KDC Reference Manual

Rev 4.3

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Patents:
Certain KDC products may be covered by the following issued US patent numbers: 7769917, 7954710, 8126399, 8295368, 8346979, 8347366, 8371506, 8483614, 8832323, 9411366, 9542339, 10037488, 10500999, 10520999, 10659580, and 11501278; Korea patent numbers: 101354252, 1020120042930, 1020180124726, and 1020190076161; UK patent numbers: GB2492615, GB2514746; Italy patent number: 102020000014503.

CAUTION:

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 PERSONíS EYES. EXPOSURE TO THE BEAM MAY CAUSE EYE DAMAGE.

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

Regulatory Compliance

US

FCC ID: VH9KBD401, VH9KBLED41, VH9KBLED50, VH9KDC20, VH9KDC30, VH9KDC80, VH9KDC100, VH9KDC180, VH9KDC180U, VH9KDC185, VH9KDC200, VH9KDC250, VH9KDC270, VH9KDC280, VH9KDC300, VH9KDC350, VH9KDC380, VH9KDC400, VH9KDC450, VH9KDC470, VH9KDC480, VH9KDC500, VH9KDCSLED-HF, VH9KDCSLED-PCIEMV, VH9KDCSLED-UHF05, VH9KDCSLED-UHF10

This equipment has been tested and found to comply with the limits 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 may radiate radio frequency energy. It may cause harmful interference to radio communications if not installed and used in accordance with the instructions. 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 may be determined by turning the equipment off and on, the user is encouraged to try to correct the interference with 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 to an outlet on a different circuit than the receiver
4. Consult with the dealer or an experienced radio/TV technician for help

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.

Europe

CE 2200 CE 0983

Certificate No.: EMC15688-07-01

Products intended for sale within the European Union are marked with a CE Mark which indicates compliance to applicable Directives and European Normes (EN), as follows. Amendments to these Directives or ENs are included: Normes (EN), as follows.

Applicable Directives:

Radio and Telecommunications Terminal Equipment Directive 1999/5/EC

Scope of Opinion (Essential Requirements)	Applied Specifications/Standards	TCF Identification	Results
Article 3.1(a) ñ Health	EN 62311:2008	Statement	Complies
Article 3.1(a) - Safety	EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013 EN62479:2010 EN IEC 62368-1:2014+A11:2020	ESTCS1101-002 ETLS180307.0036	Complies
Article 3.1(b) ñ EMC	EN 55022:2006+A1:2007 EN 55022:2010+AC:2011, EN 55024:2010 EN 55024:1998+A1:2001+A2:2003 EN 55032:2015+A11:2020 EN 55035:2017+A11:2020 ETSI EN 301 489-1 V1.8.1 (2008-04) ETSI EN 301 489-1 V2.2.0 (2017) ETSI EN 301 489-1 V2.2.3 ETSI EN 301 489-a V1.9.2 ETSI EN 301 489-3 V2.1.1 (2017) ETSI EN 301 489-17 V2.1.1 (2009-05) ETSI EN 301 489-17 V3.1.1 ETSI EN 301 489-17 V3.2.4 EN IEC 61000-3-2:2019+A1:2021 EN IEC 61000-3-3:2013+A2:2021 EN IEC 61000-4-2:2009 EN IEC 61000-4-3:2006+A2:2010 EN IEC 61000-4-5:2014+A1:2017 EN IEC 61000-4-4:2012 EN IEC 61000-4-6:2014+AC:2015 EN IEC 61000-4-11:2020	ESTCE0712-007(1) ETLE 180306.0210	Complies
Article 3.2 ñ Radio Spectrum Use	ETSI EN 300 328:V1.7.1 (2006-10) ETSI EN 300 330 V2.1.1 (2017)	ESTR0801-018(1) ETLT180307.0037	Complies

	ETSI EN 300 328 V2.2.2 (2022) ETSI EN 302 208 V3.3.1 ETSI EN 50364:2010		

Japan

003WWA080049, 003WWA090274, 011-200008, 208-120048, 208WW110041, 208-130029, 011, 208-140049, 216-220069, 216-220074, 217-220526, 217-220527, 217-230881
Article 2-1-19, 2.4GHz Wide Band low power data communication system

2014026493, 2014027753
VCCI-CISPR 32-2016

Korea

AI3-KDC100, AI3-KDC200, A13-KDC300, KCC-CMM-A13-KDC250, KCC-CMM-AI3-KDC400, KCC-CMM-AI3-KDC450, KCC-REM-AI3-KDCCRADLE, MSIP-CMM-A13-KDC20, MSIP-CMM-A13-KDC30, MSIP-CMM-A13-KDC270, MSIP-CMM-A13-KDC350A, MSIP-CMM-A13-KDC470, MSIP-CMM-AI3-KDC500, MSIP-CMM-AI3-KDC500A, MSIP-CRM-AI3-KBD401, MSIP-REM-AI3-GTA-2SCC, MSIP-REM-AI3-GTA-5BC, MSIP-REM-AI3-GTA-1BC, R-C-AI3-KDCUHF05, R-C-AI3-KBLED41,R-CRM-AI3-KDCSLED-HF, R-C-AI3-KDC180U, R-C-AI3-KDCUHF10, R-CRM-AI3-KDCSLED-HF, R-R-AI3-KDC80, R-R-AI3-KDC180, R-R-AI3-KDC180N, R-R-AI3-KDC185-CRD-2, R-R-AI3-KDC280, R-R-AI3-KDC380, R-R-AI3-KDC480, R-R-AI3-KSLED-UHF10W, R-R-AI3-SKX5, R-R-AI3-KBLED50, R-R-AI3-SKXSLED-PCIEMV, R-R-AI3-KDC-Pistol, R-R-AI3-GTA-5SCC, R-R-AI3-KMS-CRD, R-R-AI3-KPST-CRD, R-R-AI3-K180-CRD, R-R-AI3-SKX-CRD, R-R-AI3-KOAMTAC-10SCC, R-R-AI3-KOAMTAC-2SCC, R-R-AI3-GT-1SCC

Laser Compliance
KDC20/80/100/200/250/270L/280L/350L/380L/410/411/415/470L/480L

Complies with US 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice no. 50, dated June 24, 2007, and IEC 60825-1 (Ed. 2.0)
Complies with IEC60825-1:1993 + A1:1997 + A2:2001 +A3:2014

Battery Warning

- This device contains a rechargeable NiMH. Never throw the battery into a fire, as that could cause the battery to explode.
- Never short-circuit the battery by bringing the terminals in contact with another metal object. This could cause personal injury, a fire, and/or damage to the battery.
- Never dispose of used batteries with other ordinary solid wastes. Batteries contain toxic substances.
- Dispose of used batteries in accordance with the prevailing community regulations that apply to the disposal of batteries. Cover the metal terminals with insulating tape (this is to prevent accidental short-circuiting).
- Never expose the battery to any liquid.
- Always keep the battery out of reach of infants or small children.
- Never shock the battery by dropping it or throwing it.
- Dispose of a spent or damaged battery promptly.

WARNING: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Maintaining Water and Dust Resistance

Whenever your device gets wet, dry it thoroughly with a clean, soft cloth. If your device has gotten wet, you should dry the inside of the charging port before inserting a power connector to charge your device. If the charging port is not fully dry, your device may operate abnormally. For example, it may charge more slowly or overheat.

Product Disposal

This device should not be placed in municipal waste. Please check local regulations for disposal of electronic products.

Bluetooth®

Core Specification: 2.1+EDR
Bluetooth Low Energy V4.1, V5.0

Apple®

Made for iPhone, Made for iPod, Made for iPad

Samsung®

Compatible with Galaxy and Gear Series

Warranty Policy

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.

KOAMTAC ONE-YEAR LIMITED WARRANTY

KOAMTAC products are warranted to be free from defects in materials or workmanship for one (1) year from the date of purchase from an authorized dealer of KOAMTAC products. Within this period, we will, at our sole discretion, repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to you for parts and/or labor, if you shall be responsible for any transportation charges. Replacement products may be new or refurbished at our discretion.

This warranty does not apply to: (i) cosmetic damage, such as scratches, nicks, stains and dents; (ii) consumable parts, such as batteries, unless product damage has occurred due to a defect in materials or workmanship; (iii) damage caused by accident, abuse, misuse, water (in excess of specifications), flood, fire, or other acts of nature or external causes; (iv) damage caused by service performed by anyone who is not an authorized service provider of KOAMTAC; or (v) damage to a product that has been modified or altered without the prior written permission of KOAMTAC.

Repairs have a ninety (90) day warranty. If the unit sent in is still under its original warranty, then the new warranty will be the longer of ninety (90) days or the balance of the original one-year warranty.

THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESS, IMPLIED, OR STATUTORY, INCLUDING ANY LIABILITY ARISING UNDER ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, STATUTORY OR OTHERWISE. Subject to applicable law, in no event shall our liability exceed the purchase price of the Hardware.

RETURN

For warranty returns, you must pack your KOAMTAC product in its original packaging and include all accessories and documentation. We reserve the right to charge for any damage to the KOAMTAC product, and missing part fees may apply.

Please contact Customer Service prior to returning any product to receive a return authorization form and RMA number. You will be responsible for, and pre-pay, all return shipping charges and shall assume all risk of loss or damage to the product while in transit to us. We recommend that you use a traceable method of shipping for your protection. We will pay for shipping to return any product to you.

Email us at rma@koamtac.com to obtain an RMA number. Once you have obtained the RMA number, please send us your purchased KOAMTAC product with the RMA number clearly marked on the outside of the package and on the shipping slip if you choose to use traceable carriers such as UPS or FEDEX. Shipping fees for returns are your responsibility. Return shipping instructions and return address will be included in your RMA document provided by KOAMTAC.

1 Introduction

Congratulations on purchasing a revolutionary KOAMTAC KDC and SKX. KOAMTAC KDC and SKX work with a wide variety of portable applications. Use it independently or as a PC, PDA, smartwatch, smartglass, smartphone, and tablet accessory.

1.1 KDC Companion Scanners

- KOAMTAC has the most complete companion scanners portfolio in the market including KDC80 entry-level 1D laser/CCD scanner, KDC280 1D Laser/CCD and 2D Imager scanner, KDC380 1D Laser/CCD and 2D Imager scanners with keypad, NFC, and WiFi option, and KDC180/185 2D Imager wearable scanner.
- KOAMTAC companion scanners support USB flash memory for batch scanning operation.
- KOAMTAC companion scanners support USB2Serial for PC data communication.
- KOAMTAC companion scanners support BLE5.0 for Smart Devices and PC Bluetooth communication.
- KDC20/30/100/200/270/300/350 discontinued companion scanners have supported Bluetooth EDR+2.1 classic profiles (except KDC100), USB2Serial, and USB flash memory.
- KOAMTAC smart firmware enables long-lasting scanning operation with small size battery which allows to introduce small size companion scanners.
- KOAMTAC companion scanners built-in display allows easy menu setting, visual feedback and notification, and check scanned result instantly. KOAMTAC companion scanners can also be used as terminal by using pre-defined application and host application developed with Android, iOS, Web, and Windows SDK. Predefined KDC applications can be downloaded from KTSync utility program.
- KOAMTAC companion scanners can be paired with host devices by NFC, Special pairing barcode, and menu operation. KOAMTAC companion scanners also have an option to set it always pairing mode when it is not connected.

	Entry Companion	2-Finger Ring Scanner	1-Finger Ring Scanner	Casual Companion	Professional Companion
	KDC80	KDC180	KDC185	KDC280	KDC380
					
Barcodes Read	1D	1D & 2D	1D & 2D	1D & 2D	1D & 2D
Scan Engine	Laser/CCD	2D Imager (1280 x 800, 1920 x 1200)	2D Imager (640 x 480)	Laser/CCD/2D Imager (640 x 480)	Laser/CCD/2D Imager (1280 x 800)
Technology	Bluetooth 5.0 BLE	Bluetooth 5.0 BLE, UHF	Bluetooth 5.0 BLE	Bluetooth 5.0 BLE	Bluetooth 5.0 BLE, NFC, Wi-Fi
Pairing	Auto, Menu, NFC	Auto, Menu, NFC	Auto, Menu, NFC	Auto, Menu, NFC	Auto, Menu, NFC
USB Connector	Type-C	Type-C	Type-C	Type-C	Type-C
Battery & Charging	200mAh USB	1,010mAh (Detachable) USB, Pogo, Optional Wireless	500mAh (Detachable) USB, Pogo	650mAh USB, Pogo	1,100mAh USB, Pogo
# of scans (scan/1sec, 10sec)	34,000/9,000 (L) 19,000/6,500 (D)	31,000/6,500	18,000/3,500	79,000/19,000 (L) 52,000/17,000 (D) 33,000/13,500 (C)	77,000/17,500 (L) 105,000/32,000 (D) 35,000/6,500 (C) 16,000/3,000 (MR) 20,000/4,000 (ER)
IP Rating	IP42	IP65	IP65	IP65	IP65
Drop Spec	5ft	6ft	6ft	5ft	5ft
Connectivity	Bluetooth 5.0 HID/SPP USB HID/Serial to Windows USB Flash Memory	Bluetooth 5.0 HID/SPP USB HID/Serial to Windows USB Flash Memory	Bluetooth 5.0 HID/SPP USB HID/Serial to Windows USB Flash Memory	Bluetooth 5.0 HID/SPP USB HID/Serial to Windows USB Flash Memory	Bluetooth 5.0 HID/SPP USB HID/Serial to Windows USB Flash Memory
Accessories	Protective Boot	Protective Boot Ring Trigger, Glove Trigger, uniVERSE Case Adaptor 2-Slot/10-Slot Charger	Protective Boot Ring Trigger, Glove Trigger 2-Slot/10-Slot Charger	Protective Boot 1-Slot/4-Slot Charger	Protective Boot 1-Slot/4-Slot Charger

Various charging cradle options are available for KDC180/185/280/380 including USB cable, charging cradle, and wireless charging (KDC180). KDC80 only supports USB cable charging.

Category	KDC	Spec	Single Charger	Multi-bay Charger
Entry Companion	KDC80	▪ Type-C USB Charging	N/A	N/A
Ring Scanner	KDC180	▪ Type-C USB Charging ▪ POGO Charging ▪ Wireless Charging (Optional)	2-slot (5V/2A) 	10-slot (12V/10A) 
	KDC185	▪ Type-C USB Charging ▪ POGO Charging		
Casual Companion	KDC280	▪ Type-C USB Charging ▪ POGO Charging	1-slot (5V/2A) 	4-slot (5V/2A) 
Professional Companion	KDC380	▪ Type-C USB Charging ▪ POGO Charging	1-slot (5V/2A) 	4-slot (5V/2A) 

1.2 KDC Wearable Scanners

- KOAMTAC wearable scanners support both ring and glove triggers in one finger (KDC185) and two finger (KDC180) form factors
- Users can switch between ring and glove triggers freely

- KOAMTAC wearable scanners can also be used as normal companion scanners
- KOAMTAC glove triggers are waterproof and can be washed periodically
- KDC180 supports short range UHF option
- KOAMTAC wearable scanners support easy battery replacement, IP65 rated, and 6ft drop spec with a protective boot

	KDC180 2-Finger & Glove Scanner	KDC185 1-Finger & Glove Scanner
		
Dimension/Weight	1.57 in x 2.72 in x 0.8 in (2.23 oz)	1.2 in x 2.6 in x 0.7 in (1.2 oz)
Alert	1" OLED, 5 Programmable LEDs/2 Status LEDs, Vibration	0.66" OLED, 2 Status LEDs, Vibration
Scan Engine	1280 x 800/1920x1200, 60 fps, High motion tolerance	640 x 480, 120 fps, High motion tolerance
Technology	Bluetooth 5.0 BLE (Option) Keypad, 0.5W UHF, Wireless Charging	Bluetooth 5.0 BLE
Pairing	NFC Pairing, Barcode Pairing, Menu Pairing KNOX Peripheral Config, Always Pairing	NFC Pairing, Barcode Pairing, Menu Pairing KNOX Peripheral Config, Always Pairing
Battery Charging Method Battery Life (1 scan/sec)	1,010mAh Li-Ion (Replaceable) USB, Pogo, Optional Wireless 30,000 scans per charge	500mAh Li-Polymer (Detachable) USB, Pogo 20,000 scans per charge
IP Rating	IP65	IP65
Drop Spec	6ft with a protective boot	6ft with a protective boot
Accessories	Ring/Glove Trigger, uniVERSE Adaptor 2-Slot /10-Slot Charging Cradle 	Ring/Glove Trigger 2-Slot /10-Slot Charging Cradle 

1.3 KDC SmartSled

1.3.1 KDC480/485 Universal Sled

- KDC480 supports a flat angle scanner and KDC485 supports an angled scanner
- KDC480/485 supports off-the-shelf Smart device cases including Samsung Smartcase, Otterbox uniVERSE case, and other cases
- KDC480/485 supports three (3) kinds of adaptors for simultaneous charging of both Sled and Smart devices
    - GUA: General Universal Adaptor for off-the-shelf cases
    - SUA: Samsung Smartcase
    - OUA: OtterBox uniVERSE cases
    - Smart Devices can be charged and communicate simultaneously using adaptors except iOS devices
    - iOS devices with Type-C connector such as iPhone15 can be charged simultaneously with KDC480/485 using adaptors
    - Certain smart devices do not allow simultaneous charging and communication options and should use Bluetooth communication instead of USB2Serial communication
- KDC480/485 supports various companions including:
    - 0.5W and 1.0W UHF reader
    - HF(NFC) reader
    - Extended battery

- mPOS and MSR/IC card reader (supports KDC480 only)

	KDC480	KDC485
Barcodes Read	1D & 2D	1D & 2D
Scan Engine	Laser, CCD, Imager	Laser, Imager
RFID	HF/UHF with Companions	HF/UHF with Companions
MSR	Yes	Yes
PCI/EMV	Yes	Yes
Bluetooth	5.0 BLE	5.0 BLE
Connector	Type-C Pogo Pins	Type-C Pogo Pins
IP Rating	IP65	IP65
Drop Spec	5ft	5ft
Scan Range (10mil Code39)	**Laser**: 1.57 to 12.2 in **CCD**: 2.17 to 11.81 in **Imager**: 1.81 to 9.68 in	**Laser** (20mil Code39): 1.4 to 52.0 in **Imager**: 1.57 to 20.3 in Mid-range (20mil Code 39): 3.3 to 55.7 in Far-range (20mil, Code39): 3.4 to 112.1 in

1.3.2 KDC1000/1100 Upgradeable Custom Sled

- KDC1000 supports a flat angle scanner and KDC1100 supports an angled scanner.
- KDC1000/1100 supports custom cases for Android and iOS
    - Samsung XCover7
    - iPhone13, 14, 15 and 16 models including Plus, Pro, Pro Max
    - Other Android Smart devices
- KDC1000/1100 support simultaneous charging and communication of both Sled and Smart devices
- KDC1000/1100 supports various companions including:
    - 0.5W and 1.0W UHF reader
    - HF(NFC) reader
    - Extended battery
    - mPOS and MSR/IC card reader (Support KDC1000 only)

	KDC1000 (Flat)	KDC1100 (Angled)
Barcodes Read	1D & 2D	1D & 2D
Scan Engine	Imager with long-range options	Imager with long-range options
RFID	HF/UHF with Companions	HF/UHF with Companions
MSR	Yes	Yes
PCI/EMV	Yes	Yes
Bluetooth	5.0 BLE	5.0 BLE
Connector	Type-C, Lightning Pogo Pins	Type-C, Lightning Pogo Pins
IP Rating	IP65	IP65
Drop Spec	5ft	5ft
Scan Range (20mil Code39)	Imager : 29.1 – 112.1 in	


KDC1000


KDC1100

1.3.3 KDC1200 Upgradeable Custom Sled

- KDC1200 supports custom cases for Android and iOS
  - Samsung XCover7, A35
  - iPhone13, 14, 15 and 16 models including Plus, Pro, Pro Max
  - Other Android Smart devices
- KDC1200 supports simultaneous charging and communication of both Sled and Smart devices
- KDC1200 has built-in 0.5W UHF reader

	KDC1200
Barcode Read	1D & 2D
Scan Engine	Imager with long-range options
RFID	0.5W UHF
Bluetooth	5.0 BLE
Connector	Type-C, Lightning Pogo Pins
IP Rating	IP65
Drop Spec	5ft
Scan Range (20 mil Code39)	Imager: 29.1 - 112.1 in

1.3.4 SKX Custom Sled

- KOAMTAC supports three (3) Samsung rugged smartphone custom Sleds
  - SKXPro for Galaxy XCover Pro
  - SKX6Pro for Galaxy XCover6 Pro
  - SKX5 for Galaxy XCover5
- SKX supports simultaneous charging and communication of both Sled and Smart devices
- SKX supports various companions including:
  - 0.5W and 1.0W UHF reader
  - HF(NFC) reader
  - Extended battery
  - mPOS and MSR/IC card reader

1.4 RFID Reader

- KOAMTAC supports various RFID readers including HF(NFC), 0.5W UHF, and 1.0W UHF
- KDC380 and KDC480/485/1000/1100/SKX HF(NFC) companion supports HF(NFC) tag reading and writing
- KDC480/485/1000/1100/SKX 0.5W/1.0W UHF companions support UHF tag reading and writing
- KDC1200 has built-in 0.5W UHF reader.
- HF(NFC) tags can be read under 10cm
- UHF tags can be read from 50cm up to ten (10) meters depending on model and tag types
    - 0.5W companion reads 50 tags per second
    - 1.0W companion reads 400 tags per second

RFID Reader	Form Factor	Image	Host Device	Spec	Feature
1. UHF Reader (1.0W) - 860 ~ 960MHz - KDC1000/1100 - KDC480/485 - SKX6Pro/SKXPro/SKX5	1-A. SLED (Pistol)		• Android, iOS, Windows • Phone, Tablet, PC	- 0~30/33 dBm - 20 ft range	- IP65, 5 ft drop - Bluetooth 5.0 BLE / OTG / Serial
	1-B. Companion (Pistol)		• Android, iOS, Windows • Phone, Tablet, PC	- 0~30/33 dBm - 20 ft range	- IP65, 5 ft drop - Bluetooth 5.0 BLE
2. UHF Reader (0.5W) - 860 ~ 960MHz - KDC1000/1100 - KDC480/485 - SKX6Pro/SKXPro/SKX5 - KDC180U/HU	2-A. SLED (Handheld)		• Android, iOS, Windows • Phone, Tablet, PC	- 0~27dBm - 6 ft range	- IP65, 5 ft drop - Bluetooth 5.0 BLE / OTG / Serial
	2-B. Companion (Handheld)		• Android, iOS, Windows • Phone, Tablet, PC	- 0~27dBm - 1.5 ft range	- IP65, 5 ft drop - Bluetooth 5.0 BLE
3. HF/NFC Reader - KDC480/485 - KDC380N	3-A. SLED (Handheld)		• Android, iOS, Windows • Phone, Tablet, PC		- IP65, 5 ft drop - Bluetooth 5.0 BLE / OTG / Serial
	3-B. Companion (Handheld)		• Android, iOS, Windows • Phone, Tablet, PC		- IP65, 5 ft drop - Bluetooth 5.0 BLE

1.5 Card reader

- KOAMTAC provides mPOS companions and a MSR/IC card reader
- KDC500/600 are PCI/EMV certified mPOS companions
- KDC600 support wireless VISA, Master, and American Express EMV

	KDC500	SLED-PCIEMV	SLED-MSRIC
Form Factor	Detachable Barcode/EMV/Chip-and-PIN/MSR/NFC mPOS	KDC1000/KDC480/SKX Companion	KDC1000/KDC480/SKX Companion
Scan Engine	CCD, Imager	KDC/SKX Scan Engine	KDC/SKX Scan Engine
RFID	NFC	NFC	NFC
MSR	Yes	Yes	Yes
PCI/EMV	Yes	Yes	No
Technology	Bluetooth	Bluetooth/OTG	Bluetooth/OTG
Connector	Micro USB, Pogo Pins	Micro USB, Pogo Pins	Micro USB, Pogo Pins
Drop Spec	4ft	4ft	4ft
Certification	FCC, CE, TELEC, VCCI, KC, RoHS Compliant PCI PTS 4.x, EMV L1/L2, EMV L1 Contactless, SRED, MasterCard PayPass, Visa PayWave, AMEX	FCC, RED, KC, RoHS Compliant, PCI PTS 6.x, EMV L1/L2, EMV L1 Contactless, SRED, MasterCard PayPass, Visa PayWave, AMEX	FCC, RED, KC, RoHS Compliant

KDC500

SLED-PCIEMV

SLED-MSRIC

1.6 KOAMTACON

- KOAMTACON is KOAMTAC data management service portal:

  https://koamtacon.com/koamtacon-data-management-suite/

- KOAMTACON also provides KDC8 Software Decoder activation service:

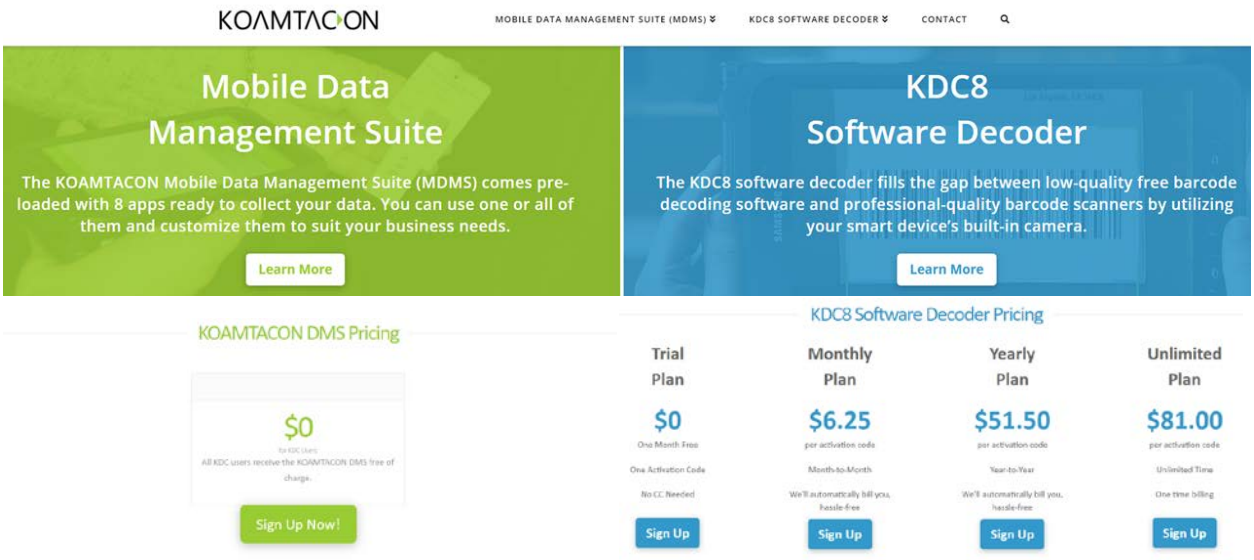
  https://koamtacon.com/kdc8-software-decoder/

KOAMTAC Data Management is an innovative tool where users download preloaded data collection applications and utilize the collected data for their business without any professional programming or IT knowledge.

Client can be downloaded from Google Play Store or the App Store.

Providing the following applications:

- Rental
- Inventory
- Retail
- Purchase
- Delivery
- Ticket
- Field Service



1.7 SDK

- The Software Development Kit (SDK) is the perfect solution for creating custom applications or integrating with existing applications to collect data with your KOAMTAC solutions
- Includes all of the APIs, objects, and constants needed to develop custom applications for your KDC/SKX
- Documentation explaining classes, methods, parameters, and returned values
- Sample applications with source code

2 Installation and Operation

Please refer to the mini/quick guides, how to manuals, and tutorial videos on each model posted here:

https://koamtac.com/support/downloads/manuals-guides/

The KDC may read and store barcode data independently, but it may also be used in conjunction with a PC, PDA, or smart device.

To read barcode data wirelessly with your KDC, the user must first pair the KDC and smart device via Bluetooth. If previously paired and no changes have been made in the smart deviceís Bluetooth settings, the smart device will always recognize the KDC that has previously been paired. However, if changes were made, the user may need to go through the pairing process again. The user may also refer to Chapter 4. Bluetooth for more information about Bluetooth pairing.

2.1 Preparing for Pairing

Select a Bluetooth profile. There are two ways to set up a Bluetooth profile. The user may establish a Bluetooth profile manually (on the scanner) or by scanning a programming barcode as shown below. (iOS and MFi are for Apple products and others are for Android products).

2.1.1 Classic Models

First, the user must disable MFi mode (ì iî models) in the system config model to enable HID mode on the Bluetooth Classic models (KDC20/30/200/250/270/300/350/41x/42x/43x/450/47x).

KDC 20L/20D/200/250/270L/270D/350L/350D/410/411/415/470L/470D/475L/475D/ 475S(1D)

Bluetooth Profile SPP

6A000

Bluetooth Profile HID iOS

6A001

Bluetooth Profile MFi

6A002

Bluetooth Profile SPP2.0

6A003

Bluetooth Profile HID normal

6A004

KDC30/270C/300/350C/420/421/425/450/470C/475H/500C (2D)

Bluetooth Profile SPP

┬MKDC6A000.

Bluetooth Profile HID iOS

┬MKDC6A001.

Bluetooth Profile MFi

┬MKDC6A002.

Bluetooth Profile SPP2.0

┬MKDC6A003.

Bluetooth Profile HID normal

┬MKDC6A004.

2.1.2 BLE Models

KDC 80L/80D/280L/280D/380L/380D/480L/480D/485S (1D)

Bluetooth Profile SPP Windows

6A000

Bluetooth Profile HID

6A001

Bluetooth Profile HID

6A007

KDC180H/180MR/180ER/185/280C/380C/380MR/380ER/480C/485H/485MR/485ER/600/1000/1100/1200 (2D)

Bluetooth Profile SPP

┬MKDC6A000.

Bluetooth Profile HID

┬MKDC6A001.

Bluetooth Profile HID Windows

┬MKDC6A007.

Note For PCI PTS compliance, KDC500C only supports Bluetooth Profile SPP and MFi. KDC600 only supports Bluetooth Profile SPP.

Some KDCs are equipped with an LCD screen.

(KDC100/80/180/185/200/250/270/280/300/350/380/500/600), the user may select a Bluetooth profile from the ConnectDevice menu as shown below:

Figure 1 - Selecting a Bluetooth device type from the KDC menu

2.2 Pairing

2.2.1 First Option: Connect the KDC from a host (PC or Smart Device)

This method is recommended for first-time users or when the user is only connecting a few KDCs.

1. Put the KDC into **Pairing** mode.

Select the correct pairing barcode and scan below for your KDC model, or

KDC20L/20D/80L/80D/200/250/27(8)0L/27(8)0D/35(8)0L/35(8)0D/410/411/415/47(8)0L/47(8)0D/475L/475D/47(8)5S (1D)

61001

KDC30/180H/180MR/180ER/185/27(8)0C/300/35(8)0C/420/421/425/450/47(8)0C/47(8)5H/485MR/485ER/500C/600/1000/1100/1200 (2D)

Pairing Special Barcode

Select **Pairing** from the KDC menu.

Figure 2 - Selecting Pairing mode in KDC

Press the Scan button for three (3) seconds to enter **Pairing** mode.

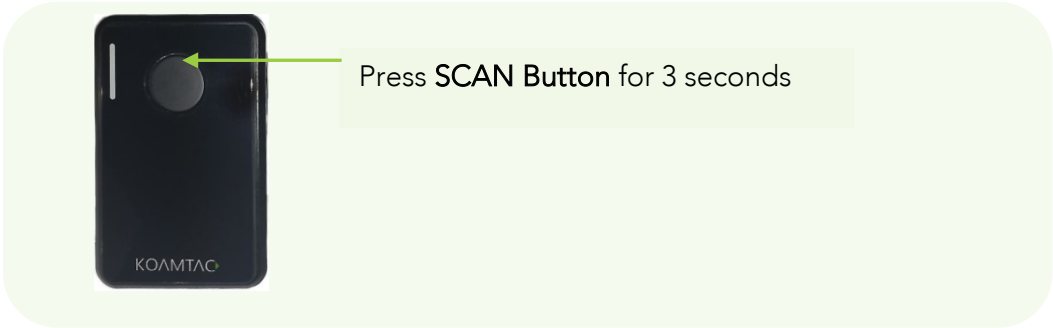


Figure 3 - Pairing mode button

For the KDC500/600, press the FN button for five (5) seconds to directly enter the BT Service menu while it is not in sleep mode.

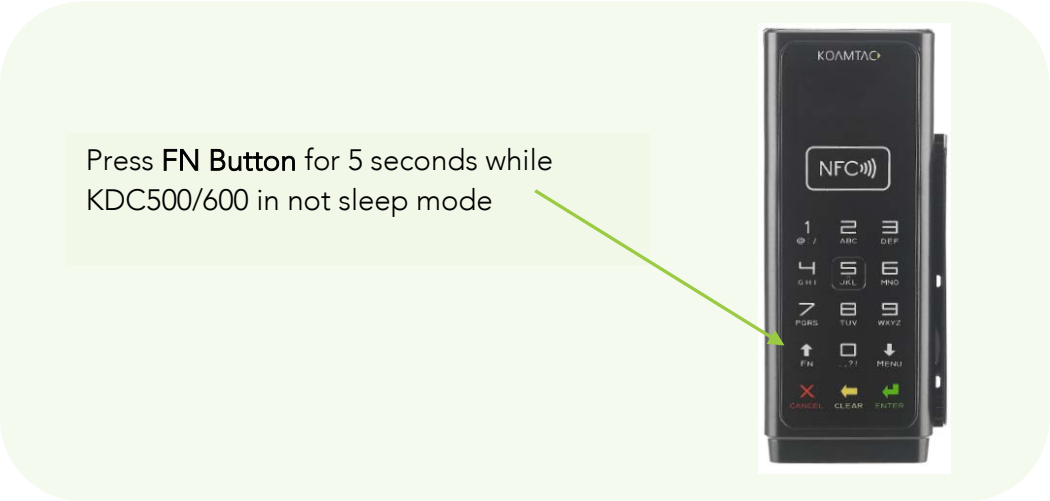


Figure 4 - Pairing menu shortcut button in KDC500/600

2. On the host device, go to **Settings** → **Bluetooth**, and select the KDC that needs to be paired. The KDC and host device will now communicate with each other.

Note For PCI PTS compliance, KDC500/600 requires Numeric Comparison method.

3. After the KTSync application has been installed, open KTSync and it will automatically find and connect to the KDC. (Refer to **KTSync Setup Wizard** for more information about installing KTSync).

2.2.2 Second Option: Connect the host device from the KDC by scanning a Special Bluetooth MAC Address barcode (Classic Models only)

This method is recommended for advanced users or when the application or process requires the pairing of multiple KDCs to multiple host devices regularly.

Note It is important to note the BLE devices do not support this MAC Pairing feature. Only applicable to Classic EDR+2.1 devices. Android and iOS KTSync have pairing barcode generation menu for BLE devices.

1. Find the **Bluetooth MAC Address** of the host device.

Figure 5 - Finding Bluetooth MAC Address

2. Create the **Bluetooth MAC Address Barcode** according to the formats below:

http://www.terryburton.co.uk/barcodewriter/generator/

For 1D scanners:
KDC20L/20D/200/250/270L/270D/350L/410/411/415/470L/470D/475L/475D/475S/500L,
Bluetooth MAC Address: **1234567890AB**
Barcode Type (Symbology): **Code 128**
Contents: **^FNC3651234567890AB**
Options: **parsefnc**

For 2D scanners:
KDC30/300/270C/350C/420/421/425/450/470C/475H/500C,
Bluetooth MAC Address: **1234567890AB**
Barcode Type (Symbology): **QR Code**
Contents: **^022M^013KDC651234567890AB**
Options: **eclevel=M parse**

3. Print the **Bluetooth MAC Address.**

- 2D barcode scanners such as the KDC30/270C/300/350C/420/421/425/450/470C/475H/500C models may read barcodes that have printed QR barcodes on an LCD screen.
- 1D CCD barcode scanners may read barcodes that have printed barcodes on an LCD screen.
- 1D laser barcode scanners such as the KDC20L/20D/100/200/250/270L/270D/350L/350D/410/411/415/470L/470D/475L/475D/500L models are not designed to read barcodes from an LCD screen and will only read printed barcodes.

4. Connect the KDC to the host device by scanning the **Bluetooth MAC Address Barcode**.

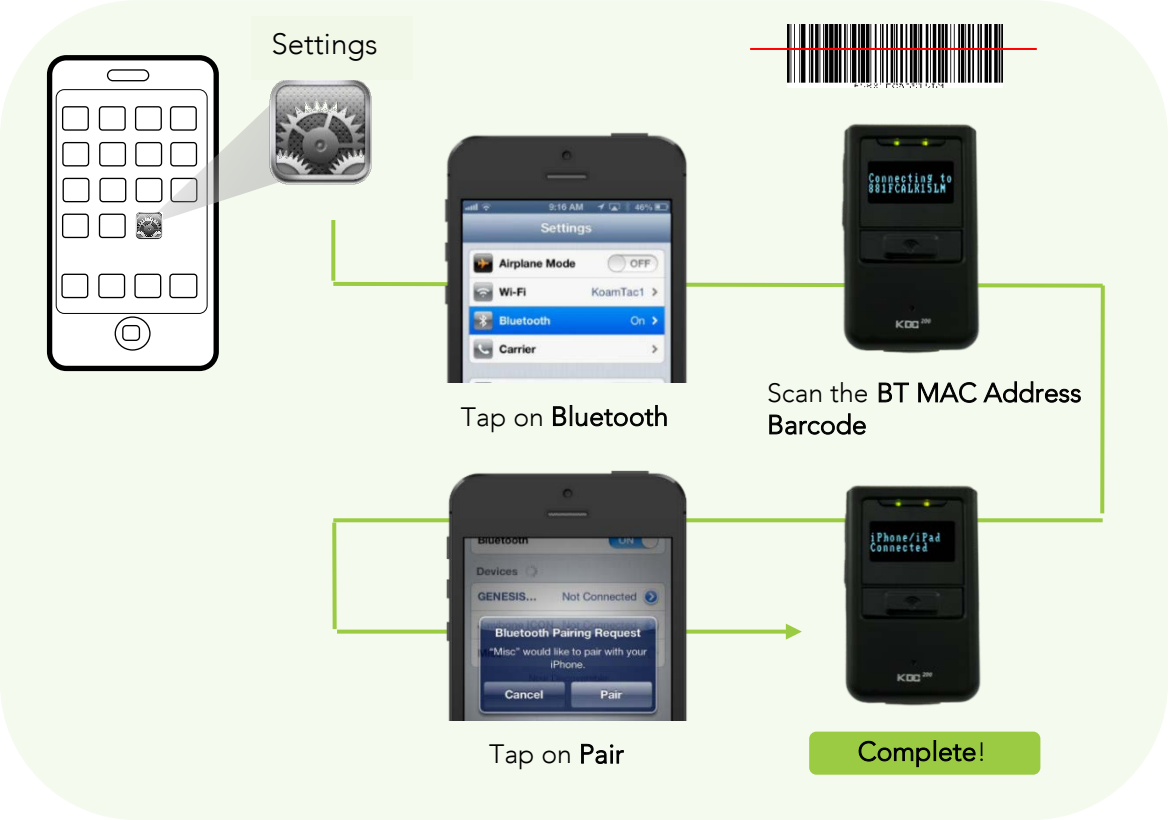


Figure 6 - Connecting KDC with a smart phone by scanning Bluetooth MAC Address Barcode

5. Open KTSync after it has been installed, and it will automatically find the KDC and connect. (Refer to **KTSync Setup Wizard** for more information about installing KTSync).

2.2.3 Third Option: Connect the host device from the KDC by tagging NFC tag

KDC80/180/185/280/380 has NFC tag emulation function and can be paired with host devices by tagging the KDC NFC antenna to host NFC antenna.

2.2.4 Fourth Option: Set KDC to Always Pairing Mode (BLE Models only)

BLE models have an option to always be ready to pair when it is not connected. Scan the barcode below:

KDC 80L/80D/280L/280D/380L/380D/480L/480D/485S(1D)

KDC180H/180MR/180ER/185/280C/380C/480C/485H/485MR/485ER/600/1000/1100/1200 (2D)

Always Pairing Special Barcode

2.3 KTSync Setup Wizard

2.3.1 Windows 7, 8, 10, 11

WARNING: Do not connect KDC to USB port prior to driver installation

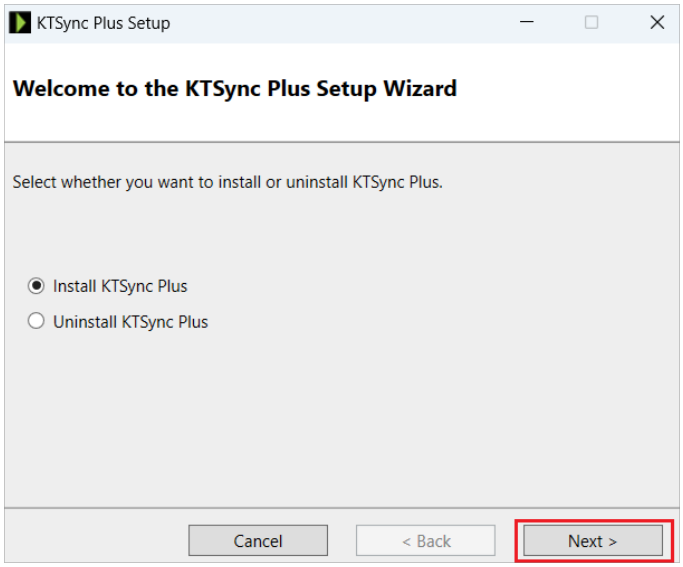
1. Download KTSync from https://koamtac.com/downloads/applications/
2. Extract the zip folder
3. Run Setup.exe which will execute the KTSync Setup Wizard

Note If the KTSync Setup Wizard locates an older version of KTSync on the computer, the user will be prompted to uninstall the older program before installing the new version. Select Uninstall KTSync then click Next. When uninstall is complete, click Close.

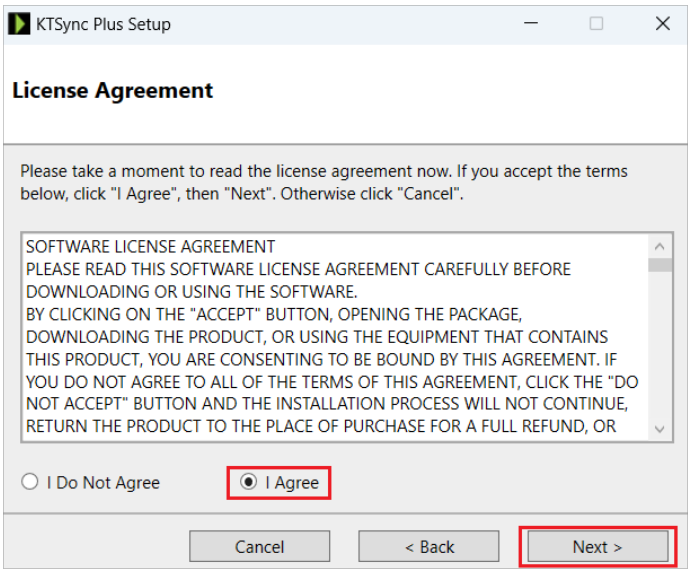
KTSync Setup Wizard

To install KTSync, follow the steps shown in the images below:

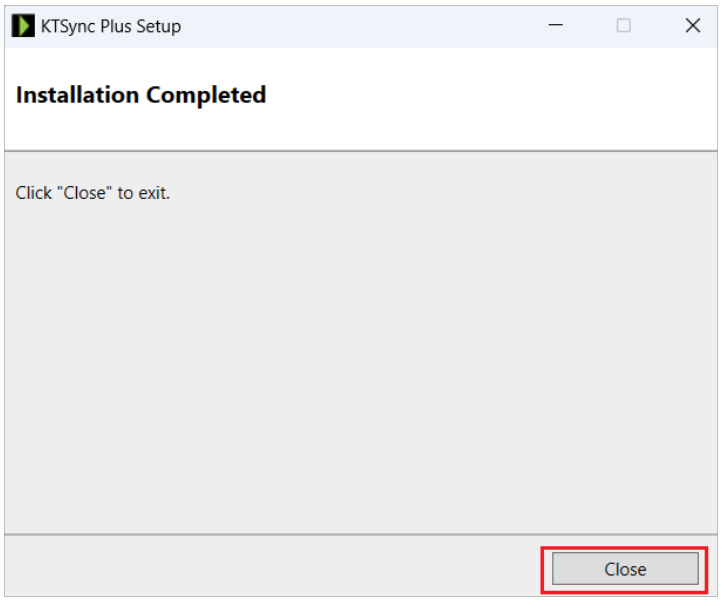
1. In the KTSync Setup Wizard window, Select Install and click **Next**



2. In the License Agreement window, select ì I Agreeî and click **Next**



3. In the KTSync Installation Complete window, click **Close**



4. KDC Windows device driver is installed with KTSync

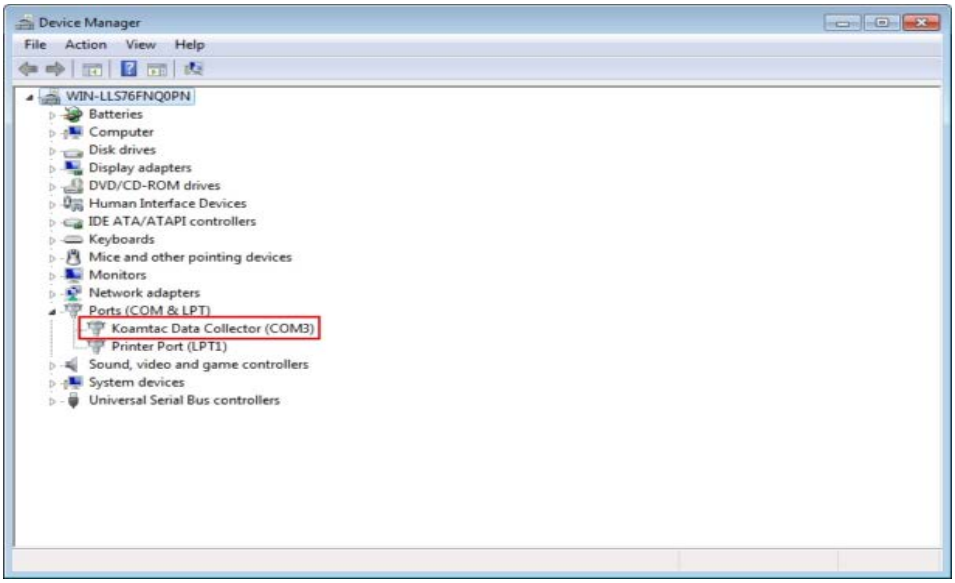
Connect KDC to Computer

Using the USB cable included with the KDC or built-in swing out USB connector, follow the directions below:

1. Connect KDC to PC
2. Wait until the computer beeps and/or displays the message **Found New Hardware**

Verify COM Port Address

The installed COM Port may be verified in Device Manager



2.3.2 Android

Download and install KTSync from the Google Play Store:
https://play.google.com/store/apps/details?id=com.koamtac.ktsync&hl

2.3.3 iPad/iPhone/iPod Touch

Download and install KTSync from the Apple App Store:
http://itunes.apple.com/us/app/ktsync/id372916602?mt=8

3 Operating your KDC

3.1 Getting Started

Please refer to the mini/quick guides, how to manuals, and tutorial videos on each model posted on following site:

User and Assembly Manuals and Guides for KDCs (koamtac.com)

3.1.1 Charge KDC Battery

Prior to using the KDC, the user should charge the battery. It will take up to five (5) hours to fully charge the battery from empty status.

