

# DynaFlex II

## Product Family Installation and Operation Manual



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**Table 0-1 - Revisions**

Rev Number	Date	Notes
10	Feb 21, 2023	Initial release
11	Aug 08, 2023	Change WebSocket connection UI from letter “C” to icons; misc. corrections and clarifications.
12	Oct 05, 2023	Add section <b>6.8.5 How to Tap Contactless NFC Tag/Mifare Classic Card and Send Pass-through Commands</b> ; section <b>6.8.10 How to Enter Tip</b> ; section <b>6.8.11 How to Enter Sale Amount</b>

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# 1 Introduction

DynaFlex II family of devices are ready to launch your payment environment to the next level. All DynaFlex II products offer an integrated secure card reader authenticator for magnetic stripe cards, EMV chip cards (contact and contactless), and NFC enabled mobile wallets including Samsung Pay, Google Pay, Apple Pay and support for Apple VAS. The DynaFlex II family includes an array of options including angled bottoms (standard countertop models), touchscreens on Pin Entry Devices (PED) only, barcode readers (BCR models), WLAN (PED models only) and flat mounting backs (Kiosk models). **DynaFlex II** delivers a smart solution for merchants and financial institutions that need the most flexibility, in the smallest form-factor, at a great price.

DynaFlex II product features include:

- Multiple Payment Methods. Secure card reader authenticator for:
  - Magstripe cards
  - EMV chip cards
  - EMV contactless cards
  - NFC capable devices
  - Pin Entry (PED Devices Only)
  - WLAN connection (optional on PED Devices Only)
  - 1D/2D barcodes (optional)
  - Touchscreen (PED Devices Only)
- Security
  - MagneSafe Security Architecture
  - AES Encryption/DUKPT key management
  - Triple DEA encryption/DUKPT key management
  - MagnePrint card authentication
  - Device/host authentication
  - PCI secure reading and exchange of data (SRED)
  - Ready for PCI-P2PE Solutions

### 1.1 Stable and Secure Performance

DynaFlex II countertop devices come with micro suction fitted feet, assuring the cardholder a stable swipe, insert, or tap experience. DynaFlex II kiosk devices come with 4 mounting positions for secure attachment. The three reading locations are all visible to the cardholder on the face of the device; this intuitive positioning of the slots ensures that “bugs,” skimmers, or shimmers cannot be hidden easily inside the device.

### 1.2 Compatible with Multiple Operating Systems

DynaFlex II products are compatible with Android and Windows operating systems. Select models offer USB, USB-C, USB and WLAN, or USB connections.

### 1.3 The Power of Flexibility

DynaFlex II devices are ready for countertop, mounted, or handheld solutions. Ready for traditional brick-and-mortar points of sale, mounted to a touchscreen, or brought to the table with wireless models. DynaFlex II PED, with touchscreen, can present your logo, custom messaging, and on-screen instructions for insert, tap, or swipe operations. DynaFlex II BCR reads 1D and 2D barcodes for faster transactions and QR Code acceptance. DynaFlex II products are made from molded rubberized black plastic and matching black lens on the face. Custom colors and silk-screened logos are available with minimum orders.

### 1.4 MagneSafe Security Architecture

DynaFlex II devices adhere to MagTek’s MagneSafe Security Architecture. This is based on dynamic encryption, authentication, and tokenization which protects cardholder data from the moment of swipe, insert, or tap. DynaFlex II devices are PCI-SRED compliant, making them ideal for P2PE solutions.

### 1.5 Magensa Services

Couple DynaFlex II products with Magensa Services to make your certification cycle easier and remove unencrypted data from your environment. A service representative will work with you to determine if Magensa Decrypt, Magensa Decrypt and Forward, or the Magensa Payment Protection Gateway is best for you.

As always, MagTek’s developer tools, including our royalty free software developer kits with APIs, are readily available on our web site. For faster development, use MagneFlex Prism, a suite of interface developer tools that reduce the points of development, for browser and middleware software applications. Instead of using SDKs, APIs, and applets to build an interface to the hardware device, another to interface to the POS application, and another to the gateway, build the interface to MagneFlex. MagneFlex then drives the hardware, interfaces with the POS app, and issues the commands to pack, parse, and send the data out for processing.



### 1.6 About Terminology

In this document, DynaFlex II products are referred to as the **device** or inclusively as **DynaFlex II products**. They are designed to be connected to a **host**, which is a piece of general-purpose electronic equipment which sends commands and data to, and receives data from, the device. Host types include PC and Mac computers/laptops, tablets, and smartphones. 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 interact with the **operator**, such as a customer service representative, while the device interacts with the **cardholder** (even if the cardholder is using a virtual representation of the card account, such as a smartphone).

Throughout this document:

- **DynaFlex II products** refers to all devices in the DynaFlex II family, including all DynaFlex II models and DynaFlex II PED models.
- **DynaFlex II PED** refers to DynaFlex II PED products with a display, including those with kiosk back cover and barcode reader.

## 1.7 Available Models and Accessories

Table 1-1 - Available Models and Options

Part No.	Description	Display	Connection(s)
21078307	DYNAFLEX II, PCI, BLACK, USB	None	USB-C
21078309	DYNAFLEX II PED, PCI, TOUCHSCREEN DISPLAY, BLACK, USB	Touchscreen	USB-C
21078311	DYNAFLEX II PED, PCI, TOUCHSCREEN DISPLAY, BLACK, WLAN	Touchscreen	USB-C Wireless LAN
21078314	DYNAFLEX II KIOSK, PCI, BCR, BLACK, USB	None	USB-C
21078321	DYNAFLEX II PED, KIOSK, PCI, TOUCHSCREEN DISPLAY, BLACK, USB	Touchscreen	USB-C
21078322	DYNAFLEX II, KIOSK, PCI, BLACK, USB	None	USB-C
21078325	DYNAFLEX II PED, KIOSK, PCI, TOUCHSCREEN DISPLAY, BLACK, WLAN	Touchscreen	USB-C Wireless LAN
21078331	DYNAFLEX II, PCI, BCR, BLACK, USB	None	USB-C
21078332	DYNAFLEX II PED, PCI, TOUCHSCREEN DISPLAY, BCR, BLACK, WLAN	Touchscreen	USB-C Wireless LAN
21078333	DYNAFLEX II PED, PCI, TOUCHSCREEN DISPLAY, BCR, BLACK, USB	Touchscreen	USB-C
21078334	DYNAFLEX II PED, KIOSK, PCI, TOUCHSCREEN DISPLAY, BCR, BLACK, USB	Touchscreen	USB-C
All models are black by default and have countertop, handheld, and custom mounting options.			

**Table 1-2 – DynaFlex II Accessories**

<b>Part #</b>	<b>Description</b>	<b>Accessory Notes</b>
1000006016	CABLE, USB A - C, 6FT, DYNAFLEX	Included with DynaFlex products
1000006017	CABLE, USB C - C, 6FT, DYNAFLEX	Optional, specify in order
21078006	CHARGING CRADLE, DYNAFLEX	Optional, specify in order
96700004	CLEANING CARD, DOUBLE SIDED	Optional, specify in order
1000008559	FOOT, BACK, SIDE A, MICROSUCTION, DYNAFLEX	Optional, specify 1 ea. for complete replacement
1000008560	FOOT, BACK, SIDE B, MICROSUCTION, DYNAFLEX	Optional, specify 1 ea. for complete replacement
1000008561	FOOT, FRONT, MICROSUCTION, DYNAFLEX	Optional, specify 1 ea. For complete replacement

## 1.8 About DynaFlex II Components

**Figure 1-1** shows the major components of DynaFlex II PED. The lanyard mount point is not visible in the figure. **Figure 1-2** shows the major components of DynaFlex II PED Kiosk. Major components of models without touchscreen are identical to the diagrams, except the touchscreen and its bezel are replaced with a faceplate showing the contactless indicator logo placed at the optimal contactless landing zone. Major components of models without barcode reader are identical to the diagrams, except the edge that incorporates the barcode reader is a single straight line and there is no QR code marking on the face.

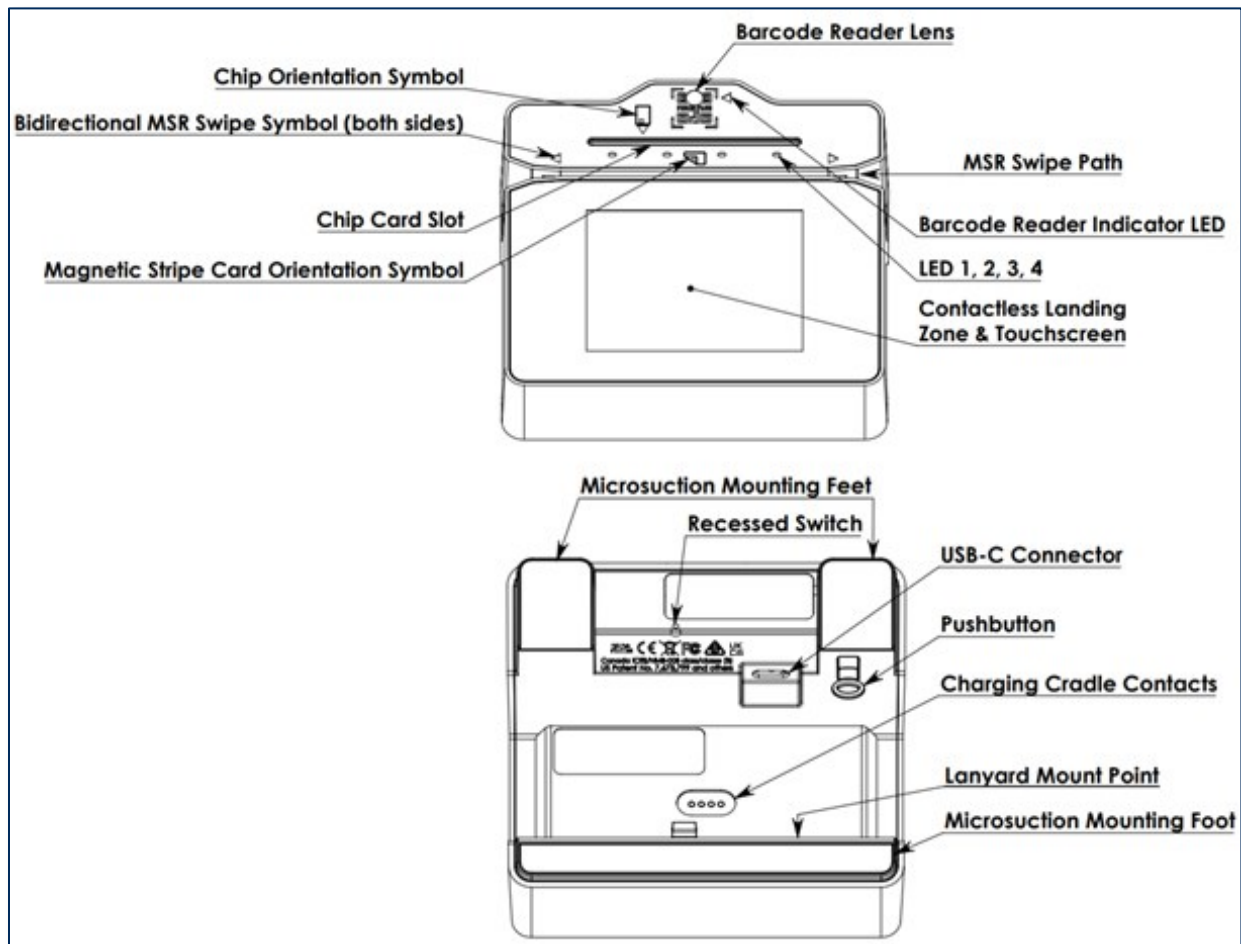


Figure 1-1 – DynaFlex II PED BCR Major Components

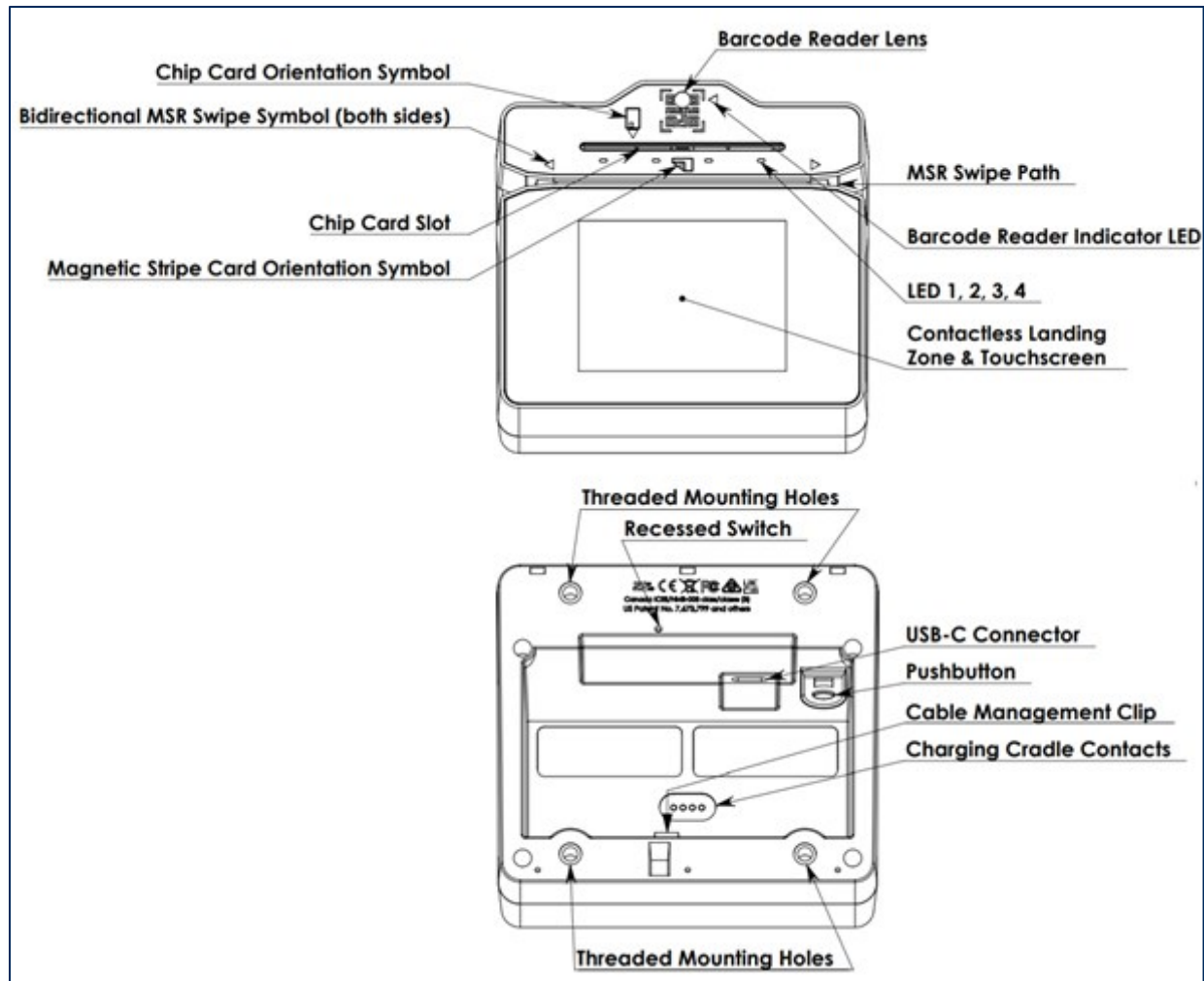
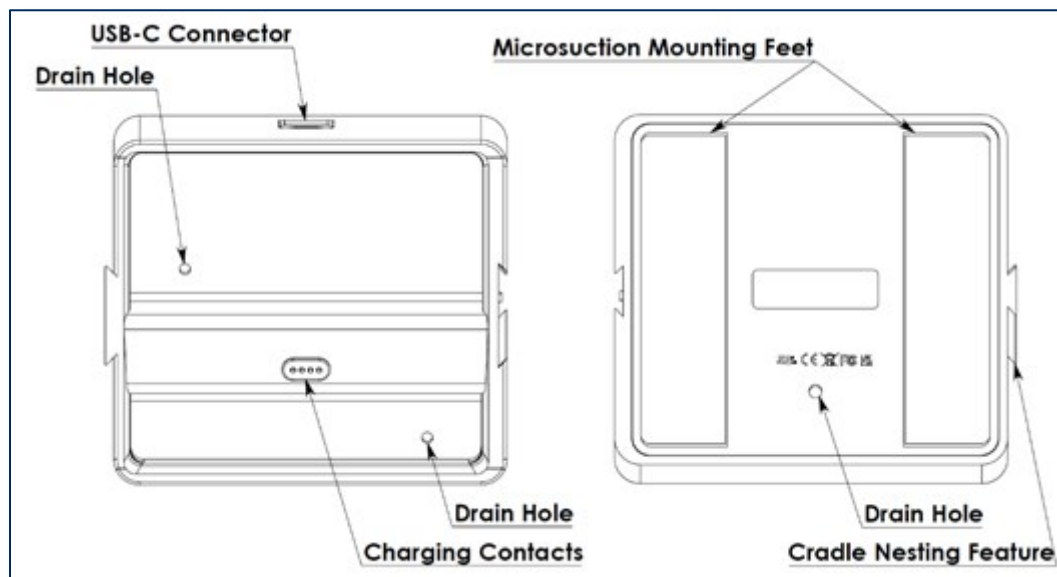


Figure 1-2 - DynaFlex II PED Kiosk BCR Major Components

**Figure 1-3** shows the major components of the optional charging cradle. The drain holes provide drainage of liquid spills from the top surface of the cradle out through the bottom. The nesting feature allows mechanical joining of any number of charging cradles into a unified charging bank. Note, the charging cradle is only compatible with non-kiosk models of the device.



