
Enter Setup

Chapter 3 Scan Mode

Trigger Mode

If the Trigger Mode is enabled, press the trigger to activate a decode session. The session continues until the barcode is decoded or decode session timeout expires or the active trigger signal is no longer present. For good read, the RT230H transmits decoded data via communication port.



0302000
Trigger Mode

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. It is programmable in 1ms increments from 0ms to 3,600,000ms. The default setting is 3,000ms. To learn how to program this parameter, see **Appendix 5**.



0313000
Decode Session Timeout



0006000
** Exit Setup

0006010
Enter Setup

Auto Sleep

Auto Sleep allows the RT230H in the Trigger Mode to automatically enter the sleep or low power mode if no operation or communication is performed for a time period (user programmable). When the RT230H is in the sleep mode, press the trigger or communication from the Host can awake the RT230H. The RT230H returns to full operation within 100ms.



0313060

**** Enable Auto Sleep**

0313070

Disable Auto Sleep

The parameter below specifies how long the RT230H remains idle (no operation or communication occurs) before it is put into sleep mode. It is programmable in 1ms increments from 0ms to 65,535ms. The default setting is 500ms. To learn how to program this parameter, see **Appendix 5**.



0313050

Time Period from Idle to Sleep

0006000

**** Exit Setup**



0006010
Enter Setup

Timeout between Decodes (Same Barcode)

Timeout between Decodes (Same Barcode) can avoid undesired rereading of same barcode in a given period of time.

To enable/disable the Timeout between Decodes (Same Barcode), scan the appropriate barcode below.

Enable Timeout between Decodes: Do not allow the RT230H to re-read same barcode before the timeout between decodes (same barcode) expires.

Disable Timeout between Decodes: Allow the RT230H to re-read same barcode.



**** Disable Timeout between Decodes**



Enable Timeout between Decodes

The following parameter sets the timeout between decodes for same barcode. It is programmable in 1ms increments from 0ms to 65,535ms. The default setting is 1,500ms.

To learn how to program this parameter, see **Appendix 5**.



Timeout between Decodes (Same Barcode)



0006000
**** Exit Setup**

0006010
Enter Setup

Sense Mode

If the Sense Mode is enabled, the RT230H activates a decode session every time it detects a change in ambient illumination. The decode session continues until the barcode is decoded or the decode session timeout expires.

Driving the TRIG pin on the host interface connector low can also activate a decode session. The decode session continues until the active trigger signal is no longer present or the barcode is decoded or the decode session timeout expires. The trigger signal needs to be negated before the RT230H is able to monitor ambient illumination again.

0302010
Sense Mode

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. If the timeout expires or the barcode is decoded, the RT230H goes back to monitoring ambient illumination. It is programmable in 1ms increments from 0ms to 3,600,000ms. The default setting is 3,000ms. To learn how to program this parameter, see **Appendix 5**.

0313000
Decode Session Timeout

Image Stabilization Timeout

The image stabilization timeout is programmable in 1ms increments from 0ms to 1,600ms. The default setting is 500ms. To learn how to program this parameter, see **Appendix 5**.



0313120

0006000
** Exit Setup



0006010
Enter Setup

Image Stabilization Timeout

Continue after Good Read

Continue after Good Read: The RT230H starts next decode session after good read.

Pause after Good Read: The RT230H starts another round of illumination monitoring and image stabilization after good read.



0313130

**** Pause after Good Read**



0313131

Continue after Good Read

Timeout between Decodes (Same Barcode)

Timeout between Decodes (Same Barcode) can avoid undesired rereading of same barcode in a given period of time.

To enable/disable the Timeout between Decodes (Same Barcode), scan the appropriate barcode below.

Enable Timeout between Decodes: Do not allow the RT230H to re-read same barcode before the timeout between decodes (same barcode) expires.

Disable Timeout between Decodes: Allow the RT230H to re-read same barcode.



0313020

**** Disable Timeout between Decodes**



0313030

Enable Timeout between Decodes



0006000
**** Exit Setup**



0006010
Enter Setup

The following parameter sets the timeout between decodes for same barcode. It is programmable in 1ms increments from 0ms to 65,535ms. The default setting is 1,500ms.

To learn how to program this parameter, see **Appendix 5**.



0313010

Timeout between Decodes (Same Barcode)

Sensitivity

Sensitivity specifies the degree of acuteness of the RT230H's response to changes in ambient illumination. The higher the sensitivity, the lower requirement in illumination change to trigger the RT230H. You can select an appropriate degree of sensitivity that fits the ambient environment.



0312010

Medium Sensitivity



0312000

Low Sensitivity



0312020

High Sensitivity



0312030

Enhanced Sensitivity



0006000
** Exit Setup



0006010

Enter Setup

If the above four options fail to meet your needs, you may program the threshold value of illumination change.

Illumination changes that reaches or surpasses the predefined threshold value will cause the RT230H to start a decode session. The lower the threshold value, the greater the sensitivity of the RT230H. The default threshold value is 2.

To learn how to program this parameter, see **Appendix 5**.



0312040

Threshold Value of Illumination Change (1-20)

0006000

**** Exit Setup**



0006010
Enter Setup

Continuous Mode

This mode enables the RT230H to scan/capture, decode and transmit over and over again.

When the RT230H is operating in Continuous Mode, barcode reading can be suspended/resumed through the trigger button. Press the trigger button to stop continuous scanning, press again to resume barcode reading.



0302020
Continuous Mode

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. It is programmable in 1ms increments from 0ms to 3,600,000ms. The default setting is 3,000ms. To learn how to program this parameter, see **Appendix 5**.



0313000
Decode Session Timeout

Timeout between Decodes

This parameter sets the timeout between decode sessions. When a decode session ends, next session will not happen until the timeout between decodes expires. It is programmable in 1ms increments from 0ms to 65,535ms. The default setting is 1,000ms. To learn how to program this parameter, see **Appendix 5**.



0313040
Timeout between Decodes



0006000
** Exit Setup



0006010
Enter Setup

Cellphone Read Mode



0313140

****Disable Cellphone Read Mode**



0313142

Enable Cellphone Read Mode



0006000
**** Exit Setup**



0006010
Enter Setup

Chapter 4 Scanning Preferences

Introduction

This chapter contains information as to how to adapt your RT230H to various applications with preference setting. For instance, to narrow the field of view of the RT230H to make sure it reads only those barcodes intended by the user.

Decode Area

Whole Area Decoding

When this option is enabled, the RT230H attempts to decode barcode(s) within its field of view, from the center to the periphery, and transmits the barcode that has been first decoded.



0322000
**** Whole Area Decoding**

Central Area Decoding

The RT230H attempts to decode barcode(s) within a specified central area and transmits the barcode that has been first decoded. This option allows the RT230H to narrow its field of view to make sure it reads only those barcodes intended by the user. For instance, if multiple barcodes are placed closely together, central area decoding in conjunction with appropriate pre-defined central area will insure that only the desired barcode is read.



0322010
Central Area Decoding



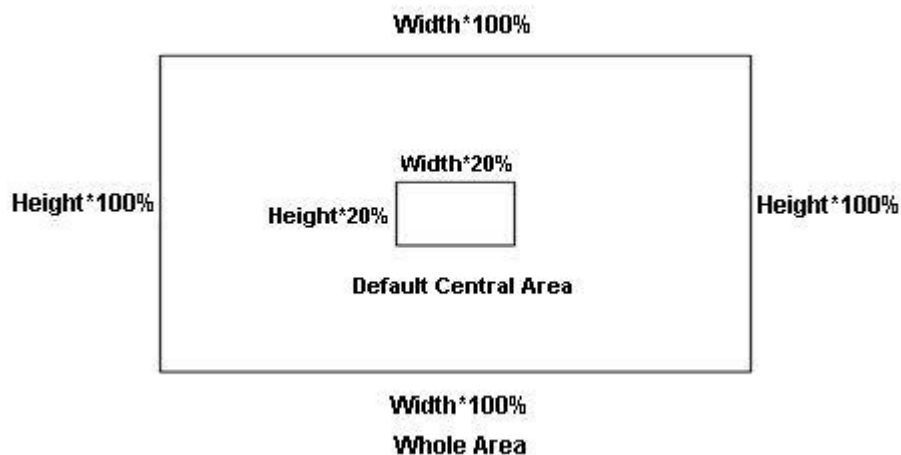
0006000
**** Exit Setup**



0006010
Enter Setup

Specify Central Area

The default central area is a (Width*20%) by (Height*20%) area in the center of the RT230H's field of view, as shown in the figure below. You can define the central area by scanning the **Specify Central Area** barcode and numeric barcode(s) corresponding to a desired percentage (1-100). If Central Area Decoding is enabled by scanning the **Central Area Decoding** barcode, the RT230H only reads barcodes that intersect the predefined central area.



To learn how to program this parameter, see the “**Appendix 5: Parameter Programming Examples**”.



