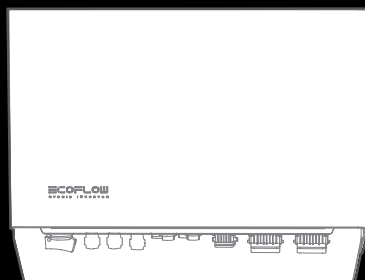


## EcoFlow PowerOcean Hybrid Inverter



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# Safety Instructions

## DISCLAIMER




Read this user manual carefully before using the product to ensure that you completely understand the product and can correctly use it. After reading this user manual, keep it properly for future reference. Improper use of this product may cause serious injury to yourself or others, or cause product damage and property loss. Once you use this product, it is deemed that you understand, approve and accept all the terms and content in this document. EcoFlow is not liable for any loss caused by the user's failure to use this product in compliance with this user manual. In compliance with laws and regulations, EcoFlow reserves the right to final interpretation of this document and all documents related to this product. This document is subject to changes (updates, revisions, or termination) without prior notice. Please visit EcoFlow's official website to obtain the latest product information.

## STATEMENT

Follow local laws and regulations when installing, operating, or maintaining the equipment. The safety instructions in this manual are only supplements to local laws and regulations. EcoFlow will not be liable for any consequence caused by the violation of general safety requirements or design, production, and usage safety standards.

## SYMBOL CONVENTIONS

This is a safety warning symbol. Such safety information alerts you to hazards that can be lethal to you and others, and that can cause damages to the equipment. All safety information is preceded by safety warning symbols and hazard words, including: "DANGER", "WARNING", "CAUTION", and "NOTICE". The "DANGER", "WARNING", "CAUTION", and "NOTICE" statements in this manual do not cover all the safety instructions. They are only supplements to the safety instructions.

Symbol	Description
 <b>DANGER</b>	Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
<b>NOTICE</b>	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

## GENERAL REQUIREMENTS

### DANGER

- Do not work with power on during installation.

### WARNING

- When the photovoltaic array is exposed to light, it supplies a d.c. voltage to the PCE.

### CAUTION

- The product must only be operated with PV modules of protection class II in accordance with IEC 61730, application class A. The PV modules must be compatible with this product. Do not ground the PV array positive/negative pole.
- If the power cord of this equipment is damaged, it must be replaced by the manufacturer, customer service department or qualified personnel to prevent a safety hazard.
  - Do not touch the exposed cable with your hands.
  - Make sure the cables, connectors and ports are dry before starting up the equipment. Make sure all three are connected securely.
  - Do not install, use, or operate outdoor equipment and cables in harsh weather conditions such as lightning, rain, snow, and level 6 or stronger wind.
  - Tighten the screws to the specified torque using tools when installing the equipment.
  - After installing the equipment, remove the remnants of the device installation area, such as cardboard boxes, foam, plastic, wire ties, stripped insulation materials, etc.
  - All warning label and nameplates on the equipment should be visible after installation is complete. Do not scrawl, damage, or block any warning label on the device.

- Understand the components and functioning of a grid-tied PV power system and relevant local standards.
- Do not open the host panel of the equipment without permission.
- Do not reverse engineer, decompile, disassemble, adapt, add code to the device software or alter the device software in any other way. Any other operation that violates the original design specifications of the device hardware and software is not allowed.
- If there is a probability of personal injury or equipment damage during operations on the equipment, immediately stop the operations, take feasible protective measures.
- Use tools correctly to avoid hurting people or damaging the equipment.
- Do not touch the energized equipment, as the enclosure is hot.
- Use insulated tools when operating equipment and wear personal protective equipment to ensure personal safety. Wear anti-static gloves, clothing and wristbands when touching electronic devices to protect equipment from damage.
- Prior to performing any work on the equipment, always disconnect it from all voltage sources as described in this section. Always adhere to the prescribed sequence.
- Before installing PV modules, please read its user manual carefully.
- The system is not suitable for power supplying life-sustaining medical devices. It cannot guarantee backup power in all circumstances.
- Do not connect loads between the inverter and the AC switch that directly connects to the inverter.

## PERSONNEL REQUIREMENTS

- Personnel who plan to install or maintain EcoFlow equipment must receive thorough training, understand all necessary safety precautions, and be able to correctly perform all operations.
- Only qualified professionals are allowed to install, operate, and maintain the equipment.
- Personnel who will operate the equipment, including operators, trained personnel, and professionals, should possess the local national required qualifications in special operations such as high-voltage operations, working at heights, and operations of special equipment.



Professionals: personnel who are trained or experienced in equipment operations and are clear of the sources and degree of various potential hazards in equipment installation, operation, and maintenance.

## ELECTRICAL SAFETY

### GROUNDING

- For the equipment that needs to be grounded, install the ground cable first when installing the equipment and remove the ground cable last when removing the equipment.
- Ground the PE hole of GRID connector, BACKUP connector and the equipment enclosure.
- Do not damage the ground conductor.
- Do not operate the equipment in the absence of a properly installed ground conductor.
- Ensure that the equipment is connected permanently to the protective ground. Before operating the equipment, check its electrical connection to ensure that it is securely grounded.

### GENERAL REQUIREMENTS

#### DANGER

- Before connecting cables, ensure that the equipment is intact. Otherwise, electric shocks or fire may occur.

- Ensure that all electrical connections comply with local electrical standards.
- Obtain approval from the local electric utility company before using the equipment in grid-tied mode.
- Ensure that the cables installer prepared meet local regulations.
- Use dedicated insulated tools when performing high-voltage operations.
- Before connecting a power cable, check that the label on the power cable is correct. When fabricating cables and installing connectors on site, follow the respective instructions in this manual and the requirements of local laws and regulations.
- Before operating the equipment, disconnect all power to the equipment and wait for the corresponding delayed discharge time to ensure that the equipment is completely deenergized.