**Figure 1-3 - Charging Cradle Major Components**

## 2 Planning and Preparation

The guidelines in the following sections are intended to help project planners and system administrators plan for the physical and network requirements of deploying and using DynaFlex II products. The most effective way to ensure smooth deployment of a solution is to consider these factors before receiving the device.

### 2.1 Logistical Planning

- Determine what type of **host DynaFlex II products** will connect to. For a list of supported host types and operating systems, see **Table 1-1** on page **10**. When planning, be sure to include any additional support or devices required by the host and **DynaFlex II products**, such as physical locations, mounting, power connections, and charging cradles.
- 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. If teams other than the software development team will be involved in preliminary device testing, MagTek recommends the solution development team provide a smoke test harness early in the development process to allow basic testing (for example, wireless range testing). In addition, be sure to plan for any additional support required by the software, such as software licenses and network connections. Information about software is provided in section **0** D998200524 DynaFlex II **PED Products, Device Inspection**, D998200539- DynaFlex II **PED Kiosk Products, Device Inspection**, D998200563 **DynaFlex II Products, Device Inspection**, and D998200566 **DynaFlex II Kiosk Products, Device Inspection**.
- About Host Software.
- Configure the host software to select which combinations of magnetic stripe swipe, EMV contact card insertion, contactless payment tap, and/or manual entry the host will direct the device to accept (see section **6.8 Using the Readers**).
- This decision may differ based on location, situation, and other factors, or may be uniform across all transactions and devices and hosts you are deploying.
- Determine how the device will be physically **presented** to the cardholder. If the device is to be mounted, make sure there is adequate clearance for cardholders to swipe, insert, and tap. If the solution design includes metal objects anywhere near the device, including metal enclosures, make sure that at all points the metal is no further forward than 15mm below the face of the device. Proximity to metal can adversely affect the device's performance.
- Select and configure a secure workstation advanced operators will use to configure and/or update the device. The workstation must be configured as follows:
  - Available USB port.
  - A secure means of obtaining files, either via the network (such as SFTP) or via removable media, such as USB flash drives. This is required for installing software tools, copying firmware files, and so on. If you are using Magensa Services, make sure the secure workstation has an internet connection and has all required Magensa Remote Services software components installed.

- **1000007406 DynaFlex, DynaProx Test Utility** installed, which advanced operators can use to configure and test the device.
- **1000007405 DynaFlex, DynaProx Firmware Upload Utility** installed, which advanced operators can use to update the device's firmware.
- Determine the final set of tools advanced operators will use to configure, test, and update the device. This documentation uses the **1000007406 DynaFlex, DynaProx Test Utility** as an example for configuring the device; it can be used for initial pre-deployment testing and development, and as sample code showing how to communicate with the device, but the full solution may call for customized, solution-specific software for configuring the device and updating firmware.
- Determine the **charging schedule(s) and location(s)**. For example, high-traffic mission-critical solutions may benefit from keeping multiple devices charging for fast swap-out. Charging cradles and accessories are available directly from MagTek. Make sure there is an adequate number of USB wall chargers and / or USB ports available for the number of devices you are charging together, and make sure the electrical socket-outlet at a given charging location supports the total load. Solutions using large numbers of devices may benefit from using a large-scale universal USB charger / hub. Details about charging are provided in section **6.6 Power Management**. Details about maximum power consumption are provided in **Appendix A Technical Specifications**.
- Determine how to **inspect** devices upon arrival, upon installation, and periodically during live usage to ensure malicious individuals have not tampered with them. Details about inspection are provided in section **4.1 About Inspection**.
- Develop procedures for maintaining the device(s). Detailed guidance is provided in section **7 Maintenance**.
- Review the device's **PCI Security Policy**, posted to the PCI web site [www.pcisecuritystandards.org](http://www.pcisecuritystandards.org) under **Approved PIN Transaction Security (PTS) Devices**, for additional information about using the device securely.

## 2.2 Network Planning

This content for this section is to be determined and will be included in the next revision of this document.



## 3 Handling and Storage



**Proper handling of the device throughout delivery, assembly, shipping, installation, usage, and maintenance is very important. Not following the guidelines in this document could damage the device, render it inoperable, and/or violate the conditions of the warranty.**

### 3.1 Handling to Avoid Damage

Upon receiving the device, inspect it to make sure it originated from an authentic source and has not been tampered with. For details, see *D998200524 DynaFlex II PED Products, Device Inspection*, *D998200539 DynaFlex II PED Kiosk Products, Device Inspection*, *D998200563 DynaFlex II Products, Device Inspection*, and *D998200566 DynaFlex II Kiosk Products, Device Inspection*, available from MagTek.

From device delivery through assembly, shipping, installation, usage, and maintenance, the device must not be exposed to conditions outside the ratings in **Appendix A Technical Specifications**.

If the device is exposed to cold temperatures, adjust it to warmer temperatures gradually to avoid condensation, which can interfere with the operation of the device or cause permanent damage.

Do not drop or shake the device.

For information about ongoing maintenance of the device, such as cleaning, see section **7 Maintenance**.

### 3.2 Handling to Avoid Accidental Tamper

DynaFlex II products implement active tamper detection, which uses a small amount of electricity even when the device is completely powered off. The device primarily powers its active tamper detection circuitry using its rechargeable battery to back up the coin cell. Devices with a rechargeable battery ship with the battery charged to between 45% and 65%, which provides a shelf life of up to 10 years. However, if the rechargeable battery completely discharges or the device does not contain a rechargeable battery, the device continues to power its active tamper detection circuitry using its non-rechargeable backup battery, which provides an additional 5 years of backup shelf life across the entire life of the device but does not recharge. If the rechargeable battery and the backup battery are both allowed to completely discharge, the device's tamper detection engages and locks down the device, and it must be returned to the manufacturer to reset.

To avoid accidental tamper events and to optimally condition the battery, follow these precautions:

- Temperature is the most critical factor in extending battery life and preserving battery charge. Store the device at the lowest reasonable temperatures within its specified storage temperature range (see **Appendix A Technical Specifications**). Storing below 77°F / 25°C is optimal.
- Fully charge the device immediately upon receipt to extend its shelf life (see section **6.6.3 How to Charge the Battery**).
- Before storing the device, charge the battery to less than 100% (60% is optimal).

- Before storing the device, power it off completely. See section **6.6.4 How to Power On / Wake Up from Standby Mode / Power Off**.
- When stored, charge the device for one hour every 6 months to keep the battery chemistry in optimal condition and to ensure it does not completely discharge.
- Do not drop or shake the device.

## 4 Installation

Installing DynaFlex II products is straightforward: The manufacturer or acquirer configures the preferred settings, keys, terminal, and payment brand settings before deployment; end users 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 inspecting, connecting, and installing **DynaFlex II products**.

### 4.1 About Inspection

Before unpacking the device, it is important to inspect its secure packaging to make sure it has not been tampered with in storage or in transit. MagTek provides details for inspecting the integrity of the device's secure packaging in ***D998200524 DynaFlex II Family, Package Inspection***

It is important to inspect a new device regularly and thoroughly before deployment and a device in live usage (including its immediate surroundings), to make sure malicious individuals have not tampered with it or its surroundings. MagTek recommends conducting inspection training for all device operators and an inspection schedule with checkpoints in place to make sure operators are performing inspections as specified and as scheduled. MagTek provides easy-to-follow device inspection references in ***D998200524 DynaFlex II PED Products, Device Inspection, D998200539- DynaFlex II PED Kiosk Products, Device Inspection, D998200563 DynaFlex II Products, Device Inspection, and D998200566 DynaFlex II Kiosk Products, Device Inspection.***

### 4.2 About Host Software

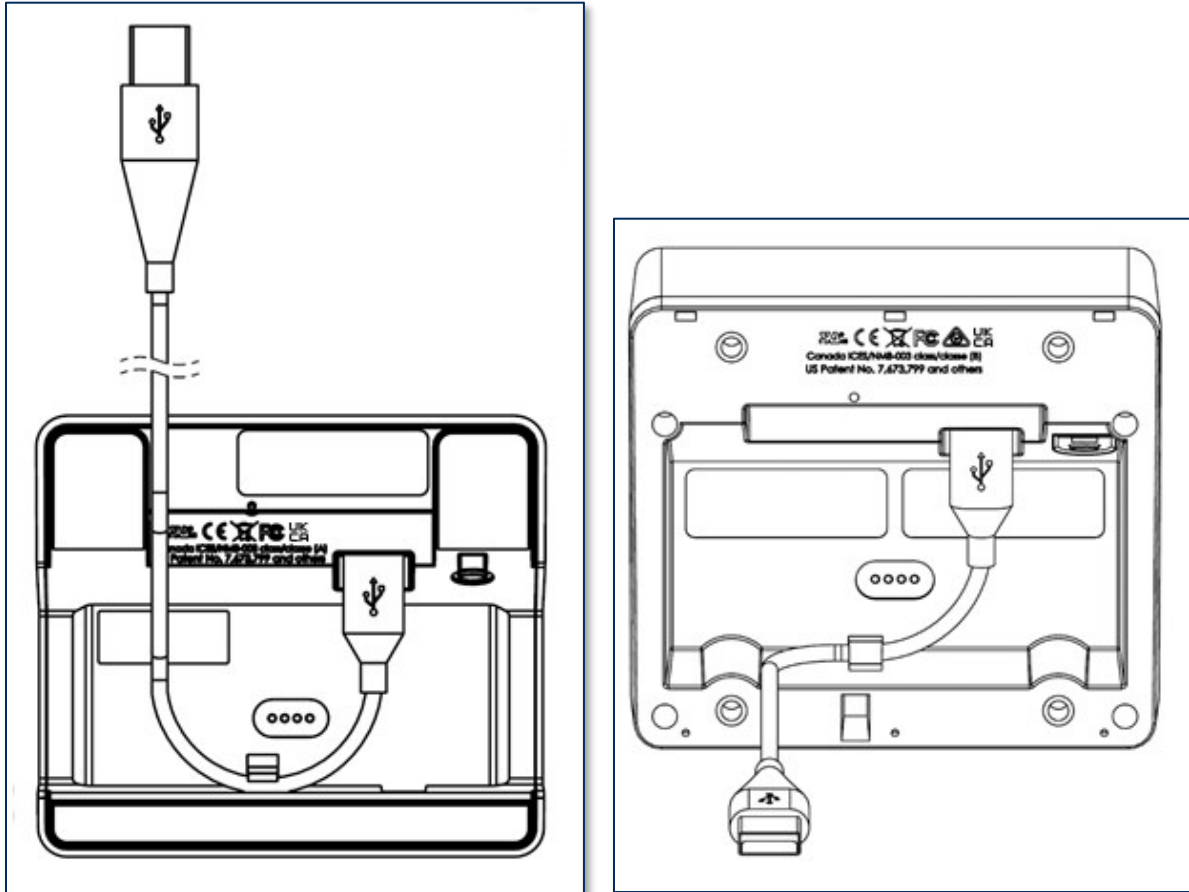
In any solution, **DynaFlex II products** are connected to a host, which must have software installed that can communicate with the device, and which is capable of processing transactions. To set up the host to work with **DynaFlex II products**, follow the installation and configuration instructions provided by the vendor of the host or the host software. For information about developing custom host software, see section **8 Developing Custom Software**.

## 4.3 Connecting to a Host

### 4.3.1 About Connecting to a Host

The following sections provide steps for connecting **DynaFlex II products** to a host via the various available physical connection types.

### 4.3.2 How to Connect DynaFlex II Products to a Host or Charger via USB



**Figure 4-1 - Connecting to a USB Host or USB Charger. Left: Countertop Models. Right: Kiosk Models**

To connect **DynaFlex II products** to a USB host or charger using the USB-C port, follow these steps (for reference see **Figure 4-1** and section **1.8 About DynaFlex II Components**):

- 1) For best results, use the cable that is included with the device or another cable from **Table 1-2 – DynaFlex II Accessories** on page 11. These cables are designed specifically for DynaFlex II products and include ferrite shielding at both ends of the cable to reduce emissions and interference. If the solution design requires an alternate cable, contact MagTek for assistance with ferrite selection and placement, and with connector overmold design.
- 2) Connect the USB-C end of the cable to DynaFlex II or DynaFlex II PED.
- 3) If you plan to route the cable out the back of the device, route the cable through the cable management clip to change its direction. Even if you are not routing out the back, you may use the

cable clip for strain relief, to help stabilize the mechanical connection when cardholders or operators move the device or the cable.

- 4) Route the cable in the desired direction (e.g., out the back, left, right, down into the countertop, or into the mounting compartment of a kiosk).
- 5) Connect the other end of the USB cable to the charger or to the host's USB port.
- 6) As soon as the device starts receiving power through USB, it automatically powers on.
- 7) If the specific device serial number you are connecting has not been connected to the host before, the device shows **Welcome** on the display, and the Windows system tray on the host reports it is **Setting up a device** (see **Figure 4-2 - Setting Up a Device**). When installation is complete (approximately 30 seconds later depending on the host), Windows reports **Device is ready**, (see **Figure 4-3 - Device is Ready**) and the device shows in Windows Device Manager under **Human Interface Devices** as two devices: **HID-compliant vendor-defined device** with VID **0801** and PID **2020**, and **USB Input Device**.