0322020
Specify Central Area



0006000
** Exit Setup



0006010
Enter Setup

Chapter 5 Illumination & Aiming

Illumination

A couple of illumination options are provided to improve the lighting conditions during every image capture:

Normal: Illumination LEDs are turned on during image capture.

Always ON: Illumination LEDs keep ON after the RT230H is powered on.

OFF: Illumination LEDs are OFF all the time.



0200000

**** Normal**



0200020

OFF



0200010

Always ON



0006000

**** Exit Setup**



0006010
Enter Setup

Aiming

When scanning/capturing image, the RT230H projects an aiming pattern which allows positioning the target barcode within its field of view and thus makes decoding easier.

Normal: The RT230H projects an aiming pattern only during barcode scanning/capture.

Always ON: Aiming pattern is constantly ON after the RT230H is powered on.

OFF: Aiming pattern is OFF all the time.



0201000

**** Normal**



0201020

OFF



0201010

Always ON



0006000
**** Exit Setup**



0006010
Enter Setup

Chapter 6 Beep & LED Notifications

Startup Beep

If startup beep is enabled, the RT230H will beep after being turned on.



0204001

**** Enable Startup Beep**



0204000

Disable Startup Beep



0006000

**** Exit Setup**



0006010
Enter Setup

Good Read Beep for Non-programming Barcode

The RT230H can provide a PWM output to an external driver circuit to drive a beeper after decoding a non-programming barcode. Scan the appropriate barcode below to enable or disable the emission of good read beep. Beep type (frequency) and volume are also user programmable.



0203010

**** Good Read Beep On for Non-programming Barcode**



0203000

Good Read Beep Off for Non-programming Barcode

Beep Type



0203020

Type 1



0203022

**** Type 3**



0203021

Type 2



0006000
**** Exit Setup**



0006010
Enter Setup

Beep Volume



0203030

**** Loud**



0203032

Low



0203031

Medium

Beep on Unknown Character

Due to the differences in keyboard layouts, some characters contained in barcode data may be unavailable on the selected keyboard (USB HID-KBW). As a result, the RT230H fails to transmit the unknown characters.

Scan the appropriate barcode below to enable or disable the emission of beep when an unknown character is detected.



1103031

Beep on Unknown Character



1103030

**** Do Not Beep on Unknown Character**



0006000
**** Exit Setup**



0006010
Enter Setup

Good Read Beep for Programming Barcode



0203041

**** Good Read Beep On for Programming Barcode**



0203040

Good Read Beep Off for Programming Barcode

Good Read LED



0206011

**** Good Read LED ON**



0206010

Good Read LED OFF



0006000
**** Exit Setup**

0006010
Enter Setup

Transmit NGR Message

Scan a barcode below to select whether or not to transmit a user-defined NGR (Not Good Read) message when a barcode is not decoded.



0320010

Transmit NGR Message

0320000

**** Do Not Transmit NGR Message**

Edit NGR Message

To edit an NGR message, scan the **Edit NGR Message** barcode and the numeric barcodes (see Appendix 6: Digit Barcodes (numeric barcodes)) corresponding to the ASCII values (decimal) of desired characters and then scan the **Save** barcode (see Appendix 7: Save/Cancel Barcodes).

An NGR message can contain 0-7 characters (ASCII value of character: 0-255).



0320020

Edit NGR Message0006000
**** Exit Setup**



0006010
Enter Setup

Chapter 7 Data Formatting

In many applications, barcode data needs to be edited and distinguished from one another.

Usually AIM ID and Code ID can be used as identifiers, but in some special cases customized prefix and terminating character suffix like Carriage Return or Line Feed can also be the alternatives.

Data formatting may include:

- ❖ Append AIM ID/Code ID/custom prefix before the decoded data
- ❖ Append custom suffix after the decoded data
- ❖ Append terminating character to the end of the data

The following formats can be used when editing barcode data:

- ❖ [Code ID] + [Custom Prefix] + [AIM ID] + [DATA] + [Custom Suffix] + [Terminating Character]
- ❖ [Custom Prefix] + [Code ID] + [AIM ID] + [DATA] + [Custom Suffix] + [Terminating Character]



0006000
** Exit Setup



0006010
Enter Setup

General Settings

Enable/Disable All Prefix/Suffix

Disable All Prefix/Suffix: Transmit barcode data with no prefix/suffix.

Enable All Prefix/Suffix: Allow user to append Code ID prefix, AIM ID prefix, custom prefix/suffix and terminating character to the barcode data before the transmission.



0311010

Enable All Prefix/Suffix



0311000

Disable All Prefix/Suffix

Prefix Sequences



0317010

Code ID+Custom Prefix+AIM ID



0317040

**** Custom Prefix+Code ID+AIM ID**



0006000

**** Exit Setup**



0006010
Enter Setup

Custom Prefix

Enable/Disable Custom Prefix

If custom prefix is enabled, you are allowed to append to the data a user-defined prefix that cannot exceed 10 characters.



0305010

Enable Custom Prefix



0305000

** Disable Custom Prefix

Set Custom Prefix

To set a custom prefix, scan the **Set Custom Prefix** barcode and the numeric barcodes representing the hexadecimal values of a desired prefix and then scan the **Save** barcode. Refer to **Appendix 4: ASCII Table** for hexadecimal values of characters.

Note: A custom prefix cannot exceed 11 characters.



0300000

Set Custom Prefix

Example: Set the custom prefix to “CODE”

1. Check the hex values of “CODE” in the ASCII Table. (“CODE”: 43, 4F, 44, 45)
2. Scan the **Enter Setup** barcode.
3. Scan the **Set Custom Prefix** barcode.
4. Scan the numeric barcodes “4”, “3”, “4”, “F”, “4”, “4”, “4” and “5”.
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode.



0006000
** Exit Setup



0006010
Enter Setup

AIM ID Prefix

AIM (Automatic Identification Manufacturers) IDs and ISO/IEC 15424 standards define symbology identifiers and data carrier identifiers. (For the details, see the “**Appendix 2: AIM ID Table**” section). If AIM ID prefix is enabled, the RT230H will add the symbology identifier before the scanned data after decoding.



0308030
Enable AIM ID Prefix



0308000
** Disable AIM ID Prefix

Code ID Prefix

Code ID can also be used to identify barcode type. Unlike AIM ID, Code ID is user programmable. Code ID can only consist of one or two English letters.



0307010
Enable Code ID Prefix



0307000
** Disable Code ID Prefix

Restore All Default Code IDs

For the information of default Code IDs, see the “**Appendix 3: Code ID Table**” section.



0307020
Restore All Default Code IDs



0006000
** Exit Setup



0006010
Enter Setup

Modify Code ID

Code ID of each symbology can be programmed separately. See the following example to learn how to program a Code ID.

Example: Set the Code ID of PDF417 to “p”

1. Check the hex value of “p” in the ASCII Table. (“p”: 70)
2. Scan the **Enter Setup** barcode.
3. Scan the **Modify PDF417 Code ID** barcode.
4. Scan the numeric barcodes “7” and “0”.
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode.



0005000
Modify PDF417 Code ID



0005030
Modify Data Matrix Code ID



0005010
Modify QR Code Code ID



0005070
Modify Chinese Sensible Code ID



0004020
Modify Code 128 Code ID



0004030
Modify GS1-128 Code ID



0006000
**** Exit Setup**



0006010
Enter Setup



0004210

Modify AIM-128 Code ID



0004040

Modify EAN-8 Code ID



0004050

Modify EAN-13 Code ID



0004060

Modify UPC-E Code ID



0004070

Modify UPC-A Code ID



0004240

Modify ISBN Code ID



0004230

Modify ISSN Code ID



0004130

Modify Code 39 Code ID



0004170

Modify Code 93 Code ID



0004080

Modify Interleaved 2 of 5 Code ID



0006000
**** Exit Setup**



0006010
Enter Setup



0004090
Modify ITF-14 Code ID



0004100
Modify ITF-6 Code ID



0004150
Modify Codabar Code ID



0004250
Modify Industrial 25 Code ID



0004260
Modify Standard 25 Code ID



0004110
Modify Matrix 25 Code ID



0004220
Modify COOP 25 Code ID



0004280
Modify Code 11 Code ID



0004270
Modify Plessey Code ID



0004290
Modify MSI/Plessey Code ID



0004310
Modify GS1 Databar Code ID



0006000
**** Exit Setup**



0006010
Enter Setup

Custom Suffix

Enable/Disable Custom Suffix

If custom suffix is enabled, you are allowed to append to the data a user-defined suffix that cannot exceed 10 characters.



0306010
Enable Custom Suffix



0306000
** Disable Custom Suffix

Set Custom Suffix

To set a custom suffix, scan the **Set Custom Suffix** barcode and the numeric barcodes representing the hexadecimal values of a desired suffix and then scan the **Save** barcode. Refer to **Appendix 4: ASCII Table** for hexadecimal values of characters.

Note: A custom suffix cannot exceed 11 characters.



