smartLine

CHECK▸TRACE▸CONTROL

User Manual

Wireless temperature data logger with

- humidity sensor
- external temperature sensor
- external reed sensor.

smartPoint

PRODUCT RANGE	• SmartPoint T 🌡 Wireless temperature datalogger
	• SmartPoint T/H 🌡💧 Wireless temperature and humidity datalogger
	• SmartPoint T/W 🌡🔌 Wireless temperature datalogger with external sensor
	• SmartPoint T/ERS 🌡 Wireless temperature datalogger with external reed sensor

Info: The user manual is valid for all SmartPoint models.

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1. SmartPoint models

Model	Use case	Temperature sensor accuracy (typical)	Additional sensor and its accuracy (typical)	Indicative useful lifetime
SL-SP-T	Facility monitoring / Shipment monitoring	±1.0°C (max) from −40°C to 0°C ±0.5°C (max) from 0°C to +65°C ±1.0°C (max) from +65°C to +85°C		up to 3 years
SL-SP-T/H	Facility monitoring / Shipment monitoring	±1.0°C (max) from −40°C to 0°C ±0.5°C (max) from 0°C to +65°C ±1.0°C (max) from +65°C to +85°C	Relative air humidity in %, typical accuracy ±2.0 % RH	up to 3 years
SL-SP-T/1W	Facility monitoring Shipment monitoring	±1.0°C (max) from −40°C to 0°C ±0.5°C (max) from 0°C to +65°C ±1.0°C (max) from +65°C to +85°C	External temperature sensor ±1.0°C from −40°C to −10°C ±0.5°C from −10°C to +85°C	up to 3 years
SL-SP-T/ERS	Facility monitoring	±1.0°C (max) from −40°C to 0°C ±0.5°C (max) from 0°C to +65°C ±1.0°C (max) from +65°C to +85°C	External reed sensor to detect open/ close state of doors, hatches etc	up to 3 years

Info: The SmartPoint measures the ambient temperature and not the quality of the monitored goods. Its purpose is to signal if product quality evaluation is required.
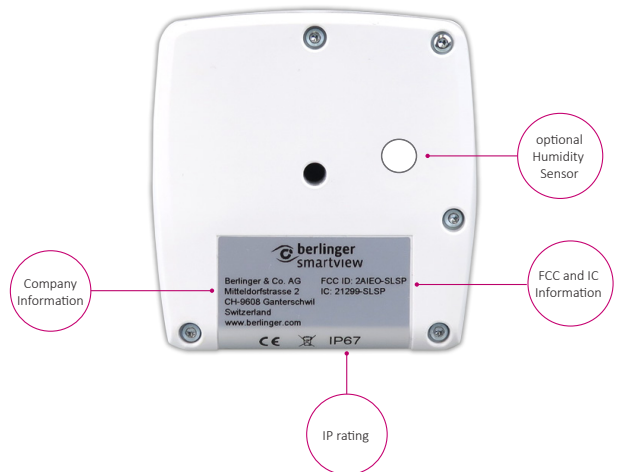
2. SmartPoint description

SmartPoint front view

SmartPoint rear view

LED Flashlight

Model

Article No.

Product Type

optional Humidity Sensor

Company Information

FCC and IC Information

IP rating

smartPoint
Model: SL-SP-T
Article No: 905-SMPT-024-013

berlinger smartview
Berlinger & Co. AG   FCC ID: 2AIEO-SLSP
Mitteldorfstrasse 2   IC: 21299-SLSP
CH-9608 Ganterschwil
Switzerland
www.berlinger.com
CE IP67

3. SmartPoint activation

SmartPoints are delivered in "hibernation" mode and they need to be activated before they can be used. See 3.3 how to activate the SmartPoint.

3.1 Stock keeping

In hibernation mode, SmartPoints are not actively measuring and reporting sensor readings. This mode ensures that the energy stored in the device battery is only little used during stock keeping of the device. Upon delivery, the devices are in hibernation mode and do not show any activity on the device itself nor in SmartView.

If you plan to not actively use the SmartPoint in the next month of delivery, it is advised to keep the device in hibernation mode. Once the SmartPoint is activated, it cannot be put back to hibernation mode again.

3.2 Operational check in hibernation mode

The operational functioning of the SmartPoint can be checked in hibernation mode.
During the check, the LED of the device will blink and the SmartPoint transmits a few messages to SmartView, if an active SmartLine network is detected.