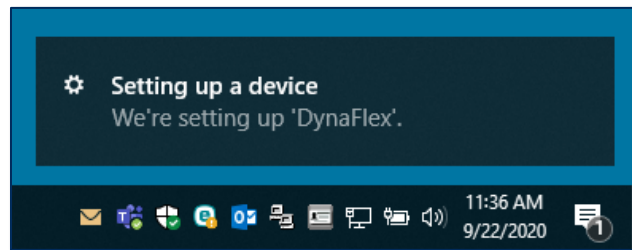


Figure 4-2 - Setting Up a Device

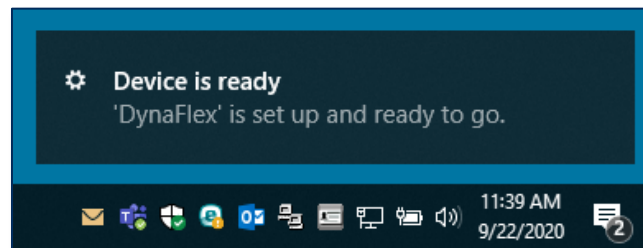
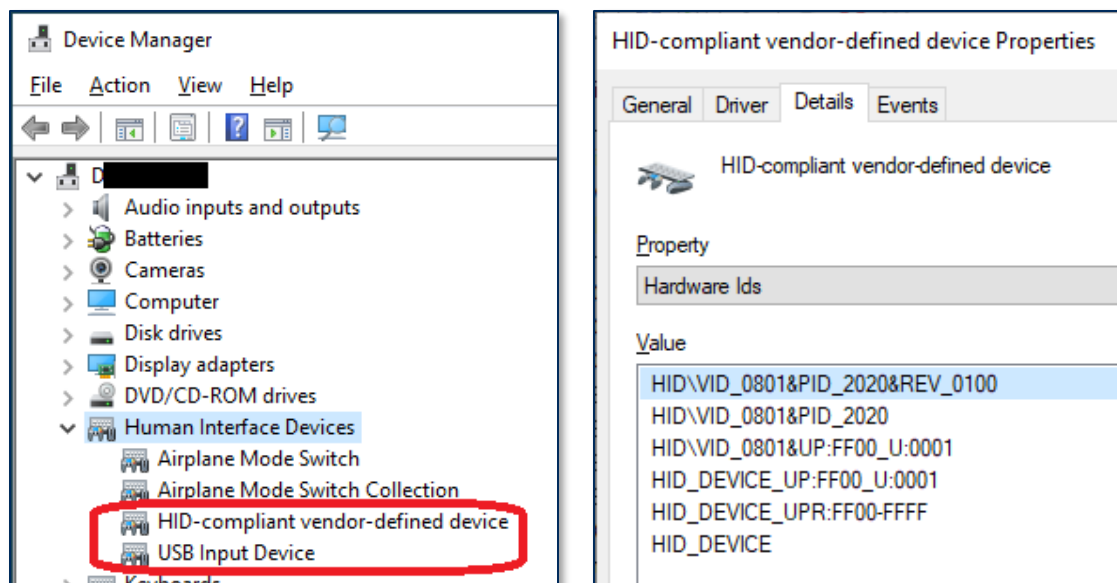


Figure 4-3 - Device is Ready



- 8) After successfully connecting to the host operating system via USB, the device shows **Welcome** or a customized graphic on the display.
- 9) The operating system may put the device into **USB Suspend** mode. See section 6.6.6 About USB Suspend.

## 4.4 Mounting

### 4.4.1 About Mounting

**DynaFlex II products** are designed to provide flexible mounting options:

- The integrated slip-resistant micro suction feet can simply be pressed onto any non-porous surface.
- The integrated lanyard mount point can be used to hang or carry the device for convenient storage and handling in grab-and-go solution designs.
- Non-kiosk models of the device can be housed in the optional charging cradle and optionally combined with the lanyard mount point, for quick grab-and-go and convenient drop-in charging between handheld sessions.
- **DynaFlex II** products can be mounted to custom mounting brackets or mounted in an enclosure as part of a larger solution design.

### 4.4.2 How to Mount DynaFlex II

Confirm the protective film has been removed from the micro suction feet. To mount **DynaFlex II products** to a non-porous surface using the micro suction feet, simply press the device onto a clean, smooth, flat surface. Avoid rough, dirty, or uneven surfaces. To uninstall, simply twist the device to disengage the mounting feet.

To use the optional charging cradle instead, see section 4.4.4 How to Mount the Charging Cradle.

If your solution design involves custom mounting brackets, contact your MagTek representative to request design advice and assistance from MagTek's Engineering team.

### 4.4.3 How to Mount DynaFlex II Kiosk Models



**This document describes how to use DynaFlex II Kiosk models securely. Using the device in any way other than the approved methods described in this document invalidates the PCI PTS approval of the device.**

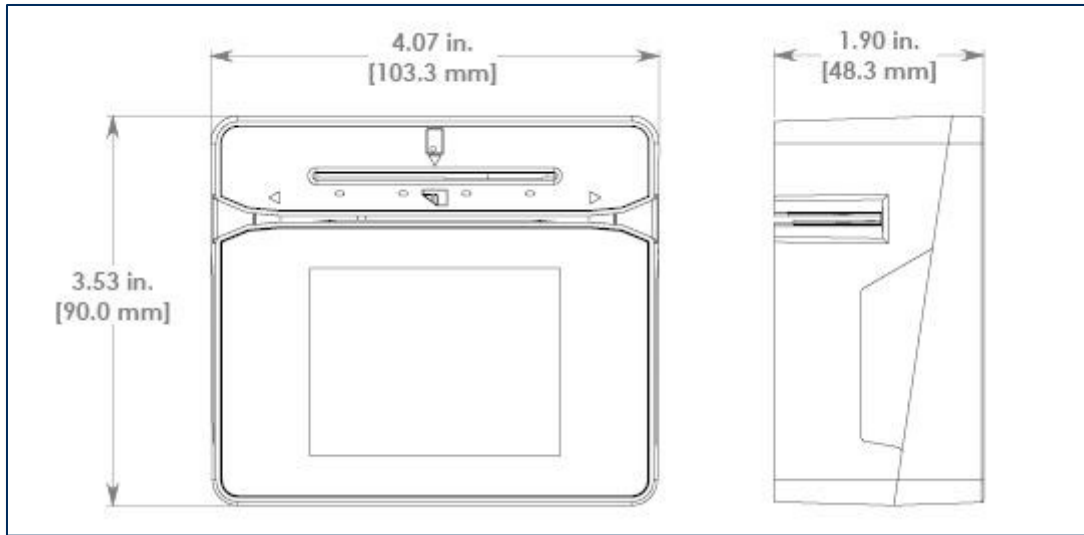
**Not following the guidelines in this section could damage the device, render it inoperable, and/or violate the conditions of the warranty.**

This section provides information and guidelines for designing the mechanical aspects of a solution that incorporates DynaFlex II Kiosk models. MagTek strongly recommends vetting and testing solution designs before finalizing and deploying them to make sure the design meets all requirements (e.g., functional, legal, security, certification, safety, and so on).

When designing the mechanical portions of a solution that incorporates DynaFlex II Kiosk models, consider the following:

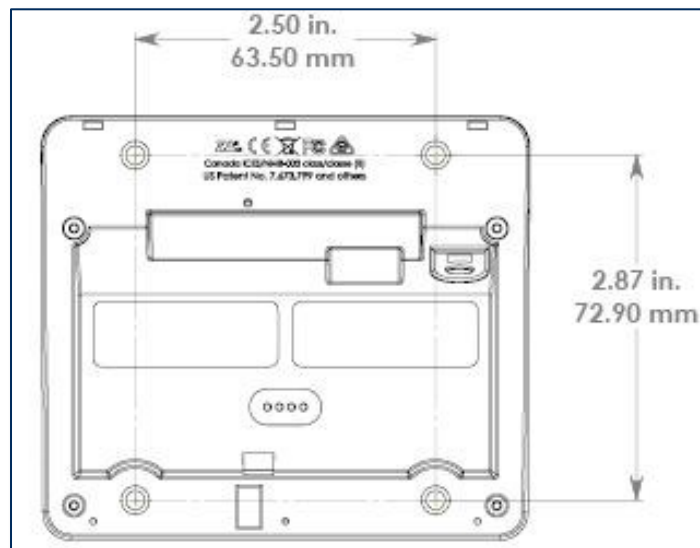
- Review section **1.8 About DynaFlex II** Components for an overall introduction to the device's physical features and what they are called.
- Review **Appendix A Technical Specifications**.
- Review the information below about overall device dimensions and mounting hole locations and use.
- Determine device orientation. The device supports all four orientations.
- Review any additional requirements from other agencies, such as PCI and EMV solution certification requirements, safety ordinances, and so on, which may introduce additional constraints to the design.

Overall dimensions of the device are shown in **Figure 4-4** and **Figure 4-5**. On request, MagTek can provide a 3D model of the device's envelope to assist with the mechanical portion of solution design. MagTek strongly recommends building and testing prototypes with actual devices before finalizing the solution design.



**Figure 4-4 – DynaFlex II Kiosk Models Overall Dimensions**

The screw hole placement on the bottom of DynaFlex II Kiosk models is detailed in **Figure 4-5**. The holes are designed to accommodate screw size **M4 x 0.7mm** and a maximum screw depth of 0.315 inches (8mm). The recommended torque range for installing the screws is 20 to 22 in-lbs. (2.3 to 2.5 N-m).



**Figure 4-5 – DynaFlex II Kiosk Models Mounting Hole Locations**

When designing the enclosure or mounting bracket, make sure there is adequate clearance for cardholders to swipe, insert, and tap. If the solution design includes metal objects anywhere near the device, including metal enclosures, ensure that at all points the metal is no further forward than 15mm below the top face of the device. Proximity to metal can adversely affect the device’s performance.

As a security measure, the device must be installed such that cardholders have a full, unobstructed view of the housing around the card insertion slot opening (“entry zone”) and MSR swipe path prior to insertion or swipe. This is to allow cardholders to easily detect suspicious objects in or around the swipe

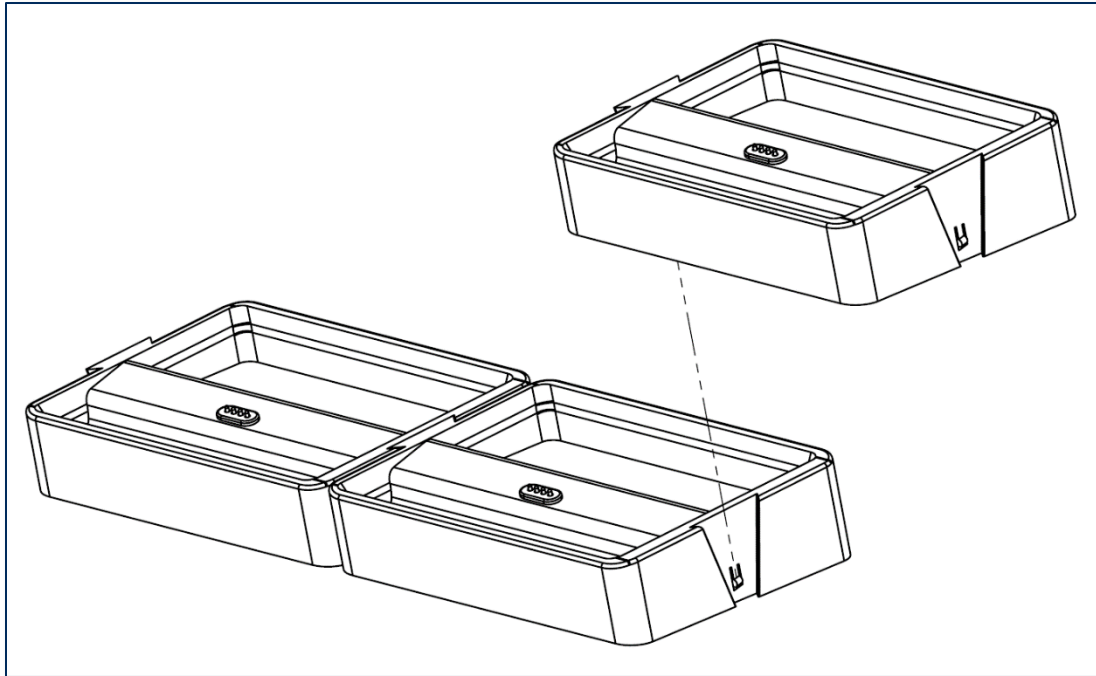


path and card slot entry, such as bugs / skimmers / tapping mechanisms, and their wires or antennas. Be sure to select an installation height and mounting angle that meet this requirement.

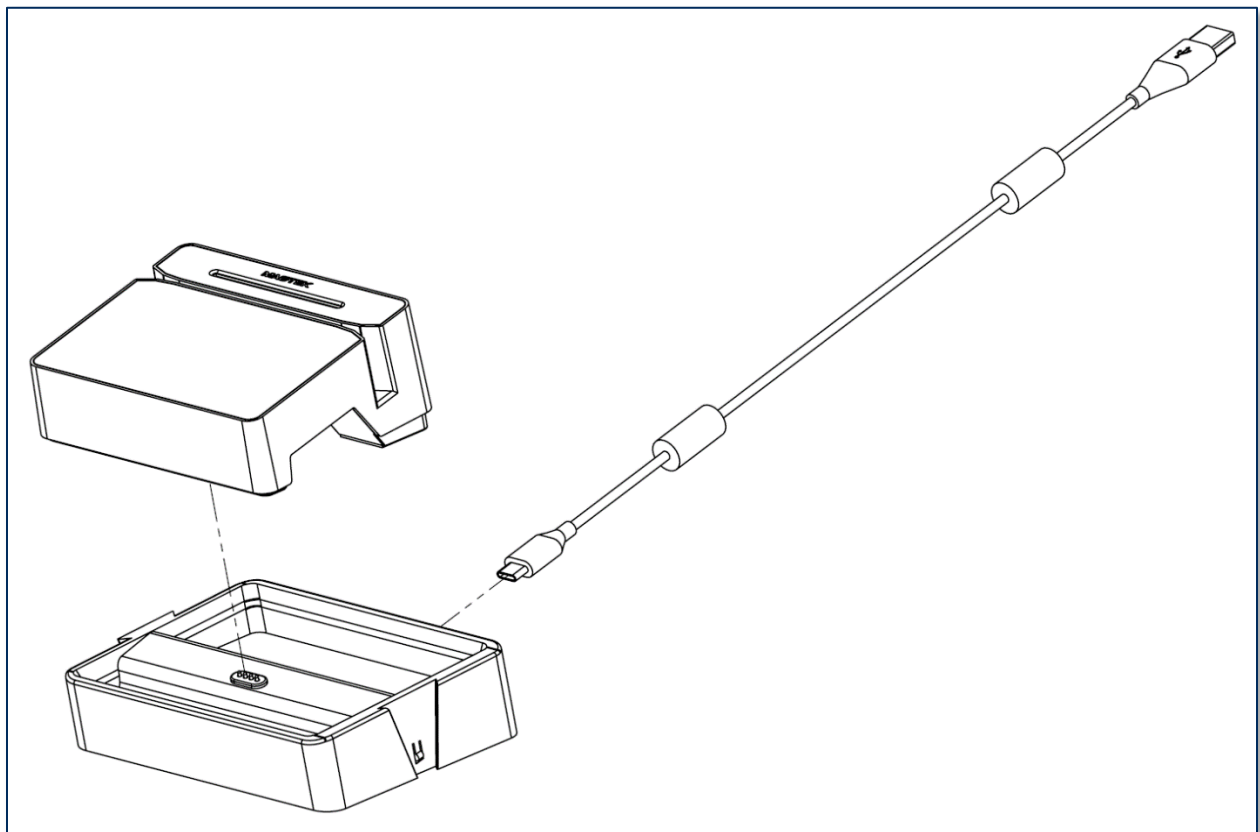
### 4.4.4 How to Mount the Charging Cradle

To mount the optional charging cradle to a countertop, follow these steps:

- 1) Determine how many charging cradles you will be installing. Any number of charging cradles can be mechanically attached to form a single unified charging bank, using the tongue-and-groove joining features on their sides (see **Figure 4-6**).
- 2) Make sure you have a cable and corresponding USB receptacle for each charging cradle you are installing. For best results, use the cable that is included with the device; it includes shielding at both ends to reduce interference.
- 3) Determine where the charging cradle(s) should be placed.
  - a) If you will use the charging cradle's micro suction feet for mounting, make sure you are mounting on a clean, smooth, flat surface. Avoid rough, dirty, or uneven surfaces.
  - b) Factors to consider include cable length, cardholder and operator ergonomics, and access for cleaning, maintenance, and repair.
  - c) If the charging cradle will be used for charging in handheld operations, unobstructed removal is also a consideration.
- 4) Connect each charging cradle to a USB port or to a USB charger with a minimum of 1A current capability. For best results, use the cable that is included with the device. It includes shielding at both ends of the cable to reduce interference.
- 5) Join the charging cradles together into a charging bank, if desired.
- 6) Press the charging cradle's micro suction feet onto the mounting surface.
- 7) To uninstall, twist the cradle to disengage the mounting feet. To separate two cradles, hold one cradle down and pull gently up on the other.



