ViVOpay ™ VP5200
User Manual
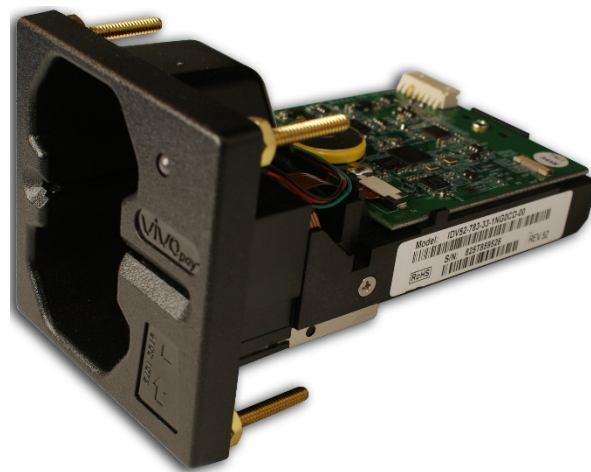
ID TECH
10721 Walker Street
Cypress, CA 90630
USA

This document, as well as the hardware and software it describes, is furnished under license and may only be used in accordance with the terms of such license. The content of this paper is furnished for informational use, subject to change without notice, and not to be construed as a commitment by ID TECH. ID TECH assumes no responsibility or liability for any errors or inaccuracies that may appear in this document.

Except as permitted by such license, no part of this publication may be reproduced or transmitted by electronic, mechanical, recorded, or any other method, or translated into another language or language form without the express written consent of ID TECH. ID TECH is a registered trademark of International Technologies and Systems Corporation. ViVOpay and Value through Innovation are trademarks of International Technologies and Systems Corporation. Other trademarks are the property of the respective owner.

Warranty Disclaimer: The services and hardware are provided "as is" and "as-available," and the use of these services and hardware are at the user's own risk. ID TECH does not make, and hereby disclaims, any and all other express or implied warranties, including, but not limited to warranties of merchantability, title, fitness for a particular purpose, and any warranties arising from any course of dealing, usage, or trade practice. ID TECH does not warrant that the services or hardware will be uninterrupted, error-free, or completely secure.

FCC Regulatory Compliance
Notices Class B Equipment
Cautions and Warnings

	Warning: Avoid close proximity to radio transmitters which may reduce the capability of the reader
	Caution: Do not drop the device.
	Caution: Electrostatic sensitive device. Use caution in handling, in high ESD conditions.

Table of Contents

1. Overview

ID TECH's ViVOpay VP5200 is a compact, ruggedized, single-slot ("insert" or "dip") credit card reader designed to support MSR (magstripe) and contact EMV transactions, incorporating ID TECH's proven L2 Common Kernel for EMV.

The VP5200 delivers MSR and EMV payment acceptance in unattended payment scenarios, such as Parking, ATM, Ticketing, and Payment Kiosks (among others). The VP5200 is certified to the latest payment standards of EMV (Level 1 and Level 2). It offers easy integration of payments into self-serve kiosk and unattended environments of all kinds.
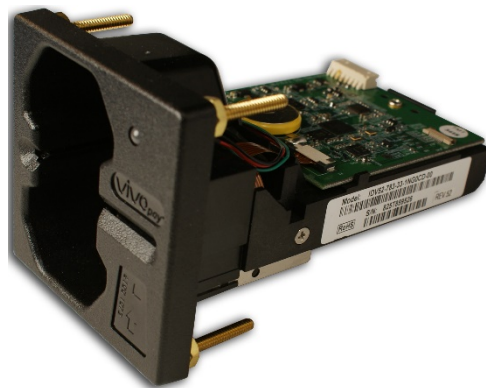
The ViVOpay VP5200

VP5200 PCI/EMV Certified Insert Reader

Model Number	Description
IDV52-783-33-1NG0C-00	Outdoor hybrid insert reader, plastic flush mount bezel, no SAM, TDES, Card Present switch, Contact controller module
IDV52-783-33-1NG0CD-00	Same as above but with Demo Key injected for development and testing.

