

REVISION

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**KoamTac**  
A NEW WAVE IN AUTO ID

## User Manual KDC200



April, 2009

**TABLE OF CONTENTS**

- LISTING OF FIGURES.....5**
- LISTING OF TABLES .....5**
- 1. INTRODUCTION .....7**
- 2. INSTALLATION & OPERATION .....8**
  - 2.1 KDC Package .....8
  - 2.2 KDC Characteristics .....9
  - 2.3 Installation.....11
    - Verify System Requirements.....11
    - Affix Neck Strap to KDC .....11
    - Copy CD to PC .....11
    - Connect KDC to PC.....12
    - Charge KDC Battery.....12
    - Configure KDC .....13
  - 2.4 Basic Operation .....14
    - Reading Barcodes .....14
    - Upload Barcode Data to PC .....14
  - 2.5 KDC Menus .....15
    - KDC Mode Menu .....16
    - View Data Menu .....16
    - Set Barcodes Menu .....16
    - Code Options Menu.....16
    - Scan Options Menu .....17
    - Data Process Menu .....18
    - Bluetooth Menu - KDC200 / KDC200P / KDC300.....19
    - PDF417 Menu – KDC200P .....20
    - System Menu.....21
  - 2.6 LED Status.....22
  - 2.7 Empty Battery .....22
  - 2.8 Buffer Full .....22
  - 2.9 Reset Feature .....23
  - 2.10 Replace Battery .....24
- 3. BLUETOOTH - KDC200 / KDC200P / KDC300 .....25**
  - 3.1 Power .....25
  - 3.2 Pairing .....25
  - 3.2 Auto Connect.....26
  - 3.3 Auto Power On .....26
  - 3.4 Auto Power Off .....26
  - 3.5 Beep Warning.....27
  - 3.6 PWR OFF Time.....27

<b>4. SYNCHRONIZATION</b> .....	<b>28</b>
4.1 Connect to KDC.....	29
4.2 Synchronization Settings .....	30
Destination of Data .....	31
Synchronization Methods .....	32
KDC Wedge Method.....	33
Synchronization Options.....	34
4.3 Barcode & KDC Settings .....	35
4.4 Confirmation Settings .....	36
<b>5. MASTER - SLAVE BARCODE COMPARE</b> .....	<b>37</b>
<b>6. TROUBLESHOOTING</b> .....	<b>38</b>
<b>7. WARRANTY</b> .....	<b>39</b>
<b>8. CONTACT INFORMATION</b> .....	<b>40</b>
<b>APPENDIX A - BARCODE &amp; SCAN OPTIONS</b> .....	<b>41</b>
A.1 Symbologies.....	41
A.2 Code Options .....	43
Transmission of Start and Stop Characters .....	43
Reverse Direction .....	43
Symbology Conversion.....	43
Verification of Optional "Check Digit" .....	44
Transmission of "Check Digit" .....	44
Resolution of Inconsistencies .....	45
A.3 Miscellaneous Barcode Information .....	46
Height of a Linear Barcode.....	46
Check Characters.....	46
Prevent Interleave 2 of 5 Partial Reading.....	46
Equation to Determining Potential Number of Stored Barcodes .....	47
Data Buffer Full.....	47
<b>APPENDIX B – FAQ</b> .....	<b>48</b>
B.1 Symbology.....	48
B.2 Host Interface .....	49
B.3 Battery .....	49
B.4 Memory .....	49
B.5 Programming.....	50
B.6 KDC200 vs. KDC200P .....	50

- APPENDIX C - SPECIAL BARCODES .....51**
- C.1 Set Symbologies .....51
- C.2 Barcode Options .....54
- C.3 Delete Last Scanned Barcode .....56
- C.4 Scan Options.....57
- C.5 Scan Timeout .....58
- C.6 Minimum Barcode Length .....59
- C.7 Security Level.....62
- C.8 Data Process - Wedge/Store .....63
- C.9 Data Process - Data Format - Handshake.....64
- C.10 Data Process - Termination Character .....65
- C.11 Bluetooth .....66
- C.12 Bluetooth PWR Off Time.....67
- C.13 System .....70
- C.14 Sleep Timeout .....72
- C.15 Function .....73
- C.16 Number .....74
- C.17 Lower Case Alphabet.....75
- C.18 Upper Case Alphabet.....78
- C.20 Symbol Character .....82
  
- INDEX.....86**

## LISTING OF FIGURES

Figure 1 - Contents of KDC Package	8
Figure 2 - Characteristics of KDC100	9
Figure 3 - Characteristics of KDC200 - KDC200P - KDC300	10
Figure 4 - Location of Scroll Buttons	13
Figure 5 - KDC Display	14
Figure 6 - Reset Function for KDC200 - KDC200 - KDC300	23
Figure 7 - Reset Function of KDC100	23
Figure 8 - Replacing KDC Battery	24
Figure 9 - KTSync® Synchronizer Menu	28
Figure 10 - COM Port Selection for KDC	29
Figure 11 - KTSync® Synchronization Settings	30
Figure 12 - KTSync® Barcode, Symbologies, and Scan Options	35
Figure 13 - KTSync® Confirmation Settings	36
Figure 14 - Master-Slave Barcode Compare Diagram	37

## LISTING OF TABLES

Table 1 - Features of KDC	7
Table 2 – Approximate Time to Charge KDC Battery	12
Table 3 - KDC Menu Options	15
Table 4 - Factory Default Settings for KDC	21
Table 5 - Explanation of LEDs	22
Table 6 - Troubleshooting Techniques	38
Table 7 - Symbologies Supported by KDC	41
Table 8 - Add-on for EAN-13 Symbology	42
Table 9 - Add-on for EAN-8 Symbology	42
Table 10 - Symbology Conversion	43
Table 11 - Verification of Optional "Check Digit"	44
Table 12 - Transmission of "Check Digit"	44
Table 13 - Resolution of Inconsistencies	45
Table 14 - Symbologies Supported by KDC	48

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**TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO ANY TYPE OF MOISTURE. DO NOT LOOK DIRECTLY INTO LASER OR POINT THE LASER INTO ANOTHER PERSON'S EYES. EXPOSURE TO THE BEAM MAY CAUSE EYE DAMAGE.**



## CAUTION:

Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

## WARNING:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## INFORMATION TO USER:

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

1. Reorient / Relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit difference from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

## WARNING:

**RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE  
DISPOSE USED BATTERIES ACCORDING TO THE INSTRUCTIONS.**

# 1. INTRODUCTION

Congratulations on purchasing KoamTac’s revolutionary barcode scanner and data collector. Lightweight and compact, with a user-friendly design and superior functionality, KoamTac’s KDC works in a variety of portable applications. Use it independently or as an accessory to your PC, PDA, or smartphone. To find out more about KoamTac, Inc. and our family of products, visit us at [www.koamtac.com](http://www.koamtac.com).

<b>FEATURES</b>	<b>KDC100</b>	<b>KDC200</b>	<b>KDC200P</b>	<b>KDC300</b>
<b>USB CONNECTIONS</b>	2	1	1	1
<b>RECHARGEABLE BATTERY</b>	YES	<b>YES</b>	YES	YES
<b>SCAN ENGINE</b>	Laser	<b>Laser</b>	Laser	Imager
<b>AUTOMATIC DATA UPLOAD</b>	YES	<b>YES</b>	YES	YES
<b>STORES 10,000+ BARCODES</b>	YES	<b>YES</b>	YES	YES
<b>KTSYNC® SOFTWARE</b>	YES	<b>YES</b>	YES	YES
<b>SDK FOR DEVELOPERS</b>	YES	<b>YES</b>	YES	YES
<b>SUPPORTS MICROSOFT® XP, VISTA, MOBILE 5.0+</b>	YES	<b>YES</b>	YES	YES
<b>BLUETOOTH ENABLED</b>	NO	<b>YES</b>	YES	YES

*Table 1 - Features of KDC*

## 2. INSTALLATION & OPERATION

### 2.1 KDC Package

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The standard KDC package contains:

1. One KDC barcode data collector
2. One USB cable
3. One neck strap
4. One KDC Laser Barcode Data Collector CD with
  - ✓ KTSync<sup>®</sup> for XP, Vista, and Mobile 5.0+
  - ✓ KDC device driver
  - ✓ User Manual

NOTE: Depending on your region or area, package contents may vary.



*Figure 1 - Contents of KDC Package*

## 2.2 KDC Characteristics

Before you use your KDC, please become familiar with its physical characteristics. For assistance, refer to Figure 2 and Figure 3 which shows the placement of buttons, display, LEDs, and ports on your KDC. All KDC models are similar except for the KDC100 which comes with an additional USB connector.

### *KDC100 Barcode Reader and Data Collector*

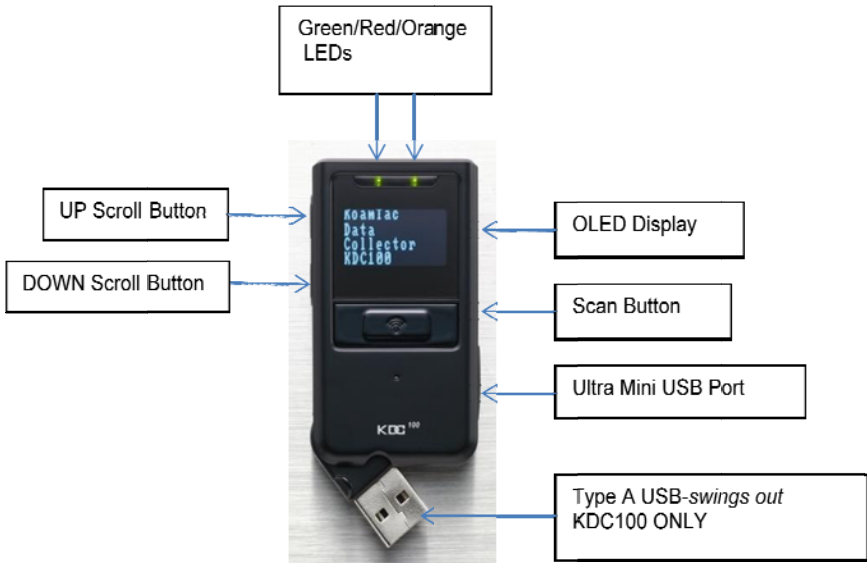
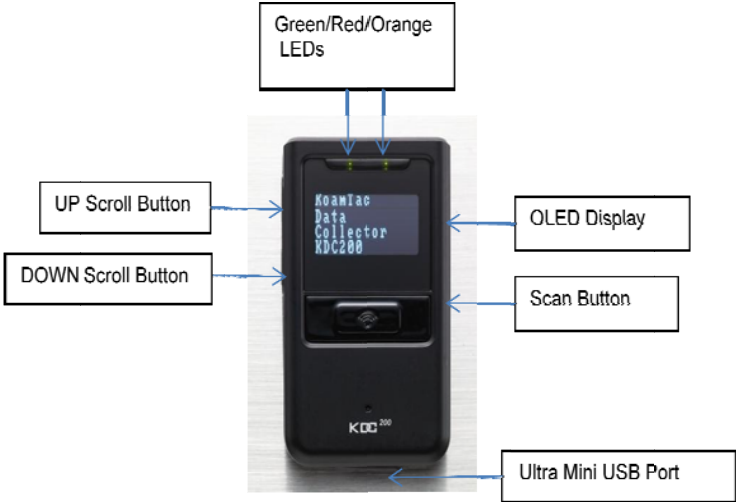
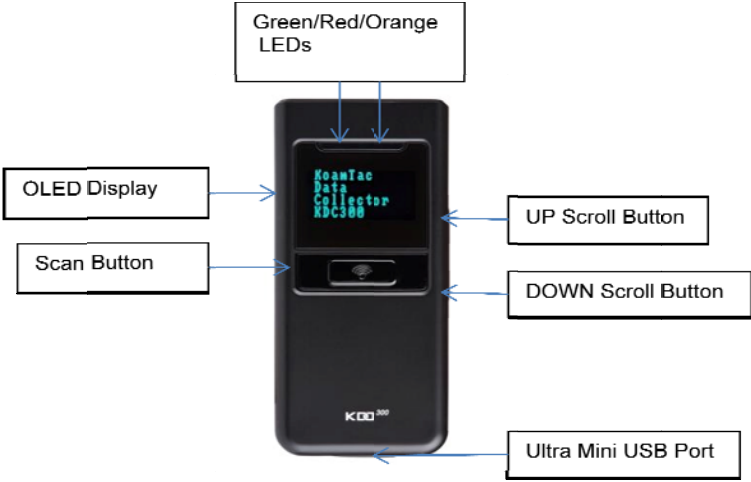


Figure 2 - Characteristics of KDC100

*KDC200 - KDC200P - KDC300  
Barcode Reader and Data Collector*



(KDC200, KDC200P)



(KDC300)

Figure 3 - Characteristics of KDC200 - KDC200P - KDC300

## 2.3 Installation

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### *Verify System Requirements*

Prior to connecting the KDC to your computer, please verify that your system meets the minimum system requirements.