**Figure 4-6 - Joining Charging Cradles into a Charging Bank**



**Figure 4-7 - Connecting the Charging Cradle and the Device**

## 5 Configuration

The device does not have an on-screen configuration interface. However, it does have settings the host can change using commands. These settings are documented as **Properties** in ***D998200383 DYNAFLEX PRODUCTS PROGRAMMER'S MANUAL (COMMANDS)***. Additional commands and settings can be activated using Magensa Web Services. Contact [support@magtek.com](mailto:support@magtek.com) for further details.

### 5.1 How to Change the Active Connection

This content for this section is to be determined and will be included in the next revision of this document.

## 6 Operation

### 6.1 About Operating Modes

During operation, DynaFlex II devices transition between distinct operating modes, which are important for operators to understand so they can properly control the device:

- **Powered Off Mode** is the shipping and storage mode of the device. Operators would not generally use this mode during a work shift or during off-shift recharging. It occurs when the operator holds the pushbutton for more than 8 seconds (or more than 12 seconds to force immediate power off without a proper shutdown sequence), or if the device's battery is critically low and the device is not connected to a USB power source. In this mode, the device consumes practically no power. To move the device from Powered Off Mode to Active Mode, press the pushbutton for one second with the battery charged, or connect the device to USB power. If the device is already connected to USB power when it enters Powered Off Mode, it automatically powers back on.
- **Reset Mode** is a transient mode where the device first transitions to Powered Off Mode, then automatically powers back on. It occurs when the operator presses the recessed switch, or the host sends the Reset Device command, or the device automatically performs a daily security reset.
- **USB Suspend Mode** occurs when the USB host that is providing power to the device sends a **USB Suspend** control event to the device to conserve power. The device responds by powering off nearly all its modules including the display and listening for the USB host to send a **USB Resume** control event. To move the device from USB, Suspend Mode to Active Mode, the host software must open a USB connection to communicate with the device, which signals the operating system that the device is in active use and should be allowed to draw full power from the USB port. It is not necessary for the host software to send commands to the device at that time.
- **Active Mode** is the device's normal "awake" state when it is in use. In this mode, the touchscreen display and LEDs are powered on and the device is ready to receive commands from the host. This mode can be divided into substates like Active/Host Not Connected, Active/Host Connected, Active/Host Communicating, Active/Armed for Read, Active/Reading, and so on. These substates differ in the amount of power they consume and are mostly under the control of the host software. To move the device from Active Mode to Powered Off mode, press and hold the pushbutton for 8 seconds. If the device does not respond, continue holding the pushbutton for longer than 12 seconds to force immediate power off without a proper shutdown sequence. To move the device from Active Mode to Reset Mode, press the recessed switch.

### 6.2 Operation Overview

During normal operation, the operator initiates a transaction from the host, and the cardholder interacts with the device. Devices with a touchscreen display provide on-screen prompts and interactive features such as buttons and signature capture.

Transaction types may include sales, refunds, voids, authorization, new accounts, teller window applications, checking, savings, mortgages, retail transactions, or any other type of transaction where there is interaction between the cardholder and the operator. For each transaction type, the host software can direct the device to prompt the cardholder for any combination of magnetic stripe swipe, EMV contact card insertion, and/or contactless payment tap, and the transaction flow on the device may differ depending on what the host software specifies and what the cardholder does. Section **6.8 Using the Readers** provides examples of the cardholder experience for each type of payment. **Figure 6-1** shows a typical point of sale (POS) transaction sequence.

If the device cannot read payment data, the host software may direct it to prompt the cardholder to repeat the action or request the cardholder revert to a different form of payment (such as using the magnetic stripe reader as a fallback instead of the chip card insertion slot).

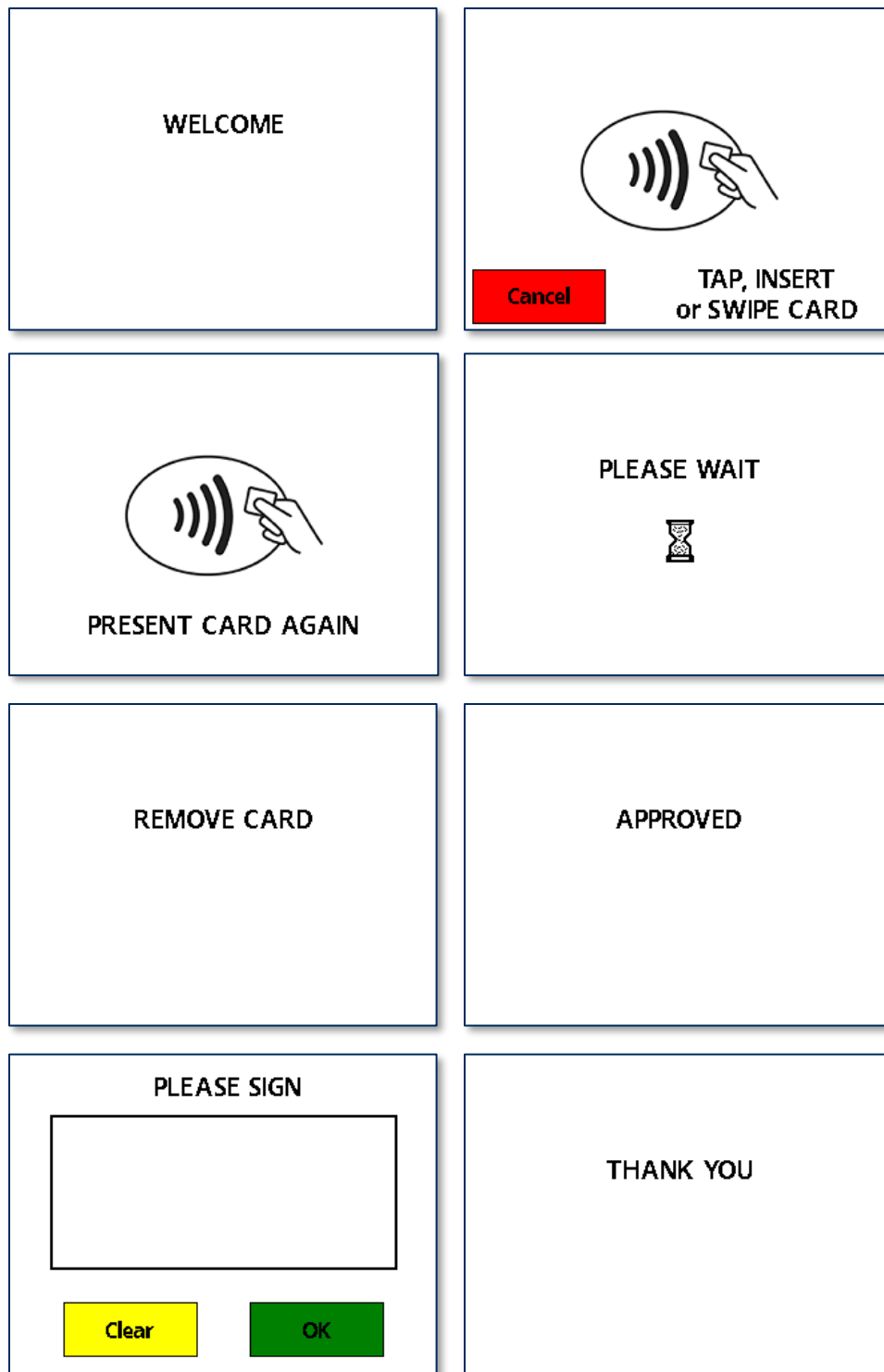


Figure 6-1 - Typical Transaction Sequence

### 6.3 About the Status LEDs

DynaFlex II provides four RGB LEDs directly below the chip card insertion slot (see section **1.8 About DynaFlex II Components**), numbered LED1 through LED4, which report the device's current operating status.

- The meaning of each LED depends on the device's operating mode. See section **6.1 About Operating Modes** and **Table 6-1 below**. Most of the time, operators will check the device's status using the LEDs when it is in **Active Mode** while the device is not performing a transaction.
- LED colors have specific meanings, as described in **Table 6-2**. They are based on international conventions for traffic light colors, with additional colors reserved for unusual / special cases.
- LED blinking patterns have specific meanings as well, as described in **Table 6-3**. A blinking LED generally means the device is actively doing something to change the state that the LED is indicating and solid indicates a persistent state that would require an operator or cardholder to take action to change. One major exception is a device-wide functional failure state, such as a tamper state, where all LEDs flash urgently to call the attention of an advanced operator to intervene.

In this manual, specific combinations of LED colors and blinking patterns are described in more detail in the sections where they are relevant and use the same icons in the tables below to indicate color and blinking patterns. For example, information about how the LEDs show the device's connection status is in section **4.3 Connecting to a Host**.

**Table 6-1 – DynaFlex II LED Allocation**

In This Context	LED1	LED2	LED3	LED4
Active Mode, not armed for a tap transaction	Power	Connection	Reserved	Card Read Result
Active Mode, armed for a tap transaction	Armed for Tap	Tap Read Progress	Tap Read Progress	Card Read Result
Device-wide failure	During major failures (such as tamper), <b>LED1-LED4</b> report the nature of the failure based on the most likely steps required to resolve it.			

Table 6-2 – DynaFlex II LED Colors







Color	Means
 Red	Stop or stopped  Example: LED1 is red. <b>Stop</b> using device: Battery is about to run out of charge.
 Yellow	Wait or waiting  LED2 will show status for Access Point connection: Green connected, yellow waiting for connection.
 Green	Go, going, or went  LED3 will show status for WebSocket connection: Green connected, yellow Waiting for connection.
Other Colors	Reserved

Table 6-3 – DynaFlex II LED Patterns

Color	Means
Solid  	<b>Solid</b> LEDs generally require an operator or cardholder to take action to change the state the LED is reporting.  Example: Host is connected. Cardholder or host would have to disconnect. Example: Host is disconnected. Host would have to initiate connection.
Blinking  	<b>Blinking</b> LEDs generally mean the device is in the process of doing / attempting something. Blink duty cycle and blink period are generally selected to show urgency or ongoing progress through a series of steps.  Example: Device is attempting to connect to the WLAN access point.



Color	Means
Short time 	LEDs sometimes light for a <b>short time</b> to indicate some process has ended (success or failure) and the device is going to transition to another state soon.  Example: Successful card read.

## 6.4 About the Touchscreen Display

The contents of this section apply only to DynaFlex II PED models, which have a display. When using a DynaFlex II model that does not have a display, the device reports ongoing status to the host, which must present any necessary prompts and status information to the operator and / or the cardholder.











### 6.4.1 Welcome Page / Active Idle Page





When the device is powered on, in Active mode, and idle (not performing a transaction or displaying host-driven user interface prompts), it displays **Welcome** or a custom graphic if it is configured to do so. If the host software is designed to receive and respond to cardholder input messages, pressing any area on the touchscreen when it is idle may trigger the host to perform an operation, such as starting a transaction. For more information about custom graphics, see *D998200383 DynaFlex and DynaFlex Pro Programmer's Manual (COMMANDS)*.

WLAN enabled devices also report current status in a set of icons at the top of the **Welcome** screen.

**Table 6-4 below** shows the icons and describes their meanings. For example, in **Figure 6-2**, the device is connected to a USB host and wireless access point, TLS is enabled, the battery level is OK, the device is charging, and it is idle, waiting for the host to initiate a transaction.

**Table 6-4 – Status Icon Meaning**

Status Icon	Meaning
	Device's Active Connection is set to USB, and the device has successfully established a USB communication connection with the host.
	WLAN is not configured
	Blinking to show device is connecting to a wireless access point
	WebSocket is active or connected
	WebSocket is inactive or disconnected
	Device's Active Connection is set to 802.11 wireless, and the device is connected to a wireless access point. The number of bars indicates the strength of the signal the device is receiving from the wireless access point (commonly known as RSSI).
 and 	TLS security on the 802.11 wireless connection is Disabled (red open padlock) TLS security on the 802.11 wireless connection is Enabled (black closed padlock)
	Battery is fully charged.
	Battery is OK, between 20% and 95% charged.

Status Icon	Meaning
	Battery is low, between 10% and 20% charged.
	Battery is critically low, between 3% and 10% charged.
	Battery is empty, below 3% charged.
	Battery is charging.

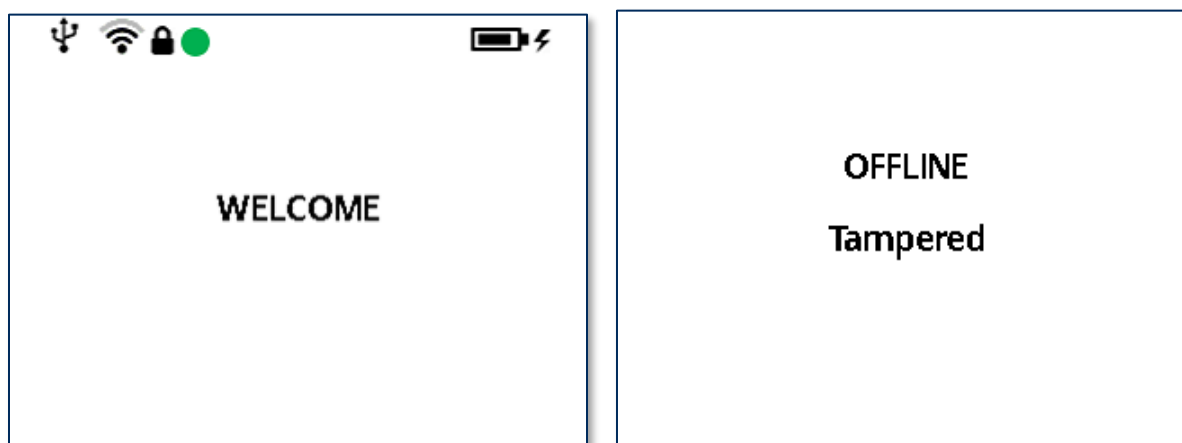


Figure 6-2 - Welcome Page Examples

The device may show text other than “Welcome” when it is Active / idle under certain conditions:

- **OFFLINE / Tampered** indicates the device has detected an attempt to tamper with it (for example, physical tampering, out-of-spec temperature range, electrical attack). If this occurs, remove the device from service and set it aside in a secure location for possible forensic analysis, and contact the manufacturer or your reseller for support. This mode can only be reset in the manufacturing facility.
- **OFFLINE / Tamper not active** indicates the device’s tamper detection system is not activated. The device is not configured properly. If this occurs, remove the device from service and contact the manufacturer or your reseller for support.
- **OFFLINE / Security not activated** indicates the device’s data security features have not been activated. The device is not configured properly. If this occurs, remove the device from service and contact the manufacturer or your reseller for support.
- **OFFLINE / Security activated** indicates the device is ready to have keys injected. If this occurs, remove the device from service and contact the manufacturer or your reseller for support.
- **OFFLINE / HW missing** indicates the device cannot detect one or more of its installed modules. This may indicate a mechanical or electrical failure. If this occurs, remove the device from service and contact the manufacturer or your reseller for support.

- **OFFLINE / Keys missing** indicates the device is missing one of the encryption keys that are critical to its data security systems. The device needs to have keys properly injected. If this occurs, remove the device from service and contact the manufacturer or your reseller for support.
- **OFFLINE** without any clarifying text indicates the device is not ready for normal operation.

### 6.4.2 Device Information Page

While powering up, the display briefly shows a page of information about the device, including the installed firmware part numbers and versions and other identifying information. To determine a device's PCI certification status, compare the contents of this screen to the device's listing on

[www.pcisecuritystandards.org](http://www.pcisecuritystandards.org), *Approved PTS Devices*. Note that in PCI listings, lowercase "x" is a wildcard meaning 'any single character.'

