

SENTINEL™ Tracking Tag

FAP5015-025

FAP5015-027

User Manual



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1.0 PRODUCT OVERVIEW

The **SENTINEL™ Tracking Tag** is a self-contained, battery-powered device that provides tracking capability within IWT's ad-hoc wireless digital mesh network. The small and lightweight Tracking Tag is compatible with both the **SENTINEL™** and **ACCOLADE®** Wireless Mesh systems. The Tracking Tag sends network health and status information to the dispatch station including Tag ID, battery level, emergency state, and tracking information.

Key features of the **SENTINEL™** Tracking Tag:

- Compact and lightweight
- Three (3) AA alkaline user-replaceable batteries last 4 to 12 months depending on configuration
- LED provides user feedback through distinct blink patterns
- Pushbutton for generating alert notifications
- Sends unique mesh identifier to dispatch
- Various mounting options including Carry Pouch and Vehicle/asset mounts
- Operates with existing infrastructure, including Fixed Mesh Nodes (FMN), Integrated Mesh Nodes (IMN), Section Mesh Nodes (SMN), and/or Battery Mesh Nodes (BMN)
- Internal antenna maximizes device durability
- MSHA Intrinsic Safety Approval No. 23-A170004-0
- PA Approval No. BFE 47-17



2.0 SAFETY INFORMATION

IMPORTANT! READ BEFORE OPERATING THE *SENTINEL™* TRACKING TAG.

This section contains important information on the safe operation of the *SENTINEL™* Tracking Tag.

2.1 MSHA APPROVAL

This device has been evaluated by the Mine Safety and Health Administration (MSHA) per Title 30 Code of Federal Regulations Part 23.

MSHA Approval Number: 23-A170004-0

Per MSHA's evaluation, this product has been determined to be intrinsically safe and may be used in areas where permissible equipment is required under the following conditions:

- For applications requiring MSHA approval, the *SENTINEL™* Tracking Tag must be used with the following AA size alkaline batteries ONLY: Energizer E91, Energizer EN91, Duracell MN1500, or Duracell PC1500.
- Do NOT mix batteries of different types or manufacturers.
- Replace all batteries at the same time.
- Battery installation and replacement must be performed in fresh air prior to installing the *SENTINEL™* Tracking Tag in a mine.
- When mounted to a vehicle and/or used for asset tracking, the *SENTINEL™* Tracking Tag must be used with the FAA9100-310 Enclosure Assembly.
- The *SENTINEL™* Tracking Tag must be located greater than 3.3 feet from blasting circuits, detonators and explosives

2.2 PROXIMITY TO BLASTING COMPONENTS

The transmitted waveform characteristics of the *SENTINEL™* Tracking Tag are short duration (milliseconds/second) pulses, with a power level of one (1) Watt or less. For this reason, the energy density is low such that the Tracking Tag is classified as a low Power RF source as defined by the Institute of Makers of Explosives, Safety Library Publication No. 20.

The Tracking Tag shall not be turned on or operated within 3.3 feet of explosives or blasting components. When used in the Commonwealth of Pennsylvania, the Tracking Tag must be located greater than 16.5 feet from blasting circuits



2.3 PART 15 OF FEDERAL COMMUNICATIONS COMMISSION (FCC) RULES COMPLIANCE

Changes or modifications to this unit not expressly approved by Innovative Wireless Technologies, Inc., (IWT) may void the user's authority to operate this equipment.

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference.
- 2) This device must accept any interference received, including interference that may cause undesired operation.

FCC ID: SP8-FAP5015025

This device complies with Industry Canada license-exempt RSS standard(s). 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 présent 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'en compromettre le fonctionnement.*

IC: 9568A-FAP5015025

The Tracking Tag automatically detects the mesh network and adjusts its frequency and power as directed by the network. The user cannot change any aspects of the RF operation.

