

Translation of the Original Operating Manual Mobile energy storage system – BattPak5048



Read operating manual before starting any work!
Keep the operating manual for future use!

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2 General

2.1 Operating manual

This operating manual provides guidance on safe and efficient operation and should form a basis of any actions involving the machine. It is an integral part of the machine, which should be kept in the immediate vicinity accessible for its operating personnel.

Prerequisite of safe operation is adherence to all safety and handling instructions. Therefore, before starting any work, the personnel must read carefully and understand the operating manual.

Moreover, the accident prevention regulations applicable at the site of the machine operation and general safety regulations must be complied with.

2.2 Symbols, acronyms, terminology

Symbols, acronyms and specialist terminology used in this document have the following meaning:

	→	See item
	▶	Enumeration
	-	Enumeration
	1	Position number
	1.	Action step
<i>Text in italics</i>		Explanation of facts
		Refers to the document contained in the enclosed documentation. The source of the document is specified in italics behind the symbol.

2.3 Explanation of symbols

Warnings and safety instructions

Warnings and safety instructions in the manual are identified with the pictograms and provided in blocks highlighted in grey.

Warnings and safety instructions, which draw attention to fundamental dangers, are additionally precluded by signal words, which specify the scope of damage. Their structure is as follows:

SIGNAL WORD!
Origin of the danger.
Consequences of ignoring the danger.
- Actions to avoid danger

- ▶ All warnings and safety instructions must be implicitly complied with!
- ▶ During the works, always act with caution, to avoid accidents, personal and material damage!

Pictograms combined with signal words mean:



DANGER!

... draws attention to an immediate danger that, if not avoided, may result in heavy or even fatal injuries.

**WARNING:**

... draws attention to potentially dangerous situations that, if not avoided, may cause heavy or even fatal injuries.

**CAUTION!**

... draws attention to potentially dangerous situations that, if not avoided, may result in slight injuries.

**ATTENTION!**

... draws attention to potentially dangerous situations that, if not avoided, may result in material damage.

Tips and recommendations**NOTE!**

... highlights tips and recommendations as well as information on efficient and trouble-free operation.

Special safety instructions

To make aware of special dangers, the following pictograms are used in combination with the safety instructions:



... marks danger due to electric current.

Failure to observe the safety instructions leads to danger of heavy or fatal injuries.



... marks danger of crushing.

Failure to observe the safety instructions leads to danger of heavy injuries from moving parts.



... marks danger due to hot surface.

Failure to observe the safety instructions leads to danger of burns and heavy skin injuries caused by heat.

2.4 Liability limitation

All data and instructions provided in this manual were compiled with consideration of applicable standards and regulations, state of the art in this field and our long-standing insights and experience.

The manufacturer accepts no liability for damages caused by:

- ▶ Non-observance of the Operating manual
- ▶ Unintended use
- ▶ Employment of unskilled and uninstructed personnel
- ▶ Unauthorised conversions
- ▶ Technical changes
- ▶ Use of non-approved spare parts

The responsibilities agreed in the delivery contract, the General Terms and Conditions as well as the delivery conditions of the manufacturer and the statutory regulations valid at the time of the conclusion of the contract shall apply.

Warranty

The manufacturer guarantees the functional capability of the applied process technology and performance parameters identified.

The warranty period commences with the defect-free delivery.

Wear parts

Wear parts are all parts having direct contact with the processed or machined material during normal operation.

These parts are excluded from warranty and defect claims, insofar as tear and wear resulting from normal operation.

Service life warranty

Service life warranty is granted for wear parts for the period of 6 months from the acceptance of the defect-free product.

Warranty conditions

12 months after delivery of mechanical and electrical components for one-shift operation, except for the wear parts and tools.

The warranty claim expires, if the system was not installed and started up by our experts.

The warranty extends to the replacement parts.

Consequential damages are excluded.

Damage caused by natural wear, deficient or improper maintenance, failure to comply with the operating regulations, excessive loads and use of inappropriate equipment shall be excluded from the warranty.

2.5 Customer service

Our customer service department is available to provide technical information.

Service hotline
02482 – 12 200

You can obtain tips via the regional competent contact person by phone or via fax, email or website at any time.

Moreover, our employees are interested in new information and experience arising from use and which can be valuable for the improvement of our products.

2.6 Copyright

This document is protected by copyright. An unauthorised transfer to third parties, duplication of any kind, including in parts, as well as use and/or disclosure of the content without written permission of the publisher is prohibited.

Non-compliance with this provision is subject to damages. The right for further claims remains reserved.

3 Safety

This section provides an overview of all safety aspects of protection of operators and users from potential dangers, and safe and trouble-free operation.
Disregarding these handling instructions, warnings and safety instructions may pose serious risks.

3.1 Intended use

The BattPak 5048 is designed exclusively for the following purposes:

The BattPak 5048

- is a portable energy system. It is intended for the operation of wired consumers.

**WARNING:
Risk of unintended use!**

Any use beyond the intended use of the machine may result in dangerous situations.

- The machine must be basically used for the intended purpose according to data contained in this document, in particular, within the application limits provided in the technical data.
- Refrain from any use beyond this scope or different use of the machine.
- Refrain from remodelling, refitting or changing the design or separate parts of the machine for the purpose of changing the field of application or applicability of the machine.

- ▶ Any claims for damages resulting from unintended use are excluded.
- ▶ The operator alone is responsible for all damages due to unintended use.

3.2 Rationally foreseeable misuse**WARNING:
Risk of injury caused by misuse!**

When misused, the machine may create dangerous situations for persons and cause heavy material damage.

- Refrain from any misuse of the machine.

Any use of the machine going beyond the intended one, shall be deemed unintended and thus prohibited.

3.3 Responsibilities of the operator

Operator

An operator is every natural or legal person, who uses the machine or delegates its use to others and is responsible for the safety of the user, personnel or third parties in the course of such use.

Operator's duties

The machine is used in the commercial sector. Therefore, the operator of the machine is subject to statutory obligations regarding occupational safety.

In addition to the warnings and safety instructions in this manual, the occupational safety, accident prevention and environmental protection regulations applicable to the field of the machine operation must be adhered to.