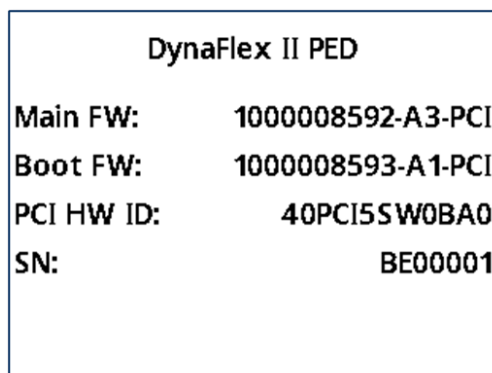


Figure 6-3 - Device Information Screen

To view details pertinent to the device's PCI certification status on WLAN enabled devices - including the installed firmware part numbers and versions as well as other identifying information (see **Figure 6-4**) - complete the following actions:

While on the **Welcome** screen, press the Pushbutton and hold for 3 beeps to access to **Settings** menu, then select **Firmware**, and **Main** to return to the **Welcome** screen, select **Back** and **Exit**

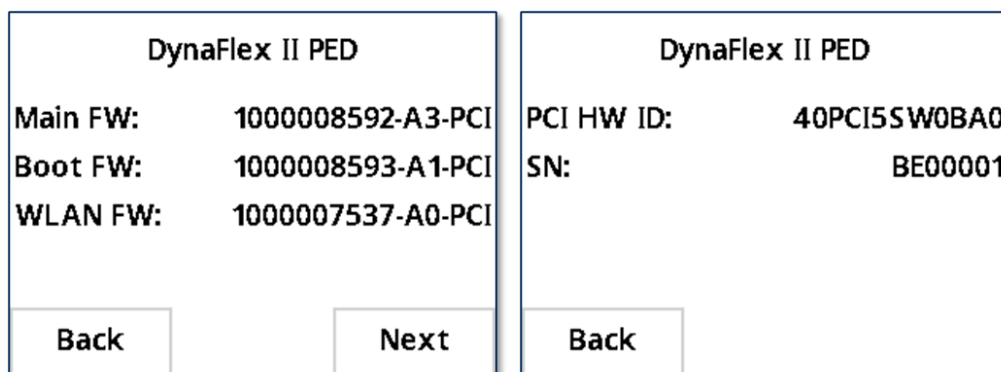


Figure 6-4 - Device Information Screen for WLAN device

### 6.4.3 Connection Status Page

In addition to the icons at the top of the display, WLAN enabled devices have a **WLAN Status** screen that reports more details about the device's 802.11 wireless (see **Figure 6-5**). To access it, while on the **Welcome** screen, press the Pushbutton and hold for 3 beeps to get to the **Settings** menu, then select **Connection**, and **WLAN Settings**, and **WLAN Status**. To return to the **Welcome** screen, select **Back** and **Exit**

WLAN Status	
Network:	Connected
WebSocket:	Disconnected
IP Addr:	192.168.1.224
MAC Addr:	2C:54:91:88:C9:E3
Back	Next

WLAN Status	
SSID:	engdlex
Host Name:	df-b6a02df
RSSI:	200
Frequency:	2.4GHz
Back	Next

WLAN Status	
TLS:	Enabled
Security:	WPA2_AES_PSK
Error Code:	0x12AB34CD
Back	

Figure 6-5 - WLAN Status Screen

#### 6.4.4 SoftAP Page

To configure WLAN enabled devices via SoftAP mode (see **Figure 6-6**) complete the following steps: While on the **Welcome** screen, press the Pushbutton and hold for 3 beeps to get to the **Settings** menu, then select **Connection**, select **WLAN Settings**, then **SoftAP Mode**. To return to the **Welcome** screen, select **Back** and **Exit**.

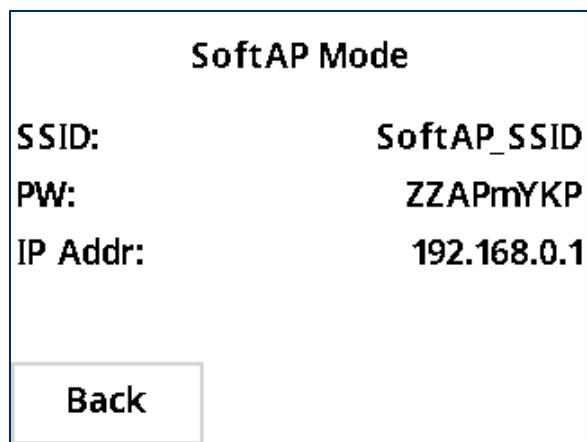


Figure 6-6 – SoftAP Mode screen

## 6.5 About Sounds

DynaFlex II products have a beeper (audible signal) that provides feedback to operators and cardholders about the internal state of the device:

- The device sounds one short beep after it has successfully read a contactless tap, and the cardholder can safely remove the card or device from the contactless landing zone.
- The device emits short beeps continuously when a transaction is complete, but the card is still present in the insertion slot.
- The device emits two beeps when reading a card or contactless payment device to indicate a read error occurred.
- The device sounds two beeps when an operator cancels a pending EMV transaction.

The device provides an internal setting the host can use to adjust the global system volume. The device does not provide an interface to change the volume setting directly via buttons or the touchscreen. If the device is too quiet or too loud:

- Make sure the device is ordered from the manufacturer with the desired volume setting.
- Check to see whether the host software you are using provides a feature to check and/or adjust the volume setting.
- If the host software does not provide that feature, request help from the development team that built the host software to check / change the volume setting. For details, see ***D998200383 DYNAFLEX PRODUCTS PROGRAMMER'S MANUAL (COMMANDS)***.

## 6.6 Power Management

### 6.6.1 About Power

This device incorporates a built-in Lithium-ion rechargeable battery, which requires very little maintenance. It is not subject to “charge memory” and therefore does not require deep discharge cycles to restore its charge capacity like many other battery technologies.

When properly powered through its USB port, the device powers on automatically, remains powered on provided the host does not put it in USB Suspend mode, and draws power both for operation and for recharging the battery (see section **6.6.3 How to Charge the Battery**). While charging, the device consumes more power from the USB connection than when the battery is fully charged. The device stops charging the battery when it determines it is optimally full, to prevent overcharging.

If the device is not connected to USB power, or if the USB connection does not provide enough power, the device powers itself using the rechargeable battery. When the battery discharges to a critically low level, the device powers down automatically. It is important to not allow the device’s main battery to remain completely discharged any longer than necessary. For information about how to prevent this from occurring during handling and storage, see section **3.2 Handling to Avoid Accidental Tamper**. To prevent this from occurring during regular use:

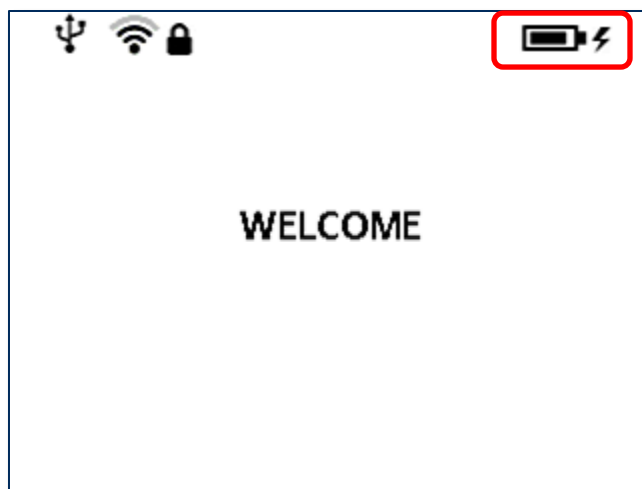
- Do not allow the device’s main battery to remain completely discharged for prolonged periods of time, and ideally do not allow it to ever reach 0%. Create a charging schedule that recharges the battery well before it is fully depleted.
- When the device is not connected to USB power, preserve the battery’s charge when it is not in use by putting the device into Sleep mode or powering it off completely (see section **6.6.4 How to Power On / Wake Up from Standby Mode / Power Off**).

The device’s rechargeable battery is designed to last hundreds of charging cycles, but with time and / or with use, its charge capacity will naturally degrade. Following the recommendations in this section will maintain the battery’s charge capacity for as long as possible.



### 6.6.2 How to Check Battery Level







When powered on, DynaFlex II starts in the idle / waiting state and shows a **Welcome** page on the touchscreen. See **6.6.4 How to Power On / Wake Up from Standby Mode / Power Off**. This page indicates battery level and charge status on the top right corner of the screen. See **Figure 6-7 Welcome Screen**.



**Figure 6-7 Welcome Screen**

The table of symbols below describes the various power level and charge status icons. See **Table 6-5 - Battery Power Level and Charge Status Icons**.

**Table 6-5 - Battery Power Level and Charge Status Icons**

Battery Power Level and Charge Status Icons	
	Battery is fully charged.
	Battery is OK, between 20% and 95% charged.
	Battery is low, between 10% and 20% charged.
	Battery is critically low, between 3% and 10% charged.
	Battery is empty, below 3% charged.
	Battery is charging.

### 6.6.3 How to Charge the Battery

#### NOTICE

**Per UL requirements, the device is designed to not recharge its internal battery when the external temperature is below 0°C or above 40°C.**

DynaFlex II products have an onboard rechargeable battery to supply their own power when they are not powered through the USB-C port. The battery must be periodically recharged by connecting the device to the optional charging cradle, or to a USB port or stand-alone USB charger. Both the charging cradle and the device require a USB power supply that can provide at least **500mA @ 5V**, optimally **1A @ 5V**.

To charge the device without an optional charging cradle, connect it to a USB charger or a USB host as described in section **4.3.2 How to Connect DynaFlex II Products to a Host or Charger** via USB. For best results, use the cable that is included with the device; it includes shielding at both ends to reduce interference. When charging, make sure the device is receiving enough power from the USB connection (battery level should increase even when device is in use). A full recharge cycle for a completely drained battery depends on how it is being charged. From a host USB port at 500mA or dedicated wall charger, full charge takes approximately 7 hours.. After connecting the device to a power source, make sure the LEDs indicate the device is charging (see section **6.3 About the Status LEDs**).

To charge the device in the optional charging cradle *for power only (no USB communication)*:

- 1) Make sure the charging cradle is properly installed and is receiving USB power. See section **4.4.4 How to Mount the Charging Cradle**.
- 2) Place the device in the charging cradle with the charging contacts pointing into the charging cradle and the device's face pointing toward the ceiling as shown in **Figure 4-7 - Connecting the Charging Cradle and the Device**.
- 3) Check the device's LEDs to make sure it is charging.

For important information about the device's power systems, optimal charging methods during regular use, optimal handling and storage, and other information about keeping the device's power systems in the best possible condition, see section **3.2 Handling to Avoid Accidental Tamper** and section **6.6.1 About Power**.

### 6.6.4 How to Power On / Wake Up from Standby Mode / Power Off

To power on the device, press and hold the pushbutton for one second, or connect the device to USB power. After powering on, devices with touchscreens show a page of information about the device, then transition to showing the **Welcome** page or custom graphics, if they are configured to do so. For more information about custom graphics, see *D998200383 DynaFlex Products Programmer's Manual (COMMANDS)*.

To power off the device, disconnect the device from USB power.

To reset the device, see section **6.6.5 How to Force Reset**.

If all LEDs are off, the device is in Powered Off mode, USB Suspend mode, or Standby mode. For details about reading the status of the device with LEDs, see section **6.1 About Operating Modes** and section **6.3 About the Status LEDs**.

### 6.6.5 How to Force Reset

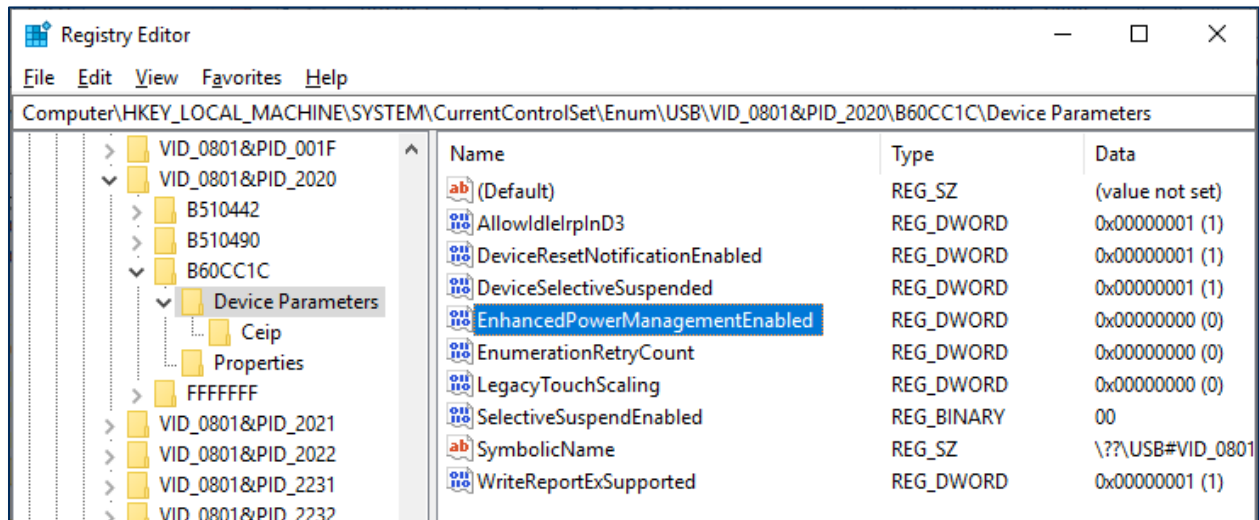
To force the device to reset, power it off then power it on again (see section **6.6.4 How to Power On / Wake Up from Standby Mode / Power Off**). Alternatively, you may use a small tool such as a paperclip to carefully press the recessed switch inside the small hole on the bottom of the device (see section **1.8 About DynaFlex II Components** on page 12). The host may also reset the device by sending the **Reset Device** command (see section **8 Developing Custom Software**).

The device also automatically powers off if the rechargeable battery reaches a level that is low enough that the device may not be able to complete a transaction.

### 6.6.6 About USB Suspend

When the device is connected to a host via USB (see section 4.3.2 **How to Connect DynaFlex II Products to a Host or Charger** via USB), the host and its operating system can use standard USB functions to put the device into **USB Suspend** mode to conserve power (see section 6.1 **About Operating Modes**). This generally occurs when there is no software running on the host that has an active USB connection with the device. When the device goes into USB Suspend mode, the device's display and LEDs turn off. When the host wakes up the device from USB Suspend, the device returns to normal operation.

It is possible to configure a Windows host to not suspend the device by editing the registry. Open **HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Enum\USB\VID\_0801&PID\_2020**, then open the folder with the device's serial number inside that folder and open the **Device Parameters** folder inside that. Set the value of **EnhancedPowerManagementEnabled** equal to **0**. After changing the setting, physically disconnect and re-connect the device to the host.



### 6.6.7 About Maintenance Reset

For security purposes, the device is designed to perform an automatic maintenance reset periodically to clear all data from memory. When the device has been on continuously for 23 hours, it terminates all current operations, stops responding to new commands, and immediately performs a full reset. At the end of the automatic maintenance reset, the device powers back on and returns to normal operation.

## 6.7 How to Start a Handheld Transaction Using Wireless LAN

The operator uses the point of sale to start a transaction by following these steps and guidelines below:

1. Ensure that the device is powered on, see **6.6.4 How to Power On / Wake Up from Standby Mode / Power Off**.
2. Ensure that the device is connected to a wireless access point and has good signal strength (Refer to section **6.4.3 Connection Status Page**).
3. Start the transaction using the point of sale's interface. Depending on how the host software is designed, the host sends various messages requesting that the cardholder or operator enter additional information, and the device requests payment as described in section **6.8 Using the Readers**.
4. Should the device run out of battery or network becomes disconnected during a transaction, the operator should cancel the transaction on the point of sale. Proceed to repeat these steps to initiate the transaction again.

