MORE SAFETY MORE POWER



TSUN SOLUTION

TSUNESS Co.,Ltd
www.tsun-ess.com

Plug & Play

ESK

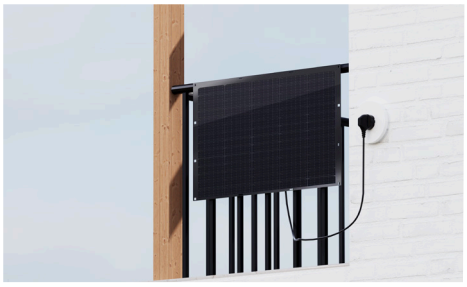


Air angled

Angled

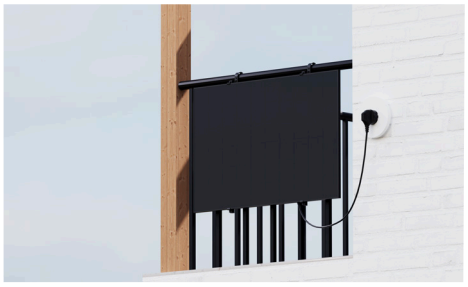


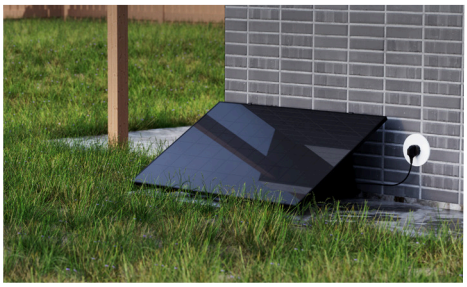
Hang on Balcony (DIY)



Air vertical

Vertical





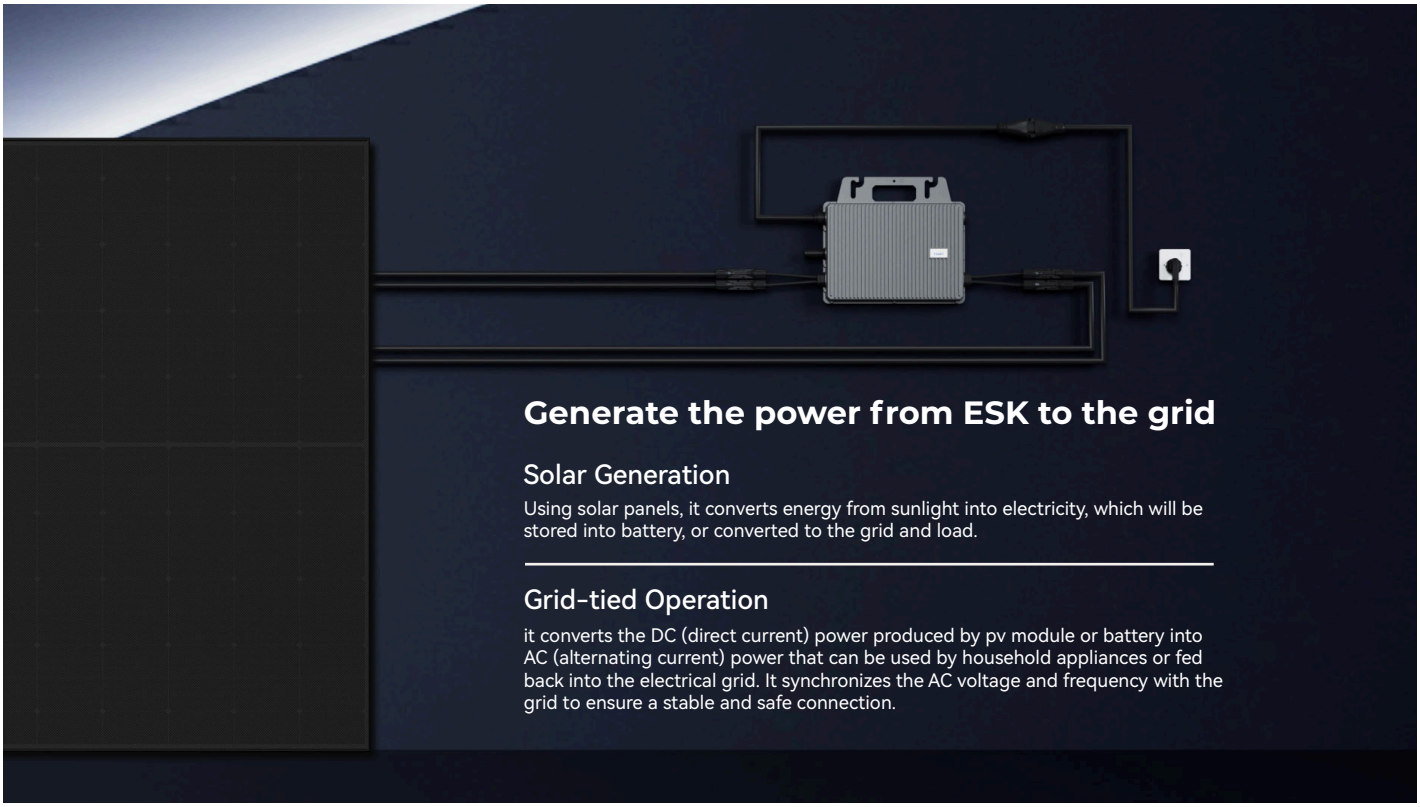
Pop-up

On the Ground (Ready to Use)

All Scenarios (DIY)

Universal





Generate the power from ESK to the grid

Solar Generation

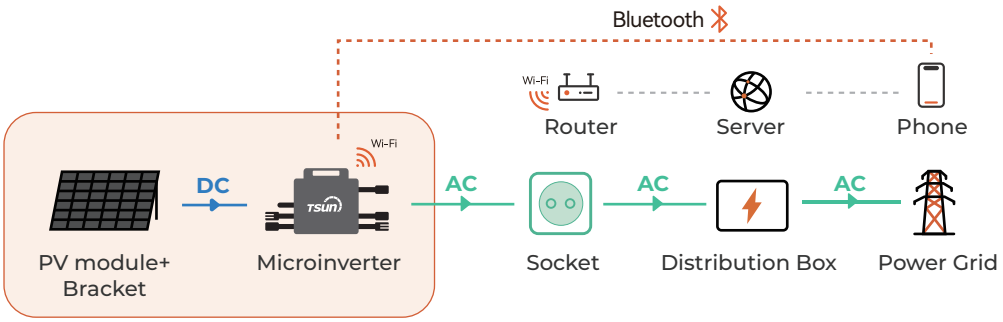
Using solar panels, it converts energy from sunlight into electricity, which will be stored into battery, or converted to the grid and load.

Grid-tied Operation

it converts the DC (direct current) power produced by pv module or battery into AC (alternating current) power that can be used by household appliances or fed back into the electrical grid. It synchronizes the AC voltage and frequency with the grid to ensure a stable and safe connection.

