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1. Product Concept

1.1 What is KDC1200 about?

This Barcode and RFID SmartSled is our most versatile product yet. Whether you need to read barcodes or RFID tags this is the KDC1200 for you. The KDC1200 SmartSled is a rugged, slim, and built for performance. Built to endure tough conditions with a 5-foot drop spec and long-range 1D/2D scanning capabilities, it's designed for reliable performance.

The KDC1200 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 KDC1200 is protected regardless of upgrades in smartphone and tablet technology.

1.2 Key Design Concepts

a) Barcode Reading

The KDC1200 stands out as a superior barcode scanner, equipped with a 2D imager capable of reading a wide range of barcodes across various industries. It supports data transfer via USB, Serial, or Bluetooth Low Energy (BLE) technology, ensuring seamless connectivity.

b) RFID

The KDC1200 features a built-in RFID reader for efficient, contactless radio frequency identification. This functionality is ideal for asset management and tracking, whether the assets are people, animals, or objects.

1.3 Key Features

a) Sled (SmartSled®)

- Supports virtually all smartphones: Protect investment on Sled regardless of smartphone change.
- o Connects with smartphones via USB or Serial or Bluetooth.
- o IP65 rated and 5ft drop spec

b) Custom Smart Case for simultaneous charging

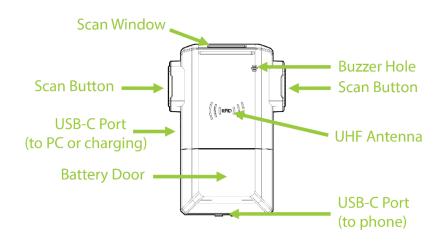
o One USB charging port (or charging cradle) charges both KDC1200 and smartphone.



2. Product Introduction

The KDC1200 Barcode & RFID reading sled is a 2D Imager Barcode Data Collector and a RFID tag reader supporting USB or Serial or Bluetooth Low Energy (BLE) v5.0.

2.1 KDC1200 Diagram



2.2 How to turn on and off

Refer to the figure in section 2.1 to locate the SCAN buttons.

- a) Press and hold the left SCAN button and right SCAN button simultaneously for 3 seconds.
- b) The KDC1200 will beep when it is turned ON.
- c) Press and hold the left SCAN button and right SCAN button simultaneously for 3 seconds again to turn off the KDC1200.

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

To install the phone, please follow the steps below:

- a) Slide the phone into the lower part of the Custom Case toward USB-C connector.
- b) Slide the upper portion of the Custom Case toward the lower case.
- c) Finish assembly by using screws on each side to fasten the top and bottom portions of the Custom Case.

To remove the phone from the Custom Case, follow steps back from c) to a).



2.4 How to Connect PC with KDC1200 or Phone

The KDC1200 automatically sets up a communication path with Phone when you plug smartphone in the case. When you need to use KTSync on PC or download a new firmware into KDC1200 from PC, you can connect to PC by scanning below barcode once connect USB cable from PC to KDC1200 USB port located in the side.



If you want to connect PC with your phone without taking out the phone from the case, you can set up by scanning below barcode. Then KDC1200 bypasses the communication path to the phone from PC so that you can access the phone from PC.



To reconnect KDC1200 to phone, scan below barcode.





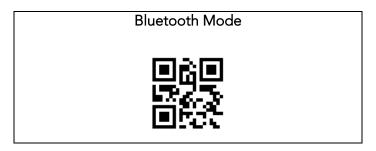
3. Connection method between KDC1200 and Phone

The KDC1200 can communicate with Phone via USB or Serial or Bluetooth. By default, the KDC1200 communicates via USB HID mode. If the phone is iPhone 13 or 14, the KDC1200 communicates via Serial.

By default, the KDC1200 is in USB OTG mode to communicate via USB or Serial. To communicate via Bluetooth, it is needed to change to Bluetooth Mode.

The following barcodes are USB OTG and Bluetooth Mode barcodes.





3.1 USB Serial Mode

The KDC1200 communicates with Android or iPhone 15/16 via USB Serial mode.