Optional Accessories

Model Number	Description
80035212-002	USB cable (also supplies power from the USB port itself)
CAB1041-1	RS-232 cable
AC0005R-3B	Power supply, USA plug, 5VDC, 1.4A; 100-240 VAC input (for non-USB models)

The VP5200 supports USB and serial (RS-232) host communication using the command protocol defined in the *NEO 2 Interface Developers Guide*. This comprehensive guide describes all 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). A feature-rich, Windows-based Universal SDK is also available to aid in rapid development of applications that communicate directly with the VP5200.

Be sure to check the Downloads section on the ID TECH [Knowledge Base](#) for the latest VP5200 demos, utilities, SDK updates, white papers, and other downloads, all of which are freely available without registration.

2. Features

The VP5200 supports the following features:

- ICC reader with landing contact
- Contact EMV Level 1 certified
    - Contact EMV Level 2 certified, using ID TECH's proven Common Kernel
- Dual head MSR reads up to 3 tracks of data (Bi-Directional), with JIS-1 and JIS-II support (for single-side magstripe card)
- State-of-the-art encryption support
    - Triple DES
    - AES
    - TransArmor RSA
- Support for DUKPT key management per ANSI X9.24
- TR-34 Remote Key Injection Protocol
- RoHS 2, and REACH compliance
- Battery for maintaining real-time clock
- 1-year manufacturer's warranty

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

2.1. Approvals

Item	Regulation & Class
CE	EN55032/EN55035, Class- B
FCC	Part 15, Class-B
RoHS	Compliant
REACH	Compliance with REACH regulation
EMV	Contact L1 & L2

2.2. Electrical

Voltage requirement: 5VDC ±10%

Battery: The unit contains a small lithium battery to power the Real Time Clock (RTC). This battery has a shelf life of 5 years. The battery is not user-replaceable. If battery replacement should be required, return your VP5200 to ID TECH. Contact support@idtechproducts.com for more information.

In RS-232 versions, the reader can be awakened from sleep mode by sending any command. USB versions will awaken whenever the USB connection is established.

2.3. 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
Contact	EMVCo Contact Level 1 & 2 (using ID TECH L2 Common Kernel)
Power Management	Low power modes: Sleep (RS-232), and USB Suspend
Key injection	Compatible with FutureX HSMs for Data Key Injection Can communicate with HSM via USB (with use of adapter) or RS232 port Support for RSA keys generation and certificates loading Support for Asymmetric TR-34 Remote Key Injection
Security	Support choice of encryption formats: • TDES • AES • RSA-based TransArmor Supports Multiple Key management techniques: • ANSI X9.24 DUKPT • Master Session Key

	Remote key injection, and application download using PKI
	Secure commands (PKI) for configuring device (RTC, whitelist, reset device, etc.)
Command Set	Reference the *NEO II Interface Developers Guide* - 800139403-002
Host Interfaces	RS-232, USB-HID USB Vendor ID: 0x0ACD USB Product ID: 0x4472
Firmware/Application Download	Use host interfaces to download firmware/application

2.4. Physical/Mechanical Characteristics

Item	
Physical Dimensions: VP5200 Reader	113 mm from back of mounting surface x 72 mm flange width x 72 mm flange height (LxWxH)
Structure Material	Plastic, PC+20% GF UL 94V-0
Housing Color	Black
Weight	0.2 kg

**Environmental Characteristics**

Category	Support	
Operating Temperature	-25° C to 70° C (-13° F to 158° F), max change of 10° C per hour	
Storage Temperature	-40° C to 80° C (-40° F to 176° 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, with conformal coating.	
ESD	Contact	±6kV
	Air discharge	±12kV

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

2.5. Durability and Reliability Specs

Item	Specification
Magnetic Head	500,000 insertions minimum
Smartcard connector	500,000 cycles minimum
Impact Rating	IK08
Ingress Resistance	IP54, the gasket and drain design at host end are necessary