System Diagram——Easy Solar Kit

The Easy Solar Kit, which integrates a PV module, microinverter, DIY bracket, and cables, is designed for a variety of applications and can be installed on a balcony, garden, flat roof, and even a wall. PV modules generate DC electricity under sunlight. Microinverters convert DC electricity into AC electricity and transmit it to the home power grid through sockets.



Easy Solar Kit

Model	ESK400 Series	ESK800 Series
PV Module Parameter		
Module Power(Pmpp @STC)	430 (400 ~ 480 optional)	2 * 430 (400 ~ 480 optional)
Max. Module Efficiency	20.7% (up to 24%)	
Temp. Coef. (Power)	-0.34%/℃	
Color	Black	
AC Output Parameter		
Max. System Continous Output Power (W)	400	800
Max. Output Current (A)	2	4
Nominal Output Voltage (V)	220/230/240	
Nominal Frequency (Hz)	50/60	
Power Factor	>0.99	
Output Current Harmonic Distortion	<3%	
Length of AC End Cable	5m (10m, 15m optional)	
Certification		
Solar Module	CE,TUV,UL,CQC,IEC 61215,IEC 61730	
Microinverter	CE-LVD,CE-EMC,CE-RED,VDE 4105,EN 50549-1	
Bracket	EN 10204:2017，EN 1090-1:2009+A1：2011	
Environmental Parameter		
Ingress Protecction	IP67	
Operating Ambient Temperature Range	-25 ℃ to 65 ℃	
Relative Humidity	0-100%	
Max. Operating Altitude Without Derating [m]	2000	

Plug & Play

ESK(without microinverter)+DCU+ microinverter

Charge to battery from ESK and then discharge from battery to the grid

Solar Generation

Using solar panels, it converts energy from sunlight into electricity, which will be stored into battery, or converted to the grid and load.

Battery Storage

Charging to battery or discharging from battery.

Grid-tied Operation

It converts the DC (direct current) power produced by pv module or battery into AC (alternating current) power that can be used by household appliances or fed back into the grid. It synchronizes the AC voltage and frequency with the grid to ensure a stable and safe connection.



Charge to battery from ESK and then discharge from battery to the off-grid load

Solar Generation

Using solar panels, it converts energy from sunlight into electricity, which will be stored into battery, or converted to the grid and load.

Battery Storage

Charging to battery or discharging from battery.

Off-grid Supply

Battery or solar supply to the off-grid load when the grid is disconnnected.



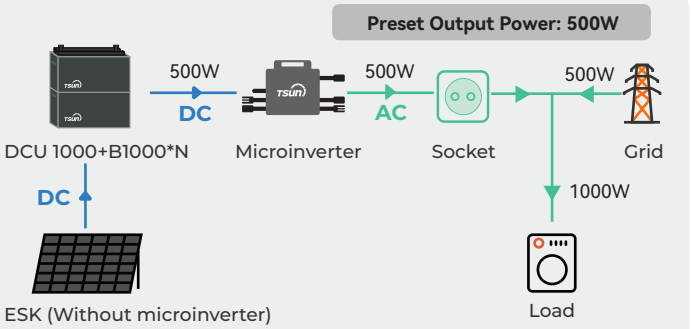
System Diagram——DCU 1000+B1000

The DCU1000 is a crucial component of the balcony solar storage system. The Smart Lithium Battery Pack, when combined with solar photovoltaic panels and microinverters, forms the balcony solar storage system. One DCU1000 can connect to four B1000.
DCU has three work modes:

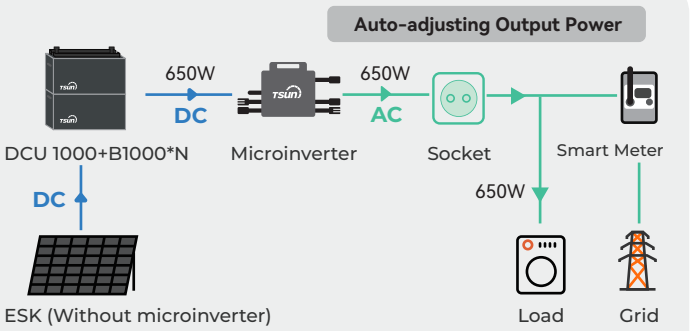
Basic Mode: The output power of the DCU is set manually by the end user. The PV energy will be stored in the battery first. Then the DCU will continue outputting electricity according to the set power.

Time-of-use Mode: The output power and time period of the DCU are set manually by the end user. The PV energy will be stored in the battery first. Then the DCU will output electricity according to the set time and power.

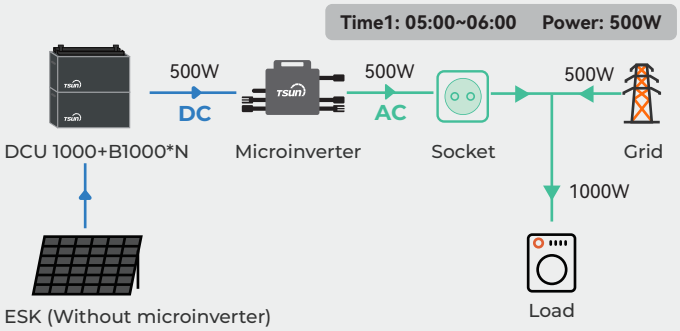
Self-consumption Mode: The DCU will work with the smart meter. The PV energy will be stored in the battery first. The smart meter will measure the status of the power grid and send it to the DCU. The DCU will automatically control the output power.

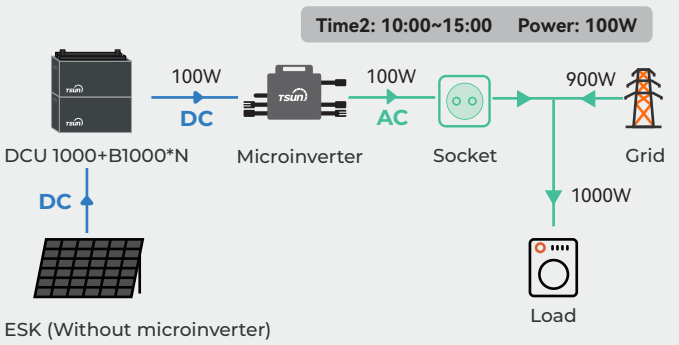


1 Basic Mode



3 Self-consumption Mode





2 Time-of-use Mode

System Diagram——P1000+DCU1000/B1000

The B1000 battery can be flexibly combined with the P1000 inverter module to form a portable power station, making it the ideal companion for camping and other outdoor activities. One P1000 can connect to one B1000.





Plug & Play

ESK(without microinverter)+MSU



Generate the power from ESK or battery to the grid

Solar Generation
Using solar panels, it converts energy from sunlight into electricity, which will be stored into battery, or converted to the grid and load.

Battery Storage
Charging to battery or discharging from battery.

Grid-tied Operation
It converts the DC (direct current) power produced by pv module or battery into AC (alternating current) power that can be used by household appliances or fed back into the electrical grid. It synchronizes the AC voltage and frequency with the grid to ensure a stable and safe connection.

Grid charge to battery

Grid Supply
Grid supplys the electricty to the load or battery.

