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Grain temperature monitoring and control

Save your time and money while protecting stored grain.

Don't rely on luck alone!

Our temperature monitoring system allows to monitor the condition of grain from anywhere in the world, reduce the likelihood of maintenance errors, react quickly to any changes that have occurred in your warehouse.

Storing grains, vegetables and fruits, hay and other agro cultures is a major challenge to maintain their high quality.

Automated wireless system will enable constant temperature monitoring of stored products allowing prevention of overheat, pests, mold and fungus. The innovative solution simplifies daily tasks required to protect stored goods, reduces possibility of human error, enables status tracking from anywhere in the world, and provides tools to take action when necessary.

- **Quality** - Monitoring products and ensuring their quality will be easy from now. Less spoiled products - higher profits.
- **Economy** - The system will help to reduce electricity costs. By monitoring the temperature, you will be able to turn on ventilation only when needed.
- **Reliability** - All the data is stored. You can re-view it, or visualize in graph at any time for any selected period.
- **Flexibility** - You'll be able to monitor your warehouses from anywhere in the world. The app works on all devices: computers, tablets, mobile phones.

Be calm!

Constant monitoring and controlling of your stored products will guarantee no unpleasant surprises regarding the quality.

Be innovative!

Thanks to our system, you will be able to collect data which helps to optimize your workflow, avoid mistakes and, most importantly, reduce costs.

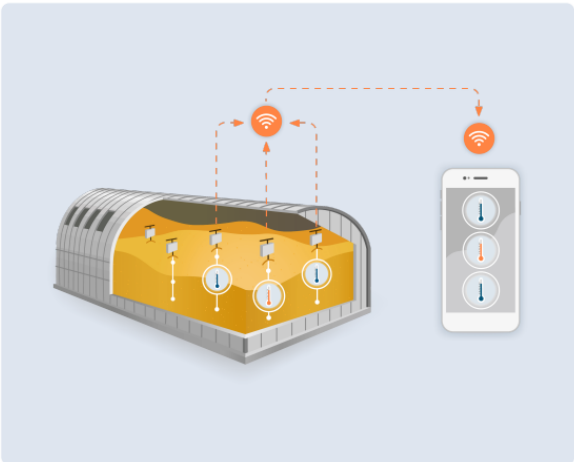
Be flexible!

Our modern system will help you monitor the condition of stored grain wherever you are and immediately inform about possible threats.

Be unique!

We will take into account your personal situation and specific needs, together we will find the most suitable solution for you.

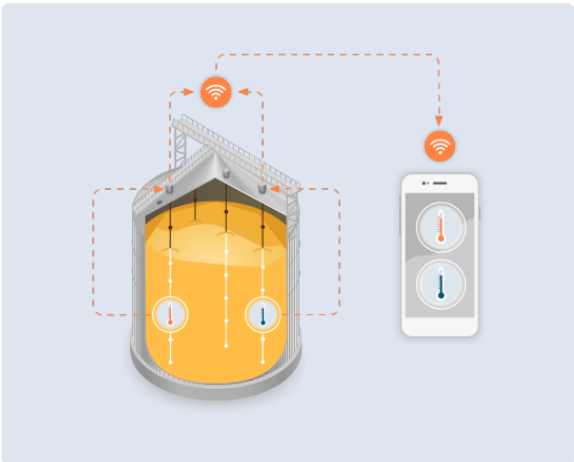
Our products



Portable grain temperature probes for storages

Portable, wireless system designed for heaps, granaries and other above-ground grain storages. Suitable for indoor and outdoor use.

MORE INFO



Wireless grain temperature monitoring for silos

Autonomous, wireless system designed to monitor the temperature of grain stored in silos. Can be powered by solar energy to work indefinitely.

MORE INFO

Temperature monitoring shows all possible threats

Spontaneous heating of grain, humidity, pests, mold - all these cases are detected in safe time by monitoring the temperature.

Humidity itself does no harm to the grain, but it is one of the reasons of spontaneous heating. By monitoring temperature changes and managing ventilation, heating becomes controlled.

CO_2 in grains increases with the appearance of pests, mold, fungus. They need moisture and warmth to grow and spread in grains. Constant monitoring and control of temperature helps to prevent their appearance and multiplication.

