ReachFree ID

Installation Instructions

For Portal, Sentinel and C-Start

Unitec

www.StartwithUnitec.com

[T H I S   P A G E   I N T E N T I O N A L L Y   L E F T   B L A N K]

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Introduction

The ReachFree ID product is a house account application designed to build car wash volume and increase throughput with secure, subscription-based wash accounts. The RFID reader reads the RFID tag that is adhered to the account holder's windshield.

If the account is valid, the Unitec entry unit will approve the transaction without any interaction from the account holder and will allow the vehicle to proceed past the entry system and into the tunnel or in-bay automatic.

Software Requirements

In order for the ReachFree ID system to function properly, the Unitec entry unit must be updated to the most recent version of software.

Site Planning

If this is a new installation, a conduit will need to be run from the Unitec entry unit to the mounting surface for the reader.

The reader may be mounted on any material including metal, but there must be open space in front of the reader and to its sides. There must be no material interfering with the reader's surveillance zone between the reader and the tags' location.

If using the optional mounting pole, the reader should be mounted beside the far side of the Unitec entry unit (with the flange flush against the base, as shown in Figure 5) because the proximity sensor on the unit door can be setup to activate the reader. The reader should be mounted on a pole 7 feet above the vehicle lane.

Parts Checklist

Prior to retrofitting an existing Unitec entry unit, verify that you have all parts required:

- AWID RFID Reader with cable (SA2135)
- RFID Cover (MF1584) and Reader pole-mounting bracket (OM1673)
- Power Supply (PS2018)
- 30 ft data cable (CA2179)
- RFID Board (OM1528) mounted on bracket (MF1583) with 2 6-32 nuts
- I2C Cable
- 50 RFID tags (OM1672) (Please note: tag refills come in groups of 50)
- 8ft Mounting Pole (MF1589) (Optional)
- 3/8" concrete bolts (Optional)
- Drill with concrete bit (not included)

Installation Procedures

Install the Mounting Pole (Optional)

The RFID kit comes with an 8 foot mounting post with a mounting flange at the base, as an option. It's designed to accommodate both surface-mounted above ground conduit for existing installations and underground conduit for new construction. For surface run conduit, there's a threaded boss welded to the post on the bottom flange. It accommodates a ½" conduit fitting to run liquid-tight conduit to the post. The conduit is then secured by screwing the conduit fitting into the boss. For underground conduit, the installer should run the conduit up the center of the post. There is a hole near the top of the post where the cable will exit to connect with the RF reader.
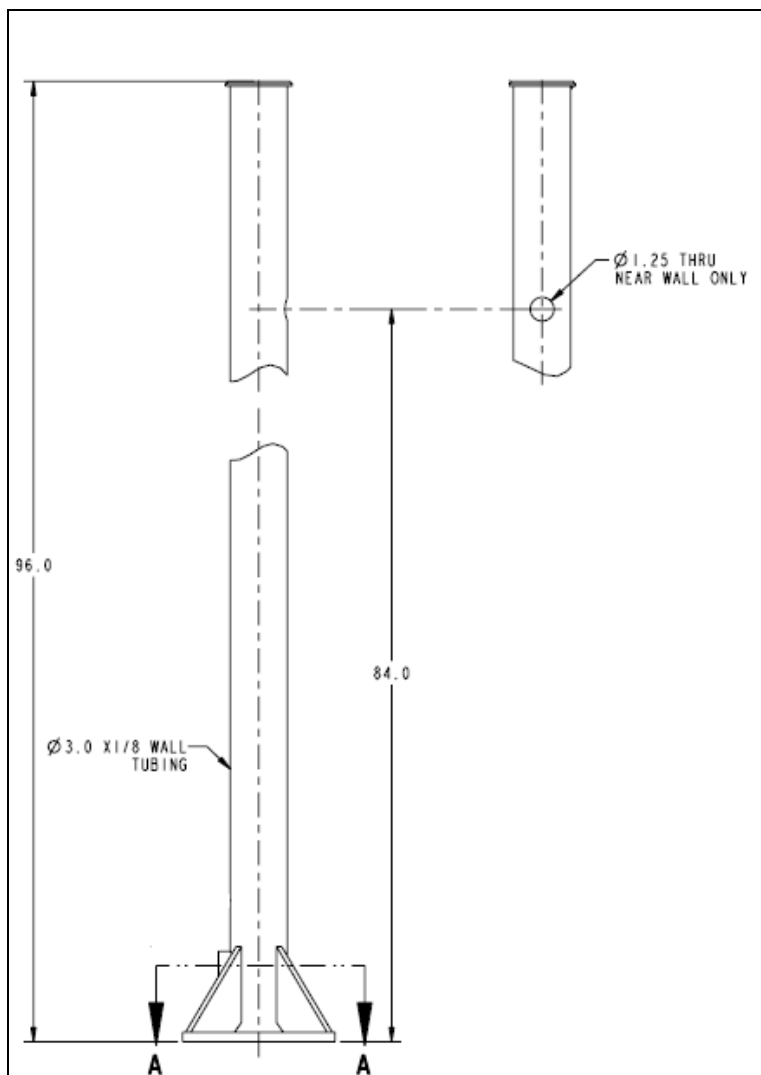