## 6.8 Using the Readers

### 6.8.1 About Reading Cards

The steps for starting a transaction and reading a card or contactless payment device are different depending on the device's configuration and on the design of the host software. Host software developers should see section **8 Developing Custom 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 has already made sure DynaFlex II or DynaFlex II PED is configured properly and is connected to the host (see section **4.3 Connecting to a Host**). When the device is connected to the host via USB and powered by the USB-C connector, the host software may always keep a connection open to the device.
- 2) The operator makes sure DynaFlex II or DynaFlex II PED is receiving power either from its rechargeable battery or from the USB connection, and is awake and powered on (see section **6.6.4 How to Power On / Wake Up from Standby Mode / Power Off** and section **6.3 About the Status LEDs**).
- 3) The operator uses the host software's user interface (for example, a point of sale) to finalize a transaction amount, then initiates a transaction. In solutions that are designed to respond to cardholder input events that occur when the device is idle, such as unprompted swiping, inserting, or tapping a card or electronic payment device, or pressing the touchscreen, the host software may respond to those inputs by notifying the host, and the host software may trigger other operations without being initiated by an operator (for example, the host software may immediately start a transaction, or alert the cardholder or operator to take action).

- 4) The host communicates with the device, and reports to the operator when the device is ready.
- 5) The operator guides and assists the cardholder in presenting payment.
- 6) The cardholder interacts with the device to present payment. The following sections provide additional details about presenting each of the available payment methods.
- 7) Devices with a **display show messages** prompting the cardholder to perform certain actions. The host should also monitor the progress of the transaction, and when necessary, should report issues to the operator, who may need to relay the messages to the cardholder.
- 8) The device reports the success or failure of the transaction to the cardholder and to the host.

### 6.8.2 How to Swipe Magnetic Stripe Cards

To swipe magnetic stripe cards, follow these steps:

- 1) Wait for the device to display an action prompt, or, if the solution is designed to respond to cardholder actions that occur while the device is idle, such as swiping, inserting, or tapping a card or electronic payment device, or pressing the touchscreen, initiate the transaction by performing one of those actions instead of waiting. In these cases, the device may automatically and rapidly pass through several of the steps below without requiring cardholder interaction.
  - a) Devices with a display show on-screen text and buttons (see **Figure 6-8 below** for examples).
  - b) The device shows the transaction status using the LEDs. If the host has directed the device to enable the contactless interface, LED1 lights solid green and all other LEDs are off, per EMV standards, to indicate it is ready for a tap. If the host has directed the device to disable the contactless interface, the device continues to show idle statuses on LED1 and LED2.
  - c) All devices report detailed transaction status to the host, and host software may report that information to operators so they can guide cardholders through the transaction (for example, “swipe, insert, or tap your card now please”).
- 2) Locate the magnetic stripe reader swipe path on the face of the device.
- 3) Orient the card with the magnetic stripe facing away from the cardholder and the touchscreen or contactless landing zone, toward the LEDs and the chip card insertion slot as shown in **Figure 6-9**.
- 4) Swipe the card through the magnetic stripe reader in either direction.
- 5) Look for a prompt that the device has successfully read the card:
  - a) The device turns LED4 green for a short time.
  - b) The device beeps once.
  - c) If the device has a display:
    - i) The device shows **PROCESSING**.
    - ii) The device may show **AUTHORIZING PLEASE WAIT**.
    - iii) If the transaction requires a signature, the device prompts for a signature (see section **6.8.12 How to Use Signature Capture**).

- iv) The device shows **THANK YOU**.
- d) The device ends the transaction and reports the transaction status to the host.
- 6) If the device cannot read the card's magnetic stripe data:
  - a) The device turns LED4 red for a brief time.
  - b) The device beeps twice.
  - c) The device ends the transaction.
  - d) Devices with a display show **FAILED**, then **THANK YOU**, then return to the idle page (see section **6.4.1 Welcome Page / Active Idle Page**).
  - e) The device notifies the host that the transaction failed. If this occurs, the host software may choose to retry the transaction or revert to prompting the operator to enter card data manually (see section **6.8.7 How to Enter Card Information Manually**).

Immediately after the user swipes a magnetic stripe card, the device disables the option to use the contactless interface. If the cardholder needs to revert to a contactless card or device for payment while a transaction is in process, the operator should cancel the transaction and start again.

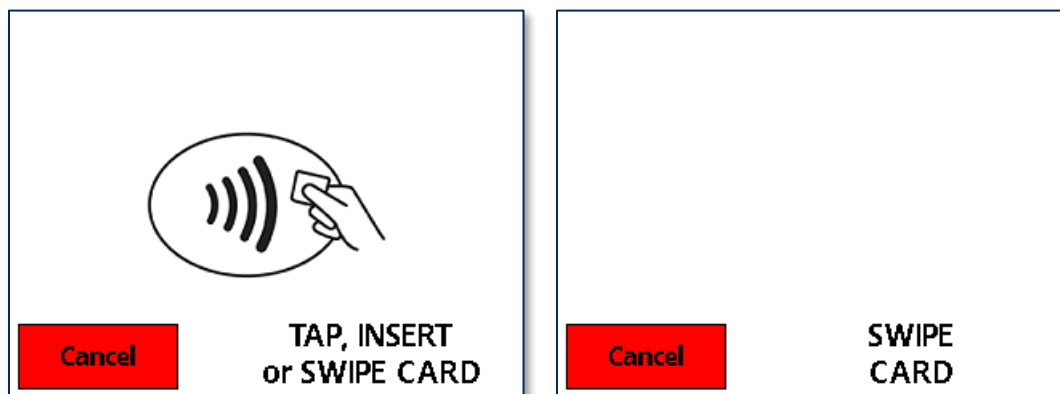


Figure 6-8 – Example Card Swipe Screens



**Figure 6-9 – Swiping a Magnetic Stripe Card**

### 6.8.3 How to Insert Contact Chip Cards

To insert contact chip cards, follow these steps:

- 1) Wait for the device to display an action prompt, or, if the solution is designed to respond to cardholder actions that occur while the device is idle, such as swiping, inserting, or tapping a card or electronic payment device, or pressing the touchscreen, initiate the transaction by performing one of those actions instead of waiting. In these cases, the device may automatically and rapidly pass through several of the steps below without requiring cardholder interaction.
  - a) Devices with a touchscreen show on-screen text and buttons (see **Figure 6-10 below** for examples).
  - b) Devices with or without a touchscreen show the transaction status using the LEDs. If the host has directed the device to enable the contactless interface, LED1 lights solid green and all other LEDs are off, per EMV standards, to indicate it is ready for a tap, swipe, or insert. If the host has directed the device to disable the contactless interface, the device continues to show idle statuses on LED1 and LED2.
  - c) All devices report detailed transaction status to the host, and host software may report that information to operators so they can guide cardholders through the transaction (for example, “swipe, insert, or tap your card now please”).
- 2) Locate the chip card insertion slot on the face of the device, as shown in **Figure 6-11**.
- 3) Orient the chip card so the chip faces the cardholder, toward the touchscreen or contactless landing zone and the LEDs.
- 4) Insert the chip card into the slot, then push gently on the card until it stops. There should not be any substantial resistance until the chip card is fully inserted.
- 5) Wait for a prompt that the device has successfully read the card, then remove the card.



- a) The device turns LED4 green for a brief time.
  - b) The device beeps once.
  - c) If the device has a display:
    - i) The device shows **PROCESSING**.
    - ii) The device shows **PLEASE WAIT** and/or **AUTHORIZING PLEASE WAIT**.
    - iii) If the transaction requires a signature, the device prompts for a signature (see section **6.8.12 How to Use Signature Capture**).
    - iv) The device shows **REMOVE CARD**.
    - v) The device shows **THANK YOU**.
  - d) The device ends the transaction and reports the transaction status to the host.
  - e) As a reminder to the cardholder to remove the card, the device beeps continuously until the card is removed.
- 6) If the device cannot communicate with the chip card:
- a) The device lights LED4 red for a short time.
  - b) The device beeps twice.
  - c) Devices with a display show **FAILED**, then **REMOVE** if the card is still in the slot, then **THANK YOU**, then return to the idle page (see section **6.4.1 Welcome Page / Active Idle Page**).
  - d) The device ends the transaction and notifies the host that the transaction failed. If this occurs, the host software may choose to retry the transaction (for example, with different payment types enabled) or revert to prompting the operator to enter card data manually (see section **6.8.7 How to Enter Card Information Manually**).
  - e) As a reminder to the cardholder to remove the card, the device double-beeps continuously until the card is removed.

Immediately after the user inserts a chip card, the device disables the option to use the contactless interface. If the cardholder needs to revert to a contactless card or device for payment while a transaction is in process, the operator should cancel the transaction and start again.

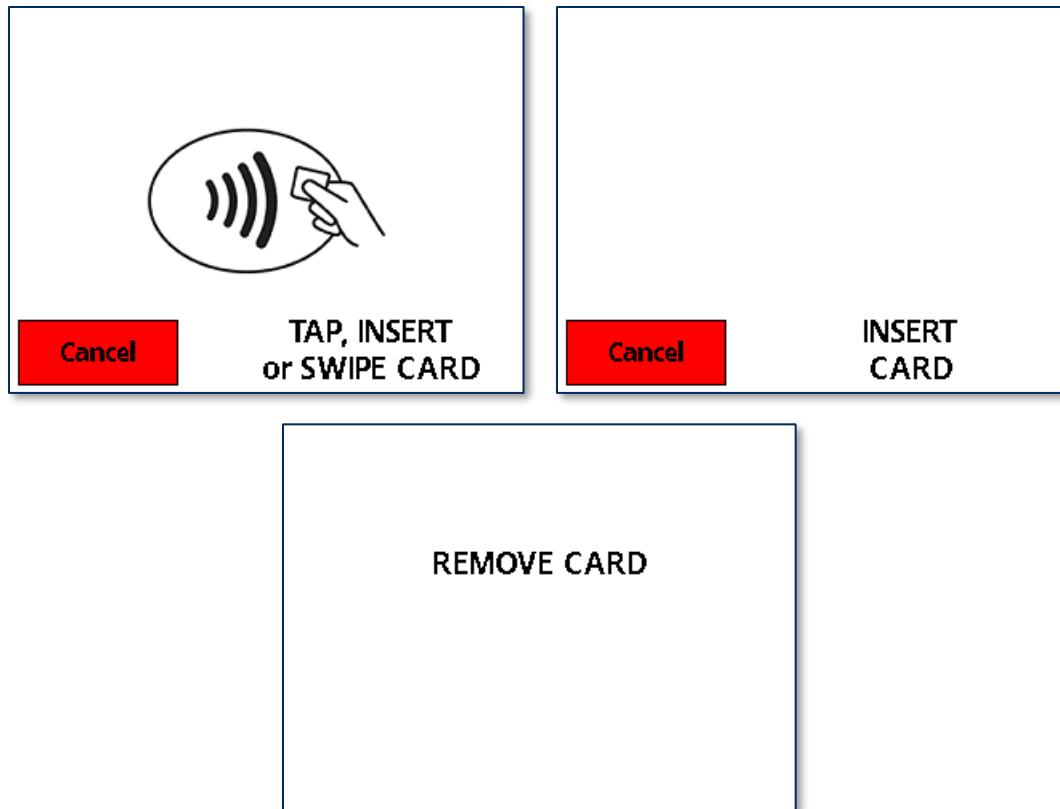


Figure 6-10 – Example Card Insertion Screens



**Figure 6-11 – Inserting a Chip Card**

#### **6.8.4 How to Tap Contactless Cards / Devices**

To tap a contactless card or smartphone, follow these steps:

- 1) Wait for the device to display an action prompt, or, if the solution is designed to respond to cardholder actions that occur while the device is idle, such as swiping, inserting, or tapping a card or electronic payment device, or pressing the touchscreen, initiate the transaction by performing one of those actions instead of waiting. In these cases, the device may automatically and rapidly pass through several of the steps below without requiring cardholder interaction.
  - a) Devices with a touchscreen show on-screen text and buttons (see **Figure 6-12 below** for examples).
  - b) Devices with or without a touchscreen show the transaction status using the LEDs. LED1 lights solid green and all other LEDs are off, per EMV standards, to indicate it is ready for a tap (or swipe or insert, if the host has enabled those interfaces for this transaction).
  - c) All devices report detailed transaction status to the host, and host software may report that information to operators so they can guide cardholders through the transaction (for example, “please tap your card now”).
- 2) If the cardholder is using an electronic payment device, such as a smartphone, make sure the payment device has **NFC** turned **On** and has a payment app configured to process transactions. For details, see the documentation provided by the smartphone manufacturer and payment app publisher.
- 3) Briefly hold the card, smartphone, or other contactless payment device over the contactless landing zone, indicated by the EMVCo Contactless Indicator symbol on the device’s face (see **Figure 6-12**). Because each smartphone model may have its NFC antenna placed differently, the ideal tap position may vary by make and model. For example, Samsung users may need to center the phone on the contactless landing zone, while Apple users may need to tap the top of the phone on the contactless landing zone.
- 4) Wait for a prompt that the device has successfully read the card, smartphone, or other contactless payment device, then remove it from the contactless landing zone.
  - a) The device quickly lights the second LED green to show it is processing, then lights the third LED green to show it has successfully read the tap, then lights the fourth LED green to show the read is complete (see **Figure 6-14**).
  - b) The device beeps once.
  - c) If the device has a display:
    - i) The device may show **PROCESSING**.
    - ii) The device shows **REMOVE CARD**.
    - iii) If the transaction requires a signature, the device prompts for a signature (see section **6.8.12 How to Use Signature Capture**).
    - iv) The device shows **THANK YOU**.

- f) The device ends the transaction and reports the transaction status to the host.
- 5) If the device can not communicate with the card, smartphone, or other contactless payment device:
  - a) The device ends the transaction.
  - b) The device lights LED4 red for a brief time.
  - c) The device beeps twice.
  - d) Devices with a display show **INSERT, SWIPE, OR TRY ANOTHER CARD**, then **THANK YOU**, then return to the idle page (see section 6.4.1 Welcome Page / Active Idle Page).
  - e) The device notifies the host that the transaction failed. If this occurs, the host software may choose to retry the transaction (for example, with different payment types enabled) or revert to prompting the operator to enter card data manually (see section 6.8.7 How to Enter Card Information Manually).

