EWATTCH
CONNECTED SENSORS FOR
ENERGY MANAGEMENT

AMBIANCE-LORAWAN

Specification sheet for the LoRaWAN version
AMBIANCE sensor.

Version 1.1

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HAZARDS AND WARNINGS

Manufacturer cannot be held responsible for failure by user to comply with the instructions in this manual.

Any service performed on this product must be completed by a qualified individual.

Replacement of this product must be performed by a qualified individual.

Failure to use this equipment in accordance with the specifications in this documentation could lead to a hazard.

No parts in this device should be replaced or removed.

Disconnect all power supplies before servicing the equipment.

CERTIFICATIONS AND COMPLIANCES

CEM

- EN 61000-6-2   Immunity for industrial environments
- EN 61000-6-3   Emissions for residential environments
- EN 55022   Immunity IT equipment

Radio

- EN 300220

Safety

- EN 61010   Metering equipment

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REFERENCES

AMBIANCE-LORAWAN   LoRaWan AMBIANCE sensor measuring temperature, humidity, rate of presence, brightness and an option for CO_2

Accessories

PILE-LITH-AA   3.6V AA Lithium battery. Capacity 2.7 Ah
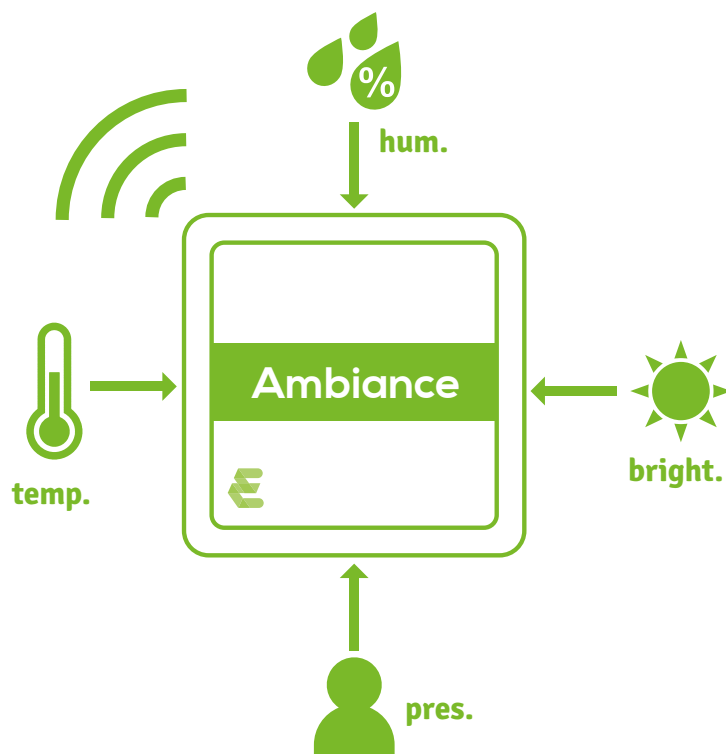**ALIM-RAIL-5V**   Power 230V AC - 5V DC. DIN RAIL mounting
ALIM-BLOC-5V   Power supply 230V AC - 5V DC mains type unit

PRESENTATION

PRODUCT DESCRIPTION

The AMBIANCE is a complete LoRaWan sensor that can measure five different things: temperature, humidity, rate of presence, brightness, and CO2 as an option.

This product can run on batteries, which allows for more flexibility in its positioning. In order to measure CO2, an EE893 sensor made by E+E must be connected to the AMBIANCE.

Its measuring cell uses dual-wavelength E+E infrared technology NDIR, which compensates for the effects of aging, is particularly resistant to pollution and offers great long-term stability.

Caution: Measuring CO2 requires the use of an external power supply and cannot be run on batteries.

