

KOAMTAC▶

KDC470 & KDC475 User Manual



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1 Product Concept

1.1 What is KDC470/475 about?

This Barcode/RFID/mPOS SmartSled is our most modular product yet. Whether you need to read barcodes or RFID tags this is the KDC for you. The KDC470 and KDC475 are rugged devices with an IP65 rating and are built to last. No matter what type of data you need to collect or how you need to collect it, there is a companion module to get the job done quickly and accurately. You can charge your device with our unique charging cases and never miss a minute of productivity. KDC475 is an angled version of KDC470 to provide more scan engines and a different view angle.

The KDC470 and KDC475 can be attached to any smart device via a custom case to create a sled scanning solution. This unique modular design allows you to upgrade your smart device without worrying about replacing the entire scanning solution. Your investment in a KDC is protected regardless of upgrades in smartphone and tablet technology.

1.2 Key Design Concepts

a) Barcode Reading

At their base, the KDC470 and KDC475 are superior barcode scanners. Both the KDC470 and KDC475 are available in various models: 1D Laser, 1D CCD, and 2D Imager, so you can read a variety of barcodes in any industry. The KDC475 offers downward angled scan engines, allowing you to hold your device at level while scanning barcodes at a lower height. The KDC connects via Bluetooth Classic technology for easy pairing and data transfers.

b) RFID Companions

The RFID companions attach directly to your KDC creating a contactless radio frequency identification reader. The interface can be utilized for asset management and tracking whether those assets are people, animals, or inanimate objects. Options include High Frequency (HF), 0.5W Ultra High Frequency (UHF), or 1.0W UHF. When the battery runs out, charging is easy with a Micro USB connector or charging cradle for multiple devices. Additionally, replacing the battery through the slot on the side is easy and fast.

c) Additional Companions

- o Extended Battery Pack - For long shifts or projects. Never worry about the battery of your KDC or smart device.
- o Pistol Grip - Pull the trigger for easy scanning.

1.3 Key Features

- a) **Sled (SmartSled®)**
 - o Supports virtually all smartphones: Protect investment on Sled regardless of smartphone/tablet change.
 - o Connects with smartphones/tablets via USB and Bluetooth.
 - o Can replace battery (1130mAh) easily from the side of KDC470/475
 - o IP65 rated and 5ft drop spec
- b) **Modular Design:** Supports various technologies and accessories below:
 - o 1D and 2D Barcode Reader
 - o HF or UHF RFID Reader
 - o Extended Battery Pack
 - o Pistol Grip
 - o PCI/EMV Payment Companion
- c) **Custom Smart Case for simultaneous charging**
 - o One USB charging port (or charging cradle) charges both KDC470/475 and smartphone/tablets.

2 Introduction

The KOAMTAC KDC470/475 works with a wide variety of portable applications. You can use it as an accessory for PC, PDA, smart watch, smart glass, smartphone, or smart tablet.