The operator, in particular, must:

- ▶ be informed about current occupational safety regulations,
- ▶ determine, through hazard evaluation, any potential additional dangers resulting from specific usage conditions at the site of the machine operation,
- ▶ put necessary behavioural requirements of the operating instructions into practice during the machine tool operation at the operation site,
- ▶ check regularly throughout the service life of the machine, whether the operating instructions drawn up by the operator are in line with the current status of rules and regulations,
- ▶ adjust the operating instructions, where necessary, to the new regulations, standards and operating conditions,
- ▶ exercise control of the competence for installation, operation, maintenance and cleaning of the machine in a clear and unambiguous manner,
- ▶ make sure that all personnel involved with the machine have read and understood the operating instructions. Moreover, the personnel must undergo training in handling the machine at regular intervals and be informed about potential dangers,
- ▶ provide the persons appointed for operating the machine with the prescribed and recommended protective devices.

Moreover, the operator is responsible for ensuring that the machine

- ▶ is always in a technically perfect condition,
- ▶ is maintained according to the specified maintenance intervals, and
- ▶ that all safety mechanisms of the machine are regularly controlled for completeness and functionality.

3.4 Responsibilities of the personnel

The machine is in the commercial use. Therefore, the personnel are subject to statutory obligations regarding occupational safety.

In addition to the warnings and safety instructions in this manual, the occupational safety, accident prevention and environmental protection regulations applicable to the field of operation must be adhered to.

In particular, the personnel must:

- ▶ be informed about current occupational safety regulations,
- ▶ adhere to behavioural requirements set out in the operating instructions issued at the site of the machine operation,
- ▶ properly exercise the responsibilities entrusted to them as regards installation, operation, maintenance and cleaning of the machine,
- ▶ fully read and understand the operating manual before starting work,
- ▶ use the prescribed and recommended protection equipment,

Moreover, scope of responsibility of every person operating the machine includes the duty of always

- ▶ keeping it in a technically perfect condition,
- ▶ performing maintenance, according to the intervals specified,
- ▶ controlling all safety mechanisms for completeness and functionality on a regular basis.

3.5 Personnel requirements

Fundamentals

Any operation with the machine may only be carried out by the persons, capable of performing their work properly and reliably and meet every requirement mentioned.

- ▶ No works can be carried out by the persons, whose response capability is affected, e.g., by drugs, alcohol or medicines.
- ▶ When deploying personnel at the site of operation, always adhere to the applicable occupational and age-specific regulations.

Qualification



WARNING:
Risk of injury for unqualified personnel!

Improper operation can result in significant personal and material damage.

- Any operations must be only carried out by the persons having required training, knowledge and experience.

Instructed personnel

Instructed personnel are the persons, who have been instructed by the operator on the tasks to be carried out and potential dangers in a detailed and verifiable way.

Specialist personnel

Specialist personnel are the persons, who, due to their professional training, knowledge and experience, as well as knowledge of the relevant provisions, are capable of duly carrying out the works assigned, recognise potential dangers independently and avoid personal and material damage.

Qualified electricians

As a matter of principle, all works on the electrical installations must be carried out by qualified electricians.

Qualified electricians are the persons, who, due to their specialist training, knowledge and experience, as well as knowledge of the relevant provisions, are capable of duly carrying out the works on electrical systems, recognising potential dangers independently and avoiding personal and material damage caused by electric current.

Unauthorised persons



WARNING:
Danger of injuries for unauthorised persons!

Those who have not been instructed are not aware of the dangers in the area of operation and must be considered unauthorised persons.

- Keep unauthorised persons away from the area of operation; if in doubt, address the persons met and banish them from the area of operation.
- Suspend operations until unauthorised persons leave the area of operation.

3.6 Dangers

The machine has undergone a risk review. Wherever possible, the identified dangers were eliminated and risks reduced. Nevertheless, the machine poses residual risks described in the following section.

- ▶ Strictly observe warnings and safety instructions specified here and in the chapters about handling to avoid potential damage to health and dangerous situations.

3.6.1 Risks through mechanical hazards

Movable parts



CAUTION!
Risk of injury by pinching in movable parts!

Failure to follow the instructions can result in serious injury.

- Apply the brake on the swivel castors

3.6.2 Risks through electrical hazards

Electric current



DANGER!
Danger to life from electric current!

Touching live parts leads to death. Damaged insulation or individual components can be life-threatening.

- Switch off power supply before maintenance, cleaning and repair operations and secure the machine against being restarted.
- If the power supply insulation is damaged, switch off immediately and arrange for repairs.
- Never bypass or disable fuses.
- Keep moisture away from live parts.
- The battery must not be opened under any circumstances!

3.6.3 Risks through thermal hazards

Hot surfaces



CAUTION!
Risk of burns on hot surfaces.

Contact with hot parts may cause burns.

- Do not touch the surface.
- Before every work, make sure that the parts have cooled down to the ambient temperature.

3.6.4 Risks due to work environment conditions



CAUTION!
Risk of injury due to inadequate lighting.

Work in inadequate lighting conditions may lead to heavy injuries.

- Provide for adequate lighting at the workplace.

3 Safety

3.6.5 Risks posed by special physical effects

Physical effects



CAUTION!
Danger of injuries caused by special physical effects!

Failure to wear appropriate protective equipment may lead to heavy injuries.

- Wear protective gloves
- Take adequate breaks
- Regular medical examinations 'G20'

3.6.6 Risks due to hazardous substances



CAUTION!
Risk of injury due to improper handling of lithium-ion batteries!

Failure to wear appropriate protective equipment can result in serious injury.

- Use personal protective equipment
- Store lithium-ion batteries according to regulations
- Avoid short circuits



CAUTION!
Risk of injury Hazardous substances, such as escaping chemicals or chemical vapors!

- Failure to wear suitable protective equipment can lead to damage to health.
- Use personal protective equipment
- Never touch chemicals
- In case of escaping chemicals or chemical vapors, leave the danger zone immediately!

If the battery cells are damaged, switch off the battery immediately and get help if chemicals are leaking. Never continue to use the battery with a damaged battery cell.

3.7 Safety

3.7.1 General safety instructions



CAUTION!
Observe the following safety instructions for the safe handling and use of Li-ion batteries.

