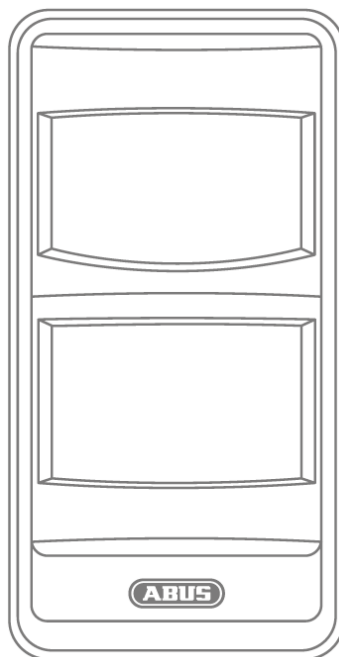




PLBW10000

Nexello Dual Motion Detector



Important information and FAQs about this product and other products can be found on the website

www.abus.com

Manual version 1.2
Firmware version 1.01



Introduction

Dear customer,

we are pleased that you have decided to use our product and thank you for your trust! You made a good choice.

This motion detector (hereinafter referred to as "device") has been developed and manufactured with the greatest care. Please read these operating instructions completely and observe all operating and safety instructions, as this will ensure the best possible handling of the device. This document is regarded as assembly and maintenance instructions.

ABUS Security-Center hereby declares that the enclosed product complies with the following guidelines concerning the product:

RED Directive 2014/53/EU, EMC Directive 2014/30/EU, Low Voltage Directive 2014/35/EU, RoHS Directive 2011/65/EU. The full text of the EU Declaration of Conformity is available at the following Internet address

www.abus.com/product/PLBW10000

It can also be obtained from the following address:

**ABUS Security Center GmbH & Co KG,
Left Kreuthweg 5, 86444 Affing, GERMANY**

If you have any questions or suggestions, please contact our customer service:

Mail: ABUS Support, Linker Kreuthweg 5, 86444 Affing, Germany
E-mail: support@abus-sc.com
Phone: +49 8207 959 90 0
Opening hours hotline: Mon-Thu: 08 - 17 h; Fri: 08 - 14 h

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Disclaimer

This operating manual has been prepared with the utmost care. Should you nevertheless notice any omissions or inaccuracies, please notify us in writing at the above address.

Your rights are limited to the repair or replacement of this product in the condition as delivered. ABUS Security Center assumes no liability for any special, incidental or consequential damages, including but not limited to loss of revenue, loss of profits, restrictions in the use of the software, loss or recovery of data, costs for replacement equipment, downtime, property damage and claims by third parties, as a result of, among other things, the following: a. the contractual, statutory or damage compensation claims arising from the warranty, irrespective of other limited warranty provisions or those implied by law, or in the event that the limited warranty does not apply, the scope of liability of ABUS Security Center is limited to the purchase price of the product.

The contents of this manual may be changed without prior notice.

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Important Safety Instructions

Appropriate use

Use the device exclusively for the purpose for which it was built and designed! Any other use is considered as not intended!

Damage caused by disregarding these safety instructions invalidates the warranty. We assume no liability for consequential damages!

Unpacking

While unpacking the device, handle it with extreme care. Packaging and packaging aids are recyclable and should always be sent for recycling.

If the original packaging is damaged, first check the device. If the device is damaged, return it with the packaging and inform the delivery service.



Please ensure that the packaging contains the DSK (Device Specific Key) card. This card shows the DSK of your ABUS Z-Wave device. Please keep them in a safe place. Every S2 (Security 2) certified Z-Wave controller requires the DSK to include the product in the Z-Wave network.

