iDynamo 5 and iDynamo 5 (Gen II)

Secure Card Reader Authenticator
Installation and Operation Manual

October 2022

Document Number:
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REGISTERED TO ISO 9001:2015

Table 0-1 - Revisions

Rev Number	Date	Notes
1.01	Feb 2, 2010	Initial Release
2.01	May 24, 2010	Added Operation section; added iPad compatibility; included physical dimensions
3.01	Jul 21, 2010	Added list of accessories with references to the iPod touch adapter and references to the extension cable
4.01	Feb 15, 2011	Add picture and references to iDynamo (21073084); add additional adapters in accessories section
5.01	Aug 15, 2011	Added Appendix A for adapter dimensions
6.01	Nov 4, 2011	Updated the dimensions of iDynamo
7.01	Nov 22, 2011	Added iPad 2 adapter
8.01	Sep 18, 2012	Updated drawings
9.01	Jan 17, 2013	Add notes on charging iPad
[1.01 Merged]	Jul 9,2013	Initial release of iDynamo 5 content as 99870003
10.01	Aug 1, 2013	Reformat, remove references to obsolete parts, merge contents of 99870003, add charging and synchronization section, clean up language and flow, incorporate Marketing feedback
110	Nov 21, 2014	Update adapters and accessories table and adapters in appendix B; update trademarks; general corrections
120	Jun 7, 2019	Apply latest content standards and formatting; Remove legacy iDynamo, including 30-pin connector and data synch; Add information about iDynamo 5 (Gen II); Add sections **1.3**, **1.4**, **2.1**, **2.3**; Consolidate device and accessory selection and solution planning into section **1.5 About Solution Planning**; Rewrite section **2.2 How to Connect to a Host** to use MagTek Test app instead of QwickPAY and to merge new host / used host installation and checking device status into a fluid set of steps; Consolidate existing power information into new section **3.1** and expand; Replace programmer-facing details with cross references to programmer's manual and SDK; Misc. clarifications and corrections.

Rev Number	Date	Notes
130	Oct 2022	Updated compatibility list iPhone 14 Pro Max, iPhone 14 Pro, iPhone 14 Plus, iPhone 14, iPhone SE (3rd generation), iPhone 13 Pro Max, iPhone 13 Pro, iPhone 13, iPhone 13 mini, iPhone 12 Pro Max, iPhone 12 Pro, iPhone 12, iPhone 12 mini, iPhone 11 Pro Max, iPhone 11 Pro, iPhone 11, iPhone XS Max, iPhone XS, iPhone XR, iPhone X, iPhone 8 Plus, iPhone 8, iPhone 7 Plus, iPhone 7, iPhone 6s Plus, iPhone 6s, iPhone 6 Plus, iPhone 6, iPad Pro 10.5-inch, iPad Pro 12.9-inch (2nd generation), iPad Pro 9.7-inch, iPad Pro 12.9-inch (1st generation), iPad Air 2, iPad Air, iPad mini 4, iPad mini 3, iPad (6th generation), iPad (5th generation)

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FCC INFORMATION

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.

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Changes or modifications not expressly approved by MagTek could void the user's authority to operate this equipment.

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 *UL 60950-1, 2nd Edition, 2011-12-19* (Information Technology Equipment - Safety - Part 1: General Requirements), *CSA C22.2 No. 60950-1-07, 2nd Edition, 2011-12* (Information Technology Equipment - Safety - Part 1: General Requirements).

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 (Ⓟ).

Table of Contents

1   Introduction

1.1   About iDynamo 5 and iDynamo 5 (Gen II)

iDynamo 5 and iDynamo 5 (Gen II) are compact secure card reader authenticators (SCRAs) that read magnetic stripe cards that conform to ISO standards. iDynamo models are made for iPhone and iPad devices with a Lightning interface.

In addition to reading multiple tracks of data from a card, iDynamo models incorporate MagnePrint technology, so a card's unique MagnePrint fingerprint is included with the track data in each transaction.

To maximize card security, when a cardholder swipes a card, the device encrypts card data and MagnePrint data before they leave the encapsulated magnetic stripe reader head using the Triple Data Encryption Algorithm (TDEA, also known as Triple DES).

iDynamo models manage encryption keys using DUKPT (Derived Unique Key Per Transaction) key management. DUKPT uses a base derivation key to encrypt a key serial number that produces an initial encryption key which is injected into the device prior to deployment. After each transaction, the encryption key is modified per the DUKPT algorithm so each transaction uses a unique key. Thus, the data is encrypted with a different key for each transaction.

1.2   Product Features

- iDynamo 5 is made for iPhone 6, iPhone 6 Plus, iPhone 5, iPhone 5c, iPhone 5s, iPad mini 3, iPad mini 2, iPad mini, iPad Air 2, iPad Air, iPad (4th generation), and iPod touch (5th generation).

- iDynamo 5 (Gen II) is made for iPhone 14 Pro Max, iPhone 14 Pro, iPhone 14 Plus, iPhone 14, iPhone SE (3rd generation), iPhone 13 Pro Max, iPhone 13 Pro, iPhone 13, iPhone 13 mini, iPhone 12 Pro Max, iPhone 12 Pro, iPhone 12, iPhone 12 mini, iPhone 11 Pro Max, iPhone 11 Pro, iPhone 11, iPhone XS Max, iPhone XS, iPhone XR, iPhone X, iPhone 8 Plus, iPhone 8, iPhone 7 Plus, iPhone 7, iPhone 6s Plus, iPhone 6s, iPhone 6 Plus, iPhone 6, iPad Pro 10.5-inch, iPad Pro 12.9-inch (2nd generation), iPad Pro 9.7-inch, iPad Pro 12.9-inch (1st generation), iPad Air 2, iPad Air, iPad mini 4, iPad mini 3, iPad (6th generation), iPad (5th generation)

- Uses Apple Lightning connector

- USB port allows the iOS host to charge without disconnecting iDynamo

- Bi-directional card reading

- Reads encoded data that meets ANSI/ISO/AAMVA standards

- Reads up to three tracks of card data

- Non-volatile memory for storage of protected and settable properties (such as unit serial number)

- Provides 54 byte MagnePrint value

- Contains a unique, permanent serial number for tracking

- Encrypts track data MagnePrint values before they leave the magnetic stripe reader head

- Provides clear text confirmation data, including cardholder name, expiration date, and a portion of the PAN as part of the masked track data

- Supports mutual authentication mode for use with Magensa.net

* iPad charging may require using the Apple supplied 10 Watt (2A @ 5V) iPad charger or equivalent. Computer USB ports may not supply enough power to charge the device.