Battery Storage
Charging to battery or discharging from battery.





Charge to battery from ESK and then discharge from battery to the off-grid load(grid is disconnected)

Solar Generation
Using solar panels, it converts energy from sunlight into electricity, which will be stored into battery, or converted to the grid and load.

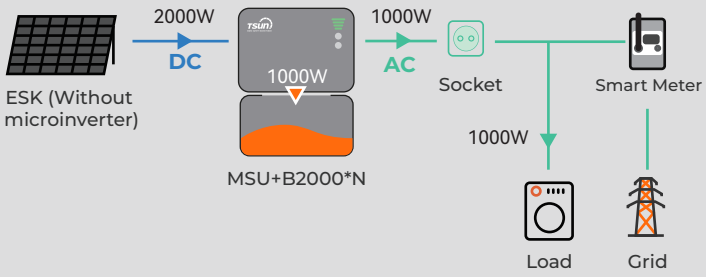
Battery Storage
Charging to battery or discharging from battery.

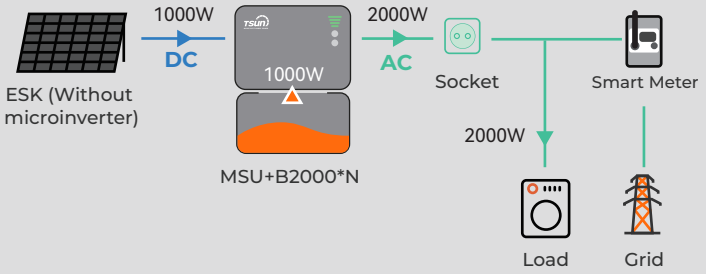
Off-grid Supply
Battery or solar supply to the off-grid load when the grid is disconnnected.

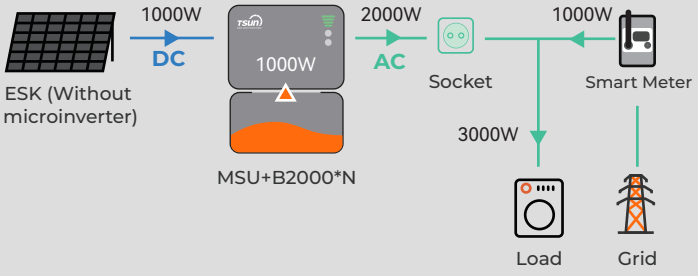
System Diagram——Micro Hybrid Storage Unit

1 Self-consumption Mode

Auto-adjusting Output Power

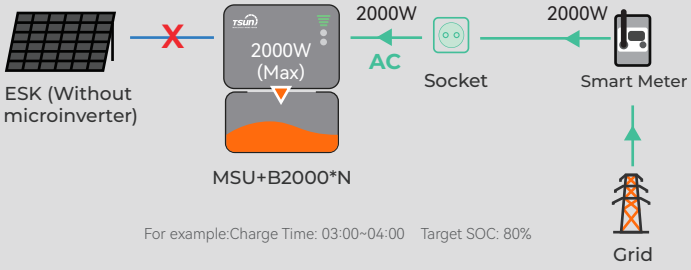






Charging Schedule:ON

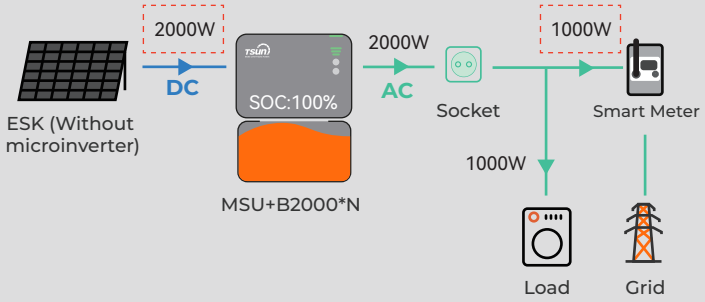
Charge the battery to the target SOC during the specified time period



For example:Charge Time: 03:00~04:00 Target SOC: 80%

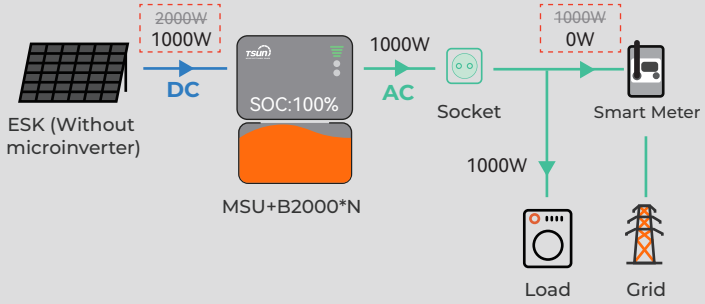
Zero Export:OFF

Excess electrical energy from PV is fed into the grid



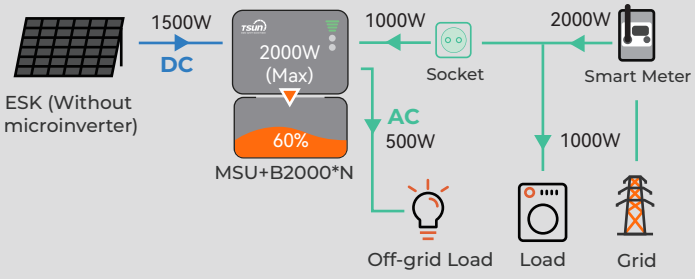
Zero Export:ON

PV energy is limited, with no excess electrical energy being fed into the grid



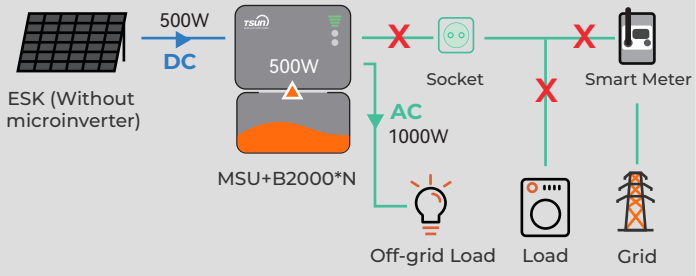
Back Up:ON

The battery will charge when the grid is connected and when the current SOC is lower than the target SOC



For example: Back up SOC: 80%

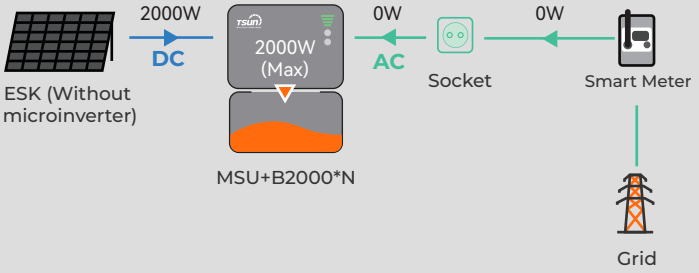
Supply power to off-grid loads when the grid is disconnected

