GeePower

GeePower Energy Technology Co., Ltd

TERRA-A SERIES WITH INVERTER

GPTE-A-51.2-300

GPTE-A-51.2-100 GPTE-A-51.2-400
GPTE-A-51.2-200 GPTE-A-51.2-500
GPTE-A-51.2-300 GPTE-A-51.2-600

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1.1 Safety Warning System

This manual includes critical safety instructions designed to protect your personal safety and prevent potential property damage. These warnings are marked with specific symbols and classified according to the level of possible risk. Please read all safety notices carefully and ensure they are strictly followed.

DANGER
Indicates an immediate hazard that will result in severe injury or death if not avoided. It's the highest level of risk.

WARNING
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION
Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE
Indicates important information related to equipment operation, property damage or product performance. It does not indicate a personal injury hazard.

1.2 Qualified Personnel

The Battery Energy Storage System must only be installed, commissioned, and maintained by a competent and suitably qualified electrician.
In the United Kingdom, this means a person who:

- holds recognised electrical qualifications (such as Level 3 NVQ or equivalent),
- is familiar with UK wiring regulations (BS 7671) and other relevant safety standards, and
- is trained to identify electrical hazards and carry out work safely.

A competent installer must also understand the requirements of the Electricity Safety, Quality and Continuity Regulations (ESQCR) and any G98/G99 grid-connection obligations, where applicable.

Consumers must not attempt to install, modify, or repair the system.

Although the system includes integrated components, it still contains hazardous voltages, lithium battery modules, and connections to the mains electricity supply. Safe installation requires technical assessment, correct protection devices, and confirmation that the installation complies with UK regulations.

The system is not suitable for self-installation. No consumer training is provided for installation, and no part of the commissioning process should be carried out by an unqualified person.

Improper installation or unauthorised modification may:

- cause electric shock, fire, or serious injury, damage property,
- prevent the system from operating safely, and
- affect the product warranty or applicable insurance coverage.

If you are unsure whether your installer is suitably qualified, ask for evidence of relevant qualifi cations, training, experience and professional registration where applicable.

⚠ WARNING

- Follow the applicable GeePower documentation for transportation, storage, installation, commissioning, operation and maintenance.
- Ensure compliance with all local safety codes and regulations.
- Operate the product only within the specified environmental and electrical conditions detailed in the manual.

1.3 Intended Use of the Terra A System

The GeePower Terra A is a grid-connected residential energy storage system designed to store electrical energy and support household electricity consumption.

The system supports scheduled charging and discharging for time-of-use electricity tariffs and may also be connected to a compatible PV array. Where a designated backup circuit is installed, the AC OUT (UPS) output can supply critical loads during a grid outage, subject to the inverter output capacity and available battery energy.

The Terra A system must be installed, commissioned and serviced by qualified personnel in accordance with the applicable GeePower documentation and local electrical requirements.

To support safe and reliable operation, use the system only as described in this manual. Improper use, unauthorised modification or operation outside the specified limits may result in personal injury , equipment damage or loss of warranty coverage.

1.4 Trademarks

The GeePower name, logo and product names referenced in this document are trademarks or registered trademarks of GeePower Energy Technology Co., Ltd.

Unauthorised commercial use of GeePower trademarks is prohibited. All other trademarks referenced in this document remain the property of their respective owners.

1.5 Copyright and Document Information

This manual is the property of GeePower Energy Technology Co., Ltd. No part of this document may be reproduced, modified or distributed for commercial purposes without prior written permission from GeePower.

The information in this manual has been reviewed for accuracy at the time of publication. Product improvements and technical updates may result in differences between the product and the descriptions or illustrations in this document. The latest version of this manual takes precedence over earlier versions.

Scan the QR code on the final page to access the latest Terra A documentation and support resources.

1.6 Retention of This Manual

This manual contains important information for the safe operation, routine inspection and maintenance of the GeePower Terra A system.

Keep this manual in a safe and accessible location for future reference. Ensure that it is available to the system owner and any qualified service personnel working on the system.

For mechanical installation, electrical wiring, commissioning and technical configuration, refer to the separate **Terra A Series - Installer Quick Start Guide**

2.1 GeePower Safety Notices

This section provides comprehensive safety guidance for the GeePower All-in-One Residential Energy Storage System, combining general precautions, DC/AC safety, earthing requirements, and inverter operation in accordance with UK BS/EN standards.

ELECTRICITY WARNING
The product uses electrical power. Only qualified personnel or users familiar with electrical systems should handle installation or maintenance. Follow the instructions in the manual carefully.

HOT SURFACE
The product may become warm during operation. Avoid touching it while it is running.

FOLLOW INSTRUCTIONS
Read the manual before using or working on the system. Always follow the safety precautions and instructions provided.

GROUND PROTECTION
Ensure the system is properly grounded according to the instructions.

DIRECT CURRENT (DC)

ALTERNATING CURRENT (AC)

ELECTRIC SHOCK RISK (5 MINUTES)
Signals danger from electric shock. It shows the time (5 minutes) to wait after the inverter is off and disconnected. This ensures safety in any installation operation.)

CE MARK
The inverter meets the requirements of applicable CE guidelines.

DISPOSAL NOTICE
Do not dispose of the GeePower system with household waste. Follow local regulations for electronic equipment disposal.

2.2 General Safety – Terra A System

The GeePower Terra A system is designed for safe and reliable residential energy storage. Incorrect installation, handling, or maintenance may cause injury or damage to the equipment. To ensure safe operation, please follow the guidance below:

- Carefully read this manual before operating the system to understand the product and its safety precautions. Installation and commissioning personnel must also read the applicable **Terra A Series - Installer Quick Start Guide**.
- Installation, wiring, commissioning and electrical maintenance must only be carried out by competent and suitably qualified personnel in accordance with BS 7671 and other applicable requirements.
- Always use appropriate tools and personal protective equipment (PPE).
- Prevent electrostatic discharge (ESD) when handling electronic components using anti-static gloves or wrist straps.
- Do not install or maintain the system outdoors during adverse weather conditions (rain, snow, strong winds).
- Follow all warning labels, protective measures, and instructions in this manual
- Do not perform installation, wiring or electrical maintenance while the system is energised.
- Before starting work, a qualified person must safely isolate all AC, PV and battery power sources and prevent inadvertent re-energisation.
- All transportation, storage, installation, wiring and maintenance activities must comply with the applicable laws, regulations, standards and GeePower instructions.
- Use only approved materials, tools, and accessories that meet local standards.
- Do not open, dismantle, modify or repair the inverter or battery modules. Contact your installer or GeePower Technical Support if service is required.

2.3 Electrical Safety

2.3.1 Grounding (Earthing) Requirements

Proper earthing is essential for user protection and equipment reliability.

- The system must be correctly earthed in accordance with BS 7671 and other applicable local requirements.
- During installation, the Protective Earth (PE) conductor must be connected before any live conductors.
- During removal or decommissioning, disconnect the PE conductor last.
- The earthing arrangement must comply with the system design, BS 7671, applicable DNO requirements and local electrical regulations.
- Proper earthing ensures continuous system protection and personnel safety.

WARNING — Electric Shock Hazard

- Do not operate the system without a secure and effective protective earth connection.
- Improper earthing may result in electric shock, fire or equipment damage.
- Earthing installation, inspection and testing must only be performed by a competent and suitably qualified electrician.

2.3.2 DC Connection Safety

Approved DC Connectors

- Use the specified MC4-compatible connectors for PV DC connections.
- Battery connections must use the dedicated connectors and cables supplied or approved by GeePower.
- Do not mix connector types, brands or components unless compatibility has been confirmed by the manufacturer.
- Incompatible or incorrectly assembled connectors may cause poor contact, overheating, arcing or fire and may affect warranty coverage.

DC Isolation & Safe Connection Procedure

- DC connections must only be installed, disconnected or serviced by a competent and suitably qualified electrician.
- Before starting work, safely isolate all AC, PV and battery power sources and prevent inadvertent re-energisation.
- Verify the absence of voltage using suitable test equipment before touching any conductor or connector.
- Never connect or disconnect PV or battery connectors while the circuit is energised or carrying current.
- Verify the correct polarity and connector compatibility before energising the system. For the complete isolation and connection procedure, refer to the **Terra A Series - Installer Quick Start Guide**

Polarity & Voltage

- Always verify correct polarity before making any DC connection: positive (+) to positive (+) and negative (−) to negative (−).
- Incorrect polarity may cause overcurrent, equipment damage, arcing or fire.
- Confirm that the PV and battery voltages remain within the applicable Terra A input limits.

Maintenance

DC inspection, testing and maintenance must only be performed by a competent and suitably qualified electrician. Users must not open, disconnect or repair PV or battery DC connections.

DANGER— Live DC Connections

Connecting or disconnecting DC connectors while the circuit is energised may cause electrical arcing.

Contact with live DC conductors may result in severe injury or death.

Electrical arcing may cause burns, equipment damage or fire.

2.3.3 Inverter Requirements

Grid Connection

Before commissioning, verify that the grid voltage and frequency are within the operating limits specified for the Terra A inverter.

AC wiring must include the required isolation, overcurrent and residual-current protection devices in accordance with the system design, BS 7671 and other applicable local requirements.

Grid connection, testing and commissioning must only be performed by a competent and suitably qualified electrician.

Internal and External Protection

The Terra A inverter incorporates internal monitoring and protection functions. These internal functions do not replace the external isolation, overcurrent, residual-current or surge protection devices required by the system design and applicable electrical regulations.

The final selection and rating of external protective devices must be confirmed by the system designer or qualified installer.

DANGER - HIGH VOLTAGE

The inverter and its connected cables may contain hazardous AC and DC voltages.
Installation, inspection and servicing must only be performed by competent and suitably qualified personnel.

Hazardous residual voltage may remain after the system has been switched off.
Do not open the inverter enclosure or touch internal components.

Safely isolate all power sources and allow the specified discharge time before opening or servicing the equipment.

WARNING - HOT SURFACE

The inverter heatsink and parts of the enclosure may become hot during operation.
Do not block or cover the ventilation openings or heat-dissipation areas.

Allow the inverter to cool before inspection, cleaning or maintenance.
Avoid touching marked hot surfaces during and immediately after operation.

2.3.4 Battery Requirements

Battery Installation

Battery modules must be installed in accordance with the **Terra A Series - Installer Quick Start Guide** and applicable local requirements. Installation, electrical connection and commissioning must only be performed by a competent and suitably qualified installer.

Always verify the correct polarity before connecting battery cables. Incorrect polarity may cause equipment damage, overcurrent, arcing or fire.

Battery Protection

The GeePower battery system incorporates an integrated Battery Management System (BMS) providing protection against overcharge, over-discharge, overcurrent, overtemperature, and short-circuit conditions.

Do not modify the battery modules, BMS, internal wiring or protective devices. Use only compatible battery modules, cables, connectors and accessories supplied or approved by GeePower.

DANGER - BATTERY ENERGY / FIRE RISK

This battery system contains stored electrical energy and presents a fire and electric shock hazard.

Do NOT short-circuit the battery terminals or connect conductive objects to the terminals.

Do NOT disassemble, modify, puncture, crush, or immerse the battery in water or other liquids.

Even when the system is switched off, hazardous energy may remain stored in the battery.

Installation, servicing and replacement must only be carried out by competent and suitably qualified personnel.

Serious injury, fire, or explosion may occur if the battery is improperly handled.

WARNING – THERMAL AND CHEMICAL HAZARD

The battery may become warm during charging or discharging. Ensure adequate ventilation around the unit.

Do NOT install the battery near heat sources, open flames, or in direct sunlight.

If smoke, abnormal odour, leakage, swelling, or deformation is detected, switch off the system if it is safe to do so, keep away from the affected area and contact your installer or GeePower Technical Support immediately.

Battery electrolyte is hazardous. Avoid contact with leaked substances or gases.

WARNING – INSTALLATION AND HANDLING

Install the battery in a dry, indoor location away from water sources and condensation.

Do NOT drop, impact, or apply excessive force to the battery.

Ensure all battery connections are tightened to the specified torque to prevent overheating.

Do NOT place tools, metal objects, or foreign materials on or near the battery.

Operate and charge the battery only within the specified temperature range.

NOTICE

The battery is a sealed system and is not expected to release gas during normal operation. A damaged, overheated or faulty battery may vent gas.

Use only compatible battery modules supplied or approved by GeePower. Do not mix battery modules of different models, capacities or incompatible specifications within the same stack.

End-of-life battery modules must be handled by an authorised battery collection or recycling facility in accordance with applicable local regulations. Do not dispose of batteries as household waste.

2.3.5 AC Connection and Isolation Safety

AC connection, inspection and servicing must only be performed by a competent and suitably qualified electrician.

Incorrect wiring or unsafe isolation may result in electric shock, fire or equipment damage. Before starting work, identify and safely isolate all AC and other power sources connected to the system.

Before Servicing

Switch the external AC isolator to the OFF position and secure it against inadvertent re-energisation.

Isolate the battery and PV power sources in accordance with the applicable shutdown procedure.

Verify the absence of voltage using suitable test equipment.

Allow the specified discharge time before touching terminals or opening the equipment.

Do not proceed until the inverter and connected circuits have been confirmed safe.

DANGER - HIGH VOLTAGE

- Do not connect or disconnect AC conductors while the circuit is energised.
  The AC circuit must be isolated using the designated external AC isolator before any inspection or servicing work.
- Switching off a circuit breaker or the inverter does not by itself confirm that all power sources have been safely isolated.
  Contact with exposed live conductors may result in severe injury or death.
- Electrical arcing may cause burns, equipment damage or fire.
  Do not perform live electrical work. Installation and servicing must only be performed after safe isolation has been completed and verified.

3.1 Introduction

The GeePower Home Energy Storage System (ESS) is a modular home battery system designed to help households manage and optimise their energy usage.

