ID TECH VP7225 User Manual

80186502-001 Rev. A
12 February 2026
Copyright © 2025 ID TECH. All rights reserved.

ID TECH
10721 Walker Street, Cypress, CA 90630-4720
Tel: (714) 761-6368 Fax (714) 761-8880
www.idtechproducts.com support@idtechproducts.com

ID TECH
10721 Walker St.
Cypress, CA 90630

This document, as well as the software and hardware described in it, is furnished under license and may be used or copied online in accordance with the terms of such license. The content of this document is furnished for information use only, is subject to change without notice, and should not be construed as a commitment by ID TECH. Reasonable effort has been made to ensure the accuracy of information provided herein. However, ID TECH assumes no responsibility or liability for any unintentional 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, recording, or otherwise, or translated into any language form without the express written consent of ID TECH. ID TECH, Concierge, and ViVOpay are trademarks or registered trademarks of ID TECH.

Warranty Disclaimer: The services and hardware are provided "as is" and "as-available" and the use of the services and hardware is at its 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, fitness for a particular purpose, title, and any warranties arising from a 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
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 and uses 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.

FCC RF Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. To comply with FCC RF Exposure compliance requirements, this grant applies only to Mobile Configurations. The antennas used for the transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

ISED Warning statements
This device complies with Canada's licence-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'encompromettre le fonctionnement.

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.

Pour se conformer aux exigences de conformité CNR 102 RF exposition, une distance de séparation d'aumoins 20 cm doit êtremaintenue entre l'antenne de cet appareil ettoutes les personnes.

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numerique de la classe B est conforme a la norme NMB-003 du Canada.

CE Caution

RF Exposure
This equipment complies with CE radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20cm between the radiator and your body.

EU DECLARATION OF CONFORMITY

Hereby, ID TECH declares that the radio equipment type VP7225 is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following Internet address: https://idtechproducts.com/
The product is so constructed that it can be operated in at least one Member State without infringing applicable requirements on the use of radio spectrum.

Notice for Operating Frequency and Output Power:

Feature	VP7225
NFC	2dBuA/m at 10m
BLE	Frequency(MHz)2402-2480 < 0dBm

Cautions and Warnings

Caution: The VP7225 should be mounted 1-2 feet away from other VP7225s. Can be adjusted based on lane setup.

Warning: Avoid close proximity to radio transmitters which may reduce the capability of the reader.

Revision History

Date	Rev	Changes	By
02/12/2026	A	Initial Draft	YC/CB

Table of Contents

1. OVERVIEW 8
1.1. Universal SDK 8
1.2. Encryption 8
2. FEATURES....9
2.1. Certifications and Approvals 10
2.2. Regulatory 10
3. VP7225 SPECIFICATIONS....11
3.1. USB Specifications 12
3.2. Power Consumption 13
3.2.1. Working mode....13
3.2.2. Low Power Mode....13
3.3. VP7225 Model Differences....13
3.4. VP7225 LTE, SAM, and SIM Connections....14
3.4.1. Supported SAM Cards....14
4. CABLE INTERFACES 16
5. VP7225 LED AND SOUND STATE INDICATORS 18
5.1. Tamper and Failed Self-Check Indicators 19
6. VP7225 INSTALLATION 20
6.1. Parts List 20
6.2. VP7225 Interface Connectors....20
6.3. Mounting the VP7225 20
6.4. VP7225 Hardware Connectors Guide 22
6.4.1. Connecting to Host Systems 22
6.5. Communication via USB 23
6.6. Connecting to LTE 23
6.6.1. Before You Begin 23
6.6.2. Accessing the SAM Slots....24
6.6.3. Installing the SIM Card 26
6.6.4. Pairing the SIM Card 26
6.6.5. Enabling Cellular Functionality....28
6.6.6. Configure Cellular TCP/IP Context (D3-09)....29
6.7. SAM (Secure Access Module) Support 31
6.7.1. Performance Tip for SAM Transactions....31
6.7.2. Installing SAM Cards 31
6.7.3. Protocol and Communication....31
6.7.4. SAM Command Set....31
6.7.5. Example SAM Operation Flow....31
6.8. Connecting to the Data Port....33
6.9. Installation Checklist 33
6.9.1. Visual Inspection 33
6.9.2. Installation Procedures....33
6.9.3. Recommendations....33
6.10. Using the VP7225 to Make a Purchase....34
6.10.1. Presenting Cards or NFC Phones 34
6.10.2. Making a Purchase....35
6.11. Installation Points....35
7. VP7225 CONFIGURATION SETTINGS....36
7.1. Configuring Ethernet Settings 36
7.1.1. Configuring Ethernet Settings with Low-Level Commands 36
Configuring BLE Settings....40
7.1.2. Configuring BLE with Low-Level Commands 40

7.2. Configuring LTE Settings 42
7.2.1. Configuring LTE Settings with Low-Level Commands 42
7.3. Configuring System Settings 49
7.3.1. Configuring System Settings with Low-Level Commands 49
8. RF INTERFERENCE 52
9. UPGRADING FIRMWARE 53
9.1. Preparation 53
9.2. Loading Files onto the Reader 53
9.3. Updating K81 Bootloader 54
9.4. Updating K81 Firmware 55
9.5. Updating K81 Device Tree Firmware 56
9.5.1. Determining the Correct Device Tree Firmware to Use 56
9.5.2. Updating the Device Tree Firmware 58
9.6. Updating RT1050 Bootloader 59
9.7. Updating RT1050 Firmware 60
9.8. Updating RT1050 Device Tree Firmware 61
10. DECOMMISSIONING SRED DEVICES 62
11. TROUBLESHOOTING 63
11.1. LTE Diagnostic Troubleshooting 64
11.1.1. Step 1: Check the Firmware and Device Tree Versions 64
11.1.2. Step 2: Check the Cellular Configuration 64
11.1.3. Step 3: Check the LTE Working Mode 64
11.1.4. Step 4: Check the Current SIM Card Slot Settings 65
12. AVOIDING DEVICE TAMPER ISSUES 66
12.1. Device Handling Best Practices 66
12.2. ID TECH Support 66
13. FOR MORE INFORMATION 67

1. Overview

The ID TECH VP72225 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 VP7225 is a single piece device including controller and antenna.

The VP7225 supports USB and serial RS-232 host communication using the NEO 3 protocol defined in the *NEO 2 Interface Developers Guide*. This comprehensive guide describes all the firmware commands and other features available in NEO 3-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.) See this guide when controlling the VP7225 through firmware commands sent directly over a serial port.

1.1. Universal SDK

A feature-rich Windows-based Universal SDK is available to aid rapid development of applications that talk to VP7225. 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 Knowledge Base (no registration required).

1.2. Encryption

VP7225 readers support industry-standard Triple DES or AES encryption, with DUKPT-based key management (per ANSI X9.24). Encryption can be configured to occur with a 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 injections.

2. Features

The VP7225 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
- VP7225 is certified with Visa Ready for Transit

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

2.1. Certifications and Approvals

VP7225 supports the following contactless payment applications and mobile payments:

- American Express ExpressPay 4.1
- Discover DPAS 2.0
- Felica
- Interac Flash v1.8
- JCB
- MasterCard PayPass/MChip 3.1.4
- UPI
- Visa VCPS 2.2 and VISA VCTKS 1.1
- Mifare
- Apple Pay, Google Pay, Samsung Pay, & other Mobile Wallets
- Apple VAS & Google SmartTap mobile Loyalty Programs
- AT&T Trendi
- PTCRB/GCF Report

2.2. Regulatory

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

3. VP7225 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	Up to 6 cm (2.3 inches)
Physical	
Length	138.4 mm
Width	88.4 mm
Depth	37.2 mm
Environmental	
Operating Temperature	0 C to 50° C , max change of 10° C per hour
Storage Temperature	-30° C to 85° C [non-condensing]
Operating Humidity	10% to Water-resistant 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 semi outdoor use
IK Rating	IK 6
IP Rating	IP 65
ESD	+/-8KV Contact and +/- 12KV Air
Electrical	
Reader Input Voltage	+5V (USB port-powered; RS-232 requires power supply)
Working Current Rated power	<2A <10w
Battery (for real-time clock)	CR2032 20mm x 3.2mm, 230mAh ("coin" battery), lifetime 5 years

3.1. USB Specifications

USB C Female		
Power Supply Requirement	**Voltage (V)**	4.75 to 5.25
	Current (A)	2
	Power (W)	10
USB	**Version**	2.0
	Protocol	USB Standard
USB Speed (Full speed or High Speed)		High Speed
PD Support		Not supported
USB Role(Host or Device)		Device
OTG		Not supported
Pin Out		View Sheets

USB Power Delivery

Mode of Operation	Voltage	Max Current	Max Power
USB 1.x / USB 2.0	5 V	0.5 A	2.5 W
USB 3.X	5 V	0.9 A	4.5 W
USB-C (Standard)	5 V	3 A	15 W
USB-C (PD)	5 - 20 V	5 A	25W - 100W

VP7225 Pin Out	
A1	GND
A2	AP_RS232_TX1
A3	3] AP_RS232_RTS1
A4	VBUS_A4_B9
A5	CC1
A6	USB1_AP_DP
A7	USB1_AP_DN
A8	LINEOUT_L
A9	VBUS_B4_A9
A10	ETHERNET_RXN
A11	ETHERNET_RXP
A12	GND
B1	GND
B2	ETHERNET_TXP
B3	ETHERNET_TXN
B4	VBUS_B4_A9
B5	MIC_DET
B6	UART5_RX
B7	UART5_TX
B8	LINEOUT_R
B9	VBUS_A4_B9
B10	AP_RS232_CTS1
B11	AP_RS232_RX1
B12	GND

3.2. Power Consumption

Note the following information about VP7225 power consumption.

3.2.1. Working mode

- Contactless transaction mode maximum power consumption is <2A/5V.
- When the VP7225's RF is inactive due to no connection to the host device, the maximum power consumption is <200mA/5V.

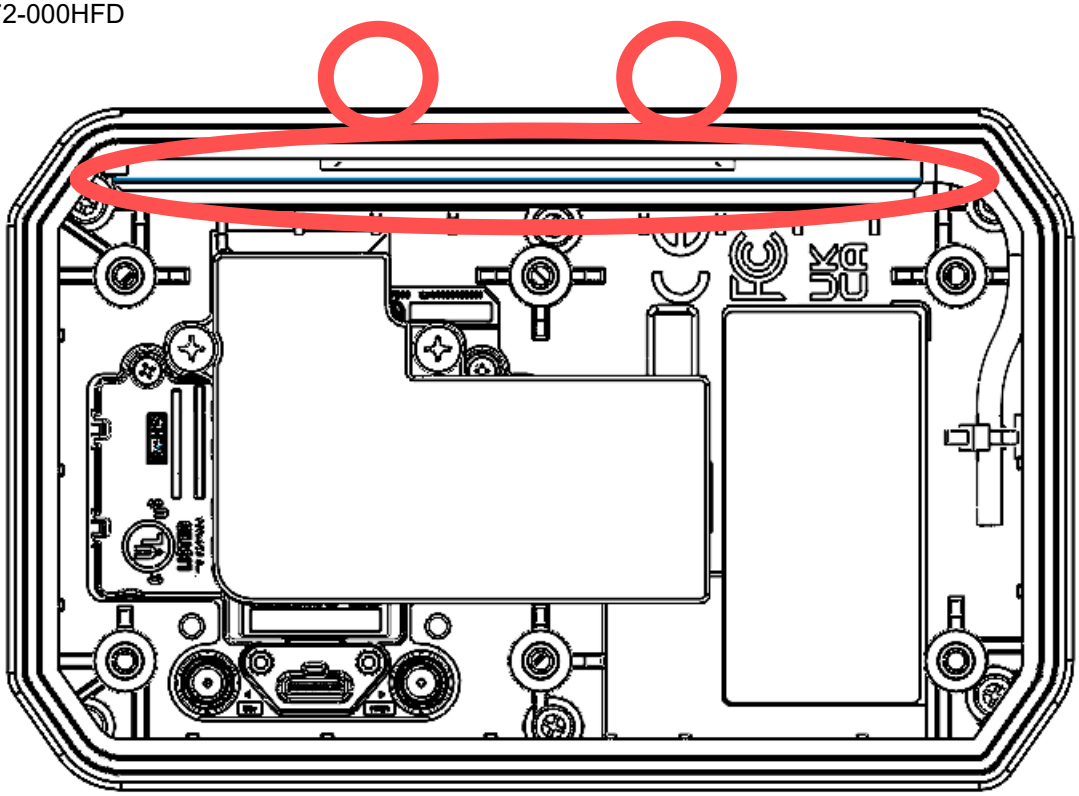
3.2.2. Low Power Mode

VP7225 low power mode is only supported with RS-232 5VDC input. Note that low power mode is NOT supported via USB.

- Standby mode power consumption is 110mA/5V. VP7225 units can wake up via RS-232 with a wake-up time of <1s.
- Sleep mode power consumption is 100mA/5V. VP7225 units can wake up via RS-232 with a wake-up time of <8s.

