

Gauge

Instruction manual huminode LW & huminode RH IoT Moisture Monitoring System



78.0°F | 6.16% | 456kg/m³ | -27.3td | 0.64aw | 51.9%r.H. | 14.8%abs | 100.4g/m² | 09m/s | 4.90Ug

Version 1.0

Read the operating instructions before starting all work!

Overview of your huminode LW

Overview basic unit huminode LW



No	Description
1	Status LED
2	Multifunction Button / User Button
3	Safety Hole
4	Electrode Connection Point

Overview Rear huminode LW



No	Description
1	Temperature sensor
2	Conductance electrodes

Overview of external sensor

Art.Nr. 15185 huminode screwable double electrode



- Measuring range: 10-50% water content (depending on type)
- Calibration accuracy: +/- 2.5%
- Material characteristics: all common types of wood in a dry density range of 300 to 1050 kg/m³

Overview of your huminode RH

Overview basic unit huminode RH



No	Description
1	Status LED
2	Multifunction Button / User Button
3	Sensor Connector
4	Safety Hole

Overview of external sensors RH

Art.Nr. 12032 Humidity Temperature Sensor



Measurement	Measuring range	Resolution	Accuracy
Relative humidity:	0 to 100% RH	0,1 %	
Calibration:	10 to 90% RH		+/- 2.0% RH (at 25°C)
Temperature °C:	-20 °C to +85 °C	0.1 °C	+/- 0.3 °C (at 25 °C)
Temperature °F:	-4°F to 185°F	0.2 °F	+/- 0.5 °F (at 77 °F)

Art.Nr. 12514 Humidity and Temperature Sensor



Measurement	Measuring range	Resolution	Accuracy
Relative humidity:	0 to 100% RH	0,1 %	
Calibration:	10 to 90% RH		+/- 2.0% RH (at 25°C)
Temperature °C:	-20 °C to +85 °C	0.1 °C	+/- 0.3 °C (at 25 °C)
Temperature °F:	-4°F to 185°F	0.2 °F	+/- 0.5 °F (at 77 °F)

Art.Nr. 12004 LF_TB 120 Precision Humidity Temperature Probe



Measurement	Measuring range	Resolution	Accuracy
Relative humidity:	0 to 100% RH	0,1 %	
Calibration:	10 to 90% RH		+/- 1.5% RH (at 23°C)
Temperature °C:	-20 °C to +120 °C	0.1 °C	+/- 0.3 °C (at 23 °C)
Temperature °F:	-4°F to 248°F	0.2 °F	+/- 0.5 °F (at 77 °F)

Art.Nr. 12032 Humidity Temperature Sensor

Measurement	Measuring range	Resolution	Accuracy
Relative humidity:	0 to 100% RH	0,1 %	
Calibration:	10 to 90% RH		+/- 2.0% RH (at 25°C)
Temperature °C:	-20 °C to +85 °C	0.1 °C	+/- 0.3 °C (at 25 °C)
Temperature °F:	-4°F to 185°F	0.2 °F	+/- 0.5 °F (at 77 °F)

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1. Introduction

1.1 Information about this instruction manual

This instruction manual enables the safe and efficient handling of the huminode RH / LW. The operating instructions are part of the device and must be kept accessible to the operator in its immediate vicinity at all times.

The operator must have read and understood this instruction manual carefully before commencing any work. The basic prerequisite for safe working is compliance with all the safety instructions and instructions given in this operating manual.

1.2 Limitation of Liability

All information and information in this operating manual has been compiled taking into account the applicable standards and regulations, the state of the art as well as the many years of knowledge and experience of Schaller Messtechnik GmbH.

Schaller Messtechnik GmbH assumes no liability for damage in the following cases and the warranty claims expire:

- Failure to follow the instructions
- Unlawful use
- Insufficiently qualified operator
- unauthorized conversions
- Technical changes
- Use of non-approved spare parts

This rapid measurement method can be influenced by various boundary conditions.

As the manufacturer, we are not liable for any incorrect measurements and any consequential damage resulting from them.

1.3 Symbols used

Safety instructions are indicated by symbols in this user manual.



CAUTION

Failure to do so can result in minor or moderate injuries.



NOTE

Failure to do so can result in property damage.



Information

Identifies important information, the observance of which results in a more efficient and economical use.

1.4 Customer Service

For technical information, please contact our customer service:

Schaller Messtechnik GmbH

Max-Schaller-Straße 99
A - 8181 St.Ruprecht an der Raab



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Internet: www.humimeter.com

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i Information

Your purchased measuring device can be calibrated using suitable test ampoules / calibration ampoules and the adjustment can be checked. For this purpose, only use the calibration solutions sold by Schaller Messtechnik GmbH.

For your test ampoules / calibration ampoules, you can download a calibration certificate from <https://www.humimeter.com/certificates/> with the batch number printed on the ampoule .

2. For your safety

The device complies with the following European directives:

- Restriction of hazardous substances in electrical and electronic equipment (RoHS Directive)
- Electromagnetic compatibility (EMC Directive)

The device is built according to the latest state of the art. Nevertheless, there are residual dangers.

To avoid danger, you must follow the safety instructions.

2.1 Intended use

- Rapid measuring device for determining humidity
- Rapid measuring device for determining material moisture
- Rapid measuring device for automatic climate monitoring

2.2 Improper use

- The device must not be used in ATEX areas.
- The device is not waterproof, protect it from water and fine dust.

2.3 Qualification of the operator

Only persons who can be expected to carry out the work reliably are permitted to operate the device. Persons whose ability to react is affected, e.g. by drugs, alcohol or medication, are not admitted.