2.6. VP5200 3-View Drawing
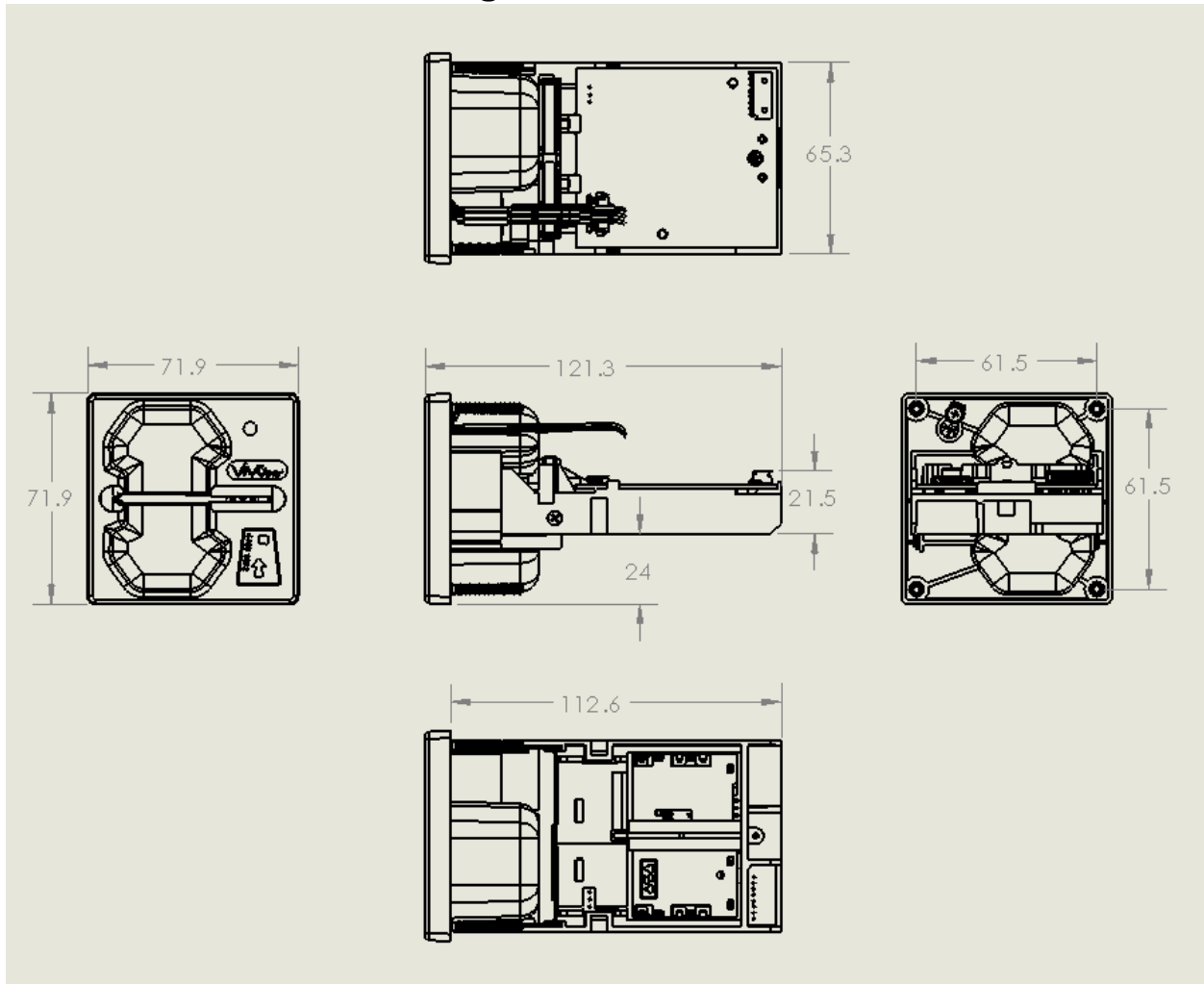
2.7. VP5200 Installation

This section provides information on how to install the VP5200 in an enclosure.
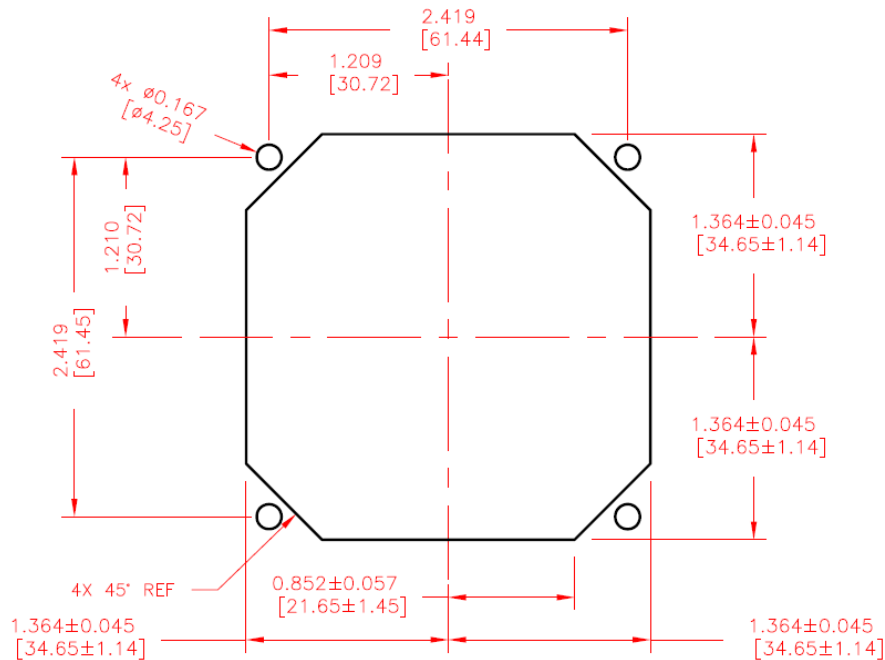
RECOMMENDED CUTOUT AND MOUNTING

Note that the unit may be installed edgewise (vertically), or in a horizontal manner. It can also be bolted to or custom-mounted flush with a surface.

2.8. Parts List

Verify that you have the following hardware for the installation of the VP5200:
- VP5200 P/N IDV52-783-33-1NG0C-00 or -1NG0D-00 (demo).
- USB cable P/N 80035212-002, or RS-232 cable CAB1041-1.