### CABLING

- The cabling path must avoid the equipment cooling system and parts.
- When routing cables, ensure that a distance of at least 30 mm exists between the cables and heat-generating components or areas. This prevents damage to the insulation layer of the cables.
- Bind cables of the same type together. When routing cables of different types, ensure that they are at least 30 mm away from each other. Mutual entanglement or cross-deployment is not allowed.
- Ensure that the cables used in a grid-tied PV power system are properly connected and insulated and meet specifications.

## INSTALLATION ENVIRONMENT REQUIREMENTS

1. Ensure that the equipment is installed in a well ventilated environment.
2. To prevent fire due to high temperature, ensure that the ventilation vents or heat dissipation system are not blocked when the equipment is under operation.
3. Do not expose the equipment to flammable or explosive gas or smoke. Do not perform any operation on the equipment in such environments.
4. Do not place the equipment next to any heat source, fire source, or water source, and not to perform any operation on the equipment next to that heat source, fire source, or water source.

## EQUIPMENT AND PERSONNEL SAFETY REQUIREMENTS

### MOVING THE EQUIPMENT

1. When moving the equipment by hand, wear protective gloves to prevent injuries.
2. Move the equipment with precaution as it is heavy. When two or more people are needed to assist in moving the equipment, please ensure communication and coordination between personnels to prevent being crushed or sprained.

### USING TOOLS

1. Use wooden or fiberglass ladders when you need to perform live working at heights.
2. Before using a ladder, check that it is intact and confirm its load bearing capacity. Do not overload it.
3. Make sure the operator is regulated in the use of installation tools, such as ladders, electric paddles, drills, etc. Make sure the tool power cord is not tangled.
4. When installing, strictly prevent screws, nuts and spacers from falling inside the equipment and ensure that the tools (such as electric drill bit) do not fall into the gap between the installed equipment and the wall to prevent delaying the installation.

### DRILLING HOLES

1. Wear goggles and protective gloves when drilling holes.
2. When drilling holes, protect the equipment from shavings or dust. After drilling, clean up any shavings or dust that have accumulated at the installation site in a timely manner, otherwise, it may block the drilled hole.

## GROUNDING CONDUCTOR MONITORING

The inverter is equipped with a grounding conductor monitoring device. This grounding conductor monitoring device detects when there is no grounding conductor connected and disconnects the inverter from the utility grid if this is the case. Depending on the installation site and grid configuration, it may be advisable to disable the grounding conductor monitoring. This can be necessary, if there is no neutral conductor present and you intend to install the inverter between two line conductors.

1. Grounding conductor monitoring must be disabled after initial start-up depending on the grid configuration. Safety in accordance with IEC 62109 when the grounding conductor monitoring is deactivated. In order to guarantee safety in accordance with IEC 62109 when the grounding conductor monitoring is deactivated, you have to connect an additional grounding conductor to the inverter.
2. Connect an additional grounding conductor that has an cross-section of at least 10 mm. Ground the PE hole of GRID connector and the equipment enclosure.

## DISPOSAL

For information on the disposal of electrical and electronic equipment, please visit the following website:

<https://eu.ecoflow.com/pages/electronic-devices-disposal>

## SETTING THE RATED RESIDUAL CURRENT OF THE RESIDUAL-CURRENT DEVICE

For single PowerOcean system, RCD (type A) with rated residual operating current of 100 mA (AC-GRID) and 30mA (AC-BACKUP) would be recommended if there is additional protection by RCD shall be provided for local electrical installation, while the use of an RCD with lower rated residual operating current is also permitted if it is required by the specific local electrical codes.

For PowerOcean system cascading, RCD (type A) with rated residual operating current of 300 mA (AC-GRID) would be recommended. When using residual-current devices with a rated residual current of 100 mA, set the rated residual current to 100 mA.

# Checking before the Installation

## CHECKING OUTER PACKAGING

Before unpacking the equipment, check the outer packing for damage, such as holes and cracks, and check the model. If any damage is found, do not unpack the package and contact your supplier as soon as possible.

## CHECKING DELIVERABLES

After unpacking the equipment, check that the deliverables are intact and complete. If any item is missing or damaged, contact your dealer.



For details about the number of accessories delivered with the equipment, see **What's In The Box** in the Installation Guide.

## Product Storage

The following requirements should be met if the equipment is not put into use directly:

1. Do not unpack the equipment.
2. Keep the storage temperature at  $-30^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  and the humidity at 0%–100% RH.
3. The product should be stored in a clean and dry place and be protected from dust and water vapor corrosion.
4. Do not stack the inverters to avoid personal injury or equipment damage.
5. Do not place this product near water, fire or other heat sources (heaters, direct sunlight, gas ovens, etc.).
6. During the storage period, check the equipment periodically.
7. If the equipment has been stored for a long time (more than 6 months), it must be checked and tested by professionals before being put into use.



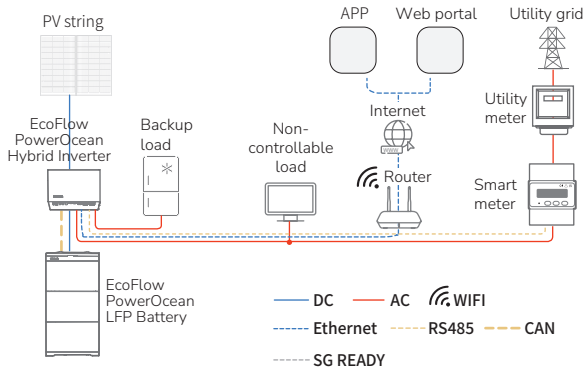
For details about Battery maintenance, see EcoFlow PowerOcean LFP Battery User Manual.