PRODUCT INSTALLATION

Installation of the sensor
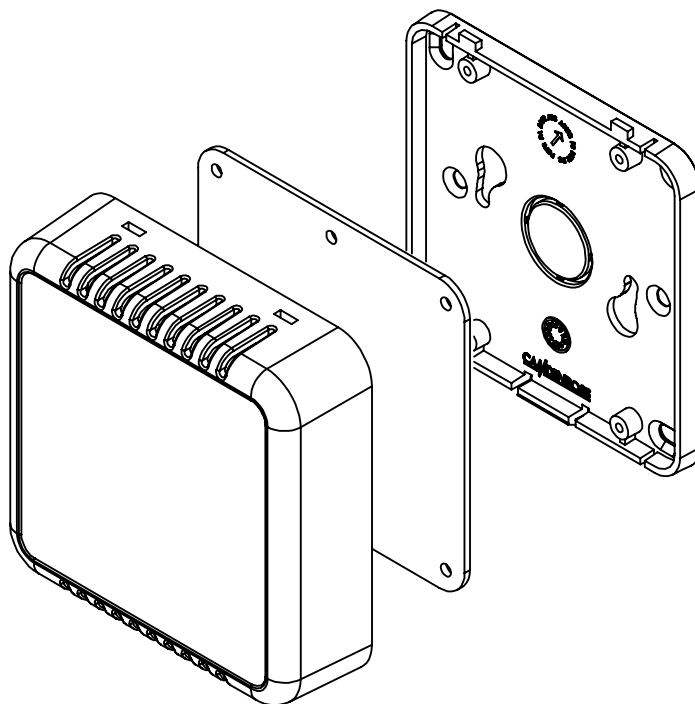
Mounting

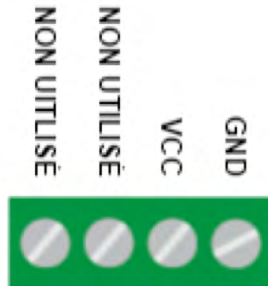This equipment can be mounted a variety of ways:
- using a double-sided adhesive
- screwing to the wall

In order to make installation easier, you must remove the rear part of the chassis using a screwdriver. The last step is to screw the chassis to the wall or mount it using a double-sided adhesive and reassemble the front part fixed to the rear part thus mounted.

double-sided foam

Screw location

PUSH

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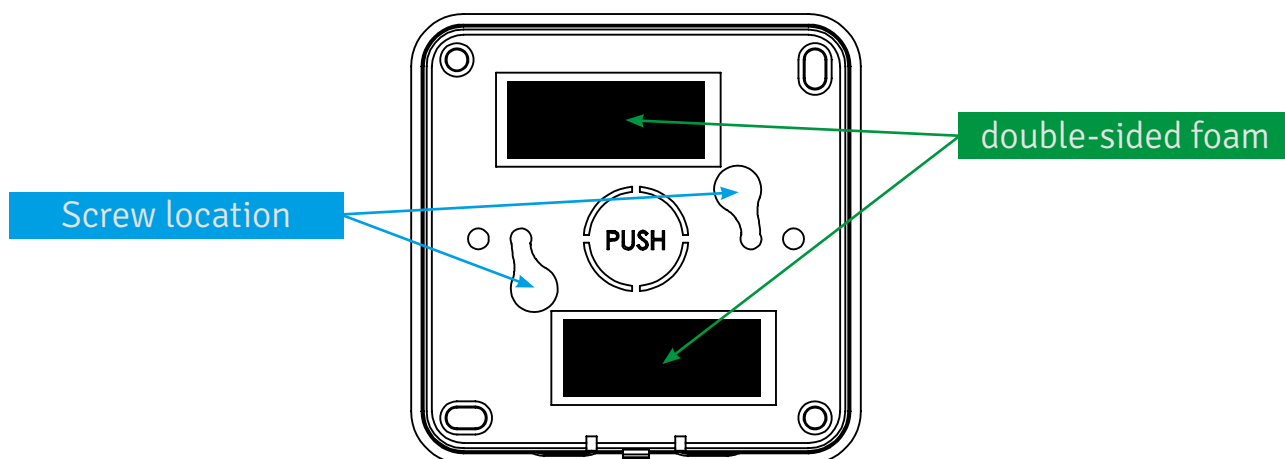
Description of sensor