1.3   About iDynamo Components

The major components of **iDynamo 5 (Gen II)** are shown in **Figure 1-1** below. The major components of **iDynamo 5** are nearly identical, with a Micro-USB B connector in place of the USB-C connector.
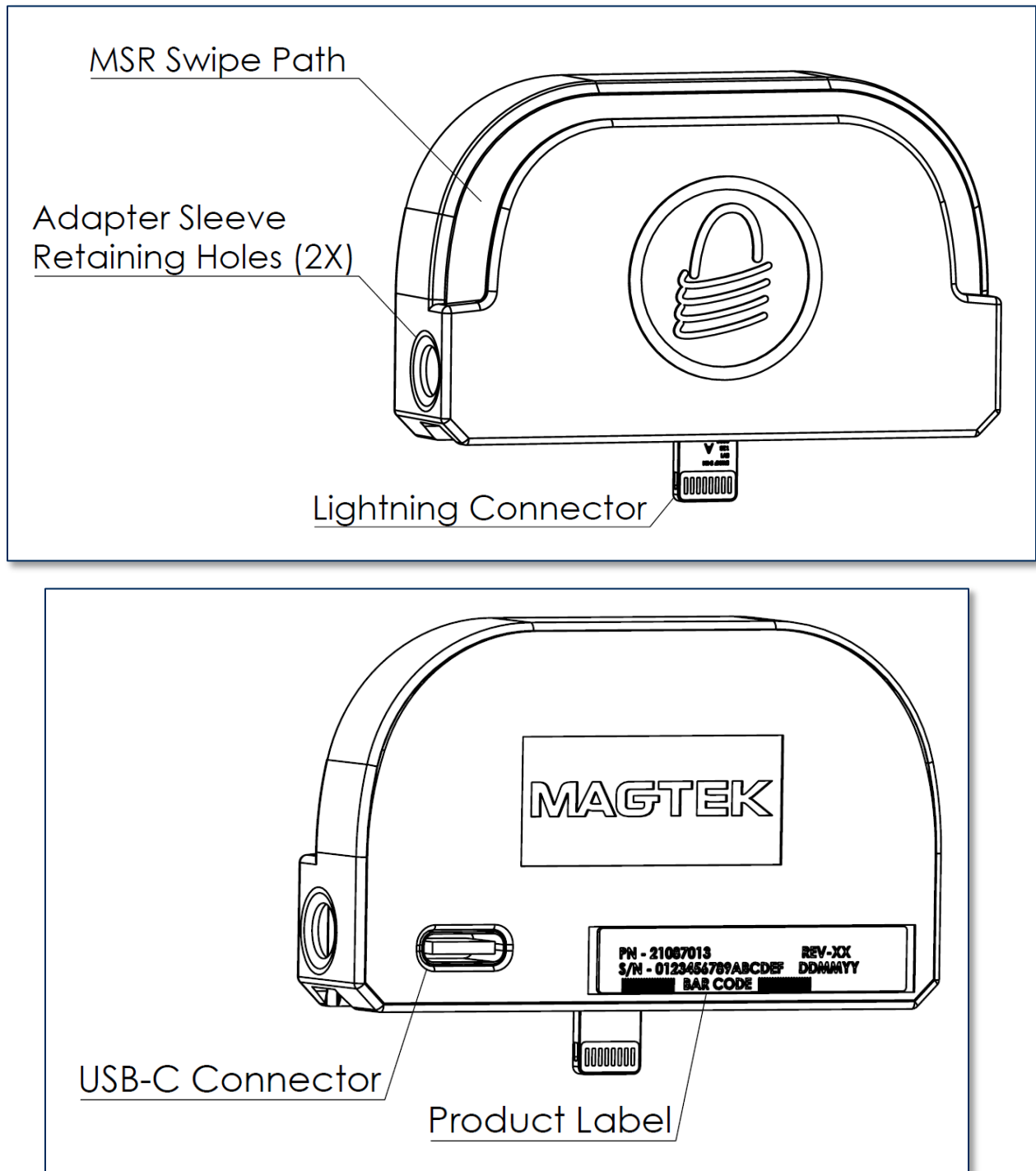
Figure 1-1 - iDynamo 5 (Gen II) Major Components

1.4   About Terminology

In this document, iDynamo models are referred to as the **device**. It is designed to be connected to a **host**, which is a piece of general-purpose electronic equipment that can send commands and data to, and receive data from, the device. Host types for iDynamo include a variety of iOS devices. Generally, the host must have **software** installed that communicates with the device and is capable of processing transactions. During a transaction, the host and its software generally interact with the **operator**, such as a cashier or bank teller, while the device interacts with the **cardholder**.

1.5   About Solution Planning

Smooth deployment of an iDynamo solution requires some up-front planning and decision-making:

- Determine the overall **functional requirements** and desired **user experience** of the solution iDynamo will be integrated into. For example, how iDynamo and its host will be physically **presented** to the cardholder. This includes whether the solution will be handheld or permanently mounted in a stand or enclosure, and whether the solution is intended to be used in portrait or landscape orientation. When planning placement, be sure to consider:

  a) **Power source availability**. For example, permanently mounted solutions should be within reasonable cabling distance from the power source; handheld solutions need a designated secure location with charging power available.

  b) **Ergonomics**. For example, make sure there is adequate clearance for operators or cardholders to easily find the critical components of the device, and swipe a card.

- Determine what **documentation** and **training** will be required from solution design through testing and field deployment. For example, it may be necessary to develop a solution-specific installation procedure for technicians, and training materials for operators.

- Determine what type of **host** iDynamo will connect to. Use **Table 1-1** to determine which model of iDynamo is appropriate for your solution, and use **Table 1-2** to determine which adapters and accessories you need. **Appendix B** provides detailed information about each adapter. When planning, include any additional support or devices required by the host, such as physical locations, mounting, and power connections.

- Determine how the host and iDynamo will be **mounted**.

- Determine what **software** will be installed on the host and how it will be configured. Software can include operating system, transaction processing software, security software, and so on. Include any additional support required by the software, such as network connections.

- Determine how iDynamo should be **configured**, and specify that when you order devices. MagTek or your reseller can advise. For deep detail about configuration options and how they affect device behavior, see *D998200309 iDynamo 5 (Gen II) Programmer's Manual (COMMANDS)*, available from MagTek.

- Determine how the solution will be powered. iDynamo provides a USB port for pass-through charging of the connected iOS host, or can draw power from the iOS host in handheld solutions. In a handheld solution using the host's power, determine the **battery recharge schedule(s)**. For example, in high-traffic mission-critical solutions, it may be wise to keep spares configured and charged for fast swap-out.

- Determine how iDynamo will be **branded**. In large quantities, MagTek can accommodate custom branding colors and trade dress. Contact a representative for details.

- Determine how the solution will be **tested** and, if appropriate, how it will be **certified**.

- Determine how the solution will be **maintained**. See section **4 Maintenance** for guidance on maintaining the iDynamo portion of the solution.

- Determine how the solution will be **regularly inspected** for tampering, unauthorized added components such as eavesdropping or skimming devices, and so on. Proper inspection requires additional solution-specific training, instructions, and visual references.

Table 1-1 - iDynamo Models

Model	Part #	Connections	Made For
iDynamo 5	21073131	Lightning Micro-USB B	iPhone 6, iPhone 6 Plus, iPhone 5, iPhone 5c, iPhone 5s, iPad mini 3, iPad mini 2, iPad mini, iPad Air 2, iPad Air, iPad (4th generation), and iPod touch (5th generation)
iDynamo 5 (Gen II)	21087013	Lightning USB-C	iPhone 14 Pro Max, iPhone 14 Pro, iPhone 14 Plus, iPhone 14, iPhone SE (3rd generation), iPhone 13 Pro Max, iPhone 13 Pro, iPhone 13, iPhone 13 mini, iPhone 12 Pro Max, iPhone 12 Pro, iPhone 12, iPhone 12 mini, iPhone 11 Pro Max, iPhone 11 Pro, iPhone 11, iPhone XS Max, iPhone XS, iPhone XR, iPhone X, iPhone 8 Plus, iPhone 8, iPhone 7 Plus, iPhone 7, iPhone 6s Plus, iPhone 6s, iPhone 6 Plus, iPhone 6, iPad Pro 10.5-inch, iPad Pro 12.9-inch (2nd generation), iPad Pro 9.7-inch, iPad Pro 12.9-inch (1st generation), iPad Air 2, iPad Air, iPad mini 4, iPad mini 3, iPad (6th generation), iPad (5th generation)

