USER MANUAL

Vehicle Access Control / RFID Parking System

UHF Long-Range Reader Installation, Configuration and Commissioning Guide

Fresh USA, Inc. - Updated Installation Manual	
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Installer note: This manual is written for qualified installers and property managers. Always follow local electrical code, gate-operator safety requirements and the specific wiring diagram printed on the device label.

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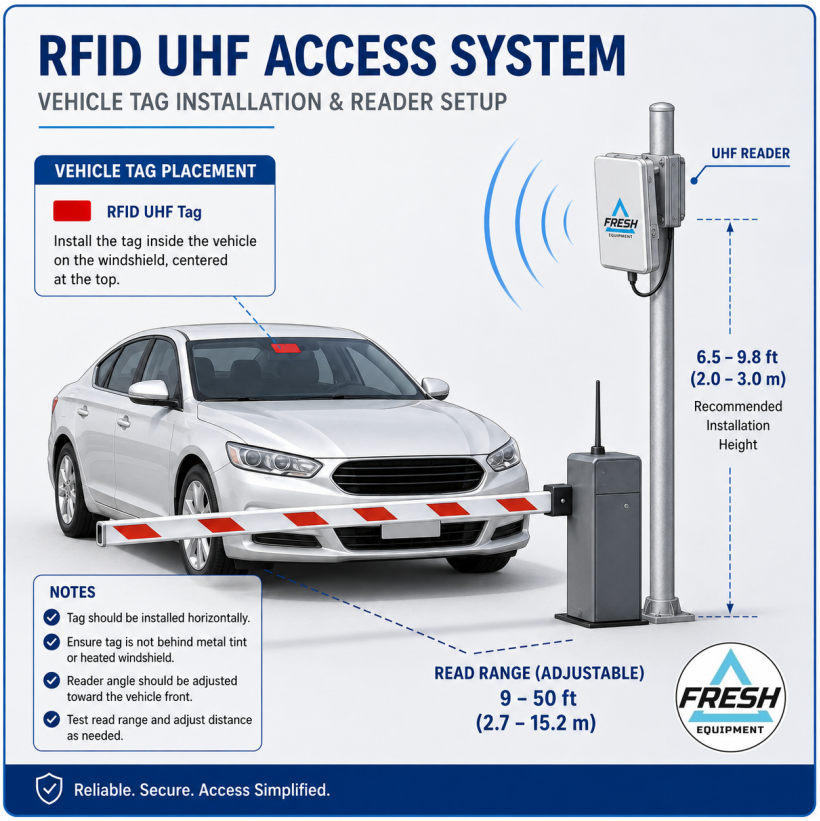


1. Purpose and Supported Applications

This manual explains how to install, wire, configure and test a Fresh USA UHF long-range RFID vehicle access control system. It replaces the older RFID Parking manual format with clearer installation steps, updated Fresh USA contact information, and corrected technical notes for modern Fresh USA access-control deployments.

The system is designed to identify authorized UHF RFID credentials at a gate, barrier, garage door, security entrance or controlled vehicle lane. After a valid credential is detected, the reader can trigger a gate controller by relay, send Wiegand data to an access controller, or communicate with Fresh USA software over TCP/IP or serial connection.

Typical use cases

- Residential communities, apartment buildings, HOAs and retirement buildings that need secure garage or gate access.
- Commercial parking lots, employee parking areas, warehouses and industrial yards.
- Gated properties, schools, municipalities, fleet yards and construction sites.
- Any site that needs convenient, contactless vehicle authorization without requiring the driver to stop and hand-scan a card.

Important distinction: A vehicle access system controls permission to open a gate or door. It does not replace required vehicle-safety devices such as loop detectors, photo eyes, anti-smash radar sensors, emergency release devices, or gate-operator safety settings.

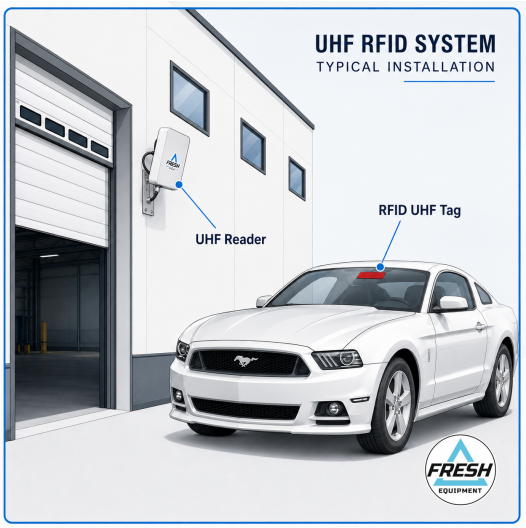
2. System Overview

A typical Fresh USA vehicle access control installation includes a UHF RFID reader, a UHF credential installed on or inside the vehicle, a gate or door controller, and optional Fresh USA access-control software for centralized management. The reader creates a directional RF reading zone. When a valid tag enters the zone, the system authorizes access according to the selected operating mode.

