ViVOpay Kiosk III
User Manual

C E FC

80136500-001 Rev. L
18 May 2020

FCC warning statement

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.

The user manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

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 the 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.

This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter and must be installed to provide a separation distance of at least 20cm from all persons.

Cautions and Warnings

⚠️	**Caution**: The ViVOpay Kiosk III should be mounted 1-2 feet away from other ViVOpay Kiosk IIIs. Can be adjusted based on lane setup.
⚠️	**Caution**: Danger of Explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.
⚡	**Warning**: Avoid close proximity to radio transmitters which may reduce the ability of the reader.

Table of Contents

1. Introduction

The ViVOpay Kiosk III is a compact reader designed to support contactless transactions based on ISO 18092, ISO 14443 Type A/Type B/MiFare compatible cards, fobs, tags, and NFC phones. The ViVOpay Kiosk III has a controller module, available in SRED and non-SRED versions, and an antenna module, available with a square or angled bezel. This two-part design allows the controller module to be installed within the cabinetry of a kiosk while the antenna can be installed one meter away on an exterior surface.

The ViVOpay Kiosk III supports USB and serial RS-232 host communication using the protocol defined in the NEO Interface Developers Guide. The NEO Interface Developers Guide describes all the firmware commands and other features available in NEO-series devices; it is the authoritative source for technical information of interest to systems integrators.

Contact an ID TECH representative to obtain a copy of this guide, which is available only on request.

> **Note**: A feature-rich Windows-based Universal SDK is also available to aid rapid development of applications that talk to Kiosk III. The Universal SDK is available for the C# language on Windows and comes with sample code for demo apps. To obtain the SDK and other useful utilities, demos, and downloads, check the Downloads link on the ID TECH Knowledge Base (no registration required).

1.1. SRED

Kiosk III is available in a standard, **Secure Reading, and Exchange of Data** (SRED) version. The PCI-validated SRED version is fulltime-encrypting and incorporates tamper detection features (with automatic zeroization of keys in the event of tamper), and other security related features: such as periodic automatic self-check, authentication of firmware updates, and other items required by PCI for SRED devices. The SRED Kiosk III is 100% command-compatible with standard Kiosk III.

1.2. Encryption

All versions of Kiosk III support industry-standard **TDES** or **AES** encryption, with **DUKPT**-based key management (per ANSI X.9-24). Encryption can be configured to occur with a PIN-variant key, or data variant, as desired. ID TECH is a certified key injection facility, capable of injecting the unit(s) with any required keys.

> **Note**: SRED unit device commands associated with the management of white lists are considered sensitive and require authentication via a MAC key. (Exception lists for allowing non-financial-card data to appear in the clear). When purchasing the SRED Kiosk III, arrange for a MAC key to be injected along with any other keys. Manually managing the white list requires a custom MAC key.

Consult an ID TECH representative to learn about all available options involving white list management or for other additional information.

2. Features

The ViVOpay Kiosk III supports the following transaction types:

- ISO/IEC 14443 Type A and B
- ISO 18092
- ISO 21481 (PCD & NFC)
- **Speed**: Enables quick transactions, improves store productivity, and operational efficiencies.
- **Implementations**: Retail locations, hospitality, car rental, and much more.
- **Consumer Intuitive**: Equipped with LEDs to provide visual cues to enable smooth, seamless transactions.
- **Consumer Intuitive**: Equipped with sound to provide audible cues to enable smooth, seamless transactions.
- **Secure**: Provides highly secure transactions whether financial, pre-paid, loyalty, or gift cards.
- Crypto data processing for contactless EMV cards.
- 32-bit Microcontroller with ample memory capable of supporting future application upgrades
- Small antenna flush-mounted on external cabinetry with square or angled bezel
- Internal mounted controller board with 1-meter controller/antenna separation
- SRED Version ONLY – 2 SAM slots

Comparison of SRED (Secure Reading and Exchange of Data) version of Kiosk III with non-SRED (standard or 'NSRED') version:

Feature	NSRED (Standard)	SRED
02-01 command (non-encrypted Activate Transaction)	Supported (unless encryption is turned on)	Not supported
02-40 command (encryption-compatible Activate Transaction)	Supports plaintext output and encrypted output	Only supports encrypted output
03-00 command	03-00 command not supported if encryption is enabled	Not supported at any time
03-40 command	Supports plaintext output.	Only supports encrypted output
Encryption Switch (C7-36/37 commands)	Yes	No
MAC Key	Not supported	Supported
Encryption Type	AES and TDES available	TDES only (SRED uses only TDES to encrypt transaction sensitive data to meet PCI requirements)
SAM	Not supported	Supported
Pass-Through Mode Output	Always Plaintext	1. Output plaintext if no sensitive data. 2. According to white list: • If the AID is in white list, output plaintext message. • If the AID is not in the white list, no output.
USB	VID: 0x0ACD PID: 0x3710	VID: 0x0ACD PID: 0x3710
Burst Mode Setting	If MSD/EMV encryption is ON and Data Key exists, then reader is in encryption mode, and Burst Mode is forced to be off.	Burst Mode always off.
FW Version	Kiosk III VX.YY.ZZZ	Kiosk III VX.YY.ZZZ.S
Self-Check	Supports self-check when power is on. No periodic 24-hour self-check	1. Support self-check when power on. 2. Supports periodic 24-hour self-check
Tamper Detection and Data Zeroization	Not supported	Supported. If device is tampered, reader will erase all sensitive data and enter deactivated state. (Unit will then do nothing except keep beeping and waiting for activate commands.)

3. ViVOpay Kiosk III Specifications

Hardware	
MTBF	500,000 hours based on Telcordia Technologies SR-332 modeled at 40° C.
Transmitter Frequency	13.56 MHz +/- 0.01%
Transmitter Modulation	ISO 14443-2 Type A
	Rise/Fall Time: 2-3 μsec. Rise, < 1 μsec fall ISO 14443-2 Type B
	Rise/Fall Time: < 2 μsec. each; 8% - 14% ASK ISO 18092
	ISO 21481 (PCD & NFC)
Receiver Subcarrier Frequency	847.5 KHz
Receiver Subcarrier Data	ISO 14443-2 Type A: Modified Manchester ISO 14443-2 Type B: NRZ-L, BPSK
	ISO 18092
	ISO 21481 (PCD & NFC)
Typical Read Range	4-6 cm (1.5 to 2.3 inches)

Physical Controller	
Length	105 mm (4.13 inches)
Width	76.2 mm (3.00 inches)
Depth	22.5 mm (0.88 inches)

Square Bezel Antenna	
Length	75.1 mm (2.95 inches)
Width	60 mm (2.36 inches)
Depth	17.62 mm (0.69 inches)

Angled Bezel Antenna	
Length	96.2 (3.787 inches)
Width	82.3 (3.24 inches)
Depth	17.62 mm (0.69 inches)

Environmental Antenna	
Operating Temperature	-25° C to 70° C (-13° F to 158° F), max change of 10° C per hour
Storage Temperature	-40° C to 85° C (-40° F to 185° F)
Operating Humidity	10% to 90% non-condensing
Storage Humidity	10% to 90% non-condensing, duration 3 months
Transit Humidity	5% to 95% non-condensing, duration 1 week
Operating Environment	Water resistant for indoor and outdoor use
IK /IP Rating	IK 8/ IP 65

Controller	
Operating Temperature	-25° C to 70° C (-13° F to 158° F), max change of 10° C per hour
Storage Temperature	-40° C to 85° C (-40° F to 185° F) - nonSRED
	-30° C to 85° C (-22° F to 185° F) - SRED
Operating Humidity	10% to 90% non-condensing
Storage Humidity	10% to 90% non-condensing, duration 3 months
Transit Humidity	5% to 95% non-condensing, duration 1 week
Operating Environment	Water resistant for indoor and outdoor use

Electrical	
Reader Input Voltage	+7.5V to 30VDC
	PLEASE NOTE: For UL compliance. Input voltage needs to be below 30 VDC
Working Current Rated power	<500mA
Maximum field strength	<1000Mw
	2.6 dBuA/m at 3 m

3.1. Certifications and Approvals

ViVOpay Kiosk III supports the following contactless payment applications and mobile:

- American Express ExpressPay 3.0
- Discover DPAS 1.0
- Interac Flash v1.5
- MasterCard PayPass/MChip 3.0.2
- Visa VCPS 2.1.3 – MSD, qVSDC and IRWIN
- Mifare
- Google Pay, Apple Pay, Samsung Pay & other Mobile Wallets
- Apple Pay VAS & Google Pay Smart Tap Mobile Loyalty Programs

4. Kiosk III Installation

Warning: For safety reasons make sure to mount the Kiosk III unit at a height no greater than two meters from the floor.

