

MANUAL

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1. Introduction

Description

Welcome to the world of Excessive Power: Zeliox. The Zeliox is a battery equipped mobile power inverter designed for use in vehicles like small commercial vans. It offers different output voltages, ranging from 5V DC (USB) to 230V AC wall sockets. The Zeliox operates highly reliable and silently without emitting harmful and toxic gases. Read this manual first before use.

Types of Zeliox

This manual is for the following types of Zeliox:

Zeliox:

ZEL18-2,25-1-0-EU 1800Watt - 2,25kWh - shore power - with or without remote monitoring
ZEL18-3,60-1-0-EU 1800Watt - 3,60kWh - shore power - with or without remote monitoring
ZEL25-2,25-1-0-EU 2500Watt - 2,25kWh - shore power - with or without remote monitoring
ZEL25-3,60-1-0-EU 2500Watt - 3,60kWh - shore power - with or without remote monitoring
ZEL35-2,25-1-0-EU 3500Watt - 2,25kWh - shore power - with or without remote monitoring
ZEL35-3,60-1-0-EU 3500Watt - 3,60kWh - shore power - with or without remote monitoring

Zeliox Plus

ZEL35-3,60-1-1-EU 3500Watt - 3,6kWh - shore power - remote monitoring

Dimensions (general)

Measurements 580 x 420 x 380 mm (l x h x d)

Weight	ZEL18-2,25-1-0-EU	53 Kg
	ZEL18-3,60-1-0-EU	55 Kg
	ZEL25-2,25-1-0-EU	63 Kg
	ZEL25-3,60-1-0-EU	65 Kg
	ZEL25-2,25-1-1-EU	63 Kg
	ZEL35-3,60-1-1-EU	65 Kg

Product identifier

Zeliox - lithium-ion battery powered Sinewave inverter

Product Identification Number (PIN)

Unique serial number on side, format: XX-XXXX (e.g. "20-0001")

Initial supplier identifier

Zeliox BV
Spaarpot 13, 5667 KV, Geldrop
the Netherlands
www.zeliox.com

Emergency telephone number

+31 40 3400 383 General / Sales
(only during office hours 08:00-17:00 CET)

+31 40 3400 384 Service
(only during office hours 08:00-17:00 CET)

Notice of Copyright

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2. Warnings

WARNING: this is a category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user contradiction in terms to take additional measures.

WARNING: This is a **Class 9 (hazardous material UN3481)** electrical device. This means it is a power source with high energy density and dangerous materials in a closed metal case.

WARNING: Do not submerge in water, do not short-circuit. Do not open the Zeliox' housing. Make sure the Zeliox has been properly installed according to the manual. The installation of a Zeliox must follow national safety regulations. Installation must be performed by professional installers only. Switch off the Zeliox completely (Master Kill Switch OFF) before altering the cables / installation.

WARNING: The Zeliox must be handled by qualified and trained personnel only. The lowest protection degree of the Zeliox is IP20. **This is a Class I product.** Only connect 230VAC IN from a source that is connected to electrical earth, including any extension cords between the source and the unit.

Attention:

- Do not open the Zeliox.
- Do not mount the Zeliox upside down or on one of the sides.
- Do not discharge a new Zeliox before it has been fully charged first.
- Check if the Zeliox has not been damaged during transport. If damaged, contact your dealer / supplier.

For more, in depth safety information, please see Appendix II – MSDS (Material Safety Data Sheet)

3. General information

When the Zeliox is not used for longer periods of time it must be stored fully charged, Master Kill Switch switched off and checked and recharged every 6 months.

ATTENTION: Read the safety instructions before installing the Zeliox.

ATTENTION: When installing the Zeliox, do not mount it upside down or on the sides. Do not cover or block the air inlets of the Zeliox to insure the battery does not overheat.

ATTENTION: Make sure the Zeliox is switched off before starting the installation

The Zeliox is designed for indoor, household and industrial use.

Transport

The Zeliox is classified as Class 9 hazardous material UN3481 and tested according to UN 38.3. **Transport of the Zeliox must always be in original certified packaging.** The transport of Zeliox must only be handled by trained people in accordance with ADR, RID and IMDG. For transport by air (IATA) the packaging has to be in accordance with P965, **the original Zeliox transport case complies to this standard.**

Disposal

Batteries marked with the recycling symbol must be processed via a recognized recycling agency. By agreement, they may be returned to the manufacturer. Batteries must not be mixed with domestic or industrial waste.

4. Safety protections

230V	230V AC input - protected by OCP Overcurrent Protection
	230V AC output - protected by RCBO Residual Current Device with Overload Protection
DC	DC Input - protected by 100AT fuse (not replaceable)
	DC output - protected by 20AT fuse (not replaceable, on input side of DCDC converter)
Isolations	Isolation guard - output shuts down in case of isolation fault
	L/N relay hazard - hardware protected
	PE/N relay hazard - hardware protected
Battery	Lithium battery - protected by 150AT fuse (2500W) / 200AT fuse (3500W) (not accessible nor replaceable from the outside)
	Low temperature – protects the battery in case of low temperature
	High temperature – protects the battery in case of high temperature
	Battery cell under voltage – individual cell monitoring for low voltage, deep discharge
	Battery cell over voltage – individual cell monitoring for high voltage, overload, over charge

5. Certifications

General

IEC/EN 62040 Class - C2 RF emission
requirements.

