AL-432-00-921 (TAIWAN)

EnOcean Sensor “EnoSense® PIR Ceiling”
for motion detection, PIR based (Passive infrared)
EnOcean 921.7 MHz / TAIWAN

Part names: AL-432-00-921

Version 1.01

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Technical data might change

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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:

AL-432-00-921 EnoSense® PIR Ceiling

The device must only be installed and operated according to the instructions in these operating instructions.

2 Intended use

The **AL-432-00-921 EnoSense® PIR Ceiling** 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-432-00-921 EnoSense® PIR Ceiling s** 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.

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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-432-00-921 EnoSense® PIR Ceiling** contains a high sensitive PIR sensor that detects moving people in range.

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: A5-07-01).

The following information is currently available for the evaluation:

- Motion detected, 0..1
- Super Cap voltage: 8 bit, 0 .. 250 [mV/20]

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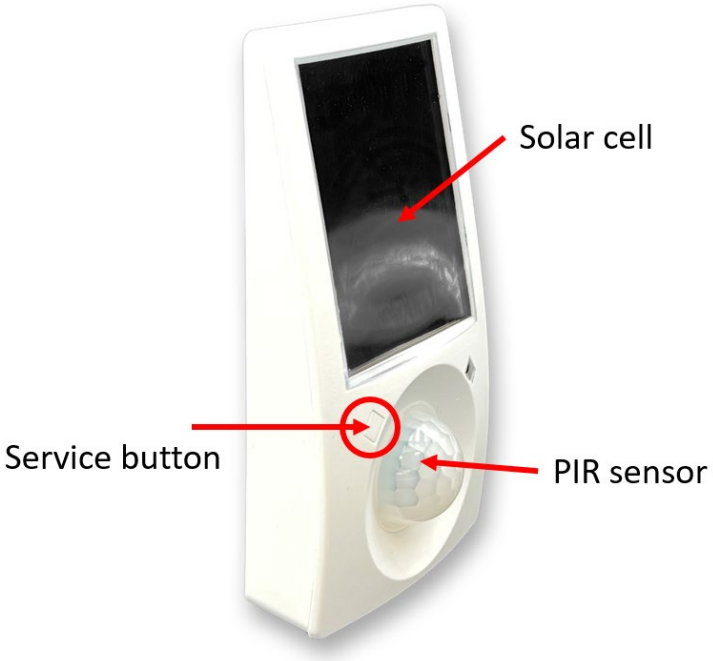
4.2 External product interface

The external product interface consists of the following items:

- Solar cell (for energy harvesting)
- Service button to send teach in / learn telegram
- PIR sensor
- Access to battery holder when housing is opened



4.3 Observe intended use

The **AL-432-00-921 EnoSense® PIR Ceiling** 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-432-00-921 EnoSense® PIR Ceiling** must only be operated in compliance with the country-specific provisions regarding operation of radio equipment.

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4.5 Non-conduction mounting surface

A non-conductive mounting surface is necessary.

Ensure the **AL-432-00-921 EnoSense® PIR Ceiling** is mounted on a non-conductive surface. If it is not, performance may be adversely affected.

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5 Technical data

5.1 Communication / EnOcean wireless interface

Type	EnOcean
Number	1
Operating frequency	921.7 MHz
Transmission power	0 dBm
Modulation type	FSK
Number of channels	Ch 24 (921,7 MHz)
Transfer / data rate	125 kbit/s

Table 1: Technical data / communication

5.2 Sensor: PIR (passive infrared motion sensor)

Mounting height	Typ. 2.5 m
Detection range	Radius approx. 5 m @ 2.5 m

Table 2: Technical data / Vibration sensor

5.3 User interfaces

Service button	Yes
Service LED	Yes, red, behind the PIR lense

Table 3: Technical data / User interfaces

5.4 Housing / connection technology

Connection technology	-
Housing	Plastic, PC, white / black / beige

Table 4: Technical data / housing

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5.5 Power supply

Supply voltage	Integrated solar cell
Backup battery	CR 2032

Table 5: Technical data / power supply

5.6 Environmental conditions

Operating temp.	0°.. 30 °C
Storage temp.	-20 ..+70 °C
Rel. humidity	20..85 % rel. humidity, non condensing
Protection class	IP20