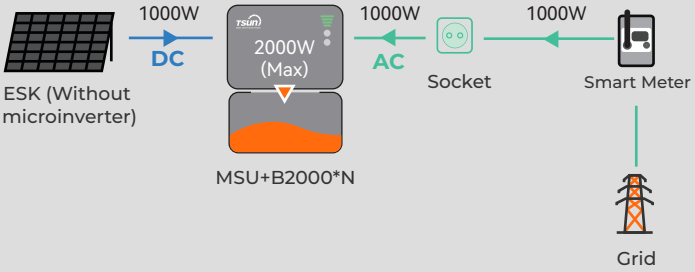


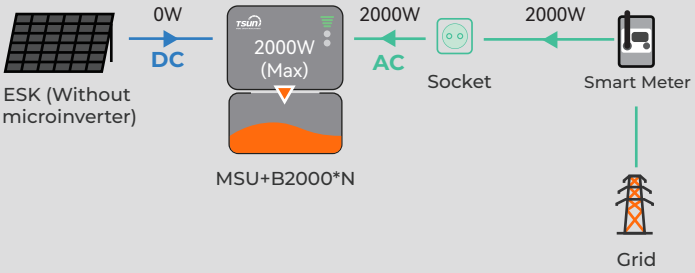
System Diagram——Micro Hybrid Storage Unit

2 Forced Mode

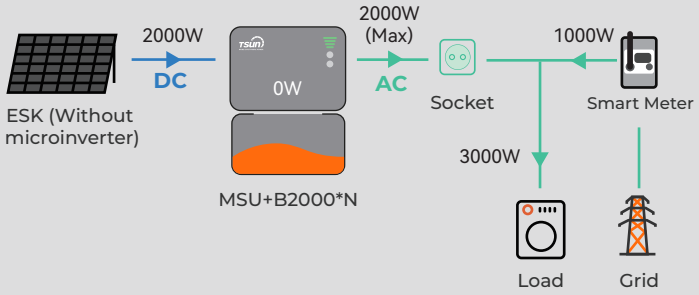
Setting Status: Charge Charge Power: 2000W

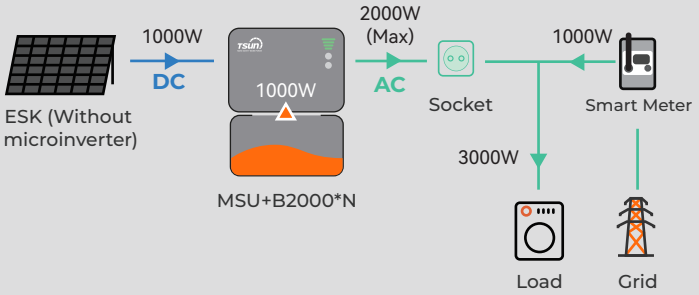


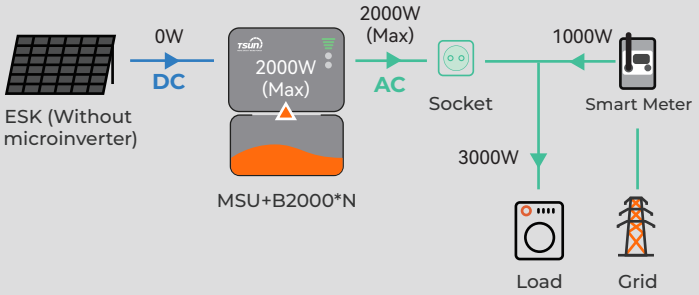




Setting Status: Discharge Discharge Power: 2000W







The MSU is a key component of the plug & play hybrid storage system or micro hybrid storage system, integrating both a hybrid inverter (supporting on-grid, off-grid, and energy storage functions) and a battery pack. The MSU can store excess electrical energy in the battery and release it when needed.

Self-consumption Mode: The MSU will work with the smart meter. The smart meter will measure power grid data and send it to the MSU. The MSU will automatically control the output power.The end user has three additional functions in this mode:

1.Enable "Charging Schedule" and set two charging time periods.
2.Enable "Zero Export" to prevent any excess PV electricity from being fed into the power grid.
3.Enable "Back Up" to store most of the electricity and use it when the power grid is disconnected.

Forced Mode: The MSU charge or discharge battery based on the pre-set power.

Plug & Play

ESK(with microinverter)+MAU



Generate the power from ESK to the grid

Solar Generation

Using solar panels, it converts energy from sunlight into electricity, which will be stored into battery, or converted to the grid and load.

Grid-tied Operation

It converts the DC (direct current) power produced by pv module or battery into AC (alternating current) power that can be used by household appliances or fed back into the electrical grid. It synchronizes the AC voltage and frequency with the grid to ensure a stable and safe connection.

Grid charge to battery

Grid Supply

Grid supplys the electricty to the load or battery.

Battery Storage

Charging to battery or discharging from battery.





Discharge from battery to the off-grid load(grid is disconnected)

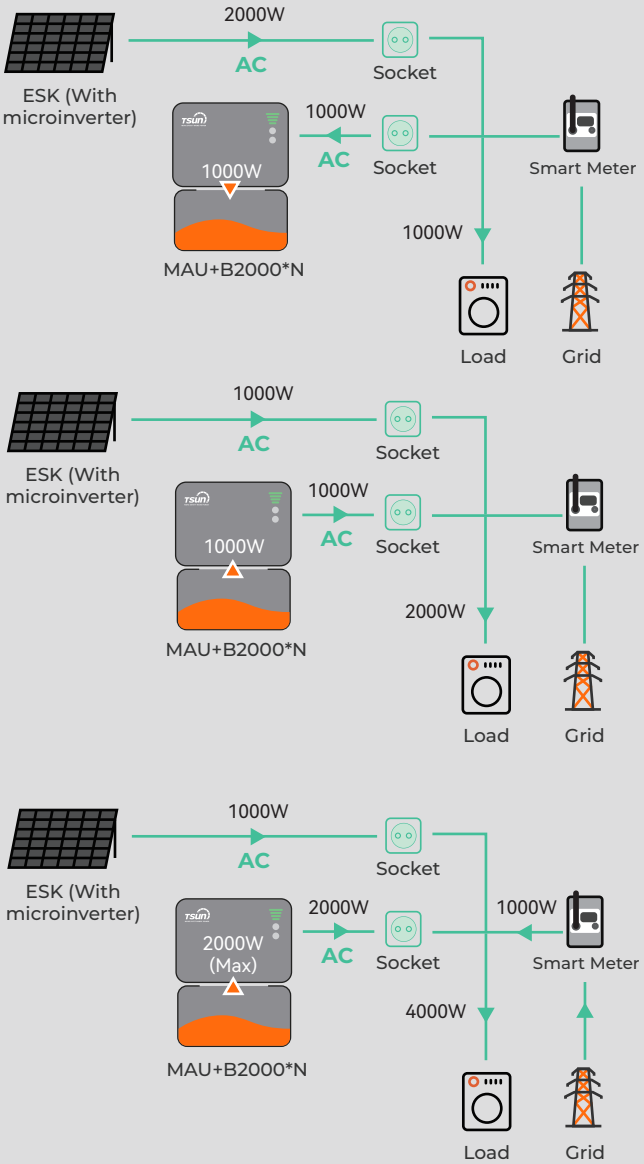
Off-grid Supply

Battery supply to the off-grid load when the grid is disconnnected.