- ✓ Microsoft Windows XP or Vista
- ✓ Accessible USB port or serial port for connecting KDC to your computer

### *Affix Neck Strap to KDC*

We **strongly** recommend attaching the neck strap to the KDC. Wear the KDC securely around your neck to prevent potential damage to the device if dropped. DO NOT swing the product with the neck strap. Contact with another object may damage the KDC causing it to malfunction. To install the neck strap,

1. Fit small thin cord of the strap around the pillar of the KDC.
2. Loop the thick cord of the strap through the thin loop.
3. Pull the strap tight.

### *Copy CD to PC*

Please create a directory in PC and copy CD files.

- Insert the CD into your PC's disk drive.
- Create a directory in PC and copy XP.Vista and Mobile5.0\_6.0 folders from CD.
- XP.Vista directory contains KTSync® program, User Manual, and KTReader.inf files
- Mobile5.0\_6.0 contains KTSync® programs for Microsoft® Windows Pocket PC 2003, Mobile 5.0, Mobile 6.0 Standard, and Mobile6.0 Professional.

### Connect KDC to PC

The KDC is equipped with one ultra mini USB port. **If you have the KDC100, it has two ports, Ultra Mini and standard Type A which swings out. See Figure 2 for more details.** The USB port is used to upload barcode data and to charge the KDC battery. Prior to using the KDC, your PC must recognize the KDC. With the USB cable that came with the KDC, connect the KDC to your PC. Follow these directions for connecting the KDC to your PC.

1. Connect the cable’s ultra mini USB connector to the KDC.
2. Connect the cable’s Type A USB connector to your PC.
3. Wait until your computer beeps and displays the message *New Hardware Found*.
4. Follow the prompts to search for the KDC device driver.
5. Select *KTReader.inf* file in XP.Vista directory and continue with the hardware installation procedure.
6. *KTReader.inf* is the device driver for 32bit Microsoft® Windows XP and Vista. 64bit device driver can be downloaded from KoamTac home page.

### Charge KDC Battery

After installing the KDC, you must charge its battery. To charge the battery, follow these directions.

1. Connect the cable’s ultra mini USB connector to the KDC.
2. Connect the cable’s Type A USB connector to your computer.
3. Your KDC battery will begin charging. Two small LEDs on the front panel will illuminate orange. When the battery is fully charged, the LEDs will illuminate green.

<b>KDC100</b>	<b>KDC200</b>	<b>KDC200P</b>	<b>KDC300</b>
<i>2 Hours</i>	<i>2 Hours</i>	<i>2 Hours</i>	<i>4 Hours</i>

Table 2 – Approximate Time to Charge KDC Battery

## Configure KDC

The KDC is designed to meet the data collection requirements of many different industries in a variety of dynamic situations. To perform well in these diverse environments, the KDC is designed to be configured easily and quickly. For the KDC to perform at its maximum level, the KDC must be configured properly. Until you are familiar with configuring the KDC, it is recommended that you DO NOT modify the KDC. The KDC can be configured in three different methods which are explained in Section 2.5 – KDC Menus, Chapter 3 – Synchronization, and Appendix C – Special Barcodes.

### CONFIGURATION METHODS FOR THE KDC

- KDC Menu
- KTSync® Software
- Special Barcodes – *Currently only available for the KDC 100 / 200 / 200P only*

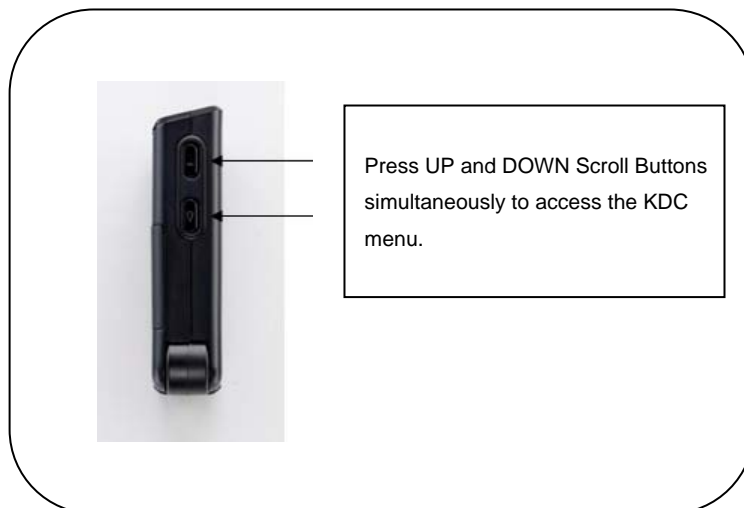


Figure 4 - Location of Scroll Buttons

## 2.4 Basic Operation

### *Reading Barcodes*

Reading a barcode is simply. Point the KDC at a barcode and press the scan button. Be sure to point the scan engine at the barcode, not at your face, making sure to position the light beam on the barcode. If the barcode is scanned successfully, you will hear one beep and the LEDs will illuminate in green. The scanned barcode data will display along with scan time and battery level. *Depending on the configuration of your KDC, other information may also display.*

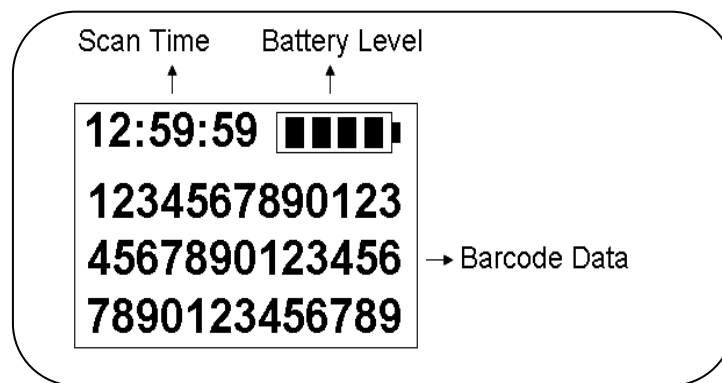


Figure 5 - KDC Display

If the scan was unsuccessful, you will hear two beeps, the LEDs will illuminate in red, and the message **Failed reading...** will display. If you have problems scanning a barcode, try the following suggestions while pointing the KDC at the barcode and depressing the scan button.

- Modify the angle of the KDC in relation to the barcode, making the angle bigger or smaller as needed.
- Modify the distance between the barcode and the KDC, moving closer or further away as needed.
- Check option settings defined in the KDC menu section and change options as needed.
- Check that the barcode's width does not exceed the light beam's width and vice versa.

### *Upload Barcode Data to PC*

Use the KTSync® synchronization program to upload barcode data from the KDC to your PC. Please refer to Chapter 4. Synchronization for details.

## 2.5 KDC Menus

Top Menu	Sub Menu	Note
<b>KDC Mode</b>	Normal	Default
	Onetime	Onetime Compare Mode
	Continuous	Continuous Compare Mode
	Collation	Select Compare Digits
<b>View Data</b>	View/Delete	View/Delete Data
<b>Set Barcodes</b>	EAN13	Enable/Disable
	EAN8	Enable/Disable
	UPCA	Enable/Disable
	UPCE	Enable/Disable
	CODE39	Enable/Disable
	ITF14	Enable/Disable
	CODE128	Enable/Disable
	I2of5	Enable/Disable
	CODABAR	Enable/Disable
	EAN128	Enable/Disable
	CODE93	Enable/Disable
	CODE35	Enable/Disable
	BooklandEAN	Enable/Disable
	EAN13withAddon	Enable/Disable
	EAN8withAddon	Enable/Disable
	UPCAwithAddon	Enable/Disable
UPCEwithAddon	Enable/Disable	
<b>Barcode Options</b>	CodaBar_NoStartStopChars	Narrow/Wide
	UPCE_as_UPCA	Narrow/Wide
	EAN8_as_EAN13	Narrow/Wide
	UPCE_as_EAN13	Narrow/Wide
	ReturnCheckDigit	Narrow/Wide
	VerifyCheckDigit	Narrow/Wide
	UPCA_as_EAN13	Narrow/Wide
	I2of5_VerifyCheckDigit	Narrow/Wide
	Code39_VerifyCheckDigit	Narrow/Wide
	I2of5_ReturnCheckDigit	Narrow/Wide
	Code39_ReturnCheckDigit	Narrow/Wide
	UPCE_ReturnCheckDigit	Narrow/Wide
	UPCA_ReturnCheckDigit	Narrow/Wide
	EAN8_ReturnCheckDigit	Narrow/Wide
EAN13_ReturnCheckDigit	Narrow/Wide	

Top Menu	Sub Menu	Note
<b>Scan Options</b>	Scan Angle	Narrow/Wide
	Filter	Normal/High
	Time Out	.5 seconds to 10 seconds
	Min. Barcode Length	2 to 36 characters
	Security Level	1 to 4 level
<b>Data Process</b>	Wedge / Store	Wedge Only
		Wedge & Store
		Store Only
		Wedge & Store if Sent
	Wedge & Store if Not Sent	
	Data Format	Barcode only Packet Data
	Handshake	Enable/Disable
Terminator	None, CR, LF, CR+LF, or Tab	
<b>Bluetooth</b> <i>KDC 200 KDC200P KDC300 only</i>	Power	Enabled/Disabled
	Auto Connect	Enabled/Disabled
	Auto Power On	Enabled/Disabled
	Auto Power Off	Enabled/Disabled
	Beep Warning	Enabled/Disabled
	Power Off Time	1 to 30 minutes
	<b>PDF417</b> <i>KDC200P only</i>	Quality
Tilt		1 to 6
Start/Stop		Enable/Disable
<b>System</b>	Memory Status	No. of Stored Barcodes & Free Memory Available
	Reset Memory	Empties Data Memory
	Sleep Timeout	Disabled to 10 minutes
	Date / Time	YYYY:MM:DD or HH:MM:SS
	Battery	% of Battery Charge Available
	Version	Firmware Version & Serial No.
	Button Lock	Enabled/Disabled
	Beep Sound	Enabled/Disabled
	Auto Exit	Enabled/Disabled
	Port Status	Enabled/Disabled
	Display Format	Time & Battery, Type & Time, or Type & Battery
	Factory Default	Restores Default Settings

Table 3 - KDC Menu Options

## *KDC Mode Menu*

The KDC Mode Menu has three options – Normal, Onetime, and Continuous modes.

- Normal: This is the default mode which provides basic barcode scanning. In Normal mode barcode data can be manipulation directly through the KDC or using KTSync® during the synchronization process.
- Onetime: This mode allows you to define a master barcode and then compare another barcode to the master barcode one time.
- Continuous: This mode allows you to define a master barcode and then compare multiple barcodes to the master barcode continuously.
- Collation: This mode works in conjunction with Onetime and Continuous modes, allowing you to define a string of characters within the master barcode and a string of characters within a slave barcode for comparison in Onetime or Continuous modes.

## *View Data Menu*

This menu option allows you to view and/or delete barcodes stored in the KDC.

## *Set Barcodes Menu*

This menu lists all the barcode symbologies supported by your KDC and allows you to select the barcode symbologies you will be scanning. For maximum scan performance, you should select only the symbologies you are scanning. Please refer to Appendix A.1 – Symbologies for a detailed listing of symbologies supported by your KDC.

## *Code Options Menu*

Your KDC supports various Code Options including Transmission of Start and Stop Characters, Symbology Conversion, Verification of Optional Check Character, and Transmission of Check Digit. Please refer to A.2 Code Options for the symbologies supported by the KDC.