3.1.2 Configure KDC

The KDC is designed to meet the data collection requirements of many different industries in a variety of dynamic situations. To deliver the best performance in these diverse environments, the KDC is designed to be configured quickly and easily.

However, for the KDC to perform at its optimum level, it must be configured properly. It is recommended that the user DOES NOT modify the KDC settings until familiar with the KDC configuration settings. The KDC may be configured by using three (3) different methods, which are explained in Section 3.5 ñ KDC Menus, Chapter 6 ñSynchronization, and Appendix ñ Special Barcodes.

Companion scanners can be configured from:

- KDC Menu
- KTSync Software
- Special Barcodes

SmartSled can be configured from:

- KTSync Software
- Special Barcodes

3.1.3 Abbreviations

The following KDC Abbrebiations are used in this manual:

ABBR.	CODE	DESCRIPTION
i	MFi - Made For iPhone/iPod/iPad	Used for two-way Bluetooth communication on iOS devices (KTSync or app integrated with SDK)
M	8MB flash memory	Storage space for bar codes and application database
SR	Standard range	(2D) Honeywell Gen5 scan engine for reading standard bar code sizes
MR	Mid-range	(2D) Honeywell Gen8 scan engine for reading mid-range distance barcode
ER	Far range	(2D) Honeywell Gen8 scan engine for reading far range distance barcode
SF	Special focus	(2D) Honeywell Gen5 scan engine for reading very small bar codes
L	Laser	Laser for reading 1D bar codes
D	CCD Engine	Charged Coupled Device, for reading 1D bar codes
MO or S	Zebra (Motorola)'s laser scan engine	Better performance than the OP engine
OP	Opticon's laser scan engine	Found in most KDC 1D scanners
G6SR-R2 or H	Honeywell Gen6 scan engine	(2D) Improved performance compared to Gen5
C	Camera	Imager scan engine for reading 2D and 1D bar codes
F	WiFi	Transmit data over WiFi via TCP, UDP, HTTP GET/POST protocols
N	NFC	Near Field Communication for reading RFID tags (13.56 MHz)
3K	3 Key	3-key, no full keypad
T	MSR track	For reading card swipes
U	Ultra-High Frequency	For reading Ultra-High Frequency RFID tags (900Mhz)

Note Both the laser and CCD engine can read 1D and 2D special barcodes.
CCD and Imager can read off of an LCD screen, while the laser cannot.

3.2 Basics

3.2.1 Reading Barcodes

To read a barcode using the KDC, point the KDC at a barcode and press the scan button. Be sure to point the scan engine window at the barcode, not at the userís face, and make sure to position the light beam on the barcode.

If a barcode has been successfully scanned, the user will hear one short beep and the LEDs will illuminate green. The scanned barcode data will be displayed on the KDC screen, along with the scan time and battery level. Depending on the configuration of the KDC, other information may also be displayed.

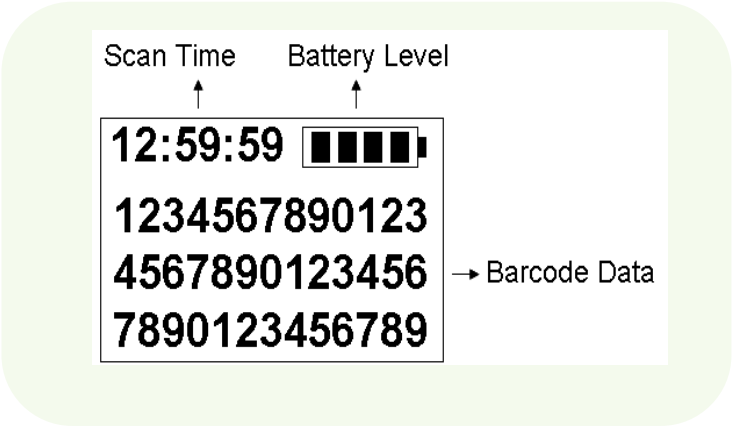


Figure 7 - KDC Display

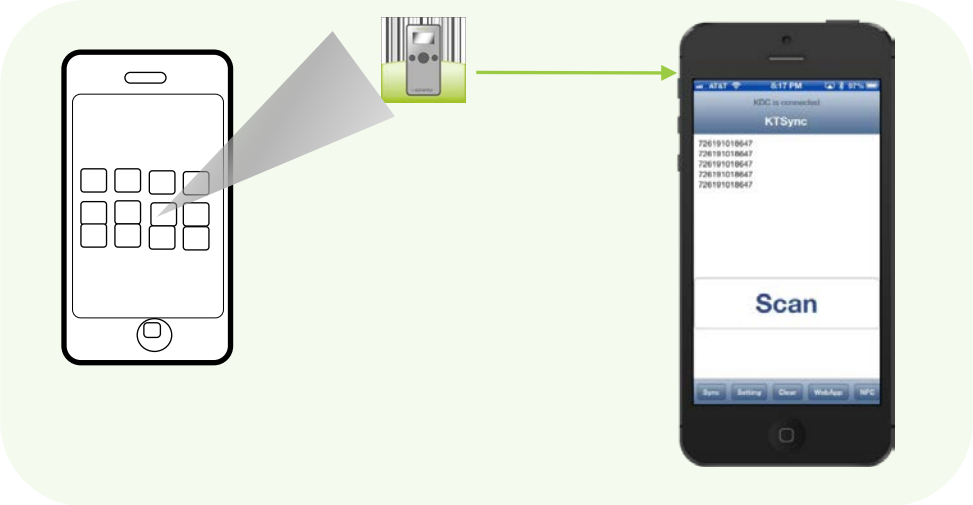


Figure 8 - Scanning barcodes using KTSync

If scanning was unsuccessful, the user will hear two (2) or five (5) short beeps, the LEDs will illuminate red, and the message ***Failed reading or Read Failed*** will display. If this is the case, the user should point the KDC at the barcode and press the scan button while trying the following suggestions:

- Modify the distance between the barcode and the KDC, moving closer or further away as needed
- Check the option settings defined in the KDC menu section and change options as needed
- Check to see that the barcodeís width does not exceed the light beamís width, and vice versa

3.2.2 Reading NFC Tags (KDC380N/450/470N/475N/480N/485N/500/600/1000N/1100N/SKX-N)

1. Enable the **NFC Power** option in the **NFC Config** menu.

2. The KDC/SKX will show the NFC tag UID and the user will hear a short beep if it has been read successfully.

3. The KDC/SKX may virtually read any ISO/IEC 14443 A or B compliant smartcards, or ISO/IEC 15693 compliant HF RFID tags.

To read an HF RFID tag, touch the RFID card to the back of the KDC/SKX case and make sure the tag and case are within five (5) cm of each other. The user will hear a short beep if it has been read successfully.

3.2.3 Enter Data by Using a Keypad (KDC180K/350/380)

The KDC180K/350/380 enables users to input barcode data by using its keypad. The user may switch between **NUM** mode and **ABC** mode by using the **Mode** button.

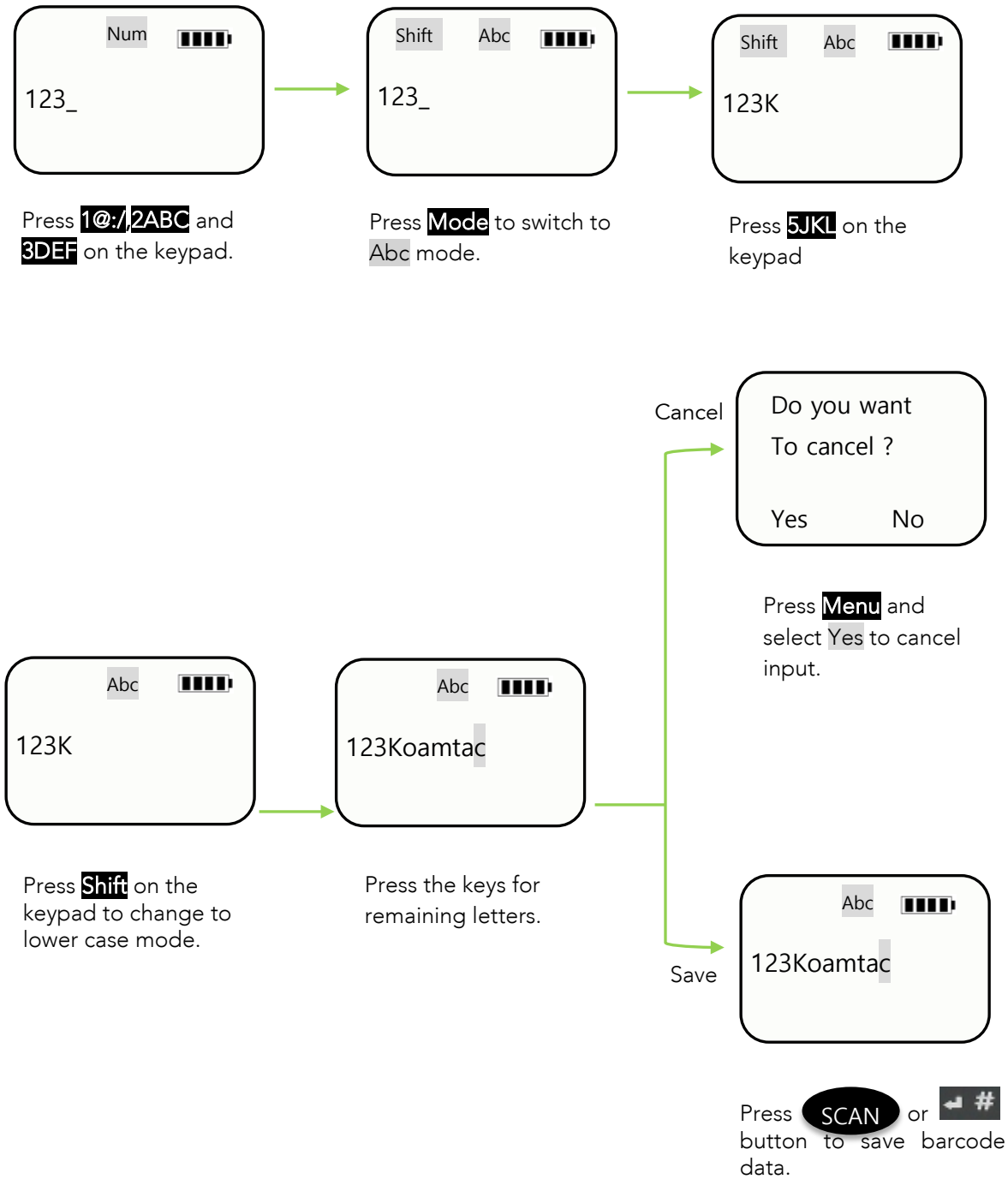
To switch between uppercase and lowercase letters, the user may press the **Shift** button while in **ABC** mode. To save the data input, press the **Enter** or **SCAN** button. For data input, press the **Menu** button.

Menu	Enables the user to enter or exit the KDC Menu. While in menu mode, press once to exit. (KDC350/380 only)
Shift	Enables the user to change character input mode from capital letters to small letters, and vice versa. (KDC350/380 only)
Mode	Enables the user to switch between ABC and number input mode
(UP button)	While in the KDC menu, press this button to go up on the selection bar. While on the main screen, press this button and the KDC will try to connect to a BT host device
(DOWN button)	While in the KDC menu, press this button to go down on the selection bar. While on the main screen, press this button to toggle the iOS soft keyboard (if the KDC is connected in HID-iOS mode)
1 2ABC 3DEF (Number button)	Input numbers or characters
# (Enter button)	Press to finish data input (if ì Enter Keyî option is disabled) Press to finish data input and move cursor to next line (if ì Enter Keyî option is enabled). (KDC350/380 only)
* (Delete button)	Press to delete the last character or number input

<table>
<tr><td> 

(Power On/Off button)</td><td>Press both Scan button and Down button for more than five (5) seconds at the same time to turn KDC power on and off</td></tr>
<tr><td>Fn
(Function button)</td><td>This button may be used in conjunction with a number key to control the KDC settings shown below
<table>
<tr><td>FN + 1</td><td>Keypad light On/Off</td></tr>
<tr><td>FN + 2</td><td>GPS Power On/Off (KDC350G series only)</td></tr>
<tr><td>FN + 3</td><td>NFC Power On/Off (KDC350N series only)</td></tr>
<tr><td>FN + 4</td><td>Enter Bluetooth Pairing Mode</td></tr>
<tr><td>FN + 5</td><td>Bluetooth Power On/Off</td></tr>
<tr><td>FN + 6</td><td>Change Bluetooth profile</td></tr>
<tr><td>FN + 0</td><td>Factory Default</td></tr>
</table></td></tr>
</table>

- When the KDC180K/350/380 shows a blank main screen, you may start pressing the numbers or characters of the barcode data that need to be input
- See example below about how to save the barcode data 123Koamtac:



3.2.4 Read Magnetic-Stripe (MS) Card (KDC500/600/SLED-mPOS/MSRIC)

1. The paired host application sends a command to enable the MS Card Reader.

2. Swipe a card with a magnetic stripe in either a top-to-bottom or bottom-to-top direction. Make sure the side of the card featuring the magnetic stripe of the card faces the KDC500/600/SLED-mPOS/MSRIC.

3. The KDC500/600/SLED-mPOS/MSRIC will send the MS card data to the paired host application and the user will hear a short beep if it has been read successfully.

3.2.5 Read Integrated Chip (IC) Card (KDC500/600/SLED-mPOS/MSRIC)

1. The paired host application sends a command to enable the IC Card Reader.

2. Insert IC Card into the IC Card slot located in the left side of KDC500 and in the right side of KDC600/SLED-mPOS/MSRIC. Make sure the IC of the card face to up.

3. The KDC500/600/SLED-mPOS/MSRIC will send the IC card data read to the paired host application.

3.2.6 Keypad Functionality for KDC500/600

 (Menu/Down button)	While in the KDC500/600 menu, press this button to scroll down the selection bar. While on the main screen, press this button for 5 seconds then the KDC500/600 will enter the KDC500/600 menu mode.
 (FN/Up button)	While in the KDC500/600 menu, press this button to scroll up the selection bar. While on the main screen, press this button for 5 seconds then the KDC500/600 will enter the KDC500/600 BT Service menu. While the KDC500/600 waits for Alpha-Numeric key entry, this button allows the user to switch between ABC and number input mode.
 (Number button)	Input numbers or characters
 (Enter button)	Press to finish data input
 (Delete button)	Press to delete the last character or number input
 (Cancel button)	Press to cancel data input

3.2.7 Synchronizing data to the host device

Use the KTSync program to synchronize barcode data from the KDC to the host device. Please refer to Chapter 6. KTSync for details.

3.3 KDC Device Driver and Firmware

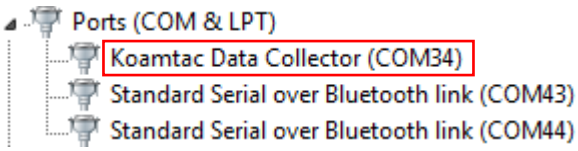
3.3.1 Upgrading KDC Firmware

Requires Windows PC, USB cable, KDC driver, KDC firmware application.

1. Download KDC driver at: https://www.koamtac.com/downloads/drivers/
   - Extract the folder, run Setup.exe only
   - Follow the instructions on the installation wizard

     Note: Once it is installed, you can skip this step
2. Download KDC Firmware at: https://koamtac.com/downloads/firmware/
   - Choose your KDC model & its KDC firmware
   - Extract the folder, open the KDC firmware upgrade application

     Note: Or download the KDC firmware from the link that KOAMTAC provides
3. Confirm the KDC Driver is properly installed
   - Plug in KDC to PC via USB
   - Navigate to Device Manager [Start > Control Panel > System and Security > System > Device Manager]
   - Click on Ports (COM & LPT). The KDC should be listed as **Koamtac Data Collector**



4. In the upgrade application, click ëStep 1: Select Serial Portí
   - Make sure **all** programs are closed and KDC is not connected to any device via Bluetooth
   - This should automatically detect the COM port the KDC is using
   - If a blank dropdown appears, plug the KDC into a different USB port
5. Click ëStep 2: Check KDCí
   - This will verify the current firmware of the KDC as well as ensure compatibility with the new firmware to be downloaded
6. Click ëStep 3: Download New F/Wí
   - Do NOT remove KDC during this process
   - Once the ëFirmware Updated Successfullyí notification appears, the KDC is safe to remove

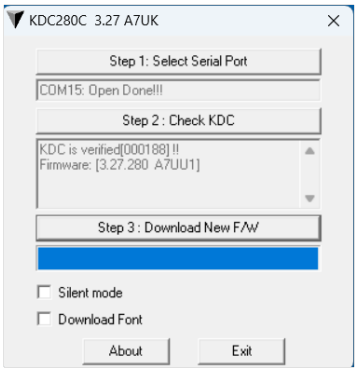
7. After firmware is upgraded, the KDC will automatically perform the factory default. User can manually select the factory default by scanning the barcodes below:

Z0000

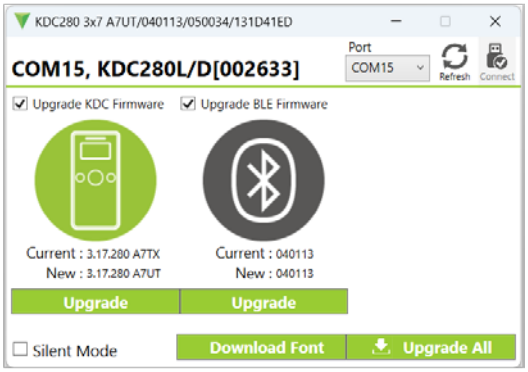
1D Laser/CCD Models

┬MKDCZ0000.

2D Imager Models



OLD Firmware Upgrade Program



New Firmware Upgrade Program

3.3.2 Firmware Version

KOAMTAC firmware version convention

A.BC.DDDE XXXX (or XXXXXX.YYYY)

A. Major firmware version
   - 2 → OA model w/o external flash memory
   - 3 → OA Model with external flash memory
   - 5 → NA Model

B. Specify scan engine type
   - 0 → 1D or 2D Only model
   - 1 → 1D model
   - 2 → 2D model

C. Minor firmware version
   - 5 → OA Model which does not support DB memory
   - 6 → OA Model which support DB memory with internal flash
   - 7 → OA Model
   - 8 → NA Model

DDD. Model number
   - 020, 030, 080, 100, 180, 185, 200, 250, 270, 280, 300, 350, 380, 410, 415, 420, 425, 430, 450, 470, 480
   - KDC1000 → A00
   - KDC1200 → C00
   - SKX → PRO

E. Minor firmware version for OA Model
   Only valid when Major firmware version (A) is '2'

XXXX. Build version **of OA model**

XXXXXX.YYYY Build version of NA model

Sample

- 2.85.180T A7TX
  - KDC180 OA Model
  - It does not support DB memory
- 3.07.200 A7UG
  - KDC200 which supports 1D only
- 3.18.280 A7UT
  - KDC280OA with 1D engine
- 3.28.280 A7UT
  - KDC280OA with 2D engine
- 220728.2508
  - KDC185 which supports 2D only
- 5.18.280 220728.2508
  - KDC280NA with 1D engine
- 5.28.280 220728.2508
  - KDC280NA with 2D engine

3.3.3 Upgrading BLE (Bluetooth Low Energy) Firmware

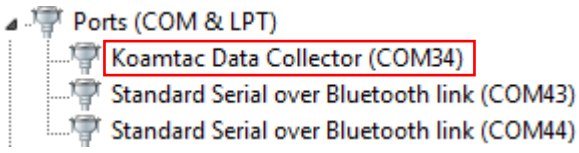
Requires Windows PC, USB cable, KDC driver, BLE firmware application.

New KDC firmware upgrade program also upgrades BLE firmware.

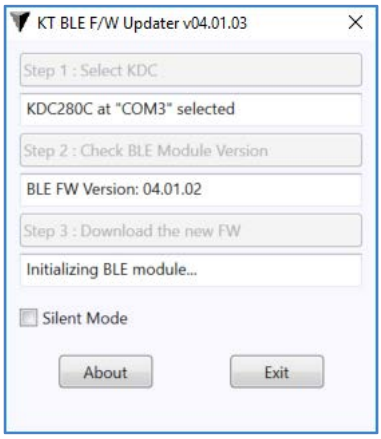
1. Download KDC driver at: https://www.koamtac.com/downloads/drivers/
   - Extract the folder, run Setup.exe only
   - Follow the instructions on the installation wizard

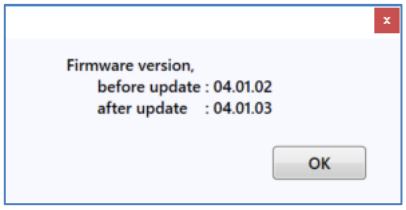
     Note: Once it is installed before, you can skip this step
2. Download BLE Firmware at: https://koamtac.com/downloads/firmware/
   - Choose your KDC model & its BLE firmware
   - Extract the folder, open the BLE firmware upgrade application

     Note: Or download the BLE firmware from the link that Koamtac provides
3. Confirm the KDC Driver installed properly.
   - Plug in KDC to PC via USB
   - Navigate to Device Manager [Start > Control Panel > System and Security > System > Device Manager]
   - Click on Ports (COM & LPT). The KDC should be listed as **Koamtac Data Collector**.



4. In the upgrade application, click ëStep 1: Select KDCí
    - Make sure **all** programs are closed and KDC is not connected to any device via Bluetooth
    - This should automatically detect the COM port the KDC is using
    - If no device is connected, it will display ì No KDC device found!î
5. Click ëStep 2: Check BLE Module Versioní
    - This will verify the current BLE firmware version of the KDC
    - Click ëStep 3: Download the new FWí
    - Do NOT remove KDC during this process
    - Once the upgrade is successful, youíll see a popup message with the old and new versions and the KDC will power cycle





3.4 KDC Beep Sounds

The KDC beep sound can be changed by using a special bar code, using the KDC menu, or using KTSync.

The beep sound can be turned off entirely by disabling the **Beep Sound**.

- KDC Menu > System Config > Beep Alert > Beep Sound > Disable > Save & Exit

Alternatively, beeps can be toggled individually for the following:

- Beep on powering up
- Beep on connection to host device
- Beep on scanning (success & failure)
- (MSR) Beep on card swipe
- (RFID) Beep on RFID tag reading

The beep pitch can be toggled using the **Beep Volume** (Tone) settings

- Set to Low by default, can be changed to Low, High
- Set to High by default for KDC500/600 only, can be set to Low, High

For the KDC180K/350/380 and KDC500/600, the **Key Tone** refers to the sound from a keypad press.

- KDC180K/350/380: Set to Disabled by default, can be changed to Disabled, Low, Medium, or High
- KDC500/600: Set to High by default, can be changed to Disabled, Low, Medium, or High

3.5 KDC Menu

If KDC has a display, the KDC menu can be accessed and configured from the KDC. If it does not have a display like a SmartSled, the KDC menu can be accessed and configured through the KTSync Windows or mobile (Android/iOS) application. (Refer to Chapter 6 KTSync)

Depending on the KDC models, the KDC menu can be accessed in the following ways:

- MENU button: KDC350/380/500
- UP button + DOWN button for three (3) seconds: KDC80/185
- UP button + DOWN button: KDC20/30/80/100/180/200/250/270/280/300
- KTSync: KDC41x/42x/430/450/470/475/480/485/1000/1100/1200, SKX

3.5.1 KDC Mode Menu

Top Menu	Sub Menu	Options	Default	Comments
KDC Mode	Normal		Default	
	Application		N/A	

The KDC Mode Menu has two options ñ Normal Mode and Application Mode.

Normal Mode

This is the default mode that provides basic barcode scanning. In normal mode, barcode data may be manipulated directly through the KDC/SKX or through KTSync during the synchronization process.

Application Mode

This mode enables the user to run the user application created by the Application Generation Tool or Predefined application. This mode is only applicable to KDC companion models. (Refer to Chapter 7 Pre-defined Application)

Note Please refer Section 3.5.15 for Japanese user.

3.5.2 View Data Menu

This menu option enables the user to view and/or delete barcodes stored in the KDC.

Top Menu	Sub Menu	Options	Default	Comments
View Data	View/Delete		N/A	

3.5.3 Set Barcodes Menu

This menu lists all the barcode symbology supported by the KDC/SKX and enables the user to select the symbology to be scanned. For maximum scan performance, you should select only the symbology that you will be scanning.

1D Model

Top Menu	Sub Menu	Options	Default	Comments
Set Barcodes (1D Model)	EAN13	Enabled/Disabled	Enabled	
	EAN8	Enabled/Disabled	Enabled	
	UPCA	Enabled/Disabled	Enabled	
	UPCE	Enabled/Disabled	Enabled	
	CODE39	Enabled/Disabled	Enabled	
	ITF14	Enabled/Disabled	Enabled	
	CODE128	Enabled/Disabled	Enabled	
	I2of5	Enabled/Disabled	Enabled	
	CODABAR	Enabled/Disabled	Enabled	
	GS1-128	Enabled/Disabled	Enabled	
	CODE93	Enabled/Disabled	Enabled	
	CODE35	Enabled/Disabled	Enabled	
	BooklandEAN	Enabled/Disabled	Disabled	
	EAN13withAddon	Enabled/Disabled	Disabled	
	EAN8withAddon	Enabled/Disabled	Disabled	
	UPCAwithAddon	Enabled/Disabled	Disabled	
	UPCEwithAddon	Enabled/Disabled	Disabled	
	GS1 Omni	Enabled/Disabled	Disabled	
	GS1 Limited	Enabled/Disabled	Disabled	
	GS1 Expanded	Enabled/Disabled	Disabled	

2D Model (1D)

Top Menu	Sub Menu		Options	Default
Set Barcodes (2D Model)	1D Symbology	Codabar	Enabled/Disabled	Enabled
		Code 11	Enabled/Disabled	Enabled
		Code 32	Enabled/Disabled	Enabled
		Code 39	Enabled/Disabled	Enabled
		Code 93	Enabled/Disabled	Enabled
		Code 128	Enabled/Disabled	Enabled
		EAN-8	Enabled/Disabled	Enabled
		EAN-13	Enabled/Disabled	Enabled
		GS1 Composit	Enabled/Disabled	Enabled
		I2of5	Enabled/Disabled	Enabled
		Matrix 2of5	Enabled/Disabled	Enabled
		MSI	Enabled/Disabled	Enabled
		Plessey	Enabled/Disabled	Enabled
		PosiCode	Enabled/Disabled	Enabled
		GS1 Omni	Enabled/Disabled	Enabled
		GS1 Limited	Enabled/Disabled	Enabled
		GS1 Expanded	Enabled/Disabled	Enabled
		S2of5 Ind	Enabled/Disabled	Enabled
		S2of5 IATA	Enabled/Disabled	Enabled
		TCL39	Enabled/Disabled	Enabled
		Telepen	Enabled/Disabled	Enabled
		Trioptic	Enabled/Disabled	Enabled
		UPCA	Enabled/Disabled	Enabled
		UPCE0	Enabled/Disabled	Enabled
		UPCE1	Enabled/Disabled	Enabled

2D Model (2D)

Top Menu	Sub Menu		Options	Default
Set Barcodes (2D Model)	2D Symbology	AztecCode	Enabled/Disabled	Enabled
		AztecRunes	Enabled/Disabled	Enabled
		CodablockF	Enabled/Disabled	Disabled
		Code16K	Enabled/Disabled	Enabled
		Code49	Enabled/Disabled	Enabled
		DataMatrix	Enabled/Disabled	Enabled
		MaxiCode	Enabled/Disabled	Enabled
		MicroPDF	Enabled/Disabled	Enabled
		PDF417	Enabled/Disabled	Enabled
		QRCode	Enabled/Disabled	Enabled
		HanXin Code	Enabled/Disabled	Enabled
	Postal Codes	Postnet	Enabled/Disabled	Enabled
		PlanetCode	Enabled/Disabled	Disabled
		UK Post	Enabled/Disabled	Disabled
		Canada Post	Enabled/Disabled	Disabled
		Kix Post	Enabled/Disabled	Disabled
		Aus Post	Enabled/Disabled	Disabled
		Japan Post	Enabled/Disabled	Disabled
		China Post	Enabled/Disabled	Disabled
		Korea Post	Enabled/Disabled	Disabled
	OCR	OCR Off	OCR Off OCR A OCR B OCR USC OCR MICR OCR SEMI OCR ISBN	OCR MICR
	MRZ		Enabled/Disabled	Disabled
	MultiBarcode		Disabled/UPS/FEDEX/DHL	Disabled

Note OCR/MRZ/MultiBarcode menu depends on the scan engine of KDC.
Postal Codes support only one postal barcode at a time.

3.5.4 Code Options Menu

The KDC supports various Code Options, including Transmission of Start and Stop Characters, Symbology Conversion, Verification of Optional Check Character, and Transmission of Check Digit.

1D Model

Top Menu	Sub Menu	Options	Default	Comments
Barcode Options (1D Model)	CodaBar_NoStartStopChars	Enabled/Disabled	Disabled	
	UPCE_as_UPCA	Enabled/Disabled	Disabled	
	EAN8_as_EAN13	Enabled/Disabled	Disabled	
	UPCE_as_EAN13	Enabled/Disabled	Disabled	
	ReturnCheckDigit	Enabled/Disabled	Disabled	
	VerifyCheckDigit	Enabled/Disabled	Disabled	
	UPCA_as_EAN13	Enabled/Disabled	Disabled	
	I2of5_VerifyCheckDigit	Enabled/Disabled	Disabled	
	Code39_VerifyCheckDigit	Enabled/Disabled	Disabled	
	I2of5_ReturnCheckDigit	Enabled/Disabled	Disabled	
	Code39_ReturnCheckDigit	Enabled/Disabled	Disabled	
	UPCE_ReturnCheckDigit	Enabled/Disabled	Enabled	
	UPCA_ReturnCheckDigit	Enabled/Disabled	Enabled	
	EAN8_ReturnCheckDigit	Enabled/Disabled	Enabled	
	EAN13_ReturnCheckDigit	Enabled/Disabled	Enabled	

2D Model

Top Menu	Sub Menu	Options	Options	Default

Barcode Options (2D Model)	Codabar	Tx StartStop	Enabled/Disabled	Disabled
		Check Digit	DoNotVerify VerifyDoNotTx VerifyDoTx	DoNotVerify
		Concatenate	Disabled/Enabled/Required	Enabled
	Code39	Tx StartStop	Enabled/Disabled	Disabled
		Check Digit	DoNotVerify VerfyDoNotTx VerifyDoTx	DoNotVerify
		Append	Enabled/Disabled	Disabled
		Full ASCII	Enabled/Disabled	Disabled
	I2of5	Check Digit	DoNotVerify VerfyDoNotTx VerifyDoTx	DoNotVerify
	Code11	Check Digit	2 digits/1 digit	1 digit
	Code128	Concatenate	Enabled/Disabled	Disabled
	Telepen	Output	Original/AIM	Original
	UPCA	VerifyChkDgt	Enabled/Disabled	Enabled
		NumberSys	Enabled/Disabled	Enabled
		2DgtAddenda	Enabled/Disabled	Disabled
		5DgtAddenda	Enabled/Disabled	Disabled
		Req. Addenda	Enabled/Disabled	Disabled
		Sep. Addenda	Enabled/Disabled	Enabled
		Coupon Code	Enabled/Disabled	Disabled

Top Menu	Sub Menu	Options	Options	Default
	UPCE	Expand	Enabled/Disabled	Disabled

Barcode Options (2D Model)		Req. Addenda	Enabled/Disabled	Disabled
		Sep. Addenda	Enabled/Disabled	Enabled
		Check Digit	Enabled/Disabled	Enabled
		NumberSys	Enabled/Disabled	Enabled
		2DgtAddenda	Enabled/Disabled	Disabled
		5DgtAddenda	Enabled/Disabled	Disabled
	EAN-13	VerifyChkDgt	Enabled/Disabled	Enabled
		2DgtAddenda	Enabled/Disabled	Disabled
		5DgtAddenda	Enabled/Disabled	Disabled
		Req. Addenda	Enabled/Disabled	Disabled
		Sep. Addenda	Enabled/Disabled	Enabled
		ISBN Trans.	Enabled/Disabled	Disabled
	EAN-8	VerifyChkDgt	Enabled/Disabled	Enabled
		2DgtAddenda	Enabled/Disabled	Disabled
		5DgtAddenda	Enabled/Disabled	Disabled
		Req. Addenda	Enabled/Disabled	Disabled
		Sep. Addenda	Enabled/Disabled	Enabled
	MSI	Tx CheckChar	Enabled/Disabled	Disabled
	PosiCode		A and B A&B LimitedA A&B LimitedB	A&B LimitedB
	GS1	UPCEAN Ver.	Enabled/Disabled	Disabled
		GS1 Emulation	No Emulate GS1 128 Emul GS1 Emulate	No Emulate
	PostNet	Tx CheckChar	Enabled/Disabled	Disabled
	PlanetCode	Tx CheckChar	Enabled/Disabled	Disabled

3.5.5 Scan Options Menu

Top Menu	Sub Menu	Options	Default	Comments
Scan Options	Power	Enable/Disable	Enable	
	Scan Angle	Wide/Narrow	Wide	
	Filter	Normal/High	Normal	
	Timeout	0.5 seconds to 10 seconds	2 second(s)	
	Min. Barcode Length	2 to 36 characters	4 chars	1D Model
		0 to 48 characters	1 char	2D Model
	Security Level	1 to 4 level	2 level	1D Laser Model
	Image Capture	Enabled/Disabled	Disabled	2D Model
	Auto Trigger	Enabled/Disabled	Disabled	
	Reread Delay	Continuous, Short, Medium, Long, Extra Long	Medium	
	Presentation Mode	Enabled/Disabled	Enabled	2D Model
	Partial Display	Start Position	1	
		No. of Char(s)	0 chars	
		Action	Select	
	ScanIfConnect	Enabled/Disabled	Disabled	
	Scan Mode	ScanWithAim/ScanAfterAim	ScanWithAim	
	Trigger Mode	Normal/Enhanced/Mobile	Normal	
	ScanCentering	Enabled/Disabled	Disabled	
	Poor Quality	Enabled/Disabled	Enabled	
	Illumination	Enabled/Disabled	Enabled	

	Video Mode	Normal Only/Reverse Only/Both	Normal Only	
	Scan Engine	VLM4122/MSL1400	Detected by factory default	
	Proximity Power	Enabled/Disabled	Disabled	
	Distance	Short/Medium/Long/Custom	Custom	
	Continuous Mode	Enabled/Disabled	Enabled	
	Reread Delay	Continuous/Short/Medium/Long/Extra Long	Short	
	Deep Sleep	Enabled/Disabled	Enabled	
	Version			

Power (KDC500/600)

Users may choose to turn the Scan Engine Power on or off. Select between Enable and Disable.

Scan Angle (Opticon Laser VLM4122)

This option enables the user to configure the laser beam angle to the barcode. There are two options for scan angleó Wide (54°) and Narrow (27°). The default is Wide.

Filter (Opticon Laser VLM4122)

This menu enables the user to change the Filter mode from Normal to High for poor quality barcodes. The default is Normal.

Timeout

Set the scan timeout options from 0.5 milliseconds up to ten (10) seconds. The default is two (2) seconds.

Minimum Barcode Length

This option enables the user to set a barcode length from two (2) characters to 36 characters (1D Model) or zero (0) characters to 48 characters (2D Model). It is strongly recommended that you maximize the minimum barcode length setting to prevent possible errors.

- The default minimum barcode length of 1D Model is four (4) characters
- The default minimum barcode length of 2D Model is as follows:

		Minimum (Default)	Maximum (Default)
1D Symbology	Codabar	2(4)	60(60)
	Code 11	1(4)	80(80)

	Code 32		
	Code 39	0(0)	48(48)
	Code 93	0(0)	80(80)
	Code 128	0(0)	80(80)
	EAN-8		
	EAN-13		
	GS1 Composite		
	I2of5	2(4)	80(80)
	Matrix 2of5	1(4)	80(80)
	MSI	4(4)	48(48)
	Plessey	4(4)	48(48)
	PosiCode	2(4)	80(48)
	GS1 Omni		
	GS1 Limited		
	GS1 Expanded	4(4)	74(74)
	S2of5 Ind	1(4)	48(48)
	S2of5 IATA	1(4)	48(48)
	TCL39		
	Telepen	1(1)	60(60)
	Trioptic		
	UPCA		
	UPCE0		
	UPCE1		
2D Symbology	AztecCode	1(1)	3750(3750)
	AztecRunes		
	CodablockF	1(1)	2048(2048)
	Code16K	0(1)	160(160)
	Code49	1(1)	81(81)
	DataMatrix	1(1)	1500(1500)
	MaxiCode	1(1)	150(150)
	MicroPDF	1(1)	366(366)
	PDF417	1(1)	2750(2750)
	QRCode	1(1)	3500(3500)
	HanXin Code		
Postal Codes	Postnet		
	PlanetCode		
	UK Post		
	Mayada Post		

	Kix Post		
	Australia Post		
	Japan Post		
	China Post	2(4)	80(80)
	Korea Post	2(4)	80(48)

Table 1 - 2D Model Minimum Barcode Length

Image Capture (2D Model)

Capture an image in JPEG format in C:\myData folder. Enable the image capture option first, then press the Scan button to start aiming. A green aiming light will illuminate, and an image will be taken upon release of the Scan button. KDC will disable the image capture option if the user presses the scan button for five (5) seconds. Image capture is only available with Windows KTSync.

Security Level (1D Laser Model)

Ensure an accurate barcode reading by setting the number of times the KDC will read a barcode. Security Level is set from one (1) to four (4). The higher security level means readings are more reliable; however, some performance degradation is likely. For poor quality barcodes, we recommend increasing the security level. The default is two (2).

Auto Trigger

Once enabled, Auto Trigger enables the user to scan a barcode automatically. You may adjust reread delay from continuous to extra-long. Auto Trigger mode always enables the duplicate check option.

Note You may exit the auto-trigger mode by pressing the scan button for three (3) seconds.

Reread Delay

The Reread Delay can be adjusted from continuous to extra-long. It sets the time period before the scan engine can read the same barcode a second time. It protects against accidental rereads of the same barcode. The default delay is a ëShortí.

Presentation Mode

If Presentation Mode is enabled, a barcode is scanned when a barcode is presented to the scan engine. If Presentation Mode is disabled, KDC scans a barcode on every period selected in the Reread Delay automatically. Presentation Mode is only supported in the 2D model.

Partial Display

Display partial data. You may define the start position and number of characters to be displayed. The selected partial data can be removed or kept by using the option Action. Erase means to remove and Select means to keep.

ScanIfConnected

Enables the KDC to check if it is connected to any host before reading barcode. If this option is enabled, KDC will not read a barcode if KDC is not connected to any host via USB or Bluetooth. The default is ëDisabledí.

Scan Mode

Determines if the barcode is scanned while the aimer is activated or after the aimer is activated. The ScanWithAim option scans for barcodes when the scan button is pressed. The ScanAfterAim option scans barcodes after the scan button is released.

Trigger Mode (2D Model)

The default is Normal mode which offers good scan speed and the longest working ranges. Enhanced mode will give you the highest possible scan speed but slightly less range than Normal mode. Mobile mode is optimized to read barcodes from mobile phones or other LED displays.

Scan Centering (2D Model)

Enables the scan engine to scan barcodes with focused windows. Users can enable this option when barcodes are close together.

Poor Quality (Honeywell Scan Engine)

Improves the scannerís ability to read damages or badly printed 1D barcodes.

Illumination (2D Model)

Determines whether to turn the illumination lights on or off while reading a barcode.

Video Mode(Honeywell Scan Engine)

Normal Only is to read standard barcodes that are printed with black ink on the white background. Reverse Only is used to allow the scan engine to read barcodes that are inverted. Both reads both standard and inverted barcodes. The default is Normal Only.

Note **In the Reverse Only, KDC special barcodes cannot be read. You must use Normal Only or Both in order to read special barcodes.**

Scan Engine (1D Laser Model)

Determines which laser scan engine will be used. By default, the scan engine is detected by the factory default.

Proximity(KDC180HP)

Proximity sensor allows KDC to read barcode automatically when objects are moved at the front of KDC.

Power

If ëEnabledí, KDC will read barcode if moving objects are detected within the field of distance. The default mode is ëDisabledí.

Distance

Configure the proximity sensor range sensitivity.

Short

An object is detected between 2cm and 6cm.

Medium

An object is detected between 5cm and 15cm.

Long

An object is detected between 15cm and 30cm.

Custom

The minimum and maximum distance can be selected from 3cm to 100cm.

Min Distance: Sets the minimum distance of object detection.

Max Distance: Sets the maximum distance of object detection.

Continuous

The proximity sensor continues to detect an object and read barcode if detected.

Reread Delay

The Reread Delay can be adjusted from continuous to extra-long. It sets the time period before the proximity sensor try to detect a next object. It protects against accidental rereads of the same barcode. The default delay is a "Short".

Deep Sleep(Opticon 2D Scan Engine)

Powers off scan engine to reduce power consumption of KDC if barcode is not read for 5 minutes. The default is "Enabled".

Version

Shows the scan engine name and the firmware version of scan engine.

Note There are three different methods to keep reading barcode.

Method	Description	Reading Interval	Support Models
Non-Presentation Mode (Auto Trigger)	KDC firmware keeps reading barcode automatically	Continuous, Short, Medium, Long, Extra Long,	1D Model 2D Model
Presentation Mode	KDC reads barcode if an object is detected in front of scan window		2D Model
Proximity Continuous Mode	KDC reads barcode if proximity sensor detects an object within the field of distance		KDC180HP

3.5.6 Data Process Menu

Top Menu	Sub Menu		Options	Default	Comments
Data Process	Wedge / Store		Wedge Only		
			Wedge & Store Always	Default	
			Store Only		
			Save if Sent		
			Save if Not Sent		
	Data Format		Barcode only	Default	
			Packet Data		
	Data Editor	Prefix			
		Suffix			
		AIM ID	None/In Prefix/In Suffix	None	
		Start Position	Start Position	1	
		No. of Char(s)	No. of Char(s)	0 chars	
		Action	Action	Select	
	Terminator		None, CR, LF, CR+LF, Tab, Right Arrow, Left Arrow, Down Arrow, Up Arrow	CR+LF	
	Chk Duplicate		Enabled/Disabled	Disabled	
	Enter Key		Enabled/Disabled	Disabled	KDC380
	Extend Key		Enabled/Disabled	Disabled	Keypad Model
	Parsing DL		Enabled/Disabled	Disabled	2D Model
	Age Verify	Verification	Enabled/Disabled	Disabled	2D Model
		Age Default	13 to 100	21	2D Model

Wedge/Store

The KDC provides five (5) modes of data transmission in the 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
- **Save if Sent**: If data transmission is successful, barcode data is stored in memory
- **Save if Not Sent**: If data transmission is NOT successful, barcode data is stored in memory

Data Format

The KDC provides two (2) data formatsó Barcode Only and Packet Data.

- **Barcode Only**: The KDC transmits scanned barcodes only. You may incorporate appropriate data transmission error detection and correction mechanisms in this mode. KDC supports a selection of various termination characters for Barcode Only format.
  You may 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 sets Data Format to Packet Data format upon execution.

  You may change **Data Format** to **Barcode Only** if you prefer to use the Barcode Only mode. However, the KDC will stay in Packet Data mode if KTSync is aborted abnormally. If this is the case, you may have to change the KDC back to Barcode Only mode manually.

Data Editor

The KDC provides various data editing options.

- **Prefix**: Enables user to add a prefix to scanned data that may be wedged to the host. The Prefix must be defined in the KTSync. The maximum length for a Prefix is 11 characters.

Note This Prefix option is different from the Prefix option in KTSync, which attaches the prefix to data during synchronization.
The user may also define the prefix by scanning characters defined in Appendix Special Barcode, as shown below in the special barcodes:

Prefix Enter Start

┬MKDC83000.

Prefix/Suffix Enter Finish

┬MKDC83002.

Note Users may also delete or display current prefixes by scanning the following special barcodes:

Delete Prefix

┬MKDC83004.

Display Prefix

┬MKDC83006.

- **Suffix**: Enables the user to add a suffix to scanned data, which may be wedged to the host. The suffix must be defined in the KTSync. The maximum length for a suffix is 11 characters.

Note This Suffix option is different from the Suffix option in KTSync, which appends the suffix to data during synchronization.
The user may also define the suffix by scanning characters defined in Appendix Special Barcode, as shown below in the special barcodes:

Suffix Enter Start

TMKDC83001.

Prefix/Suffix Enter Finish

TMKDC83002.

Note The user may also delete or display a current suffix by scanning the following special barcodes:

Delete Suffix

TMKDC83005.

Display Suffix

TMKDC83007.

- **AIM ID:** Enables the user to add AIM ID to scanned data, which may then be wedged to the host. AIM ID can be added to the end of a Prefix or Suffix.
- **Partial Data**: Enables the user to store and/or transfer partial data. The user defines the start position and number of characters to be stored and/or transferred.
    - Select the ***x*** characters from ***y*** position:
        - Set Partial Data Start Position to ***y***, Partial Data Length to ***x,*** Partial Data Action to Select
        - Partial Data Length ***0*** selects all characters from ***y*** position
    - Erase the ***x*** characters from ***y*** position
        - Set Partial Data Start Position to ***y***, Partial Data Length to ***x,*** Partial Data Action to Erase
        - Partial Data Length ***0*** erases all characters from ***y*** position

Terminator

The KDC supports various termination characters when the Data Format mode is set to Barcode only. Select <NONE>, <CR>, <LF>, <CR+LF>, or <TAB> as the termination character. The default terminator is <CR+LF>. The Up/Down/Left/Right arrow terminator is also available for HID mode.

Chk Duplicate

Prevents you from collecting duplicated data.

Enter Key (KDC350/380)

Determines the behavior of the ë#í key on the KDC350/380 keypad.

- If this option is enabled, the ë#í key acts as a keyboard enter key
    - The ë#í key finishes the current data input, and stores/sends input data according to the menu settings of **Wedge/Store**.
    - The cursor moves to the next line after the current data input is completed, regardless of whether or not there is a data input
    - The screen is scrolled up one line if the ë#í key is pressed on the last line of KDC screen.
    - If ëShiftí is enabled, remember that the ë#í key will input the ë#í character.