- Power supply P/N AC0005R-3B.

2.9. Installation of Reader

Refer to the VP5200 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 61.5 mm apart lengthwise (on center), and spaced 61.5 mm apart (on center) along the short axis. Use a 4.25mm drill.
- Secure the unit to the enclosure with bolts or screws of appropriate depth.
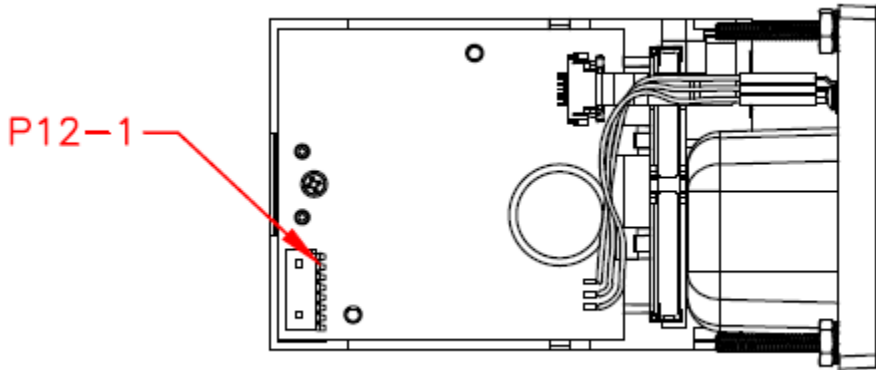
2.9.1. Connecting to Power

The VP5200 can be powered through the RS-232 communications cable or the USB cable.

Connect the +5VDC power supply (P/N AC0005R-3B) to the barrel receptacle on the RS-232 cable or use USB port power, as appropriate.