Persons using this device must have read and understood the user manual and follow its instructions.

2.4 General Security

Observe the following safety instructions to avoid personal injury and property damage :

- Put the device into sleep mode by pressing the multifunction button for 5 seconds if it is not used for a long time.
- If you notice loose parts or damage to the device, contact your dealer.
- The device contains a lithium thionyl chloride battery 3.6V/9000mAh or lithium thionyl chloride battery 3.6V/19000mAh.

Before your device is delivered, all technical characteristics have been checked and subjected to precise quality control. There is a serial number in each device. This sticker must not be removed.

2.5 Warranty

Excluded from the warranty:

- Damage caused by non-observance of the operating instructions
- Damage caused by third-party interventions
- Products that have been improperly used or altered without authorization
- Products where the warranty seal is missing or has been damaged
- Damage due to force majeure, natural disasters, etc.
- Damage due to improper cleaning
- Damage due to leaked batteries

3. Get started

3.1 Unboxing the device

- Unpack the device.
- Immediately after unpacking, check the integrity and completeness of the device.

3.2 Check the scope of delivery

Check the list below to check the completeness of the delivery:

3.2.1 Scope of delivery huminode RH

- huminode RH
- Required

accessories:

- External sensors (see "[Overview of your huminode RH](#)" page 5).

Optional accessories:

- huminode IoT Gateway Browan MiniHub Pro V2
- WisGate Edge Pro (RAK7289)
- WisGate Edge Lite 2 (RAK7268)
- huminode Dashboard Annual license for one sensor
- Replacement Lithium Thionyl Chloride Battery 3.6V/9000mAh

3.2.2 Scope of delivery huminode LW

- huminode LW
- Required

accessories:

- External sensors (see "[Overview of your huminode LW](#)" page 2).

Optional accessories:

- huminode IoT Gateway Browan MiniHub Pro V2
- WisGate Edge Pro (RAK7289)

- WisGate Edge Lite 2 (RAK7268)
- huminode LW Contact Screws 20 pcs.
- Replacement Lithium Thionyl Chloride Battery 3.6V/9000mAh

4. Basic application huminode RH / LW

huminode RH and huminode LW enable the continuous measurement and documentation of humidity and temperature parameters over long periods of time in low-maintenance continuous operation.

The sensors are suitable for various applications, including:

- Production and storage halls
- Wooden buildings
- Components and construction parts
- listed buildings

Measurement parameters:

- » huminode RH measures the relative humidity and the ambient temperature (Fig. 1).
- » huminode LW records the wood moisture and the water content of bulk materials, including the Temperature (Fig. 2).

The main operation is carried out centrally via the dash board, which can be used to visualize, document and evaluate the measured values.

Access to the dashboard at:
huminode.humimeter.com



5. Basic Operation Huminode RH

Huminode is in operation at the time of delivery.

Mount your huminode RH directly over the Mona gels at the desired location (picture 3).

If the LoRa connection is in place, all further steps can be carried out via the dashboard.



5.1 Changing the huminode RH sensor

The huminode RH can be operated with humidity or pricking sensors.

- If a sensor is already screwed on, unscrew it counterclockwise (Fig. 4).
- Plug the desired probe into the device until both threads are in contact (Fig. 5).
 - » Pay attention to the elevation in the connector and its correct positioning.
 - » The sensor should be able to be connected without any effort.
- Now tighten the thread.
 - » The change of the anti-slip sensor on the huminode must be carried out during the ongoing measurement period, operationally possible. A measurement interruption is not necessary here, so that Accredited maintenance and calibration intervals can be performed without downtime



5.2 Button Pressure Description huminode RH

The huminode has a multifunction button. Depending on the duration of the button press, different functions are triggered. While the button is pressed, the green status LED will be solid on. After every second the LED flashes briefly for orientation.

Features at a glance:

Press < 1 second

- » Starts a measurement and sends the data message via LoRaWAN.
- » If the device is not yet connected to a network server, a join test carried out.
- » If three failed connection attempts switches the device to power saving mode (current consumption approx. 2 μ A).

6



Press for 2 seconds

- » Output of the unique device identifier (EUID) via the serial port. Press for 3 seconds
- » Restarting the sensor (reset).

Press for 5 seconds

- » Device finishes measurements and data transmission and remains in the sleep mode.
- » Reactivation by pressing the button again. Press

for 7 seconds

- » Launch of the bootloader for firmware updates.
- » Attention: Device requires approx. 7 mA in this state and remains there until reset or power off.

Press for 8 seconds

- » Clearing the network context.
- » Attention: The device will lose the existing network server connection.

5.3 Perform measurement huminode RH

- The measurement is described in the chapter "6."

6. Measurement process huminode RH

6.1 Prepare measurement

The prerequisite: The measuring device must be as close as possible to the temperature of the product to be measured. It is recommended to allow the measuring device to adjust to the temperature for at least 30 minutes near the product before measuring.

6.2 Perform measurement

6.2.1 Measurement with piercing probe

- Insert the measuring device into the material to be measured with the measuring tip first (Fig. 7).
 - » The measuring head must not be bent or dropped.
 - » Allow the device to adjust to the material for a sufficient amount of time (see "6.3 Assimilation behaviour of the sensors").
- The measured values are now displayed on the dashboard.
 - » The displayed measured value can be stored on the device



6.2.2 Measurement with humidity sensor

- Position the huminode RH in a place that is representative of the indoor climate (Fig. 8).
 - » Avoid drafts and unnatural temperature fluctuations when positioning.
 - » Furthermore, make sure that the device is not exposed to direct sunlight.
- The measured values are now displayed on the dashboard.



