Installation Guide

Savi ST-621 License Plate Tag

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Documentation for Savi ST-621 License Plate Tag

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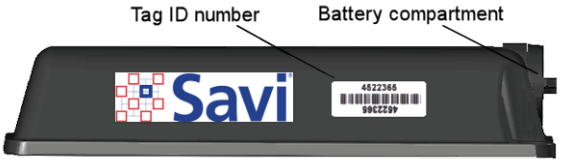
Savi ST-621 License Plate Tag Description

The Savi ST-621 License Plate Tag is a cost-effective, active RFID tag designed for various applications, including the tracking shipping containers and other conveyances. The Savi ST-621 License Plate Tag features a rugged form factor design, and has a replaceable battery with a typical life of five years.

Front view



Rear view

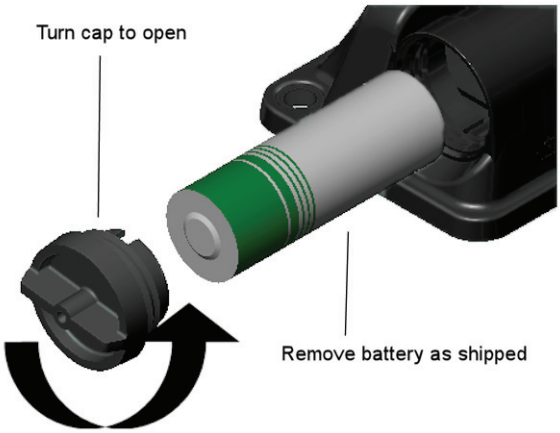
Features

- ISO 18000-7 compliant active RFID data-rich tag
- 400-foot (121.95 meters) omnidirectional line-of-sight range for monitoring, waking-up, and RF write/read operations
- Replaceable battery with a typical life of five years
- FCC, HERO, ETSI, RoHS (Directive 2002/95/EC) certified

Activating the Tag

The tag is shipped in sleep mode. You must remove and re-insert the battery to wake up the tag. After you re-insert the battery, you can initialize the tag.

1. Remove the battery cap.

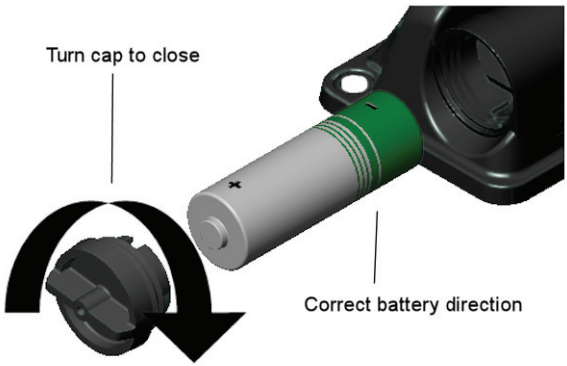


2. Remove the battery.

   Note: To properly precondition a new battery, tap the battery on a hard surface 3 or 4 times on its flat end before re-inserting the battery into the tag.

   Alternatively, when inserting a new battery for the first time it might be necessary to insert and remove the battery several times before the tag reports a "good battery" status immediately after power up by generating 5 long and 2 short beeps. This indicates that a new battery is properly pre-conditioned and the tag's low battery indicator is cleared.

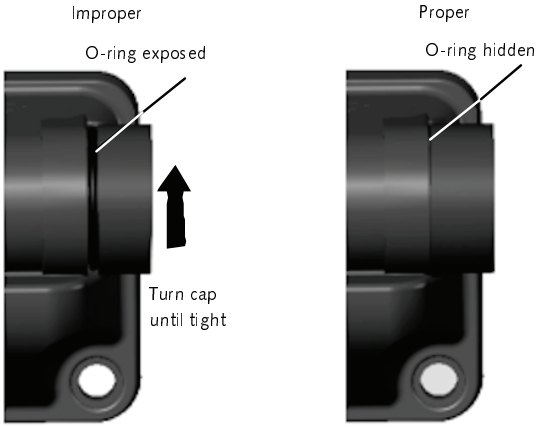
   Wait a few seconds and then reinsert the battery, matching the negative (–) and positive (+) terminals to the symbols shown on the tag housing. The tag will not work if you install the battery in the wrong direction (reversed).



Whenever a battery is inserted into a tag, the tag will emit 5 short beeps, one second apart.

Then, the tag will emit 2 short beeps to indicate adequate battery voltage or 3 short beeps if a fresh battery is required.

