Value through Innovation

ViVOpay™ VP5300
User Manual

80152500-001 Rev. A

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 VP5300 not expressly approved by ID TECH could void the user's authority to operate the ViVOpay VP5300.

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 VP5300 should be mounted 1-2 feet away from other ViVOpay VP5300 units. 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

ID TECH's ViVOpay VP5300 is a compact, ruggedized credit card reader designed to support MSR (magstripe) and contact EMV, plus contactless EMV (when the device is mated with the VP5300's NFC antenna).

The ViVOpay VP5300 is designed to deliver MSR, EMV, and NFC (contactless) payment acceptance with SRED security and reliability, in unattended payment scenarios, such as Parking, Fueling, ATM, Ticketing, and Payment Kiosks. When paired with the ID TECH SmartPIN L100 PCI-certified PIN pad, and the optional NFC antenna, all payment options from Chip-PIN to NFC/mobile wallet solutions can be accepted.

VP5300 leads the industry in low power consumption and ruggedness, with its metal bezel and IK10 and IP65 ratings to ensure long life in demanding conditions. VP5300 is certified to the latest payment standards of EMV (Level 1 and Level 2) and PCI (5.x), and offers easy integration of payments into self-serve kiosk and unattended environments.

The VP5300

VP5300 NFC Antenna

VP5300 PCI/EMV Certified Insert Reader

Model Number	Description
SPTP2-988-33-2C-0C	Outdoor hybrid insert reader, metal bezel, 2 SAM, TDES, Card Present switch, Contactless controller module
SPTP2-988-33–2CD-0C	Same as above but with Demo Key injected, for development and testing.

Optional Accessories

Model Number	Description
80152210-001	USB cable
80152211-001	RS-232 cable
140-2035-00	Power supply, USA plug, 9VDC, 1.0A; 9.0-26.4 VAC input

NFC Antenna

Model Number	Description
ID-80152002-001 Antenna	NFC Antenna, silver overlay, with RJ-45 (male) coupling.
ID-80152002-002 Antenna	NFC Antenna, black overlay, with RJ-45 (male) coupling.

The ViVOpay VP5300 supports USB and serial (RS-232) host communication using the command protocol defined in the *NEO Interface Developers Guide*. This comprehensive guide describes all of the firmware commands and other features available in ID TECH's 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 available to aid in rapid development of applications that talk to the VP5300.

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 VP5300 demos, utilities, SDK updates, white papers, and other downloads, all of which are freely available without registration.

NOTE: While the VP5300, installed by itself, can run on 5VDC power, the P/N 140-2035-00 power supply (9VDC) must be used when an approved PIN pad (keypad), such as the ID TECH SmartPIN L100, is paired with the VP5300 (because of the added power demand of the keypad).

1.1 Features

The ViVOpay VP5300 supports the following:

- Contactless: ISO/IEC 14443 Type A and B.
- ISO 18092.
- Hybrid (ICC + MagStripe) insert reader paired with an external PIN pad (SmartPin L100), an application controller and optional contactless solution.
- PCI-PTS 5.x certification with SRED.
- Tamper responsive.
- MSR reads up to 3 tracks of data (Bi-Directional), with JIS-1 and JIS-II support.
- ICC reader with landing contact.
- Contact and Contactless EMV Level 1 and 2 approval required.
- Implementation of ID TECH's proven Common Kernel, for EMV L2 compatibility.
- Encrypted MSR, contact, and contactless EMV output, with DUKPT key management.
- IDG commands for all functions.
- Support for NGA Key Injection Protocol.
- TR34 Remote Key Injection Protocol.
- Ability to pair with SmartPIN L100.
- VP5300 (standard version) and L100 (standard version) can work either as two standalone products, or paired.
- 15 DUKPT key slots supported .
- Optional contactless antenna.
- Mechanical front switch.
- 2 User-accessible SAMs
- Metallic bezel to meet IK 10 impact rating .
- Less than 1 second start up from complete power down.
- Quick Chip and M/Chip Fast compatibility for rapid contact EMV (less than 2 seconds).
- Dedicated USB and Ethernet ports (for data communication).
- Able to use a 7.5-24VDC power source support (up to 45V current spike protection) for applications requiring a L100 PIN PAD and/or Contactless where 5VDC power alone may not be able to provide sufficient power for both devices at once.
- Powered RS-232 connection, to allow powering of L100 without an additional adapter.
- LAN with network function 2 colored LEDs for link state and speed indication.
- Low power Sleep Mode and Stop Mode.
- Audio feedback for EMV and contactless transactions (either on the reader unit or on external antenna or both).
- Cable / connector terminals should be recessed from the rear surface of the case and facing backward. So the connected cables do not increase the overall length and vertical height when connected to the unit.
- RoHS 2, and REACH compliance.
- 1 year manufacturer warranty.

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

1.2 ViVOpay VP5300: Approvals

Item	Regulation & Class
CE	EN55032/EN55035, Class- B
FCC	Part 15, Class-B
RoHS	Compliant
UL	Compliance with UL regulation
REACH	Compliance with REACH regulation
USB IF	Compliance with USB IF regulation
EMV	Contact L1 & L2 / Contactless L1 & L2
American Express	American Express® ExpressPay 3.1
Discover	Discover® DPAS 1.0 Zip 3.1.2
MasterCard	MasterCard® Mchip 3.1.1
Visa	Visa VCPS 2.2
Interac	Interac 1.5d
CUP	qPBOC 3.0
JCB	JCB
PCI	PCI PTS 5.X Certified
OTHERS	Apple Pay Apple VAS Android Pay Google Smart Tap 2.1

1.3 ViVOpay VP5300: Firmware

Feature	Support Function
Magnetic stripe	Meets ISO 7810/ISO 7811 specification Supports AAMVA format Supports JIS I/II card format Supports single, dual and triple tracks. Bi-directional reading
Contactless	EMVCo Contactless Level 1/2 ISO 14443 Type A&B, Mifare, ISO 18092 (including P2P) Visa: VCPS 2.2 or later (MSD and qVSDC)