Failure to comply may lead to

- Irritation
- severe corrosive injuries,
- chemical burns,
- -Fire and/or lead to explosions.

- ▶ Use the product and accessories only in perfect technical condition
- ▶ Never tamper with or change the product or accessories. The product must not be opened.
- ▶ Do not touch the electrical contacts with your fingers, tools, jewelry, or other electrically conductive objects.
- ▶ Do not short-circuit the outputs of the product.

- ▶ Close the protective caps of the connectors when not in use.
- ▶ The product must not be disassembled, crushed, heated above 60°C or burned.
- ▶ Never expose the product to direct sunlight, increased temperature, sparking or open flame. This can lead to explosions.
- ▶ Keep the product away from moisture and liquids. Moisture ingress can cause short circuits, electric shocks, burns, fire, and explosions.
- ▶ Do not use or store the product in potentially explosive environments.
- ▶ Use the product only within the defined limits of use.
- ▶ Handle the product carefully to avoid damage and prevent the leakage of liquids that are highly harmful to health!
- ▶ Make sure that the product stands securely when using it. Place the product only on a non-slip surface. Avoid protruding the product over an edge.
- ▶ Make sure that the cable length of the connected consumer is sufficient, the connecting cable must not be under tension.
- ▶ Do not use or charge the product if it has received a blow or is otherwise damaged. Periodically inspect the product for signs of damage.
- ▶ Do not use the product as a conductor replacement.
- ▶ Do not transport the product on a crane or with lifting equipment.
- ▶ Comply with your local regulations for the safe operation of electrical consumers.
- ▶ Do not connect defective consumers to the product.
- ▶ Do not connect generators to the outputs of the product.
- ▶ Charge the product only with the supplied charging cable.
- ▶ Make sure the consumer is turned off before connecting the consumer. Always switch off the consumer after use.
- ▶ Do not use the product to operate life-sustaining medical consumers.
- ▶ If the product is too hot to touch, it may be defective. Place the product in a visible, non-flammable place at a sufficient distance from combustible materials. Let it cool. If the product is still too hot to touch after an hour, then it is defective. Please contact the GÖLZ® service..

3.7.2 Safety devices



WARNING:
Danger to life due to defective or bypassed safety devices!

Inoperable, bypassed or disabled safety devices do not protect from hazards and may lead to heavy or fatal injuries.

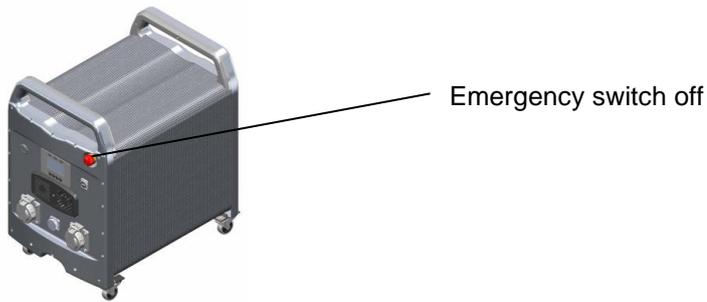
- Before commencement of works, always make sure that all safety devices are properly installed and functional.
- Never disable safety devices.
- Ensure that the safety devices are always freely accessible.



NOTE!
See safety devices in → "Design and function".

Emergency switch off

By pressing the emergency stop switch, the connected devices are de-energized.
Eliminate the error that has occurred before switching on again after pressing the emergency stop.



3.8 Spare parts



WARNING:
Risk of injury due to wrong spare parts.

Wrong spare parts can seriously compromise safety and cause damage and malfunction up to total failure.

- As a matter of principle, only original spare parts must be used.

Original spare parts can be obtained via an authorised dealer or directly from the manufacturer.

3.9 Actions in emergency and in case of accidents

Necessary actions

- ▶ Always be prepared for accidents or fire.
- ▶ First aid facilities (first aid box, cloth, etc.) and fire extinguisher must be close at hand.
- ▶ Personnel must familiarise themselves with accident signalling equipment, first aid and rescue facilities.
- ▶ Access roads for rescue vehicles must be always kept free.

If the need arises, act properly

- ▶ Activate emergency stop immediately
- ▶ Initiate first aid measures
- ▶ Remove persons affected from the danger area.
- ▶ Inform persons responsible at the operation site.
- ▶ Alert doctor and/or fire brigade in case of heavy injuries.
- ▶ Keep access roads for rescue vehicles free.

3.10 Signage

Danger from electric current!



DANGER!
Danger to life from electric current!

Touching live parts leads to death. Damage to the insulation or individual components can be life-threatening.

- The battery must not be opened under any circumstances!
- If the insulation is damaged, switch off the battery immediately and arrange for repairs.
- Keep moisture and moisture away from the live parts.

Illegible signs



CAUTION!
Risk of injury due to illegible symbols!

Stickers and signs that got illegible, make danger zones insufficiently recognisable and may become incapable of indicating potential injury risks.

- Always maintain legibility of pictograms, safety, warning and operating instructions.
- Immediately replace the pictograms, labels, signs or stickers that became illegible.

4 Technical data
4.1 Dimensions

Specification	Value	Unit
Length	660	mm
Width	410	mm
Height (without rollers)	630	mm
Weight	78	kg

4.2 Load in line mode

Specification	Value	Unit
Input voltage curve	Sine wave	-
Input voltage	230	Vac
Maximum AC input voltage	300	Vac
Input frequency	50/60	Hz
Short-circuit protection	Circuit breaker	-
Efficiency	>93	%

4.3 Load in battery mode

Specification	Value	Unit
Output power	5	KVA/kW
Output voltage curve	Pure sine wave	-
Output voltage	230 ± 5%	Vac
Output frequency	50	Hz
Efficiency	93	%
Overload protection	5s @ 150% Power	-
	10s @ 110-150% Power	-
Battery cut-off voltage	42	Vdc
Battery cut-off point	5%	-
No-load consumption	<60	W

