Tec4med

SmartHub / SmartLock

Intelligent & smart data tracking

Operating Manual

Content

1 General information

Thank you for choosing SmartHub / SmartLock!

To ensure quick commissioning, it is necessary that you read and follow the following instructions and descriptions thoroughly.

1.1 Identification of the manufacturer

Manufacturer:	Tec4med Lifescience GmbH
Street:	Otto-Hesse-Straße 19 | T9
City:	64293 Darmstadt
Telefone:	+49 (0) 6151 - 360 37 00
E-mail:	info@tec4med.com
Website:	www.tec4med.com

1.2 Scope of delivery

Quantity	Description
1x	SmartHub / SmartLock
1x	Wall mount (optional)
1x	USB-C charging cable (optional)

Before commissioning the unit, check that all parts included in the scope of delivery are present.

DANGER!

This symbol means an immediate danger to the life and health of persons

WARNING!

This symbol indicates possible risks to property and/or the environment.

INFO!

This symbol indicates important facts and particularly useful information.

Tips for saving energy.

No splash water.

Electrical appliances must not be disposed of with household waste.

Environmentally hazardous.

3.1 Purpose of the operating instructions

This instruction manual contains important information for the safe, correct and sustainable operation of the appliance. Following the instructions will help to avoid hazards, reduce repairs, increase reliability and extend the life of the unit.


Danger!

Please keep the operating instructions for future reference.

The latest version of these operating instructions can be downloaded at any time. Use the following link or QR code to access the latest version:
www.tec4med.com/tec4medservice

3.2 Liability and warranty

All information in these operating instructions is given to the best of our knowledge and belief based on our experience and knowledge to date.

The original version of these operating instructions was prepared in German and English and checked for technical accuracy by our company. The translation into the customer's national language/contract language was carried out by a recognised translation agency.

These operating instructions have been prepared with the utmost care. Should you nevertheless find gaps and/or errors, please notify us at the above address. Your suggestions for improvement will help us to design a user-friendly manual.

3.3 Copyright

4 Basic safety instructions

A basic requirement for the safe handling and trouble-free operation of this appliance is knowledge of the basic safety instructions. It is not permitted to use the unit for any purpose other than that specified by the manufacturer.


Danger!

Never open the housing of the unit. Repair work on the device may only be carried out by Tec4med LifeScience GmbH or authorised workshops. Defective parts or components may only be replaced by parts approved by Tec4med LifeScience GmbH.


Warning!

- If the unit has visible damage, it must not be put into operation. If the charging cable of the appliance is damaged, it must be replaced by the manufacturer or another qualified person to avoid danger.


Warning!

- Repairs to this appliance must only be carried out by qualified personnel. Improper repairs can pose significant risks.
- Disconnect the appliance from the power supply before any cleaning and maintenance and after each use.


Danger!

- Compare the voltage specifications on the rating plate with the available power supply.
- Only connect the appliance as follows:
- With the charging cable to a 5 V USB power supply.
- Never pull the plug out of the socket by the charging cable.


Warning!

- The batteries may only be replaced by Tec4med Lifescience GmbH or authorised partners. (except SmartHub Alkaline version)

- Commercially available alkaline batteries of size R03 (AAA / Micro) are suitable for use with the SmartHub alkaline version.

5.1 Functional description

The SmartHub is an intelligent beacon gateway monitoring system and can be integrated into any interlogistic process at box, pallet, container, truck or warehouse level. Integrated sensors measure temperature, humidity, vibrations, light, air pressure, access and geo-position and send them to the cloud software via the mobile network.
In the SmartLock version, in addition to the above functions, it offers monitoring and security as a smart lock with access authorisation and digital seal.

The SmartHub / SmartLock itself can be used as a stand-alone real-time monitoring system, but also serves as a stationary gateway to manage multiple Beacon data loggers. Integrated on a single box or pallet, the SmartHub works both as a live tracker and as an optional intelligent lock (SmartLock version), whereby its mechanics can lock special reusable containers.

As a gateway, the SmartHub / SmartLock can be mounted on any wall, in warehouses or trucks, for example, whereby it scans all passing beacon data loggers in its BLE radius, reads them automatically and transmits all data to the Tec4Cloud. In this way, all beacons can be read without manual interaction.

