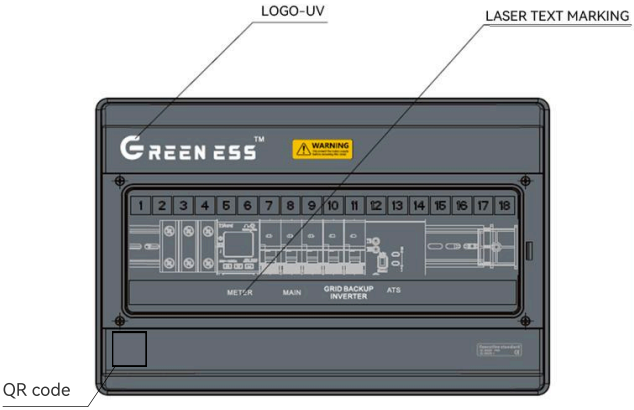
GreenEss Gateway Switchboard User Manual (Single-Phase)

GREEN ESS™

01 Concept of Operation



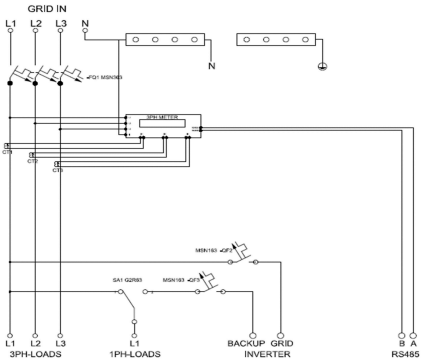
HORIZONTAL-MOUNTED: SINGLE-PHASE SINGLE INVERTER

The Gateway Switchboard addresses the complex installation and distribution challenges of residential energy storage systems. It comes pre-installed with metering and clearly separates load and backup power interfaces, eliminating complex electrical construction issues and enabling full-house or partial backup. Three specifications are available for residential energy storage systems: single-phase single-inverter, single-phase dual-inverter, and three-phase.

The ATS（Automatic Transfer Switching Equipment） allows the system to operate in phase synchronization during normal grid operation. In the event of a grid failure, Gateway's ATS isolates the load from the grid power supply and instantly connects the inverter's backup power source to the load, providing AC power.

When the grid recovers, the ATS disconnects the inverter's backup power source and connects the load to the grid, restoring grid power.

Single-phase single inverter Gateway schematic diagram:



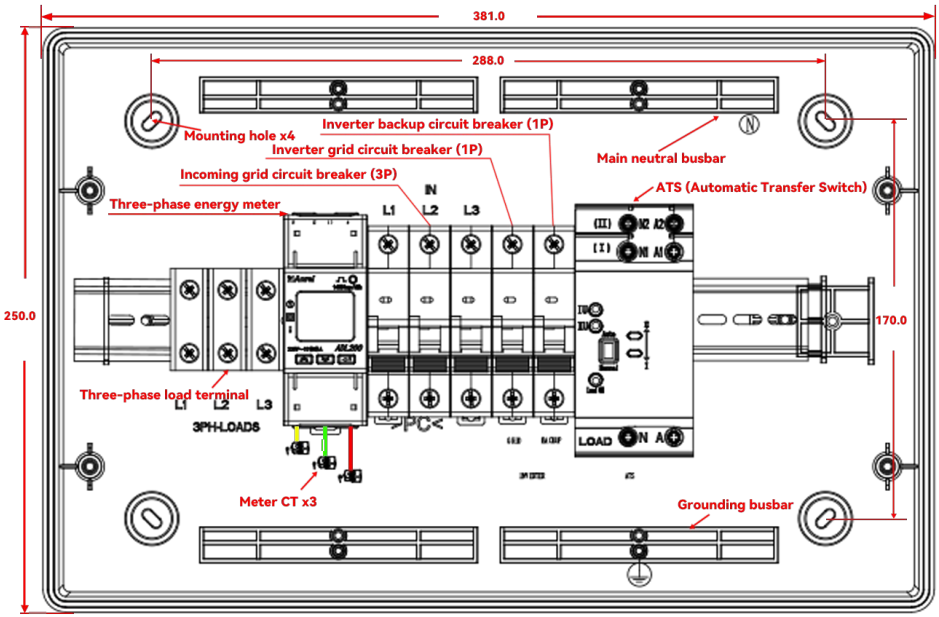
WARNING! !

