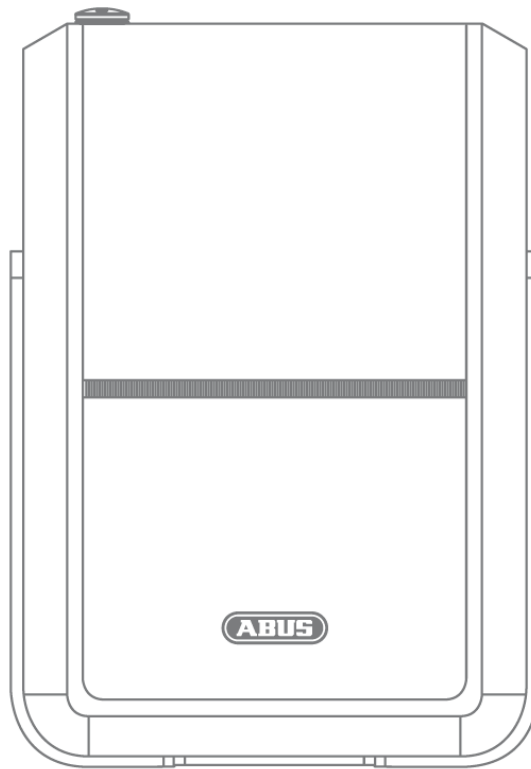




PLHA10100

Nexello 3I/3O Hybrid Module



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

www.abus.com

Manual version: 1.0
Firmware version: 1.0.0



Introduction

Dear customer, dear customer,

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

This hybrid module (hereinafter referred to as "device") has been developed and manufactured with the greatest care. Please read this operating manual in its entirety and observe all operating and safety instructions, as this ensures the best possible handling of the device. This document is to be considered as assembly and maintenance instructions.

Hereby ABUS Security-Center 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/PLHA10100

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 hrs; Fri: 08 - 14 hrs

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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 address given above.

Your rights are limited to the repair or replacement of this product in the condition it was 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 on use of the software, loss or recovery of data, cost of replacement equipment, downtime, property damage and claims by third parties, as a result of, and without limitation, the use of the software. a. 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 are subject to change 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 improper!

The product is designed exclusively for indoor wall mounting.

Damage caused by not following these safety instructions invalidates the warranty. We assume no liability for consequential damage!

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 unit is damaged, return it with the packaging and inform the delivery service.



Please make sure that the packaging contains the DSK (Device Specific Key) card. This card shows the DSK of your ABUS Z-Wave device. Please store it in a safe place. Every S2 (Security 2) certified Z-Wave controller requires the DSK to include (teach-in) the device.

Installation site Operating environment

Do not place any heavy objects on the unit. The unit is only designed for operation in rooms with the appropriate temperature or humidity (e.g. bathrooms) or excessive dust. For exact specifications, check the technical data of the individual units. Ensure that there is always sufficient ventilation, that no direct heat sources act on the device, that no direct sunlight or strong artificial light falls on devices for indoor use, that the device is not in the immediate vicinity of magnetic fields (e.g. loudspeakers), that no open fire sources (e.g. Do not stand on or next to the device, avoid contact with splashing or dripping water on devices for indoor use and aggressive liquids, do not operate the device near water, in particular, never submerge the device (do not place objects filled with liquids, e.g. vases or drinks on or next to the device), do not allow foreign objects to enter the device, do not expose the device to strong temperature fluctuations, as air humidity can condense and lead to electrical short circuits, do not expose the device to excessive shocks and vibrations.

Children

Do not allow electrical equipment to get into the hands of children! Never allow children to use electrical appliances without supervision. Children are not always able to recognize possible dangers correctly. Small parts can be life-threatening if swallowed. Also keep the packaging films away from children. There is a danger of suffocation! This device should not be handled by children. Springy parts can jump out if used improperly and cause injury (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 cause 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 a 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, use batteries of the same manufacturer as those from the original scope of delivery, as the device has been intensively tested with these batteries and thus ensures optimal function.
- Leaking or damaged batteries can cause burns if they come into contact with the skin. In this case use suitable protective gloves. 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. Use only suitable microfibre cloths for high-gloss surfaces.
- Make sure that no water gets inside the device!
- Do not put the appliance in the dishwasher!
- Do not use any sharp, pointed, abrasive, caustic cleaning agents or hard brushes!
- Do not use chemicals!
- Do not clean the device with easily flammable liquids!

