ViVOpay Kiosk III
User Manual

80136500-001 Rev. E

Copyright

ID TECH
10721 Walker Street
Cypress, CA 90630
USA

FCC Regulatory Compliance

Notices Class B Equipment

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. This device complies with part 15 of the FCC rules. Operation is subject to 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.

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 and 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.
- Changes or modifications to the ViVOpay Kiosk III not expressly approved by ID TECH could void the user's authority to operate the ViVOpay Kiosk III.

IC Compliance Warning

Operation is subject to 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.

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. Overview

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

The ViVOpay Kiosk III supports USB and serial RS-232 host communication using the protocol defined in the *NEO Interface Developers Guide*. This comprehensive guide describes all of 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 your ID TECH representative to obtain a copy of this guide, which is available under NDA.) Note, also, that a feature-rich Windows-based Universal SDK is also available to aid rapid development of applications that talk to Kiosk III.

Be sure to check the Downloads link on the ID TECH public Knowledge Base at https://atlassian.idtechproducts.com/confluence/display/KB/Knowledge+Base+-+Home for the latest product downloads.

The ViVOpay Kiosk III is designed to support a wide input power range. Both data and power can be supplied via a single cable to reduce the effort and complexity of installation.

1.1 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 improving store productivity and operational efficiencies.
- Implementations: Retail locations, hospitality, car rental, and much more.
- Consumer Intuitive: Equipped with LEDs and sound to provide visual and audible cues to enable smooth and 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

This document assumes that users are familiar with their host systems and all related functions.

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: a. If the AID is in white list, output plaintext message. b. If the AID is not in the white list, no output.
USB	VID: 0x0ACD PID: 0x3710	VID: 0x0ACD PID: 0x2830
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	1. Supports self-check when power is on. 2. 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.)

1.2 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 Rating	IK 8
IP Rating	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 Working Current Rated power Maximum field strength	+7.5V to 36VDC **PLEASE NOTE: For UL compliance. Input voltage needs to be below 30 VDC** <500mA <1000Mw 2.6 dBuA/m at 3 m

1.3 Certifications and Approvals

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

- 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
- Android Pay, Apple Pay, Samsung Pay & other Mobile Wallets
- Apple Pay VAS & Android Pay Smart Tap mobile Loyalty Programs

2. Kiosk III Installation

This section provides information on how to install the ViVOpay Kiosk III on a kiosk.

2.1 Parts List

Verify that you have 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)