Extend Key (Keypad Model)

Inputs special characters which are in the ASCII tables.

Parsing DL (2D Model)

Scans the U.S. Driverís License barcode.

Age Verify (2D Model)

Verifies age with scanning U.S. Driverís License barcode. The Parsing Driverís License option should be enabled when using this option. The default age to be verified is a 21.

3.5.7 BT Config Menu

Top Menu	Sub Menu		Options	Default
BT Config	ConnectDevice		SPP	Default
			HID	
			HID Windows	
	MAC Address		12 Characters Bluetooth MAC Address	
	FW Version		Bluetooth Firmware Version	
	Connect Alert		Enabled/Disabled	Disabled
	HID AutoLock		disabled,1,2,3,4,5,10,15 minutes	1 minutes
	HID Keyboard		US, German, French, Italian, Spanish, Japanese, Danish	US
	HID Delay	Initial Delay	Disabled, 1,2,3,5,10 secs	Disabled
		Char. Delay	Disabled,10, 20, 30, 50, 100msec	Disabled
		Termi. Delay	Disabled, 10, 25, 50, 100, 200, 400, 1000, 2000 msec	Disabled
	HID Ctrl Char		Disabled, Alt+Numpad, ^+Character, Replace to |	Disabled
	iOS Keyboard		Enabled/Disabled	Disabled
	iOS KeyLayout		Enabled/Disabled	Disabled

The KDC supports *BLE 5.x*. Before utilizing the advantages of Bluetooth functionality with the KDC, the user should become familiar with Bluetooth connectivity and its impact on the host environment.

To configure your KDC for Bluetooth functionality, you may use the KDC Menus.

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.

Note **IMPORTANT:** We strongly recommend NOT changing these settings until the user has fully tested the Bluetooth connection between the KDC and the host device.

ConnectDevice

The KDC supports both Serial Port Profile (SPP) and Human Interface Device Profile (HID). The user may choose one of these profiles to communicate with the host device. You may choose the proper option depending on the host device you are trying to connect to:

- SPP ñ Android, iOS and Windows
- HID ñ Android and iOS
- HID Windows ñ Windows

MAC Address

When users select this option, KDC displays 12 characters Bluetooth MAC Address

FW Version

Displays Bluetooth Firmware Version

Connect Alert

Enables an audible beep upon successful Bluetooth connection

HID Autolock

This option is only applied with an iOS device and used to wake up an iOS device before sending data in HID mode. The iOS device loses incoming Bluetooth data while in sleep mode. To prevent data loss, you may set the KDC Autolock time to the same Autolock time of your iOS device.

If the Autolock time is set to more than one (1) minute and the barcode scan interval is larger than the auto-lock time, there will be a one (1) second delay of barcode transmission. The auto-lock time will be be set as Zero (0), one (1), two (2), three (3), four (4), five (5), 10, or 15 minutes. Zero (0) means the iOS device will never enter sleep mode.

HID Keyboard

Users may select an international keyboard language in HID mode. KDC supports the following languages: English, German, French, Italian, Spanish, Japanese, and Danish. It is also required to set the host keyboard with the same keyboard selected in this menu.

HID Initial Delay

Certain applications may not process HID input fast enough and may lose some characters during transmission. When the KDC is connected to an iOS device in the HID Bluetooth profile, scanning into a web browser will sometimes prematurely execute the 'CR + LF' (enter) terminator. The result may drop a few characters even if the KDC scans correctly in a native app such as Notes. This can be resolved by adding some delays. Users may define the initial delay between one (1) second to 10 seconds before data transmission in HID mode.

HID Inter-character Delay

Certain applications may not process HID input fast enough and may lose some characters during transmission. When the KDC is connected to an iOS device in the HID Bluetooth profile, scanning into a web browser will sometimes prematurely execute the 'CR + LF' (enter) terminator. As a result, a few characters may drop, even if the KDC scan correctly in native apps such as Notes. This can be resolved

by adding some delays. This option enables users to define the inter-character delay between 10 milliseconds to 100 milliseconds in HID mode.

HID Control Character

This option helps users send control characters (0x01 ñ 0x1F in ASCII table) to the host device with readable characters.

- ALT+Numlock (ALT+Numpad) → Transmit Alt+ ASCII value from Numpad (Only available with Windows)
- Replace to | → Control characters would be substituted as ì |î
- ^+Character → Control characters would be substituted as shown in the following table:

Control Char	Transmit Chars	Control Char	Transmit Chars	Control Char	Transmit Chars	Control Char	Transmit Chars
0x01	^A	0x0B	^K	0x14	^T	0x1D	^]
0x02	^B	0x0C	^L	0x15	^U	0x1E	^^
0x03	^C	0x0E	^N	0x16	^V	0x1F	^_
0x04	^D	0x0F	^O	0x17	^W		
0x05	^E	0x10	^P	0x18	^X		
0x06	^F	0x11	^Q	0x19	^Y		
0x07	^G	0x12	^R	0x1A	^Z		
0x09	^I	0x13	^S	0x1C	^\		

The user may send F1 to F12 function keys by scanning special barcodes in HID mode.

iOS Keyboard

This option enables users to show soft keyboard after sending data to iOS device in HID mode. It is required to be enabled if using iOS OS version is 15.x or later.

iOS KeyLayout

This option enables users to send HID data as an iOS keyboard layout format when the language on an HID keyboard is selected as German, French, Italian or Spanish.

3.5.8 BT Service Menu

Top Menu	Sub Menu	Options	Default	Comments
BT Service	Power	Enabled/Disabled	Enabled	
	Pairing			
	HID Sync			
	Always Pairing	Enabled/Disabled	Enabled	

Power

The Power option allows users to enable or disable the Bluetooth functionality of the KDC by setting it to Enabled or Disabled. To use Bluetooth, this option must be set to Enabled. However, like all devices enabled for Bluetooth, the KDC will constantly search to connect with a Bluetooth host when set to Enabled. Constant searching for Bluetooth devices increases power consumption. Unless you are using Bluetooth with your KDC, this option should be set to Disabled.

Note **IMPORTANT: To prevent unnecessary power problems, it is strongly recommended that the Power option be set to Disabled if the KDC is idle for a long period.**

Pairing

Before using the Bluetooth connection, 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. This option enters the KDC into pairing mode and the KDC gets ready to pair.

- The KDC goes into pairing mode so that the host Bluetooth device may search for it.
- The KDC may exit pairing mode if the user presses the SCAN button or if it fails to pair with the Bluetooth host device within 90 seconds

Note **The host device must be configured for Bluetooth before it may be paired to the KDC.**

- Select Pairing from the Bluetooth menu. The message ì **S/N[xxxxxx] Pairing [Profile Name] started Ö**î will be displayed
- The ì **Pairing [Profile Name] DoneÖ**î message will display when the Bluetooth connection is successfully established. The connection must be established before the pairing timeout of 90 seconds.
    - If ì **Pairing Failed !!!**î message displays, the Bluetooth connection with the host device failed. If the message ì **Connected**î displays, a Bluetooth connection is established.
    - It is possible for the message ì **Pairing Failed !!!**î to display on the KDC while the host device displays the ì **Connected**î message. If this occurs, a Bluetooth connection has

been established.

- Scanning this special barcode will send the KDC into the pairing mode:

HID  ┬MKDC6A001.
HID-Windows  ┬MKDC6A007.
SPP  ┬MKDC6A000.

HID Sync

KDC transmits all stored data to the host over HID profile if HID Sync option is enabled.

Always Pairing

KDC will be in the pairing mode when not connected if this option is enabled.

3.5.9 BLE Config Menu

<table>
<tr><th>Top Menu</th><th>Sub Menu</th><th></th><th></th><th>Options</th><th>Default</th></tr>
<tr><td rowspan="10">BLE Config</td><td colspan="3">HID Delay</td><td>Disabled, 5, 10, 20
30, 40, 50, 100msec</td><td>Disabled</td></tr>
<tr><td colspan="3">HID Char Num</td><td>1 ñ 9 characters.</td><td>9 chars.</td></tr>
<tr><td colspan="3">Dongle Mode</td><td>USB HID, USB Serial</td><td>USB HID</td></tr>
<tr><td colspan="3">NFC Pairing</td><td>Enabled/Disabled</td><td>Enabled</td></tr>
<tr><td rowspan="6">Social Dist.</td><td colspan="2">Distance</td><td>Disabled, 0 ñ 10
meters</td><td>Disabled</td></tr>
<tr><td colspan="2">Host Alert</td><td>Enabled/Disabled</td><td>Disabled</td></tr>
<tr><td rowspan="3">KDC Alert</td><td>Beep</td><td>Enabled/Disabled</td><td>Enabled</td></tr>
<tr><td>Vibrator</td><td>Enabled/Disabled</td><td>Disabled</td></tr>
<tr><td>Data Store</td><td>Enabled/Disabled</td><td>Disabled</td></tr>
<tr><td colspan="2">Security Key</td><td>Disabled,
Fixed Key,
Custom Key</td><td>Disabled</td></tr>
<tr><td colspan="3">Power Level</td><td>-40, -20, -16, -12, -8,
-4, 0, 3, 4 dBm</td><td>4 dBm</td></tr>
</table>

HID Delay

Define the delay between each character.

HID Char Num

Define how many characters to send to the HID host device at one time. Some host devices cannot handle HID data if the KDC sends the data too quickly. A user can control the sending speed with this option.

Dongle Mode

Select how the KBLED dongle sends data to the host device

- USB HID ñ Sends data as a keyboard data
- USB Serial ñ Sends data as a serial data and the KDC can communicate with host via a KBLED dongle

NFC Pairing

KDC can pair an Android device with NFC by tagging KDC to an Android Phone. It is only supported with an Android device, not on the Wi-Fi model.

Power Level

Sets the KDC Bluetooth transmit power level. By default, KDC is using the highest power level.

Social Distance

The COVID-19 pandemic added a new social distancing challenge to workplaces across the globe. Warehouses, manufacturing lines, and retail store floors all needed to maintain a social distance for their employeeís health and safety.

The KOAMTAC social distancing feature works with the technology and systems you already have in place. It enables the KDC to send an alert if another KDC is nearby. The distance is defined in the KDC Menu.

- Distance ñ The distance between each KDC
- Host Alert ñ Enables the KDC to send an alert message to the host if another KDC is found
- KDC Alert ñ Enables the KDC to send an alert with a Beep and/or Vibration. It will also send an alert if store alert information is found in the KDC memory
- Security Key ñ Select if KDC uses keys to find other KDC
- Supported on all Bluetooth Low Energy (BLE) 5.0 KDC devices
- For more on the social distancing feature, please watch: https://youtu.be/m4Manx9vK68

There are three (3) ways to enable and control the social distancing feature settings:

1. Enable via the KDC menu
2. Scan the special Social Distance barcodes that correspond with the settings you wish to enable
3. Enable via the KTSync application

Social Distancing Feature Parameters

The following parameters can be changed:

- **Distance**: Set the acceptable social distance range with values between one (1) to 10 meters (Default: Disabled)
- **Host Alert**: This setting will forward distance alerts to the connected host device (Default: Disabled)
- **KDC Alert**: This setting allows the user to enable/disable an audible **beep** sound (Default: Enabled), **vibration** (Default: Disabled), and **data storage** (Default: Disabled) settings for distance violations on the KDC
- **Security Key**: Choose between a fixed or custom key. Only KDC devices using the same key will be able to detect and report the distance between devices. If the fixed key is selected, the KDC will use a predefined key. If you prefer to set your own custom key, this action can only be performed though using KTSync (Default: Fixed Key).

Enabling the Social Distancing Feature via the KDC Menu

If you prefer to enable the social distancing feature by navigating through the KDC menu, follow the instructions below:

- From KDC BLE Config menu, select Social Distance to configure
- Set the Distance from one (1) meter to 10 meters
- Set the Host Alert to enable/disable
- Set the KDC Alert: Beep, Vibrator, and Data Store to the desired settings
- Set the Security Key: Disabled, Fixed Key, or Custom Key

1. Enabling the Social Distancing Feature via Social Distance Barcodes

If you prefer to enable the social distancing feature via special barcodes, scan the special social distance barcodes that correspond with the settings you wish to enable.

Social Distance Range	
Disable  *MKDC6z100.	1.0M  *MKDC6z10A.
2.0M  *MKDC6z114.	3.0M  *MKDC6z11E.
4.0M  *MKDC6z128.	5.0M  *MKDC6z132.
7.0M  *MKDC6z146.	10.0M  *MKDC6z164.

Host Alert	
Enable  *MKDC6z201.	Disable  *MKDC6z200.

KDC Alert	
Beep Enable  ┬MKDC6z301.	Beep Disable  ┬MKDC6z300.
Vibrate Enable  ┬MKDC6z401.	Vibrate Disable  ┬MKDC6z400.
Store Data Enable  ┬MKDC6z501.	Store Data Disable  ┬MKDC6z500.

Security Key	
Disabled  ┬MKDC6z600.	Fixed Key  ┬MKDC6z601.
Custom Key  ┬MKDC6z602.	

Enabling the Social Distancing Feature via the KTSync application

The social distancing feature can also be configured in the KTSync application.

1. Open KTSync and tap the Setting icon
2. Select KDC Menu (Figure 9)
3. Select Social Distance Finding (Figure 9)
4. Choose your Social Distance settings. Settings listed in the KDC Configuration section are the same settings available to you as if you were setting parameters on the KDC itself. These settings will be saved when you exit this screen. (Figure 9)
5. Additional Application Configuration settings can also be set on this screen (Figure 12)
    - Enable Vibration: The host device will vibrate when receiving social distance alert data
    - Enable Email Sending: An email application is launched
    - Email Address: Register an email address to send social alert events

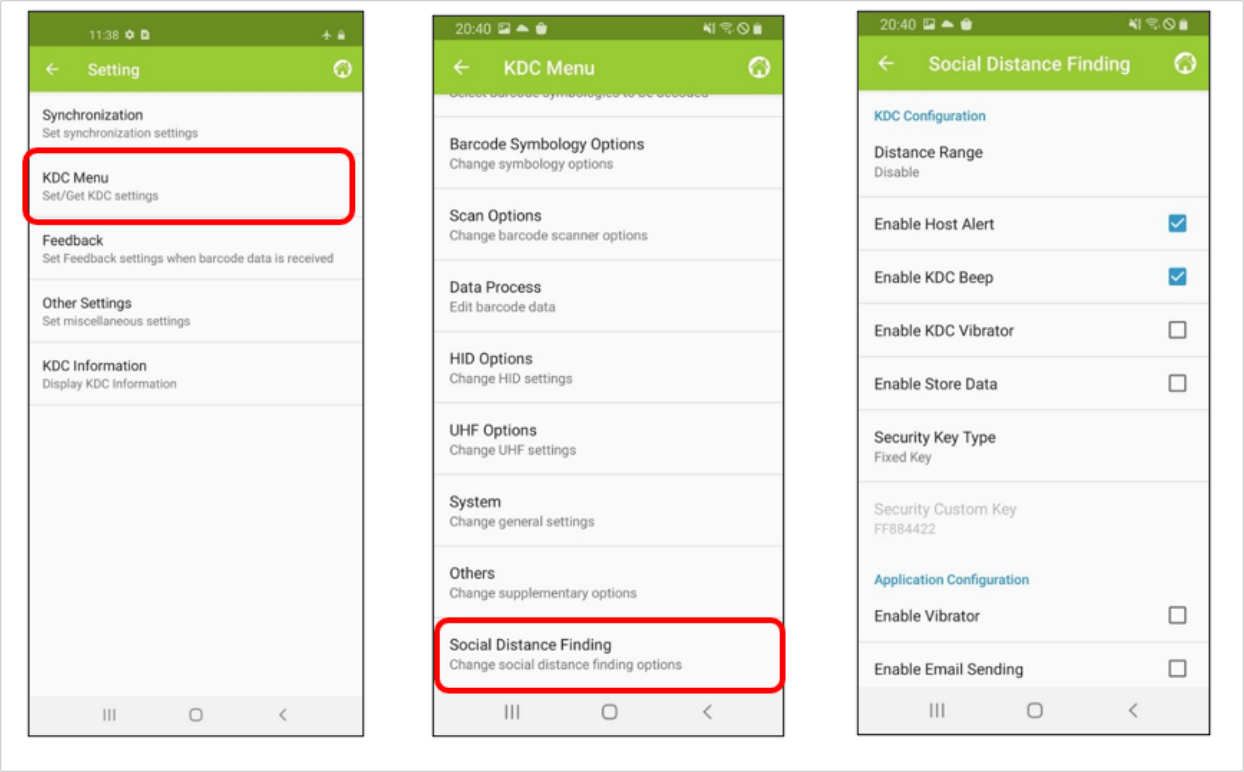


Figure 9 - Social Distance Settings

Examples of Social Distance Alerts & Social Distance Alert Data

Whenever the KDC is connected, the KDC is sending social distance alert data to the host device if **host alert** is enabled and another KDC is found within the selected **distance range**.

When a social distance violation occurs, you may receive these alerts, depending on settings:

- Social distance warning on KDC, showing your KDC serial number accompanied by **beep/vibration** if selected. (*Figure 10*)
- Social distance pop-up in KTSync showing your KDC serial number, the date and time of the violation, the serial number of the other detected KDC, and the distance if using the **host alert** setting. (*Figure 10*)
- Social distance email showing your KDC serial number, the date and time of the violation, the serial number of the other detected KDC, and the distance if using the **enable email sending** setting. (*Figure 10*)

Note

When reconnected, the KDC will send social distance data to the host device even if the same KDC is found within distance.

Only one social distance data alert is sent to the host device when multiple KDC devices are detected if social alert is already being displayed as a pop-up or email application is already launched.

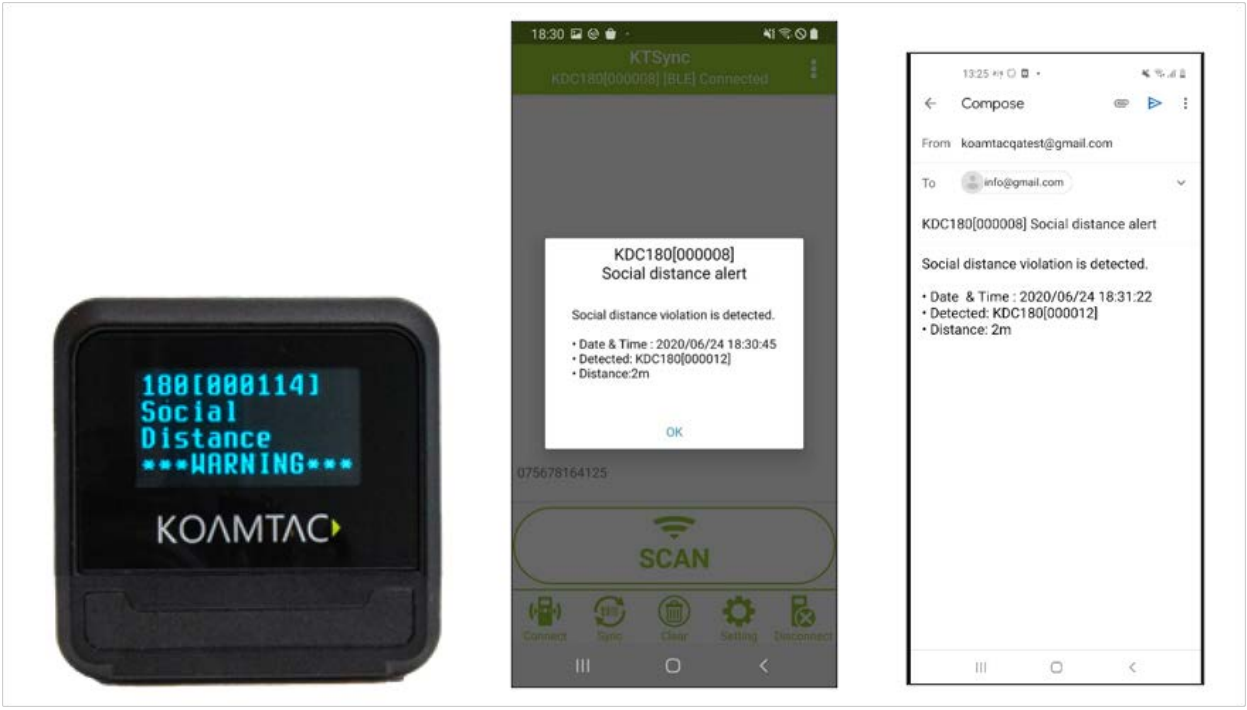


Figure 10 - Social Distance Alert Settings

3.5.10 USB Config Menu

Top Menu	Sub Menu		Options	Default
USB Config	USB Mode		Disabled USB Disk USB HID	Disabled
	Record Format		Data DataTime DataType DataTimeType	Data
	Disk Format			
	HID Option	HID Keyboard	US, German, French, Italian, Spanish, Japanese, Danish	US
		HID Ctrl Char	Disabled, Alt+Numpad, ^+Character, Replace to |	Disabled
		HID Sync		

USB Mode

Select how KDC handles USB connection

- Disabled ñ KDC communicates with host device with serial mode
- USB Disk ñ KDC stores data in the internal flash as like a USB memory stick
- USB HID ñ KDC sends data to host as a keyboard data

Note **Changing the ì USB Modeî option will erase all data in KDC memory. Make sure to back up your data before changing this option.**
KTSync may not recognize the KDC if the KDC is in ì USB DISKî mode or ì USB HIDî mode.

Record Format

Available in USB Disk and USB HID mode

- Data
- Data Time
- Data Type
- Data Time Type

Disk Format

Available in USB Disk mode and Enables users to format KDC USB Disk

HID Option

- HID Keyboard
  - Users may select an international keyboard language in HID mode. KDC supports following languages: English, German, French, Italian, Spanish, Japanese, and Danish. It is also required to set the host keyboard with the same keyboard as selected in this menu.
- HID Ctrl Char ñ Selects how ASCII control characters will be sent to the host device

  This option helps users send control characters (0x01 ñ 0x1F in ASCII table) to the host device with readable characters.
  - ALT+Numlock (ALT+Numpad) → Transmit Alt+ ASCII value from Numpad (Currently only available with Windows)
  - Replace to | → Control characters would be substituted as ì |î
  - ^+Character → Control characters would be substituted as shown in the following table:

Control Char	Transmit Chars	Control Char	Transmit Chars	Control Char	Transmit Chars	Control Char	Transmit Chars
0x01	^A	0x0B	^K	0x14	^T	0x1D	^]
0x02	^B	0x0C	^L	0x15	^U	0x1E	^^
0x03	^C	0x0E	^N	0x16	^V	0x1F	^_
0x04	^D	0x0F	^O	0x17	^W		
0x05	^E	0x10	^P	0x18	^X		
0x06	^F	0x11	^Q	0x19	^Y		
0x07	^G	0x12	^R	0x1A	^Z		
0x09	^I	0x13	^S	0x1C	^\		

  The user may send F1 to F12 function keys by scanning special barcodes in HID mode.

- HID Sync ñ Send all stored data to host

3.5.11 NFC Config Menu

Top Menu	Sub Menu	Options	Default	Comments
NFC Config	NFC Power	Enabled/Disabled	Enabled	
	Data Format	Data only/Packet Data	Packet Data	
	UID Only	Enabled/Disabled	Enabled	
	Reverse UID	Enabled/Disabled	Disabled	

NFC Power

Turns NFC Power on or off

Data Format

Selects data format to send to host

- **Data Only**: The KDC transmits NFC data only. You may incorporate appropriate data transmission error detection and correction mechanisms in this mode. KDC supports a selection of various termination characters for Data Only format. You may select <NONE>, <CR>, <LF>, <CR+LF> or <TAB> as the termination character.
- **Packet Data**: KDC transmits packet data with checksum to minimize transmission errors.

UID Only

The KDC only sends UID data to the host device when the KDC is in UID Only mode

Reverse UID

Sends UID data with reverse format

Getting to Know NFC and RFID Data Formats

	KDC SETTINGS		KDC OUTPUT				
	DATA FORMAT	UID ONLY					
1	Packet Data	Disabled	STX(0xAA)	Total Length (3 bytes)	NFC/RFID Packet		Check Sum (1 byte)
2	Packet Data	Enabled	STX(0xAA)	Total Length (3 bytes)	UID (16 bytes)	TimeStamp (4 bytes)	Check Sum (1 byte)
3	Data Only	Disabled	UID Length + UID (1 byte + 15 bytes)	NFC Data Exchange Format (NDEF) Payload			
4	Data Only	Enabled	UID (15 bytes)				

NFC/RFID Tag Read

KDC default mode is **Read** mode when NFC power is enabled.
In this mode, KDC reads NFC data when an NFC tag is positioned near the back of the KDC. Users receive the following audible and visible (KDC350) indications of a successful tag read:

- Single Beep
- Display UID if KDC has a display

Tag data is transmitted to the host via Bluetooth or USB according to the selected NFC data format.
When reading NFC tags, the payload data should be parsed by the 3rd party host software application to receive the corresponding message.

NFC Tag Write

NFC tag **Write** function works with Mifare Ultralight and Ultralight C tags.
KDC will change to **Write** mode only when it receives the write command from the host.

3.5.12 UHF Config Menu

Top Menu	Sub Menu	Options	Default	Comments
UHF Config	Power	Enabled/Disabled	Disabled	
	Power Level	0 ñ 27dBm (USA, EUROPE)	27 dBm	0.5W Model
		0 ñ 23 dBm (JAPAN)	23 dBm	
		0 ñ 30 dBm	30 dBm	1.0W Model
	Power Off Timeout	0 ñ 60 minutes	10 minutes	
	Smart Hopping	Enabled/Disabled	Enabled	0.5W Model
	Read Mode	Barcode Mode RFID Mode	Barcode Mode	
	Read Tag Mode	Single Read Multi Read Active Read	Active Read	
	Burst Mode	Enabled/Disabled	Disabled	
	Reading Timeout	0 ñ 60 seconds	10 seconds	0 means no timeout
	Data Type	EPC PC_EPC EPC_RSSI PC_EPC_RSSI TID EPC_TID PC_EPC_TID	PC_EPC	
	Beep Count	0 - 50	0	0 means no beep
	ConvertToHex	Enabled/Disabled	Disabled	
	Chk Duplicate	Enabled/Disabled	Disabled	
	Stop Active Read	Enabled/Disabled	Enabled	
	Store Data	Enabled/Disabled	Disabled	
	SendStartStop	Enabled/Disabled	Disabled	

	Charging Phone	Enabled/Disabled	Disabled	
	Channel List Selection			
	Region & ID			
	FW Version			

UHF Power

Turns UHF Module Power On or Off.

Power Level

Specifys the UHF module power level to determine the power strength of the antenna.

Power Off Time

KDC powers off the UHF module if it is not used for this timeout period.

Smart Hopping

Enables 0.5W module to find an optimized UHF channel and can be initiated by reading a special barcode.

Read Mode

It does select whether to read the barcode or UHF tag when the scan button is pressed.

KDC UHF Reader is in barcode mode upon booting the device. To read the UHF tag, you must switch to UHF mode. By pressing the UP button for three (3) seconds, the read mode is toggled between barcode mode and UHF mode. The application also can select barcode mode or UHF mode via SDK.

KDC generates one (1) long and two (2) short beeps when changing to UHF mode and one (1) long and one (1) short beep when returning to barcode mode.

- UHF Mode: one (1) long and two (2) short beeps
- Barcode Mode: one (1) long and one (1) short beep

For SKX, please refer to the Quick Guide.

Read Tag Mode

Specifies the UHF tag reading option.

- Single mode → Read only one tag when scan button pressed
- Multi-mode → Read until timeout or cancelled by pressing scan button
- Active mode → Read while scan button is pressed. Stops reading if scan button is released

The following options are only available in UHF mode (read mode):

- **Single modeó** press and release the SCAN button, it reads just one tag, whichever comes first
- **Multiple modeó** press and release the SCAN button, it keeps reading multiple tags until the timeout value is expired. If the timeout value is set to zero (0) or you want to stop reading, press the SCAN button.
- **Active modeó** while the SCAN button is pressed, it keeps reading multiple tags until the SCAN button is released

Application can also change to single, multiple, or active mode via SDK.

By default, the read mode is set to an active mode. These modes can be changed by pressing the DOWN button for two (2) seconds.

Alternatively, you can scan the special barcodes to change the mode. To change from active mode to another mode, you should first disable the active mode.

Note **If the SCAN button or Trigger button stays pressed more than ten (10) minutes in this Active Mode, the reading is stopped, and power is turned off automatically to avoid battery drain. This option is enabled by default, but it can be also disabled.**

Burst Mode

Enables KDC to send tag data in the fast mode.

Reading Timeout

Specifies the tag reading timeout when Multi mode is selected.

Data Type

Specifies what type of date will be read and send to host:

- EPC
- PC & EPC
- RSSI & EPC
- RSSI & PC & EPC
- TID
- EPC & TID
- PC & EPC & TID

Beep Count

KDC will beep once when the number of read tag data is reached. By setting the number of beeps, you can get a ballpark of how many tags are read.

ConvertToHex

Determines whether KDC sends tag data with Hex string data or binary data.

Chk Duplicate

Enables KDC to ignore duplicated tag data. It is only applied when single mode is selected. KDC internal memory for this option is not big enough, so it is not recommended to enable it if a lot of tag data will be read.

Stop Active

When active mode is selected and scan button is not released for ten (10) minutes, KDC will automatically stop to read the tag.

Store Data

KDC will store tag data in the KDC memory.

SendStartStop

KDC sends a start/stop read message to host device.

Charging Phone

Enable KDC to charge phone from battery of UHF 1.0W.

Channel List Selection

Select fixed channel to read tags.

Region and ID

Display current selected UHF module region and module ID.

FW Version

Display the UHF module firmware version.

3.5.13 Wi-Fi Config Menu

Top Menu	Sub Menu		Options	Default
Wi-Fi Config	Power		Enabled/Disabled	Enabled
	Power Level		0 ñ 7 dBm	0 dBm
	AP	SSID		
		Passcode		
		Region	USA EUROPE JAPAN	USA
	Server	IP Address		
		URL Address		
		Port Number	1 - 65535	13000
		Protocol	UDP TCP HTTP GET HTTP POST	UDP
		SSL(Security)	Enabled/Disabled	
		Server Page		
		Resp. Timeout	1 ñ 10 seconds	10 seconds
	DHCP		Enabled/Disabled	
	Static IP	IP Address		
		Net Mask		
		Gateway		
		DNS IP		
	Connect			
	Auto Connect		Enabled/Disabled	Disabled
	Auto Reconnect		Enabled/Disabled	Disabled
	Send Stored		Enabled/Disabled	Disabled
	Roaming		Enabled/Disabled	Disabled

		Threshold	-30 to -90 dBm	-60 dBm
	Version			

Note All configuration is stored in the KDC.
When both Wi-Fi and Bluetooth/USB are connected, Wi-Fi has a higher priority, meaning that the scanned data is transmitted only via Wi-Fi.

KDC Wi-Fi model can send and receive data to/from host by using the following protocols:

- UDP
- TCP
- HTTP_GET
- HTTP_POST

Power

Turns the Wi-Fi Module Power ON and OFF.

Power Level

Specify the WiFi module power level to determine the power strength of antenna.

AP

Configure the following AP information:

- Set AP SSID
- Set AP Passcode
- Set AP Region

Server

Configure the following server information:

- IP Address
- URL Address
- Port Number
- Protocol (UDP/TCP/HTTP-GET/HTTP-POST)
- SSL(Security)
- Server Page

Connect

Connect to AP and server.

Auto Connect

Enable/Disable KDC to connect to AP and Server when it powers on.

Auto Reconnect

Enable/Disable KDC to reconnect to AP and Server when it detects disconnection from AP and Server.

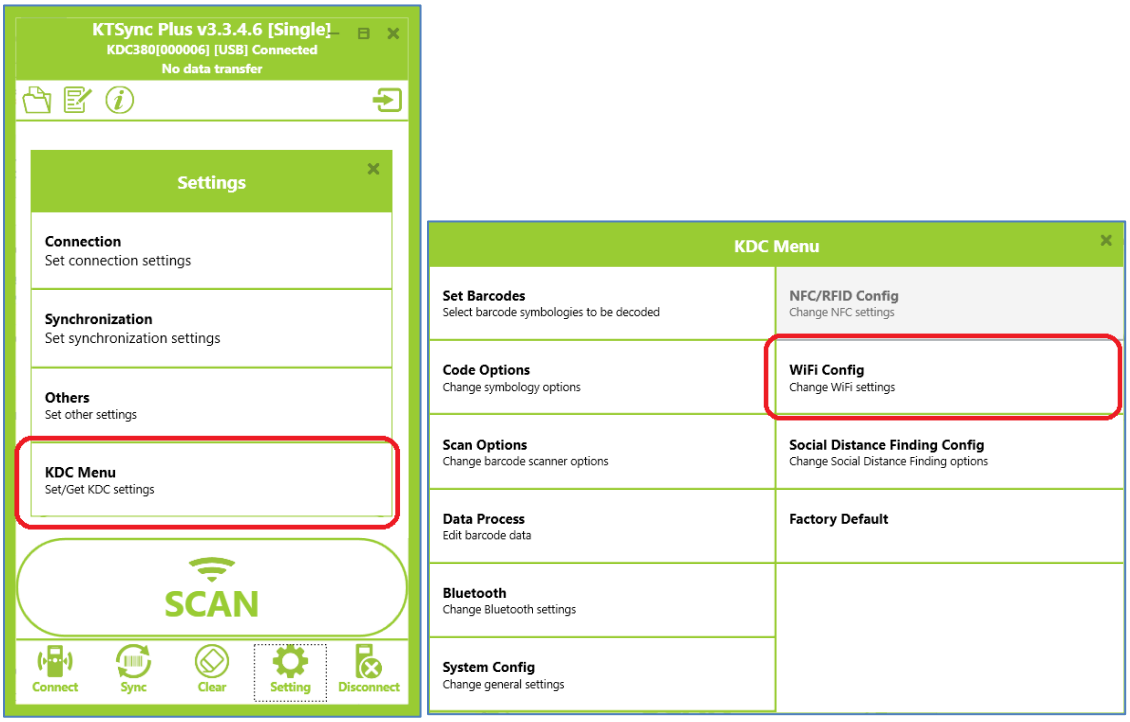
Send Stored

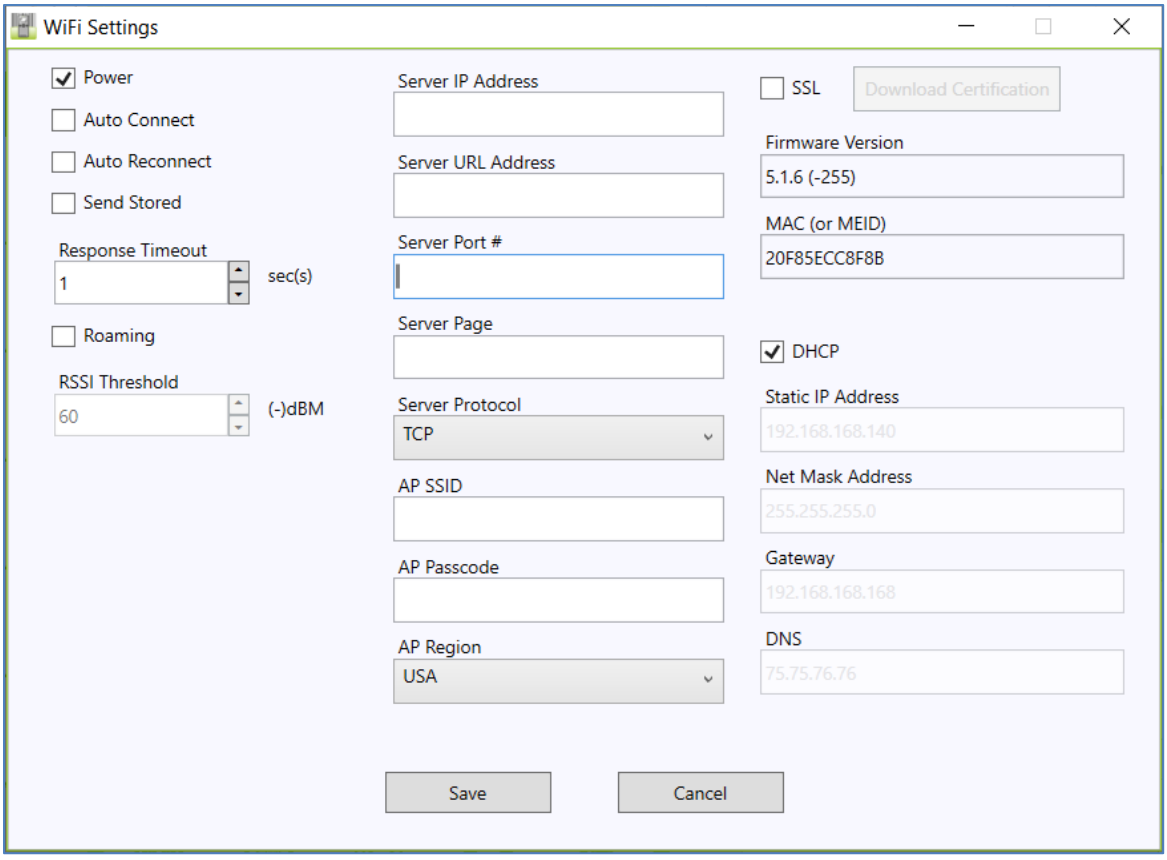
Enable/Disable KDC to send stored data when sending a new read data.

Roaming

KDC supports roaming between APs which have the same SSID. When user presses Scan button, KDC checks current APs signal strength. If the signal strength is lower than pre-defined threshold, KDC disconnects from current connected AP and connects to a new AP with the strongest signal strength. It typically takes three (3) to four (4) seconds. KDC provides a way to set the signal strength (RSSI) threshold and users can set it from -30 to -90.

If enabled, KDC checks the current Wi-Fi signal strength and tries to reconnect. The threshold is also configured in the menu. All these configurations can be set easily from KTSync.




WiFi Settings
Power
Auto Connect
Auto Reconnect
Send Stored
Response Timeout
1
sec(s)
Roaming
RSSI Threshold
60
(-)dBM
Server IP Address
Server URL Address
Server Port #
Server Page
Server Protocol
TCP
AP SSID
AP Passcode
AP Region
USA
SSL
Download Certification
Firmware Version
5.1.6 (-255)
MAC (or MEID)
20F85ECC8F8B
DHCP
Static IP Address
192.168.168.140
Net Mask Address
255.255.255.0
Gateway
192.168.168.168
DNS
75.75.76.76
Save
Cancel

3.5.14 System Config Menu

Top Menu	Sub Menu			Options	Default
System Config	Memory Size			0.5/4.5, 1/4, 2/3, 3/2, 4/1, 5/0	0.5/4.5
	Memory Status			Number of stored barcode/Available Space	
	Reset Memory			Memory	
				Application Memory	
	Auto Erase			Enabled/Disabled	Disabled
	Sleep Timeout			Disabled, 1sec to 10minute(s)	5 second(s)
	Date / Time			Set KDC Date/Time	
	Battery	Battery gauge		% of Battery Charge Available	
		PowrOffLowBatt		Enabled/Disabled	Disabled
	Version			Bootloader/Firmware Version	
	Serial No.			Serial Number/Font Version	
	Button Lock			Enabled/Disabled	N/A
	Beep Alert	Beep Sound		Enabled/Disabled	Enabled
		Power On Beep		Enabled/Disabled	Enabled
		Beep On Connect		Enabled/Disabled	Enabled
		Beep On Scan		Enabled/Disabled	Enabled
		Beep On Scan Error		Enabled/Disabled	Enabled
		Beep On Low Battery		Enabled/Disabled	Enabled
	Beep Volume			Low/High	Low
	Key Tone			Enabled/Disabled	Disabled
	Vibrator			Enabled/Disabled	Disabled
		Config	Scan Success	1 ñ 5 times	1
			Scan Failure	0 ñ 5 times	0
	Auto Exit			Enabled/Disabled	N/A
	Port Status			Enabled/Disabled	N/A
	Display Format			Time & Battery Type & Time Type & Battery Memory Status Barcode Only Graphic	Time & Battery
	Menu Barcode			Enabled/Disabled	Disabled
	Scrolling			Enabled/Disabled	Enabled
	Brightness			1 to 15 level	8 level
	LED Control			0 % - 100 %	10 %
	Keypad			Enabled/Disabled	Enabled
	Language			Disabled US(English)	US(English)

		French Italian Spanish Korean Japanese	
	Factory Default	Restores Default Settings	

Memory Size

Select how much memory to divide between normal data memory and application database memory.

- The KDC will erase all stored data upon changing the partition size
- Enter the following key sequence to change the partition:
  UP button + UP button + DOWN button + DOWN button + SCAN button

Note Download language strings and fonts when selecting language from éDisabledí

Memory Status

Check the number of stored barcodes and memory usage.

Reset Memory

Reset KDC memory by erasing all stored barcodes and applications.

Auto Erase

Erase stored barcodes on the KDC once the éBuffer Fullí condition is reached.

Sleep Timeout

Set the amount of time the KDC waits before going to sleep (when not being used).

Date/Time

Set the date and time of the KDC, which may also be set using KTSync.

Battery

- **Battery Gauge:** Shows the status of the current battery level.
- **PwrOffLowBatt:** Enables power off KDC when the battery level is 0% and generates low battery warning when the battery level is 5%.

Version

Shows the KDC firmware version.

Serial No.

Shows the KDC serial number and font version.

Button Lock

Lock or unlock the KDC scan and scroll buttons.

Beep Alert

- **Beep Sound:** Enables or disables KDC beep sound.
- **Power On Beep:** Enables or disables beep sound when KDC power is on.
- **Beep On Connect:** Enables or disables beep sound when KDC is connected to the host.
- **Beep On Scan:** Enables or disables beep sound when KDC is scanning.
- **Beep On Scan Error:** Enables or disables beep sound when scan failed.
- **Beep On Low Battery:** Enables or disables beep sound when KDC battery level is low (< 10%).

Beep Volume

Adjust the beep volume from High to Low.

Key Tone (KDC380)

Enables the beep when keypad is pressed.

Vibration

Enables or disables KDC vibration. The number of vibrations for scan success and scan failure can be specified in the Config menu.

Auto Exit

Enables KDC to automatically exit KDC Menus.

Port Status

Enable or disable KDC port messages.

Display Format

Various selections of display format:

- Time and Battery
- Type and Time
- Type and Battery
- Memory Status
- Barcode only and Graphic

Menu Barcode (2D Model)

Enable or disable 2D scan engine configuration barcodes.

Scrolling

Enable or disable display scrolling for a barcode with more than 40 characters.

Keypad (KDC180 & KDC380)

Input data with keypad.

LED Control (KDC180)

Adjust brightness of KDC180 LEDs.

Brightness

Adjust brightness of display.

Languages

Select a KDC language from one of the following:

- Disabledó Does not use language feature. The default is an English.
- U.S. (English)
- German
- French
- Italian
- Spanish
- Korean
- Japanese

Factory Default

Reset KDC options to factory default settings.

3.5.15 Japanese KDC Menu

If KDC has a display and language is selected as a Japanese, this firmware selection menu will be appeared.

Supported KDC model: KDC80/185/180/270/280/380.

Top Menu	Sub Menu	Options	Default	Comments
Application	General		Default	
	MasterSlave		N/A	

The ëGeneralí is a general firmware.

The ëMaster/Slaveí is an enhanced version of the predefined Master/Slave which is selected in the KTSync.

For more information about enhanced version of Master/Slave firmware, please see Appendix F ñ Enhanced Master/Slave.

3.5.16 Key Mgmt Menu– KDC500/600

- **Stored Keys:** Display all of the encryption keys stored in the KDC500/600
- **Inject Keys:** Inject the necessary encryption keys via Key Loader device

3.5.17 Sensitive Menu – KDC500/600

KDC500/600 Sensitive menu has sub-menus which can impact the KDC500/600 security services. KDC500/600 requires two (2) passwords for access to the Sensitive menu group to ensure only authorized people can utilize the sensitive services. The default passwords are 0000000 and 11111111.

Note **For PCI PTS compliance, the default passwords should be changed prior to use. Without the default passwords change, KDC500/600 declines all the payment related service requests, such as MS Card Read, IC Card Insertion, PIN Entry, etc.**

Set Date/Time

Set the date and time of the KDC500/600.

Set Self-Test

Set the time for the Self-Test in this menu. PCI PTS requires users to perform the Self-Test (Firmware and stored key authentication) at least once every 24 hours.

Set Passwords

Change the current passwords to access the Sensitive Menu.

Key Mgmt

- **Stored Keys:** Display all the encryption keys stored in the KDC500/600
- **Inject Keys:** Inject the necessary encryption keys via the Key Loader device
- **Clear Keys:** Clear all the encryption keys stored in the KDC500/600 except the Firmware Update Authentication key, which is loaded during the manufacturing process

Card Encrypt

Choose the encryption algorithm for the sensitive card data from the following:

- Plaintext
- T-DES
- AES

3.6 LED Status

LED Color	Status
Green	• Successful Reading • USB is connected and battery is fully charged • MFi mode in pairing mode
Orange	• Low battery • USB is connected and battery is charging • HID mode is in pairing mode (except KDC500/600)
Red	• No reading • SPP mode is in pairing mode

Table 2 - Explanation of LEDs

3.7 Empty Battery

3.7.1 KDC80/100/180/185/200/250/270/280/300/350/380

The KDC will display the message ***Empty Battery Connect USB*** when the battery is empty. Please charge the KDC IMMEDIATELY to prevent any interruptions while it is collecting data.

3.7.2 KDC20/30/400/470/480OA

- Under 30% - Orange LED flickers at 1-second intervals for five (5) seconds every minute
- Under 20% - Orange LED flickers at 1-second intervals for ten (10) seconds every minute
- Under 10% - Red LED flickers in 1-second intervals for ten (10) seconds every minute and the user will hear a beeping sound

3.7.3 KDC480NA/1000/1100/1200

- Under 5% - Red LED and the user will hear a beeping sound

3.7.4 KDC500/600

- Under 10% (Low) Displays the message **Low Battery Please Charge**. KDC500/600 is still

functional but charge the KDC500/600 immediately to prevent any interruptions while it is collecting data.

- Under 5% (Empty) - Displays the message **Empty Battery Please Charge**. KDC500/600 is not functional any longer.

3.8 Buffer (Memory) Full

The KDC will display the message **Buffer Full** when there is no more space in the flash memory, or you reach the maximum number of stored barcodes. To prevent the loss of data, you should synchronize the data then reset the memory when this message is displayed.