RF emission tests:

- Ea) AC/DC supply interference voltage per
IEC/EN 62040
- Eb) I/O line interference voltage per IEC/EN
62040
- Ec) Radiated EM fields, IEC/EN 62040, by using
an EM-clamp/ CDNs
- Ed) Mains harmonic emission, EN 61000-3-2

Immunity tests:

- Ia) ESD (air discharge, IEC 61000-4-2) IEC/EN
62040
- ESD (contact discharge, IEC 61000-4-2)
IEC/EN 62040
- Ib) EFT (burst, EN 61000-4-4) acc. IEC/EN
62040
- Ic) Surge (EN 61000-4-5) acc. IEC/EN 62040
- Id/e) Conducted/ radiated EM fields (EN
61000-4-3/6) acc. IEC/EN 62040
- If) Mains interrupts (IEC 61000-4-11) acc.
IEC/EN 62040

Electrical safety

- Sa) Bonding test acc. IEC/EN 60335
- Sb) Insulation resistance acc. IEC/EN 60335
- Sc) High voltage insulation acc. IEC/EN 60335
- Sd) Leakage current acc. IEC/EN 60335,
IEC/EN 60335

Low Voltage Directive

2014/35/EU EN62368-1:2014

RoHs Directive

2011/65/EU EN50581:2012

6. Installation

Warning

Please take care of the installation notes. Make sure the Zeliox is properly installed. When done incorrectly, the Zeliox functionality is compromised.

The Zeliox is IP20. This device must be placed indoors. Zeliox should be protected from water (in all forms) and excessive dust, mud, sand etc.

Do not block the ventilation holes of the Zeliox. Make sure a minimum distance around the Zeliox is 25mm, at the right (cable connecting) side 75mm

Risk of electrical shock when opening the housing of Zeliox. Switch the Zeliox completely OFF, remove power cord from mains when one or more cables are damaged.

6.1 Vehicle power requirements

Requirements

To be able to use the vehicle charging method, the van must be equipped with the right size cables. The on-board battery of the vehicle itself must deliver a voltage range of 11-30V and an current of > 80A (!). Use the right cable.

- If: length cable
- < 2 meters then minimum diameter is 16mm² length cable
 - > 2 meters then minimum diameter is 25mm² (max. 10 meter)

The charge cables, either AC or DC must be shorter than 10 meters.

6.2 Placement of Zeliox

Vehicle installation

Installation must strictly remove the safety regulations in compliance with the enclosure, installation, clearance, casualty, markings, and segregation requirements of the end-use application. Installation must be performed by qualified and trained installers only.

Switch off the system and check for hazardous voltages before changing any connection!

The Zeliox must be placed on a stable, solid surface. The front should be visible as well as the right side of the Zeliox. The front is important to switch it on and off, also the battery information and errors are shown here. The side is where the input and output connectors are placed.

Flat floor

Make sure the surface is stable, ruggedized and flat. Place the Zeliox in proper directions as described.



Mark the holes for the mounting plates. Remove the Zeliox, drill and prepare the holes for M8 bolts. **For measurements, see Appendix III.** Use at least 2 bolts for each mounting plate.

Bolt one mounting plate to the floor. Zeliox mounting plates are included in the packaging. Slide Zeliox in the mounting plate. Bolt the second mounting plate to the floor.

Heavy load hazard! The use of two people to lift and mount the unit is mandatory. Make sure the floor can easily support a load of 65 kilos. Do not drop the Zeliox, this can lead to unsafe situations and malfunction.

6.3.1 Connect Zeliox to Vehicle - plug & play

Plug and play

Start with the (optional) 12V Output plug (Anderson 50A plug, grey) and connect it to the Zeliox. Secondly, attach the Input plug (Anderson 175A, red). Make sure the connectors have clicked.

6.3.2 Zeliox Input Connections

Shore power

Only use the shore power cable which belongs to the Zeliox. Make sure the connector clicks in place. Make sure the wall plug connection is properly grounded.



Remote control (optional)

Connect the remote dashboard switch to the Zeliox. Make sure the connector is pushed in the right way (note the (optional) notch) and secure with a few twists of the ring (screw thread). See for more information section 6.5.

Please note: this is an optional feature.



Anderson 175A

Large Anderson plug, 175A, used for connection of the on board vehicle battery to the Zeliox.

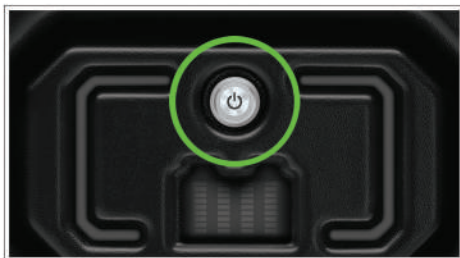
Make sure the connecting clicks in place; without proper connection good functionality of the Zeliox cannot be guaranteed. Please note: the 12V cable connecting vehicle battery to the Zeliox must be capable of loads up to 80A.



6.4 Activating Zeliox

Power Switch On/Off

The Zeliox can be switched on if all connections are executed according to the prescribed requirements. Out of box, the Master Kill Switch (MKS) will be in Off position. Set this switch to 1, ON. Then proceed with the On/Off switch on the front of the Zeliox. The blue ring of the switch will light up, followed by the Zeliox start-up sequence. After the beep, the Zeliox is in standby.



Power Usage

Please note: when Zeliox is switched on, the power usage is about 25W. Switch the Zeliox off when not in use.

- Standby time with 2,25kWh battery about 60 hours / 2,5 days
- Standby time with 3,6kWh battery about 90 hours / 3,5 days

When switched off via Power On/Off switch AND Remote Monitoring OFF the power usage is about 0,5W

- Standby time with 2,25kWh battery about 3000 hours / 100+ days
- Standby time with 3,6kWh battery about 4500 hours / 175+ days

When completely switched off via MKS (Master Kill Switch, see 7.2) the power usage less than 0,25W.

- Standby time with 2,25kWh battery about 6000 hours / 200+ days
- Standby time with 3,6kWh battery about 6000 hours / 200+ days

Please note:

A lithium battery has a small natural leak current and therefore it is recommended not to exceed the non-loading time of more than 200 days. Check the Zeliox every 100 days on battery voltage and charge if necessary (< 50%). Store in a dry and dust free environment.

Please note:

When the Zeliox is shipped for a longer period of time, make sure the following measures are taken:

1) charge till 100% preferably via Shore Power, make sure the Battery Level Indicators are showing all (10) LED's and the side Battery Monitor Pro shows 100% State of Charge and a beep has been observed.



2) switch off Zeliox by clicking the Power Switch



3) switch off MKS push the button (OFF) for Master Kill Switch. All the screens and lights are off.



4) Store location should be dry and free of dust.