Table 1-2 - iDynamo Accessories

iOS Host	iDynamo Models	Adapter Sleeve	Accessory Notes
iPhone X	iDynamo 5 (Gen II)	N/A	Custom, please consult sales
iPhone 8	iDynamo 5 (Gen II)	N/A	Custom, please consult sales
iPhone 8 Plus	iDynamo 5 (Gen II)	N/A	Custom, please consult sales
iPhone 7	iDynamo 5 (Gen II)	**21041139**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPhone 7 Plus	iDynamo 5 (Gen II)	**21041140**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPhone 6	iDynamo 5	**21041139**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPhone 6 Plus	iDynamo 5	**21041140**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPhone 6s Plus	iDynamo 5 (Gen II)	**21041140**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPhone 5	iDynamo 5	**21041088**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPhone 5c	iDynamo 5	**21041136**	Optional (specify on sales order)
iPhone 5s	iDynamo 5	**21041088**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)

iOS Host	iDynamo Models	Adapter Sleeve	Accessory Notes
iPad Pro 9.7-inch	iDynamo 5 (Gen II)	**1000001920**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPad Pro 12.9-inch (1st generation)	iDynamo 5 (Gen II)	N/A	Custom, please consult sales
iPad mini 4	iDynamo 5 (Gen II)	**1000001920**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPad mini 3	iDynamo 5 iDynamo 5 (Gen II)	**21041137**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPad mini 2	iDynamo 5	**21041137**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPad mini	iDynamo 5	**21041087**	Optional (specify on sales order)
iPad Air 2	iDynamo 5 iDynamo 5 (Gen II)	**1000001920**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPad Air	iDynamo 5 iDynamo 5 (Gen II)	**21041137**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPad (6th generation)	iDynamo 5 (Gen II)	**21041137**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPad (5th generation)	iDynamo 5 (Gen II)	**21041137**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPad (4th generation)	iDynamo 5	**21041086**	Incl. with iDynamo 5 Incl. with iDynamo 5 (Gen II)
iPod touch (5th generation)	iDynamo 5	**21041089**	Optional (specify on sales order)
Cleaning card	iDynamo 5 iDynamo 5 (Gen II)	96700025 card	Optional (specify on sales order)
Retractable Micro-USB B cable	iDynamo 5	21051543 cable	Optional (specify on sales order)

2   Installation

Installing iDynamo is a straightforward process: The acquirer or manufacturer configures the encryption keys before deployment. Operators need only set up a host with appropriate software, configure the software, and connect the device to the host. This section provides general information about setting up solutions that incorporate iDynamo, including installing host software and connecting the device.

2.1   About Host Software

In any solution, iDynamo is connected to a **host**, which must have software installed that knows how to communicate with the device, and which is capable of performing actions intended to be carried out when a cardholder swipes a card. To set up the host software to work with iDynamo, follow the installation and configuration instructions provided by the vendor of the host or the host software. For details about developing host software, see section **5 Developing Custom Host Software**.

2.2   How to Connect to a Host

iDynamo connects to an iOS host via the Lightning connector. Some hosts also may use an additional adapter sleeve, either included with the device or available from MagTek, which varies based on the iOS host being used, and which enhances the stability of the connection between iDynamo and the host.

To connect iDynamo to your selected iOS host for the first time, follow these steps:

1) Make sure you have the correct adapter sleeve for the iOS host you are connecting to. Check the label on the adapter sleeve against the list of available accessories in **Table 1-2** on page **15**. See **Appendix B iDynamo Adapter Sleeves** for a guide to identifying them.
2) Connect the adapter sleeve to iDynamo.
3) Power on the iOS host.
4) Connect the adapted iDynamo to the iOS host. Make sure all components are seated firmly.
5) After a few seconds, the iOS host will pop up an **App Not Installed** window. Press the **App Store** button to open the App Store and browse through the list of all compatible apps.
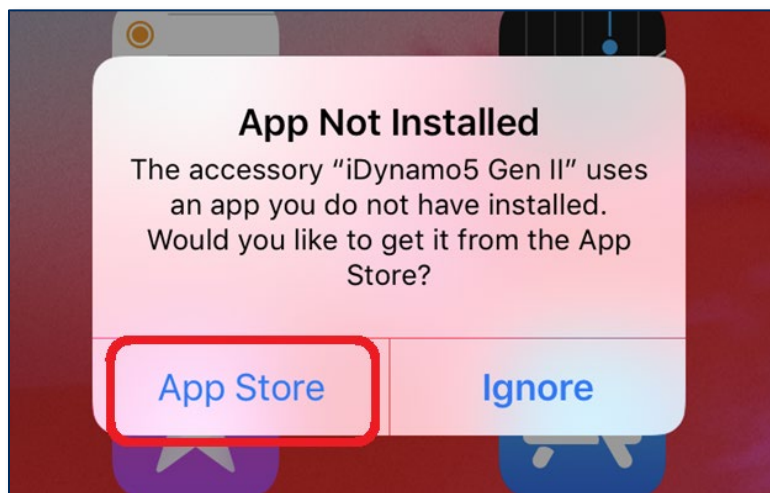
6) If the **App Not Installed** window does not pop up, it is likely an iDynamo has been connected to the host in the past and the host already has a compatible app installed. Follow these additional steps to trigger the same process manually:
   a) On the iOS host, select **Settings** to open the **Settings** page.

b) Select **General** to open the **General** page.
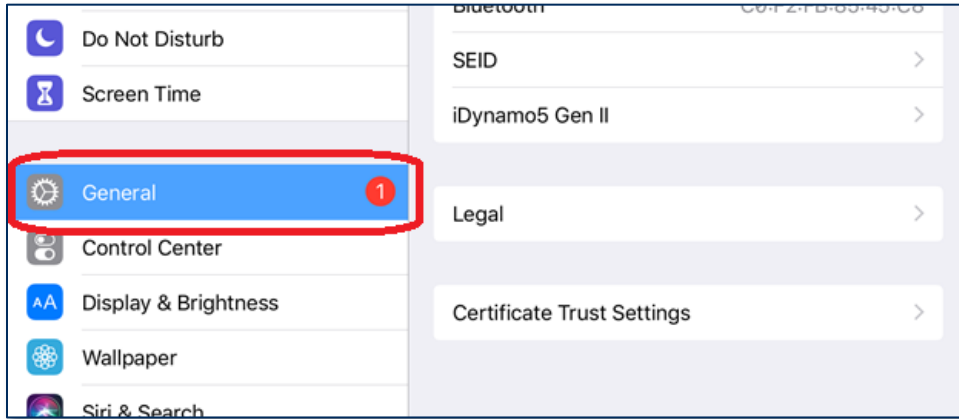
c) Select **About>** to open the **About** page.
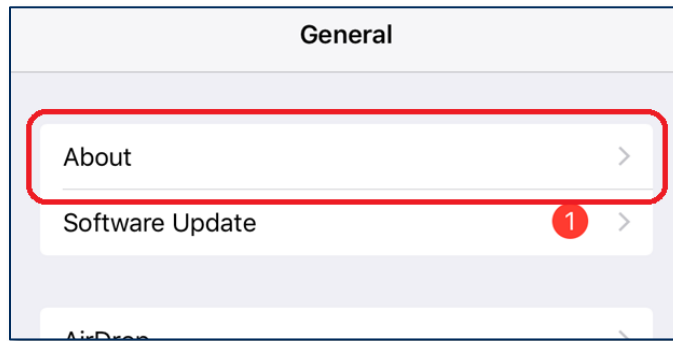
d) Select the entry for **iDynamo 5** or **iDynamo 5 Gen II** to show the device's **About** page.

e) In the device's **About** page, select **Find App for Accessory**.