3.3. VP7225 Model Differences

P/N : ID72-808HF; ID72-808HFD;ID72-008HF; ID72-008HFD;ID72-800HF; ID72-800HFD;ID72-000HF; ID72-000HFD



Model No:	camera	Ethernet	Others
ID72-808HF; ID72-808HFD (This two models just have difference key)	YES	YES	All the same
ID72-008HF; ID72-008HFD (This two models just have difference key)	NO	YES	

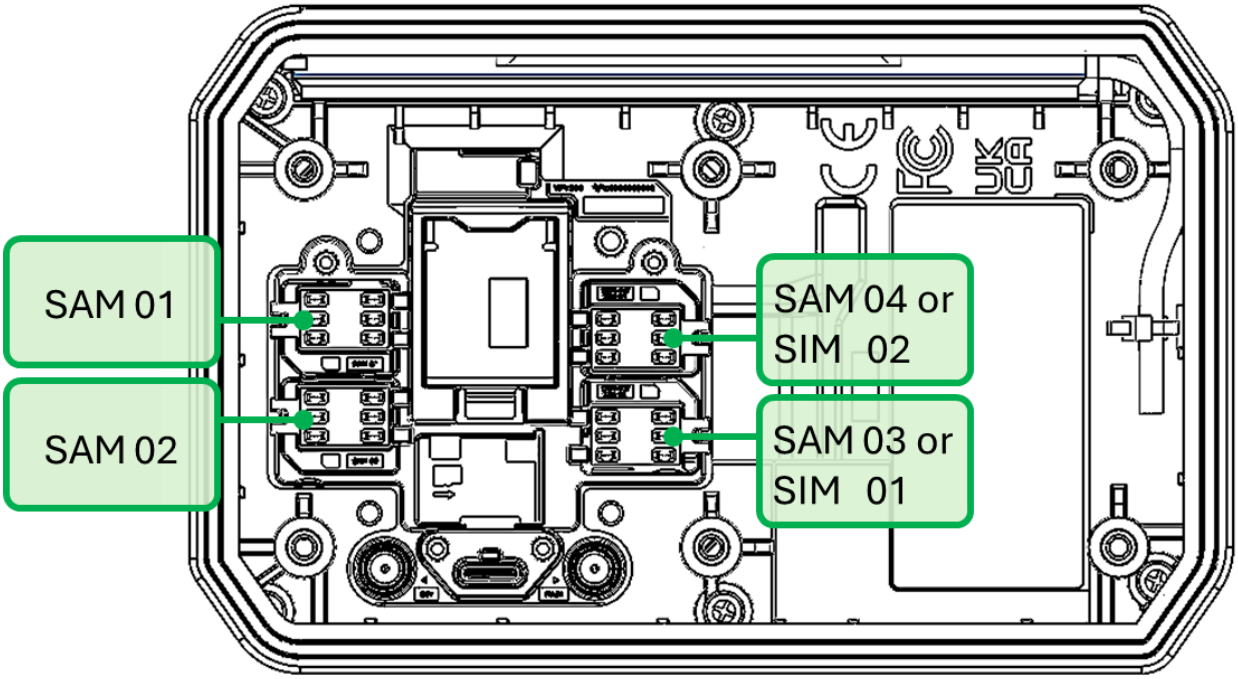
ID72-800HF; ID72-800HFD (This two models just have difference key)	YES	NO	
ID72-000HF; ID72-000HFD (This two models just have difference key)	NO	NO	
The key is a software key which is related to the transaction. The Ethernet has no related components on the PCBA, it is turned on/off by software.			

3.4. VP7225 LTE, SAM, and SIM Connections

The tables and diagram below illustrate VP7225 LTE, SAM, and SIM connections.

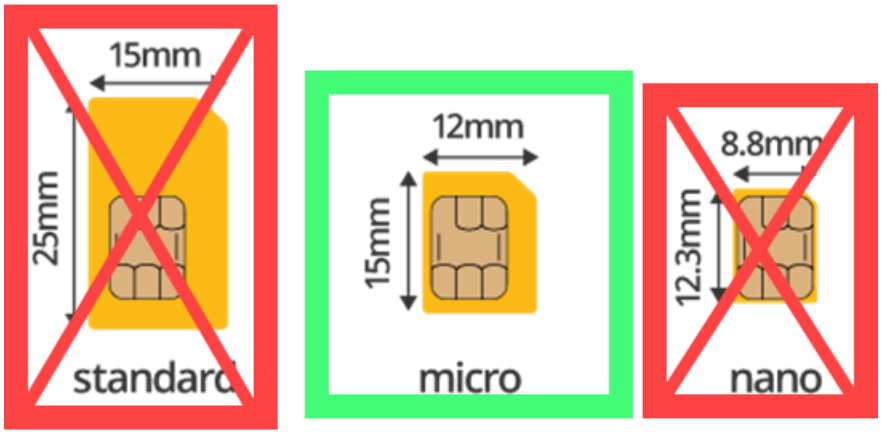
P/N	Region/Operator	SIM card slot	Antenna connection
ID72-818HJD	North America	SIM1/SIM2	Main/DIV
ID72-838HJD	EMEA	SIM1/SIM2	Main/DIV
ID72-868HJD	Japan	SIM1	Main

P/N	SAM card slot				SIM card slot	
	SAM1	SAM2	SAM3	SAM4	SIM1	SIM2
ID72-818HJD	✓	✓	X	X	✓	✓
ID72-838HJD	✓	✓	X	X	✓	✓
ID72-868HJD	✓	✓	X	X	✓	X
ID72-808HFD	✓	✓	✓	✓	X	X



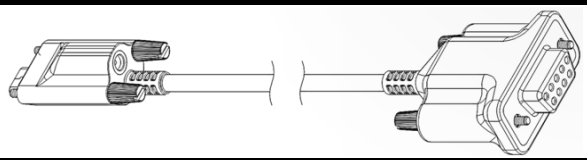
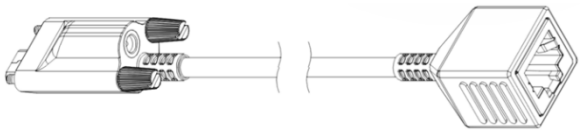
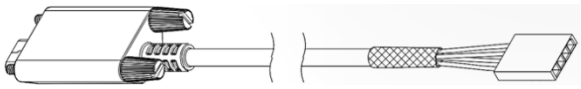
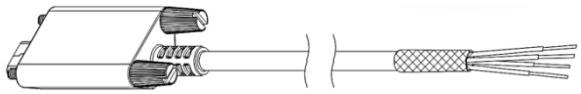
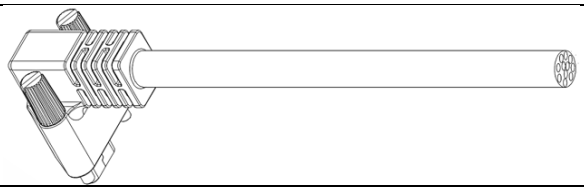
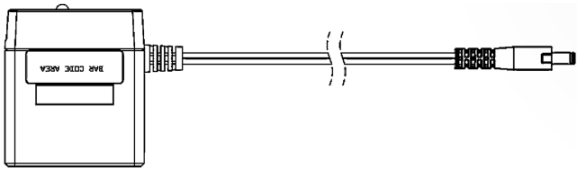
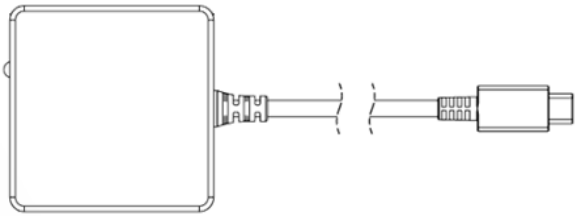
3.4.1. Supported SAM Cards

VP7225 readers use MicroSAM cards, illustrated below:

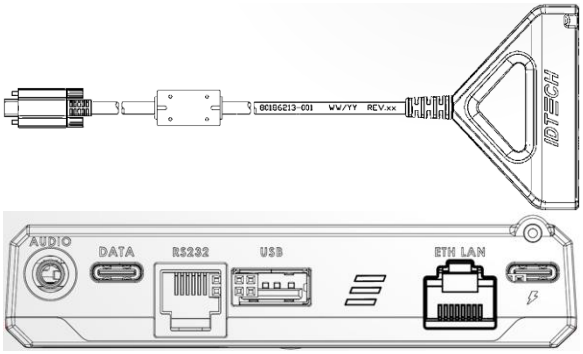

15mm
25mm
standard
12mm
15mm
micro
8.8mm
12.3mm
nano

4. Cable Interfaces

VP7225 readers use a USB-C connector to connect to the host device. Cables connect to multiple types of communication ports, as shown below.

Input	Output	P/N	Part
USB-C (IDT)[1]	RS232 (DB9) cable	80185224-001	
USB-C (IDT)[1]	Ethernet (RJ45) cable	80186228-001	
USB-C (IDT)[1]	USB-A cable	80186214-001	
USB-C (IDT)	UART (IDT)	80185226-001	
USB-C (IDT)	UART (IDT)	80185226-002	
USB-C (IDT) (Right Angle)	Cable end only	80186227-001	
DC Jack	US Plug	AC0005R-28	
USB-C (Standard)	US Plug	AC0005R-29	

[1] Note that cables 80185224-001, 80186228-001, and 80186214-001 all require a power adapter (P/N AC0005R-28).

Input	Output	P/N	Part
USB-C (IDT)	Multi-port	80186213-001	

5. VP7225 LED and Sound State Indicators

The VP7225 uses the following LEDs and sounds to indicate various statuses, including power management, transactions, and security.

Device State	LED1	LED2	LED3	LED4	Beeper[2]
Device FW, certificates, or keys self-test failed.	○ off	○ off	○ off	● blink	Beeps
Device Tampered	○ off	○ off	○ off	● blink	Beeps
Device Deactivated	○ off	○ off	○ off	● blink	Beeps
Device Activated[3]	○ off	○ off	○ off	● on	Off
Device Key Missing[4]	● blink	● blink	● blink	● blink	Off
Ready for Transaction	● blink	○ off	○ off	○ off	Off
Transaction Started[5]	● on	○ off	○ off	○ off	Off
Transaction Successful[6]	● on	● on	● on	● on	Beeps Once
Transaction Failed	○ off	○ off	○ off	○ off	Beeps Twice

[2] Note that “beeps” indicates constant beeping unless the description includes a specific number of beeps (such as “twice”).
[3] The device has loaded certificates successfully and is activated.
[4] The device only has LCL-KEK; the required key is not injected.
[5] The transaction has started and the device is waiting to read a card.
[6] LEDs remain on for 1000ms.

5.1. Tamper and Failed Self-Check Indicators

The VP7225 displays the following indicators when it has been tampered or has any of the other following internal issues, such as an expired certificate, missing key, or similar fault discovered during a self-check.

Indicator	Tampered Status
LED	LED4 blinks red
Buzzer	Alarm tone

6. VP7225 Installation

This section provides information on how to install the VP7225 on a kiosk.

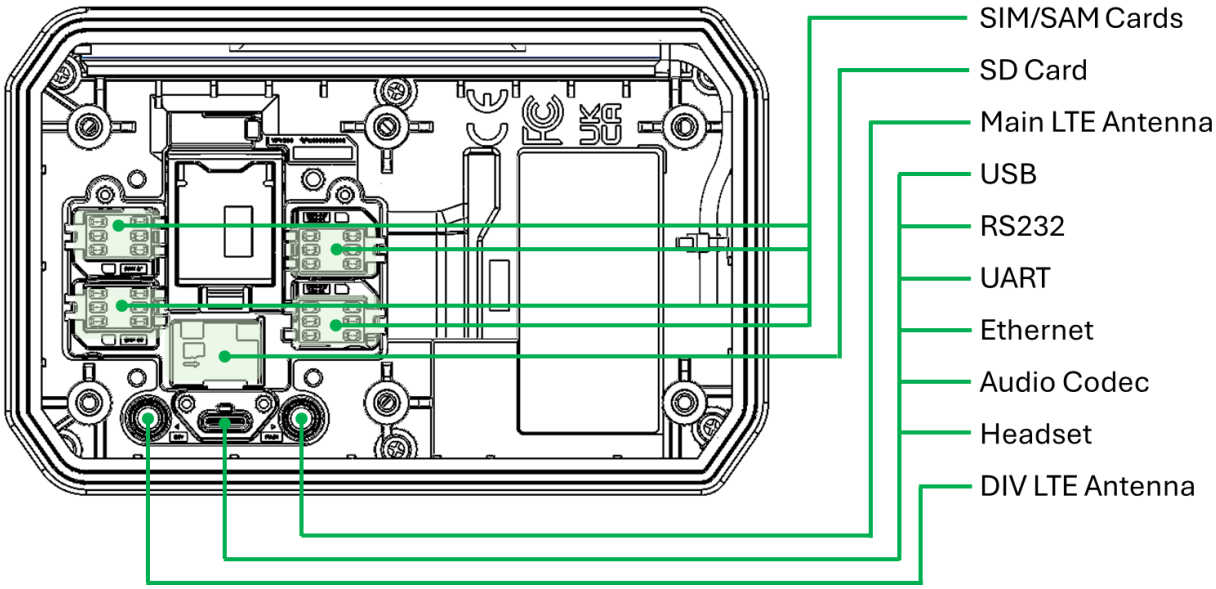
6.1. Parts List

Verify that you have the following hardware for the installation of the VP7225:

- VP7225
- Cables (sold separately)
    - RS-232: Use a cable with **P/N to 80185224-001** or equivalent 5VDC powered cable.
    - USB: Use a USB-A to USB-C cable with **P/N 80186214-001** (the VP7225 unit, in this case, would be port-powered).
    - Ethernet cable: **P/N 80186228-001**; using an ethernet cable requires 5VDC power adapter **P/N AC0005R-28**.