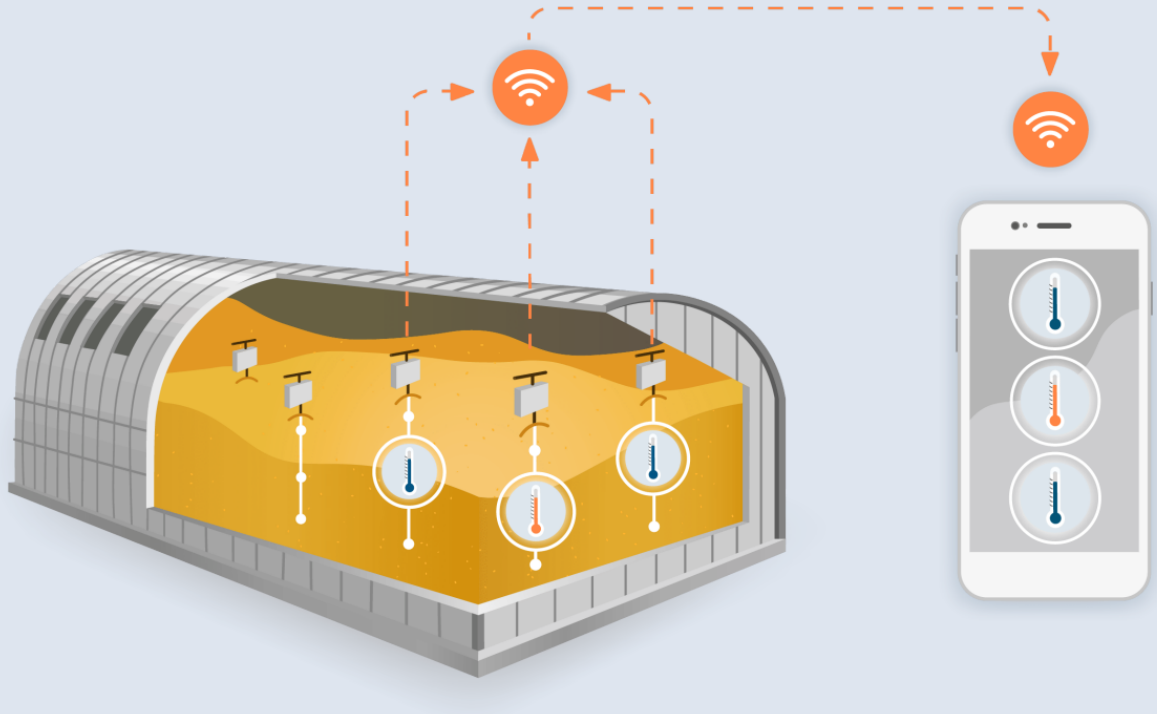
Moisture and CO_2 do not spread as rapidly and widely as the resulting temperature. Humidity and CO_2 monitoring would require a much denser and larger number of sensors in the grain, which would significantly increase the cost of the system.

During the development of our system, we've been consulting with experts, tested and analyzed all these cases ourselves. We have chosen the most optimal solution in terms of both price and security.

Portable grain temperature probes

Great solution for monitoring stored grains in warehouses, hangars, mounds.

- **Comfort** - Simple installation. Data is transmitted wirelessly. You will avoid laying wires, digging trenches, building switch cabinets.
- **Economy** - Internal rechargeable battery lasts up to 12 months. It's enough to charge once per season.
- **Precision** - The probe has three sensors. Sensor accuracy 0.5°, measuring step 0.25°.
- **Speed** - Message is sent instantly whenever temperature reaches critical limit. It is enough to have a mobile phone with you.

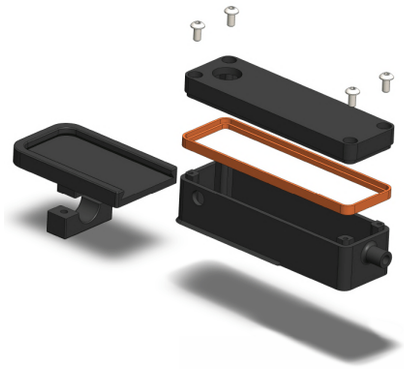


Device description

Wireless temperature measuring device:

- **Rod** - Durable, stainless steel tube with a pointed end for easier insertion. Standard height 2m, other options available on demand (up to 4m).
- **Sensors** - Probe has three sensors installed. Sensor accuracy 0.5°, measuring step 0.25°. Default data reading frequency - 1 hour. Other number of sensors or scan intervals can be selected.
- **Device box** - Waterproof device protection box. Once the battery is discharged, the box can be easily removed from the rod and taken for recharging. No need to pull out and carry the entire device.
- **Smart device** - Unique device developed by "Eltrum Systems" that can read sensors' data and send it to the central system without use of any wires. It works extremely economically - one battery charge is enough for a year.