Non-SRED Controller

SRED Controller

Standard Bezel Antenna

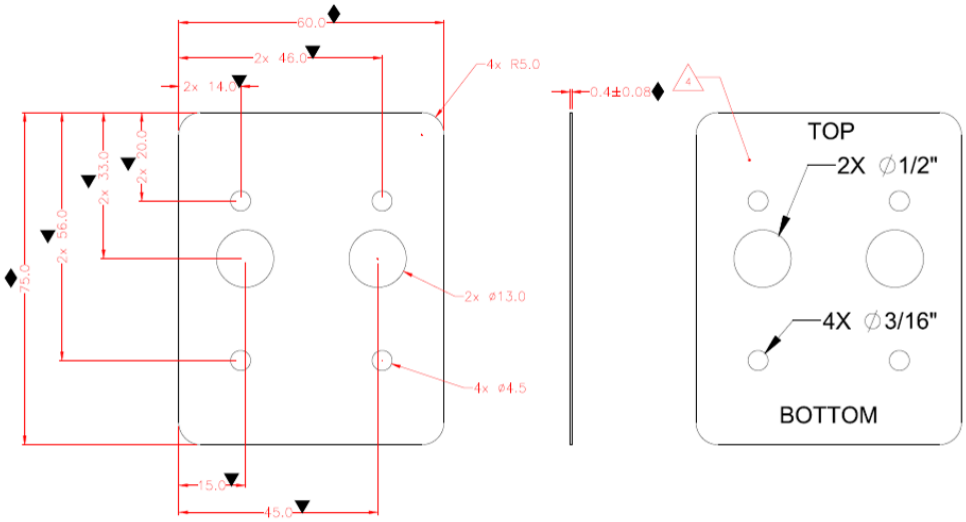
Angled Bezel Antenna

2.2 Mounting the ViVOpay Kiosk III External Antenna

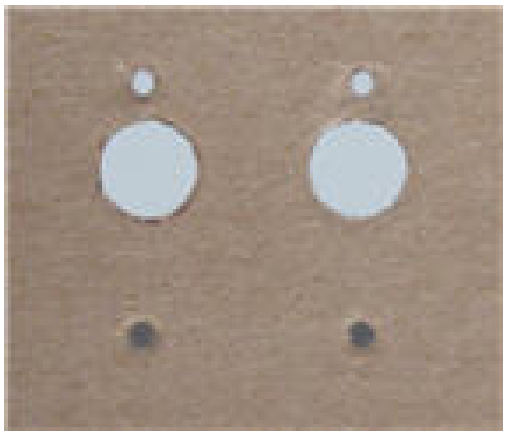
Use the following instructions to mount the antenna on the exterior of a kiosk:

Note: Verify the orientation 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 that the ViVOpay Kiosk III Antenna is oriented correctly with the LEDs at the top.

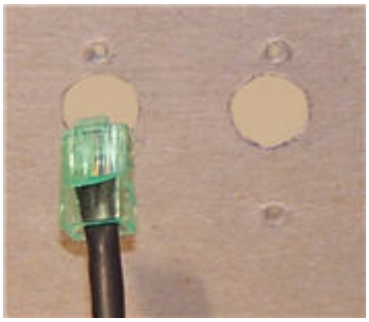
1. Using the Drill Template (PN 80136500-001 and packaged inside antenna box) for the antenna, locate and mark the four 4.4mm (0.173 inch) mounting holes.



2. Using the Drill Template, locate and mark the two 14.0 mm (0.551 inches) access holes (used for connecting the antenna power and 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 in to the kiosk. Make sure that the front of the antenna will be properly oriented (not upside down) on the kiosk before inserting the four screws into the mounting holes.



7. Align the four screws with the mounting holes and attach the ViVOpay Kiosk III to the outside surface. Make sure that the cable is not pinched or binding.

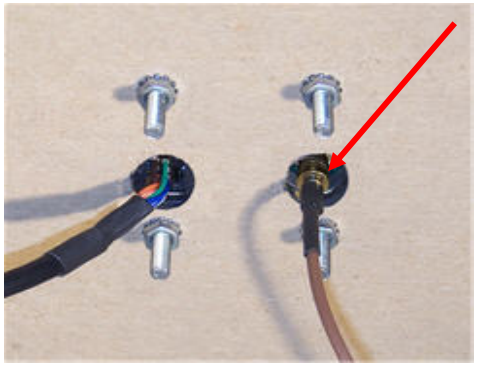
Standard Bezel Antenna

Angled Bezel Antenna

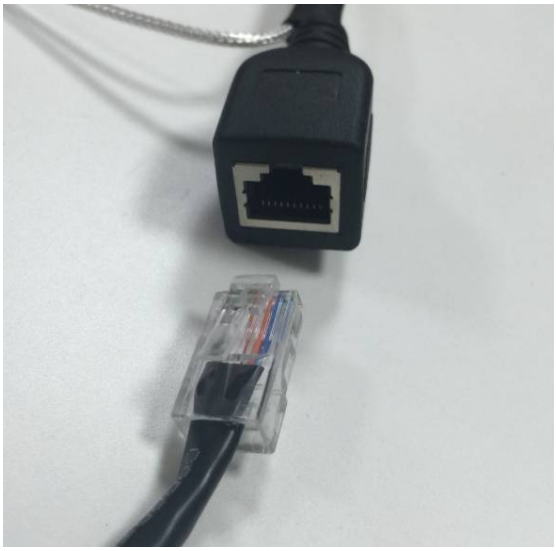
8. Use the four nuts to secure the ViVOpay Kiosk III to the outside surface of the kiosk. Make sure to tighten the nuts securely so that the ViVOpay Kiosk III does not move on the outside surface of the kiosk.

   If you are installing the Angled Bezel Antenna, 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.



2.2.1 Flush-Mounting the Square Bezel Antenna

The RF field of the antenna is sensitive to the proximity of metal. If you are flush-mounting the antenna in a metal surface or bezel, you have 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.

2.3 Mounting the ViVOpay Kiosk III Controller

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.