Installation/Wiring

	<p>The maximum voltage of the devices to be connected is 12 volts for the inputs and 24 volts for the outputs.</p> <p>Attention: Under no circumstances may products with higher voltage, such as 230VAC, be connected.</p>
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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 or commercial waste. The old device can be disposed of at the appropriate official collection points in your country. Observe local regulations when disposing of the materials. For further details about the take-back (also for non-EU countries), please contact your local administration. Separate collection and recycling helps to conserve 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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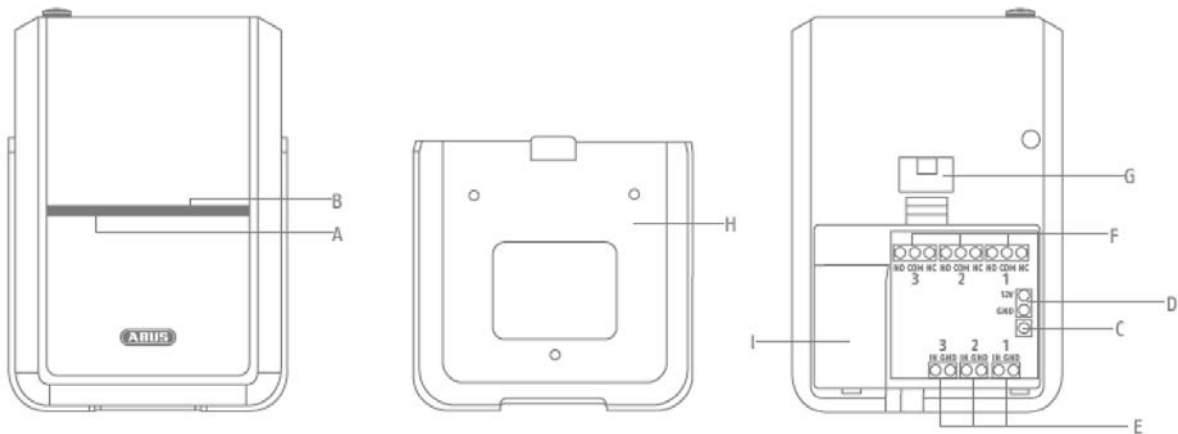
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1. Product launch





1.1. Scope of delivery

- Nexello 3l/3O Hybrid Module
- Mounting material: screws and dowels
- Quick guide & safety instructions
- DSK card

1.2. Device features



No	Designation	Comment
A	Status LED display	permanent red: power supply unit connected flashes red: power supply unit disconnected, battery mode Flashing green slowly: Product reset to factory settings flashing green fast: Z-Wave Inclusion running
B	Signal input / relay output LED display	Flashes 2x green: signal input triggered Flashes 2x red: relay output has been switched
C	Link Button	Manual triggering of the wake-up command, inclusion, exclusion and reset
D	Power supply unit Connection	For power supply with a 12V/1A power supply unit