• Place the SmartPoint on the indicated position on the SmartMat. • Hold it steady in place.	
•After **5 seconds**, the LED shows activity and the SmartPoint contacts the SmartLine network. •Keep the SmartPoint steady in place for an additional **15 – 25 seconds.**	
The LED flashes long for **5 times**, remove the SmartPoint **immediately** from the Smart-Mat.	

3.3 Activation

The SmartPoint can be woken from hibernation mode by using a SmartMat.

Only activate SmartPoints when a SmartLine network is active and the SmartPoints are within 5 meter range of a SmartGate or SmartRouter. Before activation, check if the SmartGate or SmartRouter indicate active network (see SmartGate or SmartRouter manual).

Information: The SmartPoint has an internal clock which is used to timestamp sensor readings. Upon activation, the internal clock of the device must be set by a SmartLine network.

• Place the SmartPoint on the indicated position on the SmartMat.

• Hold it steady for about **5 seconds** until the LED blinks.
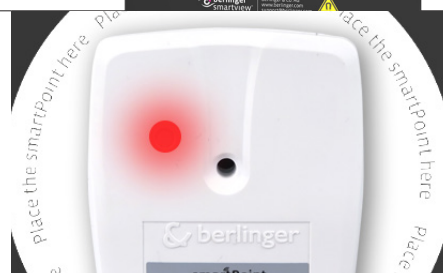
• Remove it immediately from the mat.

• If it is placed on the SmartMat for longer than **15 – 25 seconds**, the SmartPoint goes to the hibernation again. (Only valid during the activation process.)

• If the procedure has been carried out correctly, the LED blinks shortly every **45 seconds**.

Information: Sometimes the activation of the SmartPoint is not successful e.g. due to movement of the SmartPoint. Retry the activation procedure after 15 minutes.

Keep the SmartPoint close to the SmartGate or SmartRouter for 30 minutes. During the 30 minutes, other SmartPoints may be activated. This procedure is needed to ensure that the SmartPoints clock is synchronized to current data and time.

After 30 minutes, verify the operation of the device in SmartView. Find the serial ID of the SmartPoint in the list of your devices in SmartView and verify that one or more readings of the SmartPoint have appeared.

4. SmartPoint operation

After activation, the SmartPoint measures and reports sensor values based on a factory configured interval. Measurement points are also stored in the SmartPoint when no radio connection can be established. This makes the SmartPoint suitable to monitor goods during shipment.

4.1 Mounting

The SmartPoint has a single mounting hole in the center of the casing. This can be used in various ways to attach the device to the required surface (e.g. bolt, cord, or tie wrap).

Warning: Avoid the use of metallic or magnetical materials for the mounting material.

Info: The placement of the SmartPoint and/or the materials surrounding it, can have a (negative) impact on the radio range. Prevent the use of any metallic materials around the device. Install the device with an air gap of >4 cm from walls.