Figure 1. RFID Mounting Post

To mount the post, the installer will need to drill (4) holes and use concrete anchor bolts to secure the flange to the concrete, as shown below. The flange should be flush to the side of the entry unit, as shown in Figure 5.
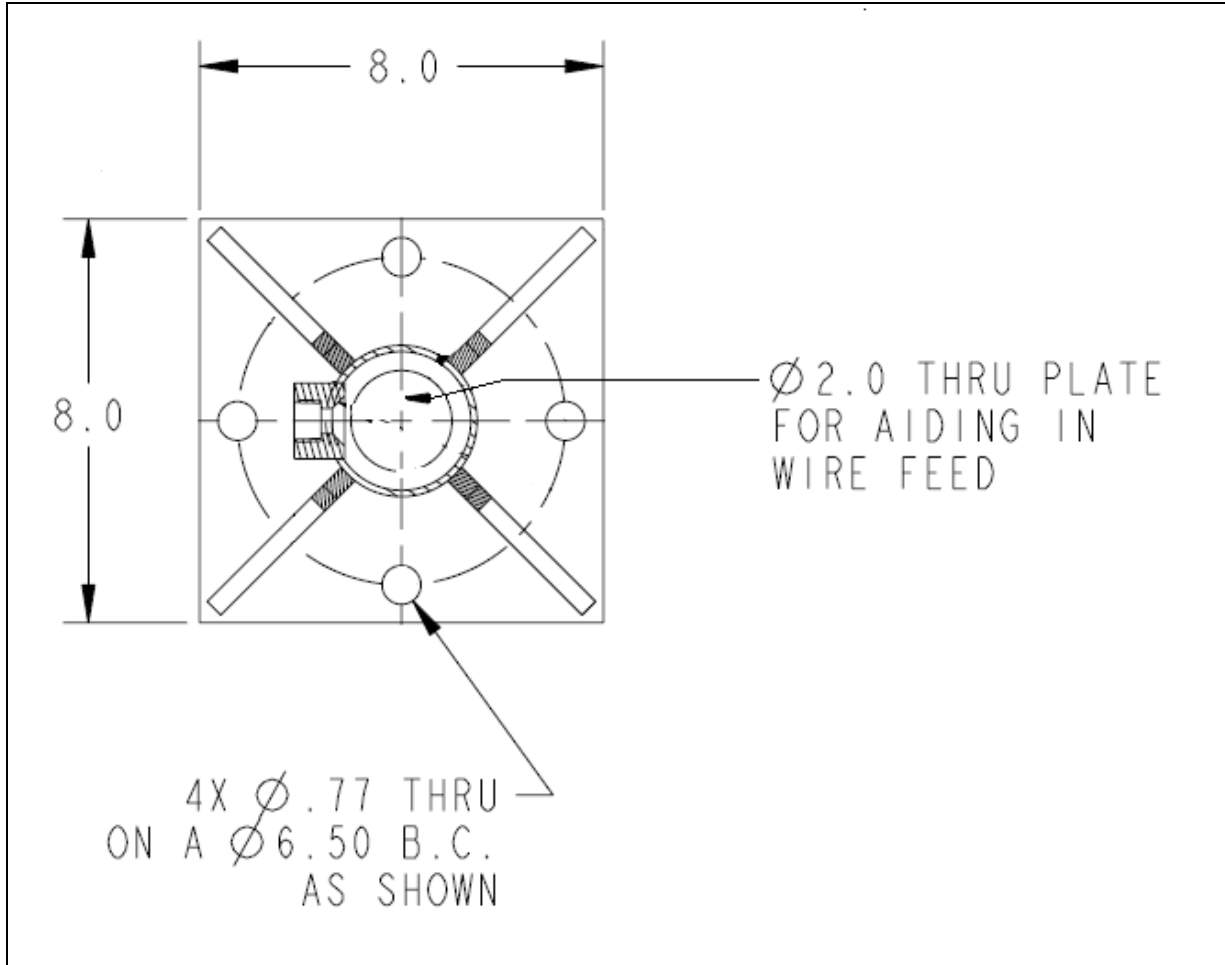

Figure 2. RFID Post Flange

Install the Reader

Note: Keep the reader assembled. Do not remove the aluminum plate behind the reader. Do not remove the plastic cover of the reader. Do not tighten or loosen the screws through the cover.
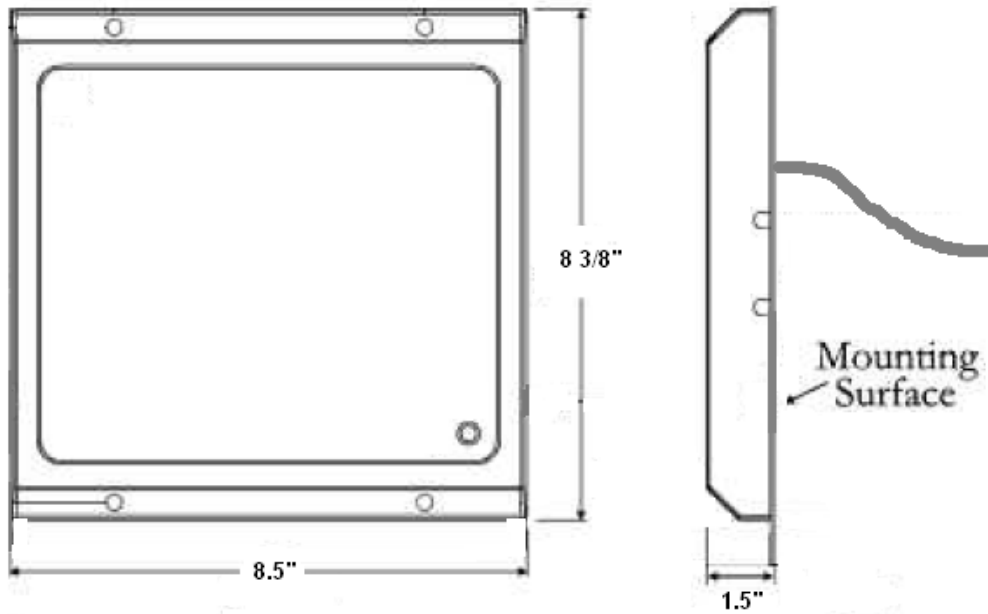