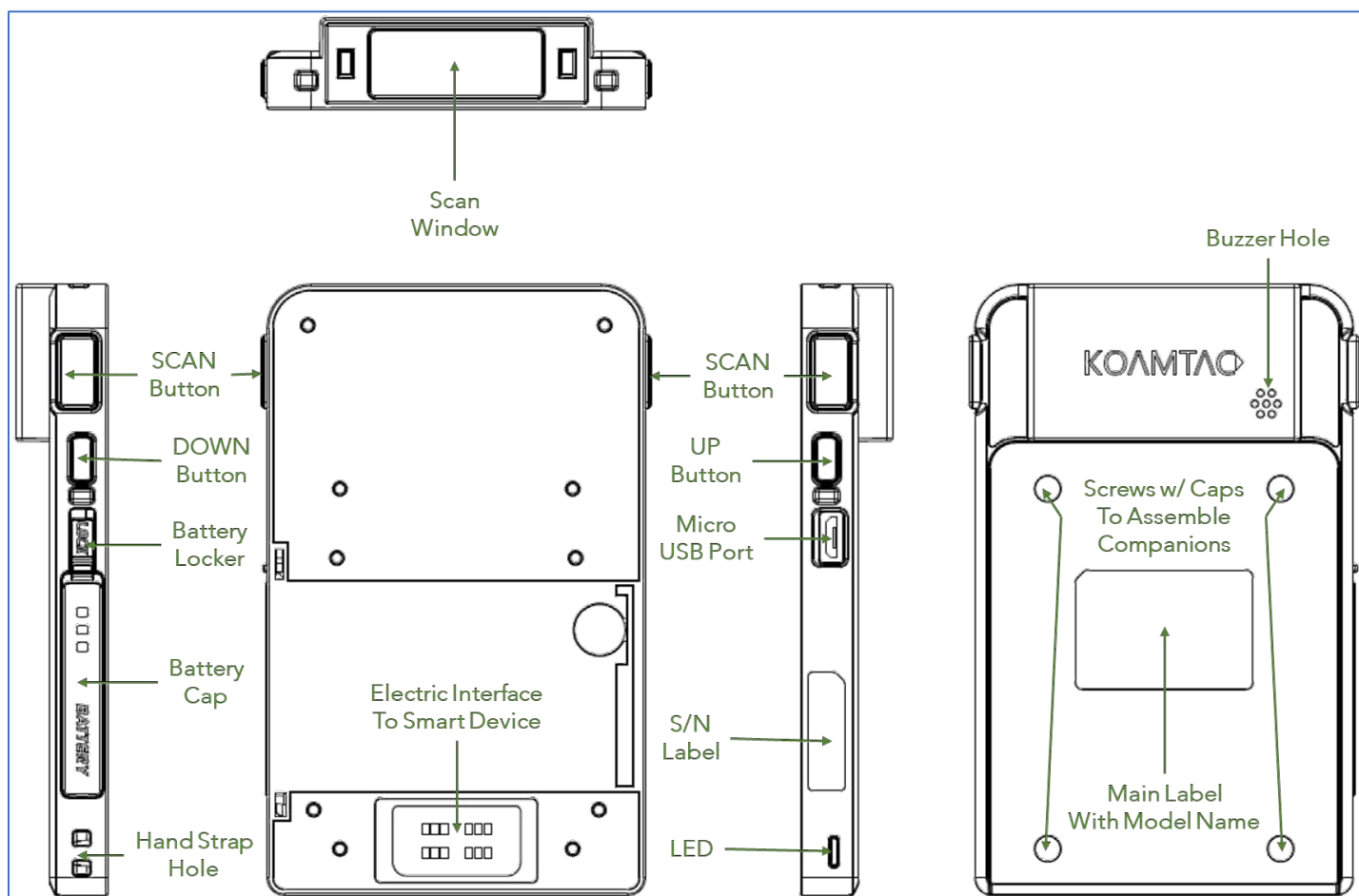
2.1 Product Spec

Item		KDC470/475
Physical	Design	Standard SmartSled
	Size	KDC470: 2.56" x 4.13" x 0.62" (65 mm x 105 mm x 15.8 mm) KDC475: 2.56" x 4.13" x 0.94" (65 mm x 105 mm x 24 mm)
	Weight w/ battery	KDC470: 3.07 oz (87g) KDC475: 3.1 oz (88 g)
Functionality	Supporting OS	Android / iOS / Mac OS X / Windows
	CPU	ARM7, 32 bits
	Keys	2 SCAN(READ) Keys, UP Key, Down Key
	Buzzer	Yes
	LED Indicator	1 Tri-color LED (Red / Amber / Green)
	USB Port	1 Micro USB Port
Memory	RAM	SDRAM 64KB
	ROM	Internal Flash ROM 256KB External Flash ROM 8MB
	Barcode/RFID Storage	409,600 Barcodes (EAN-13) or 409,600 RFID tags (in case of 12 bytes of EPC Data)
Power	Battery (Standard)	1130 mAh Lithium-Ion
	Battery Pack	Field Replaceable Hard Pack
	Extended Battery	2,000 mAh (Optional)
	Charging Solution	USB Port, Charging Cradle (POGO, Optional)
	Simultaneous Charging (KDC & Host)	Yes
	Charging Time (KDC)	4 Hours
Communication	Bluetooth	V2.1+EDR, Class2, HID/SPP/MFi (Classic Models) Or, BLE4.1 HID/SPP/OPEN (BLE Models)
	USB	USB OTG (Android) Or, USB Serial (Mac OS X, Windows)
	Serial	Serial (iOS)
Barcode Reader	1D Laser	Yes (KDC470L / KDC475S)