## *Scan Options Menu*

- **Scan Angle:** Allows you to configure the laser beam angle to the barcode. Wide is 54° and Narrow is 27°. The default is Wide.
- **Filter:** Allows you to change the Filter mode from Normal to High for poor quality barcodes. The default is Normal.
- **Timeout:** Allows you to set the length of time before the KDC will stop scanning a barcode from .5 second up to 10 seconds. The default is 2 seconds.
- **Minimum Barcode Length:** Allows you to set a barcode length from 2 characters to 36 characters. It is strongly recommended that you maximize the minimum barcode length setting to prevent possible errors. The default is 4 characters.
- **Security Level:** Allows you to ensure an accurate barcode reading by setting the number of times the KDC will read a barcode. Security Level is set from 1 up to 4. The higher security level means more reliable readings though some performance degradation is likely. For poor quality barcodes, we recommend increasing the security level. The default is 1.

## *Data Process Menu*

**Wedge/Store** - The KDC provides five modes of data transmission in keyboard wedging mode.

- Wedge Only: Barcode data is NOT stored in memory but transmitted to the host.
- Wedge & Store Only: Barcode data is stored in memory and transmitted to the host.
- Store Only: Barcode data is stored in memory but NOT transmitted to the host.
- Wedge & Store if Sent: If data transmission is successful, barcode data is stored in memory.
- Wedge & Store if Not Sent: If data transmission is NOT successful, barcode data is stored in memory.

**Data Format** - The KDC provides two data formats, Barcode Only and Packet Data.

- Barcode Only: KDC transmits scanned barcodes only. User may incorporate proper data transmission error detection and correction mechanism in this mode.
  - KDC supports various termination characters for barcode only format.
  - User can select <NONE>, <CR>, <LF>, <CR+LF> or <TAB> as the termination character.
- Packet Data: KDC transmits packet data with checksum to minimize transmission errors.
  - KTSync<sup>®</sup> operates in Packet Data mode ONLY.
  - If you are using KTSync<sup>®</sup> Data Format mode must be set to Packet Data.

**Handshake** - KDC provides Handshake mode when Data Format is set to Packet Data.

- Handshake Mode will increase the reliability of barcode data transmission.
- The default mode for Handshake is Disabled.
- Data transmission speed is slower when Handshake Mode is Enabled.

**Terminator** – KDC supports various termination characters when the Data Format mode is set to Barcode Only. This option allows you to select <NONE>, <CR>, <LF>, <CR+LF>, or <TAB> as the termination character. The default terminator is <CR+LF>.

## *Bluetooth Menu - KDC200 / KDC200P / KDC300*

The KDC supports Bluetooth, a robust wireless protocol that allows connectivity between a Bluetooth enabled KDC and a Microsoft compatible host device running a Bluetooth environment. Before utilizing the advantages of Bluetooth functionality with the KDC, you should become familiar with Bluetooth connectivity and its impact on your host environment.

To configure your KDC for Bluetooth functionality, you must use the KDC Menus. To access the menus, simultaneously press the UP and DOWN scroll buttons on the side of the KDC for about 5 seconds until the KDC Menus display. Use the DOWN button to scroll to Bluetooth then press the Scan button.

Below is a listing of the Bluetooth options and their settings. The default settings for these options have been set to increase the usability of Bluetooth technology without compromising the KDC battery usage. **IMPORTANT:** We strongly recommend NOT changing these settings until you have fully tested the Bluetooth connection between the KDC and the host device.

For more detailed information regarding Bluetooth functionality with the KDC, please refer to **Error! Reference source not found.**

- Power - Enabled or Disabled
- Pairing Mode
- Auto Connect - Enabled or Disabled
- Auto Power On - Enabled or Disabled
- Auto Power Off - Enabled or Disabled
- Beep Warning - Enabled or Disabled
- PWR Off Time - 1 to 30 Minutes

## PDF417 Menu – KDC200P

### PDF417 Symbology

The KDC200P has the same functionality as the KDC200 but it has an added option for supporting the PDF417 symbology. For maximum scanning performance for the PDF417 symbology, please become familiar with the following details.

- ✓ Ensure that not every row of the PDF417 barcode has its own encoding scheme.
- ✓ When scanning a PDF417 barcode, do not cross too many rows.
- ✓ PDF417 barcodes should be scanned horizontally from top to bottom if possible.

The PDF417 Menu lets you configure options for scanning this symbology which are discussed below. KTSync also allows you to configure these PDF417 options.

- **Quality Level** – This option allows you to configure the Quality Level of the barcode you are scanning so the KDC is able to read it. This option adjusts the number of errors and erasures defined in the PDF417 standard. The higher the Quality Level, the more accurate the scan but the speed of the scan is reduced. The Quality Level option can be set between 1 and 4. The default Quality Level is 2.
- **Tilt Level** – This option affects the speed and the accuracy of the scanner/decoder. If you allow for more tilt, this may lead to poor quality data, especially when the number of columns is large. However, when scanning a PDF417 barcodes with large number of columns, a certain amount of tilt is necessary. The optimal Tilt Level for your KDC will depend on the quality and size of the PDF417 barcodes you are scanning. The default Tilt Level is 3.
- **Start/Stop** – This option is used to reduce the chance of scan errors but may prevent decoding of partially occluded barcodes. To use this option, a Start and Stop characters must be defined. When the KDC is not scanning PDF417 barcodes, this option should be set to Disable. The default setting is Disable.

## System Menu

- Memory Status: Checks the number of stored barcodes and memory usage.
- Reset Memory: Resets KDC memory by erasing all stored barcodes.
- Sleep Timeout: Sets amount of time KDC waits, when not being used, before going to *sleep*.
- Date/Time: Sets the date and time of KDC which can also be set using KTSync®
- Battery: Shows current status of battery power level.
- Version: Shows KDC firmware version and serial number.
- Button Lock: Locks or unlocks KDC scan and scroll buttons.
- Beep Sound: Enables or disables KDC beep sound.
- Port Status: Enable or disable KDC port messages.
- Display Format: Selection of display format - Time & Battery, Type & Time, or Type & Battery
- Factory Default: Resets certain KDC options to factory defaults. Factory defaults for all KDC models are listed below.

<p><b>Set Barcodes</b></p> <p>EAN13 EAN8 UPCAUPCE CODE39 ITIF14 CODE128 I2of5 CODABAR EAN128 CODE93 CODE35</p> <p><b>Code Options</b></p> <p>UPCEReturnCheckDigit UPCAReturnCheckDigit EAN8returnCheckDigit EAN13returnCheckDigit</p>	<p><b>Scan Options</b></p> <p>Scan Angle – Wide Filter – Normal Timeout – 2 seconds Minimum Length – 4 Characters Security Level – 1 Level</p> <p><b>Data Process</b></p> <p>Wedge/Store – Wedge &amp; Store Always Data Format – Barcode Only Handshake- Disabled Terminator - &lt;CR&gt; + &lt;LF&gt;</p>	<p><b><u>Bluetooth-KDC200-KDC200P-KDC300</u></b></p> <p>Power – Disabled Auto Connect – Disabled Auto Power On –Disabled Auto Power Off- Enabled Beep Warning – Enabled Power Off Time – 5 minutes</p> <p><b><u>PDF417-KDC200P and KDC300</u></b></p> <p>Quality Level - 2 Tilt Level - Start/Stop – Disable</p> <p><b>System</b></p> <p>Sleep Timeout – 5 seconds Button Lock – Disabled Beep Sound – Enabled Auto Exit –Enabled Port Status –Enabled Display Format – Time &amp; Battery</p>
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Table 4 - Factory Default Settings for KDC

## 2.6 LED Status

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LED Color	Status
Green	<ul style="list-style-type: none"> <li>• Successful Reading</li> <li>• USB is connected and battery is fully charged</li> </ul>
Orange	<ul style="list-style-type: none"> <li>• Low battery</li> <li>• USB is connected and battery is charging</li> </ul>
Red	<ul style="list-style-type: none"> <li>• No reading</li> <li>• Empty battery</li> </ul>

*Table 5 - Explanation of LEDs*

## 2.7 Empty Battery

---

The KDC will display the message **Empty Battery Connect USB** when the battery is empty. Synchronize the KDC IMMEDIATELY to prevent loss of collected data.

## 2.8 Buffer Full

---

The KDC will display the message **Buffer Full** when the size of collected data reaches 200KB or the number of collected barcodes is 10,240. To prevent the loss of data, you should synchronize the data then reset the memory when this message displays.

## 2.9 Reset Feature

The Reset feature lets you restart the KDC if necessary without losing any stored barcode data or option settings. To reset the KDC, follow these steps.

1. Connect the KDC to your PC.
  - KDC100 - Connect to your PC directly using the *swing out*, Type A USB connector. See Figure 7 - Reset Function of KDC100.
  - KDC200 / KDC200P / KDC300 - Connect to your PC using the included cable, attaching the ultra mini USB connector to your KDC and the standard, Type A connector to your PC's USB port. See Figure 6 - Reset Function for KDC200 - KDC200 - KDC300.
2. Press DOWN scroll button and SCAN button simultaneously for 5 seconds.
3. When the LEDs illuminate yellow, release the buttons.
4. The KDC initial screen, **KoamTac Data Collector KDC** displays when reset is complete.

### Note:

*The KDC stores collected data into flash memory and will not lose data or the KDC settings during the reset process.*



Figure 7 - Reset Function of KDC100



Figure 6 - Reset Function for KDC200 - KDC200 - KDC300

## 2.10 Replace Battery

The KDC battery has a lifetime of at least 300 charges. However, when the battery is no longer chargeable, it needs to be replaced. You can purchase a replacement battery from your distributor. The steps for replacing the battery are as follows.

1. Disassemble the KDC back cover by unscrewing the middle screw.
2. Remove old battery and replace with new battery.
3. Reassemble the back cover.



Figure 8 - Replacing KDC Battery

## 3. BLUETOOTH - KDC200 / KDC200P / KDC300

The KDC supports a generic Bluetooth COM port and is compatible with following Bluetooth stacks. However, the KDC supports SPP (Serial Port Profile) and may support other Bluetooth stacks than those listed below.

- BlueSoleil
- Broadcom (Widcomm)
- Microsoft Windows XP SP2, Vista, and Mobile5.0+
- Toshiba

### 3.1 Power

---

The POWER option allows you to Enable or Disable the Bluetooth functionality of the KDC. To use Bluetooth, this option must be set to Enable. However, like all devices enabled for Bluetooth, the KDC, when set to Enable, will search constantly to connect with a Bluetooth host. Constant searching uses battery power. Unless you are using Bluetooth with your KDC, this option should be set to Disabled.

**IMPORTANT:** To prevent unnecessary power problems, it is strongly recommended that the POWER option be set to Disabled if the KDC is idle for an extended period of time.

### 3.2 Pairing

---

Before you are able to use Bluetooth, the KDC must be paired with the host device. This pairing process only needs to be completed once with each host device. After pairing, the host device will always recognize the KDC as a Bluetooth device unless the Bluetooth configuration is modified. If it is modified, you may need to pair the devices again.

**IMPORTANT:** The host device must be configured for Bluetooth before it can be paired to the KDC.

To pair the KDC with the host, follow these instructions.

1. Select Pairing from the Bluetooth menu. The message "**Pairing started...**" will displayed.
  2. When prompted by the host device, enter the Security PIN "0000".
  3. The "**Pairing success**" message will display when the Bluetooth connection is successfully established. The connection must be established before the pairing timeout which is 60 seconds.
- If "**Pairing failed...**" message displays, the Bluetooth connection with the host device failed. If the message "**Connected**" displays, a Bluetooth connection was established.
- It is possible for the message "**Pairing failed...**" to display on the KDC while the host device displays "**Connected**" message. If this occurs, a Bluetooth connection is established.

## 3.2 Auto Connect

---

This feature allows the KDC to connect automatically to the host device when the KDC is powered on.

**IMPORTANT:** Until the host device and KDC have been fully tested, it is strongly recommended that this feature be Disabled because a host device that does not support this feature can cause problems such as power loss or upload delays.

[Note] KDC tries to connect automatically to the host 10 times during two minutes if system sleep timeout is set to 10 seconds.