	IRWIN listed Visa Transit extensions MasterCard: M/Chip 3.1 or later American Express: ExpressPay 3.1 Discover: DPAS latest version Interac: Flash version 1.5d PBOC: level 1 and 2 MiFare: Classic, Ultralight C, DESFire, DESFire EV1 JCB Level 2 China Union Pay (CUP) Sony Felica Support (Japan/Asia) Android Pay Support Apple Pay Support Apple VAS Google Smart Tap 2.1 Samsung Pay NFC Calypso electronic ticketing system support (pre-development evaluation)
Contact	EMVCo Contact Level 1 & 2
External Pinpad	Pair with SmartPIN L100 PIN pad for EMV L2 chip and PIN Use L100 as user interface for non-payment related functions
Power Management	Low power modes: Sleep and Stop
Key injection	Compatible with FutureX and Geobridge HSMs for Data Key Injection Can communicate with HSM via USB or RS232 port Support for RSA keys generation and certificates loading Support for Asymmetric TR-34 Remote Key Injection
Security	PCI PTS SRED Certified (5.x or higher) Supports ID TECH Encrypted Data Output Format – 80000502-001 Support multiple types of encryption formats. TDES AES RSA-based TransArmor Supports Multiple Key management techniques: DUKPT Master Session Key Secure firmware and application download using PKI

	Secure commands (MAC or PKI) for configuring device (RTC, whitelist, reset device, etc.)
Command Set	Reference the NEO Interface Developers Guide - 800139403-001
Host Interfaces	RS232, USB-HID
Firmware/Application Download	Use host interfaces to download firmware/application
Application	Future development to supports payment applications hosted by the VP5300 to send payment packets to different gateways/processors/acquirers QSPI Flash for code storage and SDRAM for memory
Multiple hosts	Stores multiple sets of keys for different hosts
LEDs	LEDs – Green NFC Certification LED on antenna 2 diagnostic LED 1 tri-color LED indicator for MSR
Audio	Beep for contactless transaction and other functions
Logs	Keep logs for firmware/application download, secure events
Ethernet	Can connect to internet

1.4 ViVOpay VP5300: Physical/Mechanical Characteristics

Item	
Physical Dimensions: VP5300 Reader	127mm from back of mounting surface x 100mm max x 70mm max (LxWxH)
Physical Dimensions: VP5300 NFC Antenna Bezel	65mm x 54mm x 14.5mm (LxWxH), not counting 15.5mm-deep M4 studs that protrude from the back of the unit
Structure Material	Plastic, PC UL 94V-0
Housing Color	Black
Weight	0.69kg
Bezel	Metallic, stainless steel look Water drain feature to allow liquid to drain
Cable management	Cable/connectors should be recessed from rear surface of the case and facing backwards

Dimensional characteristics of VP5300.

1.5 ViVOpay VP5300: Environmental Characteristics

Category	Support	
Operating Temperature	-25° C to 65° C (-13° F to 158° F), max change of 10° C per hour	
Storage Temperature	-40° C to 80° C (-40° F to 185° F)	
Operating Humidity	10% to 95% non-condensing	
Storage Humidity	10% to 95% 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 10	
IP Rating	IP 65	
ESD (Device)	Contact	±6kV
	Air discharge	±12kV
ESD (Mag head only)	Contact	±6kV
	Air discharge	±12kV

Note: Cables/connectors must be fully isolated with insulating material to prevent ESD discharge.

1.6 ViVOpay 5300: Durability and Reliability Specs

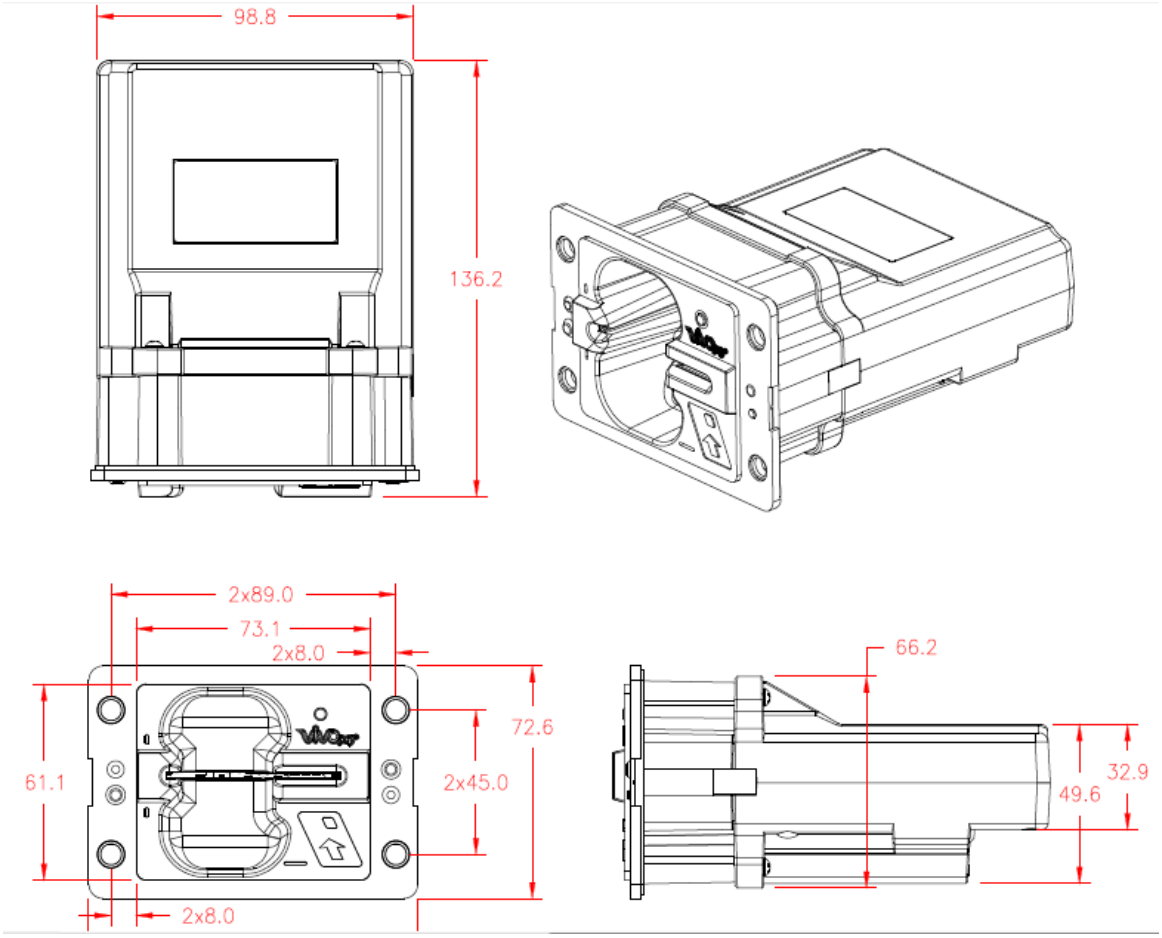
Item	Specification
Magnetic Head	1,000,000 swipes minimum
Rail	1,000,000 swipes minimum
Smartcard connector	1,000,000 cycles minimum
Impact Resistance	Pass IK 10 testing
Ingress Resistance	Pass IP 65 rating