SL-SP-T/ERS mounting
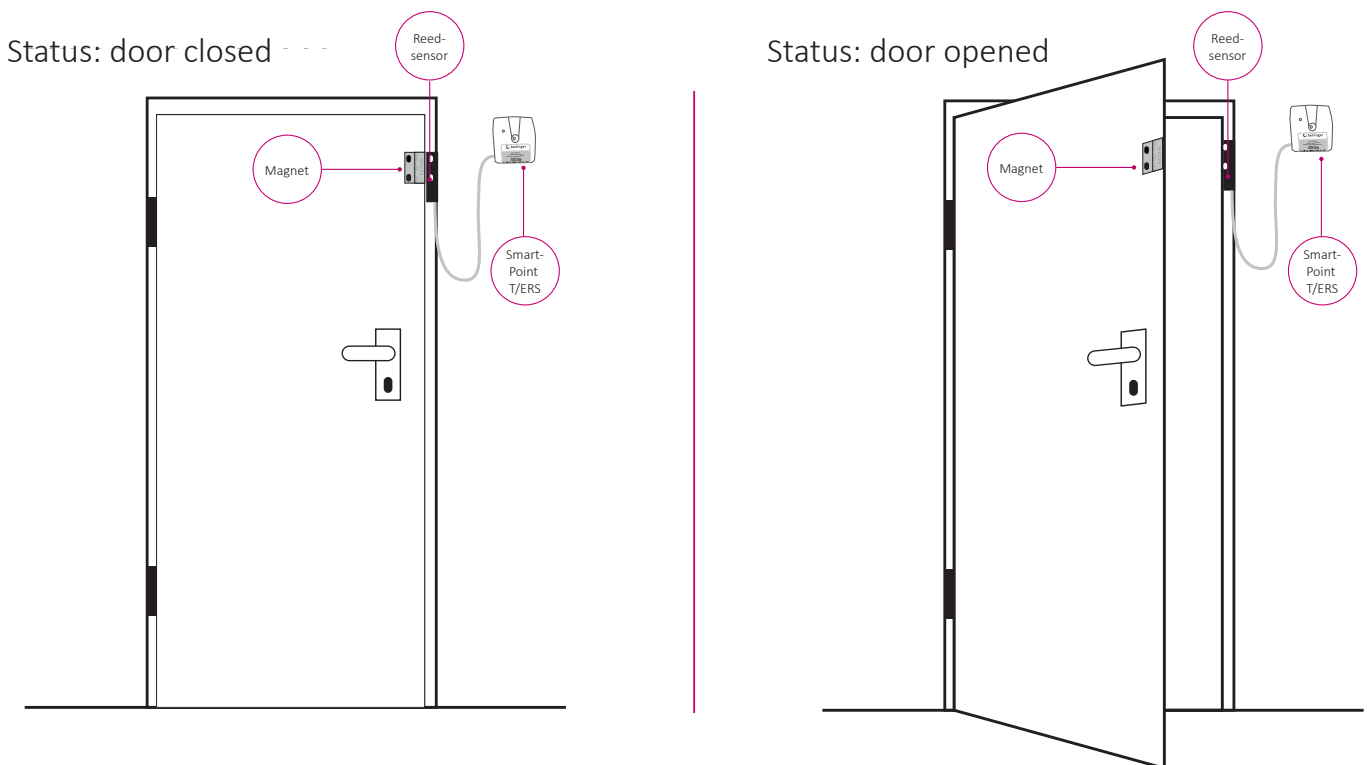
Install the SmartPoint T/ERS with external reed sensor as depicted above.

Warning: Ensure that the external sensor cable cannot be pulled out of the device. Any force applied to the cable may cause damage, even if the damage is not visible from outside. The cable has limited pull relieve.

SL-SP-T/H mounting

• Ensure that proper airflow is possible around the relative air humidity sensor.

• Do not block the opening of the sensor.

• Keep the sensor clean. Dust and condensation on the sensor membrane can cause an unwanted effect on the sensor.

• Do not spray water directly on the sensor opening. This may damage the membrane protecting the sensor and electronics.

SL-SP-T/1W mounting

Example: Installation in an airfreight container.

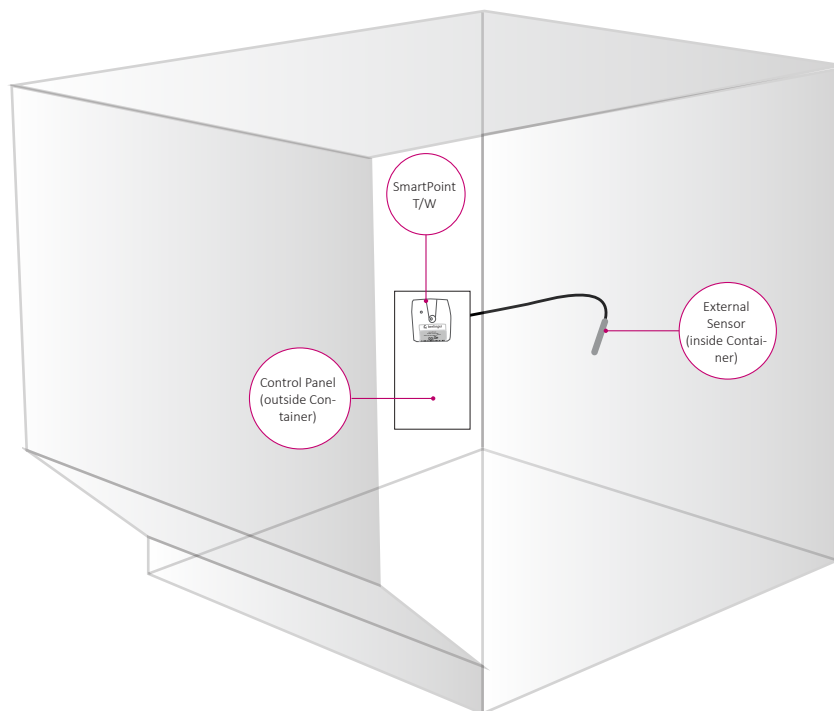Install the SmartPoint T/1W with external temperature sensor as depicted above.