6.2. VP7225 Interface Connectors

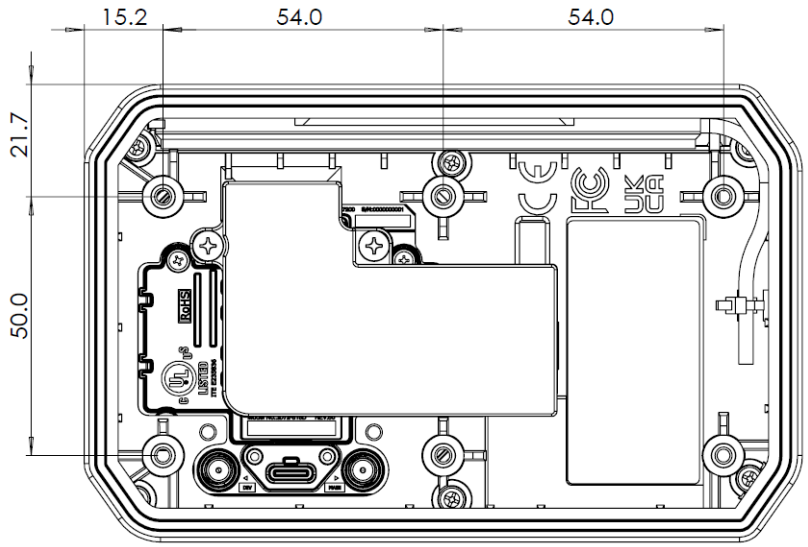
The diagram below displays interface connectors for VP7225 readers.



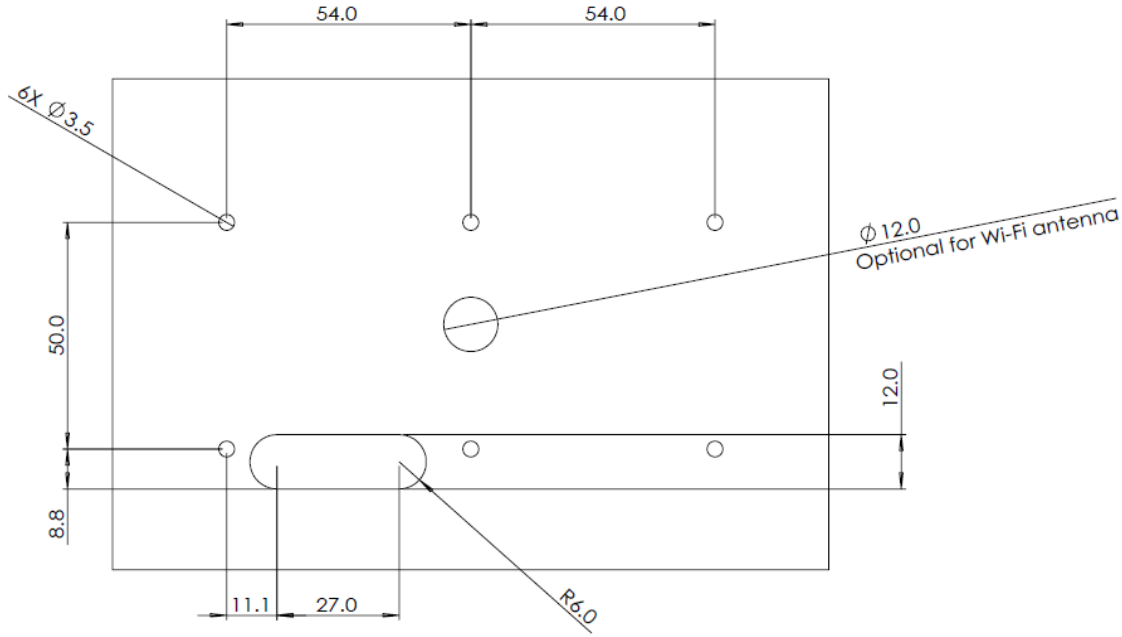
6.3. Mounting the VP7225

To optimize performance, install VP7225 readers away from or in front of any metal surfaces or materials that have metallic content, which can interfere with the RF field. VP7225 readers perform optimally when mounted away from metal surfaces.

Note: For safety reasons, make sure to mount the VP7225 at a height no greater than two meters from the floor.


15.2
54.0
54.0
21.7
50.0

There are six M3 nuts in the bottom housing, which can be used to mount the unit to equipment.



6.4. VP7225 Hardware Connectors Guide

VP7225 readers have several options for connecting to hardware like host systems and LTE (wireless internet) connections. This section provides details for each hardware type.

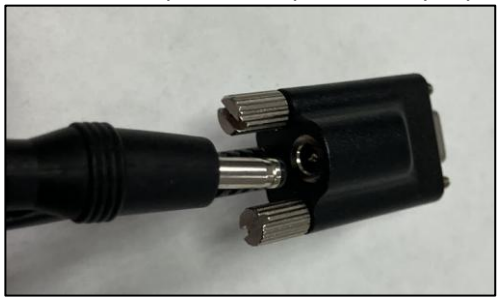
6.4.1. Connecting to Host Systems

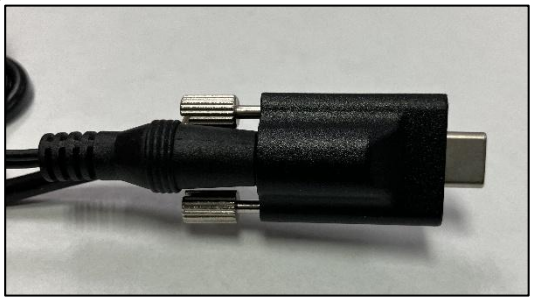
VP7225 readers have multiple methods for connecting to host systems. **Note that the cables below also require a power adapter (P/N AC0005R-28) to power the VP7225.**

- RS-232 (P/N to 80185224-001)
- USB-A to USB-C (P/N 80186214-001)
- Ethernet cable (P/N 80186228-001)

When connecting the VP7225 to a host system:

1. Insert the power adapter into the USB-C male end of the VP7225 connector cable; for safety, make sure the power adapter is not yet plugged into an outlet.





2. Insert the USB-C male connector into the VP7225 reader.
    a. Make sure to tighten the screws built into the connector to ensure the cable does not become loose or dislodged.
3. Connect the cable to the host system.
4. Plug in the power adapter.

6.5. Communication via USB

The PID is 4700 (hex) and the VID is 0ACD (hex).

6.6. Connecting to LTE

Connecting a VP7225 to LTE requires multiple steps. Each section below covers a different part of the process in sequence.

6.6.1. Before You Begin

Make sure to have the following parts:

- VP7225
- SIM card
- One of the ID TECH connector cables described above
- Power adapter (P/N AC0005R-28)
- Antenna (P/N ANT009R)

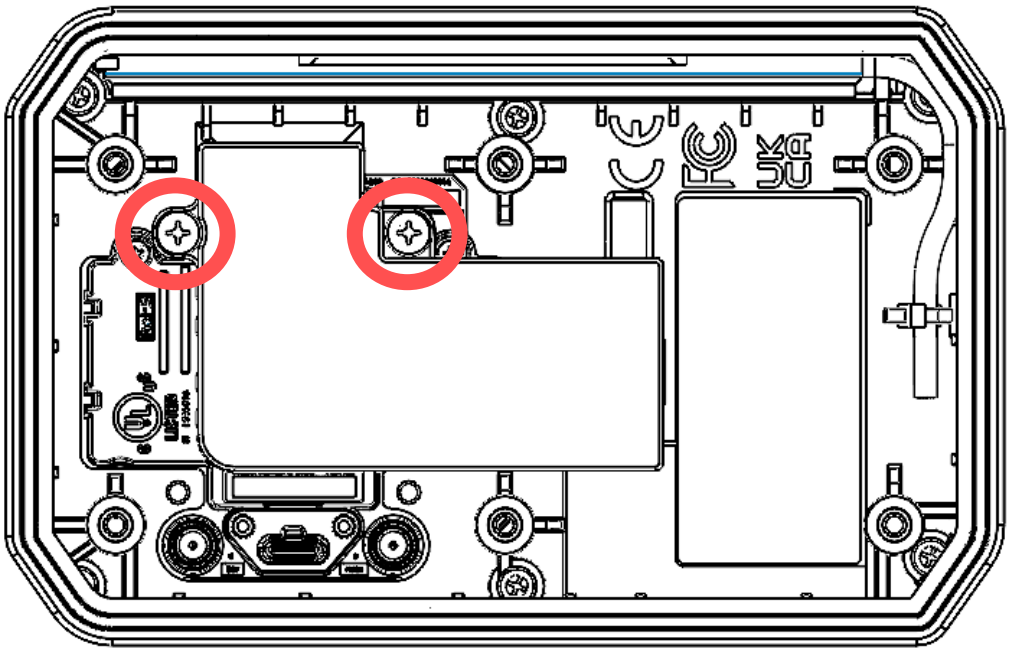
You will also need:

- A Windows computer with the ID TECH Universal SDK Demo app installed (available at no charge)
- A USB cable with a USB-C male connector

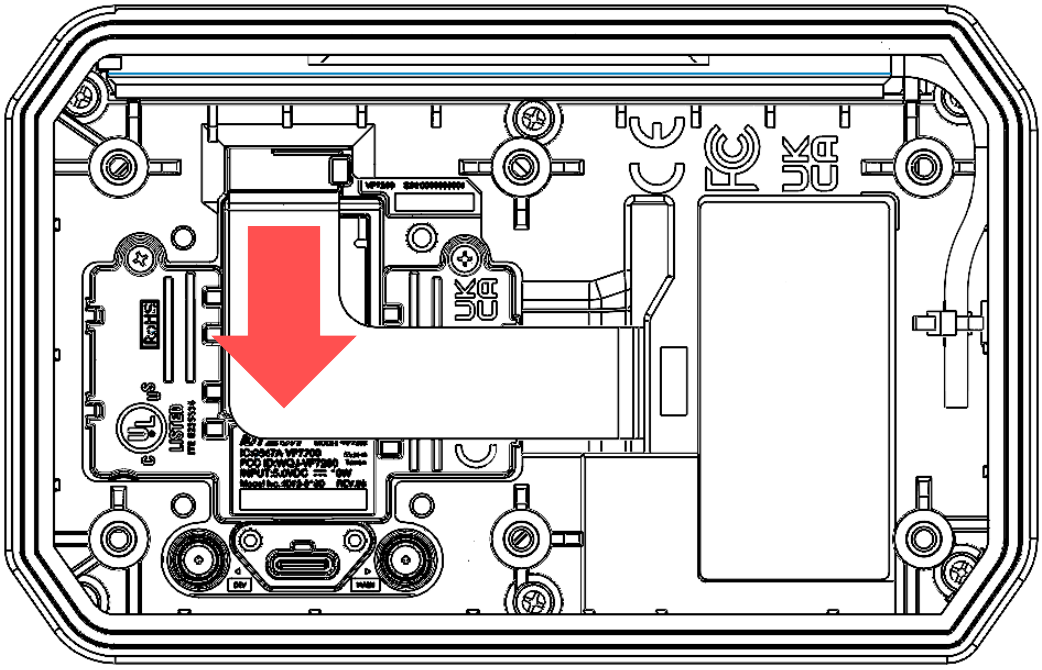
6.6.2. Accessing the SAM Slots

To access the reader's SAM slots:

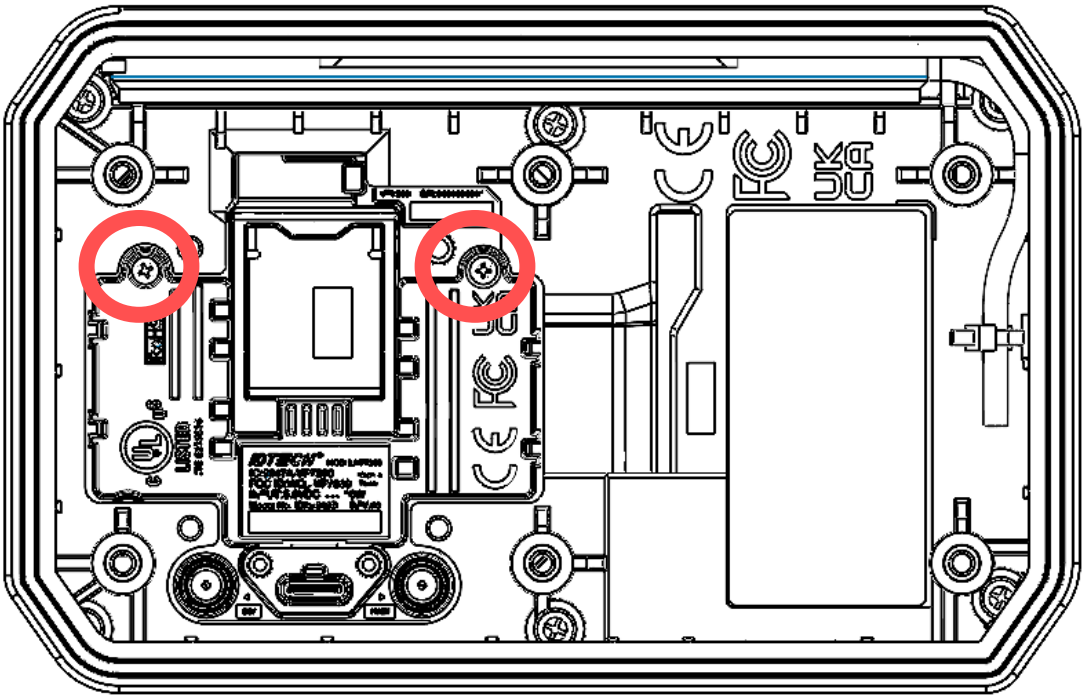
1. Loosen the two screws below and remove the flexible printed circuit board (FPCB) cover.