It uses A-grade LiFePO4 battery modules, an integrated inverter, and an intelligent battery management system that continuously monitors battery status to support safe and reliable operation.LiFePO4 technology is well known for its safety, stability, and long service life.

The system also supports remote monitoring, allowing users to conveniently view system operating status and energy usage.

The system can operate with grid power and optional solar PV. It supports functions such as energy storage, scheduled charging and discharging, household load support, and backup power for selected critical loads.

The system offers:

- Smart charge and discharge scheduling, helping you store electricity when it suits you and use it when it's most cost-effective.
- A flexible installation design that can be adapted to different household electrical systems and installation requirements.
- Built-in protection features that continuously monitor battery health and temperature to support safe long-term operation.
- A dependable backup power supply for selected critical loads during electricity outages, when sufficient battery energy is available.
- **Expandable battery capacity, allowing additional battery modules to be added as your household energy needs grow. For optimal battery consistency, expansion within the first six months after installation is recommended. Expansion at a later stage may still be possible; please contact GeePower or your authorised installer for assessment.**

3.2 System Overview

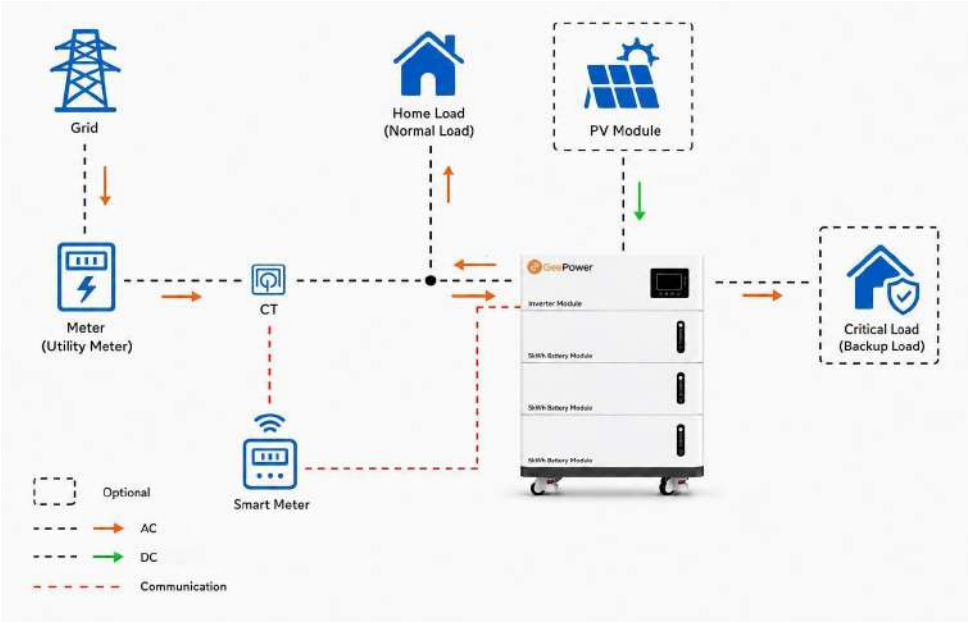
3.2.1 System Diagram

The Terra A ESS is designed for integration into standard UK domestic electrical installations.
The figure below shows a typical system application. Depending on the installation configuration, the system may include the following components:

Grid: The public utility power supply, used to supply household loads and charge the battery when required.
Smart Meter: Measures grid power flow and provides power measurement data to the Terra A system.

PV Modules (Optional): Solar panels that generate DC electricity, which can be used to supply household loads or charge the battery through the inverter.
Protection and Isolation Devices: Appropriate circuit breakers, isolators, and other electrical protection devices may be installed according to the system configuration and local installation requirements.
Manual Transfer Switch (MTS): Provides a manual bypass function for selected critical loads. Under normal operation, the critical loads are supplied through the Terra A backup output. If the inverter is shut down for maintenance or becomes unavailable, the MTS allows these loads to be manually transferred to direct grid supply.

Home Loads: Household electrical appliances such as lighting, refrigerators, TVs, air conditioners, and other AC loads.
Critical Loads (if backup function is used): Selected household circuits connected to the inverter backup output, which can continue to receive power from the Terra A system during a grid outage when sufficient battery energy is available.
Terra A Energy Storage System: The integrated inverter and modular battery system that converts, stores, and manages energy between the grid, optional PV system, battery, and household loads.



NOTICE

All wiring and installation pathways comply with UK electrical regulations, including BS 7671, and relevant PV connection standards for solar-integrated systems.

Basic Operating Principle

Grid Charging: The battery can be charged from the grid during configured charging periods, such as off-peak electricity periods.

Load Supply: Stored battery energy can be used to supply household loads during configured discharge periods, such as peak-demand or high-tariff periods.

Backup Power: During a grid outage, the inverter automatically supplies selected critical loads through the backup output, provided sufficient battery energy is available.

PV Charging (If Installed): Solar energy can be used to supply household loads or charge the battery for later use.

Energy Scheduling: Time-of-use charging and discharging periods can be configured according to the user ’ s electricity tariff and energy usage requirements.

3.2.2 Functional Description

The Terra A ESS allows households to store electrical energy from the grid and optional solar PV for use when required. The system intelligently manages energy between the grid, battery, optional PV system, and household loads according to the configured operating mode and energy schedule.

Core Components

Component	Function
Battery Module	Stores electrical energy for later use and includes an integrated Battery Management System (BMS) for battery monitoring and protection.
Inverter module	Manages power conversion and energy flow between the grid, battery, optional PV system, and household loads.
Smart Meter & CT	Measures grid power flow and provides real-time power information to the Terra A system.
Manual Transfer Switch (MTS)	Provides a manual grid bypass for selected critical loads when the inverter is unavailable or shut down for maintenance.
Wi-Fi Module	Enables remote system monitoring and operating data access through the monitoring platform.

3.2.3 Product Specification

Lithium-ion Battery Energy Storage System（Terra A Series) Model: GPTE-A-51.2						
AC OUTPUT						
Rated Output Power	6200W					
Peak Power	12400VA					
Rated Output Voltage	230Vac					
Rated Output Frequency	50/60Hz					
Nominal AC Current	27A					
Max.AC Current	40A					
Output Waveform	Pure Sine Wave					
Switch Time	10ms					
AC INPUT						
Rated Grid Voltage	230VAC(170-280Vac)					
Rated Grid Frequency	50/60Hz					
Bypass Overload Current	40A					
PV INPUT						
Num.of MPPT	2					
Max. PV Input Power	4500W+4500W					
Max. PV Input Current	18A+18A					
Max. PV Input Voltage	550Vdc+550Vdc					
Max. Voltage Range	120-480Vdc					
BATTERY						
Rated Capacity	5120Wh (100Ah)	10240Wh (200Ah)	15360Wh (300Ah)	20480Wh (400Ah)	25600Wh (500Ah)	30720Wh (600Ah)
Qty. of Battery Modules	1	2	3	4	5	6
Nominal Voltage	51.2V					
Discharge Voltage Range	44V-56.4V					
Standard Charging Current	50A					
Max.Charge/Discharge Current	100A					
Battery Type	$LiFePO_4$					
GENERAL DATA						
System Compatibility	Stackable Residential ESS					
Protective Class	Class I					
IP Rating	IP20(Indoor Use Only)					
Operating Temperature Range	-10℃-55℃					
Communication Interface	RS485					
Dimensions(L*W*H)mm	650*395*472H	650*395*652H	650*395*832H	650*395*1012H	650*395*1192H	650*395*1372H
Weigth(kg)	81	127.5	174	220.5	267	313.5
COMPLIANCE						
Inverter Module	EN IEC 62109-1; EN IEC 62109-2					
Battery Module	IEC 62619; UN38.3; MSDS					
System	EN IEC 62477-1; EN IEC 61000-6-1; EN IEC 61000-6-3; G99 (UK Grid Code); UKCA; EU RoHS					

3.2.4 Product Dimension

3.3 Battery Module

3.3.1 LED Indicator Description

Each battery module is equipped with nine LED indicators, including six capacity LEDs and three status LEDs. These indicators help users quickly understand the battery's charge level and operating status

No.	Indicator Status
①	83%-100% Capacity
②	66%-83% Capacity
③	50%-66% Capacity
④	33%-50% Capacity
⑤	16%-33% Capacity
⑥	0% -16% Capacity
⑦	Warning Indicator
⑧	Power ON/OFF Indicator
⑨	System Running Indicator

Battery Capacity Indicator LEDs (LED 1–6)

The six LEDs indicate the battery's approximate remaining capacity.
Solid ON: Indicates the current battery capacity level.
Flashing: Indicates the current capacity level while the battery is charging.
All six LEDs solid ON: The battery is fully charged.

Warning Light (LED 7)

Flashing: Battery level is low or the battery is approaching a protection threshold. The battery can continue operating.
Solid ON: A battery fault has been detected, such as abnormal temperature, overcurrent, short circuit, or system fault.
OFF: Normal condition.

ON/OFF Light (LED 8) – Battery Shutdown Indicator

OFF: Normal condition. This indicator remains OFF during normal operation, including when the battery is fully charged or reaches its normal discharge limit.
Solid ON: A battery fault has triggered protective shutdown and the battery DC output has been disconnected.

Battery Running Light (LED 9)

Indicates the battery operating status.
Flashing: The battery is discharging or in standby.
Solid ON: The battery is charging.
OFF: The battery is not operating.

NOTICE

SOC LEDs provide an instant visual status but detailed data should be viewed via the mobile App or inverter LCD.

3.3.2 Built-in Fire Protection Module

Each GeePower LiFePO4 battery module is equipped with an independent fire protection module incorporating temperature-based detection and automatic aerosol fire suppression.

The fire protection module operates independently of the Battery Management System (BMS) and the main system power supply, providing an additional layer of protection in the event of an abnormal thermal condition.

LiFePO4 (LFP) battery chemistry is widely recognised for its high thermal stability. To further enhance system safety, GeePower incorporates dedicated fire protection within each battery module, particularly considering that residential energy storage systems may be installed indoors, such as in utility rooms, garages, and plant rooms.

The module-level design provides localised protection, helping to contain an abnormal thermal event at its source and reduce the risk of propagation to adjacent battery modules or surrounding areas.

The Overall Picture

Detail Picture

Key Features

- Temperature-based automatic activation
- Automatic aerosol fire suppression within each battery module
- Independent, self-powered module-level protection, even when the main system is powered down
- Localised protection designed to help reduce the risk of fire propagation

Why GeePower Uses Module-Level Fire Protection

Home energy storage systems are often installed indoors or close to occupied areas. In the unlikely event of an abnormal thermal condition, early and localised intervention can help reduce the risk of the event developing or affecting adjacent battery modules.

For this reason, each Terra A battery module incorporates its own independent fire protection unit rather than relying solely on system-level battery protection. The fire protection module operates automatically and independently, providing localised protection directly at battery-module level.

Because the fire protection module is self-powered and self-activating, its protection function remains available independently of the main battery system power supply, including in the event of a total system power loss.

This layered approach combines the inherent thermal stability of LiFePO4 battery chemistry, BMS monitoring and protection, and dedicated module-level fire protection. **For homeowners and installers**, it provides an additional layer of safety within each battery module. **For insurers and other relevant stakeholders**, it demonstrates GeePower's proactive approach to risk management through independent, localised battery-level protection.

3.4 Inverter Module

3.4.1 Inverter Overview

The GeePower Inverter Module is the power conversion and energy management unit of the Terra A Energy Storage System. It manages energy flow between the grid, battery, optional solar PV, and household loads.

The inverter supports grid charging, battery charging and discharging, optional PV input, and backup power for selected critical loads through the AC OUT (UPS) output.

With advanced digital control, the inverter provides stable and reliable system operation. Flexible charging and discharging schedules allow the system to adapt to different household energy usage patterns and electricity tariffs.

Key Features

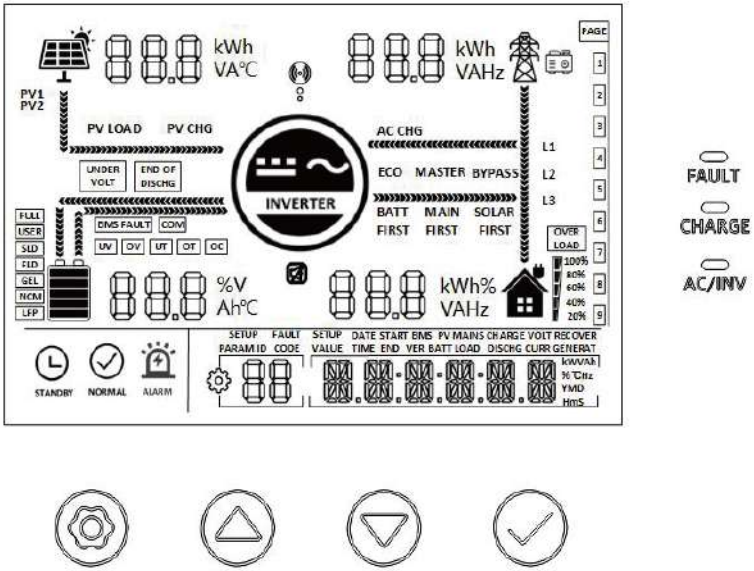
- **Hybrid Energy Management**: Manages energy flow between the grid, battery, optional solar PV, and household loads.
- **Scheduled Charging and Discharging**: Allows charging and discharging periods to be configure d according to household energy needs and electricity tariffs.
- **Backup Power:** Provides backup power to selected critical loads during a grid outage when sufficient battery energy is available.
- **MPPT Solar Charging:** Maximises available solar energy from the PV system under varying sunlight conditions.
- **System Monitoring:** LCD display and LED indicators provide real-time operating status and system information.
- **Built-in Protection:** Integrated protection and thermal management support safe and reliable operation.