## 3.3 Auto Power On

---

The Auto Power On option allows the KDC to automatically power on Bluetooth when the SCAN button is depressed. The default setting is Disabled. **NOTE:** The host may have to open the COM port before reconnecting with the KDC.

## 3.4 Auto Power Off

---

The Auto Power Off option works in conjunction with the PWR Off Time option. This option allows the KDC to power off Bluetooth automatically when the KDC is NOT CONNECTED to the host for the time duration specified in the PWR Off Time option.

The default for this option is Enable. It is strongly recommended to keep it enabled to maximize the operation time of the KDC. If Auto Power Off is enabled, Bluetooth can be manually powered off before specified time in PWR Off Time option.

## 3.5 Beep Warning

---

The KDC beeps to acknowledge the status of the Bluetooth connection as follows:

1. One (1) high short beep when Bluetooth is connected.
2. One (1) low short when Bluetooth is disconnected.
3. Five (5) short beeps if:
  - “Beep Warning is ENABLED”
  - “Auto Power Off is DISABLED”
  - “KDC200/200P/300 is DISCONNECTED from HOST”
  - “Bluetooth power is ON”

## 3.6 PWR OFF Time

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The PWR Off Time option works in conjunction with the Auto Power Off option. If Auto Power Off is Enabled, the KDC powers off Bluetooth when the time duration specified in the PWR Off Time option is met and the KDC is NOT CONNECTED to the host. The time settings for this option are from one (1) minute to 30 minutes. The default is five (5) minutes.

## 4. SYNCHRONIZATION

When barcode data is collected, it must be uploaded to your application. KTSync<sup>®</sup>, which is bundled with the KDC, is software that allows barcode data to be uploaded to any PC, PDA, or smartphone running Windows XP, Vista, or Mobile 5.0+. It has two major functions - Synchronization and Keyboard Emulation.

- Synchronization - Provides data upload functionality to your applications.
- Keyboard Emulator - Allows scanned data to upload directly into your application as if the data were being entered manually on a keyboard.
- Additional functions include:
  - Prefixes and suffixes add-on functions to scanned barcodes eliminating manual data entry
  - Symbology and Scan Option selections
  - Barcode Wedging options

KTSync<sup>®</sup> was installed during the initial installation process. Before data can be uploaded to a host device, KTSync<sup>®</sup> must be launched on the host and configured to recognize the KDC. The following screen displays when KTSync<sup>®</sup> is launched.

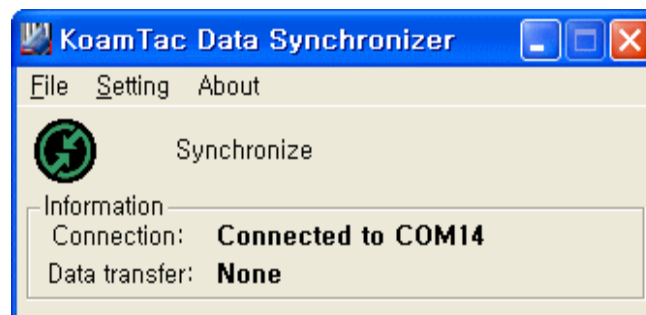


Figure 9 - KTSync<sup>®</sup> Synchronizer Menu

### File Menu

- Connect: Select the KDC port assignment. This information can be found in Windows Device Manager. The port assignment is used by KTSync<sup>®</sup> when synchronizing data from the KDC.
- Synchronize: This option tells the KDC to synchronize data with the host manually.

### Setting Menu

- Synchronize: Select Synchronize options.
- Barcode & KDC: Select Barcode and KDC options.
- Confirmation: Select Auto Connection and/or Synchronization Confirmation options.

### About Menu - KTSync<sup>®</sup> - Version Information

## 4.1 Connect to KDC

---

The KDC connects to a COM port automatically when connected to your PC's USB port. After the port is assigned, you must manually assign the KDC to its assigned COM port in KTSync®. **You can manually assign the KDC COM port using KTSync® Connection submenu under File menu if needed.**

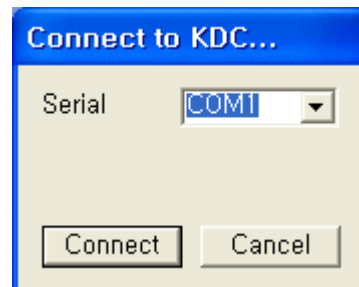


Figure 10 - COM Port Selection for KDC

- The COM port assignment is found in the Windows Device Manager.
- KTSync® will not connect to the KDC if it is in KDC Mode Menu.  
You must EXIT the KDC from the Menu before KTSync® will connect to the KDC.
- If KTSync® fails to connect automatically to the KDC, please follow these directions.
  1. Exit KTSync®.
  2. Check that you have connected the KDC to a USB port on your PC.
  3. Make sure to use the cable provided with the KDC.
  4. Check that the KDC is not in KDC Mode Menu.
  5. Restart KTSync®.

## 4.2 Synchronization Settings

The KDC Menu provides several synchronization options for synchronizing host devices such as your PC, PDA, or smartphone. KTSync® is included with the KDC for synchronizing host devices running Windows XP, Vista, or Mobile 5.0+. You can also configure various Synchronization and Keyboard Emulation functions in the Synchronization Settings option.

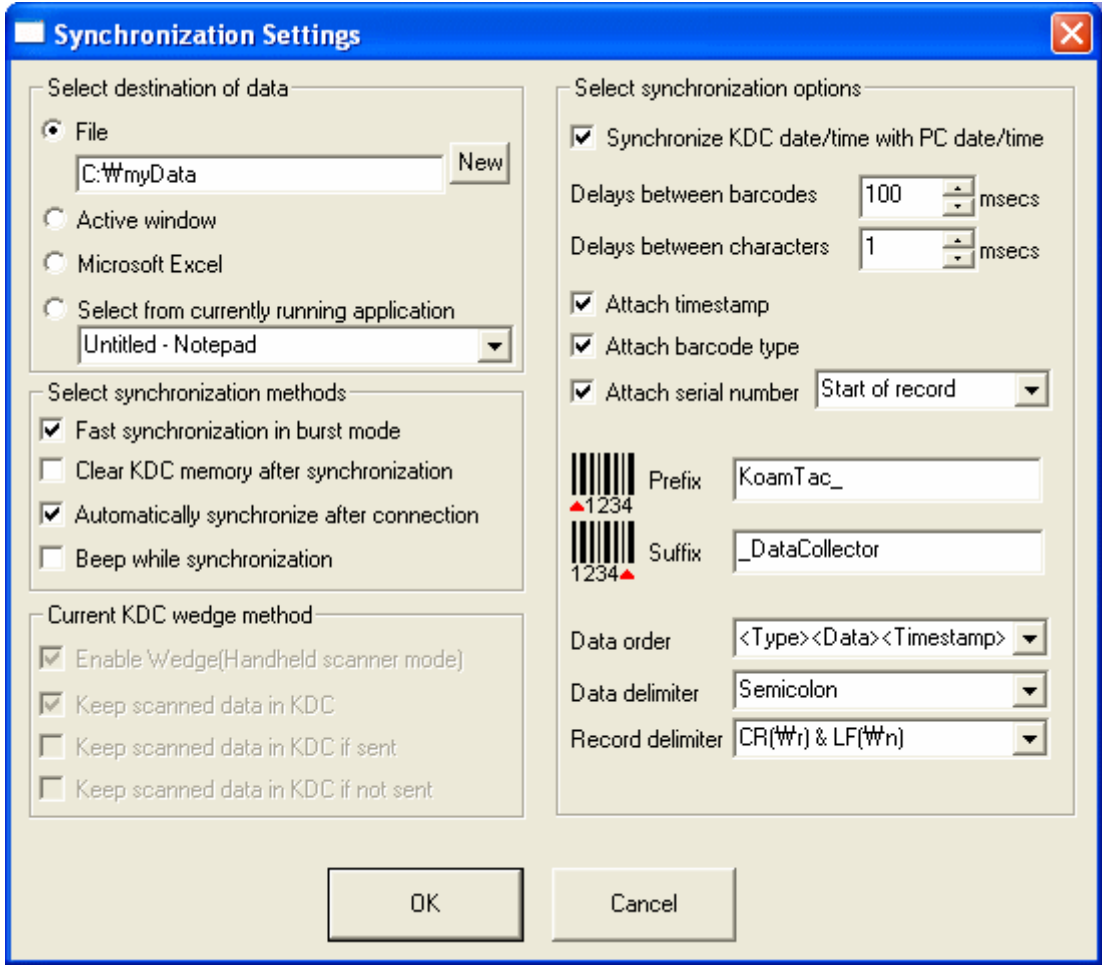


Figure 11 - KTSync® Synchronization Settings

## Destination of Data

When barcode data is uploaded to the host device, you must assign a destination for the data. Destination of Data options include:

- File - This option means data will be saved in the assigned filename. You can select a different target directory by clicking the New icon. C:\MyData is the default directory. If this directory is not created, you will be prompted to create it before data can be uploaded to a file.
- Active Window - This option means scanned barcode data is sent directly to the active program running on your device as if the data was being entered directly from a keyboard.
- Microsoft Excel - This option means barcode data is being imported directly into Microsoft's Excel. Various parameters can be set when uploading data to Excel.
- Select from Current Running Application – This option allows you to select a currently running application for data synchronization.

### Note:

- Data synchronization begins immediately if *Automatically After Connection* is selected. If not selected, data synchronization is started manually by the user.
- Users **SHOULD NOT** operate the PC during the synchronization process. It can interrupt the process causing unreliable results.

## *Synchronization Methods*

### ***Fast Synchronization in Burst Mode***

The KDC can synchronize data to a host device in Burst mode or Handshake mode. Burst mode provides the fastest synchronization process when the Destination of Data option is set to File.

### ***Clear KDC Memory after Synchronization***

The stored barcode data is cleared from the KDC memory after synchronization if this option is selected. The KDC can store a total of 10,240 barcodes or 200KB of barcode data.

- It is important to clear the KDC memory periodically to prevent Buffer Full message which will prevent the KDC from storing additional data.
- Stored barcode data can also be deleted using the Reset Memory feature on the KDC.

### ***Automatically Synchronize after Connection***

This option lets you automatically synchronize collected data to your PC immediately when the KDC is connected to the host.

- **IMPORTANT:** Remember to configure all options properly before performing an automatic synchronization process.
- Data synchronization can be done manually by clicking the synchronize icon if this option is not selected.

### ***Beep while Synchronization***

You can enable or disable the beep tone during the synchronization process. A beep is sounded each and every time barcode data is synchronized if this option is selected. The KDC beeps 5 times when the synchronization process is complete.

## *KDC Wedge Method*

The KDC can be configured in one of five Wedge/Store modes -

- Wedge Only - Scanned data is transmitted to the host. The KDC does not store scanned data.
- Wedge & Store - Scanned data is stored in the KDC and transmitted to the host.
- Store Only - Scanned data is stored in the KDC but NOT transmitted to the host.
- Wedge & Store if Sent - Scanned data is stored in the KDC ONLY if transmission to the host is successfully.
- Wedge & Store if Not Sent - Scanned data is stored in the KDC ONLY if transmission to the host is unsuccessfully.

### ***Enable Wedge (Handheld scanner mode)***

- Marked if either Wedge only or Wedge & Store option are selected.

### ***Keep Scan Data in KDC***

- Marked if either Store only or Wedge & Store option are selected.

## *Synchronization Options*

### ***Synchronize KDC Time with PC Time when Connected***

This option enables you to synchronize the KDC date and time with host device date and time. Synchronization of date and time occurs after the data is uploaded to the host device.

### ***Delays***

You can set transmission delays between barcodes and characters during the synchronization process. It is important to set proper delays to prevent errors during the transmission of collected barcodes. Some Windows applications such as Excel require longer delay times.

### ***Prefix and Suffix***

- Enter the characters you want appended to the front or back of the barcode in the prefix and/or suffix fields.
- The character set is any combination of ASCII characters including alphanumeric, line feed (“\n”), and carriage return (“\r”).

### ***Order and Delimiter***

- Select Order of Data – Type, Data, and Timestamp
- Select the Delimiter between Data – Tab, Space, Comma, and Semicolon
- Select the Delimiter between Records – None, LF, CR, Tab, and <LF & CR>

### 4.3 Barcode & KDC Settings

KTSync® allows you to configure the KDC Scan Options and Barcode Settings. The configurations options for the KDC using KTSync® are similar to the Set Barcodes, Code Options, and Scan Options on the KDC Menu. Please refer to Appendix A for proper barcode settings for your application.