3.2 USB HID Mode

The KDC1200 default mode is a USB HID mode when connected to Android and iPhone 15/16 phones. Once Phone is assembled into the KDC1200, the KDC1200 automatically works as a keyboard without any further setup. If you open any application with a text field and tap on the text field, then proceed to scan any barcode, you will notice that the barcode data will be populated into that text field. If you need to switch back into USB HID Mode from USB Serial Mode, scan this barcode:



3.3 Serial Mode

The KDC1200 automatically connects via Serial if iPhone 13 or 14 is connected. There is no specific barcode for this Serial communication. If you install phone into the case, the Serial communication is automatically enabled. The Serial communication is the only option iPhone 13 and 14 and does not support HID keyboard.

3.4 Bluetooth Mode

The KDC1200 communicates with Phone via Bluetooth when Bluetooth Mode is selected. The KDC1200 does support Bluetooth Low Energy V5.0.



4. Bluetooth Pairing

Connecting your KDC1200 using Bluetooth is made easy with the pairing barcodes below

4.1 Bluetooth Profiles Explained

- a. **HID Profile**: Allows one-way Bluetooth communication with an Android or iOS host device. The KDC1200 only transmits data to the host device.
- b. **SPP Profile**: Allows two-way Bluetooth communication. The KDC1200 transmits data to the host device and the host device can transmit data back to the KDC1200.
- c. **HID Windows Profile**: Allows one-way Bluetooth communication with a Windows PC. The KDC1200 only transmits data to the Windows PC.

Note: HID inputs data directly into an application. SPP requires the KOAMTAC KTSync® app or integration of KOAMTAC SDK to input data into an application. To gain access to the SDK, please complete the form here: https://www.koamtac.com/sdk/

4.2 Bluetooth Pairing a KDC1200 to your smart device with special barcodes



- a. Navigate to the Bluetooth setting on the host device and ensure that Bluetooth is both enabled and searching for devices.
- b. Using the KDC1200, scan the pairing barcode above that corresponds to your desired Bluetooth profile.
 - If you use an Android, iOS, or Mac device and desire an HID connection, then scan barcode #1 above.



- If you use a Windows device and desire an HID connection, then scan barcode #2 above.
- If you desire an SPP connection for any device, then scan barcode #3 above.
- c. In HID or HID Windows Profile, check the list of available Bluetooth devices on your host device. From the list, select the KDC1200 listed by serial number in brackets that matches the serial number found on the side of the KDC1200. KDC1200 will beep upon connection. Now it is ready to use.
- d. In SPP Profile for non-iOS, check the list of available Bluetooth devices on your host device. From the list, select the KDC1200 listed by serial number in brackets that matches the serial number found on the side of the KDC1200. KDC1200 will beep upon connection, but you should launch KTSync or your application and select KDC1200 within the application to complete the connection. Now it is ready to use.
- e. In SPP Profile for iOS, the KDC1200 is NOT listed on your host device Bluetooth settings, so you should launch KTSync or your application, scan Bluetooth devices and select the KDC1200 listed by serial number in brackets that matches the serial number found on the side of the KDC1200. KDC1200 will beep upon connection. Now it is ready to use.



5. Usage

5.1 Using Keyboard Wedge (HID Keyboard)

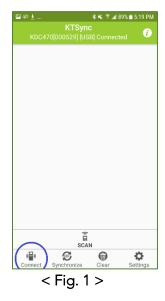
This option is only available using with HID profile.

Once the KDC1200 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.

5.2 Using KTSync – Android/iOS

You can use KTSync to utilize your KDC1200 alone or with a native application. This is only available using USB OTG (Android and iPhone 15/16), Serial (iPhone 13 & 14), or Bluetooth connection with SPP.

- a) Download and install KTSync from the <u>Google Play Store</u> or the <u>Apple App Store</u>.
- b) Scan pairing barcode in section 4.2 to enter KDC1200 into a paring mode.
- c) Open KTSync and tap on the "Connect" option on the bottom left to view a list of available devices. (Fig. 1)
- d) In case of Android, the pairing should be established from Settings of the phone and in case of iOS, "START BLE SCANNING" menu should be run from "Connect" menu.
- e) From the device list, select your KDC1200 ensuring that the serial number displayed in brackets matches the serial number on the side of your KDC1200. (Fig. 2)
- f) Upon successful connection, KTSync will display "Connected" next to the name of your KDC1200 at the top of the application. (Fig. 3)
- g) To test your connection, scan any barcode. If the connection is successful, the barcode data will display on the screen. (Fig. 3)







See Reference Manual for more detailed information.