## Product Introduction

### FUNCTION

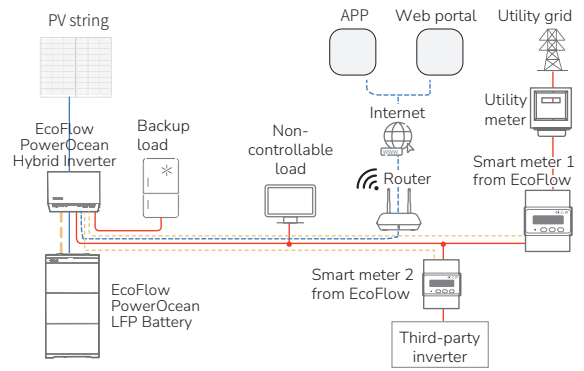
The EcoFlow PowerOcean Hybrid Inverter enables highly efficient solar energy usage and storage to achieve your home power independence. The 3-phase inverter is integrated with backup module, offering up to 12kW output to power almost every essential appliance in case of any grid outage.

### SINGLE POWEROCEAN SYSTEM OVERVIEW



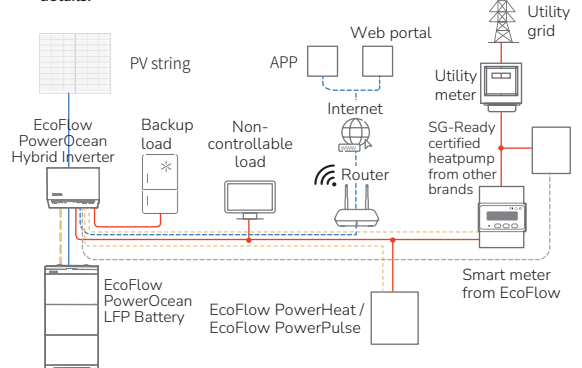
### (OPTIONAL) INTEGRATING EXISTING PV SYSTEM TO THE ECOFLOW POWEROCEAN SYSTEM

EcoFlow PowerOcean system is compatible with any single/three-phase PV grid-tied system. An existing PV system can be integrated to be a PV Energy Storage System (ESS) by connecting to the GRID terminal of the PowerOcean hybrid inverter. The power generation from the existing PV inverter will be firstly provided to the loads and then charge the battery. When the feeding power of third-party inverter is less than 200W, it will not charge the battery. With the self-powered mode of the EcoFlow PowerOcean system, the self-consumption rate of the new system, and the self-sufficiency rate of residential energy will be greatly improved, reducing electricity costs. See **Installation Guide delivered with the equipment for more details.**



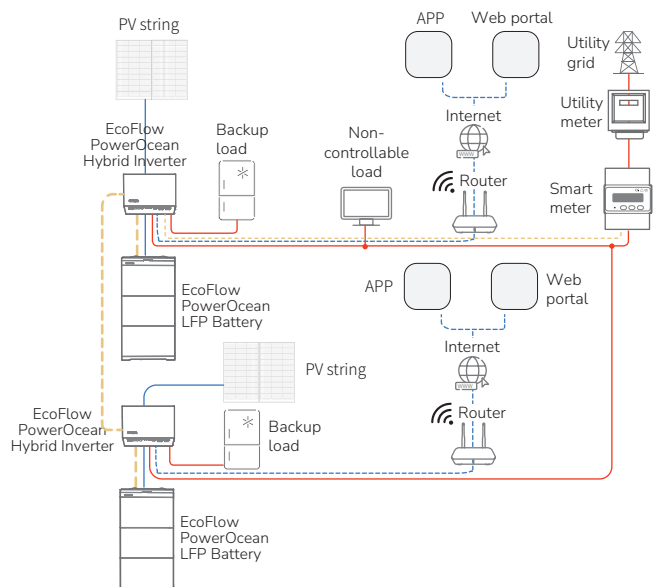
### (OPTIONAL) INTEGRATING SG-READY CERTIFIED HEATPUMP OR EV CHARGER TO THE ECOFLOW POWEROCEAN SYSTEM

EcoFlow PowerOcean hybrid inverter is compatible with EcoFlow EV Charger (PowerPulse), Heatpump (PowerHeat), any other SG-Ready certified Heatpump. When connected with the PowerOcean system, a SG-Ready certified Heatpump or EV Charger will be powered by PV strings, battery and utility grid. Effortlessly manage, monitor, and control your devices through a sleek, user-friendly interface via app or web management. With the self-powered mode of the EcoFlow PowerOcean system, the self-consumption rate of the system, and the self-sufficiency rate of residential energy will be greatly improved, reducing electricity costs. See **Installation Guide delivered with the equipment for more details.**



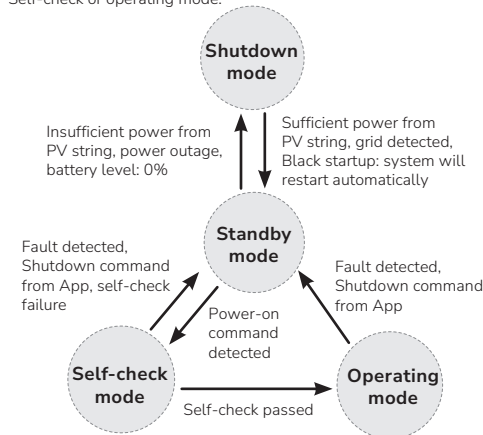
### (OPTIONAL) ECOFLOW POWEROCEAN SYSTEM CASCADING

In the PowerOcean cascading scenario, the primary and secondary inverters are both EF HD-P3-(6K0-12K)-S1, and a maximum of two EF HD-P3-(6K0-12K)-S1 can be cascaded. In the PowerOcean cascading scenario, the two EF HD-P3-(6K0-12K)-S1 connected to the power grid must meet the local power grid requirements. See **Installation Guide delivered with the equipment for more details.**



## SYSTEM WORKING MODE

The PowerOcean energy storage system can work in Shutdown, standby, Self-check or operating mode.