1.7 ViVOpay VP5300 Contactless Specifications

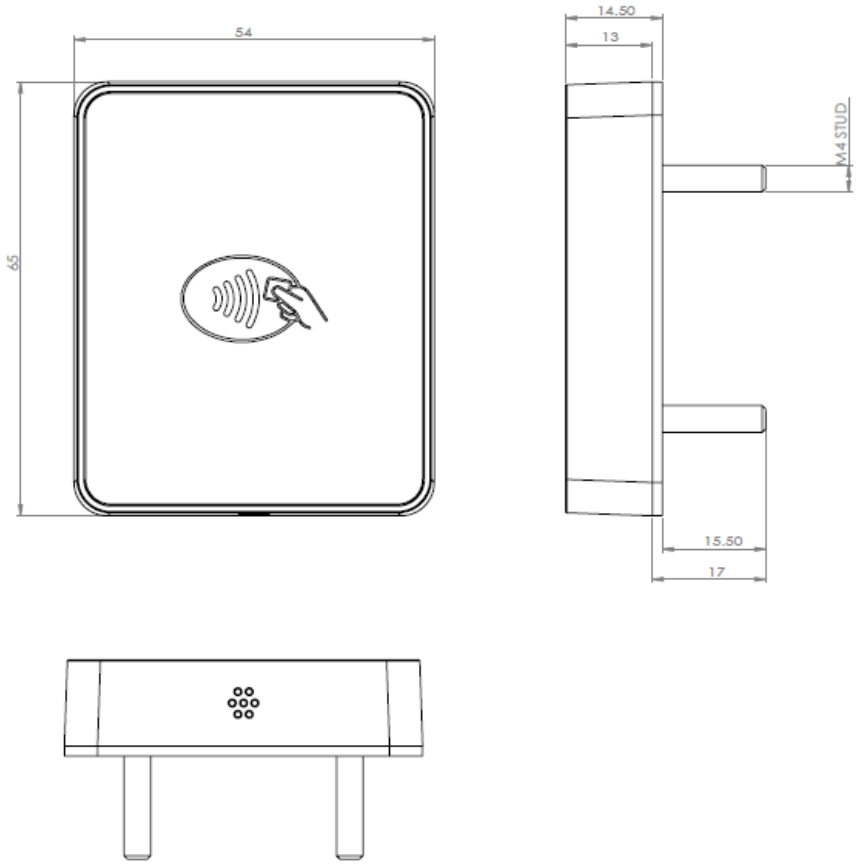
Hardware	
MTBF	500,000 hours
Receiver Subcarrier Data	ISO 14443-2 Type A: Modified Manchester ISO 14443-2 Type B: NRZ-L, BPSK ISO 18092 ISO 21481 (PCD & NFC)
Typical Read Range	4-6 cm (1.5 to 2.3 inches)
Electrical	

Reader Input Voltage	supplied by the VP5300
Working Current	<500mA(@7.5VDCIN)
Rated power	<3.8W
Maximum field strength	2.6 dBuA/m at 3 m

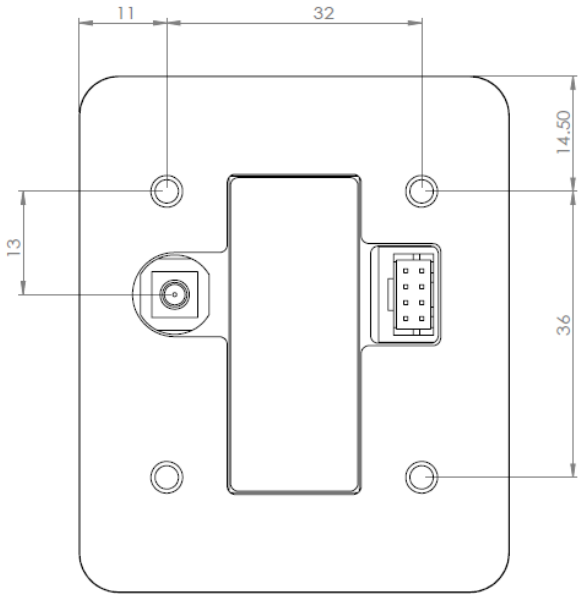
2. VP5300 3-View Drawing



3. VP5300 NFC Antenna 3-View



Antenna mounting details:



4. VP5300 Installation

This section provides information on how to install the ViVOpay VP5300 in an enclosure.

Note that the unit may be installed edgewise (vertically), or in a horizontal manner.

4.1 Parts List

Verify that you have the following hardware for the installation of the ViVOpay VP5300:

- ViVOpay VP5300 P/N SPTP2-988-33-2C-0C or SPTP2-988-33-2CD-0C.
- (Optional) ViVOpay VP5300 NFC Antenna P/N ID-80152002-001 or ID-80152002-002. You will need this item, and its cable (P/N 80136204-001), if you will be using VP5300's contactless (NFC) capabilities.
- USB cable P/N 80152210-001, or RS-232 cable P/N 80152211-001.
- Power supply P/N 140-2035-00.

4.2 Installation of Reader

Refer to the VP5300 3-view drawing. Verify that power cords can physically reach the unit. Then proceed to:

- Locate, mark, and drill holes for the four main mounting points of the unit, spaced 89mm apart lengthwise (on center), and spaced 45mm apart (on center) along the short axis. Use a #12 drill.
- Secure the unit to the enclosure with bolts or screws of appropriate depth. Note that the anti-tamper nubs, located behind the mounting gasket on the unit's right side (when viewed head-on; the side nearest the molded-in ViVOpay logo), must be depressed when the unit is mounted. Ensure that the gasket is compressed to a degree necessary to ensure anti-tamper nub depression (and to protect against unnecessary moisture ingress).

