R5 Gauge – Wireless inclinometer

The R5 gauge is a wireless inclinometer (tiltmeter) equipped with three integrated measurement sensors:

- 1 two-axis tilt sensor (resolution: 0.005°, equivalent to 0.0873 mm/m)
- 1 ambient temperature sensor (resolution: 0.1°C)
- 1 ambient humidity sensor (resolution: 1% RH)

The R5 gauge is **compact, autonomous, and ready to install, designed to remotely monitor the evolution of tilt or structural movement**.

The enclosure integrates all the components required to collect and transmit data to the Saugnac application. No additional equipment is required for data transmission.

The R5 wireless inclinometer (tiltmeter) offers the following benefits:

- **2-axis tilt monitoring** up to ±45°
- Integrated **ambient temperature and humidity sensors**
- Quick configuration in just a few clicks, with no IT skills required
- Connectivity covering **all European countries and most countries worldwide (contact us for confirmation)**
- Battery life of more than 8 years possible, depending on data transmission settings
- **Flexible configuration, adjustable remotely at any time**
- Monitoring+ mode to enable enhanced monitoring
- **Web-based application accessible from a smartphone or PC**, with alert management and data sharing via a simple link

A one-year subscription is included with the purchase of the gauge. The subscription starts only when the gauge is activated. It can then be renewed directly from the application or via a purchase order.

Depending on the selected configuration, the wireless inclinometer periodically wakes up, measures data using its embedded sensors, and stores the data in its local memory.

It then wakes up according to the configured transmission frequency and uploads the data to the Saugnac application.

Technical specifications

Tilt sensor	Resolution: 0.005° (equivalent to 0.0873 mm/m), Measurement range: ±45° on both axes, Accuracy: ±0.01° from −10° to +10°
Temperature sensor	Resolution: 0.1°C, Measuring range: -40°C to 125°C, Accuracy: ±0.2°C
Humidity sensor	Resolution: 1% RH, Measurement range: 0-100% RH, Accuracy: ±2% RH
Measurement interval	Standard mode: 1 h, 2 h, 4 h, 6 h, 8 h, 12 h, 24 h "Monitoring+" mode (time-limited): 2 min, 5 min, 10 min, 20 min, 30 min
Data transmission interval	Standard mode: twice per day, daily, every 2 days, every 3 days, weekly "Monitoring+" mode: every 1 h, 2 h, 3 h, or 4 h
Battery life	Estimated between 2 and 8 years depending on measurement and transmission settings
Battery	SAFT 3.6V 13Ah battery included
Operating temperature	−30°C to +70°C
Network coverage	LTE-M / NB-IoT multi-operator communication module Industrial-grade SIM card included
Frequency bands	B1, B3, B8, B20 and B28
RF output power	+21 dBm
Mounting	Mounting on solid or hollow substrates using the supplied bracket and fasteners
Dimensions	84 × 84 × 56 mm
Enclosure material	UV-resistant polycarbonate
Ingress protection	IP66 (certified)
Weight	230 g including battery
Warranty	2 years

Warning

The Saugnac R5 gauge is **not designed or approved for use in critical applications or life-safety alarm systems**.

The Saugnac R5 gauge is a connected measuring instrument intended to facilitate data collection, but it does not provide the required prerequisites (such as instant alert transmission or guaranteed continuous network connectivity) for use in alarm systems involving a risk of personal injury or material damage.

Installation of the wireless inclinometer

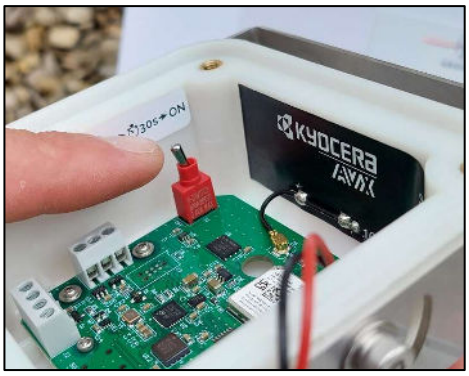
The installation of the R5 gauge is carried out in four steps:

1. **Add the R5 gauge to the application:** scan the QR code on the gauge or manually enter the identifier located below the QR code.