7. Characteristic curves huminode RH

Characteristic curves are available for the following products:

Characteristic curve	Significance	Unit	Measuring range	Sensor
Relative humidity	Relative humidity	% RH	0 to 100 %	12004/12032/ 12514/13700
Infrared Temperature	Temperature infrared sensor	°C °F	-25 °C to +125 °C -13°F to 257°F	12513

On request:

Absolute humidity g/m ³	Absolute humidity	g/m ³	0 to 130 g/m ³	12004/12032/ 12514/13700
Dew Point	Dew Point	°C °F	-55 °C to +60 °C -67°F to +140°F	12004/12032/ 12514/13700
aw value	Water activity	aw	0 to 1	12004/12032/ 12514/13700

The device detects which sensor is connected and automatically activates the corresponding characteristic curves. Special parameters or calculations can be performed via the dashboard on request

7.1 Definition of characteristic curves

Absolute humidity

The absolute humidity indicates the amount of water contained in grams per cubic metre of air. Absolute humidity is a direct measure of the amount of water vapor contained in a given volume of air. It allows you to see immediately how much condensate can be precipitated at most or how much water must be evaporated to achieve the desired humidity.

Dew Point Temperature

The dew point is the temperature to which you have to cool the air that is not completely saturated with water vapor so that it is completely saturated. When a room cools down to the dew point temperature with the current relative humidity, the water vapor begins to condense.

Relative humidity

The relative humidity indicates the relationship between the instantaneous water vapour pressure and the maximum possible, the so-called saturation vapour pressure.

The relative humidity shows the degree to which the air is saturated with water vapour. Examples:

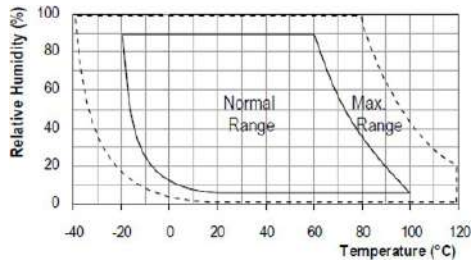
50% relative humidity: At the current temperature and pressure, half of the air is saturated with water vapour. At 100% humidity, it would be completely saturated. If the air has more than 100% humidity, the excess moisture would condense or precipitate as mist.

aw value

The Activity of Water is also referred to as free or non-cellular bound water in products such as food. It is defined as the quotient of the water vapor pressure over a material to the water vapor pressure over pure water at a given temperature.

7.2 Scope of use

The device operates within the specified accuracy in the normal range. Long-term use outside the normal range of application (max. range), especially with humidity above 80 %, can lead to higher measurement deviations (+3 % after 60 h). When returning to the normal application range, the sensor returns to the specified accuracy by itself.



8. Basic operation huminode LW

Huminode is in operation at the time of delivery.

8.1 Button Pressure Description huminode LW

The huminode has a multifunction button. Depending on the duration of the button press, different functions are triggered. While the button is pressed, the green status LED will be solid on. After every second the LED flashes briefly for orientation.

Features at a glance:

Press < 1 second

- » Starts a measurement and sends the data message via LoRaWAN.
- » If the device is not already connected to a network server, a join attempt is made up to three times.
- » If three failed connection attempts, the device switches to the energy-saving mode (current consumption approx. 2 μ A).

Press for 2 seconds

- » Output of the unique device identifier (EUID) via the serial port. Press for 3

seconds

- » Restarting the sensor (reset).

Press for 5 seconds

- » Device finishes measurements and data transmission and remains in the sleep mode.
- » Reactivation by pressing the button again. Press

for 7 seconds

- » Launch of the bootloader for firmware updates.
- » Attention: Device requires approx. 7 mA in this state and remains there until reset or power off.

Press for 8 seconds

- » Clearing the network context.
- » Attention: The device will lose the existing network server connection.

8.2 Perform measurement

- The measurement is described in the chapter "9th measurement process".

9. Measurement process huminode LW

9.1 Perform measurement

1. The huminode LW is screwed directly into the material via the electrode screw connection (Fig. 9).
2. After installation, the sensor is activated by pressing the button once.
 - » After activation, the huminode LW automatically starts measuring and transmitting of the data (Fig. 10).
 - » With an existing LoRaWAN connection, all further settings, evaluations and monitoring functions can be carried out via the central dashboard.



»



WARNING

Risk of injury

Risk of injury from the measuring tips.

- ▶ Keep the measuring tips away from the body during all activities.
- ▶ Keep the measuring tips away from the body of others during all activities .



CAUTION

Risk of injury

Crushing by the metal handle when the hammer is struck.

- ▶ Hold the metal handle in the center and pay attention to the position of your fingers.



Information - Incorrect measurements

Use the correct characteristic curve for your object to be measured. This will help you avoid incorrect measurements (see [11](#)).

10. Types of wood huminode LW

Characteristic curves are available for the following products:

Type of wood	Subgroups	Measuring range limit
Beech	Rubber, Eucalyptus	30 %
Oak	Mahogany, Wenge	30 %
Alder	Acacia, Alstonia, Birch, Sweet Chestnut, Horse Chestnut, Cherry Tree, Walnut Tree, Okan	30 %
Ash	Keruing	30 %
Spruce		30 %
Jaw	Balsa, yew, stone pine	30 %
Larch	Maple, Douglas fir, hemlock, poplar, elm, elm	30 %
Fir	Ceiba, Linde	30 %
Pasture	Pear, Hickory, Olive Wood, Ramin, Teak	30 %
Digit		0 to 100
Reference	! Only to check the measuring device !	