The 4MB/8MB version KDC reaches the **Buffer Full** condition in the following situations:

- 0.5MB Partition - Collected data size reaches 0.5MB or collected number is 25,600
- 1MB Partition - Collected data size reaches 1MB or collected number is 51,200
- 2MB Partition - Collected data size reaches 2MB or collected number is 102,400
- 3MB Partition - Collected data size reaches 3MB or collected number is 153,600
- 4MB Partition - Collected data size reaches 4MB or collected number is 204,800
- 5MB Partition - Collected data size reaches 5MB or collected number is 256,000
- 6MB Partition - Collected data size reaches 6MB or collected number is 307,200
- 7MB Partition - Collected data size reaches 7MB or collected number is 358,400
- 8MB Partition - Collected data size reaches 8MB or collected number is 409,600

3.9 Reset Feature (100/200/250/300) or Power-on/off (KDC20/30/80/270/280/350/380/400/470/475/480/485/500/600/1000/1100/1200/SKX)

The Reset feature enables the user to restart the KDC100/200/250/300 if necessary, without losing any stored barcode data or option settings. To reset the KDC:

1. Press the DOWN and SCAN buttons simultaneously for five (5) seconds
2. When the LEDs illuminate orange, release the buttons
3. 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 nor the KDC settings during the reset process.**

If you are using the KDC20/30/80/180/185/270/280/350/380/470/475/480/485, you may turn the power on and off by pressing the DOWN and SCAN button simultaneously for five (5) seconds. When the LED light is green, you may release the buttons and the power will be on. When you turn off the KDC20/30/80/180/185/270/280/350/380/470/475/480/485, you will hear a beep sound after pressing the DOWN and SCAN buttons simultaneously.

KDC400 (except KDC470/475/480/485): turn the power on and off by sliding the power switch.

KDC1000/1100/1200/SKX: turn the power on and off by pressing both right and left SCAN buttons for three (3) seconds.

KDC500/600: turn the power on and off by pressing the left and right SCAN buttons simultaneously for five (5) seconds. When the display shows the KOAMTAC logo, you may release the buttons and the power will be on. When you turn off the KDC500/600, the display will be blank after pressing the left and right SCAN buttons simultaneously.

3.10 B KDC470/475/480/485/1000/1100/SKX Extended Battery

KOAMTAC SmartSled supports an 2000mAh/5000mAh extended battery option which is used to charge KDC470/475/480/485/1000/1100 internal and smartphone batteries. In SKX, you can only charge a smartphone battery.

3.10.1 Operating mode

2000mAh/5000mAh extended battery charges smartphones and KDC470/475/480/485/1000/1100 internal batteries when no power source exists (no USB cable plugged in or not in charging cradle). Extended battery would be changed to extended battery charging mode if power source is connected.

3.10.2 LED

2000mAh/5000mAh extended battery has two LEDs. In low battery mode, extended battery enters sleep mode after one (1) minute.

Battery Label	Charging	Discharging
Low battery	Red	Red with blinking
Charging/Discharging	Orange	Orange with blinking
Full charged	Green	Green with blinking

3.10.3 Custom iOS and Android case detection issue and operation

KDC470/475/480/485 can take up to one minute to detect cradle insertion and removal when custom iOS case is attached. Android custom case can be detected in real time.

- KDC470/475/480/485 extended battery LED stops blinking upon place on the charging cradle.
- KDC470/475/480/485 extended battery starts to charge smartphone upon removing from charging cradle.

4 Bluetooth

The KDC supports HID (Human Interface Device) normal, HID iOS, SPP (Serial Port Profile) and SPP2.0 profiles. The KDC500/600 only supports SPP.
The KDC20i/30i/200i/250i/270i/300i/350i/400i/470i/475i/500i supports MFi (Made for iPhone/iPad/iPod touch) profiles.
KDC80/180/185/280/380/480/485/1000/1100/1200 are BLE5.0 devices and support HID, and SPP profiles.

Note **For PCI PTS compliance, KDC500 can only support SPP and MFi profiles. KDC600 only supports SPP profile.**

Bluetooth options may be configured by using the KDC menu, PC KTSync, and special barcodes.

4.1 Bluetooth Config

4.1.1 Connect Device

BLUETOOTH EDR+2.1 Classic
The KDC supports both Serial Port Profile (SPP) and Human Interface Device Profile (HID). Users may choose from SPP2.0, SPP (2.1), HID normal, or HID iOS profiles to communicate with the host device. An additional MFi (Made for iPhone/iPad/iPod touch) option is available for KDC20i/30i/200i/250i/270i/300i/350i/400i/470i/475i/500i models when MFi mode is enabled. (SystemConfig Menu). KDC500i does not have MFi mode option and supports MFi by default.

If the **BT Toggle** option (KDC500 does not support) in **BT Config** is enabled, users may connect and disconnect the Bluetooth connection with the host device by pressing the UP and DOWN buttons. It normally takes three (3) seconds to connect and one (1) second to disconnect. This is a very useful feature for iPhone and iPad applications.

Keyboard does not appear on iPhone/iPad/iPod touch when KDC is connected in **HID iOS mode**, users can press the DOWN button to **toggle** the **onscreen keyboard**. For the KDC400/470/475 it is the small button located on the left side of the KDC. The UP button shows the Bluetooth connection status, and the DOWN button shows the time when this option is disabled.

Note **The user should first un-pair the KDC from the Bluetooth host to change the Connect Device setting on the scanner to a different Bluetooth profile.**

BLE
The KDC80/180/185/280/380/480/485/1000/1100 supports both Serial Port Profile (SPP) and Human Interface Device Profile (HID). The user may choose from SPP, HID and HID Windows profiles to communicate with the host device.

4.1.2 Auto Connect (EDR+2.1 Classic Models Only)

This feature enables the KDC to automatically connect to the host device when the KDC is powered on. KDC500 does not support Auto Connect.

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

Note The KDC automatically tries to connect to the host ten (10) times in two (2) minutes when *Bluetooth* power is ON, *Bluetooth* is disconnected, Auto Connect is enabled, and system Sleep Timeout is set to five (5) seconds.

4.1.3 Auto Reconnect (EDR+2.1 Classic Models Only)

This feature enables the KDC to automatically connect to the host device when the KDC is disconnected from a host.

Note The KDC tries to connect automatically to the host ten (10) times within the duration of two (2) minutes if Bluetooth is disconnected.

4.1.4 Auto Power On (EDR+2.1 Classic Models Only)

The Auto Power On option enables the KDC to automatically power on Bluetooth when the SCAN button is pressed. The default setting is Disabled. KDC500 does not support this option.

Note Users should press the scan button for the duration defined in the BT Config Power-on time option. The host program may have to open the COM port again to be reconnected with the KDC.

4.1.5 PWR ON Time (EDR+2.1 Classic Models Only)

The PWR On Time option works in conjunction with the Auto Power On option. The default value is Disabled. If the KDC Bluetooth power is off, you may turn on the Bluetooth power by pressing the SCAN button for the PWR On Time option value. KDC500 does not support this option.

4.1.6 Auto Power Off (EDR+2.1 Classic Models Only)

The Auto Power Off option works in conjunction with the PWR Off Time option. This option Enables the KDC to power off Bluetooth automatically when the KDC is NOT CONNECTED to the host for the duration specified in the PWR Off Time option. KDC500 does not support this option.

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

It is recommended to enable the ëAuto Power Oní option if this option is enabled. User does not need to turn on the Bluetooth power manually with this configuration.

4.1.7 Beep Warning (EDR+2.1 Classic Models Only)

The KDC beeps to warn user to power off the Bluetooth if this option is enabled with five (5) short beeps and the following conditions are met:

1. Bluetooth power is ON
2. KDC is disconnected
3. Auto Power Off is DISABLED

KDC500 does not support this option.

4.1.8 PWR OFF Time (EDR+2.1 Classic Models Only)

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 duration of time specified in the PWR Off Time option is met and the KDC is NOT CONNECTED to the host. The time setting for this option is from one (1) minute to 30 minutes. The default is five (5) minutes. KDC500 does not support this option.

4.1.9 PowerOFF Msg (EDR+2.1 Classic Models Only)

The KDC sends a Bluetooth power off message ì BTOFFî to the host when KDC is connected from the host if this option is enabled. KDC500 does not support this option.

4.1.10 MAC Address

The user may verify the KDC Bluetooth MAC Address.

4.1.11 FW Version

The user may verify the KDC Bluetooth firmware version.

4.1.12 Wakeup Nulls

The KDC sends three (3) leading Null bytes to wake up the *Bluetooth* connected device. This feature may be disabled if the *Bluetooth* connected device does not require additional bytes to wake up. KDC500/600 does not support this option.

4.1.13 Autolock Time

The iPhone/iPad/iPod touch loses incoming Bluetooth data while in sleep mode. To prevent data loss, you may set the KDC Autolock time to the same Autolock time of your iPhone/iPad/iPod touch to use the automatic wakeup feature in HID mode. KDC500/600 does not support this option.

If the Autolock time is set to more than one minute and the barcode scan interval is larger than the Autolock time, there will be a one (1) second delay of barcode transmission. The Autolock time would be set as zero (0), one (1), two (2), three (3), four (4), five (5), ten (10) or 15 minutes. Zero (0) means the iPhone/iPad/iPod touch never enters sleep mode. This option may not need from iOS 5.x.

4.1.14 HID Keyboard

The user may select an international keyboard in English, German, French, Spanish, or Italian. It is also required to set the host keyboard with the same keyboard as selected in this menu. KDC500/600 does not support this option.

4.1.15 HID Initial and Inter-Character Delay

Certain applications may not process HID input fast enough and may lose some characters during transmission. Users should increase Initial and Inter-Character delay to prevent data loss during HID transmission. KDC500/600 does not support this option.

- HID Initial Delay: Defines the initial delay between one (1) sec to ten (10) sec before data transmission in HID mode
- HID Inter-character Delay: Defines the inter-character delay between 10msec to 100msec in HID mode

4.1.16 Control Character Transmission in HID mode

Control characters between ASCII values 0x00 and 0x1F may be replaced by the ALT+Numpad or ^+Character or replaced with ₫'. KDC500/600 does not support this option.

- Disabled: Transmit the original control character
- Alt+Numpad: Transmit Alt+ ASCII value from Numpad
- ^+Character: Control characters would be substituted as shown in the following table
- Replacement to |: Control characters would be substituted as ì |î

Control Char	Transmit Chars	Control Char	Transmit Chars	Control Char	Transmit Chars	Control Char	Transmit Chars
0x01	^A	0x0B	^K	0x14	^T	0x1D	^]
0x02	^B	0x0C	^L	0x15	^U	0x1E	^^
0x03	^C	0x0E	^N	0x16	^V	0x1F	^_
0x04	^D	0x0F	^O	0x17	^W		
0x05	^E	0x10	^P	0x18	^X		
0x06	^F	0x11	^Q	0x19	^Y		
0x07	^G	0x12	^R	0x1A	^Z		
0x09	^I	0x13	^S	0x1C	^\		

4.1.17 Function Key Transmission in HID mode

The user may send F1 to F12 function keys by scanning special barcodes in HID mode.
KDC500/600 does not support this option.

4.1.18 Disconnect/Reconnect/BT(HID) Toggle (EDR+2.1 Classic Models Only)

The user may disconnect or reconnect the Bluetooth connection and toggle the soft keyboard using side buttons. KDC500 does not support this option.

Bluetooth Profile	UP Key	DOWN Key (DisconnectBTN disabled)	DOWN Key (DisconnectBTN enabled)
SPP	Reconnect	Does nothing	Releases BT connection
HID iOS	Reconnect	Soft Keyboard Toggle if pressing less than 3sec	Soft Keyboard Toggle if pressing less than 3sec, Releases BT connection
MFi	Reconnect	Does nothing	Releases BT connection
SPP 2.0	Reconnect	Does nothing	Releases BT connection
HID normal	Reconnect	Does nothing	Releases BT connection

Note Some SPP hosts do not support Reconnection from KDC

4.1.19 Character dropping in web browser on iOS

When the KDC is connected to an iOS device in the HID iOS Bluetooth profile, scanning into a web browser will sometimes prematurely execute the 'CR + LF' (enter) terminator and result in a few characters dropping. The KDC will scan in native apps such as Notes.

Workaround 1 - Using KTSync
If the KDC is an "i" model and has the MFi Bluetooth profile, KTSync can be used for keyboard wedging, similar to HID. In this mode, the data transmission is much faster and more reliable. KTSync must be open with the KDC connected and the KTSync Keyboard needs to be selected before scanning. The HID character delay settings do not have any impact on transmission times when connecting in MFi/SPP.

Workaround 2 - Using HID Transmission Delays
User can adjust Initial delay and Inter-Character delay such as one (1) second Initial Delay and 30 millisecond Inter-Character delay.

- Scan the appropriate special bar codes on the back of the user manual
- Alternatively, these settings can be set in KTSync by going to KDC Menu > Bluetooth > and changing the Initial and Inter-Character Delays

4.2 Bluetooth Service

4.2.1 Power

The POWER option enables the user 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 will constantly search to connect with a Bluetooth host when set to enable. Constant searching for Bluetooth devices increases power consumption.

Unless you are using Bluetooth with your KDC, this option should be set to disable.

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

4.2.2 Pairing

Before you use Bluetooth connection, 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.

Note KDC with Bluetooth Spec2.1+EDR does not prompt Pin code entry menu.

To pair KDC with the host, follow these instructions:

1. Select Pairing from the Bluetooth menu. The message ì **Pairing startedÖî** will be displayed.
2. The **ì Pairing Doneî** message will display when the Bluetooth connection is successfully established. The connection must be established before the pairing timeout of 90 seconds.
    a. If **ì Pairing failed...î** message displays, the Bluetooth connection with the host device failed. If the message **ì Connectedî** displays, a Bluetooth connection is established.
    b. It is possible for the message ì **Pairing failed...î** to display on the KDC while the host device displays the **ì Connectedî** message. If this occurs, a Bluetooth connection has been established.

For KDC500/600 paring with the host, Numeric Comparions pairing method is required for PCI PTS compliance. See the section 2.1 Bluetooth Paring for the details.

4.2.3 Discovering (EDR+2.1 Classic Models Only)

KDC200/250/270/300/350 starts to search for neighboring *Bluetooth* devices if the Discovering menu is executed. It will take approximately 30 seconds to finish searching and list available neighboring *Bluetooth* devices. Another option is to enter the corresponding Bluetooth MAC address in the KTSync Bluetooth menu instead of waiting for the KDC to search for neighborhood *Bluetooth* devices.

KDC20/30/400/470/475 only supports via KTSync configuration. KDC500 does not support this feature.

4.2.4 Connect To (EDR+2.1 Classic Models Only)

This option lets you easily connect the KDC to *Bluetooth* devices that have either been previously registered in KTSync under the File Menu or discovered/connected from the KDC *Bluetooth* Service menu. KDC20/30/400/470/475 only supports via KTSync configuration. KDC500 does not support this feature.

Note There could be an interoperability issue depending on the corresponding device Bluetooth stack. The master Bluetooth device may request that you to follow the master Bluetooth deviceís security procedures, if the KDC tries to connect to the master Bluetooth device.

4.2.5 HID Sync

The user may synchronize stored barcode data over HID using the HID Sync option. The KDC will start to transmit all stored barcode data upon execution of the HID Sync option. KDC500/600 does not support this feature.

4.2.6 Tips (EDR+2.1 Classic Models Only)

Pair and connect KDC20i/30i/200i/250i/270i/300i/350i/400i/470i/475i and iOS4.0+ in HID iOS mode.

Note Users must disable the MFi option in System > MFi menu and change the Bluetooth profile to HID-iOS to use HID Bluetooth profiles.
Users must RESET the iPhone/iPad/iPod touch in order to change HID to MFi mode, and vice versa, after removing a previous KDC connection.
KDC with Bluetooth Spec2.1+EDR does not prompt Pin code entry menu.
KDC with Bluetooth Spec. 2.1+EDR stack does not require four (4) or six (6) digit PIN entry

Follow the below steps to pair and connect KDC models for MFi and iOS4.0+ in HID mode:

1. Go to the MFi menu of KDC SystemConfig Menu
2. Change MFi option to Disabled
3. Change ConnectDevice to HID iOS mode
4. Remove previous KDC connection and RESET the device
5. Change KDC to Pairing mode
6. The iPhone/iPad/iPod touch will find a new device as Keyboard
7. Click Keyboard device iOS Soft Keyboard Toggling using BT Toggle Option. Users need to select the option to use this feature in BT Config>BT Toggle. Press the DOWN button to toggle a soft keyboard.

4.2.7 Auto Pairing (EDR+2.1 Classic Models Only)

For SPP and MFi mode, select host profile before pairing. However, users do not need to select host device profile if this option is enabled. KDC automatically detects if host device is in SPP or MFi mode. This option is supported from KDC Bluetooth firmware version 2.2.O.

4.2.8 Always Pairing (BLE Models Only)

KDC automatically enters pairing mode when disconnected.

4.3 BLE Config (BLE Models Only)

4.3.1 Dongle Mode

This option selects whether KBLED40/50 will connect to PC vis USB Serial or USB HID.

4.3.2 NFC Pairing

This option enables KDC to pair with Android device via NFC. NFC Pairing is only supported by BLE 5.0 models (KDC80/180/185/280/380).

4.3.3 Social Distance

This option enables KDC to detect KDC which is located closed to KDC within one (1) ñ ten (10) meters.

4.3.4 Power Level

This option selects the KDC BLE power strength from -40 to 4 dBm.

4.4 BLE (Bluetooth Low Energy)

4.4.1 BLE vs. Classic

KOAMTAC BLE models support BLE4.1 or BLE5.0: KDC280C (BLE4.1), KDC470-BLE/KDC475-BLE (BLE4.0), and KDC80/180/185/280/380/480/485/1000/1100/1200 (BLE5.0) and other KDCs models support Classic 2.1+EDR.

Key differences between KDC BLE and Classic Bluetooth technology

	Classic	BLE
Profiles	SPP, SPP2.0, MFi, HID iOS, HID normal	SPP, HID, HID windows
Scan key	Entering pairing mode with pressing 5 seconds	Entering pairing mode with pressing 5 seconds
Down key	iOS Soft keyboard toggle	Not supported
	Disconnect with pressing 5 seconds	
Up key	Reconnect to host	Display connection status

The KDC menu difference:

- KDC BLE does not support MFI, SPP2.0
- KDC BLE consolidated HID iOS and HID normal into a HID
- KDC BEL does not support Auto connect/reconnect
- KDC BLE does not support Disconnect button
- KDC BLE does not support Discovering and connecting to
- KDC BLE does not support Auto Pairing
- KDC BLE does not support MFi mode

Menu			Classic	BLE
BT Config	ConnectDevice	SPP	Yes	Yes
		MFi	Yes	No
		HID iOS	Yes	No
		HID normal	Yes	No
		HID	No	Yes
		SPP 2.0	Yes	No
		HID Windows	No	Yes
	Auto Connect	Enabled/Disable	Yes	No
	Auto Reconnect	Enable/Disable	Yes	No
	Auto Power On	Enable/Disable	Yes	No
	PWR On Time	Disabled, 1 ñ 10 seconds	Yes	No
	Auto PowerOff	Enable/Disable	Yes	No
	Beep Warning	Enable/Disable	Yes	No
	PWR Off Time	1 ñ 30 minutes	Yes	No
	PowerOff Msg	Enable/Disable	Yes	No
	MAC Address		Yes	Yes
	FW Version		Yes	Yes
	Wakeup Nulls	Enable/Disable	Yes	Yes
	BT Toggle	Enable/Disable	Yes	No
	DisconnectButton	Enable/Disable	Yes	No
	HID Autolock	1,2,3,4,5,10,15	Yes	Yes
	HID Keyboard	US, German, French, Italian, Spanish, Japan, Danish, Sweden	Yes	Yes
	HID Delay	Initial Delay	Yes	Yes
		Char. Delay	Yes	Yes
	HID Ctrl Char	Disabled	Yes	Yes
		Alt + Numpad	Yes	Yes
		^ + Character	Yes	Yes
		Replace to |	Yes	Yes
BT Service	Power		Yes	Yes
	Pairing		Yes	Yes
	Discovering		Yes	No
	Connecting To		Yes	No
	HID Sync		Yes	Yes

	Auto Pairing	Enable/Disable	Yes	No
	Always Pairing			
System Config	MFi	Enable/Disable	Yes	No

Reconnection feature for Bluetooth Classic and BLE

OS	Profile	Reconnection from KDC		Reconnection from Host (Phone)	
		BT Classic	BLE	BT Classic	BLE
Android	SPP	Yes	No	Yes	Yes
	HID	Yes	No	Yes	Yes (Automatically)
iOS	MFi/SPP	Yes	No	Yes	Yes
	HID	Yes	No	Yes	Yes (Automatically)
Windows	SPP	Yes (Need to accept by user)	No	Yes	Yes
	HID	Yes	No	Yes	Yes (Automatically)

4.4.2 BLE Profiles

KDC BLE models below support the following:

- **SPP**ó Koamtac specific customized profile which provides bi-directional communication in the paired mode
- **HID**ó Bluetooth Low Energy standard profile which supports Human Interface Device as like a keyboard or a mouse. It is required to be paired first. This option needs to be selected when connecting to Android or iOS devices.
- **HID Windows**ó Option for connecting to Windows PC in HID mode

Selecting a profile
There are two (2) ways to set up a BLE profile:

By scanning a programming (special) barcode as shown below:

SPP

HID

HID Windows

Or, by navigating the following MENU from KDC:

1. Press Up & Down button at the same time
2. Navigate to BT Config
3. Select ConnectDeivce
4. Select a profile

Pairing Mode

There are three (3) ways to put KDC into a pairing mode.

1. Scan below **Pairing barcode**

1D

2D

2. Select Pairing from KDC MENU
    a. Press Up & Down button at the same time
    b. Navigate to BT Service
    c. Select Pairing

3. Press the Scan button for five (5) seconds

Pairing completion from the host device

On the host device, go to Settings → Bluetooth, and select the KDC [Serial Number] to be paired. The KDC and the host device will now communicate with each other.

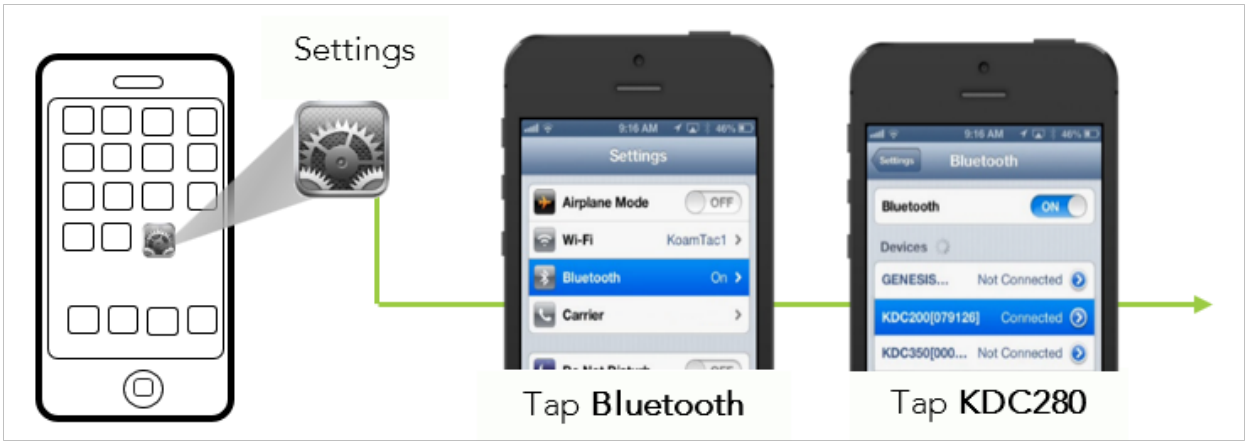


Figure 11 - KDC BLE Pairing

Connection of KDC and the host device

After it has been paired, open the application and select a paired device to connect to the KDC.

4.5 KDC BLE and Samsung Tizen

Free SDK for KDC provides a sample demo application for Tizen, especially Samsung Gear S3. This document explains how to install and use the demo application on Samsung Gear S3.

KDC80/180/185/280/380/480/485/1000/1100/1200 have BLE (BluetoothÆ Low Energy) V5.0 and V4.1 instead of Bluetooth V2.1 and support the following profiles:

- **SPP**ó KOAMTAC-specific custom profile which provides bi-directional communication in the paired mode.
- **HID**ó Bluetooth Low Energy standard profile which supports a Human Interface Device like a keyboard or mouse. It is required to be paired first.

To connect with Gear S3 for the current demo application from KOAMTAC, you should use SPP profile because Gear S3 does not support HID.

4.5.1 Connect the phone to Gear S3 and Install the demo application

- Download Galaxy Wearable (Samsung Gear) application from the Google Play Store. Please make sure your phone supports Galaxy Gear S3.
- Connect the Samsung Gear to your smartphone. Refer to the following link to learn how to connect: http://www.samsung.com/ca/support/skp/faq/1119975
- On the Gear, press the home button and scroll to settings. Scroll down and select Connect to a New Phone. On the phone, open the Samsung Gear application and search for nearby Gear devices. Select your Gear from the list and confirm the passcode on both devices.
- From Galaxy Apps, search Koamtac apps, which is ì Koamtac Simple Web Demoî App and install it on Gear S3.

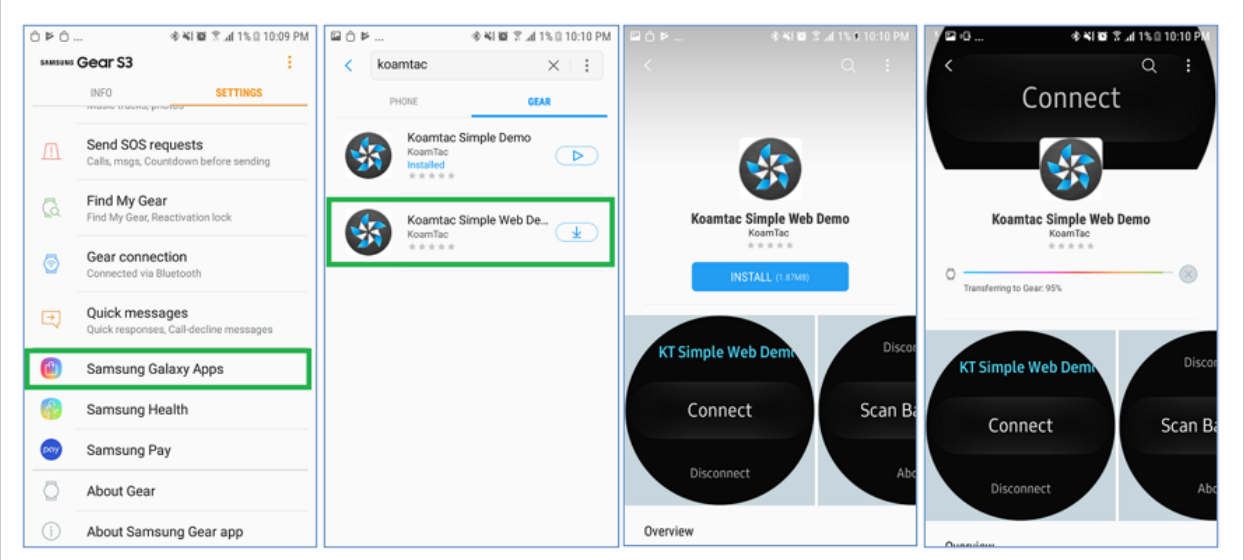


Figure 12 - KDC BLE and Gear S3

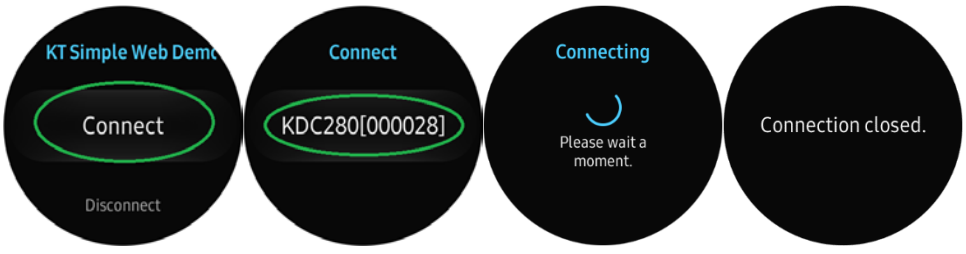
4.5.2 Pair/Connect KDC with Gear S3

Put KDC80/180/185/280/380/480/485/1000/1100 into SPP mode and start pairing.

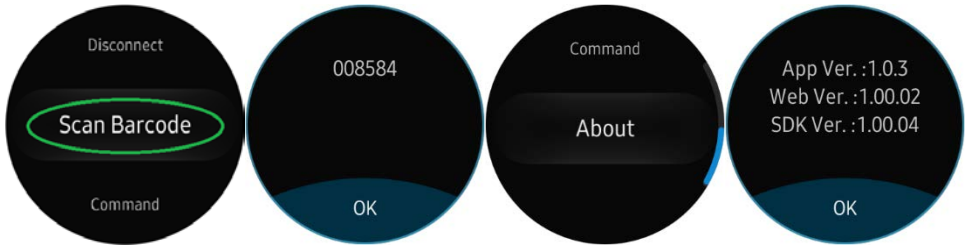
Bluetooth Profile & Pairing
#3. SPP & Pairing
1D 6A000;61001 2D ┬MKDC6A000;61001.

Run KTSimpleWebDemo on your Gear S3.

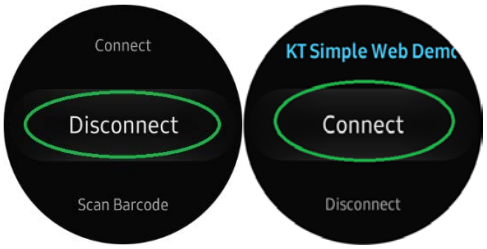
Tap ì Connectî and the available devices will be listed on your Gear S3. Tap the KDC from the list of available devices to connect. The number between the brackets refers to the serial number located on the back of the KDC.



Now you can trigger the KDC scanner via the demo application or the KDC itself. Any scanned barcode will be displayed on the Gear S3. There are also many commands that can be used to view or set the configuration of the KDC.



If the KDC becomes disconnected or if you disconnect the current KDC, you can reconnect it later by selecting Connect from the Gear S3.



4.5.3 How to Get Tizen SDK for KDC

You can request free SDK from our website:

1. Go to www.koamtac.com
2. Navigate to SUPPORT > Downloads > SDK
3. Complete and submit the following form

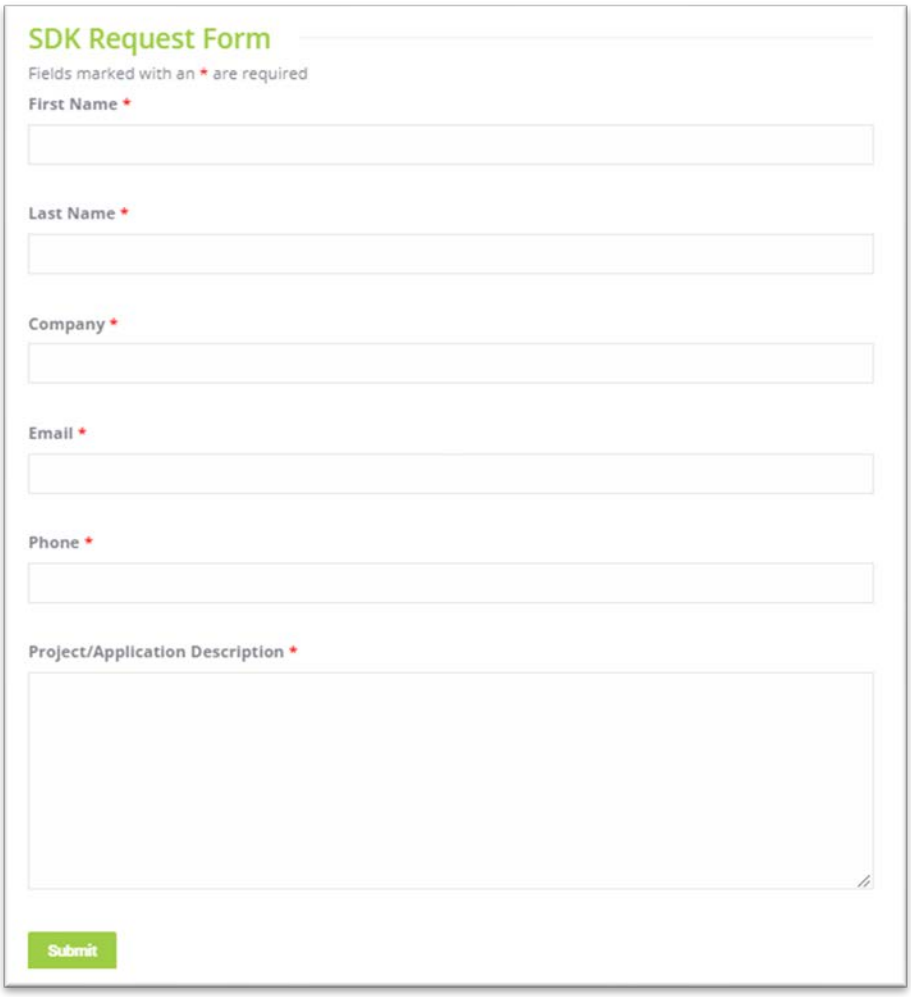


Figure 13 - SDK Request Form

You will receive a response in one (1) ñ two (2) business days and receive the SDK package if approved.

The SDK Package consists of three (3) subfolders:

1. **Documentó** explains KDC SDK architecture and all the procedures to use the SDK for KDC

   There is one more folder (KDCReaderAPI.zip) which explains all the APIís using the **hyperlinks** so that you can easily look up any class information that you want to see (see screenshot below).

2. **Library/KoamacServiceó** has the actual library file that you should use
3. **Samplesó** has a sample demo application and its source codes

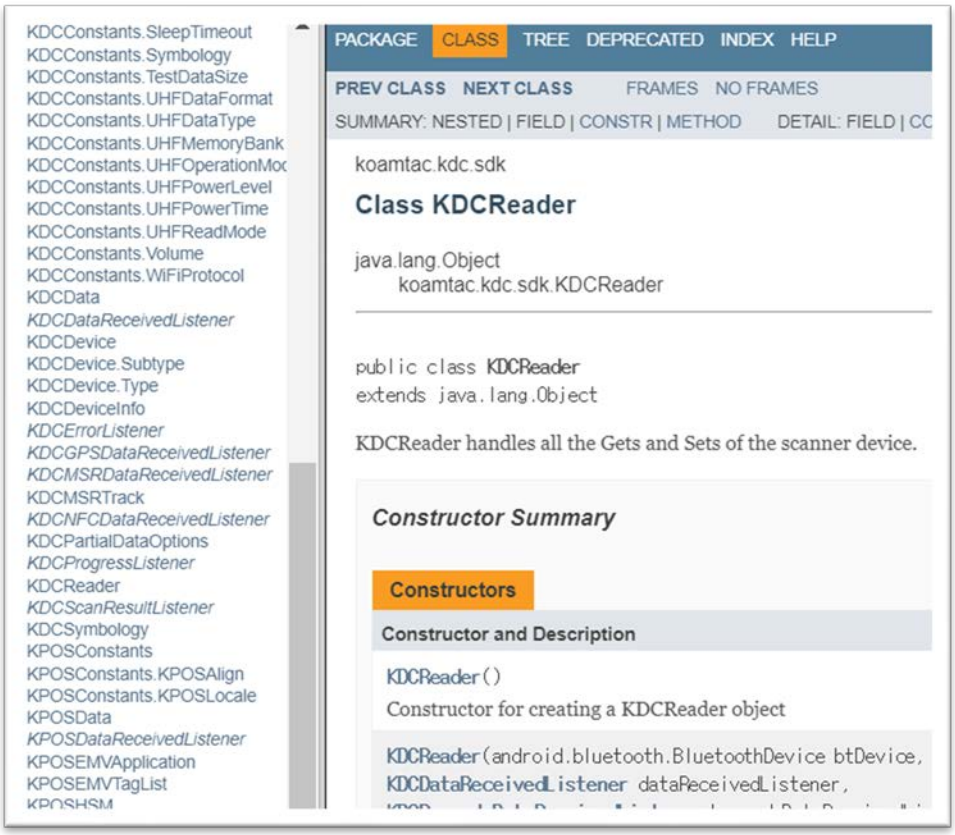


Figure 14 - SDK Package

4.6 KDC BLE and Samsung Android Wear

KDC BLE devices support Android Wear as well as Samsung Tizen.

1. Active Bluetotoh on Galax Watch

2. Activate Location services on the Watch

3. Download KTSimpleWatchDemo app from the Google Play Store and open the app. If running the app for the first time, grant requested permissions.

4. Pair via the Auto Pairing QR code

5. Scan a barcode from KDC or KTSimpleWatchDemo demo app

5 WiFi, NFC, UHF, Serial/OTG

5.1 KDC350/380 WiFi

5.1.1 WiFi Config Menu

	Screen	Comment
1	Power	Turn the Wi-Fi Module Power ON/OFF
2	AP	Configure the AP
3	Server	Configure the server
4	Connect	Connect to the AP and server
5	Auto Connect	Enable/Disable auto reconnection
6	Send Stored	Enable/Disable sending stored data
7	Version	Shows WiFi module version and MAC address
8	Exit Menu	Return to previous menu

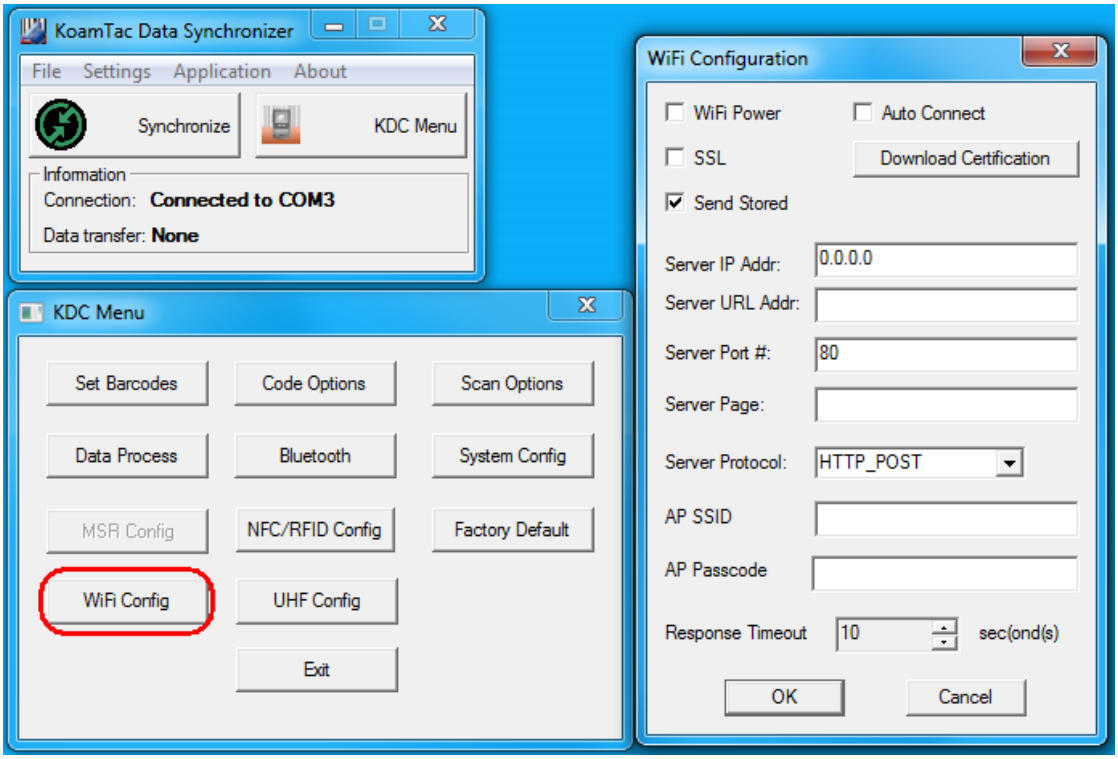
All configurations are stored in the KDC350/380

Note When both WiFi and Bluetooth are connected, WiFi has a higher priority, meaning that the scanned data is transmitted only via WiFi.

5.1.2 How to use KTSync to configure WiFi

Configure the following WiFi options by using KTSync:

- WiFi Power
- Auto connect
- SSL
- Download Certification
- Send Stored
- Server IP
- Server URL
- Server Port Number
- Server Page
- Server Protocol
- AP SSID
- AP Passcode
- Response Timeout



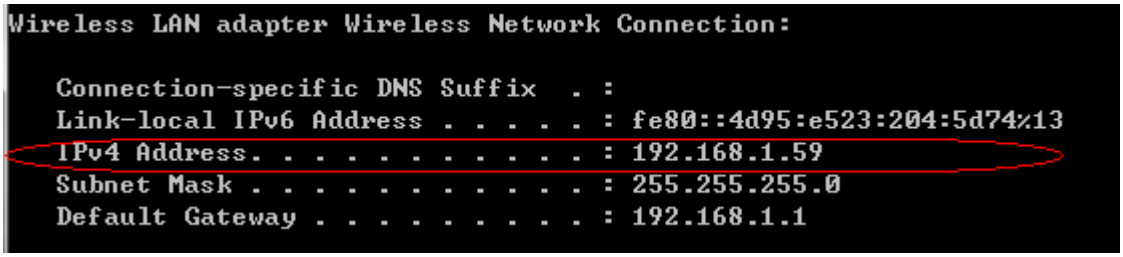
5.1.3 How to test data transmission

TCP

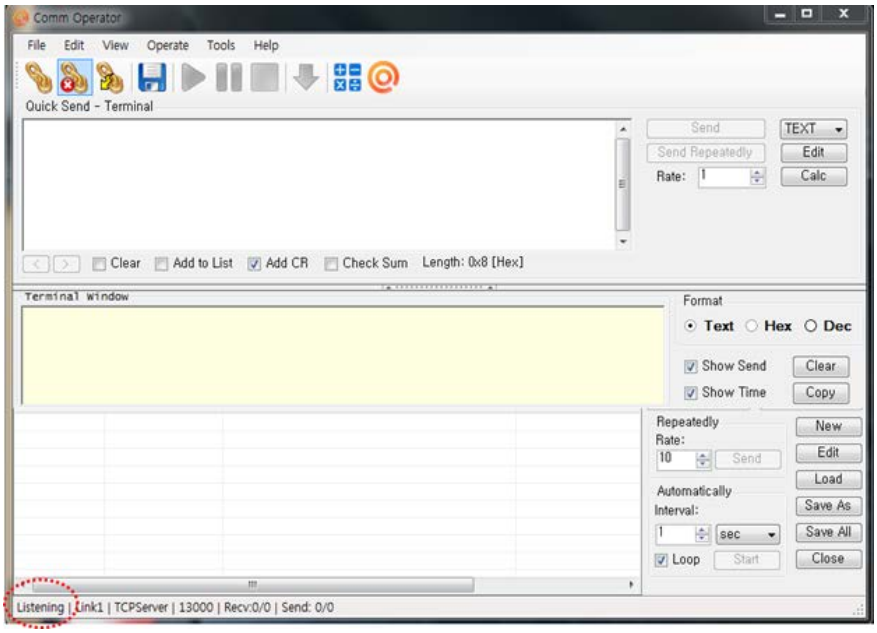
Step 1. Wi-Fi Module Power ON
Turn on the Wi-Fi moduleís power with ì WIFI Configî →ì Powerî →ì Enableî

Step 2. Configure server information

- ì WIFI Configî → ì Serverî → ì IP Addressî → ì XXX.XXX.X.XXî
- ì WIFI Configî → ì Serverî → ì Port Numberî → ì XXXXXî
- ì WIFI Configî → ì Serverî → ì Protocolî → ì TCPî
- Obtain the PCís IP address by opening the command prompt in the windows and searching ì ipconfigî



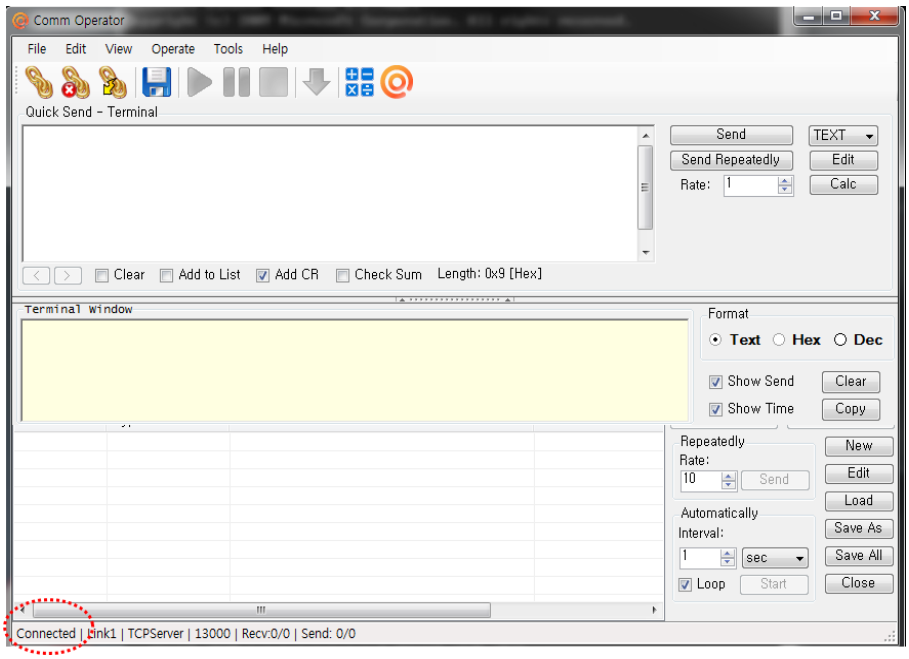
- The port address is defined in the following test application called ì CommOpî
- A 30-day free trial can be downloaded from: http://www.serialporttool.com/download/CommOperator/CommOperator.zip



Step 3. Connect to the server

- Run the test application ì CommOp.exeî with TCP server listening mode. Be sure the status is in ì Listeningî as shown on the following page.

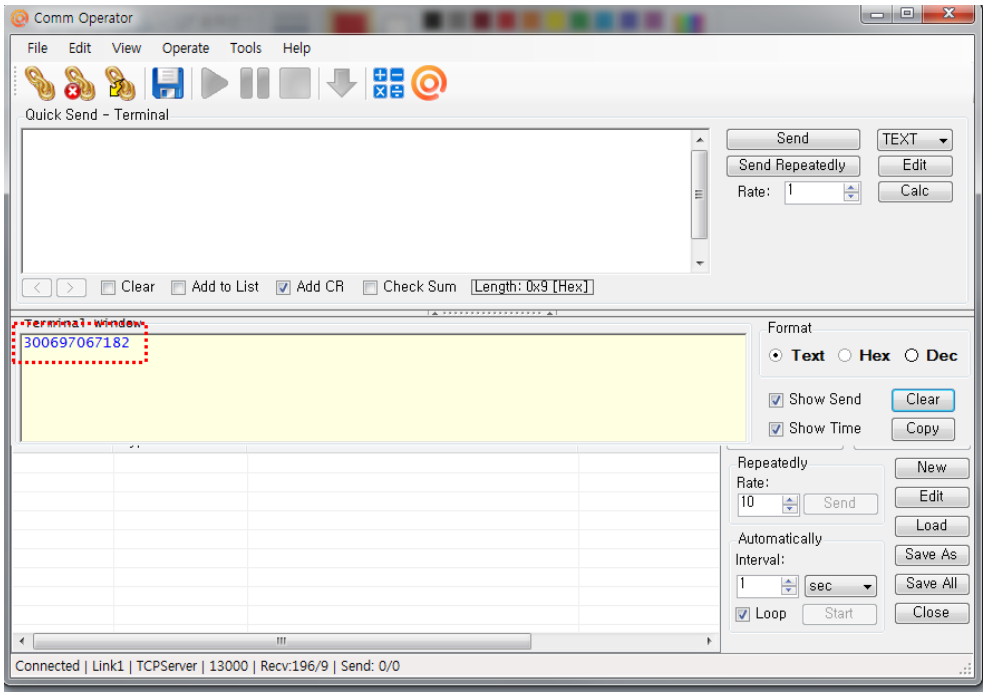
- Connect the KDC to the server in ì WIFI Configî →ì Connectî



- The status will be changed from ì Listeningî to ì Connectedî as shown above once the KDC is connected to the server.