4.3 Mounting the ViVOpay VP5300 External NFC Antenna

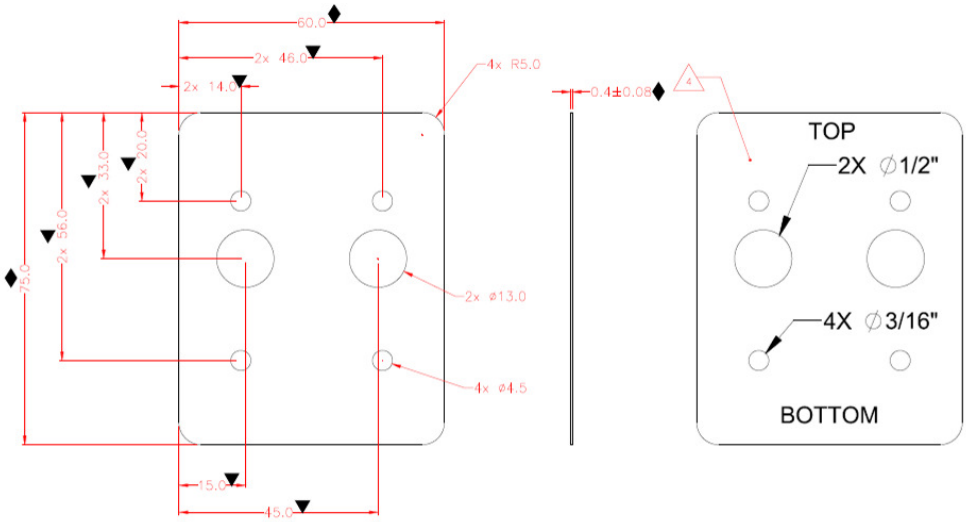
Refer to the VP5300 Antenna 3-view drawing. If you are using the VP5300's contactless capability, you will need to install the optional NFC antenna and its cabling.

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

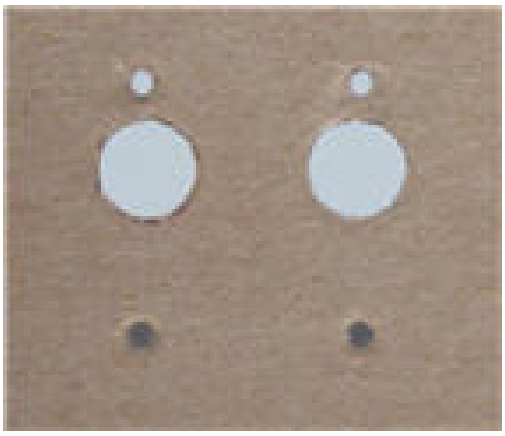
> **Note:** It is recommended that you experiment with and verify the orientation of the ViVOpay VP5300 NFC Antenna before marking and drilling mounting holes, ensuring that the antenna is far enough away from the main body of the VP5300 so that insertion of a "tap card" in the unit's contact-EMV slot doesn't trigger an unwanted NFC interaction.

Important: Mark holes in such a way as to ensure that the ViVOpay VP5300 NFC Antenna is oriented with the LEDs at the top.

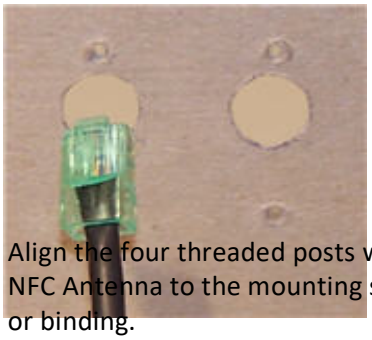
1. Locate and mark the four 4.4mm (0.173 inch) mounting holes.



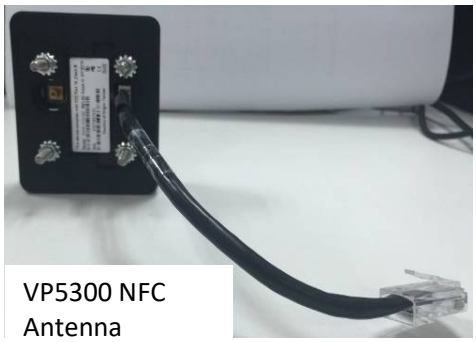
2. Locate and mark two 14.0 mm (0.551 inches) access holes (used for connecting the antenna barrel connector (gold-plated) and the LED power and data cable (Molex terminated) to the unit. Notice that these holes are located off-center toward the top of the unit.
3. Drill the four 4.4 mm (0.173) mounting holes using a number 17 drill bit.
4. Drill the two access holes (14.0 mm, 0.551 inch) holes using a 35/64 drill bit.



5. Remove the nuts from the four mounting studs on the back of the antenna.
6. Route the end of the cable (80136204-001) with the RJ-45 connector through the matching 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 threaded posts with their mounting holes and attach the ViVOpay VP5300 NFC Antenna to the mounting surface. Make sure that the cable is not pinched, rubbing, or binding.

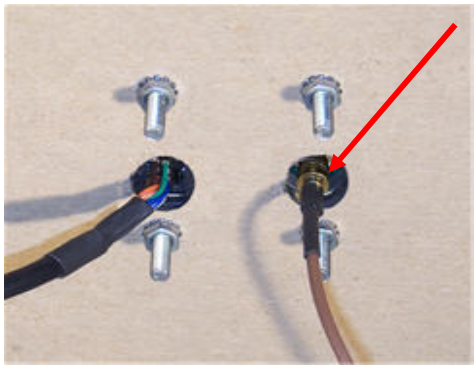


VP5300 NFC Antenna

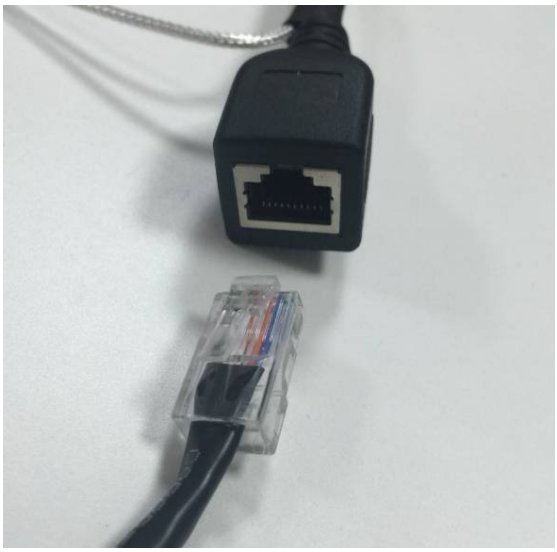
8. Use the four nuts to secure the ViVOpay VP5300 NFC Antenna to the surface of the kiosk. Make sure to tighten the nuts securely so that the antenna does not move freely on the outside surface of the kiosk.