In Always-pairing mode, an application can connect to a KDC1200 without reading a pairing barcode, so the connection procedure is a little different.

- a) In the KTSync app, tap the Connect icon at the bottom left of the app.
- b) In KTSync, tap "START BLE SCANNING" in the top right.
- c) In KTSync, check the list of found devices.
- d) In KTSync, tap the KDC1200 listed by serial number in brackets followed by [BLE] that matches the serial number found on the side of the KDC1200. The format will look like this, KDC1200[xxxxxxx] [BLE], where xxxxxx is the serial number.
- e) The KDC1200 will beep upon connection. Now it is ready to use.



See Reference Manual for more detailed information.

Visit store.koamtac.com to purchase additional KDCs and accessories.



5.3 Using KTSync Keyboard - Android

Once your KDC1200 is connected to KTSync, you can use your KDC1200 as a keyboard.

- a) While KTSync is running in the background, navigate to Settings > Language & Input > Virtual Keyboard > Manage keyboards
- b) Tap on "KTSync Keyboard" to enable it.
- c) Change "KTSync Keyboard" to the default keyboard. (Fig. 5)

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. 6)







< Fig. 5 >

< Fig. 6 >



5.4 Using KTSync Keyboard - iOS

Once your KDC1200 is connected to KTSync, you can use your KDC1200 as a keyboard.

- a) Navigate to the Settings > General > Keyboard > Keyboards > Add New Keyboard... > Select the KTSync keyboard to be added. (Fig. 7)
- b) Select the KTSync Keyboard and toggle the switch to Allow Full Access. (Fig. 8)





< Fig. 7 >

< Fig. 8 >

- 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. 9)



< Fig. 9>

Note: The KDC1200 must be connected to KTSync & the KTSync keyboard must be selected for this to work.



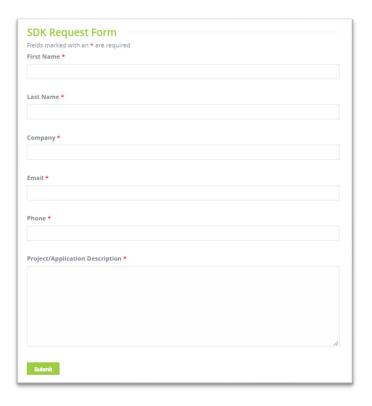
5.5 Using other developed applications with SDK – Android/iOS

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 KDC1200 scanner. It's easy to request the SDK from the KOAMTAC website:

- a) On any web browser, open www.koamtac.com
- b) Navigate to SUPPORT > Downloads > <u>SDK</u>
- c) Complete the form and submit it.

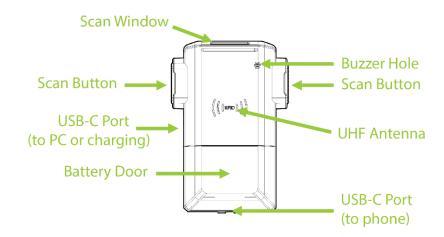
After submission, a KOAMTAC representative will reach out regarding next steps for completing the SDK Agreement.

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



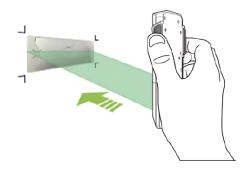


6. 0.5W UHF Reader



* 0.5W UHF Reader built-in on KDC1200

1. Keep hands straight and point the RFID antenna towards the RFID tag and read the tag using the scan button.



2. A successful scan will sound 1 beep.



7. UHF Reader Usage

For optimal UHF tag read performance and to ensure that human exposure to RF energy does not exceed the FCC and European Union guidelines, always follow the instructions and precautions below:

- Before using the KDC1200 UHF reader, the user should carefully read this operation guide and user guide to understand how to use KDC1200 UHF reader properly.
- The KDC1200 UHF reader should be used by a professional person who fully understands how to operate the KDC1200 UHF reader.
- Maintain at least 20cm (about 8 inches) between the KDC1200 UHF reader and the body when reading UHF RFID tags.
- Keep the KDC1200 UHF antenna facing towards the UHF RFID tag. Do not direct the antenna towards the body when reading UHF RFID tags.
- Exit UHF tag read mode and enter Barcode read mode when finished reading UHF tags.
- Do not wear the KDC1200 UHF reader when not using the KDC1200 UHF reader.