Explanation of wood types and subgroups

The wood types listed in the "Wood type" column are displayed in the dashboard. If you want to measure a type of wood that is not displayed directly on the meter, look for it in the subgroups and set the corresponding wood type on the meter.

Example: If you want to measure poplar, set the wood type larch on the meter .

11. Characteristic curves huminode LW

Characteristic curves are available for the following products:

Product Name	Measuring material	Measuring range
Wood chips	Wood chips according to point 6.3.1	10 % - 50 %
Coarse wood chips	Wood chips according to point 6.3.2	10 % - 50 %
Industrial wood chips	Wood chips according to point 6.3.3	10 % - 50 %
Test block	! Only to check the measuring device !	

11.1 Definition of water content

The device displays the water content. This means that the humidity is calculated in relation to the total mass:

$$\%WG = \frac{M_n - M_t}{M_n} \times 100$$

Mn: Mass of sample with average water content Mt:

Mass of dried sample

%WG: Water content (according to the EN ISO 18134-2 standard)

11.2 Definition of wood chip classes (according to EN ISO 17225-1)

The figures given refer to the particle sizes that fit through the round screen openings. The designations of the old ÖNORM M 7133 are listed in the brackets.

- P16 (G30) at least 75% of the mass between 3.15 and 16 mm
- P31 (G30) at least 75% of the mass between 8 and 31.5 mm
- P45 (G50) at least 75% of the mass between 8 and 45 mm
- P63 (G100) at least 75% of the mass between 8 and 63 mm

11.3 Characteristic curve selection for wood chips

The type of wood (hardwood, softwood), the size of the wood chips (size classes according to EN ISO 17225-1) and the fines content play a role in the selection of wood chips.

If you are not sure which characteristic curve is best suited for your material, we recommend an additional comparative measurement using the kiln method (EN ISO 18134-2).

Schaller Messtechnik GmbH will be happy to advise you personally on the selection of characteristic curves. Take a photo of your wood chips with a tape measure next to it and send it to support@schaller-gmbh.at. You will receive a recommendation from us immediately.

11.3.1 Wood chips

For wood chips with a fine content consisting of at least 1/3 "one third" of hardwood species. The fines are mainly produced by bark, small branches and shrubs. For wood chips within size classes P16 to P45. See example pictures picture [11](#) and picture [12](#).

If your wood chips contain little to no fines or consist mainly of softwood species, reference is made to the following characteristic curves.

11.3.2 Coarse wood chips

For coarse wood chips without fines that consist of at least 1/3 "one third" of hardwood species. This characteristic curve is primarily suitable for the measurement of hardwood chips from trunk wood and solid trees. This characteristic curve is also true for softwood wood chips with a fine content, which consists predominantly (more than 2/3 "two thirds") of coniferous wood species (spruce, fir, pine, larch, ...). The fines are mainly produced by bark, small branches and shrubs. For wood chips within size classes P31 to P45. See example pictures picture [13](#) and picture [14](#).

If your softwood wood chips contain little to no fines, reference is made to the following characteristic curve.

11.3.3 Industrial wood chips

For coarse coniferous wood chips without fines, which consists predominantly (more than 2/3 "two thirds") of coniferous wood species (spruce, fir, pine, larch, ...). This characteristic curve is primarily suitable for the measurement of softwood chips from trunk wood, solid trees and sawmill residues. For softwood chips within size classes P45 to P63. See example pictures picture [15](#) and picture [16](#).

Example pictures of wood chips



Example images of coarse wood chips



Example images of industrial wood chips



11.4 Note on comparative measurement with the kilning method

The device is used to measure a much larger sample quantity (12 to 20 times the size of the drying method), and repeat measurements can be carried out very quickly on inhomogeneous material for a more accurate average calculation.

If you add up the sampling error due to the much smaller sample quantity and the proportion of volatile substances (resins, etc.), which are not water, you will achieve an accuracy of practically about $\pm 3\%$ by means of a drying oven. If one now compares the results of the two very different methods, differences of $\pm 3\%$ can be seen as quite normal.

The EN ISO 18134-2 standard also points out that the kilning method does not provide absolute values, but only comparable values.

11.5 Compression of wood chips

The huminode LW was calibrated to normally compressed wood chips. If the wood chips are much less or much more compressed during the measurement, this leads to measurement inaccuracies. Normally compressed wood chips are defined in the EN 15103 standard (Determination of bulk density).

12. Data Gateways

The gateway is a communication module that collects, processes and forwards the measurement data collected by your huminode to the dashboard. It acts as an interface between the stationary Huminoid devices and the evaluation software, thus enabling permanent, wireless or wired transmission.

12.1 Browan MiniHub Pro V2

The Browan MiniHub Pro V2 serves as a gateway to transmit the measured values collected by the humi-node devices to the central dashboard. It is installed in a suitable location with power supply and automatically connects to the network to ensure data sharing.

12.1.1 Overview Browan MiniHub Pro V2



No	Description
1	USB-C Port
2	Reset button
3	AC adapter mount
4	Setup button
5	LED Display

12.1.2 Scope of Delivery

- MiniHub Pro V2 Gateway
- Three interchangeable AC adapters (US, EU, UK)
- Cover cap for the adapter connection
- Quick start guide from the manufacturer
- Power supply

12.1.3 Status LED

The MiniHub Pro V2 has an LED indicator on the front.