4.1. Parts List

Verify the possession of the following hardware for the installation of the ViVOpay Kiosk III:
- ViVOpay Kiosk III Controller (either non-SRED or SRED)
- ViVOpay Kiosk III Antenna (either standard or angled bezel)
- Antenna to Controller cables (80136204-001 & 80136218-001 which are included with the antenna)
- ViVOpay Kiosk III to ECR/POS cable (customer supplied). This could be USB or serial cable, based on the host machine.
- Drill Template for the antenna (PN 80136500-001)
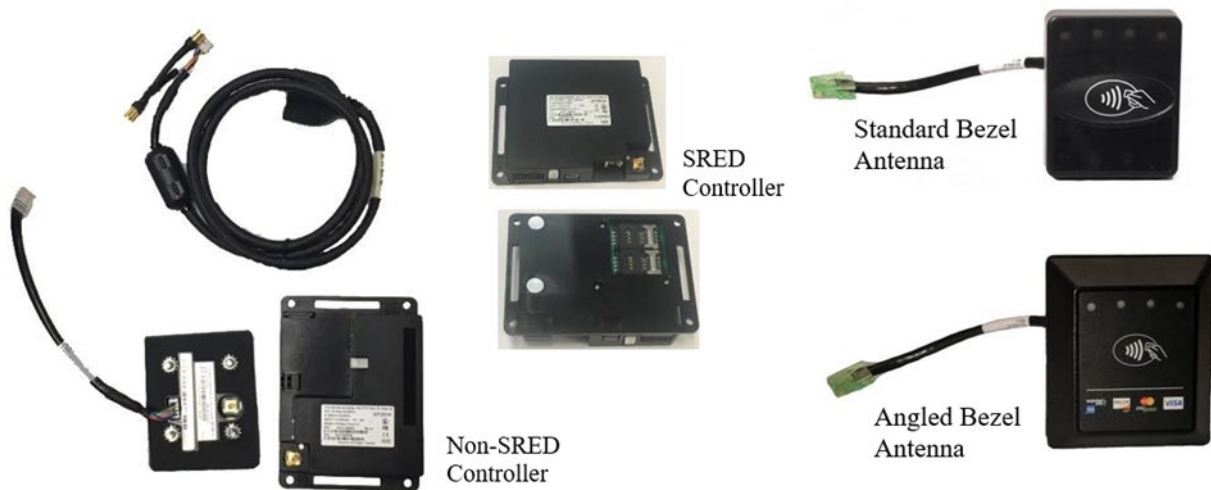
4.2. Mounting the ViVOpay Kiosk III Internal Antenna

Note: Verify the chosen location of the ViVOpay Kiosk III Antenna before marking and drilling the holes. The two larger holes should be located towards the top of the mounting location to ensure the ViVOpay Kiosk III Antenna is placed correctly with the LEDs at the top.

To mount the antenna on the exterior of a kiosk:
1. Locate and mark the four 4.4mm (0.173 inch) mounting holes using the Drill Template for the antenna. (PN 80136500-001 packaged inside antenna box.)
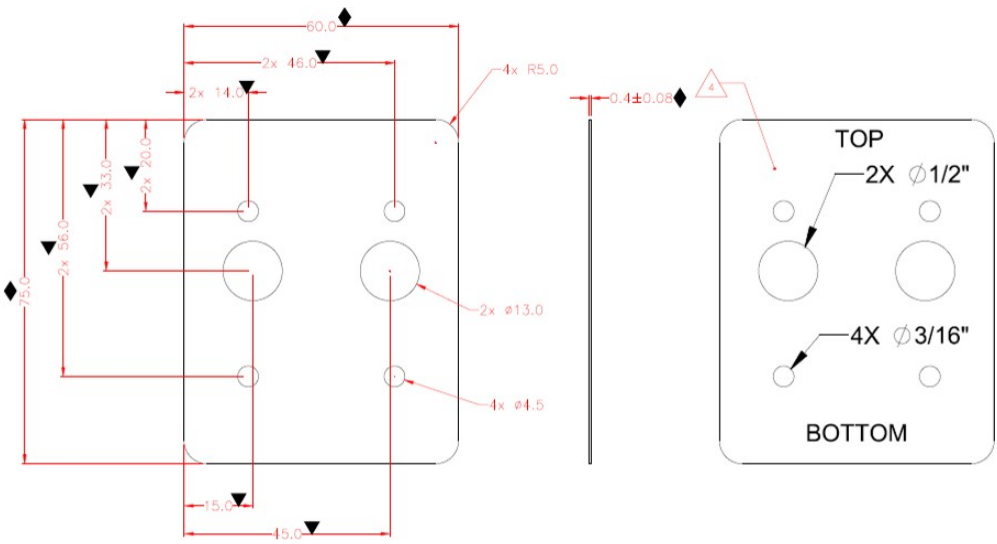
2. Locate and mark the two 14.0 mm (0.551 inches) access holes (used for connecting the antenna power, the LED power, and data cable to the ViVOpay Kiosk III).
3. Drill the four 4.4 mm (0.173) mounting holes using a number 17 drill bit.
4. Drill the two 14.0 mm (0.551 inch) holes using a 35/64 drill bit.