System Diagram——Micro AC Coupled Unit

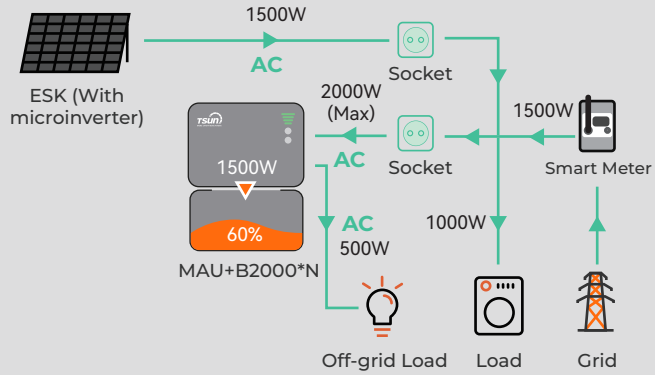
1 Self-consumption Mode

Auto-adjusting Output Power



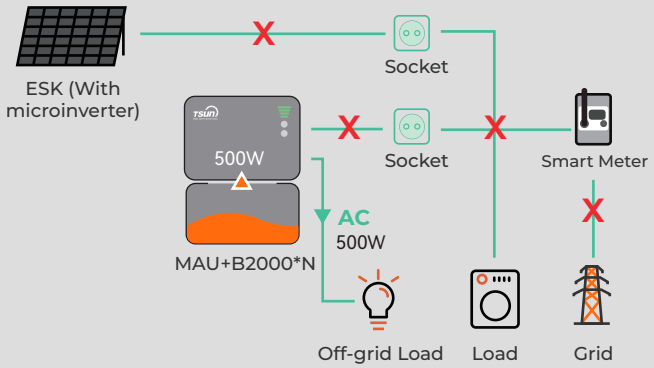
Back Up:ON

The battery will charge when the grid is connected and when the current SOC is lower than the target SOC



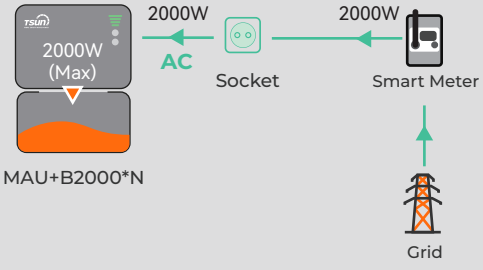
For example: Back up SOC: 80%

Supply power to off-grid loads when the grid is disconnected



Charging Schedule:ON

Charge the battery to the target SOC during the specified time period

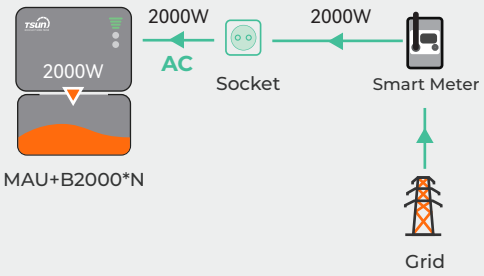


For example:Charge Time: 03:00~04:00 Target SOC: 80%

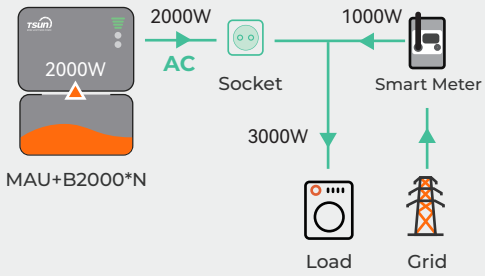
System Diagram——Micro AC Coupled Unit

2 Forced Mode

Setting Status: Charge **Charge Power: 2000W**



Setting Status: Discharge **Discharge Power: 2000W**



The MAU is a key component of the Plug & Play Energy Storage System or Micro Energy Storage System, integrating both an energy storage inverter and battery pack. It stores excess electricity generated by the PV system in its battery and converts it into AC power when required.

Self-consumption Mode: The MAU will work with the smart meter. The smart meter will measure power grid data and send it to the MAU. The MAU will automatically control the output power.The end user has two additional functions in this mode:

1.Enable "Charging Schedule" and set two charging time periods.
2.Enable "Back Up" to store most of the electricity and use it when the power grid is disconnected.

****In this system, the zero-export function should be implemented by the microinverter and the smart meter.**

Forced Mode: The MSU charge or discharge battery based on the pre-set power.

Plug & Play

ESK(without microinverter)+MH+Battery



Generate the power from ESK or battery to the grid

Solar Generation
Using solar panels, it converts energy from sunlight into electricity, which will be stored into battery, or converted to the grid and load.

Battery Storage
Charging to battery or discharging from battery.

Grid-tied Operation
It converts the DC (direct current) power produced by pv module or battery into AC (alternating current) power that can be used by household appliances or fed back into the electrical grid. It synchronizes the AC voltage and frequency with the grid to ensure a stable and safe connection.

Grid charge to battery

Grid Supply
Grid supplys the electricty to the load or battery.

Battery Storage
Charging to battery or discharging from battery.
Compatible with multiple battery types, including lead-acid and lithium batteries, and supports various operating voltages, including 24V, 36V, 48V, and 51.2V.





Charge to battery from ESK and then discharge from battery to the off-grid load(grid is disconnected)

Solar Generation
Using solar panels, it converts energy from sunlight into electricity, which will be stored into battery, or converted to the grid and load.

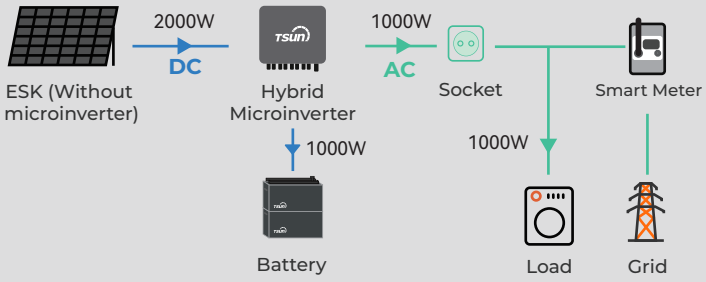
Battery Storage
Charging to battery or discharging from battery.

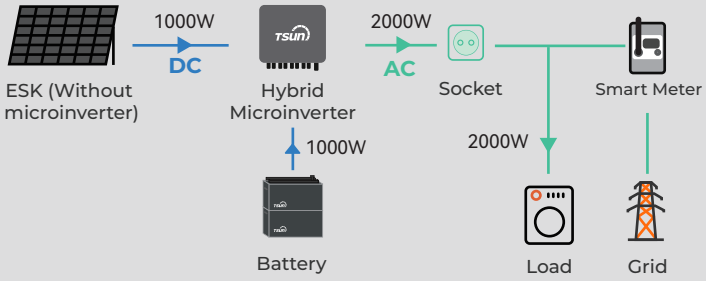
Off-grid Supply
Battery or solar supply to the off-grid load when the grid is disconnnected.