3.0 SPECIFICATIONS

3.1 SPECIFICATIONS FOR FAP5015-025 PERSONNEL TRACKING TAG

(Typical unless otherwise specified)

Operating	
System Compatibility	<i>SENTINEL™</i> and <i>ACCOLADE®</i> Systems
Operating Frequency	902 to 928 MHz
Operating Temperature	-20C to +70C
Operating Life	4 months @ 30-second update rate
RF Transmit Power	+22 dBm
Communications	Self-forming mesh network
Range ¹	Up to 1,000 feet

Physical	
Dimensions	3.69" x 2.44" x 1.25"
Weight	3.5 oz. (without batteries)
Enclosure	IP65
Antenna	Internal
Power	Three (3) AA Alkaline Batteries

Note 1: Communication range varies with topology and other environmental factors.

3.2 SPECIFICATIONS FOR FAP5015-027 ASSET TRACKING TAG

(Typical unless otherwise specified)

Operating	
System Compatibility	<i>SENTINEL™</i> and <i>ACCOLADE®</i> Systems
Operating Frequency	902 to 928 MHz
Operating Temperature	-20C to +70C
Operating Life	12 months @ 4-minute update rate
RF Transmit Power	+22 dBm
Communications	Self-forming mesh network
Range ¹	Up to 1,000 feet

Physical	
Dimensions (including mounting flanges)	6.33" x 3.57" x 2.46"
Weight	1.0 lb (without batteries)
Enclosure	IP66
Antenna	Internal
Power	Three (3) AA Alkaline Batteries

Note 1: Communication range varies with topology and other environmental factor.

4.0 OPERATING INSTRUCTIONS

4.1 POWER

The *SENTINEL*™ Tracking Tag requires three AA alkaline batteries. Use of other battery chemistries is not allowed. For applications requiring MSHA Intrinsic Safety approval, only the cells listed in Section 2.1 may be used, and batteries must be replaced in fresh air. To turn the Tracking Tag on, insert three AA batteries. Device will automatically turn on. There is no on/off button.

4.1.1 Replacing Batteries of FAP5015-025 Personnel Tag

To insert or replace batteries:

- Remove cover by unscrewing the screws at the top of the device with a Phillips screwdriver.
- Slide out interior tray and insert the batteries. Note proper polarity (marked on battery holder).
- Replace cover and tighten screws to ensure dust-tight seal.
- Make sure the enclosure gasket is undamaged and in place.
- Ensure the screws have a small rubber gasket that is pushed back against the head of the screw.
- Observe LED status light to verify power is ON.