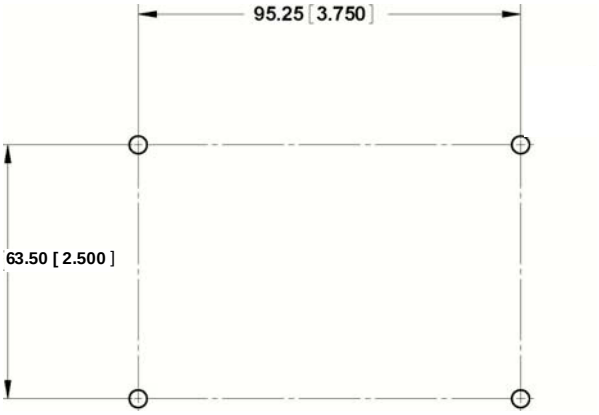
If it is acceptable, the installer can drill four holes for mounting the controller if screw heads can appear on the outside of the kiosk. In this case, it would be advisable to use security screws to prevent tampering with the screws.

If drilling additional holes on the outside of the kiosk surface is not acceptable, the installer can use double-sided tape to mount the controller to any clean surface.

2.3.1 Mounting the ViVOpay Kiosk III Controller Using Screws

1. Position the ViVOpay Kiosk III Controller on the interior of the kiosk making sure that there is sufficient 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. The following diagram shows the spacing on the holes to be drilled for mounting the ViVOpay Kiosk III Controller.



3. Drill the four 4.4 mm (0.173) mounting holes using a number 17 drill bit.
4. 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.)
5. Tighten the nuts to hold the ViVOpay Kiosk III Controller in position so that it does not move.

2.3.2 Mounting the ViVOpay Kiosk III Controller Using Mounting Tape

1. Position the ViVOpay Kiosk III Controller on the interior of the kiosk making sure that there is sufficient room for the antenna mounting surface to be fully opened.
2. Attach double-sided tape to the mounting surface.
3. Position the ViVOpay Kiosk III Controller over the mounting tape and gently apply pressure to hold the controller in position.

2.4 Attaching the Cables from the Antenna to the 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

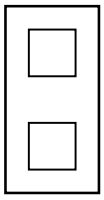
Note: Verify that the polarizing lug on the end of the data cable is facing towards the top of the ViVOpay Kiosk III Controller (away from the mounting plate) before inserting the cable. If the cable is installed incorrectly (upside-down), it will apply the wrong polarity to the LEDs and damage them.

2.5 Connecting to USB Power

The KIOSK III can be powered through the serial communications port or the two-socket power connector. If you are using USB data communications, you must 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).

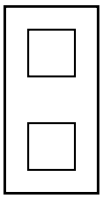
Non-SRED



Pin 2 - Ground

Pin 1 - +7.5v to 45VDC

SRED



Pin 2 - Ground

Pin 1 - +7.5v to 45VDC

2.6 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.

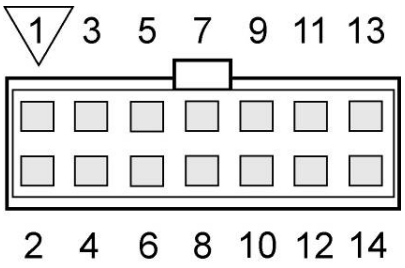
Non-SRED

SRED

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 your own RS-232 cable, 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). If you are powering the Kiosk III from this connector, wire the two power pins (pins 2 and 4) together and the two power ground pins together (pins 1 and 3).



2.7 Using the ViVOpay Kiosk III to Make a Purchase

Presenting Cards or NFC Phones

The ViVOpay Kiosk III allows for credit/debit card purchases using Contactless technology.

Present the card/phone in close proximity to the front portion of the antenna module. Present the card/phone so that maximum surface area is parallel to the antenna module as shown below. The antenna should beep and all four green LEDs should illuminate briefly to indicate a successful test.

This tests the antenna's ability to read the Contactless test card. If unsuccessful, there will be no reaction from the reader. If you use a test card and the Kiosk III antenna is attached to the Kiosk III Controller, a dummy transaction can be tested. The transaction will not be authorized and will come back with a response, but will at least test for end-to-end connectivity.