3.4.2 Operation Panel

The inverter features a user-friendly operation panel consisting of one LCD screen, three LED status indicators, and four operation buttons. The panel allows users to quickly check the system operating status and access basic operating information.

Inverter Front Panel

NO.	Name	Instruction
①	**LCD Display**	Displays system operating status and real-time data
②	**AC/INV (Yellow)**	**Solid on**: Mains Power Output **Flashing**: Inverter Output
③	**CHARGE (Green)**	**Solid off**: Battery fully charged **Flashing**: Battery charging
④	**FAULT (Red)**	**Solid on**: Inverter fault **Flashing**: Inverter warning
⑤	**ESC (Back)**	Exit or return to previous menu
⑥	**DOWN**	Scroll down / next option
⑦	**UP**	Scroll up / previous option
⑧	**Enter / Confirm**	Confirm selection or enter setup menu



Notes:

LED Indicators: Provide a quick indication of the inverter operating status.

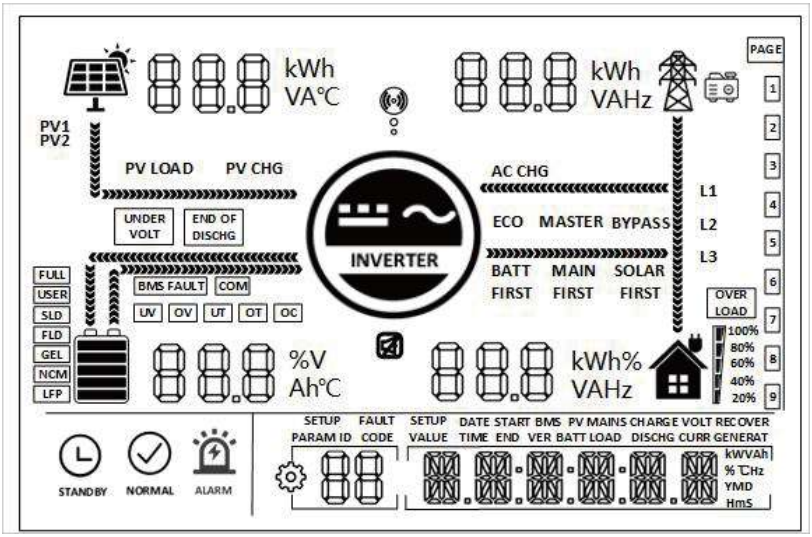
Operation Buttons: Allow users to navigate the display, view system information, and access available settings.

LCD Display: Shows real-time system information, including power flow, charging/discharging status, battery status, and system alarms.

Operation buttons introduction

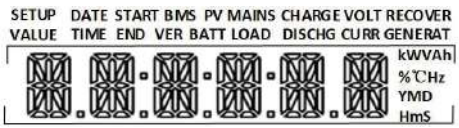
Function Key	Description
	Enter / Exit the Settings Menu
	Increase Page Number / Selected Value
	Decrease Page Number / Selected Value
	Confirm / Enter the Selected Option

LCD screen introduction



Icon	function	Icon	function
	Indicates mains power	INVERTER	Indicates the inverter is working
	Indicates generator		Indicates home appliances
	Indicates solar power	OVER LOAD	Indicates AC output is overload
	Battery remaining capacity is below 5% Battery remaining capacity is 5%~19% Battery remaining capacity is 20%~39% Battery remaining capacity is 40%~59% Battery remaining capacity is 60%~79% Battery remaining capacity is 80%~100%		Load percentage is below 5% Load percentage is 5%~19% Load percentage is 20%~39% Load percentage is 40%~59% Load percentage is 60%~79% Load percentage is 80% ~ 100%
	Indicates that the machine is communicating with the Surveillance Equipment		Indicates that the buzzer is not enabled
FULL	Indicates that the battery is fully charged	USER	Indicates that the current battery type of the machine is user-defined
SLD	Indicates that the current battery type of the machine is sealed lead-acid battery	FLD	Indicates that the current battery type of the machine is flooded lead-acid battery
GEL	Indicates that the current battery type of the machine is gel battery	NCM	Indicates that the current battery type of the machine is NCM battery

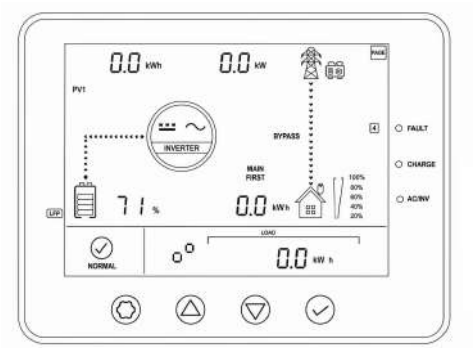
LFP	Indicates that the current battery type of the machine is LFP battery	PAGE	Display the page number prompt of the main interface
1 2	3 4 5 6 7	8 9	Indicates the data page of the main display interface
STANDBY	Indicates that the machine is currently idle	NORMAL	Indicates that the machine is currently in normal operation
ALARM	Indicates that the machine is currently in an alarm or fault state		Indicates that the machine is currently in the parameter setting state
PV LOAD	Indicates that the PV is in a direct load state	PV CHG	Indicates that the PV is in a state of charge
AC CHG	Indicates that the AC is in a state of charge	BYPASS	Indicate that the Mains Power is in the bypass state
ECO	Indicates that the system is enabled in the ECO mode	BATT FIRST	Indicates that the output mode is Battery First
MAIN FIRST	Indicates that the output mode is Mains Power first	SOLAR FIRST	The indicated output mode is Solar First.
UNDER VOLT	Indicates battery under voltage	END OF DISCHG	Battery over-discharge
COM	Indicates internal communication failure	UV	Indicates system under voltage
OV	Indicates system over voltage	UT	Indicates system low temperature
OT	Indicates system over temperature	OC	Indicates system over current
BMS FAULT	Indicates BMS communication failure		Indicates the direction of energy flow
	When the system is in alarm or fault state, the main interface displays fault code; display setting options when setting		Display parameters of PV, battery, mains power and load

	Main Interface: display real-time time, date, total PV power generation, total load power consumption, RS485 address, version number Setting Interface: display setting contents

Real-time data viewing method

On the LCD main screen, press the button for page turning to view the real-time data of the machine.

Page 4

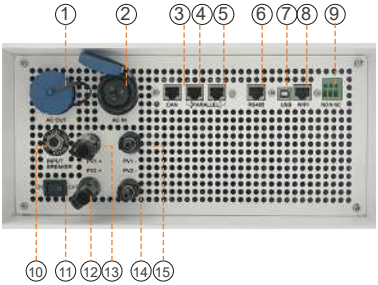


Page	PV side parameters	Battery side parameters	Mains side parameters	Load side parameters	Comprehensive parameters
1	PV Voltage	Battery Voltage	AC Voltage	Load Voltage	Current Time
2	PV Current	Battery Current	AC Current	Load Current	Current Date
3	PV Power	Battery power	AC Power	Load Power	PV Total kWh
4	PV Today kWh	BMS Batt SOC	Smart Meter Power	Load Today kWh	Load Total kWh
5	PV Temperature	BMS Batt Volt	AC Frequency	Load Frequency	RS485 Address
6	Bus Voltage	INV Temperature	Today on grid kWh	Load kVA	Soft Version
7	PV Rated Voltage	Battery Rated Current	Reserved	Load Rated Power	Parallel Mode
8	Reserved	Reserved	Reserved	Reserved	Customer ID
9	Reserved	Reserved	Reserved	Reserved	From chip version

3.4.3 Side Panel Interfaces

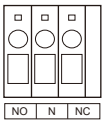
The side panel of the inverter provides clearly labelled connection interfaces to simplify installation and maintenance.

These include:



No.	Interface
①	AC Output (AC OUT)
②	AC Input (AC IN)
③	CAN Communication Port
④	Parallel Communication Port A
⑤	Parallel Communication Port B
⑥	RS485 Communication Port
⑦	USB Communication Port
⑧	WiFi Communication Port
⑨	Dry contact port
⑩	Input Circuit Breaker
⑪	Main ON/OFF Switch
⑫	PV2+
⑬	PV1+
⑭	PV2-
⑮	PV1-

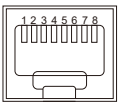
Dry Contact



Working Principle: This dry contact can control the ON/OFF of the diesel generator to charge the battery.

① Normally, the terminals are that the NC-N point is closed and the NO-N point is open;
② When the battery voltage reaches the low voltage disconnection point, t he relay coil is energized, and the terminals turn to that the NO-N point is cl osed while NC-N point is open. At this point, NO-N point can drive resistive loads: 125VAC/1A, 230VAC/1A, 30VDC/1A.

RS485 Communication Port

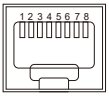


RS485

This port is an RS485 communication port with dual functions:
Enable RS485 communication with the lithium battery BMS.
As shown in the figure

RS485: Pin 1 is RS485-B,and Pin2 is RS485-A, Pin 4 is CANH, and Pin 5 is CANL, Pin 7 is RS485-A, and Pin 8 is RS485-B

CAN Communication Port



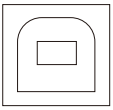
CAN

CAN communication port for CAN communication with lithium battery BMS;

As shown in the figure:

CAN: Pin 4 is CANH, and Pin 5 is CANL.

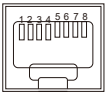
USB Communication Port



This is a USB communication port, which can be used for USB communication with the optional PC host software.

To use this port, you should install the corresponding “USB to serial chip CH340T driver” in the computer.

WIFI Communication Port



WIFI

The WIFI port is used to connect to the Wi-Fi/GPRS data accquisition module, which allow the user to view the operating status and parameters of the inverter via the mobile phone APP.

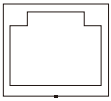
As shown in the figure;

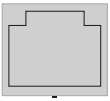
WIFI: Pin 1 is 5V power supply, and Pin2 is GND, Pin 7 is RS485-A, and Pin 8 is RS485-B.

Parallel Function Port (Not Supported for current stage)

This port is used for parallel communication, through which the parallel modules can communicate with each other.
Each machine has two 8 Pin ports, one for the parallel_A and one for the parallel_B. When connecting, make sure to connect the local Parallel_A to the parallelized machine Parallel_B, or the local Parallel_B should be connected to the parallelized machine Parallel_A.

Note: Do not connect local paralle_A to local parallel_B


Parallel_A


Parallel_B

3.4.4 Wi-Fi Module Overview

Introduction

The Wi-Fi module provides a convenient communication interface between the inverter and the monitoring platform. By collecting real-time operating data from the inverter, including PV generation, battery status, power flow and system operating information, the module enables users to remotely monitor and manage the energy storage system.

The module connects the inverter to the **SOLAR-MAN monitoring platform** through a wireless network, allowing users to view real-time system status, historical data and performance information through an intuitive web or mobile interface.

In addition, the monitoring platform supports intelligent alerts, which can notify users of abnormal operating conditions or system faults through email or other notification methods. This helps simplify system maintenance and enables remote system management anytime and anywhere.

For detailed Wi-Fi module installation, network configuration, and user registration procedures, please refer to the **Stick Logger Quick Guide** provided with the module package.

Alternatively, scan the QR code on the last page of this manual to access the **Terra A Resource Library** on the GeePower website.

Front view

Back view

Side view

1.Successful connection to the server: NET light keeps on.
2.Logger runs normally: READY light flashes.
3.Successful connection to the inverter:COM light keeps on

Light	Implication	Implication
NET	Communicate with base station	1.Light off: Connection to the router failed 2.On 1s/Off 1s (Slow flash): Connection to the router succeeded. 3.Light on: Connection to the server succeeded. 4.On 100ms/Off 100ms (Fast flash) : Fast networking
COM	Communicate with inverter	1.Light on: Logger connected to the inverter. 2.Light off: Connection to the inverter failed. 3.On 1s/off 1s (Slow flash) : Logger communicating with inverter.
READY	Logger Running Status	1.Light off: Logger runs abnormally. 2.On 1 s/Off 1 s (Slow flash) : Logger runs normally. 3.On 100ms/Off 100ms (Fast flash) : Restore factory settings.

Abnormal Status Processing

If the data on platform is abnormal when the stick logger is running, please check the table below and complete as imple trouble shooting according to the status of indicator lights.If it still can not be resolved or indicator lights status do not show in the table below, please contact our customer sevice.
(Note； please using the following table query after power-on for 2 mins.)

NET	COM	READYT	Fault Description	Fault Cause	Solution
● NET	● COM	● READY			
Any status	OFF	Slow flash	Communicate with inverter abnormal	1.Communicate stick logger and inverter loosen. 2.Inverter does not match with stick logger's communication rate	1.Check the Connection between stick logger and inverter.Remove the stick logger and install again. 2.Check inverter's communication rate to see if it matches with stick logger's.
OFF	ON	Slow flash	Communicate with router abnormal	1.Stick logger does not have a network. 2.Antenna abnormal 3.Router WiFi signal strength weak.	1.Check if the wireless network configured. 2.Check the antenna, if ther is any damage or loose. 3.Enhance Router WiFi signal strength.
Slow flash	ON	Slow flash	Communicate with router abnormal , Communicate with remote server abnor-mal	1.Router networking abnormal. 2.Server direction has been verified. 3.Network restrained.	1.Check if the router has a network. 2.Check router setup. 3.Contact Customer Service.
OFF	OFF	OFF	Power supply abnormal	1.Connection between stick logger and invert-er loosen or abnormal. 2.Inverter power insufficient. 3.Stick Logger abnormal.	1.Check the connection, remove the stick logger and install again. 2.Check inverter output power. 3.Check Customer Service.

3.4.5 System Operating Modes

The Terra A system automatically manages energy flow between the grid, battery, household loads, and optional solar PV according to the system configuration and the configured charging/ discharging schedule.

During normal operation, users do not need to manually switch between different power supply modes.

