Auto Passport®

with the RFID All-In-One Reader/ Antenna
for the Auto Sentry® Petro

Installation Guide - Version 3.0

November 8, 2019
Installation Overview

Thank you for purchasing your Auto Passport, the ICS® radio frequency identification system. This document was written for technicians and electricians installing the Auto Passport. A thorough understanding of electrical wiring, installation, codes, and safety protocols is required. No prior experience with the Auto Passport is necessary. By reading the information and performing the procedures in this installation guide, you should be able to install the Auto Passport system-level and communications wiring.

*NOTE:* The Auto Passport is not a stand-alone system. WashConnect and a connection to an Auto Sentry is required.

System Components

- The protective enclosure houses the RFID reader and antenna.
- One All-In-One RFID Reader / Antenna Enclosure per lane is to be installed on an overhead truss or canopy above the lane near the Auto Sentry Petro so vehicles can drive underneath it.
- The RFID All-In-One Reader/Antenna power and data cable terminates at the terminal blocks located in the base of Auto Sentry Petro.
- The RFID All-in-One Cable is 35’ in length.

Truss Size Information

Trusses are available in two sizes:

- A 95-inch truss to be installed on curbs or raised islands.
- A 100-inch truss to be installed on ground-level surfaces.

This guide should be supplied to the electrician prior to the installation of conduits and wiring to ensure the Auto Passport is installed properly. Faulty installations are the major cause of system malfunctions. The Auto Passport must be installed exactly as described in this installation guide to ensure its reliability and safe operation.

**WARNING:** Failure to properly install the Auto Passport could result in serious injury or death and will void the warranty.

Version Considerations

This version 3.0 of the installation guide, released on November 5, 2019. WashConnect Software version of 1.6.7 or higher.

Site Planning

Careful planning for the layout of the site will help eliminate possible problems with the start-up of your system and will ensure continued, reliable system operation. In determining the location stage, keep the following objectives in mind:

- The Auto Passport has been designed to operate in an outdoor environment.
Hardware Specs

- The Auto Passport is designed to be located in all types of conditions, cold, wet, or hot.
- The unit has been designed to operate in the temperature range of -20° F to 120° F (-28 °C to 48 °C).
- The RFID Antenna enclosure is mounted on a truss that is bolted to the concrete floor.
- Dedicated universal power supply (UPS): 1500VA/865 Watts output capacity.
- RFID All-In-One Reader / Antenna Enclosure Equipment Measurements, and Ratings:

Planning for Installation

- Prepare to have all the necessary tools and parts.
- Ensure Auto Sentry island specifications are met.
- Ensure permanent connections are performed by a licensed electrician who must comply with the National and Local recommended standards.

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<tr>
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<tr>
<td>Length</td>
<td>30 in / 76.2 cm</td>
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<td>10 Amps @ 120 V AC</td>
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<td>RF Power</td>
<td>Max 4 watts EIRP with antenna</td>
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Table 1: Auto Passport RFID Reader/Antenna Measurements, and Ratings

- Wiring can be contained in rigid PVC conduit or metal conduit.
- High-voltage (AC) and low-voltage (DC) must not be combined in a common conduit, junction box, or wire trough.
- Power for the Auto Passport and any peripherals must come from the dedicated UPS, as supplied by ICS, and must be properly grounded.
- Check through all shipping containers before disposing of them looking for possible manuals, cables, connectors, etc.

Warning Markings

The symbol on the left is labeled on equipment and hardware to indicate one should consult accompanying documentation before proceeding.

Technical Support

Innovative Control Systems® provides a phone number for customers and installers for installation questions: 800-246-3469.
Auto Sentry Petro Island Specifications

- **NOTE 1:** The length of the island should be determined by the car wash owner, but ICS recommends that the island be a minimum of 18’ - 0” in length. This will provide for adequate space for the proper placement of the Auto Sentry and its gate. If menu signs and other items are to be installed on the island, then it is the car wash owner’s responsibility to increase the length of the island to accommodate these additional items. See Figure 4.