Due to its durability and longevity, the device can be used year after year.



Full set

- **Rod with sensors** - Standard height 2m, other options are possible from 1m to 4m. Sensors every 75cm.
- **Smart device** - WiFi transmitter capable of reading rod temperature data and sending it to the system. Installed in a waterproof box.
- **Battery** - Long life battery, 500 charge cycles. One charge is enough for a season.
- **Charging cable** - Special cable for charging the battery without disassembling the device. Plugs into a power source via a standard USB connection.
- **Gateway** - 4G communication station. Serves up to 200 devices at a distance of 200 meters. The station requires a SIM card with a minimum tariff plan for mobile data transmission.
- **Cloud system account** - An individual account on the cloud platform responsible for data storage and management, message transmission.
- **Mobile app** - A handy tool that works on any mobile device: computer, tablet, smartphone.

Installation instructions

- Insert SIM card into the gateway. Attach the gateway in a convenient location and point it towards the serviced facility / warehouse. After turning on the station, you need to wait 2 minutes for it to warm-up and start servicing devices within its operating range (up to 200m).
- Place the rods in the grain. It is recommended to put the rods at every 5m at least. One rod is enough to monitor the temperature within a 2.5m radius around it.
- Open the "Eltrum" application on your mobile phone or computer. Register a new user using your email address, facebook or google account. Add a new device to the app by entering the unique code found in the box of the purchased device.

- In the mobile application, track device readings, temperature graphs, set critical temperature limits, manage messaging and share your device with others.

Prices

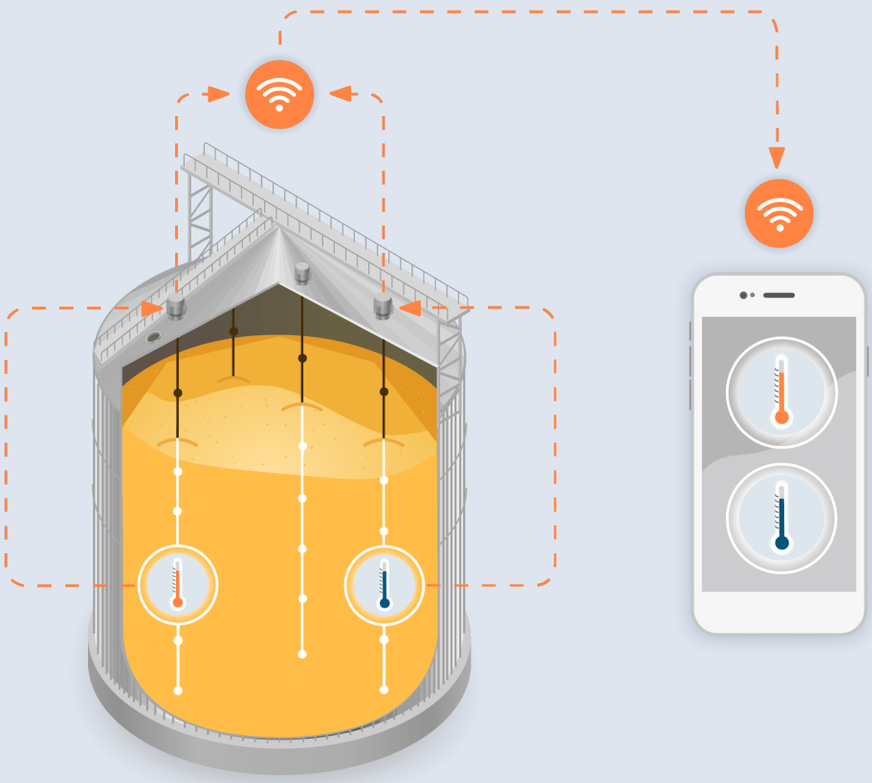
- Rod, smart device, battery, charging cable - **180€**
- Gateway - **180€**
- System account and mobile app - **0€**

* One gateway is enough for 200 devices at a distance of 200m.
* Prices are indicative, excluding VAT. Contact us for more info.