   Note: Tighten the nuts to 5-7 in/lbs. for a good weather-tight seal.

9. Attach the end of the cable with the SMB barrel connector through the right 14.0 mm (0.551 inch) hole, and secure it to its socket on the back of the antenna. The SMB connector pushes onto the socket.



10. Attach the RJ-45 connector (male) coming from the ViVOpay VP5300 NFC Antenna to the RJ-45 receptacle (female) on the 80136204-001 cable.



Flush-Mounting the 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:

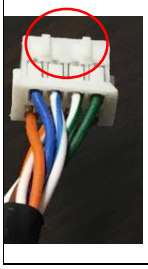
- Mount with the RF emitting surface of the antenna at least 1cm forward of any metal.
- Mount with the RF emitting surface of the antenna at least 1cm behind any metal. This will reduce the effective range of the antenna.
- Mount flush with the metal but allow a minimum of 1cm spacing between the antenna and the metal.

In all cases, test the antenna mounting before engaging in a production-ready installation.

Attaching the Cables from the Antenna to the VP5300

1. Attach the SMB barrel end of the cable (80136204-001) from the antenna to the SMB post of the ViVOpay VP5300. The connector slides on.
2. Attach the Molex end of the cable (80136204-001) from the antenna to the ViVOpay VP5300, where the Molex receptacle sits next to the RJ-45 receptacle.

Note: Verify that the polarizing lug on the end of the data cable is facing towards the correct side of the ViVOpay VP5300 (away from the mounting plate) before inserting the connector. If the Molex is installed incorrectly (upside-down), it will apply the wrong polarity to the LEDs and quite likely damage them.



4.4 Connecting to Power

The VP5300 can be powered through the RS-232 communications cable or the USB Y-connector.

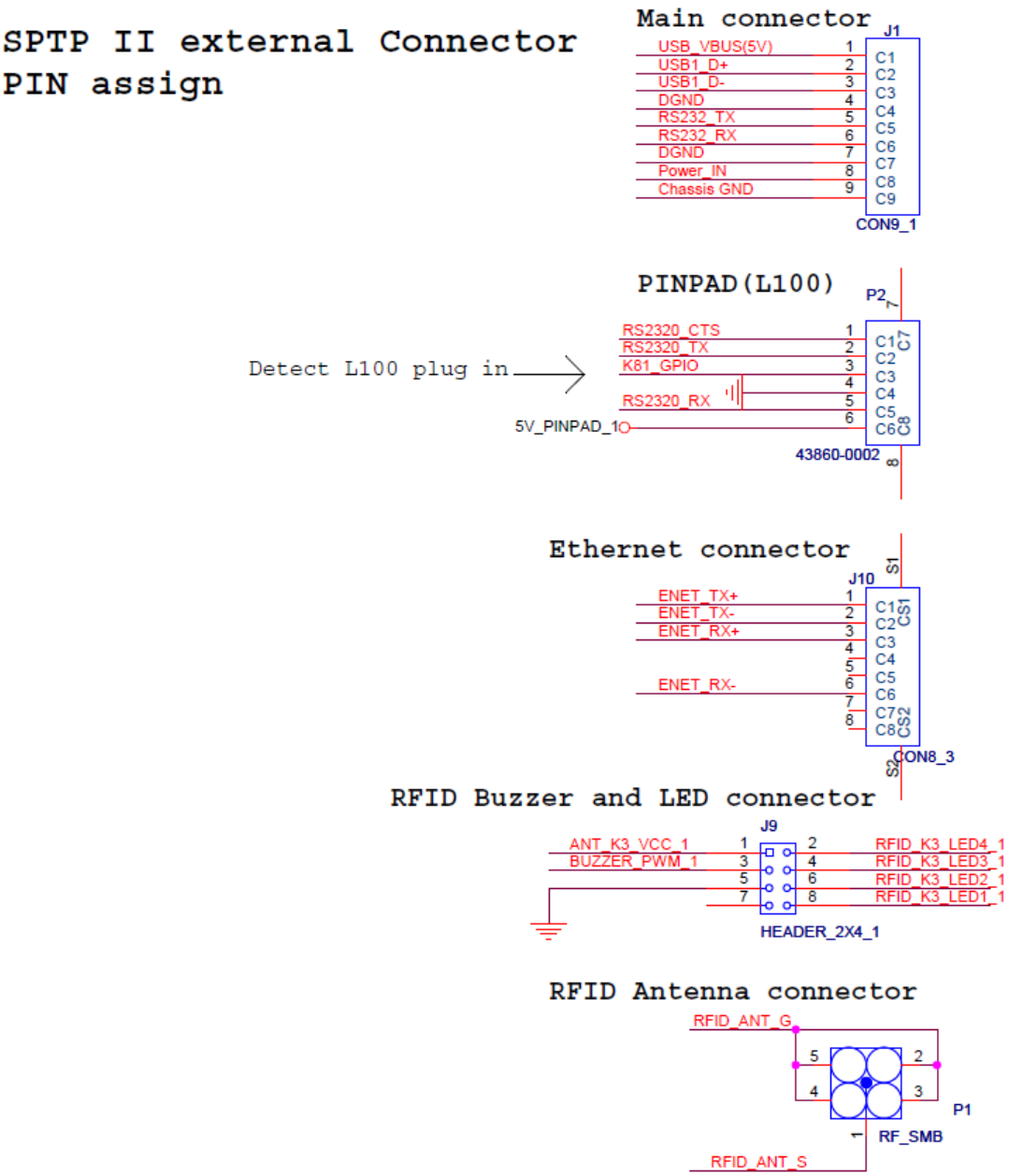
Connect the +7.5 to 45VDC power supply (P/N 140-2035-00) to the barrel receptacle on the RS-232 cable, or the barrel part of the Y-cable for USB, by sliding the power supply barrel into the receiving recess.