Figure 3. AWID Reader Dimensions
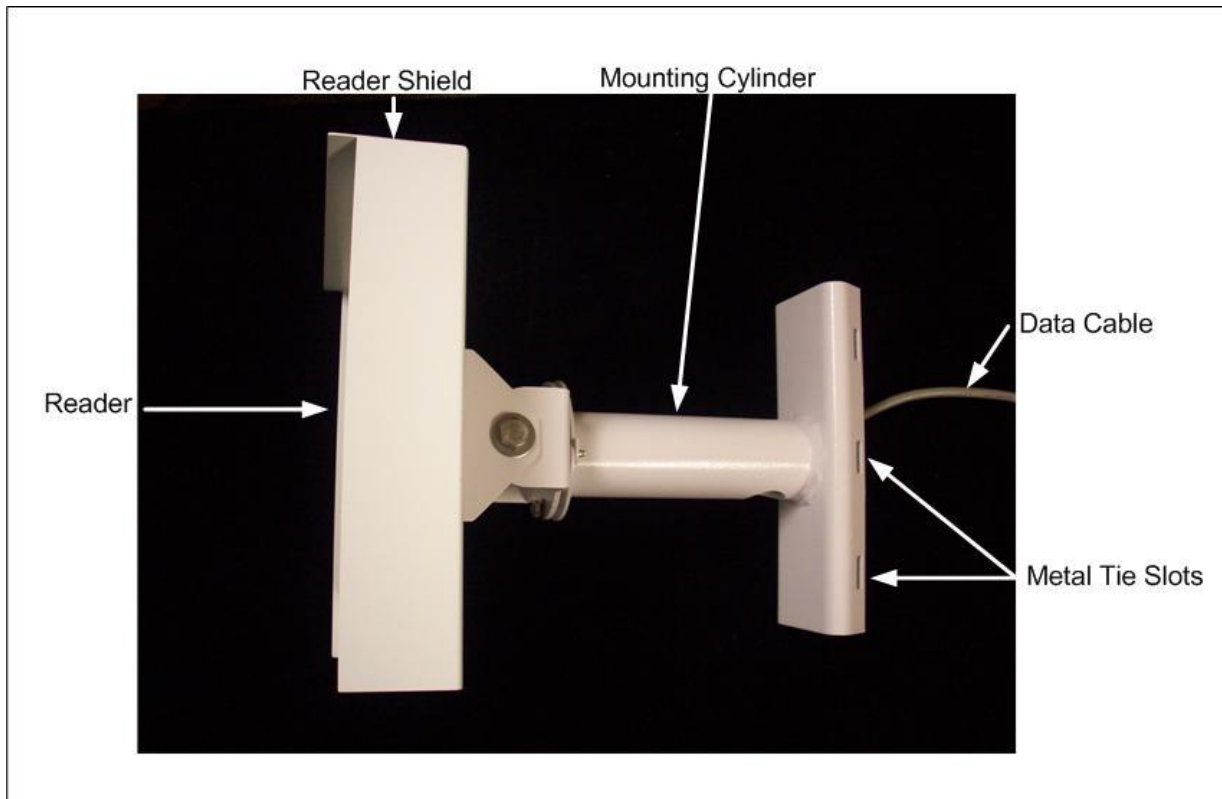
Figure 4. Reader with Mounting Assembly

1. Attach the mounting assembly to the reader's metal plate using 1/4"-20 screws, if needed for your installation.

2. If you are mounting the reader to a pole, leave the mounting assembly fully assembled and use the supplied metal ties to secure the reader to the pole approximately 7 feet above the lane.

   Note: If you are mounting the reader on to something other than a pole, you will need to order another style of mount.

Site Installation
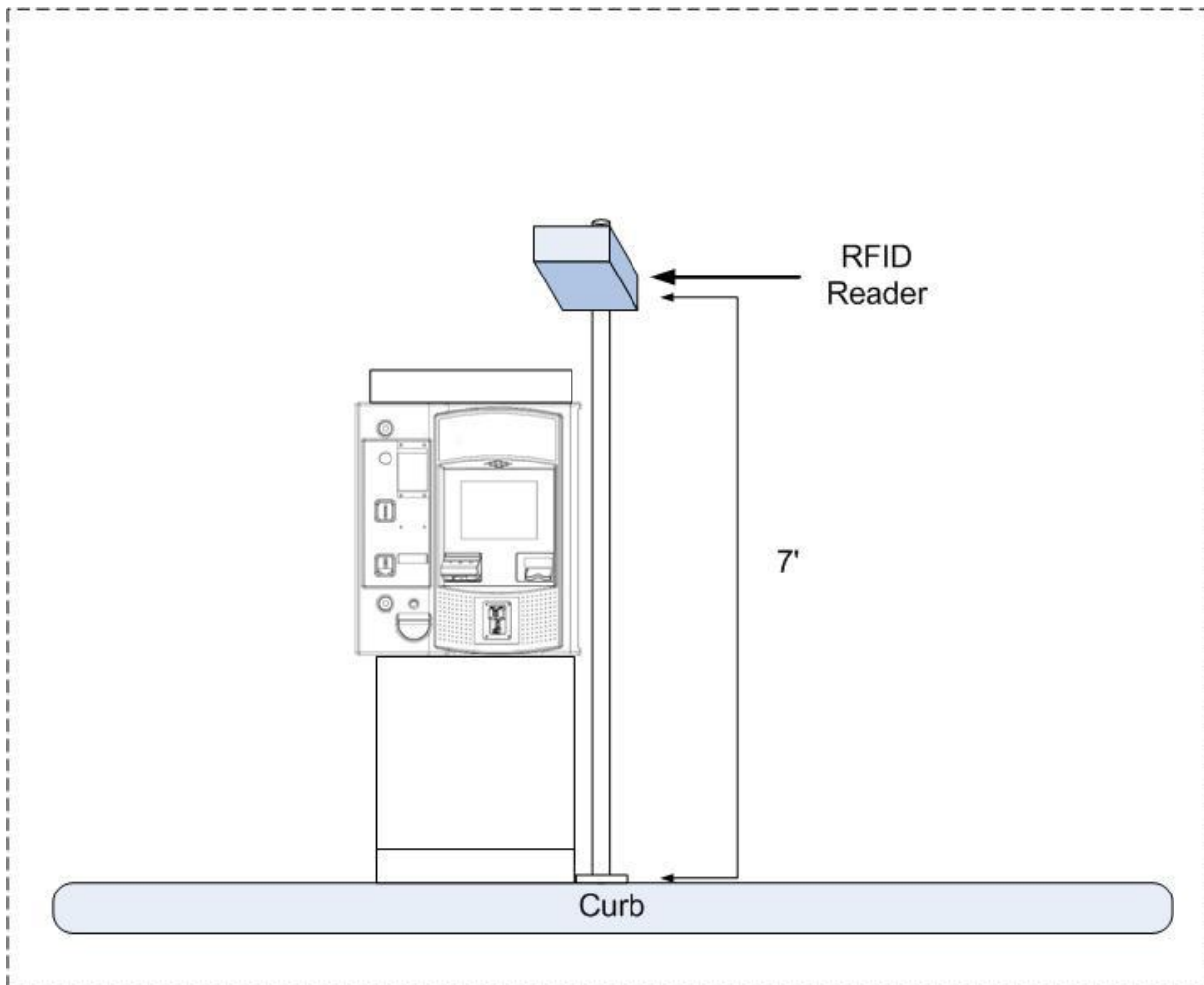
Figure 5. RFID Reader Installation - Front View