<p>E</p>	<p>Signal input 1-3</p> 	<p>For the connection of</p> <ul style="list-style-type: none"> ▪ Analogue sensors with voltage 0~12V ▪ Digital sensors with voltage 0~12V ▪ Potential-free outputs NC/NO ▪ Open Collector Outputs OC <p>functions:</p> <ul style="list-style-type: none"> ▪ Selectable voltage level triggering threshold (see configuration settings) ▪ Activation/deactivation of the internal 3.3V voltage for classic wire detectors ▪ Input overvoltage protection (also works when the input voltage is above the supply voltage) ▪ periodic report of the voltage level to the controller <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  <p>Attention: Under no circumstances may products with higher voltage, e.g. 230VAC, be connected.</p> </div>																
<p>F</p>	<p>Relay output 1-3</p> 	<p>For connecting actuators with a maximum of 24VDC SPDT (Single Pole, Double Throw) relay (toggle switch)</p> <p>functions:</p> <ul style="list-style-type: none"> ▪ Configurable timer that switches off automatically after a preset period of time (default is 500 ms) ▪ The output can be set to activate automatically when the input terminals ▪ (see configuration setting) <p>Maximum power Volt/Ampere:</p> <table border="1" data-bbox="687 1178 1390 1368"> <thead> <tr> <th>Relay</th> <th>Max. V</th> <th>NO Pin</th> <th>NC pin</th> </tr> </thead> <tbody> <tr> <td>OUT 1</td> <td>24V DC</td> <td>10A</td> <td>5A</td> </tr> <tr> <td>OUT 1</td> <td>24V DC</td> <td>3A</td> <td>3A</td> </tr> <tr> <td>OUT 1</td> <td>24V DC</td> <td>3A</td> <td>3A</td> </tr> </tbody> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  <p>Attention: Under no circumstances may products with higher voltage, e.g. 230VAC, be connected.</p> </div>	Relay	Max. V	NO Pin	NC pin	OUT 1	24V DC	10A	5A	OUT 1	24V DC	3A	3A	OUT 1	24V DC	3A	3A
Relay	Max. V	NO Pin	NC pin															
OUT 1	24V DC	10A	5A															
OUT 1	24V DC	3A	3A															
OUT 1	24V DC	3A	3A															
<p>G</p>	<p>Sabotage contact</p>	<p>Pressing the sabotage contact for 6 seconds activates the sabotage protection. Afterwards, sabotage alarm is triggered when the contact is opened.</p>																
<p>H</p>	<p>Backplate</p>	<p>For mounting on the wall</p>																
<p>I</p>	<p>Battery compartment</p>	<p>Observe polarity</p>																

1.3. Operating principle

The PLHA10100 was developed for use in alarm and home automation systems that use the Z-Wave wireless standard. The device has the following functions:

- Integration of wired sensors and actuators into the Z-Wave wireless protocol
- Three signal inputs
- Three relay outputs
- Emergency power supply and sabotage protection

1.4. Performance features

The device...:

- ...is Z-Wave Plus compatible & certified
- ...supports the Z-Wave S2 standard (Security 2)

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 the 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 under the QR Code on the back 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:

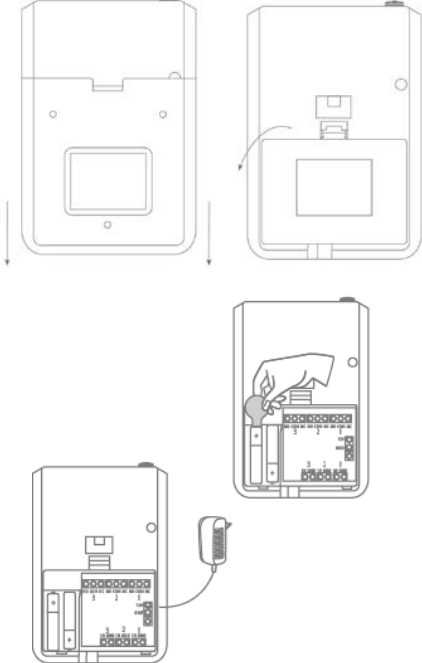

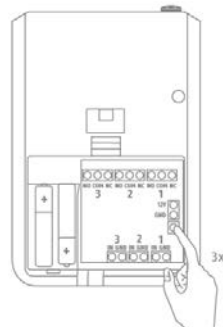
We recommend secure S2 inclusion (must be supported by the Z-Wave controller) Please enter the 5 digits of the DSK code (bottom of the device) or the entire DSK code (QR code) when prompted.


2. Functional overview

2.1. Inclusion / Teach-in device

This product supports SmartStart:

SmartStart-enabled products can be added to a Z-Wave network by scanning the Z-Wave QR code present on the product with a controller that provides SmartStart integration. No further action is required, and the SmartStart product will be automatically added near the network within 10 minutes of power-up.