	1D CCD	Yes (KDC470D)
	2D Imager	Yes (KDC470C / KDC475H)
	# of scans (1 sec interval)	Laser > 60,000 CCD > 50,000 Imager > 25,000
	# of scans (10 sec interval)	Laser > 20,000 CCD > 15,000 Imager > 10,000
	Scan Range (10mil Code39)	Laser (L): 1.97" to 7.48" (50 to 190 mm) Laser(S,10mil Code128): 1.2" to 19.0" (30 to 483 mm) CCD (D): 2.17" to 11.81" (55 to 300 mm) Imager (C): 1.81" to 9.68" (46 to 246 mm) Imager (H): 1.1" to 13.3" (28 to 388 mm)
	Screen Reading	Yes (KDC470D, KDC470C, KDC475H)
	Postal Codes / OCR Passport	Yes
Companions	RFID (HF Reader)	Optional
	RFID (UHF Reader)	Optional (0.5W, 1.0W)
	Magnetic Strip Reader	Optional
	Chip-and-PIN (EMV)	Optional
	Extended Battery Pack (2,000 mAh)	Optional
	Pistol Grip	Optional
Environment	Drop Spec	5 ft (1.5 m)
	Tumble (Height: 0.5m)	500 cycles (1000 drops)
	IP Rating	IP65
	Operating Temp.	-4 °F ~ +122 °F (-20 °C ~ +50 °C)
	Storage Temp.	-4 °F ~ +140 °F (-20 °C ~ +60 °C)
	Humidity Spec	5% ~ 95% (non-condensing)
Regulatory Conformance	Laser Safety	IEC60825/CDRH Class II
	LED Safety	IEC62471:2006
	Regulatory	R&TTE, FCC, KC, TELEC, VCCI, SRRC, RoHS Compliant
Accessories	Hand Strap	Yes
	USB Cable	Yes (Micro USB)
	1-slot Charging Cradle	Yes
	4-slot Charging Cradle	Yes
	Supporting Case (Integrated Custom Case)	Galaxy XCover4 / Tab Active 2, Apple iPod Touch 5/6G/ iPhone 7/8 Plus
	Supporting Case (Universal Case)	All Cases

2.2 KDC470/475 Diagram

Before using the KDC, the user should become familiar with its physical characteristics. Refer to the figure below. This figure indicates the placement of the SCAN/UP/DOWN buttons, LED, USB port, and others on the KDC.



*KDC475 is identical with the exception of an angled scan window

2.3 How to Turn the Device On or Off

KDC470/475 has a power on/off switch. Please turn on the power first before using the device.

- KDC470/475 is shipped with the power off.
- To turn on, press any SCAN button and DOWN button together for 3 seconds at the same time until you hear a short beep sound. KDC470/475 will sound a long beep when it is ready to use. (You should hear the long beep in about 30 seconds.) (* 2017/2018/early 2019 versions of KDC470/475 turn on upon pressing scan button.)

- c) To turn off, press any SCAN button and DOWN button together for 3 seconds at the same time. You can make sure that it is turned off by pressing any SCAN button to read a barcode after that. If you do not see the scanning beam, the device is off.
- d) Check the figure above to locate the SCAN and DOWN buttons.

2.4 How to Install/Uninstall the Smart Device into the Integrated Case (Android/iOS)

To install the smart device, please follow the steps below.

- a) Bend top of SmartSled Charging Case back.



- b) Slide device into case toward connector.



- c) Pull top of case over device.



- d) To remove, bend top of SmartSled Charging Case back (careful not to bend smart device) and slide device out.

2.5 How to Connect PC with KDC or Phone

This functionality only applies to KDC470/475 integrated charging case (SmartSled Custom Case).