3. Aim the reader so that center front face of the reader points toward a spot on the vehicle lane approximately 18" from the middle front of the entry unit. This usually requires that the reader be adjustable downward about 45 to 90 degrees ("tilt"), and slightly toward the approaching vehicles ("pan").
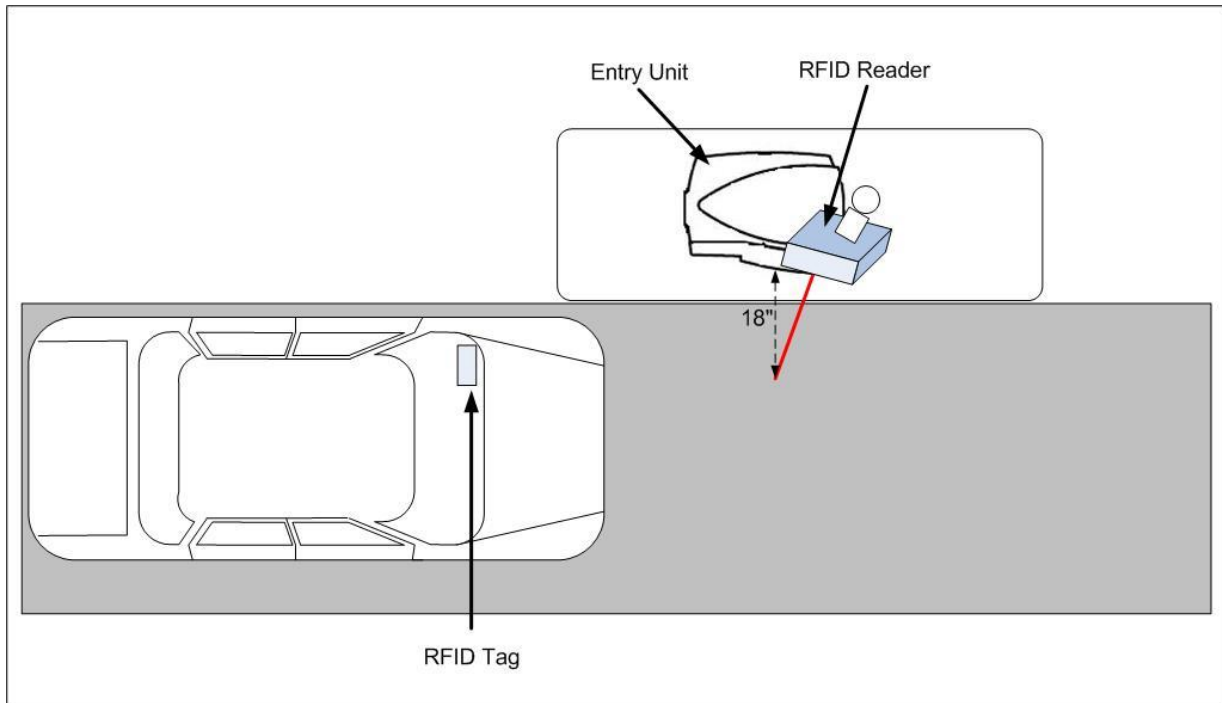
Figure 6. RFID Reader Installation - Top View

Connector Wiring
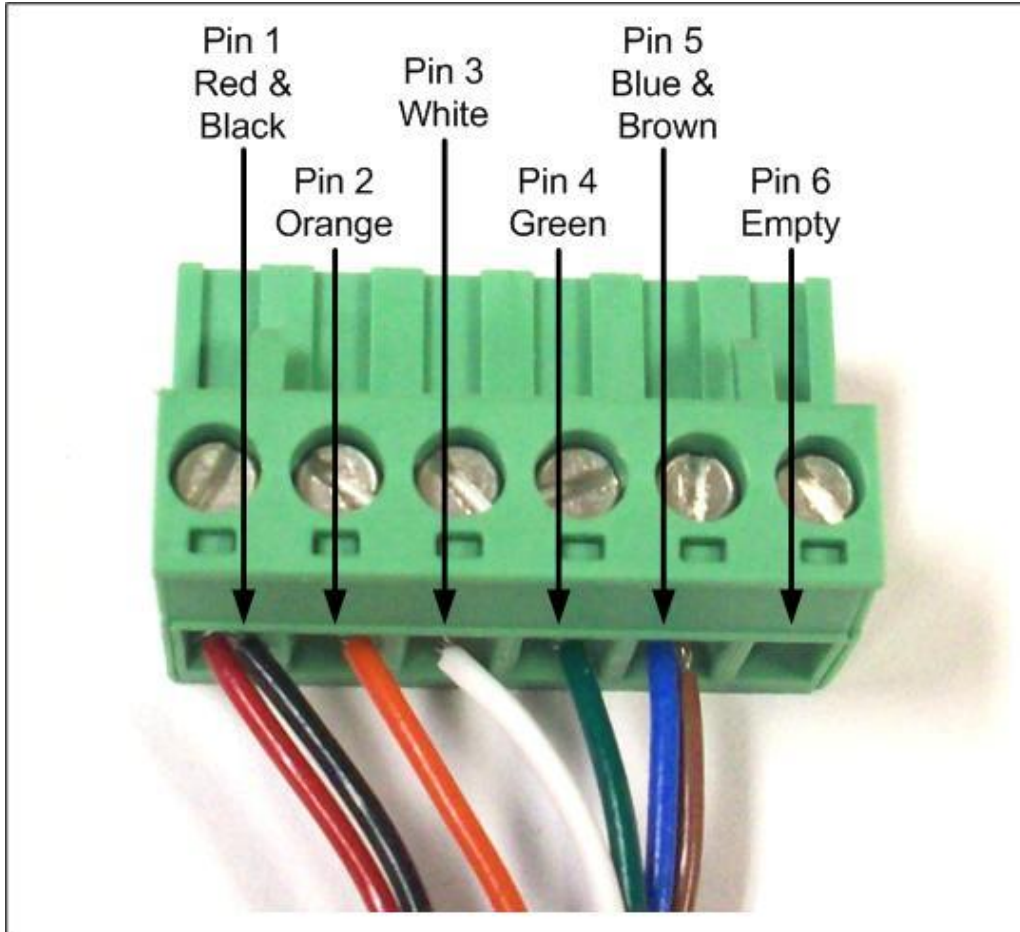
Figure 7. Wired Connector

Mount RFID Board and Connect Cables

Portal TI Installation

If installing the board inside a Portal with coin or bill dispensing, the RFID board mounts to the side of the bill dispenser/coin hopper cage inside the entry unit.