Step 4. Send Barcode Data to server

- Scan a barcode.



- The barcode sent from the KDC is displayed on the test application as shown above.

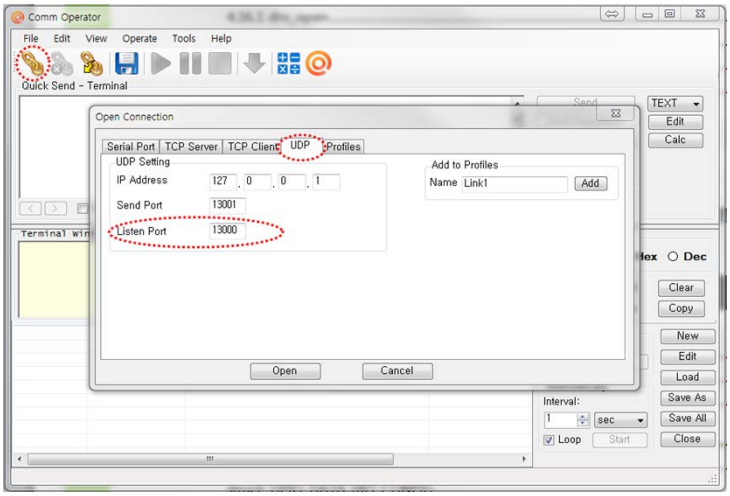
UDP

Step 1. Wi-Fi Module Power ON

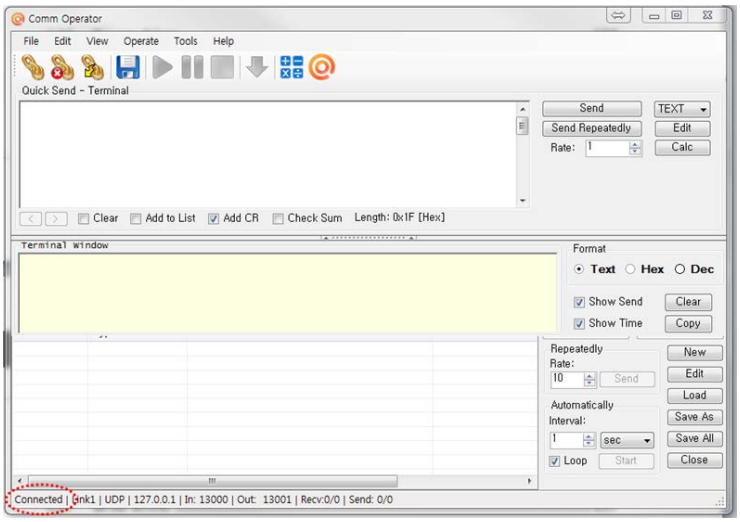
- Turn on the Wi-Fi power module with ì WIFI Configî → ì Powerî → ì Enableî

Step 2. Configure server information

- ì WIFI Configî → ì Serverî → ì IP Addressî → ì XXX.XXX.X.XXî
- ì WIFI Configî → ì Serverî → ì Port Numberî → ì 13000î
- ì WIFI Configî → ì Serverî → ì Protocolî → ì UDPî



- The port address is defined in the test application as follows:

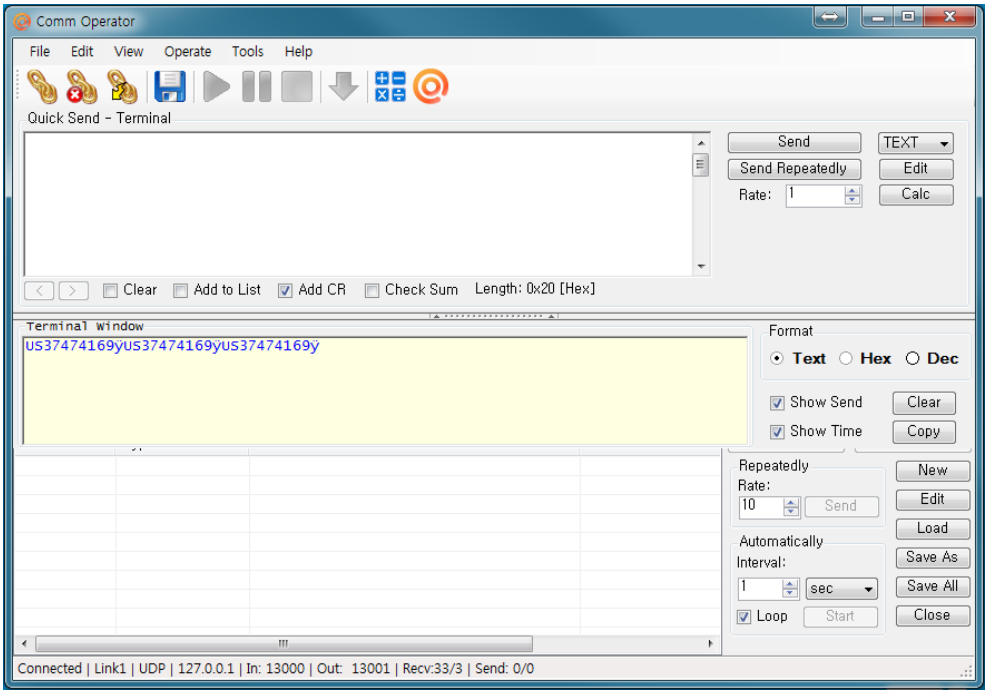


Step 3. Connect to server

- Run the tester application ì CommOp.exeî with UDP mode chosen
- Connect the KDC to the server in ì WIFI Configî → ì Connectî

Step 4. Send barcode data to server

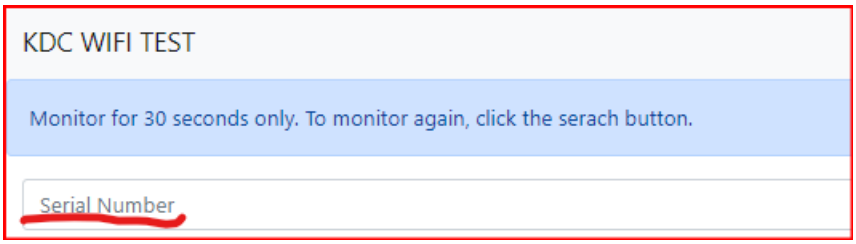
- Scan barcode and the barcode will be displayed as following screen.



HTTP GET&POST

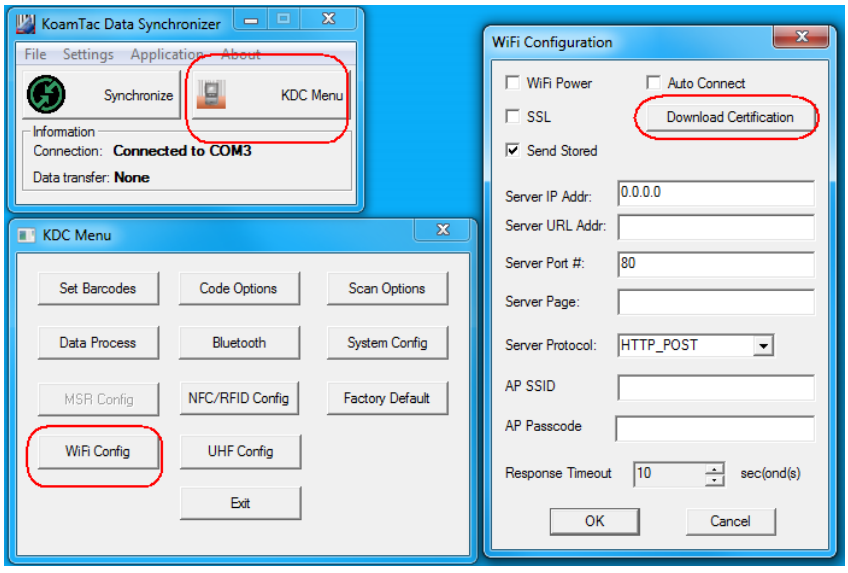
Configure the KDC settings as follows for testing purposes:

- Server URL: services.koamtacon.com
- Port: 80(HTTP) if SSL is disabled, 443(HTTPS) if SSL is enabled
- Server page: /test/kdcwifi/{unique id}?data=
  - The unique id would be a serial number of the KDC
  - For example, if the serial number is a 123456, the server page would be as following: /test/kdcwifi/123456?data=
- To view transferred data:
  - Open http://services.koamtacon.com/test/kdcwifilist
  - Enter the unique id in the following field



Download certificate for testing HTTPS into KDC using KTSync

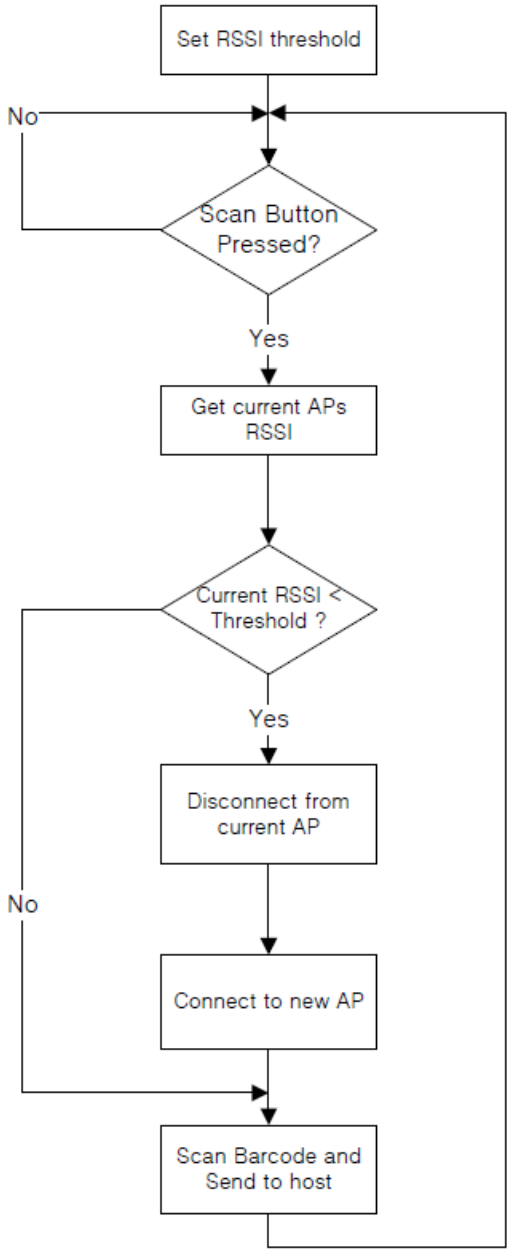
- Open KDC Menu and enter WiFi Config
- Press ì Download certificationî and select the certificate provided to download certification data into KDC
- KTSync will display ì Download is doneî



5.1.4 WiFi Roaming

KDC supports roaming between APs which have the same SSID. When user presses Scan button, KDC checks current APs signal strength. If the signal strength is lower than pre-defined threshold, KDC disconnects from current connected AP and connects to new AP which has strongest signal strength. Usually, it takes about three (3) ñ four (4) seconds. KDC provides a way to set the signal strength (RSSI) threshold and user can set it from -30 to -90.

The overall workflow is as follows:



5.2 KDC350/380/470/475/480/485/1000/1100/SKX HF (NFC)

5.2.1 Enable and disable the NFC Reader

There are two (2) ways to enable/disable the NFC reader across all NFC-equipped KDC models. KDC350/380 provides an additional two.

- All NFC models

1. Scanning Special Barcodes

1D Models

NFC Power Enable

N0001

NFC Power Disable

N0010

2D Models

NFC Power Enable

TMKDCN0001.

NFC Power Disable

TMKDCN0010.

2. Using KTSync application
   Once KDC is connected KTSync, NFC power can be controlled in the KDC Menu → NFC Config

- KDC350/380

3. On the Menu
   In the KDC Menu → NFC Config and it is possible to select NFC power enable/disable

4. Using Keypad
   NFC power is toggled with pressing <Fn> + 3 simultaneously on the kypad

5.2.2 NFC Tag Read

KDC default mode is **Read** mode when NFC/RFID power is enabled.
In this mode, KDC reads NFC/RFID data when an NFC/RFID tag is positioned near the back of the KDC.
Users receive the following audible and visible (KDC350/380) indications of a successful tag read:

- Single Beep
- Display UID on KDC screen (KDC350/380)

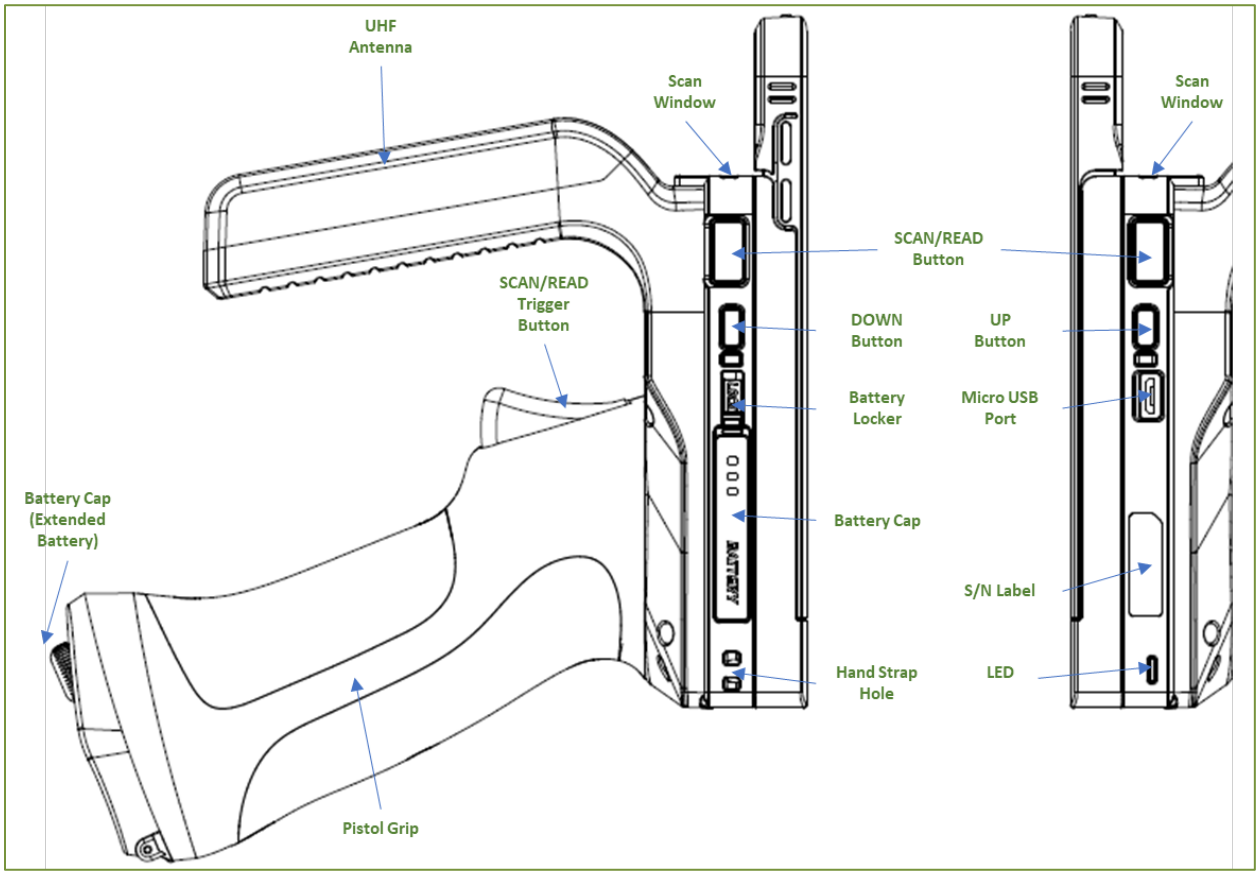
Tag data is transmitted to the host via Bluetooth or USB according to the selected NFC data format (as taught in this guide).
When reading NFC tags, the 3rd party host software application must parse the NDEF payload to get the corresponding message.

5.2.3 NFC Tag Write

NFC tag **Write** function works with Mifare Ultralight and Ultralight C tags.
KDC will change to **Write** mode only when it receives the write command from the host.

5.3 KDC180U/KDC470/475/480/485/1000/1100/1200/SKX SmartSled UHF

5.3.1 0.5W and 1.0W UHF Diagram



*** KDC1200 has built-in 0.5W UHF reader

5.3.2 Trigger Mode: Read RFID tag and Barcode with a trigger (Only for 1.0W)

You can read barcodes and UHF tags in the trigger mode with the trigger on the pistol grip. If you pull the trigger once, then the SmartSled will read the RFID tag. If you pull the trigger twice very quickly, the SmartSled will read the barcodes.

The following barcodes will enable/disable Trigger mode:

Trigger Mode (Enable)	Trigger Mode (Disable)
┬MKDCNU701.	┬MKDCNU700.

5.3.3 Read Mode

KDC180U keeps read mode and boots with the previous selected read mode. However, SmartSled UHF reader is in barcode mode upon booting the device. To read UHF tag, it is required to change to UHF mode. On the KDC180U/470/485/480/485, by pressing the UP button for three (3) seconds, the read mode is toggled between barcode mode and UHF mode. On the KDC1000/1100/1200/SKX, by pressing <Left Scan><Left Scan><Right Scan><Right Scan><Left Scan><Right Scan> in 3 seconds, the read mode is toggled. Application also can select barcode mode or UHF mode via SDK.

KDC180U and SmartSled generates one (1) long and two (2) short beeps when changing to UHF mode and one (1) long and one (1) short beep when returning to barcode mode.

UHF Mode: one (1) long and two (2) short beeps

Barcode Mode: one (1) long and one (1) short beep

The following barcodes will select barcode mode or UHF mode.

Barcode Mode	UHF Mode
	

5.3.4 Read Tag Mode

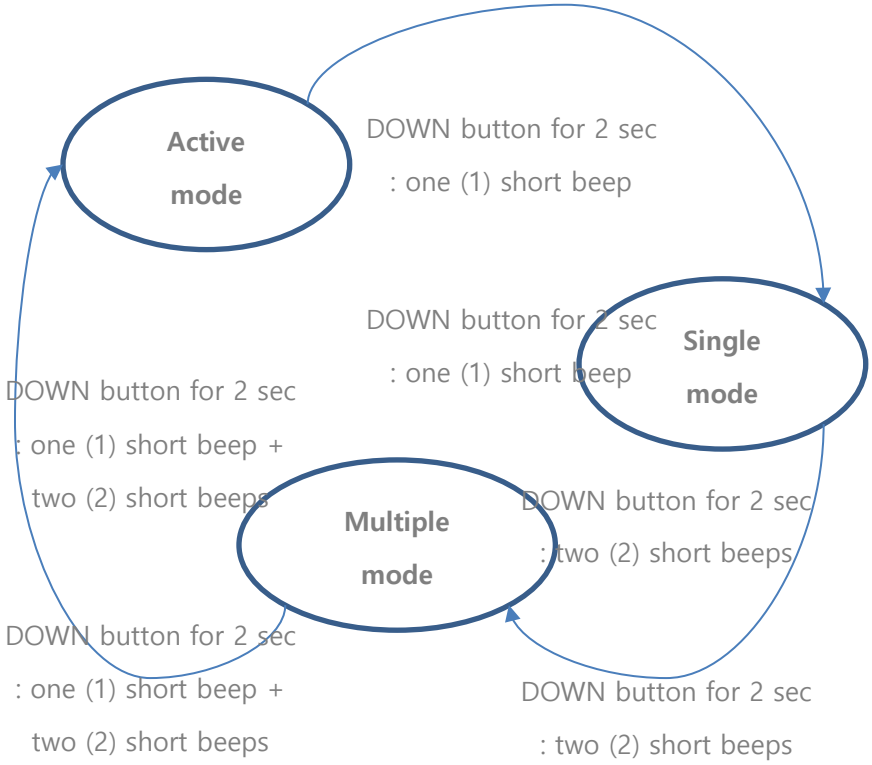
There are three (3) Read Tag Modes: Single mode, Multiple mode, and Active mode. These options are only available in UHF mode (read mode):

- **Single mode**ó press and release the SCAN button, it reads just one (1) tag, whichever comes first.
- **Multiple mode**ó press and release the SCAN button, it keeps reading multiple tags until the timeout value is expired. If the timeout value is set to zero (0), then press the SCAN button to stop reading.
- **Active mode**ó while the SCAN button is pressed, it keeps reading multiple tags until the SCAN button is released. If the timeout value is set to zero (0), then press the SCAN button to stop reading.

Application can also change to single, multiple, or active mode via SDK.

By default, the read tag mode is set to an active mode. On the KDC180U/470/475/480/485, these modes can be changed by pressing the DOWN button for two (2) seconds. However, it is not supported to change the read tag mode by using button combinations on the KDC1000/1100/1200/SKX.

Note KDC1000/1100/1200/SKX does not have a DOWN button



Alternatively, you can scan the special barcodes to change the mode. To change from active mode to another mode, you should disable the active mode first.

Single Mode

MKDCN6010.

Multiple Mode

MKDCN6001.

Active Mode (Enable)	Active Mode (Disable)
 ┬MKDCN6201.	 ┬MKDCN6210.

Note In this Active Mode, if the SCAN button or Trigger button staying pressed more than ten (10) minutes, the read mode changes automatically from UHF Mode to Barcode Mode to avoid the battery drain due to the unwanted button press. This option is enabled by default, but it can be also disabled.

This is the option: Stop Active Read (ten (10) min Timeout)

Enabled (Default)	Disabled
 ┬MKDCN6301.	 ┬MKDCN6310.

5.3.5 UHF Tag Counting (BeepCount)

By setting the number of beeps, you can get the ballpark on how many tags are read.

- **Count = Zero (0)ó** beeps once only when you start reading
- **Count = Five (5)ó** beeps once every Five (5)-tag read. If you hear two (2) beeps, it means you read 10-14 tags.
- **Count = Ten (10)ó** beeps once every Ten (10)-tag read. If you hear two (2) beeps, it means you read 20-29 tags.
- **Count = 20ó** beeps once every 20-tag read. If you hear two (2) beeps, it means you read 40-59 tags.
- **Count = 50ó** beeps once every 50-tag read. If you hear two (2) beeps, it means you read 100-149 tags.

Tag Counting Bar Codes

Count = 0

␆MKDCN6400.

Count = 5

␆MKDCN6405.

Count = 10

␆MKDCN640A.

Count = 20

␆MKDCN6414.

Count = 50

␆MKDCN6432.

5.3.6 Phone Charging Option (Only for 1.0W UHF Reader)

This option enables user to charge the phone from the extended battery inside the pistol grip of the 1.0W UHF Reader to give the phone more battery capacity.

- **Enabled (Default)**ó Phone charging from the extended battery is enabled
- **Disabled**ó Phone charging from the extended battery is disabled

Enabled (Default)	Disabled
	

5.4 SmartSled Communication Protocols

SmartSled supports the following communication protocols:

- Serial (Apple iOS devices)
- OTG (Android and iOS devices USB port)
- Bluetooth (Classic or BLE, Not available for SKX)

KDC470/475/480/485/1000/1100/1200 with custom iOS device case operates in Serial mode only. SmartSled with custom Android case operates in both Bluetooth and OTG mode. Before using OTG mode on the Android custom case, it is strongly recommended to pair SmartSled with Android smartphone case in the Bluetooth mode.

KDC470/475/480/485 cannot communicate over OTG in charging mode in certain model. User should use Bluetooth connection during charging which is automatically switched from OTG if pairing in advance.

KDC470/475/480/485 do not perform paring when it is in the OTG mode.

KDC1000/1100/1200 supports simultaneous charging and communication for both iPhone13/14/15/16 and Android devices.

KDC1000/1100/1200 supports USB communication with iOS devices which has USB port instead of a lightning connector.

SKX supports simultaneous charging and communication (via OTG only) for Android devices.

5.4.1 How to start OTG mode

KDC470/475/480/485 starts to communicate with Android phone via USB when:

1. Android phone case is configured for OTG mode, or
2. By scanning barcode below

- Once OTG is configured, it will be stored in the KDC NVRAM and KDC470/475/480/485 will run as an OTG mode whenever it restarts
- By scanning barcode below, user can change KDC470/475/480/485 operating mode to Bluetooth anytime

5.4.2 Automatic operation mode changes

Because it is not possible to charge the smartphone while in OTG mode, KDC470/475/480/485 automatically switches to Bluetooth mode to charge phone when:

1. User plugs USB cable to KDC470/475/480/485 USB port
2. User puts KDC470/475/480/485 in the charging cradle

All transitions between OTG and Bluetooth modes are performed automatically.

5.4.3 OTG and Extended battery

The KDC470/475/480/485 extended battery is disabled when KDC470/475/480/485 is in OTG mode and enabled when:

1. KDC470/475/480/485 is configured as a Bluetooth mode, or
2. KDC470/475/480/485 is connected/charged via USB cable, or
3. KDC470/475/480/485 is in the charging cradle

5.4.4 Serial interface for iOS devices

KDC470/475/480/485/1000/1100 communicates with iOS devices via Serial interface when custom iOS case is attached. There is no operational difference between Bluetooth and Serial communication from iOS device perspective.

5.4.5 USB interface for Android devices

SKX communicates with Android devices via USB interface.

5.4.6 USB interface for iOS devices

KDC1000/1100/1200 communicates with iOS devices via USB interface with custom iOS case is attached.

6 KTSync

When barcode data is collected, it must be uploaded to your application. KTSync, which is bundled with the KDC, is a software that enables barcode data to be uploaded to any PC, PDA, or smartphone running Android 2.1+, Apple iOS3.1.3+, Blackberry,Mac and Windows XP/Vista/7/8/10/11/Mobile 5.0+. It has three (3) major functions. (Windows XP/Vista/7/8/10/11 version supports all of the following features. Tablet, PDA and smartphone versions support only limited features of PC KTSync.)

- Synchronizationó Provides data upload functionality to your applications
- Keyboard Emulatoró Enables scanned data to be uploaded directly into your application as if the data were being entered manually with a keyboard
- Application Generationó Enables users to create custom applications or download predefined applications such as Master-Slave, Pick/Bin, DB Lookup and Inventory

Additional functions include:

- Prefix and Suffix add-ons to eliminate manual data entry
- Symbology and Scan Option selections
- Barcode Wedging options
- KDC Menu configurations

6.1 Windows KTSync

KTSync was installed on your PC during the initial installation process. Before data may be uploaded to any host device, KTSync must be launched on the host and configured to recognize the KDC. The following screen displays when KTSync is launched:

Figure 15 - KTSyncÆ Synchronizer Initial Screen

6.1.1 File Menu

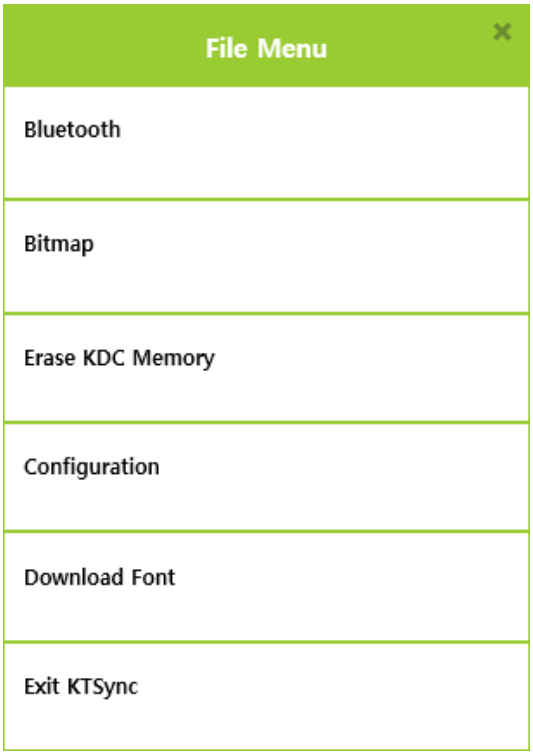


Figure 16- File Menu

Bluetooth (Classic Model Only)

This menu option enables the user to register up to ten (10) Bluetooth devices, including their MAC addresses, PIN number, and optional prefixes or suffixes. This option enables direct Bluetooth connection between KDC and other Bluetooth devices, such as a *Bluetooth* printer. The user should choose a *Bluetooth* device to be connected in ì Connect toî menu in KDC *Bluetooth* Service menu. (KDC500 does not support this feature)

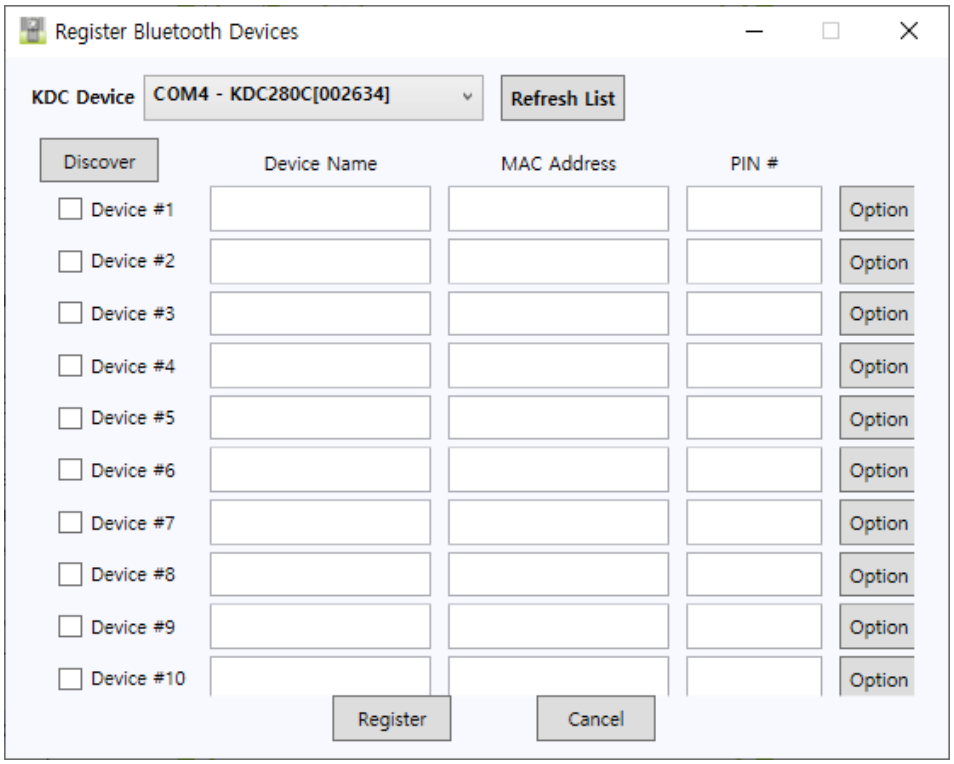
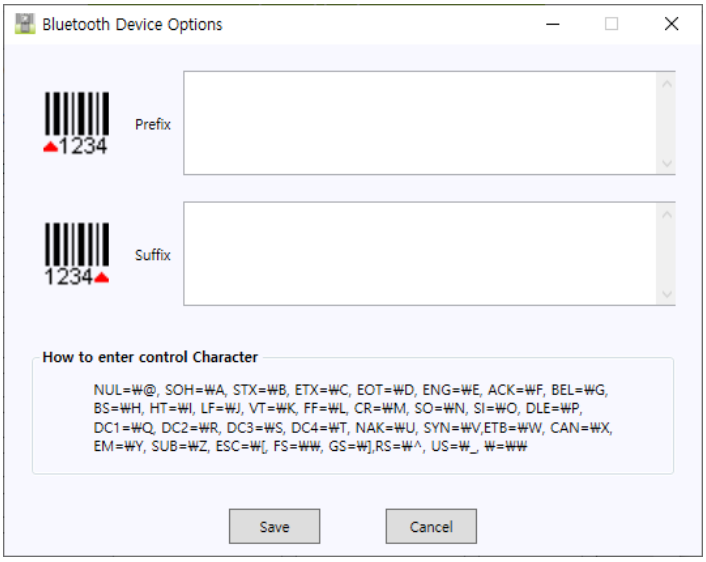
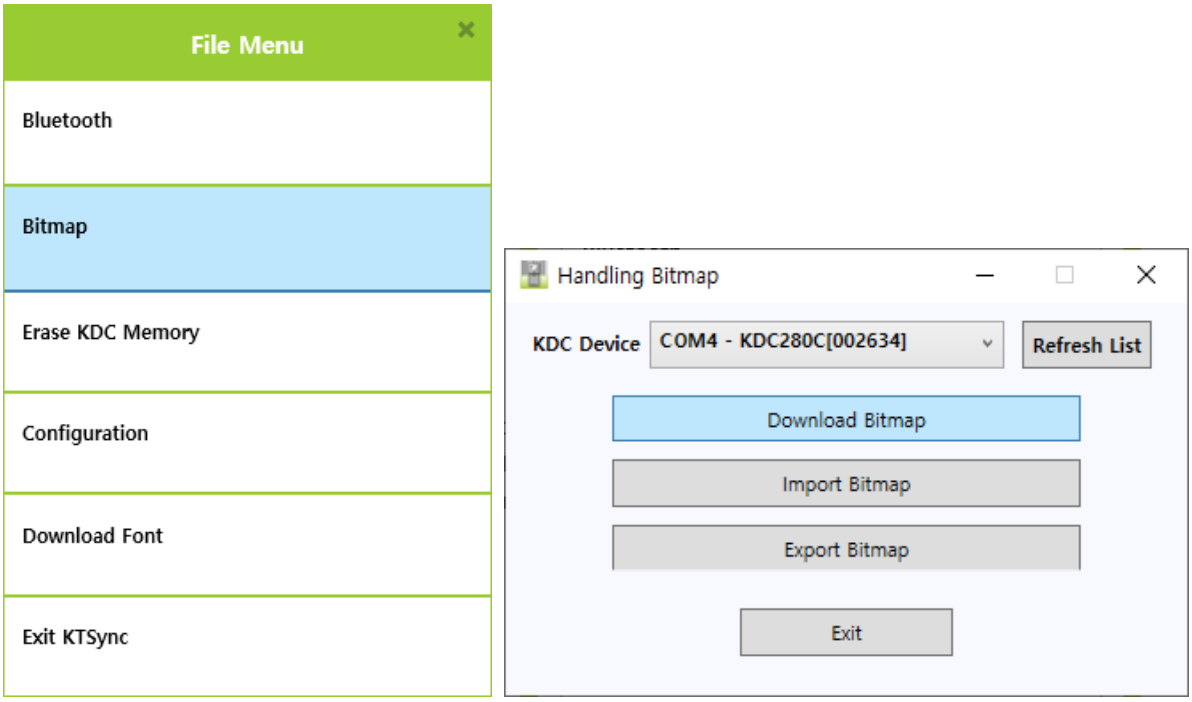


Figure 17 - Bluetooth Device Registration



Bitmap

Users can download bitmap to be displayed on KDC using KTSync.



Download Bitmap and upload up to 50 bitmap images. KDC can display 128x48 black and white image and is supported with firmware version 3.05 and above. KTSync will only accept bitmap files using the following name:
Example: Bxxx.bmp
** xxx will specify bitmap index in KDC memory and may be set from 000 to 049.

Please refer to KDC programming manual to display downloaded bitmap on KDC.

Erase KDC Memory

Erase all stored data in the KDC internal memory.

Configuration

This menu is useful for users who need to configure different KDCs with the same settings. In this menu, you may export settings from a KDC to your computer and import it to other KDCs.

When you select **Configuration** in the File menu, you will need to choose either **Export** or **Import**. First, select Export. You name the settings file, press **Open**, and it is exported to your computer. Second, connect a different KDC to your computer and import the settings file to the KDC by selecting **Import** in the Configuration menu. Once the configuration has been finished, KDC will restart.

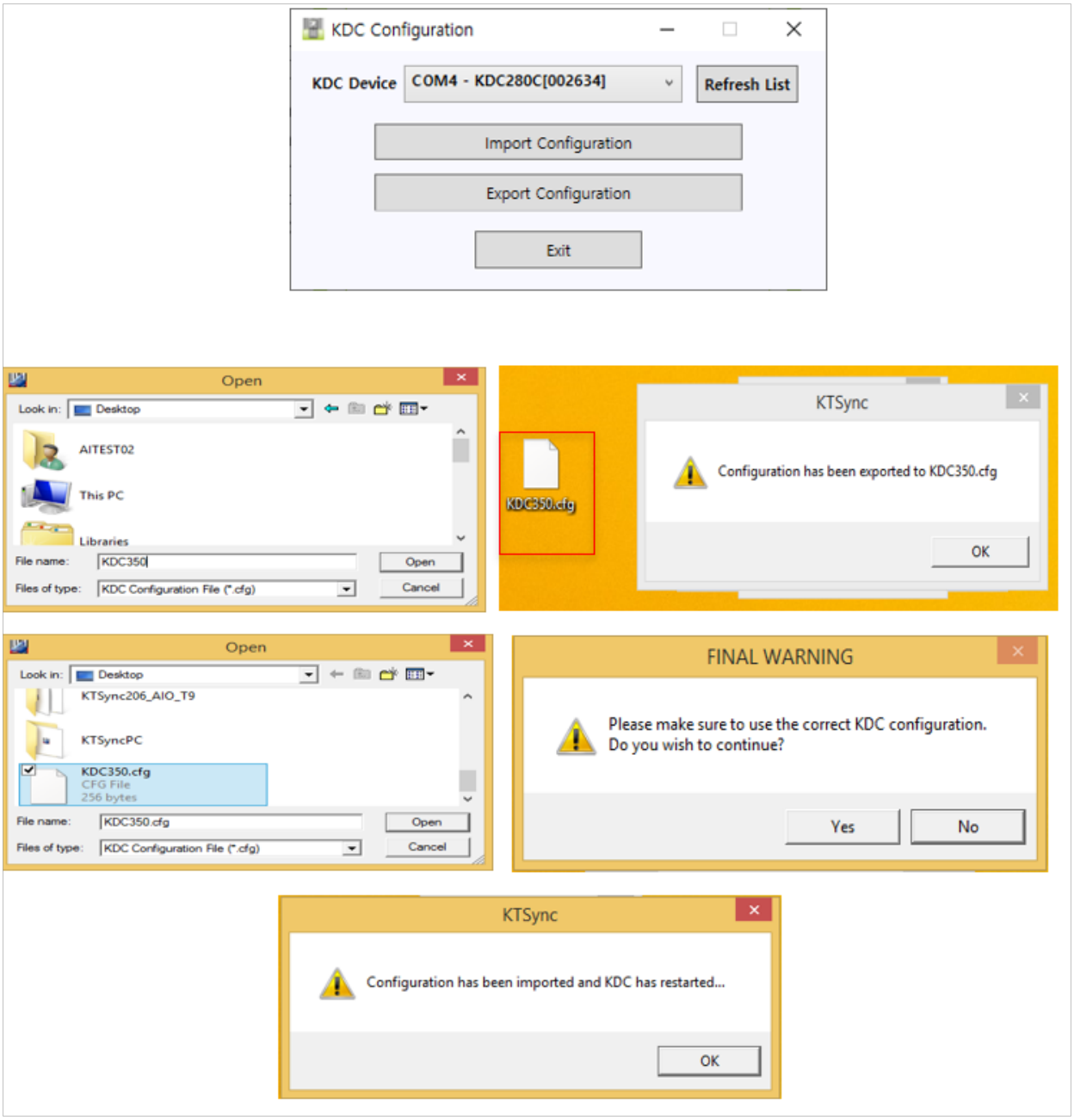
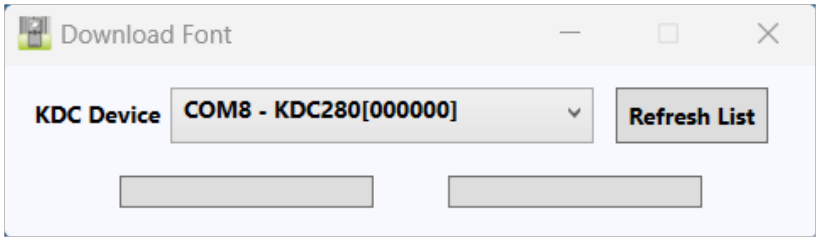


Figure 18 - KDC Configuration Import/Export

Download Font

This option downloads fonts of into KDC.



Exit

This option ends the KTSync program. You must re-run KTSync before you may synchronize data on the KDC.

6.1.2 Application Menu (KDC500/600 does not support Application)

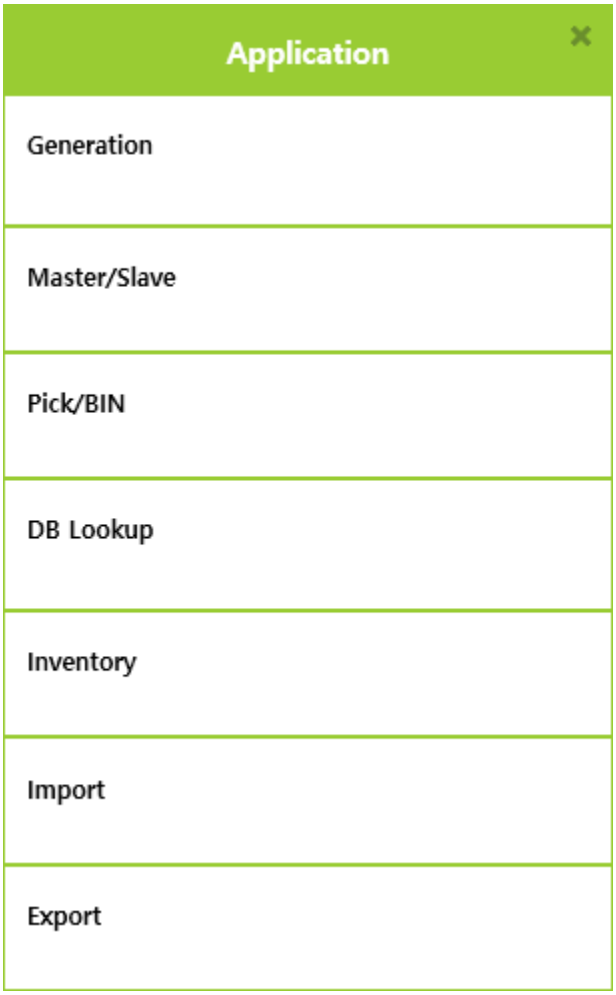


Figure 19 - Application Menu

- **Generation**ó Create user application or download predefined application
- **Master/Slave**ó The user defines a master barcode for comparison with one or more slave barcodes
- **Pick/BIN**ó The user defines Pick ID and the barcode symbology for comparison with a defined Bin
- **DB Lookup**ó Enables users to download DB into KDC and display barcode description field
- **Inventory**ó Users may count inventories. Inventory description will be displayed if inventory DB is downloaded into the KDC
- **Import**ó Enables user to import application settings which was exported
- **Export**ó Enables user to export application settings for import into KDC later

6.1.3 About Menu - KTSync - Version Information

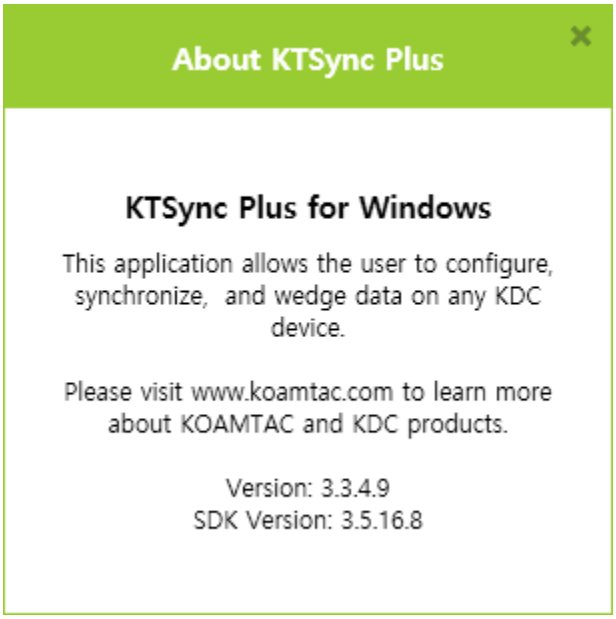


Figure 20 - About Menu

6.1.4 ICON Menu

Connect to KDC. KTSync automatically finds COM port and will try to connect founded KDC com port. The Serial port assigned to KDC may be found under Windows Device Manager. The port assignment is used by KTSync for synchronizing data from the KDC to the host.

Manually tells the KDC to synchronize data with the host. While data is being synchronized, KTSync menu options are unavailable.

Note

Please do not use your computer during data synchronization.

Clears internal viewer contents

Enables user to set KDC configurations and KTSync configurations

Disconnect from current connected KDC

6.1.5 Settings Menu

- Connection
  - Select whether using Single or Multiple connection mode
  - Select whether connecting to KDC manually or automatically
- Synchronizationó Select Synchronize options
- Barcode & KDCó Select Barcode and KDC options
- Othersó Select Auto Connection and/or Synchronization Confirmation options

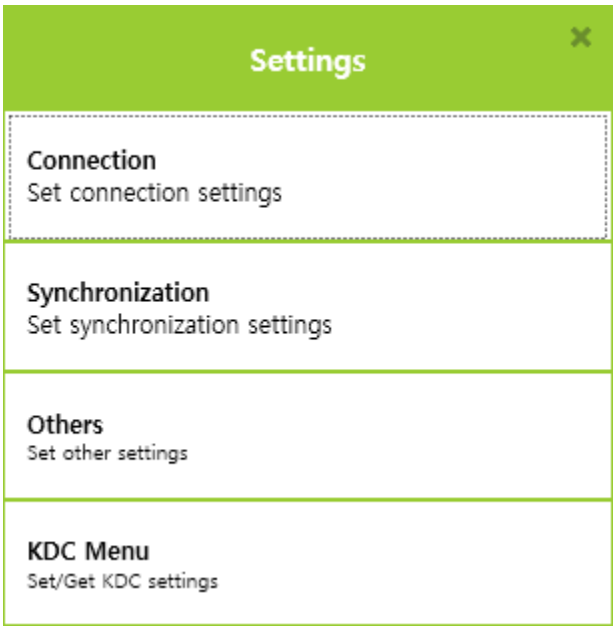
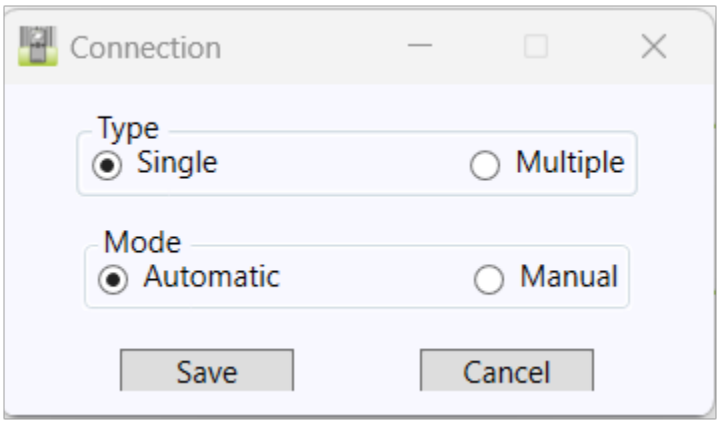


Figure 21 - Setting Menu

6.1.5.1 Connection



6.1.5.2 Synchronization Settings

KTSync provides several synchronization options for synchronizing data from your KDC to host devices.