5.1 Construction and components

1	Display	3	USB-C charging port
2	Button	4	Lock mechanism

6 Commissioning & operation

Before use, make sure that the charging cable and the plug are dry or that the charge level of the batteries is more than 20%.


Danger!

- If the unit shows visible damage, do not operate it.
- Do not operate the appliance near open flames or other sources of heat. Danger of overheating.


Danger!

- Protect the appliance and cables from heat and moisture.
- Do not throw or spin the appliance and avoid excessive external force.

6.1 Tips for operating

- Operating the unit in low temperatures may reduce battery life
- Choose longer intervals to save energy and enhance runtime for:
  - Data recording
  - Data transmission
  - Beacon read-out
  - Scan for Beacons

6.2 Button functions

SmartHub: Push the button to manually trigger data measurement and transfer as well as a settings update.

SmartLock: The button is used to activate and deactivate the lock mechanism. Pushing the button also triggers a data measurement and transfer as well as a settings update.

SmartHub and SmartLock can be reset by pressing the button for 15 seconds. If the battery is drained and the device does not respond, it may be necessary to charge the device for 16 hours before reset. Please disconnect the charger before reset.

6.3 Connect

Press the button for 3 seconds to connect SmartHub/ SmartLock to the Tec4med system manually.

- When the batteries are discharged, connect the unit to a power source with the supplied charging cable or use the charging station (optional).

The rechargeable batteries can be charged via the charging station or the supplied charging cable. For more information on the rechargeable batteries contact Tec4med Lifescience GmbH.

6.4 Locking/ Unlocking the SmartLock

The SmartLock can only be unlocked if it is running. Connect the charger to unlock a SmartLock with drained battery.

Press the button for 3 seconds for locking (LED lights up orange), press the button again for 3 seconds for unlocking (LED lights up green).

If the unlocking is prevented, the SmartLock cannot be opened without force. This may lead to damage to the unit.

Warning!

6.5 Display functions

The display is an energy-saving e-ink display.

After switching on the device, the display remains permanently active.

6.5.1 Lock

The lock symbol indicates whether the SmartLock is locked or unlocked. An open lock indicates that the lock mechanism is unlocked. A closed lock indicates that the lock mechanism is locked.

6.5.2 Temperature

SmartHub and SmartLock measure the temperature at predefined time intervals via a sensor. This is shown on the display next to the thermometer symbol and indicated in °C.

6.5.3 Humidity

SmartHub and SmartLock measure the relative humidity in predefined time intervals via a sensor. This is shown on the display next to the drop symbol and indicated in %.

6.5.4 Geo-Position

SmartHub and SmartLock determine the location of the device via the Global Navigation Satellite System (GNSS), and via the triangulation of cell towers and WiFi routers. The successful determination of a geo-position via one of these technologies is indicated on the display by the GPS symbol.

6.5.5 Connection to the mobile network

SmartHub and SmartLock transmit the measured data directly via the mobile network to the server from where the data is uploaded to Tec4Cloud. The connection (strength) to the mobile network is indicated by the bars of the mobile network symbol. The mobile connection is established either via LTE Cat M1 or 2G depending on network availability. For a list of the countries and network providers available worldwide contact Tec4med Lifescience GmbH.

6.5.6 Battery charge status

SmartHub and SmartLock measure the charge status of the batteries. This is indicated on the display by the battery symbol.

6.5.7 Gateway for Beacons

SmartHub and SmartLock serve as a gateway for Beacon data loggers and are able to read out their measured data via Bluetooth Low Energy (BLE). The devices transmit the measured data to the Tec4Cloud via the mobile network. The display shows the connected devices, with the last measured temperature and the serial number.

6.6 GNSS / mobile tracking functions

Warning!