5. Remove the nuts from the four mounting screws.
6. Route the end of the cable (80136204-001) with the RJ45 connector through the left 14.0 mm (0.551 inch) hole into the kiosk. Verify the front of the antenna is not upside down on the kiosk before inserting the four screws into mounting holes.
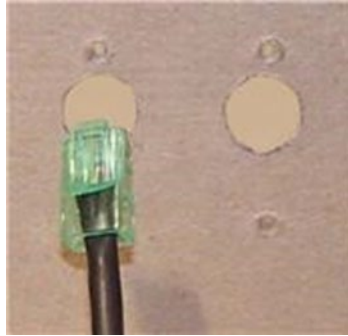
7. Align the four screws with the mounting holes and attach the ViVOpay Kiosk III to the outside surface. Ensure the cable is not pinched or binding.)

Standard Bezel Antenna

Angled Bezel Antenna
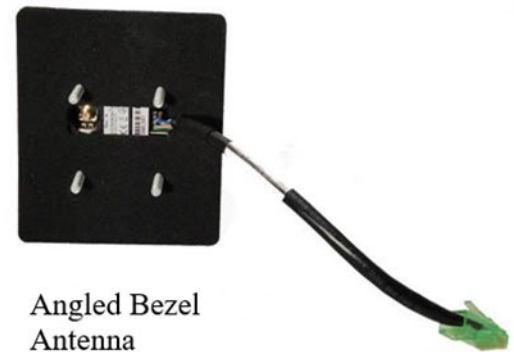
8. Use the four nuts to secure the ViVOpay Kiosk III to the outside surface of the kiosk.

Note: Tighten the nuts securely so the ViVOpay Kiosk III does not move on the outside surface of the kiosk. If the Angled Bezel Antenna is being installed, tighten the nuts to 5-7 in/lbs. for a good weather seal.

9. Attach the end of the cable with the SMB connector through the right 14.0 mm (0.551 inch) hole and attach it to the socket on the back of the ViVOpay Kiosk III antenna. The SMB connector pushes on to the socket on the antenna.
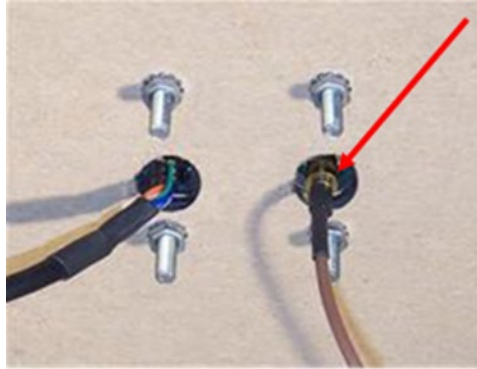
10. Attach the RJ45 connector coming from the ViVOpay Kiosk III Antenna to the RJ45 receptacle on the 80136204-001 cable.

4.2.1. Flush-Mounting the Square Bezel Antenna

The RF field of the antenna is sensitive to the proximity of metal. To flush mounting the antenna in a metal surface or bezel, there are three options:
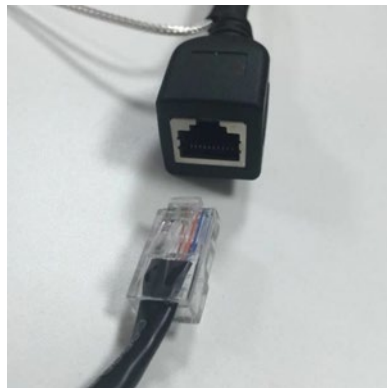
- Mount with the RF emitting surface of the antenna at least 1cm forward of any metal.
- Mount with the RF emitting surface of the antenna at least 1cm behind any metal. This will reduce the effective range of the antenna.
- Mount flush with the metal but allow a minimum of 1cm spacing between the antenna and the metal.

In all cases, test the antenna mounting before engaging in a full-scale installation.

4.3. Mounting the ViVOpay Kiosk III Controller

If screws can be visible, use the installer to drill four holes for mounting the controller. (It is advisable to use security screws to prevent tampering with the screws.)

Otherwise, the installer can use double-sided tape to mount the controller to any clean surface.

Note: The ViVOpay Kiosk III Controller must be mounted within 1 meter of the antenna. If the antenna is mounted of a surface that opens (such as a door) make sure the controller and antenna are close enough that there is no tension on the cable when the enclosure is open.

4.3.1. Mounting the ViVOpay Kiosk III Controller Using Screws

1. Position the ViVOpay Kiosk III Controller on the interior of the kiosk with enough room for the antenna mounting surface to be fully opened.
2. Locate the four 4.4mm (0.173 inch) mounting holes by holding the ViVOpay Kiosk III Controller in position and mark the holes.
3. The following diagram shows the spacing on the holes to be drilled for mounting the ViVOpay Kiosk III Controller:

4. Drill the four 4.4 mm (0.173) mounting holes using a number 17 drill bit.
5. Use four screws and nuts to mount the ViVOpay Kiosk III Controller to the kiosk surface. (Mounting screws are not provided and must be supplied by the installer.)
6. Tighten the nuts to hold the ViVOpay Kiosk III Controller in position.