	<p>Remove the back cover and open the battery compartment.</p> <p>Connect the power supply unit and remove the contact strip on the battery compartment.</p>
	<p>Activate the inclusion mode (teach-in mode) on the Z-Wave controller. (for more details, please refer to the Z-Wave controller's user manual)</p> <p>Press the "+" button (Add / Inclusion) in your Z-Wave app and follow the instructions to set the Z-Wave controller into inclusion mode.</p>
	<p>Press the Link button 3 times quickly (within 1.5 seconds) to start the inclusion on the device. The LED starts flashing green quickly.</p>



Successful inclusion is displayed in the app or on the Z-Wave controller and the status LED on the device stops flashing.

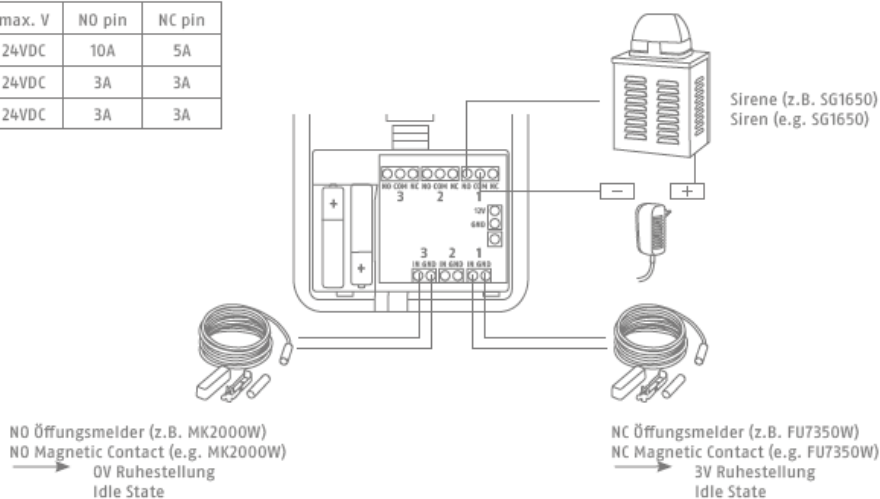
Repeat the inclusion process if it was not successful. If a new attempt fails as well, first carry out a factory reset on the device, see 2.4.

2.2. Planning, assembly and installation


- The device uses low power radio signals to communicate with the Z-Wave controller. For best results, please note the following:
- The device has a radio range of up to 40 m.
- Due to its design, the device is only suitable for surface mounting indoors.

Example installation:

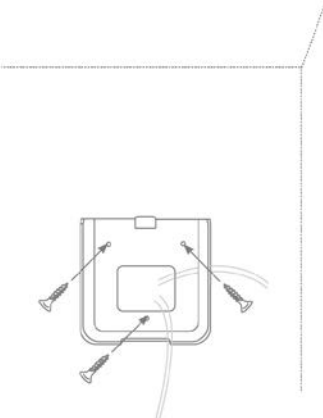
RELAY	max. V	NO pin	NC pin
OUT 1	24VDC	10A	5A
OUT 2	24VDC	3A	3A
OUT 3	24VDC	3A	3A



Please observe the safety instructions:



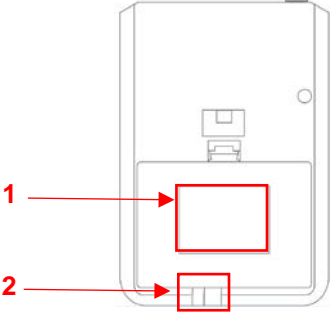
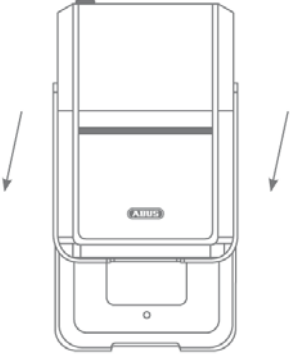
- **The maximum voltage of the devices to be connected is 12 volts for the inputs and 24 volts for the outputs.**
- **Attention: Under no circumstances may products with higher voltage, such as 230VAC, be connected.**




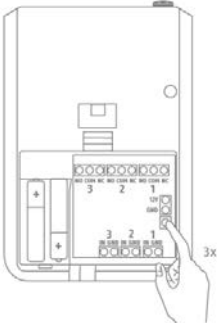

Screw the bracket to the wall.