Working mode	Description
Shutdown mode	Hybrid inverter, the internal auxiliary power source and DC-DC converter of the battery do not work. In Shutdown mode, if the grid is detected, and the power from PV string is sufficient, then the system will restart automatically and enter Standby mode.
Standby mode	The internal auxiliary power source works, hybrid inverter and DC-DC converter of the battery do not work. In Standby mode, if the inverter detects a power-on command, it enters Self-check mode. If there is a power outage, the power from PV string is insufficient, or the battery level is 0% and the PV cables are disconnected, the system enters the Shutdown mode.
Self-check mode	In Self-check mode, the internal auxiliary power source works, hybrid inverter and DC-DC converter of the battery do not work. The system continuously performs self-check, once the operating conditions are met, the system enters Operating mode. If the self-check is not passed, a fault or a shutdown command is detected, the system enters the Standby mode.
Operating mode	In Operating mode, the internal auxiliary power source works, hybrid inverter and DC-DC converter of the battery start working. The inverter converts DC power from PV strings into AC power and feeds the power to the power grid. The inverter tracks the maximum power point to maximize the PV string output power. If a fault or a shutdown command is detected, the system enters Standby mode.

## BACK-UP FUNCTION

The inverter is equipped with a backup function, which is enabled by default. The backup function ensures that the inverter forms a three-phase battery-backup grid that uses energy from the battery and the PV system that is directly connected to the inverter to power the household loads in the event of a utility grid outage. The selected backup loads connected to the AC-BACKUP terminal are connected and supplied to the AC-GRID terminal in parallel grid operation mode via an integrated bypass contactor. In the event of a grid outage, the contactor opens. The inverter provides a stand-alone grid and the backup loads are switched within 20ms to be supplied by the energy stored in the battery and the PV modules connected directly to the inverter.

The battery is being charged by the existing PV system during backup operation. As soon as the utility grid is available again, the backup operation is disabled automatically and the loads are supplied with energy from the household grid and PV system.

When the utility grid is down and the battery fully discharged, there is, in the beginning, insufficient power to create a stable battery-backup grid. In this case, the battery must be charged by the PV system. The inverter is able to create a stable battery-backup grid only when sufficient power is available in the battery. Battery-backup operation starts automatically as soon as sufficient energy is available from the PV system. By setting parameters via EcoFlow App, it is possible to define up to which state of charge the battery is charged and discharged. For example, it is possible to set the amount of energy that should remain in the battery for battery-backup operation. The following statement involves EcoFlow general policies about the hybrid inverters described in this document.

1. For hybrid inverters, both PV modules and batteries need to be configured in the system installation typically and there is sufficient power from batteries or PV modules in backup mode, otherwise, the backup power supply will be automatically terminated. EcoFlow shall hold no liability for any consequences arising from failing to observe this instruction.

The hybrid inverter comes with UPS function. Under normal circumstances, the back up switching time during grid outage is less than 20 ms, which will be more than 20ms when low-voltage ride-through function is enabled by default based on local electrical code.

To prevent the power backup function from failing, instructions as below must be observed:

1. The system is not suitable for powering life-sustaining medical devices. It cannot guarantee backup power in all circumstances.
2. Do not connect any loads that require an uninterrupted energy supply.
3. Do not connect the loads whose total capacity is greater than the maximum Back-Up capacity.
4. Do not connect the loads that may cause very high start-up current surges, such as non-frequency conversion air conditioning, vacuum cleaner or half-wave loads, etc. Normal household loads can be supported when the inverter is in back-up mode. Accepted loads as below:
  - Inductive loads: 1.5P non-inverter air conditioner
  - Capacitive loads: total power  $\leq 0.5$  times of the inverter's rated output power.
  - Loads with neutral wires are allowed to be connected to the BACKUP port. Do not connect loads without neutral wire to the BACK-UP port. Otherwise, the loads cannot work properly or even be damaged.

## BACK-UP OVERLOAD PROTECTION

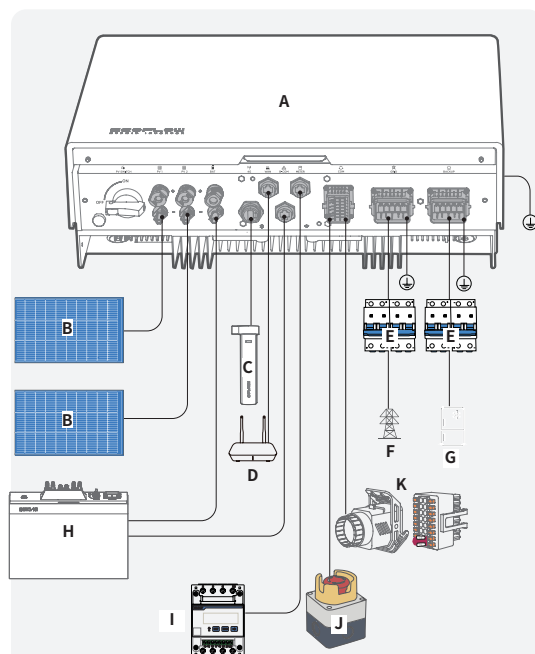
When single overload protection occurs, the inverter can restart automatically; however, the restarting time will be extended (5 min at most) if it repeats. For a faster restarting, try it via app. Try removing the loads which may cause very high start-up current surges.

## MULTI-PEAK TRACKING FUNCTION

The inverter is equipped with Multi-Peak Tracking Function. The Multi-Peak Tracking Function is disabled by default and must be enabled via the EcoFlow Pro APP, see the **Installation Guide** delivered with inverter. If this feature is enabled, the system will optimize solar generation in shaded conditions at your setup intervals to track the maximum power point. Solar generation may fluctuate.