7.1 Toggling the Read Mode: Barcode mode vs. UHF mode

With the same SCAN button, you can read barcodes (Barcode mode) or UHF tags (UHF mode) depending on the read mode and you can change the mode alternatively.

- a) On "Barcode mode", a barcode can be read by a SCAN button.
- b) On "UHF mode", UHF tags can be read by a SCAN button.
- c) By default, it is a "Barcode mode" and also it is set back to a "barcode mode" after the factory default.
- d) There are two ways to change the read mode:
 - Press below combinations of SCAN button in 3 seconds.
 <Left Scan><Left Scan><Right Scan><Left Scan><Right Scan>
 - 2) Change from within the application using SDK
- e) When the mode is changed, the KDC1200 will give a series of beeps to confirm the mode change:

When you enter UHF Mode: 1 long and 2 short beeps

When you enter Barcode Mode: 1 long and 1 short beep

7.2 Changing the UHF Read Tag Modes: Single, Multiple, or Active

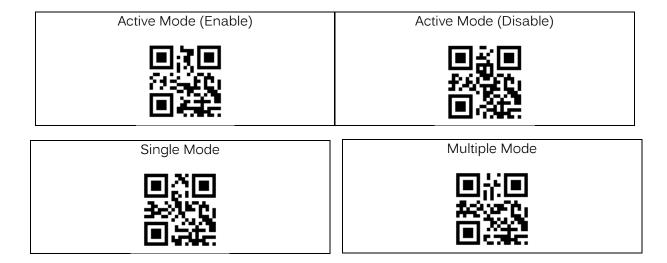
This mode only works when the device is in UHF mode. Refer to 7.1 to see how to toggle read modes.

- Single mode: Only one tag is read every time the scan button is pressed.
 - o 1 short beep will occur when changing mode to Single mode.
- **Multiple mode**: When the Scan button is pressed, reads multiple tags simultaneously for the set time (default 10 seconds).
 - o 2 short beeps will occur when changing mode to Multiple mode.
 - o Time setting can be changed.
- Active mode: Basic operation status. Simultaneous reading of multiple tags while pressing the scan button (max. 10 minutes)



o 3 short beeps will occur when changing mode to Active mode.

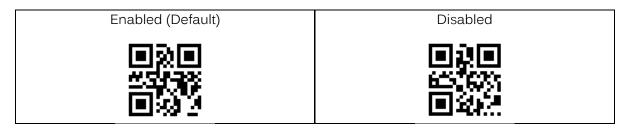
Scan the special barcodes to change the mode. To change from active mode to another mode, you should disable the active mode first.



In Active Mode, if the SCAN button is pressed more than 10 minutes, the read mode automatically changes from UHF Mode to Barcode Mode to save battery life in the case of the trigger being stuck in the scan position. This option is enabled by default and may be disabled.

If you need to scan with the trigger depressed for more than 10 minutes, you need to disable the Active Read 10 Minute Timeout.

Active Read 10 Minute Timeout



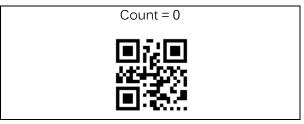


7.3 UHF Tag Counting (Beep Count)

By setting the Count attribute, you can get an estimate on how many tags are read per beep.

- Count = 0: The device only beeps once when you start reading
- Count = 5: Beeps once every 5 tags read. Example: 2 beeps means you read 10 to 14 tags.
- Count = 10: Beeps once every 10 tags read. Example: 2 beeps means you read 20 to 29 tags.
- Count = 20: Beeps once every 20 tags read. Example: 2 beeps means you read 40 to 59 tags.
- Count = 50: Beeps once every 50 tags read Example: 2 beeps means you read 100 to 149 tags.

Scan the barcode on below that corresponds with your preference for Tag Counting.