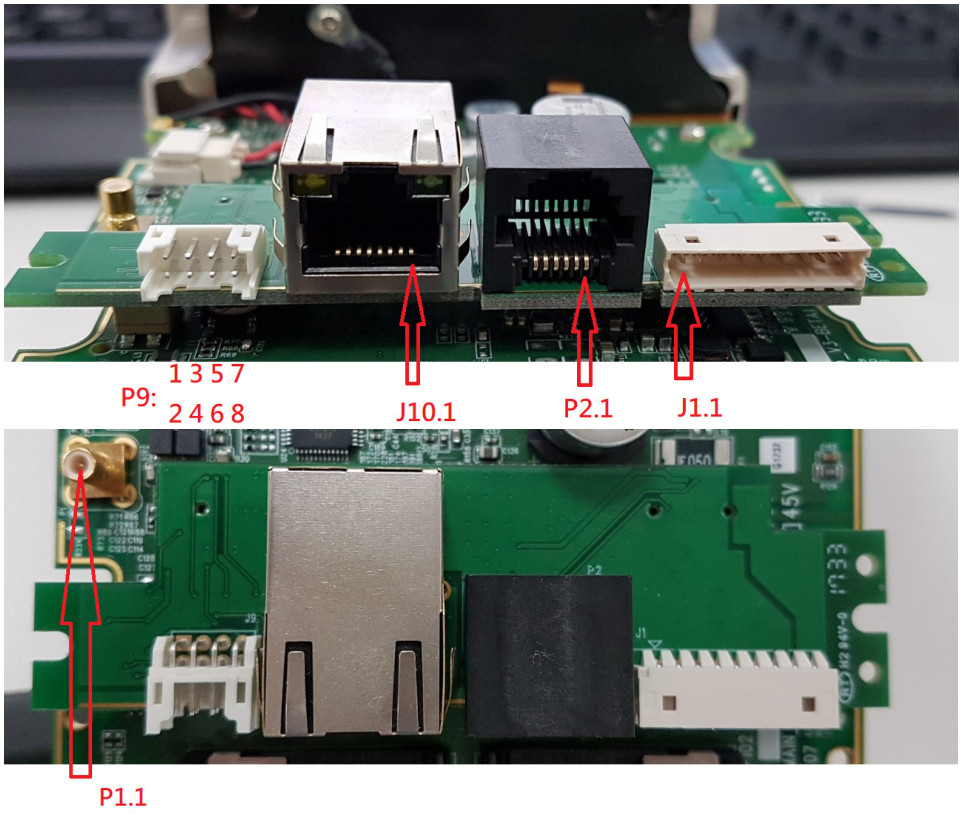
Plug the unit in to an AC outlet and verify that the VP5300 lights up.

4.5 Connecting to the Data Port

See below.

SPTP II external Connector PIN assign





4.6 Engaging the Removal Detection Switch for Testing

The front panel of the ViVOpay VP5300 incorporates a removal-detection switch behind the bezel's rubber gasket, on the unit's right-edge flange (when viewed head-on, as in the illustration below). For bench testing, you may find it desirable to clamp the detection-removal nubs closed using a metal strip held on with two screws (see illustration below). It's necessary to engage the removal-detection feature, for example, before attempting to pair a VP5300 with a compatible ID TECH PINpad, such as the SmartPIN L100 keypad.

4.7 LED Management

There are two LEDs. One is the user-interface LED on the front bezel of the reader; the other (diagnostic) LED is on the back.

Front LED Status

- The LED turns green in idle waiting.
- LED handling for Magstripe card operation:
  - The LED will turn red to indicate that the recent magstripe card read was bad.
- LED handling for smart card operation:
  - The Green LED will flash after powering on the smart card.
  - The solid Green LED indicates smart card processing is complete and the ICC powered off. The user can remove the smart card.

State	LED	Indicating
0	Off	No external power
1	Flashing Green	Powering on the smart card and starting smart card operation
2	Solid Green	Idle waiting (Smart card processing is complete and the ICC powered off. User can remove the smart card. If the transaction mode was MSR, magstripe card data is sent out.)
3	Solid Red	The recent magstripe card read was bad. Red lasts 1 second.

Diagnostic LED Status

The LED on the *back* of the VP5300 is intended to be used for diagnostic purposes.

LED status:

1. Off
2. Solid – No communication with its host.
3. Flashing (1 sec on, 1 sec off) – Communicating with its host.

LED Colors:

Amber – Reader requires on-site service actions.
Green – Reader is ready to read cards.
Red – Reader needs to be sent back to the manufacturer.

State	LED			Indicating	Service action
	Green	Amber	Red		
1	Off	Off	Off	No external power	Check the power cable and power supply

2			Solid Red	Power is on, but firmware(either K21 or MaxQ) doesn't run	Dismount the device and send it back to the manufacture.
3		Solid Amber		Solid amber normally means the front removal-detection buttons (left side of front bezel) are not depressed. If this possibility is ruled out, check host connectivity.	Check that the removal detection button is fully depressed. Check the communication cable and if host is running.
4	Solid Green	Solid Amber		Power on. First restart and no command sent. In not ready state, and waiting for host to communicate.	RFU
5	RFU	RFU		RFU	RFU
6	Flashing Green	Flashing Amber	Off	Firmware downloading and programming	RFU
7	Solid Green			In ready state but no communication with its host	RFU
8	Flashing Green	Off		Command sent to reader; reader waiting for response.	RFU
9		Flashing Amber		Removal flag is on and communicating with its host	Check removal switch (under the gasket on the unit's front flange, on the right) to see if it is fully engaged; if

					necessary, call service center to reactivate the reader.
10		Solid Amber	Solid Red	Reader has no communication with its host, and the crypto driver is not functioning: Crypto MCU is lost or certificates are invalid (unit may be tampered)	Dismount the reader and send it back to the manufacturer.
11		Flashing Amber		Reader is communicating with its host, and the crypto driver is not functioning: Crypto MCU is lost or certificates are invalid (unit may be tampered)	Dismount the reader and send it back to the manufacturer.

4.8 Using the ViVOpay VP5300 to Make a Purchase

Presenting Cards or NFC Phones

The ViVOpay VP5300 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 antenna is attached to the VP5300, 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.