3. Replace the battery cap on the tag. **Continue tightening the cap until it is secure**.



If the O-ring is not properly compressed by the cap, water leakage and damage may occur.

Note: When the tag is not in use, disable the tag by removing, reversing, and re-inserting the battery. Store the battery at room temperature (50-80 °F or 10-27 °C).

Placing the Tag for Best Performance

Savi Technology recommends that you mount the tag on a flat surface, with the tag aligned vertically. For best performance, place the tag as high as possible, safe from impact (for example, between the ribs of an ISO-type shipping container), and away from obstructions on the asset.

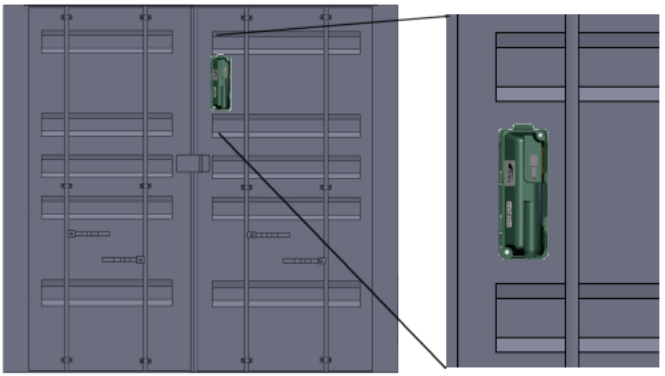
Mount the tag by adhering the tag and supplied plastic mounting sleeve with pressure sensitive tape (PST) to the inside or outside of a Class VIII container or plastic, cardboard, or wood container or box.

Typical locations include mounting the tag inside the middle of the container or on the outside of the container on a flat surface.

For best performance, make sure the tag is:

- Mounted on a metal surface
- Mounted at no less than a 6 foot (1.8m) elevation
- Mounted vertically
- Not mounted behind or between metal objects

The figure shows a tag mounted on an ISO container according to the performance guidelines.



Note: Make sure you clean the surface of the container or other asset before attaching the tag.

The tag has 400-foot (122m) read/write range to Savi SR-650 Fixed Readers. For the most consistent communications with the tag, the readers must be mounted:

- to have an unobstructed line-of-sight to the tag
- at 20 feet (6m) or higher

Caution: Tags mounted close to the ground may have less range.

Follow the instructions in the *Savi SR-650 Fixed Reader Installation Guide* to locate and position the Savi Fixed Reader for best performance.

Mounting the Tag

You can choose among several mounting methods for the tag, including using pressure sensitive tape (PST) or a plastic mounting sleeve. Whichever mounting method you select, the goal is to prevent accidental loss of the tag by sudden impact, vibration, or shock during transport. The fastener you choose often depends on the material from which the asset or container is constructed and your personal preference.

There are two accessory mounting packages, which are sold separately:

- Savi Mounting Kit STA-1260-Black, which includes PST
- Savi Magnetic Mounting Kit STA-1261-Black

You can also use the following alternative fastening methods:

- Tie-wraps
- Twine
- Screws

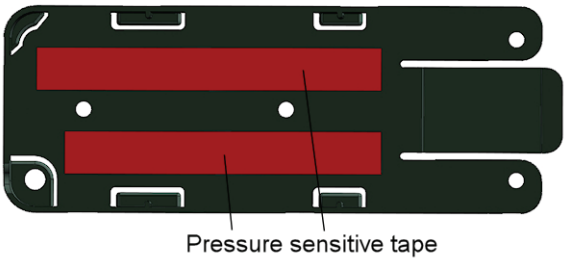
Caution: Use these and other alternative methods at your own risk.

Mounting with Tape

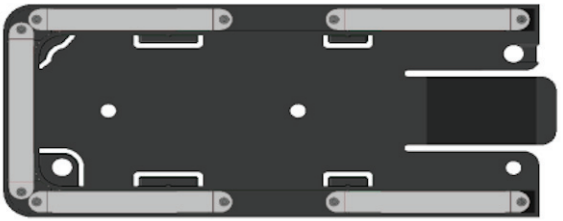
If it is not possible or practical to use screws, use PST to attach the tag. For ease of installation, the tag comes with PST on the back of the plastic mounting sleeve.

Note: Ideal tape application temperature range is 70°F to 100°F (21°C to 38°C). After application, the bond strength increases and reaches maximum bond strength after 3 days.

PST mounting kits are also available for separate purchase.