Figure 8. RFID Board Location in Portal with Coin/Bill Dispensing

If installing the board inside a cashless Portal, the RFID board mounts to the top back wall of the unit to the left of the power supply tower.

Figure 9. RFID Board Location in Cashless Portal

1. Run the data cable down thru the unit's conduit and up to the mounted reader.

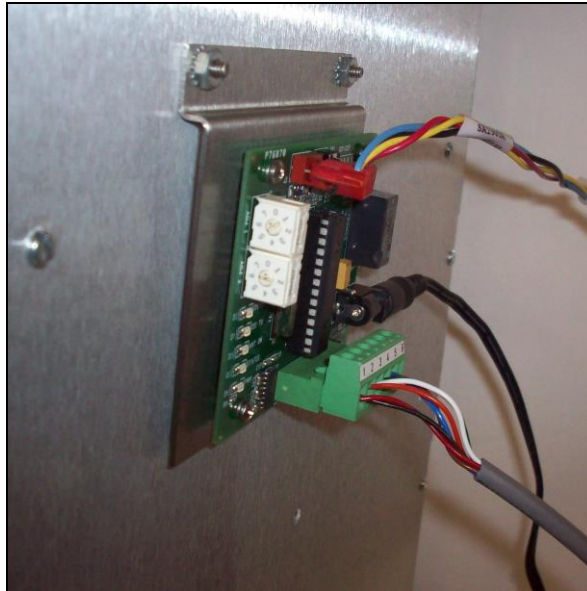2. Plug the female end of the in-line connector on the 30' data cable into the male end of the in-line connector on the reader. To ensure a tight, water-proof connection, fit the two ends together, press firmly and turn the ends to lock them together.

3. Connect the other end of the data cable with the 6-pin Phoenix connector to the J2 connector on the RFID board

4. Plug the power supply into the J1 power connector on the RFID board and the power supply cord into an outlet on the power supply panel at the back of the unit.

5. Connect the 4-pin I2C cable to the J3 4-pin connector on the RFID board. Connect the other 4-pin connector to the CN3 connector at the bottom of the carrier board on the right wall of the unit.

Figure 10. RFID Board Connections for Portal

Sentinel and C-Start Installation

If installing the board inside a Sentinel or C-Start unit, the RFID board mounts to the right inside wall of the electronics side of the unit.