## NETWORKING APPLICATION

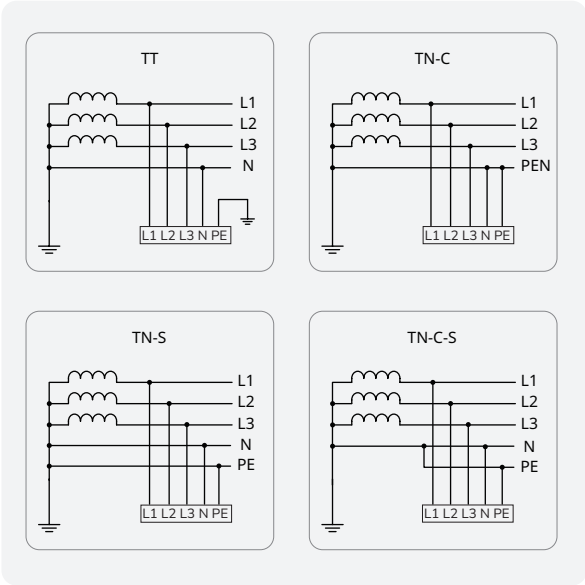
This equipment applies to residential grid-tied systems. The system consists of PV strings, EF BD-5.1-S1 batteries, hybrid inverter, AC switches, and power distribution units.



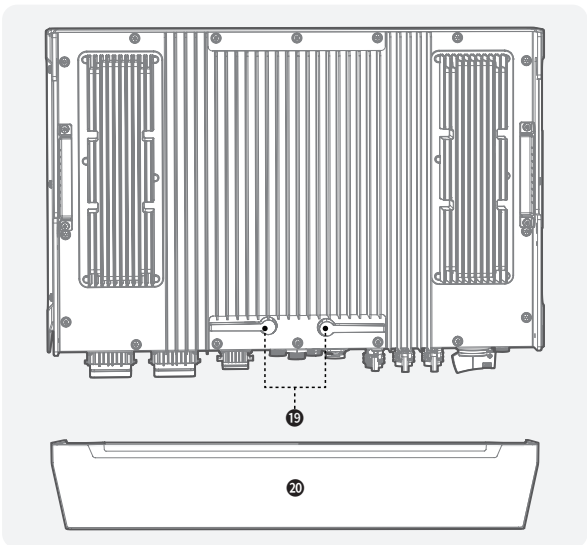
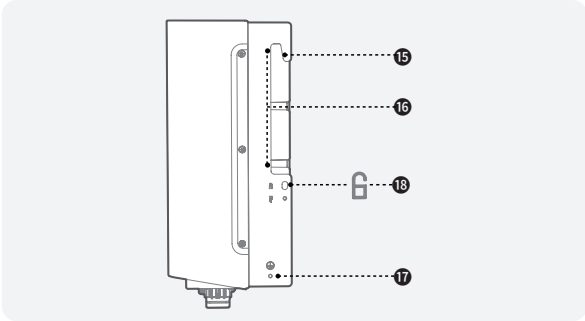
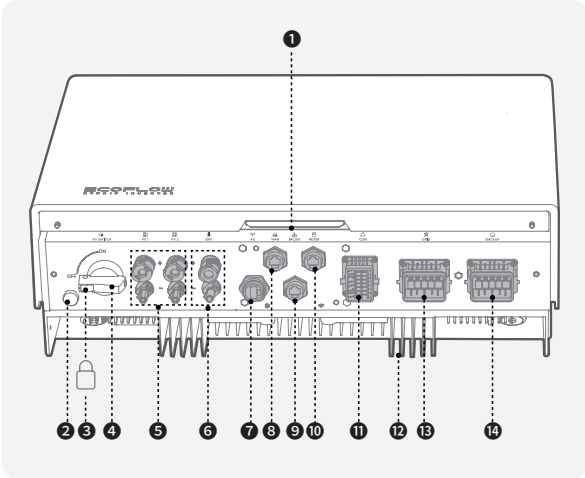
- |                                       |                                     |
|---------------------------------------|-------------------------------------|
| A. EcoFlow PowerOcean Hybrid Inverter | H. EcoFlow PowerOcean LFP Battery   |
| B. PV string                          | I. Smart meter                      |
| C. 4G module (Optional)               | J. Emergency Stop Button (Optional) |
| D. Router (Optional)                  | K. COM connector with shorting wire |
| E. AC switch                          |                                     |
| F. Power grid                         |                                     |
| G. Backup load                        |                                     |

SUPPORTED POWER GRID TYPES

The inverter supports the following power grid types: TN-S, TN-C, TN-C-S, and TT.



APPEARANCE



- 1 LED indicator
- 2 Ventilation valve
- 3 Lock hole button: press and hold to reveal the lock hole and lock to prevent accidental startup.
- 4 PV SWITCH: Control of solar PV input source only, no control of other voltage sources.
- 5 PV input terminals (PV1/2+/PV1/2-)
- 6 Battery terminals (BAT+/BAT-)
- 7 4G module port
- 8 WAN port
- 9 Battery communication port
- 10 Meter port
- 11 Communications port (COM)
- 12 Heat sink
- 13 Power grid port (GRID)
- 14 Backup port (BACKUP)
- 15 Mounting Slot
- 16 Handle
- 17 Ground point
- 18 Anti-theft lock hole
- 19 Antennas
- 20 Trim cover

LABEL DESCRIPTION

ENCLOSURE LABELS

Icon	Name	Meaning
	Electric shock warning	Caution, risk of electric shock
	Delayed discharge	Danger to life due to high voltages in the inverter; observe a waiting time of 5 minutes. High voltages that can cause lethal electric shocks are present in the live components of the inverter. Prior to performing any work on the inverter, disconnect it from all voltage sources as described in this document.
	Burn warning	Do not touch a running equipment because the enclosure is hot when the equipment is running.
	Refer to documentation	Reminds operators to refer to the documents delivered with the equipment.
	Grounding	Indicates the position for connecting the protective earthing (PE) cable.
	Operation warning	Do not remove the AC/DC connector when the equipment is running.
	Symbol of a crossed-out trash can	WEEE designation Do not dispose of the product together with the household waste but in accordance with the disposal regulations for electronic waste applicable at the installation site.
	CE marking	The product complies with the requirements of the applicable EU directives.



The labels are for reference only.

## WORKING PRINCIPLES

The inverter receives inputs from up to two PV strings. Then the inputs are grouped into two MPPT routes inside the equipment to track the maximum power point of the PV strings. The DC power is then converted into three-phase AC power through an inverter circuit. Surge protection is supported on both the DC and AC sides.