Count = 20

Count = 5

Count = 50



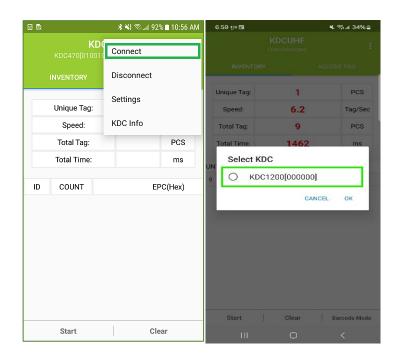
8. KDCUHF Demo App (Tag Read/Write Demo)

8.1 Install demo application

1. You can download the demo application from Google Play Store or Apple App Store and install it: KDCUHF

8.2 Connect KDC1200 with a smart device

- 1. First, if you connect via Bluetooth, you should pair KDC1200 with your host device through Bluetooth.
 - a. Send KDC1200 to a pairing mode by scanning SPP & Pairing barcode.
 - b. Pair your smart device with KDC1200 from the Bluetooth device list
 - c. See 4. Bluetooth pairing for more detail pairing process.
- 2. Start KDCUHF you just installed then KDCUHF is trying to connect with KDC1200 among paired KDC1200 list.
- 3. If you want to connect to the specific KDC1200, please use the menu "Connect" from KDCUHF.





8.3 Read UHF data

- 1. Select "INVENTORY" and approach your UHF tags to read.
- 2. Then tap on "Start" button or press the physical SCAN button on the KDC1200.
- 3. You might hear multiple fast beeps while reading depending on the number of UHF tags nearby.
- 4. You can clear the current information with "Clear" button.



Unique Tag	The number of the unique tags which have been read.	
Speed	The rate to identity tags, in pcs/s.	
Total Tag	A piece of EPC No. The total amount which includes the data being repeatedly read.	
Total Time	Total time it takes from start point, in ms.	



Meaning of the data in EPC column as below:

ID	ID for identifying unique tags
COUNT The number of read each tag	
EPC	EPC data of read tag
PC	PC data of read tag

8.4 Select UHF tag

Scan tags nearby and select the tag which you want to work with.

- 1. Select "ACCESS TAG" to set up
- 2. Approach UHF tag to write and tap on "Refresh" then you'll see the tag information on the "Tag List" field if successful.
- 3. Also, you'll see the toast message at the bottom saying, "Getting Tag List Succeeded".
- 4. Choose one UHF tag to do manual operation and tap on "Select".
- 5. If successful, you'll see the toast message at the bottom saying, "Selecting Tag Succeeded".







8.5 Read or Write UHF tag

Read Password and Read/Write data

- 1. Access password is required to read or write data. To get password, select "Password" and tap "Read" button.
 - KDCUHF uses the default access password (00 00 00 00) to get password. If the access password of the tag has been changed, the proper access password is required.
- 2. Once the password is read successfully, select the memory area to write (Password, EPC, or USER).
- 3. And then put the start address (Start Add) and the length (Length), together with the data in hex to write (Data) and tap "Write" button.



8.6 SDK API

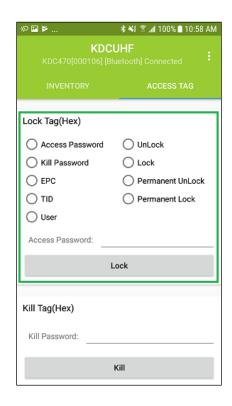
- 1. The API to write a data to UHF tag is: public boolean WriteUHFTagMemory(byte[] pwd, UHFMemoryBank bank, int start, int length, byte[] data, UHFStatus status)
- 2. You can check the guide document in the SDK package: KDC SDK Guide for Android.pdf



8.7 Lock UHF tag

Select UHF tag, Get access password and lock the tag.

- 1. Select UHF tag which you want to lock through "Select Tag" menu. If the tag is selected already, skip it.
- 2. Access password is required to proceed locking the tag.
 - It might be invalid to lock the tag with the default password. Please modify the access password first before locking
- 3. Choose memory bank and action (unlock, lock, permanent...) and tap "Lock" button on "Lock Tag" menu.

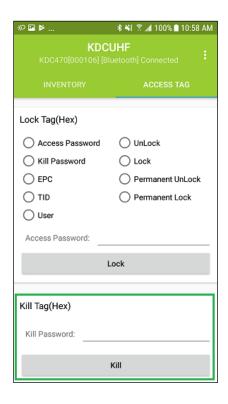




8.8 Kill UHF tag

Select UHF tag, Get kill password and kill the tag.

- 1. Select UHF tag which you want to kill through "Select Tag" menu. If the tag is selected already, skip it.
- 2. Kill password is required to proceed killing the tag.
 - It is not possible to kill tags with default kill password. Please modify the kill password first.
- 3. Tap "Kill" button on "Kill Tag" menu.
 - Killed tags are no longer available.