When unpacking Zeliox after transport, activate the Zeliox by clicking the buttons in reverse order; (after necessary installation on floor, connecting the cables etc. etc.)

1) switch on MKS

2) switch Zeliox on and charge the Zeliox.

Please note, the Battery Monitor Pro will be reset @ 100% State of Charge, therefore fully recharge the Zeliox again. When charging is complete, a beep will sound. If still blinking (= synchronise required): push both left and right arrow for 4 seconds. After 4 seconds it will stop blinking, meaning synchronisation is done.

6.5 Remote Connection (optional)

Dashboard on/off switch

A remote connection can be placed on the vehicle's dashboard and can be used to switch the Zeliox remotely. This can be useful to prevent accidental battery drain. The cable should be shorter than 10 meters.



Cabin

Make sure the switch is placed visible and reachable for the vehicles driver.

Make a 19mm hole and pull a cable from the loading bay area through all small cavities into dashboard. Make sure the cable is well protected and can't be damaged in use. Connect the cable to the wires of the blue connector. Use the wiring scheme to connect the wires in the right order. Use proper ways of connecting (soldering or connectors, insulate all connections). Place the switch in the hole with the on/off symbol pointing up. Secure it with nut. Next, connect the cables via blue connector. Connect the cable at the Zeliox. Make sure the blue light illuminates when pressed once, and off when pressed again.

Cable to Zeliox	white	1		1	red	Blue Connector optional
	brown	2		2	green	
	green	3		3	blue	
	yellow	4	Contact ON			
	grey	5		5	black	
	pink	6	600 Watt Indication			
	blue	7	Shore Indication*			
	red	8	Not Connected			

*(open = normal. - gnd = shore)

Cable to Zeliox – explanation per wire:

1 White should be connected to 1 Red @ blue connector (for switch @ dash)

2 Brown should be connected to 2 Green @ blue connector (for switch @ dash)

3 Green should be connected to 3 Blue @ blue connector (for switch @ dash)

4 Yellow should be connected to contact ON.

5 Grey should be connected to 5 Black @ blue connector (for switch @ dash)
>> cables 1 to 5 are used for the power plug functions, located @ dashboard.

6 Pink Increase idle motor RPM when load increases.
Relay contact: Active low when converter power load is >600W

7 Blue Acoustic alarm, Driver for immobiliser; ignition interlock
Active low when shore power is detected

8 Red not connected

7.1 Connection of Electrical Devices

USB

Please note: only connect USB powered device like mobile phones, power banks etc.

Output Current 1A and 2A, please check the user's manual of the electrical device before connecting
Voltage: 5V



Cigar Lighter Socket (optional)

Please note: only small devices. Do not plug in power splitters. Do not short cut.

Output Max. Current 10A. Please note these 10A is used for combined currents of the Cigar Lighter Socket and Anderson connector!
Output Voltage: 12V

Anderson connector 50A (grey) (optional)

Please note: the small Anderson 50A plug is OUTPUT power.

Output Max. Current 25A.
Output Voltage: 12V



Anderson connector 50A (red) (optional)

Please note: the small Anderson 50A (red) is INPUT power. Warning: should only be connected to the solar panels (optional).

Input Max. Current 15A
Input Voltage: 75V

230V

Please note: only connect the right type of power plugs > Schuko/Type F (including grounded connection)

Output Current 16A.

Output Voltage: 230V

Warning: when using shore power, the isolation monitor is disabled. The earth leakage protection of Zeliix is enabled. Make sure the wall plug has proper grounded connection.



7.2 Side functions (behind cover)

RCBO Residual Current Device with Overload Protection

Protects (without shore power connection) the Zeliix for earth leakage and overload in 230V area.

Maximum load 10A. Correct position: RED arrow (GREEN means safe, off).
(for 1800 / 2500 Watt version)

Maximum load 16A. Correct position: RED arrow (GREEN means safe, off).
(for 3500 Watt version)



OCP Overcurrent Protection

Protect for overload in 230V area.
Maximum load 10A. RED arrow (GREEN means safe, off).
(for 1800 / 2500 Watt version)

Protect for overload in 230V area.
Maximum load 16A. RED arrow (GREEN means safe, off).
(for 3500 Watt version)

Serial number plate

Serial number plate; Zeliox type of identification.

Battery Watch Pro

The Battery Watch Pro is for information purposes only. Do not attempt to re-program the Zeliox, as critical malfunction could happen. Risk of electrical shock. Do not open.

Please note, the Battery Monitor Pro will be reset @ 100% State of Charge, therefore charge the Zeliox again full. After loading is completed, a beep will sound. If still blinking (= synchronise required): push both left and right arrow 4 seconds. When pushing left or right arrow, it will stop blinking, synchronisation done.

Master Kill Switch

Master Kill Switch (MKS) has two positions: OFF > the Zeliox is completely switched off. Virtually no power consumption. Master Kill Switch (MKS) ON > the Zeliox is ready to be switched on. This is not the power on/off button. The Battery Watch Pro will be active.



See 6.4 for information about On/Off button.

When using the Master Kill Switch (MKS), all systems are reset. For example, the State of

Charge of the battery is reset to 100%. To have reliable read out of State of Charge, charge the battery completely and the Zeliox will automatically "synchronise" the Battery Watch Pro. Manually - if necessary - by pushing arrows left and right simultaneously for 4 seconds.

Front screen battery level state of charge indicator will remain functional and reliable. This is because the front screen uses an alternative measuring system.

(optional)

The MKS will also disable the functionality of the Remote Monitoring System. When Zeliox is in use, data will be send. Please note, some countries or areas will have increased data costs. Please switch the Zeliox completely off (by using MKS, 0 position) to prevent accidental use of the Remote Monitoring System. Expensive countries are: Turkmenistan, Uzbekistan and Kyrgyzstan. Less expensive: Iran an Kazakhstan.

Warning: remote monitoring uses the GSM/GPRS network via QUAD-band, 850 / 900 / 1800 / 1900 Mhz. The use of certain bandwidth depends on the network.