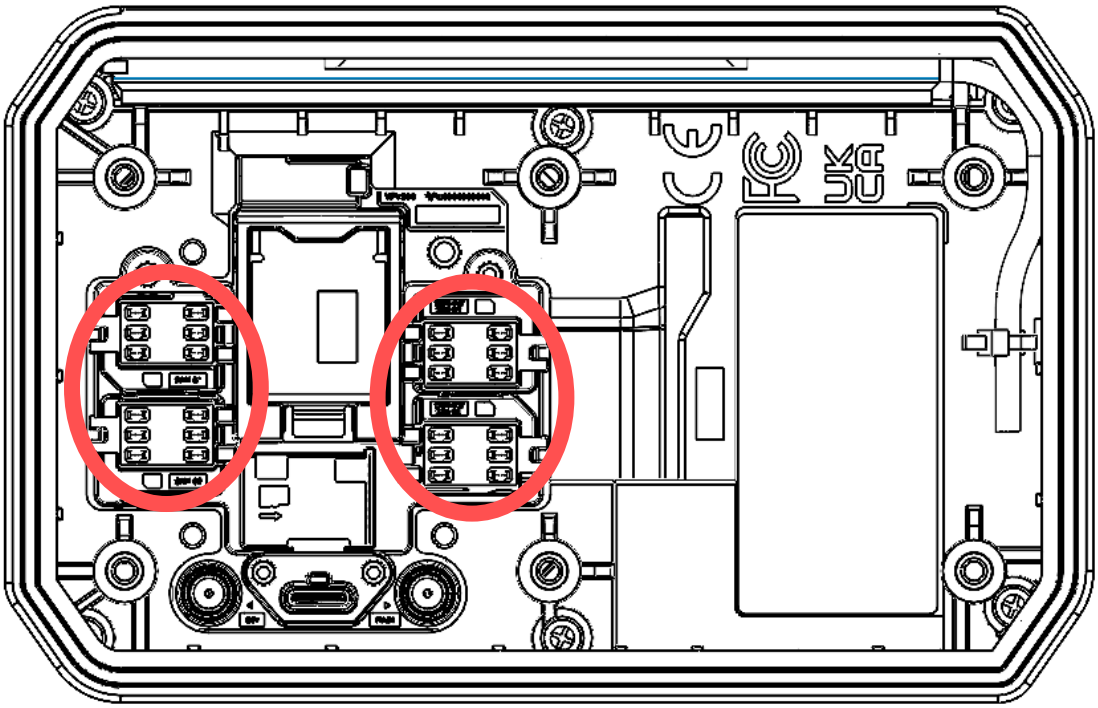
2. Gently pull off the FPCB connector.



3. Loosen the two screws below and remove the cover.



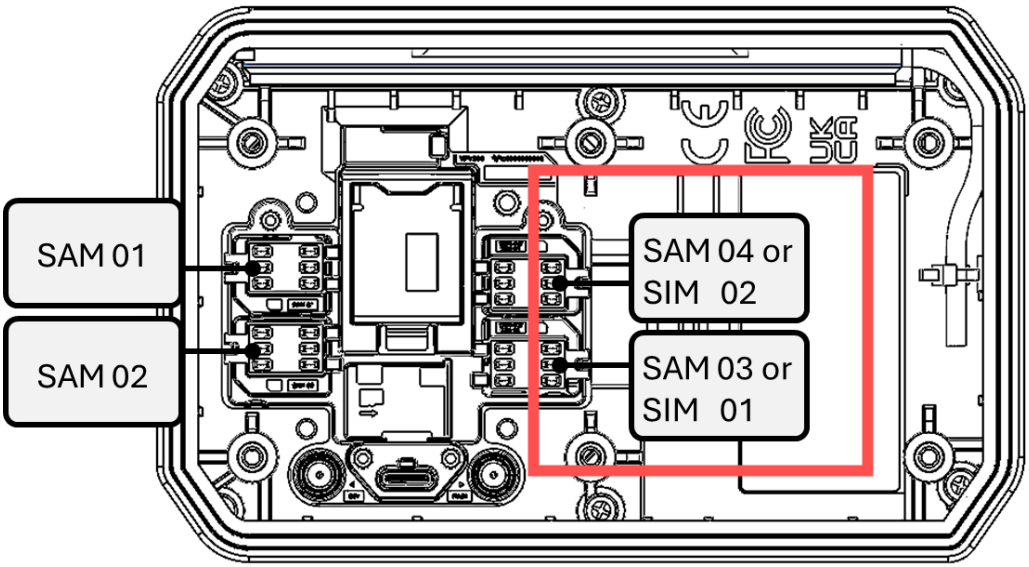
4. When you see this screen, you can start installing the SIM/SAM cards.



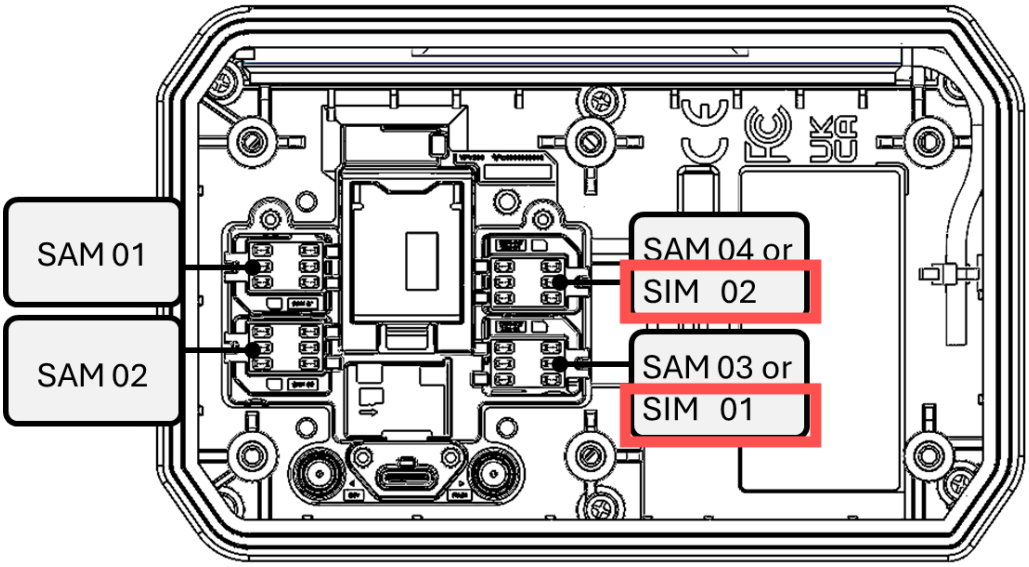
6.6.3. Installing the SIM Card

To install the SIM card:

1. After removing the FPCB cover and removing the connector, locate the SIM slots.



2. Insert the SIM card into the desired slot. Make sure to note which slot you have used.



Note: For VP7225, the default SIM slot is Slot #1.

3. Close the SIM card panel on the VP7225.

6.6.4. Pairing the SIM Card

You must pair a SIM card before it can provide an LTE connection. To pair the SIM card:

1. Open the Universal SDK Demo app on your Windows PC.
2. Connect your VP7225 to the computer and power on the reader.
3. Go to **COMMANDS** in the Universal SDK Demo app.
4. Use the **Retrieve Cellular Switch Status (D3-02)** command to check if cellular functionality is enabled or disabled.

```
[TX]: 56 69 56 4F 74 65 63 68 32 00 D3 02 00 00 39 58
[RX]: 56 69 56 4F 74 65 63 68 32 00 D3 00 00 01 01 31 02
```

5. If cellular functionality is disabled, use the **Cellular Switch Control (D3-01)** command to enable it. This change requires a device reboot.

```
[TX]: 56 69 56 4F 74 65 63 68 32 00 D3 01 00 01 01 47 B6
[RX]: 56 69 56 4F 74 65 63 68 32 00 D3 00 00 00 57 38
```

Note: If you switch the SIM card to another slot or insert a new SIM card, you must reboot the device. LTE firmware does not support hot-swapping SIM cards.

6. To verify or change the SIM card slot in use, run the **Retrieve Dual (U)SIM Card Slot Selection (D3-0C)** command.

```
[TX]: 56 69 56 4F 74 65 63 68 32 00 D3 0C 00 00 22 59
[RX]: 56 69 56 4F 74 65 63 68 32 00 D3 00 00 01 01 31 02
```

7. If needed, send the **Dual (U)SIM Card Slot Select (D3-0B)** command to select the desired SIM slot. The reader will reboot automatically after switching the SIM slot.

```
[TX]: 56 69 56 4F 74 65 63 68 32 00 D3 0B 00 01 01 2F 1D
[RX]: 56 69 56 4F 74 65 63 68 32 00 D3 00 00 00 57 38
```

8. Use **Detect (U)SIM Card in Slots (D3-0D)** to check if the SIM card is functioning correctly. The response data should be **D3-00-01** if everything is working properly.

```
[TX]: 56 69 56 4F 74 65 63 68 32 00 D3 0D 00 01 01 08 84
[RX]: 56 69 56 4F 74 65 63 68 32 00 D3 00 00 01 01 31 02
```

9. Use the **Retrieve Selected Network Operator Information (D3-0F)** command to verify the current network mode and selected operator. If the cellular network is not registered, use **Auto Register Cellular Operator** to automatically register the device with an available operator.

   After the expected operator information is returned, the reader should be able to communicate via LTE.

```
[TX]: 56 69 56 4F 74 65 63 68 32 00 D3 0F 00 00 7B 09
[RX]: 56 69 56 4F 74 65 63 68 32 00 D3 00 00 1B 2B 43 4F 50 53 3A
20 30 2C 30 2C 22 4D 69 6E 74 22 2C 37 0D 0A 0D 0A 4F 4B 0D 0A 20
38 // +COPS: 0,0,"Mint",7
```

10. Use the **Ping Remote Server (D3-06)** command (in this case, “www.google.com”).

```
[TX]: 56 69 56 4F 74 65 63 68 32 00 D3 06 00 0E 77 77 77 2E 67 6F
6F 67 6C 65 2E 63 6F 6D 2C B6
[RX]: 56 69 56 4F 74 65 63 68 32 00 D3 00 00 A9 33 32 20 62 79 74
65 73 20 66 72 6F 6D 20 31 34 32 2E 32 35 30 2E 37 32 2E 31 33 32
3A 20 69 63 6D 70 5F 73 65 71 3D 30 20 74 69 6D 65 3D 32 39 31 20
```

```
6D 73 0A 33 32 20 62 79 74 65 73 20 66 72 6F 6D 20 31 34 32 2E 32
35 30 2E 37 32 2E 31 33 32 3A 20 69 63 6D 70 5F 73 65 71 3D 31 20
74 69 6D 65 3D 35 34 20 6D 73 0A 32 20 70 61 63 6B 65 74 73 20 74
72 61 6E 73 6D 69 74 74 65 64 2C 20 32 20 72 65 63 65 69 76 65 64
2C 20 30 25 20 70 61 63 6B 65 74 20 6C 6F 73 73 2C 20 74 69 6D 65
20 32 30 30 32 20 6D 73 0A A1 87
```

11. Enable the cellular auto-connect feature with the **Cellular Auto Connect to Server (D3-03)** command.

```
[TX]: 56 69 56 4F 74 65 63 68 32 00 D3 03 00 01 01 AA DE
[RX]: 56 69 56 4F 74 65 63 68 32 00 D3 00 00 00 57 38
```

After completing SIM card installation and pairing, mount the VP7225 in the desired kiosk or other location.

6.6.5. Enabling Cellular Functionality

VP7225 readers do not automatically detect SIM cards. After inserting the SIM card(s) and attaching the antenna, use the **Cellular Switch Control (D3-01)** command to enable the SIM card.

Integrators having issues with LTE functionality should refer to LTE Diagnostic Troubleshooting.

Note: You must restart the device for the change to take effect.

6.6.5.1. Cellular Switch Control (D3-01)

The **Cellular Switch Control** command enables or disables cellular functionality. The reader saves the specified configuration in flash.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte14	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOtech2\0	D3h	01h	00h	01h	See send data field	Variable	Variable

Command Data Field

Length	Description
1	00h: Disable cellular functionality. 01h: Enable cellular functionality. Other: Reserved.

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	CRC (MSB)	CRC (LSB)
ViVOtech2\0	D2h	See status code table	00h	00h	Variable	Variable

If necessary, use the **Dual (U)SIM Card Slot Select (D3-0B)** command to set the desired slot for Dual SIM cards. See the NEO 2 Interface Developer's Guide for details.

6.6.6. Configure Cellular TCP/IP Context (D3-09)

Use the **Configure Cellular TCP/IP Context** command to set the reader's TCP/IP settings.

The **Configure Cellular TCP/IP Context** command is used for configuring the parameters of a TCP/IP Context. The specified configuration is saved in flash.

Note the following:

1. If the username and password are empty, the **authentication** parameter should be **01h, 02h, or 03h**.
2. **Context ID** currently only supports **01h**.
3. **Context Type** currently only supports **01h**.
4. If the response is an error, the LTE module cannot update the internal parameters completely as requested, or some other error happened. In this case, the LTE module's internal parameters may be partially changed. Before the error returns, the firmware will try to revert the parameters back to their original state.
5. LTE functionality takes effect after a device reboot.

Note: Network registration may take 10 to 40 seconds, depending on the network. Be sure to wait for registration to complete before testing after the reader restarts.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14- Byte 14+n-1	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOtech2\0	D3h	09h	Varies	Variable	See below	Variable	Variable

Command Data Format

Item	Description
Context ID	**01h** 02h **…** 10h
Context Type	**01h: IPv4** 02h: IPv6 03h: IPv4v6
APN	Access Point Name. ASCII, must end with 0x00. Maximum length is 63 bytes including null terminator.
Username	Username, provided by the ISP. ASCII, must end with 0x00. Maximum length is 63 bytes including null terminator.
Password	Password of the target AP, provided by the ISP. ASCII, must end with 0x00. Maximum length is 63 bytes including null terminator.
Authentication	**00h: None** 01h: PAP 02h: CHAP 03h: PAP or CHAP

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	CRC (MSB)	CRC (LSB)
ViVOtech2\0	D3h	See status code table	00h	00h	Variable	Variable

Example:

```
Set LTE APN configuration as:
Context ID: 1
Context Type: 1
APN: “IDTech”
Username: ""
Password: ""
Authentication: 0
```

Test the connection's ping with **Ping Remote Server (D3-06)** and verify the operator with **Retrieve Selected Network Operator Information (D3-0F)**.