4.4 Charging

Specification	Value	Unit
Battery		
Battery voltage	48	Vdc
Maximum charging current	100	A
Overcharge cut-off point	57,5	Vdc
Line mode		
Maximum input voltage	300	Vac
Maximum input current AC IN	32	A
Maximum charging current	50	A
Solar mode		
Efficiency	max. 98	%
Maximum input voltage	145	Vdc
Maximum input current PV IN	22	A
Maximum charging current	100	A
Parallel charging via solar and line		
Maximum charging current	100	A

4.5 Information of battery cells and battery

Specification	Value	Unit
Cell type	Lithium-Ironphosphate (LiFePO4)	-
Cell form	Rectangular Aluminum cell	-
Cell voltage	3,2	V
Cell capacity	100	Ah
Battery voltage	48	V
Battery capacity	4800	Wh
Life span	6.000	Charging cycles

4.6 Connections

Connections	Output	Unit
	2 x 230V	1 x 230V
	1 x USB-A	1 x Photovoltaic
	1 x USB-C	1 x DC-IN (Expansion Plug)
	1 x Communication plug	

4 Technical data

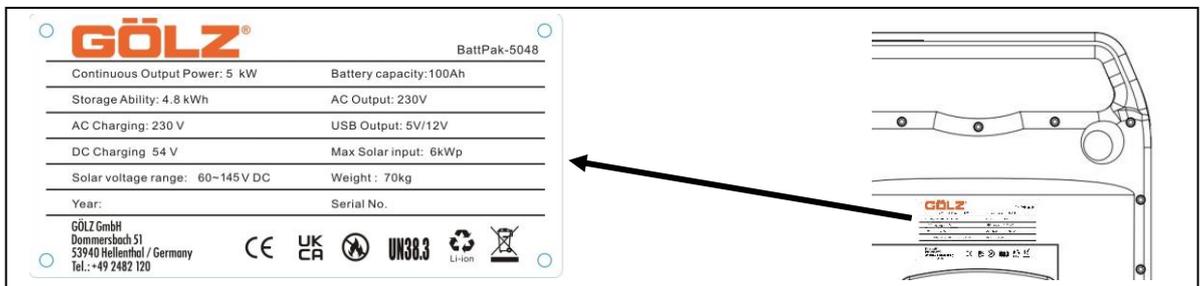
4.7 Operating conditions

Working zone

Specification	Value	Unit
Ambient temperature when working	-20...60	°C
Storage temperature	-10...60	°C
Battery temperature at the start of charging	0...45	°C
Relative air humidity, maximum	5 - 95 (without condensing)	%
Conditions	Avoid direct impact of dampness, dust and frost. Do not operate in strong electric and magnetic fields! Do not operate the machine tool in explosive atmosphere!	

4.8 Type plate

The type plate is placed on the housing of the battery.



4.9 Installation site requirements

The floor surface must:

- ▶ have sufficient load bearing capacity,
- ▶ be slip proof,
- ▶ be level.

Installation conditions

Choose the installation site as per space requirements according to the technical data.

4.10 Storage requirements

Storage conditions

As a matter of principle, the machine, its components, assemblies or parts must be only stored in the following conditions:

- ▶ do not store outdoors
- ▶ store in dry and dust-free place
- ▶ do not expose to aggressive media
- ▶ protect from solar radiation
- ▶ avoid mechanical vibrations
- ▶ storage temperature range -15 to 60°C
- ▶ relative air humidity, max. 95%
- ▶ Store the product out of the reach of children and unauthorized persons.
- ▶ Do not store the product in the discharged state for long periods of time. This could lead to deep discharge. Charge the product at least once every three months.

If stored for more than 3 months, regularly check the general condition of all parts and packaging. Also check the charge level of the Battpak. If necessary, refresh or renew the preservation and load the Battpak.

5 Design and function

The BattPak 5048 is used for mobile power supply of electrical appliances that are intended for operation via a standard household socket (230 V / 16 A). The product consists of a housing, the lithium-ion battery with built-in technology and connections, as well as carrying handles.

5.1 Scope of delivery and responsibility

The machine was developed and manufactured under sole responsibility of Gölz GmbH.

Upon transfer to the operator, the responsibility for safe handling and instruction of the personnel passes to the operator.

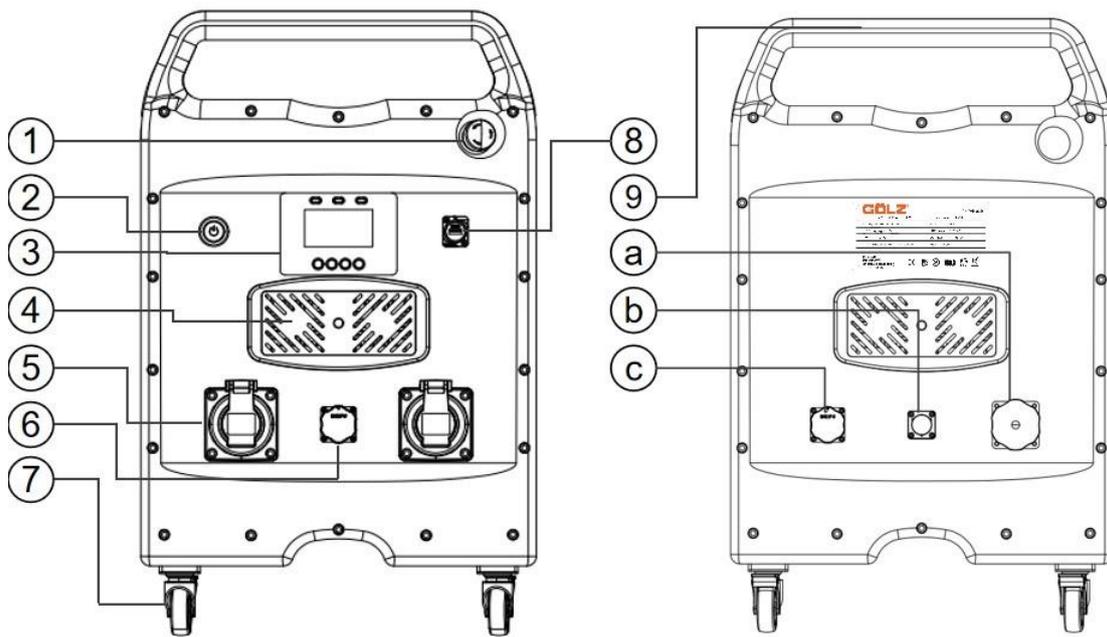
The manufacturer offers training on the machine.