Basic access sequence

1. A vehicle approaches the controlled lane at a safe speed.
2. The UHF reader detects the credential within the tuned reading area.
3. The reader or Fresh USA software checks whether the credential is authorized.
4. If access is allowed, the reader sends a relay pulse, Wiegand signal, or software command to the gate controller.
5. The gate, garage door, barrier arm, turnstile, or other access device opens according to its own controller logic and safety devices.

Fresh USA UHF Vehicle Access Control - Typical Architecture



3. Standalone vs. Software-Managed Operation

Fresh USA can support two practical installation approaches. The correct choice depends on the number of users, the number of access points, reporting needs and how often credentials must be added or removed.

Standalone Operation vs. Software-Managed Operation

Standalone System

Best for simple gates, garages and small sites where the reader can validate allowed credentials locally.

- No PC required for routine access
- Reader stores authorized credential data
- Fast installation and simple daily use
- No Internet dependency for routine opening
- Limited central reporting

Software-Managed System

Best for multi-gate sites, residential complexes, commercial properties, reporting and event history.

- PC software manages users and permissions
- Event logs and reporting
- Multiple readers and access points
- Easier administration for many residents/users
- Requires software setup, database and reader licenses

Feature	Standalone System	Software-Managed System
PC required for routine access	No. The reader validates credentials locally after configuration.	Yes, for centralized management and event logging when the system is operated through software.
Best for	Simple gates, garages and smaller properties.	Residential complexes, commercial properties, multiple readers, reporting and controlled permissions.
Internet dependency	No Internet required for routine access.	Can operate locally. Internet is not required for routine local validation unless remote access or external services are used.
Credential management	Credentials are enrolled into the reader or assigned using a configuration tool.	Users, cards, permissions and logs are managed in Fresh USA software.
Event logs and reports	Limited or not centralized, depending on configuration.	Available in the software database.
Installation complexity	Simpler and faster.	Requires PC, network/serial setup, software, database and reader configuration.

Configuration note: Connecting a reader to software may change how the reader operates. If a reader was previously used as standalone and then connected to software, verify or reconfigure standalone settings before returning it to standalone operation.

4. Standard Components and Optional Accessories

Typical standard components

- Fresh USA UHF long-range RFID reader with integrated antenna.
- Mounting bracket and hardware supplied with the reader.
- DC power supply or model-specific power option.
- UHF RFID vehicle credentials, such as windshield tags, cards, card holders, or other approved UHF tags.
- Reader configuration software or Fresh USA access-control software, depending on the selected mode.

Common optional accessories

- F-02 RFID tag writer/encoder for adding or preparing additional UHF credentials where applicable.
- Windshield card holders with suction cups when a common card must be used for vehicle gates and pedestrian doors.
- Anti-metal UHF tags for equipment, metal-mounted objects or special vehicle surfaces.
- Barrier gate anti-smashing radar sensor or other vehicle-presence safety devices.
- Network switch, Ethernet cabling, PoE equipment only when the supplied reader model supports PoE, and a dedicated PC for software-managed installations.

Credential flexibility: Fresh USA can supply a common RFID credential scenario where the same card can be used for garage doors, barrier gates, office doors, residential complex doors and other access points. Permissions can still be limited by gate, door or access point.

5. Technical Specifications

The values below are typical for Fresh USA UHF long-range vehicle access readers and for the reader family shown in the original RFID Parking manual. Always confirm the exact product label, invoice, data sheet and regional frequency configuration supplied for the installed unit.