- All transmission functions are switched off when the device is in airplane mode. All status parameters such as humidity, temperature, access and vibration are still recorded internally.
- As soon as the SmartHub / SmartLock has re-established reception in the mobile network, all recorded data is subsequently transferred to the cloud.
- If the device is in an aircraft, it automatically switches to flight mode; no manual settings are necessary.
- For a list of airlines where the SmartHub / SmartLock is already approved contact help@tec4med.com

6.7 Data recording/transmission/readout interval

- SmartHub / SmartLock measures temperature, humidity, tilt, vibration, air pressure, access (SmartLock only) and geo-position.
- The unit records the measured parameters in an adjustable interval. Default record interval is 15 minutes.
- The device transmits the parameters to the Tec4Cloud in an adjustable interval. Default transmission interval is one hour.
- The intervals can be changed by the manufacturer on request (shorter intervals ensure higher; longer intervals lower power consumption).
- SmartHub / SmartLock can serve as a gateway for the Tec4med Beacon family (SmartBeacon, TempBeacon, CryoBeacon).
- The device reads out the parameters measured by Beacons in an adjustable interval. The default read out interval is 24 hours.
- The device scans for Beacons in its BLE range of 100m (if no obstacles present) in an adjustable interval. Default BLE scan interval is 2 minutes.
- The device can read-out up to 25 Beacons at a time.

6.8 Battery operation & battery change

- The batteries of the SmartHub / SmartLock are charged via the supplied charging cable (USB Type-C) and charger or the charging station.
- The batteries may only be replaced by the manufacturer or an authorised partner. (SmartLock & SmartHub LiPo)

Warning!

- The batteries may only be charged indoors. Keep the device away from splashing water.
- Commercially available alkaline batteries of size R03 (AAA / Micro) are suitable for use with the SmartHub Alkaline version.

- To change the alkaline batteries, open the battery compartment and remove old batteries if necessary. Make sure that you insert the batteries in the orientation indicated in the battery holders.

Warning!

- SmartHub Alkaline must be operated with at least 6 batteries. The 6 batteries must be inserted in at least two battery holders with 3 batteries each.

If the charge level of the rechargeable batteries / batteries reaches 5%, the device warns of the discharge.

If the charge level of the batteries falls below 5%, the system also switches off all active transmission functions (the internal recording of sensor data from temperature, humidity and air pressure continues). The data from external beacons is also no longer recorded. The system only reconnects to the cloud when an external event (e.g. lock function or switch-on/off function) is activated or the charge level rises above 5%.

Warning!

7 Cleaning and care


Danger!

Always disconnect the appliance from the power supply before cleaning and maintenance.

Never clean the appliance under running water or in rinse water. Do not use strong detergents or hard objects for cleaning as they may damage the appliance.

- Clean the outside of the unit from time to time with a damp cloth.
- Make sure that the unit is free of dust and impurities.


Warning!

8 Troubleshooting and disposal

Electronic devices must not be disposed of with household waste! Dispose of the device properly at the end of its life.

For more information about the web interface and dashboard (Tec4Cloud), visit www.tec4med.com or ask for information at help@tec4med.com.

Caution - The batteries used in this unit may present a fire hazard or cause chemical burns if misused. Do not disassemble, heat above the maximum temperature limit of 45 °C / 113° F or incinerate. Do not replace the batteries yourself. There is a risk of fire or explosion if other batteries are used!


Danger!

Keep away from children. Do not disassemble or incinerate.

The unit and all its accessories must be disposed of properly by the manufacturer. Please also contact the manufacturer in case of malfunctions and emergencies.


Warning!

