uDynamo

Troubleshooting Reference Manual

REVISIONS

Rev Number	Date	Notes
1.01	7/22/2014	Initial release
20	10/31/2014	Update LED behavior

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FCC WARNING STATEMENT

This equipment has been tested and was found to comply with the limits for a Class B digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation.

FCC COMPLIANCE STATEMENT

This device complies with Part 15 of the FCC Rules. Operation of this device 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.

CANADIAN DOC STATEMENT

This digital apparatus does not exceed the Class B limits for radio noise from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Réglement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numériqué de la classe B est conformé à la norme NMB-003 du Canada.

CE STANDARDS

Testing for compliance with CE requirements was performed by an independent laboratory. The unit under test was found compliant with standards established for Class B devices.

UL/CSA

This product is recognized per Underwriter Laboratories and Canadian Underwriter Laboratories 1950.

RoHS STATEMENT

When ordered as RoHS compliant, this product meets the Electrical and Electronic Equipment (EEE) Reduction of Hazardous Substances (RoHS) European Directive 2002/95/EC. The marking is clearly recognizable, either as written words like "Pb-free", "lead-free", or as another clear symbol (Ⓟ̶ⓑ̶).

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SECTION 1:   DESCRIPTION OF UDYNAMO

The uDynamo is a magnetic stripe secure card reader authenticator (SCRA) designed to allow all three tracks of financial and other cards such as AAMVA to be read using the multimedia audio connector of a mobile devices such as iOS and Android devices. The uDynamo interfaces to mobile devices through the audio head set jack and communicates with the host device through the microphone input and the audio output signals.

In addition to the audio interface, a USB interface is provided to allow the uDynamo to charge its internal, rechargeable battery, and to allow the uDynamo to interface with a host PC or tablet as a USB HID interface reader.

The uDynamo is powered by rechargeable internal Lithium-ion batteries that are not replaceable. The reader is designed to draw extremely low current in when operating with the audio interface allowing the device to operate on batteries for extended periods. When operating from USB, the device is powered from the USB bus and will charge the battery at the rate allowed by the host USB interface.

Figure 1 uDynamo

SECTION 2:   AUDIO CONNECTION

Make sure the 1/8" audio jack is extended down. Also, for added stability, please ensure the desired stabilizing connector is attached to the uDynamo. There are small and a large stabilizing connectors included with each device, allowing the user to choose which fits best for their mobile device.

Note: Please be certain to remove all audio headsets and ensure mute is set to OFF and your volume is set to max. If you have a physical mute button on your device, it may not be automatically detected and you will need to turn mute OFF. Protect the uDynamo's audio jack by folding it in when not in use.

Step1 – Plug the uDynamo into the audio jack of the Android or iOS Device

Step 2 – Attach the stabilizing connector to the uDynamo and the Android or iOS Device

Step 3 – Open the application on the Android or iOS Device. For iOS, ensure that Settings/Privacy/Microphone/Host Application set to ON

Step 4 – Launch the host application and (if needed) set/select the audio connection and observe the LED. When the device is ready to receive a swipe or is ready for the host to initiate an authentication sequence, the LED should show solid green. The uDynamo has a single tri-color LED to provide user feedback. Other user prompts and feedback may be provided via the host's user interface under the control of an application on that host. The LED is sufficiently bright that it may be seen outdoors in bright, diffuse (slightly overcast) lighting conditions. Details on the LED states and meaning are found in Table 1.0, below.

Note: The uDynamo has been tested and works with all current iOS devices. For a listing of Android devices that have been tested and found to work with uDynamo, click here. This list is not necessarily an all-inclusive list. From time to time, new Android devices are released into the market. If the user has an Android device that is not on the list, the user can download the MagTek Audio Reader Tester which can be used to verify the uDynamo's ability to communicate with a specific Android Device. If the test passes, then the user can send the configuration setting to MagTek, by email, so that we may enter that configuration information into our database.

SECTION 3: LED INDICATOR

The LED indicator reflects the status of the uDynamo.

- When device is first powered on, the LED is off. This usually lasts ½ second or less.
- Before the device starts the self-test, the LED is red.
  - If self-test fails, the LED remains red and the device won't function.
  - If self-test passes, the LED progresses to Idle / Background Mode.
- If battery is low and the device is not charging, the LED turns red for 2 seconds.
- The device progresses to Idle / Background Mode.

Table 1.0

Color	Flashing Pattern		Meaning
Off	Off	──	**Active Mode**: A card has just been swiped. The device will then show whether the read was successful, then return to showing device status. If a card has not just been swiped, the device is powered off or the battery is fully discharged.
Red	Short Flash	⊓	**Startup Mode**: The device has just been powered on and is performing a self-test.
Green	Steady On	──	**Idle Mode**: If configured to require authentication, the device is waiting for authentication. Otherwise, the device is in the Fully Charged state and is ready to read a card.
Green	Rapid Flash	⎍⎍⎍⎍	**Idle Mode**: Authentication has been established and the device is ready to read a card. In this mode, the LED does not indicate the battery state.
Amber/Green	Flash/Blink		**Idle Mode**: The device is charging and is in the Healthy Battery state (between the Fully Charged state and the Low Battery state).
Red/Green	Flash/Blink		**Idle Mode**: The device is charging OR not charging, and is in the Low Battery state. Card swipes and commands are available. Charge the device to the Healthy Battery state.
Amber	Steady On	──	**Idle Mode**: The device is charging and is in the Critically Low Battery state. Card swipes and most commands are unavailable. Charge the device to at least the Low Battery state before using.
Red	Rapid Flash	⎍⎍⎍⎍	**Idle Mode**: The device is not charging and is in the Critically Low Battery state. Card swipes are not available. Stop using the device, disconnect it from the mobile device, and charge it until it reaches the Healthy Battery state.