Variant 1:
Ideally, use a flush-mounted box as storage space for the cables. The holder has a corresponding opening and the battery compartment has a predetermined breaking point, which you can open carefully with a cutter knife, for example. This allows the cables to be inserted into the product from behind.

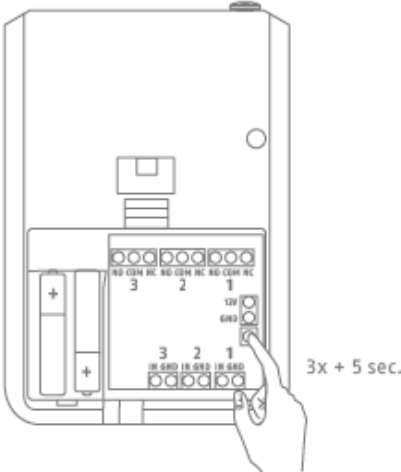
Variant 2:

	<p>Alternatively, the cables can also be surface-mounted and inserted from below.</p>
	<p>Wire the devices to be connected in accordance with the instructions in Chapter 1.2. and the safety instructions. Use the integrated train protection. Leave enough clearance for the cables during wiring to still be able to remove the device from the wall. Then place the device on the wall bracket, the tamper protection is activated automatically after 6 seconds.</p>

2.3. Exclusion / teach-in device

	<p>Activate the exclusion mode (learn mode) on the Z-Wave controller. (for more details, please refer to the Z-Wave controller's user manual)</p> <p>Or 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 to 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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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. The device ID of the device to be controlled must be stored in the controlling devices. This is done 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 the following association groups:

Group-Number	Maximum Devices	Group name	Profile	command class
1	5	Lifeline	General	Device Reset Locally notification report Switch Binary Report Sensor Multilevel Report battery report
2	5	On / Off Control (signal input 1)	Notification	Mirroring Endpoint 1, Group 2 (basic set)
3	5	On / Off Control (signal input 2)	Notification	Mirroring Endpoint 2, Group 2 (basic set)
4	5	On / Off Control (signal input 3)	Notification	Mirroring endpoint 3, group 2 (basic set)
End point 1				
1	0	Lifeline	General	Mirroring the root device
2	5	On / Off Control (signal input 1)	Notification	basic set
End point 2				
1	0	Lifeline	General	Mirroring the root device
2	5	On / Off Control (signal input 2)	Notification	basic set
End point 3				
1	0	Lifeline	General	Mirroring the root device
2	5	On / Off Control (signal input 3)	Notification	basic set

Group 1 (the Z-Wave controller)

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

Group 2, 3 and 4 (direct association with up to 5 terminals)

- When a signal input (IN 1-3) is triggered, the unit first sends a BASIC Set ON. When the preset timer expires, it sends a BASIC Set OFF.

Multi Channel : Root map (Association Group Information)

Sensor Multilevel Command Class	End point 1
Switch Binary Command Class	End point 4
Basic Command Class	End point 4

3.2. WakeUp Time

The device is an Always On Slave and therefore does not require a WakeUp function. The device can be controlled by the Z-Wave controller at any time.

3.3. Reports

notification report

Event	Type	Attribute	Parameters Length	Event Parameters
Current is applied for the first time	0x08	0x01	0x00	
Power supply unit separated	0x08	0x02	0x00	
Power supply unit connected again	0x08	0x03	0x00	
Sabotage alarm (Sabotage contact opened after it was closed for more than six seconds)	0x07	0x03	0x00	
Sabotage alarm acknowledgement (sabotage contact is pressed for more than six seconds)	0x07	0x00	0x01	0x03
Input was triggered	0x07	0x02	0x00	
Signal input was triggered	0x07	0x00	0x01	0x02
Signal input Acknowledgement	0x07	0x00	0x01	0x02
Signal input Armed (If set as Armed / Disarmed input in configuration parameter 18)	0x06	0x01	0x00	
Signal input Disarmed (If set as Armed / Disarmed input in configuration parameter 18)	0x06	0x01	0x00	

battery report

Battery message for the backup battery

Value	Description
0x14 - 0x64 (20 – 100)	Battery charge level in percent (%)
0xFF (256)	Low battery (or no battery)

Sensor Multilevel report

Report about voltage in millivolts at the 3 signal inputs

Description	Type	Precision	Measured variable	Size	Value
Voltage	0x0F	1	millivolts (mV)	2 bytes	0x0000 - 0xFFFF (-32767mV - 32767mV)

Switch Binary report

Sends report when relay outputs 1-3 are switched on or off.

