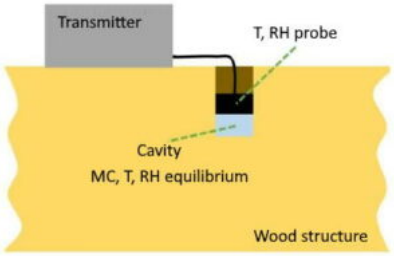
ABL
Wood moisture

DESCRIPTION

Autonomous sensor for continuous measurement of temperature and relative humidity in wood or other porous material.

Sensors data are transmitted in LoRa to A3IP Cloud, via a long distance encrypted radio transmission and consuming very little energy. They are stored and accessible through A3IP Cloud applications; access to the data of the connected sensors is simple and the visualization of the measurements is easy.



Wood moisture sensors are based on the equilibrium relationship between wood and air. A temperature and air humidity sensor is inserted into a small cavity created in the wood element. In this configuration, the wood moisture will impose the conditions (T, RH) inside the cavity. A hygroscopic equilibrium chart for wood is then applied to compute the measurements in the area surrounding the cavity, correlating it with the temperature and relative humidity of the air around the

measurement point. The probe requires a small diameter drilling of the requested depth.

Sensors active element measuring relative humidity uses a field effect (capacitive) to achieve a reliable and accurate measurement for a wide range of use (in temperature as well as in moisture). It avoids degradation over time, or due to high levels of humidity in classic sensors (resistive, membrane, optical...).

Probe requires an 11mm diameter hole of the desired depth.

Each sensor is autonomous; it does not need another box or a sending station

UNIVERSITÉ Clermont Auvergne

The sensor was developed in partnership with the University of Clermont Auvergne and the MSGC test platform of Polytech Clermont Ferrand (https://msgc-cust.fr).

APPLICATIONS

Measurement of moisture content in porous materials, including wood.
A specific exploitation for a wood species or another material is possible; consult us.

SENSOR CHARACTERISTICS

DATA RECORDING

Local measurement interval	1 second (via Bluetooth application)
Data reporting interval	10 minutes (configurable)
Reported data	Probes temperature (1 to 4)
	Probes relative humidity (1 to 4)
	Temperature and relative humidity of the air around the case
	Case temperature
	Battery voltage

TEMPERATURE PROBE

Measuring principle	Digita
Measuring range	-40 ... +125°C
Resolution	0,015°C
Repeatability	±0,1°C
Long term drift	< 0.05 °C/year

HUMIDITY PROBE

Measuring principle	Capacitive
Measuring range	-0 ... 100 %RH
Resolution	0,02 % RH
Repetability	±0,2 % RH
Long term drift	< 0.5 % RH/year (+23 °C, 30 ... 70 % RH)

TEMPERATURE SENSOR INSIDE THE HOUSING

Measuring principle	NTC
Measuring range	-55 ... +125°C
Resolution	0,6°C (-5 ... +50°C)

LONG DISTANCE RADIO

Radio technology	LoRaWAN
Security	AES-128 data encryption
Supported features	LoRa private or operated, OTAA
Radio range	Up to 15 km
Transmitted power	Up to 20 dBm (adaptive)
Receiver sensitivity	-142 dBm
Frequency band	868 MHz (EU), 915MHz (US, AS, AU)
Antenna	Internal or external to the housing

LOCAL RADIO

Radio technology	Bluetooth Low Energy
Radio range	Up to40m
Transmitted power	Up to 4 dBm
Receiver sensitivity	-96 dBm
Frequency band	2.4 GHz ISM
Antenna	Internal to the box

POWER SUPPLY

Battery type	Lithium-Ion
Power consumption	< 1mW
Battery life *	

Measurement period	Duration (up to)
10 minutes	5 years
20 minutes	10 years
30 minutes	15 years
1 hour	15 years

* Indicative duration, for use in the conditions of use

SENSOR

Operating temperature	-30 ... +85°C
Dimension	105 x 105 x 60 mm
Weight	280g
Internal memory	1024 measurements
Case	Polycarbonate (weather, UV and impact resistant)
	Decompressor against condensation
	IP65, IK07
	Fixing brackets

ORDER REFERENCES

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ABL-01	wood sensor with 1 probe, 20cm cable
ABL-01-xx	wood sensor with 1 probe, specific length cable*
ABL-02	wood sensor with 2 probes, 20cm cable
ABL-02-xx	wood sensor with 2 probes, specific length cable*
ABL-03	wood sensor with 3 probes, 20cm cable
ABL-03-xx	wood sensor with 3 probes, specific length cable*
ABL-04	wood sensor with 4 probes, 20cm cable
ABL-04-xx	wood sensor with 4 probes, specific length cable*

* cable length cannot exceed 5m per sensor

Other options : contact us

WARNINGS

Specifications and information in this document are subject to change without notice.

A3IP products are not warranted or licensed for use as a critical component for medical or other life-saving or life-sustaining applications, or other applications where failure could reasonably be expected to cause serious injury, death, or damage to any structure, work or building.

In addition, devices are indications and decision aids and cannot be used in alarm or critical applications.

CONTACT

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