5. Mounting the ViVOpay Kiosk III Controller Using Mounting Tape

1. Position the ViVOpay Kiosk III Controller over the mounting tape and gently apply pressure to hold the controller in position.
2. Attach the SMB end of the cable (80136204-001) from the antenna to the ViVOpay Kiosk III controller.
3. Position the ViVOpay Kiosk III Controller over the mounting tape and gently apply pressure to hold the controller in position.
4.

5.1. Attaching the Cables from the Antenna to Controller

1. Attach the SMB end of the cable (80136204-001) from the antenna to the ViVOpay Kiosk III controller.

non-SRED Controller   SRED Controller

2. Attach the other end of the cable (80136204-001) from the antenna to the ViVOpay Kiosk III Controller.
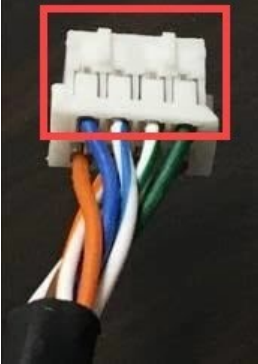

Non-SRED Controller   SRED Controller

Note: Verify that the polarizing lug on the end of the data cable is facing towards the top of the ViVOpay Kiosk III Controller (away from the mounting plate) before inserting the cable. If the cable is installed incorrectly (upside down), it will apply the wrong polarity to the LEDs and damage them.

5.2. Connecting to USB Power

The Kiosk III can be powered through the serial communications port or the two-socket power connector. When using USB Data Communications Power, the Kiosk III though the two-socket power connector.
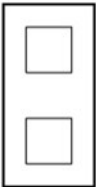
Connect +7.5 to 45VDC to the white two-socket Molex connector (mating connector Molex P/N 0039012020 with 5556-series crimps) or to pins 1 and 2 of the RS-232 connector (see next section).
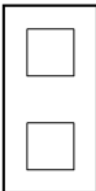
5.3. Connecting to the Data Port

The Kiosk III has two data connections options: USB through the USB connector and RS-232 through the 14-pin Molex connector.

The RS-232 port has the following pinouts:

Pin	Description	Pin	Description
1	Power ground	2	+7.5v to 45VDC
3	Power ground	4	+7.5v to 45VDC
5	No connection	6	Reserved
7	Reserved	8	Reserved
9	Signal ground	10	Signal ground
11	RS-232 Tx	12	RS-232 Rx
13	No connection	14	Reserved

To build the RS-232 cable:
1. Use Molex female connector part number 0511101451 with 50394-series crimps (see www.molex.com for more information). Pin 1 is indicated by a triangle (diagram is socket-side view of female connector).
2. Powering the Kiosk III from this connector.
3. Wire the two power pins (pins 2 and 4) together and the two power ground pins together (pins 1 and 3).
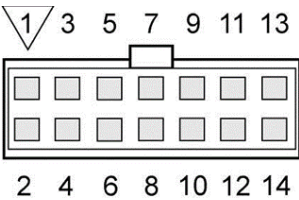
5.4. Make a Purchase with the ViVOpay Kiosk III

The ViVOpay Kiosk III allows for credit and debit card purchases using contactless technology.

Present the card or phone so the card is parallel to the front portion of the antenna module as shown below. The antenna should beep, and all four green LEDs should illuminate briefly to indicate a successful test.

5.4.1. Presenting Cards or NFC Phones

A dummy transaction can be tested using a test card and the Kiosk III antenna. The antenna's ability to read the Contactless test cards and test for end-to-end connectivity will be tested. If unsuccessful, there will be no reaction from the reader and the transaction will not be authorized.

6. Installation

The Kiosk III is designed to be mounted on a metal surface, close to any internal motors and electrical devices that may be operating inside the kiosk. However, the Kiosk III is susceptible to RF and electromagnetic interference.

Note: It is important that the unit not be mounted near (within 3 or 4 feet) large electric motors, computer UPS systems, microwave transmitters, anti-theft devices, radio transmitters, and communications equipment.

The proximity of metal to the RF-emitting end of the antenna can greatly reduce the range of the antenna.

Precautions for Flush Mounting the Kiosk III Antenna:
1. Label the cable end as host, ViVOpay, and power to simplify connection testing or component replacement.
2. Tie all cables with nylon cable-ties and route them so that they are inaccessible to customers.
3. Test the Kiosk III installation using a test card to perform an end-to-end transaction. (The same as an actual purchase on the Kiosk). This transaction should be declined but will prove absolute connectivity throughout the system.
4. "Requesting Authorization" will display.
5. Each Kiosk III should be tested on a regular basis, either at the start of the day or once per week, to ensure continued operation and functionality of transactional communications.