8.9 UHF Setting

Change the connected KDC1200 UHF configurations.

1. Enable UHF Power

Determine whether UHF Power is on or off.

2. UHF Power Level

Set UHF Power Level to the specific dBm.

3. Enable Smart Hopping

Enable or Disable "Smart Hopping" function.

4. UHF Read Tag Mode

Select UHF Read Tag Mode.

Single - Read only one tag.

Multiple - Read tags for a specific time.

Active - Read tags during "Scan" button is pressed

5. UHF Reading Timeout

Set Reading Timeout for Multiple Read Tag Mode.

6. Enable Duplicate Check

If enabled, duplicated tag data is not sent by KDC1200.

7. UHF Read Mode

Determine whether to scan Barcode or UHF when a Scan button of KDC1200 is pressed or a scan command is received from the application.

8. UHF Data Type

Select UHF Data Type. Received data is composed with EPC and PC or EPC only.

9. Set UHF Region

Set UHF bandwidth (Frequency, Power, ...) to fit the region.

It is depended on KDC1200 which you are using.

10. Stop Active Read

"Active Read" function stops after a certain period of time.

11. RFID beep count

Select read beep count of KDC1200.

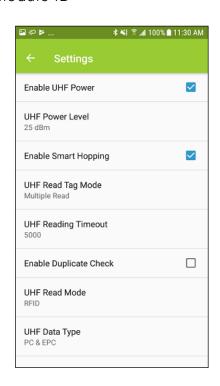


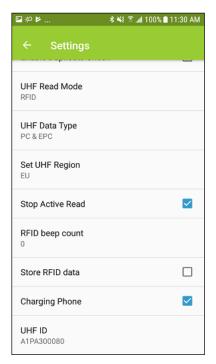
12. Store RFID data

Determine whether read tag data is stored or not.

13. UHF ID

Show the UHF module ID







8.10 Application setting

Change KDC1200 UHF configurations.

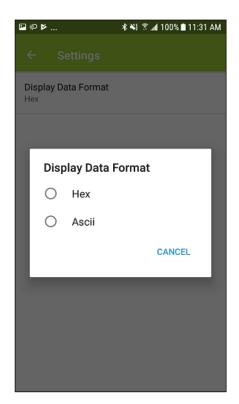
1. Display Data Format

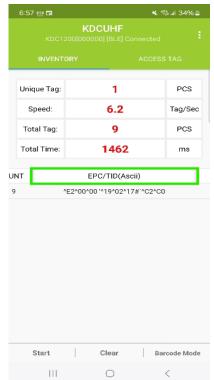
- Select Hex string or ASCII as the default display data format.

When "Display Data Format" is ASCII,

"^" is used control character like "\" so you should write "^^", if you want to input "^" in ASCII mode.

Characters that can't be displayed are indicated by " $^{"}$ " and a two digit hex string. For example, 0x00 0xFF will be displayed 00 FF.



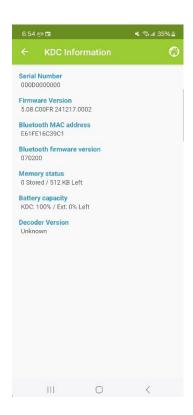




8.11 KDC Information

Display the connected KDC information.

- Serial Number, Firmware Version, etc.