Plug the unit in to an AC outlet and verify that the VP5200 lights up.

2.10. Connecting to the Data Port

I/O CONNECTOR		
MAIN PCA P12	SIGNAL	
	RS232	USB
P12-1	CASE GND	CASE GND
P12-2	TXD	---
P12-3	RXD	D+
P12-4	VCC	---
P12-5	---	VBUS
P12-6	---	D-
P12-7	GND	GND

2.11. LED Management

There is one LED on the front bezel of the reader.

2.12. 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 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.

2.13. Installation

- The VP5200 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.
- 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 the installation using a test card to perform an end-to-end transaction. If possible, the store manager or some other responsible party should test each VP5200 on a regular basis (like at the start of each day or at least once per week) with a test card to ensure continued operation and functionality.

3. Firmware Upgrade

The VP5200's firmware can be upgraded in the field using either serial or USB interfaces.

3.1. Preparation

To update the firmware, you will need:
- PC with available serial or USB port
- VP5200 with a serial data cable or a USB cable attached
- Firmware files (including Bootloader files) for the desired firmware
- Software (for the PC) that will upload the firmware files to the VP5200

3.2. Uploading Firmware for RS-232 or USB

NOTE: For serial connection, use Baud Rate of 115200 (default) with settings 8-N-1.

1. Move firmware files (*.FM) and bootloader .EXE files into the same folder.
2. Check and confirm the device is correctly connected to the power source and RS-232/USB connection.
3. If RS-232 is the interface choice, close all software using RS-232 communication.
4. Launch **IDtechBootload.EXE** from the firmware package with the VP5200 connected.
5. Follow the numbered steps in the screenshot below to load the **bootloader_loader_Vx.xx_2.fm** file (the example below is illustrative; your version numbers may differ).
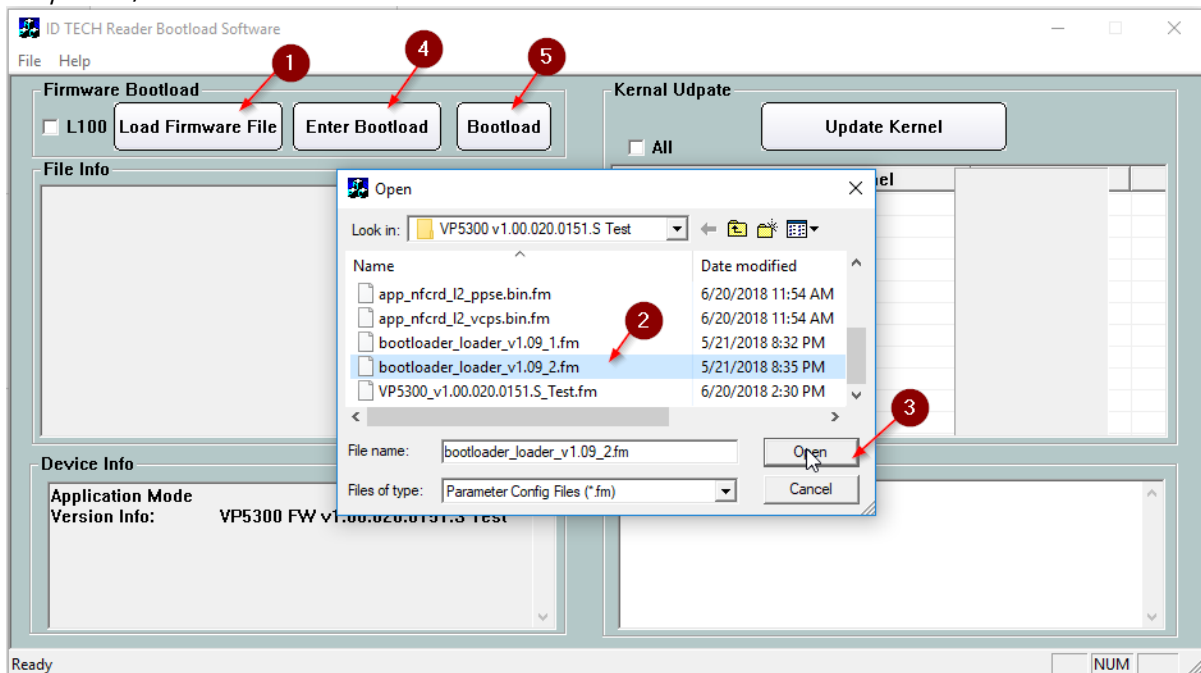