(optional)

The MKS will also disable the functionality of the Remote Monitoring System. When Zeliox is in use, data will be send. Please note, some countries or areas will have increased data costs. Please switch the Zeliox completely off (by using MKS, 0 position) to prevent accidental use of the Remote Monitoring System.

Expensive countries are: Turkmenistan, Uzbekistan and Kyrgyzstan. Less expensive: Iran an Kazakhstan.

Warning: remote monitoring uses the GSM/GPRS network via QUAD-band, 850 / 900 / 1800 / 1900 Mhz. The use of certain bandwidth depends on the network.

External Connector – not to be used

Do not use this connector. This is not a RJ45 connector for normal use. Warranty void if RJ45 is connected.

8. Explanation of Functionalities

8.1 What are the scenarios during use?

Do not use the Zeliox at temperatures below 0°C (battery could be damaged).

Zeliox switched OFF:

5 Volt USB out: active 48h after shut down	Load function active:	> via vehicle - with engine running
12 Volt out: active 48h after shut down	the ring [] blinking green	> via shore power - if connected
230 Volt out: off	stops loading when battery is at 100%	> via solar - if connected (optional accessory)

Zeliox switched ON:

5 Volt USB out: active	Load function active:	> via vehicle - with engine running
12 Volt out: active	the ring [] blinking blue	> via shore power – if connected
230 Volt out: active	stops loading when battery is at 100%	> via solar - if connected optional accessory

General: > if shore power cables are connected, the immobilizer is active *
> if power consumption exceeds 600W, idle motor RPM's are increased *
> remotely on / off switching of Zeliox is possible via the dashboard remote switch *

** this is an optional feature and is built in separately*

8.2 Charging

There are several ways to charge the Zeliox. Do not charge the Zeliox at temperatures below 0°C (battery could be damaged).

Via Vehicle

12V always, via Anderson 175A plug (red)
make sure the cables are properly connected

Via Shore Power

230V always except when MKS is off via shore power cable make sure the 230V connection is properly grounded

Via Solar Power (optional)

12V always, via Anderson 50A plug (red)
maximum result when sun is at optimum angle

Via Secondary Zeliox (optional)

230V always except when MKS is off via shore power cable from 230V output to shore power input this is an optional feature - please note: not recommended

8.3 Using

There are several ways to use the Zeliox:

Via USB (optional, see 7.1)

5V always (until 48h after Zeliox switched off) via USB cable.
If needed longer than 48h, reset Zeliox (e.g. push on/off switch) and another 48h are available.
maximum 1 and 2A, please check your device manual

Via CLS (optional, see 7.1)

12V only when Zeliox is switched on via Cigar Lighter Socket connector
max. 20A, shared with Anderson 12V connection

Anderson connector 50A (grey, see 7.1)

12V only when Zeliox is switched on via Anderson connector 50A (grey)
Max. 25A, optional via HUB 12V, please contact dealer

Via 230V (see also 7.1)

230V only when Zeliox is switched on via standard 230V plug make sure the combined usage does not exceed 2500 or 3500 Watt

9. Troubleshooting

The Zeliox has several self-preserving functions built in. Some of these are made visible through the screen. An app is available for easy troubleshooting (for iOS and Android).

9.1 Front screen lights

	colour	light	meaning	remarks
On/Off button ring	grey	off	Zeliox is switched off	none
	blue	on	Zeliox is switched on	ready to use the Zeliox: standby mode
	colour	frequency	meaning	remarks
Ring with light []	blue	slow	standby mode	ready to use the Zeliox
	blue	fast	heavy electrical load	Zeliox can be used till 2500/3500 Watt
	yellow	slow or fast	Warning: battery 30% or less	prepare loading via vehicle or shore power
	red	slow or fast	Warning: battery 10% or less	start vehicle or plug in shore power
	red	continuously	Zeliox shuts down, battery empty	start vehicle or plug in shore power
	green	slow or fast	loading via vehicle or shore power	battery indicator will show progress
	white	fast	Start up sequence	only shortly visible
	colour	amount of LED's	meaning	remarks
Battery symbol	green row	7	battery has 100-30% capacity	none
	red row	3	battery has only 30% capacity or less	prepare loading via vehicle or shore power
	red row	2	battery has only 20% capacity or less	start vehicle or plug in shore power
	red row	1	battery has only 10% capacity or less	start vehicle or plug in shore power

9.2 Side lights

Side of the Zeliox, first row:

name		colour	meaning	remarks
ISO.OK	on	green	insulation guard functioning	should be on, all is good
FAULT	on	red	insulation guard detects fault	please check all electrical devices plugged in the Zeliox for faults. If faulty device is found and unplugged, then switch Zeliox on.
SHORE	on	yellow	indicates shore power is plugged in	please note: wall socket must have proper earth as insulation guard of Zeliox switches off.
CHARGE	on	green	charging via vehicle or shore power	none

Side of the Zeliox, second row:

name		colour	meaning	remarks
BAT.LOW	on	yellow	warning for 30-10% capacity	prepare loading via vehicle or shore power
BAT.HOT	on	red	temperature battery over 50°C	warning: using Zeliox could damage the battery
BAT.COLD	on	blue	temperature battery below 5°C	warning: charging / using could damage the battery
FULL	on	green	battery state of charge 100%	loading of battery is switched off

9.3 Acoustic signals

Interval	when	meaning	remarks
1x one-time beep	at startup	Zeliox inverter is switched on	all is good
1x one-time beep	at charging	battery is fully charged (State of Charge 100%)	all is good
1x beep – per minute	during use	battery has only 30% capacity or less	prepare charging
1x beep – per 10 sec	during use	battery has only 10% capacity or less	start vehicle or plug in shore power
1x beep – per 5 sec	switched off	battery has only 10% capacity or less	start vehicle or plug in shore power

9.4 List of errors

The Zeliox has several self-preserving functions built in. Some of these are made visible through the screen. An app is available for easy troubleshooting (for iOS and Android).