**IMPORTANT: You must configure barcode options properly for the best performance.**

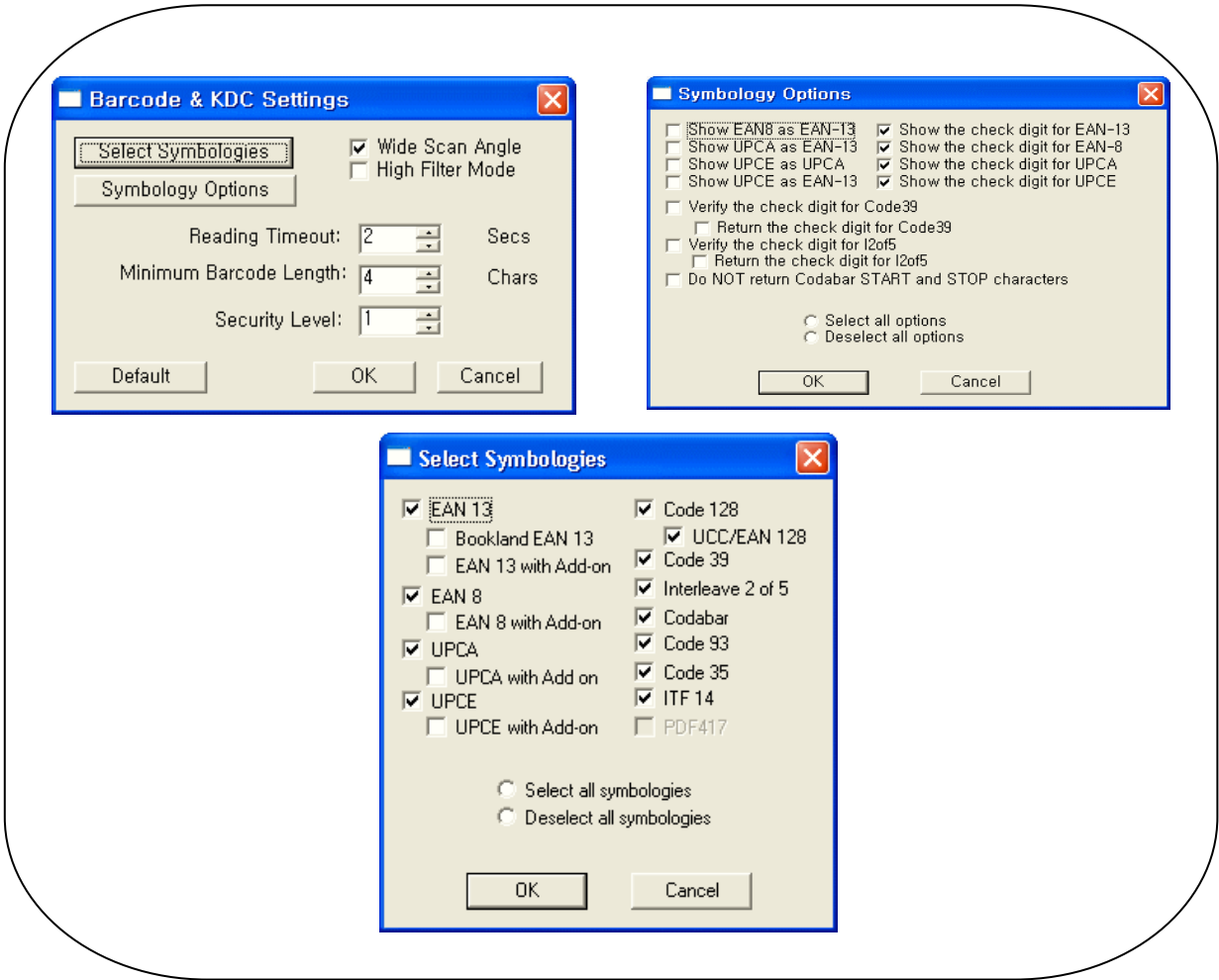
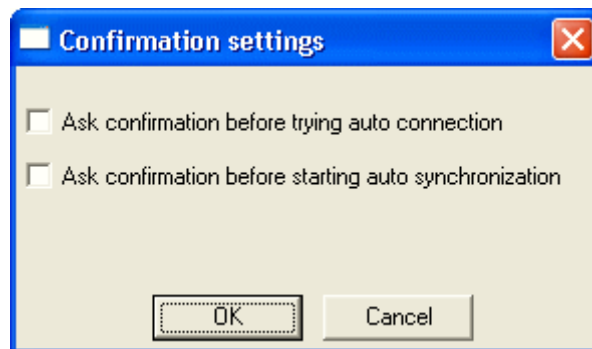


Figure 12 - KTSync® Barcode, Symbologies, and Scan Options

## 4.4 Confirmation Settings

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The Confirmation Settings window will display. If you want to confirm an Auto Connection or Auto Synchronization, this window will pop up.



*Figure 13 - KTSync® Confirmation Settings*

# 5. Master - Slave Barcode Compare

The KDC Mode Menu supports two applications for collecting data, Normal mode and Master-Slave Barcode Compare mode. In the Master-Slave mode, a **master** barcode is defined then compared to **slave** barcodes. The specific modes are described below.

- Onetime mode - Define one **master** barcode and compare it with one **slave** barcode.
- Continuous mode - Define one **master** barcode and compare it with multiple slave barcodes.
- Collation mode
  - 1. Allows you to compare a substring within a barcode instead of comparing an entire barcode string.
  - 2. Uses a Start Character Position and Number of Characters to be Compared to define the substring.

The following flow chart shows the data flow in this Master-Slave Compare application. Within this application, you can go back to KDC Mode Menu by pressing the UP and DOWN scroll buttons simultaneous during the Master-Slave Barcode Compare process.

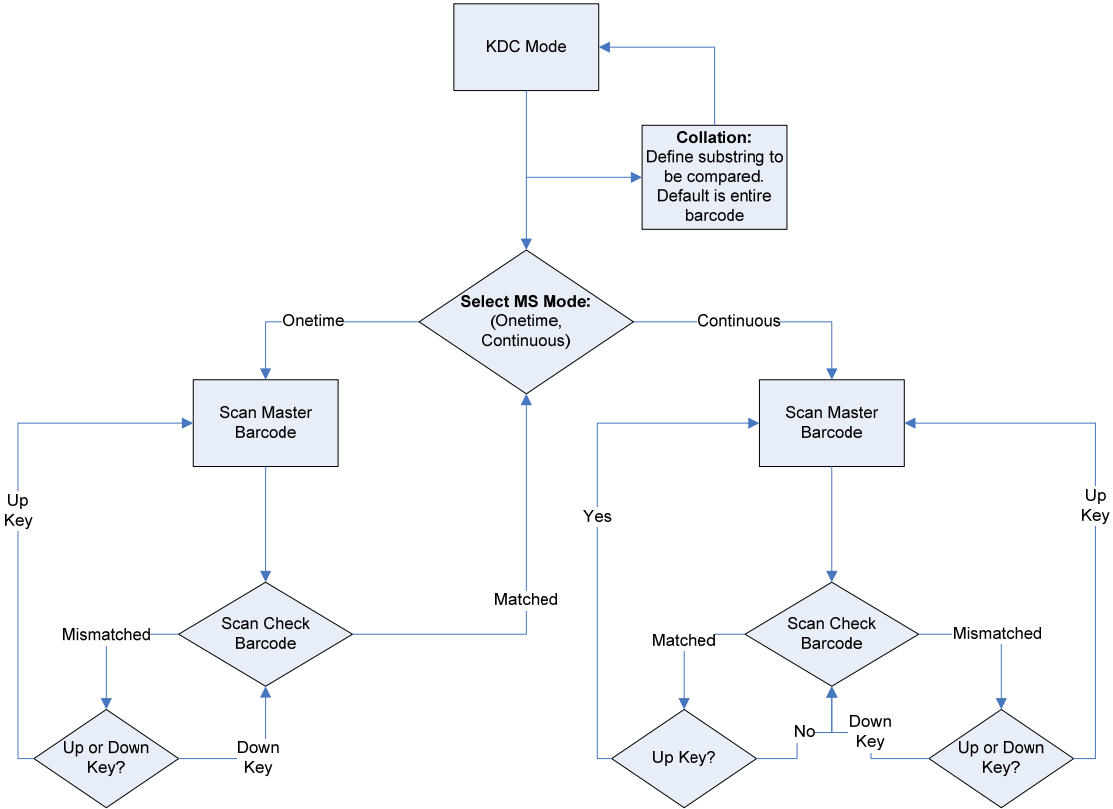


Figure 14 - Master-Slave Barcode Compare Diagram

## 6. Troubleshooting

<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
<b>KDC not working</b>	Dead battery	<ul style="list-style-type: none"> <li>● Charge battery by connecting KDC to your PC using the included cable</li> </ul>
	Hardware failure	<ul style="list-style-type: none"> <li>● Contact distributor for technical support</li> </ul>
<b>KDC not charging</b>	Bad battery	<ul style="list-style-type: none"> <li>● Replace battery – Contact Local Distributor</li> </ul>
	Poor USB port	<ul style="list-style-type: none"> <li>● USB port doesn't supply proper current to KDC - Charge KDC using a different USB port on your PC</li> </ul>
<b>Failed reading</b>	Damaged barcode	<ul style="list-style-type: none"> <li>● Scan a different barcode</li> </ul>
	Out of scan range	<ul style="list-style-type: none"> <li>● Move the scanner closer to barcode</li> <li>● Move scanner farther from the barcode</li> </ul>
	Incorrect angle	<ul style="list-style-type: none"> <li>● Change the angle of scanner to barcode</li> </ul>
	Symbology not supported	<ul style="list-style-type: none"> <li>● Contact KoamTac - <a href="http://www.koamtac.com">www.koamtac.com</a> for possibility of custom symbology support</li> </ul>
	Scan options	<ul style="list-style-type: none"> <li>● Check scan option settings</li> </ul>
	Dirty scan window	<ul style="list-style-type: none"> <li>● Clean scan window</li> </ul>
	Damaged scan window	<ul style="list-style-type: none"> <li>● Replace scan window</li> </ul>
<b>KDC reads wrong barcode</b>	Dirty scan window	<ul style="list-style-type: none"> <li>● Clean scan window</li> </ul>
	Damaged scan window	<ul style="list-style-type: none"> <li>● Replace scan window</li> </ul>
	Poor quality barcode	<ul style="list-style-type: none"> <li>● Select only necessary barcodes</li> <li>● Increase minimum barcode length</li> <li>● Increase security level</li> </ul>
<b>Can't communicate with PC, PDA, or smartphone</b>	USB cable is not connected properly	<ul style="list-style-type: none"> <li>● Check cable connection between KDC and host device</li> </ul>
	Software is not working properly	<ul style="list-style-type: none"> <li>● Reload the software</li> </ul>
	COM configuration	<ul style="list-style-type: none"> <li>● Check COM port configurations</li> </ul>
<b>LED blinks yellow</b>	Low battery power	<ul style="list-style-type: none"> <li>● Charge the battery by connecting KDC to PC.</li> <li>● KDC will lose collected data if the battery is empty.</li> </ul>
<b>Buffer Full Message</b>	Full Memory	<ul style="list-style-type: none"> <li>● Clear the Memory using Synchronization program</li> </ul>
<b>Empty Battery Message</b>	Empty battery	<ul style="list-style-type: none"> <li>● Connect USB immediately.</li> <li>● Synchronize the collected data and charge KDC</li> </ul>

Table 6 - Troubleshooting Techniques

# 7. Warranty

## LIMITED WARRANTY AND DISCLAIMERS

BY OPENING THE PACKAGE OF THIS PRODUCT YOU AGREE TO BECOME BOUND BY THE LIABILITY AND WARRANTY CONDITIONS AS DESCRIBED BELOW.

UNDER ALL CIRCUMSTANCES THIS MANUAL SHOULD BE READ ATTENTIVELY, BEFORE INSTALLING AND OR USING THE PRODUCT.