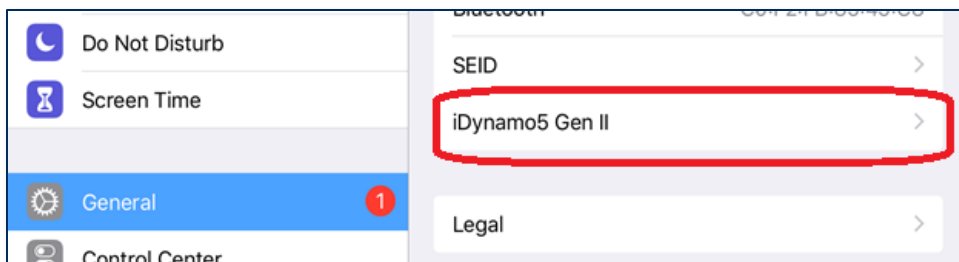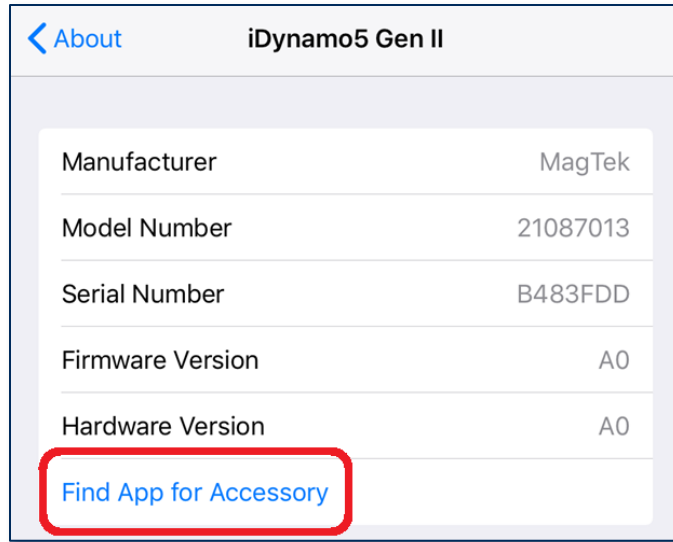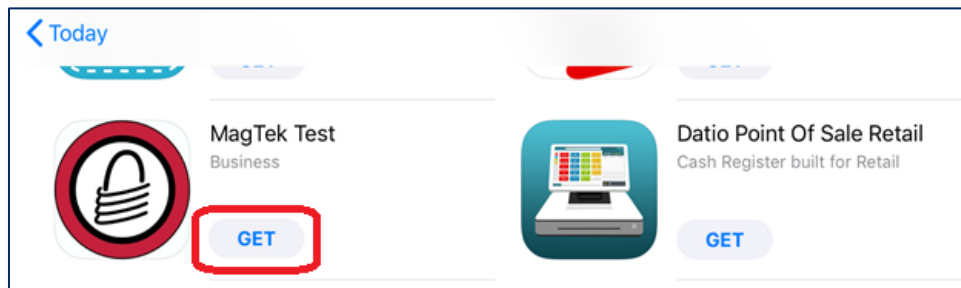7) Install and configure the host software you intend to use with iDynamo. If you do not yet have host software, you can download a test tool from the App Store called MagTek Test, published by MagTek, Inc., to perform simple tests.

8) Make sure the host software is configured to look for the device on the proper connection type.

9) Make sure the host software is configured to look for the correct device.

10) Make sure the host software is configured to properly interpret incoming data from the device.

11) Use the host software or the MagTek Test app to test swiping, inserting, and tapping a card. For details, see section **3.2 Card Reading**. If you are using the MagTek Test app, follow these steps:

   a) At the bottom of the app, select Lightning.

   b) Press the Connect button. If the host successfully connects, the main reporting area of the app will say Connected….

2.3 How to Disconnect from a Host

To disconnect iDynamo from the host, follow these steps:

1) Make sure all installed apps that use iDynamo are either closed or disconnected.

2) Turn off the iPad host's display to avoid accidentally launching or interacting with apps.

3) Disconnect the pass-through charging cable, if one is connected.

4) Carefully pull iDynamo's adapter sleeve straight out from the host.

3   Operation

3.1   Power Management

3.1.1   About Power

During normal operation, iDynamo is powered either from its connection to the host or from a connection to a USB power source. When properly powered through its USB port, the device powers the connected iOS host through the Lightning port. While the host charges this way, the device consumes more power from the USB connection than when the host's battery is fully charged. For details about setting up pass-through charging, see section **3.1.2 How to Set Up Pass-Through Charging**.

To save power, iDynamo enters low power mode when an app does not have an active session with it, and will remain in low power mode until the app restarts or re-initiates a session. While an app has an open session, a cardholder may swipe a card through the magnetic stripe reader slot. When the device is not connected to USB power, the host would generally open a session with the device to process a transaction, then close the session after the transaction is complete to transition the device to low power mode and conserve power. When the device is powered by the USB-C connector, the host software may choose to always keep a session open with the device.

If iDynamo does not receive adequate power from the host or its USB connector, the device powers off.

The device also draws a trickle of power from the connected iOS host to power the magnetic stripe reader head. The host's operating system manages this power flow when the device is not in use to save power.

3.1.2 How to Set Up Pass-Through Charging

NOTICE
iDynamo's pass-through USB port only supports *charging* the iOS host. It does not support *synchronizing data*. To synchronize the iOS host with a computer, you must disconnect iDynamo and connect the iOS host directly to the computer.

iDynamo is equipped with a pass-through USB port which allows the connected iOS host to continue charging while iDynamo is connected.

To set up pass-through charging, follow these steps:

1) Disconnect iDynamo from the iOS host.

2) Verify the charging source works properly without iDynamo: Connect the iOS host directly to the power source using the iOS host's original cable. The power source may be a computer's high-power USB port (2A @ 5V) or an Apple-supplied or third-party charger designed for the iOS host.

3) Make sure the iOS host charges correctly.

4) Disconnect the charging cable from the iOS host.

5) Connect iDynamo to the iOS host. See section **2 Installation** for details.

6) Connect the charging cable to iDynamo's pass-through USB port.

3.2 Card Reading

3.2.1 About Reading Cards

The steps for reading a card may be different depending on iDynamo's configuration and on the design of the host software. Host software developers should see section **5 Developing Custom Host Software** for implementation references. The solution developer should provide solution-specific instructions for operators to follow. A transaction generally follows this essential flow:

1) An advanced operator makes sure iDynamo has been installed and configured, appropriate host software has been installed and configured, and the connection between iDynamo and the host is working properly (see section **2 Installation**). After the iOS host identifies and authenticates iDynamo, apps may open a session with it.

2) The operator uses the host user interface to finalize a transaction amount, then initiates a transaction.

3) The host communicates with the device, and reports to the operator when the device is ready.

4) The operator directs the cardholder in presenting payment.