## System Installation

For System Installation, please refer to Installation Guide delivered with the equipment.

## Electrical Connection

For Electrical Connection, please refer to Installation Guide delivered with the equipment.

## System Commissioning

For System Commissioning, please refer to Installation Guide delivered with the equipment.

## System Operation





### SYSTEM POWER-ON

#### PROCEDURE (ON-GRID AND PV MODULE CONFIGURED)

1. Set the BATTERY SWITCH on top of the Junction Box to ON position.
2. Turn on the AC switch between the inverter and the power grid.
3. Set the PV SWITCH at the bottom of the inverter to ON position.
4. Observe the LED to check the inverter operating status.

#### PROCEDURE (OFF-GRID AND NO PV MODULE CONFIGURED)

1. Set the BATTERY SWITCH on top of the Junction Box to ON position.
2. Turn on the AC switch between the inverter and the power grid.
3. Set the PV SWITCH at the bottom of the inverter to ON position.
4. After commissioning, press and hold for three seconds the BATTERY ON/OFF button on top of the battery junction box.
5. Observe the LED to check the inverter operating status.

Status	Description
 on 1s  off 1s	Standby / Startup / Self-check / Over-the-air updates / Alarm, system is still operating
	Operating in grid-tied/backup mode (post commissioning)
	EPO shutdown / Fault, system cannot work

### NOTICE

- If the LED indicates a faulty status, visit the EcoFlow Pro app to retrieve the error code for troubleshooting.

## App Control

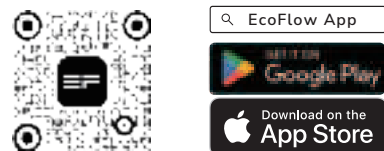
EcoFlow provides thorough support for the system. Both the end user and installer benefit from our comprehensive guides and resources.

### FOR END USER

Effortlessly manage, monitor, and control your PowerOcean devices through a sleek, user-friendly interface via app or web management. Access real-time energy data, detailed power generation, storage and energy bills savings anytime and anywhere. Professional technical support is also readily available when needed.

- EcoFlow App Management

Scan the QR code or download at <https://download.ecoflow.com/app>



### PRIVACY POLICY

By using EcoFlow Products, Applications and Services, you consent to the EcoFlow Term of Use and Privacy Policy, which you can access via the "About" section of the "User" page on the EcoFlow App or on the official EcoFlow website at <https://www.ecoflow.com/policy/terms-of-use> and <https://www.ecoflow.com/policy/privacy-policy>

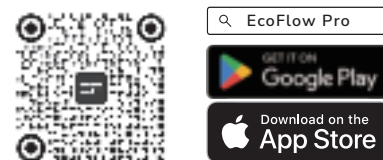
## FOR INSTALLER

Streamline the commissioning process, monitor device status in real-time, access detailed troubleshooting solutions for system faults and also offer customer support from EcoFlow professional support team.

- EcoFlow Pro App Management

Scan the QR code or download at

<https://download.ecoflow.com/ecoflowproapp>



## System Maintenance & Replacement

### SYSTEM POWER-OFF



- After the inverter powers off, the remaining electricity and heat may still cause electric shocks and body burns. Therefore, put on protective gloves and begin operating the equipment five minutes after the power-off.
1. Send a shutdown command on the App.
  2. Turn off the AC switch between the inverter and the power grid.
  3. Set the PV SWITCH at the bottom of the inverter to OFF position.
  4. (Optional) Secure the PV SWITCH with a lock to prevent accidental startup. The lock is prepared by the customer.
  5. Set the BATTERY SWITCH on top of the Junction Box to OFF position.
  6. (Optional) Secure the BATTERY SWITCH with a lock to prevent accidental startup. The lock is prepared by the customer.
  7. Press and hold the BATTERY ON/OFF button of the junction box for 10 seconds, until the indicator is off.

### ROUTINE MAINTENANCE



- Power off the inverter and follow the instructions on the delayed discharge label to ensure that the inverter is powered off.
  - Wear proper PPE before any operations.
1. Turn off the AC and DC switches of the inverter and the battery junction box when maintaining the electric equipment or power distribution equipment connected the equipment.
  2. Place temporary warning signs or erect fences to prevent unauthorized access to the maintenance site.
  3. If the equipment is faulty, contact your dealer.
  4. The equipment can be powered on only after all faults are rectified. Failing to do so may escalate faults or damage the equipment.

Check Item	Check Method	Recommended Maintenance Interval
System cleanliness	Check periodically that the heat sinks are free from obstacles and dust. If there is any stain/dirt, use a dry, soft cloth to wipe it off and prohibit the use of stain removing powder, any liquid, coarse brush, abrasives or hard objects to clean the equipment. Ensure equipment ventilation and heat dissipation.	Once every 6 months
System running status	Check that the equipment is not damaged or deformed. Check that the equipment operates with no abnormal sound. Check that all equipment parameters are correctly set during operation.	Once every 6 months
Electrical connection	Check that cables are secured. Check that cables are intact.	Once every 6 months
Grounding reliability	Check that ground cables are securely connected.	Once every 6 months
Seal ability	Check that unused terminals, ports, waterproof covers are locked as delivered.	Once every 6 months



## TROUBLESHOOTING

### ⚠ WARNING

- Only professionals with appropriate qualifications are allowed to perform the following activities.
  - Wear proper PPE before any operations.
- Visit and log in to the **EcoFlow Pro** app.
  - Retrieve the error code and in-app instructions.
  - Completely power off the entire system, see the **System Power-Off**.
  - Follow the in-app instructions to fix the issue.

