

Elpas Temperature Sensors

P/Ns: 5-STE00433-1 and 5-STC00433-1

User Guide

Introduction

Elpas Temperature Sensors are supervised Active RFID Tags that provide wireless remote monitoring of environmental sensitive assets or environments that require strict temperature range compliance.

The sensors report location based temperature monitoring data which is received and relayed over the Elpas infrastructure to a host RTLS application or an integrated 3rd party platform for regulatory compliance, temperature-range alerting or trend analysis.

Sensors are available with an internal thermistor for ambient temperature monitoring or with an external probe for applications requiring higher precision. Both sensors feature wireless call-button functionality to report preconfigured maintenance messages plus remote device supervision to ensure field reliability.

Elpas Temperature Sensors are water/dust resistant, cleanable with alcohol based disinfectants and are powered by one field-replaceable lithium battery.



It is important that you understand, and follow the instructions in this document. Should you have any questions, please contact your local ELPAS support representative before proceeding with the installation, operation or maintenance of these products.



Internal Thermistor Configuration



External Probe Configuration

Product Specifications

	Internal Thermistor (P/N: 5-STE00433-1)	* External Probe (P/N: 5-STC00433-1)
Signaling Technology	RF (433MHz)	RF (433MHz)
Transmission	Supervision transmission duration - 4ms Supervision transmission period - 127sec	Supervision transmission duration - 4ms Supervision transmission period - 127sec
Sensor Range	-10°C to 70°C (14°F to 158°F)	-40°C to 80°C (-40°F to 176°F)
Sensor Accuracy	+/- 2.0°C (-10°C to 70°C)	+/- 0.5°C (0°C to 70°C) +/- 1.0°C (-40°C to 0°C) & (70°C to 80°C)
Sensor Resolution	+/- 0.1°C	+/- 0.1°C
Sensor Cable Length	N/A	2.5m (8.0 FT)
Supervised Events Button Press/Low Battery	6 RF transmissions (each transmission 4ms in duration), total burst duration - 927.5ms	6 RF transmissions (each transmission 4ms in duration), total burst duration - 927.5ms
Power Source	3V/270mAh lithium battery, Type CR 2430	3V/600mAh lithium battery, Type CR 2450
Average Battery Life	Three years	Three years
Status Indicators	Red LED: Button Press, Low Battery Green LED: Activation from sleep-mode	Red LED: Button Press, Low Battery Green LED: Activation from sleep-mode
Badge ID	Unique, factory-programmed ID	Unique, factory-programmed ID
Construction	PA Plastic (Nylon)	PA Plastic (Nylon)
IP Rating	Sensor: IP64	Sensor: IP64. External Probe: IP67
Dimensions (H x W x D)	34 x 40 x 15 mm (1.3 x 1.6 x 0.6 inches)	34 x 40 x 15mm (1.3 x 1.6 x 0.6 inches)
Weight	20 grams (0.75 ounces)	20 grams (0.75 ounces)
Remote Management	Eiris Software V4.7.2 (or higher)	Eiris Software V4.7.2 (or higher)
Standards	IC, FCC & CE compliant	IC, FCC & CE compliant
Warranty	1 year limited warranty (excluding battery)	1 year limited warranty (excluding battery)

*Note: P/N: 5-STC00433-1 includes external probe - temperature sensor, one glycol bottle, one tag mounting clip and one probe mounting clip.

Product offerings and specifications are subject to change without notice.

Not all products include all features

Compatible Accessories

Part Number	Description
5-BC012430	3V/270mAh Lithium Battery, CR2430 (25pcs)
5-PBA90003	3V/600mAh Lithium Battery, CR2450 (25pcs)
5-ETC09001	Mounting Clip (5 units)
5-STC90001	Glycol Bottle and Mounting Kit

Supported Button Press Events

Temperature Sensors support Button Press events (designated B1) to report maintenance messages.

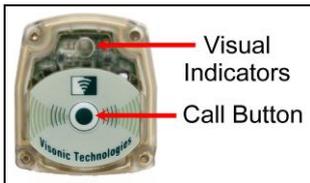
- **Button Press:** 3 messages are transmitted (each @ 4ms in duration), 463.75ms apart. B1=1
- **Button Release:** 3 messages are transmitted (each @ 4ms in duration), 463.75ms apart. B1=0
- **Steady State** (no button press/button release) B1=0

Initial Activation

Temperature sensors come from the factory in Sleep Mode to conserve battery power during shipping.



To Activate the sensor from sleep mode, remove the Activation Label. Then press the sensor's call button for at least 7 seconds.



If the activation process is successful the sensor's LED indicator will glow green for about 3 seconds.

The sensor is now ready to for enrollment in the host RTLS application.

Glycol Bottle Usage Tips

When inserting the probe into the bottle, push the probe fully through the screw cap so that a leak-proof seal is formed and then ensure that the cap is properly screwed onto the bottle.

When removing the probe from the bottle, first unscrew the cap and only then **PUSH** the probe out from the cap.



⚠ Caution DO NOT pull the probe from the cap as this may cause damage to the probe or to the interface cable.