7. Firmware Upgrade

The Kiosk III can be upgraded using either serial or USB interfaces.

7.1. Preparation

To update the new firmware:

- PC with available serial or USB port
- Kiosk III with a serial data cable or a USB cable attached
- For serial downloads: use cable `220-2492-00`, `220-2463-00`, and `140-2035-00`
- For USB downloads: `220-2492-00`, `80097208-001`, or for a Mini USB cable and `140-2035- 00`

Firmware files (including Boot Loader files) for the desired firmware.

7.2. Uploading Firmware for RS232 or USB

1. Move **KIOSKIII_EData.bin** and **KIOSKIII Bootloader Utility.exe** into the same folder.
2. Confirm device is correctly connected to the power source and **RS232/USB** connection. (If **RS232** is the interface choice, then please close all software that is using the **RS232** communication.)
3. Run **KIOSKIII Bootloader Utility.exe**, choose communication type and parameters according to the connection interface.
   - For serial interface, choose "COM" and **Baud Rate** is 19200 (default).
   - For USB interface, choose "HID" and verify **VID** displaying **0ACD** and PID displaying **3710** (default).
4. Click the "Load" - the firmware will be downloaded into the device. When "Firmware successfully downloaded" displays, then the firmware has been successfully downloaded.
5. Close **Bootloader Utility**.