Note: The RFID board should be mounted upside down on the mounting plate so that the diagnostic LEDs are facing the door of the unit.
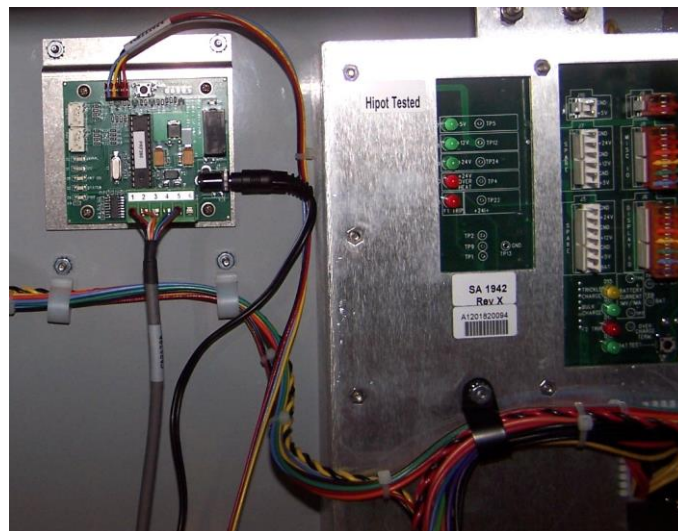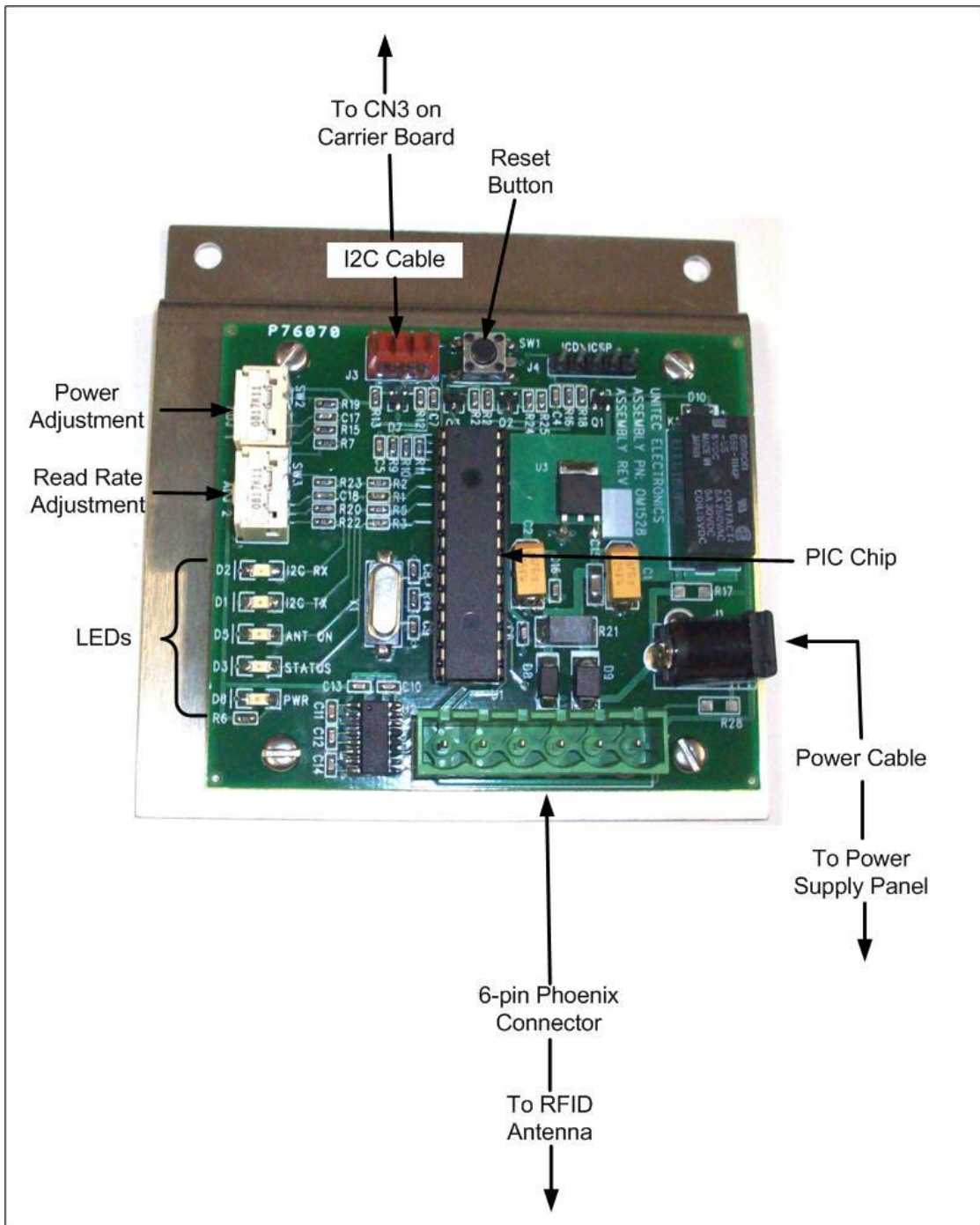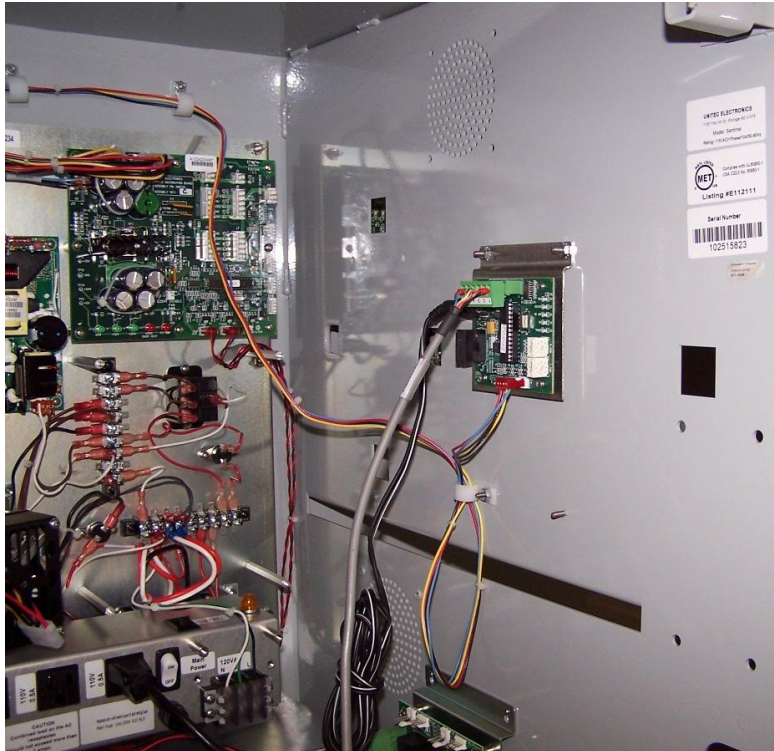

Figure 11. RFID Board Location in Sentinel

1. Run the data cable down thru the unit's conduit and up to the mounted reader.

2. Plug the female end of the in-line connector on the 30' data cable into the male end of the in-line connector on the reader. To ensure a tight, water-proof connection, fit the two ends together, press firmly and turn the ends to lock them together.

3. Connect the other end of the data cable with the 6-pin Phoenix connector to the J2 connector on the RFID board

4. Plug the power supply into the J1 power connector on the RFID board and the power supply cord into an outlet on the power supply panel at the back of the unit.

5. Connect the 4-pin I2C cable to the J3 4-pin connector on the RFID board. Connect the other 5-pin end to a 5-pin connector on the CPU module on the left side of the case.