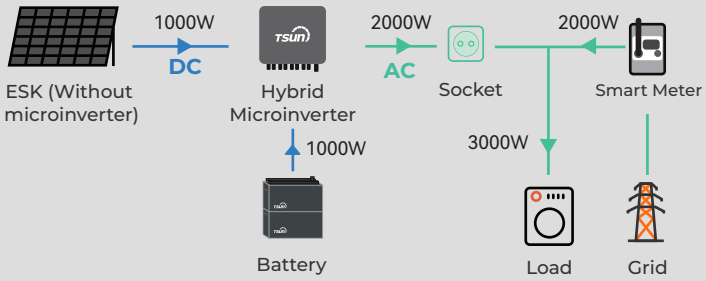
System Diagram——Hybrid Microinverter

1 Self-consumption Mode

Auto-adjusting Output Power

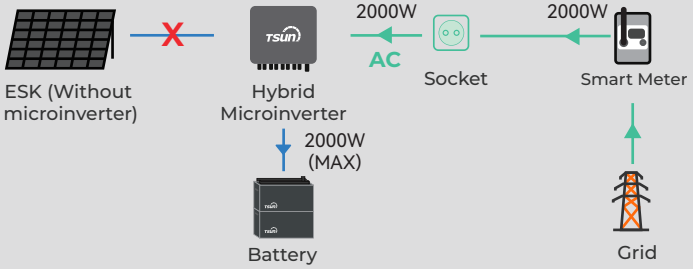






Charging Schedule:ON

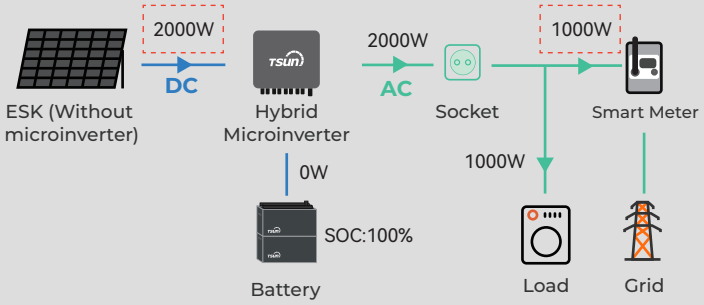
Charge the battery to the target SOC during the specified time period



For example:Charge Time: 03:00~04:00 Target SOC: 80%

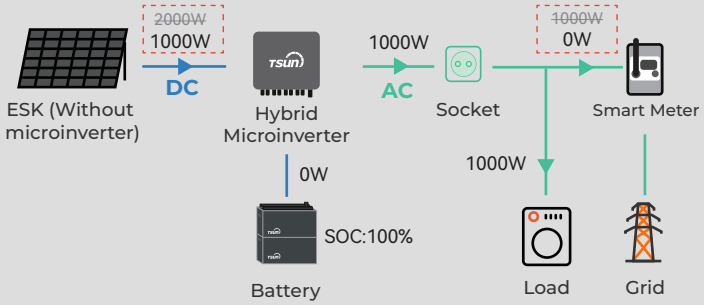
Zero Export:OFF

Excess electrical energy from PV is fed into the grid



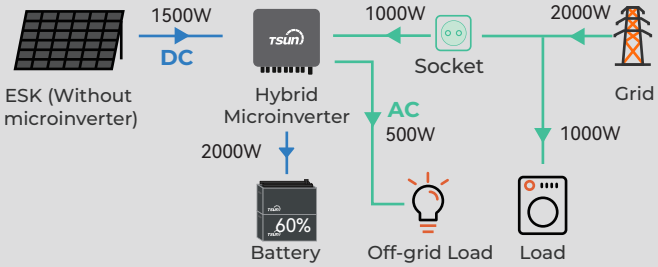
Zero Export:ON

PV energy is limited, with no excess electrical energy being fed into the grid



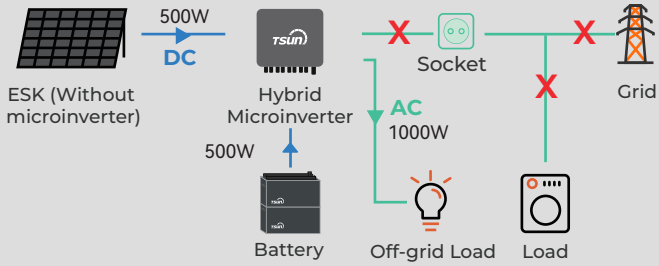
Back Up:ON

The battery will charge when the grid is connected and when the current SOC is lower than the target SOC