Serial Interface:
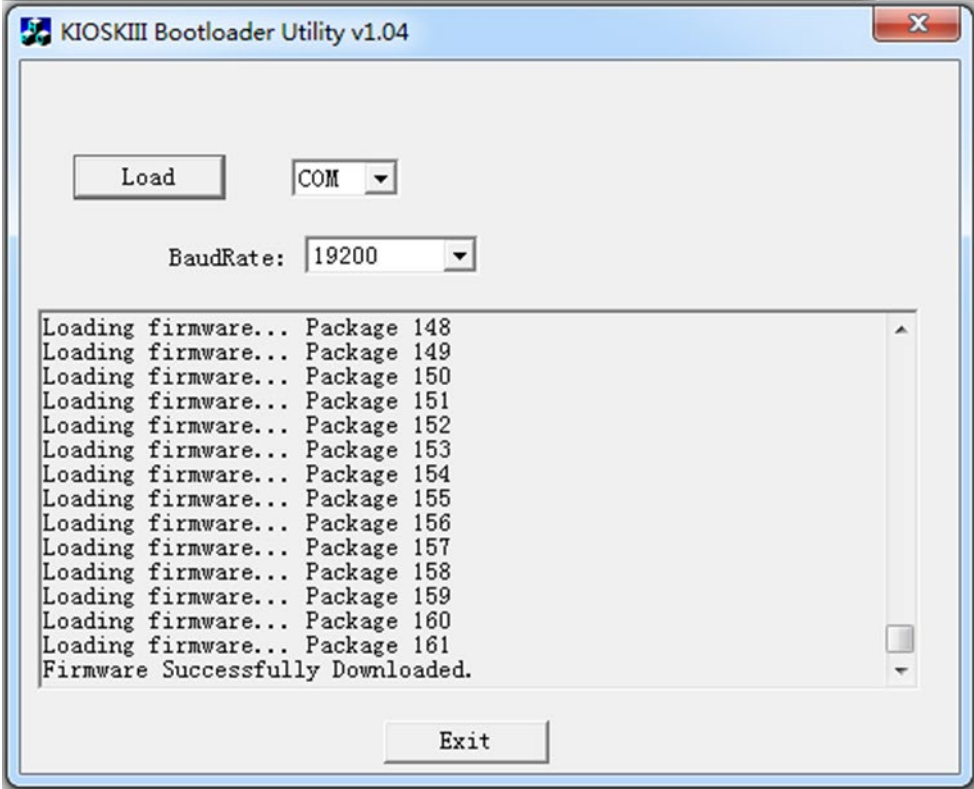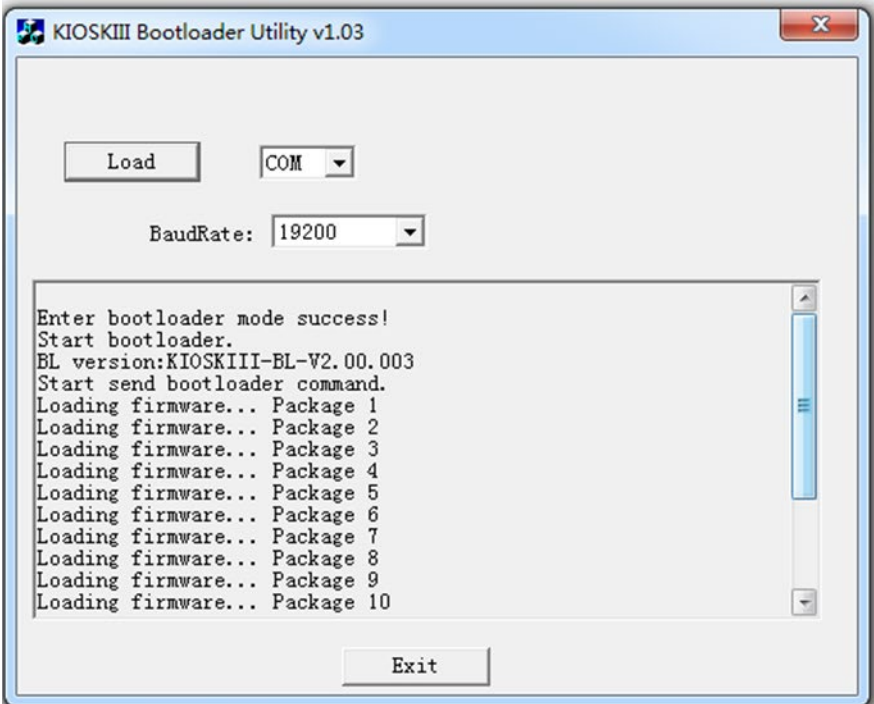
User Interface:
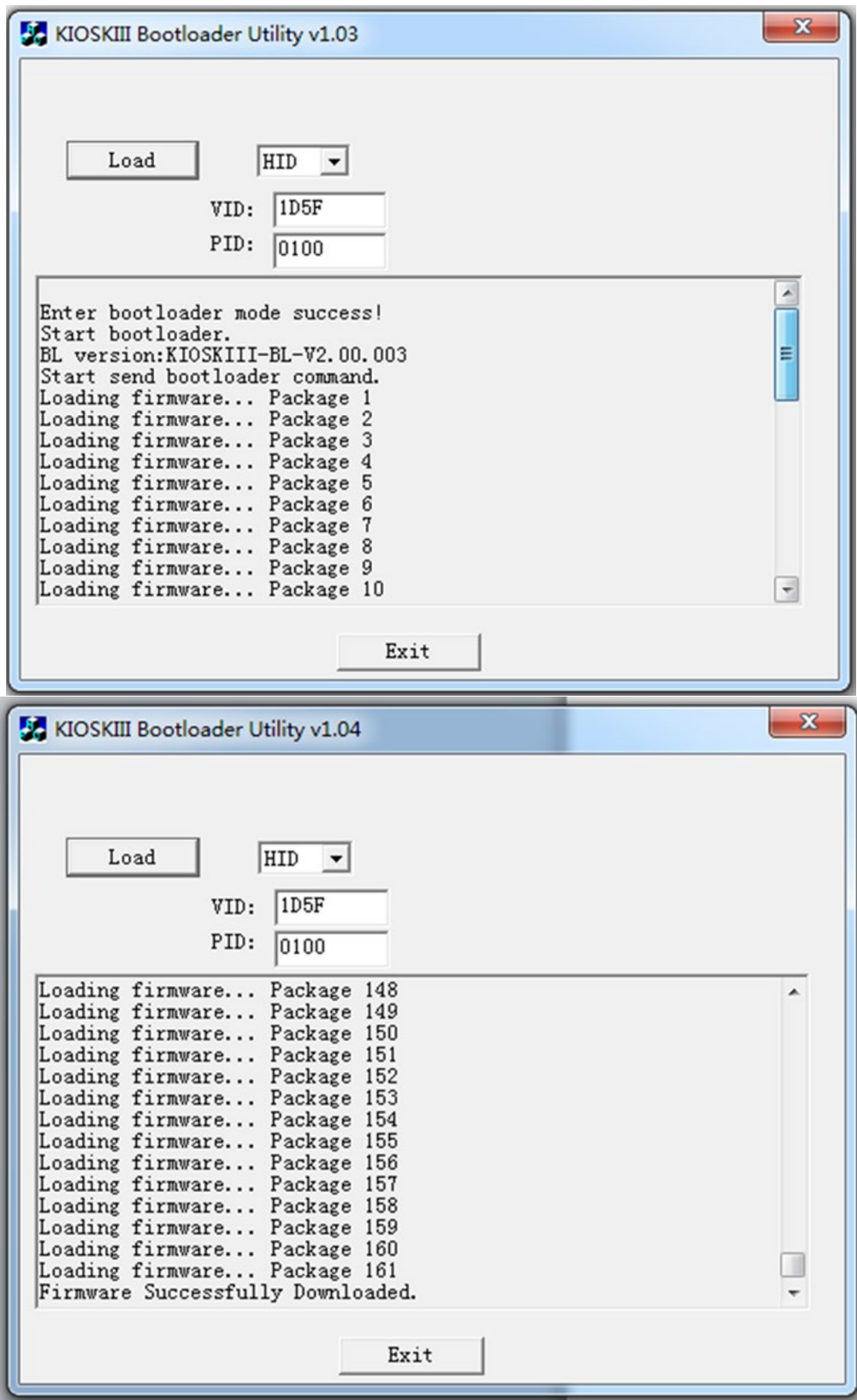
8. Decommissioning SRED Devices