Item	Typical Specification / Corrected Note
Frequency range	USA: 902-928 MHz UHF. Other regions may use 865-868 MHz or a regional configuration. Use only legally permitted frequencies for the country of installation.
Protocol	ISO 18000-6C / EPC Gen2 UHF RFID.
Integrated antenna	Directional UHF antenna, commonly around 12 dBi depending on model.
RF output power	Typically adjustable from 0 to 30 dBm by configuration software. Tune only as high as needed for reliable reads.
Read distance	Model, tag and site dependent. Typical vehicle access range can be approximately 16-50 ft under suitable conditions. Fresh USA F-920 class readers are commonly used up to approximately 26 ft; higher-range models may support longer range.
Communication	TCP/IP, RS232, RS485 and/or Wiegand depending on model. Some variants may support WiFi or PoE. Do not assume WiFi or PoE unless supplied for that unit.
Relay output	Dry contact relay output for gate/door trigger. Use NO and COM for a standard normally-open open command unless the gate controller requires another input type.
Power input	Commonly DC 7.5-12 V, 3 A, or the specific rating printed on the device label. Use only the supplied or approved power supply.
Operating temperature	Outdoor operation is supported by the device enclosure rating and model. Confirm the exact model rating before installation in extreme weather.
Mounting	Pole, wall, bracket or horizontal-arm mounting. Aim the reader toward the expected credential path and away from adjacent lanes.

Range caution: Longer range is not always better. Excess RF power or a wide reading zone can read vehicles in the wrong lane. Tune the reader for the smallest reliable zone for the intended access point.

6. Before You Install

Complete the site survey before mounting the reader. Good planning prevents false reads, weak reads and repeated service calls.

Site survey checklist

- Identify the lane direction, normal stopping point, gate/barrier opening point and safe vehicle speed.
- Confirm whether the system will operate standalone, through an existing controller by Wiegand, or through Fresh USA software.
- Confirm the controller input type: dry-contact open input, Wiegand input, TCP/IP, RS232/RS485, or another supported interface.
- Confirm power availability at the reader location. If PoE is planned, verify that the exact reader supports PoE.
- Plan Ethernet cable length. Standard Ethernet cable length is up to 328 ft (100 m) between active network devices.
- Check for metal structures, mesh fencing, signs, heated windshields, reflective glass and adjacent lanes that may affect reading.
- Plan safety devices such as loops, photo eyes or anti-smash radar according to the gate operator requirements.
- Prepare a laptop, configuration utility, test credentials, multimeter and basic hand tools.

Recommended installation workflow

1. Mount the reader temporarily or loosely enough to adjust the angle.

2. Connect power and communication only after wiring has been verified.

3. Configure network or serial communication.

4. Set RF power to a moderate starting level.

5. Test tag detection with the vehicle in the real approach path.

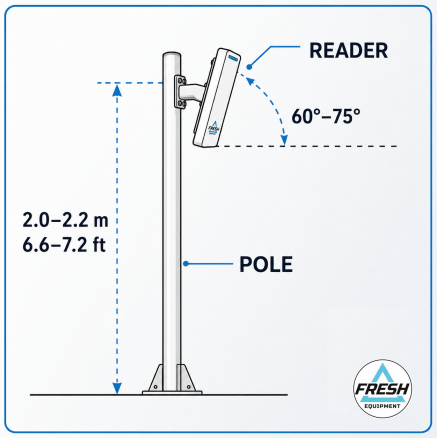
6. Adjust the reader angle and RF power until reads are reliable only in the desired zone.

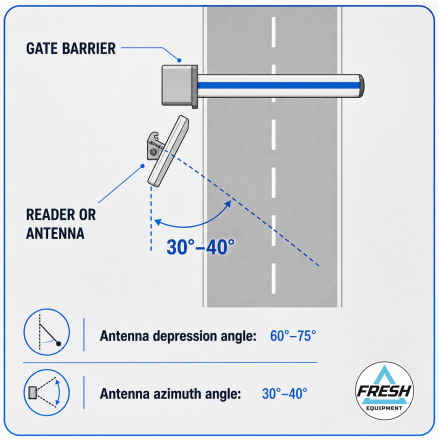
7. Connect the relay or Wiegand output to the gate controller.

8. Perform final commissioning tests and record the final settings.

7. Mounting and Aiming the Reader

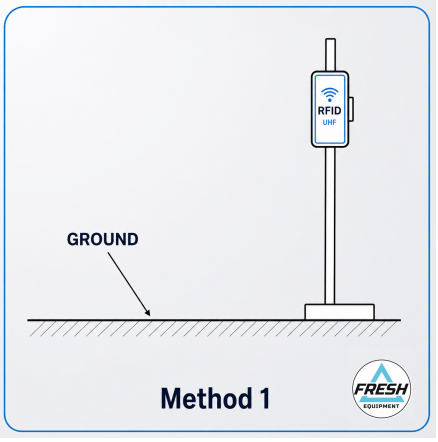
The reader must be aimed at the credential path, not simply at the road. The objective is to create a reliable read before the vehicle reaches the gate, while avoiding reads from other lanes or parked vehicles.