9. Product Specifications

	Design	Barcode & RFID SmartSled
Physical	9	KDC1200: 34.01" x 72.60" x 11.61"(86.4 x 184.4 x 29.5
Fnysical	Size	mm)
	Weight	KDC1200: 6.46 oz (183 g)
	Supporting OS	Android / iOS / Windows / Mac OS X
	Keys	2 SCAN Keys
Functionality	Buzzer	Yes
	LED Indicator	1 Status LED (Red / Amber / Green)
	USB Port	1 Type-C USB Port
	RAM	SDRAM 256KB
Memory	ROM	Program Flash ROM 1,024KB User Data Flash ROM 8MB
	Barcode/RFID Storage	400,000+ Barcodes/RFID tags (EAN-13 or EPC Data)
	Battery (Standard)	1130 mAh Lithium-Ion
Power	Charging Solution	USB Connector / Charging Cradle
rower	Simultaneous Charging	Yes
	Charging Time (KDC)	3 Hours
	Bluetooth	Bluetooth Low Energy V5.0, HID/SPP
Communication	USB	USB HID, USB Serial
	Serial	Serial (iPhone 13 & 14)
	1D/2D Symbology	Yes
	# of scans (1 sec interval)	KDC1200ST: 31,000+
Barcode Reader	# of scans (10 sec interval)	KDC1200ST: 20,000+
Daisodo Neudel	Scan Range (20mil Code39)	KDC1200ST: 1.9" to 29.1"(49mm to 740mm) KDC1200PRO: 1.7" to 31.5"(44mm to 800mm) KDC1200MR: 3.3" to 59.0"(85mm to 1500mm) KDC1200ER: 3.4" to 112.1"(88mm to 2848mm)
	Screen Reading	Yes
	Postal Code / OCR Passport	Yes / Yes
	Pistol Grip (6000 mAh)	Optional
	Supported Standards	EPC Class1 Gen2, EPC Gen2 V2
DEID D !	Nominal Read Range	5'+ (1.5m+)
RFID Details	Norminal Read Range	dependent on tag type and operating environment

See Reference Manual for more detailed information.

Visit <u>store.koamtac.com</u> to purchase additional KDCs and accessories.



	Tag Read Rate / Storage	100+ tags per second / 400,000+ Barcodes/RFID tags (EAN-13 or EPC Data)
	Drop Spec	5 ft (1.5 m)
	IP Rating	IP65
Environment	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)
Dl - +	Laser Safety	IEC60825-1 (Class II) (KDC1100S/H)
Regulatory Conformance	LED Safety	IEC62471:2006 (KDC1000C)
Comormance	Regulatory	CE, FCC, KC, J-MIC, VCCI, SRRC, RoHS Compliant
	Hand Strap	Yes
Accessories	1-slot Charging Cradle	Yes
Accessories	5-slot Charging Cradle	Yes
	Supporting Case	All Cases



10. Appendix. Useful Special Barcodes

10.1 Scan Options



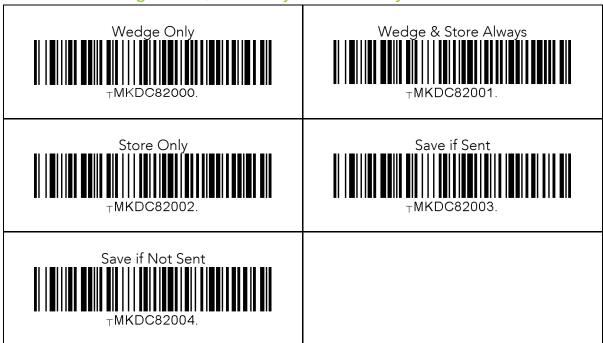


10.2 Scan Options





10.3 Data Process - Wedge/Store, Enter Key & Extend Key





10.4 Data Process – Data Edit







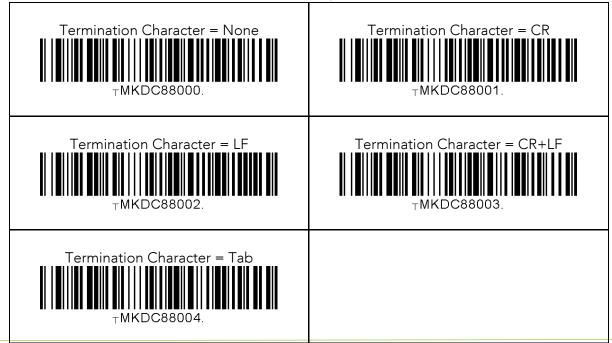


10.5 Data Process - Data Format and Handshake





10.6 Data Process – Termination Character & Duplicate Check









10.7 Bluetooth



10.8 HID Initial Delay

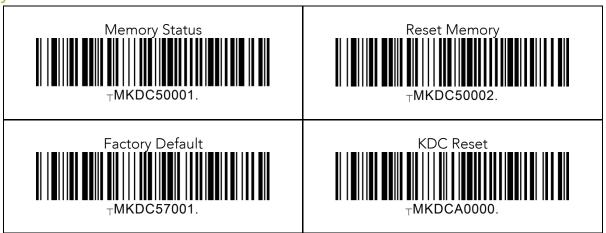




10.9 HID Character Delay



10.10 System



10.11 OTG/Bluetooth (Android & iPhone15)







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