Operating Mode	Description
Grid Supply	The grid supplies household loads when grid power is available. Depending on the configured schedule, grid power may also be used to charge the battery.
Battery Supply	Stored battery energy is used to support household loads during configured discharge periods or according to the system operating strategy.
PV Supply (If Installed)	Available solar energy can be used to supply household loads and charge the battery according to the system operating conditions.
Scheduled Charge / Discharge	The battery can be configured to charge and discharge during selected time periods, allowing users to make use of different electricity tariff periods.
Backup Operation	During a grid outage, the inverter automatically supplies selected critical loads through the AC OUT (UPS) output when sufficient battery energy is available.

Note: The system operating strategy and protection parameters are configured during commissioning. Users should only adjust the charging/discharging schedule and other user-accessible settings described in this manual. Advanced system parameters should not be changed unless instructed by GeePower or an authorised installer.

3.5 Recommended External System Components

The Terra A system may be installed with external metering, transfer, protection, and isolation devices according to the system configuration and site requirements.

GeePower can provide recommended components for UK installations. The required components may vary depending on the installation configuration, optional PV connection, backup requirements, and site conditions.

The final device selection, rating, and installation arrangement must be confirmed by a qualified installer according to the actual installation requirements.

Component	Recommended Rating	Main Function
Manual Transfer Switch (MTS)	40 A	Manual transfer of selected critical loads between UPS and Grid supply
Smart Meter & CT Clamp	System matched	Grid power measurement and system energy management
Smart Meter MCB	6 A	Upstream circuit protection for the Smart Meter
AC RCBO	50 A minimum	Residual-current, overload, and short-circuit protection
AC Rotary Isolator	System matched	Dedicated AC isolation for maintenance and servicing
PV Input MCB	25 A DC	PV input overload and short-circuit protection
PV DC Rotary Isolator	PV system matched	Dedicated PV DC isolation for maintenance and servicing

Note:

A 6 A MCB is recommended upstream of the Smart Meter. The installer may add or adjust MCB protection according to the actual circuit design, existing protective measures, installation conditions, and applicable electrical regulations.

PV protection and isolation devices are applicable only when solar PV is installed.

3.5.1 Manual Transfer Switch (MTS)

Recommended Rating: 40 A

Function

The Manual Transfer Switch (MTS) provides a manual means of transferring selected critical loads between the Terra A inverter AC OUT (UPS) supply and the Grid supply.

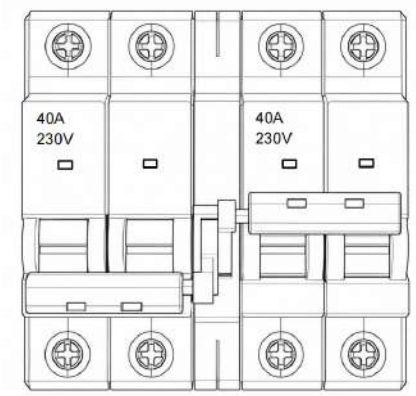
The MTS is primarily intended to provide a manual bypass function during inverter maintenance,

servicing, or fault conditions and is not intended for routine daily operation.

Normal Operation – MTS Position: UPS

During normal operation, the MTS should remain in the **UPS** position.

- Selected critical loads are supplied through the Terra A inverter AC OUT (UPS) circuit.
- The inverter manages the power supply to these loads according to the configured operating mode.
- If the grid supply is interrupted, the Terra A inverter automatically switches to battery backup and continues supplying the selected critical loads when sufficient battery energy is available.
- No manual operation of the MTS is required during a normal grid outage.

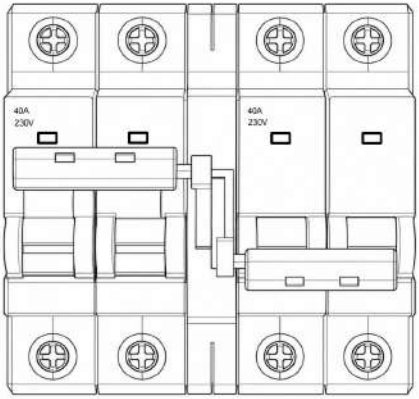


Inverter Maintenance or Fault – MTS Position: GRID

If the Terra A inverter needs to be shut down for maintenance, servicing, or becomes unavailable due to a fault, the selected critical loads can be manually transferred to the Grid supply using the MTS, provided grid power is available.

In the **GRID** position:

- The selected critical loads are supplied directly from the grid.
- The inverter AC OUT (UPS) supply is disconnected from the critical loads.
- This allows the critical loads to remain powered while the inverter is shut down, serviced, or unavailable.



Important:

The MTS is manually operated and does not automatically transfer between the Grid and UPS supplies.

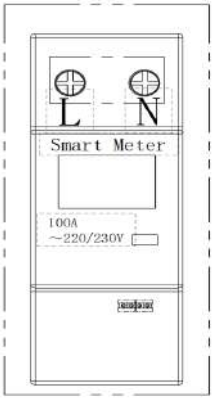
The Grid supply and Terra A AC OUT (UPS) supply must never be connected to the critical loads at the same time. A mechanically interlocked MTS must be used to ensure that only one power source can supply the critical loads at any time.

Only selected critical loads should be connected to the backup circuit, and the total connected load must remain within the Terra A inverter's maximum backup output capacity of **6.2 kW**.

Typical Critical Loads:
Lighting / Refrigerator / Internet Router / Security Equipment

Not Recommended for Backup:
EV Charger / Electric Shower / Large Electric Heating Appliances

3.5.2 Smart Meter and CT Clamp



Function
The Smart Meter and CT clamp work together to measure power flow between the utility grid and the household electrical system.

The CT clamp measures the magnitude and direction of current flow on the incoming grid conductor. The Smart Meter processes this measurement data and communicates it to the Terra A inverter.

The measurement information is used by the Terra A system for:

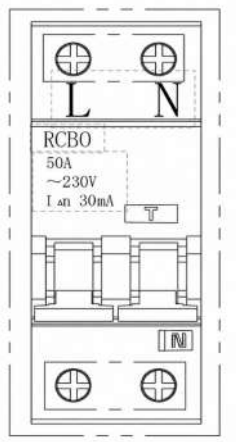
- Grid import monitoring
- Household energy flow measurement
- System power management
- Remote monitoring and data display

The Smart Meter communicates with the Terra A inverter through an RS485 communication connection. **The CT clamp is supplied with a fixed 6 m signal cable. Do not extend, shorten, cut, or otherwise modify the CT cable.**

A 6 A MCB is recommended upstream of the Smart Meter for circuit protection.

Important:
The Smart Meter and CT clamp must be correctly installed and configured by a qualified installer. Incorrect CT installation or orientation may result in incorrect power-flow measurement and abnormal system operation.

3.5.3 AC RCBO



Recommended Rating: 50 A minimum

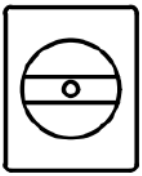
Function
The RCBO provides combined electrical protection against:

- Residual current (earth leakage)
- Overload
- Short circuit

It is used on the Terra A AC circuit to provide protection for the associated wiring and connected circuits.
The RCBO automatically disconnects the circuit under specified fault conditions to help protect users, wiring, and electrical equipment.

Note:
The final RCBO type and rating must be confirmed by a qualified installer according to the actual circuit design and installation requirements.

3.5.4 AC Rotary Isolator



Function
The AC Rotary Isolator provides a dedicated manual isolation point for the Terra A AC grid connection. It allows the inverter AC connection to be safely isolated during maintenance, inspection, or servicing.

Where a lockable isolator is used, it can be secured in the OFF position to help prevent inadvertent re-energisation during maintenance.

Important:

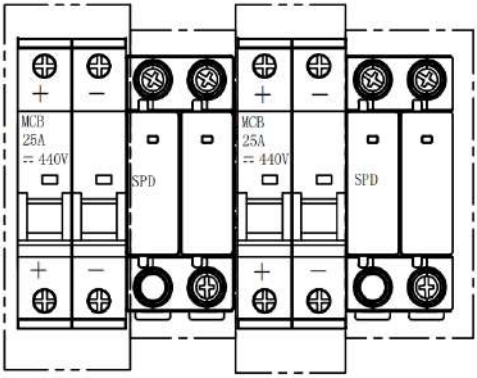
The AC Rotary Isolator is an isolation device. Appropriate circuit protection must be provided separately according to the installation design.

The final isolator type and rating must be selected by a qualified installer according to the actual installation requirements.

3.5.5 PV DC Protection Units (PV MCBs and SPDs)

Applicable only when solar PV is installed.

PV MCB: 25 A DC
DC Surge Protective Device (SPD): Type 2



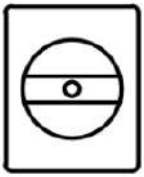
The Terra A system has two independent PV input circuits. Each PV input must be equipped with a dedicated PV MCB and DC SPD.

Function
Each PV MCB provides overload and short-circuit protection for its corresponding PV DC input circuit and allows the circuit to be isolated when required.

Each DC SPD helps protect the corresponding Terra A PV input and associated wiring against transient overvoltages caused by lightning or switching events.

Note:
The final MCB and SPD specifications must be confirmed by a qualified installer according to the PV array voltage and current, inverter PV input limits, earthing arrangement and applicable installation requirements.

3.5.6 PV DC Rotary Isolator



Applicable only when solar PV is installed.

Function
The PV DC Rotary Isolator provides a dedicated manual isolation point between the PV array and the Terra A inverter PV input.

It allows the PV DC circuit to be isolated during maintenance, inspection, or servicing.

Important:

PV modules can generate DC voltage whenever exposed to light. The PV DC circuit should only be installed, inspected, or serviced by a qualified installer.

The isolator voltage and current ratings must be selected according to the actual PV array configuration and installation requirements.

4.1 Safety Instructions

Please read this section carefully before installation and operation.

Failure to follow these instructions may result in fire, electric shock, serious injury, or equipment damage.

Installation, commissioning, and maintenance must be carried out only by qualified personnel and in accordance with local regulations and standards, including BS 7671 (UK IET Wiring Regulations) and applicable ENA requirements.

DANGER – Risk of Fire or Explosion

Electrical devices can cause fires

Install the inverter on a non-flammable surface.

Do not install the inverter where flammable materials are stored.

WARNING – Heat During Operation

The inverter may become warm during operation. Mount the inverter in a suitable location.

Avoid prolonged direct contact with the enclosure or nearby surfaces while the inverter is operating. Wait for the inverter to cool down before handling.

CAUTION – Equipment Damage and Operational Risks

All electrical installations must be done according to local wiring regulations (e.g., BS7671 in UK).

Do not remove the casing. The inverter contains no user-serviceable parts. Only qualified service personnel should perform servicing.

All wiring and electrical installation should only be done by a qualified electrician.

Carefully remove the unit from its packaging. Inspect it for external damage. If you find any damage, contact your local supplier immediately

NOTICE – Important Safety Information Regarding Voltage

Both AC and DC voltage sources are terminated inside the inverter module. Always disconnect these circuits before servicing.

When a photovoltaic panel is exposed to light, it generates a DC voltage.

When connected to this equipment, a photovoltaic panel will charge the DC capacitors, which will remain charged for a period after the source is removed. Energy stored in this equipment's DC capacitors presents a risk of electric shock.

Note: This system is a low-voltage 51.2V battery system. The voltage is not hazardous under normal handling, but proper precautions must still be taken.

Battery Installation

Note the polarities when installing batteries. Do not connect the positive and negative poles of a battery or battery string together. Otherwise, the battery may be short-circuited.

When installing batteries, do not place tools, metal parts, or sundries on the batteries. After installation, clean up the objects on and around the batteries.

After unpacking batteries, place them in the required orientation. Do not place a battery upside down, vertically, on its side, tilted, or stacked incorrectly. Ensure that batteries do not fall or get damaged.

⚠ CAUTION – Battery Handling and Movement
Move battery packs slowly to prevent damage or collision.
Ensure battery packs are securely bound before using a pallet truck or forklift.
Do not remove protective covers or waterproof caps from battery terminals when moving batteries.
Exercise caution when moving batteries to prevent bumping and ensure personal safety.
Install and secure batteries horizontally, from the bottom up and left to right, to prevent tipping.
When connecting batteries, ensure the spring washer on the screw is level, the terminal protrusion faces outwards, and the cable is intact.

⚠ CAUTION – Installation Procedure
Ensure the power circuit breaker is OFF before installing batteries.
Keep the battery loop disconnected during installation and maintenance.

Damaged Battery Warning

- Do not use a damaged battery (dropped, bumped, bulged, or dented), as this may cause electrolyte leakage or gas release. In case of electrolyte leakage or structural deformation, contact the installer or qualified O&M personnel immediately to remove or replace the battery.
- Do not store damaged batteries near other devices or flammable materials, and keep away from non-professionals.
- Before installing a battery pack, check that the enclosure is not deformed or damaged.

4.2 Pre-Installation Check

Before unpacking and installing the Terra A system, complete the following checks to confirm that the correct equipment has been delivered and that no visible shipping damage is present.

4.2.1 Battery Capacity Confirmation

Before unpacking or installing the system, confirm that the correct number of battery modules has been delivered. Each lithium battery module has a nominal energy capacity of 5 kWh. The total system capacity depends on the number of battery modules installed.

NOTE: Do not proceed with installation if the delivered battery quantity does not meet the required system capacity. Contact your supplier for clarification if needed.

4.2.2 Packaging Inspection

Before unpacking the system, inspect the outer packaging of each box (A, B, and C) for any damage, such as holes, dents, or cracks. Confirm that the packaging labels match the battery and system model ordered.

NOTE: If significant shipping damage is found, take clear photographs of the packaging and product labels before unpacking and contact your supplier or dealer.

4.2.3 Unpacking and Deliverables Check

After unpacking, check that all delivered components are complete and free from visible damage.
Verify that:
The inverter module is undamaged.
The correct number of battery modules has been supplied.
Required cables and accessories are present.
Any ordered external components are included.
Product labels and model information are correct.

