

# LoRa-Tag<sup>®</sup>

Ineo-Tag is an innovative product dedicated to identification and localization services. Thanks to a cutting edge approach, combining Real Time Localization Services and long range reading, Ineo-Sense offer a new way to solve active RFID concerns. Based on LoRa technology, which offers secure, robust and long range bidirectional transmissions, LoRa -Tag is able to address efficiently various RFID applications as well as, asset management, on-line inventory, people and asset flow tracking, secured localization...

In addition, Ineo-Tag can include sensors allowing relevant applicative scenarios (Motion, Tilt, Tamper, temperature...). Ineo-Tag is the main node of a complete distributed system architecture. This architecture provides concrete new services and enables real-time triggering events.

### LoRa-Tag operational mode :

- Standby mode : Remote On/Off switching.
- Zoning detection : Allowing real time localization within 5 to 50 m range positioning.
- Periodic transmission : Regular presence frame (every 1 to 255 min).
- Motion alarm : Alarm frame on characterized shock & movement.
- On demand Localization : for one, a group or all Tags in the area.
- Lon worker protection using Motion combined with Tilt sensing.
- Digital alarm : Alarm transmission triggered on digital input (BP, Seal or Tamper).
- Real time clock scheduler : Allowing automatic operational mode switch.
- Datalogging events : Rolling Storage of the tags events (Up to 3000).
- 1Ko E<sup>2</sup>prom memory available for custom applicative data storage.
- OTA Setting: Over The Air Firmware .



## <u>Clover-Net<sup>®</sup> Technology overview :</u>

Clover-Net<sup>®</sup> represents private communication protocol based on LoRa technology. This well known technology provides ultra-long range spread spectrum communication and high interference immunity whilst minimizing current consumption. Clover-Net protocol includes Full networks services (Broadcast, Repeater, Mesh, ...) in addition to Long range modulation for Lo-RaWAN public networks. Dedicated for ultra Low power Clover-Net<sup>®</sup> fit to battery powered devices (average current about few  $\mu$ A). Solution based on Clover-Net<sup>®</sup> are ready to deployed wordwide thanks to Native three bands implementation (433Mhz, 868Mhz, 915Mhz) and high coexistence transmission by Multichannel & TSSP.

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## Ineo-sense wireless main characteristics :

- Transmission range up to 5 000 m line of sight, up 500 m indoor.
- 2-way communications : Scheduled transmission, automatic alarms and on-demand reading.
- Robust against physical and electronic interferences.
- Fast event reactivity, huge coexistence ability.
- ETS 300-220 compliant.
- Operates in license free ISM 868 Mhz bands.
- Use Multi-channels frequency and FHSS to avoid collision.
- Dedicated alarm frequency channel.
- Data Encryption by AES 128 with dynamic key mixt

#### Hardware features :

- ABS Grey casing : Personal Tal IP44, Industrial Tag IP55.
- Average weight : 65 grams. (85g for industrial version)
- Removable batteries on personal Tag
- Two leds for radio communication & event alerts
- Optional buzzer for pre-alert (emergency, wake-up ...)
- Secured fixation with specific assembly
- Optional electric seal cable.
- One Motion sensor dedicated to Tilt & shock detection.
- Operating temperature :-20° to +60° C (-4° to 158° F)
- Highly optimized for long battery life in the field (> 3 years )