Value	Description
0x00 (0)	Relay is off
0xFF (256)	Relay is on

(There is a delay of 2 seconds for the automatic shutdown after the shutdown is completed.)

Device Reset Locally Report

A "Device Reset Locally" report is sent when the device is reset to factory settings.

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.

For signal input 1 and relay output 1

Parameter	Byte size	Function	Default value	Description																																				
1	1	Signal input 1 - Mode	64 (01000000)	<p>Several settings of the signal input and its triggering behaviour. Binary number (8 bits) must finally be converted into a decimal number.</p> <p>Bit 0: Must be 0</p> <p>Bit 1:</p> <ul style="list-style-type: none"> ▪ 0 = nothing happens ▪ 1 = Relay output 1 is switched when tripped <p>Bit 2:</p> <ul style="list-style-type: none"> ▪ 0 = nothing happens ▪ 1 = Relay output 2 is switched when tripped <p>Bit 3:</p> <ul style="list-style-type: none"> ▪ 0 = nothing happens ▪ 1 = Relay output 3 is switched when tripped <p>Bit 4: Must be 0</p> <p>Bit 5: Must be 0</p> <p>Bit 6:</p> <ul style="list-style-type: none"> ▪ 0 = No voltage present at signal input ▪ 1 = 3.3V is present at the signal input <p>Bit 7: (Depending on parameter 4/5)</p> <ul style="list-style-type: none"> ▪ 0 = Trip when voltage falls below low threshold Acknowledgement when voltage rises above high threshold ▪ 1 = Tripped when voltage rises above high threshold. Acknowledgement when voltage drops below low threshold <p><i>Example:</i></p> <table border="1"> <thead> <tr> <th>Bit</th> <th>7</th> <th>6</th> <th>5</th> <th>4</th> <th>3</th> <th>2</th> <th>1</th> <th>0</th> </tr> </thead> <tbody> <tr> <td>Bit value</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>Decimal value</td> <td>128</td> <td>64</td> <td>32</td> <td>16</td> <td>8</td> <td>4</td> <td>2</td> <td>1</td> </tr> <tr> <td colspan="9" style="text-align: center;">128 + 64 + 2 = 194</td> </tr> </tbody> </table> <p><i>Signal input triggers above high threshold, 3.3V is applied and on triggering Relay output 1 switched</i></p> <p>(Hexadecimal: 0x00 - 0xFF)</p>	Bit	7	6	5	4	3	2	1	0	Bit value	1	1	0	0	0	0	1	0	Decimal value	128	64	32	16	8	4	2	1	128 + 64 + 2 = 194								
Bit	7	6	5	4	3	2	1	0																																
Bit value	1	1	0	0	0	0	1	0																																
Decimal value	128	64	32	16	8	4	2	1																																
128 + 64 + 2 = 194																																								

2	1	Relay output 1 - switching time	5	<p>Setting for the duration of the switching time when the relay output is switched.</p> <ul style="list-style-type: none"> Adjustable from 1 - 256 in 100ms steps (5 = 500ms = 0.5s) 0 = relay output is permanently switched (Hexadecimal: 0x00 - 0xFF)
3	1	Signal input 1 - switching time at association group 2	180	<p>Setting for the duration of the switching time at association group 2 when signal input is triggered.</p> <ul style="list-style-type: none"> Adjustable from 1 - 256 in seconds 0 = Switched permanently (Hexadecimal: 0x00 - 0xFF)
4	1	Signal input 1 - voltage high threshold	25	<p>Setting, from which voltage rise the signal input triggers or acknowledges.</p> <ul style="list-style-type: none"> Adjustable from 0 - 256 in 100mV steps (25 = 2500mV = 2.5V) (Hexadecimal: 0x00 - 0xFF)
5	1	Signal input 1 - Low voltage threshold	10	<p>Setting of the voltage drop below which the signal input is triggered or acknowledged.</p> <ul style="list-style-type: none"> Adjustable from 0 - 256 in 100mV steps (10 = 1000mV = 1.0V) (Hexadecimal: 0x00 - 0xFF)

