



Model name:

**AL-431 EnOcean Multisensor
“EnoSense Wall & Desk” / white / IMDA**

**Model number:
12790**

Version 2.00

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Every conceivable measure has been taken to ensure the accuracy and completeness of this documentation. However, as errors can never be fully excluded, we always appreciate any information or suggestions for improving the documentation.

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1 Validity of this documentation

This documentation is only applicable to the product with model name

AL-431-00-868 EnOcean Multisensor “EnoSense Wall & Desk” / white / IMD

The device must only be installed and operated according to the instructions in these operating instructions. In the following, “**AL-431**” is used instead of the full model name.

2 Intended use

The **AL-431** must not be used in any relation with equipment that supports, directly or indirectly, human health or life or with applications that can result in danger for people, animals or real value.

The **AL-431** can be mounted on top or on the bottom of a table, or can be mounted on any other smooth surface using a double-sided adhesive tape.

The sensor element inside the device must be able to detect a vibration, caused by the occupancy. If this is not possible due to the construction of the table, this sensor type is not the best choice.

3 Disposal



Electrical and electronic equipment may not be disposed of with household waste. This also applies to products without this symbol.

Electrical and electronic equipment contain materials and substances that can be harmful to the environment and health. Electrical and electronic equipment must be disposed of properly after use.

Note only for EU: WEEE 2012/19/EU applies throughout Europe. Directives and laws may vary nationally.

4 Device description

4.1 Functionality

The **AL-431** contains a high sensitive vibration sensor that detects even small movements and sends a message via radio (EnOcean). The sensor electronics, which are built into a plastic housing, is usually attached with a double-sided adhesive pad to a desks surface. Depending on your requirements, the sensor is available in a black, white or beige housing.

Best case, the sensor is supplied with energy by the integrated solar cell in the front. In situations where the ambient light is not sufficient, an internal battery supplies the sensor energy storage for typically 5 years or longer.

The information is transmitted via the EnOcean wireless standard (EEP: A5-14-05).

The following information is currently available for the evaluation:

- Vibration detected, 0..1
- Battery voltage: 8 bit, 0 .. 250 [mV/20]

4.2 External product interface

The external product interface consists of the following items:

- Solar cell (for energy harvesting)
- Service button to send teach in / learn telegram
- Access to battery holder

4.3 Observe intended use

The **AL-431** must not be used in any relation with equipment that supports, directly or indirectly, human health or life or with applications that can result in danger for people, animals or real value.

4.4 Observe statutory provisions for operating frequency range.

The **AL-431** must only be operated in compliance with the country-specific provisions regarding operation of radio equipment.

4.5 Non-conduction mounting surface

A non-conductive mounting surface is necessary.

Ensure the **AL-431** is mounted on a non-conductive surface. If it is not, performance may be adversely affected.

5 Technical data

5.1 Communication / EnOcean wireless interface

Type	EnOcean
Number	1
Transmit / Receive frequency	868,3 MHz
Occupied frequency band	868,0 – 868,6 MHz
Maximum transmission power	Typ. +5 dBm

Table 1: Technical data / communication

5.2 Sensor: Accelerometer / Vibration

Measuring range	+/- 2g
Sensitivity	0.03 g

Table 2: Technical data / Vibration sensor

5.3 User interfaces

Service button	Yes
Service LED	-

Table 3: Technical data / User interfaces

5.4 Housing / connection technology

Connection technology	-
Housing	-

Table 4: Technical data / housing

5.5 Power supply

Supply voltage	Integrated solar cell
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Backup battery	CR 1632
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Table 5: Technical data / power supply

5.6 Environmental conditions

Operating temp.	-5°.. 40 °C
Storage temp.	-20 ..+70 °C
Rel. humidity	0..99 % rel. humidity, non condensing
Protection class	IP20

Table 6: Technical data / environmental conditions

5.7 Dimensions and weight

Weight	19 g
Dimensions	40 x 40 x 13 mm

Table 7: Technical data / dimensions and weight

5.8 Standards and approvals

CE	2014/53/EU RED-directive 2011/65/EU + Annex 2015/863/EU RoHS-3 directive
IMDA	

Table 8: Technical data / Approval / Label

6 Functional description in detail

6.1 Vibration sensing

The **AL-431** will detect people working on a desk, based on an integrated 3-axis accelerometer.