The KDC470/475 automatically sets up a communication path with PC when you plug in USB cable to KDC470/475 so that you can use KTSync on PC or download a new firmware into KDC from PC (KDC Path).

But, if you want to connect PC with your phone without taking out the phone from the case (Phone Path), you can set up by pressing DOWN button for 3 seconds. Then KDC470/475 bypasses the communication path to the phone from PC so that you can access the phone from PC. In the same way, if you press DOWN button for 3 seconds again, it changes to KDC Path again.

While in Phone Path, if it is put on to the charging cradle, it changes to KDC Path right away.

(Note) If using a **UHF RFID** module with your KDC470/475 + integrated SmartSled® Custom Case, please be sure the SmartSled® is in Barcode Mode (toggle with UP button) before connecting via USB to PC. Once in Barcode Mode, the communication path can be toggled with the DOWN button.

3 Communication Protocols: OTG/Serial vs. Bluetooth

KDC470/475 supports various communication protocols including:

- a) Bluetooth (Classic or BLE)
- b) USB OTG (Android USB port)
- c) Serial (Apple iOS Lightning port)

Depending on the platform and the case used, there several ways to connect KDC to a host device:

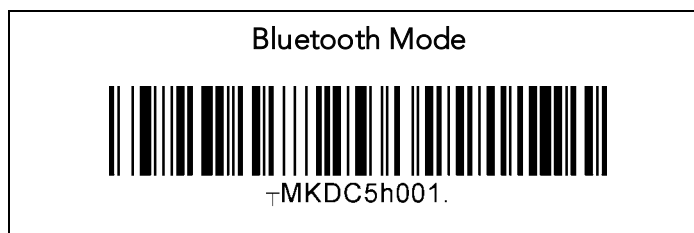
Platform	Case Type	Phone/Tablet	Connection
Android	Integrated Case* (Custom Case)	J3, J7, XCover4	USB OTG or Bluetooth
	Universal Case* or Other cases	Any Phone/Tablet	Bluetooth
iOS	Integrated Case* (Custom Case)	iPod Touch 5/6G, iPhone 7/8P	Serial
	Other cases	Any Phone/Tablet	Bluetooth

* Integrated Case and Universal Case support simultaneous charging for both phone and KDC

3.1 Bluetooth: How to pair KDC470/475 to smart device (Android/MacOS/Windows)

To read barcode data with your KDC wirelessly, the user must first pair the KDC and smart device via Bluetooth. If previously paired and no changes have been made in the smart device's Bluetooth settings, the smart device will always recognize the KDC that has previously been paired. However, if changes have been made, the user may need to go through the pairing process again.

To move forward, you should scan the Bluetooth Mode barcode first.



3.1.1 Two Bluetooth Profiles

There are two different methods to pair KDC470/475 to a host device.

- a) **HID (Human Interface Device):** one-way communication with the host device. The KDC wedges data to the Android keyboard. (HID Keyboard)
- b) **SPP (Serial Port Profile) or MFi (Made for iOS):** two-way communication with an application on the host device. The KDC can send data or receive commands to or from the host device. So, any application is required to use KDC. One example is the KTSync application, which is developed using the KOAMTAC SDK (Software Development Kit). When connected to KTSync application, the data can be wedged to the keyboard. (KTSync Keyboard)

3.1.2 HID Normal (Basic Mode) - Keyboard Wedge or HID Keyboard

- a) Scan the HID Normal & Pairing bar code on the quick manual provided with the scanner. If done correctly, the LED on the side of your KDC470/475 will begin blinking **orange**.
- b) HID Normal & Pairing Barcode (Android/MacOS/Windows)



- c) HID iOS & Pairing Barcode (iOS)



- d) Navigate to the Bluetooth settings on the host device and turn Bluetooth on.
- e) Underneath the list of available devices, tap on the KDC470/475. The serial number will appear in brackets which you can cross check with the serial number on the back of the KDC.
- f) The KDC will beep when connected.
- g) Open any application with a text field and tap on the text field and scan any barcode then it will show up on the text field.

