ViVOpay Kiosk IV
User Manual

80160500-001 Rev. G
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ID TECH
10721 Walker Street
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USA

FCC Regulatory Compliance

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.

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 IV should be mounted 1-2 feet away from other ViVOpay Kiosk IVs. Can be adjusted based on lane setup.
	**Warning:** Avoid close proximity to radio transmitters which may reduce the capability of the reader.

Table of Contents

1. Overview

The ViVOpay Kiosk IV – the successor to ID TECH's well proven Kiosk III – is a compact, standalone contactless reader, designed to support contactless EMV 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 IV is a single piece device including controller and antenna.

The ViVOpay Kiosk IV supports USB and serial RS-232 host communication using the protocol defined in the *NEO Interface Developers Guide*. This comprehensive 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 your ID TECH representative to obtain a copy of this guide, which is available only on request.) Please refer to this guide when controlling the Kiosk IV through firmware commands sent directly over a serial port.

Universal SDK

A feature-rich Windows-based Universal SDK is available to aid rapid development of applications that talk to Kiosk IV. The 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, 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 (no registration required).

Encryption

Kiosk IV supports industry-standard Triple DES 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 operates a certified Key Injection Facility, capable of injecting your unit(s) with any required keys. Consult your ID TECH representative to learn about all available options involving key injection.

1.1 Features

The ViVOpay Kiosk IV supports the following transaction types:

- ISO/IEC 14443 Type A and B
- ISO 18092
- ISO 21481 (PCD & NFC)
- Suitable for transit, kiosks, parking and various other unattended and attended verticals.
- 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. Data is encrypted at the time of the transaction and never travels in clear-text form.
- Self-contained antenna
- Kiosk IV is certified with Visa Ready for Transit

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

ViVOpay Kiosk IV 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	
Length	64 mm (2.52 inches)
Width	53 mm (2.09 inches)
Depth	13.5 mm (0.59 inches)
Environmental	
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) [non-condensing]
Operating Humidity	10% to 90% non-condensing, maximum 95%
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 for with Stud version – IDVK-411 IP 32 for no Stud version – IDVK-410
Electrical	

Reader Input Voltage	+5V (USB port-powered; RS-232 requires power supply)
Working Current Rated power Maximum field strength Battery (for real-time clock)	<500mA <1000Mw 2.6 dBuA/m at 3m CR1225 12.5*2.5mm, 48 mah ("coin" battery), lifetime 5 years

	Current	Wake up time
Standby Mode	3.6mA	<0.1 sec
Sleep Mode	0.3mA	<8 secs

1.2 Certifications and Approvals

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

- American Express ExpressPay 3.1
- Discover DPAS 1.0
- Felica
- Interac Flash v1.5
- JCB
- MasterCard PayPass/MChip 3.1
- UPI
- Visa VCPS 2.1.3 - MSD, qVSDC and IRWIN
- Mifare
- Apple Pay, Google Pay, Samsung Pay, & other Mobile Wallets
- Apple VAS & Google SmartTap mobile Loyalty Programs

1.3 Regulatory

- CE Mark
- UL certified
- ROHS2 and REACH
- USB-IF Certification
- TQM Certification
- Japan Telec/VCCI

2. Kiosk IV Installation

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

2.1 Parts List

Verify that you have the following hardware for the installation of the ViVOpay Kiosk IV:

- ViVOpay Kiosk IV.
- Cables (sold separately)