Quality of sensing mainly depends on the construction and the materials used for the table. The more stable the table is, the lower the accuracy of the sensors detection will be.

6.2 Send learn telegram

To connect the **AL-431** to any building automation system, a so called learn telegram can be send by the device.

Simply push the service button. The **AL-431** will immediately send a learn telegram.

6.3 Table of supported EEP's (EnOcean Equipment Profiles)

6.3.1 Transmit / TX

The EnOcean wireless standard defines so called EnOcean Equipment Profiles (EEP).

Each EnOcean based product sends data according to at least one standardized data format. The **AL-431** transmits data described as follows:

Cons. nr.	EEP	Description	Tx-ID
1	00-A5-14-05	Vibration detection (BYTE1) + Power supply voltage, 8 bit (BYTE 3)	EURID

Table 9: Technical data / EnOcean EEP for TX

The following table describes in detail data send by the **AL-431** according to the EEP A5-14-05:

Offset	Size	Bitrange	Data	Shortcut	Description	Valid range	Scale	Unit
0	8	DB3.7...DB3.0	Supply voltage	SVC	Battery voltage	0..250	0...5.0	V
8	23	DB2.7...DB1.0	Not used (= 0)					
28	1	DB0.3	LRN Bit	LRNB	Learn Bit	0: Teach in tel. 1: Data tel.		
29	1	DB0.2	Not used (= 0)					
30	1	DB0.1	Vibration	VIB	Vibration	0: no Vibration det. 1: Vibration detectedt		
31	1	DB0.0	Not used (= 0)					

Table 10: EnOcean transmit data

6.3.2 Vibration detection / data transmission rules

The sensor works on the basis of a three axis accelerometer.

It continuously monitors the sampled analogue data of the internal sensor. Once the signal is above a configured threshold, i.e. a certain amplitude of vibration, the sensor will send a message with content "Vibration detected".

After a sending a message, the sensor will send no data for approx.240 seconds.

After this period the sensor will send "Vibration detected" all 240 seconds as long as vibration is still detected.

Instead, if no vibration is detected, the sensor will send "No vibration detected" all 240 seconds.

7 Service / changing batteries



Caution: When handling the device, you have to take care of electrostatic discharge. Otherwise, electronics can be damaged.

In case of a discharged battery, it can be replaced with a new CR 1632 battery.

You have to open the housing with your fingers.



8 Safety remarks



CAUTION: Risk of damage or explosion if a battery of incorrect type is used.



This product contains AA type batteries. If a battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death.



Keep new and used batteries away from children.

9 Device labels

The following labels are placed on the bottom side of the **AL-431**:

9.1 AL-431

**DEUTA Controls GmbH
Paffrather Str. 140
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AL-431-00-868 EnOcean
Multisensor "EnoSense
Wall & Desk" / white / IMDA
PN: 12790 SN: 12345678**

10 Ordering information

Model name	Model number	Description
AL-431-00-868 EnOcean Multisensor "EnoSense Wall & Desk" / white / IMDA	12790	Multi-Sensor EnOcean " EnoSense Wall & Desk ", for mounting on walls and desk surfaces; measuring ranges: Temperature -20°..+60° C; Humidity 0..100 % r.h.; Brightness 0..65.000 Lux; Acceleration +/- 2 g; magnetic contact; ambient temp.: -5° ..+45° C / 0 .. 90% r.h.; Dimensions: 40 x 40 x 13 mm; EEP: A5-14-05 (default), D2-14-40, A5-02-05, A5-04-01, A5-04-03, A5-06-02, A5-06-03, D5-00-01; D2-14-41 Power supply: Integrated solar cell, optional: backup battery CR1632, not included EnOcean 868.3 MHz, IMDA SINGAPORE ;

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11 Revision history

Version	Author	Reviewer	Date	Major changes
1.00	Lehzen	Pohl	06.10.2023	Initial release
2.00	Pohl	Lehzen	14.11.2023	Housing removed

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