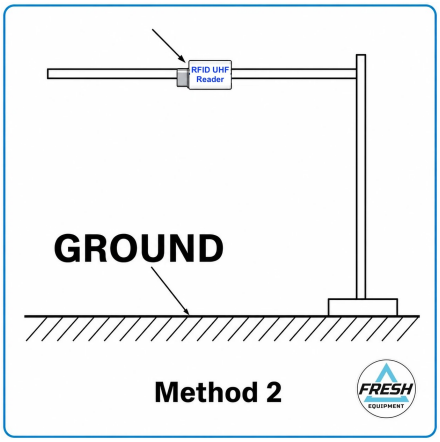


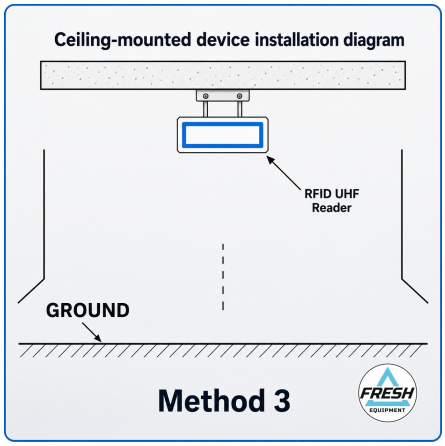


Mounting recommendations

- Install the reader close to the gate line when a near-gate trigger is required. A common target is within approximately 3 ft (1 m) of the gate/barrier line, when site geometry allows.
- Keep a clear line of sight between the reader and the tag path. Avoid metal obstructions directly in front of the reader.
- Typical reader height for passenger vehicles is often around 6.5-8 ft, then adjusted on site. The older manual also shows higher horizontal-arm style mounting; use only when the site requires it and after testing.
- Start with a downward tilt of about 60-75 degrees from the horizontal reference and an azimuth angle of about 30-40 degrees toward the incoming vehicle path. Final settings must be tuned on site.
- Use stainless or outdoor-rated mounting hardware in exterior installations.
- Tighten the bracket only after the read zone is verified.





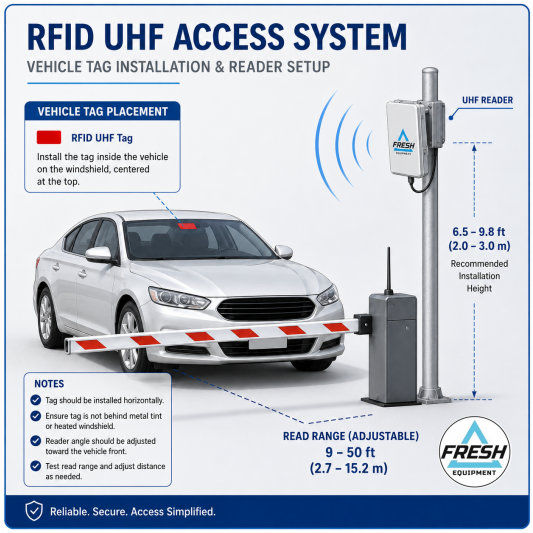


Mounting methods

Method	Description	When to Use
Vertical pole / side mount	Reader is mounted on a pole or wall near the lane and angled toward the windshield tag path.	Most simple gates, garages and residential lanes.
Horizontal arm / overhead approach	Reader is mounted on an arm or overhead support and aimed downward into the approach zone.	Wider lanes, special vehicle paths, or sites where side mounting is not practical.
Wall mount near garage entrance	Reader is mounted on a wall near the garage or gate opening.	Parking garages, restricted vehicle entrances and compact residential installations.

8. RFID Tag and Credential Placement

Tag placement has a major effect on range and reliability. Use Fresh USA-supplied or approved UHF credentials for the reader frequency and application.



Windshield tags and card holders

- Place windshield tags or card holders in a consistent windshield location for all vehicles.
- Test the selected location before final sticker placement, especially with heated windshields, metalized tint or heavy defroster lines.
- For a removable solution, use a card inserted into a windshield card holder with suction cups. This is useful when the same card is also used for pedestrian doors or other access points.
- Do not place a standard UHF sticker directly on metal. Use an anti-metal tag when mounting to metal surfaces.
- Avoid placing multiple UHF credentials very close together in the same vehicle unless the system is designed to handle that scenario.