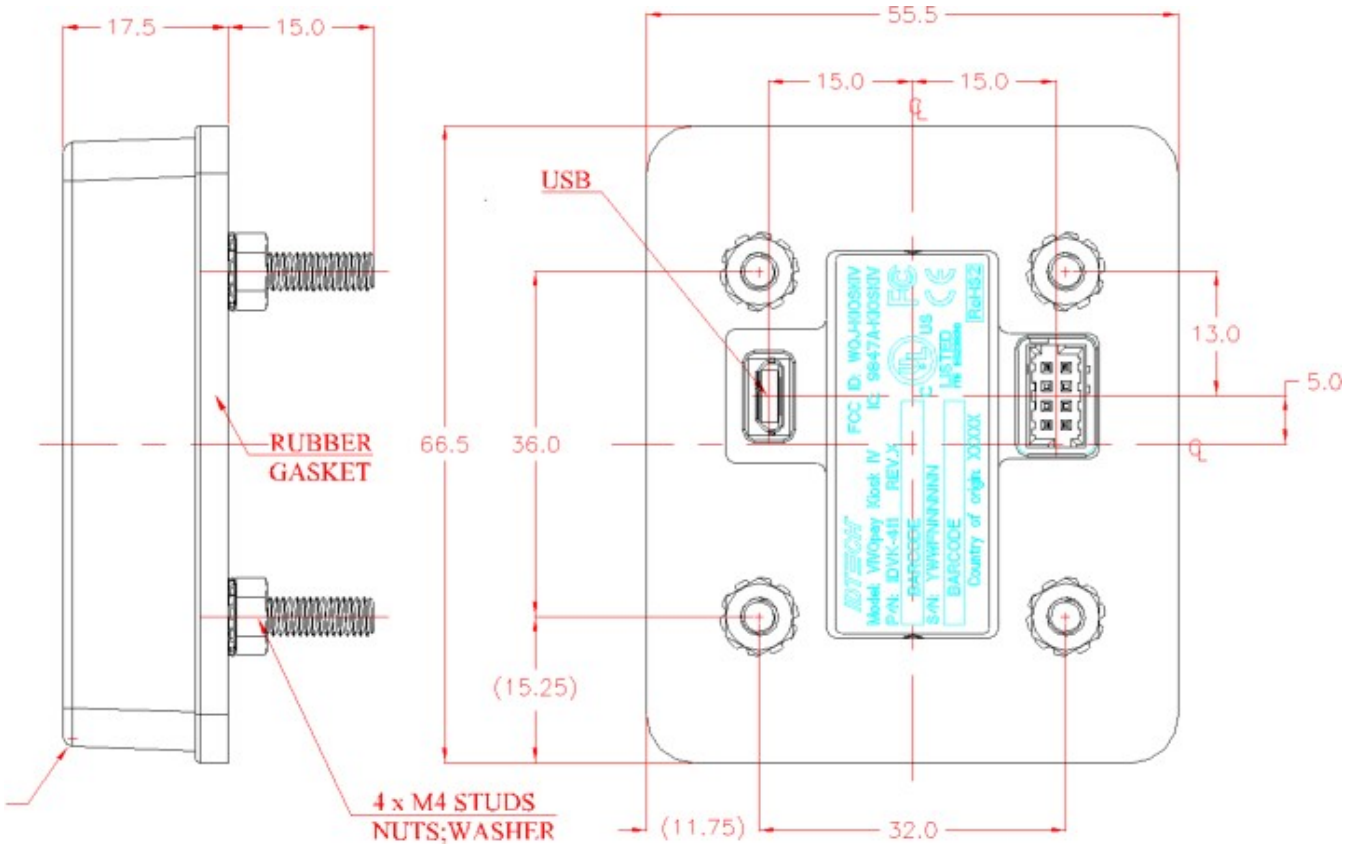
- RS-232 – Please use cable with P/N 80160205-001 or equivalent 5VDC powered cable should be used.
- USB - a standard micro-USB cable could be used (Kiosk IV will, in this case, would be port-powered).

2.2 Mounting the ViVOpay Kiosk IV

Warning: The RF field of the antenna is sensitive to the proximity of metal. If you are mounting the Kiosk IV in a metal surface, 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 distance from the metal

Kiosk IV Part# IDVK-411:



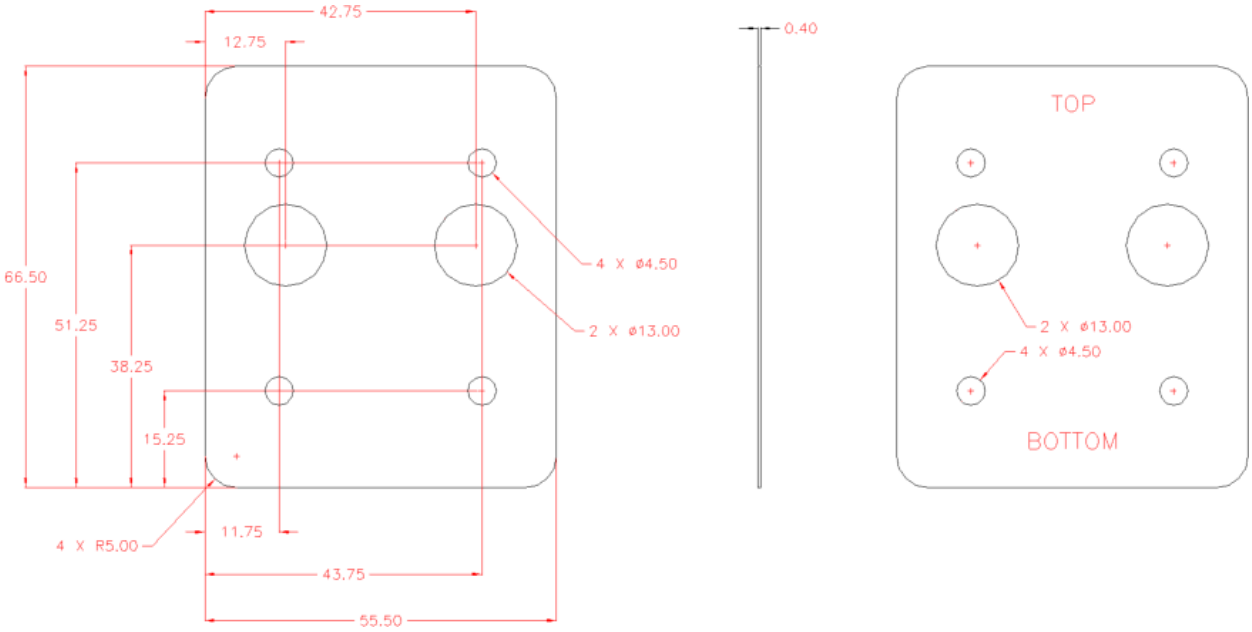
Please Use the following instructions to mount the Kiosk IV on the exterior of a kiosk structure:

Note: The Kiosk IV is post-compatible with Kiosk III dimensions. Posts are 36 mm apart in the lengthwise direction and 32 mm apart widthwise. See drawing below.

- *Please **Note** that a post-less variant of Kiosk IV can be ordered on request. Contact your ID TECH representative for details.*

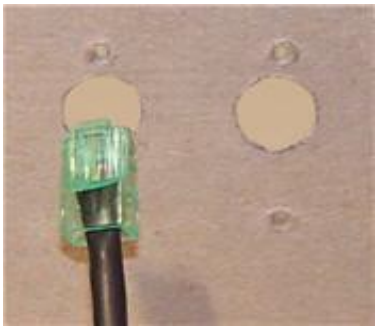
Note: Verify the orientation of the ViVOpay Kiosk IV before marking and drilling the holes. The two larger holes should be located towards the top of the mounting location to ensure that the ViVOpay Kiosk IV is oriented correctly with the LEDs at the top.

1. Using the Drill Template below, locate and mark the (4) 4.4mm (0.173 inch) mounting holes.



2. Using the Drill Template, locate and mark the (2) 14.0 mm (0.551 inches) access holes (used for connecting the power and/or data cable to the ViVOpay Kiosk IV).
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 through the left 14.0 mm (0.551 inch) hole into the kiosk. Make sure that the front of the unit 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 IV to the outside surface. Make sure that the cable is not pinched or binding.
8. Use the four nuts to secure the ViVOpay Kiosk IV to the outside surface of the kiosk. Make sure to tighten the nuts securely so that the ViVOpay Kiosk IV does not move on the outside surface of the kiosk.

   Pass the small end of the cable through the right 14.0 mm (0.551 inch) hole and the cable to the back of the ViVOpay Kiosk IV.

2.3 Connecting to Power

The Kiosk IV can be powered through the USB port or if RS-232, a power supply with P/N 140-2035-XX should also be used.
Communication via USB
The PID is 4480 (hex) and the VID is 0ACD (hex).

2.4 Connecting to the Data Port

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

8-pin connector (RS232 and 5V power)

Pin-Out Table:

RS232			
PIN#	**Function**	**PIN#**	**Function**
1	RS232_TX1	2	5V_IN
3	RS232_RX1	4	GND
5	NC	6	NC
7	GND	8	NC

To build your own RS-232 cable, please go to www.molex.com for more information.