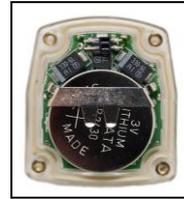
Battery Replacement

Change the sensor's status in the host RTLS application to 'Inactive'.

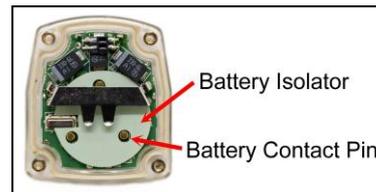
Place the sensor back cover side up. Unscrew the 4 screws to remove the back cover



Slide the battery out from under the battery holder. Dispose of used battery in accordance with local regulations.



Before inserting a new battery into place, position the battery Isolator such that its holes align with the battery contact pins.



Replace the battery ensuring that the positive (+) side of the battery faces up.

Close the back cover such that the screw holes are correctly aligned. Tighten the 4 screws snugly into place. Do not over-tighten as this may strip the case threads.

Change the sensor's status in the host RTLS application back to 'Active'.

Installation & Usage Considerations

1. Temperature sensors are not compatible with Elpas1 Lon Readers.
2. The transmission range of the temperature sensor may vary when mounted in different types of refrigeration units; therefore a facility site survey to examine specific sensor mounting environments is required.
3. Always use an Elpas Mounting Clip (P/N: 5-ETC09001) to mount the temperature sensor so that it can easily be removed for service or replacement,
4. Supervisory Alerts should be configured in the host RTLS application to notify staff members that the temperature sensor is: 1) being tampered with, 2) is in a low voltage condition or 3) is not properly transmitting temperature data. Additionally, the operational status of these system alerts should be triggered once a week to ensure system integrity.

Sensor Mounting Guidelines - Refrigerator Applications

The **Elpas Internal Thermistor - Temperature Sensor** (P/N: 5-STE00433-1) is suitable for general purpose refrigerator applications (such as food and pharmaceutical storage) where ambient temperature monitoring is sufficient.

Use an **Elpas Mounting Clip** (P/N: 5-ETC09001) with an ultra-high bond adhesive to mount the temperature sensor on the side wall as close to the middle of the refrigerator as possible. Avoid mounting the temperature sensor near or in the direct air path of cold air intake since there will may be wide temperature swings at this location. If the refrigerator is relatively empty consider adding bottles of water or other items to help stabilize the temperature of the refrigerator.



The **Elpas External Probe - Temperature Sensor** (P/N: STC00433-1) is for refrigerator applications (such as blood, vaccines and pathology storage) where it is necessary to immerse the probe in propylene glycol to better match the thermal properties of the items being stored. Mount the probe and glycol bottle on the side or back corner of the refrigerator where it will not be disturbed, while placing the sensor's electronics either inside or outside the refrigerator. Use tape or tie-wraps to secure the probe cable to the side wall or shelf.

Sensor Mounting - Freezer Applications

The **Elpas External Probe - Temperature Sensor** (P/N: STC00433-1) is also for freezer applications below -20°C/4°F where placement is limited by the operating limits of the sensor's electronics and battery. The sensor's remote probe enables temperature measurements inside the freezer while its electronics and battery is mounted externally on the outside of the freezer. The probe can be attached to a shelf or other bracket using tie-wraps. Avoid the cold air intake and try not to mount it on the top of the freezer as this area can become warm during defrost cycles, In relatively empty freezers add bottles of frozen water or ice packs to help stabilize the temperature of the freezer.



Cleaning Procedures

Use an appropriate antibacterial disinfectant such as Dispatch® Hospital Cleaner Disinfectant with Bleach from Caltech Industries (<http://www.caltechind.com>) to clean the Elpas Temperature Sensors.

Since 'Cleaning Procedures' may vary according to facility guidelines, thus the procedures given below are for illustrative purposes only:

Option 1 – Using Dispatch Disinfectant Spray

1. Lightly wet a disposable towel with Dispatch spray
2. Do not saturate the towel
3. Wipe the outer surfaces of the sensor
4. Next wipe the sensor with a dry disposable towel
5. Allow the sensor to air dry
6. Return the clean sensor to inventory or usage
7. Dispose of used towels per facility policies

Option 2 – Using Dispatch Disinfectant Towels

1. Open a new Dispatch pre-moistened towel
2. Wipe the outer surfaces of the sensor
3. Next wipe the sensor with a dry disposable towel
4. Allow the sensor to air dry
5. Return the clean sensor to inventory or usage
6. Dispose of used towels per facility policies

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Compliance Standards

These devices (FCC #:04X5-RLE00125 and IC #:1467G-RLE00125) complies with FCC Rules Part 15 and with industry Canada license exempt RSS.

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, or that may cause undesired operation.

For industry Canada: Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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.

Changes or modifications to this equipment not expressly approved by the party responsible for compliance (Elpas Solutions Ltd.) could void the user's authority to operate the equipment.