0301000
Set Custom Suffix

Example: Set the custom suffix to “CODE”

1. Check the hex values of “CODE” in the ASCII Table. (“CODE”: 43, 4F, 44, 45)
2. Scan the **Enter Setup** barcode.
3. Scan the **Set Custom Suffix** barcode.
4. Scan the numeric barcodes “4”, “3”, “4”, “F”, “4”, “4”, “4” and “5”.
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode.



0006000
** Exit Setup



0006010
Enter Setup

Terminating Character Suffix

A terminating character can be used to mark the end of data, which means nothing can be added after it.

A terminating character suffix can contain one or two characters.

Enable/Disable Terminating Character Suffix

To enable/disable terminating character suffix, scan the appropriate barcode below.



0309010

**** Enable Terminating Character Suffix**



0309000

Disable Terminating Character Suffix



0006000
**** Exit Setup**



Set Terminating Character Suffix

The RT230H provides a shortcut for setting the terminating character suffix to CR (0x0D) or CRLF (0x0D,0x0A) and enabling it by scanning the appropriate barcode below.



**** Terminating Character CR (0x0D)**



Terminating Character CRLF (0x0D,0x0A)

To set a terminating character suffix, scan the **Set Terminating Character Suffix** barcode and the numeric barcodes representing the hexadecimal value of a desired terminating character and then scan the **Save** barcode. Refer to **Appendix 4: ASCII Table** for hexadecimal values of terminating characters.

Note: A terminating character suffix cannot exceed 7 characters.



Set Terminating Character Suffix

Example: Set the terminating character suffix to 0x0D

1. Scan the **Enter Setup** barcode.
2. Scan the **Set Terminating Character Suffix** barcode.
3. Scan the numeric barcodes "0" and "D".
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode.





0006010
Enter Setup

Chapter 8 Symbologies

General Settings

Enable/Disable All Symbologies

If the **Disable All Symbologies** feature is enabled, the RT230H will not be able to read any non-programming barcodes except the programming barcodes.



0001020
Enable All Symbologies



0001010
Disable All Symbologies

Enable/Disable 1D Symbologies

If the **Disable 1D Symbologies** feature is enabled, the RT230H will not be able to read any 1D barcodes.



0001040
Enable 1D Symbologies



0001030
Disable 1D Symbologies

Enable/Disable 2D Symbologies

If the **Disable 2D Symbologies** feature is enabled, the RT230H will not be able to read any 2D barcodes.



0001060
Enable 2D Symbologies



0001050
Disable 2D Symbologies



0006000
** Exit Setup



0006010
Enter Setup

Video Reverse

Regular barcode: Dark image on a bright background.

Inverse barcode: Bright image on a dark background.

The examples of regular barcode and inverse barcode are shown below.



Regular Barcode



Inverse Barcode

Video Reverse allows the RT230H to read barcodes that are inverted.

Video Reverse ON: Read both regular barcodes and inverse barcodes.

Video Reverse OFF: Read regular barcodes only.

The RT230H shows a slight decrease in scanning speed when Video Reverse is ON.



0001021

Video Reverse ON



0001011

**** Video Reverse OFF**



0006000
** Exit Setup



0006010
Enter Setup

1D Symbologies

Code 128

Restore Factory Defaults



0400000

Restore the Factory Defaults of Code 128

Enable/Disable Code 128



0400020

**** Enable Code 128**



0400010

Disable Code 128

Set Length Range for Code 128



0400030

Set the Minimum Length



0400040

Set the Maximum Length



0006000
**** Exit Setup**



0006010
Enter Setup

GS1-128 (UCC/EAN-128)

Restore Factory Defaults



0412000

Restore the Factory Defaults of GS1-128

Enable/Disable GS1-128



0412020

** Enable GS1-128



0412010

Disable GS1-128

Set Length Range for GS1-128



0412030

Set the Minimum Length



0412040

Set the Maximum Length



0006000
** Exit Setup



0006010
Enter Setup

AIM-128

Restore Factory Defaults



0423000

Restore the Factory Defaults of AIM-128

Enable/Disable AIM-128



0423020

**** Enable AIM-128**



0423010

Disable AIM-128

Set Length Range for AIM-128



0423030

Set the Minimum Length



0423040

Set the Maximum Length



0006000
**** Exit Setup**



0006010
Enter Setup

EAN-8

Restore Factory Defaults



0401000

Restore the Factory Defaults of EAN-8

Enable/Disable EAN-8



0401020

**** Enable EAN-8**



0401010

Disable EAN-8



0006000
**** Exit Setup**



0006010
Enter Setup

Transmit Check Digit

EAN-8 is 8 digits in length with the last one as its check digit used to verify the integrity of the data.



0401040

** Transmit EAN-8 Check Digit



0401030

Do Not Transmit EAN-8 Check Digit

Add-On Code

An EAN-8 barcode can be augmented with a two-digit or five-digit add-on code to form a new one. In the examples below, the part surrounded by blue dotted line is an EAN-8 barcode while the part circled by red dotted line is add-on code.



1234 567



1234 567

89012



0401060

Enable 2-Digit Add-On Code



0401050

** Disable 2-Digit Add-On Code



0401080

Enable 5-Digit Add-On Code



0401070

** Disable 5-Digit Add-On Code

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The RT230H decodes a mix of EAN-8 barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The RT230H decodes EAN-8 and ignores the add-on code when presented with an EAN-8 plus add-on barcode. It can also decode EAN-8 barcodes without add-on codes.



0006000
** Exit Setup



0006010
Enter Setup

Add-On Code Required

When **EAN-8 Add-On Code Required** is selected, the RT230H will only read EAN-8 barcodes that contain add-on codes.



0401110

EAN-8 Add-On Code Required



0401120

**** EAN-8 Add-On Code Not Required**

EAN-8 Extension

Disable EAN-8 Zero Extend: Transmit EAN-8 barcodes as is.

Enable EAN-8 Zero Extend: Add five leading zeros to decoded EAN-8 barcodes to extend to 13 digits.



0401100

Enable EAN-8 Zero Extend



0401090

**** Disable EAN-8 Zero Extend**



0006000
** Exit Setup



0006010
Enter Setup

EAN-13

Restore Factory Defaults



0402000

Restore the Factory Defaults of EAN-13

Enable/Disable EAN-13



0402020

**** Enable EAN-13**



0402010

Disable EAN-13

Transmit Check Digit



0402040

**** Transmit EAN-13 Check Digit**



0402030

Do Not Transmit EAN-13 Check Digit



0006000
**** Exit Setup**



0006010
Enter Setup

Add-On Code

An EAN-13 barcode can be augmented with a two-digit or five-digit add-on code to form a new one.



0402060

Enable 2-Digit Add-On Code



0402050

**** Disable 2-Digit Add-On Code**



0402080

Enable 5-Digit Add-On Code



0402070

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The RT230H decodes a mix of EAN-13 barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The RT230H decodes EAN-13 and ignores the add-on code when presented with an EAN-13 plus add-on barcode. It can also decode EAN-13 barcodes without add-on codes.

Add-On Code Required

When **EAN-13 Add-On Code Required** is selected, the RT230H will only read EAN-13 barcodes that contain add-on codes.



0402090

EAN-13 Add-On Code Required



0402100

**** EAN-13 Add-On Code Not Required**



0006000

**** Exit Setup**



0006010
Enter Setup

ISSN

Restore Factory Defaults



0421000

Restore the Factory Defaults of ISSN

Enable/Disable ISSN



0421020

Enable ISSN



0421010

**** Disable ISSN**



0006000
**** Exit Setup**



0006010
Enter Setup

Add-On Code

An ISSN barcode can be augmented with a two-digit or five-digit add-on code to form a new one.



0421030

Enable 2-Digit Add-On Code



0421040

**** Disable 2-Digit Add-On Code**



0421050

Enable 5-Digit Add-On Code



0421060

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The RT230H decodes a mix of ISSN barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The RT230H decodes ISSN and ignores the add-on code when presented with an ISSN plus add-on barcode. It can also decode ISSN barcodes without add-on codes.

Add-On Code Required

When **ISSN Add-On Code Required** is selected, the RT230H will only read ISSN barcodes that contain add-on codes.



0421070

ISSN Add-On Code Required



0421080

**** ISSN Add-On Code Not Required**



0006000
** Exit Setup



0006010
Enter Setup

ISBN

Restore Factory Default



0416000

Restore the Factory Defaults of ISBN

Enable/Disable ISBN



0416020

**** Enable ISBN**



0416010

Disable ISBN

Set ISBN Format



0416030

**** ISBN-13**



0416040

ISBN-10



0006000
**** Exit Setup**



0006010
Enter Setup

Add-On Code

An ISBN barcode can be augmented with a two-digit or five-digit add-on code to form a new one.



0416050

Enable 2-Digit Add-On Code



0416060

**** Disable 2-Digit Add-On Code**



0416070

Enable 5-Digit Add-On Code



0416080

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The RT230H decodes a mix of ISBN barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The RT230H decodes ISBN and ignores the add-on code when presented with an ISBN plus add-on barcode. It can also decode ISBN barcodes without add-on codes.