problem	possible cause	remedy
switching Zeliox on, nothing happens	disconnected cables battery too empty (<2%) or poor condition internal fault	check if all input cables are connected start vehicle / shore power, wait 10 minutes push the "master kill switch" twice (off > on = reset)
switching Zeliox off, nothing happens	internal fault	push the "master kill switch" twice (off > on = reset)
no light around switch, Zeliox is on	led of switch is broken	led switch should be repaired by dealer
no light rings []	internal fault led of ring is broken	push the "master kill switch" twice (off > on = reset) ring must be repaired by dealer
no battery level indicator	battery too low (<2%) or poor condition internal fault	start vehicle / shore power, wait 10 minutes push the "master kill switch" twice (off > on = reset)
no USB power	disconnected USB cable battery too empty (<2%) or poor condition disconnected input cables 12V / shore power blown fuse	check if USB cable is connected start vehicle / shore power, wait 10 minutes check if all input cables are connected must be checked by dealer
no 12V power	disconnected 12V cable battery too empty (<2%) or poor condition disconnected input cables 12V / shore power blown fuse	check if 12V cable is connected start vehicle / shore power, wait 10 minutes check if all input cables are connected must be checked by dealer
no 230V power	disconnected 230V cable battery too empty (<2%) or poor condition disconnected input cables 12V / shore power blown fuse Fuse RCBO triggered to GREEN position	check if 230V cable is connected start vehicle / shore power, wait 10 minutes check if all input cables are connected must be checked by dealer check if RCBO earth leakage circuit breaker is in RED arrow position (green=safe & off, red=power & on))
no Anderson HUB power	disconnected Anderson cable battery too empty (<2%) or poor condition disconnected input cables 12V / shore power blown fuse	check if Anderson cable is connected start vehicle / shore power, wait 10 minutes check if all input cables are connected must be checked by dealer

problem	possible cause	remedy
battery does not load while connected to shore power	AC input voltage or frequency out of range or unstable	make sure that the AC input voltage is between 190 - 270 V and frequency between 45-65Hz
Charge current is too low	high ambient temperature	try to lower the Zeliox ambient temperature. Make sure ventilation areas at bottom, front and back are not blocked.

10. Warranty

Do not use the Zeliox without reading this manual completely. Improper installation and/or use of the Zeliox may be dangerous and may cause damage to other electrical equipment.

Do not attempt to repair the Zeliox. The Zeliox can only be repaired by Zeliox dealer. Do not open the housing of the Zeliox. Risk of electrical shock. Warranty void if opened. No serviceable parts inside.

Zeliox warrants - for the original purchaser a 24 months period from the date of purchase, when installed properly – the device will be working as described in this manual. If the Zeliox is malfunctioning – if used following the recommendations in this manual, normal use - Zeliox will repair or replace the device.

Excluded from this warranty are the following cases:

- If the Zeliox is used outside the recommendations in this manual,
- If the Zeliox' cables have had reversed polarity,
- If the Zeliox is abused in general, neglect and/or excessive wear and tear, if dropped, if hit with lightning, if exposed to RFI/EMI outside the specification, etc. etc.
- If the Zeliox is modified or repaired without authorization of Zeliox,
- If the Zeliox is used in other applications than automotive and/or solar without the explicit written confirmation of Zeliox.

How to return the Zeliox for repair:

- You'll need the following:
 - proof of purchase,
 - serial number (written on the side, behind the cover),
 - a description of the problems (application, scenario what went wrong).
- Please contact your dealer. Do not ship without confirmation of dealer or Zeliox.
- Please note that the Zeliox must be shipped as dangerous goods according to UN3481 (device containing lithium-ion batteries).

