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# **RUUKKI® ROOF SENSOR**

# **USERS MANUAL**

**RUUKKI® ROOF SENSOR. YOU KNOW THE ROOF WILL HOLD.**

**RUUKKI**  
Building your tomorrow.

# **RUUKKI®**

## **ROOF SENSOR**

### **USERS MANUAL**

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## **SYSTEM OVERVIEW**

The Ruukki® Roof Sensor System is part of the Ruukki® Sensor Network concept monitoring the outside of the building.

The purpose and aim of the Ruukki® Roof Sensor System is to measure and visualise the snow load on roofs constructed with Ruukki Load bearing sheets. The system provides valuable information for safety and management decisions concerning the building.

Because it is hard to estimate snow loads just by visual inspection, actual measurements are needed. As nothing else was previously available, someone had to climb on the roof and measure the snow load.

With the Ruukki® Roof Sensor System and appropriate information concerning the structural design and roofing materials, the snow load can be accurately measured without the need to climb on the roof. By comparing the measured snow load with the available weather information, it is also possible to estimate and put into place the actions needed to keep the situation under control.

By monitoring the roof with the Ruukki® Roof Sensor System, you prevent unnecessary service calls and roof inspections, the need to climb on the roof or remove snow unnecessarily, which may result in damage, further cost or even injury.

# OPERATIONAL CORNERSTONES

## THE SYSTEM HAS FOUR PREREQUISITES

1. In structural design, Ruukki's POIMU roof dimensioning program must be used
2. Ruukki's load bearing steel sheets must be correctly used (see [www.ruukki.com](http://www.ruukki.com))
3. Ruukki Roof Sensors must be correctly placed by the structural designer and appropriately fitted by the installer
4. The parameters must be appropriately defined in the Roof Sensor application, which is available via the POIMU software

If even one of these system prerequisites is missing or implemented carelessly, Ruukki cannot guarantee the operation or accuracy of the system. The usage of the system for other purposes has not been tested and the accuracy of operations thus cannot be guaranteed.

After installation, the Ruukki® Roof Sensor System and application are designed to give you extra peace in mind.

### More information on the system

The Ruukki® Roof Sensor application works as a stand-alone system requiring few watts of electricity to operate. It can give local visual warnings without a web browser. More information can be received using a web browser via a Local Area Network (even without internet connections, separate contracts or monthly payments).

The simplest use of the system is based on warning lights placed in sensor points. The warning light, amber or red in colour, indicates the snow load on the roof.

The general status of the snow load, information from multiple measuring points and historical data can be viewed with most smartphones, tablets and desktop computers equipped with a modern browser capable of connecting to

the Ruukki® Roof Sensor System. The application takes advantage of web-server technologies and provides a user interface via a web browser.

Thanks to the Ruukki® Roof Sensor application, the sensor measurements can be viewed, managed, tested and stored in the interface. The measurement status is communicated in several ways and can be visualised for different users. The system stores historical data from the sensors, thus enabling snow loads to be monitored over an extended period.

Information can be also redirected to other information systems by web technologies or most building automation systems by wire pairing it (open-closed switch circuit). This delivers information about warning situations (or enables the system to be tested).

For a larger roof area, several monitoring points can be designed, and several systems joined together with ease to form a larger area measuring network. The system can be further connected to other building automation systems and cloud-based status and backup systems if the necessary connections have been established to enable the Roof Sensor System to be used remotely.

The Roof Sensor System is expandable to cover Bluetooth measuring sensors. The system is also part of the wider Sensor Network concept, designed to enable the outside of the building to be monitored comprehensively to enable the investment in the building to be safeguarded. We welcome customers' feedback and monitoring and measurement requests at Ruukki.

# QUICK START GUIDE

## Roof snow load status

There are visual light indicators at roof measuring points.