Tag reading best practices

- Test the vehicle from the actual driving direction and normal stopping point.
- Test different vehicle types if the site includes trucks, vans, cars and SUVs.
- Adjust RF power and reader angle so the tag reads reliably before the gate, but not from unintended areas.
- Use the reader duplicate-read or valid-time setting to avoid repeated triggering while the same tag remains in the reading zone.
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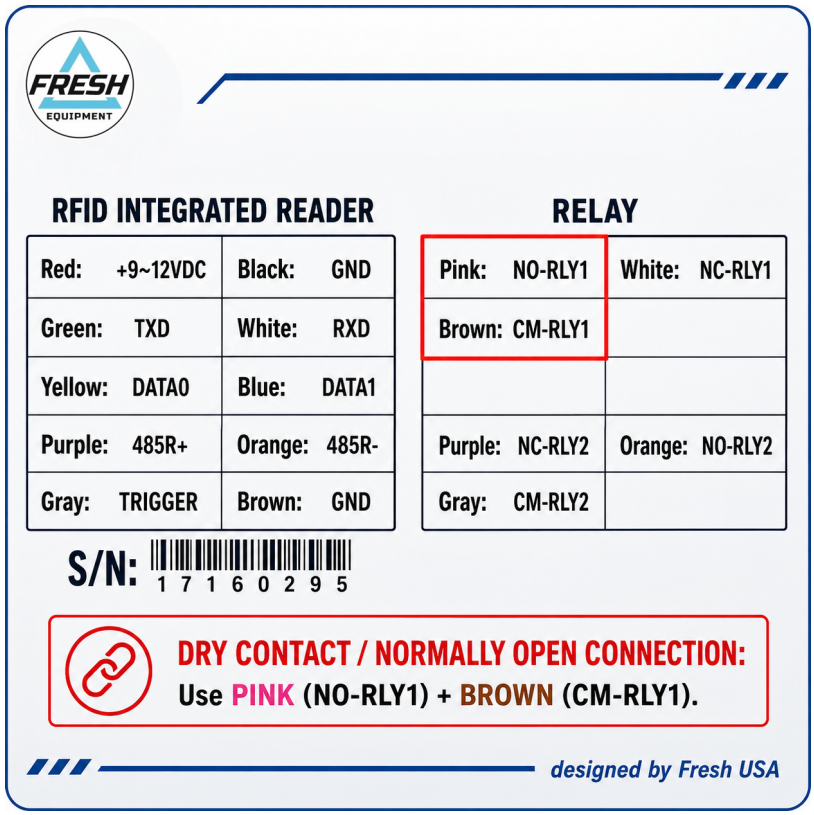
9. Wiring, Relay Output and Interfaces

The older manual includes several wiring images and wire-color charts. Because wire colors can vary by reader version and production batch, the corrected Fresh USA rule is: use the terminal name printed on the device label first; use wire color only as a secondary reference.



Important: **Do not connect AC mains to low-voltage reader wires. Follow the gate-controller manual and local electrical code.**

Common reader connections

Connection	What It Does	Correct Installation Note
+9-12 VDC / GND	Powers the reader.	Use the supplied or approved DC power supply. Verify polarity before powering the reader.
NO / COM relay	Dry-contact gate trigger.	Connect to the gate controller open/ push-button input when a relay trigger is required.
NC / COM relay	Normally-closed relay option.	Use only if the gate/controller specifically requires NC logic.
DATA0 / DATA1 / GND	Wiegand output.	Connect Data 0, Data 1 and common GND to the access controller. A shared signal ground is required.
TXD / RXD / GND	RS232 serial communication.	TX and RX are usually crossed between reader and PC/adapter. Configure baud rate in the utility.
485+ / 485-	RS485 communication.	Use twisted pair where appropriate and follow RS485 polarity and termination rules.
TCP/IP Ethernet	Network communication to PC/software.	Place PC and reader on the same subnet for initial setup, then assign a static IP suitable for the site.
Trigger input	External read trigger input on supported models.	Use only for applications requiring external trigger logic. Confirm active-low/ active-high behavior from the model guide.

Relay wiring to a gate or barrier

1. Turn off power to the gate controller and reader before connecting wires.
2. Locate the gate controller input used for an external open command, push button, access control, or dry-contact trigger.
3. Connect the reader relay NO terminal to the controller open input.
4. Connect the reader relay COM terminal to the controller common input for that open circuit.
5. Restore power and test with a multimeter or manual command before allowing vehicles through the lane.
6. Set relay pulse time according to the gate controller requirement. Common pulse times are short, but the exact value depends on the gate operator.

Safety warning: The reader relay should be used as a low-voltage control signal. Do not switch AC mains through reader wiring. Keep gate-safety sensors active and never bypass the gate operator safety system.

