

TubeSense® HomeCollect

**A smart solution for temperature monitoring
in the safe transport of individually packaged biological samples**



Safe logistics in healthcare

When transporting biological samples or temperature sensitive pharmaceuticals, it is vital that the transport conditions remain within set guidelines. From now on, this can be monitored with TubeSense®: Equipped with an accurate temperature sensor and Near Field Communication chip (NFC), the reusable TubeSense® temperature logger offers a smart solution for the logistics of both biomedical samples (blood, urine) and temperature sensitive pharmaceuticals.

The TubeSense Cloud Solution

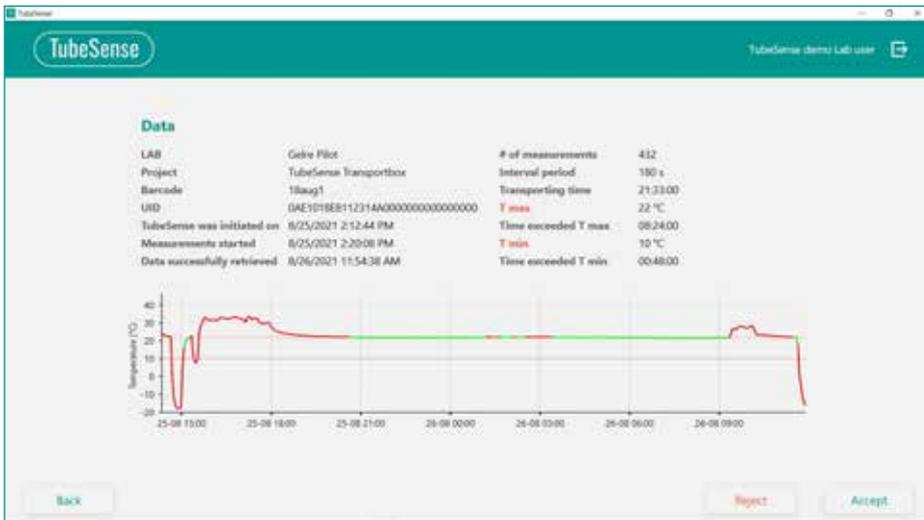
With TubeSense®, all relevant data, including sample specification, temperature progression during transport and storage, and all tracking & tracing information is securely stored in the TubeSense Cloud with one simple scan of the logger and via links stored in the hospital and/or laboratory information system. TubeSense® has a solution for both individual samples, materials transported in transport boxes (PGM) and for distribution of temperature sensitive pharmaceuticals.

Shipping of individual samples

For monitoring individual biological samples, such as blood and urine samples in Home Collect tests, the TubeSense® temperature logger can be attached directly to a sample tube. Before a Home Collect sample kit is sent to a patient, the TubeSense logger attached to the tube is linked to the patient's lab record. After sample collection, the patient initiates the temperature check by removing a plastic tab attached to the logger. The TubeSense logger then records the exact time and temperature course of each sample during transport.



When the laboratory receives the sample tube with TubeSense temperature logger, it is scanned with an NFC reader, which reads the measured temperature history and sends it together with the receipt to the TubeSense Cloud for data storage and further analysis. If the measured values deviate from the pre-set temperature profile, a warning is immediately sent to the lab technician.



TubeSense® offers:

- Item-level identification of PGM (e.g. blood, urine) and temperature-sensitive pharmaceutical products;
- Precise temperature monitoring at defined intervals, based on required temperature profiles (measuring intervals are specified per batch);
- Tracking & tracing during key phases in the process (shipping, time of activation, proof of receipt on entry into the laboratory);
- A cost-efficient solution as the temp. logger is reusable;
- Memory for storing up to 15K measurement values with a resolution of 0.3°C;
- An attractive solution for temperature recording of individual samples and packages due to its compact size, secure attachment to packages (independent of tube size) and low costs;
- Activation of temperature monitoring by the user;
- A secure, fast and user-friendly solution based on Near Field Communication (NFC);
- A dashboard for analyses with statistics and Key Performance Indicators (KPIs);
- A Cloud server solution with both desktop app and mobile app front-ends with customised look and feel;
- Optional integration with Lab Information Management Systems (LIMS) and/or Hospital Information Systems (HIS);
- An AVG-safe solution because TubeSense® does not use or store personal data;
- Anti-tampering functionality.

TubeSense® specifications

Temp. range	-40°C to +85°C
Accuracy	±0.3°C between 0°C and 40°C ±0.5°C between -40°C and +85°C
Calibration	Not required (pre-calibration, according to ISO/IEC 17025 temperature calibration procedure)
Logging interval	Adjustable from 10 seconds to 2.5 hours
Starting options	By removing plastic tab or via NFC
Stop options	If the memory is full or via reading with NFC
Memory	~15,000 measurements
Interface	Smartphone with NFC or a PC with NFC reader
Data storage	Data is stored in an SQL database for analysis (dashboard). An API to LIMS is available.
Battery	CR1225 coin cell battery, 3V, 45-70 mAh*.
Lifetime	Approx. one year (depending on measurement frequency)
Sensor location	Can be clicked onto any tube or attached to a transport box with a sticker
Material	Resistant polypropylene enclosure
Dimensions	40 x 15 x 4 mm (L x W x H)

*A replaceable battery is preferred over all currently available rechargeable battery technologies because it is lighter and smaller, more cost-effective, super reliable and safe to ship. And because of its closed-loop operation, the batteries can be safely recycled after return to the laboratory.