Installation site Operating environment

Do not place any heavy objects on the unit. The device is only designed for operation in rooms with appropriate temperature or humidity (e.g. bathrooms) or excessive dust. For an exact specification check the technical data of the individual devices. Ensure that there is always adequate ventilation, no direct heat sources are applied to the device, no direct sunlight or strong artificial light is applied to indoor equipment, the device is not in the immediate vicinity of magnetic fields (e.g. loudspeakers), no open fire sources (e.g. Burning candles) on or next to the unit, contact with splashing and dripping water on indoor units and aggressive liquids is avoided, the unit is not operated near water, in particular, the unit must never be submerged (do not place objects filled with liquids, e.g. vases or drinks on or next to the unit), no foreign objects may enter the unit, the unit is not exposed to strong temperature fluctuations, as otherwise air humidity may condense and lead to electrical short circuits, the unit is not exposed to excessive shocks and vibrations.

Children

Do not allow electrical devices to get into the hands of children! Never allow children to use electrical equipment unsupervised. Children are not always able to recognize possible dangers correctly. Small parts can be fatal if swallowed. Also keep the packaging film away from children. There is danger of suffocation! This device should not be handled by children. Springy parts can jump out if used improperly and cause injuries (e.g. eyes) to children.

Notes on handling batteries

- Make sure that batteries are not in the hands of children. Children could put batteries in their mouths and swallow them. This can lead to serious damage to health. In this case consult a doctor immediately!
- Normal batteries must not be charged, heated or thrown into an open fire (danger of explosion!)
- Do not expose the battery to any heat source or direct sunlight and do not store it in a place with a very high temperature.
- The battery must not come into contact with water.
- The battery must not be disassembled, punctured or damaged.
- The battery contacts must not be short-circuited.
- Replace weakening batteries in good time.
- Always replace all batteries at the same time and use batteries of the same type. Ideally you should use identical batteries from the same manufacturer as those from the original scope of delivery, as the device has been intensively tested with these batteries and thus optimum function is ensured.
- Leaking or damaged batteries can cause burns on contact with skin. Use suitable protective gloves in this case. Clean the battery compartment with a dry cloth.

Cleaning

- Dusty equipment must be cleaned. Dust deposits in the air slots can be sucked off or blown out. If necessary, the dust can be removed with a brush.
- The surface can be cleaned with a cloth slightly moistened with soapy water. Only use suitable microfibre cloths for high-gloss surfaces.
- Make sure that no water gets inside the device!
- Do not clean the appliance in the dishwasher!
- Do not use sharp, pointed, abrasive, corrosive cleaning agents or hard brushes!
- Do not use chemicals!
- Do not clean the device with easily flammable liquids!

Notes on the disposal of the device



Attention: The EU Directive 2012/19/EU regulates the proper return, treatment and recycling of used electronic equipment. This symbol means that, in the interest of environmental protection, the device must be disposed of at the end of its service life in accordance with the applicable legal regulations and separately from household and commercial waste. The old device can be disposed of at the appropriate official collection points in your country. Follow local regulations when disposing of the materials. For further details about the withdrawal (also for non-EU countries), please contact your local administration. Separate collection and recycling conserves natural resources and ensures that all regulations for the protection of health and the environment are observed when recycling the product.

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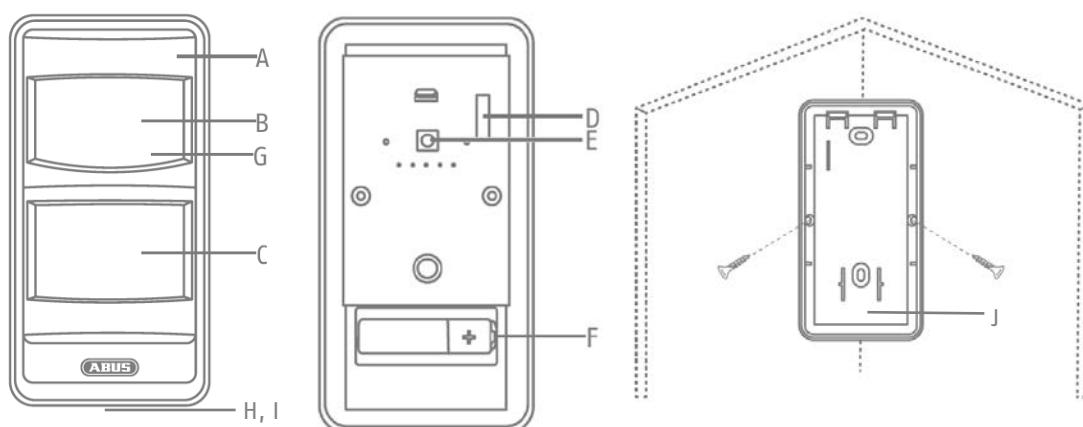
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1. Product