5. Installation Points

- The VP5300 is designed to be mounted on a metal surface and in reasonably close proximity to any internal motors and electrical devices that may be operating inside the kiosk. However, the unit (like all NFC/RFID devices) 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, routers, and so on.***
- ***Close proximity of metal to the RF-emitting end of the antenna can greatly reduce the range of the 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 as "host," "ViVOpay" and "power," to simplify connection testing or component replacement, particularly when untrained individuals might be involved.
- Test theinstallation using a test card to perform an end-to-end transaction (the same as an actual purchase). The NFC antenna front panel's light should illuminate. 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 VP5300 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 unit is rebooted on a regular basis (such as every night) it is important to test the contactless reader portion as soon as possible afterwards to ensure continued communication.

6. RF Interference

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

A. Contactless payment devices use radio frequency technology to send card data to a contactless terminal reader.

Q. How can RF interference affect contactless payment?

A. Radio frequency 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

Large electric motors
Medical equipment
Microwaves
Electromechanical switches
Wireless Routers

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. Yes. 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 situations that would be encountered in your own 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.

7. Firmware Upgrade

The VP5300 can have its firmware upgraded in the field using either serial or USB interfaces.

Preparation

To update the new firmware you will need:

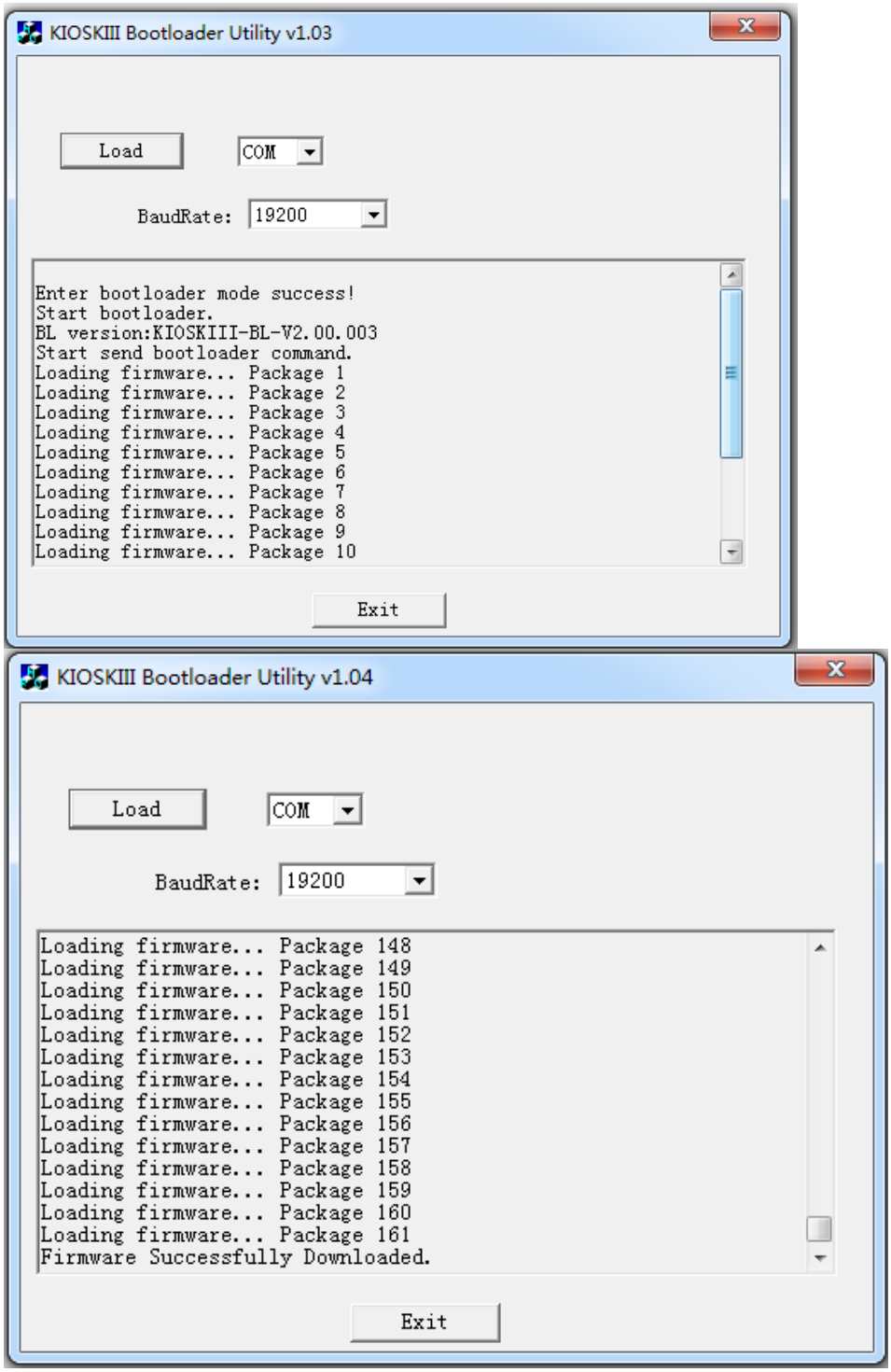
- PC with available serial or USB port
- VP5300 with a serial data cable or a USB cable attached
- Firmware files (including Boot Loader files) for the desired firmware
- Software (for the PC) that will upload the firmware files to the VP5300