Warning: Ensure that the external sensor cable cannot be pulled out of the device. Any force applied to the cable may cause damage, even if the damage is not visible from outside. The cable has limited pull relieve.

4.2. Extended sleep

When a SmartPoint can communicate with a SmartGate or SmartRouter, it immediately transmits a measurement point when it becomes available. The measurement point will be available in SmartView within serveral minutes.

If the SmartPoint is outside the range of a SmartLine network, it enters "extended sleep" mode. In this mode, the SmartPoint continues to measure as regular, however, it does not attempt to transmit.

Information: SmartPoints are not transmitting when outside SmartLine network range and are therefore allowed to monitor aircargo by most airlines. Please, check with airline before use.

When a SmartPoint is within range of a SmartGate or SmartRouter, the device automatically exits the "extended sleep" mode. This may take up to 30 minutes. After 30 minutes, new measurement points appear in SmartView.

Tip: When a SmartPoint is swiped over a SmartMat, it immediately exits the "extended sleep" mode when in range of a SmartGate or SmartRouter.

4.3. Logging

When the SmartPoint cannot establish connection with a SmartGate or SmartRouter, measurements are stored in the memory of a device. SmartPoints have capacity to store 8000 measurement points, which equals circa 3 months of measurement data (at standard logging interval).

The stored measurement points are automatically transmitted to SmartView when the SmartPoint can reestablish a connection to a SmartGate or SmartRouter.

Information: In some cases, the SmartPoint is not able to transmit all stored measurement samples. Ensure that the device is placed in the network range from a SmartGate or SmartRouter. Persistent weak radio links affect the data communication success rate severly and the SmartPoint is not able to send the stored data. The stored measurement points are transmitted at a rate of 4 measurement points per minute.*

Ensure that a SmartPoint is long enough in range of the SmartLine network to send all stored information. E.g. one week of stored data (at standard logging interval) is transferred in circa 4 hours after the SmartPoint was brought into range of a SmartLine network.*

When a SmartPoint has been monitoring a shipment outside the range of a SmartLine network, but is now inside a network again, the current measurements are visible, while simultaneously the stored measurements are transmitted. In SmartView, a data gap may be visible during the time it takes the SmartPoint to transmit stored data.

Even though the SmartPoint needs time to transmit stored measurements, it enables you to act upon real-time alarms whenever it is in range of a SmartLine network.

4.4. Operational check in active mode

It is recommended to test and inspect SmartPoints in active mode regularly.

• Never use SmartPoints with damaged or open enclosure.

• Never use SmartPoints with damaged external sensor.

• Never use SmartPoints with damaged battery pack.

• Never use a SmartPoint with damaged label.

• Never use SmartPoints with punktured membrane of humidity sensors

Although SmartPoints report alarms to SmartView when their battery is low, it is good practice to verify devices before they are used for critical monitoring. Use after the defined useful lifetime is unreliable and should not be used for critical monitoring.

There are a few methods to check if the SmartPoint is still operational and has not run out of battery power.

1. After a SmartPoint has been activated, every 45 seconds the LED will shortly flash.

   Tip: Direct sunlight or other bright light source may make it difficult to notice the short LED blink. Check the device in shadow or dimmed light conditions.

2. When an active SmartPoint is swiped across the SmartMat, the LED will flash immediately.

   Information: Flashing of the LED means that the SmartPoint is functioning. The LED does not indicate if the SmartPoint is connected or not.

3. Periodically review the status of the SmartPoint in SmartView. No low battery indications should be present and the last reported message should be recent.

When SmartView indicates that the battery of a SmartPoint is low and/or the device does not show LED activity, the SmartPoint should no longer be used.

4.5. Operational check before use as monitoring device in a shipment

When a SmartPoint is going to be used as a monitoring device in a shipment, it is important to allow it to set its internal clock correctly before it leave the SmartLine network.