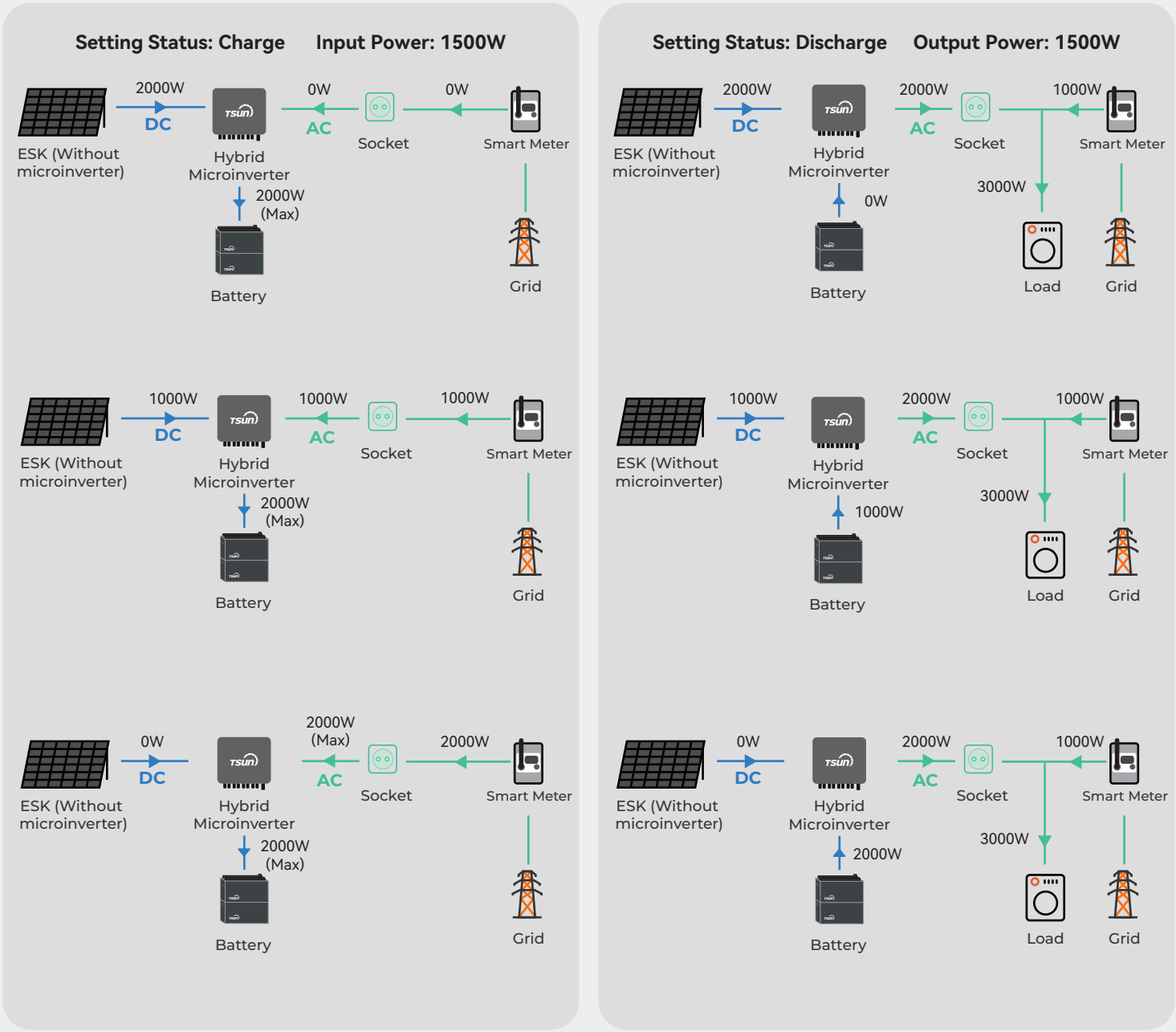
For example: Back up SOC: 80%

Supply power to off-grid loads when the grid is disconnected



System Diagram——Hybrid Microinverter

2 Forced Mode



The MH is a key component of the plug-and-play hybrid storage system or micro hybrid storage system. It supports on-grid, off-grid, and energy storage functions. The Hybrid Microinverter, connected between the solar modules and the battery, can store excess electrical energy in the battery and release it as needed.

Self-consumption Mode: The MH will work with the smart meter. The smart meter will measure power grid data and send it to the MH. The MH will automatically control the output power.The end user has three additional functions in this mode:

1.Enable "Charging Schedule" and set two charging time periods.
2.Enable "Zero Export" to prevent any excess PV electricity from being fed into the power grid.
3.Enable "Back Up" to store most of the electricity and use it when the power grid is disconnected.

Forced Mode: The MH charge or discharge battery based on the pre-set power.

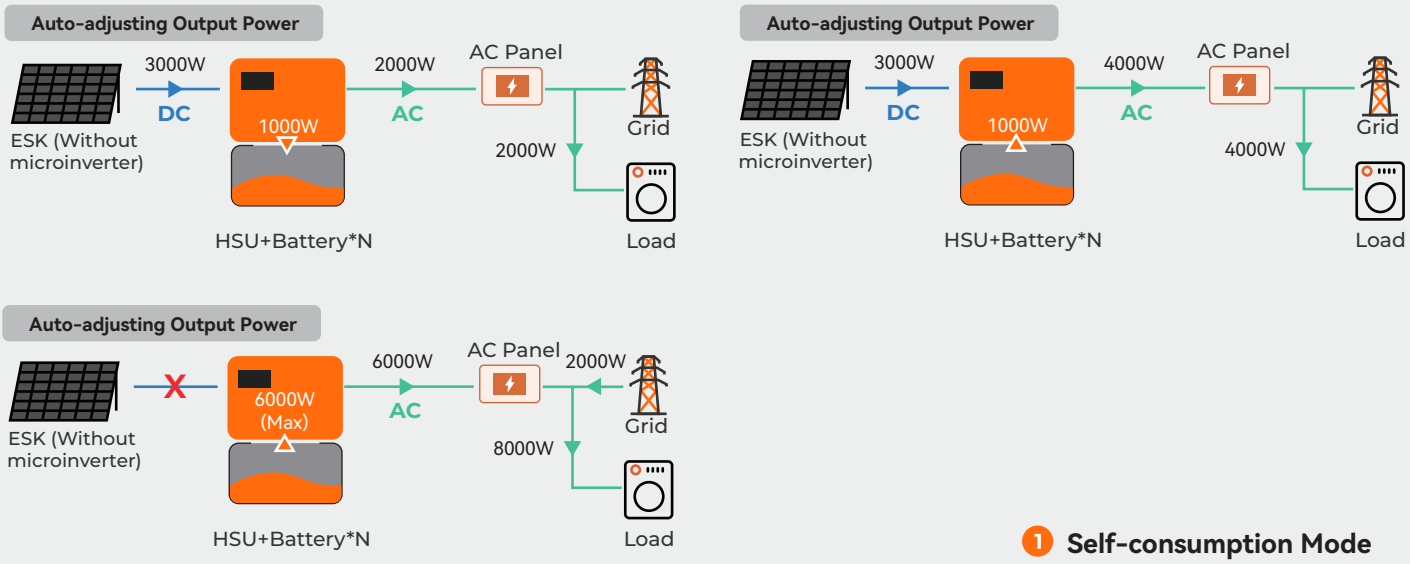
System Diagram——Residential Storage Unit

The HSU is a key component of the Hybrid Storage System, integrating both a hybrid storage inverter and a battery pack. The Hybrid Storage Unit stores electricity from the PV module or power grid in its battery and converts it into AC power according to different work modes.
HSU has three work modes:

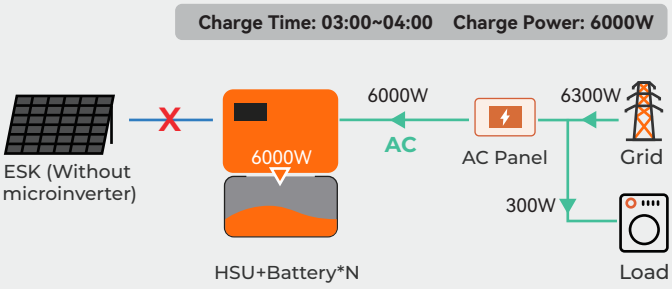
Self-consumption Mode: The HSU uses its CT to measure the status of the power grid and control the input or output power automatically.

Peak Shift Mode: The power and time period of the HSU are set manually by the end user. The HSU will charge the battery or output power according to the set time and power.

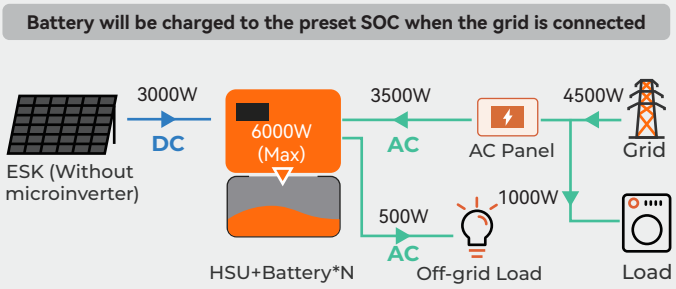
Battery Priority Mode: The battery will be charged to the preset SOC when the power grid is connected. The HSU will supply power to off-grid loads when the power grid is disconnected.