7.2 Uploading Firmware for RS232 or USB Need rewrite based on the latest Secure bootloader

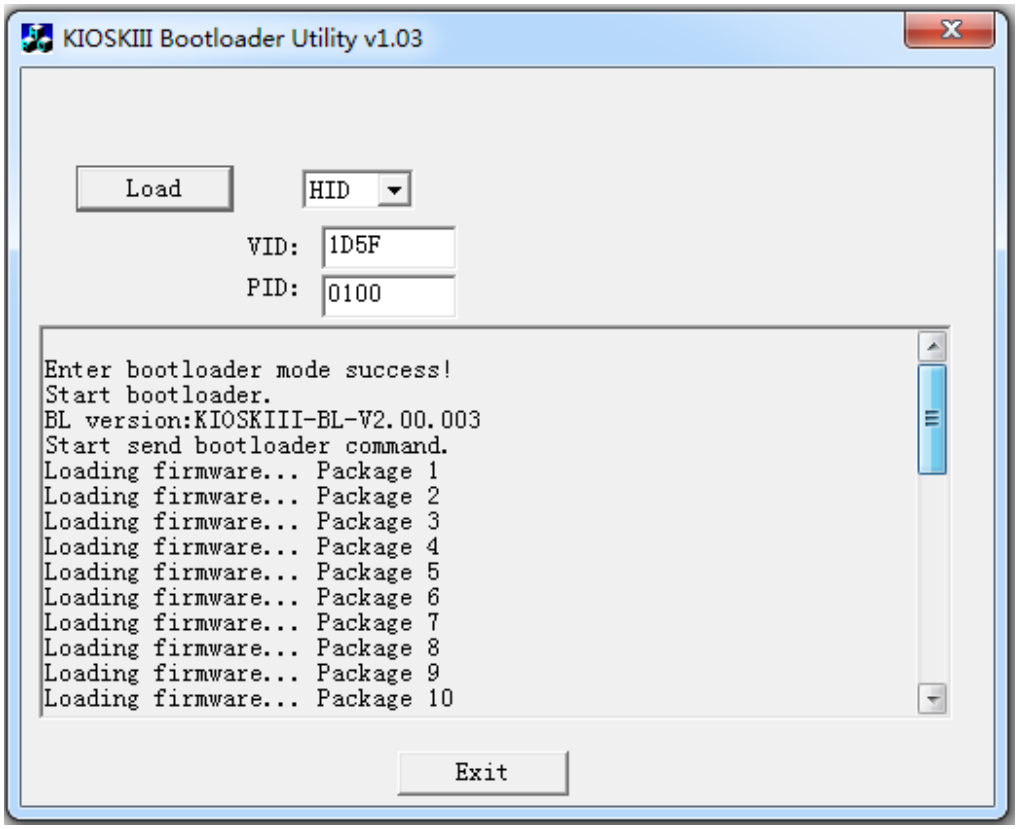
1. Move firmware files (*.fm) and bootloader .exe files into into the same folder.
2. Check and confirm device is correctly connected to the power source and RS-232/USB connection.
3. If RS232 is the interface choice, then please close all software that is using RS-232 communication.
4. Run the bootloader utility, choosing communication type and parameters according to the connection interface.
    - For serial interface, choose “COM” and Baud Rate of 19200 (default).
    - For USB interface, choose “HID” and verify VID displaying 0ACD.

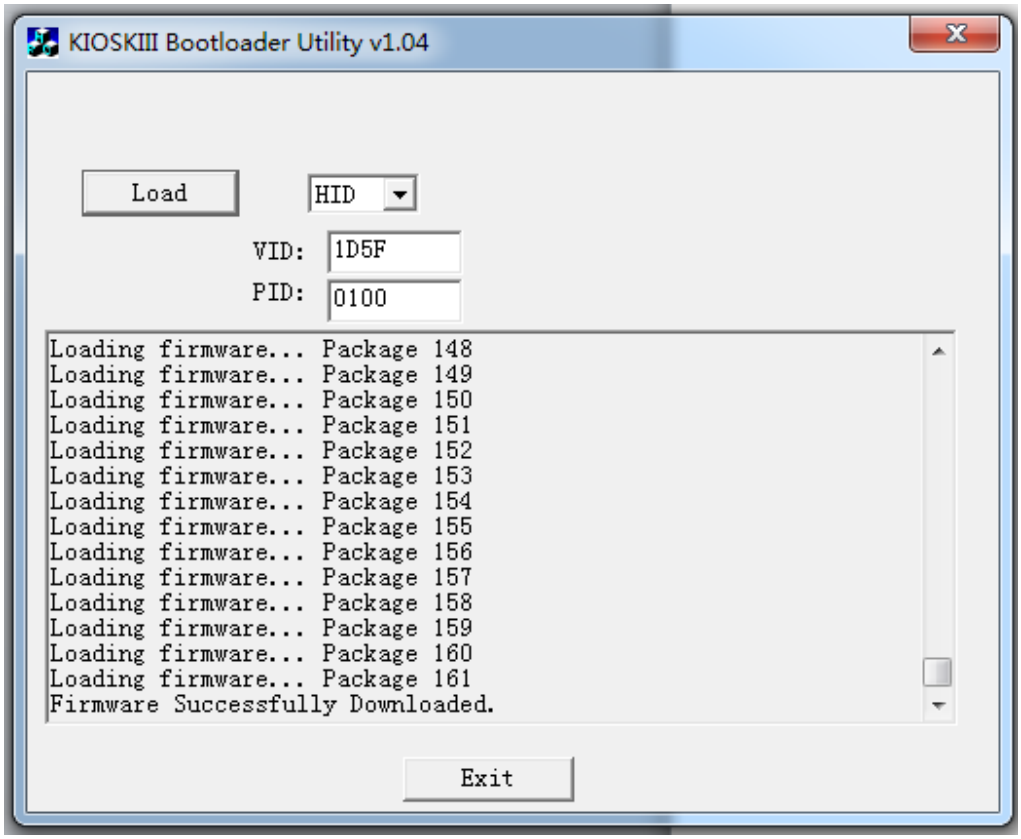
5. Click the “Load” button - the firmware will be loaded into the device. When “Firmware successfully downloaded” appears on the utility, then the firmware has been successfully installed. The Utility may be closed at that time.

Serial Interface:



USB interface:





8. Troubleshooting

The ViVOpay VP5300 reader is designed to be 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 reader. • Make sure that the correct polarity is observed. • For more information, refer to the Input Voltage under the Electrical specification section.

Symptom	Possible Cause	Remedy
		• Replace the device with a known-good device to verify that the power supply and wiring in the installation are sound.
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 unit.

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). • Card readers must contain the latest versions of card-brand public certificates (CAPKs). If a CAPK is out of date, one particular kind of card may no longer be usable. Update the CAPK.
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 unit.
Load Firmware		
Firmware loading software indicates “open RS-232 failed”	Device is not well connected to PC. Or other software is using the serial interface.	• Check the cable connection • Close other software which might be using the same serial interface.
Firmware loading software indicates “Load firmware failed."	Device is not well connected to PCs.	• Check the cable connections.
Firmware loading software indicates “Send Command failed.”	Bootloader firmware in device is destroyed.	• Contact your support representative to reload manufacture's 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).