3.1.3 SPP (Application Mode)

- First, connect the KDC to the phone in SPP mode. If the KDC is already connected, make sure to unpair it first
- Scan the SPP/MFi & Pairing bar code on the quick manual. The LED on the side of your KDC470/475 will begin blinking **red** (Android) or **green** (iOS).
- SPP & Pairing Barcode (Android/MacOS/Windows)



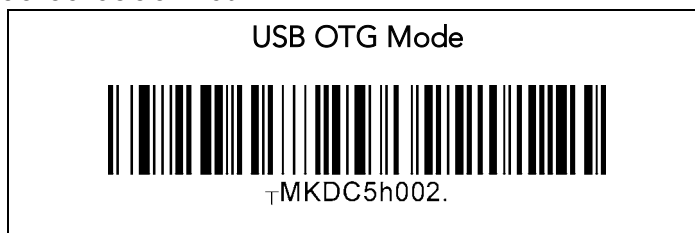
- MFi & Pairing Barcode (iOS) – 1D & 2D



- Navigate to the Bluetooth settings on the host device and turn Bluetooth on.
- Underneath the list of available devices, tap on the KDC470/475. The serial number will appear in brackets which you can cross check with the serial number on the back of the KDC.
- The KDC will pair to the phone but needs to connect to an application to function properly.
- Once the KDC470/475 is connected to an application, it will beep upon connection.

3.2 USB OTG: How to enable OTG on your KDC470 (Android Only)

- Remove your Android smart device from the integrated smart case if already mounted.
- Scan the OTG Mode barcode first.



- c) Once OTG is configured, it will be stored in the KDC NVRAM and KDC470/475 will run as an OTG mode whenever it restarts.
- d) Mount your Android smart device into the integrated smart case then they connect via USB OTG automatically.

Note: When you charge (via USB cable or charging cradle), USB OTG will be suspended. The connection between KDC470/475 and the smart device will be changed to Bluetooth connection automatically. The OTG connection will resume once the device is removed from the charging cradle or disconnected from the USB cable.

3.3 Serial: How to enable Serial on your KDC470/475 (iOS Only)

- a) Just mount your iOS smart device into the integrated smart case then they connect via Serial automatically. (There is no specific barcode for this Serial communication. If you install phone into the integrated charging case, the Serial communication is automatically enabled.)
- b) The Serial communication is the only option for the integrated charge case for iOS and does not support HID keyboard.

4 Usage

Now it is ready to use. You can use HID Keyboard, KTSync, KTSync Keyboard, other developed applications with our free SDK.

4.1 Using Keyboard Wedge (HID Keyboard)

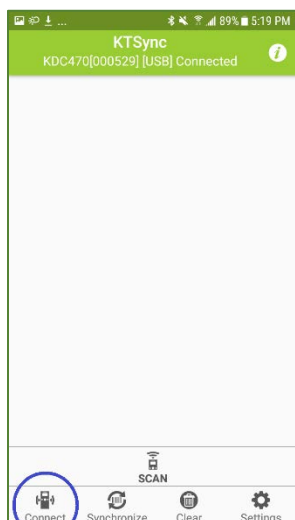
This option is only available using Bluetooth connection with HID profile.

Once the KDC is paired with the host, open any application with a text field and tap on the text field. Scan any barcode and it will populate in the text field.

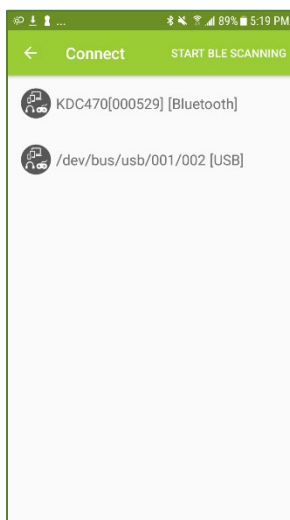
4.2 Using KTSync – Android/iOS

You can use KTSync to utilize your KDC alone or with a native application. This is only available using USB OTG (Android), Serial (iOS), or Bluetooth connection with SPP or MFi.