1.1. Scope of delivery

- Nexello Dual Motion Detector
- 1x GP CR123 battery
- Mounting material: screws, dowels
- Quick guide & safety instructions
- DSK card

1.2. Device features



No	Designation	Comment
A	Front cover	Connected to the rear part with a screw at the bottom
B	Upper Fresnel Lens	For motion detection
C	Lower Fresnel Lens	For motion detection
D	Tamper contact	Triggers Tamper alarm
E	Link Button	Manual triggering of the wake-up command, inclusion, exclusion and reset
F	Battery compartment	Observe polarity
G	LED indicator	Status display for various processes (Inclusion, exclusion, reset, error)
H	Hygrometer	Opening for temperature and humidity measurement
I	Screw	Housing Screw
J	Bracket	For wall mounting: flat wall or corner mounting. Z-Wave QR Code DSK Sticker for S2 Inclusion is located on the backside of the bracket

1.3. Operating principle

The device was developed for use in alarm and home automation systems that use the Z-Wave wireless standard. The device has the following functions:

- **Motion detector**
It uses Passive Infrared (PIR) technology to detect movement in a defined area by detecting the changes in thermal radiation caused by the moving body inside or outside the detection zone. With the dual PIR sensor (dual-lens technology), the sensor hides pets up to approx. 38kg, so that your pet can move freely without triggering the sensor. When the motion detector is triggered, an alarm signal is sent to the Z-Wave controller. The indicator LED lights up when motion is detected.
- **Integrated temperature and humidity sensor**
At periodic intervals, the unit automatically sends the measured temperature and humidity value to the Z-Wave controller or on request of the Z-Wave controller.
- **Tamper protection between the device and wall bracket**
When the housing is opened, the tamper switch is triggered and the device sends a tamper alarm to the Z-Wave controller. The tamper contact must remain pressed for three seconds to reset the tamper alarm.

1.4. Performance features

The device...:

- ...is a battery-powered motion detector
- ...is due to its design only suitable for wall mounting
- ...is Z-Wave Plus compatible & certified
- ...supports the Z-Wave S2 standard (Security 2)
- ...has a low-battery warning function
- ...was developed for indoor installation

1.5. Use in systems of different manufacturers

Communication is via the Z-Wave EU frequency (868.4 Mhz). You can integrate the device into any Z-Wave network with a certified Z-Wave controller, regardless of manufacturer. All non-battery powered nodes in the network act as amplifiers to amplify the wireless communication of the network.

1.6. DSK code

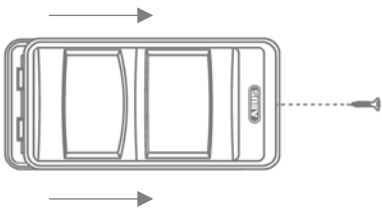

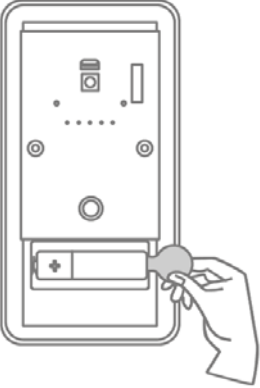

The DSK code (Device-Specific Key) is the device-specific key of your device and is required for secure teach-in (inclusion) via S2 on the Z-Wave controller. The first 5 digits of the DSK code can be found on the QR Code sticker on the backside of the bracket of the product. Please enter them in the inclusion process when prompted. Alternatively, you can transfer the entire DSK code that you find on the enclosed DSK card to the Z-Wave controller via QR Code Scan. Please keep the DSK card in a safe place!