2.8 Making a Purchase

1. After the transaction has been entered on the kiosk control panel, the customer should present their card/fob/phone in close proximity so that maximum surface area is parallel to the antenna.

- A single beep and all four LEDs briefly flashing indicates the card/fob/phone has been read correctly.

3. Installation Points

- The Kiosk III is designed to be mounted on a metal surface and in close proximity 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***. 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, communications equipment and so on.***
- ***Close proximity of metal to the RF-emitting end of the antenna can greatly reduce the range of the antenna. See the precautions described in Flush Mounting the Kiosk III Antenna.***

- Tie all cables neatly with nylon cable-ties and route them so that they are inaccessible and invisible to customers. Label the cable ends, host, ViVOpay and power, to simplify connection testing or component replacement.
- 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). The kiosk control panel should display "Requesting Authorization". Even if the transaction is declined (as it should be with a test card), it will prove connectivity all the way through the system. If possible the store manager or some other responsible party should test each Kiosk III on a regular basis (perhaps at the start of each day or at least once per week) with a test card to ensure continued operation and functionality. If the kiosk is rebooted on a regular basis (such as every night) it is important to test the contactless reader as soon as possible afterwards to ensure continued communication to the kiosk.

4. RF Interference

Q. Why do I need to know about RF interference?

A. Contactless payment uses radio frequency technology to send card data to a contactless 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 your 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 your 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 engineered.

5. Firmware Upgrade

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

5.1 Preparation

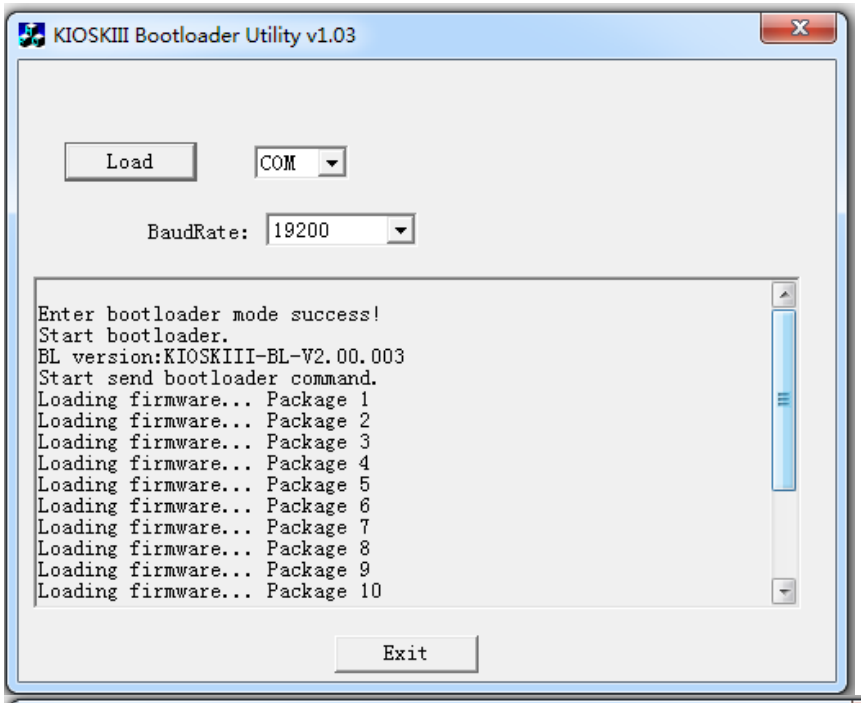
To update the new firmware you will need:

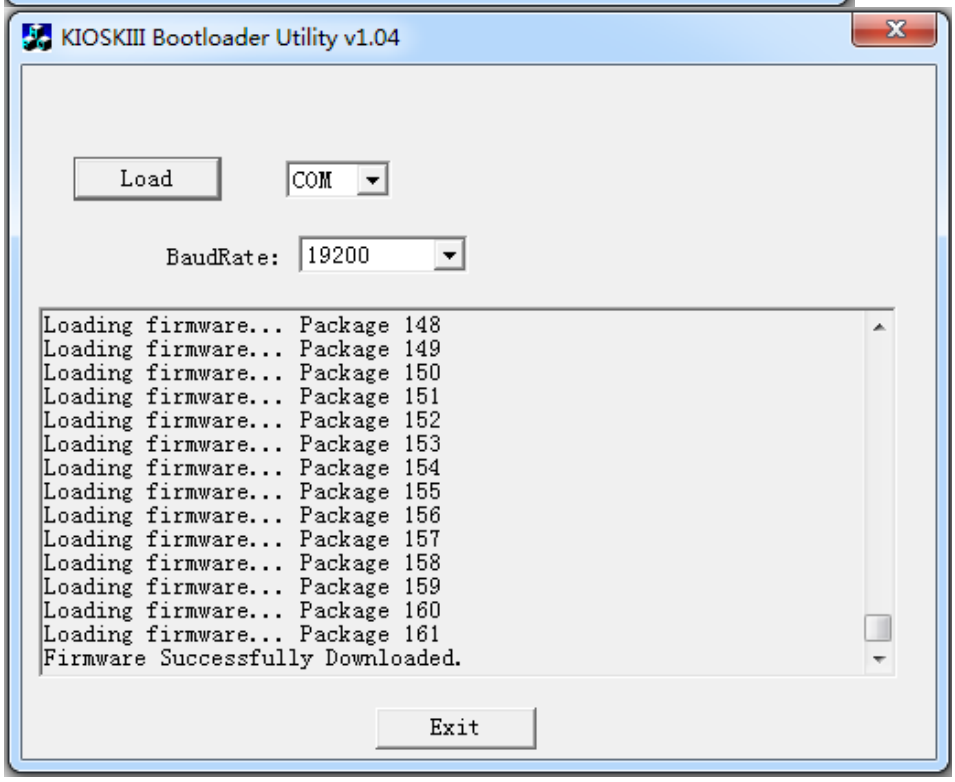
- PC with available serial or USB port
- Kiosk III with a serial data cable or a USB cable attached
- **For serial downloads:** use cable 220-2492-00, 220-2463-00 and 140-2035-00
- **For USB downloads:** 220-2492-00, 80097208-001 or your own Mini USB cable and 140-2035-00
- Firmware files (including Boot Loader files) for the desired firmware

5.2 Uploading Firmware for RS232 or USB

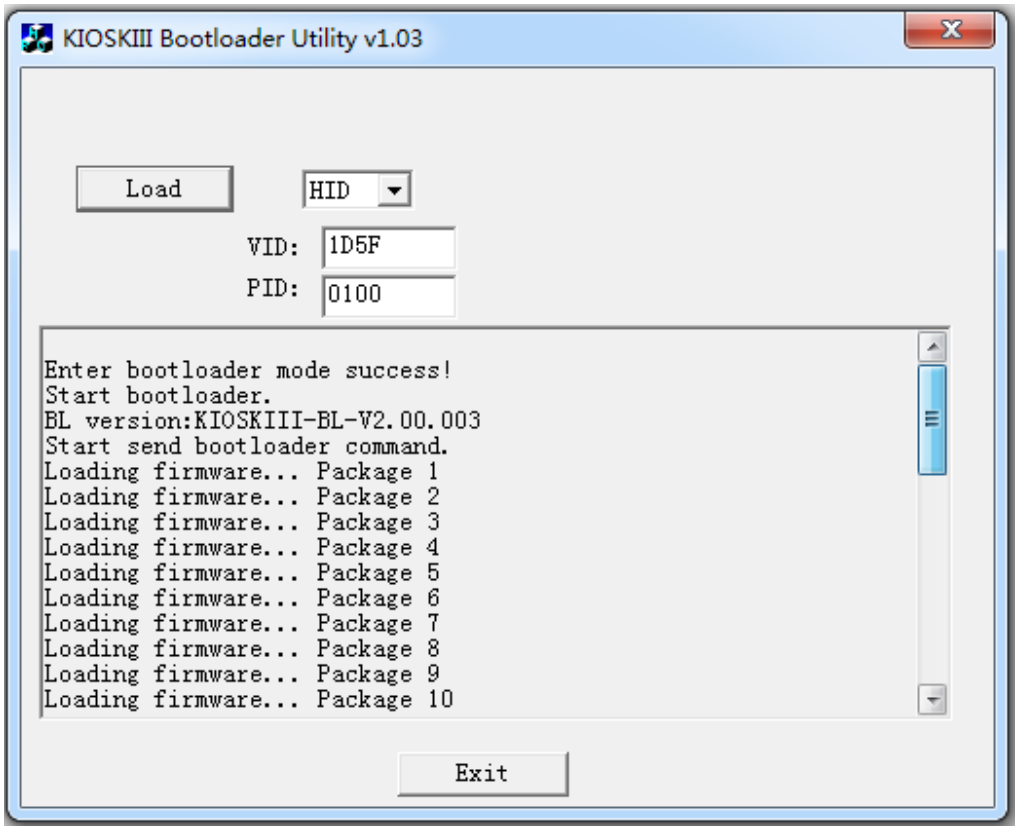
1. Move “KIOSKIII_EData.bin” and “KIOSKIII Bootloader Utility.exe” into the same folder.
2. Check and confirm device is correctly connected to the power source and RS232/USB connection.
3. If RS232 is the interface choice, then please close all software that is using the RS232 communication.
4. Run “KIOSKIII 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 1D5F and PID displaying 0100 (default).
5. Click the “Load” button - the firmware will be downloaded into the device. When “Firmware successfully downloaded” appears on the utility, then the firmware has been successfully downloaded. The Utility could be closed at that time.