The Ruukki® Roof Sensor System provides information about snow load using the following coloured light indicators seen on the liquid crystal panel:

- Acceptable load: There is no visual light in the roof sensor (green traffic light in the Roof Sensor UI client display)
- Observe the situation: Amber rotating light in the roof sensor (amber traffic light in the Roof Sensor UI client display)
- Service needed: Red flashing light in the roof sensor (red traffic light in the Roof Sensor UI client display, additional BAS warning is switched on)

## Observe the situation – the meaning of amber light

A slowly rotating and flashing amber light is shown on the roof when the snow load has reached the characteristic load level specified by the designer.

The situation is still safe and according the roof design, but snow should be removed from the roof if a severe snow fall is expected to continue for an extended period. Please inform the property's management company. You should also check the weather forecast for your area. Possible wire connections to building automation system will continue to be open and no warning messages are yet delivered.

## Service is needed – the meaning of red light

The red light is switched on when the snow load has reached 80% of the design value where the steel roof is reaching its limit of endurance. Further snow-fall could cause permanent deformation of the roof and the situation could turn more serious and unsafe. You must remove the snow or leave the building.

Possible wire connections to building automation systems will be closed and warning messages are delivered.

## How to find information and connect to the Ruukki® Roof Sensor System (LAN/WLAN)

1. From the available WLAN networks, select RuukkiRoofSensor (SSID)
2. If asked for a password, use Ruukki® Roof Sensor as a password
3. In your browser go to address <http://ruukkiroofsensor> (or <http://192.168.4.1>)

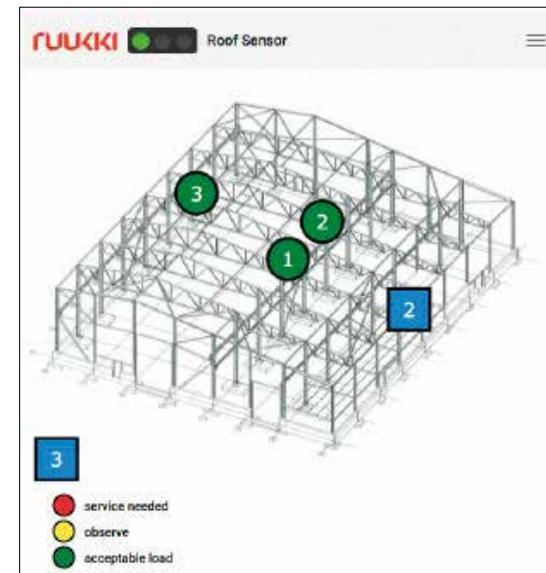
When arriving at <https://ruukkiroofsensor> (or <https://192.168.4.1>) to configure the Roof Sensor software settings, your browsers may give a warnings about an insecure access. However, it is safe to proceed.



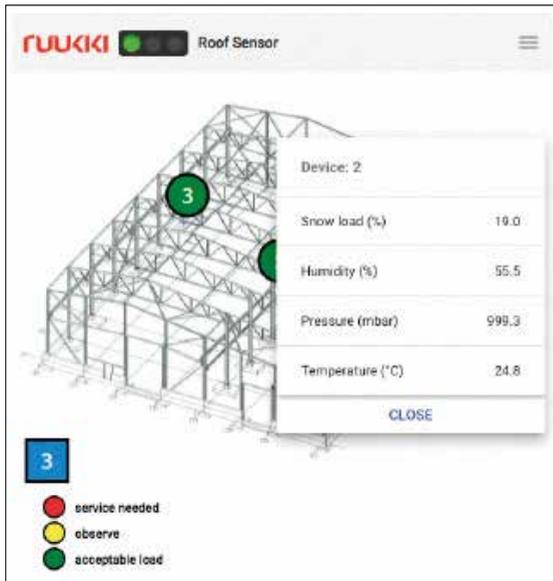
Roof snow load traffic lights in a browser view page display

Relay connections. Traffic lights replicate the highest load situation of any of the connected sensors. So even if just one of the many sensors gives a value that exceeds the pre-configured snow load level, the traffic lights will replicate the snow load status of this one sensor. You can navigate to the Status page by clicking the traffic lights.