5) The cardholder interacts with the device to present payment.

6) Because the device does not have its own display, the device may send messages to the host prompting the cardholder to perform certain actions; the host software should process these requests by displaying the requested messages, and depending on the placement of the host display(s), the operator may need to relay the messages to the cardholder. For example, if the device can not read the card, it may prompt the cardholder to swipe again.

7) The device reports the success or failure of the transaction to the host, which should report the results to the operator.

3.2.2 How to Swipe Magnetic Stripe Cards

Cardholders should swipe magnetic stripe cards in the MSR swipe path with the magnetic stripe facing away from the cardholder and into the device, as shown in **Figure 3-1**. Cardholders may swipe in either direction along the path.

Figure 3-1 - Swiping a Card Through iDynamo

4   Maintenance

⚠ CAUTION
To avoid damaging the read head, only clean the card path with approved cleaning cards. DO NOT use liquid cleaning products or insert any other objects into the device.

Periodic cleaning of iDynamo's exterior may be required. To clean the outside of iDynamo, wipe it down with a soft, damp, lint-free cloth and then wipe it dry.

MagTek's double-sided cleaning card *96700004* is designed to clean the magnetic read head in the MSR swipe path. Keeping the head clean is essential to the device's functioning. MagTek recommends swiping and inserting a cleaning card once per week to avoid card misreads.

5 Developing Custom Host Software

Custom host software uses the same underlying device command set to communicate with all available iDynamo models. This section provides high-level information about communicating with the device, and provides pointers to select API references and sample code.

5.1 Lightning-Based Custom Software

MagTek produces software development kits (SDKs) with API libraries that provide higher-level functions wrapped around Lightning communication protocols. These libraries simplify the development of custom host software that interfaces with iDynamo. See *99510111 DYNAMAX / EDYNAMO / UDYNAMO / ADYNAMO / IDYNAMO / KDYNAMO / SDYNAMO / TDYNAMO SDK FOR IOS*. All product software and documentation is available from www.magtek.com.

In addition to MagTek's SDK API libraries, custom host software can communicate directly with the device using Apple's *ExternalAccessory* Framework, with sample code available in the form of Apple's *EADemo* app. For details, see:

- *Apple Developer Documentation*
- https://developer.apple.com/devcenter/ios
- *D998200309 iDynamo 5 (Gen II) Programmer's Manual (COMMANDS)*, available from MagTek.

5.2 For More Information

For more information about developing custom host software that integrates with iDynamo, see the MagTek website or contact your reseller or MagTek Support Services.

Appendix A   Technical Specifications

iDynamo Technical Specifications	
Reference Standards and Certifications	
Identification Cards Financial Transaction Cards (ISO 7813) AAMVA Encryption: TDEA (3DES)-CBC using DUKPT FCC Title 47 Part 15 Class B CE Level B EMC UR/CUR UL Recognized California Proposition 65 (California) EU Directive Waste Electrical and Electronic Equipment (WEEE) EU Directive Restriction of Hazardous Substances (RoHS) Universal Serial Bus Specification 2.0, compatible with 1.1	
Physical Characteristics	
Dimensions (H x W x T)	2.47 in. x 1.50 in. x 0.58 in. (62.7 mm x 38.1 mm x 14.7 mm)
Weight	Approximately 1 oz. (28g)
Supported Mounting Options	Direct to iOS host, adapter sleeves available
Card Read Characteristics	
Magnetic Stripe Reader	Bidirectional 3 track encrypting IntelliHead magnetic stripe reader (MSR) with MagnePrint
Magnetic Stripe Decoding	Financial (ISO Type B), AAMVA, or Other ISO 7810, 7811
Acceptable Swipe Speeds	6 in./s to 60 in./s (15 cm/s to 152 cm/s)
Chip Card Reader	Not Applicable
Contactless Reader	Not Applicable
User Interface Characteristics	
Status Indicators	Host-driven
Display Type	Not Applicable
Display Size (viewable area)	Not Applicable
Display Resolution	Not Applicable
Keypad	Not Applicable
Security Characteristics	
Ingress Protection	Not Applicable
Tamper Protection	Not Applicable

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iDynamo Technical Specifications	
Code Protection	Signed firmware. The device will not allow a host to install firmware that is not properly signed by an authorized source.
Eavesdrop Protection	Not Applicable
Electrical Characteristics	
Power Inputs	Lightning connector iDynamo 5: Micro-USB B connector iDynamo 5 (Gen II): USB-C connector
Battery Type	Not Applicable
Battery Capacity	Not Applicable
Battery Charge Time	Not Applicable
Battery Time, Powered Off	Not Applicable
Battery Time, Idle	Not Applicable
Battery Time, Sleep Mode	Not Applicable
Battery Time, Transactions	Not Applicable
Voltage Requirements	2.85 to 3.47 VDC from the attached iOS host 5 VDC on USB power
Average Current Draw	From USB Connector: 270 mA (connected mode with swipe/contact/contactless enabled) Additional draw (~1A, depends on host) when charging host's battery From iOS host: 85 mA from the attached host when magnetic read head is on; 0mA otherwise
Data Storage	Not Applicable
Host Connection Characteristics	
Wired Connection Types	Apple Lightning iAP2 iDynamo 5: Micro-USB for pass-through charging iDynamo 5 (Gen II): USB-C for pass-through charging
Wireless Connection Types	Not Applicable
Wireless Connection Frequency	Not Applicable
Software Characteristics	
Tested Operating System(s)	iDynamo 5: iOS 6.0.0 through 6.1.3 iDynamo 5 (Gen II): iOS 8 and above

iDynamo Technical Specifications	
Environmental Tolerance	
Operating Temperature	32°F to 95°F (0°C to 35°C)
Operating Relative Humidity	5% to 90% without condensation
Storage Temperature	-4°F to 113°F (-20°C to 45°C)
Storage Relative Humidity	10% to 90% without condensation
Vibration Resistance	Not Applicable
Shock Resistance	No separation of covers or damage to internal components after six surface drops and four corner drops 3 feet onto concrete surface
Maximum operating altitude:	3000 m (10,000 ft.)
Reliability	
Shelf Life	Minimum 4 years
Magnetic Read Head Life	100,000 card swipes
ICC Read Head Life	Not Applicable
Battery Shelf Life	Not Applicable
Battery Cycle Life	Not Applicable