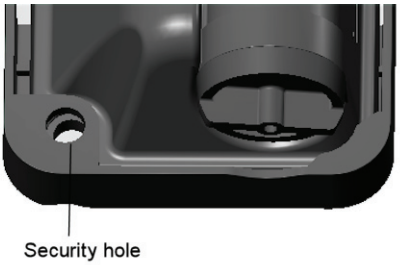


The magnetic mount clamps directly onto the metal surface. The magnets hold the tag securely, but allow the tag and the magnetic bracket to be removed quickly.



Once a mounting sleeve is fastened to an asset, you can leave it on the asset even after the tag is removed so the sleeve is available for future use with other compatible tags. Prior to re-use, visually inspect the PST-mounted sleeve to make sure it is attached securely. If necessary, reinstall the sleeve using new PST.

Asset tags and mounting sleeves have a security hole through which a nylon keeper band may be passed and tightened to secure the tag in place.



Replacing the Battery

The tag is equipped with non-volatile memory, which means stored data is not lost when you replace the battery.

1. Remove the battery cap.
2. Remove the discharged battery from its compartment.

   For more information, see "Activating the Tag" on page 6.

   Note: The lithium battery can be harmful to the environment. Follow current procedures for safely disposing of lithium batteries. The battery cannot be reused or recharged.

3. When installing a fresh battery, always install a 3.6V lithium "A" type battery, and DO NOT use a used battery, or incorrect battery status will be reported by the tag.

   Match the negative (–) and positive (+) terminals to the symbols shown on the tag housing. The tag will not work if you install the battery in the wrong direction (reversed).

   Note: To properly precondition a new battery, tap the battery on a hard surface 3 or 4 times on its flat end before inserting the battery into the tag.

   Alternatively, when inserting a new battery for the first time it might be necessary to insert and remove the battery several times before the tag reports a "good battery" status immediately after power up by gener-

ating 5 long and 2 short beeps. This indicates that a new battery is properly pre-conditioned and the tag's low battery indicator is cleared.

4. Replace the battery cap on the tag.

   Whenever a battery is inserted into a tag, the tag will emit 5 beeps.

   Then, the tag will emit 2 short beeps to indicate adequate battery voltage or 3 short beeps if a fresh battery is required.

   Whenever a battery is inserted into a tag, the tag performs multiple checks on the battery. It may take several days to report a low battery over RFID or using the USB cable.

5. **After the beep, continue tightening the cap until it is secure**.

Contacting Savi Global Support Services

For additional product information, including firmware updates, contact Savi Global Support Services.

- Go to www.savi.com and click SAVI SUPPORT.
- Send an email to help@savi.com.
- Call 1-888-994-7284 (North America only) or 1-650-316-4760 between 5 a.m. and 5 p.m. Pacific time.

When you contact Savi Global Support Services by telephone or email, have the following information available:

- Contact information (company name, your name, email, and phone number)
- Problem description
- Product name/ model
- Product/software version
- Serial number or license information

Specifications

Versions	ST-621-030: License plate tag ST-621-030-NSN: License plate tag with label
Physical Characteristics	Dimensions: 6.2 in. (15.8 cm) x 2.1 in. (5.4 cm) x 1.1 in. (2.8 cm) Weight: 3.8 ounces (108g) Color: Black Beeper: Audible beeper for tag location
Environmental	Temperature: -32°C to +70°C operating; -40°C to +85°C storage Humidity: 95% non-condensing Vibration and shock: MIL-STD-810F Weatherproofing: IP64 Manufacturing: RoHS Directive 2002/95/EC
Wireless (UHF Transceiver)	Frequency: 433.92 MHz at 0.6mW peak EIRP, FSK Modulated Communication range (unobstructed): 400 ft. (122m) operating read/write range (outdoors, non-obstructed) from Savi SR-650 reader Protocols: ISO 18000-7, EchoPoint
Wireless (LF Receiver)	Frequency: 123 kHz Communication range: Up to 12 ft. (3.6m) from SP-651-211 Signpost or SP-652-211 Signpost Reader Protocol: EchoPoint
Power	Battery type: 3.6 volt lithium, replaceable by user without tools Battery life: Approximately 5 years at 2 collections per day

Accessories	Mounting: Pressure sensitive tape Savi Mounting Kit STA-1260-Black (sold separately) Savi Magnetic Mounting Kit STA-1261-Black (sold separately)
Approvals	Radio Type Approval: FCC Part 15, EN 300 220 (433.92 MHz), RSS-210, AS/NZS 4268A EMC and Immunity: ETSI, EN 301 489, ICES-003 Ordnance: HERO safe separation distance rated at zero inches