Hint:

We recommend the secure S2 inclusion (must be supported by the Z-Wave controller) When prompted, please enter the 5 digits of the DSK code (bottom of the device) or the complete DSK code (QR code).

2. Functional overview

2.1. Inclusion / teach-in device

	<p>Open the screw and remove the front cover of the motion sensor.</p>
	<p>Activate the inclusion mode (teach-in mode) on the Z-Wave controller. (please refer to the Z-Wave controller manual for more details)</p> <p>Press the "+" button (Add / Inclusion) in your Z-Wave app and follow the instructions to set the Z-Wave controller to inclusion mode.</p>
	<p>Keep the device within reach of the Z-Wave controller.</p> <p>Remove the safety strip from the battery compartment. We recommend the exclusive use of the original GP battery from the scope of delivery.</p> <p>The device supports automatic inclusion, i.e. it automatically goes into inclusion mode when it is powered and not yet connected to a Z-Wave controller. The LED starts flashing.</p> <p>Alternative/manual inclusion: If you have already inserted the batteries, press the Link button 3 times quickly (within 1.5 seconds) to start the inclusion process.</p>
	<p>Successful inclusion is displayed in the app or on the Z-Wave controller and the status LED on the device stops flashing.</p> <p>It may take up to 60 seconds after inclusion before the LED goes out. During this time the PIR sensor calibrates itself, only as soon as this warm-up phase is completed the LED goes out.</p> <p>Repeat the inclusion process if it was not successful. If a new attempt fails as well, first carry out a factory reset on the device, see 2.5.</p>

2.2. Planning, mounting and installation

The device uses low-power radio signals to communicate with the Z-Wave controller. To achieve the best results, please note the following:

- Please do not attach directly to metal planes or metal constructions, as this may limit the range.
- The device has a radio range of up to 40 m.
- The battery life of the device is reduced if the wireless connection to the Z-Wave controller is not direct but via a repeater.

Test mode

Press the tamper switch 3 times in 1.5 seconds to activate the test mode. The test mode switches off automatically after 10 minutes.

In test mode

- the preset waiting time is ignored and several movement messages are also sent one after the other without a reset.
- Every 5 seconds a check is made to see if there is any movement. Accordingly, the LED lights up when motion is present and a motion message is sent. If there is no movement, the reset message is sent.

Use the test mode to select the optimal installation location.

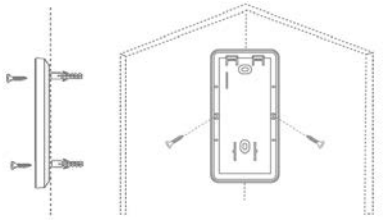
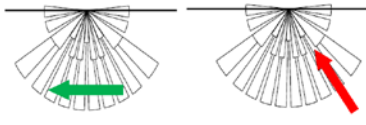
Select installation location

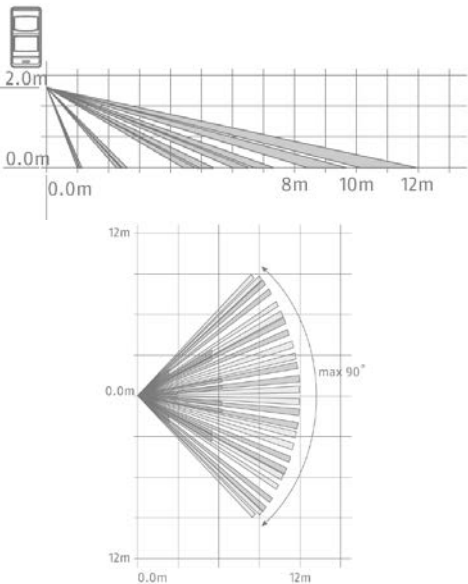
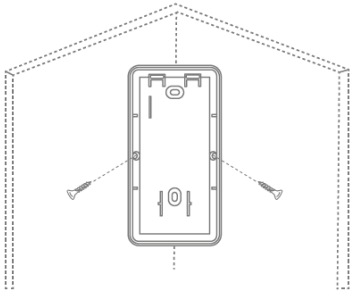
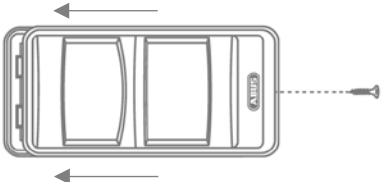
The detector is only suitable for indoor installation.