Temperature monitoring system for grain silos

Wireless, autonomous system. A quick and convenient solution for grain silos.

- **Comfort** - Simple installation. Data is transmitted wirelessly. You will avoid laying wires, digging trenches, building switch cabinets.
- **Economy** - The device is charged by using solar energy. Can work safely for up to 6 months if not charged.
- **Precision** - Sensors are installed in the cable every 1.5m by default. Sensor accuracy 0.5°, measuring step 0.25°.
- **Speed** - Message is sent instantly whenever temperature reaches critical limit. It is enough to have a mobile phone with you.



Device description

- **Cable** - Extremely strong, wrapped in a high-quality, high-density polyethylene sheath with replaceable core. Reinforced with two galvanized steel ropes that withstand tension up to 5 tons.
- **Sensors** - Sensor accuracy 0.5°, measuring step 0.25°. Default data reading frequency - 1 hour. Other scan intervals can be selected. Sensors are installed every 1.5m, the distance between them can be adjusted according to specific needs.
- **Smart device** - Unique device developed by "Eltrum Systems" that can read sensors' data and send it to the central system without use of any wires.
- **Power supply** - Device can be charged by solar energy or connected to the mains. Internal battery ensures uninterrupted operation for up to 6 months.

Due to its durability and longevity, the device can be used year after year.

ATEX The cable meets ATEX Zone Ex || 20/21 requirements.

Full set

- **Sensor cable** - Cable length and sensor density on request. By default sensors are installed every 1.5m.
- **Smart device** - WiFi transmitter capable of reading cable temperature data and sending it to the system. Installed in a waterproof box.
- **Battery** - Long life battery, 500 charge cycles. Ensures uninterrupted operation for up to 6 months without charging.
- **Charging cable** - Special cable for charging the battery without disassembling the device. Plugs into a power source via a standard USB connection.
- **Solar module** - The device can be charged with solar energy if desired. Reduces installation costs and electricity consumption.
- **Gateway** - 4G communication station. Serves up to 200 devices at a distance of 200 meters. The station requires a SIM card with a minimum tariff plan for mobile data transmission.
- **Cloud system account** - An individual account on the cloud platform responsible for data storage and management, message transmission.
- **Mobile app** - A handy tool that works on any mobile device: computer, tablet, smartphone.

Installation instructions

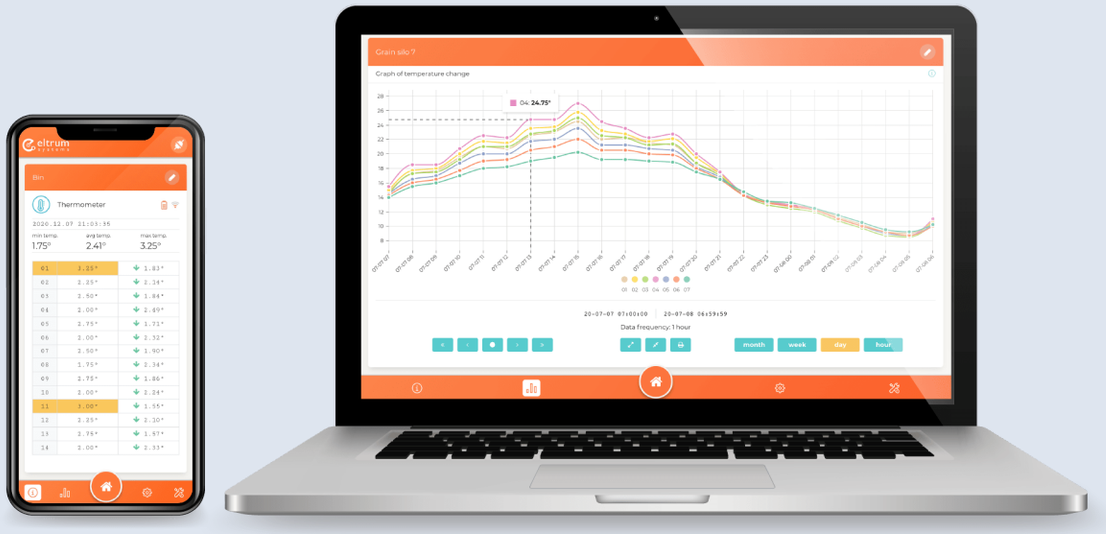
- Install temperature cables in the grain tower. In modern towers there are specially equipped places for this, in older towers a hole with a diameter of 3cm should be drilled in the roof and a cable should be attached to it. Connect the cable to your smart device. Connect the device to power line or attach the solar module to it. Recommendations for the number of cables in grain towers:
  - Tower up to 6m in diameter - 1 cable.
  - Tower with a diameter from 6m to 12m - 3-4 cables.
  - Tower with a diameter from 12m to 20m - 10-12 cables.
  - In wider towers - according to the situation.
- Insert SIM card into the gateway. Attach the gateway in a convenient location and point it towards the silos. After turning on the station, you need to wait 2 minutes for it to warm-up and start servicing devices within its operating range (up to 200m).
- Open the "Eltrum" application on your mobile phone or computer. Register a new user using your email address, facebook or google account. Add a new device to the app by entering the unique code found in the box of the purchased device.
- In the mobile application, track device readings, temperature graphs, set critical temperature limits, manage messaging and share your device with others.