Table 6: Technical data / environmental conditions

5.7 Dimensions and weight

Weight	110 g
Dimensions	114 x 66 x 31 mm

Table 7: Technical data / dimensions and weight

5.8 Standards and approvals

NCC, AL-432-00-921	CCXXxxYYyyyZzW Will be updated finally

Table 8: Technical data / Approval / Label

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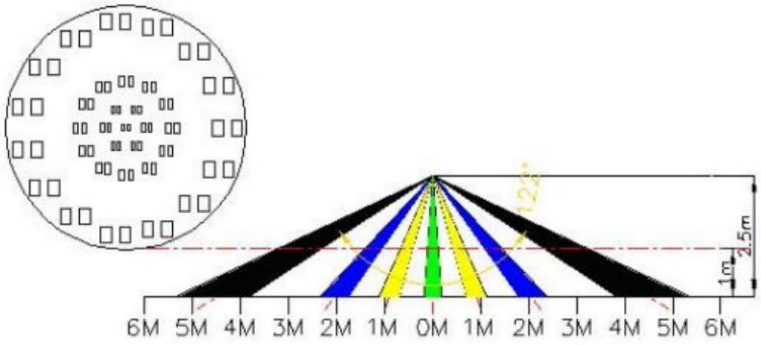
6 Functional description in detail

6.1 Motion detection

The **AL-432-00-921 EnoSense® PIR Ceiling** will detect people walking through / moving around inside the detection area of the PIR sensor. When mounted in a heighth of 2.5 m, the detection radius is approx. 5 m.



6.2 Send learn telegram

To connect the **AL-432-00-921 EnoSense® PIR Ceiling** to any building automation system, a so called learn telegram can be send by the device.

Simply push the service button for less than 1 second. The **AL-432-00-921 EnoSense® PIR Ceiling** 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-432-00-921 EnoSense® PIR Ceiling** transmits data described as follows:

Cons. nr.	EEP	Description	Tx-ID
1	00-A5-07-01	Motion 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-432-00-921 EnoSense® PIR Ceiling** 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	Supply voltage	0..250	0…5.0	V
8	23	DB2.7…DB1.0	Not used (= 0)					
16	8	DB1.7…DB1.0	PIR Status	PIRS	PIR Status	0 .. 127 PIR OFF 128 .. 255 : PIR ON		
24	4	DB0.7…DB0.4	Not used (= 0)					
28	1	DB0.3	LRN Bit	LRNB	LRN Bit	0: Teach in tel. 1: Data tel.		
29	2	DB0.2..DB0.1	Not used (= 0)					
31	1	DB0.0	Supply voltage availability	SVA		0: Supply voltage not supported 1: Supply voltage supported		

Table 10: EnOcean transmit data

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6.3.2 Motion detection / data transmission rules

The sensor works on the basis of a PIR based motion sensor..

It continuously monitors the sampled analogue data of the internal sensor. Once the signal is above a configured threshold, the sensor will send a message with content “Motion detected”.
After a sending a message, the sensor will send no data for approx. 120 seconds. After this period the sensor will send “Motion detected” all 120 seconds as long as vibration is still detected.
Instead, if no vibration is detected, the sensor will send “No motion detected” all 120 seconds.

6.3.3 Operating modes

The different operating modes of the EnoSense PIR ceiling can be selected using the LRN button on the front. The LED signals / confirms the corresponding mode.

The following table lists the different operating modes, depending on the actuation of the LRN button.