### Serial Number

A serial number appears on the KDC label. This official registration number is strictly related to the device purchased. Make sure that the serial number appearing on your KDC is not removed. Removing the serial number will affect the warranty conditions and liability disadvantageously, so please maintain the label with serial number on the KDC. Units with the serial number label removed should not be operated.

### Warranty/Warranty Period/Liability

KoamTac, Inc. ("KoamTac") manufactures its hardware products in accordance with industry-standard practices. Unless otherwise agreed in a contract, KDC is warranted for a period of one year after purchase, covering defects in material and workmanship except rechargeable battery. KoamTac will repair or, at its opinion, replace products that prove to be defective in material or workmanship under proper use during the warranty period. KoamTac will not be liable in cases (i) in which the unit has been repaired or altered unless done or approved by KoamTac, (ii) in which the unit has not been maintained in accordance with any operating or handling instructions supplied by KoamTac, (iii) in which the unit has been subjected to unusual physical or electrical stress, misuse, abuse, power shortage, negligence or accident or (iv) in which the unit has been used other than in accordance with the product operating and handling instructions. Preventive maintenance is the responsibility of the customer and is not covered under this warranty. Under no circumstance will KoamTac be liable for any direct, indirect, consequential or incidental damages arising out of use or inability to use either the hardware or software, even if KoamTac has been informed about the possibility of such damages.

### Warranty Coverage and Procedure

During the warranty period, KoamTac will repair or replace defective products returned to KoamTac warehouse. International customers should contact the local KoamTac office or support center. If warranty service is required, KoamTac will issue a Return Material Authorization Number. Products must be shipped in the original or comparable package, shipping and insurance charges prepaid. KoamTac will ship the repaired or replacement product freight and insurance prepaid. Customer accepts full responsibility for its software and data including the appropriate backup thereof. Repair or replacement of a product during warranty will not extend the original warranty term.

**CAUTION:** Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

## 8. CONTACT INFORMATION



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**For more information, visit our website - [www.koamtac.com](http://www.koamtac.com)**

# APPENDIX A - Barcode & Scan Options

The process for scanning and reading barcodes is delicate and complicated. Your KDC, though equipped with a high performance scan engine, if configured incorrectly, may not perform at its peak performance level. To ensure its high performance, the KDC comes configured to optimize its scan engine technology. Unless you clearly understand the impact of your changes to the KDC settings, please do not change factory default settings.

## A.1 Symbologies

KoamTac's KDC products support most major barcode symbologies including 1D, 2D, Postal, and OCR-Fonts. Below is a list of the barcode symbologies supported by the KDC with respect to each models particular area of support. To ensure superior scan performance, remember to select only the required symbologies.

	<i>KDC100</i>	<i>KDC200</i>	<i>KDC200P</i>	<i>KDC300</i>
<i>1D Barcodes</i>	EAN13, EAN8, UPCA, UPCE Bookland EAN, EAN13 with Addon, EAN8 with Add-on, UPCA with Add-on, UPCE with Add-on, Interleave 2 of 5, ITF14, Code128, Codabar, EAN128, Code39, Code93, & Code35	EAN13, EAN8, UPCA, UPCE Bookland EAN EAN13 with Add-on, EAN8 with Add-on, UPCA with Add-on, UPCE with Add-on, Interleave 2 of 5, ITF14, Code128, Codabar, EAN128, Code39, Code93, & Code35	EAN13, EAN8, UPCA, UPCE Bookland EAN EAN13 with Add-on, EAN8 with Add-on, UPCA with Add-on, UPCE with Add-on, Interleave 2 of 5, ITF14, Code128, Codabar, EAN128, Code39, Code93, & Code35	Codabar, Code11, Code32, Code39, Code128, EAN8, EAN13, EANUCC, I2of5, MSI, Plessey, PosiCode, RSS-14, RSSLimit, RSSEXPAND, S2of5IA, S2of5I, TLC39, Telepen, Trioptic, UPCA, & UPCE
<i>2D Barcodes</i>	N/A	N/A	PFD417	AztecCode, AztecRunes, CodablockF, Code 16K, Code49, DataMatrix, MaxiCode, MicroPDF, PDF417, & QRCode
<i>Postal Barcodes</i>	N/A	N/A	N/A	AusPost, CanadaPost, ChinaPost, JapanPost, KoreaPost, KixPost, Planet Code, Postnet (US), & UKPost
<i>OCR Fonts</i>	N/A	N/A	N/A	OCR-A, OCR-B, OCRUSCurrency, OCRMICRE13B, & OCRSEMIFONT

Table 7 - Symbologies Supported by KDC

## Bookland EAN vs. EAN-13

Bookland EAN which includes ISBN, ISSN, and ISMN, is supported by the KDC. This group of symbologies is essentially an EAN-13 barcode with fixed prefixes; 977 for ISSN, 978 for ISBN, and 979 for ISMN. If EAN-13 and Bookland EAN are both enabled, Bookland EAN takes precedence. Bookland EAN does not have any options. The Bookland EAN barcode does not contain any groupings – that is, there are no hyphens or separators. Thus, the ISBN 957-630-239-0 is transmitted as 9576302390.

## Add-on Symbologies

By default, the 2 or 5 digit add-on symbols with a UPCE, UPCA, EAN-8, and EAN-13 barcode is neither decoded nor transmitted. Transmission for these specific symbologies is enabled by setting the appropriate *withAddon* options. There are 4 *withAddon* options, one for each symbology:

- **UPCEwithAddon**
- **UPCAwithAddon**
- **EAN8withAddon**
- **EAN13withAddon**

The decoding of add-on symbols is typified by the following table, which explains the process for EAN-13 symbols.

Mode	Behavior	Value of flags	
		EAN13	EAN13withAddon
Auto-discrimination	If add-on symbol is present, then it is also decoded; otherwise only the EAN-13 symbol is decoded.	true	true
With add-on	Only EAN-13 barcodes with 2 or 5 add-on symbols are decoded.	false	true
Without add-on	The add-on symbol is ignored.	true	false

Table 8 - Add-on for EAN-13 Symbology

The add-on symbol is appended to the EAN-13 barcode. The process is similar for UPCE, UPCA, and EAN-8 barcodes. Note that all the UPCE, UPCA, EAN-8, and EAN-13 formatting and conversion options are in effect. The following table should help explain the effect of various options for EAN-8 barcode 12345670 + 12.

Barcode	EAN8_as_EAN13	EAN8_ReturnCheckDigit	EAN13_ReturnCheckDigit
1234567012	False	True	N/A
123456712		False	
00000123456712	True	N/A	false
000001234567012			true

Table 9 - Add-on for EAN-8 Symbology

The add-on symbol neither contains check digit nor a terminating guard band. Every effort has been made to reduce the decoding error; however, it is likely to decode a partial scan of a 5-digit add-on symbol as a 2-digit add-on symbol. It is strongly recommended that the minimum security level is set at 2 while decoding add-on symbols. Since the decoder takes a conservative view on the add-on symbols, it is likely that the add-on symbol will be missed in the auto-discrimination mode. Auto-discrimination mode should then be avoided.

## A.2 Code Options

---

The KDC supports the following barcode options:

- Transmission of start and stop characters
- Reverse direction
- Symbology conversion
- Verification of optional check character
- Transmission of check digit

### *Transmission of Start and Stop Characters*

For Codabar symbols you can choose not to transmit the start and stop symbols, the NOTIS Editing. By default, they are transmitted. Setting the field **CodaBar\_NoStartStopChars** to true disables the transmission.

### *Reverse Direction*

This option may be selected if direction oriented symbologies are selected such as Code35.

### *Symbology Conversion*

By default the EAN-8, UPCE, and UPCA symbols are transmitted in their native format. It is possible to show them in a different format. You can choose to display UPCE symbols as either UPC-A or EAN-13 symbols, EAN-8 symbols as EAN-13 symbols, or UPC-A symbols as EAN-13 symbols. The following table shows the effect of setting various options.

Option	EAN-8	UPC-A	UPC-E	All other
EAN8_as_EAN13	Converted to EAN-13	No effect	No effect	No effect
UPCA_as_EAN13	No effect	Converted to EAN-13	No effect	
UPCE_as_EAN13	No effect	No effect	Converted to EAN-13	
UPCE_as_UPCA	No effect	No effect	Converted to UPC-A	

Table 10 - Symbology Conversion

## Verification of Optional "Check Digit"

Code39 and Interleave 2 of 5 have an optional check digit, which, by default, is not verified. Their verification can be enabled by selecting the option **VerifyCheckDigit** to true or you can enable the verification for individual symbologies. If the check digit verification fails then the barcode is not transmitted.

Option Selected	Verify Code39 check digi	Verify I2of5 check digit
VerifyCheckDigit	Yes	Yes
Code39_VerifyCheckDigit	Yes	No effect
I2of5_VerifyCheckDigit	No effect	Yes

Table 11 - Verification of Optional "Check Digit"

## Transmission of "Check Digit"

By default, the check digit – optional or mandatory – is not transmitted. Its transmission can be enabled for all symbologies by enabling **ReturnCheckDigit** option.

Option Selected	Is the check digit returned?					
	EAN-1	EAN-1	UPC-A	UPC-E	Code3	I2of5
ReturnCheckDigit	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
EAN13_ReturnCheckDigit	<b>Yes</b>	No effect	No effect	No effect	No effect	No effect
EAN8_ReturnCheckDigit	No effect	<b>Yes</b>	No effect	No effect	No effect	No effect
UPCA_ReturnCheckDigit	No effect	No effect	<b>Yes</b>	No effect	No effect	No effect
UPCE_ReturnCheckDigit	No effect	No effect	No effect	<b>Yes</b>	No effect	No effect
Code39_ReturnCheckDigit	No effect	No effect	No effect	No effect	<b>Yes</b>	No effect
I2of5_ReturnCheckDigit	No effect	No effect	No effect	No effect	No effect	<b>Yes</b>

Table 12 - Transmission of "Check Digit"

## *Resolution of Inconsistencies*

Three types of inconsistencies could arise in the assignment of symbology options. The decoder has pre-defined strategies to resolve these inconsistencies: If **UPCE\_as\_EAN13** is true, then **UPCE\_as\_UPCA** is ignored.

If symbology conversion is selected but the target symbology is not enabled, then the decoder still outputs the symbol in the target symbology. For example, suppose UPC-E is enabled and **UPCE\_as\_EAN13** is true but EAN-13 is disabled. All UPC-E symbols will be shown as EAN-13 and EAN-13 options (if specified) will be applied. For the two symbologies that have optional check digits, Code39 and Interleave 2 of 5, the decoder will always transmit the check digit if the verification is disabled.

Verify Check Digit	Return Check Digit	Description
Disabled	Enabled or Disabled	Check digit is not verified but is transmitted
Enabled	Disabled	Check digit is verified but is not transmitted
Enabled	Enabled	Check digit is verified and is transmitted

*Table 13 - Resolution of Inconsistencies*

## A.3 Miscellaneous Barcode Information

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### *Height of a Linear Barcode*

Industry standards suggest a height of either 6.5mm or 15% of the symbol length, whichever is greater. Symbols of less than recommended heights may cause recognition problems.

### *Check Characters*

Yes, we recommend the use of check-characters in barcodes. Operating without check-characters is not safe and will lead to errors that are costly to correct. Using check-characters positively affects data integrity especially when character density is at the limits and/or image quality is not at its best.

### *Prevent Interleave 2 of 5 Partial Reading*

A partial scan of an Interleave 2 of 5 symbol may decode and cause incorrect data to be read. To prevent partial scans on long symbols, you should include bearer bars. These are bars that run along the top and bottom edges of the barcode in the scanning direction. If a partial scan of the barcode occurs, the scanning beam will hit the bearer bar and will not decode. The bearer bar must touch the top and bottom of all the bars and must be at least 3 times as wide.

Another solution for the short scanning problem is to fix all Interleave 2 of 5 symbols to a set number of digits. Zeros can be used to pad the data to the set number of digits. The application program would then be set to only accept scans of the correct number of digits.

