



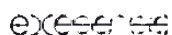
Autonomous digital wireless sensors array in one device

WESA-XX

Wireless temperature and humidity sensor.
Беспроводный автономный датчик температуры и
влажности.
Dolphin based.



version 2.2



Тех.поддержка: support@exesense.com, общая информация: info@exesense.com. Представитель в России – ATLAS Group, Москва,
Левобережная 12, phone +7 (495) 64-234-63, 64-335-65
e-mail: info@atlasgroup.ru, sale@atlasgroup.ru
www.atlasgroup.ru



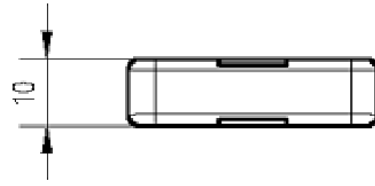
1. General Notice

EnOcean wireless-based, solar-powered sensor array WESA-XX for measurement temperature (WESA-TX) or temperature and humidity (WESA-TH) in the rooms, living or working area. WESA-XX transmits measured data in digitized EnOcean telegram with 8 bit accuracy. WESA-XX provides cyclic wake up of internal measurement sensor (every 100 sec default). After wake up, the internal microcontroller reads the status of the temperature sensor and optional humidity. A radio telegram will be transmitted in case of a significant change of measured temperature or humidity. In case of no relevant input change, a redundant retransmission signal is sent after a 10 wake-ups to announce all current values (every 1000 sec default). In addition to the cyclic wake-up, a wake up can be triggered externally using the input for the internal LRN button.

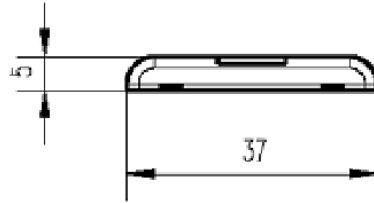
Technical data:

- Wireless protocol – EnOcean Frequency/Modulation 868MHz / ASK /125kbps
- Radiated Output Power : +8 dBm1 (EIRP) \pm 2.5 dB2
- Temperature measurement 0-40 C (0,16 C resolution, Accuracy typ. \pm 0.5 K between 17 °C and 27 °C typ. \pm 1 K between 0 °C and 40 °C) .
- Humidity measurement 0-100rH % (3-4% accuracy). Option.
- Works up to 60 hours in darkness
- Transmit power below 10mW (5dBm)
- Transmit range 300m free field
- Power supply : solar cell (Illumination 50-100000 lux) and Li-CLO2 3,6 V on board battery.
- Operation start up time with empty energy store typ. 2.5 min @ 400 lux / 25 °C incandescent or fluorescent light
- EnOcean Equipment Profiles EEPs: A5-02-05 (WESA-TX), A5-04-01 (WESA-TH)
- Physical dimensions:
 - 50 x 52 x 35 mm
 - Color of housing grey with transparent cover (option: customer RAL color)
 - Material of housing PC/ABS
- Environmental conditions:
 - Operating temperature -20 °C ... +60 °C
 - Storage temperature -20 °C ... +60 °C, recommended: +10 °C...+30 °C, <60%r.h.
 - Shelf life 12 months after delivery
 - Humidity 0% ... 93% r.h., non-condensing
 - Protection class IP 54, indoor use only

Dimensions:



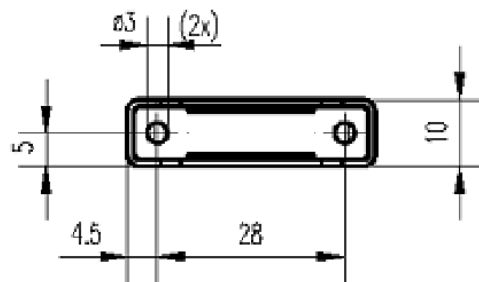
Top view



Side view

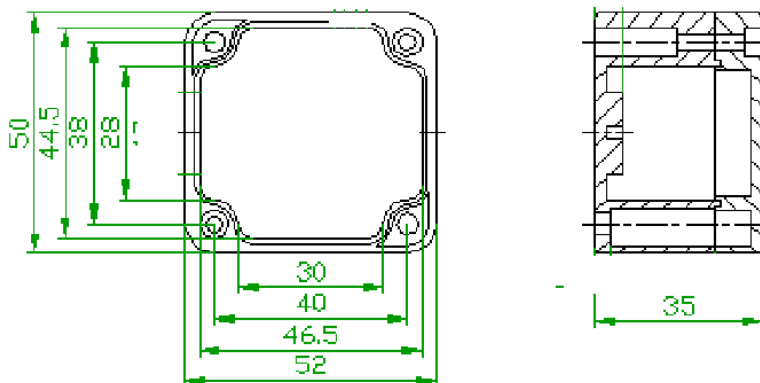


Front view



Bottom view

WESA-XX IP54 versions



2. Transmission range

The main factors that influence the system transmission range are type and location of the antennas of the receiver and the transmitter, type of terrain and degree of obstruction of the link path, sources of interference affecting the receiver, and “dead” spots caused by signal reflections from nearby conductive objects. Since the expected transmission range strongly depends on this system conditions, range tests should categorically be performed before notification of a particular range that will be attainable by a certain application.

The following figures for expected transmission range are considered by using a the TCM based radio receiver device with preinstalled whip antenna and may be used as a rough guide only:

- Line-of-sight connections: Typically 30 m range in corridors, up to 100 m in halls
- Plasterboard walls / dry wood: Typically 30 m range, through max. 5 walls
- Line-of-sight connections: Typically 30 m range in corridors, up to 100 m in halls
- Ferro concrete walls / ceilings: Typically 10 m range, through max. 1 ceiling
- Fire-safety walls, elevator shafts, staircases and supply areas should be considered as screening.

The angle at which the transmitted signal hits the wall is very important. The effective wall thickness – and with it the signal attenuation – varies according to this angle. Signals should be transmitted as directly as possible through the wall. Wall niches should be avoided. Other factors restricting transmission range:

- Switch mounted on metal surfaces (up to 30% loss of transmission range)
- Hollow lightweight walls filled with insulating wool on metal foil
- False ceilings with panels of metal or carbon fibre
- Lead glass or glass with metal coating, steel furniture

The distance between EnOcean receivers and other transmitting devices such as computers, audio and video equipment that also emit high-frequency signals should be at least 0.5 m

A summarized application note to determine the transmission range within buildings is available as download from www.enocean.com

3. Package

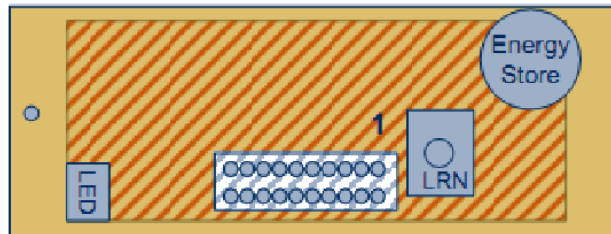
1. WESA-XX sensor.
2. User manual.
3. Battery 3,6 V Li-CLO2 type (option with WESA-XX IP54).

4. Ordering code.

Art number	Name	Description
	WESA-T	temperature sensor with solar cell
	WESA-T IP54	temperature IP54 sensor with solar cell and battery (option)
	WESA-TH	Temperature and humidity sensor with solar cell
	WESA-TH	Temperature and humidity sensor IP54 with solar cell

Appendix

Teach-in telegram



In case of a wake-up via LRN input the sensor transmits a teach-in telegram. With this special teach-in telegram it is possible to function and type of a device. The following EnOcean Equipment Profiles are supported by sensor:

A5-02-05 Temperature sensor 0-40 °C (default)

RORG	A5	4BS Telegram
FUNC	02	Temperature Sensors
TYPE	05	Temperature Sensor Range 0°C to +40°C