Add-On Code Required

When **ISBN Add-On Code Required** is selected, the RT230H will only read ISBN barcodes that contain add-on codes.



0416090

ISBN Add-On Code Required



0416100

**** ISBN Add-On Code Not Required**



0006000

**** Exit Setup**



0006010
Enter Setup

UPC-E

Restore Factory Defaults



0403000

Restore the Factory Defaults of UPC-E

Enable/Disable UPC-E



0403020

**** Enable UPC-E**



0403010

Disable UPC-E

Transmit Check Digit



0403040

**** Transmit UPC-E Check Digit**



0403030

Do Not Transmit UPC-E Check Digit



0006000
**** Exit Setup**



0006010
Enter Setup

Add-On Code

A UPC-E barcode can be augmented with a two-digit or five-digit add-on code to form a new one.



0403060

Enable 2-Digit Add-On Code



0403050

**** Disable 2-Digit Add-On Code**



0403080

Enable 5-Digit Add-On Code



0403070

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The RT230H decodes a mix of UPC-E barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The RT230H decodes UPC-E and ignores the add-on code when presented with a UPC-E plus add-on barcode. It can also decode UPC-E barcodes without add-on codes.

Add-On Code Required

When **UPC-E Add-On Code Required** is selected, the RT230H will only read UPC-E barcodes that contain add-on codes.



0403130

UPC-E Add-On Code Required



0403140

**** UPC-E Add-On Code Not Required**



0006000

**** Exit Setup**



0006010
Enter Setup

Transmit System Character “0”

The first character of UPC-E barcode is the system character “0”.



0403100
**** Transmit System Character “0”**



0403090
Do Not Transmit System Character “0”

UPC-E Extension

Disable UPC-E Extend: Transmit UPC-E barcodes as is.

Enable UPC-E Extend: Extend UPC-E barcodes to make them compatible in length to UPC-A.



0403120
Enable UPC-E Extend



0403110
**** Disable UPC-E Extend**



0006000
**** Exit Setup**



0006010
Enter Setup

UPC-A

Restore Factory Defaults



0404000

Restore the Factory Defaults of UPC-A

Enable/Disable UPC-A



0404020

**** Enable UPC-A**



0404010

Disable UPC-A

Transmit Check Digit



0404040

**** Transmit UPC-A Check Digit**



0404030

Do Not Transmit UPC-A Check Digit



0006000
**** Exit Setup**



0006010
Enter Setup

Add-On Code

A UPC-A barcode can be augmented with a two-digit or five-digit add-on code to form a new one.



0404060

Enable 2-Digit Add-On Code



0404050

**** Disable 2-Digit Add-On Code**



0404080

Enable 5-Digit Add-On Code



0404070

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The RT230H decodes a mix of UPC-A barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The RT230H decodes UPC-A and ignores the add-on code when presented with a UPC-A plus add-on barcode. It can also decode UPC-A barcodes without add-on codes.

Add-On Code Required

When **UPC-A Add-On Code Required** is selected, the RT230H will only read UPC-A barcodes that contain add-on codes.



0404110

UPC-A Add-On Code Required



0404120

**** UPC-A Add-On Code Not Required**



0006000
**** Exit Setup**



0006010
Enter Setup

Transmit Preamble Character “0”



0404100

Transmit Preamble Character “0”



0404090

**** Do not Transmit Preamble Character “0”**

Note: The preamble character “0” usually does not appear in printed UPC-A barcodes.



0006000
**** Exit Setup**



0006010
Enter Setup

Interleaved 2 of 5

Restore Factory Defaults



0405000

Restore the Factory Defaults of Interleaved 2 of 5

Enable/Disable Interleaved 2 of 5



0405020

**** Enable Interleaved 2 of 5**



0405010

Disable Interleaved 2 of 5

Set Length Range for Interleaved 2 of 5



0405030

Set the Minimum Length



0405040

Set the Maximum Length



0006000
**** Exit Setup**

0006010
Enter Setup

Check Digit Verification

A check digit is optional for Interleaved 2 of 5 and can be added as the last digit. It is a calculated value used to verify the integrity of the data.

Disable: The RT230H transmits Interleaved 2 of 5 barcodes as is.

Do Not Transmit Check Digit After Verification: The RT230H checks the integrity of all Interleaved 2 of 5 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted except the last digit, whereas those failing it will not be transmitted.

Transmit Check Digit After Verification: The RT230H checks the integrity of all Interleaved 2 of 5 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted, whereas those failing it will not be transmitted.



0405050

**** Disable**

0405060

Do Not Transmit Check Digit After Verification

0405070

Transmit Check Digit After Verification

0006000

**** Exit Setup**



0006010
Enter Setup

ITF-14

ITF-14 is a special kind of Interleaved 2 of 5 with a length of 14 characters and the last character as the check digit.



0405260

Restore the Factory Defaults of ITF-14



0405080

Disable ITF-14



0405090

**** Enable ITF-14 But Do Not Transmit Check Digit**



0405100

Enable ITF-14 and Transmit Check Digit

Note: It is advisable not to enable ITF-14 and Interleaved 2 of 5 at the same time.



0006000
**** Exit Setup**



0006010
Enter Setup

ITF-6

ITF-6 is a special kind of Interleaved 2 of 5 with a length of 6 characters and the last character as the check digit.



0405270

Restore the Factory Defaults of ITF-6



0405110

**** Disable ITF-6**



0405120

Enable ITF-6 But Do Not Transmit Check Digit



0405130

Enable ITF-6 and Transmit Check Digit

Note: It is advisable not to enable ITF-6 and Interleaved 2 of 5 at the same time.



0006000
**** Exit Setup**



0006010
Enter Setup

Matrix 2 of 5

Restore Factory Defaults



0406000

Restore the Factory Defaults of Matrix 2 of 5

Enable/Disable Matrix 2 of 5



0406020

Enable Matrix 2 of 5



0406010

**** Disable Matrix 2 of 5**

Set Length Range for Matrix 2 of 5



0406030

Set the Minimum Length



0406040

Set the Maximum Length



0006000
**** Exit Setup**



0006010
Enter Setup

Check Digit Verification



0406050

Disable



0406060

**** Do Not Transmit Check Digit After Verification**



0406070

Transmit Check Digit After Verification



0006000
**** Exit Setup**



0006010
Enter Setup

Industrial 2 of 5

Restore Factory Defaults



0417000

Restore the Factory Defaults of Industrial 2 of 5

Enable/Disable Industrial 2 of 5



0417020

**** Enable Industrial 2 of 5**



0417010

Disable Industrial 2 of 5

Set Length Range for Industrial 2 of 5



0417030

Set the Minimum Length



0417040

Set the Maximum Length



0006000
**** Exit Setup**



0006010
Enter Setup

Check Digit Verification



0417050

**** Disable**



0417070

Transmit Check Digit After Verification



0417060

Do Not Transmit Check Digit After Verification



0006000
**** Exit Setup**



0006010
Enter Setup

Standard 2 of 5 (IATA 2 of 5)

Restore Factory Defaults



0418000

Restore the Factory Defaults of Standard 25

Enable/Disable Standard 25



0418020

**** Enable Standard 25**



0418010

Disable Standard 25

Set Length Range for Standard 25



0418030

Set the Minimum Length



0418040

Set the Maximum Length



0006000
**** Exit Setup**



0006010
Enter Setup

Check Digit Verification



0418050

**** Disable**



0418070

Transmit Check Digit After Verification



0418060

Do Not Transmit Check Digit After Verification



0006000
**** Exit Setup**



0006010
Enter Setup

Code 39

Restore Factory Defaults



0408000

Restore the Factory Defaults of Code 39

Enable/Disable Code 39



0408020

**** Enable Code 39**



0408010

Disable Code 39

Transmit Start/Stop Character



0408090

Transmit Start/Stop Character



0408080

**** Do not Transmit Start/Stop Character**



0006000
**** Exit Setup**



0006010
Enter Setup

Set Length Range for Code 39



0408030

Set the Minimum Length



0408040

Set the Maximum Length

Check Digit Verification



0408050

**** Disable**



0408070

Transmit Check Digit After Verification



0408060

Do Not Transmit Check Digit After Verification

Enable/Disable Code 39 Full ASCII

The RT230H can be configured to identify all ASCII characters by scanning the appropriate barcode below.



0408110

**** Enable Code 39 Full ASCII**



0408100

Disable Code 39 Full ASCII



0006000
**** Exit Setup**



0006010
Enter Setup

Codabar

Restore Factory Defaults



0409000

Restore the Factory Defaults of Codabar

Enable/Disable Codabar



0409020

**** Enable Codabar**



0409010

Disable Codabar

Set Length Range for Codabar



0409030

Set the Minimum Length



0409040

Set the Maximum Length



0006000
**** Exit Setup**



0006010
Enter Setup

Check Digit Verification



0409050

**** Disable**



0409070

Transmit Check Digit After Verification



0409060

Do Not Transmit Check Digit After Verification

Transmit Start/Stop Character



0409090

Transmit Start/Stop Character



0409080

**** Do not Transmit Start/Stop Character**



0006000
**** Exit Setup**



0006010
Enter Setup

Start/Stop Character Format

You can choose your desired start/stop character format by scanning the appropriate barcode below.