The scope of delivery includes the following components:

Components	Quantity
BattPak 5048	1
Technical documentation	1
Charging cable 230V – 16A	1
PV charging cable	1
PRCD adapter cable	1

Optional accessories	Quantity
Transport car	-
Expansion battery BattXpansion	-
Photovoltaic panel	-
Typ2 -230V EV-charging adapter	-
400V-32A charging cable	-

5.2 BattPak 5048



1	Emergency switch off	8	USB-B/USB-C Socket
2	On/Off switch	9	Transport handle
3	LED-Display	a	Expansion plug
4	Fan	b	Photovoltaic charging plug
5	230V Plug	c	230V charging plug
6	Communication plug		
7	Transport rollers		

Housing

The housing (1) protects the electronics and the battery from physical and environmental influences.

Plugs

The various connectors of the battery are used to connect devices to the battery for operation, to charge the battery and to connect the battery to a battery extension.

Transport rollers

The battery can be moved around by one person using the transport rollers. The rollers can rotate freely and are equipped with a parking brake for safe parking of the battery.

Battery

The battery cells are made of lithium iron phosphate (LiFePO4) and are enclosed in an impact-resistant housing. They are used to supply power to the connected devices.

Display

The battery display shows all relevant info about the battery via LCD display.



NOTE!

Due to the design, the emergency stop switch is located to the right of the battery indicator. A blow on the emergency stop causes the immediate interruption of the power supply to the connected devices.

5.2.1 Functional description

By switching on the battery via the on-off switch, the power supply is released up to the terminals on the outside of the battery housing. Now up to two devices can be operated in parallel via the two 230V sockets of the battery.

All relevant information about the battery is shown on the LCD display on the front.

6 Transport & packaging

6.1 Transport safety information

**ATTENTION!****Damage through improper transportation!**

Improper transportation can result in considerable damage of the transported goods and objects in the vicinity.

- Always proceed with the utmost care and caution when loading and unloading and transporting goods within the company.
- Pay attention to the instructions and symbols on the packaging.
- Always remove transport locks only during installation.
- Transport the appliance only when it is switched off.

Observe your local transport regulations for batteries!

6.2 Transport inspection

Inspect the condition of the transported goods immediately upon delivery for completeness and damage.

In the event of externally recognisable damages:

- ▶ do not accept the delivery or accept it only conditionally,
- ▶ record the scope of the damage in the transport documents and indicate it in the carrier's consignment note,
- ▶ lodge complaint.

**NOTE!**

Claim any defect immediately upon delivery of the transported goods!

Claims regarding transport damage can only be lodged within valid complaint periods.

6.3 Transport symbols

On the outside of the transported goods, there are symbols corresponding to the content, which must be strictly observed during transportation and storage.

Meaning of the transport symbols

The following transport symbols can be placed on the transported goods:

	<p>This side up</p> <p>The arrowheads indicate the top end of the transported goods. These should point upwards otherwise the content can be damaged.</p>		<p>Keep dry</p> <p>Protect the transported goods from dampness and keep them dry.</p>
	<p>Anchor point</p> <p>Only attach lifting tackle to the indicated points.</p>		<p>Centre of gravity</p> <p>Indicates the centre of gravity of the transported goods. Pay attention to the centre of gravity position when handling the goods!</p>

6.4 Transport and storage

Handling packaging

The product is packed in a safe and environmentally sound manner for the anticipated transport conditions. The packaging protects the parts up to the beginning of assembly from damage and corrosion.

- ▶ Only remove packaging and transport locks before assembly.
- ▶ Dispose of packaging materials according to applicable local regulations.



ATTENTION!
Environmental damage through improper disposal!

Packaging material is valuable raw material and can be used again or expediently reprocessed and recycled.

- Always dispose of packaging materials in an environmentally sound manner.
- Follow local regulations. If necessary, employ a specialised company for waste disposal.

Transport of the machine



ATTENTION!
Damage through improper transportation!

Improper transportation can result in considerable damage of the machine and objects in the vicinity.

Before every transport:

- protect from excessive shock, vibration, rain and sunlight
- transport with special care, do not throw, do not squeeze and do not place objects on the battpak

The product can be transported by one person using the attached transport rollers or by 2 people using the transport handles. Optionally, it can be transported by one person using the transport trolley.

**NOTE!**

The product is not designed for crane transport. There are no appropriate load suspension points on the machine.

- ▶ Observe your local transport regulations for batteries.
- ▶ Batteries may not be sent by post. Contact a shipping company if you want to ship undamaged batteries.
- ▶ Inspect the product for damage before each use, as well as before and after prolonged transport.
- ▶ The product may not be transported on a passenger aircraft. If necessary, contact the airline.

Storage of the product

Store the product in the following conditions:

- ▶ indoors only,
- ▶ store in dry and dust-free place,
- ▶ do not expose to aggressive media,
- ▶ protect from solar radiation,
- ▶ avoid mechanical vibrations,
- ▶ storage temperature: -10 to 60 °C,
- ▶ relative air humidity: max. 95%.
- ▶ Store the product out of the reach of children and unauthorized persons.
- ▶ Do not store the product in the discharged state for long periods of time. This could lead to deep discharge. Charge the product at least once every three months.
- ▶ If stored for more than 2 months, regularly check the general condition of all parts and packaging. Also check the state of charge of the batteries. If necessary, refresh or renew the preservation and load the Battpak (at least 50%).
- ▶ Store the product only when it is switched off.

7 Installation and first commissioning

7.1 Location

Place the product in a suitable place. Check the safe stand before commissioning. Make sure that the transport rollers are fixed.

7.2 First commissioning and acceptance, general



DANGER!

Risk of injury during the first commissioning. Therefore:

- Before connecting consumers to the battery, make sure that they are switched off.
- Make sure that the machine is not placed on slopes or construction pits
- Make sure the surface is even
- Ensure sufficient lighting
- Keep environment clean and free from objects and cables
- Make sure, there are no unauthorised persons in the vicinity of the machine



The Battpak is delivered immediately ready for use..