If any component is missing, damaged, or incorrect, contact your supplier or dealer before installation.

4.2.4 Packaging List

The Terra A system is supplied in separate packages according to the ordered system configuration.
Please check all packages against the supplied packing list before installation.

Box	Contents
A	Inverter, Installation Kit (mounting base, wheels, connectors, WiFi module, User Manual)
B	Lithium Battery
C	Accessory Package

When unpacking, inspect each box carefully. Ensure that all accessories listed in the packing list are present and that both the packaging and the product are free from damage.

Inverter Module

Battery Module *1

MC4 Plug *4

Installation Kit

WiFi Module

AC aviation plug

This photo is provided as a reference to verify that all components and accessories are included.

Always check items against the packing list before proceeding with installation.

4.3 Preparing Tools and Instruments

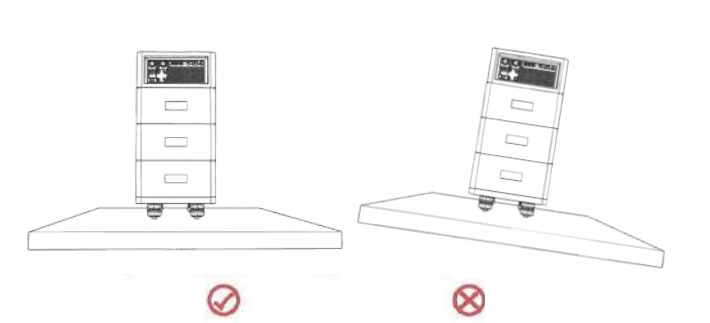
Type	Tools and Instruments			
Installation Tools				
	Impact drillDrill bits: Ø8 mm, Ø12 mm, Ø16 mm	Insulated Phillips torque screwdriver	Utility knife	Insulated torque socket wrench
	Diagonal cutting pliers	Rubber mallet	Cable ties	Wire stripper
	Cable cutter	Crimping tool	Multimeter	Vacuum cleaner
	Marker pencil	Steel tape measure	Spirit level	Cold-press terminal crimping tool
Personal Protective Equipment (PPE)				
	Insulated gloves	Protective work gloves	Dust mask	Safety shoes
		-	-	-
	Safety goggles			

4.4 Installation Location Requirements

Before installation, carefully select the installation position to ensure safe operation, proper ventilation, and ease of maintenance.

4.4.1 Installation Orientation Requirements

The system is designed for upright, vertical installation only.
Do not install the system in any of the following positions:
Tilted forward or backward / Tilted to either side / Horizontal installation / Upside down



Incorrect installation orientation may cause equipment damage or abnormal operation.

4.4.2 Installation Position and Clearance Requirements

Installation Position Requirements

- Install the ESS on a solid, level, and non-combustible floor, such as a concrete structure.
- If installed on other types of floors, the surface must be fire-retardant and meet the load-bearing r equirements.
- Wall mounting is not required for this system.
- Position the system close to a wall after installation and lock the wheels to ensure stability.

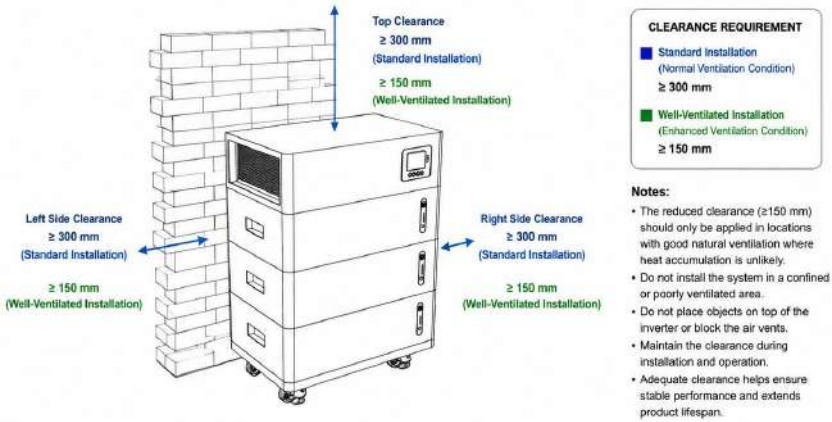
Clearance Requirements

Ensure sufficient clearance around the system to maintain proper airflow and heat dissipation.

Standard Installation Condition:
⩾300 mm on both sides.
⩾300 mm above the system.

Well-Ventilated Installation Condition:
⩾150 mm on both sides.
⩾150 mm above the system.

The reduced clearance should only be applied in locations with good natural ventilation where heat accumulation is unlikely.



4.4.3 Installation Environment Requirements

- Follow these recommendations when selecting an installation location:
- Do not install the system where it may come into direct contact with water.
- Avoid installation in locations exposed to direct sunlight.
- Do not install the system near flammable or explosive materials.
- Do not place any objects on top of the system, as this may obstruct ventilation and heat dissipation.
- The installation location must be safely accessible at all times for inspection and maintenance.
- Ensure sufficient space around the system for cooling and ventilation.
- The ambient temperature of the installation location should be below 40℃ for optimal operation.
- Relative humidity should be 0–95% (non-condensing).

4.5 System Installation Procedure

This section describes the procedure for floor-mounted installation of the system.

4.5.1 Installation Preparation

Before installation, ensure the following preparations are completed:

- Ensure the installation surface is level, solid, and non-combustible.
- Confirm that sufficient space is reserved for ventilation, heat dissipation, and maintenance.
- Check that the installation route is suitable for moving and positioning the system.
- Ensure the system remains upright during transportation and positioning.
- Check that all required tools, installation accessories, and battery modules are available.
- Verify that the battery modules and covers are correctly installed before operation.
- Ensure the wheel locking mechanism is functional before positioning the system.

4.5.2 Installation Procedure

①Installation Kit

②5kWh Battery Module

③10kWh Battery

④15kWh Battery

⑤15kWh Battery
with Inverter

⑥ All-in-one Battery System

Step 1 Position the Base and Lock the Wheels

- Place the base as close to the wall as possible, ensuring it is flush with the wall surface.
- If a skirting board prevents the base from being flush with the wall, remove or cut the skirting board as required.
- Adjust the base position so it is aligned parallel to the wall.
- Lock all wheels to prevent movement before proceeding with installation.

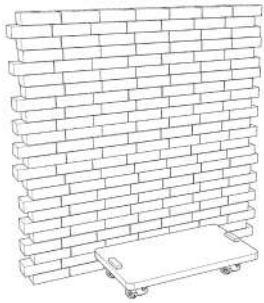


Figure 1 Base positioning and wheel locking

Step 2 Install the Battery Modules

- Place the first battery module onto the base.
- Ensure the module is positioned upright, stable, and flush with the wall.
- Stack additional battery modules from bottom to top, ensuring:
  - Each module is fully seated
  - Modules remain aligned with the wall
  - The system remains level left to right

No wall drilling or expansion bolts are required for standard installation.

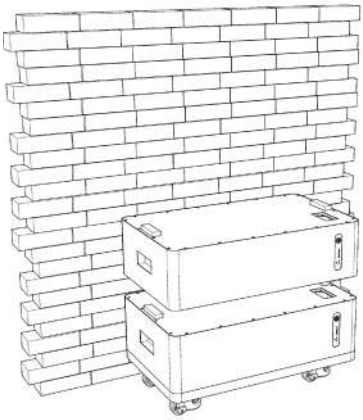


Figure 2 Battery module stacking (bottom to top)

Step 2.1 Secure and Check Stability

After all battery modules are installed, confirm:

- All modules are properly stacked and aligned
- Wheels remain fully locked
- The system is stable and cannot roll or tip

Do not proceed to inverter or electrical installation unless mechanical installation is complete and stable

⚠ WARNING – Risk of Injury Due to Heavy Weight

Each battery module weighs approximately 46 kg. A two-person lift is recommended, or use suitable lifting equipment during installation.

⚠ CAUTION – Stability Risk

Ensure wheels are locked before stacking battery modules.

Do not install the system on uneven or sloped surfaces.

Do not apply lateral force to the system during stacking.

Step 3 Install the Inverter

The inverter should be installed after all battery modules are properly stacked and secured.

- Place the inverter on top of the stacked battery modules, ensuring it is centered and flush with the system frame.
- Ensure sufficient clearance around the inverter for ventilation, maintenance, and cable connections.
- Use a spirit level to confirm the inverter is level front to back and side to side.
- Confirm that the inverter is firmly secured, stable, and does not move.

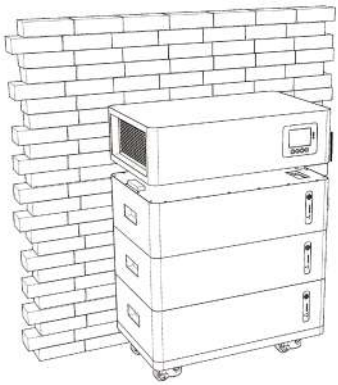


Figure 3 Inverter positioning

⚠ CAUTION – Clearance and Stability

Maintain proper clearance around the inverter for ventilation and cable routing. Do not place the inverter on an uneven surface or apply lateral force.

Step 4 Install External Protection and Isolation Devices

After the Terra A inverter and battery modules have been correctly positioned and secured, install the required external protection, isolation, metering, and transfer devices according to the approved system configuration.

Depending on the installation configuration, these may include:

Manual Transfer Switch (MTS)
Smart Meter and CT Clamp
AC RCBO
AC Rotary Isolator
PV Input MCB (if PV is installed)
PV DC Rotary Isolator (if PV is installed)

Install all devices in suitable, accessible locations with sufficient space for safe operation, inspection, and maintenance.

The exact device selection, rating, and installation arrangement must be confirmed by a qualified installer according to the system design and applicable electrical requirements.

Important: Do not begin electrical wiring until the Terra A inverter, battery modules, and all required external devices have been correctly installed and secured.

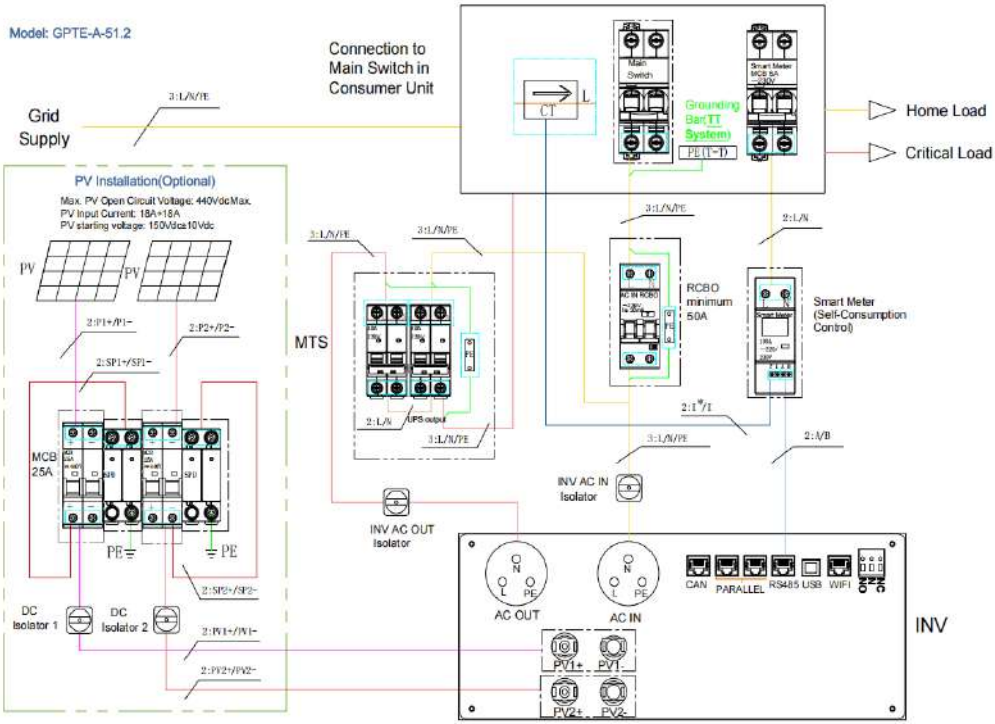
Step 5 – System Wiring Overview

The following diagram shows the typical wiring arrangement of the Terra A system, including the grid connection, AC input and output, Smart Meter and CT, Manual Transfer Switch (MTS), critical loads, and optional PV connection.

The actual installation may vary depending on the site configuration and system options.

Important: All electrical connections must be completed by a qualified installer. For detailed installation and commissioning instructions, refer to the **Terra A Series - Installer Quick Start Guide or scan the QR code on the last page of this manual to access the latest Terra A resources.**

Typical Terra A System Wiring Diagram



Step 6 – Installation Completion

After completing the mechanical installation and electrical connections:

Confirm that all Terra A modules and external system components are securely installed.
Confirm that all required electrical connections have been completed by a qualified installer.
Do not power on the system until the **Pre-Commissioning Checklist in Chapter 5** has been completed.

Next Step: Proceed to Chapter 5 – System Commissioning

5. System Commissioning

This section describes the checks and procedures required before powering on and commissioning the Terra A system.

Commissioning must be performed by a qualified installer. Before powering on the system, verify that the mechanical installation, electrical connections, protection and isolation devices, Smart Meter and CT, and optional PV connections have been correctly installed.

Important: System parameters and advanced settings must not be changed unless specified in this manual or instructed by GeePower technical support.

5.1 Pre-Commissioning Checklist

Before powering on the system, confirm all of the following:

Wiring Inspection
All battery, AC, and optional PV cables are securely connected.
Cable polarity and terminal connections have been checked.
Cables and insulation show no visible signs of damage.
All accessible terminals and connections are properly secured.