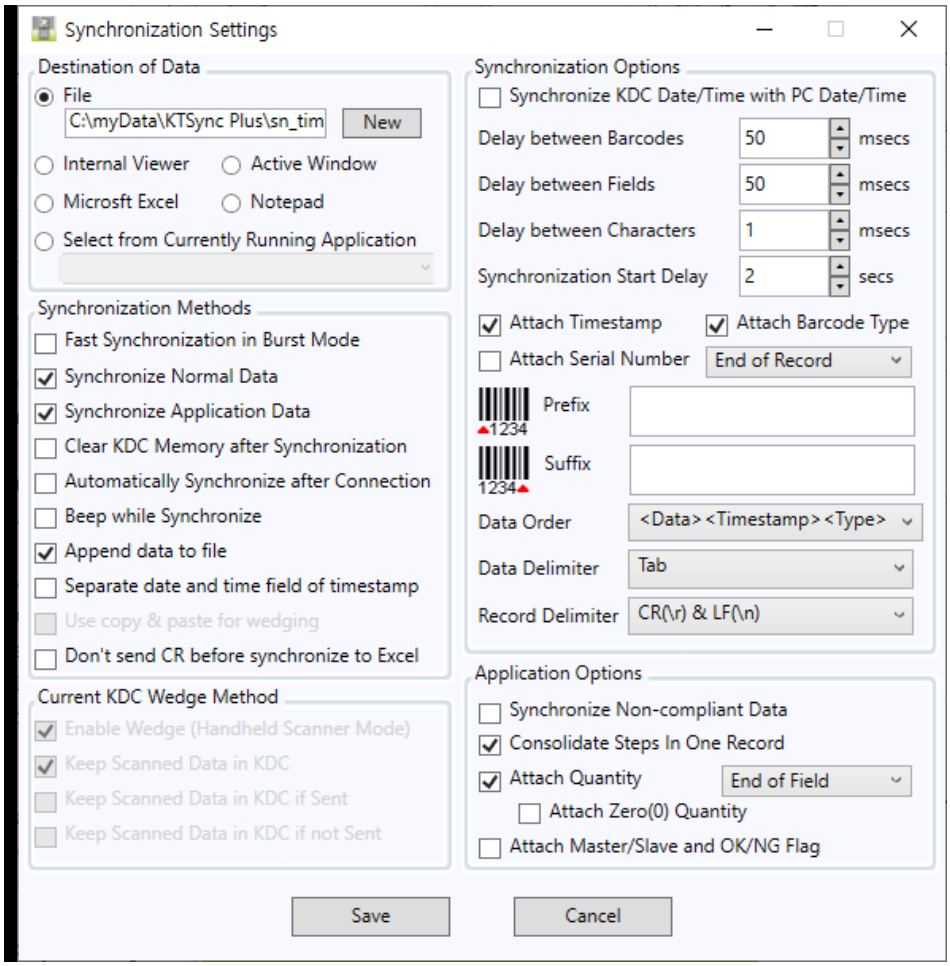


Figure 22 - KTSync Synchronization Settings

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: (This option is applied to only Windows XP/Vista/7/8/10)

- **File**ó Data will be saved in the assigned filename. You may select a different target directory by clicking the **New** icon. The default directory is C:\MyData\sn_timestamp.txt. If this directory is not created, you will be prompted to create it before data may be uploaded to a file.
- **Active Window**ó Scanned barcode data is sent directly to the active program running on your device as if the data is being entered directly from a keyboard.
- **Microsoft Excel**ó Barcode data is being imported directly into Microsoft Excel. Various parameters may be set when uploading data to Excel.
- **Select from Current Running Application**ó Enables the user to select an application currently running for data synchronization.

Note

Data synchronization begins immediately if ì Automatically Synchronize after Connectionî is selected. If not selected, data synchronization is started manually by the user.
Users SHOULD NOT operate the PC during the synchronization process. It may interrupt the process causing unreliable results.

Synchronization Methods

Fast Synchronization in Burst Mode

The KDC may synchronize data to a host device in Burst mode or Sequential mode. Burst mode provides the fastest synchronization process but could result in an error in a poor *Bluetooth* environment. Fast synchronization in Burst mode is only recommended with a USB connection.

Synchronize Normal Data

If Synchronize Normal Data option is selected, the KDC will synchronize only Normal Data in KDC memory. If the user wants all data in KDC memory synchronized, the user should select Synchronize Normal Data and Synchronize Application Data.

Synchronize Application Data

If Synchronize Application Data option is selected, the KDC will synchronize only Application Data in KDC memory. If the user wants all data in KDC memory synchronized, the user should select Synchronize Normal Data and Synchronize Application Data.

Clear KDC Memory after Synchronization

If this option is selected, the stored barcode data is cleared from the KDC memory after synchronization.

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

Automatically Synchronize after Connection

This option lets the user automatically synchronize collected data immediately to the computer when the KDC is connected to the host.

- Important: Before selecting this option, remember to configure all options properly
- Data synchronization may be done manually by clicking the synchronize icon if this option is not selected

Beep while Synchronization

The user may enable or disable the beep tone during the synchronization process. If this option is selected, a beep is sounded every time barcode data is synchronized. The KDC beeps five (5) times when the synchronization process is complete.

Append Data to File

If the user has specified a file name and Append data to File option is enabled, KTSync will append data to the existing file instead of creating a new file.

Current KDC Wedge Method

The KDC may be configured in one (1) of five (5) wedge/store modes:

- **Wedge Only**ó Scanned data is transmitted to the host. The KDC does not store scanned data
- **Wedge & Store**ó Scanned data is stored in the KDC and transmitted to the host
- **Store Only**ó Scanned data is stored in the KDC but NOT transmitted to the host
- **Save if Sent**ó Scanned data is stored in the KDC ONly if transmission to the host is successful
- **Save if Not Sent**ó Scanned data is stored in the KDC only if transmission to the host is unsuccessful

Enable Wedge (Handheld Scanner Mode)

This option will be checked if Wedge Only or Wedge & Store option is selected.

Keep Scan Data in KDC

This option will be checked if Store Only or Wedge & Store option is selected.

Synchronization Options

Synchronize KDC Time with PC Time when Connected

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

Delays

The user may 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.

Attachments

Timestamp, Barcode Type, and Serial Number may be attached to the scanned barcode by selecting these options. The Serial Number of the KDC may be attached to the Start or End of Record.

Prefix and Suffix

- Enter the characters the user wants to attach to the front (Prefix) or back (Suffix) of the barcode in the Prefix and Suffix fields
- The character set is any combination of ASCII characters including alphanumeric, line feed (î \nî), and carriage return (î \rî)

Order and Delimiter

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

Application Options

Synchronize Non-Compliant Data

The KDC will synchronize both compliant and non-compliant data (filtered data) if the Synchronize Non-Compliant Data option is enabled.

Consolidate Steps in One Record

KTSync will consolidate the data collected in step one (1) with the data collected in step two (2) and/or step three (3). When consolidate step in one (1) record is enabled, data will be consolidated into one (1) record instead of individual data records for each step. If this option is enabled, non-complete records i.e. three (3) steps were defined but data was only collected for two (2) steps, will be discarded.

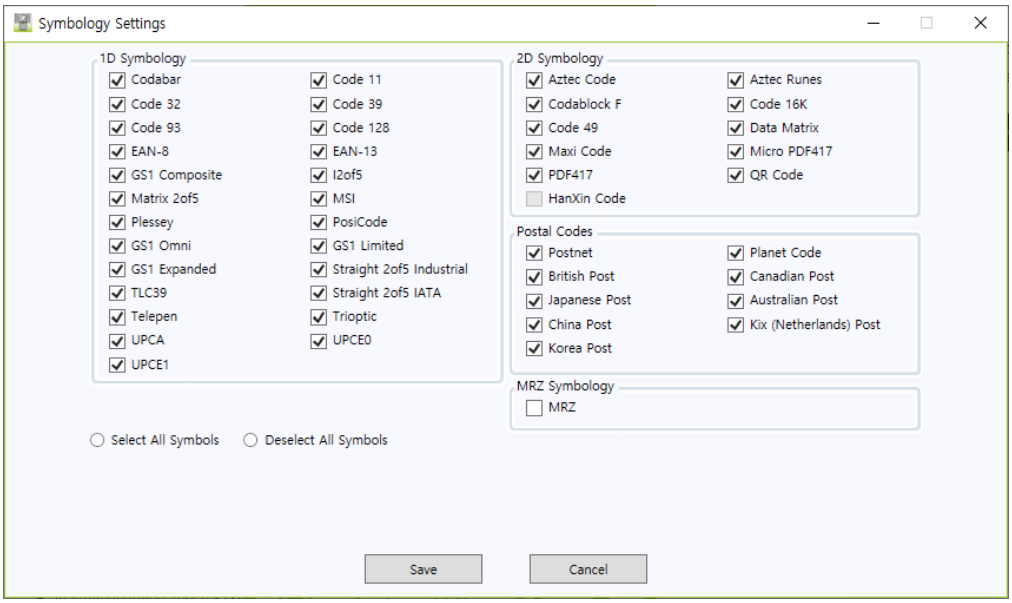
Attach Quantity

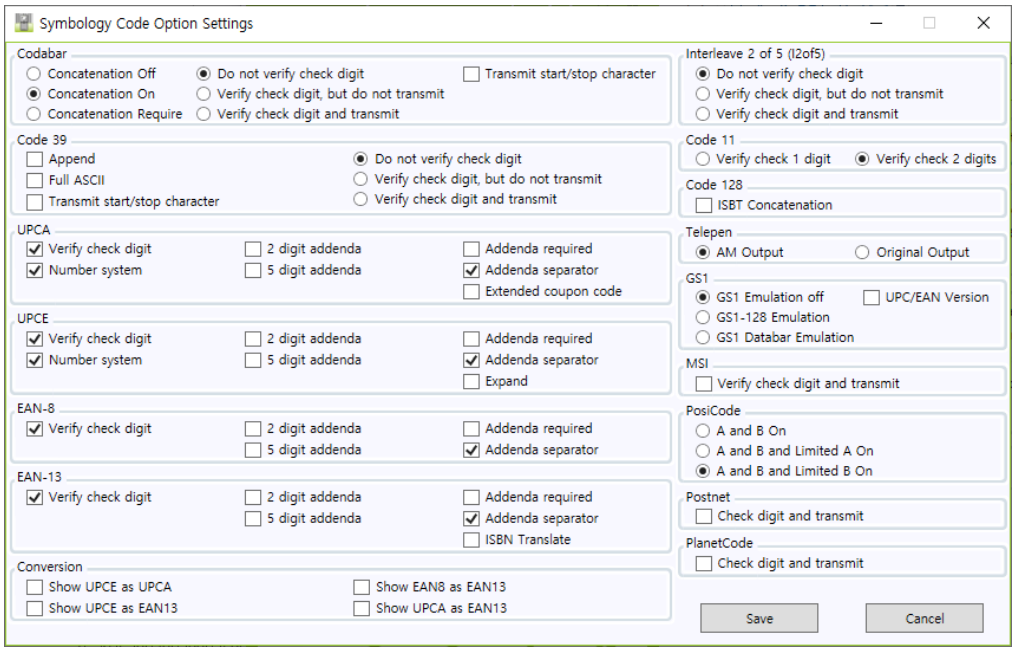
If this option is enabled, quantity will be attached to the left or right of the data.

6.1.5.3 Barcode & KDC Settings

KTSync enables the user to configure the KDC Scan Options and Barcode Settings. The configuration options for the KDC using KTSync are similar to the Set Barcodes, Code Options, Data Editing and Scan Options on the KDC Menu. Please refer to 11. Appendix A ñ Barcode & Scan Options for proper barcode settings for the application.

Note User must configure barcode and scan options properly for optimal KDC performance





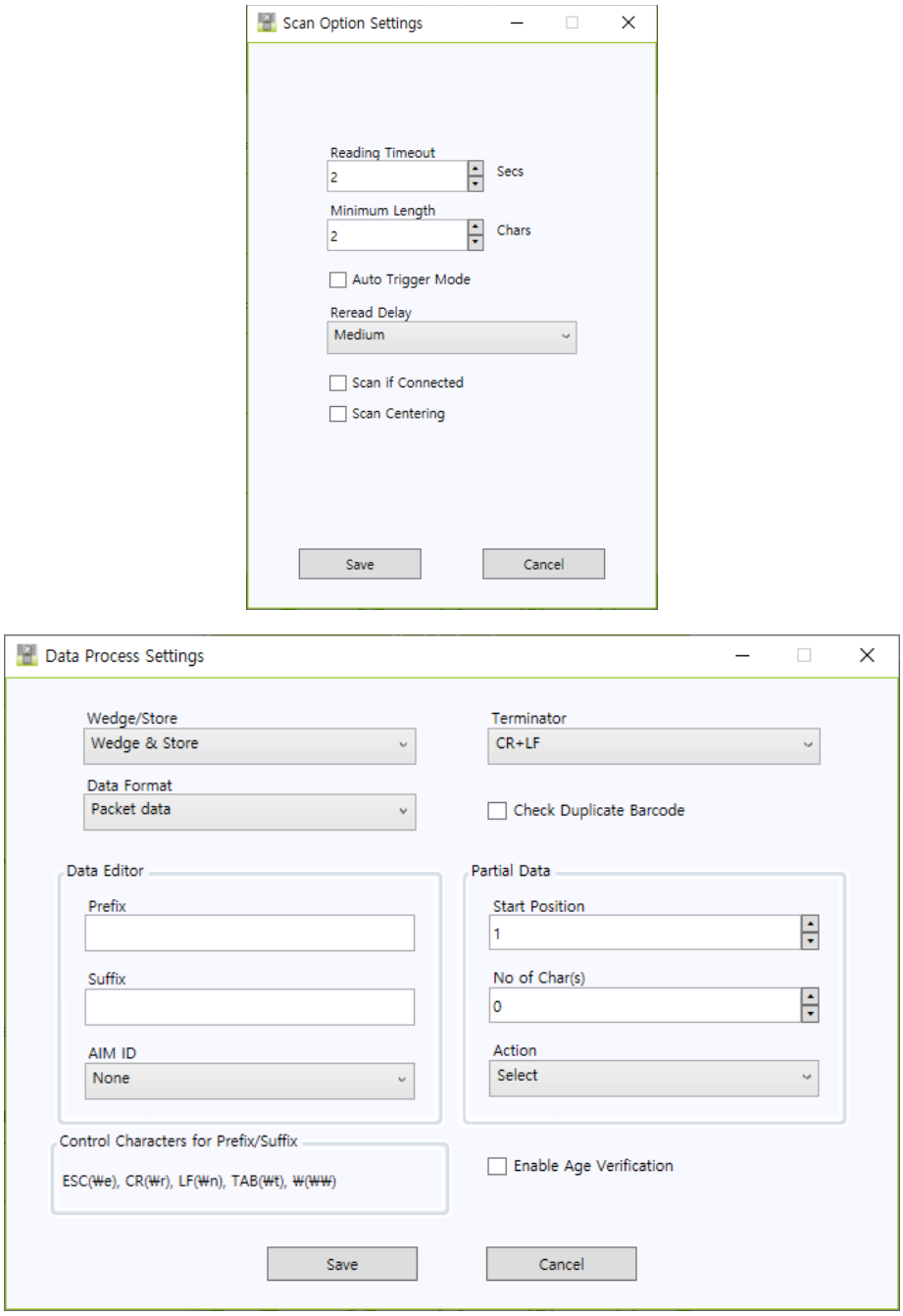


Figure 23 - Barcode & KDC Settings, Symbologies, Data Editing and Scan Options

Select Symbologies and Symbology Options

The process for scanning and reading barcodes is delicate and complicated. Although your KDC is equipped with a high performance scan engine, if configured incorrectly it 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. Please refer to Appendix A for details. Pressing the Default icon will reset all symbology related options to factory default settings.

Data Editing Option

Prefix: Enables the user to add a prefix to scanned data that may be stored in KDC or wedged to the host. The Prefix format must be defined in the data format menu of KTSync. The maximum length for a Prefix is 11 characters.

Note This Prefix option is different from the Prefix option in KTSync that appends the prefix to data during synchronization.

Suffix: Enables the user to add a suffix to scanned data, which may be stored in KDC or wedged to the host. The Suffix must be defined in the data format menu of KTSync. The maximum length for a Suffix is 11 characters.

Note This Suffix option is different from the Suffix option in KTSync that appends the suffix to data during synchronization.

AIM ID: Enables the user to add AIM ID to scanned data, which may be stored in KDC or wedged to the host. AIM ID must be defined in the data format menu of KTSync. AIM ID is either added to the end of a Prefix or Suffix.

Partial Data: Enables the user to display and store partial data. The user defines the start position and number of characters to be displayed and stored.

- Select the ***x*** characters from ***y*** position
    - Set Partial Data Start Position to ***y***, Partial Data Length to ***x,*** Partial Data Action to Select
    - Partial Data Length ***0*** selects all characters from ***y*** position
- Erase the x characters from y position
    - Set Partial Data Start Position to y, Partial Data Length to x, Partial Data Action to Erase
    - Partial Data Length 0 erases all characters from y position

6.1.5.4 Other Settings

Other options under the Settings menu allow the user to select four (4) additional settings:

- **Ask Confirmation before Trying Auto Connection** prevents unintentional launch of KTSync.
- **Ask Confirmation before Starting Auto Synchronization** prevents unintentional synchronization of data.
- **Minimize KTSync on Start** will minimize KTSync and send it to the tray upon execution.
- **Keep Checking *Bluetooth* Connection** enables reconnection of KDC once *Bluetooth* signal is detected. This feature is useful when moving to or from *Bluetooth* host device frequently. KTSync will automatically reconnect *Bluetooth* connection when the user enters an effective *Bluetooth* network range. (Not available on KDC100)

To select any of these settings, click on the box to the left of the setting. A check mark (√) will display next to the setting to indicate that it is selected.

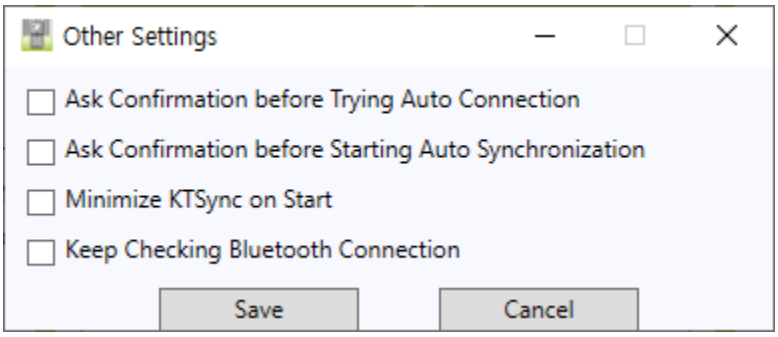
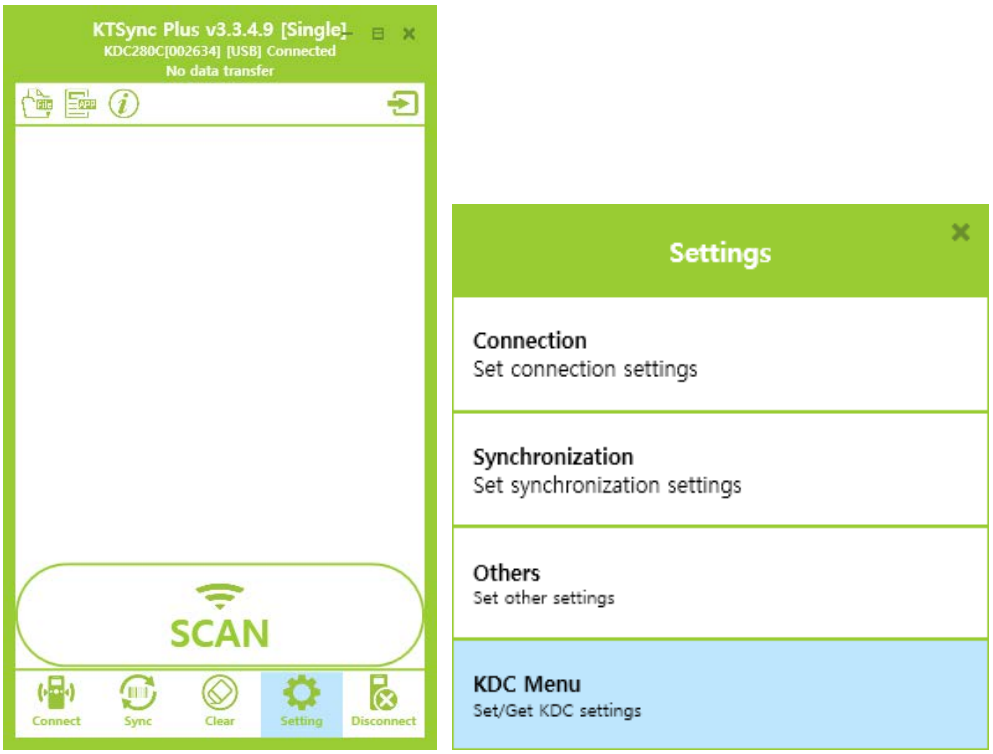


Figure 24 - KTSyncÆ Other Settings

6.1.5.5 KDC Menu in KTSync

After connecting KDC to PC with a USB cable, run KTSync on your PC and you will see **KDC Menu** on the right side of KTSync window. Click **KDC Menu** to configure your KDC in KDC Menu window, as shown below.



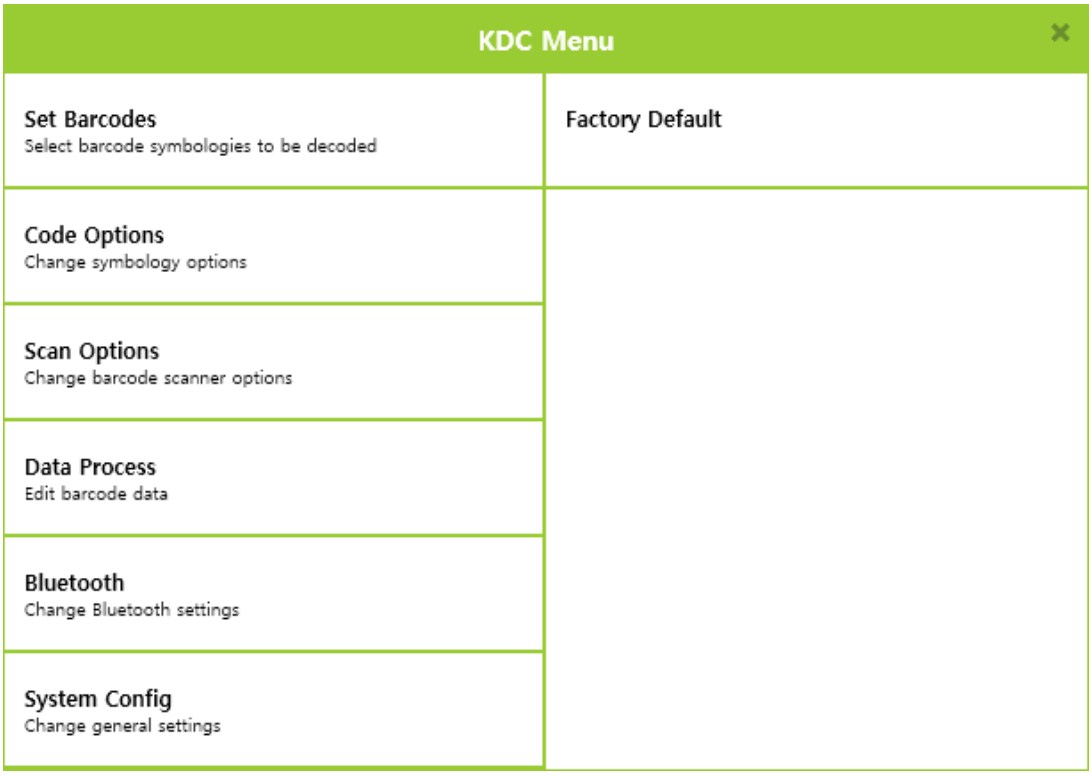


Figure 25 - KDC Menu in KTSync

6.2 Mobile pKTSync

pKTSync provides limited functionality for Pocket PC 2003 and Mobile 5.0+ users.

- **Synchronization**ó Provides data upload functionality to your applications
- **Keyboard Emulator**ó Enables scanned data to be uploaded directly into your application as if the data were being entered manually on a keyboard

For detailed explanations of these functions, please refer to earlier sections of this chapter.

WARNING: The user must assign the correct COM port to KDC before using pKTSync. Please refer to the mobile device manual for details on Bluetooth pairing and COM port assignment methods.

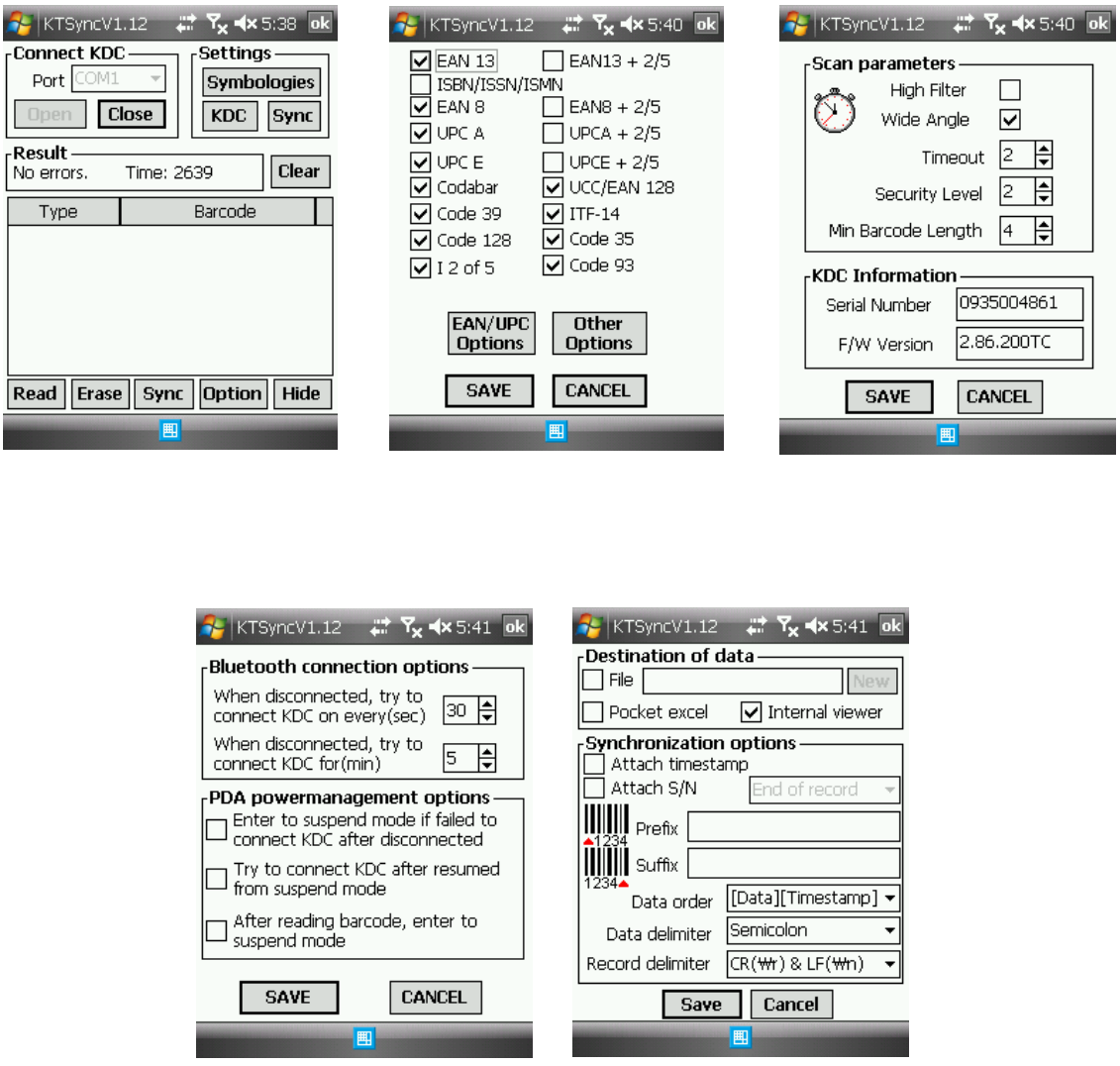


Figure 26 - Mobile pKTSync

6.3 Android KTSync

The Android KTSync provides limited functionality of KTSync PC version to Android users.

Note

KTSync only supports Android devices with API Level 26 or higher, depending on the KTSync version
KDC with Bluetooth Spec2.1+EDR does not prompt Pin code entry menu

6.3.1 KDC and Android Pairing

1. Pairing

- Select SPP Bluetooth profile from the KDC ConnectDevice submenu in BT Config menu
- Search KDCxxx from Android and pair the two devices
- If SPP2.0 is selected, KDCxxx PIN code is ì 0000î

5 Connection

- Click Connect icon in aKTSync
- Android will list paired Bluetooth devices and the user should select the target KDC

6 Synchronization: Provides data upload functionality to the applications

7 Settings: The user may change various Synchronization options in the settings menu

8 Wedging: The user may wedge barcode data to any Android application. Press the home key and launch the target application

6.3.2 Launch Android KTSync

1. Download and install Android KTSync from the Google Play Store
2. Change KDC Bluetooth ConnectDevice option to SPP
3. Execute Android Bluetooth device scan option and KDC Bluetooth pairing option
   - 3.1 Execute KDC *Bluetooth* **Pairing** option
   - 3.2 Launch **Settings** on the Android device
   - 3.3 Select **Wireless and Networks**
   - 3.4 Click on **Bluetooth Settings**
   - 3.5 Click on **Scan devices**

The Android device will display the KDC model and 6 digits of the serial number

4. Press the KDC list entry, enter ì 0000î PIN code, and press OK. (Classic Model Only)
5. When paired, the Android device will display ì Paired but not connectedî
6. Launch Android KTSync program
   - 6.1 Press menu key and select the Connect option on the top left
   - 6.2 From the list of paired devices, choose the KDC to use
   - 6.3 On the top menu bar of Android KTSync, you will see a message ì connecting,î and then ì connectedî
   - 6.4 On the KDC display, you will see ì Pairing Succeeded!!!î and then ì Bluetooth Connectedî
   - 6.5 Select Settings option on the bottom left to change KTSync setting

Note

Android (from version 12) requests user to allow an application to use Bluetooth device for communication and user must give a permission if requested as like below picture.

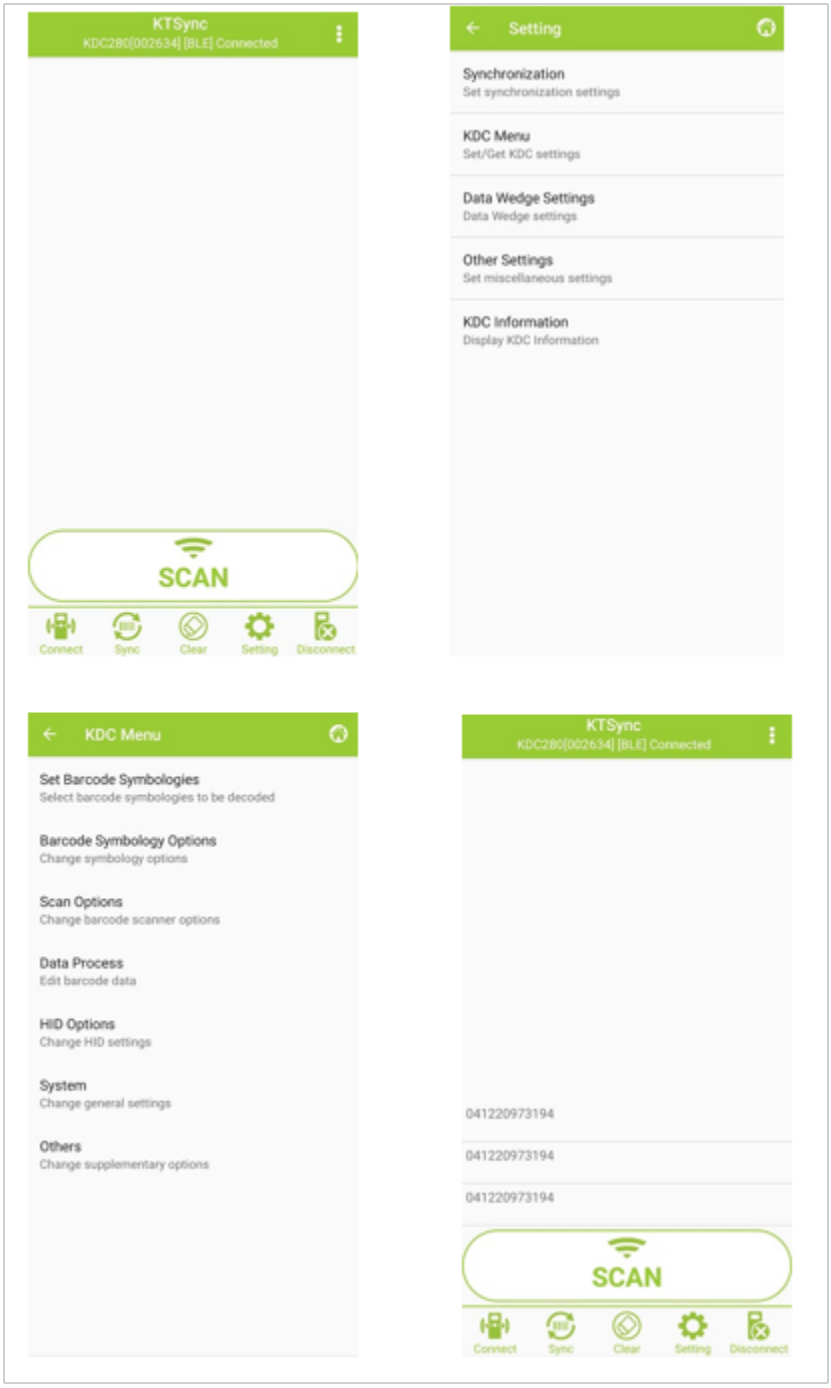


Figure 27 - Android KTSync

6.3.3 Android KTSync Keyboard Wedge

1. Launch **Settings** on the Android device
2. Select **Language and Keyboard** (or **Input method**)
3. Select **KTSync Keyboard**
4. Launch the application and touch the input box to focus
5. The barcode will be wedged to the input box upon scanning a barcode

6.4 iPad/iPhone/iPod Touch KTSync

The KTSync for iPad/iPhone/iPod touch provides limited functionality of PC KTSync for iPad, iPhone and iPod touch users.

iOS KTSync can be downloaded from below link or from the Apple App Store:
http://itunes.apple.com/us/app/ktsync/id372916602?mt=8

Classic Model

1. The KDC supports **SPP** and **MFi** Bluetooth profiles
2. The iPhone/iPad/iPod touch should use **MFi** Bluetooth profiles. **MFi** is the default profile of KDCi models
3. Download the KTSync program from the App Store
4. Enable the iPhone/iPad/iPod touch Bluetooth power from the **Setting > General > Bluetooth menu**

Note

Users have to disable MFi option in System > MFi menu to use HID Bluetooth profiles.
Users have to RESET the iPhone/iPad/iPod touch to change ì HID to MFi modeî or ì vice versaî after removing previous KDC connection.
KDC with Bluetooth Spec2.1+EDR does not prompt Pin code entry menu.

BLE Model

1. The KDC uses **SPP** profile to connect to iOS device
2. Download the KTSync program from the App Store
3. Enable the iPhone/iPad/iPod touch Bluetooth power from the **Setting > General > Bluetooth menu**
4. User needs to find and pair from KTSync application

6.4.1 KTSync for iOS Settings

KTSync for iOS provides the following Settings menu:

- **Synchronization**ó Configure Synchronization options, such as destination of data, data formation and delimiters
- **KDC Menu**ó Configure KDC settings
- **Other Settings**ó Configure additional settings
- **KDC Information**ó Display current connected KDC information

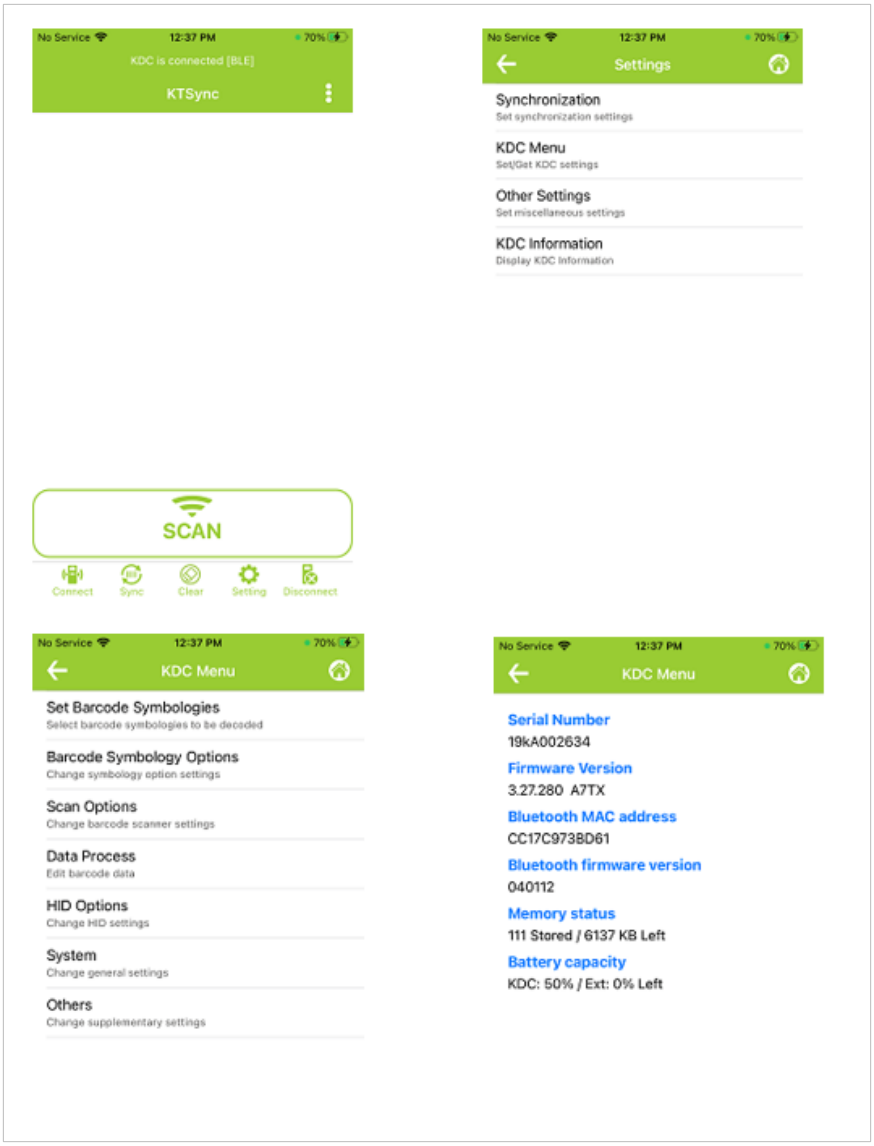


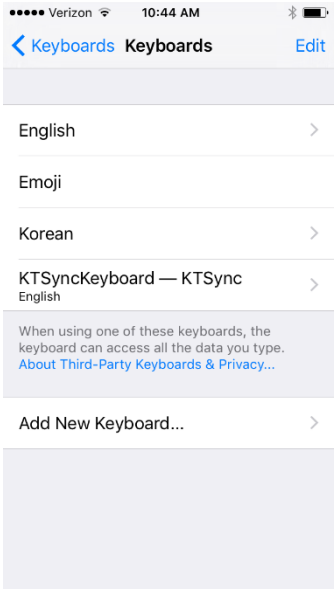
Figure 28 - iPad/iPhone/iPod touch KTSync

6.4.2 How to Connect and Reconnect MFi Mode using UP Keys (Classic Models Only)

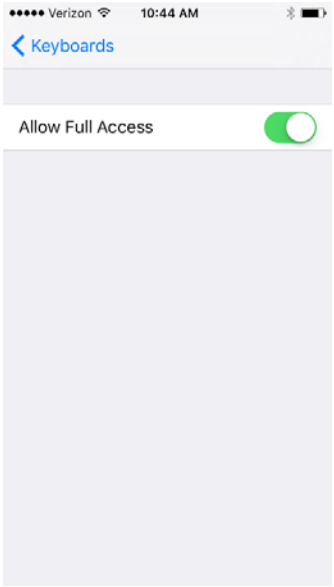
1. Select the option to use this feature in the BT Config > BT Toggle
2. Press the UP button to connect or reconnect to the iPhone/iPad/iPod touch

6.4.3 How to use Keyboard Wedge with iOS KTSync

1. Navigate to the iPhone/iPad/iPod Settings > General > Keyboard > Keyboards > Add New Keyboard... > Select the KTSync keyboard to be added



2. Select the KTSync Keyboard > Allow Full Access



3. Open the application you want to scan into and tap on the screen so the on-screen keyboard appears. Tap and hold on the globe icon located to the left of the spacebar. Select the KTSync Keyboard & begin scanning.

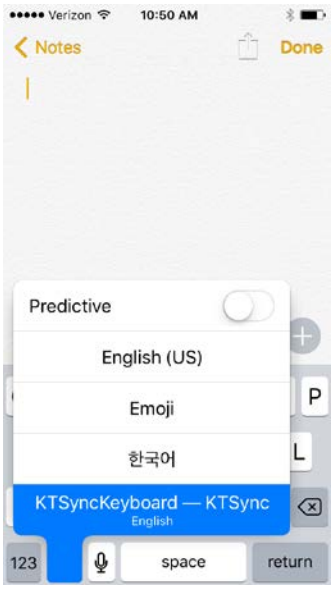


Figure 29 - KTSync for iOS Keyboard Wedge

Note The KDC must be connected to KTSync and the KTSync keyboard must be selected.

6.5 KTSync for Mac OS X

The KTSync Mac OS X version provides limited functionality of PC Windows KTSync for Mac OS X users.

Note

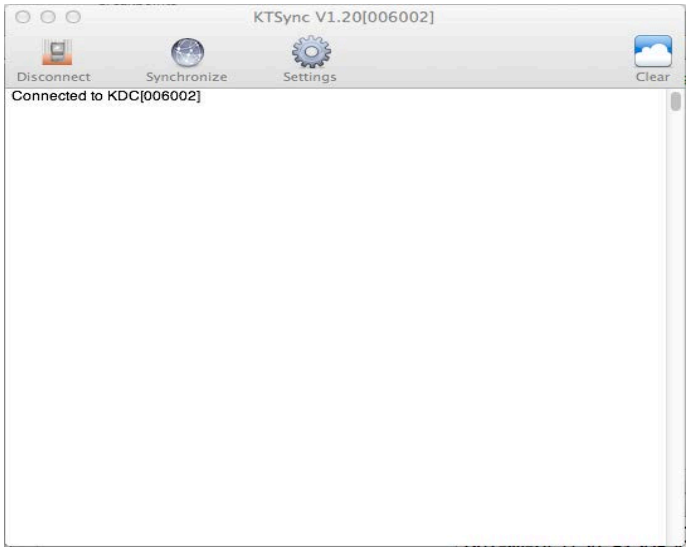
KTSync for Mac OS X version supports both Bluetooth SPP profile and USB connection. The user should pair KDC with Mac before using the KTSync program via Bluetooth connection.

Mac OS X version KTSync is built as a X86 binary application and works with the Intel-based Mac. It is verified on Mac PC running Mac OS X 10.6.5 and later versions.

KTSync Mac OS X version supports the following features:

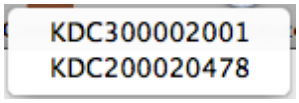
- Keyboard wedge function to a file, internal viewer, active window, and user application
- Synchronization to a file, internal viewer, active window, and user application
- Automatic connection and disconnection on USB port

The user will see the following initial KTSync screen upon launching the program. KTSync will connect automatically if KDC is plugged into a USB port or if KDC is paired.



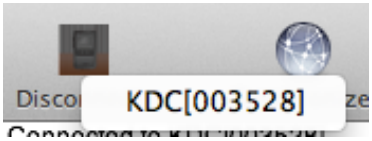
6.5.1 Connect Button

Connect the Mac with the KDC that is paired or plugged into the USB port by clicking the Connect button. The following screen will be displayed when this button is pressed, and KTSync will start to connect to the selected KDC.



6.5.2 Disconnect Button

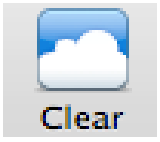
KTSync changes Connect button to Disconnect button once the KDC is connected. The user may disconnect the KDC manually by selecting connected KDC on the following screen.



6.5.3 Synchronize Button

TStart the synchronization process by pressing the Synchronize button. The user may select the destination of barcode data in the settings menu. There are four (4) selectable destinations: File, Internal viewer, Active window, and User application.