DANGER!

Danger to life due to electric current!

Failure to follow these instructions may result in a fatal electric shock!

- If more than one consumer is connected at the same time, residual current protection must be ensured. This can be done by means of the PRCD adapter cable supplied, or by means of the PRCD installed in the connection cable on the plugged-in machine.

More detailed information can be found on the following page. Be sure to note them!

7 Installation and first commissioning

7.2.1 Initial commissioning and acceptance, use of the PRCD adapter cable



NOTE!

If the plugged-in load has a PRCD permanently installed in the connection cable, the PRCD adapter cable does not have to be used with this load, since the permanently installed PRCD of the load takes over the protective function.

<p>One consumer plugged in</p>	<p>No PRCD adapter cable necessary</p>	
<p>Two plugged in consumers</p>	<p>PRCD adapter cable necessary</p>	
<p>Plugged in multiple socket with one consumer</p>	<p>No PRCD adapter cable necessary</p>	
<p>Plugged in multiple socket with several consumers</p>	<p>PRCD adapter cable required for the second and each additional consumer</p>	

8 Operation

8.1 Operation safety information



WARNING!

Risk of injury due to improper operation!

Improper operation may lead to heavy injuries.

- The product may only be operated by trained personnel authorised by the operator.
- Before every work, make sure that the safety devices are correctly installed and function without flaws.
- Never disable safety devices.
- Always keep the working zone tidy and clean! Objects, parts, workpieces, tools and cleaning devices loosely lying around are accident sources.



DANGER!

Danger to life from electric current!

Touching live parts leads to death. Damaged insulation or individual parts can be life-threatening.

- In case of defective electric components switch off immediately and arrange for repairs.
- Keep humidity away from live parts.

Personnel

- ▶ Instructed Personnel

8.2 Start-up preparation

To safely use the product as intended, the following preconditions must be met:

- ▶ the machine stands firmly
- ▶ the machine has been checked for damage, loose screw connections and integrity

8.3 Start-up



The product is switched on via the on/off switch (1).



NOTE!

Wait until the battery fans are running properly and the display shows the output voltage 230V. Then connect the selected device with a power <=5kW.

**WARNING!**

Be sure to keep the following things in mind!

Failure to observe the following points can cause significant damage to the battery.

- Before using the battery for the first time, be sure to charge it to 100%!
- Wait until the fans of the battery are running properly and the display shows the output
- voltage 230V, only then connect a device to the battery!

The manufacturer does not assume any warranty for damage caused by incorrect use and non-observance of these instructions!

8.4 Operation/charging via 230V

A socket marked "AC-In" is used to connect the mains connection for charging via 230V. Plug in the corresponding plug supplied and connect the battery to a standard 230V socket.

Two sockets marked "AC-Out" are used to connect a machine/device that is to be operated with the battery. Two devices can be operated in parallel if the input power of the two devices together does not exceed 5kW.

8.5 Charging via photovoltaics (PV)

Check the cable connection between the PV component and the PV input terminal of the battery, then connect the positive terminal of the cable to the positive terminal of the PV input terminal of the device, and the negative terminal of the cable to the negative terminal of the PV input terminal of the device to ensure that the connection is firm and reliable.



NOTE!

Before connecting the PV modules to the battery, make sure that the maximum output power of the PV modules does not exceed the maximum charging power of the battery!

Selection of the PV component

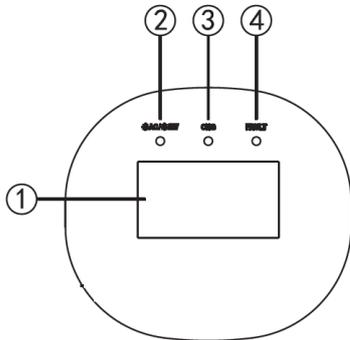
When selecting a suitable PV component, the following parameters must be taken into account:

1. The voltage of the PV module must not exceed the maximum voltage of the PV charging port of the device.
2. The voltage of the PV module must be higher than the minimum battery voltage.

Max. power of the photovoltaic system	4500W
Max. voltage of the photovoltaic system	145Vdc
Max. current of the photovoltaic system	18A
Photovoltaic system voltage range	60~115Vdc
Switch-on voltage	34Vdc ± 10Vdc
Maximum charging current via PV operation	100A

8.6 Operation and LCD display

The control and display panel shown below consists of three indicator lights, four function buttons, and an LCD display to show the operating status and input/output current information.

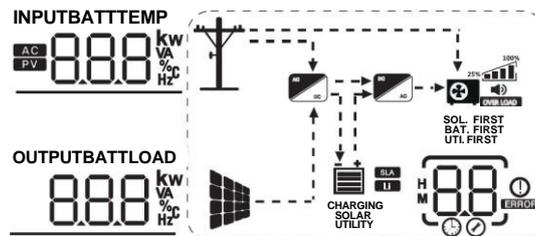


- (1) LCD display
- (2) Status display
- (3) Charging indicator
- (4) Error indication

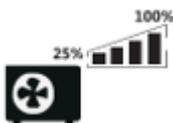
LED indicator

LED indicator		Product description	
	Green	Constant	Output is powered by the mains
		Flashing	The output is powered by the battery or PV in battery mode
	Green	Constant	Battery is fully charged
		Flashing	Battery charges
	Red	Constant	An error has occurred
		Flashing	Warning

LCD-Display Symbol



Symbol	Description
AC IN Information	
AC	AC IN has been detected
PV	PV IN has been detected
INPUT 	Display AC input power, AC input voltage, AC input frequency and AC input current.