2.5 Using the ViVOpay Kiosk IV to Make a Purchase

Presenting Cards or NFC Phones

The ViVOpay Kiosk IV allows for credit/debit card purchases using Contactless (NFC) 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 the four green LEDs should illuminate in sequence, then all will illuminate together, briefly (750 msec), to indicate a successful test.

This tests the Kiosk IV'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 IV antenna is attached to the Kiosk IV 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.

2.6 Making a Purchase

1. After the transaction has been entered on the kiosk control panel, the customer should present his or her card/fob/phone in close proximity with the device 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 IV 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 IV 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 (wifi routers), 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 IV 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 IV installation using a test card to perform an end-to-end transaction (the same as an actual purchase on the Kiosk). The kiosk display panel (if it exists) 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 IV 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 host.

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 IV can be upgraded using either serial or USB interfaces. Contact your ID TECH representative to obtain the necessary software.

5.1 Preparation

To update the new firmware, you will need:

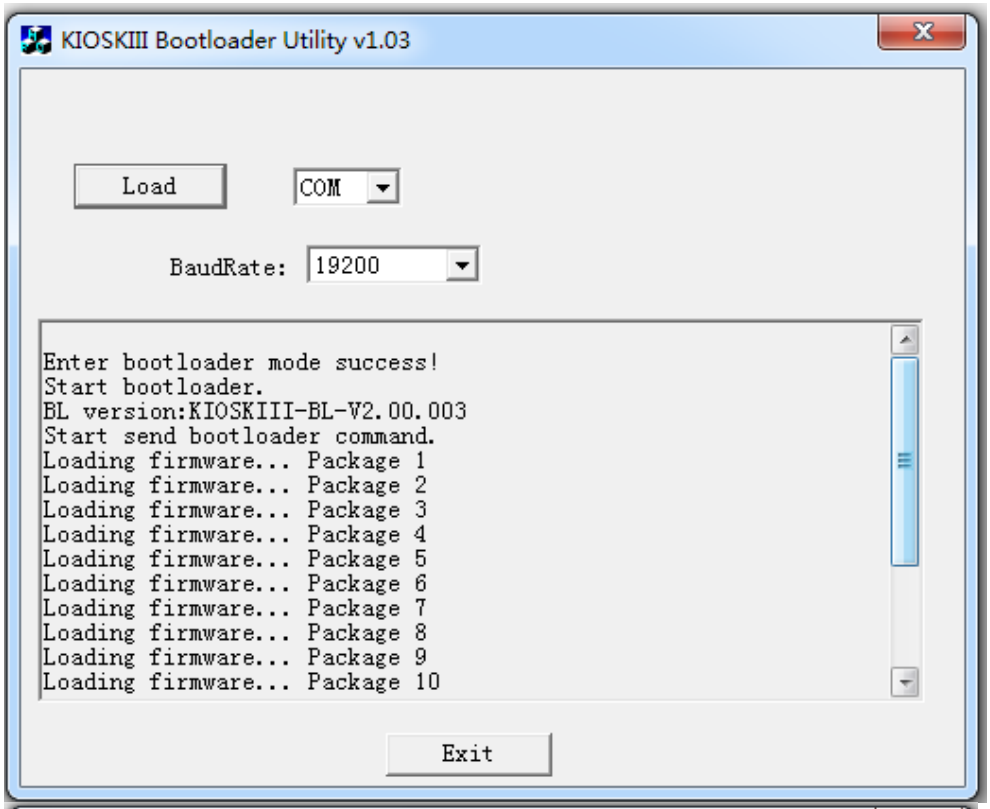
- PC with available serial or USB port:
- Kiosk IV with a serial data cable or a USB cable attached
- **For serial downloads:** use cables 80160205-001 (or 5VDC powered cable could be used) and 140-2035-00
- **For USB downloads:** a standard micro-USB cable could be used
- Firmware files (including Boot Loader files) for the desired firmware