Swipe the SmartPoint across a SmartMat while the device is <5m away from active SmartGate or SmartRouter. The LED of the SmartPoint must flash. Keep the device near the SmartGate or SmartRouter for 5 minutes. Then it is ready to be used for shipment monitoring.

5. Calibration

Berlinger offers a calibration service which allows the calibration of the internal sensor(s).

•Without calibration, the sensor accuracy is as stated in table SmartPoint Models.

•Calibration is only valid during the period stated on the calibration certificate.

*See datasheet for transmission rate

6. Important Information

6.1. Storage and active mode conditions

• Before activation, the SmartPoint must be stored between 10°C and 25°C in a non-condensing environment.

• After activation, acceptable operational temperature is –40°C to +85°C.

• Do not expose the SmartPoint to mechanical impact/force exceeding the norm defined in EN 60068-2-31:2008 and EN 60068-2-6:2008.

• The SmartPoint has been designed to be resistant to moisture and dust conditions that can be expected in warehouses, during transportation, storage in fridges/freezers etc. It has not been designed for outdoor use. Do not puncture the membrane of the relative air humidity sensor.

Warning: Do not fully submerge the product in water. Excessive exposure to direct sunlight may cause discoloration of the enclosure and/or reduction of the mechanical robustness. Do not use high-pressure cleaning directly on the SmartPoint. Do not use chemicals to clean the SmartPoint.

6.2 Liability

The manufacturer shall not be held liable:

• If the device was used beyond the manufacturer's given limitations.

• For any claims due to the improper storage and use of the device.

• For any problems with the temperature controlling and / or cooling unit.

• For the bad quality of any monitored goods.

• For incorrect readings if the device was used beyond its expiry date.

Warranty: SmartPoint and SmartPoint One 1 year from date of delivery. Battery pack is excluded from warranty.

6.3 Battery

The SmartPoints contain a non-rechargeable Lithium battery. Please pay strict attention to the following points:

• The housing of the SmartPoint must never be opened nor destroyed.

• Never expose the SmartPoint to temperatures above the allowed range (fire, oven, microwaves, etc.).
  It may cause serious injuries.

• Always keep the SmartPoint out of the reach of children.

• The battery complies with IATA DGR Packaging Instruction 970 Section 2 and is therefore not considered as dangerous good.
  Consult IATA regulation before use in airfreight.

• Dispose or recycle the SmartPoint in accordance with the WEEE2012/19/EU guidelines or your local regulations.
  The device may also be returned to the manufacturer for proper recycling.

7. Regulatory information

FCC INFORMATION (USA):

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. 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.

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IC INFORMATION (CANADA):

This device complies with RSS-210 of the Industry Canada Rules. 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.

IC Radiation Exposure Statement: This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment.

Avis d'Industrie Canada: Cet appareil est conforme à la norme CNR-210 des règlements d'Industrie Canada. Son fonctionnement est sujet aux deux conditions suivantes:

1) Cet appareil ne doit pas provoquer d'interférences et
2) Cet appareil doit accepter toutes les interférences, y compris celles pouvant entraîner son dysfonctionnement.

Avis d'Industrie Canada sur l'exposition aux Rayonnements: Cet appareil est conforme aux limites d'exposition aux rayonnements d'Industrie Canada pour un environnement non contrôlé.

EU INFORMATION (EUROPEAN UNION):

Product: SmartPoint
Models: SL-SP-T, SL-SP-T/H, SL-SP-T/ERS, SL-SP-T/1W

This equipment is in conformance with the essential requirements and other relevant provisions of Directive 2014/53/EU (RED) and 2011/65/EU (RoHS).

Standards Applied: EN 300 328 V2.1.1, EN 301 489-1 V2.2.0, EN 301 489-17 V3.2.0, EN 62311: 2008, EN 62368-1:2014

RF specifications: 2405- 2480 MHz, 16 Channels, 5 dBm

Note: In case of disposal, the battery shall be removed and offered at a local collection point.

8. Support/Contact

If you need any support, please do not hesitate to contact our support team: support@berlinger.com, +41 71 982 89 70.

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Berlinger & Co. AG
Mitteldorfstrasse 2
9608 Ganterschwil
Switzerland

Tel.   +41 71 982 88 11
E-Mail info@berlinger.com
Web   www.berlinger.com