Symbol	Description								
Output Informationen									
	Display of output voltage, output current, output frequency, percentage load and load in VA								
Battery Information									
	Display of battery level with 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charge status in mains mode								
Solar Utility	Indicates the priority of the charging source: Solar means that solar charging is preferred. Utility means that charging via a mains connection is preferred. If the solar symbol is illuminated, this means that charging can only be done via solar. If both characters are active, charging can be carried out in parallel via solar and mains.								
Load information									
	<table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>0-24%</td> <td>25-49%</td> <td>50-74%</td> <td>75-100%</td> </tr> </table>					0-24%	25-49%	50-74%	75-100%
									
0-24%	25-49%	50-74%	75-100%						
	Overload indicator								
Additional Information									
SOL.FIRST BAT.FIRST UTL.FIRST	Output source priority: solar first, battery first, SBU mode or SUB mode.								
	Indicates connection to power grid								
	Indicates connection with PV system								
	Connected device is powered by mains power								
	Indicates compatible power grid								
	Indicates working DC/AC converter								
	Indicator for deactivated alarm								

9 Maintenance & cleaning

9.1 Maintenance safety information



WARNING!

Risk of injury due to improper maintenance!

Improper maintenance may lead to injuries.

- Any maintenance works must be only carried out by the service department of GÖLZ GmbH.
- Sufficient assembly freedom must be ensured before commencement of works.



DANGER!

Danger to life from electric current!

Touching live parts leads to death. Damage to the insulation or individual components can be life threatening.

- Before cleaning, switch off the battery and secure it against being switched on again, and also close the protective caps of the sockets.
- Keep moisture away from electrical components.

9.2 Maintenance plan

Maintenance works necessary for optimum and trouble-free operation are described in the following sections.

- ▶ If an increased wear of parts is revealed by regular inspections, reduce the maintenance intervals!
- ▶ Draw up a maintenance log after every maintenance! The log assists in error analysis, enables adjusting the intervals to actual usage conditions and validating guarantee claims.
- ▶ If you have any queries on maintenance works and intervals: contact manufacturer.

Interval	Maintenance work	Personnel
Before every commissioning	Visual inspection - the entire product	Operating personnel
	Visual inspection - the electrical connections	Specialist personnel
After completion of work	Clean - Entire product	Operating personnel
	Clean - Housing	Specialist personnel
yearly	Carry out a legal safety check in the case of - the entire product	Qualified electricians
in case of an error	Visual inspection - the entire product	Operating personnel
	Visual inspection - Connections	Specialist personnel

9.3 Description of the maintenance works to be carried out by the operator

**ATTENTION!**

Cleaning by a high-pressure cleaner will damage the product.

ATTENTION!

Foaming and cleaning with water will damage the machine.

- Replacing the transport rollers
- Replacing the fan

9.4 Steps after completing maintenance

After completion of the maintenance works and before switching on, follow the following steps:

1. Check for tightness all threaded joints previously detached.
2. Check the proper installation of all previously removed protective devices and covers.
3. Make sure that all tools, materials and other equipment have been removed from the working zone.
4. Clean the working zone and remove any spilled substances such as liquids, processing materials or similar.
5. Make sure that all safety devices of the system function properly.

9.5 Parts susceptible to wear

Product parts susceptible to wear are:

- Transport rollers

Wear of these parts does not present any product defect.

10 Errors

10.1 Troubleshooting safety information

**WARNING!****Risk of injury due to improper troubleshooting!**

Improper actions in the course of troubleshooting may lead to heavy injuries.

- Any repair works must be only carried out by the GÖLZ Service.
- Sufficient assembly freedom must be ensured before commencement of works.
- Always keep the working zone tidy and clean! Objects, parts, workpieces, tools and cleaning devices loosely lying around are accident sources.
- Check correct assembly of spare parts if these have been replaced. Fit properly all fastening elements. Observe screw tightening torques.
- Before recommissioning, make sure that all safety devices are properly installed and functional.

**WARNING!****Risk of injury resulting from unauthorised restarting!**

When working on individual components, people can be injured due to unexpected switching on of the power supply of the connected devices.

- Before working on any individual parts, switch off the machine and secure it against being restarted.

**DANGER!****Danger to life from electric current!**

Touching live parts leads to death. Damaged insulation or individual parts can be life-threatening.

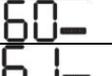
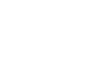
- Switch off the battery before maintenance and repair operations and secure it against being restarted.
- Keep humidity away from live parts.

10.2 Actions in case of errors

Basically, the following applies:

1. In the event of malfunctions that pose an immediate danger to persons or property, trigger emergency stops immediately.
2. Inform those responsible at the scene of the incident.
3. Depending on the type of malfunction, the cause should be determined and eliminated by responsible and authorized specialists.

10.3 Troubleshooting table

Error code	Cause	Error	Removal
01	Fan blocked		Solve blockage if necessary replace the fan
02	Overheated		Allow the battery to cool down and check the fan
03	The battery voltage is too high		Contact GÖLZ-Service
04	The battery voltage is too low		Charge the battery
05	Output short-circuited		Contact GÖLZ-Service
06	Output voltage is too high		Check the voltage of the connected devices, contact GÖLZ service if necessary
07	Overload timeout		Connected load and restart the battery
08	Bus voltage is too high		Contact GÖLZ-Service
09	Bus soft start failed		Contact GÖLZ-Service
51	Overcurrent or overvoltage		Contact GÖLZ-Service
52	Bus voltage is too low		Contact GÖLZ-Service
53	Soft start of the machine failed		Contact GÖLZ-Service
55	Overvoltage in AC output		Contact GÖLZ-Service
56	Battery not connected or battery voltage is too low		Charge the battery, otherwise contact GÖLZ-Service
57	Failure of the current sensor		Contact GÖLZ-Service
58	The output voltage is too low		Check the voltage of the connected devices, contact GÖLZ service if necessary
60	Negative current fault		Contact GÖLZ-Service
61	PV voltage is too high		Minimize PV voltage
62	Internal communication error		Contact GÖLZ-Service
80	CAN error		Contact GÖLZ-Service
81	Host is missing		Contact GÖLZ-Service