GND: power supply ground wire.
VCC: 5V to 12V power supply terminal.
Allows operation without batteries.
Non utilisé : Not used
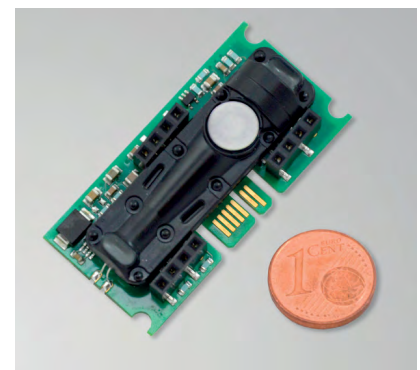
Location for 3.6V AA batteries.
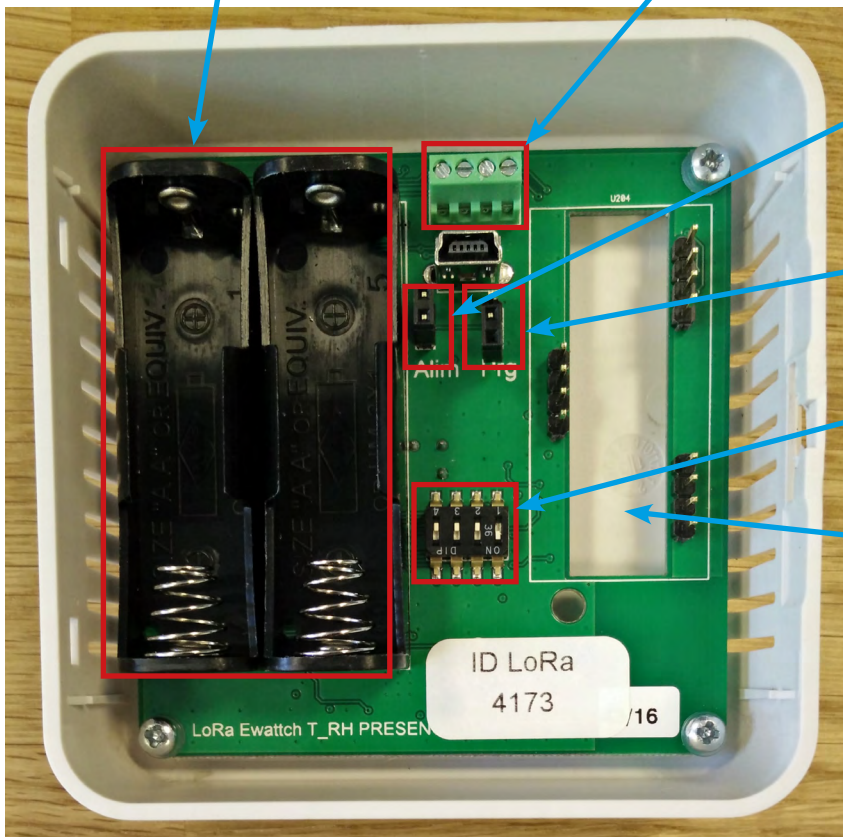
Power jumper.
Product running if jumper is in place, and off if jumper is removed.

Product programming jumper.
This jumper must not be connected.

Product configuration switch.

Location for optional CO2 EE893 metering module.

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RADIO COMMUNICATION

The AMBIANCE periodically sends its sensor measurements via a LoRaWan radio link.

In order to configure the AMBIANCE sensor for a LoRaWan network, the unique encrypted identification code indicated on each product (DevEUI) is required.
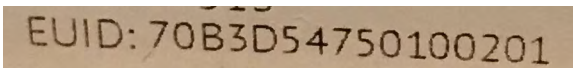
As well as the following two codes:
AppEUI: 70B3D54750080001
AppKey: 67535BF6E9E6A21AB80820523003EE8B

Configuration of switches

Switch configuration

Selectors 1 and 2: configuration of the transmission period

 One transmission every 10 minutes

 One transmission every 20 minutes

 One transmission every 30 minutes

 One transmission every 60 minutes

Selectors 3 and 4:

 Not used

Payload descriptions

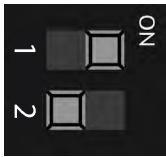The AMBIANCE sensor transmits its data in raw format on different public and private LoRaWAN networks. The section below shows you how to decode the frames (Payload) sent by the AMBIANCE.