Prices

- Sensor cable (10m, 6 sensors) - **480€**
- Smart device, battery, charging cable - **180€**
- Solar module (optional) - **75€**
- Gateway - **180€**
- System account and mobile app - **0€**

* The price of the cable depends on its length and the density of the sensors.
* One gateway is enough for 200 devices at a distance of 200m.
* Prices are indicative, excluding VAT. Contact us for more info.

Temperature monitoring and control system



With software and hardware developed by "Eltrum Systems", you will be able to monitor and control all your devices from anywhere in the world with the Internet and a smartphone.

The system consists of smart devices, an online cloud platform and mobile app.

- **Devices** - Data is transferred by wireless connection in long ranges eliminating the need of wiring, trenching and switch cabinets. It is enough to install device in its working environment and register it in mobile app.
- **Cloud platform** - Responsible for data storing and maintenance, messaging, communication between devices and mobile app.
- **Mobile app** - A handy tool that works on any device: computer, tablet, mobile phone.

Automated system allows to monitor the condition of stored products from anywhere in the world, reduce the likelihood of maintenance errors, react quickly to any changes that have occurred in your warehouse.

How the system works

All "Eltrum Systems" devices operate 24/7, constantly monitoring the task assigned to them and "listening" to commands coming from the system. Whenever device controller reads sensors' data, the data is encrypted and transmitted wirelessly (WiFi, LoRa) to the platform.

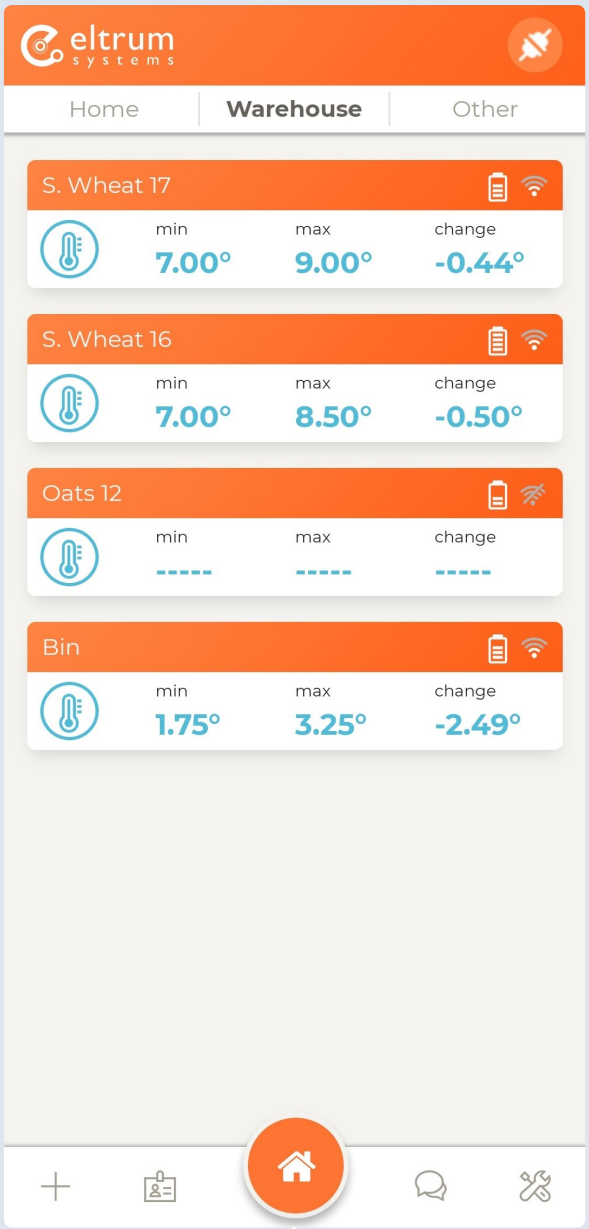
4G communication stations are used to ensure smooth data transfer between the devices and the platform. One station covers up to 10000m^2 area, and can handle up to 200 devices simultaneously.