0409100

**** ABCD/ABCD as the Start/Stop Character**



0409110

ABCD/TN*E as the Start/Stop Character



0409120

Start/Stop Character in Uppercase



0409130

Start/Stop Character in Lowercase



0006000
**** Exit Setup**



0006010
Enter Setup

Code 93

Restore Factory Defaults



0410000

Restore the Factory Defaults of Code 93

Enable/Disable Code 93



0410020

** Enable Code 93



0410010

Disable Code 93

Set Length Range for Code 93



0410030

Set the Minimum Length



0410040

Set the Maximum Length



0006000
** Exit Setup



0006010
Enter Setup

Check Digit Verification



0410050
Disable



0410060

**** Do Not Transmit Check Digit After Verification**



0410070

Transmit Check Digit After Verification



0006000
**** Exit Setup**



0006010
Enter Setup

GS1-Databar (RSS)

Restore Factory Defaults



0413000

Restore the Factory Defaults of GS1-Databar

Enable/Disable GS1 Databar



0413020

**** Enable GS1-DataBar**



0413010

Disable GS1-DataBar

Transmit Application Identifier "01"



0413060

**** Transmit Application Identifier "01"**



0413050

Do Not Transmit Application Identifier "01"



0006000
**** Exit Setup**



0006010
Enter Setup

Code 11

Restore Factory Defaults



0415000

Restore the Factory Defaults of Code 11

Enable/Disable Code 11



0415020

**** Enable Code 11**



0415010

Disable Code 11

Set Length Range for Code 11



0415030

Set the Minimum Length



0415040

Set the Maximum Length



0006000
**** Exit Setup**



0006010
Enter Setup

Transmit Check Digit



0415120
Transmit Check Digit



0415110
** Do Not Transmit Check Digit

Check Digit Verification



0415050
Disable



0415060
** One Check Digit, MOD11



0415070
Two Check Digits, MOD11/MOD11



0415080
Two Check Digits, MOD11/MOD9



0415090
One Check Digit, MOD11 (Len<=10)
Two Check Digits, MOD11/MOD11 (Len>10)



0415100
One Check Digit, MOD11 (Len<=10)
Two Check Digits, MOD11/MOD9 (Len>10)



0006000
** Exit Setup



0006010
Enter Setup

Plessey

Restore Factory Defaults



0419000

Restore the Factory Defaults of Plessey

Enable/Disable Plessey



0419020

**** Enable Plessey**



0419010

Disable Plessey

Set Length Range for Plessey



0419030

Set the Minimum Length



0419040

Set the Maximum Length



0006000
**** Exit Setup**



0006010
Enter Setup

Check Digit Verification



0419050

Disable



0419060

**** Do Not Transmit Check Digit After Verification**



0419070

Transmit Check Digit After Verification



0006000
**** Exit Setup**



0006010
Enter Setup

MSI-Plessey

Restore Factory Defaults



0420000

Restore the Factory Defaults of MSI-Plessey

Enable/Disable MSI-Plessey



0420020

**** Enable MSI-Plessey**



0420010

Disable MSI-Plessey

Set Length Range for MSI-Plessey



0420030

Set the Minimum Length



0420040

Set the Maximum Length



0006000
**** Exit Setup**



0006010
Enter Setup

Transmit Check Digit



0420100

Transmit Check Digit



0420090

**** Do Not Transmit Check Digit**

Check Digit Verification



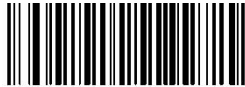
0420050

Disable



0420060

**** One Check Digit, MOD10**



0420070

Two Check Digits, MOD10/MOD10



0420080

Two Check Digits, MOD10/MOD11



0006000
**** Exit Setup**



0006010
Enter Setup

2D Symbologies

PDF 417

Restore Factory Defaults



0501000
Restore the Factory Defaults of PDF 417

Enable/Disable PDF 417



0501020
**** Enable PDF 417**



0501010
Disable PDF 417

Set Length Range for PDF 417



0501030
Set the Minimum Length



0501040
Set the Maximum Length



0006000
**** Exit Setup**



0006010
Enter Setup

PDF 417 Twin Code

PDF417 twin code is 2 PDF417 barcodes paralleled vertically or horizontally. Two of them must have the same direction and similar specifications and be placed closely together.

There are 3 options for reading PDF417 twin codes:

Single PDF417 Only: Read either PDF417 code.

Twin PDF417 Only: Read both PDF417 codes.

Both Single & Twin: Read both PDF417 codes. If successful, transmit as twin PDF417 only. Otherwise, try single PDF417 only.



0501070

**** Single PDF417 Only**



0501080

Twin PDF417 Only



0501090

Both Single & Twin

Transmission order of twin code

Order 1: Transmit the one containing more information first.

Order 2: Transmit the one containing less information first.



0501110

**** Order 1**



0501100

Order 2



0006000

**** Exit Setup**



0006010
Enter Setup

QR Code

Restore Factory Defaults



0502000

Restore the Factory Defaults of QR Code

Enable/Disable QR Code



0502020

**** Enable QR Code**



0502010

Disable QR Code

Set Length Range for QR Code



0502030

Set the Minimum Length



0502040

Set the Maximum Length

Micro QR



0502110

**** Enable Micro QR**



0502100

Disable Micro QR



0006000

**** Exit Setup**



0006010
Enter Setup

QR Twin Code

QR twin code is 2 QR barcodes paralleled vertically or horizontally. Two of them must have the same direction and similar specifications and be placed closely together.

There are 3 options for reading QR twin codes:

Single QR Only: Read either QR code.

Twin QR Only: Read both QR codes.

Both Single & Twin: Read both QR codes. If successful, transmit as twin QR only. Otherwise, try single QR only.



0502070

**** Single QR Only**



0502080

Twin QR Only



0502090

Both Single & Twin



0006000

**** Exit Setup**



0006010
Enter Setup

Transmission order of twin code

Order 1: Transmit the one containing more information first.

Order 2: Transmit the one containing less information first.

Order 3: If the twin code is paralleled horizontally, transmit the one on the left first; if it is paralleled vertically, transmit the one in the upper position first.



0502140
Order 1



0502130
Order 2



0502120
**** Order 3**



0006000
**** Exit Setup**



0006010
Enter Setup

Data Matrix

Restore Factory Defaults



0504000

Restore the Factory Defaults of Data Matrix

Enable/Disable Data Matrix



0504020

**** Enable Data Matrix**



0504010

Disable Data Matrix

Set Length Range for Data Matrix



0504030

Set the Minimum Length



0504040

Set the Maximum Length



0006000
**** Exit Setup**



0006010
Enter Setup

Rectangular Barcode



0504110

**** Enable Rectangular Barcode**



0504100

Disable Rectangular Barcode

Mirror Image



0504331

**** Decode Mirror Images**



0504330

Do Not Decode Mirror Images



0006000
**** Exit Setup**



0006010
Enter Setup

Data Matrix Twin Code

Data Matrix twin code is 2 Data Matrix barcodes paralleled vertically or horizontally. Two of them must have the same direction and similar specifications and be placed closely together.

There are 3 options for reading Data Matrix twin codes:

Single Data Matrix Only: Read either Data Matrix code.

Twin Data Matrix Only: Read both Data Matrix codes. Transmission order: Data Matrix code on the left (in the upper position) followed by the one on the right (in the lower position).

Both Single & Twin: Read both Data Matrix codes. If successful, transmit as twin Data Matrix only. Otherwise, try single Data Matrix only.



0504070

**** Single Data Matrix Only**



0504080

Twin Data Matrix Only



0504090

Both Single & Twin



0006000

**** Exit Setup**



0006010
Enter Setup

Chinese Sensible Code

Restore Factory Defaults



Restore the Factory Defaults of Chinese Sensible Code

Enable/Disable Chinese Sensible Code



Enable Chinese Sensible Code



** Disable Chinese Sensible Code

Set Length Range for Chinese Sensible Code



Set the Minimum Length



Set the Maximum Length



0006000
**** Exit Setup**



0006010
Enter Setup

Chapter 9 Image Control

Ambient Illumination

Ambient lighting conditions may vary from one operating environment to another, such as fluorescent lit warehouses or sunlit open spaces. Fluorescent lights may flicker when using AC power source in 50-60Hz. Usually indoor illuminance is around 1,000 lux while outdoor illuminance may reach 60,000 lux or even over 100,000 lux.

Two options are provided for ambient illumination settings:

Normal Illuminance: applicable to most indoor/outdoor environments.

High Illuminance: applicable to special environments with super-intense light source.

Change to this settings will not take effect until the RT230H reboots or wakes up from sleep.