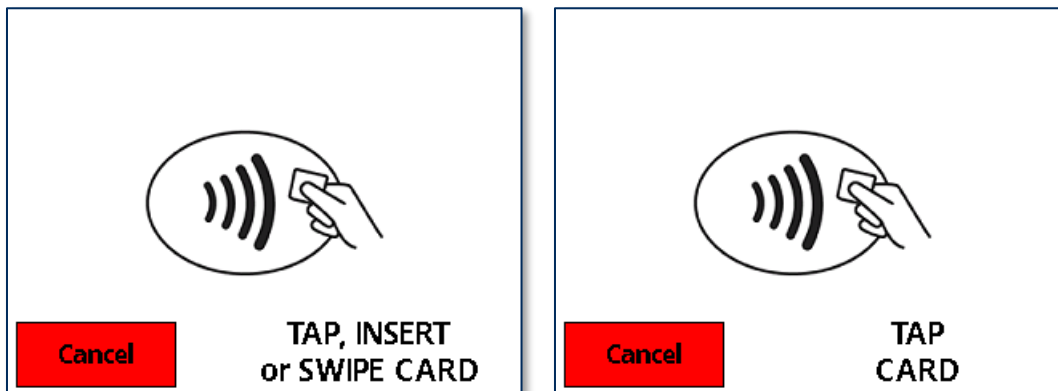
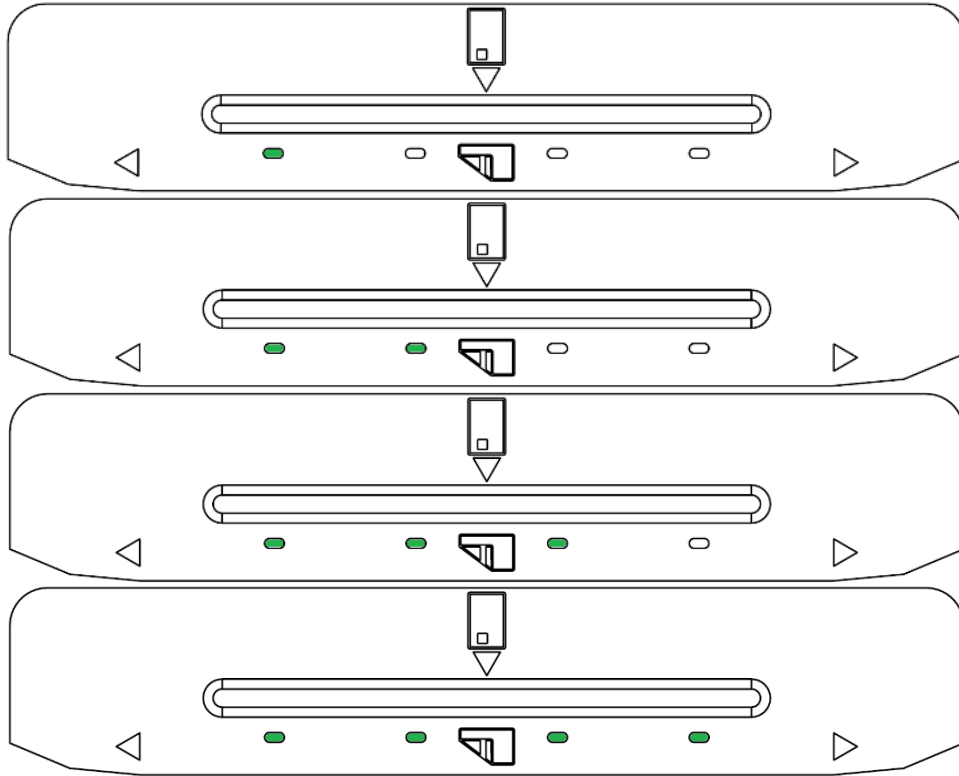


Figure 6-12 – Example Contactless Transaction Screens



Figure 6-13 – Tapping a Contactless Card / Smartphone



**Figure 6-14 – Tap Read Is Complete**

### 6.8.5 How to Tap Contactless NFC Tag/Mifare Classic Card and Send Pass-through Commands

To tap a contactless NFC Tag/Mifare Classic card, follow these steps:

- 1) Wait for the device to display an action prompt, or, if the solution is designed to respond to cardholder actions that occur while the device is idle, such as swiping, inserting, or tapping a card or electronic payment device, or pressing the touchscreen, initiate the transaction by performing one of those actions instead of waiting. In these cases, the device may automatically and rapidly pass through several of the steps below without requiring cardholder interaction.
  - a) Devices with a touchscreen show on-screen text and buttons (see **Figure 6-12** for examples).
  - b) Devices with or without a touchscreen show the transaction status using the LEDs. LED1 lights solid green and all other LEDs are off, per EMV standards, to indicate it is ready for a tap (or swipe / insert, if the host has enabled those interfaces for this transaction).
  - c) All devices report detailed transaction status to the host, and host software may report that information to operators so they can guide cardholders through the transaction (for example, “please tap your card now”).
- 2) Place the card over the device's designated contactless landing zone, marked by the EMVCo Contactless Indicator symbol on the front face of the device.
- 3) Wait for LED status:
  - a) Initially, LED 2 illuminates, signaling the device is processing. The device subsequently illuminates LED 3 and LED 4, indicating card detection. Notifications are then sent to identify the card type and UID.
  - b) The Host application can further interact with the NFC Tag using pass-through commands. For details, see **D998200383 DynaFlex Products Programmer's Manual (COMMANDS)**.
  - c) If the pass-through command is the last successful command, the device will end the transaction, emitting a single beep signaling a successful transaction. The user then needs to remove the card.
  - d) If an error is detected, the device will end the transaction and emit two beeps to signal the error. The user then needs to remove the card.
- 4) The device notifies the host that the transaction has ended with the NFC Tag removed.

### 6.8.6 How to Scan Barcodes

To scan a barcode, follow these steps:

- 1) Make sure you are using a DynaFlex II model that includes a barcode reader, indicated by QR code markings on the face of the device surrounding the barcode reader lens (see section **1.8 About DynaFlex II Components**).
- 2) If the barcode being scanned is not on a self-illuminated source such as a smartphone, make sure there is enough ambient light for the camera to read the barcode. In low light conditions, the barcode reader will only be able to read self-illuminated sources.
- 3) In some solutions, the operator may have to perform an operation in the host software to enable the barcode reader, or to start a transaction with the barcode reader enabled.

- 4) Wait for the device, the host, or the operator to prompt for a barcode read:
  - a) Devices with a display show the prompt **SCAN BARCODE**.
  - b) The device lights the barcode reader indicator LED next to the barcode reader lens.
- 5) Hold the barcode in front of the barcode reader camera:
  - a) If possible, use the light from the barcode reader indicator LED to align the barcode within the barcode reader's field of view, which extends 16 degrees above / below and 21 degrees to the left / right of a line perpendicular to the barcode reader lens.
  - b) Hold the barcode as close as 1 inch from the lens. For smaller barcodes, the device will read immediately. If it does not, gradually pull back to up to 14 inches from the lens until the device reports a successful read. Larger barcodes must be far enough away from the device that the whole barcode is within the camera's field of view; if a large barcode is too close, the barcode reader can only see a zoomed in portion of the barcode.
  - c) Do not tilt the barcode more than 60 degrees from parallel to the device's face.
- 6) Wait for the device or the host to report the barcode has been read successfully:
  - a) Devices with a display will no longer show the prompt **SCAN BARCODE**.
  - b) The device beeps once.
  - c) The device turns off the barcode reader indicator LED.



**Figure 6-15 – Scanning a Barcode**

### 6.8.7 How to Enter Card Information Manually

Devices with touchscreen displays provide support for starting a transaction that immediately prompts the operator or cardholder to enter card data manually. Manual entry can be useful in the following situations:

- **As a last resort form of transaction fallback:**
  - The cardholder swiped during a transaction that had one or more card interfaces enabled, but the device could not read card data.
  - The cardholder inserted a chip card during a transaction that had one or more card interfaces enabled, but the device could not read card data and could not fall back to swipe.
- **In card not present transactions**, including merchant locations where cardholders do not have their card, in telephone call centers, and so on. In these cases, the operator uses the device to keep sensitive data out of the merchant's domain, for compliance / security reasons.

To enter card information manually, follow these steps. For every prompt below, press the **Enter** button after entering data to move to the next step, or press the **Backsp** button to delete data that has already been entered but stay on the same step, or press the **Cancel** button to completely end the transaction:

- 1) The operator starts a transaction, specifying manual card entry, optionally specifying a transaction amount and cash back amount. If the solution is designed to respond to cardholder actions that occur while the device is idle, such as pressing the touchscreen, the operator may initiate the transaction by performing one of those actions instead of initiating the transaction from the host.
- 2) The device shows a numeric keypad and a prompt to enter **Card Number** (see Figure 6-16). Enter the card number and press the **Enter** button. If the device double-beeps when pressing the **Enter** button and does not proceed to the next step, the PAN is not valid. The device may be configured to enable MOD10 validation, which makes sure the card number passes a validity check to prevent errors during entry. It is also possible you have entered too many or too few PAN digits. Double-check the card number and use the **Backsp** button to correct any errors, then press **Enter**.
- 3) The device shows a numeric keypad and a prompt to enter **Exp Date (MMYY)** (see Figure 6-17). Enter the expiration date on the card and press the **Enter** button.
- 4) The device shows a numeric keypad and a prompt to enter **CVV/CVC/Card ID**. Enter the card verification code / value, then press the **Enter** button. This code is a 3- or 4- digit number printed on the front or back of the card, and is also referred to as a security code, security validation value, CAV2, CVC2, CVV2, or CID, depending on which payment brand issued the card.
- 5) The device shows a summary of all the data that was entered during the transaction. If the operator specified a transaction amount when starting the transaction, the summary includes the total transaction amount (purchase amount plus cash back, if any).
- 6) Verify all the information is correct:
  - a) If it is correct, press the **Enter** button to proceed with the transaction.
  - b) If it is correct but the cardholder or operator wishes to stop the transaction, press the **Cancel** button to completely end the transaction.



- c) If it is not correct, press the **Cancel** button to completely end the transaction, and start the transaction again from the first step.

Card Number			
1	2	3	Cancel
4	5	6	Backsp
7	8	9	Enter
.	0	00	

Figure 6-16 – Enter Card Number

Exp Date (MMYY)			
1	2	3	Cancel
4	5	6	Backsp
7	8	9	Enter
.	0	00	

Figure 6-17 – Enter Expiration Date

CVV/CVC/Card ID			
1	2	3	Cancel
4	5	6	Backsp
7	8	9	Enter
.	0	00	

Figure 6-18 – Enter CVV/CVC/Card ID

### 6.8.8 How to Verify the Transaction Amount

When the device is performing a transaction using the EMV Transaction Flow (as opposed to the Quick Chip Transaction Flow), devices with a display show the amount of the transaction when they prompt the cardholder to swipe, dip, or tap a card or payment device, as shown in **Figure 6-19**. The cardholder implicitly confirms / accepts the transaction amount by presenting payment.

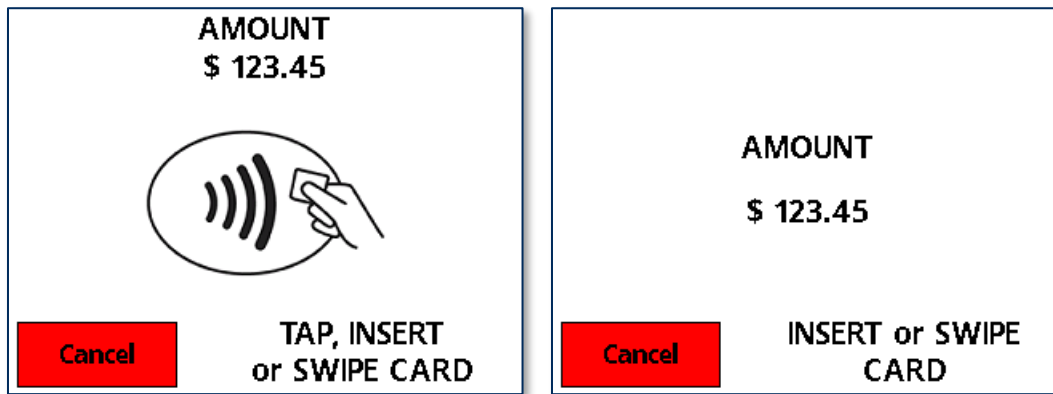


Figure 6-19 - Example Transaction Amount Screens

### 6.8.9 How to Enter PINs

Devices with a touchscreen display provide support for requesting PIN from the cardholder. The device prompts the cardholder to **ENTER PIN** (see **Figure 6-20**) as required by the financial institution. The device expects the PIN to be between 4 and 12 digits long. After entering the PIN, the cardholder must press the **ENTER** button.

Enter PIN			
1	2	3	Cancel
4	5	6	Clear
7	8	9	Enter
	0		

Figure 6-20 – Enter PIN

If the double PIN entry option is enabled, the device prompts the cardholder to enter the PIN a second time (see **Figure 6-21**). The process for re-entry is identical to the process for the first entry.

Enter PIN Again			
1	2	3	Cancel
4	5	6	Clear
7	8	9	Enter
	0		

Figure 6-21 – Enter PIN Again

#### 6.8.10 How to Enter Tip

Devices with a touchscreen display provide support for requesting Tip entry from the cardholder. The device prompts the cardholder to **Enter Tip** (see **Figure 6-22 – Enter Tip**).

Enter Tip		
<b>Total</b>	<b>\$ 108.82</b>	
<b>Amount</b>	<b>Tax</b>	<b>Tip</b>
\$ 101.00	\$ 7.82	\$ 1.00
\$ 1.00	\$ 2.00	\$ 3.00
\$ 4.00	No Tip	Custom
Cancel		Submit

Figure 6-22 – Enter Tip

If the cardholder selects a **Custom** button, the device prompts a keypad for the cardholder to **Enter Tip Amount** (see **Figure 6-23 – Enter Tip Amount**). After entering the Tip Amount, the cardholder must press the **Enter** button.

Enter Tip Amount			
1	2	3	No Tip
4	5	6	Backsp
7	8	9	Enter
	0		

Figure 6-23 – Enter Tip Amount

After finalizing the Tip, and pressing the **Submit** button, the device prompts the cardholder to present a payment (see **Figure 6-24**). The on-screen prompt is different depending on which payment method(s) the host directed the device to enable for the transaction. If the Quick Chip flow is in effect, the prompt does not include the transaction amount. If the Full EMV flow is in effect, the prompt includes the transaction amount.


<b>AMOUNT</b> \$ 108.82	<b>TAP, INSERT, SWIPE</b> or SCAN BARCODE
	
<b>Cancel</b>	<b>Edit Tip</b>

Figure 6-24 – Example Present Payment Screen

### 6.8.11 How to Enter Sale Amount

Devices with a touchscreen display and active connection to a Wireless LAN Host provide support for entering a Sale Amount from the cardholder. The device prompts the cardholder with the Start Sale button (see **Figure 6-25**)



Figure 6-25 - Start Sale Screen

When the cardholder presses the **Start Sale** button, the device prompts the cardholder to **Enter Sale Amount** (see Figure 6-26)

Enter Sale Amount			
1	2	3	Cancel
4	5	6	Backsp
7	8	9	Enter
	0		

Figure 6-26 - Enter Sale Amount

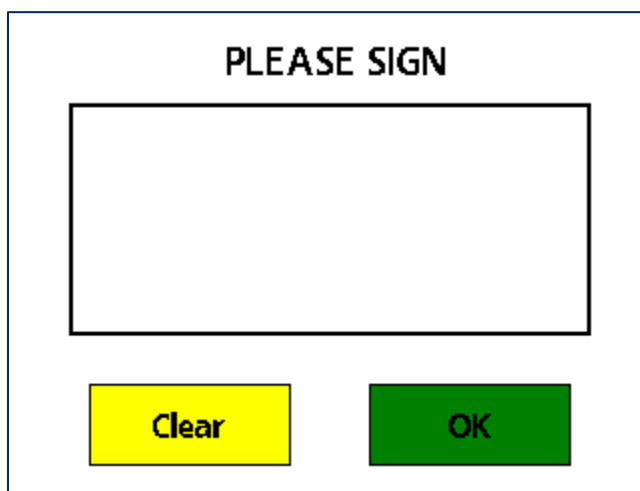
After the cardholder enters the Sale Amount and presses **Enter**, the device prompts the cardholder to enter Tip (see section 6.8.10 How to Enter Tip)

### 6.8.12 How to Use Signature Capture

#### CAUTION

**Do not use a stylus or other hard object on the touchscreen. The touchscreen is designed for fingers only and can be scratched if misused.**

When a device with a display prompts cardholders with **PLEASE SIGN**, (Figure 6-27 - Signature Capture Requested) cardholders should use the tips of their finger to press and glide against the screen to sign, then press the **OK** button. To clear the current signature on the display and start over, press the **Clear** button.



**Figure 6-27 - Signature Capture Requested**

Devices that do not have a touchscreen display cannot prompt for or collect a signature. When these devices are aware that a signature is required to complete a transaction, they send a notification message to the host that includes the status **Signature Capture Requested**. In this case, the solution design collects the cardholder's signature via a different method.

## 7 Maintenance

### 7.1 Mechanical Maintenance

#### CAUTION

**To avoid damaging the read head and contact block, only clean the MSR swipe path and insertion slot with approved cleaning cards.**

**DO NOT use liquid cleaning products or insert any other objects into the device.**

**DO NOT apply any liquid directly onto the device, to avoid seepage into the electronics.**

Periodic cleaning of the device's exterior may be required. To clean the outside of DynaFlex II products, including the LCD display, wipe down the device with a soft, slightly damp cloth and then wipe dry with a lint-free cloth. The display can also be cleaned using a slightly damp specialty cleaning cloth, like those used to wipe lenses, monitors, and smartphone displays.

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

If the device's micro-suction mounting feet lose their holding power over time, use a clean, damp, lint-free cloth to wipe the mounting feet and the mounting surface clean, then let both surfaces air dry. This should restore the mounting feet's holding power. If the mounting feet are damaged and unusable, replacements are available. See section **1.7 Available Models and Accessories**.

### 7.2 Updates to Firmware, Documentation, Security Guidance

In addition to the security guidance in the product manuals, MagTek may provide updates to this document, as well as supplemental security guidance or notices regarding vulnerabilities, at [www.magtek.com](http://www.magtek.com). MagTek advises checking the product's home page periodically for the most up-to-date information.