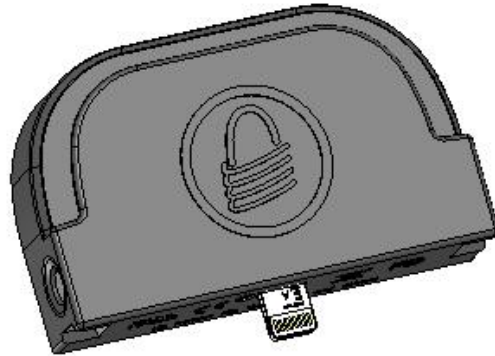# Appendix B   iDynamo Adapter Sleeves

Figure 5-1 - iDynamo 5 Without Adapter Sleeve
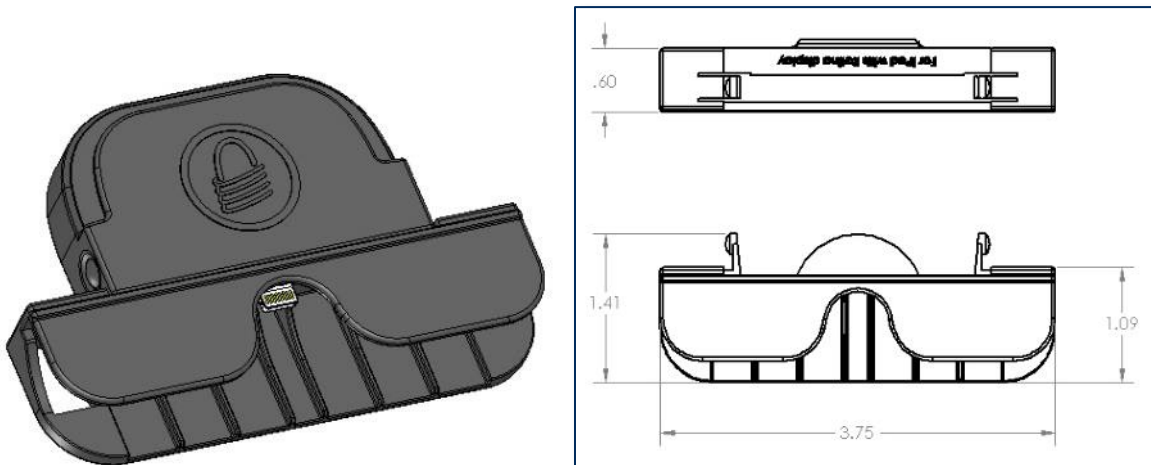
B.1   21041086

Figure 5-2 - iDynamo 5 with 21041086 Adapter Sleeve, Adapter Sleeve Dimensions (in inches)
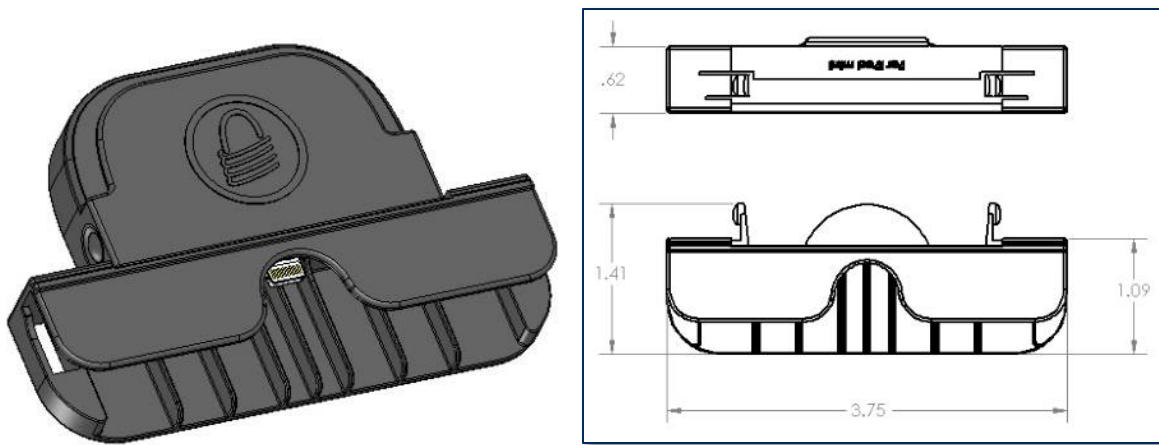
B.2   21041087

Figure 5-3 - iDynamo 5 with 21041087 Adapter Sleeve, Adapter Sleeve Dimensions (in inches)
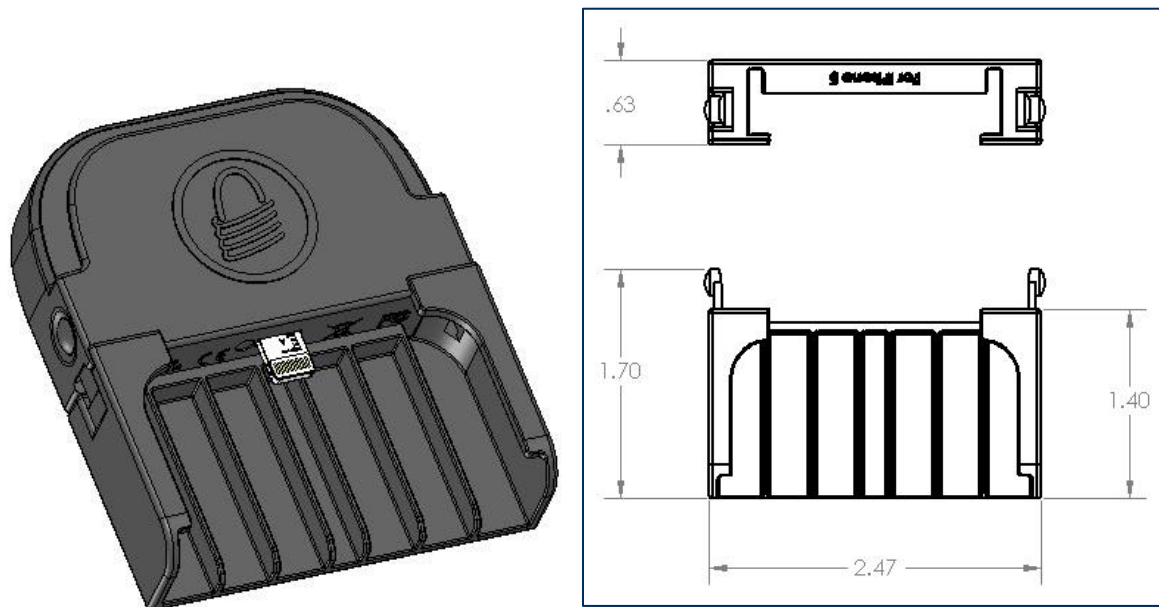
B.3   21041088

Figure 5-4 - iDynamo 5 with 21041088 Adapter Sleeve, Adapter Sleeve Dimensions (in inches)
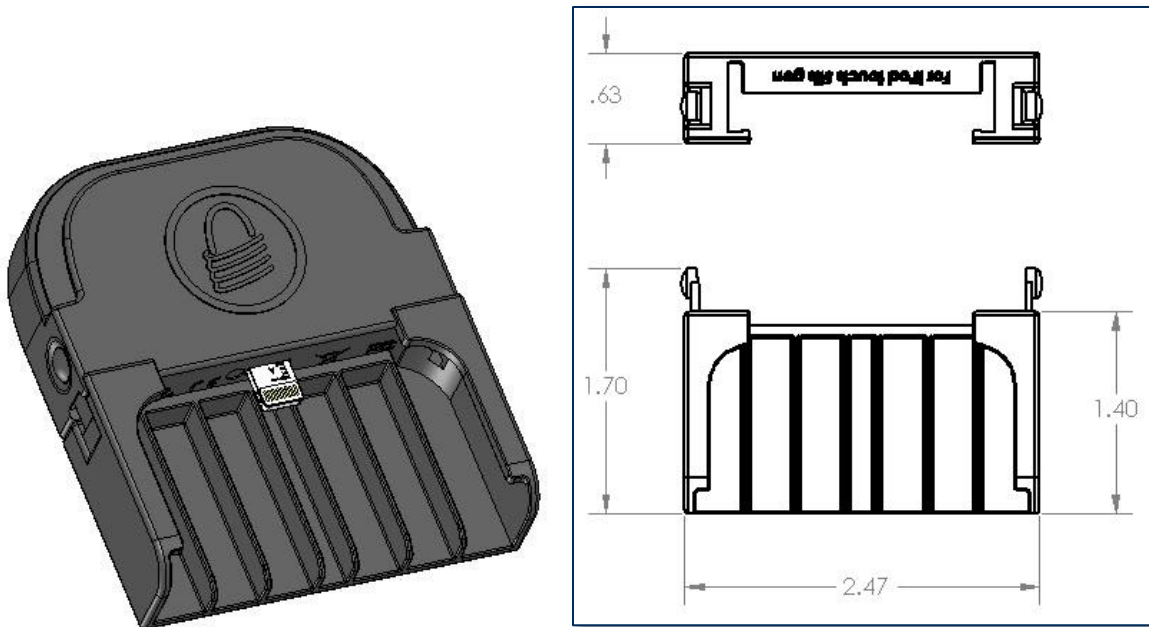
B.4   21041089