System and Installation Check
Battery modules are correctly stacked, aligned, and secured.
The inverter module is correctly installed on top of the battery stack.
Required external protection and isolation devices are correctly installed.
The MTS is correctly installed and set to the UPS position where backup power is configured.
Smart Meter and CT are correctly installed.
All system covers and protective devices are secured.

Grounding (Earthing)
The Terra A system and associated electrical equipment are properly earthed in accordance with applicable electrical requirements.
Protective earth (PE) connections are secure.

AC Grid Supply Check
Grid voltage and frequency are within the inverter operating limits.
AC protection and isolation devices are correctly installed.
The AC isolation switch is in the OFF position before initial power-up.

PV Array Check (If Installed)
PV polarity has been verified.
PV open-circuit voltage (Voc) is within the inverter input limits.
PV input current is within the inverter input limits.
PV protection and isolation devices are correctly installed.
The PV DC isolation switch is in the OFF position before initial power-up.

CAUTION– Commissioning Required

The Terra A system must be fully installed and commissioned before normal operation. Always follow the specified power-on and shutdown sequences.

Incorrect wiring, system configuration, parameter settings, or operating sequence may cause abnormal operation, trigger protection functions, or damage the equipment. Do not disconnect cables or electrical connections while the system is operating.

Commissioning and initial power-on must only be performed by a qualified installer in accordance with this manual and the Terra A Series - Installer Quick Start Guide.

5.2 System Power-On Procedure

5.2.1 Power-On Sequence

① Check All Switches Before Power-On

Before powering on the system, ensure that the following devices are switched OFF:
AC Rotary Isolator
AC Output RCBO
PV MCB (if PV is installed)
PV DC Rotary Isolator (if PV is installed)
Connected critical loads

Where a Manual Transfer Switch (MTS) is installed, confirm that it is set to the UPS position.

② Check the Grid Supply

Confirm that the grid supply voltage is within the inverter's normal operating range before connecting the grid supply to the inverter.

③ Switch ON the Battery Modules

Switch ON the battery module closest to the inverter first. This module establishes communication with the inverter and must be powered on before the other battery modules

Then switch ON the remaining battery modules in sequence, working from the module closest to the inverter to the module furthest away.

Confirm that the battery status indicators are normal and no persistent fault or communication alarm is present.

Important: Always switch ON the battery module closest to the inverter first. Starting another battery module first may cause a temporary communication alarm.

④ Start the Inverter

Turn the inverter power switch ON and wait for the inverter self-check process to complete.
Confirm that the LCD display starts normally and no fault or alarm message is displayed.

⑤ Connect the Grid Supply

After the battery system and inverter have started normally:
Turn the customer Main Switch ON.
Turn the AC Rotary Isolator ON.
Confirm that the inverter detects the grid supply and enters normal grid-connected operation.

⑥ Connect the PV Supply (If Installed)
If solar PV is installed:
Turn the PV MCB ON.
Turn the PV DC Rotary Isolator ON.
Confirm that the inverter detects the PV input normally.
Confirm that no PV-related fault or alarm is displayed.
Note: Skip this step if no solar PV system is installed.

⑦ Enable the AC OUT / Critical Load Circuit
Where backup power is configured:
Confirm that the MTS remains in the UPS position.
Turn ON the RCBO or MCB corresponding to the critical loads.
Switch ON the connected critical loads one by one to avoid excessive inrush current that may trigger system protection.
Confirm that the critical loads are supplied normally and no fault or alarm is displayed.

The Terra A system is now ready for normal operation and final commissioning checks.

5.2.2 Shutdown Sequence

① Switch OFF the Critical Loads

Switch OFF the connected critical loads one by one.
Do not switch OFF the AC Output RCBO until the connected loads have been switched off.

② Disconnect the AC OUT Circuit

Turn the AC Output RCBO OFF.
Where an MTS is installed, leave the MTS in the UPS position during normal system shutdown.

Note: If continuous power to the critical loads is required during inverter maintenance, the MTS may be transferred to the GRID position according to the MTS operating instructions, provided grid power is available.

③ Disconnect the PV Supply (If Installed)
If solar PV is installed:
Turn the PV DC Rotary Isolator OFF.
Turn the PV MCB OFF.
Note: Skip this step if no solar PV system is installed.

④ Disconnect the Grid Supply
Turn the AC Rotary Isolator OFF to isolate the Terra A inverter from the grid supply.

⑤ Switch OFF the Inverter
Turn the inverter power switch OFF.

Wait for the inverter to begin its shutdown process.

⑥ Switch OFF the Battery Modules
Switch OFF all battery modules.
For complete system shutdown, confirm that the battery status indicators turn off.

⑦ Confirm Complete Shutdown
Wait until the inverter LCD display and system indicators turn off completely. This may take several minutes.
Before any maintenance or electrical work is carried out, confirm that the system has been fully isolated and that no hazardous voltage is present.

System is now fully powered down.

5.3 User Settings

The Terra A inverter parameters are pre-configured before shipment. Users may only adjust the charging and discharging schedule and other permitted user settings described in this section.

Important operating, battery-protection and grid-protection parameters are factory configured and must not be changed. If any technical parameter needs to be adjusted, contact your installer or GeePower Technical Support.

5.3.1 Entering the Settings Menu

Key Operation Instructions:

Press the Menu button to enter the setting menu.

Parameter number [00] (Exit) will flash.

Use the / keystoselect theparameter number to edit.

Press Enter to enter the editing state; the parameter value will flash.

Adjust the value using / keys.

Press Enter again to confirm the value and return to parameter selection.

To exit the setting menu, select [00] ESC or Press Menu button again.

Notes:

- Only adjust the user settings specifically described in this section.
- Do not change any other system operating, battery-protection, voltage or grid-protection parameters.
- The charging and discharging schedule may be configured according to the household ’ s electricity tariff and energy usage requirements.
- If you are unsure about any setting, contact your installer or GeePower Technical Support before making changes.
- Incorrect parameter settings may affect system operation and performance.

The following section describes the settings that may be adjusted by the user. All other parameters must remain at their factory-configured values.

User-Adjustable Settings

Parameter 28 – Maximum Charging Current
This setting refers to the battery-side charging current at the battery's nominal voltage of 51.2 V
Factory default: 60 A
Maximum adjustable value: 100 A

GeePower recommends avoiding unnecessarily high charging currents to help maintain battery performance and extend cycle life.

Parameters 40 – 55 – Charging & Discharging Schedule
Configure the charging and discharging time periods according to the customer's electricity tariff and usage
requirements.

Parameter 61 – Backup Reserve SOC
Factory default: 10%. For a 15kWh battery system, this provides approximately 13.5kWh of usable energy under normal operation.
The reserve SOC can be adjusted; however, GeePower recommends maintaining the factory default of 10 % or higher to avoid excessive depth of discharge and support long-term battery performance and cycle life. A higher reserve may be selected if the customer requires more capacity for backup operation.

5.3.2 Parameter Settings Table

Voltage Setting Logic: [15] < [12] < [04/14] < [35] < [37] < [05] < [09/11]

Parameter Number	Parameter Name	Setting Options	Description
00	Exit	[00] ESC	Menu of Exit Settings
01	Supply Priority Mode	[01] AC1ST	PV Priority for Load Supply: When PV power is insufficient, the grid and PV jointly supply the load. When PV power exceeds the load demand, the surPlus charges the battery. Grid charging is activated only when the battery is over-discharged. **(In Setting [06], if "ONLYPV" is selected, the grid will not charge the battery.)** The battery discharges in off-grid mode or during scheduled discharge periods.
		[01] BT1ST	Inverter priority mode: Switch to Mains Power only when the battery is under-voltage or lower than **Parameter [04]** Set Value. When the battery voltage exceeds the set value of **Parameter [05]**, the system will switch from mains power supply back to PV power supply mode.
		[01] PV1ST	Solar First Mode: Switch to Mains Power when PV has failed or battery is lower than **Parameter [04]** Set Value.
		[01] Mix load **Default**	PV Priority Charging: When solar power is insufficient, the system supports hybrid charging using both PV and grid power. **(In Setting [06], if "ONLYPV" is selected, the grid will not charge the battery.)** Meanwhile, the grid can still supply power to the loads. As the same,the battery discharges in off-grid mode or during scheduled discharge periods.
02	Output Frequency	[02] 50.0 **Default**	Bypass self-adaptation; when the mains is connected, it automatically adapts to the mains frequency; when the mains is disconnected, the output frequency can be set through this menu. The default output frequency of the 230V machine is 50HZ, and the 120V machine is 60Hz.
		[02] 60.0	
04	Battery to Mains	[04] 46V **Default**	When the **Parameter [01] = BT1ST/PV1ST**, the battery voltage is lower than the set value, and the output is switched from inverter to Mains Power, and the set range is 40V~52V.
05	Mains to Battery	[05] 57.6V **Default**	When the **Parameter [01] = BT1ST/PV1ST**, the battery voltage is higher than the set value or the battery is fully charged, and the output is switched from mains to inverter, and the set range is 48V~60V.

06	Charging mode	[06] Hybrid **Default**	Hybrid charging by PV and under utility grid give priority to PV, and use utility grid for supplementary if PV energy is insufficient. When the PV energy is sufficient, the utility grid will stop charging. **Note:** PV and utility grid are available for charging at the same time only when the bypass output is loaded, and only PV charging can be activated when the inverter is working.
		[06] ONLYPV	Only PV charging, no mains charging is enabled.
07	Maximum Charging Current	[07] 60A **Default**	Setting range: 0~100A
08	Battery type	LFP16 (**Default**)	The factory default setting is LFP16, and users are not allowed to modify it without factory approval. Any unauthorized modification by the user will void the warranty.
09	Boost Voltage	[09] 57.6V **Default**	Setting of Boost Voltage: Set Range of 48V~58.4V, Step 0.4V, available when the battery type is user-defined and lithium battery.
10	Maximum Boost Duration	[10] 120 **Default**	Maximum Boost Charging Duration Setting: It refers to the maximum charging time when the voltage reaches **Parameter [09]** during constant voltage charging. The setting ranges from 5 minutes to 900 minutes with a step of 5 minutes.
11	Float charge voltage	[11] 55.2V **Default**	Floating Charge Voltage, with the Set Range of 48V~58.4 V, Step of 0.4 V.
12	Over-discharge voltage	[12] 42V **Default**	Over-discharge Voltage: The battery voltage is lower than such criterion, and the Inverter output is turned off after the time delay **parameter is set to [13]**, with the Set Range of 40V~52V and Step of 0.4V.
13	Over discharge Delay Time	[13] 5S **Default**	Over-discharge Delay Time: when the battery voltage is lower than the **Parameter [12]**, the inverter output is turned off upon delay of time set by this Parameter, with the Set Range of 5S~50S, Step of 5S.

14	Battery under voltage alarm point	[14] 44V **Default**	Battery under-voltage alarm point: when the battery voltage is lower than such criterion, under-voltage alarm will be given, the output will not be shut down, with the Set Range of 40V~52.8V, Step of 0.4V.
15	Battery Discharge Limit Voltage	[15] 40V **Default**	Battery Discharge Limit Voltage: the battery voltage is lower than such criterion, output and shut down immediately. Set Range of 40V~52V, Step of 0.4V, available when the battery type is user-defined and lithium battery.
16	Equalization charge	[16] DIS **Default**	No equalization charging.
		[16] ENA	Enable equalization charging, only Flooded lead-acid batteries, sealed lead-acid batteries and user-defined are effective.
17	Equalization Voltage	[17] 58V **Default**	Equalization Charging Voltage, with the Set Range of 48V~58.4V, Step of 0.4V, available for Flooded lead-acid battery, sealed lead-acid battery and user-defined.
18	Equalization Charging Time	[18] 120 **Default**	Equalization Charging Time, with the Set Range of min~900min, Step of 5min, available for Flooded lead- acid battery, sealed lead-acid battery and user-defined.
19	Equalized Charging Delay	[19] 120 Default	Equalization Charging Delay, with the Set Range of min~900min, Step of 5min, available for Flooded lead- acid battery, sealed lead-acid battery and user-defined
20	Equalization Charge Interval Time	[20] 30 **Default**	Equalization Charge Interval Time, 0~30d, Step of 1d, available for Flooded lead-acid battery, sealed lead-acid battery and user-defined.
21	Equalization Charging Start-Stop	[21] ENA	Start equalization charging immediately
		[21] DIS **Default**	Stop equalization charging immediately
22	ECO mode	[22] DIS **Default**	Power saving mode disabled.
		[22] ENA	After the power saving mode is enabled, if the load is null or less than 50W, the inverter output is turned off after a delay for a certain period of time. When the load is more than 50W, the inverter automatic restart. Note: Only valid when the battery is discharging.

23	Overload Automatic Restart	[23] DIS **Default**	Overload automatic restart is disabled. If overload occurs, the output will be shut down, and the machine will not be restarted.
		[23] ENA	Enable overload auto restart. If overload occurs, shut down output, delay the machine for 3 min and then restart the output. After 5 times in total, no startup will be resumed.
24	Auto restart upon over-temperature	[24] DIS **Default**	Over-temperature automatic restart is disabled. If over-temperature occurs, the output will be shut down, and the machine will not be restarted for output.
		[24] ENA	Enable automatic restart upon over-temperature. If over-temperature occurs, shut down output, and restart output after the temperature has dropped.
25	Buzzer Alarm	[25] DIS	No Alarm
		[25] ENA **Default**	Enable alarm
26	Mode Change Reminder	[26] DIS	Alarm is disabled when the status of the main input source has change.
		[26] ENA **Default**	Alarm is enabled when the status of the main input source has change.
27	Inverter Overload to Bypass	[27] DIS **Default**	Automatic switch to Mains Power is disabled when the Inverter is overloaded.
		[27] ENA	Automatic switch to Mains Power when the inverter is overloaded.
28	Current of charging under grid electricity	[28] 60A **Default**	AC output 230Vac, with the Set Range of 0~100A.
30	RS485 Address Setting	[30] 1 **Default**	RS485 communication address can be set within the range of 1~254 for stand-alone mode and 1 to 6 for parallel mode.
31	AC output mode (can be set in the standby mode only)	[31] SIG **Default**	Single machine setting.
		[31] PAL	Single-phase parallel connection setting.
		[31] 3P1/3P2/3P3	Three-phase parallel connection setting.
		All machines in phase 1 must be set as 【3P1】 All machines in phase 2 must be set as 【3P2】 All machines in phase 3 must be set as 【3P3】 1.When the output voltage set in the setting【38】 is 230Vac (S model) At present the line voltage between the live wire L1 in phase 1 and the live wire L2 in phase 2 is 230*1.732 = 398Vac, and similarly the line voltage between L1-L3, L2-L3 is 398Vac; the single phase voltage between L1-N, L2- N, L3-N is 230Vac.	