Company Contact

Elpas, Inc.
Westford, Massachusetts (USA) - Tel: 1-800-223-0020

EU Declaration of Conformity

This equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Product Warranty

Elpas Solutions Ltd. (ELPAS or the Company), and its affiliates, warrants its products (hereinafter referred to as "the Product") to be free of defects in materials and workmanship under normal operating conditions and use for a period of one year from the date of shipment by ELPAS. The Company's obligations shall be limited within the warranty period, at its option, to repair or to replace the defective Product or any defective component or part thereof. To exercise this warranty, the product must be returned to the manufacturer freight prepaid and insured.

This warranty does not apply to repairs or replacement caused by improper installation, Product misuse, failure to follow installation or operating instructions, alteration, abuse, accident, tampering, repair by anyone other than ELPAS, external causes, and failure to perform required preventive maintenance. This warranty also does not apply to any products, accessories, or attachments used in conjunction with the Product, including batteries, which shall be covered solely by their own warranties, if any. ELPAS shall not be liable for any damage or loss whatsoever, whether directly, indirectly, incidentally, consequentially or otherwise, resulting from a malfunction of the Product due to products, accessories, or attachments of others, including batteries, used in conjunction with the Product.

ELPAS MAKES NO EXPRESS WARRANTIES EXCEPT THOSE STATED IN THIS STATEMENT. ELPAS DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. ELPAS'S SOLE RESPONSIBILITY FOR WARRANTY CLAIMS IS LIMITED TO REPAIR OR TO REPLACE AS SET FORTH IN THIS STATEMENT.

ELPAS shall have no liability for any death, personal injury, property damage, or other loss whether direct, indirect, incidental, consequential, or otherwise, based on a claim that the Product failed to function. However, if ELPAS is held liable, whether directly or indirectly, for any loss or damage arising under this limited warranty or otherwise, regardless of cause or origin, ELPAS's maximum liability shall be limited to the purchase price of the Product, which shall be fixed as liquidated damages and not as a penalty, and shall be the complete and exclusive liability of ELPAS.

ELPAS shall not, under any circumstances whatsoever, be liable for any inaccuracy, error of judgment, default, or negligence of ELPAS, its employees, officers, agents, or any other party, or of the purchaser or user, arising from any assistance or communication of any kind regarding the configuration, design, installation, or creation of security system involving the Product, that being the responsibility of the purchaser or user. If ELPAS is unable to make such repair or replacement, ELPAS's entire liability shall be limited to the cost of a reasonable substitute product. ELPAS shall not be responsible for any dismantling, installation, reinstallation, purchasing, shipping, insurance, or any similar charges.

ELPAS shall have no liability for any damages, including without limitation, any direct, indirect, incidental, special, or consequential damages, expenses, costs, profits, lost savings or earnings, or other damages arising out of the use of the Product or the removal, installation, reinstallation, repair or replacement of the Product or any related events. In the event that there is any liability against ELPAS, such liability shall be limited to the purchase price of the Product which amount shall be fixed as liquidated damages.

The purchaser and user understand that this Product may be compromised or circumvented by intentional acts; that the Product will not in all cases prevent death, personal injury, property damage, or other loss resulting from burglary, robbery, fire or other causes; and that the Product will not in all cases provide adequate warning or protection. The purchaser and user also understand that a properly installed and maintained alarm may reduce the risk of events such as burglary, robbery, and fire without warning, but it is not insurance or a guarantee that such events will not occur or that there will be no death, personal injury, property damage, or other loss as a result of such events.

By purchasing the Product, the purchaser and user shall defend, indemnify and hold ELPAS, its officers, directors, affiliates, subsidiaries, agents, servants, employees, and authorized representatives harmless from and against any and all claims, suits, costs, damages, and judgments incurred, claimed, or sustained whether for death, personal injury, property damage, or otherwise, because of or in any way related to the configuration, design, installation, or creation of a security system involving the Product, and the use, sale, distribution, and installation of the Product, including payment of any and all attorney's fees, costs, and expenses incurred as a result of any such events.

The purchaser or user should follow the Product installation and operation instructions and test the Product and the entire system at least once each week. For various reasons, including but not limited to changes in environmental conditions, electric, electronic, or electromagnetic disruptions, and tampering, the Product may not perform as expected. The purchaser and user are advised to take all necessary precautions for the protection and safety of persons and property.

This statement provides certain legal rights. Other rights may vary by state or country. Under certain circumstances, some states or countries may not allow exclusion or limitation of incidental or consequential damages or implied warranties, so the above exclusions may not apply under those circumstances and in those states or countries.

ELPAS reserves the right to modify this statement at any time, in its sole discretion without notice to any purchaser or user. However, this statement shall not be modified or varied except by ELPAS in writing, and ELPAS does not authorize any single individual to act on its behalf to modify or vary this statement. Any questions about this statement should be directed to ELPAS. 3/0



W.E.E. Product Recycling Declaration

For information regarding the recycling of this product you must contact the company from which you originally purchased it. If you are discarding this product and not returning it for repair then you must ensure that it is returned as identified by your supplier.

This product is not to be thrown away with everyday waste - Directive 2002/96/EC Waste Electrical and Electronic Equipment.