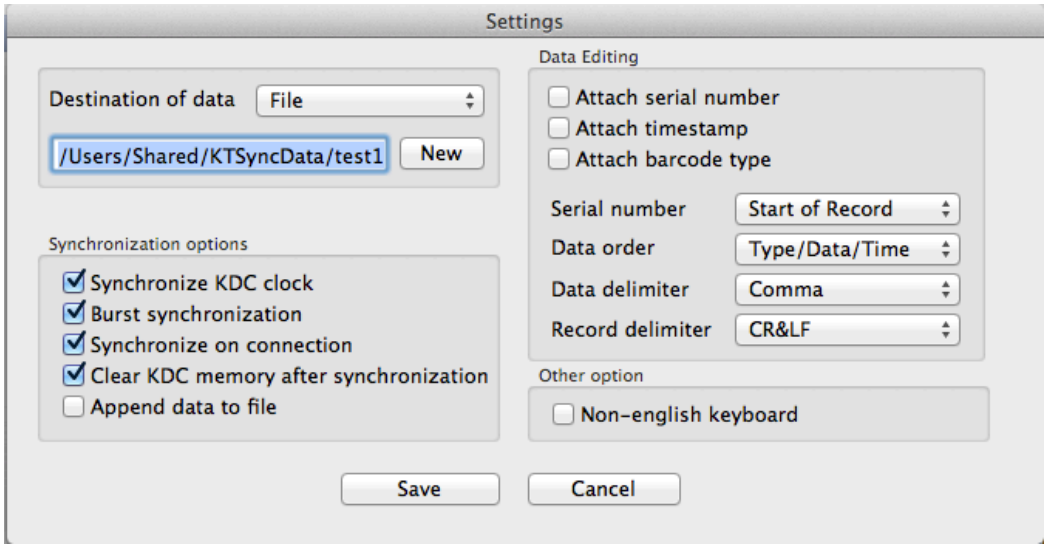
6.5.4 Clear Button



Press this button to clear the KTSync internal viewer.

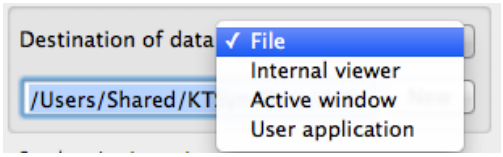
6.5.5 Settings Button

Configure synchronization options on the following screen by pressing the Settings button.



Destination of Data

The KTSync program wedges or downloads barcode data to one of the following four destinations:



- **File**ó The KTSync makes a file name based on 3.11 if file name is specified as an ì sn_timestamp.txtî . The default directory is /Users/Shared/KTSyncData directory. The user may define another directory or another filename by clicking the ì Newî button. The maximum file path length is 128 characters.
- **Internal Viewer**ó The KTSync displays barcode data in KTSync internal text viewer.
- **Active Window**ó The KTSync sends barcode data to current active window if Active window option is selected.
- **User Application**ó The user may define the target application by pressing the ì Newî button. The maximum application name path length is 128 characters.

Synchronization Options

- Synchronize KDC Clockó KTSync will set the KDCís date and time with Mac PC date and time when the KDC is connected to Mac, if this option is enabled.
- Burst Synchronizationó KTSync will synchronize barcode data from KDC in burst mode. Otherwise, KTSync will synchronize barcode data one by one. This option is enabled by default and cannot be disabled.
- Synchronization on Connectionó KTSync will automatically synchronize barcode data from the KDC when the KDC is connected.
- Clear KDC Memory After Synchronizationó KTSync clears barcode data stored in the KDCís memory once synchronization has finished.
- Append Data to Fileó KTSync appends synchronized data to existing file specified on destination. If file does not exist then KTSync creates a new file.

Data Edition

- Attach Serial Numberó The KTSync will add a KDC serial number to barcode data. This option is enabled by default and cannot be disabled.
- Attach Time Stampó The KTSync will add timestamp to barcode data. This option is enabled by default and cannot be disabled.
- Attached Barcode Typeó The KTSync will add barcode type to barcode data. This option is enabled by default and cannot be disabled.

Serial Number

When Attach Serial Number is enabled, this option determines when to attach a serial number. ì Start of recordî means to attach at the front of record and ì End of recordî means to attach to the end of record.

- Data Orderó This option specifies the order of data (Barcode Type, Barcode Data and Timestamp) in the record.
- Data Delimiteró This option is used to select a character to be added between barcode data, serial number and timestamp and/or barcode type. User may select one of the following: None, Tab, Space, Comma and Semicolon as the data delimiter. The Comma is selected as the data delimiter by default.
- Record Delimiteró This option is used to select a character to be added at the end of the barcode record. The user may select one of None, CR, LF, TAB, and CR&LF as the record delimiter. The CR&LF is selected as the record delimiter by default.

Other Options

- Non-English Keyboardó This option is used when the barcode data has non-English characters and a non-English keyboard.

7 Application Generation

Note KDC FW2.85 does not support the DB Lookup and Inventory features. KDC Smartsled does not support the Application.

When you select the Application menu from the KTSync, the user may choose from the following five (5) Applications: Generation, DB Lookup, Master/Slave, Pick/BIN, and Inventory. Users may also download saved programs using the Import & Download option.

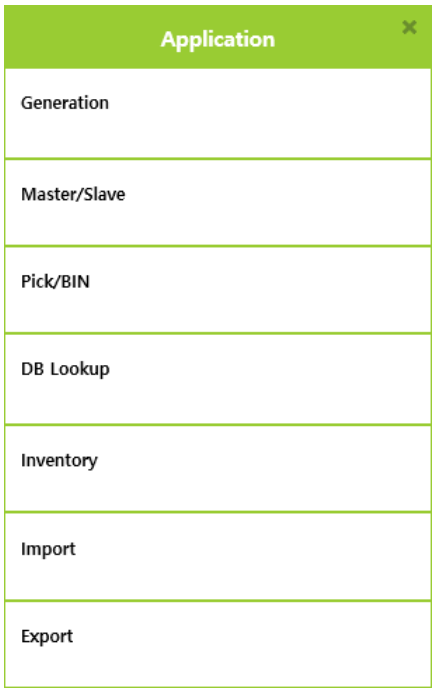


Figure 29 - Application Menu

When the Application tool is selected, the KDC will beep once to acknowledge a connection between the KDC and the Application tool. The following KTSync warning window will pop up if the downloaded application in KDC does not match with KTSync application tool.

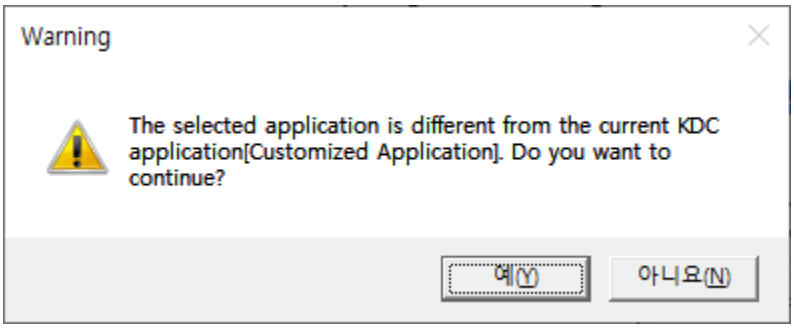


Figure 31 - Application Warning Window

Note KDC will wedge barcode data to the host in application mode if ì wedge and store alwaysî option in data process menu is selected and KDC firmware version is higher than 2.86.xxx.G or 3.0+.

7.1 Application Generation

KDC Application Generation tool is a robust feature that enables the user to create custom applications for collecting and managing barcode data. To create a custom application, select the Generation submenu from the Application menu in KTSync[Æ].

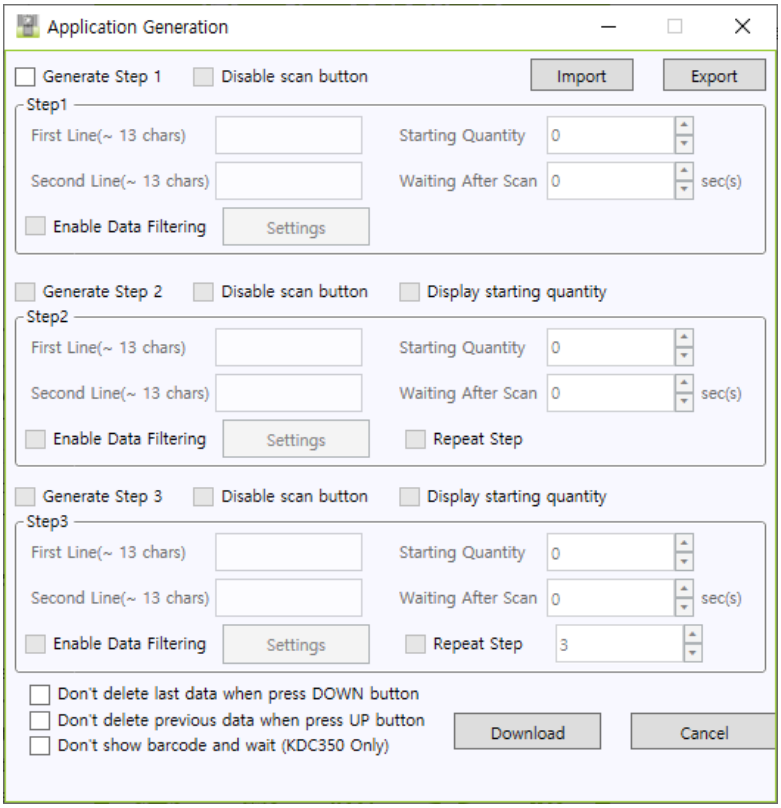


Figure 30 - Application Generation Menu

7.1.1 Generate Application

Generate Step one (1)

To generate a custom application, click on the Generate Step one (1) box. This enables the user to define the user prompts and data collection settings for Step one (1) of the custom application. Below is a description of each field. These prompts are the same when selecting Generate Step two (2) and Generate Step three (3).

The custom application may include only Step one (1).

- **First line**
  Enter up to 13 characters; these will display on the first line of the KDC.

- **Second line**
  Enter up to 13 characters; these will display on the second line of the KDC.

- **Starting quantity**
  Enter a predefined start quantity for each scanned barcode. The start quantity may be defined from one (1) to 128. Use the up or downside key to choose the desired quantity.

- **Waiting to scan**
  Enter the number of seconds the KDC pauses before the user prompts display. During this timeout period, the user may modify the quantity. If this field is set to zero (0), the quantity field may not be adjusted. This field may be defined from ì -1î to ì 30î seconds. ì -1î second enables infinite waiting of user quantity input.

- **Enable data filter**
  Check this box to enable the data filtering option. Data filtering enables the user to predefine the different aspects of the barcode data the user is collecting.

7.1.2 Data Filter Settings

When the user select Enable data filtering, the user must click on the Settings button to select the Data filter setting. The options for the Data filter settings are the same for Step one (1), Step two (2), and Step three (3).

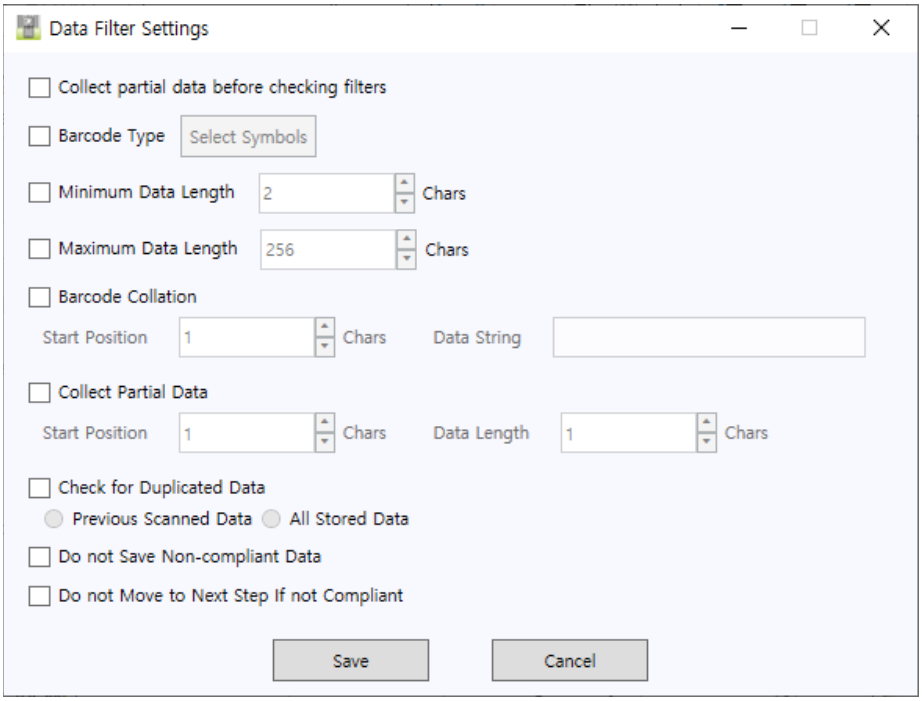


Figure 31 - Data Filter Settings

- **Barcode Type**
  Select the type of barcodes the KDC will collect. When the user clicks on the box, Select Symbols is enabled. A listing of the symbologies supported by the KDC will display. To select a barcode symbology, click on the box associated with the symbology.

- **Minimum Data Length**
  Define the minimum length of the scanned barcode. The length may be between two (2) and 36 (1D models), two (2) and 48 (2D models) characters. If the user scans a barcode with a length less than the defined length, the barcode data is not collected.

Note The default KDC minimum barcode length defined in scan option is four (4). Therefore, users should change KDC minimum barcode length to two (2) or three (3) to define minimum data length to two (2) or three (3).

- Maximum Data Length
  This field enables the user to define the maximum length of a scanned barcode. The defined length may be between two (2) and 256 characters. If the user scans a barcode with a length greater than the defined length, the barcode data is not collected.

- Barcode Collation
  Define a data string that the KDC will use to compare scanned barcodes.
  - Starting Position ñ This is the start position of the scanned barcode data to be compared with the defined data string.
  - Data String ñ This is the defined value to be compared with scanned barcode data. This value may be up to 32 characters.

- Collect Partial Data
  Define partial barcode data to be collected when a barcode is scanned. Only the partial data will be stored in the KDC.
  - Start position ñ This is the starting position that the KDC will use when collecting scanned barcode data.
  - Data Length ñ This is the length of partial data to be stored by the KDC.

- Check for Duplicated Data
  Prevent the collection of duplicate data.
  - Previous Scanned Data ñ Compare the scanned barcode with the previously scanned barcode and treat it as non-compliant data if the user scanned the same barcode twice.
  - All Stored Data ñ Compare the scanned barcode with stored barcode data and treat it as non-compliant data if the same barcode already scanned and stored.

- Do not Save Non-Compliant Data
  This field tells the KDC how to manage non-compliant data based on the defined data filtering fields. If this field is enabled, non-compliant data is NOT stored in the KDC. If this option is not enabled, non-compliant data is stored.

Generate Step two (2)

To include another Step in the data collection process, click the box, Generate Step two (2). This Step has the same options as Step one (1). In this step, the user has the option of repeating Step two (2) by clicking the box, Repeat Step.

Note This field is disabled when the application has three (3) Steps

Generate Step three (3)

To include a third Step, click the box, Generate Step three (3). This step has the same options as Step one (1) and two (2). In this Step, the user has the option to repeat Steps two (2) or three (3).

7.1.3 Application Download and Execution

Before running your application, use the following steps to download it to KDC:

1. Click the ì Downloadî icon from the Application Generation Window
2. Change KDC from Normal to Application mode
    a. Press the two side buttons simultaneously to enter menu mode
    b. Select KDC mode and enter the scan button
    c. Change to Application mode
    d. Save and exit from menu mode
3. KDC will run in normal mode if you do not change to Application mode after downloading the application
4. If you want to delete the downloaded application in your KDC, select App. Data in Reset Memory after you go to System Config in KDC Menu

7.2 Predefined Applications

KTSync provides four Predefined Applications: Master/Slave, Pick/Bin, DB Lookup and Inventory.

7.2.1 Master/Slave

Master/Slave predefined application enables you to define a **master** barcode for comparison with one or more ***slave*** barcodes. The predefined application may be run once or continuously. Within either setting, you may define a substring for comparison of **master** and **slave** barcodes.

Master/Slave Onetime
Define one **master** barcode and compare it with one **slave** barcode.

Master/Slave Continuous
Define one **master** barcode and compare it with multiple **slave** barcodes.

Collation Options
Works in either Onetime or Continuous Mode to compare a substring within the **master** and **slave** barcodes.

- **Master start position**ó Select the numeric position of start substring character in Pick barcode, one (1) to 255
- **Slave start position**ó Select the numeric position of start substring character in Pick barcode, one (1) to 255
- **Comparing Barcode Length**ó Number of characters to be compared, zero (0) to 255. Zero (0) means all characters

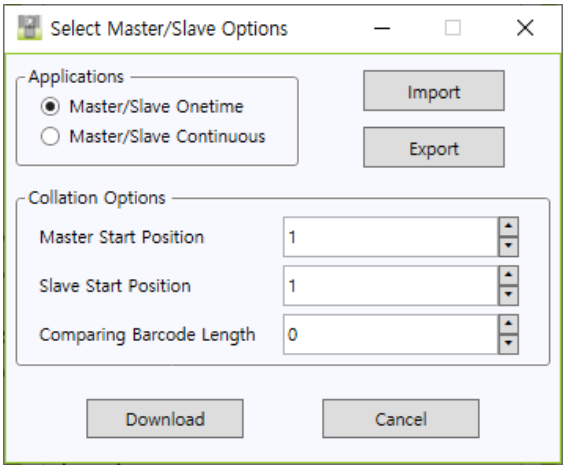


Figure 32 - Master/Slave Application Settings

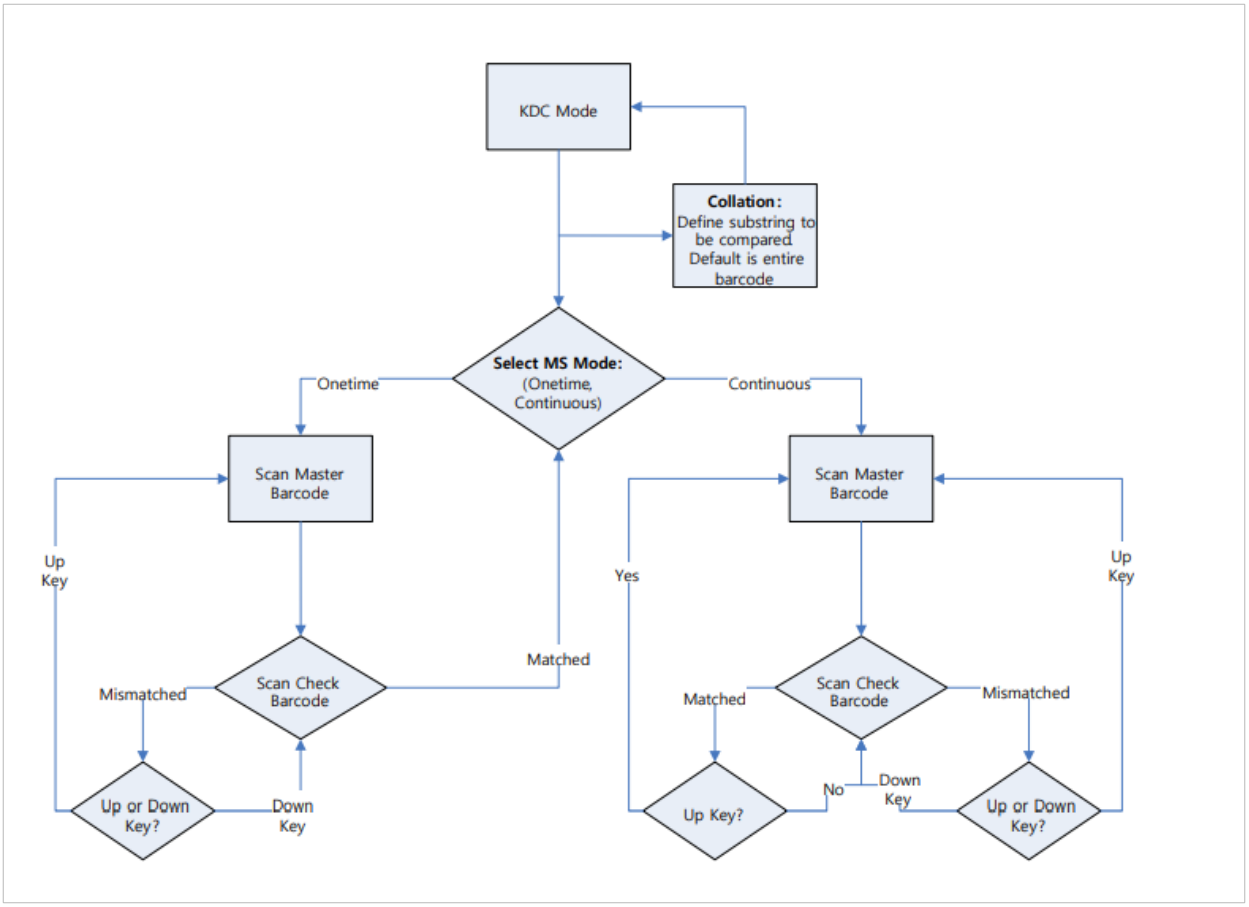


Figure 33 - Master/Slave Application Flow Chart

7.2.2 Pick/Bin

The Pick/Bin predefined application is a special version of the Master/Slave predefined application. The Pick/Bin application enables you to define the Pick ID and the barcode symbology for comparison with a defined Bin.

- **Number of ID and Symbologyó** Define Pick ID characters from one (1) to 32 and the barcode symbology
- **Pick Start Position and Symbologyó** Select numeric position of start substring character in Pick barcode from one (1) to 255 and the barcode symbology
- **Bin Start Position and Symbologyó** Select the numeric position of start substring character in Bin barcode from one (1) to 255 and the barcode symbology
- **Comparing Barcode Lengthó** Select the number of characters to be compared from zero (0) to 255. Zero (0) means all characters.

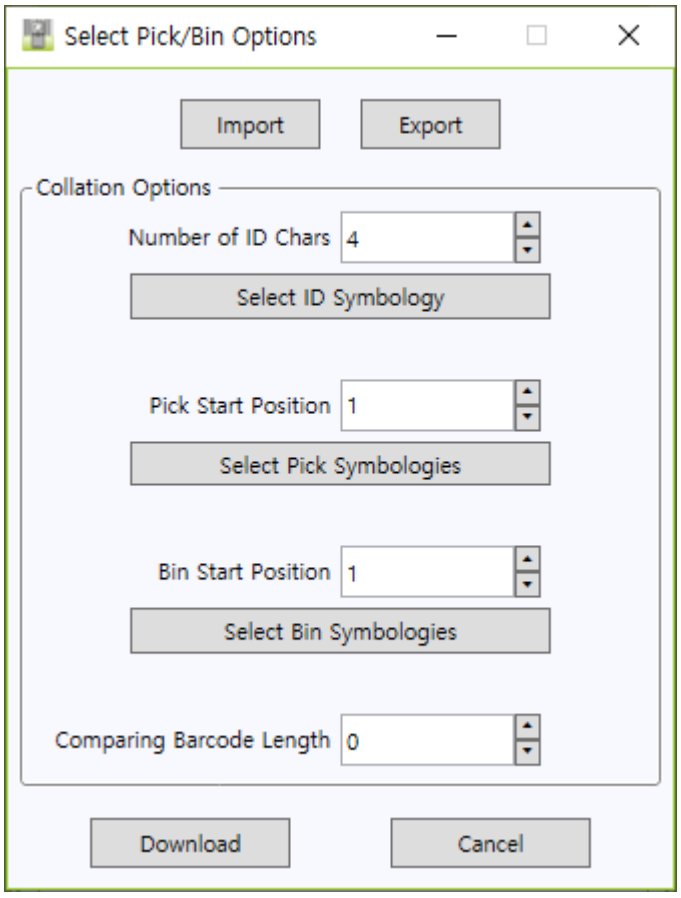


Figure 34 - Pick/BIN Application Menu

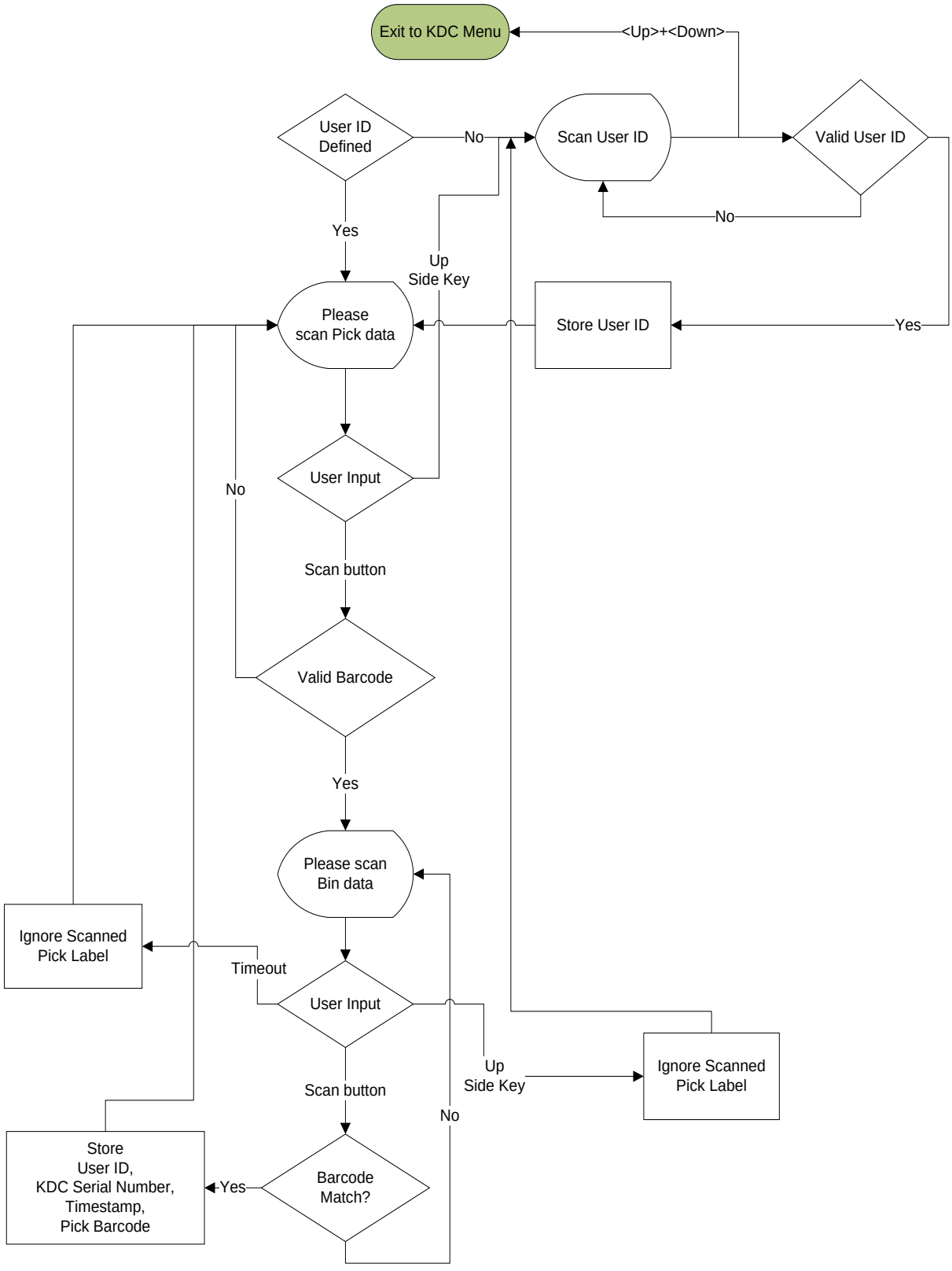


Figure 35 - Pick/BIN Application Flow Chart

7.2.3 DB Lookup Application

The DB Lookup application enables the user to download a database to the KDC that may then be utilized for advanced AUTO-ID applications, such as displaying additional data after scanning a barcode. For example, using our DB Lookup application, you may download a product database including information such as description, price, and stock quantity. With the advanced data functionality built-in to the KDC, you may easily display product price, description, and stock level after the productís barcode is scanned.

Functionality of DB Lookup Application (based on the firmware version v2.86 and v3.0+)

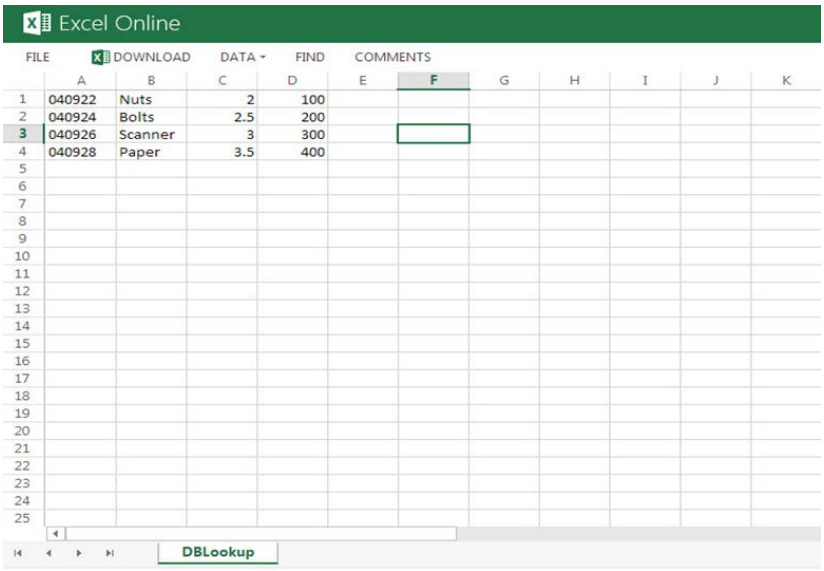
- The database size may not exceed 800 records (v2.86) / 61,440 records (v3.0+)
- The maximum record size is 128 bytes
- Each record may have up to 4 fields, including the barcode, which is the primary key
- The maximum field size is 39 characters
- Quantities may be entered by pressing the UP or DOWN scroll buttons after DB fields are displayed
- Quantity may be from one (1) to 128
- The user may create a database using Microsoft Excel
    - Excel file must be saved as .txt
    - Records should be separated by CR/LF
    - Fields should be separated by TAB
    - Database should end with CR/LF
    - Last 4 bytes of database should be CR/LF/CR/LF

DB Lookup Fields and Settings (based on the firmware version v2.86 and v3.0+)

- **Download DB to KDC -** Downloads user created database to KDC
- **Starting Quantity -** Enter predefined start quantity for each scanned barcode. The start quantity may be defined from one (1) to 128 and may be adjusted using UP or DOWN buttons
- **Barcode Field -** Select the position of barcode field in database from one (1) to four (4)
- **Stored Barcode Start Position -** Select the numeric position of start substring character of barcode in database from one (1) to 39
- **Scanned Barcode Start Position -** Select the numeric position of start substring character of scanned barcode from one (1) to 39
- **Comparing Barcode Length -** Number of characters to be compared from zero (0) to 255 where zero (0) is all of the characters
- **Display on KDC -** Define database fields to be displayed on KDC. KDC may display between one (1) and three (3) fields. KDC will display one (1) field in two (2) or three (3) lines, if same field is specified in line entering option.

Formatting a Database

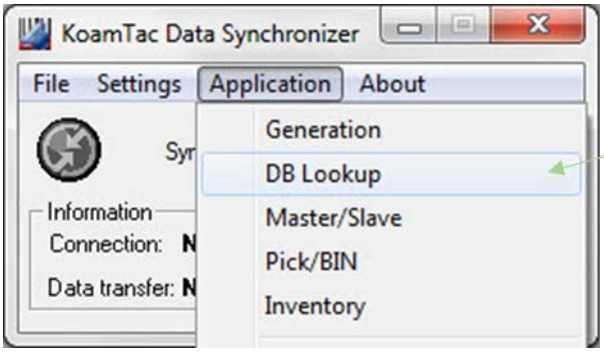
You must first create a database to use the DB Lookup Application following the steps below. We recommend using Microsoft Excel when creating a database for formatting purposes. Copy and paste from Excel into a text document such as Microsoft Word. Save the Word document as a .txt file.



There should be a total of four columns, matching the four lines on your KDC screen. Column A must contain barcode data.

Creating an application

Connect your KDC to your PC. Open KTSync>Application>DB Lookup



First select the DB Lookup application.

Importing the application to your KDC

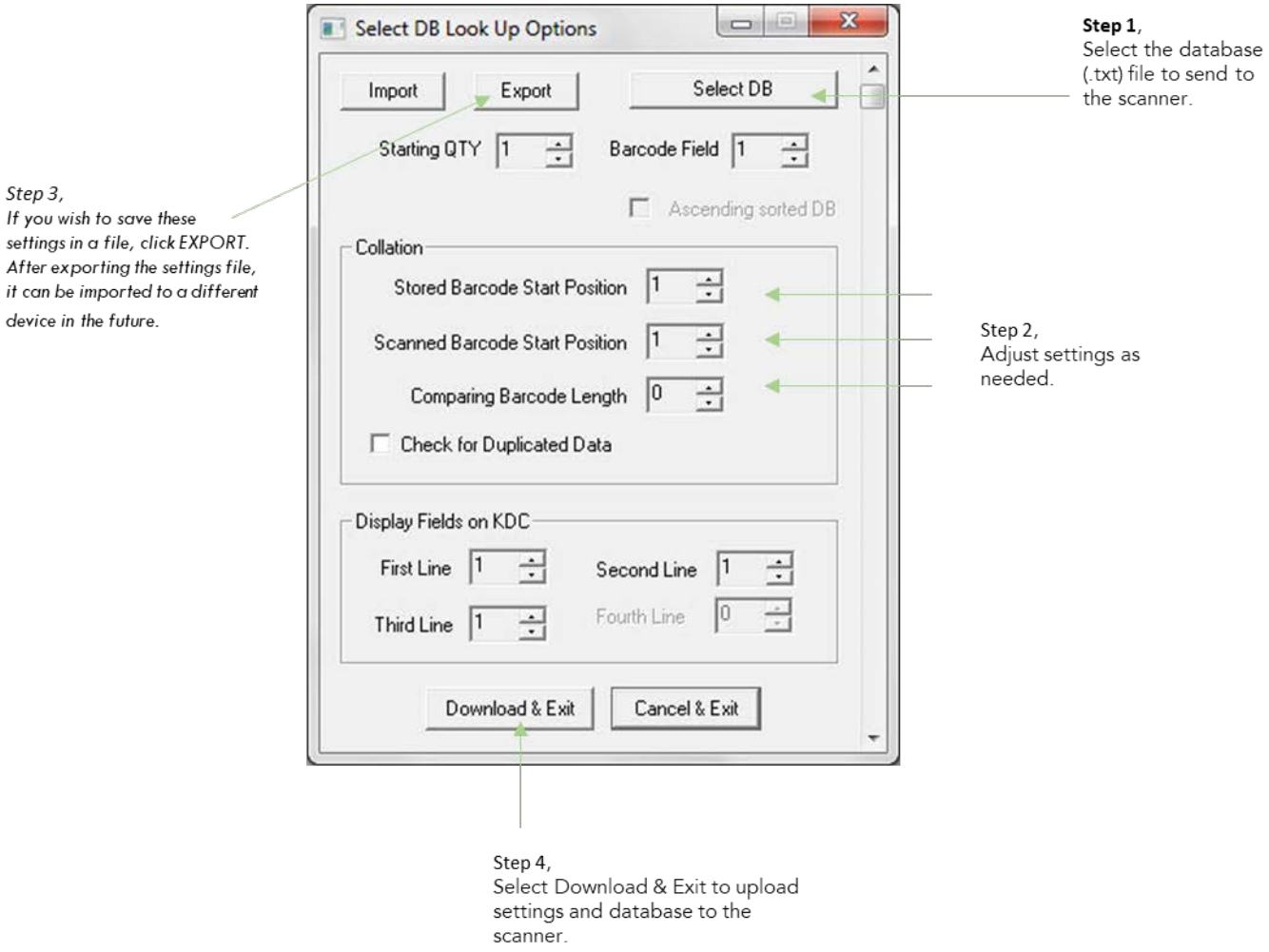


Figure 36 - DB Lookup Application

7.2.4 Inventory Application

The Inventory application enables the user to count inventories by scanning inventory barcodes. This application will increase inventory item count if the same item is scanned. Users may also download an inventory database to the KDC. If inventory DB is downloaded, KDC will display inventory description.

Functionality of Inventory Application (based on the firmware version v2.86 and v3.0+)

- The inventory may not exceed 800 items (v2.86) / 61,440 items (v3.0+)
- The maximum record size is 128 bytes
- Each record may have up to four (4) fields, including the barcode, which is the primary key
- The maximum field size is 39 characters
- Quantities between one (1) and 32786 may be entered by pressing the UP or DOWN buttons after inventory is scanned
- Starting Quantity may be between one (1) and 128
- Min/Max. Data Length is between two (2) and 256 (1D models) or four (4) and 256 (2D models)
- Barcode Collation Start Position is between one (1) and 256
- The length of Collation Data String is between one (1) and 30
- Collect Partial Data Start Position is between one (1) and 256
- Collect Partial Data Length is between one (1) and 256
- Users may create an inventory database using Microsoft Excel
    - Excel file must be saved as .txt
    - Click User Inventory DB option to display inventory description
    - Click Do not add non-existing item into DB if you do not wish to add new items into inventory DB
    - The number of Barcode Data Field is between one (1) and four (4)
    - The position of Display Filed is between one (1) and four (4)

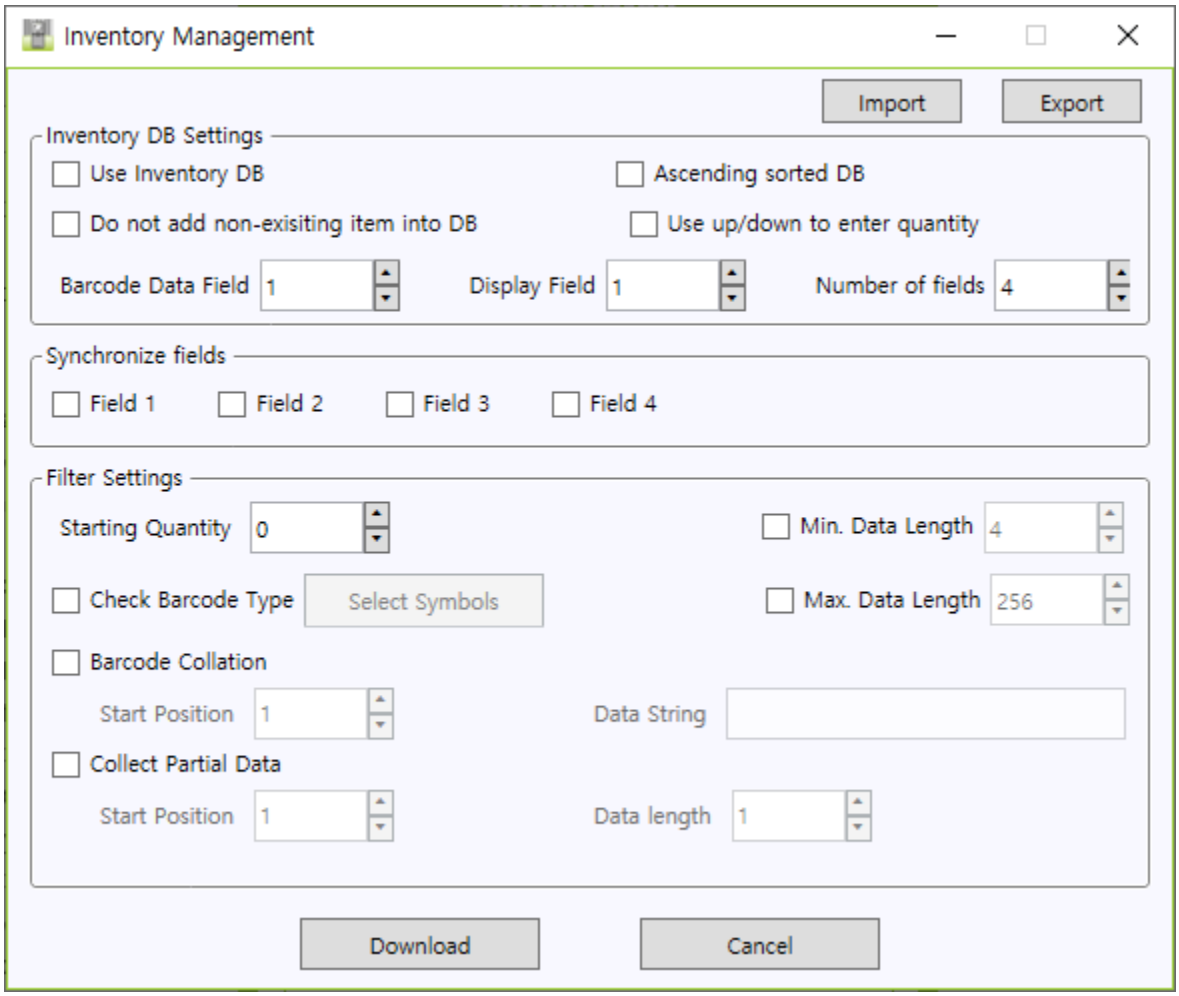


Figure 38 - DB Lookup Application

8 Troubleshooting

KDC not working	Dead Battery: No scan light, beep sound, LED light, and display.	Charge battery by connecting KDC to power source using included cable. KDC may take up to 20 minutes to power on from dead battery.
	Hardware failure • Laser scan engine appears as a dot or not emitted at all. • OLED ñ display screen is distorted or no display. • USB ñ KDC does not charge at all. KDC display toggles between messages ëUSB Port Connectedí and ëUSB Port Disconnectedí when KDC is plugged into power source.	Contact distributor for technical support
KDC not charging	Bad battery	Recommends replacing KDC battery annually.
	Bad USB port	Power source does not supply proper current to KDC. Try first using another USB port or power source. If problem persists the issue may be hardware damage to the USB port or charging cable.
Failed reading	Failed Reading ñ KDC is out of scan range or incorrect angle	Try scanning at a closer distance or changing the angle of the scan.
	Failed Reading ñ Scan window is dirty or damaged	Clean the scan window and make sure there are is no dirt or cracks impacting the scan light. Contact distributor for support if damaged.
	Barcode settings - Symbology not enabled or supported	Check barcode settings to make sure Symbology is enabled or contact
	Barcode settings ñ does not meet minimum length	Check scan options. Min. length for laser models is 4 characters and can be lowered to 2. Imager models min. length is 2 and can be lowered to 1.
	Failed Reading ñ poor bar code quality or damage barcode	Try scanning a different bar code.

	Failed Reading ñ KDC is out of scan range or incorrect angle	Try scanning at a closer distance or changing the angle of the scan.
KDC reads wrong barcode	Dirty scan window	Clean scan window
	Damaged scan window	Replace scan window
	Poor quality barcode	Select only necessary barcodes, increase minimum barcode length, increase security level.
KDC unable to connect with host device.	smartphone ñ Make sure correct Bluetooth profile is selected. Use HID iOS or MFi for iOS devices and HID Normal/SPP for Android devices.	Unpair KDC and scan appropriate pairing bar code on quick manual. Once scanned the LED lights on the KDC will blink Orange indicating HID mode, Red indicating SPP mode, or Green indicating MFi mode.
	PC (wired) ñ Make sure USB cable is connected properly and USB port or cable is not damaged. PC (Bluetooth) ñ Make sure SPP profile is used and KDC is unplugged from USB cable	Try reinstalling KDC driver, restarting PC and using different USB ports and USB cables. Unplug KDC from USB and repair using Bluetooth.
Buffer Full Message	Barcode storage is full.	First, synchronize data using KTSync to save data to PC then clear memory using Memory Reset bar code on the quick manual.
Abnormal KTSync Operation on DELL PC	Quickset Utility	Disable Quickset Utility before using KTSync. Dell Quickset utility interrupts normal KTSync operation
KDC500/600 touch keypad not working	WSED Utility	Disable WSED Wireless enable/disable utility. Delete the folder C:/Program Files/WSED, which contains a file WSED.exe, with the same icon as in the taskbar Delete the registry entry KEY_LOCAL_MACHINE /SOFTWARE/Microsoft/Windows/CurrentVersion/Run/WSED
	Foreign object detected	Clear any foreign object (including your finger) placed on the touch keypad and reset KDC.
KDC500/600 Compromise	Hardware failure	Contact distributor for technical support.
	Security Attack detected	Contact distributor for technical support.

message displayed

Table 3 - Troubleshooting Techniques

9 Contact Information

Appendix A ñ Barcode & Scan Options

The process for scanning and reading barcodes is delicate and complicated. Although the KDC is equipped with a high performance scan engine, if configured incorrectly, it 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 KDC products support most major barcode symbologies including 1D, 2D, Postal, and OCR-Fonts. Below is the list of the barcode symbologies supported by the KDC with respect to each modelís particular area of support. To ensure superior scan performance, remember to select only the required symbologies.

	KDC20/100/200/250/270L/270D/350L/410/411/415/470L/470D/500L	*KDC30/270C/280C/300/350C/420/421/425/450/470C/500C/KDC1000/1100/1200/SKX*
1D Barcodes	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, GS1-128, Code39, Code93, & Code35	Codabar, Code11, Code32, Code39, Code128, EAN8, EAN13, GS1-128, I2of5, MSI, Plessey, PosiCode, GS1 DATABAR OMNI, GS1 Limited, GS1 Expanded, S2of5IA, S2of5ID, TLC39, Telepen, Trioptic, UPCA, & UPCE
2D Barcodes	*N/A*	AztecCode, AztecRunes, CodablockF,Code 16K, Code49, DataMatrix, MaxiCode, MicroPDF, PDF417, & QRCode and HanXin Code
Postal Barcodes	*N/A*	AusPost, MayadaPost, ChinaPost, JapanPost, KoreaPost, KixPost, Planet Code, Postnet (US), & UKPost
OCR Fonts	*N/A*	OCR-A, OCR-B, OCRUSCurrency, OCRMICRE13B, & OCRSEMIFONT

Table 4 - Symbologies Supported by KDC

A.1.1 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 ñ that is, there are no hyphens or separators. Thus, the ISBN 957-630-239-0 is transmitted as 9576302390.

A.1.2 Add-on Symbologies

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

- UPCEwithAddon
- UPCAwithAddon
- EAN8withAddon
- EAN13withAddon

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

Mode	Behavior	Value of flags	
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 5 - 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 explains the effects 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 6 - Add-on for EAN-8 Symbology

The add-on symbol does not contains a check digit or 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 five (5)-digit add-on symbol as a two (2)-digit add-on symbol. It is strongly recommended that the minimum-security level be set at two (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 of 1D Models

(KDC20L/20D/80L/80D/100/200/250/270L/270D/280L/280D/410/411/415/470L/470D/475L/475D/475S/480L/480D/485S)

The KDC 1D models support 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, the user may 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.

A.2.1 Reverse Direction

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

A.2.2 Symbology Conversion

By default, the EAN-8, UPCE, and UPCA symbols are transmitted in their native format. However, it is possible to show them in a different format. The user may 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 others
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 7 - Symbology Conversion

A.2.3 Verification of Optional "Check Digit"

Code39 and Interleave two (2) of five (5) have an optional check digit, which, by default, is not verified. Changing the option **VerifyCheckDigit** to true may enable their verification, or the user may enable the verification for individual symbologies. If the check digit verification fails, the barcode is not transmitted.