- **NOTE #2:** ICS highly recommends that the width of the islands be a minimum of 4’ - 6” for the safety of the attendants when servicing. This measurement, along with the proper placement of the Auto Sentry, will prevent the rear of the Auto Sentry from hanging over into another drive-thru lane and provides ample room for vehicles to pass through the lanes without striking the rear of an Auto Sentry.

- **NOTE #3:** The height of the island, above the final finished grade upon which a vehicle will rest, must be 6”. This will ensure that the Auto Sentry is at the optimum height for customers using the Auto Sentry while seated in their vehicles.

- **NOTE #4:** At the car wash owner’s discretion, the installation of bollards at the entrance end of the island is highly recommended and will minimize the chances of vehicles striking and damaging an Auto Sentry or Traffic gate. Bollards should be located so that they provide protection to ICS equipment but also offer ample clearance so that the equipment can be easily installed and maintained.

- **NOTE #5:** Any canopy that is above both the Auto Sentry and the optional Traffic Gate must be a minimum of 12’ - 6” from the base of the gate to the bottom of the canopy to allow the gate to open fully without striking the canopy.

- **NOTE #7:** WARNING: (If optional Gates are installed) Do not install bollards or any equipment within 20” clearance of the gate housing and gate arm. This is to prevent crushing and allow the gate arm to break away properly.

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**AUTO SENTRY PETRO ISLAND DETAIL**

*(TOP VIEW)*

***THIS DRAWING IS NOT TO SCALE***

- 3” Dia. Concrete filled Bollard (Typical) See Note #3
- The white square represents the open space in the base of the Auto Sentry Petro where the conduits pass through. 6’-1/2” x 6’-1/2”
- Optional RFID Truss Base Footprint
- There should be a minimum of 24” diameter of clearance from the center of the gate in all directions.
- Footprint of Auto Sentry Petro
- Direction of travel (OF TRAVEL)
- OF TRAVEL
- OF PETRO
- Traffic Gate
- Traffic Gate Arm/Barrier
- MiniMax 16’ - 0”
- MiniMax 16’ - 0”
- MiniMax 16’ - 0”
- MiniMax 16’ - 0”
- MiniMax 16’ - 0”
- MiniMax 16’ - 0”
- MiniMax 16’ - 0”
- MiniMax 16’ - 0”

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*Figure 4. Auto Sentry Petro Island Specifications*
System Wiring

Auto Passport® RFID All-In-One Reader/Antenna Power Requirements

- Power for the Auto Passport reader/antenna is supplied by the Auto Sentry Petro.
- The Auto Sentry Petro has terminal blocks inside for power termination.

Recommended and Accepted Grounding Methods

The Auto Passport equipment must be properly grounded. Proper system grounding is an extremely important part of the system installation. Grounds for all devices should be wired to the main service electrical panel ground bus bar which, in turn, should be grounded to a ground rod. A conduit ground does not provide a sufficient ground. It is recommended that the neutral and ground bus bars be bonded together when it is not prohibited by local codes.

The universal ground symbol identifies the grounding terminal located in the Auto Sentry unit near the terminal blocks.

**WARNING:** Failure to properly ground the unit could result in unit failure and/or bodily injury. Ground wire must be connected to the ground terminals.

> **NOTE:** Improper grounding will void equipment warranty.

Wire Gauge and Conduit Size

When planning the orientation of the wiring runs, follow the applicable ICS wiring diagrams and consider the layout of the components at the site. To determine conduit size needed, see the table below for more information.

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<td>12</td>
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</table>

Table 2: Number of Wires (THHN) in a Given Conduit Size
Conduit Detail (Triple Lane)

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CNDUIO DTOAIL
THIS DRAWING IS ONLY INTENDED TO SHOW THE CONDUIT REQUIREMENTS FOR THE AUTO SENTRY ISLANDS IN DETAIL. THIS DRAWING IS NOT TO SCALE.