All PCI devices require proper decommissioning prior to device disposal to ensure the protection of all sensitive financial card data. For instructions on decommissioning the device, see Decommissioning of SRED Devices on the ID TECH Knowledge Base.

9. Troubleshooting

The ViVOpay Kiosk III readers are reliable and easy to troubleshoot. The components that may require troubleshooting include the power module (if applicable), the reader, and the serial cable.

Symptom	Possible Cause	Remedy
General Issues		
Reader does not appear to be powered on (no LEDs are lit).	• Reader not powered on or incorrect voltage. • Improper use of internal power supply provided by the kiosk.	• Check cable connections. • Verify that power is on and correct voltage and current are present. • Make sure that the correct pins are utilized. • Make sure that the power provided is within the specified range of the Kiosk III reader. • Make sure that the correct polarity is observed. • For more information, refer to the Input Voltage under the Electrical specification section. • Replace the ViVOpay Kiosk III.
Reading Cards or Phones		
LEDs do not light and beeper is not audible when card/fob presented.	• Card/fob/phone not properly presented. • RF interference. • Unsupported card used. • Wrong firmware (contact your local support representative).	• Present card/fob/phone closer to the antenna, and ensure it is parallel to the face of the reader. • Verify that the card/fob/phone is valid/current. • Verify that metal is not interfering with the antenna. • Test with "ViVOcard Contactless Test Card" part number 241-0015-03 Rev A. • Try a different card/fob. • Check to see if card/fob is damaged. • Verify that correct firmware is loaded on reader (local support representative only). • Power cable plug is fully inserted. • Replace the ViVOpay Kiosk III.
Some cards/fobs read, but not all.	• Possible bad card/fob. • Unsupported card used. • Wrong firmware (contact your local support representative).	Check that the cable connection is secure and in the correct port on the kiosk III.

Communication to Kiosk		
No data is received, or data is garbled.	Faulty or incorrect cable connections.	Check that the cable connection is secure and in the correct port on the kiosk III.
Load Firmware		
Firmware loading software indicate " open RS232 failed"	Device is not well connected to PC. Or other software is using serial interface.	• Check the cable connection • Close other software which is using serial interface
Firmware loading software indicate "Load firmware failed"	Device is not well connected to PC.	Check the cable connection.
Firmware loading software indicate "Send Command failed"	Bootloader firmware in device is destroyed.	Contact your local support representative to reload manufacture firmware.

If you are unable to resolve the problem, please contact support@idtechproducts.com (sending an e-mail to this address will automatically open a support ticket)

9.1. Radio Frequency

Q. Why do I need to know about RF interference?
A. RF is when contactless payment uses radio frequency technology to send card data to a terminal reader.

Q. How can RF interference affect contactless payment?
A. RF Interference can cause data errors. If RF Interference is present, contactless payment devices may operate intermittently or inconsistently.

Q. Where does RF interference come from?
A. Radio Frequency Interference (RFI) can originate from a wide number of sources at the point-of-sale (POS).

Some examples of sources of RF energy and RF interference include:
>   AM/FM radio and TV transmitters 2-way radios, pagers
>   Mobile telephones Power lines, transformers Medical equipment Microwaves
>   Electromechanical switches

Q. What should I do if I suspect RF interference exists in my environment?
A. Begin by inspecting the environment for possible sources of RF interference.

Q. Do equipment manufacturers test their devices for RF interference?
A. Electronic equipment is tested for RFI sensitivity by the manufacturers. These tests are performed in a controlled laboratory environment and will often not replicate the types of devices that would be encountered in the point-of-sale (POS) environment.

Q. What RF levels will impact RF operations?

A. Factors that can cause RF interference vary case-by-case. There are no set rules defining a single RF level that will cause RFI. RFI depends on the sensitivity of the equipment under consideration, or how low an interpreting signal can be in the presence of the equipment and cause problems. Equipment can be particularly sensitive to very low signal levels of one frequency and yet be quite immune to high signal levels of another frequency - so frequency is an important factor. Some electronic system components are internally shielded and have a very high immunity to interference; but generally, most equipment has not been so engineer.