Warning code	Warning Cause	Alarm	Flashing icon	Removal
01	The blower is blocked while the unit is in operation	Three times beep per second	01	Loosen the blockage, replace the fan if necessary
02	The temperature is too high	Beep once per second	02	Allow the battery to cool down
03	Battery is overcharged	Beep once per second	03	Contact GÖLZ-Service
04	Low battery	Beep once per second	04	Charge the battery
07	Overload	One-time beep every 0.5 seconds	07	Reduce stress
10	Reduction of output power	One-time beep every 3 Seconds	10	Contact GÖLZ-Service
12	Solar charging stops due to low battery	Beep once per second	12	Charge Battery via 230V
13	Solar charger stops due to overload	Beep once per second	13	Contact GÖLZ-Service
14	Solar charger was stopped by overload	Beep once per second	14	Contact GÖLZ-Service
15	Different feed-in in the Parallel operation	Beep once per second	15	Contact GÖLZ-Service
16	Input phase error in parallel operation	Beep once per second	16	Contact GÖLZ-Service
17	Phase loss at the parallel output	Beep once per second	17	Contact GÖLZ-Service
18	Step-down regulator overcurrent	Beep once per second	18	Contact GÖLZ-Service
19	Battery disconnected	No beep	19	Contact GÖLZ-Service
20	BMS communication error	Beep once per second	20	Contact GÖLZ-Service
33	BMS-Loss of communication	Beep once per second	33	Contact GÖLZ-Service
34	Overvoltage in the cell	Beep once per second	34	Contact GÖLZ-Service
35	Undervoltage in the cell	Beep once per second	35	Charge the battery
36	Total overvoltage	Beep once per second	36	Contact GÖLZ-Service
37	Total undervoltage	Beep once per second	37	Charge the battery
38	Overcurrent during discharge	Beep once per second	38	Contact GÖLZ-Service
39	Overcurrent during charging	Beep once per second	39	Contact GÖLZ-Service
40	Overtemperature during discharge	Beep once per second	40	Contact GÖLZ-Service
41	Overtemperature during charge	Beep once per second	41	Contact GÖLZ-Service
42	Mosfet overtemperature	Beep once per second	42	Contact GÖLZ-Service

Warning code	Warning Cause	Alarm	Flashing icon	Removal
43	Battery overheats	Beep once per second	43 [△]	Allow the battery to cool down
44	Battery supercooled	Beep once per second	44 [△]	Operate the battery in a warmer environment
45	System is shut down	Beep once per second	45 [△]	Restart battery, otherwise contact GÖLZ-Service

10.4 Other errors

Symptoms	LED indicator/ beep	Cause	Removal
The device switches off automatically during the start-up process	LCD/LEDs and buzzer are 3 seconds long active and then go out	The battery voltage is too low (<1.91V/cell)	Charge the battery. If this does not help, then send the battery to the GÖLZ service
No response after powering on	No signal	1. The battery voltage is too low (<1.4V/cell) The battery is Reverse polarity connection	1. Charge the battery 2. Send the device to the GÖLZ service
The mains are present, but the device works on battery power	The input voltage is displayed as 0 and the green LED flashes	Input protection is triggered	Check that the AC breaker has tripped and that the AC wiring is properly connected
	Green LED flashes	Insufficient quality of the AC power supply (shore power or generator)	1. Check if the AC cables are too thin or too long 2. Check if the generator (if any) is working properly or if the input voltage range is set correctly
	Green LED flashes	Set "Solar First" as the output source priority	Change the priority of the output source to "Utility"
When the device is turned on, the internal relay is repeatedly switched on and off	LCD display and indicator flashing	Battery connection is disconnected	Send the device to the GÖLZ service

10.5 Steps after troubleshooting

After completion of the troubleshooting and before switching on, follow the following steps:

1. Check for tightness all threaded joints previously detached.
2. Check proper installation of all previously removed protective devices and covers.
3. Make sure that all tools, materials and other equipment have been removed from the working zone.
4. Clean the working zone and remove any spilled substances such as liquids, processing materials or similar.
5. Make sure that all safety devices of the machine function properly.

11 Disposal

After the design service life is over, the machine must be disposed of in an environmentally friendly manner.

In many countries, GÖLZ takes back your old appliance for recycling.

Unless a take-back or disposal agreement has been made, dismantled components shall be recycled:

- ▶ Scrap residual metallic components.
- ▶ Giving plastic parts for recycling.
- ▶ Dispose of remaining components sorted according to material properties.



EU countries only

Electric waste is recyclable and must not be disposed of in the household waste!!

According to the European directive 2012/19/EU on electrical and electronic waste and version transposed into national law, used power tools must be collected separately and sent for recycling in an environmental-friendly manner.



ATTENTION!

Environmental damage resulting from improper disposal!

Wrong or negligent disposal may result in significant environmental pollution.

- Electrical scrap, electronic components, lubricants, operating and other auxiliary materials must be disposed of by specialised companies.
- In case of hazardous substances, treatment and disposal provisions of the material safety data sheets must be taken into consideration.
- In case of doubts, consult the manufacturer or local municipal authorities or specialised disposal companies on the environmentally safe ways of disposal.

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EU conformity declaration



GÖLZ® GmbH
 Dommersbach 51
 D-53940 Hellenthal
 Germany

declares under sole responsibility that

Model:	Energy storage system
Manufacturer:	GÖLZ
Type:	BattPak 5048

comply with the relevant provisions of the Directives

2014/30/EU	Electromagnetic compatibility
2014/35/EU	Low voltage
2012/19/EU	Waste electrical and electronic equipment
UN38.3	Transport test for lithium metal and lithium-ion batteries
2011/65/EU	Restriction of the use of certain hazardous substances in electrical and electronic equipment

and has been developed and fabricated in compliance with the following standards valid as at the production date:

DIN EN 62133-2	Secondary cells and batteries with alkaline or other non-acidic electrolytes - Safety requirements for portable gas-tight secondary cells and batteries made thereof for use in portable devices - Part 2: Lithium systems
IEC 62619	Accumulators and batteries with alkaline or other non-acidic electrolytes - Safety requirements for lithium accumulators and batteries for use in industrial applications Uses
EN 62109-1	Safety of inverters for use in photovoltaic energy systems - Part 1: General Requirements
EN62109-2	Safety of power converters for use in photovoltaic energy systems - Part 2: Specific features Requirements for inverters
EN IEC 61000-6-3	Electromagnetic compatibility
EN IEC 61000-6-1	

Technical documentation kept by:

GÖLZ® GmbH
 Development and design

Year of construction and machine number are indicated on the unit.

Hellenthal, 14.08.2023
 GÖLZ® GmbH

.....
 Managing Director