Figure 12. RFID Board Connections for Sentinel and C-Start

RFID Tags
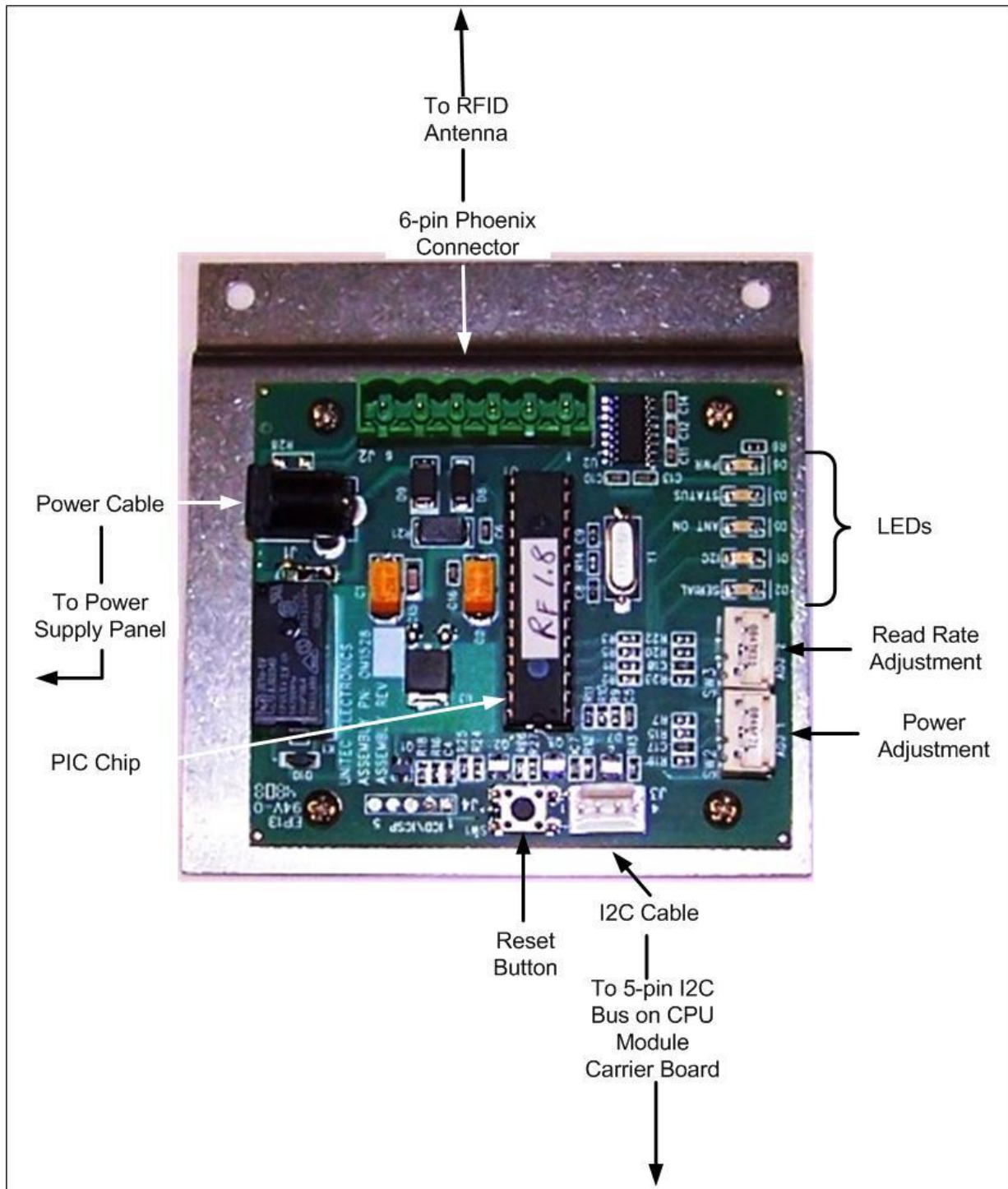

Figure 13. Sample RFID Tag

The ReachFree ID vehicle tag should be applied to the INSIDE bottom or top corner of the windshield on the driver's side, depending on the height of the vehicle, so that the tag is in approximately the same place on every vehicle. For example, if the vehicle is a taller SVU, apply the tag to the bottom of the windshield. If the vehicle is a smaller sports car, apply the tag to the top corner of the windshield. Make sure the windshield is clean before adhering the tag to the glass.

Program the Unitec Entry Unit

The ReachFree ID system is based off a subscription-based house account. You will need to set up a house account program and account for each vehicle tag. For more information, see the *Sierra Management Application Programming Manual*, which is available on our website at http://www.StartwithUnitec.com/.

The RFID reader's default setting is set to "Always On." If you wish to change it so that the reader is triggered to turn on by the proximity sensor in the entry unit, you must configure the RFID reader in the Device Profiles tab.

Troubleshooting
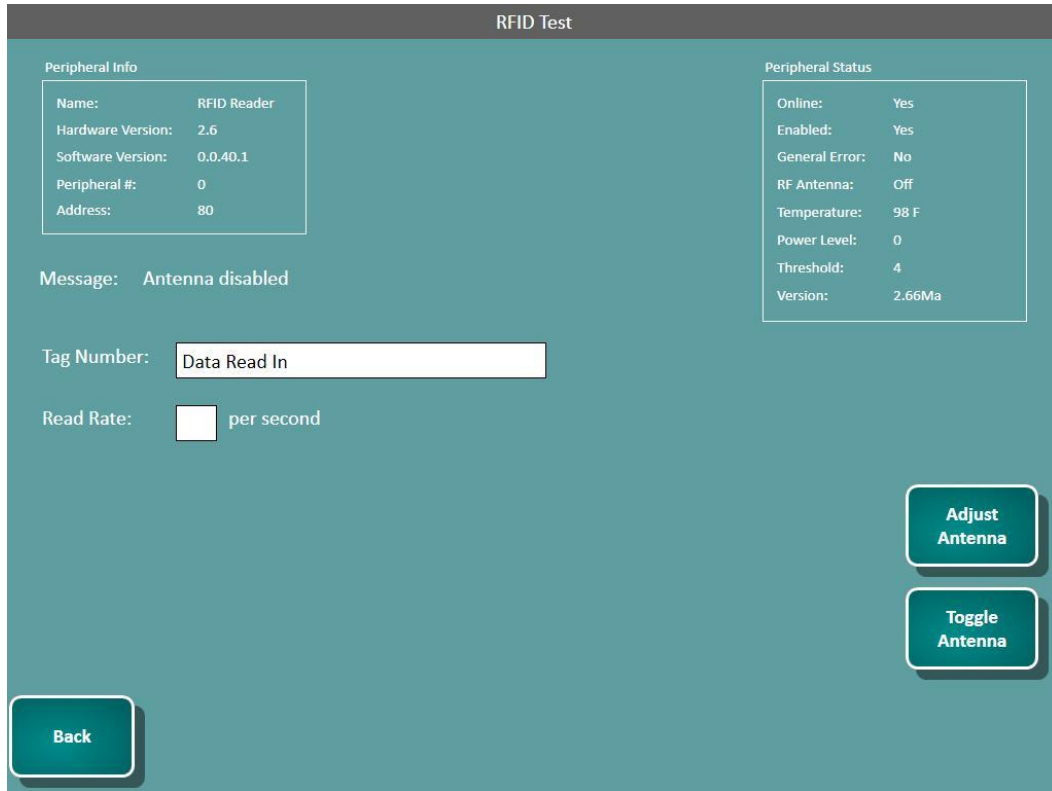
Figure 14. RFID Troubleshooting Screen

Login to Maintenance Mode>Test Hardware>RFID Reader to make sure the ReachFree ID system is reading the tags properly. Once the vehicle tag is detected by the reader, the 8-digit code will be displayed in the text box on the screen. As long as the RF tag remains in range of the reader, the entry unit will beep once per second. You can determine the area the RF Reader can read tags by moving the tag around and listening for the beeps. As long as the unit is beeping once per second, the RF tag is in-range.