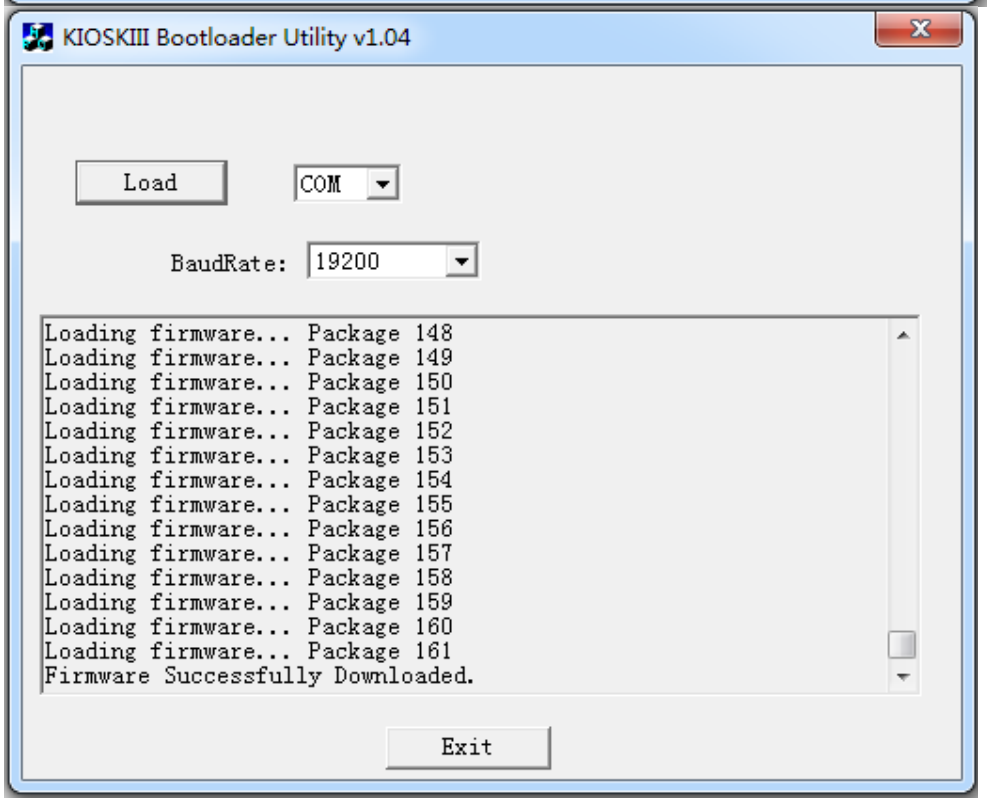
5.2 Uploading Firmware for RS-232 or USB

1. Move “KIOSKIV_EData.bin” and “KIOSKIV 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 “KIOSKIV 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.

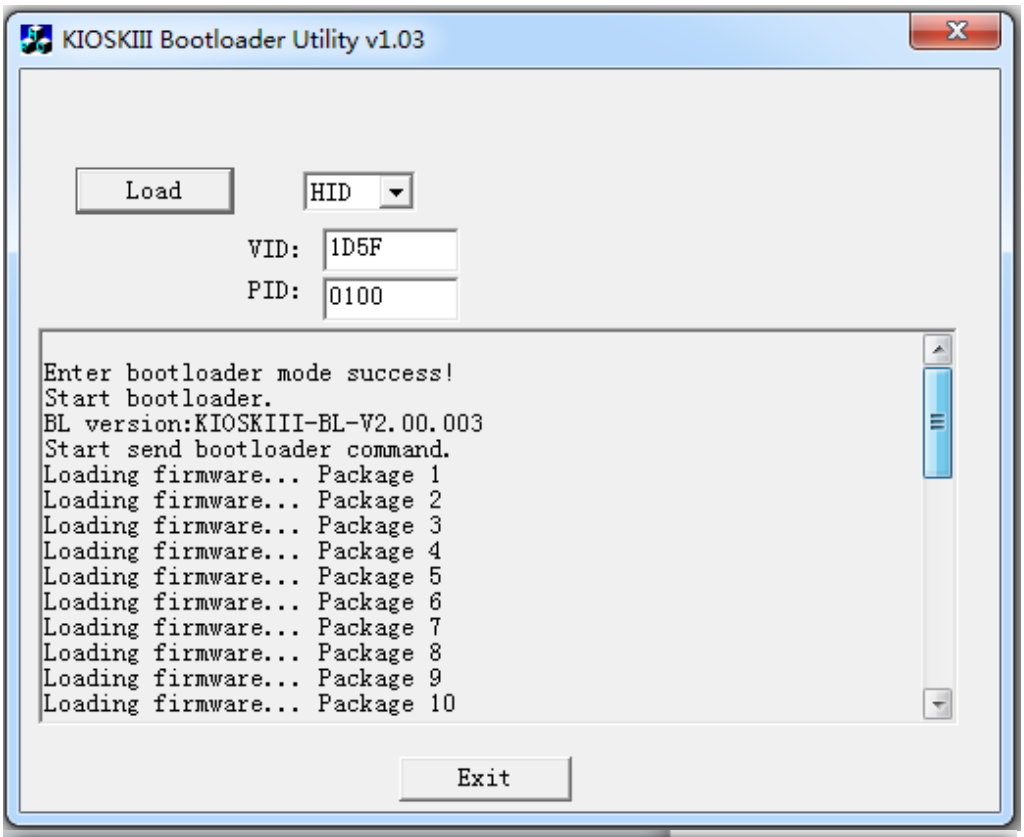
Note: *Screen shots depicts the Kiosk III utility, but Kiosk IV utility is similar.*