6.7. SAM (Secure Access Module) Support

The VP7225 includes 4 SAM slots to enhance security for sensitive operations. It communicates with SAM cards in pass-through mode.

6.7.1. Performance Tip for SAM Transactions

Please note that the best way to optimize performance is to minimize the number of APDU exchanges, even if combining all operations into a single exchange is not feasible.

Reducing the frequency of APDU calls helps lower communication overhead and shortens overall transaction time, especially critical in time-sensitive applications like fare collection or contactless payments.

6.7.2. Installing SAM Cards

- SAM slots are located on the back of the device.
- Please insert or remove SAM cards **only when the device is powered off** to avoid hardware damage.

6.7.3. Protocol and Communication

- Supported Protocols: **ISO/IEC 7816 T=0 and T=1**, depending on the card ATR.
- Maximum Baud Rate: Up to **125.1 Kbps.**
- Clock Frequency: **4.002 MHz.**
- The reader supports a wide range of TA1 configurations for compatibility with various SAM cards.

*** Note:** For compatibility verification with custom or non-standard SAM cards, please contact IDTECH technical support.

6.7.4. SAM Command Set

The VP7225 supports low-level ICC commands, enabling direct APDU communication with chip cards:

- The **Pass-Through Mode Start/Stop (2C-01)** command enables pass-through mode for direct SAM card communication. You must issue this command before the reader can process any SAM commands. This command also terminates pass-through mode.
- The **Get ATR (2C-12)** command activates the ICC and establishes a Layer 1 session to retrieve the ATR.
- The **Exchange APDU Data (2C-13)** command exchanges APDU data with the SAM card.
- The **Contact Transaction Power Off (2C-18)** command powers off the SAM card. When a transaction is successful, the ICC slot or SAM needs to power off before the user removes their card.

6.7.5. Example SAM Operation Flow

1. Use the **Pass-Through Mode Start/Stop (2C-01)** command to enable SAM card access. You must issue this command before sending any APDU commands.
```
[TX]: 56 69 56 4F 74 65 63 68 32 00 2C 01 00 01 01 19 1D
[RX]: 56 69 56 4F 74 65 63 68 32 00 2C 00 00 00 1C 9B
```

2. Use the **Get ATR (2C-12)** command to activate the selected SAM slot and retrieve its ATR (Answer to Reset).

```
[TX]:56 69 56 4F 74 65 63 68 32 00 2C 12 00 01 21 00 B9
[RX]:56 69 56 4F 74 65 63 68 32 00 2C 00 00 12 3B F8 96 00 00 81
31 FE 45 4A 43 4F 50 76 32 34 31 32 FD E1
```

3. Use the **Exchange APDU Data (2C-13)** command to send ISO/IEC 7816-compliant APDU commands to the SAM card and receive the response.

```
[TX]:56 69 56 4F 74 65 63 68 32 00 2C 13 00 15 21 00 A4 04 00 0E
31 50 41 59 2E 53 59 53 2E 44 44 46 30 31 00 AD E5
[RX]:56 69 56 4F 74 65 63 68 32 00 2C 00 00 28 6F 24 84 0E 31 50
41 59 2E 53 59 53 2E 44 44 46 30 31 A5 12 88 01 01 5F 2D 08 65 73
65 6E 66 72 64 65 9F 11 01 01 90 00 5F 72
```

4. Use the **Contact Transaction Power Off (2C-18)** command to shut down the SAM card and terminate the ICC session.

```
[TX]:56 69 56 4F 74 65 63 68 32 00 2C 18 00 01 21 AB D1
[RX]:56 69 56 4F 74 65 63 68 32 00 2C 00 00 00 1C 9B
```

5. Use the **Pass-Through Mode Start/Stop (2C-01)** command again to reinitialize the SAM interface (for example, when switching to another slot or starting a new session).

```
[TX]:56 69 56 4F 74 65 63 68 32 00 2C 01 00 01 00 38 0D
[RX]:56 69 56 4F 74 65 63 68 32 00 2C 00 00 00 1C 9B
```

Note: Step 5 is optional and used to re-enter pass-through mode (for example, for switching to another SAM slot).

Detailed descriptions of these commands can be found in the *NEO 2 Interface Developer's Guide*.

It is the responsibility of the integrator to develop their own application to interface with the device using IDG commands.

6.8. Connecting to the Data Port

The VP7225 has three data connection options: USB, RS-232, and Ethernet through the USB-C connector.

USB-C Connector

PIN#	Function	PIN#	Function
A1	GND	B12	GND
A2	RS232_TX→	B11	RS232_RX←
A3	RS232_RTS→	B10	RS232_CTS←
A4	VBUS	B9	VBUS
A5	CC1	B8	LINEOUT_R
A6	USB_DP	B7	UART_TX→(3.3V IO)
A7	USB_DN	B6	UART_RX←(3.3V IO)
A8	LINEOUT_L	B5	MIC_DET
A9	VBUS	B4	VBUS
A10	ETHERNET_RXN	B3	ETHERNET_TXN
A11	ETHERNET_RXP	B2	ETHERNET_TXP
A12	GND	B1	GND

6.9. Installation Checklist

When installing VP7225 units, be sure to verify the following items.

6.9.1. Visual Inspection

Before installing a VP7225:

- Visually inspect the reader for any modifications on the plastic housing.
- Check the security labels over the screws to verify the reader has not been tampered with.
- Power up the reader and check for any flashing LEDs and beeps that indicate tampering. Refer to Tamper and Failed Self-Check indicators for specific information.

6.9.2. Installation Procedures

After visually inspecting the VP7225, follow these guidelines when integrating the reader to your system:

- Insert any Security Access Modules into the SAM sockets.
- For additional memory expansion, insert any microSD card into the uSD socket.
- If your unit supports LTE radio, insert your network SIM into the SIM sockets.
- Close the cover and install the unit in its housing using four screws. **Note:** Do not overtighten the screws.
- If the display module is supported, insert the display module flex into the optional LCD connector.
- Insert the communication/power cable into the USB-C connector and tighten the locking screws (if provided).
- Power on the whole system and check the unit's operations.

6.9.3. Recommendations

Additionally, follow these recommendations after installation:

- Periodically inspect the system for any tampering and insertion of electronic bugs.
- Look for the latest updates on the manual or firmware on the ID TECH website.

- See the Installation Points, and Firmware Upgrade sections below for additional information about verifying device functionality and performing maintenance.

6.10. Using the VP7225 to Make a Purchase

The section below provides instructions for making purchases with the VP7225.

6.10.1. Presenting Cards or NFC Phones

The VP7225 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 VP7225'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 VP7225 antenna is attached to the VP7225 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.

6.10.2. Making a Purchase

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.

6.11. Installation Points

- The VP7225 is **NOT** 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 VP7225 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 (Wi-Fi 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 VP7225 Antenna.***
- Make sure to install the SAM/SIM card cover before checking SAM/SIM cards functions.
- 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, ID TECH and power, to simplify connection testing or component replacement.
- Test the VP7225 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 VP7225 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.

7. VP7225 Configuration Settings

VP7225 integrators can configure readers via IDG commands. Refer to the *NEO 2 Interface Developer's Guide* for a complete list of commands (available from your ID TECH representative).

7.1. Configuring Ethernet Settings

The section below describes configuring VP7225 ethernet settings.

7.1.1. Configuring Ethernet Settings with Low-Level Commands

To configure ethernet settings via low-level commands, send the following commands in sequence:

1. Set Network Configuration (D1-13)
2. Get Network Configuration (D1-15)
3. Set Ethernet SSL Request Configuration (D2-01)
4. Get Ethernet SSL Request Configuration (D2-02)

7.1.1.1. Set Network Configuration (D1-13)

The **Set Network Configuration** command sets the static network DHCP for the reader. If set static, the network configuration is saved. If set DHCP, reader will function as a DHCP client to get the network configuration from the host device.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14- Byte 13+n	Byte 19	Byte 20
Header Tag & Protocol	Command	Sub Command	Length MSB	Length LSB	Data	CRC (LSB)	CRC (MSB)
ViVOtech2/0	D1h	13h	00h	variable	See blow	Varies	Varies

Length	Description
2	Determine to set static or DHCP. Zero-terminated ASCII value. 30h: Set DHCP. 31h: Set static IP network configuration.
Variable	IP address, zero-terminated ASCII. Maximum length is 16 bytes including null terminator.
Variable	Net mask, zero-terminated ASCII. Maximum length is 16 bytes including null terminator.
Variable	Gateway, zero-terminated ASCII. Maximum length is 16 bytes including null terminator.
Variable	DNS, zero-terminated ASCII. Maximum length is 16 bytes including null terminator.

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol	Command	Status	Length MSB	Length LSB	CRC (MSB)	CRC (LSB)
ViVOtech2/0	D1h	See status code table	00h	00h	Varies	Varies

Example:
Set ethernet configuration as:

IP address: `192.168.6.99`
Net mask: `255.255.255.0`
Gateway: `192.168.6.1`
DNS: `192.168.6.17`

TX: `56 69 56 4F 74 65 63 68 32 00 D1 13 00 36 31 00 31 39 32 2E 31 36 38 2E 36 2E 39 39 00 32 35 35 2E 32 35 35 2E 32 35 35 2E 30 00 31 39 32 2E 31 36 38 2E 36 2E 31 00 31 39 32 2E 31 36 38 2E 36 2E 31 37 00 04 8B`
RX: `56 69 56 4F 74 65 63 68 32 00 D1 00 00 00 50 BA`

7.1.1.2. Get Network Configuration (D1-15)

The **Get Network Configuration** command retrieves all network configurations for the VP7225.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15	Byte 16
Header Tag & Protocol	Command	Sub Command	Length MSB	Length LSB	Data	CRC (LSB)	CRC (MSB)
ViVOtech2/0	D1h	15h	00h	01h	00	Varies	Varies

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14-Byte 19	Byte 14+n	Byte 14+n+1
Header Tag & Protocol	Command	Status	Length MSB	Length LSB	Data	CRC (MSB)	CRC (LSB)
ViVOtech2/0	D1h	See status code table	00h	variable	Data (See D1-13 command)	Varies	Varies

7.1.1.3. Set Ethernet SSL Request Configuration (D2-01, PCI only)

The **Set Ethernet SSL Request Configuration** command sets the reader's SSL-request-to-SSL-client configuration.

This command saves the server IP and port number in the client's flash memory. When the reader powers on it connects automatically to the remote server.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Bye14-13+n	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOpayV3\0	D2h	01h	variable	variable	See send data field		

Command Data Field

Length	Description
Variable	Server IP address, zero terminated ASCII. Maximum length is 16 bytes including null terminator.
2	Port number, HEX value, Big Endian.
1	00

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	CRC (MSB)	CRC (LSB)
ViVOtech2\0	D2h	See status code table	00h	00h		

Example: Server IP 192.168.6.126, port: 1443

OUT: `5669564f746563683200d20100113139322e3136382e362e3132360005a3004592`
IN: `5669564f746563683200d2000000218c`

7.1.1.4. Get Ethernet SSL Request Configuration (D2-02, PCI only)

The **Get Ethernet SSL Request Configuration** command retrieves the server's IP address and port number from flash memory.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Bye14-13+n	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOpayV3\0	D2h	02h	00	01	00		

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14-Byte 19	Byte 14+n	Byte 14+n+1
Header Tag & Protocol	Command	Status	Length MSB	Length LSB	Data	CRC (MSB)	CRC (LSB)
ViVOtech2/0	D2h	See status code table	00h	variable	Data (See D2-01 command)	Varies	Varies

Example: Server IP 192.168.6.126, port: 1443

OUT: `56 69 56 4F 74 65 63 68 32 00 D2 02 00 01 00 66 1A`
IN: `56 69 56 4F 74 65 63 68 32 00 D2 00 00 11 31 39 32 2E 31 36 38 2E 36 2E 31 32 36 00 05 A3 00 A7 F6`

Configuring BLE Settings

The section below describes configuring VP7225 BLE settings.

7.1.2. Configuring BLE with Low-Level Commands

To configure BLE settings via low-level commands, send the following commands in sequence:

1. Set Bluetooth Parameters (Name) (77-81)
2. Get Bluetooth Name (77-82)
3. Get Bluetooth Local Information (77-83)

7.1.2.1. Set Bluetooth Parameters (Name) (77-81)

The **Set Bluetooth Parameters** command sets a Bluetooth name.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOtech2\0	77h	81h	var		var		

Command Data Field

Data Field	Length (bytes)	Description
Name	Var to 26	ASCII, must end with **0x00**

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	CRC (MSB)	CRC (LSB)
ViVOtech2\0	77h	See Status Code Table	00h	00h		

7.1.2.2. Get Bluetooth Name (77-82)

The **Get Bluetooth Name** command retrieves a Bluetooth name.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOtech2\0	77h	82h	00h	00h	null		

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14 … Byte 14+n-1	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	Data	CRC (MSB)	CRC (LSB)
ViVOtech2\0	77h	See status code table	var		ASCII (<26 bytes)		

The Bluetooth name of the response data must be less than 26 bytes.

7.1.2.3. Get Bluetooth Local Information (77-83)

The **Get Bluetooth Local Information** command retrieves Bluetooth local information for the module version and Bluetooth address.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOtech2\0	77h	83h	var				

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14 … Byte 14+n-1	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	Data	CRC (MSB)	CRC (LSB)
ViVOtech2\0	77h	See status code table	00h	0Dh	See below data table		

Data Table: Get Bluetooth Local information

Data Item	Length (bytes)	Description
Event	2	Reserved
Version	4	Firmware version (BCD)
Address	6	ASCII code MAC Address (LSB)
Identify	1	0x02: CYW43455

7.2. Configuring LTE Settings

The section below describes configuring VP7225 LTE settings.