Periodic frames :

The periodic frames contain the data measured by the AMBIANCE sensor.
Example of a periodic transmitted frame (HEXADECIMAL):

000E **00** **6A0B** **04** **60** **08** **A802** **10** **2E04** **14** **0500**

Explanation of the frame structure:

Index (in bytes)	Name	Example	Description
1	Frame type	00	Data sent periodically Other possible values: 0x01: Data sent during an event 0x10: Sensor status data
2	Payload size	0E	Number of bytes sent. 0x0E in hexadecimals gives 14 bytes (excluding header: Frame type and Payload Size)
3	Object Type	00	Object Type 0x00: Temperature
4-5	Data	6A0B	6A0B - Little endian encoded value 0x0B6A: 2922 x 0.01°C = 29.22°C
6	Object Type	04	Object Type 0x04: Humidity
7	Data	60	0x60: 96 x 0.5%RH = 48%RH
8	Object Type	08	Object Type 0x08: CO2
9-10	Data	A802	A802 - Little endian encoded value 0x02A8: 680 PPM
11	Object Type	10	Object Type 0x10: Brightness
12-13	Data	2E04	2E04 - Little endian encoded value 0x42E: 1070 lux
14	Object Type	14	Object Type 0x14: Presence This is an index that changes and indicates the number of seconds of presence in front of the sensor.
15-16	Data	0500	0500 - Little endian encoded value 0x0050: 80 x 10s: 800s Detection of cut in the power supply to presence sensor: If the rollover bit (MSB) returns to 0, or if the index value received is lower than the value previously received and that the rollover bit is 0.

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Status frame

The status frames contain supplementary information about the sensors (battery level, firmware version, etc.)

Example of a transmitted (HEXADECIMAL) status frame :

100A 0002 020401 0405 083C00

Explanation of the frame structure :

Index (in bytes)	Name	Object	Description
1	Frame type	**10**	Status frame
2	Payload size	**0A**	Number of bytes sent. 0x0A in hexadecimals gives 10 bytes (excluding header: Frame type and Payload Size)
3-4	Type of sensor	**00 02**	0x02: Ambiance Other possible values: 0x00: Environment v0x01: Presence 0x02: Ambiance 0x10: Pulse 0x20: TyNess
5-7	Firmware version	**02 04 01**	0x04: Minor MSB version 0x01: Major LSB version i.e. firmware version 1.4
8-9	Battery level	**04 05**	0x05: Battery level: normal Other possible values: 0x08: Mains power supply 0x07 -> 0x02: Battery level normal 0x01: Level low 0x00: Level critical
10-12	Periodicity	**08 3C 00**	Periodicity of transmissions in seconds. Value of 16-bit code in little endian to multiply by 10. 3C 00 => 0x003C hexadecimal i.e. 60 decimal and 60 x 10 = 600 seconds i.e. a transmission every 10 minutes.

TECHNICAL SPECIFICATIONS

POWER SUPPLY

VOLTAGE	LIFE SPAN ON BATTERY POWER
3.6 VDC	3 to 5 years

VOLTAGE USING EXTERNAL POWER	
5 to 12 VDC	

MEASUREMENTS

Temperature measurement

TEMPERATURE	ACCURACY
- 40 to 60°C	0,3°C

Relative humidity

HUMIDITY	ACCURACY
0 à 100%	1%

Brightness measurement

BRIGHTNESS	ACCURACY
0 to 65535Lux	3Lux*

Measurement of CO2 level

CO2 LEVEL	ACCURACY
0 to 10000PPM	100ppm + 5%

Presence measurement

PRESENCE MEASUREMENT RANGE	DETECTION ANGLE
5 to 6 m	130°

* For a measurement made with the sensor facing the light source

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TECHNICAL SPECIFICATIONS (CONT.)

RADIO COMMUNICATION

LoRaWAN

FREQUENCY 868MHz	**UNIQUE SERIAL NUMBER** oui
MAXIMUM TRANSMISSION POWER 25mW	**COMMUNICATION RANGE** up to 15km in open areas

ENVIRONMENTAL CONDITIONS

AREA OF APPLICATION: Indoors	**OPERATING TEMPERATURE** From 0 to 60°C
STORAGE TEMPERATURE From -20°C to +70°C	**OPERATING HUMIDIT** From 10 to 80 %, without condensation
MAXIMUM ALTITUDE 2 000 m	**POWER SUPPLY VOLTAGE FLUCTUATION** ±10% of the nominal voltage

PHYSICAL

DIMENSIONS (H X L X D) 86 x 86 x 25.5 mm	**CHASSIS MATERIAL** ABS
WEIGHT 80 g (without batteries)	**PROTECTION RATING** IP20

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