Wait until the reader sounds one long beep, the LED turns to solid green, and the "Bootloader succeeded!" message appears, as in the screenshot below:
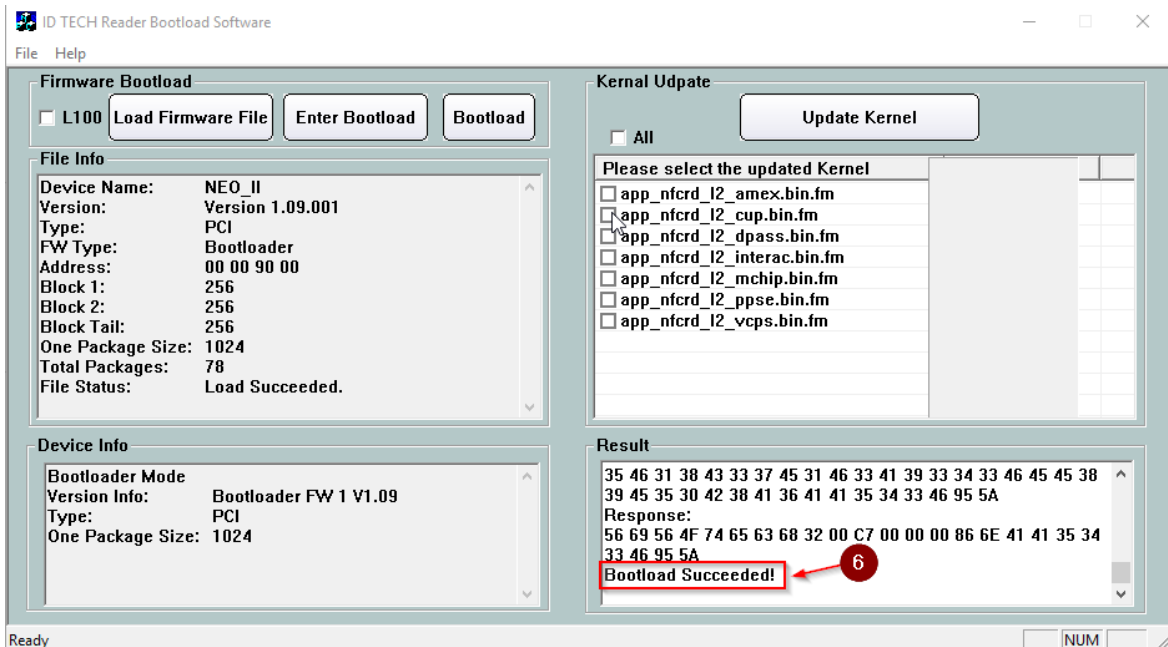
6. Repeat the same steps in the screenshots above to load the bootloader_loader_Vx.xx_1.fm file (note that this time, we are loading the .1.fm file).
7. Repeat the same steps in the screenshot above to load the VP5200_v1.00.020.0151.S_Test.fm file (or the specific version firmware file included in your package)
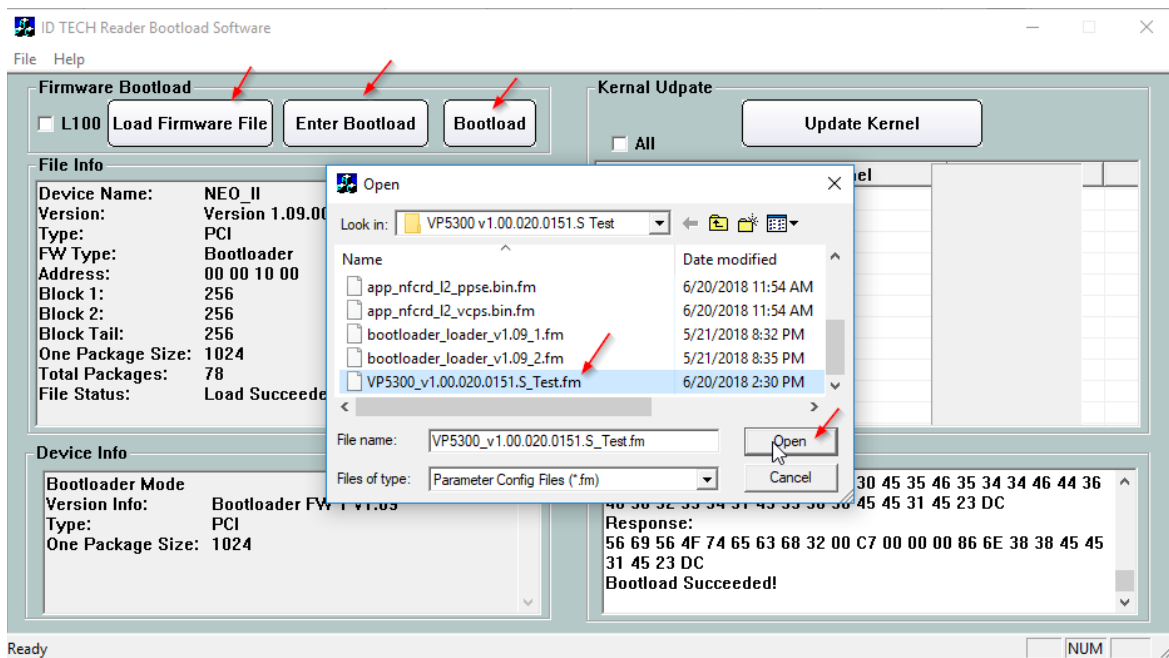
Wait until the reader sounds one long beep, the LED turns to solid green, and the "Bootloader succeeded!" message shows up, as the screenshot below:
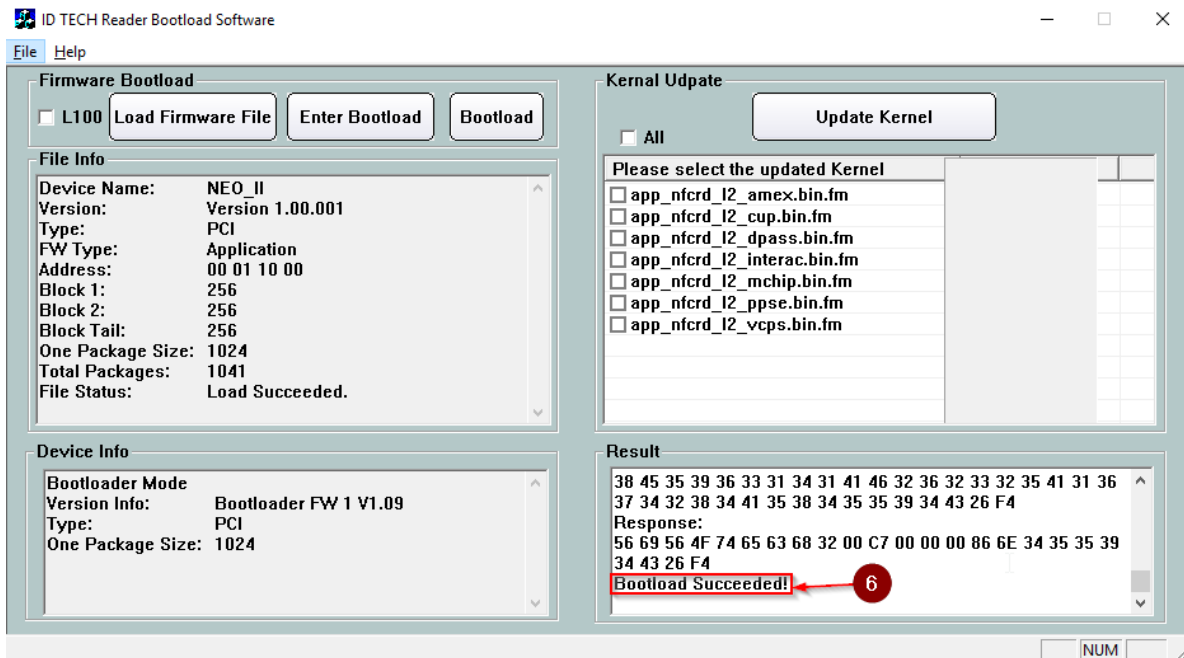
8. Install all the kernel files by following the numbered steps shown in the screenshot below:
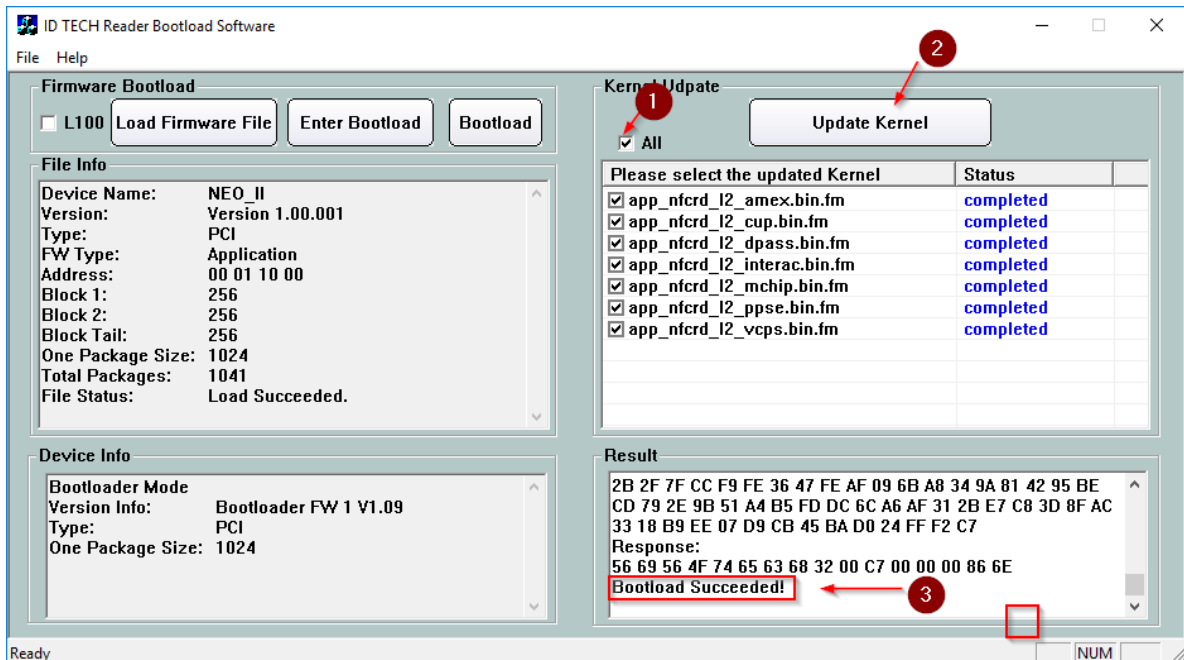
When all is done, the LED on the reader should be back to solid green.

9. Exit the Bootloader app and launch the USDK Demo app (available for download on the ID TECH Knowledge Base). Run the Firmware Version command (under **Device**) to verify the new firmware.

4. Troubleshooting

The VP5200 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 used. • 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. • Replace the device with a known-good device to verify that the power supply and wiring in the installation are sound.
Reading Cards		
Some cards read, but not all.	Possible bad card. Unsupported card type. Wrong firmware (contact your local support representative).	Check to see if card 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 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 firmly connected to PC or other software is using the serial interface.	Check the cable connection. Close other software that might be using the same serial interface.
Firmware loading software indicates "Load firmware failed."	Device is not firmly 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).