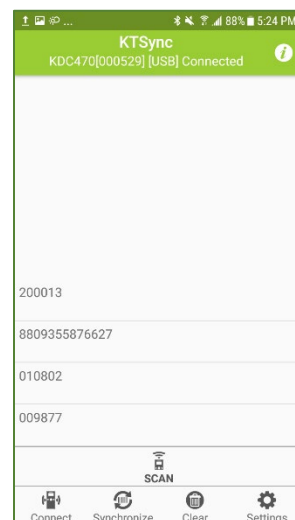
- Download and install KTSync from the Google Play Store or the Apple App Store.
- Open KTSync and tap on the "Connect" option on the bottom left to view a list of available devices. (Fig. 1)
- From the device list, select your KDC – ensuring that the serial number displayed in brackets matches the serial number on the back of your KDC. (Fig. 2)
- Upon successful connection, KTSync will display "Connected" next to the name of your KDC at the top of the application. (Fig. 3)
- To test your connection, scan any barcode. If the connection is successful, the barcode data will display on the screen. (Fig. 3)



< Fig. 1 >



< Fig. 2 >

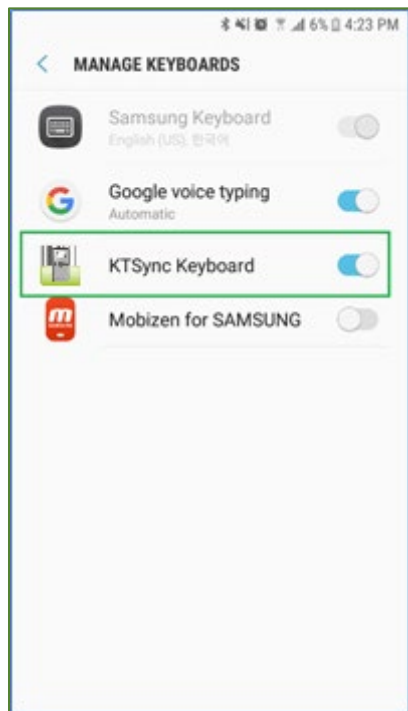


< Fig. 3 >

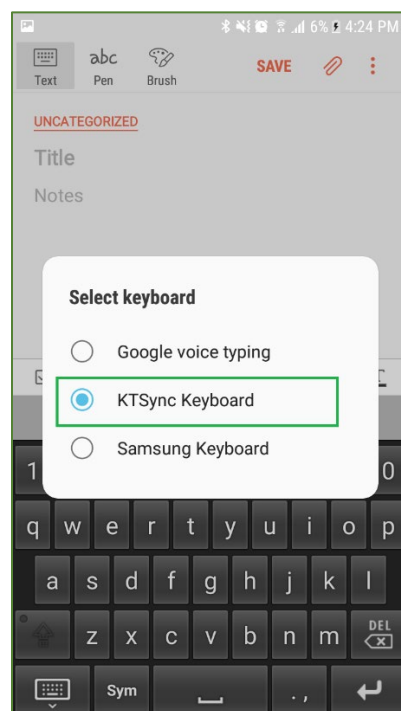
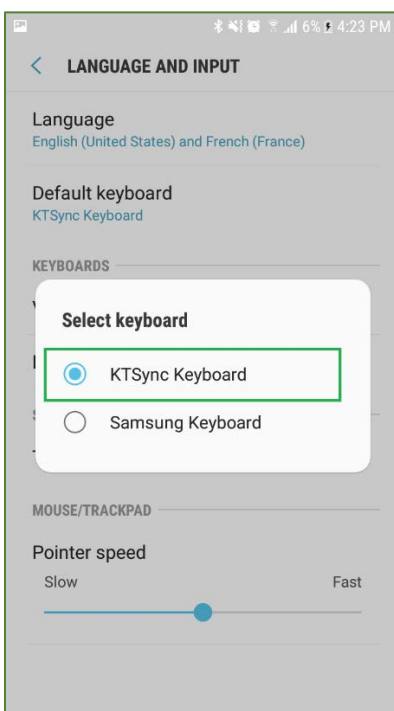
4.3 Using KTSync Keyboard – Android

Once your KDC is connected to KTSync from Chapter 4.2, you can use your KDC as a keyboard.