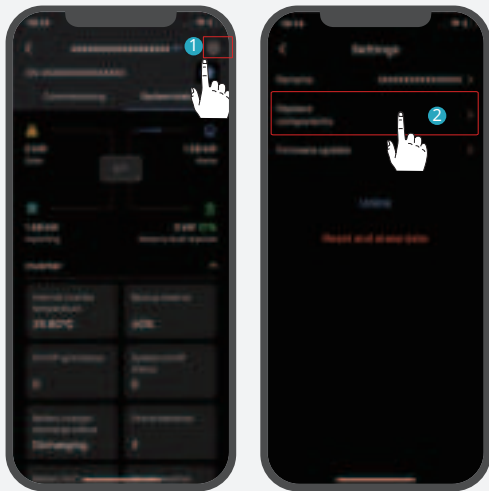


- As end users, you can visit and log in to the **EcoFlow** user app and find the most common FAQ or contact customer support on the **Setting** page **-Help and feedback**.
- If the problem persists, contact the EcoFlow technical support team.

## REPLACEMENT

### ⚠ WARNING

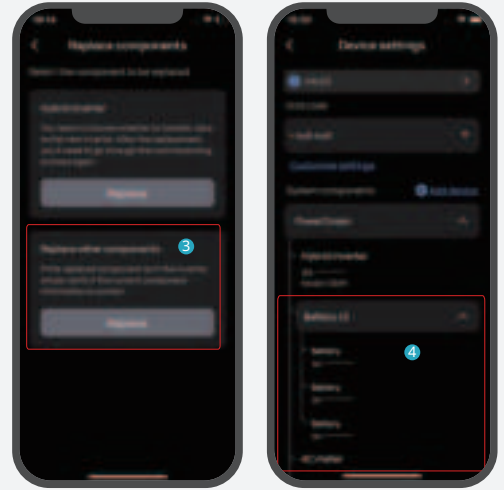
- Only professionals with appropriate qualifications are allowed to perform the following activities.
  - Wear proper PPE before any operations.
- Completely power off the entire system, see the **System Power-Off** section.
  - Sequentially disconnect GRID cables, PV input cables, battery cables, communication cables and all modules connecting to the inverter.
  - Remove the old inverter or other components from the mounting bracket.
  - Install a new inverter or other components, see the Installation Guide delivered with the inverter.
  - Power on the system, see the **System Power-On** section.
  - System Commissioning, see the Installation Guide delivered with the inverter.
  - Transfer the old device data to the new device or delete the old data through the **EcoFlow Pro App**.



a. Replace the old inverter.



b. Replace other components.



## Inverter Decommissioning

### ⚠ CAUTION

- Before removing a inverter, power it off. For details, see **System Power-Off**.

### REMOVING AN INVERTER

- Sequentially disconnect GRID cables, PV input cables, battery cables, communication cables and all modules connecting to the inverter.
- Remove the inverter from the mounting bracket.
- Remove the mounting bracket.
- Pack and store the inverter properly.

### DISPOSING AN INVERTER



If the inverter cannot work anymore, dispose of it according to the local disposal rules for electrical equipment waste. The inverter cannot be disposed of together with household waste. Hereby, our battery module has met the regulations of BattG in Germany.

Technical Parameters

Technical parameters		EF HD-P3-6K0-S1	EF HD-P3-8K0-S1	EF HD-P3-10K-S1	EF HD-P3-12K-S1
DC Input (PV)	Maximum PV Power (W)	10000	12000	14000	16000
	Maximum Input Voltage (V)	160-1000			
	MPPT Operating Voltage Range (V)	200-850			
	Start-Up Voltage (V)	160			
	Nominal Input Voltage (V)	600			
	Maximum Power per MPPT (W)	5000	6000	7000	8000
	Maximum Input Current per MPPT (A)	16			
	Maximum Short Circuit Current per MPPT (A)	24			
	Number of Strings per MPPT	1			
DC Input (Battery)	Number of MPPTs	2			
	Overvoltage Category	II			
	Maximum Charging Power (W)	6000	8000	10000	12000
	Maximum Discharging Power (W)	6000	8000	10000	12000
	Maximum Continuous Charging Current (A)	12.5	12.5	12.5	15
	Maximum Continuous Discharging Current (A)	12.5	12.5	12.5	15
	Rated Voltage (V)	800			
	Maximum Battery Capacity (kWh)	45.9			
AC Input	Connection	3L+N+PE			
	Overvoltage Category	III			
	Nominal Apparent Power from Utility Grid (VA)	12000	16000	16000	16000
	Maximum Apparent Power from Utility Grid (VA)	12000	16000	16000	16000
	Rated Input Voltage (V)	230/400, 3L+N+PE			
	Maximum AC Current from Utility Grid (A)	17.4	23.1	23.1	23.1
	Nominal Frequency (Hz)	50/60			
	Grid Connection	3L+N+PE			
	Overvoltage Category	III			
AC Output (On-grid)	Nominal Apparent Power Output to Utility Grid (VA)	6000	8000	10000	12000
	Maximum Apparent Power Output to Utility Grid (VA)	6000	8000	10000	12000
	Nominal Output Voltage (V)	230/400, 3L+N+PE			
	Nominal Frequency (Hz)	50/60			
	Maximum AC Current Output to Utility Grid (A)	8.7	11.5	14.4	17.4
	Nominal Output Current (A)	8.7	11.5	14.4	17.4
	Current Total Harmonic Distortion (At Rated Power)	<3%			
	Power Factor	-0.8...1...+0.8			
	Nominal Apparent Power (VA)	6000	8000	10000	12000
AC Output (Backup)	Maximum Apparent Power (VA)	7200@1 sec	9600@1 sec	12000@1 sec	14400@1 sec
	Nominal Output Voltage (V)	230/400, 3L+N+PE			
	Nominal Frequency (Hz)	50/60			
	Nominal Output Current (A)	8.7	11.5	14.4	17.4
	Maximum Output Current (A)	10.4@1 sec	13.9@1 sec	17.4@1 sec	20.9@1 sec
	Voltage Total Harmonic Distortion (At Linear Load & Rated Power)	<3%			
Protection	Residual Current Monitoring	Integrated			
	PV Insulation Resistance Detection	Integrated			
	Anti-Islanding Protection	Integrated			
	PV Reverse Polarity Protection	Integrated			
	AC Overcurrent Protection	Integrated			
	Backup Load Short-Circuit Protection	Integrated			
	AC Overvoltage Protection	Integrated			
	DC Switch	Integrated			
	Remote Shutdown	Integrated			
Efficiency	Protective Class	I			
	Maximum Efficiency	97.6%			
	Maximum MPPT Efficiency	99.9%			
Compliance	Certificates	CE/CB/TUV MARK			CE MARK
	Safety Standards	IEC/EN62109-1, IEC/EN62109-2			
	Grid-tied Standards	EN 50549, EN50438, TOR Erzeuger Type A, EEA-NE7- CH, PTPIREE, UTE C 15-712-1, ANRE, O3E-323, G99, G98, CEI0-21, C10/11, VDE-AR-N-4105			
	EMC	EN 62311, EN 301 489-1, EN 301 489-17, EN IEC 61000-6-3, EN IEC 61000-3-2, EN 61000-3-3, EN IEC 61000-6-1, EN 300 328			
General Data	Topology	Non-isolated			
	Operating Temperature Range (°C)	-20 to 50			
	Storage Temperature (°C)	-30 to 60			
	Operating Relative Humidity	0%-100% (Condensing)			
	Noise Emission (dB)	<35			
	Maximum Operating Altitude (m)	3000			
	Weight (kg)	Approximately 29.6			
	Dimensions (W×D×H) (mm)	588×175×380 (±1) (without trim cover), 588×175×455 (±1) (with trim cover)			
	Protection Level	IP65			
	Self-Consumption at night (W)	<25			
	Cooling Method	Natural convection			
	Communication Method	RS485 (for Meter) & CAN (for BMS) & Wi-Fi & Bluetooth & WAN & 4G			
	Wi-Fi Frequency Range (MHz)	2412-2472 (20) / 2422-2462 (40),			
	Maximum Output Power (dBm)	18.54			
	Bluetooth Frequency Range (MHz)	2402-2480,			
	Maximum Output Power (dBm)	7.19			
	Pollution Degree	PD3			
	Environmental Category	Outdoor/Indoor			