A.2.4 Transmission of "Check Digit"

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

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

Table 8 - Verification of Optional "Check Digit"

Option Selected	Is the check digit returned?					
ReturnCheckDigit	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
EAN13_ReturnCheckDigit	**Yes**	No effect	No effect	No effect	No effect	No effect
EAN8_ReturnCheckDigit	No effect	**Yes**	No effect	No effect	No effect	No effect
UPCA_ReturnCheckDigit	No effect	No effect	**Yes**	No effect	No effect	No effect
UPCE_ReturnCheckDigit	No effect	No effect	No effect	**Yes**	No effect	No effect
Code39_ReturnCheckDigit	No effect	No effect	No effect	No effect	**Yes**	No effect
I2of5_ReturnCheckDigit	**No effect**	**No effect**	**No effect**	**No effect**	**No effect**	**Yes**

Table 9 - Transmission of "Check Digit"

A.2.5 Resolution of Inconsistencies

Three (3) 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 (2) symbologies that have optional check digits, Code39 and Interleave two (2) of five (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 10 - Resolution of Inconsistencies

A.3 Miscellaneous Barcode Information

A.3.1 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.

A.3.2 Check Characters

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 limit and/or image quality is not at its best.

A.3.3 Prevent Interleave two (2) of five (5) Partial Reading

A partial scan of an Interleave two (2) of five (5) symbols may decode and cause incorrect data to be read. To prevent partial scans on long symbols, the user should include bearer bars. These bars 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 three (3) times as wide.

Another solution for the short scanning problem is to fix all Interleave two (2) of five (5) symbols to a set number of digits. Zeros may 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 two (2) of five (5) symbology has an optional check character that 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 two (2) of five (5) must always have an even number of digits, the leftmost character may need to be a zero (0) when the check character is added. The standard check digit is calculated by assigning alternating 3,1,3,1Ö 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 that needs to be added to the sum to make it an even multiple of ten (10). An example would be if the sum of the products was 37, then the check digit would be three (3).

A.3.4 Equation to Determining Potential Number of Stored Barcodes

The number of barcodes that may be stored in the KDC memory depends on the size of the barcodes. **Example:** In case of EAN-13, it takes up 20 bytes. The maximum number of EAN-13 barcodes that may be saved is STORAGE_SIZE/20. For example, in case of 4MB, it may store maximum 204,800 barcodes and in case of 8MB, it may store maximum 409,600 barcodes.

A.3.5 Data Buffer Full

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

Appendix B ñ Special Barcodes

Please refer following special barcodes online directory:

Special Barcode (koamtacon.com)

Appendix C ñ Multiple Special Barcodes

This chapter explains how to make a multiple configuration barcode for the KDC to configure multiple KDC settings by scanning one barcode. The KDC provides special barcodes that enable changes to the KDC configuration but this current barcode changes only one configuration. New KDC firmware VersionR_305 introduces a feature to enable the user to make one special barcode to change multiple KDC configurations.

KDC20L/20D/80L/80D/100/250/270L/270D/280L/280D/350L/350D/380L/380D/410/411/415/470L/470D/475L/475D/475S/480L/480D/485S

Barcode type Code128 is used to make a single special barcode and its format is as follows:

<FNC3><Barcode String>

The <FNC3> is a Code 128 control character and the <Barcode String> is an ASCII string for each KDC configuration.

The multiple configuration Code128 barcode format is as follows and has a control character and series of barcode strings.

<FNC3><Barcode String 1>;;;;; <Barcode String N>

Here, the <FNC3> is a Code 128 control character and the <Barcode String 1> and <Barcode String N> are an ASCII string for each KDC configuration. The ë¡í is a separator for each configurationís barcode string. Please see user manual for the <Barcode String> for KDC configuration.

Example: Assume the user is changing the following configurations with one barcode.

- Change Wedge/Store to ì Wedge Onlyî → <FNC3>82000
- Change Termination Character to ì Noneî → <FNC3>88000
- Change Bluetooth ì Auto PowerOffî to ì Disabledî → <FNC3>64010

<FNC3>82000;88000;64010

KDC30/180/185/270C/280C/300/350C/380C/420/421/425/450/470C/475C/475H/480C/485H/500/600/1000/1100/1200/SKX

The following format is for a single configuration barcode format:

<SYN> M <CR> KDC <Barcode String>

- <SYN> is a control character 0x16 in hex format
- M is an ASCII character 0x4D in hex format
- <CR> is a control character 0x0d in hex format
- KDC is an ASCII string 0x4B 0x44 0x43 in hex format
- <Barcode String> is an ASCII string for each configuration
- . is an ASCII string 0x2E in hex format that indicates the end of barcode

The multiple configuration barcode string uses a repeated barcode string of each configuration in the following format:

<SYN>M<CR>KDC<Barcode String 1> ;;;;;; <Barcode String N>

- <SYN> is a control character 0x16 in hex format
- M is an ASCII character 0x4D in hex format
- <CR> is a control character 0x0d in hex format
- KDC is an ASCII string 0x4B 0x44 0x43 in hex format
- <Barcode String1> and <Barcode String N> are an ASCII string for each configuration
- ; is a separator between each barcode strings
- . is an ASCII string 0x2E in hex format that indicates the end of barcode

Example: Assume the user is changing the following configurations with one barcode.

- Change Wedge/Store to ì Wedge Onlyî → <SYN>M<CR>KDC82000
- Change Termination Character to ì Noneî → <SYN>M<CR>KDC 88000
- Change Bluetooth ì Auto PowerOffî to ì Disabledî → <SYN>M<CR>KDC 64010

<SYN>M<CR>KDC82000;88000;64010

Code 128

QR code

Appendix D ñ Power management

When the KDC is not in use, it enters sleep mode. In this state, the KDC consumes very little power to prolong battery life.

The KDC270/KDC280/470/480 supports an additional power management feature called Hibernation mode. In this state, the KDC consumes even less power than when in sleep mode since Hibernation mode is essentially in the same state as the power off state. The KDC will boot up faster from Hibernation mode in comparison to the power off state, since the KDC skips initialization in the Hibernation mode.

Press and hold the SCAN button for more than three (3) seconds to boot from Hibernation mode or power off mode.

By default, the Hibernation mode is disabled. It can be enabled by scanning the barcodes below with selected timeouts.

1D ñ KDC270L/270D/280L/280D/470L/470D/475L/475D/475S/480L/480D/485S

Disabled  5P000	10 minutes  5P00A
15 minutes  5P00F	30 minutes  5P001E
45 minutes  5P02D	60 minutes  5P03C

2D ñ KDC270C/280C/470C/475C/475H/480C/485H

Disabled  ┬MKDC5P000.	10 minutes  ┬MKDC5P00A.
15 minutes  ┬MKDC5P00F.	30 minutes  ┬MKDC5P001E.
45 minutes  ┬MKDC5P02D.	60 minutes  ┬MKDC5P03C.

The following table shows the different power management modes of the KDC.

Mode	Description	Current consumption	Support Models
Power Off	• KDC is not ready to use and all components are off • It takes about 30 ñ 60 seconds to boot up before it can be used • To power OFF the KDC, press and hold the SCAN + DOWN buttons for more than three (3) seconds or Slide power switch off (KDC400 only). Or press and hold the both SCAN buttons for more than three (3) seconds. (KDC500/600 only)	< 10 uA	KDC20/30 KDC80/180/185 KDC350/380 KDC400 KDC270 KDC280 KDC470/475 KDC480/485 KDC500/600 KDC1000/1100 KDC1200

			SKX
Hibernation	• KDC is not ready to use and all components are off. • It takes four (4) ñ five (5) seconds to boot up before it can be used • KDC transits into a hibernation mode from Power On or Sleep mode when the timeout has occurred (10, 15, 30, 45 & 60 minutes) • Power on the KDC by pressing the SCAN button for three (3) seconds	< 10 uA	KDC30 KDC270 KDC280 KDC470/475
Decoder Off	• KDC is ready to use • KDC wakes up with a command from the host or a button event • Decoder is off when the timeout has occurred (five (5) minutes) • It takes about 500ms to start decoding	< (80uA ~ 3mA)	KDC30 KDC270C KDC280C KDC470C/475C/480C
Sleep	• KDC is ready to use • It takes 150ms to wake up from sleep mode • KDC wakes up with a command from the host or a button event • KDC transits into a sleep mode when the sleep timeout has occurred	< (80uA ~ 10mA)	All
Power On	• KDC is fully ready to use • To power ON the KDC, press and hold the SCAN + DOWN buttons for more than three (3) seconds (KDC20, 30, 350, 270, 280, 470) or Slide power switch on (KDC400 only) or press and hold both SCAN buttons for more than three (3) seconds. (KDC500/600 only)	< (40mA ~ 100mA)	All

	• KDC30OP, KDC270, KDC280 and KDC470/475 power are also powered on with press and hold the SCAN button only for more than three (3) seconds.		

KDC100/200/250/300 does not have a power off state.

Appendix E ñ KDC470/475/480/485 specific features

E.1 Connection method with a PC

The KDC470/475/480/485 automatically sets up a communication path between itself and the PC when the KDC470/475/480/485 is plugged in via USB cable. By pressing the DOWN button for three (3) seconds, the KDC470/475/480/485 toggles the communication path between the PC and smart device.

E.2 Configuring SCAN buttons

The KDC470/475/480/485 has two (2) scan buttons (Main scan buttons) and provides an additional two (2) scan buttons (Case scan buttons) on certain smart device cases. By default, both the main and case scan buttons are enabled.

However, user can configure scans buttons as follows:

1. Enable/Disable main scan buttons. In this case, the Case scan buttons are only work.
2. Disable Case scan buttons and separate main LEFT and RIGHT scan buttons.
    - Enable only LEFT scan button
    - Enable only RIGHT scan button
    - Enable both LEFT and RIGHT scan button

E.2.2 1D – KDC470L/470D/475L/475D/480L/480D/485S

Disable main scan buttons 5X000	Enable main scan buttons 5X001
Disable Case scan buttons 5X101	Enable Case scan buttons 5X100
Disable both main scan buttons 5X200	Enable LEFT main scan button only 5X201
Enable RIGHT main scan button only 5X202	Enable both main scan buttons 5X203

E.2.2 2D – KDC470C/475H/480C/485H

Disable main scan buttons  ┬MKDC5X000.	Enable main scan buttons  ┬MKDC5X001.
Disable Case scan buttons  ┬MKDC5X101.	Enable Case scan buttons  ┬MKDC5X100.
Disable both main scan buttons  ┬MKDC5X200.	Enable LEFT main scan button only  ┬MKDC5X201.
Enable RIGHT main scan button only  ┬MKDC5X202.	Enable both main scan buttons  ┬MKDC5X203.

E.3 USB OTG (On-The-Go) Mode

KDC470/475/480/485 support OTG mode when using Android phone with a smartphone case. KDC470/475/480/485 smartphone case allows user to charge a phone and KDC470/475/480/485 at the same time. However, it is not possible to charge a phone while in OTG mode. It should be switched to Bluetooth mode while charging a phone.

There are two modes in KDC470/475/480/485: OTG mode and Bluetooth mode

- KDC470/475/480/485 stores mode in NVRAM
- These modes are only determined via a special barcode and a command

In the OTG mode, KDC470/475 is switched to Bluetooth mode temporarily when:

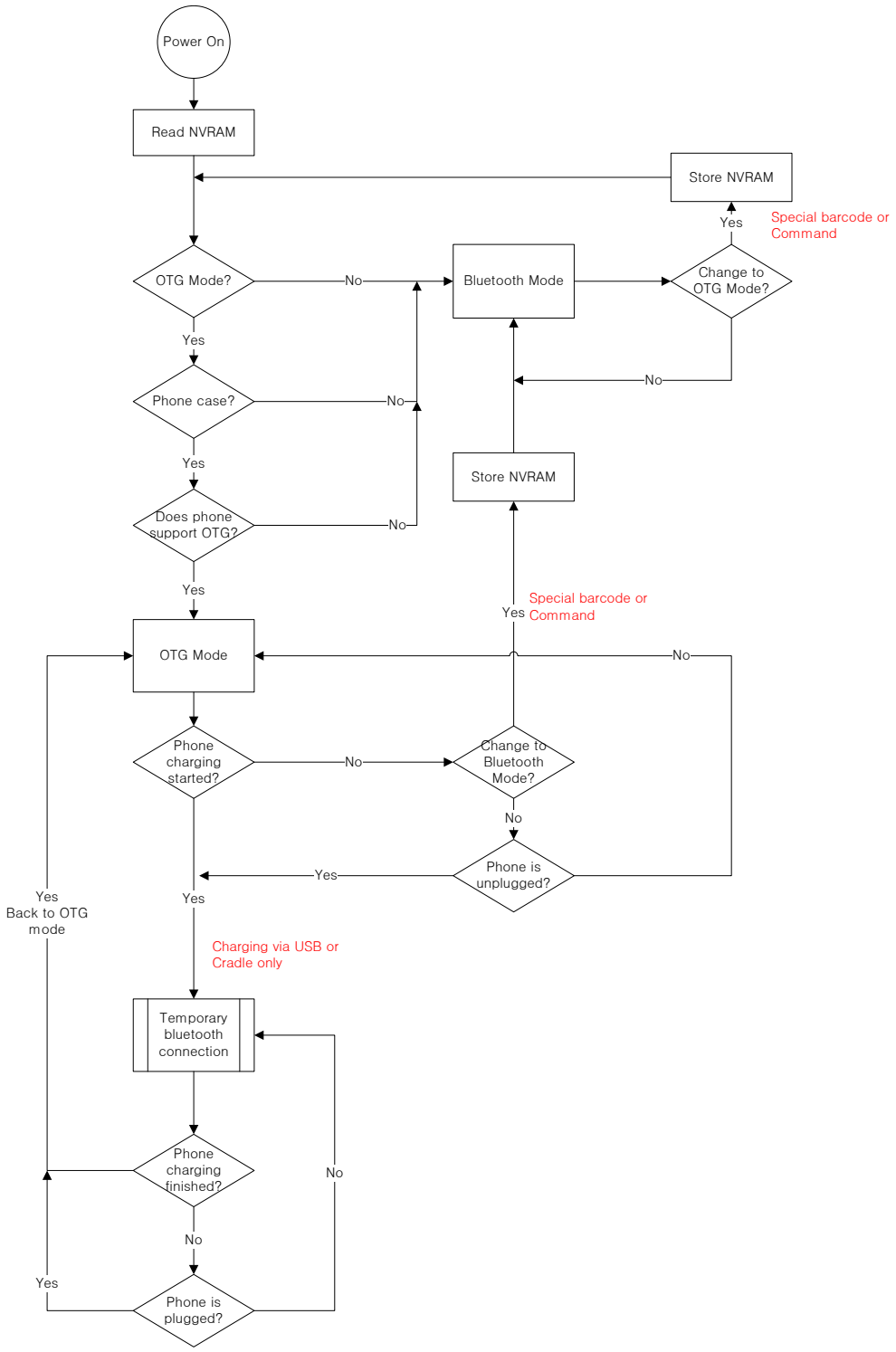
- KDC470/475/480/485 is running w/o a smartphone case
- KDC470/475/480/485 is running w/o a smartphone
- KDC470/475/480/485 is running w/ a smartphone which does not support OTG mode
- KDC470/475/480/485 and Phone are under charging via USB or Cradle
- KDC470/475/480/485 is switched back to OTG mode when USB cable is unplugged or removed from charging cradle

KDC470/475/480/485 scanners automatically and seamlessly switch between OTG and Bluetooth. The application can maintain connections throughout these transitions.

Note To switch and connect between OTG and Bluetooth, the KDC470/475/480/485 should be paired with Phone before using it.

Note KDC1000/1100/1200 allows to charge phone while in OTG mode. No need to switch to Bluetooth mode.

Overall flow of using OTG and Bluetooth mode in KDC470/475/480/485



E.3.1 When does KDC470/475/480/485 switch modes?

- U1: Removes Phone from KDC470/475/480/485 case and KDC470/475/480/485 switches to Bluetooth mode from OTG mode
- U2: Inserts Phone to KDC470/475/480/485 case and KDC470/475/480/485 switches back to OTG mode from Bluetooth mode
- U3: Plugs USB cable and KDC470/475/480/485 switches to Bluetooth mode from OTG mode
- U4: Unplugs USB cable and KDC470/475/480/485 switches back to OTG mode from Bluetooth mode
- U5: Puts KDC470/475/480/485+Case into a cradle and KDC470/475/480/485 switches to Bluetooth mode
- U6: Removes KDC470/475/480/485+Case from a cradle and KDC470/475/480/485 switches back to OTG mode
- U7: Scans a Bluetooth mode special barcode to change to Bluetooth mode
- U8: Scans an OTG mode special barcode to change to OTG mode

The following table shows the connection modes of KDC470/475/480/485 which can be changed automatically:

Phone Installed?	USB Connected?	On the Charging Cradle?	Mode to be set to
Yes	No	No	OTG
	No	Yes	Bluetooth
	Yes	N/A	Bluetooth
No	N/A	N/A	Bluetooth

E.3.2 Special Barcodes

- **Bluetooth Mode**: KDC and Smart Device communicate each other through Bluetooth.

- **OTG Mode**: KDC and Smart Device communicate each other through USB.

Appendix F ñ Enhanced Master/Slave

Enhanced Master/Slave supports following functions.

- 1 to 1 Onetime Regular
- 1 to 1 Onetime Reverse
- 1 to N Continuous Regular
- 1 to N Continuous Reverse
- N to N Onetime Regular
- N to N Onetime Reverse
- N to N Onctime Verification
- N to N Continuous Regular
- N to N Continuous Reverse
- N to N Continuous Verification

F.1 Menu

Enhanced Master/Slave firmware has following Menu.

F.1.1 KDC Mode

- [1 to 1] OT
  - Regular
  - Reverse
- [1 to N] C
  - Regular
  - Reverse
- [N to N] OT
  - Regular
  - Reverse
  - Verification
- [N to N] C
  - Regular
  - Reverse
  - Verification

F.1.2 KDC Settings

- Set Collation
  - Master Start (1 ~ 255) : Start position of master barcode to be compared.
  - Slave Start (1 ~ 255) : Start position of slave barcode to be compared.
  - No of Char(s) (0 ~ 255) : Number of character(s) to be compared. 0 means all characters.

- Master Symbol

Select Master barcode symbols. See 3.5.3 Set Barcode Menu for barcode symbols.

- Slave Symbol

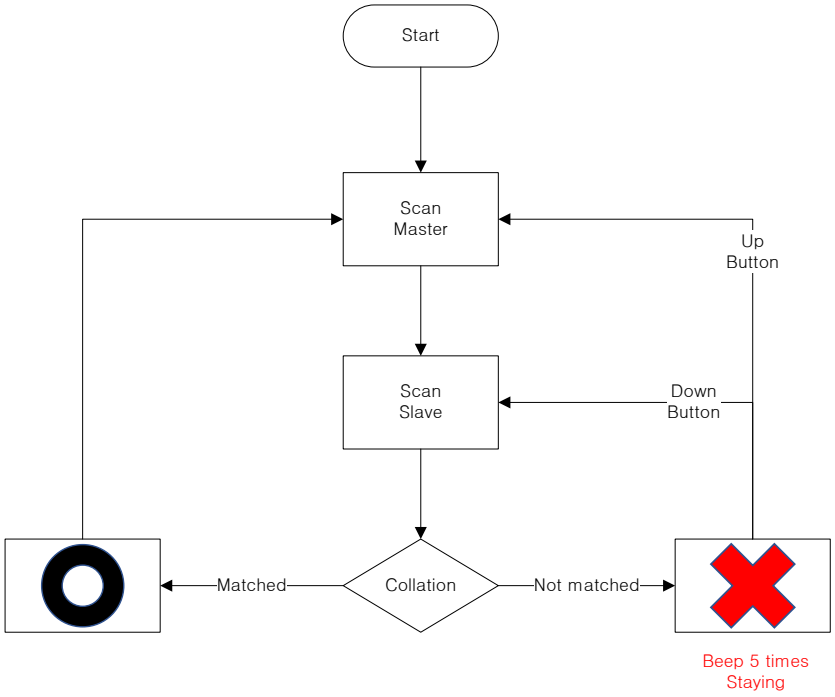
  Select Slave barcode symbols. See 3.5.3 Set Barcode Menu for barcode symbols.

- Slave Timeout: Sets timeout to finish showing result screen after slave barcode is scanned. If disabled, it will be finished by pressing RIGHT button. If RIGHT button is pressed before timeout, the result screen will be finished. The following options are supported.
  - Disabled
  - 1 second
  - 3 seonds
  - 5 seconds
  - 10 seconds
  - 30 seconds

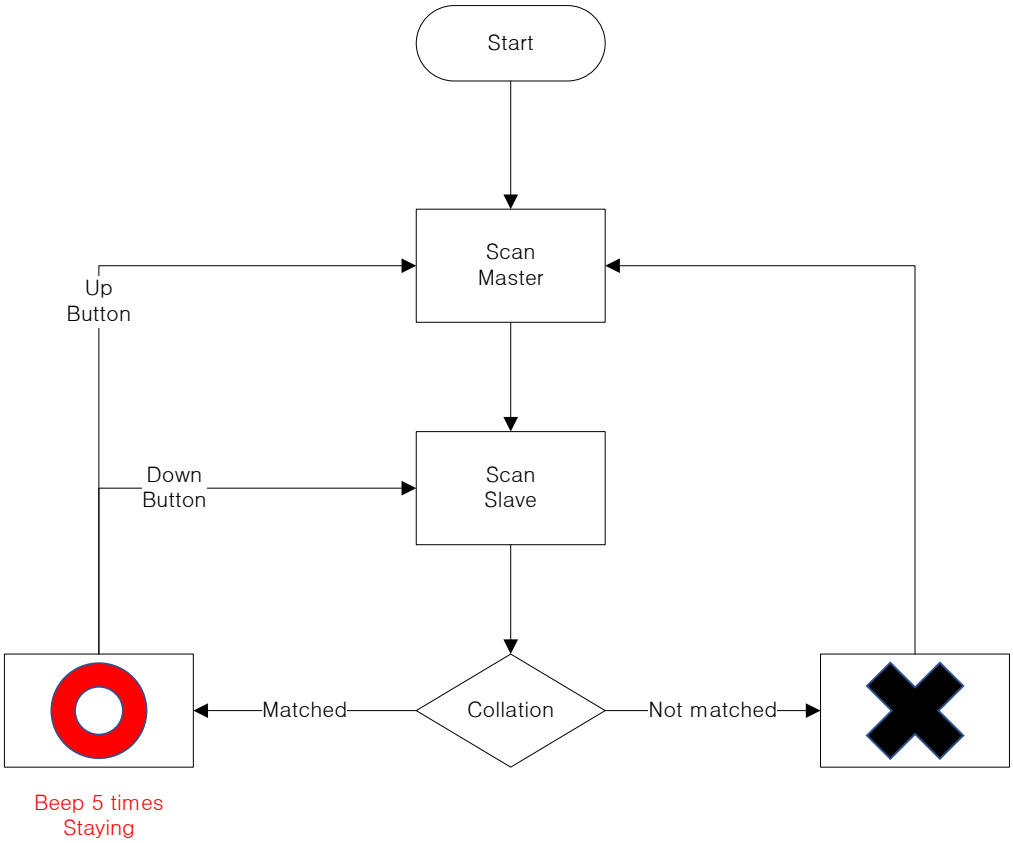
F.1.3 KDC Menu

It is the general version firmware KDC menu. See 3.5 KDC Menu for details.

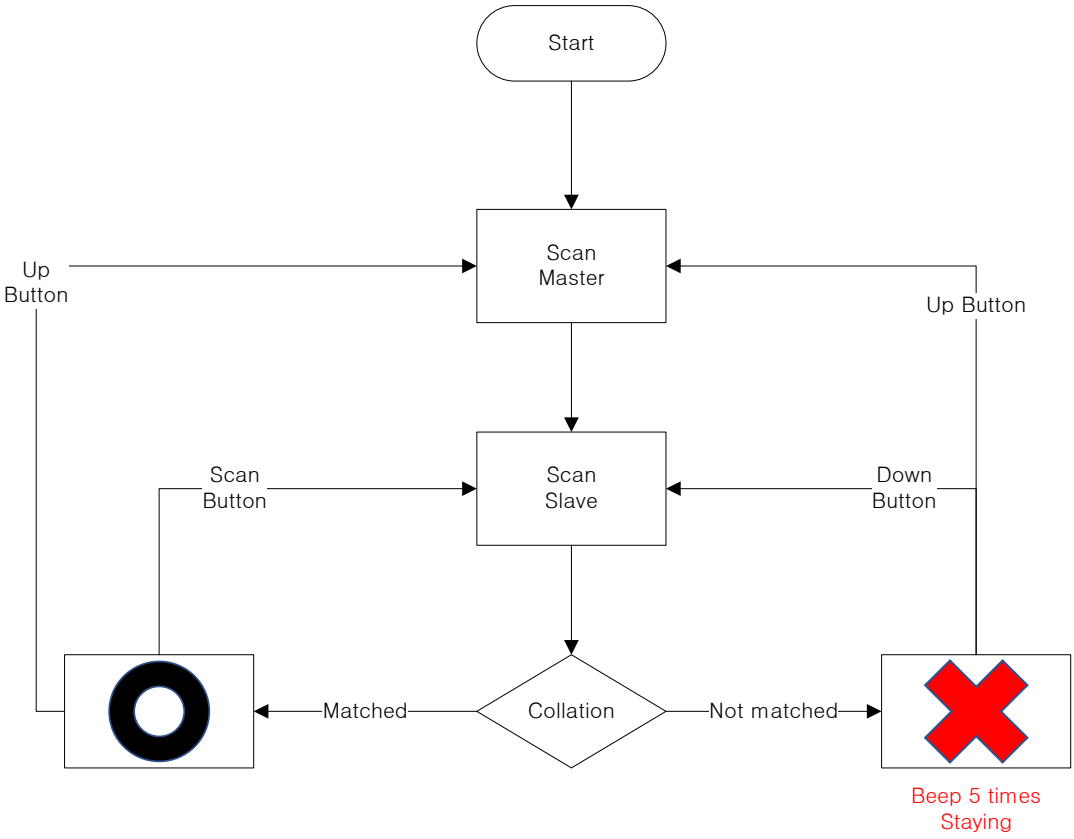
F.2 1 to 1 Onetime Regular



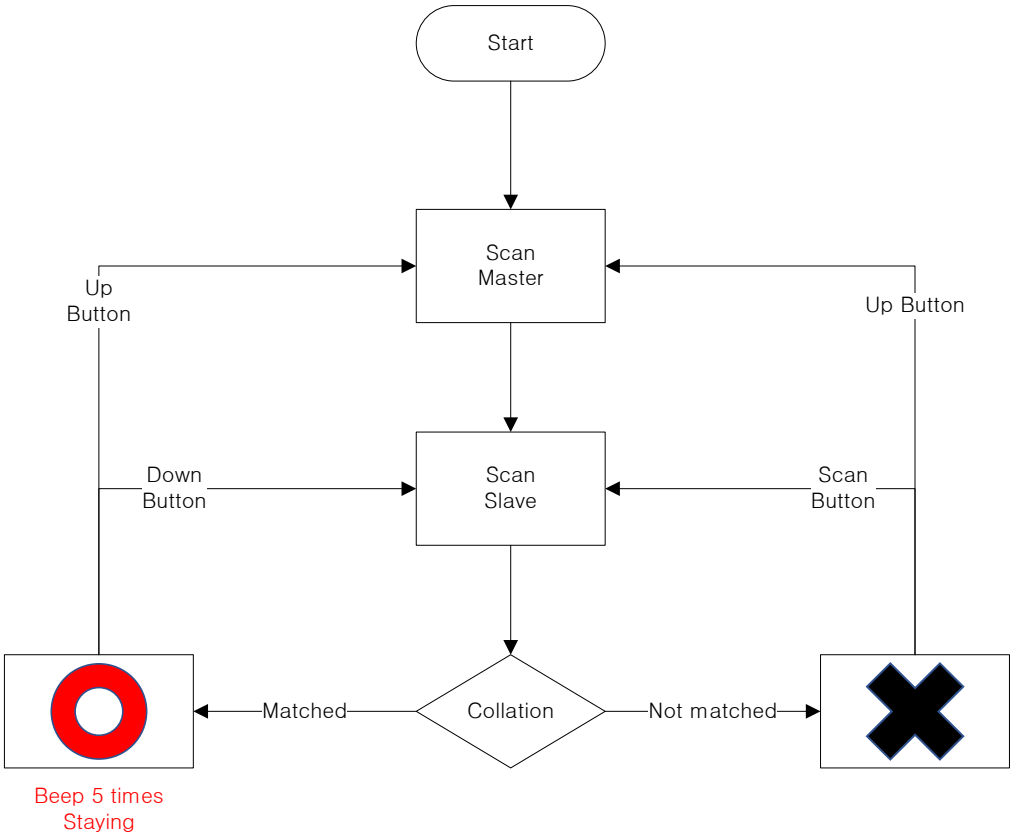
F.3 1 to 1 Onetime Reverse



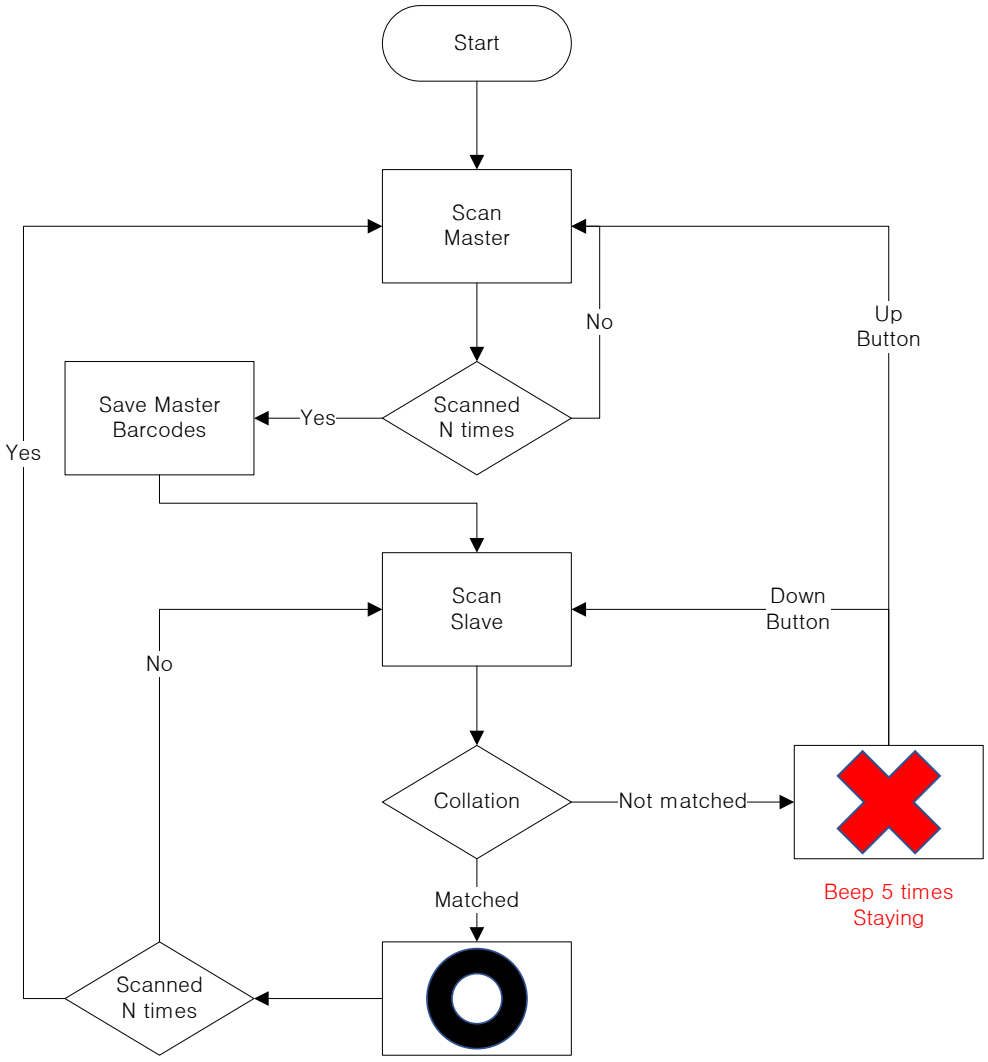
F.4 1 to N Continuous Regular



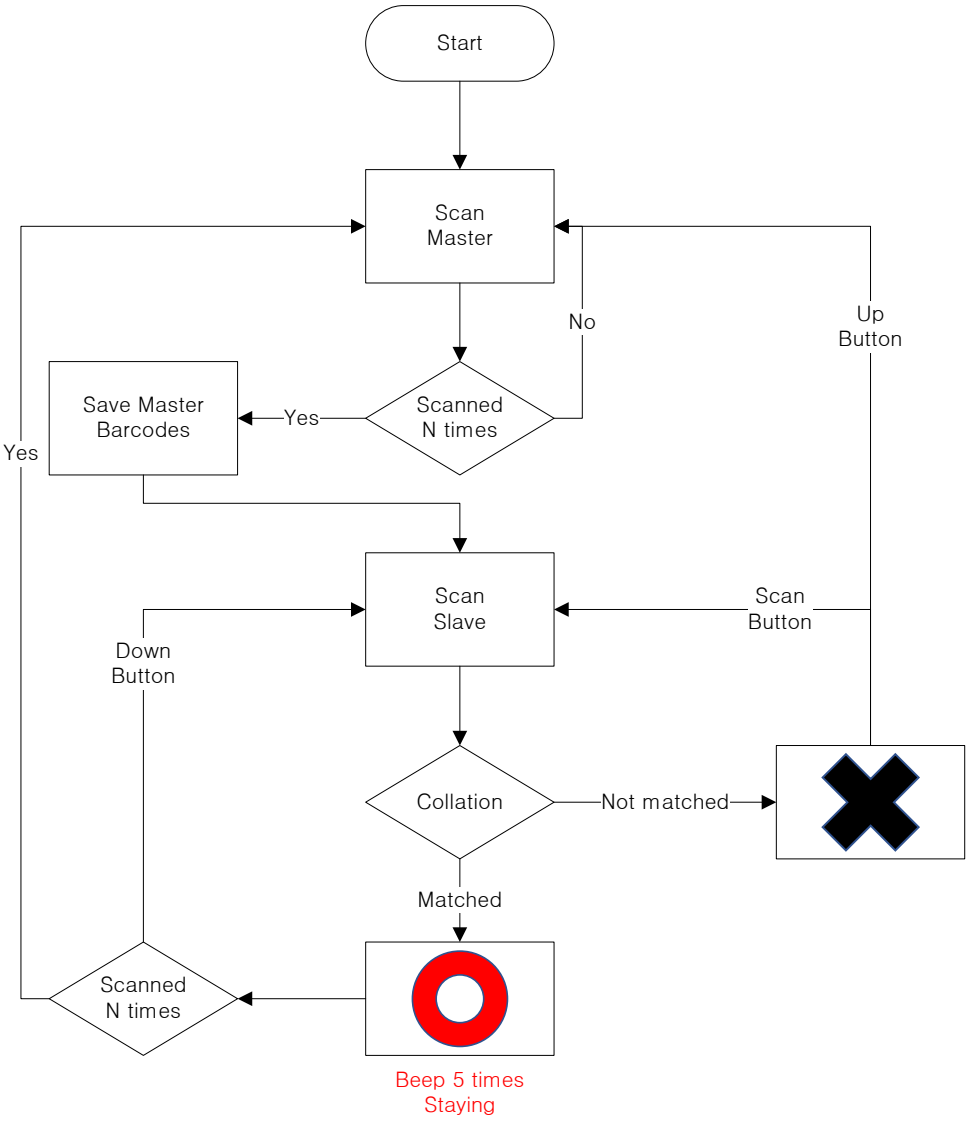
F.5 1 to N Continuous Reverse



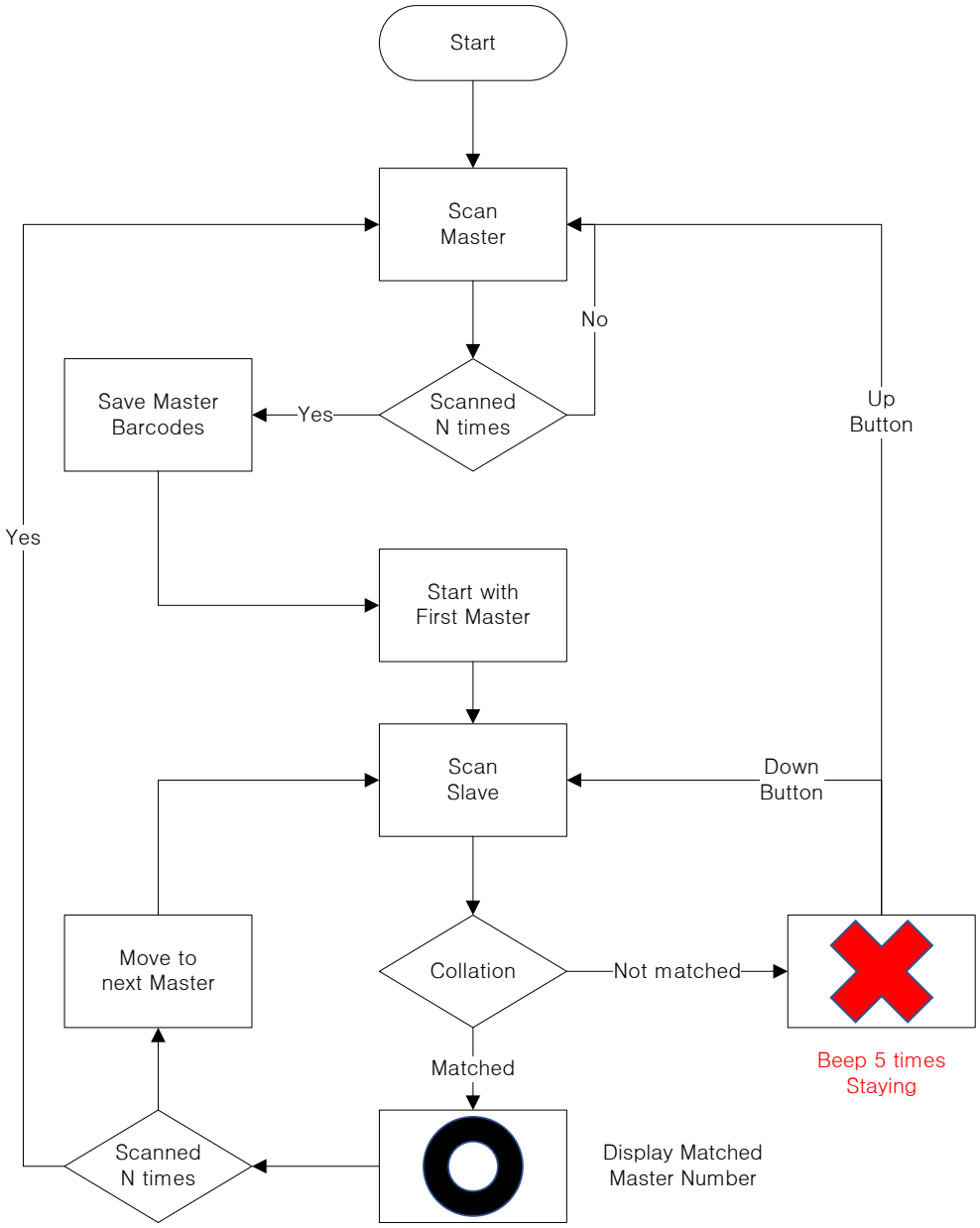
F.6 N to N Onetime Regular



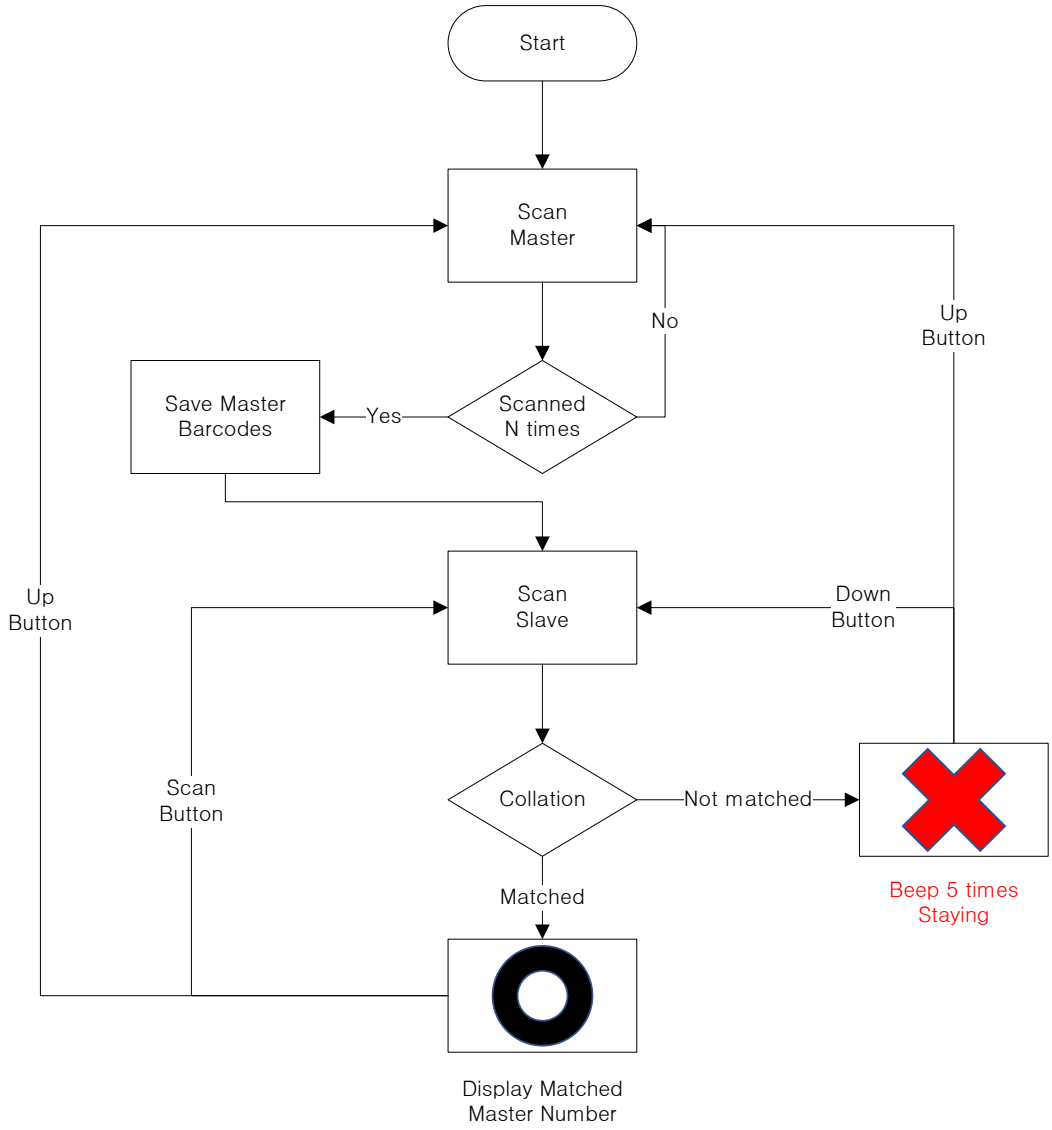
F.7 N to N Onetime Reverse



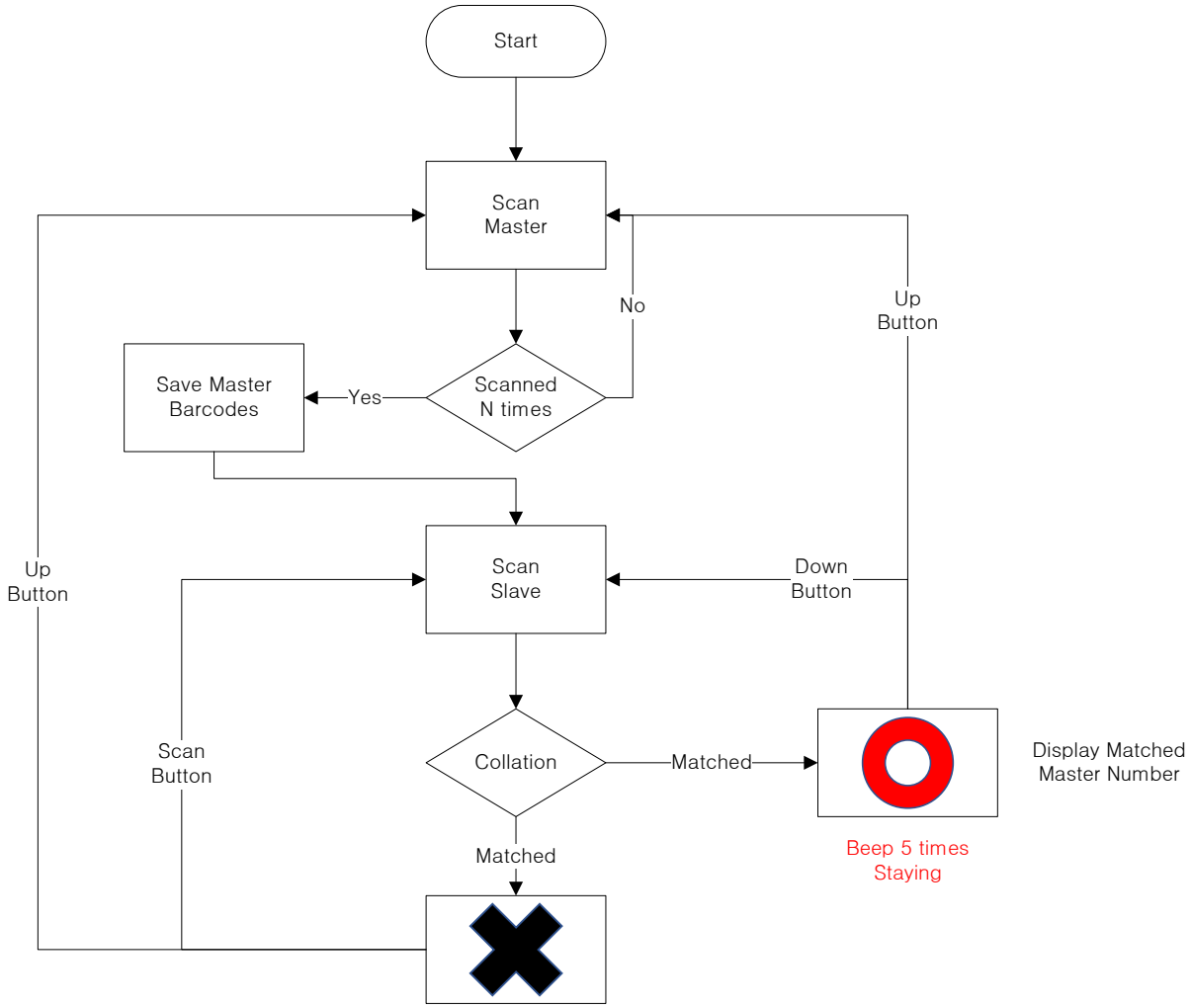
F.8 N to N Onetime Verification



F.9 N to N Continuous Regular



F.10 N to N Continuous Reverse



F.11 N to N Continuous Verification