- While KTSync is running in the background, navigate to Settings > Language & Input > Virtual Keyboard > Manage keyboards.
- Tap on "KTSync Keyboard" to enable it.
- Change "KTSync Keyboard" to the default keyboard. (Fig. 4)
- To switch back to the previous keyboard, simply change the default keyboard again. Or, when a text field is selected swipe down from the top of the screen to bring up the notification panel. Select 'choose input method' and you can select the default keyboard from here. (Fig. 5)



< Fig. 4 >



< Fig. 5 >

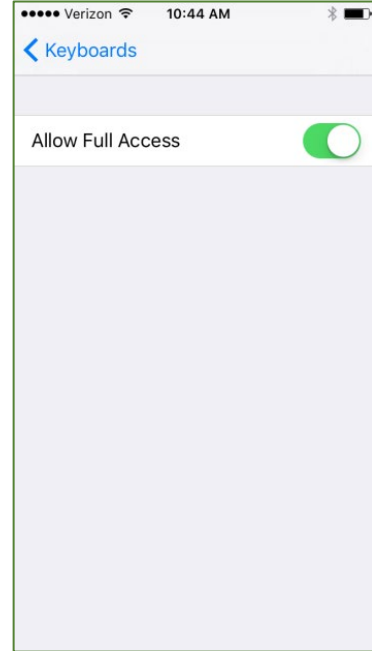
4.4 Using KTSync Keyboard – iOS

Once your KDC is connected to KTSync from Chapter 4.2, you can use your KDC as a keyboard.

- Navigate to the iPhone/iPad/iPod Settings > General > Keyboard > Keyboards > Add New Keyboard... > Select the KTSync keyboard to be added. (Fig. 6)
- Select the KTSync Keyboard and toggle the switch to Allow Full Access. (Fig. 7)

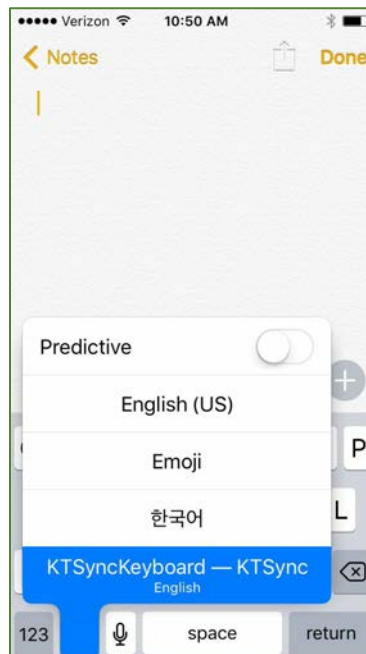


< Fig. 6 >



< Fig. 7 >

- c) Open the application you want to scan into and tap on the screen, so the on-screen keyboard appears.
- d) Press and hold the globe icon located to the left of the spacebar.
- e) Select the KTSync Keyboard and begin scanning. (Fig. 8)



< Fig. 8 >

Note: The KDC must be connected to KTSync & the KTSync keyboard must be selected for this to work.

4.5 Using other developed applications with free SDK – Android/iOS

A Software Development Kit (SDK) for Android and iOS is available to all KOAMTAC customers to ensure smooth development of applications that work seamlessly with a KDC scanner. It's easy to request the SDK from the KOAMTAC website:

- On any web browser, open www.koamtac.com
- Navigate to SUPPORT > Downloads > SDK
- Complete the form and submit it. (Fig.9)

After submission, a KOAMTAC representative will reach out regarding next steps for completing the SDK Agreement.

The SDK package will have libraries, documents, a sample application, and its source code.

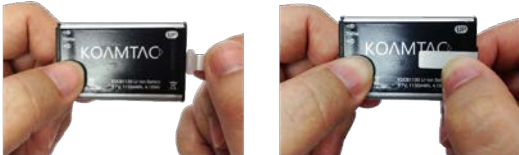
< Fig. 9 >

5 How to Replace the Battery

5.1 Things to Know

- Each KDC comes with a rechargeable Lithium-Ion.
- The battery may be recharged from any USB port or KDC charging cradle and may be recharged about 300 times before it needs to be replaced. KOAMTAC recommends replacing the battery annually, as a declining battery will cause noticeable performance degradation in the KDC.
- Replacement batteries may be purchased from a KDC reseller.
- Batteries should be disposed of properly as according to the WEEE (Waste Electrical and Electronic Equipment) regulation.