10. Network and Reader Configuration

For TCP/IP installations, configure the reader on the same network range as the PC or router during setup. The default IP address used by many Fresh USA reader configurations is 192.168.0.250. If your supplied reader documentation or device label shows a different address, use the address supplied with that unit.

Initial TCP/IP setup steps

1. Connect the reader to the network using Ethernet. If the model does not support PoE, also connect the approved DC power supply.
2. Set the configuration laptop to the same subnet. Example: PC IP 192.168.0.100, subnet mask 255.255.255.0.
3. Launch the Fresh USA/UHF reader configuration utility, such as UHF Reader 18-PoE C# v2.61 when supplied for the reader.
4. Open Communication, select TCP/IP, then open TCP/IP Configuration.
5. Use the Operation or search function to find the reader IP address. Common default: 192.168.0.250.
6. Log in when required. Common default credentials for configuration utilities may be admin/admin unless changed for the project.
7. Set the reader to a static IP address that fits the customer network and does not conflict with any other device.
8. Save settings and reboot the reader. A simple power cycle of about 10 seconds is commonly used after saving network settings.
9. Reconnect using the new IP address and confirm stable communication.

Serial setup notes

- For RS232, use the correct USB-to-serial adapter and confirm the COM port number in Windows Device Manager.
- Typical serial settings may include 8 data bits, 1 stop bit, no parity, and a configured baud rate such as 9600, 19200, 38400, 57600 or 115200, depending on reader setup.
- If communication fails, check TX/RX crossover, GND, baud rate, COM port permissions and whether another program is already using the port.

WiFi and PoE notes

- Some reader versions may support WiFi, PoE, or both as options. Do not assume these features are present unless they were supplied and confirmed for that unit.
- If WiFi is used, select WiFi or Ethernet according to the reader configuration. Do not expect both to be active unless the specific model supports it.
- For mission-critical gates, Fresh USA generally recommends wired Ethernet where practical because it is more stable than WiFi.

11. Fresh USA Software Setup

Software-managed systems use Fresh USA access-control software to manage credentials, readers, permissions, schedules and event records. The software is usually installed on a dedicated Windows PC at the site.

Software installation preparation

- Use a stable Windows PC with administrator rights.
- Install the software and required database components as administrator.
- During installation, security software or firewall settings may need to allow the database service, reader communication and local application ports.
- Keep the PC powered and protected from accidental shutdown if it is required for live operation.
- The Fresh USA software license file can be tied to the specific computer motherboard. Replacing the computer may require a new license key.

Adding a reader to software

1. Confirm the reader IP address or serial port communicates correctly in the reader utility.

2. Open the Fresh USA access-control software and add the reader with the correct IP/port or COM settings.

3. Assign the reader to the correct gate, door, lane or access point name.

4. Add users, cards or vehicle credentials.

5. Set permissions for each access point. The same card may be allowed at one gate but denied at another.

6. Perform a live read test and confirm the event appears in the software log.

7. Test relay or controller output and confirm the gate opens only for authorized credentials.

No monthly fees: Fresh USA software is typically supplied as a lifetime license for the purchased system configuration. Some optional remote services, cellular notification modules, phone services, third-party carriers or special integrations may have separate costs.

12. Testing and Commissioning

Commissioning is the most important step. Do not leave the site until the system has been tested with actual vehicles, actual credentials and actual gate behavior.

Commissioning test procedure

1. Verify all wiring against terminal names and the gate-controller manual.

2. Confirm the reader powers on and communicates by the selected interface.

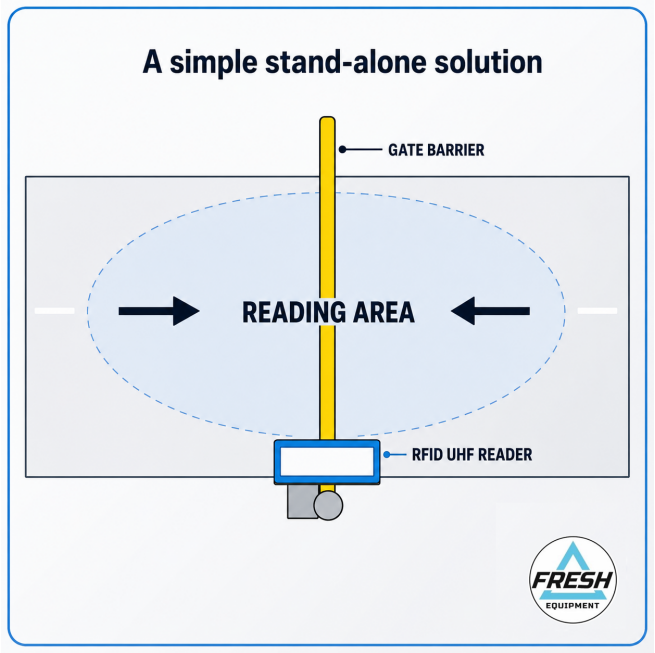
3. Enroll or import at least one authorized credential and one unauthorized test credential.