The data obtained on the platform is decoded and stored in a database so that it can be displayed on a graph or printed out in a report. At the same time, the data is analyzed, corresponding messages are generated, and are immediately sent to user's e-mail and his mobile app.

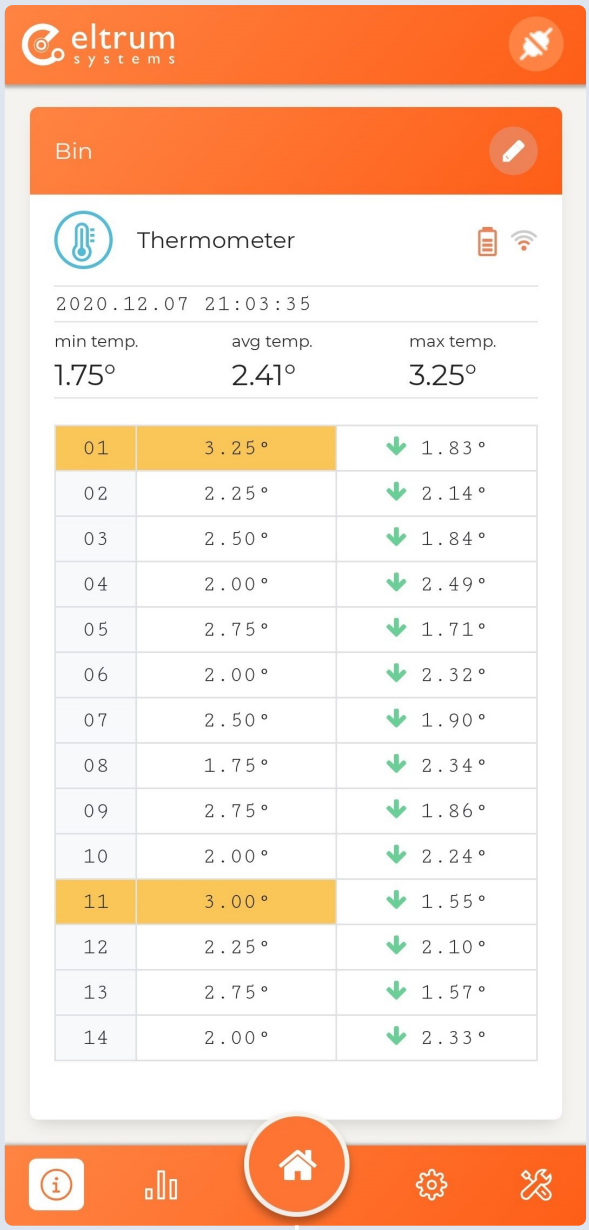
In the mobile app, users can see current device status/data, re-view graphs of data changes, and manage device settings. The app also lets users to share access to their devices with other people, group devices, rename them, review usage history. The app is translated into English, Russian and Lithuanian languages.

In cooperation with our customers, we are constantly improving the capabilities of the app, adding new features, and striving to make the maintenance of stored products as convenient and safe as possible.