Zeliox BV
 Spaarpot 13, 5667 KV, Geldrop
 the Netherlands

www.zeliox.com

APPENDIX I – Specifications Zelixo & Zelixo Plus

Name	Zelixo Compact	Zelixo Custom	Zelixo Custom	Zelixo Custom	Zelixo Custom	Zelixo Custom	Zelixo Custom	Zelixo Plus
Description	1600W / 1,2 kWh	1800W / 2,25 kWh	1800W / 3,6 kWh	2500W / 2,25 kWh	2500W / 3,6 kWh	3500W / 3,25 kWh	3500W / 3,6 kWh	3500W / 3,6 kWh / remote
Model no.	ZEL16-1,2-1-0-EU	ZEL18-2,25-1-0-EU	ZEL18-3,6-1-0-EU	ZEL25-2,25-1-0-EU	ZEL25-3,6-1-0-EU	ZEL35-2,25-1-0-EU	ZEL35-3,6-1-0-EU	ZEL35-3,6-1-1-EU
Battery type	Lithium 12V - 100Ah	Lithium 24V - 100Ah	Lithium 24V - 144Ah	Lithium 24V - 100Ah	Lithium 24V - 144Ah	Lithium 24V - 100Ah	Lithium 24V - 144Ah	Lithium 24V - 144Ah
Battery chemistry	LiFePO4	LiFePO4	LiFePO4	LiFePO4	LiFePO4	LiFePO4	LiFePO4	LiFePO4
Battery capacity	100Ah	100Ah	144Ah	100Ah	144Ah	100Ah	144Ah	144Ah
Available capacity	90%	90%	90%	90%	90%	90%	90%	90%
Charge / discharge cycles	4000 times (at 80%)	4000 times (at 80%)	4000 times (at 80%)	4000 times (at 80%)	4000 times (at 80%)	4000 times (at 80%)	4000 times (at 80%)	4000 times (at 80%)
AC input voltage	190-260V	190-260V	190-260V	190-260V	190-260V	190-260V	190-260V	190-260V
AC input frequency	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz
AC input power (charge power)	950W	1250W	1500W	1250W	1500W	1250W	1500W	1500W
AC output voltage	230V AC	230V AC	230V AC	230V AC	230V AC	230V AC	230V AC	230V AC
AC output frequency	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz
AC output Amp limit (A)	10A	10A	10A	10A	10A	16A	16A	16A
AC output power - continuously	1300W	1400W	1400W	2000W	2000W	2800W	2800W	2800W
AC output power - 10 minutes	1600W	1800W	1800W	2500W	2500W	3500W	3500W	3500W
AC output power - peak (10 sec)	2500W	3000W	3000W	3500W	3500W	4500W	4500W	4500W
Operation time 230V - 250W @ 25°C	4h	7h 27m	11h 55m	7h 27m	11h 55m	7h 27m	11h 53m	11h 53m
Operation time 230V - 500W @ 25°C	2h	3h 44m	5h 58m	3h 44m	5h 58m	3h 44m	5h 58m	5h 58m
Operation time 230V - 1000W @ 25°C	1h	1h 52m	2h 58m	1h 52m	2h 58m	1h 52m	2h 58m	2h 58m
Operation time 230V - 1400W @ 25°C	40m	1h 30m	2h 8m	1h 20m	2h 8m	1h 20m	2h 8m	2h 8m
Operation time 230V - 1800W @ 25°C	30m	1h10m	1h52m	1h10m	1h42	1h10m	1h52m	1h52m
Operation time 230V - 1800W @ 25°C	n/a	n/a	10m	1h 2m	1h 2m	1h 2m	1h 2m	1h 2m
Operation time 230V - 2000W @ 25°C	n/a	n/a	n/a	36m	1h 20m	36m	1h 20m	1h 20m
Operation time 230V - 2500W @ 25°C	n/a	n/a	n/a	10m	10m	45m	1h 12m	1h 12m
Operation time 230V - 3000W @ 25°C	n/a	n/a	n/a	n/a	n/a	30m	46m	46m
Operation time 230V - 3500W @ 25°C	n/a	n/a	n/a	n/a	n/a	10m	10m	10m
Discharge rate - switched off via MKS	n/a	0,02A = 4500 hrs = 175+ days	0,02A = 6480 hrs = 270+ days	0,02A = 4500 hrs = 175+ days	0,02A = 6480 hrs = 270+ days	0,02A = 4500 hrs = 175+ days	0,02A = 6480 hrs = 270+ days	0,02A = 6480 hrs = 270+ days
Discharge rate - switched OFF	7mA = 12000 hrs = 900 days (see self discharge battery)	0,1A = 900 hrs = 35 days	0,1A = 900 hrs = 35 days	0,1A = 900 hrs = 35 days	0,1A = 900 hrs = 35 days	0,1A = 900 hrs = 35 days	0,1A = 900 hrs = 35 days	0,1A = 900 hrs = 35 days
Discharge rate - switched ON / Stand-by mode	350mA (max 2500grms), display on; 280 hrs = 11,5 days	1A = 100 hrs = 3,5 days	1A = 144 hrs = 5,4 days	1A = 100 hrs = 3,5 days	1A = 144 hrs = 5,4 days	1A = 100 hrs = 3,5 days	1A = 144 hrs = 5,4 days	1A = 144 hrs = 5,4 days
Maximum efficiency	93%	93%	93%	93%	93%	93%	93%	93%
DC input voltage	12-15V DC	12-15V DC	12-15V DC	12-15V DC	12-15V DC	12-15V DC	12-15V DC	12-15V DC
DC input continuous current	60A	60A	60A	60A	60A	60A	60A	60A
DC output voltage	12V	12V	12V	12V	12V	12V	12V	12V
DC output Amp limit (A)	25A	25A	25A	25A	25A	25A	25A	25A
DC output power (W)	300W	300W	300W	300W	300W	300W	300W	300W
DC output continuous current	25A	25A	25A	25A	25A	25A	25A	25A
DC output maximum current	35A	35A	35A	35A	35A	35A	35A	35A
DC output max impulse current 20 min	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
DC output max impulse current 1 min	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
DC output max impulse current 10 sec	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Operating temperature range	0-50°C	0-50°C	0-50°C	0-50°C	0-50°C	0-50°C	0-50°C	0-50°C
Maximum storage temperature	70°C	70°C	70°C	70°C	70°C	70°C	70°C	70°C
Cooling	forced air	forced air	forced air	forced air	forced air	forced air	forced air	forced air
Connection 230V AC	Zelixo Compact Power Cable	Zelixo Shore Power Cable						
Connection 230V AC	1x Schuko standard type 6C C18	2x AC power socket (CEE7/3 "Schuko-German" / CEE 7/5 "French" / others on request)						
Connection 12V DC input	Anderson 50A	Anderson 175A	Anderson 175A	Anderson 175A	Anderson 175A	Anderson 175A	Anderson 175A	Anderson 175A
Connection 12V DC output	Anderson 50A	Anderson 50A	Anderson 50A	Anderson 50A	Anderson 50A	Anderson 50A	Anderson 50A	Anderson 50A
IP rating	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20
Product weight	23 kg	53kg	55kg	63kg	65kg	68kg	65kg	65kg
Product dimensions (h x w x l)	420 x 190 x 355 mm (h x w x d)	580 x 420 x 380 mm (h x w x d)	580 x 420 x 380 mm (h x w x d)	580 x 420 x 380 mm (h x w x d)	580 x 420 x 380 mm (h x w x d)	580 x 420 x 380 mm (h x w x d)	580 x 420 x 380 mm (h x w x d)	580 x 420 x 380 mm (h x w x d)
Shore power safety system		Auto-detect Shore Power > shore power must have working earth safety						
Stand-by mode safety		auto-detect inactivity and auto-wake up						
Low battery warning		light and sound warning system for low battery						
Protection against		short circuit / overload / AC back feed / high input ripple voltage						
Remote data read-out (optional)		read out of Zelixo data (e.g. Voltage, State of charge) via Desktop or Smartphone						
GPS (optional)		read out of Zelixo location via GPS						
Solar Power input (optional)		alternative power input for the Zelixo						
Initial Supplier Identifier		Zelixo						
Address		Spartop 13, 5667 KV, Geldrop						
General telephone number		0031 40 3400 383 only during office hours 08:00-16:45						
Service telephone number		0031 40 3400 384 only during office hours 08:00-16:45						
Version		V 2.0.2						
Version date		04-05-2021						

APPENDIX II - MSDS - (Material Safety Data Sheet)

The Zeliox has several self-preserving functions built in. Some of these are made visible through the screen. An app is available for easy troubleshooting (for iOS and Android).