Tel.: +49 (0)6151 - 360 37 00
E-mail: help@tec4med.com

Complaints to:
TEC4MED LifeScience GmbH, Otto-Hesse-Str. 19, T9,
64293 Darmstadt

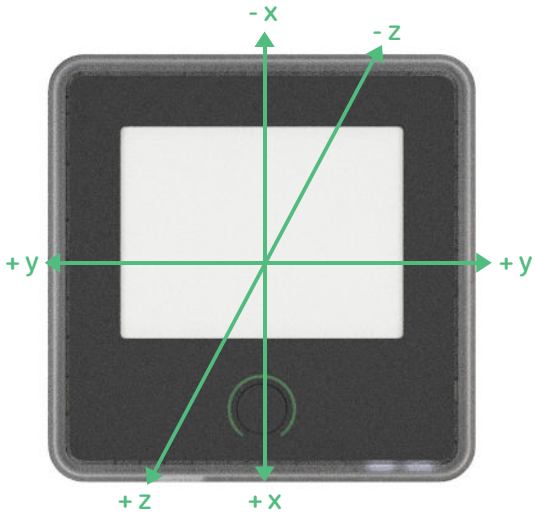
Technical data

	Description	Details
Accelerometer	3 axes: x, y and z up to ±16 g per axis Measuring frequency	• Up to ±16 g factory-calibrated • Accuracy of 0.04 g at zero g level • 0.2 g resolution • Adjustable threshold from 2 g to 12 g • Between 25 Hz to 400 Hz
Air pressure sensor	Calibrated by manufacturer	• Pressure range 300 to 1.100 hPa (9.000...-500 m above sea-level) • Accuracy of ±1 hPA at 0 to 40° C • Resolution 0.01 hPa
Humidity sensor	Calibrated by manufacturer	• 0% rH to 100% rH non condensing • ±2% rH accuracy; 0.01% rH resolution • Definable threshold
Temperature sensor	Calibrated by manufacturer	• -40° C up to +60° C with accuracy of ±0.2°C • 0.015° C resolution • Lower and upper threshold freely definable
Battery (Li-Po) SmartHub	Polymer Lithium-Ion Nominal voltage: 3,7 V Capacity: 12000 mAh	• Battery life up to 30 days, depending on configuration
Battery (Alkaline) SmartHub	Alkaline Batteries Size R03 (AAA / Micro) Battery exchange possible	• Battery life up to 10 days, depending on configuration and the number of batteries inserted (up to 12)
Battery (Li-Ion) SmartLock	Lithium-Ion Nominal voltage: 3,6 V Capacity: 13400 mAh	• Battery life up to 30 days, depending on configuration
BLE for data transfer	Bluetooth Low Energy	• Max. 100 m range (line of sight) • Bluetooth 5.0 long-range, 2.4 Ghz • Optionally deactivatable
Buzzer Data transfer and analysis	Alert and Event Buzzer Wireless via mobile network (170 countries)	• 2.4 kHz Buzzer frequency, up to 88 dB • Automated data transfer via mobile network • Configuration and analysis: Browser based via Tec4Cloud
Display	E-Ink/ E-Paper low power	• Size: 4.2" • Resolution: 400x300 px
Geo-positioning	Global Navigation Satelite System (GNSS)	• GPS • Galileo • GLONASS
GSM Module Config	Global 5G / 2G and WiFi	• LTE Cat M1 / 2G Fallback • Country list for global roaming upon request • Single band WiFi 2,4 GHz, IEEE 802.11 b/g/n

Technical data

	Description	Details
Weight	SmartHub Li-Po SmartHub Alkaline SmartLock Li-Ion	• 400 g • ca. 350 g (depending on the battery amount) • 490 g
Housing and mounting	ABS housing; Tec4med Wall Mount or Lid Box / Integration	• Dimensions: 129 x 129 x 35 mm (SmartLock) 129 x 129 x 29 mm (SmartHub)
Memory/ logging	Non-volatile memory Event and interval triggered with thresholds	• Capacity: up to 960 data points
USB Charging	USB-C	• 5 V, 1.8 A • Can be adapted to all sockets by a power supply adapter.
Version	IP 50 protection	• Sensor protection through membrane • Penetration of fluids is to be prevented (Corrosion damage/short circuit)
Mounting	SmartHub SmartLock In case of permanent wall installation	• Attachable with integrated magnets on steel surfaces / objects • Attachable to specificly designed transportation box available from Tec4med • Attachable to mounting bracket by the integrated lock. The mounting bracket can be affixed to anything using screws or adhesive pads • Device must not be installed 2 m above ground or higher. Device must be installed indoors.
Operating conditions	Must be strictly adhered to	• Charging: at 10 to 45 °C • Discharging: at -20 to 60 °C • Humidity: < 80% (no condensation)