LED Display	Significance
Green (permanent)	Connection to LNS (LoRa Network Server) established
Green (flashing)	Establishing a connection to the LNS
Orange (flashing)	Waiting for configuration (first start)
Orange (fast flashing)	Trying to connect to Wi-Fi

12.1.4 Buttons and Connectors

- **Setup button:** Press and hold for 10 seconds to clear the Wi-Fi configuration and enter AP (Access Point) mode.
- **Reset button:** Press and hold for 10 seconds to reset the device to factory settings (deletes all known Wi-Fi networks and credentials).
- **USB-C port:** Currently without function (reserved for future developments)

12.1.5 Factory reset

- Press and hold the reset button on the bottom for 10 seconds.
- The device reboots and resets all configurations.
- A new setup can then be carried out.

12.2 WisGate Edge Pro RAK7289

The WisGate Edge Pro (RAK7289) is a professional outdoor gateway for the huminode sensors. It serves as an interface between the wireless LoRaWAN sensors and the central dashboard. Data is transmitted via Ethernet, LTE or WLAN. The rugged IP67 housing protects the device from dust and water and allows for outdoor installation.

NOTE: The gateway must be mounted within wireless range of the huminode devices to ensure stable data transmission.

12.2.1 Overview WisGate Edge Pro RAK7289



No	Description
1	12V DC IN/Battery Plus
2	Reserved
3	Ethernet
4	Console Nano Sim Reset TF Card
5	Ground Pad
6	Antenna Port (LoRa1)
7	Antenna Port (LoRa2)
8	Power, ETH, WLAN, LTE

12.2.2 Scope of Delivery

- WisGate Edge Pro RAK7289 Gateway
- Power supply or PoE injector
- Antennas (LoRa, LTE, WiFi, GPS)
- Mounting kit (U-brackets, screws, brackets)
- PVC Water Protection Tape

12.2.3 Status LED

The MiniHub Pro V2 has an LED indicator on the front.

LED Display	Significance
Power	Device is turned on
ETH	Data transmission via Ethernet active
LoRa	LoRaWAN communication active
Wi-Fi	Wireless connection active
LTE	Cellular connection active (LTE version only)

12.2.4 Buttons and Connectors

Buttons / Connectors	Function
Reset button	Short press: Restart the device Press and hold for 10 seconds: Factory reset
Nano SIM slot	for mobile phone operation (LTE version only)
TF Card Slot	to back up system logs
Console Port	for advanced configuration
Ethernet port	Network connection, PoE power supply
12V DC-IN	Alternative power supply (12–24 V)
Ground Pad	for grounding
Antenna Connectors	LoRa1, LoRa2, LTE, WiFi, GPS

12.2.5 Factory reset

- Press and hold the reset button for at least 10 seconds.
- The device reboots and resets all configurations.
- After that, a new setup can take place.

12.2.6 Technical data

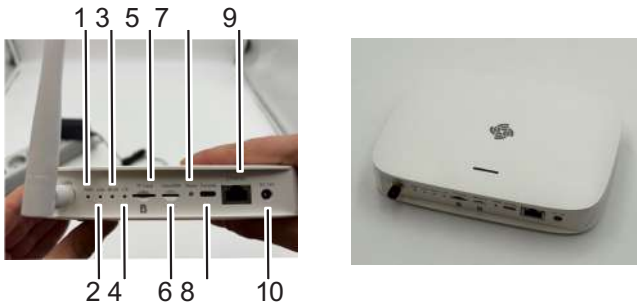
LoRaWAN	Full stack support, integrated network server
Wi-Fi	2.4 GHz (802.11 b/g/n), also known as AP for configuration
Ethernet	100M Base-T, PoE (IEEE 802.3af, 37-57 VDC)
Power supply	12V/1A or PoE, support for RAK Battery Plus
Protection class	IP67
Housing material	Aluminium and plastic
Operating Temperature	-30 °C to +55 °C
Assembly	Pole or wall mounting
Backhaul	Ethernet, WLAN, optional LTE
Mobile network	LTE Cat 4 (optional, C versions)
BLE Connectivity	optional (H-versions)
Memory	TF card for log backup
Network Integration	compatible with private (e.g. ChirpStack) and public (e.g. TTN) LoRaWAN servers

12.3 WisGate Edge Lite 2 (RAK7268)

The WisGate Edge Lite 2 (RAK7268) is a compact indoor gateway for use with huminode sensors. It supports the LoRaWAN standard and enables the reliable transmission of measurement data to the central dashboard.

The device is particularly suitable for small to medium-sized installations in indoor spaces.

12.3.1 Overview WisGate Edge Lite 2 (RAK7268)



No	Description
1	PWR
2	LoRa
2	Wi-Fi
4	LTE
5	TF Card
6	NanoSIM
7	Reset
8	Console
9	ETH (OIE)
10	DC12V

12.3.2 Scope of Delivery

- WisGate Edge Lite 2 Gateway
- Power supply or PoE injector (depending on model)
- LoRa antenna (depending on the model, additional antennas for LTE/WiFi/Bluetooth)
- Mounting kit for wall or ceiling mounting
- Manufacturer's Quick Start Guide

12.3.3 Status LED

The status LEDs on the top of the device indicate the current operating status.