Figure 1 - Enclosure is held together by two screws



Figure 2 - Remove screws with Phillips screwdriver



Figure 3 - Carefully slide out interior tray



Figure 4 - Replace batteries and note proper polarity

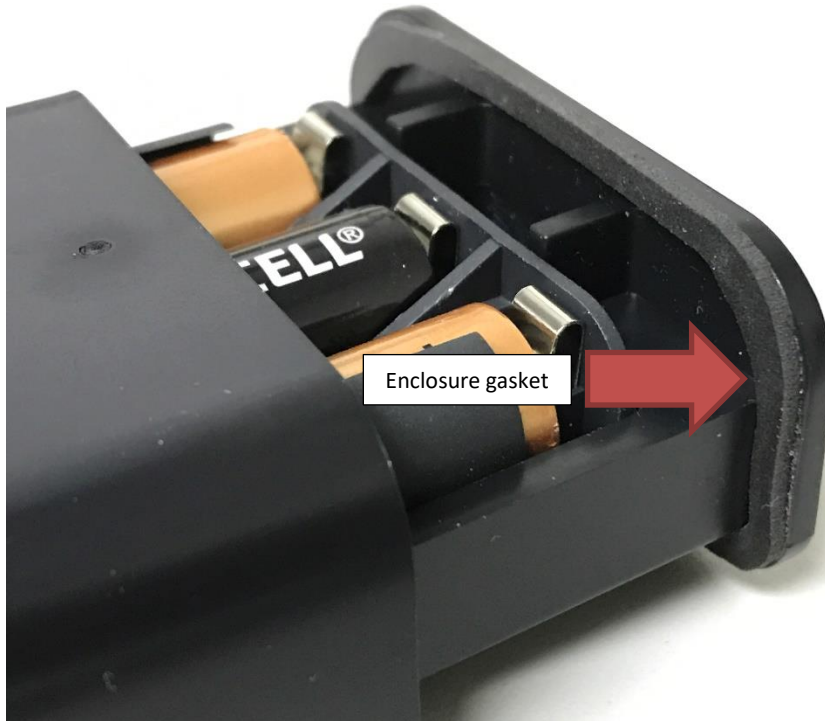


Figure 5 - Ensure gasket is undamaged and in place

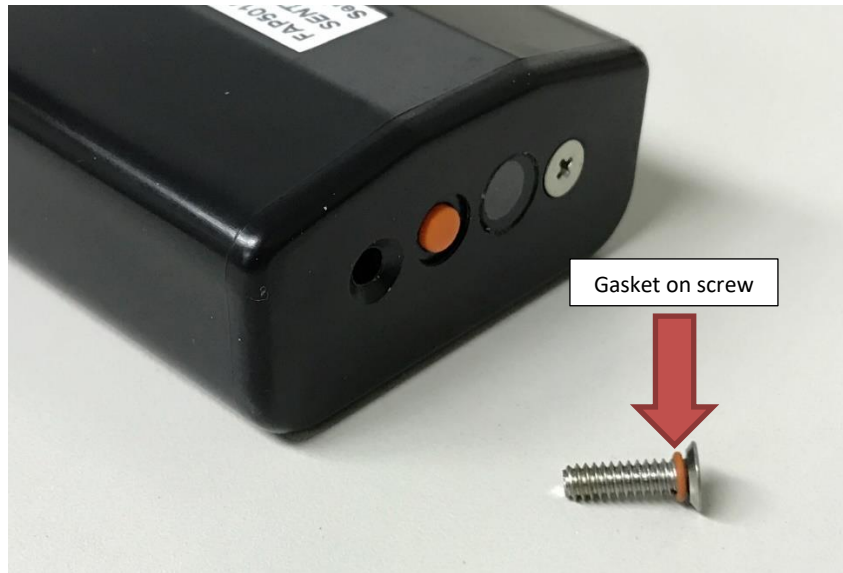


Figure 6 – Replace cover and tighten screws. Ensure the gasket is on the screw before inserting.

4.1.2 Replacing Batteries of FAP5015-027 Asset Tag

To insert or replace batteries:

- Open enclosure by unscrewing the four captive cover screw on the back/bottom side of the enclosure.
- Remove Tracking Tag assembly from external enclosure.
- Follow battery replacement instructions in section 4.1.1.
- Place Tracking Tag assembly into foam insert in top side of enclosure. Ensure flat side of Tracking Tag assembly is facing outward prior to closing up the enclosure.
- Make sure external enclosure gasket is undamaged and in place.
- Replace external enclosure lid and tighten screws to ensure dust-tight seal.

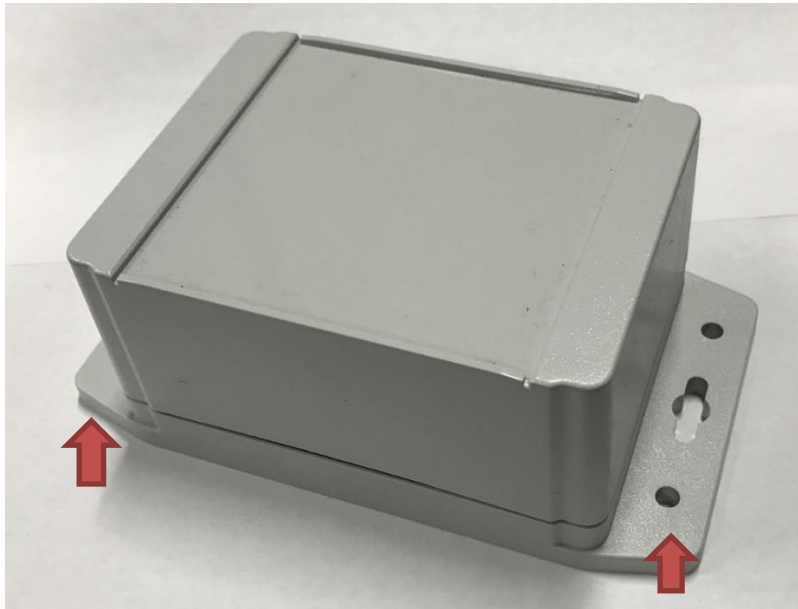


Figure 7 - External enclosure is held together by four captive screws inserted at the back of the enclosure.