For signal input 2 and relay output 2

Parameter	Byte size	Function	Default value	Description
6	1	Signal input 2 - Mode	64 (01000000)	<p>Identical to parameter 1.</p> <ul style="list-style-type: none"> Concerns signal input 2 Bit 7 depending on parameter 9 and 10
7	1	Relay output 2 - switching time	5	<p>Identical to parameter 2.</p> <ul style="list-style-type: none"> Concerns relay output 2
8	1	Signal input 2 - switching time at association group 3	180	<p>Identical to parameter 3.</p> <ul style="list-style-type: none"> Concerns Association Group 3 Concerns signal input 2
9	1	Signal input 2 - voltage high threshold	25	<p>Identical to parameter 4.</p> <ul style="list-style-type: none"> Concerns signal input 2
10	1	Signal input 2 - Low voltage threshold	10	<p>Identical to parameter 5.</p> <ul style="list-style-type: none"> Concerns signal input 2

For signal input 3 and relay output 3

Parameter	Byte size	Function	Default value	Description
11	1	Signal input 3 - Mode	64 (01000000)	Identical to parameter 1. <ul style="list-style-type: none"> Concerns signal input 3 Bit 7 depending on parameter 14 and 15
12	1	Relay output 3 - switching time	5	Identical to parameter 2. <ul style="list-style-type: none"> Concerns relay output 3
13	1	Signal input 3 - switching time at association group 4	180	Identical to parameter 3. <ul style="list-style-type: none"> Concerns Association Group 4 Concerns signal input 3
14	1	Signal input 3 - voltage high threshold	25	Identical to parameter 4. <ul style="list-style-type: none"> Concerns signal input 3
15	1	Signal input 3 - Low voltage threshold	10	Identical to parameter 5. <ul style="list-style-type: none"> Concerns signal input 3

For signal input 3 and relay output 3

Parameter	Byte size	Function	Default value	Description
11	1	Signal input 3 - Mode	64 (01000000)	Identical to parameter 1. <ul style="list-style-type: none"> Concerns signal input 3 Bit 7 depending on parameter 14 and 15
12	1	Relay output 3 - switching time	5	Identical to parameter 2. <ul style="list-style-type: none"> Concerns relay output 3
13	1	Signal input 3 - switching time at association group 4	180	Identical to parameter 3. <ul style="list-style-type: none"> Concerns Association Group 4 Concerns signal input 3
14	1	Signal input 3 - voltage high threshold	25	Identical to parameter 4. <ul style="list-style-type: none"> Concerns signal input 3
15	1	Signal input 3 - Low voltage threshold	10	Identical to parameter 5. <ul style="list-style-type: none"> Concerns signal input 3