When selecting a position for the detector, the following points should be observed:


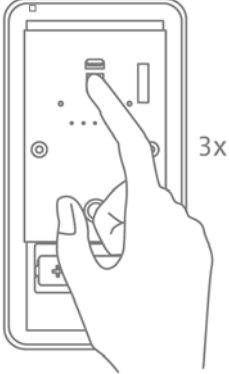

- Do not install the detector opposite a window or where it is exposed to direct sunlight. PIR detectors are not suitable for use in conservatories due to the high temperature fluctuations.
- Do not install the detector where it is exposed to fans or air conditioners.
- Do not install the detector near a heat source (e.g. fire, radiator, boiler, etc.).
- Do not mount the detector in a position where it is subject to excessive vibration.

Mounting instructions:

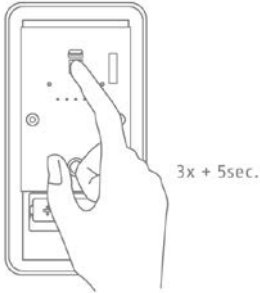
	<p>The detector is designed for mounting on a flat wall or in a corner.</p>
 <p>Sensitive Insensitive</p>	<p>If possible, mount the detector in the corner of the room so that the path of a person passes through the detection zone. PIR detectors respond more effectively to movement through the detection zone than to movement towards the sensor.</p>

 <p>The diagram illustrates the detection range of the PIR detector. The top part shows a side view where the detector is mounted at a height of 2.0m. The detection range is shown as a fan-shaped area extending up to 12m horizontally. The bottom part shows a top-down view of the 90-degree detection field, with a maximum range of 12m.</p>	<p>Mount the PIR detector in one of 2 m. At this height, the detection range of the detector is optimised, i.e. 12 metres range and 90° detection angle.</p> <p>The PIR detector ignores pets up to a height of approx. 60 cm in this installation.</p> <p>Mount the PIR detector slightly higher if the detector is still triggered by the pet. Do not mount the detector too high, otherwise it will not be triggered by humans.</p>
 <p>The diagram shows the mounting bracket for the PIR detector. It is a rectangular bracket with two screws and two holes for marking the wall. The bracket is shown in a perspective view, with dashed lines indicating the mounting points.</p>	<p>Use the bracket as a template to mark the position of two drill holes on the wall. There are two markings each for wall or corner mounting.</p> <p>Fix the bracket to the wall using the supplied plugs and screws.</p> <p>Do not overtighten the screws to avoid damaging the bracket.</p>
 <p>The diagram shows the PIR detector unit being inserted into the bracket. The unit is shown with a metric screw being used to connect the two parts. The unit is shown in a perspective view, with dashed lines indicating the mounting points.</p>	<p>Place the base on the bracket and then press the unit against the wall.</p> <p>Connect the two parts again with the metric screw.</p>

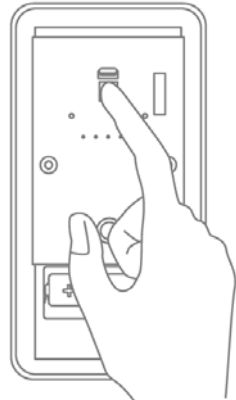
2.3. Exclusion / teach-out device

	<p>Activate the exclusion mode (teach-out mode) on the Z-Wave controller. (please refer to the Z-Wave controller manual for more details)</p> <p>Press the "-" button (Remove / Exclusion) in your Z-Wave app and follow the instructions to set the Z-Wave controller to Exclusion mode.</p>
	<p>Press the Link button 3 times quickly (within 1.5 seconds) to start the exclusion on the device.</p>
	<p>The successful exclusion is displayed in the app or on the Z-Wave controller</p>