Red	Steady On	———	**Startup Mode**: If the device has just been powered on, it has failed the self-test. Card swipes and commands are unavailable. **Idle Mode**: If Authentication has been attempted, it has failed. In this mode, the LED does not indicate the battery state. Attempt to re-authenticate, or power off the device, check authentication configuration, and power the device back on.
Green	Two Seconds On	⎍	**Active Mode**: Device has successfully read a swiped card. After this, the LED shows the device status.
Red	Two Seconds On	⎍	**Active Mode**: If the device was previously in authenticated mode, that mode has timed out. Re-establish authentication. **Active Mode**: If a card has just been swiped, the device has failed to decode card data. After this, the LED shows the device status. Swipe again. **Startup Mode**: If the device has just been powered on, the device is not charging, and self-test has detected the Low Battery state. After this, the LED shows the device status.

The uDynamo is powered by rechargeable internal Lithium-ion batteries. The uDynamo can process up to (approx.) 300 swipes on a single battery charge. If the reader is left on, awaiting a card swipe, the battery will deplete in 3.5 hours. Recharging can take up to 6 hours.

SECTION 4:   USB CONNECTION

Make sure to use the proper Micro-B USB cable. Refer to the previous section for information about the LED behavior when connected to USB. While plugged in by USB, the uDynamo will charge its internal Lithium-ion batteries.

Step1 – Plug the Micro-B side into the uDynamo and the other side into the host PC. The uDynamo is a USB HID device and will automatically install through USB Plug and Play.

Step 2 – The host application running on the PC/browser may utilize a Driver or other Control like a Java Applet. In this case, the user will need to make sure the Driver/Control is able to download and install itself before proceeding.

Step 3 – Open the host application and the uDynamo will be ready for a card swipe.

SECTION 5:   CARD SWIPES

After swiping a card, the LED will temporarily shut off while the reader is processing data. Once the processing is complete, the LED will either turn ***Green for 2 seconds*** to indicate a ***good*** card read or turn ***Red for 2 seconds*** to indicate a ***bad*** card read. Afterwards, the LED will change to the appropriate state. Refer to Table 1.0 above for more detail.

SECTION 6:   BASIC TROUBLESHOOTING

USB

1. If the LED is not showing a solid or flashing green (is amber or red) when the device is connected to the PC
   a. Try a different USB connection. If a Hub is used, try connecting directly to the PC.
   b. If the connection to the PC is not the issue, ensure the micro USB cable connection to the body of the reader is snug.
   c. If another PC is available, try the device connected to a different PC.
   d. If another reader is available, try swapping the cables and see if the problem follows the reader or the cable.
2. If the LED shows green and you swipe a card, but the LED does not change, ensure the magnetic stripe on the card is oriented correctly. If the orientation is correct, test with a different card. If all cards fail, the reader is not reading and may need to be serviced or replaced.
3. If the LED shows green and when you swipe a card the LED turns red, this is a bad read and may be due to poor swiping or a bad card. Re-swipe, ensuring the card is being swiped correctly. If this does not work, try a different card.
4. If the LED shows green and when the card is swiped the LED turns off momentarily and then returns to a solid green, the reader is performing correctly.

AUDIO

1. If the LED is Off, please make sure the uDynamo is charged by connecting the Micro USB (Micro-B) cable is plugged into the uDynamo and the other end plugged into a power converter or USB port on a PC. When plugged into a USB power source and charging, the LED will display one of the following sequences:
   a. Solid Green
   b. Blinking Short Amber and Long Green
   c. Blinking Short Red and Long Green
   d. Solid Amber
2. If the LED is not showing a solid or blinking green (is amber or red) when the device is connected to the Android or iOS Device
   a. Make sure the 1/8" audio jack is fully seated in the audio port of the Android or iOS Device. When fully seated, it will make a click sound.
   b. Ensure the Android or iOS device Settings are properly configured for attaching external audio devices.
   c. Remove all audio headsets and ensure mute is set to OFF and your volume is set to max. If you have a physical mute button on your device, it may not be automatically detected and you will need to turn mute OFF.
3. If the LED is not showing a solid or blinking green (is amber or red) when the device is connected to the Android or iOS Device and you have confirmed the uDynamo is charged (See to Table 1.0)
   a. Try connecting the uDynamo to a different Android or iOS Device, if available
   b. Try connecting a different uDynamo, if available
   c. Protect the uDynamo's audio jack by folding it in when not in use.
4. If the LED shows green and you swipe a card, but the LED does not change, ensure the magnetic stripe on the card is oriented correctly. If the orientation is correct, test with a different card. If all cards fail, the reader is not reading and may need to be serviced or replaced.
5. If the LED shows green and when you swipe a card the LED turns red, this is a bad read and may be due to poor swiping or a bad card. Re-swipe, ensuring the card is being swiped correctly. If this does not work, try a different card.
6. If the LED shows green and when the card is swiped the LED turns off momentarily and then returns to a solid green, the reader is performing correctly.

For more information on the uDynamo reader, please visit: http://www.magtek.com/V2/products/secure-card-reader-authenticators/udynamo.asp. This page includes useful links to all documentation and tools for the uDynamo.