LED Display	Significance
Green (permanent)	Connection to the network server established
Green (flashing)	Establishing the network connection
Orange (flashing)	Waiting for configuration (first start)
Orange (fast flashing)	Connecting via Wi-Fi

12.3.4 Buttons and Connectors

Buttons / Connectors	Function
Ethernet port (PoE capable)	Data transmission and power supply via PoE
DC Power Connector	Alternative power supply
Reset button	Short press: Restart the device Press for more than 5 seconds: Factory reset
LoRa antenna connector	for advanced configuration
Console port / USB-C (for service purposes)	Network connection, PoE power supply
MicroSD card slot	for configuration files / log data, mod-dependent
SIM card slot	LTE models only

12.3.5 Factory reset

- Press and hold the reset button for at least 10 seconds.
- The device reboots and resets all configurations.
- After that, a new setup can take place.

12.3.6 Technical data

Power supply	12 V DC or PoE (802.3 af)
Power consumption	approx. 12 W
Dimensions	186 × 126 × 36 mm
Weight	approx. 350 g
Operating Temperature	-10 °C to +45 °C
Housing material	Plastic
Installation Method	Wall mounting

13. Dashboard

13.1 Login to the dashboard

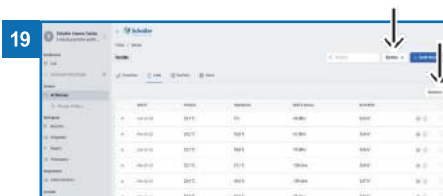
- Open the link we provided.
- Log in with the access data provided by us (Fig. 17).



13.2 Organize devices / create tags

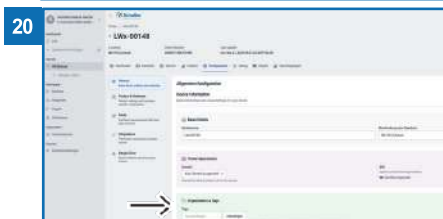
The devices have already been added by Schaller Messtechnik. In order to enable automatic assignment, create tags.

- » Different views of the devices (Image 18).
- Go to the view. "List" to create tags.
- » Under Columns, you can select the desired device information .



Create tags Variant A:

- Select the desired device on the right (individually or several at the same time) (Figure 19).
- Add the day you want .



Create tags Variant B:

- Click on the desired device.
- Go to Configuration and then to Organization and Tags (Figure 20).
- Under "Add tags", enter the desired label.
- Confirm by clicking on "Add".
- » Any number of tags can be created.
- Then save the process at the bottom.

13.3 Create a folder

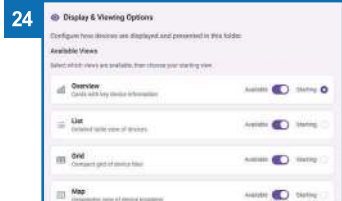
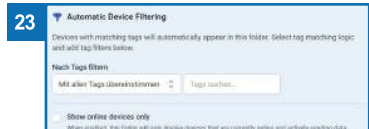
Folders can be created to structure devices (Figure 21).

1. Click on "Manage Folders".
2. Go to "All Devices". A "+" appears on the right.
3. Click "+" to create a new folder.
4. Enter the name of the folder. Optionally, an icon or description can be added (Figure 22).



Under Automatic Device Filtering, you can use the tags you created earlier (Figure 23):

- **At least one matching tag:** The device is mapped as soon as one of the tags is present.
- **Match all tags:** Only devices with exactly these tag combinations are assigned.



With "Search tags" all tags that have already been created are displayed and can be selected.

Under Display & Viewing Options, you can specify which information is displayed and which view is opened by default (Figure 24).

- Save the changes with Save Changes at the bottom of the page.

13.4 Delete folder

1. Click on "Manage Folders".
2. Go to the desired folder. A wastepaper basket appears on the right.
3. Click the Trash to delete the folder.



13.5 Overview Display



No	Description	Explanation
1	Status	Shows Online/Offline Mode, Battery, RSSI, SNR and... on
2	Current Temperature	Displays temperature 4 minutes ago.
3	Maximum, average and minimum temperature	Displays maximum, average and mini times temperature 4 minutes ago.
4	Current humidity	Indicates humidity before 4 minutes.
5	Maximum, average and minimum humidity	Displays maximum, average and minimum times humidity 4 minutes ago.
6	Average overview of values 14 days	Can be set to hourly, daily, weekly, monthly, or custom.
7	Temperature Polynomial	
8	Material Polynomial	
9	Characteristic curves	Selection of the desired characteristic curve
10	Interval	Setting the measurement interval (see)

11 Average value overview daily

Can be set to hourly, daily, weekly, monthly, or custom.

13.5.1 Setting the measurement interval

The measurement interval determines the time interval at which the values are sent and updated.



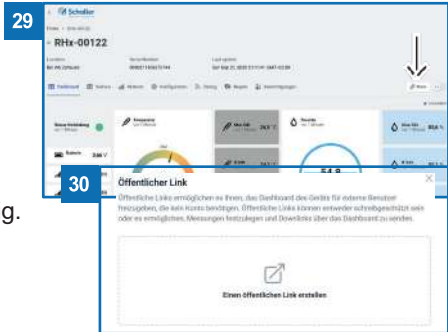
- Under Interval, select one of the specified intervals.
- Alternatively, you can enter a custom interval:
 - » Enter the desired time in minutes in the left field.
 - » Confirm the entry via the adjacent field with the arrows.
- 0 min (Stop) setting: The measurement is temporarily paused.