32	Communication function	[32] DIS	Disable BMS communication.
		[32] 485 **Default**	485-BMS communication.
		[32] CAN	CAN-BMS communication.
33	BMS communication protocol	When [32] enables BMS communication, the corresponding lithium battery manufacturer brand should be selected for communication.	
		WOW-SRNE	
34	ON-GRID function	[34] OFF GRID	Disable this Function.
		[34] ONGRID	When operating in the bypass state, the excess PV energy is allowed to be connected to the grid, and if this is during a time when the battery is discharged, the battery will be discharged and connected to the grid.
		[34] HMLOAD **Default**	In Home Load mode, the inverter uses available PV power and battery power to supply the household loads. By reading the smart meter data, the inverter monitors the actual load consumption and dynamically adjusts its output power according to the household energy demand.
35	Battery Under-voltage Recovery Point	[35] 52V **Default**	When the battery is under-voltage, the battery voltage should be greater than this set value to restore the inverter AC output of the battery, and the set range is 44.4V~58.8V
36	Max PV charger current	[36] 80A **Default**	Max PV charger current. Setting range: 0~100A.
37	Battery Recharge Recovery Point	[37] 52V **Default**	After the battery is fully charged, the inverter will stop charging, and when the battery voltage is lower than this Value, the Inverter will resume charging again. And the set range is 44.4V~55.6V.
38	AC Output Rated Voltage	[38] 230Vac **Default**	You can set: 200/208/220/230/240Vac
39	Charge current limiting method (when BMS is enabled)	[38] LC SET	Max. battery charging current not greater than the value of setting 【07】
		[38] LC BMS **Default**	Max. battery charging current not greater than the limit value of BMS
		[38] LC INV	Max. battery charging current not greater than the logic judgements value of the inverter.
40	1-section start charging time	[40] 00:00:00 **Default**	Set Range: 00: 00-23: 59: 00
41	1-section end charging time	[41] 00:00:00 **Default**	Set Range: 00: 00-23: 59: 00
42	2-section start charging time	[42] 00:00:00 **Default**	Set Range: 00: 00-23: 59: 00
43	2-section end charging time	[43] 00:00:00 **Default**	Set Range: 00: 00-23: 59: 00

44	3-section start charging time	[44] 00:00:00 **Default**	Set Range: 00: 00-23: 59: 00
45	3-section end charging time	[45] 00:00:00 **Default**	Set Range: 00: 00-23: 59: 00
46	Sectional charging function	[46] DIS	Disable this Function.
		[46] ENA **Default**	When the function is enabled, if PV power is insufficient, the mains will charge the battery within the set time period; outside the time period, the mains will not participate in charging.
47	1-section start discharging time	[47] 00:00:00 **Default**	Set Range: 00: 00-23: 59: 00
48	1-section end discharging time	[48] 00:00:00 **Default**	Set Range: 00: 00-23: 59: 00
49	2-section start discharging time	[49] 00:00:00 **Default**	Set Range: 00: 00-23: 59: 00
50	2-section end discharging time	[50] 00:00:00 **Default**	Set Range: 00: 00-23: 59: 00
51	3-section start discharging time	[51] 00:00:00 **Default**	Set Range: 00: 00-23: 59: 00
52	3-section end discharging time	[52] 00:00:00 **Default**	Set Range: 00: 00-23: 59: 00
53	Sectional discharge function	[53] DIS	Disable this Function
		[53] ENA **Default**	When the function is enabled，if PV power is insufficient, and the battery charge is sufficient, the battery will participate in discharging to supply the load within the set time period. Outside the time period, when mains power is available, the system will switch to mains-powered load supply.
54	Current date setting	[54] 00:00:00 **Default**	Set Range: 00:01: 01-99:12:31
55	Current time setting	[55] 00:00:00 **Default**	Set Range: 00:00: 00-23:59: 59
56	Leakage protection function(NG resistance)	[56] DIS **Default**	Disable this Function.
		[56]ENA	Enable leakage protection function.
57	Stop charging current	[57] 2A **Default**	Charging stops when the default charging current is less than this setting.
58	Discharge alarm SOC setting	[58] 15% **Default**	SOC alarm when capacity is less than this set value (valid when BMS communication is normal).
59	Cut-off discharge SOC Settings	[59] 5% **Default**	Stops discharging when the capacity is less than this setting (valid when BMS communication is normal).

60	Cut-off charge SOC Settings	[60]100% **Default**	Stops charging when capacity is greater than or equal to this setting (valid when BMS communication is normal).
61	Switch to mains SOC Settings	[61] 10% **Default**	Switch to mains when capacity is less than this setting (valid when BMS communication is normal).
62	Switch to inverter output SOC Settings	[62] 30% **Default**	Switches to inverter output mode when capacity is greater than or equal to this setting (valid when BMS communication is normal).
63	N-G automatically connect	[63] DIS **Default**	Disable automatic switching of N-G connections.
		[63] ENA	Enable automatic switching of N-G connections.
64	Password input	[64] 00000 **Default**	When the screen is off, Input the password to set parameters.
65	Password setting	[65] 00000 **Default**	Set the password
67	On grid power	[64] 6200W **Default**	Set the on grid power
72	Battery grid-connected discharge enable	[72] DIS	Battery is not allowed to discharge through the grid-connected point to supply loads.
		[72] ENA **Default**	Battery is allowed to discharge through the grid-connected point to supply loads.
73	Generator charge current	[73] 40A	Setting range: 0~100A
74	Generator input power	[74] 6000W **Default**	Setting range: 0~6000W
78	Battery hybrid discharge current	[78] 100A **Default**	When the battery and grid jointly supply power to the load, the battery discharge current must be set. Setting range: 0~100A
81	Generator Port Working Mode	[81] GEN IN	Generator input.
		[82] SMLOAD	Secondary load output.

5.3.3 Scheduled Charge / Discharge Settings (Time-of-Use)

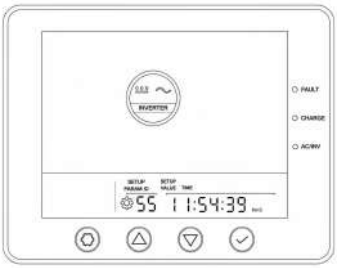
The Scheduled Charge/Discharge function allows the system to charge or discharge the battery according to pre-defined time periods. This can help maximise economic benefits under variable electricity tariffs.

Step-by-Step Instructions:

Set the Correct System Date and Time

【54】 00:00:00 (Default Setting)

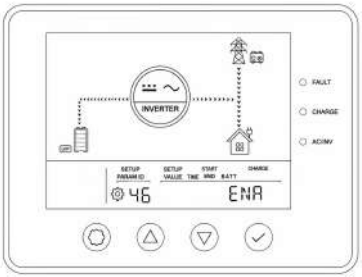
Set Parameter 54 to adjust the date.
Set Range:00:01:01-99:12:31



【55】 00:00:00 (Default Setting)

Set Parameter 55 to adjust the time.
Set Range:00:00-23:59:00

Charging Settings



【46】Default Setting: DIS (Disabled)

Set Parameter 46 to ENA to enable the Sectional Charging Function.

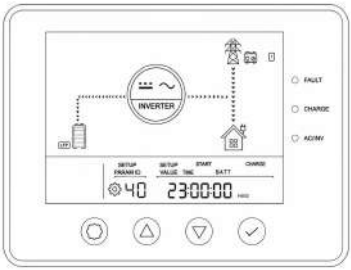
When enabled, the battery will only be charged from the grid during the defined charging time period. Outside this period, grid charging will be disabled.

【42】 00:00:00 (Default Setting)
2nd charging period start time
Set Range: 00:00 – 23:59

【43】 00:00:00 (Default Setting)
2nd charging period end time
Set Range: 00:00 – 23:59

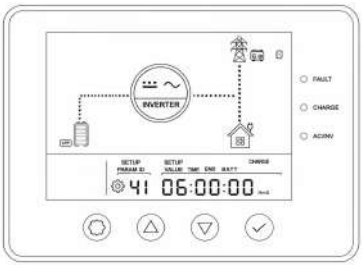
【44】 00:00:00 (Default Setting)
3rd charging period start time
Set Range: 00:00 – 23:59

【45】 00:00:00 (Default Setting)
3rd charging period end time
Set Range: 00:00 – 23:59



【40】00:00:00 Default Setting

1st charging period start time
Set Range:00:00-23:59:00



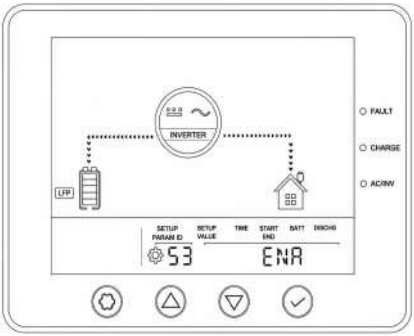
【41】00:00:00 Default Setting

1st charging period end time
Set Range:00:00-23:59:00

Three charging time periods can be configured by setting Parameters 40 – 45.

Discharge settings

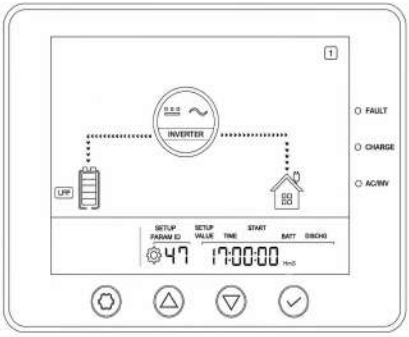
Three discharging periods can be configured by setting Parameters 47-52.
Parameter 53 must be set from DIS to ENA before using this function.



【53】 Default setting:DIS (Disabled)

Set Parameter 53 from DIS to ENA to enable the Sectional Discharging Function.

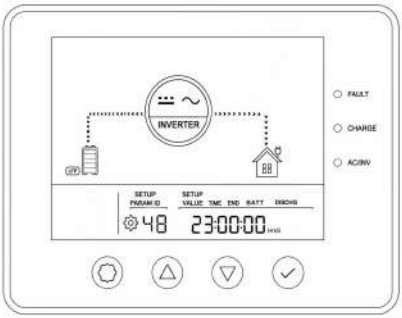
When enabled, the battery will only discharge during the configured discharging periods. Outside these periods, battery discharging will be disabled. If grid power is available, the load will be supplied by the grid.



【47】 00:00:00 Default Setting

1st discharging period start time

Set Range:00:00-23:59:00



【48】00:00:00 Default settings

1st discharging period start time

Set Range:00:00-23:59:00

【49】 00:00:00 (Default Setting)
2nd discharging period start time
Set Range: 00:00 – 23:59

【50】 00:00:00 (Default Setting)
2nd discharging period end time
Set Range: 00:00 – 23:59

【51】 00:00:00 (Default Setting)
3rd discharging period start time
Set Range: 00:00 – 23:59

【52】 00:00:00 (Default Setting)
3rd discharging period end time
Set Range: 00:00 – 23:59

6. System Maintenance

This chapter describes safety precautions, routine maintenance, battery expansion recommendations, and basic troubleshooting for the GeePower low-voltage (51.2 V) stacked ESS.

6.1 General Safety Precautions

Before performing any maintenance on the system or batteries:

- Ensure the system is fully powered OFF: AC breaker, battery breaker, PV switches OFF.
- Wait at least 20 minutes for the inverter and battery modules to cool and capacitors to discharge.
- Wear appropriate personal protective equipment (PPE) and use insulated tools during maintenance.
- Do not smoke or allow open flames near batteries.
- Do not use water, solvents, or wet cloths to clean batteries or exposed conductive parts.
- Do not touch exposed copper bars or terminals with bare hands.

WARNING–Electric Shock Hazard

Always disconnect AC, battery, and PV power sources and ensure all internal capacitors are fully discharged before inspection or maintenance.

6.2 Routine Inspection & Maintenance

6.2.1 User Visual Checks

The user may perform the following visual checks without opening the system enclosure or touching any electrical connections:

- Ensure that the ventilation openings and heat-dissipation areas are not blocked by dust, dirt or other objects.
- Check the exterior of the inverter and battery modules for visible damage, deformation, corrosion or unusual discolouration.
- Check that external cables are securely supported and show no visible signs of damage, excessive wear or animal interference.
- Confirm that the inverter display and battery indicators are operating normally and that no warning or fault message is displayed.
- Check the surrounding area for water leakage, excessive dust, flammable materials or other conditions that may affect safe operation.
- If an external surge protective device (SPD) is installed, check its status indicator. If the indicator shows that replacement is required, contact a qualified installer.

6.2.2 Cleaning Guidelines

Switch off the system before cleaning.

Clean the exterior using a soft, dry cloth. If necessary, use a slightly damp, well-wrung cloth.

Do not use chemicals, solvents, abrasive materials or pressurised cleaning equipment.

Do not allow water or other liquids to enter the inverter, battery modules, ventilation openings or electrical connections.