0313150

**** Normal Illuminance (0~60000lux)**



0313151

High Illuminance (60000~120000lux)



0006000

**** Exit Setup**



0006010
Enter Setup

Image Flipping

The user may get reversed images when the RT230H is installed in non-standard ways. When it happens, image flipping can be used to right the “wrong”.

The following figures illustrate standard image and three flipped images.

- ✧ Fig.8-1 Standard Image: Image the RT230H should get when it is installed properly and no reflector is used in its optical imaging system.
- ✧ Fig.8-2 Horizontal Flipped Image: It happens when horizontal reflection occurs along the optical path. To get standard images, enable the **Flip Horizontally** option.
- ✧ Fig.8-3 Vertical Flipped Image: It happens when vertical reflection occurs along the optical path. To get standard images, enable the **Flip Vertically** option.
- ✧ Fig.8-4 Horizontal and Vertical Flipped Image: It happens when the RT230H is installed upside down. To get standard images, enable the **Flip Horizontally and Vertically** option.



Fig.8-1 Standard Image



Fig.8-2 Horizontal Flipped Image



Fig.8-3 Vertical Flipped Image



Fig.8-4 Horizontal and Vertical Flipped Image



0006000
** Exit Setup



0006010
Enter Setup

Flip



0202000

**** Do Not Flip**



0202030

Flip Vertically



0202031

Flip Horizontally



0202032

Flip Horizontally and Vertically

Flip Vertically



0202033

Flip Vertically



0202034

Do Not Flip Vertically

Flip Horizontally



0202035

Flip Horizontally



0202036

Do Not Flip Horizontally



0006000

**** Exit Setup**

Chapter 10 Troubleshooting

FAQ

Problem: Some barcodes cannot be read.

Solution:

1. Find out the barcode type and verify that the barcode type is enabled. If the barcode parameters include check digit verification, select the Disable option.
2. If you do not know the barcode type, enable all symbologies.
3. If they are inverse barcodes (bright images on a dark background), enable the Video Reverse feature.

Problem: Incorrect output.

Solution:

1. If this problem happens to all barcodes and additional characters appear before/after barcode data, disable all prefix/suffix.
2. If this problem only happens to some barcodes and matches one of the following situations:
 - a) incomplete barcode data: Enable the check digit verification.
 - b) both the first and last characters are asterisks (*): Disable the transmission of start/stop characters of Code 39.
 - c) "a" transmitted as "+A": Enable Code 39 Full ASCII.

Problem: Barcodes can be read, but cannot be displayed.

Solution: Verify that the serial port parameter (such as baud rate, data bit and stop bit) settings match the host requirements.

Problem: Illumination and aiming beams are OFF.

Solution:

1. Verify that the RT230H is properly powered up.
2. Send “?” to the RT230H. If the RT230H returns a reply of “!”, then send programming commands to turn on illumination and aimer.

Problem: Carriage Return/Line Feed settings.

Solution: See the “**Terminating Character Suffix**” section in Chapter 7.

Appendix

Appendix 1: Factory Defaults Table

Parameter		Factory Default	Remark
Programming Barcode			
Barcode Programming		Disabled	
Programming Barcode Data		Do not send	
Communication Settings			
RS232	Baud Rate	9600	
	Parity Check	None	
	Data Bit	8	
	Stop Bit	1	
	Hardware Flow Control	No flow control	
HID-KBW (optional)	USB Country Keyboard Type	U.S.	
	Convert Case	No conversion	
	Inter-Keystroke Delay	No delay	
	Beep on Unknown Character	Do not beep	
	Emulate ALT + Keypad	Disabled	
	Function Key Mapping	Disabled	
	Emulate Numeric Keypad	Disabled	
Code Page		Windows 1252 (Latin I)	
Scan Mode			
Default Scan Mode		Sense mode	Options: Batch mode, Trigger mode, Sense mode, Continuous mode.
Trigger Mode	Decode Session Timeout	3,000ms	Applicable to a Trigger mode, Sense mode, Continuous mode. 0~3,600,000ms
	Trigger Condition	Electric level	
	Auto Sleep	Enabled	
	Time Period from Idle to Sleep	500ms	0~65,535ms
	Timeout between Decodes (Same Barcode)	Disabled 1,500ms	 0~65,535ms

Parameter		Factory Default	Remark
Sense Mode	Decode Session Timeout	3,000ms	Applicable to Trigger mode, Sense mode, Continuous mode. 0~3,600,000ms
	Image Stabilization Timeout	500ms	0~1,600ms
	Operation after Good Read	Pause after good read	
	Timeout between Decodes (Same Barcode)	Disabled 1,500ms	0~65,535ms
	Threshold Value of Illumination Change	2	1~20
Continuous Mode	Decode Session Timeout	3,000ms	Applicable to Trigger mode, Sense mode, Continuous mode. 0~3,600,000ms
	Timeout between Decodes	1000ms	0~65,535ms
Cellphone Read Mode		Disabled	
Scanning Preferences			
Decode Area		Whole Area Decoding	
Central Area		20%	
Illumination & Aiming			
Illumination		Normal	
Aiming		Normal	
Beep & LED Notifications			
Startup Beep		Enabled	
Good Read Beep for Non-Programming Barcode	Notification	Enabled	
	Beep Type	Type 3	
	Beep Volume	Loud	
Good Read Beep for Programming Barcode		Enabled	
Good Read LED		Enabled	
NGR (Not Good Read) Message		Do not transmit	
		None	

Parameter	Factory Default	Remark
Data Formatting		
Prefix Sequence	Custom Prefix+Code ID+AIM ID	
Custom Prefix	Disabled	
	None	
AIM ID Prefix	Disabled	
Code ID Prefix	Disabled	
Custom Suffix	Disabled	
	None	
Terminating Character Suffix	Enabled	
	0x0D	Carriage Return
Image Control		
Ambient Illumination	Normal illuminance	
Image Flipping	Do not flip	

Parameter	Factory Default	Remark
Symbologies		
Video Reverse	Disabled	Applicable to all symbologies.
Code 128		
Code 128	Enabled	
Maximum Length	127	
Minimum Length	1	
GS1-128 (UCC/EAN-128)		
GS1-128	Enabled	
Maximum Length	127	
Minimum Length	1	
AIM-128		
AIM-128	Enabled	
Maximum Length	127	
Minimum Length	1	
EAN-8		
EAN-8	Enabled	
Check Digit	Transmit	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
Extend to EAN-13	Disabled	
EAN-13		
EAN-13	Enabled	
Check Digit	Transmit	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
ISSN		
ISSN	Disabled	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	

Parameter	Factory Default	Remark
ISBN		
ISBN	Enabled	
ISBN Format	ISBN-13	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
UPC-E		
UPC-E	Enabled	
Check Digit	Transmit	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
Extend to UPC-A	Disabled	
System Character "0"	Transmit	
UPC-A		
UPC-A	Enabled	
Check Digit	Transmit	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
Preamble Character "0"	Do not transmit	
Interleaved 2 of 5		
Interleaved 2 of 5	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Maximum Length	100	
Minimum Length	6	
ITF-6		
ITF-6	Disabled	
Check Digit	Do not transmit	

Parameter	Factory Default	Remark
ITF-14		
ITF-14	Enabled	
Check Digit	Do not transmit	
Matrix 2 of 5		
Matrix 2 of 5	Disabled	
Check Digit Verification	Enabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	6	
Industrial 2 of 5		
Industrial 2 of 5	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	6	
Standard 2 of 5		
Standard 2 of 5	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	6	
Code 39		
Code 39	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Start/Stop Character	Do not transmit	
Code 39 Full ASCII	Enabled	
Maximum Length	127	
Minimum Length	1	

Parameter	Factory Default	Remark
Codabar		
Codabar	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Start/Stop Character	Do not transmit	
Start/Stop Character Format	ABCD/ABCD	
Maximum Length	127	
Minimum Length	1	
Code 93		
Code 93	Enabled	
Check Digit Verification	Enabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	3	
GS1 Databar		
GS1 Databar	Enabled	
Application Identifier "01"	Transmit	
Code 11		
Code 11	Enabled	
Check Digit Verification	One check digit, MOD11	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	2	
Plessey		
Plessey	Enabled	
Check Digit Verification	Enabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	1	

Parameter	Factory Default	Remark
MSI-Plessey		
MSI-Plessey	Enabled	
Check Digit Verification	One check digit, MOD10	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	2	
PDF 417		
PDF 417	Enabled	
Maximum Length	2710	
Minimum Length	1	
PDF 417 Twin Code	Read single PDF417 only	
Transmission Order of Twin Code	Order 1	
QR Code		
QR Code	Enabled	
Micro QR	Enabled	
Maximum Length	7089	
Minimum Length	1	
QR Twin Code	Read single QR only	
Transmission Order of Twin Code	Order 3	
Data Matrix		
Data Matrix	Enabled	
Rectangular Barcode	Enabled	
Mirror Image	Decode	
Maximum Length	3116	
Minimum Length	1	
DM Twin Code	Read single DM only	
Chinese Sensible Code		
Chinese Sensible Code	Disabled	
Maximum Length	7827	
Minimum Length	1	