Offset	Size	Bitrange	Data	ShortCut	Description	Valid Range	Scale	Unit
0	16	DB3.7...DB2.0	Not Used (= 0)					
16	8	DB1.7...DB1.0	Temperature	TMP	Temperature (linear)	255...0	0...+40	°C
24	4	DB0.7...DB0.4	Not Used (= 0)					
28	1	DB0.3	LRN Bit	LRNB	LRN Bit	Enum: 0: Teach-in telegram 1: Data telegram		
29	3	DB0.2...DB0.0	Not Used (= 0)					

A5-10-05 Temperature sensor 0-40 °C, occupancy control

RORG	A5	4BS Telegram
FUNC	10	Room Operating Panel
TYPE	05	Temperature Sensor, Set Point and Occupancy Control

Offset	Size	Bitrange	Data	ShortCut	Description	Valid Range	Scale	Unit
0	8	DB3.7...DB3.0	Not Used (= 0)					
8	8	DB2.7...DB2.0	Set point	SP	Set point (linear) Min.- ... Max+	0... 255	0...255	N/A
16	8	DB1.7...DB1.0	Temperature	TMP	Temperature (linear)	255...0	0...+40	°C
24	4	DB0.7...DB0.4	Not Used (= 0)					
28	1	DB0.3	LRN Bit	LRNB	LRN Bit	Enum: 0: Teach-in telegram 1: Data telegram		
29	2	DB0.2...DB0.1	Not Used (= 0)					
31	1	DB0.0	Occupancy	OCC	Occupancy button	Enum: 1: Button released 0: Button pressed		

A5-04-01 Temperature and humidity sensor 0-40 °C and 0-100% r.h.

A5-04: Temperature and Humidity Sensor

RORG	A5	4BS Telegram
FUNC	04	Temperature and Humidity Sensor
TYPE	01	Range 0°C to +40°C and 0% to 100%

Offset	Size	Bitrange	Data	ShortCut	Description	Valid Range	Scale	Unit
0	8	DB3.7...DB3.0	Not Used (= 0)					
8	8	DB2.7...DB2.0	Humidity	HUM	Rel. Humidity (linear)	0...250	0...100	%
16	8	DB1.7...DB1.0	Temperature	TMP	Temperature (linear)	0...250	0...+40	°C

24	4	DB0.7...DB0.4	Not Used (= 0)					
28	1	DB0.3	LRN Bit	LRNB	LRN Bit	Enum: 0: Teach-in telegram 1: Data telegram		
29	1	DB0.2	Not Used (= 0)					
30	1	DB0.1	T-Sensor	TSN	Availability of the Temperature Sensor	Enum: 0: not available 1: available		
31	1	DB0.0	Not Used (= 0)					

A5-10-10 Temperature and humidity sensor 0-40 °C and 0-100% r.h., and occupancy control

RORG	A5	4BS Telegram
FUNC	10	Room Operating Panel
TYPE	0A	Temperature Sensor, Set Point Adjust and Single Input Contact

Offset	Size	Bitrange	Data	ShortCut	Description	Valid Range	Scale	Unit
0	8	DB3.7...DB3.0	Not Used (= 0)					
8	8	DB2.7...DB2.0	Set point	SP	Set point (linear) Min.- ... Max+	0...255	0...255	N/A
16	8	DB1.7...DB1.0	Temperature	TMP	Temperature (linear)	255...0	0...+40	°C
24	4	DB0.7...DB0.4	Not Used (= 0)					
28	1	DB0.3	LRN Bit	LRNB	LRN Bit	Enum: 0: Teach-in telegram 1: Data telegram		
29	2	DB0.2...DB0.1	Not Used (= 0)					
31	1	DB0.0	Contact State	CTST	Contact state	Enum: 0: closed 1: open		

For details please refer to the EnOcean Equipment Profiles 2.1 specification.