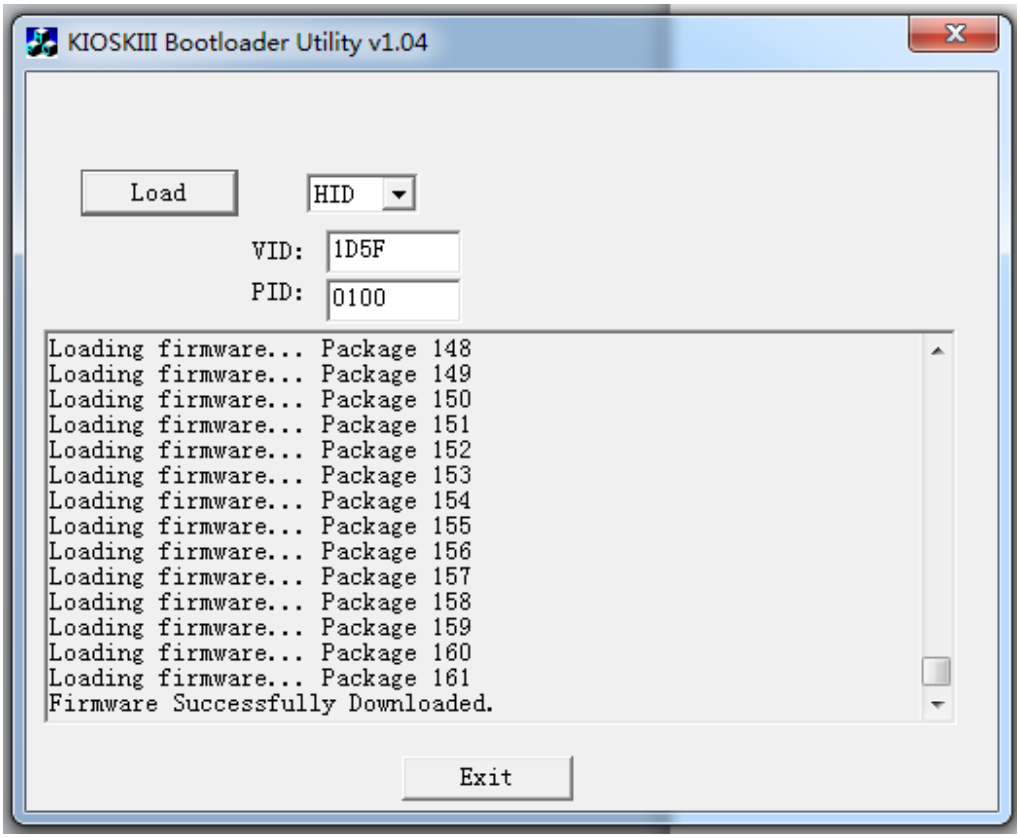
Serial Interface:





USB interface:





6. 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.

Symptom	Possible Cause	Remedy
Reading Cards/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 to see if card/fob is damaged. • Verify that correct firmware is loaded on reader (local support representative only).
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).