Finally, a check digit may be used. The Interleave 2 of 5 symbology has an optional check character which uses a weighted Modulo 10 scheme. The check character is the last character in the symbol and should be checked by the decoder and then transmitted with the data. Since Interleave 2 of 5 must always have an even number of digits, the leftmost character may need to be a zero when the check character is added. The standard check digit is calculated by assigning alternating 3,1,3,1... weights to respective data digits. These weights are then multiplied by their respective data digits and the products are summed. The check digit is the digit needed to be added to the sum to make it an even multiple of 10. An example would be if the sum of the products was 37, then the check digit would be 3.

## *Equation to Determining Potential Number of Stored Barcodes*

The number of barcodes that can be stored in the KDC memory depends on the size of the barcodes.

**Example:** *If only UPCA barcodes are scanned and the check digit is not transmitted, then each barcode takes up 11 (barcode data) + 2 (added bytes) + 2 (length and type) + 4 (time stamp) = 19 bytes. The maximum number of UPCA barcodes that can be saved is  $204,800/19 = 10,778$ . However, the maximum number of barcodes that can be stored is 10,240. Therefore, the KDC can store 10,240 UPCA barcodes.*

If different length barcodes are mixed, then you cannot compute the maximum number of barcodes that can be stored.

## *Data Buffer Full*

When the data buffer is full, the KDC displays a message, **Buffer Full**, ignoring any command to scan barcodes. You must reset the data buffer to continue data collection

# Appendix B – FAQ

## B.1 Symbology

### Q: What barcode symbologies are supported by the KDC200?

A: The KDC200 supports most major 1D barcode symbologies. Below is a list of the 1D symbologies supported by the KDC200.

<b>KDC300</b>	<b>KDC100 / KDC 200 / KDC200P*</b>
<p><u>2D Barcodes</u></p> <p>AztecCode, AztecRunes, Codablock, Code16K, Code49, DataMatrix, MaxiCode, MicroPDF, PDF417, and QRCode</p> <p><u>1D Barcodes</u></p> <p>Codabar, Code11, Code32, Code39, Code128, EAN8, EAN13, EANUCC, I2of5, MSI, Plessey, PosiCode, RSS-14, RSSLimit, RSSExpand, S2of5IA, S2of5ID, TLC39, Telepen, Trioptic, UPCA, and UPCE</p> <p><u>Postal Barcodes</u></p> <p>AusPost, CanadaPost, ChinaPost, JapanPost, KoreaPost, KixPost, Planet Code, Postnet (US), and UKPost</p> <p><u>OCR Fonts</u></p> <p>OCR-A, OCR-B, OCRUSCurrency, OCRMICRE13B, and OCRSEMIFONT</p>	<p><u>1D Barcodes</u></p> <p>EAN13 EAN8 UPCA UPCE Bookland EAN EAN13 with Add-on EAN8 with Add-on UPCA with Add-on UPCE with Add-on Interleave 2 of 5 ITF14 Code128 Codabar EAN128 Code39 Code93 Code35</p> <p><u>2D Barcodes</u></p> <p>PFD417 - KDC200P only</p>

Table 14 - Symbologies Supported by KDC

## B.2 Host Interface

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**Q: What interface ports are supported by the KDC200?**

A: The KDC200 has one ultra mini USB port which supports serial and USB-Serial. It also supports *Bluetooth* SPP.

**Q: What *Bluetooth* protocol stacks are supported by KDC200?**

A: The KDC200 supports all major *Bluetooth* stacks such as Toshiba®, Widcomm®, BlueSoleil® and Microsoft®. The KDC200 can also connect to other *Bluetooth* stacks supporting SPP (Serial Port Profile).

## B.3 Battery

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**Q: How long will the KDC200 battery last before it needs to be replaced?**

A: The battery on the KDC200 can be charged at least 300 times before it needs to be replaced.

**Q: How long does it take to charge the KDC200?**

A: It takes about 2 hours to fully charge the KDC200 from an empty battery status to a fully charged status.

**Q: How many barcodes can a fully charged KDC200 scan?**

A: The KDC200 can scan more than 10,000 barcodes when fully charged. Using *Bluetooth*, it can scan more than 7,500 barcodes.

**Q: How long will the KDC200 battery lasts in the sleep mode?**

A: The KDC200 lasts more than two weeks in sleep mode. If *Bluetooth* is powered ON and connected to a host device, it will last for more than two days.

**Q: Can I replace the KDC200 battery?**

A: Yes. The KDC200 has a separate compartment for the battery which can be opened easily with a screw driver. Contact your distributor for a replacement battery.

## B.4 Memory

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**Q: How many barcodes can be stored in the KDC200?**

A: The KDC200 has 200KB of data memory and is able to store over 10,000 UPC barcodes.

**Q: Can I download stored barcodes or wedge barcodes to my application?**

A: Yes. KTSync® is synchronization and wedging software included with the KDC200 which supports host applications running on *Microsoft*® Windows XP, Vista, and Mobile5.0+.

**Q: Does the KDC200 support *Blackberry*®, *Symbian*®, *Apple*®, and *Palm*® devices?**

A: KTSync® supports devices running *Microsoft*® Windows XP, Vista, and Mobile5.0+. Applications for *Blackberry*, *Symbian*, *Apple*, *Palm*, and others can be developed using KoamTac's software development kit. Contact KoamTac if you are interested in our SDK.

## B.5 Programming

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**Q: Can the KDC200 be programmed by a KoamTac Business Partner?**

A: Currently, the KDC doesn't support a programming environment for its partners. However, an application generator utility is scheduled for release in 2009.

**Q: Does KoamTac provide customization services for the KDC200?**

A: Yes. Custom applications or projects can be developed by KoamTac engineers. This service is provided as an additional fee to KoamTac. For more information regarding this service, please contact KoamTac.

**Q: Can a partner develop a PC or PDA application for the KDC200?**

A: Yes. A software development kit for devices or applications running *Microsoft*<sup>®</sup> Windows XP, Vista, and Mobile5.0+ is available to our partners. Partners can use DLL and our demo source code included in the SDK for custom applications.

## B.6 KDC200 vs. KDC200P

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**Q: What are the differences between the KDC200 and the KDC200P?**

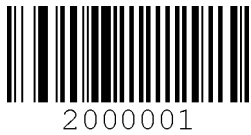
A: The only difference between these two models of KDC is that the KDC200P supports PDF417, a 2D symbology which is not supported by the KDC200. All other features of the KDC200 are included in the KDC200P.

# APPENDIX C - SPECIAL BARCODES

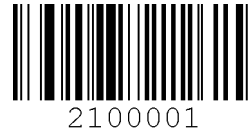
## C.1 Set Symbologies

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Enable EAN-13



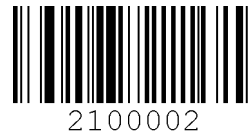
Disable EAN-13



Enable EAN-8



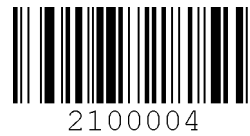
Disable EAN-8



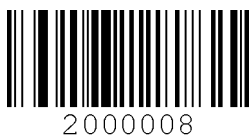
Enable UPCA



Disable UPCA



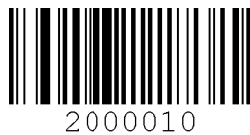
Enable UPCE



Disable UPCE



Enable Code39



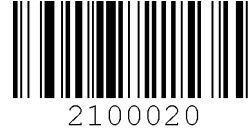
Disable Code39



Enable ITF-14



Disable ITF-14



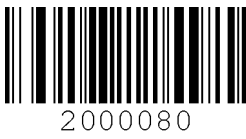
Enable Code128



Disable Code128



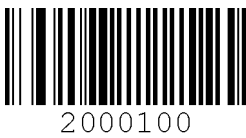
Enable Interleave 2 of 5



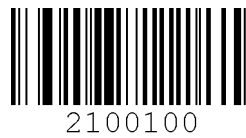
Disable Interleave 2 of 5



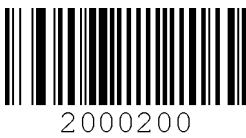
Enable Codabar



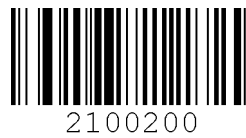
Disable Codabar



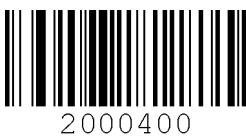
Enable EAN-128



Disable EAN-128



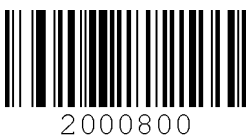
Enable Code93



Disable Code93



Enable Code35



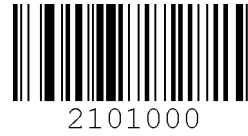
Disable Code35



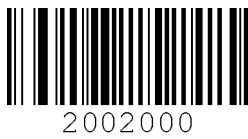
Enable Bookland EAN



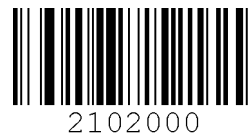
Disable Bookland EAN



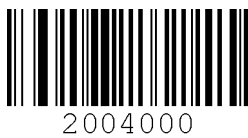
Enable EAN-13 Supplements



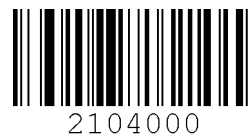
Disable EAN-13 Supplements



Enable EAN-8 Supplements



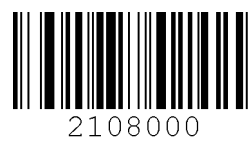
Disable EAN-8 Supplements



Enable UPCA Supplements



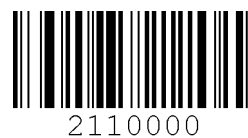
Disable UPCA Supplements



Enable UPCE Supplements



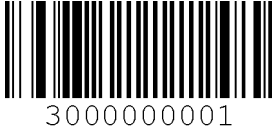
Disable UPCE Supplements



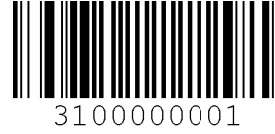
## C.2 Barcode Options

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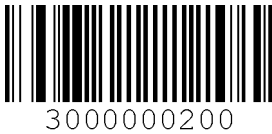
Codabar - do NOT transmit start/stop