2.4. Reset factory settings

	<p>Press the Link button 3 times quickly (within 1.5 seconds).</p> <p>Press quickly (within 1 second) a fourth time and press and hold the Link button for at least 5 seconds.</p> <p>The device is now reset to factory settings.</p> <p>Hint:</p> <p>This procedure should only be used if the primary network controller is not capable of acting.</p> <p>If the device is set to factory default, the status is set to "not included" and the association settings and possible configurations are reset to default.</p>
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2.5. Waking up the device / Wake-up

	<p>Press the Link button once to wake up the device. It then establishes a connection to the Z-Wave controller and transmits the current status.</p>
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2.6. Behavior PIR sensor

Warm up phase

It takes about 1 minute for the PIR sensors to warm up after the battery is inserted. During this time the LED behind the lens will light up. When the LED goes out, it means that the warm-up process is complete and the detector is ready for detection.

Hint:

- This has no effect on the inclusion/exclusion process.
- After removing the batteries, wait 5 seconds before inserting them again.

PIR waiting time

- As soon as motion is detected, the device's LED lights up and it sends a motion alarm to the Z-Wave controller. The device now waits for a preset time (waiting time) until it resets the motion alarm to the Z-Wave controller.
- If motion is still present after 160 seconds, a new motion alarm is sent and the waiting time for resetting the motion alarm is reset. The detector will not reset the motion alarm until the waiting time for reset has expired without motion detection.
- The default period of the reset waiting time is 180 seconds. **Changes have a significant effect on the expected battery life.**

3. Advanced Z-Wave Parameters

3.1. Association Groups

Z-Wave devices can control other devices directly. This direct control is called association in Z-Wave. For this purpose, the device ID of the device to be controlled must be stored in the controlling devices. This takes place in so-called association groups. An association group is always linked to an event in the controlling device (keystroke or triggering of a sensor). When this event occurs, a control command - usually a BASIC SET - is sent to all devices stored in an association group.

The device supports two association groups:

Group-Number	Maximum Devices	Group name	Profile	Command class
Group 1	1	Lifeline	General	Notification report Battery report Device Reset Locally Notification Sensor Multilevel Report
Group 2	4	PIR control	Notification	Basic set

Group 1 (Association Z-Wave Controller)

- The Lifeline Association is automatically established between the Z-Wave controller and the device during inclusion and defines what information is exchanged between the Z-Wave controller and the device.

Group 2 (direct association to terminals)

- When the motion alarm is triggered, it sends a BASIC SET On / Off command to the nodes of group 2

3.2. WakeUp Time

The time between the WakeUp Notification Commands can be set in the Wakeup Command Class within the following values:

Description	Value
Minimum wake-up interval	600s
Maximum wake-up interval	86400s (1 day)
Default value Wake-up interval	21600s (6 hours)
Interval steps	600s

3.3. Reports

Notification report

Event	Type	Attribute	Parameter Length	Event Parameters
Power is applied for the first time	0x08	0x01	0x00	
Motion alarm	0x07	0x08	0x00	
Motion alarm reset (no Event)	0x07	0x00	0x01	0x08
Tamper alarm	0x07	0x03	0x00	
Tamper alarm reset (no Event)	0x07	0x00	0x01	0x03

Battery report

Value	Description
0x14 - 0x64 (20 – 100)	Battery charge level in percentage (%)
0xFF (256)	Low battery

Sensor Multilevel Report

Description	Type	Precision	Measured variable	Size	Value
Temperature	0x01	0,1	degrees Celsius (°C)	2 bytes	0x0000 - 0xFFFF (-3276.7°C - 3276.7°C)
Air humidity	0x05	0,1	Percentage (%)	2 bytes	0x0000 - 0x03E8 (0,0% - 100,0%)

3.4. Overview configuration parameters

Z-Wave products can be used directly after inclusion in the network. However, configuration settings can be used to adapt the behaviour of the device even better to the requirements of the application and to activate additional functions.