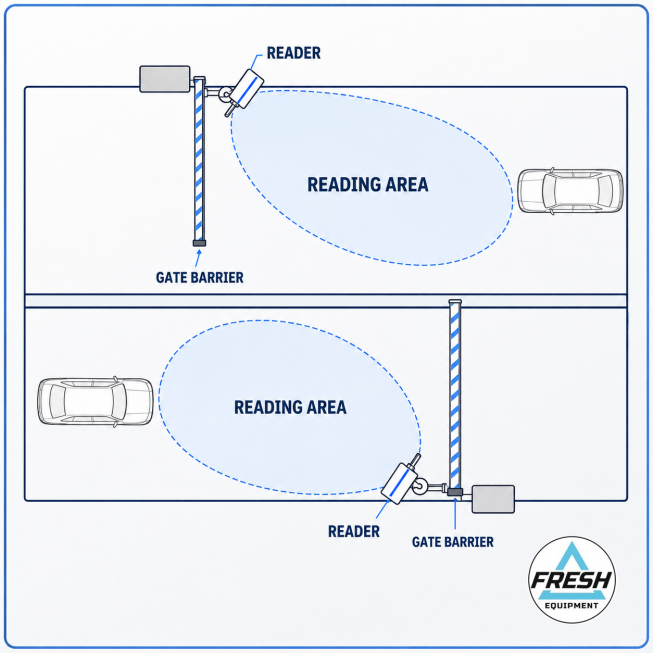
4. Set RF power to a moderate level and test the authorized credential at walking speed or very slow vehicle approach.

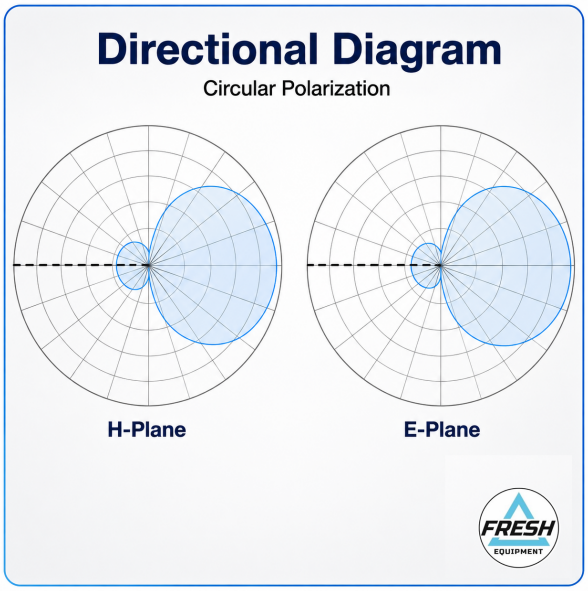
5. Adjust reader angle and RF power until the tag reads in the intended approach zone.

6. Test at normal site speed. For gate approaches, slow controlled speeds such as 5-10 mph are typically safer and more reliable during validation.

7. Test for false reads from adjacent lanes, parked vehicles, vehicles behind the gate and vehicles leaving the site if the reader is for entry only.
8. Test the unauthorized credential and confirm the gate does not open.
9. Test duplicate-read protection so one vehicle does not repeatedly trigger the relay while stopped.
10. Confirm all gate safety devices operate correctly after access-control wiring is added.
11. Document final RF power, IP address, port, relay time, mounting height, angle and credential placement.







Test	Pass Criteria
Authorized vehicle approach	Gate opens reliably at the intended distance.
Unauthorized credential	Gate stays closed and access is denied.
Adjacent lane test	Reader does not trigger from the wrong lane.
Behind-gate test	Reader does not trigger when a credential is outside the intended approach zone.
Software log test	Event appears with correct reader, user/card and time in software-managed mode.
Power-cycle test	Reader reconnects and returns to expected operation after restart.
Safety test	Vehicle safety devices and emergency release functions still work correctly.