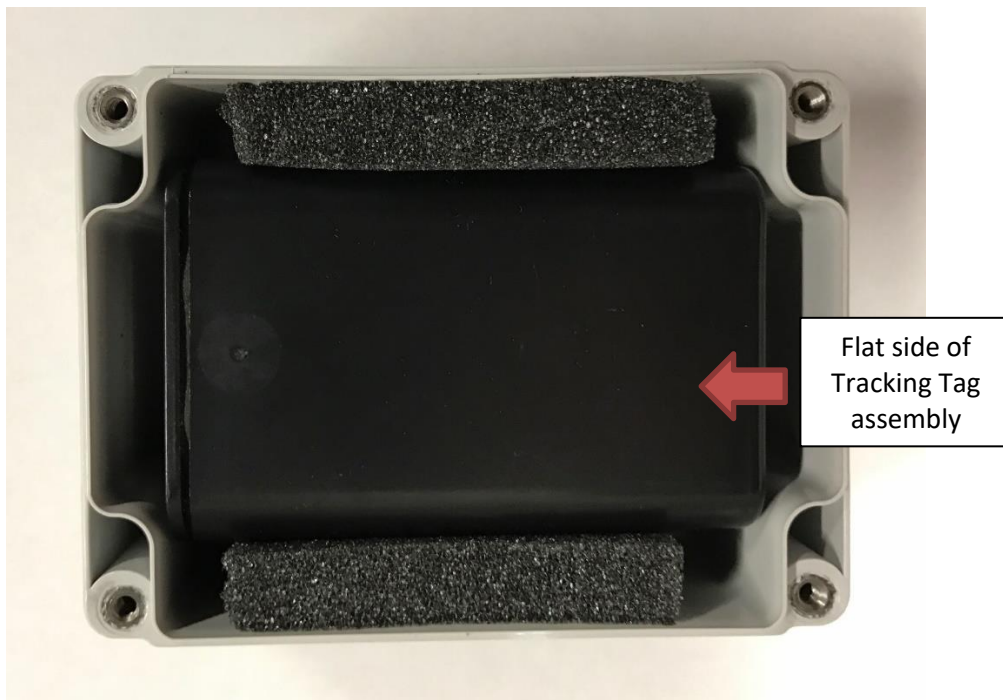


Figure 8 - Remove Tracking Tag assembly from external enclosure to replace batteries.

4.1.3 Battery Life

The battery life ranges between 4 and 12 months depending on the user application. The Personnel version of the Tracking Tag (-025) operates for 4 months @ a 30-second update interval, and the Asset version of the Tracking Tag (-027) operates for 12 months @ a 4-minute update interval.

4.2 LED STATUS INDICATOR

The Tracking Tag includes an LED status indicator with distinct blink patterns to provide local feedback to the user. The LED indicates network status and basic battery level.

- Good Battery, On Network: Double blink every second
- Good Battery, Off Network: Double blink every 3 seconds
- Low Battery, On Network: Single blink every second
- Low Battery, Off Network: Single blink every 3 seconds



Figure 9 - Tracking Tag LED

4.3 PUSHBUTTON

The Tracking Tag includes an orange multi-purpose pushbutton. In the Personnel version of the Tracking Tag (-025), this button is configured to generate an alert for the dispatcher in the event of an emergency condition. It is also used for initiating programming modes for configuration updates to the device.



Figure 10 - Tracking Tag Pushbutton

4.4 CARRY POUCH FOR PERSONNEL TRACKING (FAP5015-025)

A Custom Carry Pouch is available as a separate accessory for the Tracking Tag. It has a strip of reflective material across the bottom and belt loop on the back. There is also a smaller loop on the side for mounting with a carabineer.