6.2.3 Qualified Installer Maintenance

Item	Check Method	Interval
Electrical terminals	Inspect for looseness, corrosion, overheating, insulation damage or discolouration. Tighten terminals where required.	Six months after commissioning, then every 6 – 12 months
Cables and insulation	Inspect for mechanical damage, excessive wear, UV exposure, animal interference or insulation deterioration. Replace damaged cables where required.	Every 6-12 months
Protective earthing	Confirm that all protective earthing conductors and connections are secure, intact and free from corrosion.	6 months after commissioning, then every 6–12 months
Ventilation and cooling	Inspect ventilation openings and heat-dissipation areas. Remove accumulated dust or debris where necessary.	Every 6–12 months
Surge protection devices (SPD)	Check the SPD status indicator and replace the SPD if its indicator shows that replacement is required.	Every 6–12 months
System operation	Check the inverter display, battery status, communication and fault history. Confirm that the system operates normally.	Every 6–12 months

Note:

Routine visual checks and qualified installer maintenance are recommended every 6 – 12 months. The actual interval may be adjusted according to the installation environment, operating conditions and local requirements.

6.3 Battery Expansion & Replacement

Battery Expansion

- Battery expansion is recommended within six months of initial system commissioning.
- If battery expansion is required after six months, contact the original installer or GeePower
- Technical Support for a compatibility assessment.
- Differences in battery age, State of Health (SOH), internal resistance and State of Charge (SOC) may affect system performance.
- All battery modules within the same stack must be compatible and must meet GeePower ’ s applicable model, capacity and configuration requirements.
- Battery expansion must only be performed by a qualified installer. The system must be inspected and recommissioned after additional modules are installed.

Battery Replacement

- Battery module inspection, removal and replacement must only be performed by a qualified installer.
- Do not remove a battery module while the system is operating.
- A replacement module must be confirmed as compatible by GeePower or an authorised service provider.
- After replacement, the battery stack must be correctly reconnected, inspected and recommissioned before operation.
- System capacity may be reduced if the system is reconfigured to operate with fewer battery modules.

6.4 Battery Storage Requirements

If battery modules are stored before installation or during an extended period of non-use:

- Recommended storage temperature: 20 °C to 30 °C
- Recommended SOC before storage: at least 50%.
- Store batteries in a dry, clean, and well-ventilated environment.
- Keep the battery modules away from direct sunlight, water, heat sources and flammable materials.
- Inspect the battery SOC periodically and recharge the modules when required to prevent over-discharge.
- Long-term storage may result in gradual capacity degradation.
- Before returning stored battery modules to service, arrange for inspection by a qualified installer.

7 System Protection & Troubleshooting

To support safe and reliable operation, visually inspect the Terra A system at least once a year. Electrical inspection, maintenance and component replacement must only be performed by a qualified installer.

When to Contact Technical Support

Stop using the system and contact your installer or GeePower Technical Support if any of the following occurs:

- A persistent warning or fault is displayed.
- The enclosure, cables or connectors appear damaged.
- There is unusual noise, smell, heat or discolouration.
- Water has entered or accumulated around the system.
- The system repeatedly shuts down or does not operate normally.
- The SPD status indicator shows that the device requires replacement.

Warning

Risk of electric shock, burns or equipment damage.

- Do not open, dismantle or modify the inverter or battery modules.
- Do not touch exposed conductors, terminals or damaged cables.
- Do not tighten terminals, replace electrical components or carry out internal repairs yourself.
- Electrical inspection and maintenance must only be performed by a qualified installer after the system has been safely isolated and residual energy has been discharged.

Warranty Information

For applicable warranty coverage, exclusions and claim procedures, please refer to the GeePower **Terra A Warranty Document**. Scan the QR code on the final page of this manual to access the latest warranty information and support resources.

Nothing in this manual affects the customer's statutory rights under applicable consumer law.

7.1 System Protection Functions

No.	Protections	Description
1	PV current/power limiting protection	When charging current or power of the PV array configured exceeds the PV rated, it will charge at the rated.
2	PV night reverse-current protection	At night, the battery is prevented from discharging through the PV module because the battery voltage is greater than the voltage of PV module.
3	Mains input over voltage protection	When the mains voltage exceeds 280V (230V model) o, the mains charging will be stopped and switched to the inverter mode.
4	Mains input under voltage protection	When the mains voltage is lower than 170V (230V model /UPS mode) the mains charging will be stopped and switched to the inverter mode.
5	Battery over voltage protection	When the battery voltage reaches the overvoltage disconnection point, the PV and the mains will be automatically stopped to charge the battery to prevent the battery from being overcharged and damaged.
6	Battery low voltage protection	When the battery voltage reaches the low voltage disconnection point, the battery discharging will be automatically stopped to prevent the battery from being over-discharged and damaged.
7	Load output short circuit protection	When a short-circuit fault occurs at the load output terminal, the AC output is immediately turned off.
8	Heat sink over temperature protection	When the internal temperature is too high, the all-in-one machine will stop charging and discharging; when the temperature returns to normal, charging and discharging will resume.
9	Overload protection	Output again 3 minutes after an overload protection, and turn the output off after 5 consecutive times of overload protection until the machine is re-powered. For the specific overload level and duration, refer to the technical parameters table in the manual.
10	PV reverse polarity protection	When the PV polarity is reversed, the machine will not be damaged.
11	AC reverse protection	Prevent battery inverter AC current from being reversely input to Bypass. (In off-grid mode)
12	Bypass over current protection	Built-in AC input overcurrent protection circuit breaker.
13	Battery input over current protection	When the discharge output current of the battery is greater than the maximum value and lasts for 1 minute, the AC input would switched to load.
14	Battery input protection	When the battery is reversely connected or the inverter is short-circuited, the battery input fuse in the inverter will blow out to prevent the battery from being damaged or causing a fire.
15	Charge short protection	When the external battery port is short-circuited in the PV or AC charging state, the inverter will protect and stop the output current.
16	CAN communication loss protection	In parallel operation, an alarm will be given when CAN communication is lost.

17	Parallel connection error protection	In parallel operation, the equipment will be protected when the parallel line is lost.
18	Parallel battery voltage difference protection	In parallel operation, the equipment will be protected when the battery connection is inconsistent and the battery voltage is greatly different from that detected by the host.
19	Parallel AC voltage difference protection	In parallel operation, the equipment will be protected when the AC IN input connection is inconsistent.
20	Parallel current sharing fault protection	In parallel operation, the running equipment will be protected when the load difference of each inverter is large due to improper connection of current sharing line or device damage.
21	Synchronization signal fault protection	The equipment will be protected when there is a fault in the guidance signal between parallel buses, causing inconsistent behavior of each inverter.

7.2 Fault Codes & Alarms

Fault code	Fault name	Whether it affects the output or not	Description
【01】	BatVoltLow	NO	Battery undervoltage alarm
【02】	BatOverCurrSw	Yes	Battery discharge average current overcurrent software protection
【03】	BatOpen	Yes	Battery not-connected alarm
【04】	BatLowEod	Yes	Battery undervoltage stop discharge alarm
【05】	BatOverCurrHw	Yes	Battery overcurrent hardware protection
【06】	BatOverVolt	Yes	Charging overvoltage protection
【07】	BusOverVoltHw	Yes	Bus overvoltage hardware protection
【08】	BusOverVoltSw	Yes	Bus overvoltage software protection
【09】	PvVoltHigh	NO	PV overvoltage protection
【10】	PvOCSw	NO	Boost overcurrent software protection
【11】	PvOCHw	NO	Boost overcurrent hardware protection
【13】	OverloadBypass	Yes	Bypass overload protection
【14】	OverloadInverter	Yes	Inverter overload protection
【15】	AcOverCurrHw	Yes	Inverter overcurrent hardware protection
【17】	InvShort	Yes	Inverter short circuit protection
【19】	OverTemperMppt	NO	Buck heat sink over temperature protection

【20】	OverTemperInv	Yes	Inverter heat sink over temperature protection.
【21】	FanFail	Yes	Fan failure
【22】	EEPROM	Yes	Memory failure
【23】	ModelNumErr	Yes	Model setting error
【26】	RlyShort	Yes	Inverted AC Output Backfills to Bypass AC Input .
【29】	BusVoltLow	Yes	Internal battery boost circuit failure.
【30】	BatCapacityLow1	NO	Alarm given when battery capacity rate is lower than 10% (setting BMS to enable validity).
【31】	BatCapacityLow2	NO	Alarm given when battery capacity rate is lower than 5% (setting BMS to enable validity).
【32】	BatCapacityLowStop	Yes	Inverter stops when battery capacity is low (setting BMS to enable validity).
【34】	CanCommFault	Yes	CAN communication fault in parallel operation.
【35】	ParaAddrErr	Yes	Parallel ID （mailing address） setting error.
【37】	ParaShareCurrErr	Yes	Parallel current sharing fault
【38】	ParaBattVoltDiff	Yes	Large battery voltage difference in parallel mode.
【39】	ParaAcSrcDiff	Yes	Inconsistent AC input source in parallel mode.
【40】	ParaHwSynErr	Yes	Hardware synchronization signal error in parallel mode
【41】	InvDcVoltErr	Yes	Inverter DC voltage error.
【42】	SysFwVersionDiff	Yes	Inconsistent system firmware version in parallel mode.
【43】	ParaLineContErr	Yes	Parallel line connection error in parallel mode.
【44】	Serial number error	Yes	If the serial number is not set by omission in production, please contact the manufacturer to set it.
【45】	Error setting of splitphase mode	Yes	[31]Settings item setting error.
【58】	BMS communication error	NO	Check whether the communication line is connected correctly and whether [33] is set to the corresponding lithium battery communication protocol.
【59】	BMS alarm	NO	Check the BMS fault type and troubleshoot battery problems.
【60】	BMS battery low temperature alarm	NO	BMS alarm battery low temperature.

【61】	BMS battery over temperature alarm	NO	BMS alarm battery over temperature.
【62】	BMS battery over current alarm	NO	BMS alarm battery over current.
【63】	BMS battery undervoltage alarm	NO	BMS alarm low battery.
【64】	BMS battery over voltage alarm	NO	BMS alarm battery over voltage.

7.3 Fault Handling & Guidelines

Fault code	Faults	Remedy
Display	No display on the screen	Check if the battery the PV circuit breaker has been turned off; if the switch is in the "ON" state; press any button on the screen to exit the screen sleep mode.
【06】	Battery overvoltage protection	Measure if the battery voltage exceeds rated, and turn off the PV array circuit breaker and Mains circuit breaker.
【01】 【04】	Battery undervoltage protection	Charge the battery until it returns to the low voltage disconnection recovery voltage.
【21】	Fan failure	Check if the fan is not turning or blocked by foreign object.
【19】 【20】	Heat sink over temperature protection	When the temperature of the device is cooled below the recovery temperature, normal charge and discharge control is resumed.
【13】 【14】	Bypass overload protection, inverter overload protection	① Reduce the use of power equipment; ② Restart the unit to resume load output.
【17】	Inverter short circuit protection	① Check the load connection carefully and clear the short-circuit fault points; ② Re-power up to resume load output.
【09】	PV overvoltage	Use a multimeter to check if the PV input voltage exceeds the maximum allowable input voltage rated.
【03】	Battery disconnected alarm	Check if the battery is not connected or if the battery circuit breaker is not closed.
【40】 【43】	Parallel connection fault	Check whether the parallel line is not connected well, such as loose or wrong connection.
【35】	Parallel ID setting error	Check whether the setting of parallel ID number is repeated.
【37】	Parallel current sharing fault	Check whether the parallel current sharing line is not connected well, such as loose or wrong connection.
【39】	Inconsistent AC input source in parallel mode	Check whether the parallel AC inputs are from the same input interface.
【42】	Inconsistent system firmware version in parallel mode	Check whether the software version of each inverter is consistent.

8 System Removal & Disposal

This section provides basic guidance for the safe removal and end-of-life disposal of the Terra A residential energy storage system.

System removal must only be carried out by qualified personnel.

8.1 System Removal

Before removing any part of the system, ensure that the Terra A system has been completely shut down and electrically isolated.

Before Removal

① Follow the System Shutdown Sequence described in this manual.

② Ensure all relevant energy sources are isolated, including:

- Grid / AC supply
- Terra A inverter
- Battery modules
- PV supply (if installed)

③ Confirm that the AC Rotary Isolator, AC Output RCBO, PV MCB, and PV DC Rotary Isolator (if installed) are in the appropriate OFF position.

④ Verify that the relevant AC and DC circuits are voltage-free before disconnecting any cables.

WARNING: Do not disconnect AC, DC, battery, PV, or communication cables while the system is operating or energised.

CAUTION–Ensure the System Is Fully Shut Down and Isolated

Before handling or removing the inverter or battery modules, ensure that all power sources have been switched OFF and electrically isolated. Do not disconnect any cables or electrical connections while the system is energised.

Removing the System

① Disconnect the AC, PV (if installed), communication, and protective earth connections as applicable.

② Disconnect the battery and inverter interconnections according to the installation arrangement.

③ Carefully remove the inverter module from the top of the battery stack.

④ Remove the battery modules one by one, starting from the top of the stack.

⑤ After all modules have been removed, release the wheel locks and carefully move the system base

Note: The Terra A system is floor-mounted and does not normally require wall mounting brackets. Remove any site-specific cable supports, enclosures, or accessories separately where applicable.

8.2 Disposal

At the end of the product's service life, the Terra A system and its components must not be disposed of with normal household waste.

Electrical and electronic equipment must be collected and recycled in accordance with applicable local requirements.
Lithium-ion battery modules must be handled separately and delivered to an appropriate authorised battery collection or recycling facility.
Do not dismantle, crush, burn, or dispose of battery modules as general waste.

For end-of-life handling or disposal guidance, contact your installer, an authorised recycling facility, or GeePower technical support.

NOTICE– Proper Disposal Required

The inverter, lithium battery modules, and other electrical components must be disposed of in accordance with applicable local waste and recycling requirements. Do not dispose of these products with normal household waste.

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