Key press	Duration	Mode	LED
1x short	< 1 s press	Exit Sleep-Mode Send Learn-Telegram	Success: 1x blink Error: -
2x short	< 1 s press < 1 s release < 1 s press	Start Walk-Test (will exit automatically after 2	Flashes briefly whenever motion is detected
3x short	< 1 s press < 1 s release < 1 s press < 1 s release < 1 s press	LED on/off	LED on: 4x blink LED off: -
1x long	3 s < press < 5 s	Enter Sleep mode	Success: 3x blink Error: -
2x long	3 s < press < 5 s < 1 s release 3 s < press < 5 s	Enter Secure Mode Send Secure Teach-in Telegram	Success: 2x blink Error: -
1x very long	> 8 s press	Load factory defaults	Success: 5x blink Error: -

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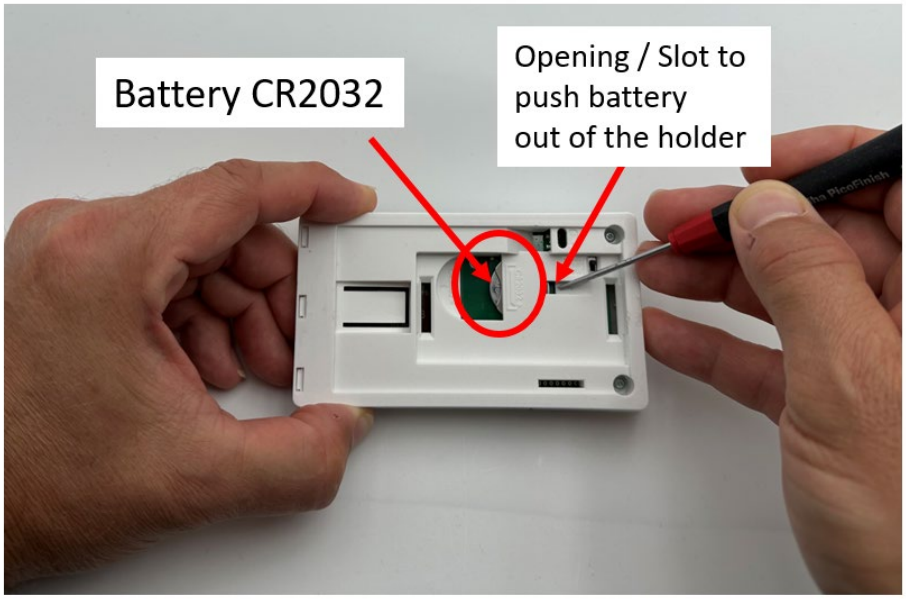
7 Service / changing batteries

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 2032 battery.
You have to open the housing on the rear side with a small screw driver or similar..
Then you have access to the battery holder and can change it.



8 Safety remarks

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

This product contains CR2032 type batteries. If a battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death.

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Keep new and used batteries away from children.

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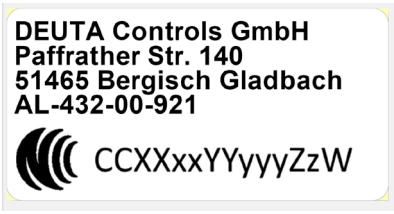
9 Device labels

The following labels are placed on the bottom side of the **AL-432-00-921 EnoSense® PIR Ceiling**:



10 NCC statement

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

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11 Ordering information

Part name	Part nr.	Description
AL-432-00-921	12768	EnOcean sensor "**EnoSense PIR Ceiling / NCC / TAIWAN**", PIR motion detector, ceiling mounting, mounting height 2.5 ... 3.0 m, detection radius typ. 5 m at a height of 2.5 m, integrated solar cell, backup battery CR2032 (optional), min. Light intensity 200 lux for 6 hours a day, typically 96 hours running time without light, EnOcean 921 MHz, NCC, TAIWAN; Dimensions: 114 x 66 x 31 mm, ambient temp. 0..60 ° C

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12 Revision history

Version	Author	Reviewer	Date	Major changes
1.00	Lehzen	Pohl	25.07.2023	Initial release
1.01	Lehzen	Pohl	7.8.2023	Added NCC statement

---------- End of document ----------

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