SECTION 1. IDENTIFICATION

Product identifier	Zeliox - lithium-ion battery powered Sinewave inverter	
Product Identification Number	Unique serial number on side, format: XX-XXXX (e.g. "18-0001")	
Other means of identification	DC to AC Sinewave inverter Lithium-ion battery	
Recommended use	This lithium-ion battery powered inverter should only be used in a Vehicle.	
Restrictions on use	Do not overheat, do not use under water, do not short-circuit.	
Initial supplier identifier	Zeliox HQ Spaarpot 13, 5667 KV Geldrop www.zeliox.com	
Emergency telephone number	0031 40 3400 383	General / Sales (08:00-17:00 CEST)

SECTION 2. HAZARD IDENTIFICATION

Classification	Class 9
Hazard	It may cause heat generation or electrolyte leakage if battery terminals contact with other metals. Electrolyte is flammable. In case of electrolyte leakage, move the battery from fire immediately.
UN Number	UN 3481

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Zeliox 2,25 kWh:

Chemical Name	CAS no.	Common name / Synonyms	
LiFePO ₄	-	Lithium Iron Phosphate	
Chemical Element	Chemical Index	CAS no.	EC no.
LiFePO ₄	26,61%	15365-14-7	604-917-2
Electrolyte	20,83%	/	/
Graphite	14,32%	7782-42-5	231-955-3
Aluminium	10,90%	7429-90-5	231-072-3
Copper Foil	8,80%	7440-50-8	231-159-6
Battery Cover	8,39%	/	/
Aluminium Foil	4,71%	7429-90-5	231-072-3
Diaphragm	3,00%	9003-07-0	618-352-4

Zeliox 3,6 kWh:

Chemical Name	CAS no.	Common name / Synonyms	
LiFePO ₄	-	Lithium Iron Phosphate	

Chemical Element	Chemical Index	CAS no.	EC no.
LiFePO ₄	26,61%	15365-14-7	604-917-2
Electrolyte	20,83%	/	/
Graphite	14,32%	7782-42-5	231-955-3
Aluminium	10,90%	7429-90-5	231-072-3
Copper Foil	8,80%	7440-50-8	231-159-6
Battery Cover	8,39%	/	/
Aluminium Foil	4,71%	7429-90-5	231-072-3
Diaphragm	3,00%	9003-07-0	618-352-4

SECTION 4. FIRST-AID MEASURES

The product contains organic electrolyte. In case of electrolyte leakage from the battery, actions described below are required.

Inhalation

Remove to fresh air immediately. Take to a medical treatment.

Skin contact

Wash the contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, this may cause sores on the skin.

Eye contact

Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Take a medical treatment. If appropriate procedures are not taken, this may cause an eye irritation.

Special risks

- R22 Harmful if swallowed
- R43 May cause sensitisation by skin contact

Safety advice

- S2 Keep out of the reach of children
- S22 Do not breathe dust
- S24 Avoid contact with skin
- S26 In case of contact with eyes, rinse immediately with plenty of water and seek

medical advice

- S36 Wear suitable protective clothing
- S37 Wear suitable gloves
- S43 In case of fire use water, type D or CO₂
- S45 In case of accident or if you feel unwell seek medical advice immediately.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

- Suitable Extinguishing Media > Immersed in water / cooled / ventilate, Type D fire extinguisher, CO₂
- Unsuitable Extinguishing Media > Foam extinguishers, hose

Specific Hazards Arising from the Product

Following cell overheating due to external source or due to improper use, electrolyte leakage or battery container rupture may occur and release inner component/material to the environment.

Eye contact: the electrolyte solution contained in the battery is irritant to ocular tissues.

Skin contact: the electrolyte solution contained in the battery causes skin irritation.

Ingestion: the ingestion of electrolyte solution causes tissue damage to throat and gastro/respiratory tract.

Inhalation: contents of a leaking or ruptured battery can cause respiratory tract, mucus, membrane irritation and oedema.

Special Protective Equipment and Precautions for Firefighters

Use self-contained breathing apparatus to avoid breathing irritant fumes. Wear protective clothing and equipment to prevent body contact with electrolyte solution.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precaution, Protective Equipment and Emergency Procedures

Remove personnel from area until fumes dissipate. If the skin has come into contact with electrolyte, it should be washed thoroughly with water.

Methods for Containment and Cleaning up

The material contained within the batteries would only be expelled under abusive conditions. Using shovel or broom, cover battery or spilled substances with dry sand or vermiculite, place in approved container (after cooling if necessary) and dispose accordance with local regulations.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods.

Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in original housing.

The Zeliox must be fully charged before storing it for a longer period of time. Check every 100 days and fully recharge.

Conditions for Safe Storage

Store in a cool (preferably between 10-30°C) and ventilated area, away from moisture, sources of heat, open flames, food and drinks. Keep adequate clearance between walls and batteries. Temperatures above 70°C may result in battery leakage and rupture. Since a short circuit can cause burns, leakage and rupture hazard, keep batteries in original housing and do not take the housing apart and/or disassemble.

SECTION 8. EXPOSURE CONTROL / PERSONAL PROTECTION

Control Parameters	X
Notes	X
Appropriate Engineering Controls	X

Individual Protection Measures:

Eye/Face Protection

Not necessary under normal use. Wear safety goggles or glasses with side shields if handling a leaking or ruptured battery.

Skin Protection

Not necessary under normal use. Use rubber protective gloves if handling a leaking or ruptured battery.

Respiratory Protection

Not necessary under normal use. In case of battery rupture, use self-contained full-face respiratory equipment.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Rectangular shaped dark grey steel casing with plastic front and back, aluminium brackets on top and bottom of the device.
Specific Energy	2,25 kWh or 3,6 kWh
Voltage	input 12V / output 5V, 12V, 230V
Current Limit	At 5V 2A / at 12V 20A / at 230V 16A
Weight	53 Kg (1800W/2,25kWh) 55kg (1800W/3,6kWh) 63 kg (2500W/2,25kWh) 65 kg (3500W/3,6 kWh)

SECTION 10. STABILITY AND REACTIVITY

Reactivity	not applicable
Chemical Stability	Product is stable under conditions described in Section 7
Possibility of Hazardous Reactions	Short circuit followed by inflammation

Conditions to Avoid

Heat above 70°C or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble. Short circuit. Expose over a long period of time to humid conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

_ Inhalation _ Skin contact _ Eye contact _ Ingestion

Acute Toxicity	LC50	x
	LD50 (oral)	x
	LD50 (dermal)	x

Skin Corrosion / Irritation

The electrolyte solution contained in the battery causes skin irritation.