Use your Z-Wave controller to initiate the changes to the parameters. In order for the device to receive the values, a wake-up must be performed on the device itself. (see point 2.5)

Parameter	Byte size	Function	Default value	Description
1	2	Temperature & Humidity Report (Time)	30	The interval time of the temperature and humidity report. <ul style="list-style-type: none"> Adjustable from 1 - 1440 in minutes (Hexadecimal: 0x01 - 0x5A0)
2	2	Waiting time between two motion alarms	160	Waiting time from one motion alarm to the next triggering. <ul style="list-style-type: none"> Adjustable from 10 - 3600 in seconds (Hexadecimal: 0x10 - 0xE10)
3	2	Reset waiting time after motion alarm (Association Group 2)	180	Waiting time after a movement alarm until reset. Additionally, defines how long directly associated devices from group 2 are activated. <ul style="list-style-type: none"> Adjustable from 10 - 3600 in seconds (Hexadecimal: 0x10 - 0xE10)
4	1	Temperature report (threshold)	5	Additional temperature report, which is sent when the set threshold is exceeded. The value 0 deactivates the temperature report. <ul style="list-style-type: none"> Adjustable from 0 - 10 in 0.5° steps (e.g. 5 = 2.5°) (Hexadecimal: 0x00 - 0x0A)
5	1	Air humidity report (threshold)	5	Additional humidity report that is sent when the set threshold is exceeded. A value of 0 disables the humidity report. <ul style="list-style-type: none"> Adjustable from 0 - 10 in 5% steps (e.g. 5 = 25%) (Hexadecimal: 0x00 - 0x0A)
6	1	LED status (motion alarm)	1	Set whether the status LED lights up in case of a motion alarm. <ul style="list-style-type: none"> 0 = LED deactivated 1 = LED activated (Hexadecimal: 0x00 - 0x01)

3.5. Supported command classes

Command class	Version
ASSOCIATION	Version 2
ASSOCIATION_GRP_INFO	Version 1
BATTERY	Version 1
CONFIGURATION	Version 1
DEVICE_RESET_LOCALLY	Version 1
FIRMWARE_UPDATE_MD	Version 4
MANUFACTURER_SPECIFIC	Version 2
NOTIFICATION	Version 8
POWERLEVEL	Version 1
SECURITY	Version 1
SECURITY_2	Version 1
SENSOR_MULTILEVEL	Version 5
SUPERVISION	Version 1
TRANSPORT_SERVICE	Version 2
VERSION	Version 3
WAKE_UP	Version 2
ZWAVE PLUS_INFO	Version 2

3.6. Supported security levels

- Security S2 Authenticated
- Security S2 Unauthenticated
- Security S0 Authenticated

4. Technical data

Parameters	PLBW10000
Dimensions (W x H x D)	120 x 61 x 51 mm
Weight	100 g
Operating temperature	>0° – 40°C
IP class	IP 20 (indoor area)
Radio frequency	868.42 MHz (Z-Wave Plus, Europe)
Modulation	FSK (BFSK/GFSK)
Transmitting power:	< 5 dbm
Power supply	3 V DC
Type of battery	1x CR123 GP
Battery life	~2 years (based on per day: 20x trigger, 48 hygrometer multisensor reports, 4 wakeup)
Tamper protection	yes
Firmware updateable	Yes, OTA
Z-Wave Manufacturer ID	0x0403
Z-Wave Product Type ID	0x0002
Z-Wave Device ID	0x0004
Z-Wave Beaming supported	Yes
Z-Wave SmartStart supported	No
Z-Wave Plus supported	Yes
Z-Wave Network Security	Yes
Z-Wave AES-128 Security (S0)	Yes
Z-Wave S2 Security	Yes (S2 Authenticated)
Z-Wave Chip Generation	500