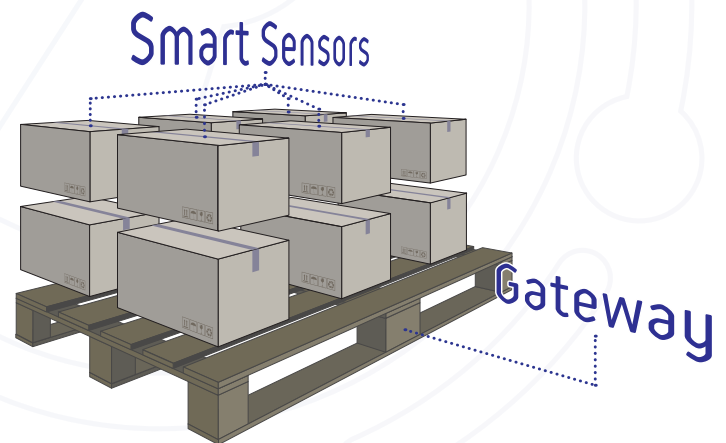# Multisensing Platform for Smart Containers

**Ambrosus**

The Ambrosus Multisensing Platform for Smart Containers consists of a low-energy battery-powered gateway and at least one smart-sensor. It is designed to provide certified and signed records of the position, temperature, humidity, light intensity and shocks.

## INTRODUCTION

The Multisensing Platform for Smart Containers consists of a number of Smart Sensors communicating with an integrated Gateway, which connects and transmits data directly to AMB-NET. Devices are battery-powered. The Smart Sensor records, stores, certifies and signs data, before sending it to the Gateway via Bluetooth.

The Smart Sensor records humidity, temperature, light and accelerations. Positioning is done by the Gateway, using 3G / WiFi networks.



Smart Sensors

Gateway

## FEATURES

### Data

The Smart Sensor has an internal memory, which can store up to 10'000 records. These records are then signed according to the Ambrosus protocol using its own private key.

The Gateway gets its positioning by triangulating data from the 3G / WiFi networks.

### Communication

The communication between the Smart Sensor(s) and the Gateway uses the Bluetooth Low-Energy (BLE) protocol. It takes place only when the Gateway prompts the Smart Sensor(s). The collected data is then transmitted either by Wi-Fi or 3G network using the HTTPS protocol with SSL/TLS encryption.
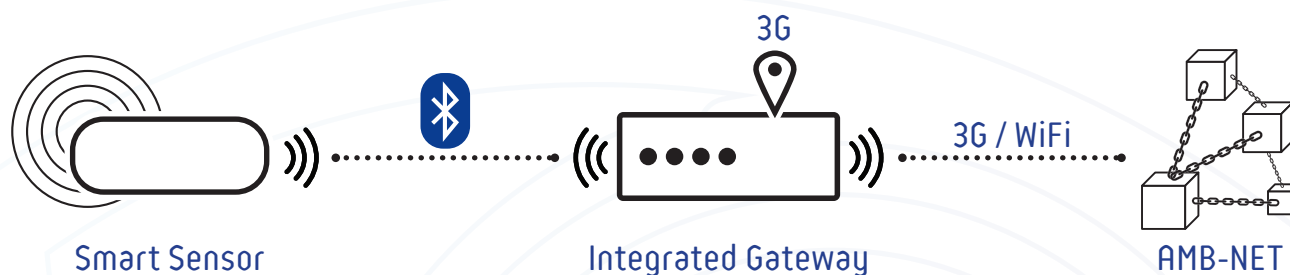
### Integration

The Smart Sensor's casing is waterproof (IP67), and was designed for integration into batches packagings, from cardboard boxes to cooled containers. The Gateway is designed to be integrated directly into pallets.

Both casings can be customized for integration into different smart containers/boxes.

## www.ambrosus.com

# HOW IT WORKS



Smart Sensor       Integrated Gateway       AMB-NET

# TECHNICAL DATA

| | |
|---|---|
| Temperature range | -15 to 60 °C |
| Humidity range | 0 to 100 %RH |
| Light range | 0 to 100'000 Lux |
| Acceleration range | ±16 g |
| Positioning | Triangulation using available 3G / WiFi networks |
| Communication protocol | Smart Sensor : Bluetooth Low Energy (BLE)<br>Gateway : WiFi/3G |
| Connectivity | Customizable, from 1/min to 1/week |
| Log capacity | Smart Sensor : Up to 10'000 records per Smart Sensor<br>Gateway : Up to 100 position records for the integrated Gateway |
| Sampling frequency | Smart Sensor : Customizable, from 1/sec to 1/day for Smart Sensor<br>Gateway : Customizable, from 1/min to 1/day for integrated Gateway |
| Power source | Smart Sensor : AA type battery • 3,6V • 2500 mAh<br>(battery extension on demand)<br>Gateway : 3x AA type battery • 3,6V • 2500 mAh<br>(battery extension on demand) |
| Autonomy | Depends on the sampling and connection frequency, but up to 1 month normally |
| Weight | Smart Sensor : 50g<br>Gateway : 150g |
| Other connections and functionalities possible | • Tags, tracers and seal readers<br>• Extension to commercial sensors with other capabilities<br>• Connection to containers or other pallets through IoT network |
| Positioning option | Through GPS antenna, embedded into the Gateway |
| CE Certification | Under evalutation |