2. **Define activation parameters:** set the time of the first measurement, the measurement interval, and the data transmission interval.

3. **Power on the gauge** by activating the switch inside the enclosure.

   The gauge powers up and an indicator light turns on to display the configuration status. Once initialization is complete, the gauge automatically enters sleep mode.



4. **Mount the gauge** on the structure using the supplied fasteners.

Mounting the wireless inclinometer

The supplied mounting bracket allows installation in all configurations: flat mounting, ceiling mounting, or wall mounting, and enables fine adjustment of the gauge's horizontal alignment during installation.


Installation examples:

On solid substrates

- Required tools **(not supplied)**: drill, Ø8 mm drill bit, 5 mm hex key, plus a 3 mm hex key to open the enclosure and power on the inclinometer.
- **Supplied** fasteners for solid substrates: two brass anchors and a mounting bracket with two M6 × 35 mm screws.

On hollow substrates (also suitable for solid substrates)

- Required tools (**not supplied**): drill, Ø13 mm drill bit, 5 mm hex key, plus a 3 mm hex key to open the enclosure and power on the inclinometer.
- **Supplied** fasteners for hollow substrates: two EPDM anchors and a mounting bracket with two M6 × 35 mm screws.

For substrates where drilling is not possible, the gauge can alternatively be mounted by bonding, by gluing the bracket instead of mechanically fastening it.

R5 gauge protection

To ensure protection of the R5 wireless inclinometer during on-site measurements, a dedicated protective cover is available.

Made of PVC, it provides an effective barrier against splashes and unintentional damage that may occur in outdoor environments or on construction sites.

Network coverage of the wireless inclinometer

The R5 gauge connects to LTE-M / NB-IoT networks. These networks are based on 4G infrastructure and are specifically designed for IoT devices, using a protocol that enables longer range and improved penetration through walls.

he connectivity is multi-operator, providing coverage in **all European countries and most major countries worldwide** (contact us for confirmation)

Battery life of the wireless inclinometer

Battery life depends on the configuration of the R5 gauge. The higher the measurement and transmission frequency, the higher the battery consumption.

Based on internal testing, the battery life of the R5 gauge is estimated **to range from 2 years to more than 8 years** under normal operating conditions. These battery life values are estimates only and do not constitute a commitment by Saugnac. Actual battery life depends on several uncontrollable factors, including signal quality, transmission power, and weather conditions.

An alert is sent when the battery reaches end of life to notify the user that battery replacement is required. The battery can be replaced easily by following the instructions provided in the user manual.

Monitoring+ mode

To meet temporary needs for more intensive monitoring, a "Monitoring+" mode can be activated remotely via the application.

This mode increases measurement and transmission frequency with the following settings:

- Measurement interval: every 2, 5, 10, 20, or 30 minutes
- Data transmission interval: every 1, 2, 3, or 4 hours

This mode is temporary, as it consumes more energy and data.

The maximum operating duration is automatically determined based on the selected frequency. Once this duration is reached, if the user has not disabled "Monitoring+" mode, the device automatically returns to standard mode in order to preserve battery life and limit data usage.

This mode can be activated multiple times for a series of measurements, up to a limit of **12,000 measurements.**

Measurement interval	Maximum possible duration
2 min	4 days
5 min	10 days
10 min	20 days
20 min	40 days
30 min	60 days

Weather resistance

The enclosure design provides an IP66 ingress protection rating. The selection of materials and electronic components, combined with the tests performed, ensures reliable operation of the wireless inclinometer within a temperature range of –30°C to +70°C

Remote measurement monitoring with the Saugnac application

All data collected by the three integrated sensors are accessible via the Saugnac application https://saugnac.app/ from a PC or smartphone. The application is supplied with the R5 gauge and remains accessible even if the subscription for data transmission has expired..

This user-friendly application allows you to:

- Generate and download charts
- Download data in Excel or CSV format
- Set alert thresholds with email notifications
- Modify configuration settings remotely
- Share data with a single click: a unique link is generated to provide read-only access to the data without requiring an application account

To explore the application, log in using the demo account:

- User: saugnac.en@gmail.com
- Password: demo