Figure 5-5 - iDynamo 5 with 21041089 Adapter Sleeve, Adapter Sleeve Dimensions (in inches)
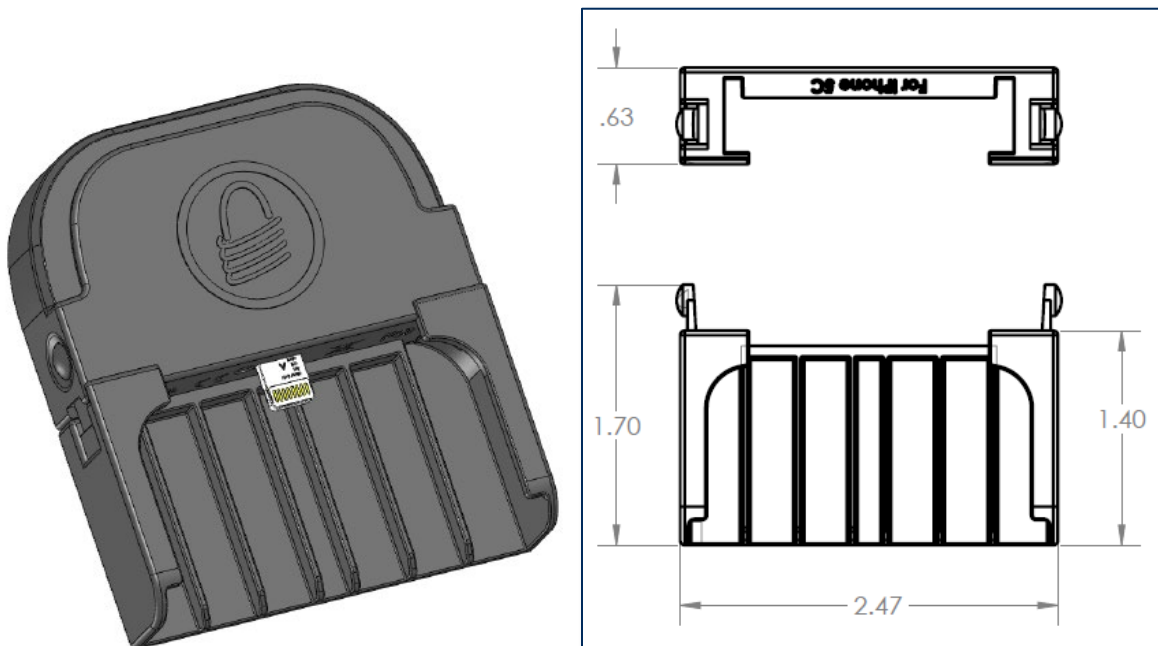
B.5   21041136

Figure 5-6 - iDynamo 5 with 21041136 Adapter Sleeve, Adapter Sleeve Dimensions (in inches)
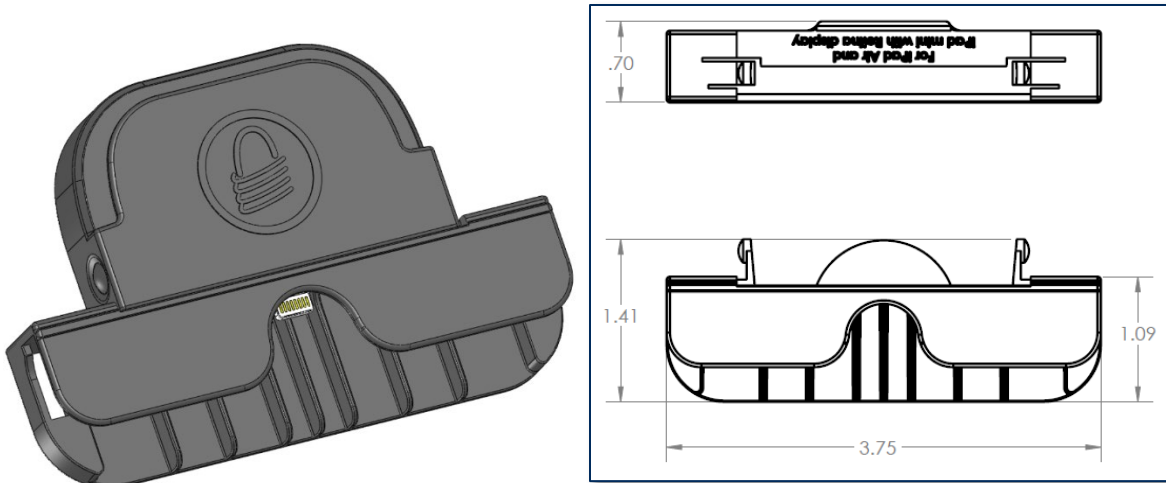
B.6   21041137

Figure 5-7 - iDynamo 5 with 21041137 Adapter Sleeve, Adapter Sleeve Dimensions (in inches)
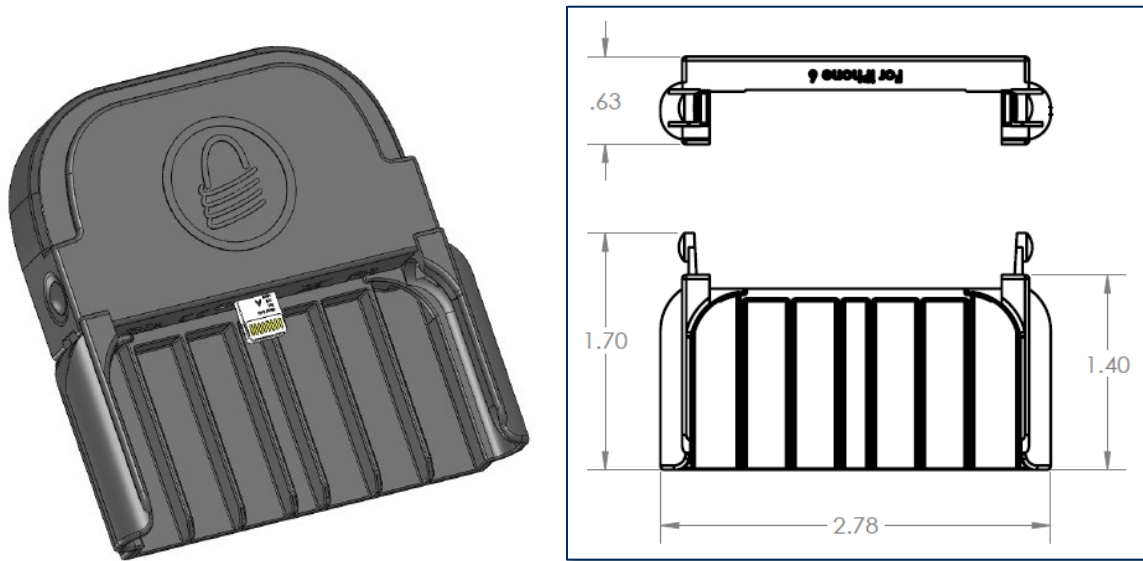
B.7   21041139