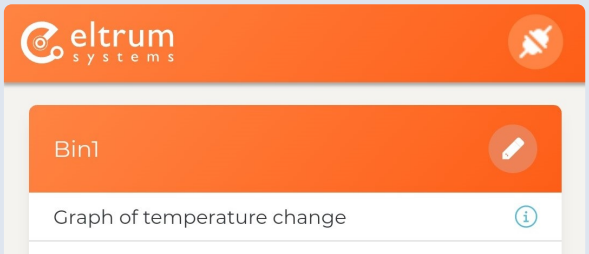
Mobile app

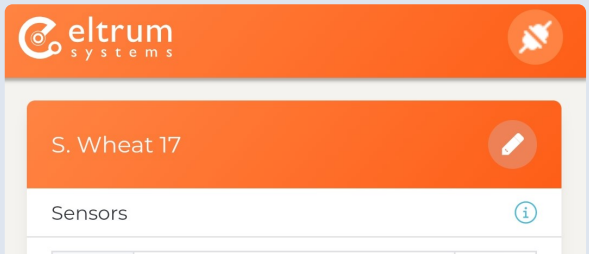


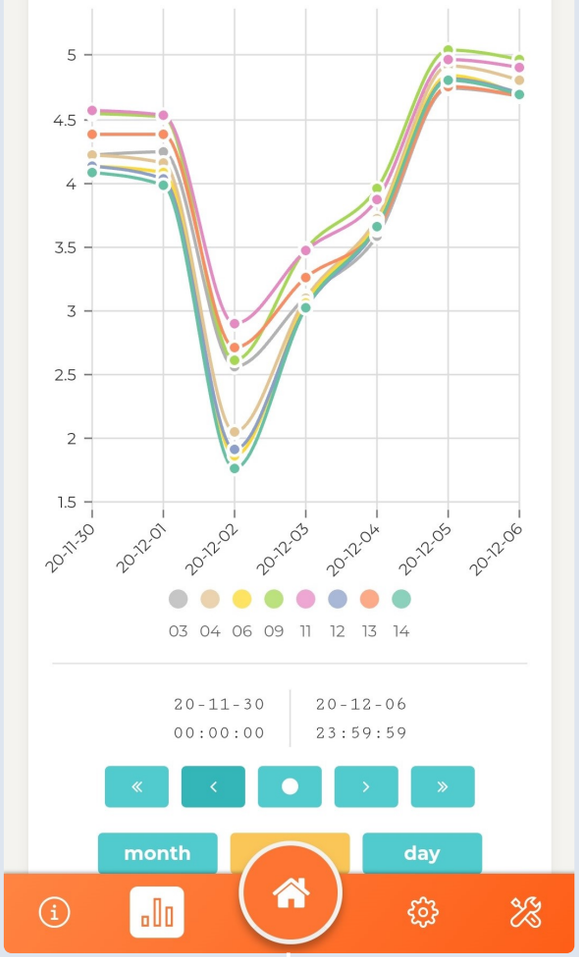
All user's devices are displayed in the main window. Devices can be divided into specific groups.



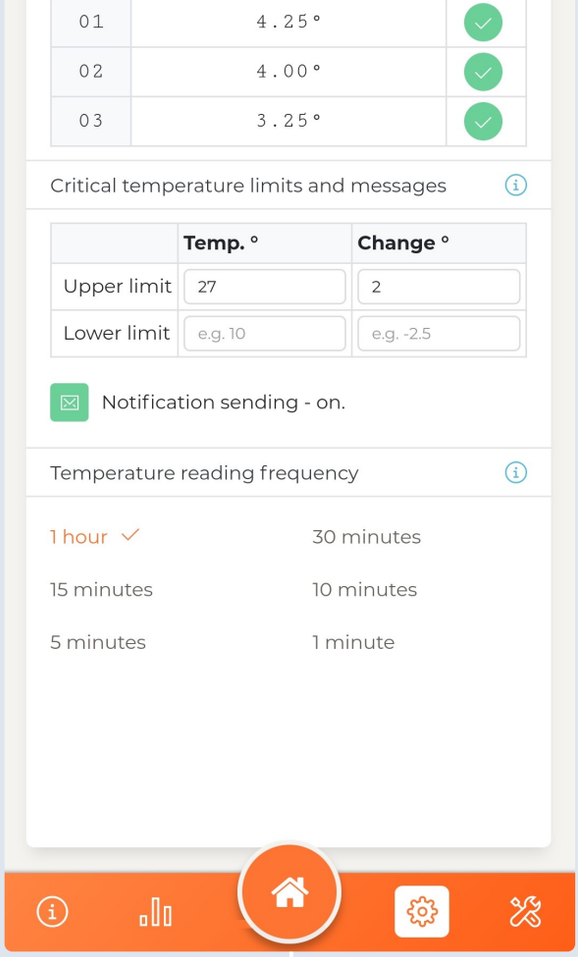
All sensors of a single device can be monitored in real time. You can see min, max and avg values as well.







Collected data is transferred to safe cloud platform and allows visualization of historical data.



Messaging settings for dangerous temperature reached and sudden changes.

App installation does not require any specific knowledge, it can be simply used in any web browser.

Start using system here

MOBILE APP

eltrum systems

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