13.6 Share device status

Sharing the device status is only possible from individual devices. **Prerequisite:**

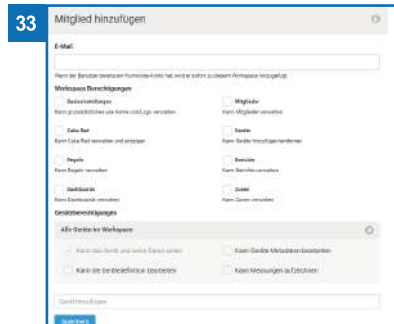
They are in the dashboard of the desired device (Figure 27).

- Click on "Share" (Figure 29).
- Now click on "Create a public link" (Figure 30).
- » You have the option of optionally setting a password (image 31).
- Now determine whether only one view or also an edit of the device is possible (Figure 31).
- » **Read only** - only view of the device-Status
- » **Read & Write** - View and editDevice status can be adjusted
- Click on "Create public link".
- Now the link or QR code can be saved, downloaded and shared (Fig. 32).



13.7 Add members

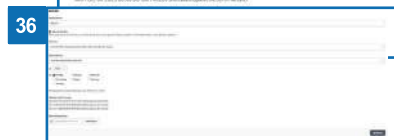
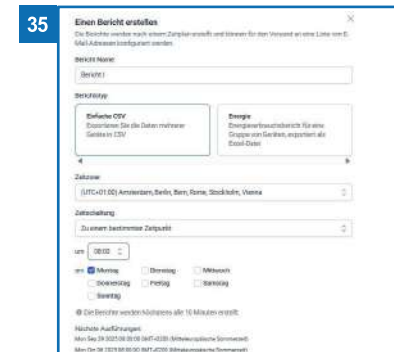
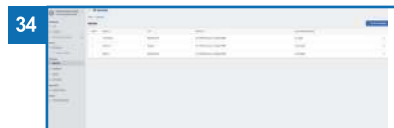
- In the workspace, click Members.
- Select "Add Member."
- Enter the email address of the new member.
- Set the desired permissions for the member.
- Under Add devices, select the devices you want the member to have access to.
- Complete the process by clicking on "Save".



13.8 Send Reports

13.8.1 Create a report

- In the workspace, click Reports.
- Select "Add Report" (Figure 34).
- Enter the name of the report.
- Select the report type.
 - » Simple CSV: Export data multiple devices in CSV
 - » Energy: Energy consumption report for a group of devices, exported as Excel file
- Now select the appropriate time zone .
- Set the desired timer.
 - » To do this, select the time and days of the week.
 - » Reports are generated every 10 minutes at most.
- Finally, click on "Create Report ".
- Now enter the report recipient (Figure 36).
- Now click on "Save".



13.8.2 Selecting the "Simple CSV" Report:

- You can specify the desired devices by device name or by tags.
- » Under "Device must match", you can choose whether all of the tags should occur on the devices and only one day is sufficient.
- Under "Include fields in the report", you can select the desired information using the dropdown.
- » Multiple selection possible.
- If necessary, specify the number of decimal places.
- » It is only active when the left button lights up blue. To do this, it has to be moved to the right.
- Select the desired time slot, time zone and resolution.
- Select the type of output file.
- » Individual files: Send a separate report for each selected device.
- » Combined: A report is generated for all selected devices.
- If you want to display the device name or serial number, move the button to the right so that it lights up blue.
- Finally, enter the desired name of the file.
- Now click on the "Save" button to complete the process.



13.8.3 Selection of "Energy" report:

- Enter the desired heading and subheading.
- Now select which devices should be included.
- Select Explicit to add individual devices.
 - » The desired devices can be added or restored of which can be removed.
- Select Product to add devices of the desired product.
 - » The devices from the selected product can be filtered by tags.
 - » Specify the desired measurement area.
- If necessary, the "Location" can be displayed.
 - » To do this, move the button to the right so that it glows blue.
- Specify the desired time frame.
- For Bucket width, you can specify the timing of the report.
- Now click on the "Save" button to complete the process.



13.8.4 Download the report

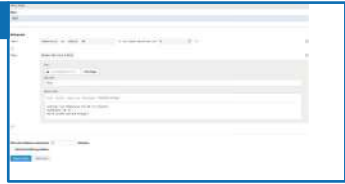
- To download the report, click on "Run now" and then on "Reload".
- Now the report that has just been created appears.
- Click "Download" to download the report.
- An Excel file opens.



13.9 Create rules

- In the workspace, click Rules.
- Select "Add Rule"
- For Name, enter the name or label of the rule.
- Now enter the desired conditions.
- Now enter the email address, the subject and the desired text.
- Specify the interval at which the action should be performed every second.
- If multiple executions are allowed, the rule's actions are executed each time a metric used in the rule is updated and the rule applies.
- Now click on the "Create Rule" button to complete the process.

40



13.10 Select characteristic curve huminode RH

Prerequisite: You are in the dashboard.

An overview of characteristic curves and the selection criteria for the characteristic curve to be selected can be found under "7".

1. Press the or button to switch one characteristic curve further at a time
Or

2. Press the or key for 2 seconds to get to the characteristic curve overview.

41



3. To switch one characteristic curve further at a time, press one of the arrow keys.
4. To scroll through the characteristic curves, hold down one of the arrow keys.
5. Confirm your selection with .
 - » The selected characteristic curve is shown at the top of the display.

14. Care and maintenance

Regular cleaning and maintenance ensure that your device remains intact for as long as possible.

14.1 Care instructions

- Do not leave the device in the rain. The device is not waterproof.
- Do not submerge the sensor in water.
- Do not expose the device to extreme temperatures.
- Avoid strong mechanical vibrations or loads.