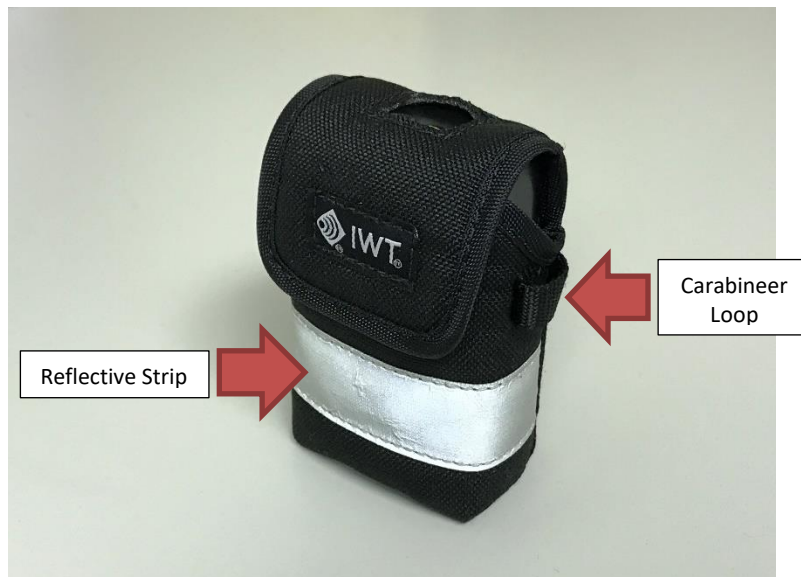


Figure 11 - Carry Pouch Front View



Figure 12 - Carry Pouch Side View

The top and bottom of the Carry Pouch have openings for easy access to the pushbutton and LED on top, and the Node ID on the bottom.



Figure 13 - Carry Pouch Bottom Window

4.5 EXTERNAL ENCLOSURE FOR VEHICLE MOUNTING OR ASSET TRACKING (FAP5015-027)

The FAA9100-310 Enclosure Assembly is available as a separate accessory for the Tracking Tag. For applications requiring MSHA Intrinsic Safety approval, the FAA9100-310 Enclosure Assembly is required when mounting the Tracking Tag to a vehicle or using the Tag to track material/assets (see Section 2.1). The external enclosure has an internal gasket for protection against dust and water ingress, four captive lid screws, and a foam insert. Mounting flanges on the enclosure allow options for mounting to vehicles, pallets of material, or other assets.

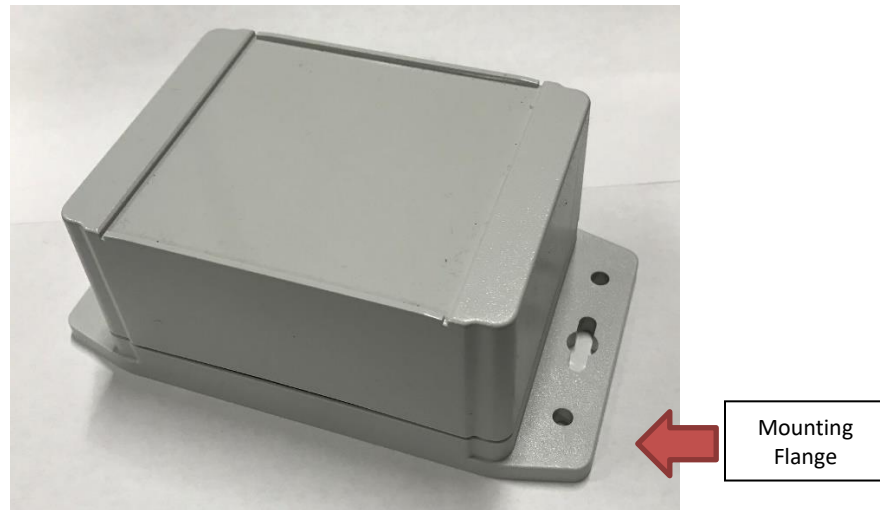


Figure 14 – FAA9100-310 Enclosure with mounting flanges

5.0 ADDITIONAL ASSISTANCE

If you have any issues with your Tracking Tag that require assistance, contact your authorized dealer.