Figure 5-8 - iDynamo 5 with 21041139 Adapter Sleeve, Adapter Sleeve Dimensions (in inches)
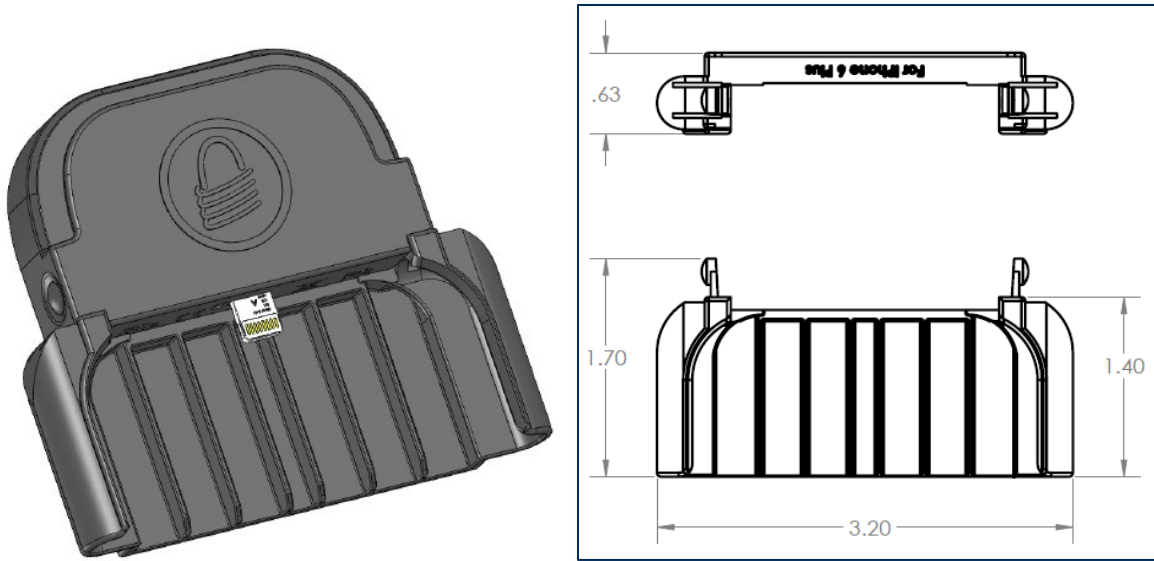
B.8   21041140

Figure 5-9 - iDynamo 5 with 21041140 Adapter Sleeve, Adapter Sleeve Dimensions (in inches)
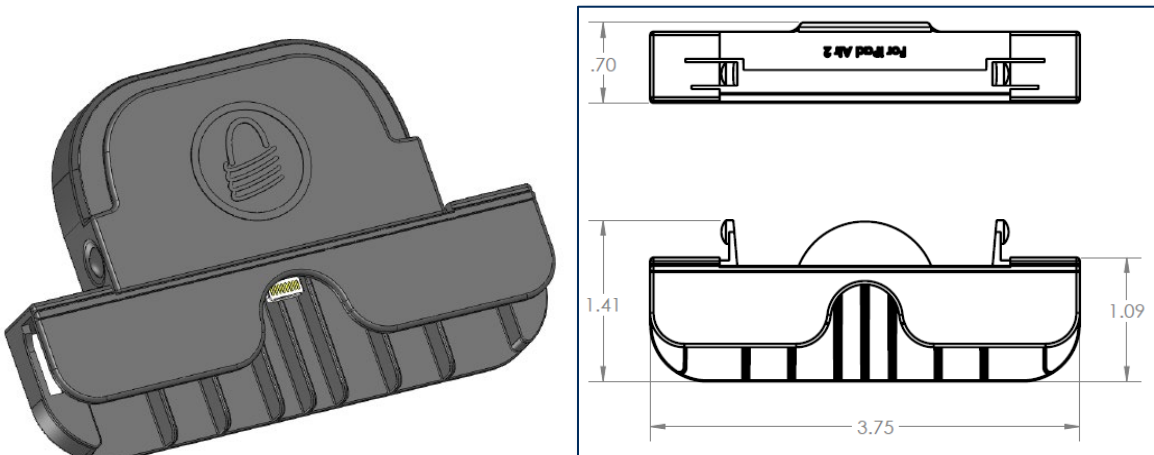
B.9   1000001920

Figure 5-10 - iDynamo 5 with 1000001920 Adapter Sleeve, Adapter Sleeve Dimensions (in inches)

Appendix C   Troubleshooting

C.1   App Does Not Detect iDynamo

If the app you are using won't detect or connect to the device, check the following:

- Check the electromechanical connection:
    - o Make sure the iOS host's case is not interfering with the connection.
    - o Make sure you are using the correct adapter for the chosen iOS host (see **Appendix B**).
    - o Make sure iDynamo in its adapter sleeve does not shift on the iOS host when gently wiggled.
    - o Make sure the device's connector is not damaged or dirty.
    - o Connect another device to the iOS host's connector to make sure it is functioning correctly.

- For an app to interface with iDynamo, it must use the same Bundle Identifier as the device. iDynamo can also be configured with a different Bundle Identifier, in which case the app must use that Bundle Identifier instead. For details, see section **5 Developing Custom Host Software**.

C.2   Bad Reads / Swipe Not Detected

If card swipes are not being registered correctly, check the following:

- **Card orientation**. Make sure the card is oriented so the magnetic stripe is inside iDynamo and facing toward the thicker side of iDynamo (away from the MagTek lock logo). See section **3.2.2 How to Swipe Magnetic Stripe Cards**.

- **Damaged card**. The magnetic stripe on the card may be damaged. Try another card.

- **Excessive buildup on the read head**. Clean the read head by swiping a cleaning card through iDynamo several times in different orientations until the card comes out clean. Cleaning card 96700025 is available from MagTek. If the operating environment is dusty, use compressed air to blow dust or other residue out of iDynamo.

- **Swipe mechanics**. A good read depends on the magnetic stripe moving straight over the read head and above a certain speed. Try swiping more quickly and straight through the guide path of iDynamo. The range of working swipe speeds is listed in **Appendix A Technical Specifications**.

- **Ergonomics**. Make sure there are no mechanical hindrances (such as an accessory case or stand for the iOS host) or ergonomic factors (such as awkward mounting angle) that make it difficult to swipe smoothly and straight through the device.

If iDynamo still does not register swipes after following these steps, contact your supplier for assistance.

C.3   iOS Host Not Charging

If the connected iOS host is not charging through the pass-through USB port, check the following:

- **Incorrect power supply** / **not enough power**. Swap out components in the chain, such as the power supply itself and the cable connecting the power supply to iDynamo. Remove iDynamo and connect the power supply directly to the iOS host to make sure the host charges.

- **Connectors**. Check the connectors on iDynamo, the iOS host, and the cable to make sure they are not dirty or damaged.

C.4   iOS Host Not Synchronizing

iDynamo's USB connector does not support pass-through synchronization through the iOS host's Lightning connector. The pass-through USB connector can only charge the iOS host. See section **3.1.2**.