# EcoFlow Inc.

RM 401, Plant #1, Runheng Industrial Zone, Fuyuan Road, Zhancheng Community, Fuhai Street, Bao'an District, Shenzhen City, Guangdong Province, P.R.China

## EU Declaration of Conformity

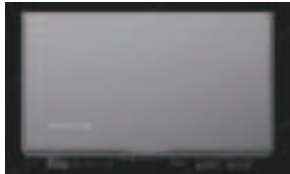
We, **EcoFlow Inc.**, as Manufacturer, declare under our sole responsibility that the products

**Product Name:** EcoFlow PowerOcean Hybrid Inverter

**Models:** EF HD-P3-12K-S1, EF HD-P3-10K-S1, EF HD-P3-8K0-S1, EF HD-P3-6K0-S1  
to which this declaration relates, is in compliance with the follow requirements:

Directives	Harmonised standards
2014/53/EU (RED)	EN 62109-1:2010; EN 62109-2:2011
	EN 300328 V2.2.2
	EN 301489-1 V2.2.3
	EN 301489-17 V3.2.4
	EN 55032:2015+A11:2020
	EN 55035:2017+A11:2020
	EN IEC 61000-3-2:2019+A1:2021
	EN 61000-3-3:2013+A2:2021
2011/65/EU(RoHS) (EU)2015/863(RoHS)	EN IEC 62311:2020
	EN IEC 63000: 2018
	IEC 62321

**EU Representative:** EcoFlow Europe s.r.o.  
Doubravice 110, 533 53 Pardubice, Czech Republic



**Signed for and on behalf of:**

signature and seal

Compliance Engineer  
position

2024-07-18  
date of issue

# Network security & Vulnerability Disclosure

## CHANGE MECHANISMS

Users can change their login identity by switching accounts and entering the password corresponding to that account on EcoFlow App login page. See the **Installation Guide** delivered with the inverter.

## SENSORS

- The device is connected to a smart meter via an RS485 interface for power sampling.
- The device comes with built-in NTC to sample the internal inverter temperature for control strategies.

## SECURITY SETTING

Users will be instructed to set an access password during the initial binding of the device. See the **Installation Guide** delivered with the inverter.

## SETUP CHECK

Each input by the user is checked based on the validation rules. The only scenario where the user can make an insecure input is creating a new user account. If the password entered does not comply with the password rules, the app immediately notifies the user via a pop-up window, and the setup process can only proceed when the user enters valid characters.

## PERSONAL DATA

The device will record the hotspot information of the wifi accessed by the user so that the device can automatically connect to the corresponding hotspot after re-powering on without having to reenter the information.

## TELEMETRY DATA

- Telemetry parameters include home load power consumption, PV production, grid usage, etc., to be revealed to the user via EcoFlow App or web portal.
- Telemetry parameters include internal inverter parameters such as current, voltage, temperature, etc., which are used for safety diagnosis of the device.

## ERASING DATA

- Users can visit the home page of the EcoFlow App, and delete the corresponding data by tapping the following in sequence "Settings" -> "Reset and erase data".
- User can visit the home page of Ecoflow app, and select "Account setting" -> "Delete account" to write off app account.

## MODEL DESIGNATION

- EF HD-P3-6K0-S1
- EF HD-P3-8K0-S1
- EF HD-P3-10K-S1
- EF HD-P3-12K-S1

## SUPPORT PERIOD

The product warranty and software support period are both 15 years.

## VULNERABILITY DISCLOSURE POLICY

For the Vulnerability Disclosure Policy, users can visit Ecoflow's official website at

[https://account.ecoflow.com/agreement/en-uk/EFSRC\\_Vulnerability\\_Disclosure\\_Plan.html](https://account.ecoflow.com/agreement/en-uk/EFSRC_Vulnerability_Disclosure_Plan.html)