1 Self-consumption Mode



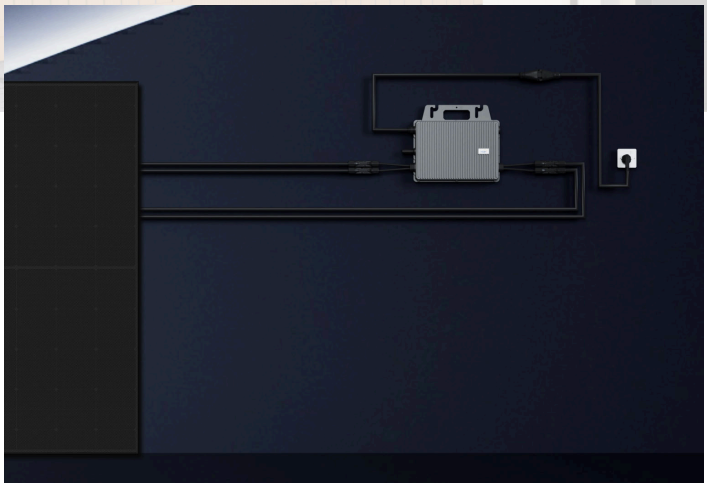
2 Peak Shift Mode



3 Battery Priority Mode

Install

ESK(with microinverter)+ACU3.0-6.0K



Generate the power from ESK to the grid

Solar Generation

Using solar panels, it converts energy from sunlight into electricity, which will be stored into battery, or converted to the grid and load.

Grid-tied Operation

It converts the DC (direct current) power produced by pv module or battery into AC (alternating current) power that can be used by household appliances or fed back into the electrical grid. It synchronizes the AC voltage and frequency with the grid to ensure a stable and safe connection.

Grid charge to battery

Grid Supply

Grid supplys the electricty to the load or battery.

Battery Storage

Charging to battery or discharging from battery.





Discharge from battery to the off-grid load(grid is disconnected)

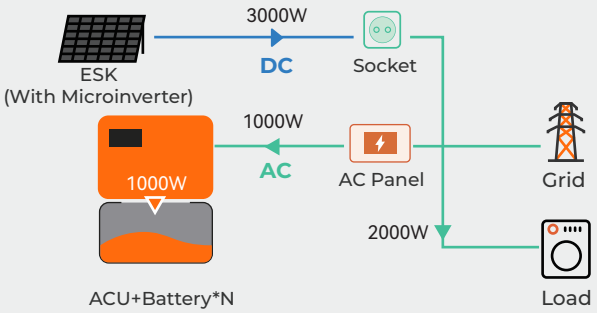
Off-grid Supply

Battery supply to the off-grid load when the grid is disconnnected.

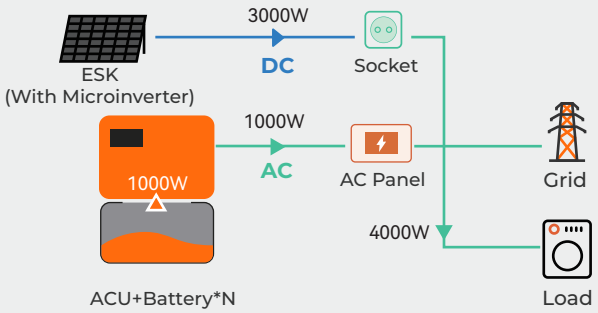
The ACU is a key component of the Energy Storage System, integrating both an energy storage inverter and a battery pack. The AC Coupled Unit stores electricity in its battery and converts it into AC power according to different work modes.

System Diagram——Residential Storage Unit

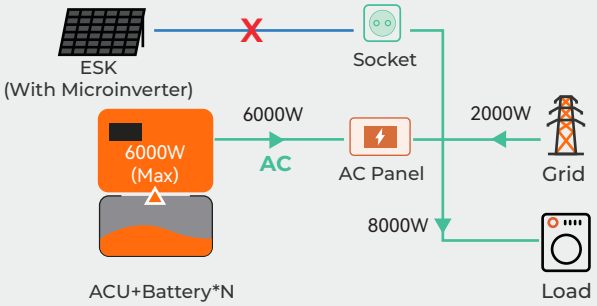
Auto-adjusting Output Power



Auto-adjusting Output Power



Auto-adjusting Output Power

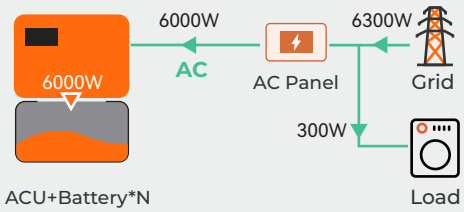


1 Self-consumption Mode

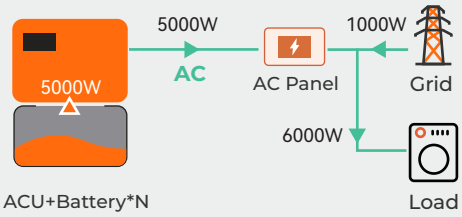
The ACU uses its CT to measure the status of the power grid and control the charge or discharge power automatically.

****In this system, the zero-export function should be implemented by the microinverter and the smart meter.**

Charge Time: 03:00~04:00 Charge Power: 6000W



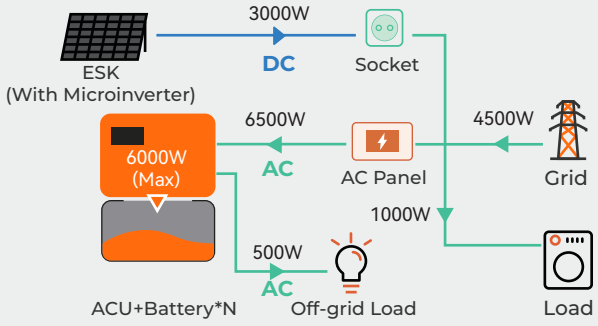
Disharge Time: 07:00~08:00 Discharge Power: 5000W



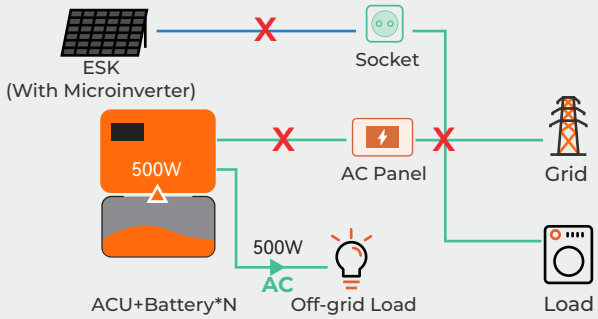
2 Peak Shift Mode

The power and time period of the ACU are set manually by the end user. The ACU will charge or discharge electricity according to the set time and power.

Battery will be charged to the preset SOC when the grid is connected



Supply power to off-grid loads when the grid is disconnected



3 Battery Priority Mode

The battery will be charged to the preset SOC when the power grid is connected. The ACU will supply power to off-grid loads when the power grid is disconnected.