Any firmware updates addressing product features, bugs, or security vulnerabilities are also posted to [www.magtek.com](http://www.magtek.com) or may be sent directly to affected customers. To update the device's firmware:

- 1) Obtain the firmware image to install.
- 2) Download **1000007405 DynaFlex, DynaProx Firmware Upload Utility** from the MagTek web site.



- 3) Follow the instructions in ***D100005288 DynaFlex, DynaProx Firmware Update Utility Manual*** included in the firmware update utility's **Document** subfolder.

Note: ***1000007406 DynaFlex, DynaProx Test Utility*** can be utilized to upload new or updated firmware to DynaFlex II devices.

## 8 Developing Custom Software

Custom host software uses the same underlying device command set for all DynaFlex II product connection types. This section provides high-level information about communicating with the device via the various physical connection types in various software development frameworks, and provides pointers to available SDKs, which include sample code. Product documentation and SDKs are available for download by searching for the product name on [www.magtek.com](http://www.magtek.com) and navigating to the **Support** tab.

MagTek provides convenient SDKs and corresponding documentation for many programming languages and operating systems. The API libraries included in the SDKs wrap the details of the connection in an interface that conceptually parallels the device's internal operation, freeing software developers to focus on the business logic, without having to deal with the complexities of platform APIs for connecting to the various available connection types, communicating using the various available protocols, and parsing the various available data formats. Information about using MagTek wrapper APIs is available in separate documentation, including:

- ***D998200380 Magtek Universal SDK Programmer's Manual (Microsoft .NET)***
- ***D998200381 Magtek Universal SDK Programmer's Manual (Microsoft C++)***
- ***D998200385 Magtek Universal SDK Programmer's Manual (Java)***
- ***D998200387 Magtek Universal SDK Programmer's Manual (Android)***

The documentation is bundled with the SDKs themselves, which include:

- ***1000007351 MagTek Universal SDK for MMS Devices (Windows)***
- ***1000007352 MagTek Universal SDK for MMS Devices (Android)***

The SDKs and corresponding documentation include:

- Functions for sending the direct commands described in this manual
- Wrappers for commonly used commands that further simplify development
- Sample source code to demonstrate how to communicate with the device using the direct commands described in this manual

To download the SDKs and documentation, search [www.magtek.com](http://www.magtek.com) for “SDK” and select the SDK and documentation for the programming languages and platforms you need or contact MagTek Support Services for assistance.

In addition to the SDK API libraries, software developers also have the option to revert to direct communication with the device using libraries using the operating system's native USB or TCP/IP. For example, custom software written in Visual Basic or Visual C++ may make API calls to the standard Windows USB HID driver. For more information about sending commands directly, see ***D998200383 DynaFlex Products Programmer's Manual (COMMANDS)***.

For more information about developing custom applications that integrate with DynaFlex II, see the MagTek web site or contact your reseller or MagTek Support Services.

## Appendix A Technical Specifications

DynaFlex II Products Technical Specifications	
Reference Standards and Certifications	
ISO 7810, ISO 7811, AAMVA	
ISO/IEC 7816-1, 2, 3, & 4 Identification Cards Integrated Circuits with Contacts	
EMV ICC Specifications for Payment Systems Version 4.3, L1 Contact and L2 Contact	
EMV Contactless Level 1 Version 3.0	
MasterCard TQM	
MCL v3.1.3, payWave v2.2, Expresspay 4.0.2, D-PAS Terminal Payment Application v1.0, D-PAS Terminal Application Specification Bulletins CL TAS-002 v1.1, CL TAS-003 v1.0, CL TAS-004 v1.0	
PCI PTS POI v6.x PED	
PCI PTS POI v6.x SCR	
TDEA (3DES)-CBC using DUKPT	
FCC Part 15 Low Power Transceiver, RX verified per FCC Title 47 Part 15 Subclass C	
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)	
CE Certified	
UKCA Certified	
CE Safety: IEC 62368-1: 2014	
UL/CSA 62368-1: 2 <sup>nd</sup> Edition	
Canada ISED Certified	
Japan VCCI Certified (not applicable to WLAN models)	
Japan MIC Certified (not applicable to WLAN models)	
AS/NZS CISPR 32 (2013), AS/NZS 4268 Table 1, Row 59 DTS 2400-2483MHz SRD (WLAN), and AS/NZS 4268 (2017) Table 1, Row 43 13.553-13.567MHz (contactless reader)	
RoHS Compliant the Electrical and Electronic Equipment (EEE) Reduction of Hazardous Substances (RoHS) European Directive 2002/95/EC	
California Proposition 65 (California)	
IPC-A-610 Class II Assembly	
EU Directive Waste Electrical and Electronic Equipment (WEEE)	

DynaFlex II Products Technical Specifications	
Reference Standards and Certifications	
EU Directive Restriction of Hazardous Substances (RoHS) Universal Serial Bus Specifications 1.1, 2.0 IEEE 802.11 b/g/n, IEEE 802.11i-2004 WPA2-PSK, TKIP, AES, SHA-256 TCP/IP secured by Transport Layer Security (TLS) Protocol v1.2	
Physical Characteristics	
Dimensions (L x W x H):	DynaFlex II and DynaFlex II PED: 4.1 in. W x 3.7 in. L x 1.9 in. H (103.3mm x 95.1mm x 48.5mm)  DynaFlex II Kiosk and DynaFlex II PED Kiosk: 4.1 in. W x 3.7 in. L x 1.9 in. H (103.3mm x 95.1mm x 48.3mm)
Weight	DynaFlex II USB = 8.4 oz. (238g) DynaFlex II Bluetooth LE= 8.7 oz. (247g) DynaFlex II PED USB= 8.7 oz. (246g) DynaFlex II PED WLAN = 8.9 oz. (252g) Kiosk Models, add 1.1 oz. (30g) BCR Models, add 0.12 oz. (3.5g)
Supported Mounting Options:	Microsuction feet Lanyard mount point
Reader Characteristics	
Magnetic Stripe Reader:	Three track bidirectional encrypting reader with MagnePrint
Magnetic Stripe Decoding:	Financial (ISO Type B), AAMVA, or Other
Magnetic Swipe Speeds:	6 inches per second to 60 inches per second
EMV Contact Reader:	EMVCo L1 and L2 Contact Reader
EMV Contactless Reader:	EMVCo L1 and L2 Contactless Reader D-PAS, PayPass/MCL, payWave, Expresspay

DynaFlex II Products Technical Specifications	
Reference Standards and Certifications	
	Mobile wallets including but not limited to Apple Pay, Google Pay, Samsung Pay
Barcode Reader:	Barcode Media: Labels, paper, smartphone / computer displays Barcode Types: QR Codes, Linear Barcodes, UPC-A, UPC-E, Code 128, PDF417 / Data Matrix, etc. Field Of View 31.5° total vertical sweep, 42° total horizontal sweep, perpendicular to device face Depth Of Field 1.2 in. (30mm) to 13.8 in. (350mm) Integrated white indicator LED
User Interface Characteristics	
Status Indicators:	4 RGB LEDs
Display Type:	TFT a-Si Active Matrix Color LCD with Touchscreen (Select Models)
Display Size (viewable area):	2.3 in. x 1.7 in. (57.6mm x 43.2mm) (Select Models)
Display Resolution:	320 x 240 px, 16-bit color depth (Select Models)
Keypad:	Touchscreen
Security Characteristics	
Certifications:	PCI PTS POI 6.xPED PCI PTS POI 6.x SCR
Tamper Protection:	The enclosure and associated electronics form a Tamper Resistant Security Module (TRSM) where attempts to penetrate or modify the unit cause all cryptographic keys to be cleared or rendered unusable.
Electrical Characteristics	
Power Inputs:	USB powered via USB-C receptacle or charging cradle connectors
Power Outputs:	None
Battery Type:	Lithium Polymer rechargeable
Battery Capacity:	2100 mAh nominal (rated)
Battery Charge Time:	~7 hours connected to a 500mA host USB port

DynaFlex II Products Technical Specifications	
Reference Standards and Certifications	
Battery Time, Powered Off	4 years or longer
Battery Time, Standby:	Wireless LAN: Reserved Bluetooth LE: Reserved
Battery Time, Transactions:	Reserved
Voltage Requirements:	5 VDC from USB port
Current Requirements:	500mA from USB port
Data Storage:	Not Applicable
Communication Characteristics	
Wired Connection Types:	USB-C, compatible with USB 1.1, USB 2.0 Vendor-defined USB Human Interface Device (HID) data format
Wireless Connection Types:	Bluetooth Low Energy ("Bluetooth LE") (select models) TCP/IP over Wireless LAN (select models)
Wireless Range:	WLAN: 100m in a typical environment Bluetooth LE: TBD
Wireless Frequencies and Power:	Wireless LAN Frequency range = 2400 MHz to 2484 MHz Average power radiated = 0.80 mW (-0.97 dBm)  Bluetooth LE Frequency range = 2400 MHz to 2480 MHz Average power radiated = 0.07 mW (-11.55 dBm)  NFC: Frequency range = 13.56 MHz Maximum power conducted = 794 mW (29 dBm)
RF Exposure:	Exempt from SAR requirements due to radiated power substantially below regulatory thresholds.

DynaFlex II Products Technical Specifications	
Reference Standards and Certifications	
Software Characteristics	
Tested Operating System(s):	USB Hosts: Windows 10, Windows 11
Environmental Resistance	
Ingress Protection:	Splash Resistant
Operating Temperature:	32°F to 113°F (0°C to 45°C)
Operating Relative Humidity:	5% to 90% non-condensing
Storage Temperature:	14°F to 140°F (-10°C to 60°C)
Storage Relative Humidity:	5% to 90% non-condensing
Vibration Resistance:	5Hz to 500Hz sinusoidal vibrations at 15g acceleration, all 3 axes
Shock Resistance:	30g 11ms terminal sawtooth shocks, all 3 axes
ESD Tolerance (EMVCo):	±10kV air discharge when device is properly earth grounded
ESD Tolerance (FCC/CE):	±8kV contact discharge / ±12kV air discharge when properly grounded
Vapor Resistance:	Not Applicable
Reliability	
Shelf Life:	24 months at 25°C nominal
Magnetic Read Head Life:	1 million swipes
ICC Read Head Life:	500,000 card insertions
Battery Shelf Life:	5 years or longer (backup battery)
Battery Cycle Life:	After 500 charge / discharge cycles, battery capacity remains above 80%.

## Appendix B      Warranty, Standards, and Certifications

### LIMITED WARRANTY

MagTek warrants that the products sold pursuant to this Agreement will perform in accordance with MagTek's published specifications. This warranty shall be provided only for a period of one year from the date of the shipment of the product from MagTek (the "Warranty Period"). This warranty shall apply only to the "Buyer" (the original purchaser, unless that entity resells the product as authorized by MagTek, in which event this warranty shall apply only to the first repurchaser).

During the Warranty Period, should this product fail to conform to MagTek's specifications, MagTek will, at its option, repair or replace this product at no additional charge except as set forth below. Repair parts and replacement products will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and products become the property of MagTek. This limited warranty does not include service to repair damage to the product resulting from accident, disaster, unreasonable use, misuse, abuse, negligence, or modification of the product not authorized by MagTek. MagTek reserves the right to examine the alleged defective goods to determine whether the warranty is applicable.

Without limiting the generality of the foregoing, MagTek specifically disclaims any liability or warranty for goods resold in other than MagTek's original packages, and for goods modified, altered, or treated without authorization by MagTek.

Service may be obtained by delivering the product during the warranty period to MagTek (1710 Apollo Court, Seal Beach, CA 90740). If this product is delivered by mail or by an equivalent shipping carrier, the customer agrees to insure the product or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location, and to use the original shipping container or equivalent. MagTek will return the product, prepaid, via a three (3) day shipping service. A Return Material Authorization ("RMA") number must accompany all returns. Buyers may obtain an RMA number by contacting MagTek Support Services at (888) 624-8350.

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## LIMITATION ON LIABILITY

EXCEPT AS PROVIDED IN THE SECTIONS RELATING TO MAGTEK'S LIMITED WARRANTY, MAGTEK'S LIABILITY UNDER THIS AGREEMENT IS LIMITED TO THE CONTRACT PRICE OF THIS PRODUCT.

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MAGTEK'S SOLE LIABILITY AND BUYER'S EXCLUSIVE REMEDIES ARE STATED IN THIS SECTION AND IN THE SECTION RELATING TO MAGTEK'S LIMITED WARRANTY.

## 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.**

## CANADIAN DECLARATION OF CONFORMITY

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 Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

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

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

## INNOVATION, SCIENCE AND ECONOMIC DEVELOPEMENT

## CANADA (ISED)

This device complies with ISED Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) L'appareil ne doit pas produire de brouillage, et (2) L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## 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.

## EU STATEMENT

Hereby, MagTek Inc. declares that the radio equipment types **Wideband Transmission System** (Wireless LAN and Bluetooth Low Energy), and **Non-Specific Short Range Device** (contactless) are in compliance with **Directive 2014/53/EU**. The full text of the EU declarations of conformity is available at the following internet addresses:

- <https://www.magtek.com/Content/DocumentationFiles/D998200404.pdf> for DynaFlex with no display, USB connection
- <https://www.magtek.com/Content/DocumentationFiles/D998200410.pdf> for DynaFlex with no display, Bluetooth LE connection
- <https://www.magtek.com/Content/DocumentationFiles/D998200411.pdf> for DynaFlex Pro with USB connection
- <https://www.magtek.com/Content/DocumentationFiles/D998200412.pdf> for DynaFlex Pro with Bluetooth LE connection
- <https://www.magtek.com/Content/DocumentationFiles/D998200413.pdf> for DynaFlex Pro with WLAN connection

## UKCA STATEMENT

Hereby, MagTek Inc. declares that the radio equipment types **Wideband Transmission System** (Wireless LAN and Bluetooth Low Energy), and **Non-Specific Short Range Device** (contactless) are in compliance with Radio Equipment Regulations 2017 **Directive S.I.2017:1206**. The full text of the UKCA declarations of conformity is available at the following internet addresses:

- <https://www.magtek.com/Content/DocumentationFiles/D998200475.pdf> for DynaFlex with no display, USB connection

- <https://www.magtek.com/Content/DocumentationFiles/D998200476.pdf> for DynaFlex with no display, Bluetooth LE connection
- <https://www.magtek.com/Content/DocumentationFiles/D998200477.pdf> for DynaFlex Pro with USB connection
- <https://www.magtek.com/Content/DocumentationFiles/D998200478.pdf> for DynaFlex Pro with Bluetooth LE connection
- <https://www.magtek.com/Content/DocumentationFiles/D998200479.pdf> for DynaFlex Pro with WLAN connection


## AUSTRALIA / NEW ZEALAND STATEMENT

Testing for compliance with AS/NZS standards was performed by a registered and accredited laboratory. The unit under test was found compliant with standards established under AS/NZS CISPR 32 (2013), AS/NZS 4268 Table 1, Row 59 DTS 2400-2483MHz SRD (802.11), and AS/NZS 4268 (2017) Table 1, Row 43 13.553-13.567MHz (contactless reader).

## 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) Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU. The marking is clearly recognizable, either as written words like “Pb-free,” “lead-free,” or as another clear symbol ().

## PCI STATEMENT

PCI Security Standards Council, LLC (“PCI SSC”) has approved this PTS POI device (SCR class) to be compliant with the PCI PTS POI Security Requirements v5.1.

When granted, PCI SSC approval is provided by PCI SSC to ensure certain security and operational characteristics important to the achievement of PCI SSC’s goals, but PCI SSC approval does not under any circumstances include any endorsement or warranty regarding the functionality, quality or performance of any particular product or service. PCI SSC does not warrant any products or services provided by third parties. PCI SSC approval does not under any circumstances include or imply any product warranties from PCI SSC, including, without limitation, any implied warranties of merchantability, fitness for purpose, or non-infringement, all of which are expressly disclaimed by PCI SSC. All rights and remedies regarding products and services which have received PCI SSC approval shall be provided by the party providing such products or services, and not by PCI SSC.



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