General settings

Parameter	Byte size	Function	Default value	Description																											
16	1	Voltage Report (time)	30	<p>The interval time of the voltage report for signal input 1-3</p> <ul style="list-style-type: none"> Adjustable from 1 - 256 in minutes <p>(Hexadecimal: 0x01 - 0xFF)</p>																											
17	1	Sabotage Alarm Relay output	0 (00000000)	<p>Setting whether a relay output must be switched in case of a sabotage alarm. Binary number (8 bits) must finally be converted into a decimal number.</p> <p>Bit 0: Must be 0</p> <p>Bit 1:</p> <ul style="list-style-type: none"> 0 = nothing happens 1 = Relay output 1 is switched when tripped <p>Bit 2:</p> <ul style="list-style-type: none"> 0 = nothing happens 1 = Relay output 2 is switched when tripped <p>Bit 3:</p> <ul style="list-style-type: none"> 0 = nothing happens 1 = Relay output 3 is switched when tripped <p>Bit 4 - 7: Must be 0</p> <p><i>Example:</i></p> <table border="1"> <thead> <tr> <th>Bit</th> <th>7</th> <th>6</th> <th>5</th> <th>4</th> <th>3</th> <th>2</th> <th>1</th> <th>0</th> </tr> </thead> <tbody> <tr> <td>Bit value</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>Decimal value</td> <td>128</td> <td>64</td> <td>32</td> <td>16</td> <td>8</td> <td>4</td> <td>2</td> <td>1</td> </tr> </tbody> </table> <p style="text-align: center;">8 + 2 = 10</p> <p><i>In case of sabotage alarm, relay output 1 and 3 triggered</i></p> <p>(Hexadecimal: 0x02 - 0x0A)</p>	Bit	7	6	5	4	3	2	1	0	Bit value	0	0	0	0	1	0	1	0	Decimal value	128	64	32	16	8	4	2	1
Bit	7	6	5	4	3	2	1	0																							
Bit value	0	0	0	0	1	0	1	0																							
Decimal value	128	64	32	16	8	4	2	1																							
18	1	Signal input - Activate sharp / blurred message	0	<p>Setting whether a signal input should send an armed and an unarmed message instead of a trip.</p> <ul style="list-style-type: none"> 0 = No signal input 1 = Signal input 1 sends sharp/unsharp message 2 = Signal input 2 sends Arm / Disarm message 3 = Signal input 3 sends sharp/unsharp message <p>(Hexadecimal: 0x00 - 0x03)</p>																											

3.5. Supported command classes

Command class	Version
Association	version 2
Association Group Info	Version 1
Battery	Version 1
Configuration	Version 4
Device Reset Locally	Version 1
Firmware Update Md	Version 4
Manufacturer Specific	version 2
multi-channel	Version 4
Multi Channel Association	Version 3
Notification	Version 8
Power level	Version 1
Security	Version 1
Security 2	Version 1
Sensor Multilevel	Version 5
Supervision	Version 1
Switch Binary	Version 1
Transport Service	version 2
Version	Version 3
ZwavePlus Info	version 2

For endpoints 1-3

Command class	Version
Association	version 2
Association Group Info	Version 1
Multi Channel Association	Version 3
Notification	Version 8
Sensor Multilevel	Version 5
Supervision	Version 1
ZwavePlus Info	version 2

Endpoint 4~6

Command class	Version
Association	version 2
Association Group Info	Version 1
Multi Channel Association	Version 3
Supervision	Version 1
Switch Binary	Version 1
ZwavePlus Info	version 2

3.6. Supported security levels

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

3.7. Description of the endpoints

	Root	End point 1-3	End point 4-6
Role Type	Always On Slave		
device type	Notification Sensor	Notification Sensor	binary switch
generic type	Sensor Notification	Sensor Notification	binary switch
specific type	Notification Sensor	Notification Sensor	distressed
Requested security keys	S0, S2 Un-Authenticated, S2-Authenticated		

Endpoint	Basic Command	Mapped
1~3	Basic Command	no
4~6	Basic Set (value)	Binary Switch Set (Value)
4~6	Basic Report(Value)	Binary Switch Report (Value)

4. Technical data

Parameters	PLHA10100
Dimensions (W x H x D)	143 x 99 x 32 mm
Battery	4xAAA
Weight	216 g
Operating temperature	>0° – 40°C
Location	Interior
Radio frequency	868.42 MHz (Z-Wave Plus, Europe)
Modulation	FSK (BFSK/GFSK)
Transmitting power:	< 5 dbm
Power supply	9V-12V DC, 1A min
Firmware updateable	Yes, OTA
Z-Wave manufacturer ID	0x0403
Z-Wave Product Type ID	0x0003
Z-Wave Device ID	0x0007
Z-Wave SmartStart supported	Yes
Z-Wave Plus supports	Yes
Z-Wave Network Security	Yes
Z-Wave AES-128 Security (S0)	Yes
Z-Wave S2 Security	Yes (S2 Authenticated)
Z-Wave Repeater Function	Yes
Z-Wave Chip Generation	500