LANE #1
AUTOSENTRY ISLAND
1/2" CONDUIT STUBBED OUT TO CONNECT WITH GATE CLOSING LOOP
1/2" CONDUIT STUBBED OUT TO CONNECT WITH THE MERGE LOOP. THE MERGE LOOP SHOULD RUN TO THE TRAFFIC GATE IN LANE #1.
3/4" CONDUIT

LANE #2
AUTOSENTRY ISLAND
1/2" CONDUIT STUBBED OUT TO CONNECT WITH GATE CLOSING LOOP
1/2" CONDUIT STUBBED OUT TO CONNECT WITH THE MERGE LOOP. THE MERGE LOOP SHOULD RUN TO THE TRAFFIC GATE IN LANE #1.
3/4" CONDUIT

LANE #3
AUTOSENTRY ISLAND
1/2" CONDUIT STUBBED OUT TO CONNECT WITH GATE CLOSING LOOP
1/2" CONDUIT STUBBED OUT TO CONNECT WITH THE MERGE LOOP. THE MERGE LOOP SHOULD RUN TO THE TRAFFIC GATE IN LANE #1.
3/4" CONDUIT

NOTE: ENSURE THAT ALL CONDUITS RUNNING TO THE GATES ARE TIGHTLY BUNDLED TOGETHER AS THE OPENING IN THE BASE OF THE GATE IS ONLY 3 – ¼ INCHES IN DIAMETER.

LOW VOLTAGE CONDUIT
HIGH VOLTAGE CONDUIT
10" CONDUIT STUB OUTS FOR CONNECTION TO LOOPS

Figure 5. Triple Lane Example Conduit Layout

RFID Wiring Layout

The wiring layout is the same for one, two, three, or four lanes. There is one cable that houses five wires and they connect from the RFID All-in-One Reader / Antenna back to its corresponding Auto Sentry Petro. See Figure 6.

RFID WIRING PLAN
TERMINATE THE CABLE FROM THE RFID ALL-IN-ONE RFID READER/ANTENNA ENCLOSURE TO THE RIGHT-SIDE OF THE TERMINAL BLOCKS INSIDE THE AUTO SENTRY PETRO HEAD AS FOLLOWS:
BLACK ALL IN ONE CABLE – ALL (5) WIRES ARE LABELED:
ATTACH WIRE MARKED 24V(+) TO THE ORANGE TERMINAL BLOCK (24+)
ATTACH WIRE MARKED 24V(-) TO THE BLACK TERMINAL BLOCK (24-)
ATTACH WIRE MARKED RX TO THEyellow TERMINAL BLOCK (RX)
ATTACH WIRE MARKED GROUND TO THE WHITE TERMINAL BLOCK (GD)

Figure 6. Triple Lane Example RFID Wiring Layout
Truss and RFID System Installation

NOTE: It is recommended to have 2 people perform the installation of the RFID system.

Tools Required (not supplied by ICS)
- 1/8" Allen Wrench
- Small Flat Head Screw Driver
- Hammer Drill
- Diagonal Cutting Pliers
- Fish Tape
- Ladder

Parts Required (not supplied by ICS)
- 8" or greater UV Cable Ties
- 1/2" dia. x 6" L Concrete Anchor Bolts

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Parts Included</th>
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<tr>
<td>RFID All-In-One Reader / Antenna Enclosure</td>
<td>![RFID Enclosure]</td>
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<tr>
<td>NOTE: Colors may vary.</td>
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<tr>
<td>Power and Data Wires</td>
<td>![Power Wires]</td>
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<tr>
<td>in the RFID All-In-One Cable</td>
<td></td>
</tr>
</tbody>
</table>

Parts Required (supplied by ICS)

Estimated Completion Time
We estimate that it will take 2 hours to perform this procedure. Keep all hardware organized as you work.
WARNING: Please have a certified electrician check voltages on the power supply before installing new components. The voltage should be 24 volts.

Instructions to Power Down the Auto Sentry Petro

**WARNING: Failure to turn off the Auto Sentry increases the risk of serious bodily injury or death.**

1. On the site server desktop, click on the VNC icon for the Auto Sentry Petro.
2. On the menu bar, click the Windows flag icon.
3. Click the Shutdown button.
4. Wait until the Auto Sentry display goes to a white screen.
5. Open the rear door of the Auto Sentry Petro.
6. Inside the head of the Auto Sentry, turn off the power switch. See Figure 7.
7. The circuit breaker for the Auto Sentry Petro is located in the left side of the Auto Sentry Petro. Turn off the circuit breaker by pressing the 10A blue button on the breaker until it clicks out. See Figure 7. If Canadian install, there are two 10A circuit breakers to turn off. See Figure 8.