5.2 Procedure

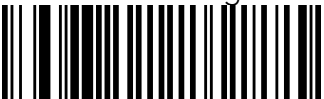
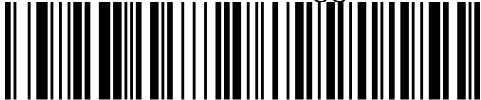
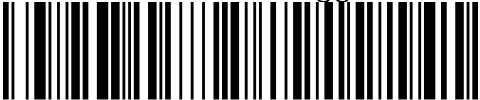
	1) Unlock the battery cover by sliding the lock switch right.
	2) Open the cover as shown in the picture.
	3) For easy removal, use a paperclip or similar tool to pull on folded sticker. 4) Hold the sticker and remove battery.
	5) <Insert the battery> 6) Before inserting battery, fold sticker over battery lengthwise.
	7) Slide the lock switch up, open the battery cover and slide in the battery slowly.



- 8) Close the battery cover and slide the lock switch down

6 Appendix. Useful Special Barcodes

6.1 Scan Options

Wide Scan Angle*  3000004000	Narrow Scan Angle*  3100004000
Enable Auto Trigger  ␣MKDC5A001.	Disable Auto Trigger  ␣MKDC5A010.

* Opticon Laser Model only

6.2 Scan Options

Enable Auto Trigger  ␣MKDC5A001.	Disable Auto Trigger  ␣MKDC5A010.
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6.3 Data Process - Wedge/Store, Enter Key & Extend Key

Wedge Only  ␣MKDC82000.	Wedge & Store Always  ␣MKDC82001.
Store Only  ␣MKDC82002.	Save if Sent  ␣MKDC82003.



6.4 Data Process – Data Edit



6.5 Data Process – Data Format and Handshake



6.6 Data Process – Termination Character & Duplicate Check



Termination Character = LF  └MKDC88002.	Termination Character = CR+LF  └MKDC88003.
Termination Character = Tab  └MKDC88004.	
Enable Duplicate Check  └MKDC89001.	Disable Duplicate Check  └MKDC89010.

6.7 Bluetooth

Enable Bluetooth Power  └MKDC60001.	Disable Bluetooth Power  └MKDC60010.
Enter Pairing Mode  └MKDC61001.	Disconnect  └MKDC6D000.
Bluetooth Profile = SPP  └MKDC6A000.	Bluetooth Profile = HID iOS  └MKDC6A001.

Bluetooth Profile = MFi  └MKDC6A002.	Bluetooth Profile = HID Normal  └MKDC6A004.
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6.8 HID Initial Delay

HID Initial Delay = Disabled  └MKDCH0000.	HID Initial Delay = 1second  └MKDCH0001.
HID Initial Delay = 2seconds  └MKDCH0002.	HID Initial Delay = 3seconds  └MKDCH0003.
HID Initial Delay = 5seconds  └MKDCH0005.	HID Initial Delay = 10seconds  └MKDCH000A.

6.9 HID Character Delay

HID Character Delay = Disabled  └MKDCH1000.	HID Character Delay = 10msec  └MKDCH100A.
HID Character Delay = 20msec  └MKDCH1014.	HID Character Delay = 30msec  └MKDCH101E.

HID Character Delay = 50msec  └MKDCH1032.	HID Character Delay = 100msec  └MKDCH1064.
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6.10 System

Memory Status  └MKDC50001.	Reset Memory  └MKDC50002.
Reset BT Registry  └MKDC50005.	Display Version  └MKDC54001.
Factory Default  └MKDC57001.	KDC Reset  └MKDCA0000.

6.11 OTG/Bluetooth (Android)

USB OTG Mode  └MKDC5h002.	Bluetooth Mode  └MKDC5h001.
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