Appendix 2: AIM ID Table

Symbology	AIM ID	Remark
EAN-13	]E0	Standard EAN-13
	]E3	EAN-13 + 2/5-Digit Add-On Code
EAN-8	]E4	Standard EAN-8
	]E4...]E1...	EAN-8 + 2-Digit Add-On Code
	]E4...]E2...	EAN-8 + 5-Digit Add-On Code
UPC-E	]E0	Standard UPC-E
	]E3	UPC-E + 2/5-Digit Add-On Code
UPC-A	]E0	Standard UPC-A
	]E3	UPC-A + 2/5-Digit Add-On Code
Code 128	]C0	Standard Code 128
GS1-128 (UCC/EAN-128)	]C1	FNC1 is the character right after the start character
AIM-128	]C2	FNC1 is the 2nd character after the start character
ISBT-128	]C4	
Interleaved 2 of 5	]I0	No check digit verification
	]I1	Transmit check digit after verification
	]I3	Do not transmit check digit after verification
ITF-6	]I1	Transmit check digit
	]I3	Do not transmit check digit
ITF-14	]I1	Transmit check digit
	]I3	Do not transmit check digit
Industrial 2 of 5	]S0	Not specified
Standard 2 of 5	]R0	No check digit verification
	]R8	One check digit, MOD10; do not transmit check digit
	]R9	One check digit, MOD10; transmit check digit
Code 39	]A0	Transmit barcodes as is; Full ASCII disabled; no check digit verification
	]A1	One check digit, MOD43; transmit check digit
	]A3	One check digit, MOD43; do not transmit check digit
	]A4	Full ASCII enabled; no check digit verification
	]A5	Full ASCII enabled; transmit check digit
	]A7	Full ASCII enabled; do not transmit check digit
Codabar	]F0	Standard Codabar
	]F2	Transmit check digit after verification
	]F4	Do not transmit check digit after verification

Symbology	AIM ID	Remark
Code 93	]G0	Standard Code 93
Code 11	]H0	One check digit, MOD11; transmit check digit
	]H1	Two check digits, MOD11/MOD11; transmit check digit
	]H3	Do not transmit check digit after verification
	]H9	No check digit verification
GS1-DataBar (RSS)	]e0	Standard GS1-DataBar
Plessey	]P0	Standard Plessey
MSI-Plessey	]M0	One check digit, MOD10; transmit check digit
	]M1	One check digit, MOD10; do not transmit check digit
	]M8	Two check digits
	]M9	No check digit verification
Matrix 2 of 5	]X0	Specified by the manufacturer
	]X1	No check digit verification
	]X2	One check digit, MOD10; transmit check digit
	]X3	One check digit, MOD11; do not transmit check digit
ISBN	]X4	Standard ISBN
ISSN	]X5	Standard ISSN
PDF417	]L0	Comply with 1994 PDF417 specifications
Data Matrix	]d0	ECC000 - ECC140
	]d1	ECC200
	]d2	ECC200, FNC1 is the 1st or 5th character after the start character
	]d3	ECC200, FNC1 is the 2nd or 6th character after the start character
	]d4	ECC200, ECI included
	]d5	ECC200, FNC1 is the 1st or 5th character after the start character, ECI included
	]d6	ECC200, FNC1 is the 2nd or 6th character after the start character, ECI included
QR Code	]Q0	QR1
	]Q1	2005 version, ECI excluded
	]Q2	2005 version, ECI included
	]Q3	QR Code 2005, ECI excluded, FNC1 is the 1st character after the start character
	]Q4	QR Code 2005, ECI included, FNC1 is the 1st character after the start character
	]Q5	QR Code 2005, ECI excluded, FNC1 is the 2nd character after the start character
	]Q6	QR Code 2005, ECI included, FNC1 is the 2nd character after the start character
Chinese Sensible Code	]X0	

Reference: ISO/IEC 15424:2008 Information technology – Automatic identification and data capture techniques – Data Carrier Identifiers (including Symbology Identifiers).

Appendix 3: Code ID Table

Symbology	Code ID
Code 128	j
GS1-128(UCC/EAN-128)	j
AIM-128	f
EAN-8	d
EAN-13	d
ISSN	n
ISBN	B
UPC-E	c
UPC-A	c
Interleaved 2 of 5	e
ITF-6	e
ITF-14	e
Matrix 2 of 5	v
Industrial 2 of 5	D
Standard 2 of 5	s
Code 39	b
Codabar	a
Code 93	i
Code 11	H
Plessey	p
MSI-Plessey	m
GS1 Databar	R
PDF417	r
QR Code	Q
Data Matrix	u
Chinese Sensible Code	h

Appendix 4: ASCII Table

Hex	Dec	Char
00	0	NUL (Null char.)
01	1	SOH (Start of Header)
02	2	STX (Start of Text)
03	3	ETX (End of Text)
04	4	EOT (End of Transmission)
05	5	ENQ (Enquiry)
06	6	ACK (Acknowledgment)
07	7	BEL (Bell)
08	8	BS (Backspace)
09	9	HT (Horizontal Tab)
0a	10	LF (Line Feed)
0b	11	VT (Vertical Tab)
0c	12	FF (Form Feed)
0d	13	CR (Carriage Return)
0e	14	SO (Shift Out)
0f	15	SI (Shift In)
10	16	DLE (Data Link Escape)
11	17	DC1 (XON) (Device Control 1)
12	18	DC2 (Device Control 2)
13	19	DC3 (XOFF) (Device Control 3)
14	20	DC4 (Device Control 4)
15	21	NAK (Negative Acknowledgment)
16	22	SYN (Synchronous Idle)
17	23	ETB (End of Trans. Block)
18	24	CAN (Cancel)
19	25	EM (End of Medium)
1a	26	SUB (Substitute)
1b	27	ESC (Escape)
1c	28	FS (File Separator)
1d	29	GS (Group Separator)

Hex	Dec	Char
1e	30	RS (Request to Send)
1f	31	US (Unit Separator)
20	32	SP (Space)
21	33	! (Exclamation Mark)
22	34	" (Double Quote)
23	35	# (Number Sign)
24	36	\$ (Dollar Sign)
25	37	% (Percent)
26	38	& (Ampersand)
27	39	` (Single Quote)
28	40	((Right / Closing Parenthesis)
29	41	) (Right / Closing Parenthesis)
2a	42	* (Asterisk)
2b	43	+ (Plus)
2c	44	, (Comma)
2d	45	- (Minus / Dash)
2e	46	. (Dot)
2f	47	/ (Forward Slash)
30	48	0
31	49	1
32	50	2
33	51	3
34	52	4
35	53	5
36	54	6
37	55	7
38	56	8
39	57	9
3a	58	: (Colon)
3b	59	; (Semi-colon)
3c	60	< (Less Than)
3d	61	= (Equal Sign)

Hex	Dec	Char
3e	62	> (Greater Than)

3f	63	? (Question Mark)
40	64	@ (AT Symbol)
41	65	A
42	66	B
43	67	C
44	68	D
45	69	E
46	70	F
47	71	G
48	72	H
49	73	I
4a	74	J
4b	75	K
4c	76	L
4d	77	M
4e	78	N
4f	79	O
50	80	P
51	81	Q
52	82	R
53	83	S
54	84	T
55	85	U
56	86	V
57	87	W
58	88	X
59	89	Y
5a	90	Z
5b	91	[(Left / Opening Bracket)
5c	92	\ (Back Slash)
5d	93	] (Right / Closing Bracket)

Hex	Dec	Char
5e	94	^ (Caret / Circumflex)
5f	95	_ (Underscore)
60	96	' (Grave Accent)

61	97	A
62	98	b
63	99	C
64	100	D
65	101	E
66	102	F
67	103	G
68	104	H
69	105	I
6a	106	J
6b	107	K
6c	108	L
6d	109	M
6e	110	N
6f	111	O
70	112	P
71	113	Q
72	114	R
73	115	S
74	116	T
75	117	U
76	118	V
77	119	W
78	120	X
79	121	Y
7a	122	Z
7b	123	{ (Left/ Opening Brace)
7c	124	| (Vertical Bar)
7d	125	} (Right/Closing Brace)
7e	126	~ (Tilde)
7f	127	DEL (Delete)

Appendix 5: Parameter Programming Examples

The following examples show you how to program parameters by scanning programming barcodes.

a. Program the Decode Session Timeout

Example: Set the decode session timeout to 1500ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Decode Session Timeout** barcode. (See the “**Decode Session Timeout**” section in Chapter 3)
3. Scan the numeric barcodes “1”, “5”, “0” and “0”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

b. Program the Time Period from Idle to Sleep

Example: Set the time period from idle to sleep to 500ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Time Period from Idle to Sleep** barcode. (See the “**Auto Sleep**” section in Chapter 3)
3. Scan the numeric barcodes “5”, “0” and “0”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

c. Program the Image Stabilization Timeout

Example: Set the image stabilization timeout to 500ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Image Stabilization Timeout** barcode. (See the “**Image Stabilization Timeout**” section in Chapter 3)
3. Scan the numeric barcodes “5”, “0” and “0”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

d. Program the Timeout between Decodes (Same Barcode)