8. Shut off the electricity by turning off the Auto Sentry Petro breaker inside the ICS® power distribution box. If your site does
not have an ICS Power Distribution Box, shut off the electricity by turning off the Auto Sentry Petro breaker inside the Main Service Electrical Panel.

Truss Base Mounting Location

Figure 9. Truss Base Mounting Location Rear View

Figure 10. Truss Base Mounting Location Side View
Truss Base Mounting Instructions

- Mount truss base 1'5" from the edge of the curb to the center of the truss base.
- Mount truss base 45 1/2" from the center of the Auto Sentry Petro to the center of the truss.

1. The three mounting holes that are adjacent to the rear edge of the truss base should always be furthermost away from the traffic lane and the vehicle. The two mounting holes adjacent to the front edge of the truss base should always be closest to the traffic lane and the vehicle. See Figure 11.

2. The center hole in the truss-base is used to pass the RFID all-in-one reader/antenna cable to pass from the conduit up through the center of the truss to the RFID enclosure. Minimally, a 1" conduit is recommended for the RFID All-in-one cable.

3. Using a hammer drill, secure the base of the truss to the concrete island with 1/2" dia. x 6"L concrete anchor bolts through

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**Figure 11. Truss Base Mounting Specifications**
RFID All-In-One Reader / Antenna Mounting

1. Attach the RFID All-In-One Reader / Antenna enclosure to the truss that is next the Auto Sentry and extends over the lane.

- The truss will be shipped with truss brackets and hex screws. (1/8” Allen key is needed to install but not supplied by ICS).

2. Mount the center of the enclosure at 3’6-1/2” from the edge of the curb. See Figure 13.

- To ensure the proper angle for the antenna, the enclosure should be mounted so the top of the enclosure is level. The antenna is angled inside of the enclosure. The enclosure will appear to be facing down. See Figure 10, Figure 12, and Figure 13.

3. Route cable down through the center of the truss. ICS recommends securing the cable to the truss every 12 inches with cable ties.

4. Use diagonal cutters to cut excess length off of the cable ties.

IMPORTANT: The enclosure should not be rotated on the truss as that would move the antenna to a position where it is not designed to work properly.
5. Open the back door of the Auto Sentry Petro.
6. Using the fish tape, pull the RFID All-In-One Cable through the 1" conduit from the base of the truss to the Auto Sentry Petro.
7. Locate the set of terminal blocks included on the right wall inside the back door as shown in Figure 14.

   **NOTE:** There is a terminal description label to the right of the terminal blocks.

8. The RFID All-In-One reader/antenna cable has (5) wires that connect to the terminal blocks as follows. See Figure 15.
   - Attach the power wires marked 24VDC(+) and 24VDC(-) from the RFID reader to the bottom terminals of the orange and black terminal blocks: 24V DC(+) wire to orange terminal block 24V DC(+), and the 24V DC(-) wire to black terminal block 24V DC(-).
   - Attach the data wires from the RFID reader to the bottom terminals of the orange, yellow, and white terminal blocks: the wire marked (Tx) to the orange terminal block (Tx), the wire marked (Rx) to the yellow terminal block (Rx), and the wire marked Ground to the white terminal block (GD).

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**Figure 14. Terminal block inside Auto Sentry Petro**

**Figure 15. Wire Termination**

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**Instructions to Power On the Auto Sentry Petro**

1. After the truss and enclosure are installed, and all the wires are connected as instructed on page 11, reconnect the power to the ICS power distribution box by turning on the Auto Sentry Petro breaker inside the ICS® power distribution box.
2. Turn on the breaker(s) inside the Auto Sentry Petro by pressing the blue buttons on the breakers until they click in.
3. Inside the Auto Sentry Petro, turn on the power switch to boot the system. See Figure 7 and Figure 8 on page 7.
4. Please contact ICS Technical Support to configure the RFID System: **800-246-3469**