13. Daily Operation

For property managers

- Keep a current list of authorized credentials and assigned vehicles.
- Remove lost, stolen or returned credentials immediately.
- For shared cards used at multiple access points, limit permissions only to the doors or gates the user should access.
- Do not move the reader, change RF power or change IP settings without recording the change.
- For software-managed systems, back up the database according to the site policy.

For users and drivers

- Approach the gate slowly and consistently.
- Keep the credential in its assigned windshield location or holder.
- Do not cover the tag with metalized objects, foil, phone mounts or other RF-blocking materials.
- Report lost cards, damaged tags or vehicles that no longer read reliably.

14. Troubleshooting

Symptom	Possible Cause	Recommended Action
Reader does not power on	Wrong polarity, insufficient power supply, loose connector.	Verify voltage and polarity at the reader. Use the approved power supply and inspect connectors.
PC cannot find reader by TCP/IP	Wrong subnet, duplicate IP, firewall, bad cable, PoE assumption on non-PoE model.	Set PC to same subnet, test cable/ switch, ping reader, check firewall and power supply.
Reader utility cannot connect by RS232	Wrong COM port, wrong baud rate, TX/ RX not crossed, no common GND.	Check Device Manager, baud rate, adapter driver, TX/RX/GND and cable quality.
Tag reads only at very short range	Poor tag placement, metalized windshield, low RF power, wrong tag type, bad angle.	Move tag, test with approved tag, adjust RF power and reader angle.
Reader opens wrong lane	RF power too high, angle too wide, reader aimed at adjacent lane.	Reduce RF power, rotate reader, add shielding or change mounting position.
Gate does not open after valid read	Relay not wired to correct input, relay time too short, gate controller disabled.	Test relay with multimeter, verify NO/ COM to open input, check controller settings.
Gate opens repeatedly for same vehicle	Duplicate-read/valid-time setting too short or relay repeats while tag remains in zone.	Increase duplicate-read delay or valid time; adjust read zone.
Software database error	SQL/database service stopped, insufficient permissions, firewall/antivirus blocking.	Run software as administrator, check SQL services in Task Manager/Services, allow software through security tools.
Reads disappear after network change	Reader IP no longer matches network, duplicate IP or router change.	Reconnect locally, search reader IP, assign new static IP and update software settings.
Wiegand controller receives no data	D0/D1 reversed, no GND reference, wrong Wiegand format.	Confirm DATA0, DATA1 and GND; verify controller format and reader output mode.

15. Maintenance and Service

- Inspect mounting brackets, pole hardware and cable strain relief periodically.
- Keep the reader face clean and clear of snow, ice, heavy dust and new obstructions.
- Check outdoor cable seals, conduit and weatherproof boxes after severe weather.
- Test a known good credential monthly or according to the site security policy.
- Keep a record of reader IP addresses, passwords, software license information and final commissioning settings.
- Before replacing a PC used for Fresh USA licensed software, contact Fresh USA support because licensing may be tied to the motherboard.

Fresh USA support contact

Support Item	Current Information
Company	Fresh USA, Inc.
Address	250 Parkway Dr Ste 150 #AT122, Lincolnshire, IL 60069, USA
Phone	+1 (312) 312-9608
Email	order@fresh222.com
Website	www.fresh222.com
Online Store	software.fresh222.com

Appendix A - Quick Installation Checklist

Checklist Item	Required Confirmation
Site survey complete	Lane direction, gate line, mounting point, power, network and safety devices confirmed.
Correct operating mode selected	Standalone, Wiegand controller, or Fresh USA software-managed mode selected.
Reader mounted and adjustable	Bracket installed; reader can still be adjusted before final tightening.
Tag placement verified	Actual vehicle and credential tested before permanent placement.
Power confirmed	Correct DC voltage and polarity verified.
Communication confirmed	TCP/IP, RS232/RS485, Wiegand or relay communication tested.
Reader IP documented	Default or assigned static IP, port and subnet recorded.
Relay output tested	NO/COM dry-contact trigger opens gate only when authorized.
RF zone tuned	Reader does not read wrong lane, parked vehicles or unintended direction.
Unauthorized credential tested	Gate remains closed for denied credential.
Safety devices tested	Loops, photo eyes, radar sensors and emergency functions operate normally.
Final settings recorded	RF power, relay pulse, angle, height, IP address and software settings documented.

Final handoff: Provide the property manager with login information, backup instructions, credential enrollment instructions, and the Fresh USA support contact information listed in this manual.

Fresh USA, Inc.

RFID Technology Systems, Software and Hardware

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Designed and prepared for Fresh USA vehicle access-control installations.