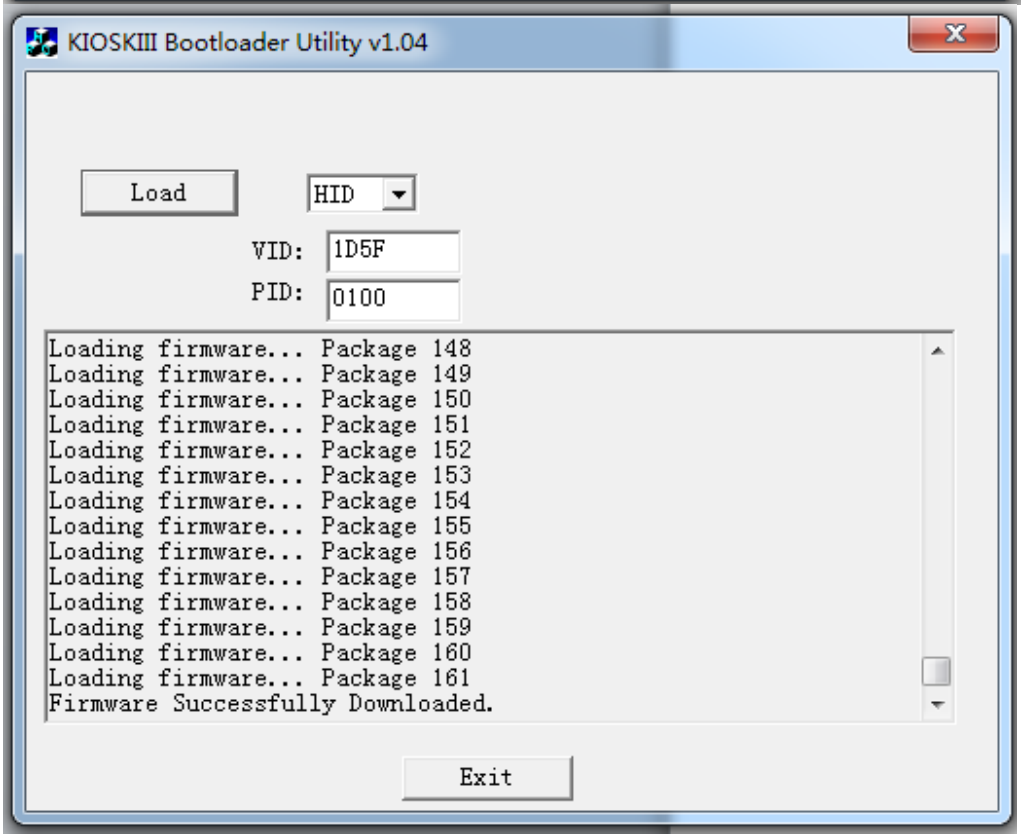
Serial Interface:





USB interface:





6. Troubleshooting

The ViVOpay Kiosk IV readers are reliable and easy to troubleshoot. The components that may require troubleshooting include the power supply, the reader itself, and the serial cable.

Symptom	Possible Cause	Remedy
General Issues		
Reader does not appear to be powered on (no LEDs are lit). Note that when the unit is expecting a transaction, the first LED (on the left) will illuminate continuously. Otherwise, in the idle state, it will blink.	• 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 IV 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 IV.
Reading Cards/Phones		
First LED is lit, but 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 IV.

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). • Present the card in a different orientation.
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 IV.
Load Firmware		
Firmware loading software indicates "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).