7.2.1. Configuring LTE Settings with Low-Level Commands

To configure LTE settings via low-level commands, send the following commands in sequence:

1. Cellular Switch Control (D3-01)
2. Retrieve Cellular Switch Status (D3-02)
3. Cellular Auto Connect Control (D3-03)
4. Retrieve Cellular Auto Connect Status (D3-04)
5. Configure Cellular Remote Server IP Address and Port Number (D3-07)
6. Configure Cellular Remote Server IP Address and Port Number (D3-08)
7. Configure Cellular TCP/IP Context (D3-09)
8. Retrieve Cellular TCP/IP Context (D3-0A)

7.2.1.1. Cellular Switch Control (D3-01)

The **Cellular Switch Control** command enables or disables cellular functionality. The reader saves the specified configuration in flash.

Note: This function takes effect after a device reboot.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte14	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOtech2\0	D3h	01h	00h	01h	See send data field	Variable	Variable

Command Data Field

Length	Description
1	00h: Disable cellular functionality. 01h: Enable cellular functionality. Other: Reserved.

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	CRC (MSB)	CRC (LSB)
ViVOtech2\0	D3h	See status code table	00h	00h	Variable	Variable

7.2.1.2. Retrieve Cellular Switch Status (D3-02)

The **Retrieve Cellular Switch Status** command retrieves the cellular functionality enable or disable status.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	CRC (LSB)	CRC (MSB)
ViVOpayV3\0	D3h	02h	00	00	Variable	Variable

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 14+n	Byte 14+n+1
Header Tag & Protocol	Command	Status	Length MSB	Length LSB	Data	CRC (MSB)	CRC (LSB)
ViVOtech2/0	D3h	See status code table	00h	01h	Data	Variable	Variable

Response Data Field

Length	Description
1	00h: Cellular functionality is disabled. 01h: Cellular functionality is enabled. Other: Reserved.

7.2.1.3. Cellular Auto Connect Control (D3-03)

The **Cellular Auto Connect Control** command enables or disables the reader's auto connect feature. The reader connects to the remote server automatically when it starts up. The reader saves the specified configuration in flash.

Note: This function takes effect after a device reboot.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Bye14	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOtech2\0	D3h	03h	00h	01h	See Command Data Field	Variable	Variable

Command Data Field

Length	Description
1	00h: Cellular functionality will not connect to the remote server automatically. 01h: Cellular functionality will connect to the remote server automatically. Other: Reserved.

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	CRC (MSB)	CRC (LSB)
ViVOtech2\0	D3h	See status code table	00h	00h	Variable	Variable

7.2.1.4. Retrieve Cellular Auto Connect Status (D3-04)

The **Retrieve Cellular Auto Connect Status** command retrieves the cellular functionality auto connect feature status.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	CRC (LSB)	CRC (MSB)
ViVOtech2\0	D3h	04h	00	00		

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 14+n	Byte 14+n+1
Header Tag & Protocol	Command	Status	Length MSB	Length LSB	Data	CRC (MSB)	CRC (LSB)
ViVOtech2/0	D3h	See status code table	00h	01h	Data	Variable	Variable

Response Data Field

Length	Description
1	00h: Cellular functionality will not connect to the remote server automatically. 01h: Cellular functionality will connect to the remote server automatically. Other: Reserved.

7.2.1.5. Configure Cellular Remote Server IP Address and Port Number (D3-07)

The **Configure Cellular Remote Server IP Address and Port Number** command configures the remote server IP address and port number. The reader saves the specified configuration in flash.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14 … Byte 14+n-1	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOtech2\0	D3h	07h	Variable	Variable	See Command Data Field	Variable	Variable

Command Data Field

Length	Description
Variable	Server IP address, zero terminated ASCII. Maximum length is 16 bytes including null terminator
2	Port number, HEX value, Little Endian

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	CRC (MSB)	CRC (LSB)
ViVOtech2\0	D3h	See status code table	00h	00h	Variable	Variable

Example:

```
Server IP: 180.169.129.58, Port: 1555(0x1306)
```

TX: `56 69 56 4F 74 65 63 68 32 00 D3 07 00 11 31 38 30 2E 31 36 39 2E 31 32 39 2E 35 38 00 13 06 0C 0A`

RX: `56 69 56 4F 74 65 63 68 32 00 D3 00 00 00 57 38`

7.2.1.6. Retrieve Cellular Remote Server IP Address and Port Number (D3-08)

The **Retrieve Cellular Remote Server IP Address and Port Number** command retrieves the remote server IP address and port number.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	CRC (LSB)	CRC (MSB)
ViVOtech2\0	D3h	08h	00	00	Variable	Variable

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14-Byte 14+n-1	Byte 14+n	Byte 14+n+1
Header Tag & Protocol	Command	Status	Length MSB	Length LSB	Data	CRC (MSB)	CRC (LSB)
ViVOtech2/0	D3h	See status code table	00h	Variable	See Response Data Field	Variable	Variable

Response Data Field

Length	Description
Variable	Server IP address, zero terminated ASCII. Maximum length is 16 bytes including null terminator
2	Port number, HEX value, Little Endian

Example:

```
Server IP: 180.169.129.58, Port: 1555(0x1306)
```

TX: `56 69 56 4F 74 65 63 68 32 00 D3 08 00 00 99 FE`

RX: `56 69 56 4F 74 65 63 68 32 00 D3 00 00 12 31 38 30 2E 31 36 39 2E 31 32 39 2E 35 38 00 13 06 00 D6 CA`

7.2.1.7. Configure Cellular TCP/IP Context (D3-09)

The **Configure Cellular TCP/IP Context** command is used for configuring the parameters of a TCP/IP Context. The specified configuration is saved in flash.

Note:

1. If username and password are not empty, the **authentication** parameter should not be **0**.
2. **Context ID** currently only supports 01h.
3. **Context Type** currently only supports 01h.
4. If the response is an error, it means the LTE module cannot update the internal parameters completely as requested, or some other error happened. In this case, the LTE module's internal parameters may be partially changed. Before the error returns, the firmware will try to revert the parameters back to their original state.
5. This function takes effect after a device reboot.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14-Byte 14+n-1	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOtech2\0	D3h	09h	Varies	Variable	See below	Variable	Variable

Command Data Format

Item	Description
Context ID	**01h** 02h **…** 10h
Context Type	**01h: IPv4** 02h: IPv6 03h: IPv4v6
APN	Access Point Name. ASCII, must end with 0x00. The maximum length is 63 bytes including null terminator.
Username	Username, provided by the ISP. ASCII, must end with 0x00. The maximum length is 63 bytes including null terminator.
Password	Password of the target AP, provided by the ISP. ASCII, must end with 0x00. The maximum length is 63 bytes including null terminator.
Authentication	**00h: None** 01h: PAP 02h: CHAP 03h: PAP or CHAP

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	CRC (MSB)	CRC (LSB)
ViVOtech2\0	D3h	See status code table	00h	00h	Variable	Variable

Example:

```
Set LTE APN configuration as:
Context ID: 1
Context Type: 1
APN: "IDTech"
Username: ""
Password: ""
Authentication: 0
```

7.2.1.8. Retrieve Cellular TCP/IP Context (D3-0A)

The **Retrieve Cellular TCP/IP Context** command retrieves the parameters of a TCP/IP context.

Command Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	CRC (LSB)	CRC (MSB)
ViVOtech2\0	D3h	0Ah	00h	00h	Variable	Variable

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte14… 14+n-1	Byte 14+n	Byte 15+n
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	Data	CRC (MSB)	CRC (LSB)
ViVOtech2\0	D3h	See status code table	Variable	Variable	Refer to D3-09 Command Data Format	Variable	Variable

7.3. Configuring System Settings

The section below describes configuring VP7225 backlight and audio volume settings.

7.3.1. Configuring System Settings with Low-Level Commands

To configure system settings via low-level commands, send the following commands to the reader (they can be sent independently of each other):

- Set Backlight (83-2F)
- Set/Get Audio Volume (61-32)
- Get System Info (09-15)

7.3.1.1. Set Backlight (83-2F)

This command sets the VP7225's backlight level. If the level is set to >100%, the command will be rejected; if the level is set to <10%, backlight level will be set to 10%.

Command Frames

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14-Byte17	Byte 18	Byte 19
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOpayV2\0	83	2F	00	04	See below		

Data Format

Item	Length (bytes)	Description
Status	1 byte	0: backlight off 1: backlight on
Brightness	1 byte	0-100
Reserved	2 bytes	Fixed 0x00, 0x00

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	CRC (MSB)	CRC (LSB)
ViVOtech2\0	83h	00h	00h	00h		

Example:

- Set Backlight 100:

  TX: `56 69 56 4F 74 65 63 68 32 00 83 2F 00 04 01 32 00 00 1E 33`

  RX: `56 69 56 4F 74 65 63 68 32 00 83 00 00 00 22 03`

7.3.1.2. Set/Get Audio Volume (61-32)

The **Set/Get Audio Volume** command sets and retrieves the reader's audio volume.

Command Frame (Set Volume)

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Bye14	Byte 15	Byte 16
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOpayV2\0	61h	32h	00h	01h	See below		

Data Format

Item	Length (bytes)	Description
Set Volume Percent	1	0 - 100 (00h - 14h) in 5% increments.

Response Frame (Set Volume)

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	CRC (MSB)	CRC (LSB)
ViVOtech2\0	61h	See status code table	00h	00h		

Command Frame (Get Volume)

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	CRC (LSB)	CRC (MSB)
ViVOpayV2\0	61h	32h	00h	00h		

Response Frame (Get Volume)

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Bye14	Byte 15	Byte 16
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	Data	CRC (MSB)	CRC (LSB)
ViVOtech2\0	61h	See status code table	00h	01h	See Below		

Data Format

Item	Length (bytes)	Description
Get Volume Percent	1	0-100 (00h - 14h) in 5% increments.

Get System Info (09-15)

The **Get System Info** command retrieves system info for individually set items or an entire system. When retrieving all system info, this command returns only available information.

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15	Byte 16
Header Tag & Protocol Version	Command	Sub-Command	Data Length (MSB)	Data Length (LSB)	Data	CRC (LSB)	CRC (MSB)
ViVOpayV2\0	09h	15h	00h	01h	0Dh		

Response Frame

Byte 0-9	Byte 10	Byte 11	Byte 12	Byte 13	Bye14 - 26	Byte 27	Byte 28
Header Tag & Protocol Version	Command	Status Code	Data Length (MSB)	Data Length (LSB)	Data	CRC (MSB)	CRC (LSB)
ViVOtech2\0	09h	See status code table	00h	0Dh	ASCII string		

Example:

- Get HWID:

  TX: `56 69 56 4F 74 65 63 68 32 00 09 15 00 01 0D 26 20`

  RX: `56 69 56 4F 74 65 63 68 32 00 09 00 00 0D 0D 0B 48 31 38 34 2D 38 30 30 30 30 42 52 AB`

  Response PCI-ID: `0D 0B 48 31 38 34 2D 38 30 30 30 30 42` (H184-80000B)

8. 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 interfering 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.

9. Upgrading Firmware

Use the USB interface to upgrade VP7225 firmware. Contact your ID TECH representative to obtain the necessary software.

9.1. Preparation

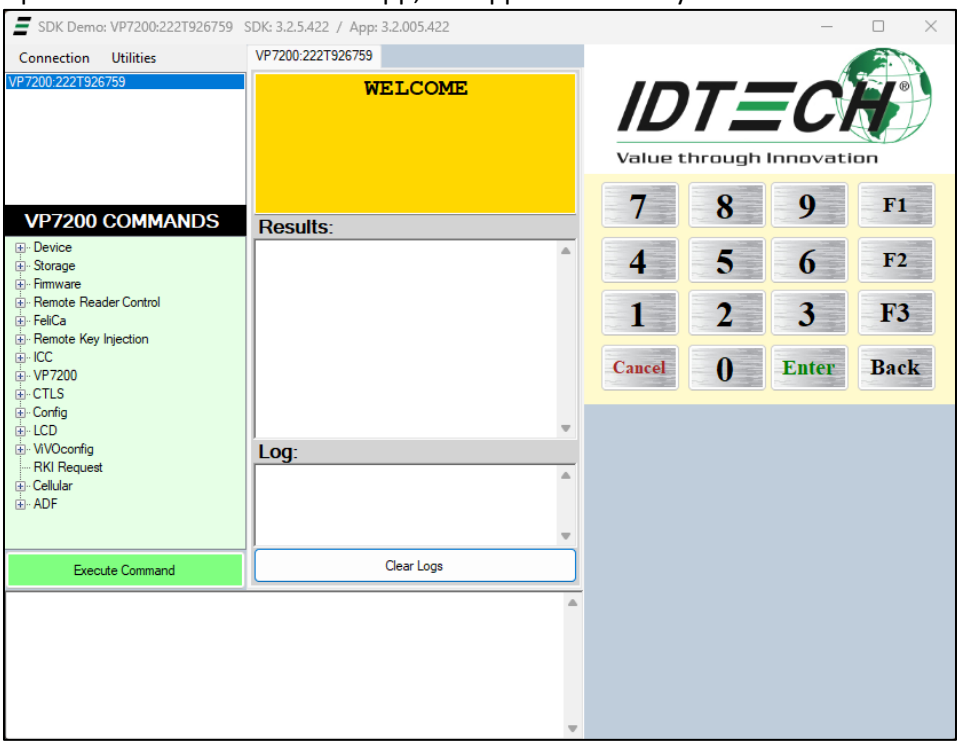
To update the new firmware, you will need:

- PC with an available USB port with the ID TECH Universal SDK Demo application installed.
- A VP7225 reader with a Multi Cable (use the USB port labeled **Data**).
- Firmware files extracted to your computer; contact your ID TECH representative to receive the following:
  - K81 Bootloader, Firmware, and Device Tree files
  - RT1050 Bootloader, Firmware, and Device Tree files

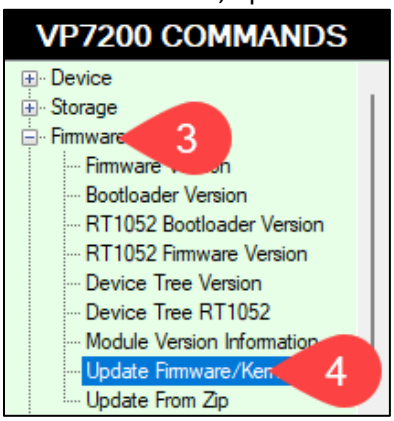
Note: All RT1050 Firmware, and Device Tree files have **EXT** in their filenames; the RT1050 bootloader filename contains **RT1050**. K81 files will not update the RT1050 processor. Likewise, RT1050 files will not update the K81 processor.