To adjust the power or threshold (read rate) of the reader, press Adjust Antenna.

Figure 15. RFID Settings Screen

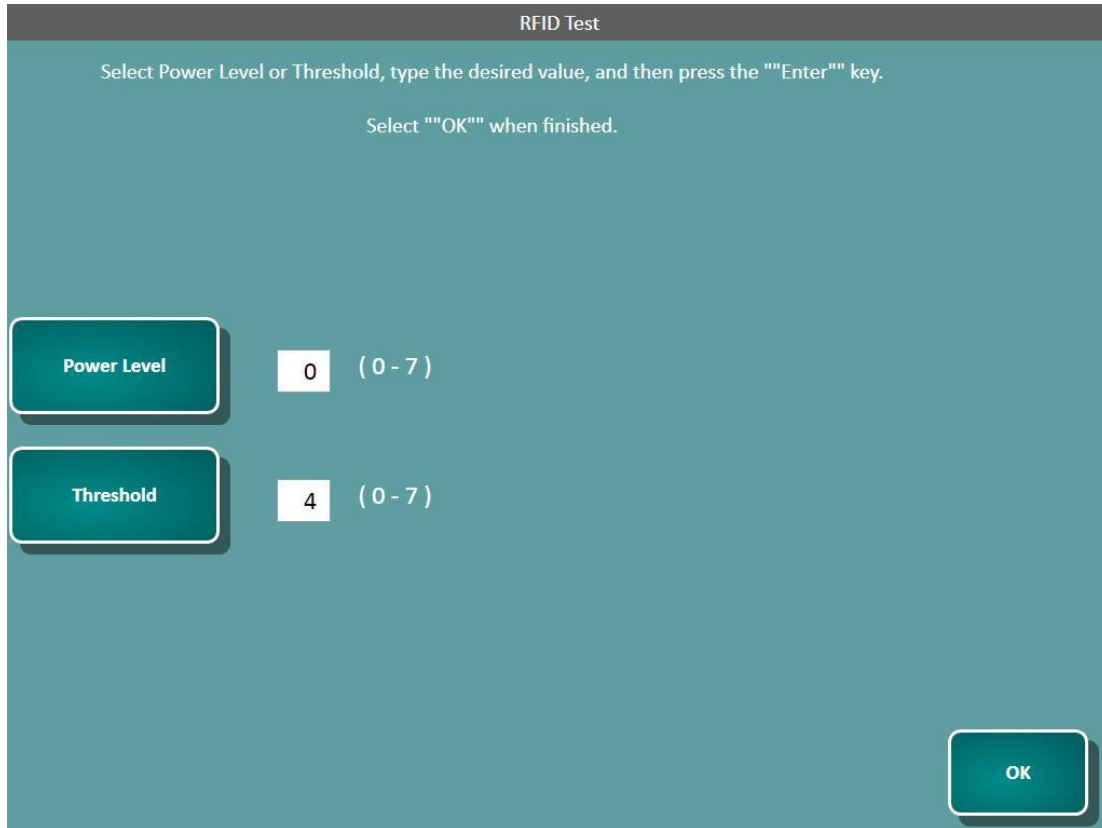The power level and threshold may be adjusted from 1-7 with 7 being the highest. The threshold (or read rate) reads at a multiple of 6 per second. For example, if the threshold is set to 4, the read rate is 24 tag reads per second.

These settings are also available on the pots on the RFID board.

NOTE: The software settings override the pot setting on the board.

The top pot on the Portal RFID board (bottom pot on Sentinel) controls the power output on the reader.. If you need to adjust the power for the reader on the board, insert a small flat head screwdriver in top pot in the slot facing out toward the door of the unit and turn it counter-clockwise to reduce the power output. The power levels range from 1 to 7, with 7 being the highest. Since the pot and power level numbers are very small, the top 3 LEDS will also light up in the corresponding sequence listed in the following table:

LEDs	Power Level
No LEDs lit	0
1 Green LED middle LED)	1
1 Yellow LED	2
1 Green LED + 1 Yellow LED	3
1 Red LED	4
1 Green LED + 1 Red LED	5
1 Yellow LED + 1 Red LED	6
1 Green LED + 1 Yellow LED + 1 Red LED	7

The bottom pot on the Portal RFID board (top pot on the Sentinel) controls the threshold (rate of tag reads per second). If you need to adjust the threshold for the reader, insert a small flat head screwdriver in pot in the slot facing out toward the door of the unit and turn it to adjust the threshold. The levels range from 1 to 7, with 7 being the highest. Since the pot and power level numbers are very small, the top 3 LEDS will also light up in the corresponding sequence listed in the table below:

LEDs	Read Rate per Second (x6)
No LEDs lit	0
1 Green LED middle LED)	1
1 Yellow LED	2
1 Green LED + 1 Yellow LED	3
1 Red LED	4
1 Green LED + 1 Red LED	5
1 Yellow LED + 1 Red LED	6
1 Green LED + 1 Yellow LED + 1 Red LED	7

LEDS

The RFID board has 5 LEDs that indicate whether or not the RFID system is working. The table below defines each LED and its function.

LED	Label	Color	Light Status	Description
LED 1	Serial	Red	Blinks during data transfer	Indicates when the RF Reader sends data to the RFID board. Most of the time this will be when the RF Reader senses a RF tag.
LED 2	I2C	Yellow	Blinks during data transfer	Indicates when the RFID board sends and receives data to and from the entry unit
LED 3	Ant On	Green	Solid	Indicates when the reader is enabled. If the reader is enabled by the proximity sensor, then this LED will be OFF most of the time. If the reader is always enabled then this LED will be constantly lit.
LED 4	Status	Green	Blinking	Blinks once per second to show that the RFID board is alive
LED 5	Power	Green	Solid	Indicates power to the board

Tips and Suggestions

The ReachFree ID reader uses the 900 MHz frequency which can cause interference with other electronic devices that use the 900 MHz frequency range. Unitec strongly suggests you observe the following warnings:

- Stay away from UHF communications devices.

- Avoid arc lighting fixtures by 3 or 4 feet.

- Keep neighboring long-range readers on parallel lanes at least 12 feet apart, with their surveillance zones parallel to each other.

- Do not have identical readers facing each other (but "back-to-back" is OK).