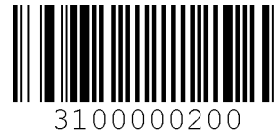
Codabar - transmit start/stop



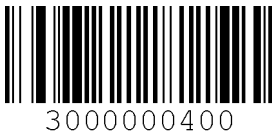
Convert UPCE to UPCA



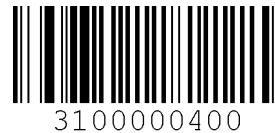
Do NOT convert UPCE to UPCA



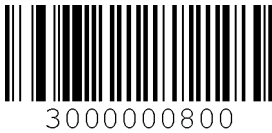
Convert EAN8 to EAN13



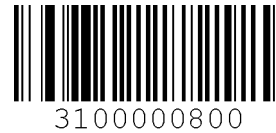
Do NOT convert EAN8 to EAN13



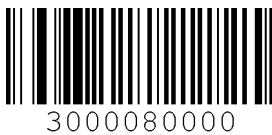
Convert UPCE to EAN13



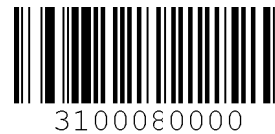
Do NOT convert UPCE to EAN13



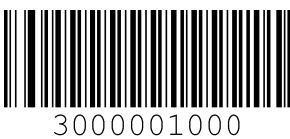
Convert UPCA to EAN13



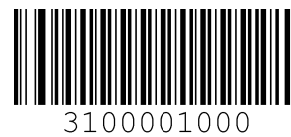
Do NOT Convert UPCA to EAN13



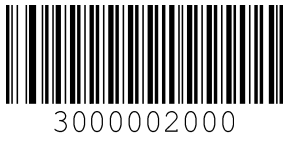
ReturnCheckDigit



Do NOT ReturnCheckDigit



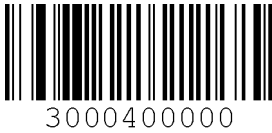
VerifyCheckDigit



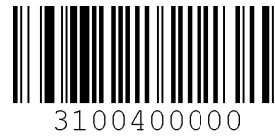
Do NOT VerifyCheckDigit



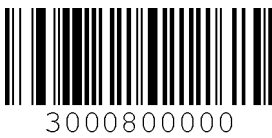
Verify check digit for I2of5



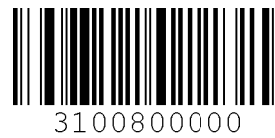
Do NOT verify check digit for I2of5



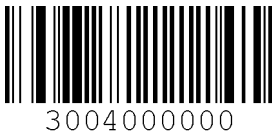
Verify check digit for Code39



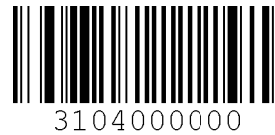
Do NOT verify check digit for Code39



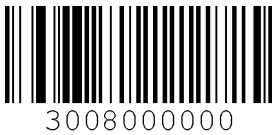
Return check digit for I2of5



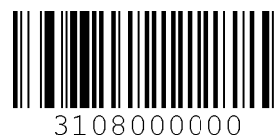
Do NOT return check digit for I2of5



Return check digit for Code39



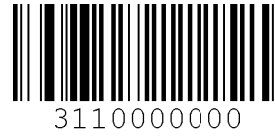
Do NOT return check digit for Code39



Return check digit for UPCE



Do NOT return check digit for UPCE



Return check digit for UPCA



3020000000

Do NOT return check digit for UPCA



3120000000

Return check digit for EAN8



3040000000

Do NOT return check digit for EAN8



3140000000

Return check digit for EAN13



3080000000

Do NOT return check digit for EAN13



3180000000

## C.3 Delete Last Scanned Barcode

---

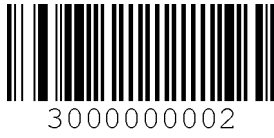


80001

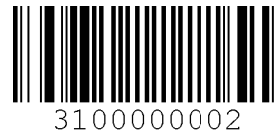
## C.4 Scan Options

---

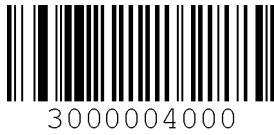
Reversed Scan



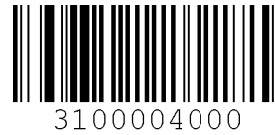
Normal Scan



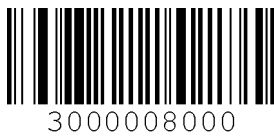
Wide scan angle



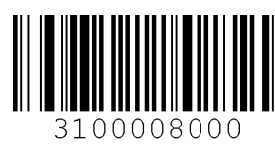
Narrow scan angle



High filter mode



Normal filter mode



## C.5 Scan Timeout

---

Timeout = 500msec



Timeout = 1sec



Timeout = 2sec



Timeout = 3sec



Timeout = 4sec



Timeout = 5sec



Timeout = 6sec



Timeout = 7sec



Timeout = 8sec



Timeout = 9sec



Timeout = 10sec



## C.6 Minimum Barcode Length

---

Minimum Length = 2



Minimum Length = 3



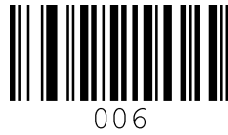
Minimum Length = 4



Minimum Length = 5



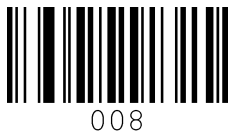
Minimum Length = 6



Minimum Length = 7



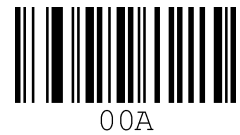
Minimum Length = 8



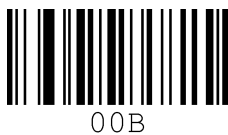
Minimum Length = 9



Minimum Length = 10



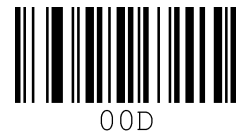
Minimum Length = 11



Minimum Length = 12



Minimum Length = 13



Minimum Length = 14



Minimum Length = 15



Minimum Length = 16



Minimum Length = 17



Minimum Length = 18



Minimum Length = 19



Minimum Length = 20



Minimum Length = 21



Minimum Length = 22



Minimum Length = 23



Minimum Length = 24



Minimum Length = 25



Minimum Length = 26



Minimum Length = 27



Minimum Length = 28



Minimum Length = 29



Minimum Length = 30



Minimum Length = 31



Minimum Length = 32



Minimum Length = 33



Minimum Length = 34



Minimum Length = 35



Minimum Length = 36



## C.7 Security Level

---

Security level = 1



Security level = 2



Security level = 3



Security level = 4



## C.8 Data Process - Wedge/Store

---

Wedge Only



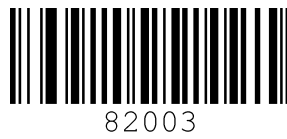
Wedge & Store



Store Only



Wedge & Store if Sent



Wedge & Store if Not Sent



## C.9 Data Process - Data Format - Handshake

---

Data format - Barcode only



Data format - Packet data



Enable Handshake



Disable Handshake



## C.10 Data Process - Termination Character

---

None



88000

CR



88001

LF



88002

CR+LF



88003

Tab



88004

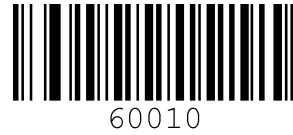
## C.11 Bluetooth

---

Enable Bluetooth Power



Disable Bluetooth Power



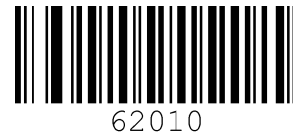
Enter Pairing Mode



Enable Auto Connect



Disable Auto Connect



Enable Auto Power Off



Disable Auto Power Off



Enable Auto Power On



Disable Auto Power On



Enable Beep Warning



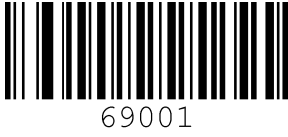
Disable Beep Warning



## C.12 Bluetooth PWR Off Time

---

1min



2min



3min



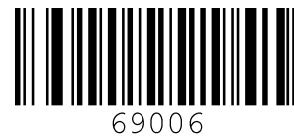
4min



5min



6min



7min



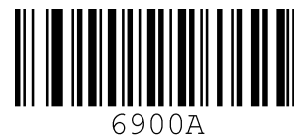
8min



9min



10min



11min



12min



13min



14min



15min



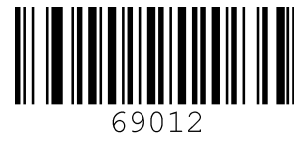
16min



17min



18min



19min



20min



21min



22min



23min



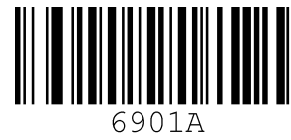
24min



25min



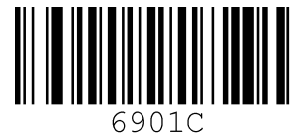
26min



27min



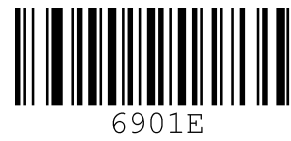
28min



29min



30min



## C.13 System

---

Memory Status



Reset Memory



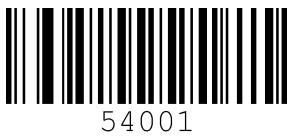
Data/Time



Battery



Version



Button Lock



Button Unlock



Enable Auto Menu Exit



Disable Auto Menu Exit



Enable Port Status



Disable Port Status



Time & Battery



Type & Time



Type & Battery



Factory Default



## C.14 Sleep Timeout

---

Disable



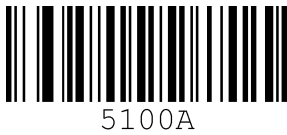
2sec



4sec



10sec



30sec



2min



10min



1sec



3sec



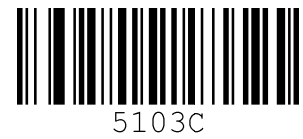
5sec



20sec



1min



5min



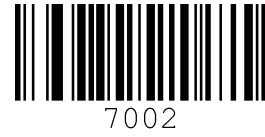
## C.15 Function

---

F1



F2



F3



F4



F5



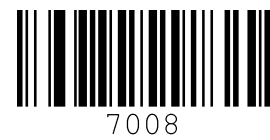
F6



F7



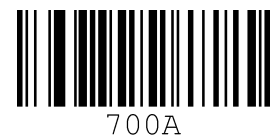
F8



F9



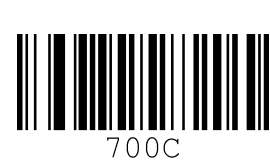
F10



F11



F12



## C.16 Number

---

0



1



2



3



4



5



6



7



8



9



## C.17 Lower Case Alphabet

---

a



b



c



d



e



f



g



h



i



j



k



716B

l



716C

m



716D

n



716E

o



716F

p



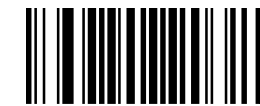
7170

q



7171

r



7172

s



t



u



v



w



x



y



z



## C.18 Upper Case Alphabet

---

A



B



C



D



E



F



G



H



I



J



K



L



M



N



O



P



Q



R



S



T



U



V



W



X



Y



Z



## C.19 Control Character

---

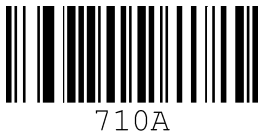
BS



TAB



LF



VT



CR



ESC



Space



DEL



## C.20 Symbol Character

---

!



“



#



\$



%



&



‘



(



)



\*



+



712B

,



712C

-



712D

.



712E

/



712F

:



713A

;



713B

<



713C

=



713D

>



713E

?



713F

@



7140

[



715B

\



715C

]



715D

^



715E

\_



715F

`



7160

|



717B



717C

}



717D

~



717E

Start-String



7201

Stop-String



7210

**Note:**

- *You can compose a string up to 16 characters.*
- *A string would be composed by scanning the “Start-String”, number/alphabet/special characters, and “Stop-String” special barcodes.*
- *The KDC will abort string composition if you do not scan “Stop-String” in one minute after scanning “Start-String” and number/alphabet/special characters.*

# INDEX

- Angle..... 15, 17
- Auto..... 66
- barcode scanner ..... 7
- Battery..... 12, 21, 70, 71
- Beep..... 15, 21, 32, 66
- Bluetooth..... 66
- Button..... 15, 21
- Clear ..... 32, 38
- CODABAR ..... 15
- CODE128..... 15
- CODE35..... 15
- CODE39..... 15
- CODE93..... 15
- Connect..... 66
- data collectorSee barcode scanner
- Date ..... 15, 21
- Delay..... 34
- Delete..... 15
- Delimiter..... 34
- EAN128..... 15, 41, 48
- EAN1315, 41, 42, 43, 44, 45, 48
- EAN8..... 15, 41, 42, 43, 44, 48
- Factory Default..... 21, 71
- File ..... 28, 29, 31
- Filter ..... 15, 17
- Format..... 15, 18
- Full**.....22, 38
- Handshake .....15, 18
- High .....15, 17
- I2of5.....15, 44
- ITF14 .....15, 41, 48
- Keyboard .....28, 30
- KoamTac7, 23, 38, 39, 40, 48, 49, 50
- KTSync® 14, 18, 21, 28, 29, 30, 35, 49
- LED.....14, 22, 23, 38
- Length.....15
- Level.....15, 17
- Memory.....15, 21, 38, 49
- Menu..... 15, 17, 18, 28, 29
- Minimum .....15, 17
- Narrow .....15, 17
- Normal .....15, 17
- Option**15, 16, 17, 28, 34, 41, 43, 44
- Order .....34
- Pairing .....66
- PDA .....30, 38, 50
- PDF417 .....20
- Power .....66
- Prefix.....28, 34
- Process** ..... 15, 18
- Reset..... 15, 21
- Resolution ..... 45
- Scan** 15, 17, 28, 33, 35, 38, 41
- Security ..... 15, 17
- Serial..... 15, 39
- Sleep..... 15, 21
- Special Barcodes ..... 13
- Status..... 15, 21, 22
- Store ..... 15, 18, 33
- Suffix ..... 34
- Symbology ..... 15, 28, 43, 48
- Synchronization 14, 28, 30, 32, 34, 36, 38
- Terminator..... 15, 18
- Time ..... 15, 17, 21, 34
- Transmission..... 43, 44
- UPCA15, 41, 42, 43, 44, 45, 47, 48
- UPCE 15, 41, 42, 43, 44, 45, 48
- USB..... 22, 23, 29, 38
- Version..... 15, 21
- View ..... 16
- Website .....See Koamtac
- Wedge..... 15, 18, 33
- Wide..... 15, 17