9.2. Loading Files onto the Reader

1. Check and confirm the device is correctly connected to the power source and USB connection.
2. Open the Universal SDK Demo app; the app automatically scans for devices.



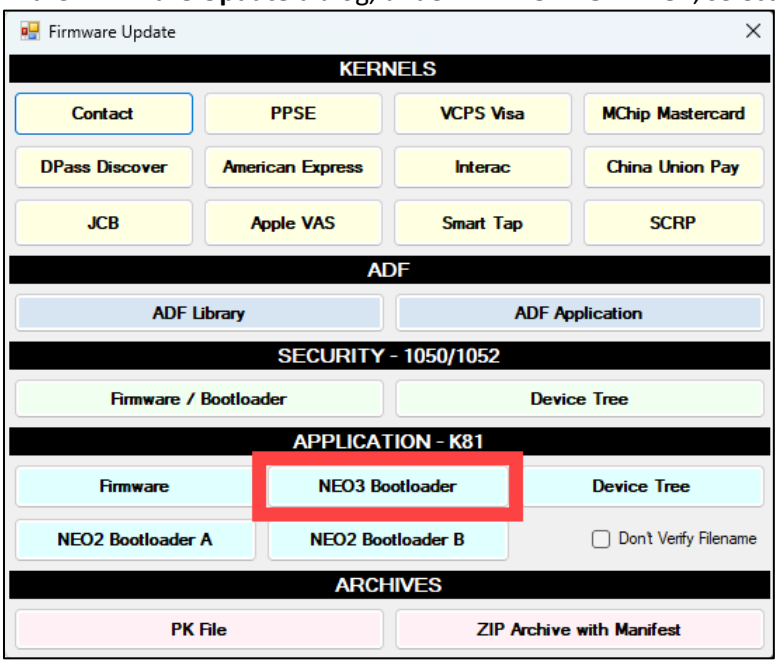
3. Under **Commands**, open the **Firmware** tree.



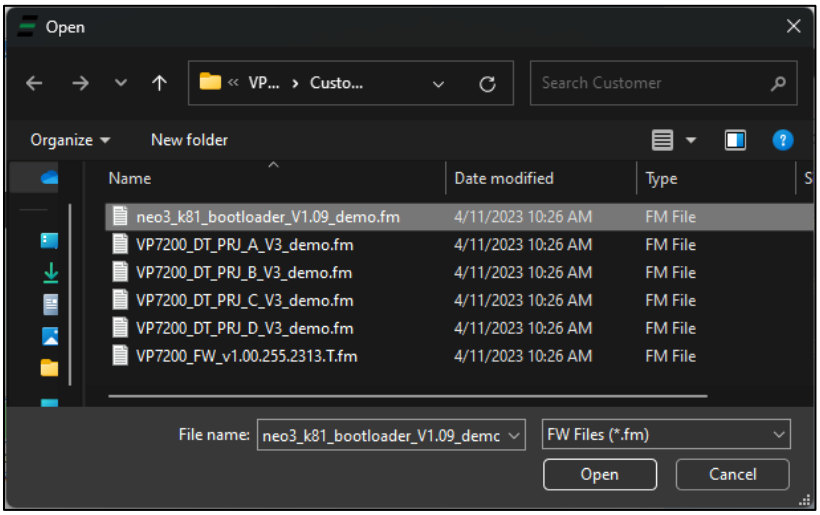
4. Select **Update Firmware/Kernels**, then select **Execute Commands**; the USDK Demo app opens a **Firmware Update** dialog.

9.3. Updating K81 Bootloader

1. In the **Firmware Update** dialog, under **APPLICATION - K81**, select **NEO3 Bootloader**.



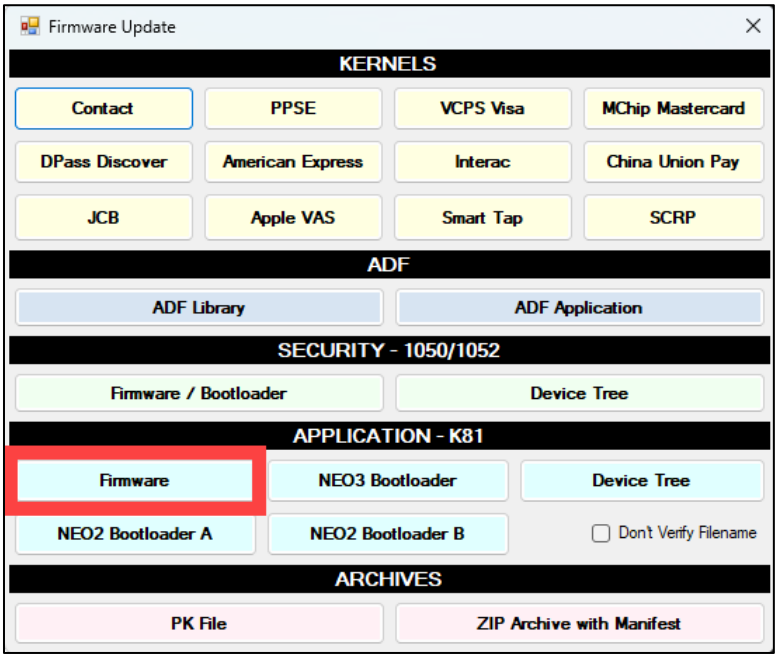
2. Select the K81 Bootloader file from the extracted location and select **Open**.



3. The Universal SDK Demo app will update the reader's K81 firmware; this process may take several minutes.
4. When the process is complete, the **Results** pane displays **Firmware Update Successful** and **Firmware Update Process Completed with Success**.

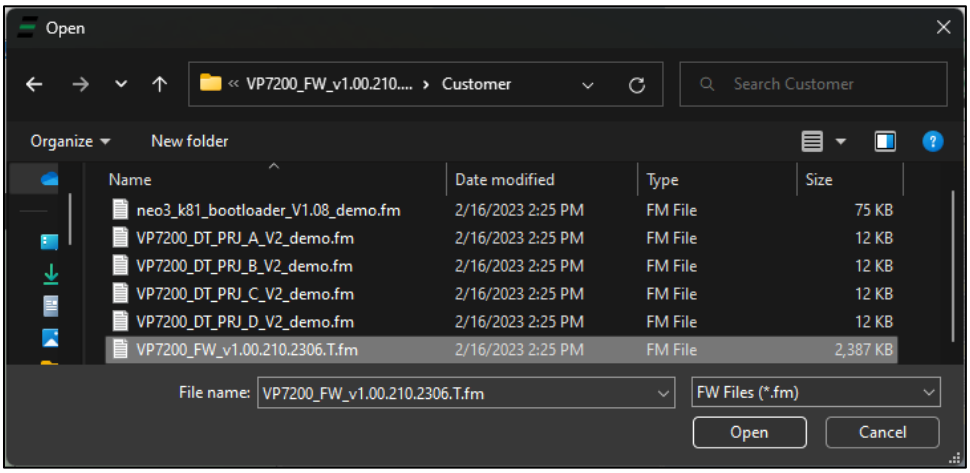
9.4. Updating K81 Firmware

1. In the **Firmware Update** dialog, under **APPLICATION - K81**, select **Firmware**.



2. Select the **VP7225_FW** file and select **Open**.

Note: Make sure to use the correct type of firmware file for your device:
- **Production** devices require firmware files ending with **.S**
- **Demo** devices require firmware files ending with **.T**



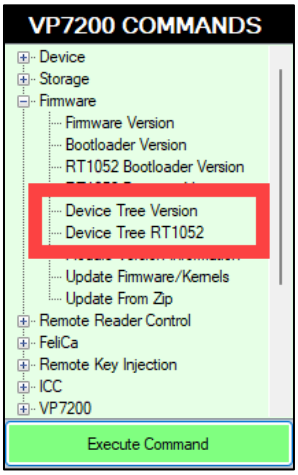
3. The Universal SDK Demo app will update the reader's firmware; this process may take several minutes.
4. When the process is complete, the **Results** pane displays **Firmware Update Successful** and **Firmware Update Process Completed with Success**.

9.5. Updating K81 Device Tree Firmware

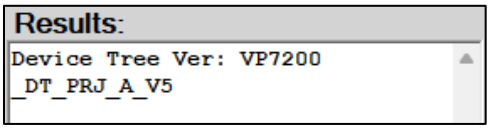
The section below provides steps for updating the K81 Device Tree firmware.

9.5.1. Determining the Correct Device Tree Firmware to Use

Note that VP7225 readers use different **Device Tree versions** depending on their model numbers. The Universal SDK Demo app provides an easy way to tell the reader's Device Tree version:



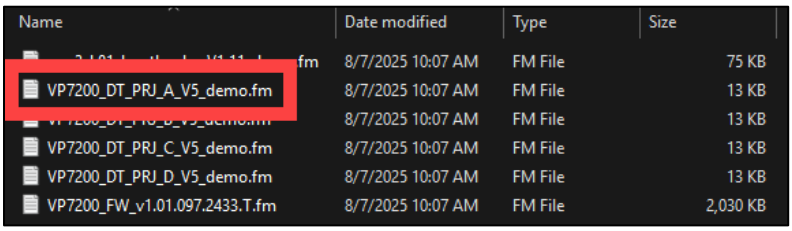
Select the appropriate command (**Device Tree Version** for K81 and **Device Tree RT1052** for RT1050) and select **Execute Command**. The Device Tree version prints in the **Results** pane:



Device Tree versions can also be determined by model numbers, as listed in the table below:

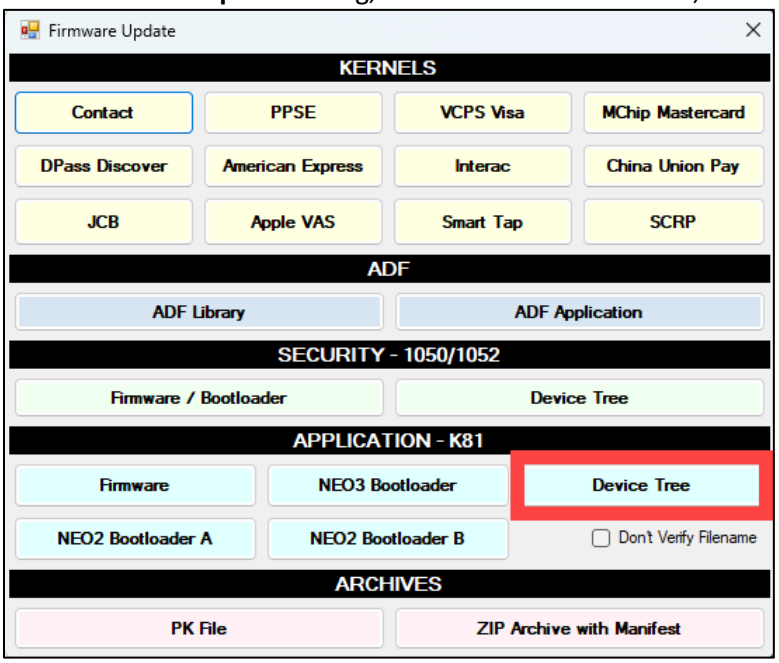
Model	ID72-818D ID72-818	ID72-838D ID72-838	ID72-868D ID72-868	ID72-808D ID72-808	ID72-000D ID72-000
Secure DT model	T or S	T or S	T or S	T or Z	T or S
Project DT model (RT1050)	A	A	B	C	D
Project DT model (K81)	A	A	B	C	D

For example, referencing the table above, a reader with a model number of **ID72-818** (or ID72-818D for demo readers) uses version A in the Device Tree. Firmware files have these project version designations listed in their file names as provided in firmware updates:

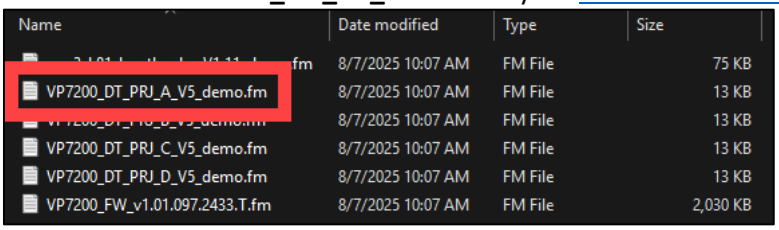


9.5.2. Updating the Device Tree Firmware

1. In the **Firmware Update** dialog, under **APPLICATION - K81**, select **Device Tree**.



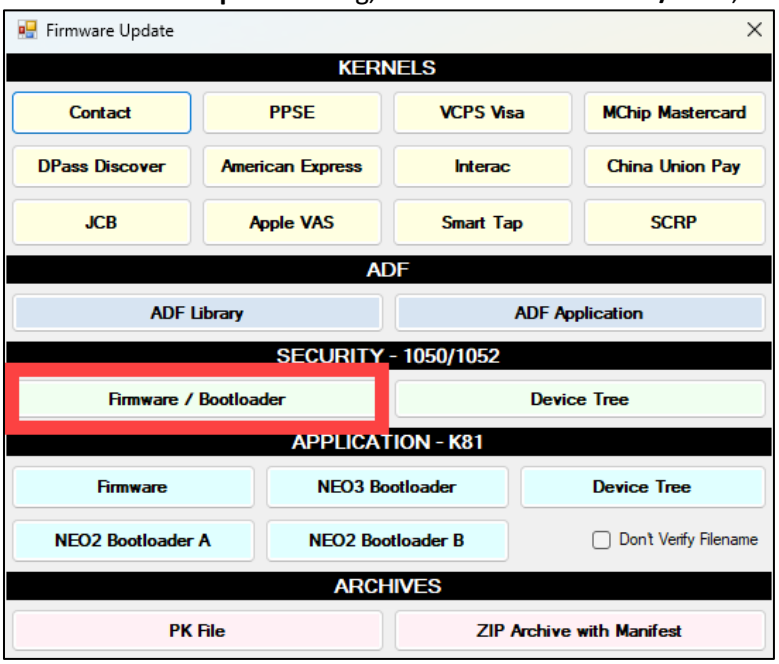
2. Select the K81 **VP7225_Ext_DT_PRJ** file for your VP7225's model number and select **Open**.