The status view gives more information about individual measuring points and their readings.



Example of user view:  
Snow load sensor icons are round and numbered, showing the status with green, amber and red colours. The background picture reveals the location of the sensors, making the user interface easier to understand. The background picture may be changed, and you can add, for instance, an aerial picture of the building to highlight where the sensors are located outside the building.

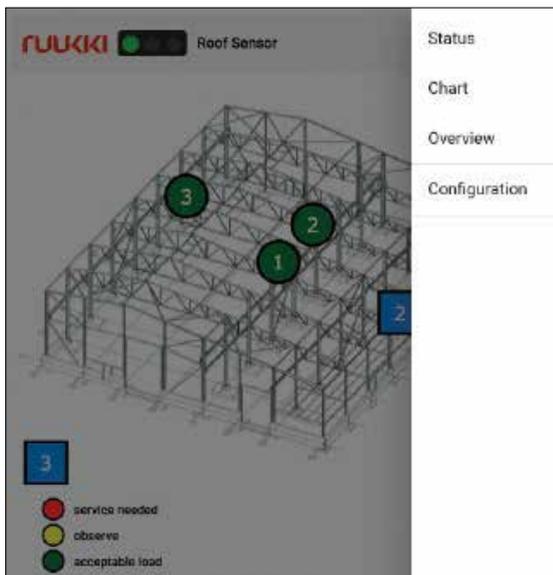


etting the latest information from an individual measuring point can be obtained by clicking the measuring point location icon. The additional Bluetooth sensors, shown here with rectangular icons, work in a same way.

## Menus

From the menu, you can select Status, Chart, Overview and Configuration

### STATUS



### CHART



In the CHART view, you can browse and view historical snow load data. You can change the time and scroll the timeline. Please press "PRESENT" to return to the current situation. On larger browser screens you can have numerical values by placing the pointer over the measurement curve. If needed, you can also isolate and select a single measurement view by clicking the chart keys (1, 2, 3, ...).

In the OVERVIEW screen, the purpose and use of the Ruukki® Roof Sensor software is described. Its content will correspond with the content of this document.

## CONFIGURATION view



As a general user, you also have access to the setup information.

Note: You must change the password when the settings are changed for the first time. Please make note or memorise the new password so that you can manage and configure any changes. If you lose your password, it is lost forever. The system will continue to work, but you cannot make any changes without reinstalling the software.

You can only change the sensor configuration or calibrate the sensors if you record your reasons for wanting to make the change(s). The comment, and the date/time when it was made, is saved in the database and can be reviewed later. This feature can also be used to record other notes.

## ADDITIONAL MEASUREMENTS

The Ruukki® Roof Sensor System is part of the Ruukki® Sensor Network concept, monitoring the outside of a building and gives valuable information for the efficient use of the building and to enable the investment made in the building to be safeguarded.

For this there is the box containing a Bluetooth measuring device (BT device) that you can use for monitoring the building yourself.

Usage example 1: Information on different spaces, products or machinery where there is currently no monitoring of temperature, humidity and pressure, but it would be desirable to start measuring these.

Usage example 2: By placing the BT device on floor, you can have information of the temperature in a specific working space and compare it to the roof level measurements. This gives you an idea of vertical temperature changes and air stratification.

Now there is no historical data available for additional measurements, but this function will be added during updates. If you have monitoring and measuring needs concerning the status or use of your building, please feel free to contact Ruukki – we will assess your circumstances and consider your ideas.

## SOFTWARE MANAGEMENT

To install the software or make changes to the settings or user icons, you need to use a secured communication protocol HTTPS, username and password. Please note that different browsers may act differently and may give warnings about insecure access. It is however safe to proceed.

Possible software updates are also implemented here. Because the system works in Local Area Network, you probably need to download the update file on your browser ready for the update.

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