Example: Set the timeout between decodes (same barcode) to 1000ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Timeout between Decodes (Same Barcode)** barcode. (See the “**Timeout between Decodes (Same Barcode)**” section in Chapter 3)
3. Scan the numeric barcodes “1”, “0”, “0” and “0”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

e. Program the Threshold Value of Illumination Change

Example: Set the threshold value of illumination change to 4

1. Scan the **Enter Setup** barcode.
2. Scan the **Threshold Value of Illumination Change** barcode. (See the “**Sensitivity**” section in Chapter 3)
3. Scan the numeric barcode “4”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

f. Program the Timeout between Decodes

Example: Set the timeout between decodes to 500ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Timeout between Decodes** barcode. (See the “**Timeout between Decodes**” section in Chapter 3)
3. Scan the numeric barcodes “5”, “0” and “0”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

g. Program the Central Area

Example: Set the percentage of central area to 20%

1. Scan the **Enter Setup** barcode.
2. Scan the **Specify Central Area** barcode.
3. Scan the numeric barcodes “2” and “0”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

h. Program the Custom Prefix/Suffix

Example: Set the custom prefix to “CODE”

1. Check the hex values of “CODE” in the ASCII Table. (“CODE”: 43, 4F, 44, 45)
2. Scan the **Enter Setup** barcode.
3. Scan the **Set Custom Prefix** barcode. (See the “**Set Custom Prefix**” section in Chapter 6)
4. Scan the numeric barcodes “4”, “3”, “4”, “F”, “4”, “4”, “4” and “5”.
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

i. Program the Terminating Character Suffix

Example: Set the terminating character suffix to 0x0D

1. Scan the **Enter Setup** barcode.
2. Scan the **Set Terminating Character Suffix** barcode. (See the “**Set Terminating Character Suffix**” section in Chapter 6)
3. Scan the numeric barcodes “0” and “D”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

j. Program the Code ID

Example: Set the Code ID of PDF 417 to “p”

1. Check the hex value of “p” in the ASCII Table. (“p”: 70)
2. Scan the **Enter Setup** barcode.
3. Scan the **Modify PDF417 Code ID** barcode. (See the “**Modify Code ID**” section in Chapter 6)
4. Scan the numeric barcodes “7” and “0”.
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

k. Program the NGR Message

Example: Set the NGR message to “!ERR”

1. Check the hex values of “!ERR” in the ASCII Table. (“!ERR”: 21, 45, 52, 52)
2. Scan the **Enter Setup** barcode.
3. Scan the **Edit NGR Message** barcode. (See the “**Edit NGR Message**” section in Chapter 5)
4. Scan the numeric barcodes “2”, “1”, “4”, “5”, “5”, “2”, “5” and “2”.
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

l. Program the Length Range (Maximum/Minimum Lengths) for a Symbology

Note: If minimum length is set to be greater than maximum length, the RT230H only decodes barcodes with either the minimum or maximum length. If you only want to read barcodes with a specific length, set both minimum and maximum lengths to be that desired length.

Example: Set the RT230H to decode Code 128 barcodes containing between 8 and 12 characters

1. Scan the **Enter Setup** barcode.
2. Scan the **Set the Minimum Length** barcode. (See the “**Set Length Range for Code 128**” section in Chapter 7)
3. Scan the numeric barcode “8”.
4. Scan the **Save** barcode.
5. Scan the **Set the Maximum Length** barcode. (See the “**Set Length Range for Code 128**” section in Chapter 7)
6. Scan the numeric barcodes “1” and “2”.
7. Scan the **Save** barcode.
8. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

m. Program the Code Page

Example: Set the code page to Windows 1251 (Cyrillic)

1. Scan the **Enter Setup** barcode.
2. Scan the **Set the Code Page** barcode. (See the “**Code Page**” section in Chapter 2)
3. Scan the numeric barcode “1”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

Appendix 6: Digit Barcodes (numeric barcodes)

0-9



0000000

0



0000050

5



0000010

1



0000060

6



0000020

2



0000070

7



0000030

3



0000080

8



0000040

4



0000090

9

A-F



A



B



C



D



E



F

Appendix 7: Save/Cancel Barcodes

After reading numeric barcode(s), you need to scan the **Save** barcode to save the data. If you scan the wrong digit(s), you can either scan the **Cancel** barcode and then start the configuration all over again, or scan the **Delete the Last Digit** barcode and then the correct digit, or scan the **Delete All Digits** barcode and then the digits you want.

For instance, after reading the **Maximum Length** barcode and numeric barcodes “1”, “2” and “3”, you scan:

- ✧ **Delete the Last Digit:** The last digit “3” will be removed.
- ✧ **Delete All Digits:** All digits “123” will be removed.
- ✧ **Cancel:** The maximum length configuration will be cancelled. And the RT230H is still in the setup mode.



Save



Delete the Last Digit



Delete All Digits



Cancel

Appendix 8: ASCII Function Key Mapping Table

ASCII Function	ASCII Value (HEX)	No Function Key Mapping	Function Key Mapping
NUL (Null char.)	00	Null	Ctrl+Z
SOH (Start of Header)	01	Keypad Enter	Ctrl+A
STX (Start of Text)	02	Caps Lock	Ctrl+B
ETX (End of Text)	03	Null	Ctrl+C
EOT (End of Transmission)	04	Null	Ctrl+D
ENQ (Enquiry)	05	Null	Ctrl+E
ACK (Acknowledgment)	06	Null	Ctrl+F
BEL (Bell)	07	Enter	Ctrl+G
BS (Backspace)	08	Left Arrow	Ctrl+H
HT (Horizontal Tab)	09	Horizontal Tab	Ctrl+I
LF (Line Feed)	0A	Down Arrow	Ctrl+J
VT (Vertical Tab)	0B	Vertical Tab	Ctrl+K
FF (Form Feed)	0C	Backspace	Ctrl+L
CR (Carriage Return)	0D	Enter	Ctrl+M
SO (Shift Out)	0E	Insert	Ctrl+N
SI (Shift In)	0F	Esc	Ctrl+O
DLE (Data Link Escape)	10	F11	Ctrl+P
DC1 (XON) (Device Control 1)	11	Home	Ctrl+Q
DC2 (Device Control 2)	12	Print Screen	Ctrl+R
DC3 (XOFF) (Device Control 3)	13	Delete	Ctrl+S
DC4 (Device Control 4)	14	tab+shift	Ctrl+T
NAK (Negative Acknowledgment)	15	F12	Ctrl+U
SYN (Synchronous Idle)	16	F1	Ctrl+V
ETB (End of Trans. Block)	17	F2	Ctrl+W
CAN (Cancel)	18	F3	Ctrl+X
EM (End of Medium)	19	F4	Ctrl+Y
SUB (Substitute)	1A	F5	Ctrl+Z
ESC (Escape)	1B	F6	See the following table
FS (File Separator)	1C	F7	
GS (Group Separator)	1D	F8	
RS (Request to Send)	1E	F9	
US (Unit Separator)	1F	F10	

ASCII Function Key Mapping Table (Continued)

The function key mappings of the last five characters in the previous table differ from one keyboard layout to another.

Country/ Keyboard Layout	Function Key Mapping				
	1B	1C	1D	1E	1F
United States	Ctrl+[	Ctrl+\	Ctrl+]	Ctrl+6	Ctrl+-
Belgium	Ctrl+[	Ctrl+<	Ctrl+]	Ctrl+6	Ctrl+-
Scandinavia	Ctrl+8	Ctrl+<	Ctrl+9	Ctrl+6	Ctrl+-
France	Ctrl+^	Ctrl+8	Ctrl+\$	Ctrl+6	Ctrl+=
Germany		Ctrl+Ã	Ctrl++	Ctrl+6	Ctrl+-
Italy		Ctrl+\	Ctrl++	Ctrl+6	Ctrl+-
Switzerland		Ctrl+<	Ctrl+.	Ctrl+6	Ctrl+-
United Kingdom	Ctrl+[	Ctrl+ ¢	Ctrl+]	Ctrl+6	Ctrl+-
Denmark	Ctrl+8	Ctrl+\	Ctrl+9	Ctrl+6	Ctrl+-
Norway	Ctrl+8	Ctrl+\	Ctrl+9	Ctrl+6	Ctrl+-
Spain	Ctrl+[	Ctrl+\	Ctrl+]	Ctrl+6	Ctrl+-

Appendix 9: Code Pages List

Numeric Barcode Needed	Code Page
0	Windows 1252 (Latin I)
1	Windows 1251 (Cyrillic)



If need any technical support, feel free to contact our technical support department:
Support Department

.....
RTSCAN TECHNOLOGY LIMITED

Add: F/7, Block C, Ying Da Li Park, Futian Tax-Free Trade Zone, Shenzhen, China

Tel: +86-755-32909260

E-mail: support@rtscan.net