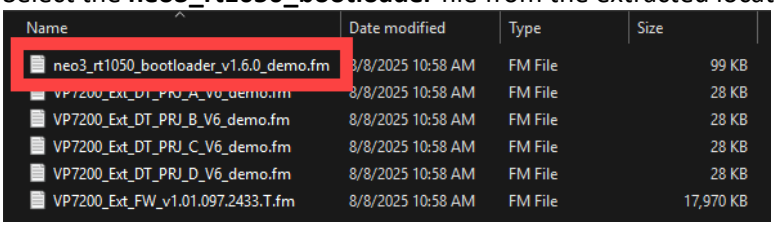
3. The Universal SDK Demo app will update the reader's firmware; this process may take several minutes.
4. When the process is complete, the **Results** pane displays **Firmware Update Successful** and **Firmware Update Process Completed with Success**.

9.6. Updating RT1050 Bootloader

1. In the **Firmware Update** dialog, under **SECURITY - 1050/1052**, select **Firmware / Bootloader**.



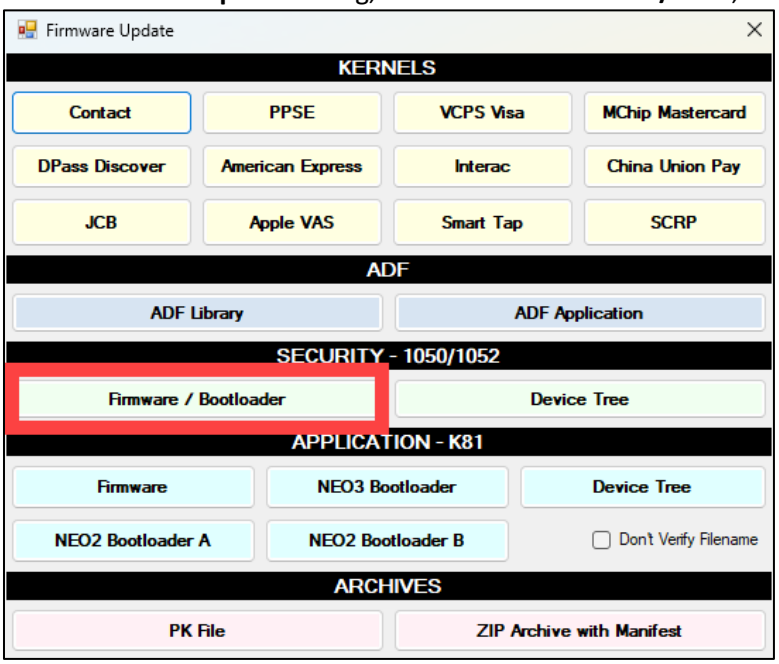
2. Select the **neo3_rt1050_bootloader** file from the extracted location and select **Open**.



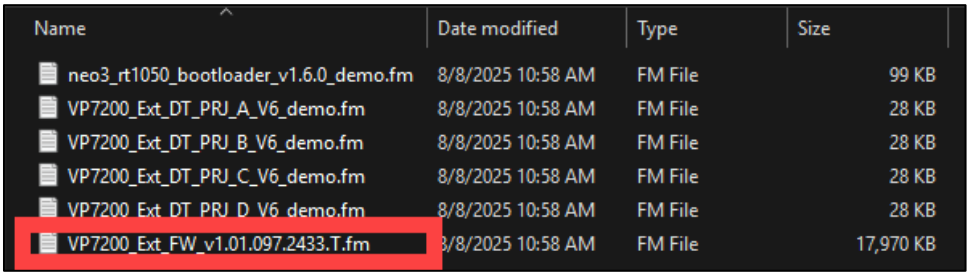
3. Select the **neo3_rt1050_bootloader** file and select **Open**.
4. The Universal SDK Demo app will update the reader's RT1050 bootloader; this process may take several minutes.
5. When the process is complete, the **Results** pane displays **Firmware Update Successful** and **Firmware Update Process Completed with Success**.

9.7. Updating RT1050 Firmware

1. In the **Firmware Update** dialog, under **SECURITY - 1050/1052**, select **Firmware / Bootloader**.



2. Select the **VP7225_Ext_FW** file and select **Open**.



Name	Date modified	Type	Size
neo3_rt1050_bootloader_v1.6.0_demo.fm	8/8/2025 10:58 AM	FM File	99 KB
VP7200_Ext_DT_PRJ_A_V6_demo.fm	8/8/2025 10:58 AM	FM File	28 KB
VP7200_Ext_DT_PRJ_B_V6_demo.fm	8/8/2025 10:58 AM	FM File	28 KB
VP7200_Ext_DT_PRJ_C_V6_demo.fm	8/8/2025 10:58 AM	FM File	28 KB
VP7200_Ext_DT_PRJ_D_V6_demo.fm	8/8/2025 10:58 AM	FM File	28 KB
VP7200_Ext_FW_v1.01.097.2433.T.fm	8/8/2025 10:58 AM	FM File	17,970 KB

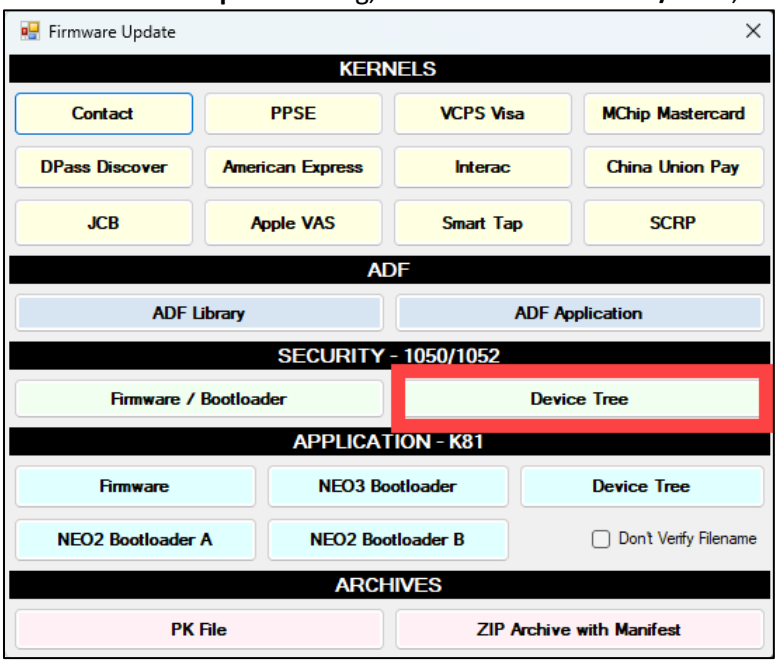
Note: Make sure to use the correct type of firmware file for your device:

- **RT1050** files contain **Ext** as part of their file name
- **Production** devices require firmware files ending with **.S**
- **Demo** devices require firmware files ending with **.T**

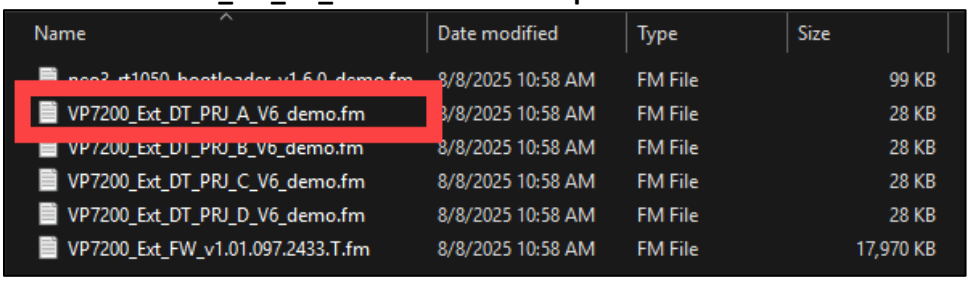
3. The Universal SDK Demo app will update the reader's firmware; this process may take several minutes.
4. When the process is complete, the **Results** pane displays **Firmware Update Successful** and **Firmware Update Process Completed with Success**.

9.8. Updating RT1050 Device Tree Firmware

3. In the **Firmware Update** dialog, under **SECURITY - 1050/1052**, select **Device Tree**.



4. Select the **VP7225_Ext_DT_PRJ** file and select **Open**.



Note: Make sure to use the correct device tree firmware for your reader; see the Determining the Correct Device Tree Firmware to Use section above for assistance.

5. The Universal SDK Demo app will update the reader's device tree; this process may take several minutes.
6. When the process is complete, the **Results** pane displays **Firmware Update Successful** and **Firmware Update Process Completed with Success**.

10. Decommissioning SRED Devices

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

11. Troubleshooting

VP7225 readers are reliable and easy to troubleshoot. The components that may require troubleshooting include the power supply, the reader itself, and the serial cable. ***If you are unable to resolve the problem, contact support@idtechproducts.com (sending an e-mail to this address will automatically open a support ticket).***

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 VP7225 reader. • Make sure that the correct polarity is observed. • For more information, refer to the Input Voltage under the Electrical specification section. • Replace the VP7225.
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 VP7225.
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 VP7225.
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 indicates "Send Command failed"	Bootloader firmware in device is destroyed	• contact your local support representative to reload manufacture firmware

11.1. LTE Diagnostic Troubleshooting

The section below provides steps to self-diagnose VP7225 LTE issues. Integrators performing diagnostics can send these commands independently of each other. When performing diagnostics, power on the VP7225 and wait thirty to sixty seconds to allow boot-up to complete before sending any commands.

For details on the commands used below, see the *NEO 2 Interface Developer's Guide*.

11.1.1. Step 1: Check the Firmware and Device Tree Versions

Send the following commands to the reader to check version numbers:

- **Get RT1050 Firmware Version (29-80)**
  - Expected response format: `VP7225 FW v1.01.243.2535.T RT1052`
- **Get Version: Protocol 2 (29-00)**
  - Expected response format: `VP7225 EXT FW v1.01.243.2535.T`
- **Get Device Tree Version (29-0B-01)**
  - Expected response format: `VP7225_DT_PRJ_B_V10`
- **Get Device Tree Version (29-0B-11)**
  - Expected response format: `VP7225_Ext_DT_PRJ_B_V10`

11.1.2. Step 2: Check the Cellular Configuration

Send the following commands to the reader to verify the cellular connection is enabled:

- **Retrieve Cellular Switch Status (D3-02)**
  - Expected response: `01`
- **Retrieve Cellular Auto Connect Status (D3-04)** (Optional):
  - Expected response: `00`

11.1.3. Step 3: Check the LTE Working Mode

Send the following commands to verify that airplane mode is turned off (**00**):

- **Get Airplane Mode (D3-12)**
  - Expected response: `00`

11.1.4. Step 4: Check the Current SIM Card Slot Settings

Send the following command to verify the position the SIM card should be in:

- **Retrieve Dual (U)SIM Card Slot Selection (D3-0C)**
    - Expected response: `01` (indicating the SIM card is in slot 1)

12. Avoiding Device Tamper Issues

All ID TECH PCI-certified devices integrate tamper switches and disable the card reader when it has been compromised. The section below describes best practices when handling PCI-secure devices to help prevent triggering the tamper switches.

Note that following these guidelines does not guarantee a device will not tamper if inadvertently mishandled or breached. User-induced tamper events will incur repair fees, key injection fees, and shipping both to and from ID TECH, regardless of warranty status.

12.1. Device Handling Best Practices

- Do not excessively shake the reader.
- Do not drop the reader.
- Do not strike the reader.
- Do not attempt to twist or cause any torsion to the reader.
- Do not expose the reader to extreme heat or cold.
- Do not intentionally subject the reader to electrical shocks.
- Do not submerge the reader in liquids of any type for extended time.
- Do not attempt to open the reader.
- Do not provide power to the reader until all connectors are plugged into the unit.
- Check the device manual to ensure the reader receives the correct power voltage. Providing power to wires and connectors before plugging them into the device may cause power spikes that can trigger a tamper event.
- When working with or installing the reader, minimize exposure to static electricity.

12.2. ID TECH Support

In the event the reader does tamper when under warranty, report the tampered device to ID TECH to troubleshoot and, if needed, be returned to ID TECH for analysis. Contact ID TECH support at support@idtechproducts.com for assistance.

13. For More Information

- To learn more about the VP7225 and other ID TECH products, visit the ID TECH Knowledge Base.
- Visit us online at http://idtechproducts.com.
- Find more Tech Support resources at the ID TECH Tech Support home page.