Ensure that all conducttors are de-energized and isolated before making any electrical comnections.

3rd Party(Non-GreenEss authorized) inverters are not supported.

02 Panel Introduction

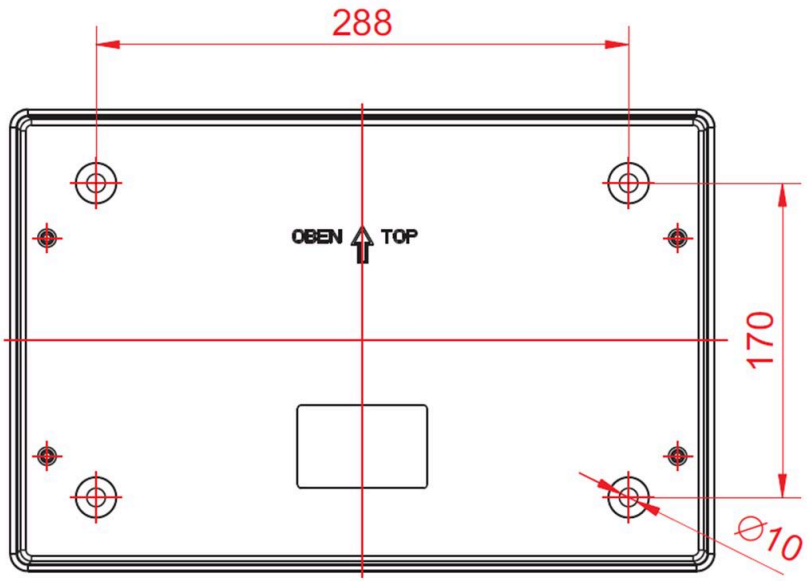
Horizontal-mounted: Single-phase single inverter:



03 Installation and Fixing

The Gateway's dimensions are: 381 x 250 mm for a single-phase and 273 x 400 mm for a three-phase. Please allow ample space for installation.

Drill holes according to the opening dimensions and install expansion tubes to secure the Gateway to the incoming cable entry. Holes can be drilled around the enclosure to install waterproof connectors for easy access of cable harnesses.



04 Grid Inlet Connetion

The Gateway has a maximum rated current of 63A and should be installed no more than 20 meters from an AC power source.

Ensure that the correct cable is used for proper operation.

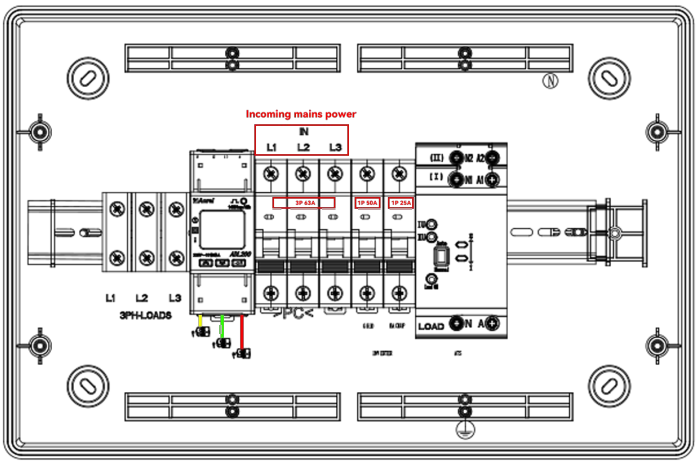
Assuming two 10kW single-phase inverters or one 25kW three-phase inverter are installed, ensure the following cable sizes are used:

L ≥ 16 mm^2

N ≥ 16 mm^2

PE ≥ 8 mm^2

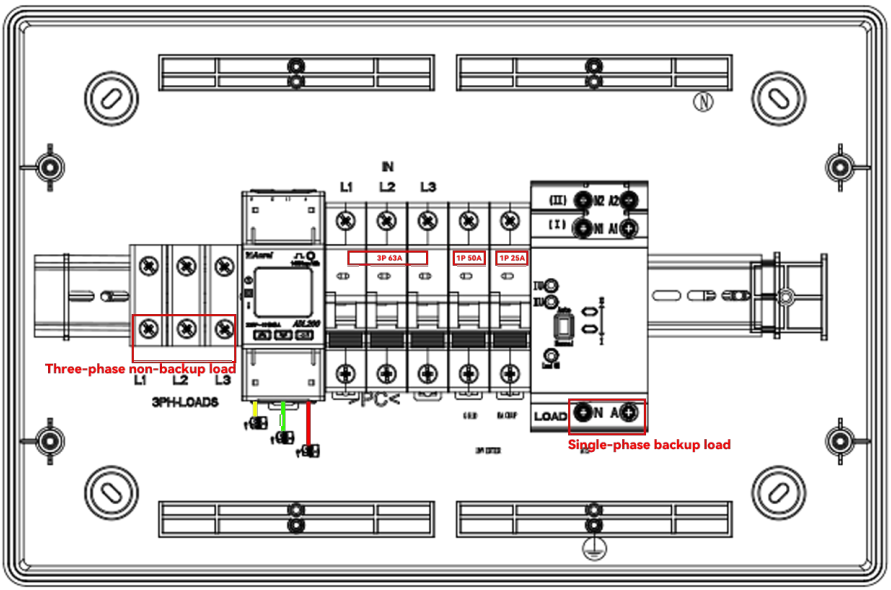
Horizontal-mounted: Single-phase single inverter



05 Load Connections

The Gateway has a maximum rated current of 63A. Installers should calculate the maximum demand for each circuit and determine the correct cable size according to AS/NZS 3008.

Horizontal-mounted: Single-phase single inverter



06 Inverter Grid Connection

The Gateway is designed to accommodate three 10kW single-phase inverters (one per phase) or one 25kW three-phase inverter. In On-grid mode, the maximum AC current rating of each inverter is 45.5A. Assuming a 10-meter path length from the inverter to the Gateway and a 1% voltage drop, we recommend using a standard V-90 two-core grounded cable with the following cable dimensions:

10kW single-phase or 25kW three-phase inverter:

L ≥ 10 mm^2

N ≥ 10 mm^2

PE ≥ 8 mm^2

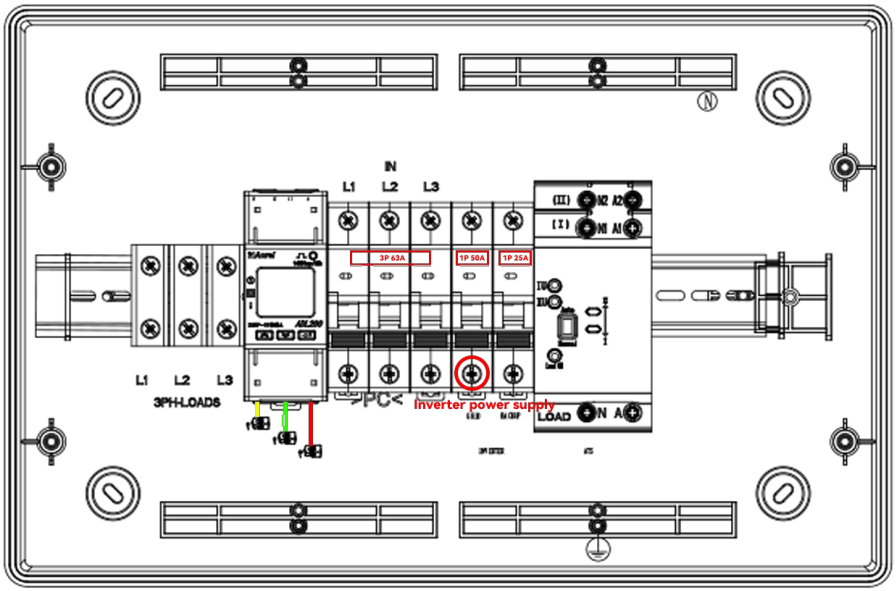
5kW single-phase:

L ≥ 4 mm^2

N ≥ 4 mm^2

PE ≥ 2.5 mm^2

Horizontal-mounted: Single-phase single inverter



07 Inverter Backup Connections

To ensure the energy storage system continues to power the load during a grid outage, the inverter's backup port must be connected back to the Gateway. Assuming a 10-meter path length from the inverter to the Gateway and a 1% voltage drop, we recommend using a standard V-90 two-core grounding cable with the following cable dimensions:

10 kW single-phase or 25 kW three-phase inverter:

L ≥ 10 mm^2

N ≥ 10 mm^2

PE ≥ 8 mm^2

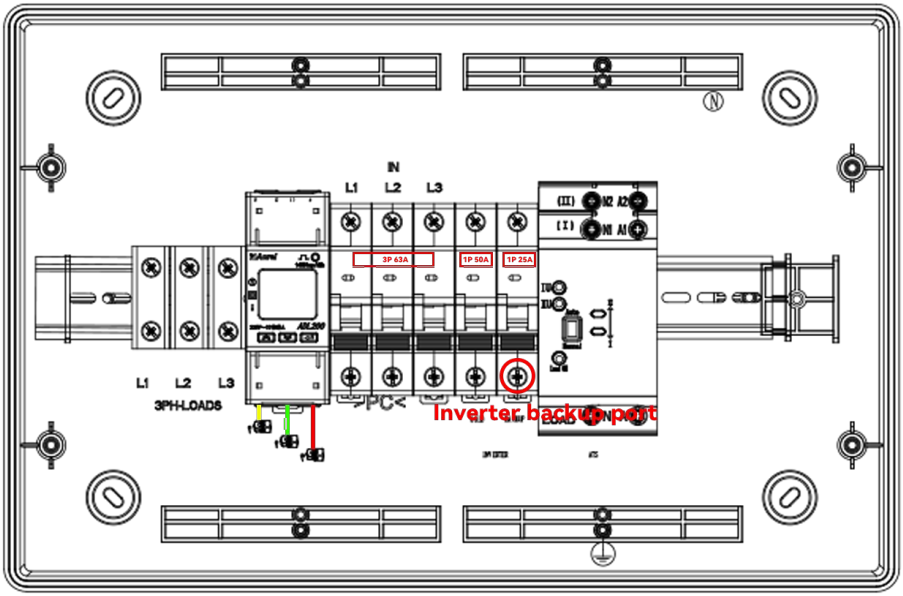
5 kW single-phase:

L ≥ 4 mm^2

N ≥ 4 mm^2

PE ≥ 2.5 mm^2

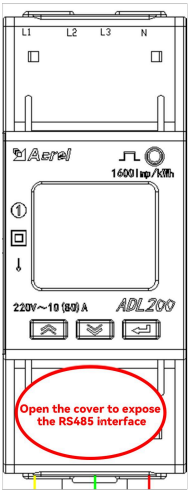
Horizontal-mounted: Single-phase single inverter



08 Communication Interface Connections

For the energy storage system to measure and manage grid data, a communication connection must be established between the Gateway and the energy storage system.
The built-in meter has an RS485 port. Please connect it to the METER port on the energy storage cabinet using the following recommended cables.
Recommended: Category 6a network cable.

If using cables longer than 10 meters in areas with a risk of voltage surges caused by lightning, it is recommended to use an external surge protection device.



Warning!

Carefully read all operating and safety instructions in the installation guides included with the Gateway and energy storage cabinet.

Warning!

Before connecting the Gateway to the energy storage cabinet, ensure that the battery and inverter power are turned off.

09 Current Transformer (CT) Connections

Current transformers (CTs) are pre-installed in the Gateway; no additional connection is required.

10 System Startup and Shutdown

10-1 To start the system:

1. Turn on the main circuit breaker in the Gateway.
2. Check that the energy storage cabinet is powered on by touching the display to see if it is lit. If it is powered off, locate the power button on the side of the cabinet and press it to start the cabinet.
3. Turn on the circuit breaker on the side of the inverter in the cabinet (a three-phase inverter uses a pushbutton switch).
4. After the cabinet starts, turn on the circuit breaker on the front of the cabinet.
5. Turn on the INV GRID circuit breaker in the Gateway.
6. Turn on the BACK UP circuit breaker in the Gateway.
7. If a PV system is connected, turn the rotary switch on the side of the inverter to the ON position.

10-2 To shut down the system:

1. Turn off the circuit breaker on the front of the cabinet.
2. If a PV system is connected, turn the rotary switch on the side of the inverter to the OFF position.

3. Turn off the circuit breaker on the side of the inverter (a three-phase inverter uses a pushbutton switch).
4. Turn off the INV GRID circuit breaker inside the Gateway.
5. Turn off the BACK UP circuit breaker inside the Gateway.