Serious Eye damage / Irritation

The electrolyte solution contained in the battery is irritant to ocular tissues.

STOT (Specific Target Organ Toxicity) – Single Exposure

The ingestion of electrolyte solution causes tissue damage to throat and gastro/respiratory tract. Contents of a leaking or ruptured battery can cause respiratory tract, mucus, membrane irritation and oedema.

SECTION 12. ECOLOGICAL INFORMATION

When properly used or disposed, the Lithium-Ion batteries do not present environmental hazard.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with applicable regulations which vary from country to country. (In most countries, the trashing of used batteries is forbidden and the end-users are invited to dispose them properly, eventually through not-for-profit organizations, mandated by local governments or organized on a voluntary basis by professionals). Lithium-Ion batteries should have their terminals insulated and be preferably wrapped in plastic bags prior to disposal.

SECTION 14. TRANSPORT INFORMATION

Regulation	-
UN No.	3481
Proper Shipping Name	rare earth lithium power rechargeable battery
Technical Name (for N.O.S. entry)	-
Transport Hazard Class(es)	9
Packing Group	II

Special Precautions

CAUTION: risk of fire, explosion and burns. Do not short-circuit, crush, incinerate or disassemble Zeliox housing nor battery.

Environmental Hazards

Not applicable

Transport in Bulk Acc. To Annex II of MARPOL 73/78 and the IBC Code

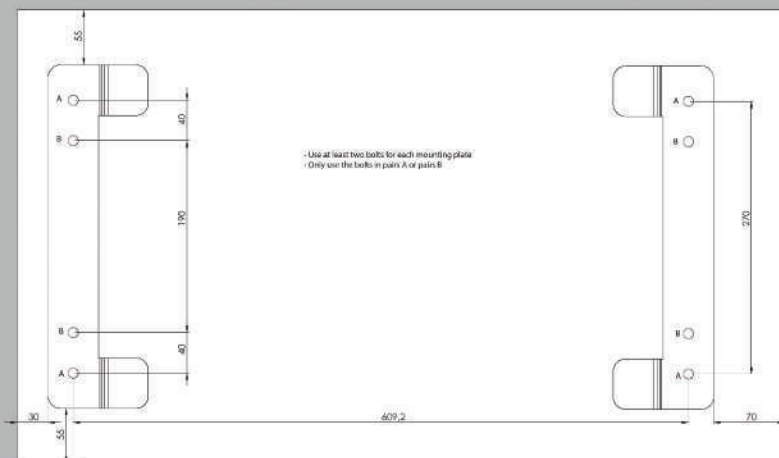
Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Not applicable

APPENDIX III – measurements



Use at least 2 bolts for each mounting plate. Only use the bolts in pairs A and/or pairs B.



APPENDIX IV – Charging times

Zeliox:	1800W	2.25kWh	3.6kWh
Shore power:	30A	3h	4h 48m
Vehicle power:	25A	3h 35m	5h 46m
Solar power*:	15A	6h	9h 35m

Zeliox:	2500W	2,25kWh	3,6kWh
Shore power:	40A	2h 15m	3h 36m
Vehicle power:	25A	3h 35m	5h 46m
Solar power*:	5A	6h	9h 36m

Zeliox:	3500W	2,25kWh	3,6kWh
Shore power:	50A	1h 48m	2h 53m
Vehicle power:	25A	3h 35m	5h 46m
Solar power*:	15A	6h	9h 36m

* = Solar Power 500W p 440 W max, at the best circumstances (full available sun), factor 0,85.



MANUFACTURER

ZELIOX EXCESSIVE POWER

ADDRESS

Spaarpot 13
5667 KV Geldrop
The Netherlands

Declares that the following products

PRODUCT TYPE

lithium-ion battery powered sinewave inverter

MODELS

ZELIOX
ZELIOX PLUS

Conform to the requirements of the following Directive(s) of the European Union :

General

IEC/EN 62040 Class - C2 RF emission requirements.

RF emission tests:

- | | |
|---|---|
| Ea) AC/DC supply interference voltage per | IEC/EN 62040 |
| Eb) I/O line interference voltage per | IEC/EN 62040 |
| Ec) Radiated EM fields, | IEC/EN 62040, by using an EM-clamp/CDNs |
| Ed) Mains harmonic emission, | EN 61000-3-2 |

Immunity tests:

- | | |
|---|--------------|
| la) ESD (air discharge, IEC 61000-4-2) | IEC/EN 62040 |
| ESD (contact discharge, IEC 61000-4-2) | IEC/EN 62040 |
| lb) EFT (burst, EN 61000-4-4) acc. | IEC/EN 62040 |
| lc) Surge (EN 61000-4-5) acc. | IEC/EN 62040 |
| ld/e) Conducted/ radiated EM fields (EN 61000-4-3/6) acc. | IEC/EN 62040 |
| lf) Mains interrupts (IEC 61000-4-11) acc. | IEC/EN 62040 |

Electrical safety

- | | |
|----------------------------------|----------------------------|
| Sa) Bonding test acc. | IEC/EN 60335 |
| Sb) Insulation resistance acc. | IEC/EN 60335 |
| Sc) High voltage insulation acc. | IEC/EN 60335 |
| Sd) Leakage current acc. | IEC/EN 60335, IEC/EN 60335 |

Low Voltage Directive

2014/35/EU	EN62368-1:2014
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RoHS Directive

Theo Schoofs - Managing Director

Zeliox BV
Spaarpot 13, 5667 KV, Geldrop
the Netherlands

www.zeliox.com

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