Mounting direction

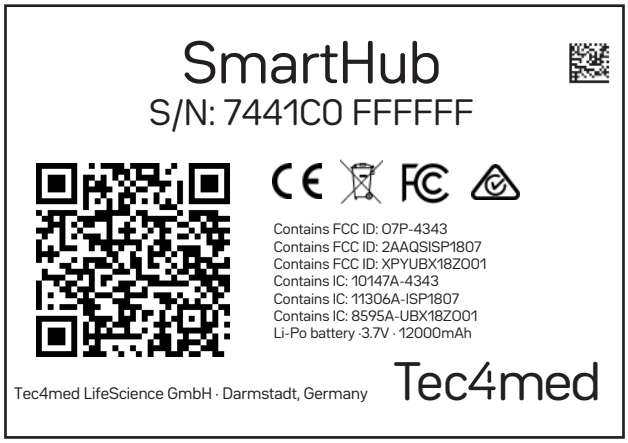


In order to correctly allocate the axes during shock events, the mounting position is crucial.

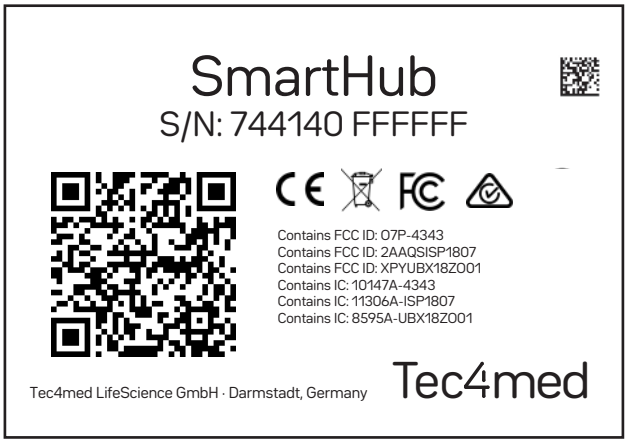
In case of permanent wall installation:
Device must not be installed 2 m above ground or higher.
Device must be installed indoors.

Identification plates

SmartHub (Li-Po)



SmartHub (Alkaline)



SmartLock (Li-Ion)

Supplier's Declaration of Conformity

Party issuing Supplier's Declaration of Conformity:

TEC4MED LifeScience GmbH
Otto-Hesse-Str. 19 Block T9
Darmstadt, Hessen 64293 Germany
Telephone: +49(0)6151-360 37 00
Email: info@tec4med.com
Website: www.tec4med.com

Responsible Party U.S. Contact Information / FDA-agent:

Mr. Michael Fritz
Email: fm@bito.com
Ms. Anastasia Wittich
Email: wan@us.bito.com
Company Name: BITO Storage Solutions US, Inc.
Address: 8314 Sherwick Ct/ 20794 Jessup (MD)
Tel.: +1 410 892 6658

Responsible Party Australia Contact Information:

Mr. Bruce Maule
Company Name: Braco Compliance Pty Ltd
Address: Unit 308, 469-481 High St, Northcote, VIC 3070, Australia
ACN/ARBN: 84156023504
Email: admin@bracocompliance.com

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Federal Communications Commission (FCC) warns the users that changes or modifications to the unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

EU Declaration of Conformity

EU Declaration of Conformity

We,
the company Tec4med Lifescience GmbH
Otto-Hesse-Straße 19 | T9
64293 Darmstadt
Germany

declare in sole responsibility that the products:

Description: SmartHub Alkaline, SmartHub LiPo, SmartLock
Serial-number: S/N 740000000000 to S/N 74FFFFFFFFFF

to which this declaration refers, complies with the following directives and standards or other normative documents:

2014/35/EU Low voltage
2014/30/EU Electromagnetic compatibility
2014/53/EU Radio equipment
2011/65/EU RoHS

EN 62368-1 :2018
EN 62311:2018
ETSI EN 301 489-1 V2.1.1
ETSI EN 301 489-17 V3.2.0, -52 V1.1.0
ETSI EN 300 328 V2.2.2 + ETSI EG 203 367
ICES-003 Issue 6
RTCA/DO-160G, Section 21, Category H

Details of the signatory

Last name: Höler
First name: Nico
Position: Managing Director

Germany, Darmstadt, 2021-01-18
_____
Place, Date

NICO HÖLER
_____
Signature