14.2 Cleaning the device



NOTE

Device damage due to damp cleaning

The device can be destroyed by water or cleaning agents.

- ▶ Carry out dry cleaning only.

Plastic housing

Clean the plastic case with a dry cloth.

Humidity temperature sensor Art.Nr. 12032 & humidity and temperature sensor Art.Nr. 12514

Clean the plastic tube with a dry cloth.

In case of contamination of the humidity and temperature sensor, please contact your dealer. It is not possible to clean the sensor.

Precision humidity and temperature sensors Art.Nr. 12004

In the event of soiling of the probe, it can be cleaned with alcohol.

IR temperature sensor Art.Nr. 12964

Clean the plastic housing of the IR temperature probe with a dry cloth.

In case of contamination of the sensor, contact your dealer. It is not possible to clean the sensor.

15. Disruptions

If the measures mentioned below do not remedy the faults or if other faults not listed here occur, please contact Schaller Messtechnik GmbH.

Disruption	Cause	Action
Incorrect measurement	Temperature out of range: below -10 °C or above +60 °C	Use the measuring device only for temperatures above -10 °C or below +60 °C.
	Measurement error due to too short temperature adjustment time	Allow the device to adjust to the environment for a sufficient amount of time (see "6.3 Adaptation behavior of the sensors").
	Heat or cold sources that do not correspond to the ambient temperature	Position your device in a new location that is representative of the indoor climate.
	Wrong characteristic curve set	Before you start a measurement, check whether the correct characteristic curve has been set (see "8").
	Dripping water or sprayed water	Direct contact of the sensor with dripping water or sprayed water destroys the sensor.
	Irreversible impairment of the sensor element by aggressive gases	In this case, contact your dealer.
	Risk of condensation during temperature change	Condensation on the sensor will affect calibration . Allow the device to adjust to the ambient temperature.
	Dirty humidity sensor	In this case, contact your dealer.

Disruption	Cause	Action
	Foreign objects on the sensors	In this case, contact your dealer.

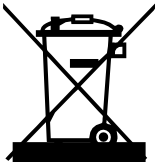
16. Storage and disposal

16.1 Store the device

Store your device under the following conditions:

- Do not store outdoors
- Store in a dry and dust-free place
- Protect from sunlight
- Avoid mechanical vibrations/loads
- Remove the batteries from the device if it will not be used for more than 4 weeks.
- Storage temperature: -20 °C to +40 °C

16.2 Disposing of the device



The equipment marked with this symbol is subject to the European Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment. If the device is not operated within the European Union, the national disposal regulations in the respective user country must be observed.

Electrical appliances do not belong in the household waste.

Dispose of the device in an environmentally friendly manner via suitable collection systems.

17. Information about the device

17.1 CE Declaration of Conformity

DECLARATION OF CONFORMITY *DECLARATION OF CONFORMITY*

Name/ Address of the manufacturer: **Schaller Messtechnik GmbH**

Name/ address of manufacturer: **Max-Schaller-Straße 99
A – 8181 St. Ruprecht**

Product name: **Huminode**

Product designation:

Type designation: **RH ; LW**

Type designation:

Product Description: **IoT Humidity Monitoring System**

Product description **IoT moisture monitoring system**

The designated product complies with the provisions of the Directives:

The designated product is in conformity with the European directives:

EMC Directive 2014/30/EC

EMC Directive 2014/30/EU

RoHS - Directive 2011/65/EC

RoHS Directive 2011/65/EU

The conformity of the designated product with the provisions of the Directives is demonstrated by full compliance with the following standards:

Full compliance with the standards listed below proves the conformity of the designated product with the provisions of the above-mentioned EC Directives:

EN 61326–1:2013

Electrical Measuring, Control, Regulation and Laboratory Devices - EMC Demands

Electrical equipment for measurement, control, and laboratory use – EMC requirements

EN IEC 63000:2019-05

replaced

EN 50581:2012

Technical documentation for the assessment of electrical and electronic equipment with regard to the restriction of hazardous Fabrics.

Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

For the listed product, complete documentation with operating instructions is available in the original version.

For the mentioned product, a complete documentation with manual of instruction in original version is available.

In the event of changes not specified by the manufacturer, this declaration of conformity loses its validity.

In case of any changes not agreed upon with the manufacturer, this declaration of conformity loses its validity.

St. Ruprecht a.d. Raab, 31.07.2022



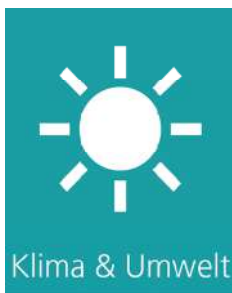
Lernhard Maun...
Legally binding signature of the issuer
Legal binding signature of the issuer

17.2 Technical data huminode LW

Calibration accuracy to reference material	according to the sensor
Measuring range	according to the sensor, resolution 0.1 % rh
Temperature compensation	Automatic
Measurement result	Interval for measuring values individually adjustable from 15 minutes to several hours
Communication	LoRaWAN
Dimensions basic unit	150 x 65 x 45 mm
Weight	260 g
Power supply	Integrated Lithium Thionyl Chloride Battery

17.3 Technical data huminode RH

Relative humidity	Measuring range according to sensor, resolution 0.1 % rh
Measuring range	Measuring range according to sensor, resolution 0.1 °C
Absolute humidity	0 to 130 g/m ³ , resolution 0.1 g/m ³
Communication	LoRaWAN
Dimensions basic unit	150 x 65 x 45 mm
Weight	260 g
Power supply	Integrated Lithium Thionyl Chloride Battery



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