Part 2:
Integrator of Energy Storage System

A C G S A G

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5kW Hybrid inverter

Battery voltage range：40-60Vdc

Max charge/discharge current：70A/100A

IP65 Natural cooling

Web、APP Remote monitoring

PV	
Max. PV Power（W）	6000
Max. DC voltage（V）	580
MPPT voltage range（V）	125-550
Starting voltage（V）	90
MPPT	2
BATTERY	
Battery voltage range (V)	40-60
Rated battery voltage（V）	48
Max.charge/discharge current（A）	70/100
BMS communication interface	CAN/RS485
AC side	
Rated AC power	5000VA
Rated grid voltage（V）	230
Rated grid frequency（Hz）	50/60
Rated AC current（A）	21.7
Max. AC current（A）	22.8
LOAD side	
Rated power（W）	4600
Rated AC voltage（V）	230
Electrical connection	1/N/PE
On-off grid switching time	≤10ms
Rated frequency（Hz）	50/60
Rated current（A）	21.7
Max. AC current （A）	22.8
Common Parameters	
Size（widthXhighXdepth） （mm）	495mm*516mm*152mm
Weight（KG）	<25
IP grade	IP65
Heat dissipation mode	Natural cooling
display	LED & APP
Communication mode	Wi-Fi、RS485、GPRS

ACGS

10kW Hybrid inverter

Battery voltage range：200-800Vdc

Max charge/discharge current：25A/25A

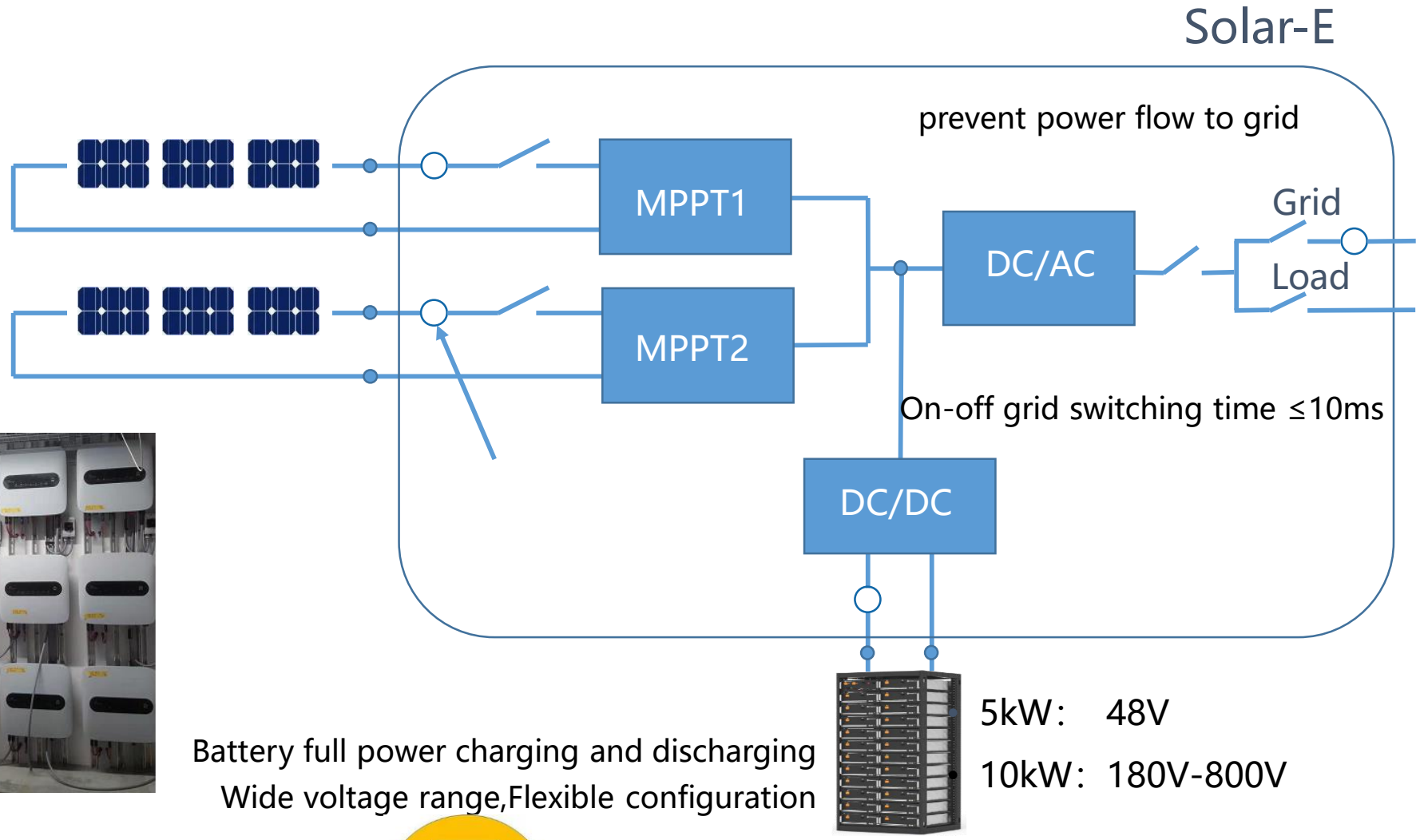
IP65 Natural cooling

100% unbalance of on-grid and off-grid three phases

Web、APP Remote monitoring

PV	
Max. PV Power（W）	13000
Max. DC voltage（V）	1000
MPPT voltage range（V）	180-880
Starting voltage（V）	180
MPPT	2
BATTERY	
Battery voltage range (V)	180-800
Rated battery voltage（V）	400
Max.charge/discharge current（A）	25/25
BMS communication interface	CAN/RS485
AC side	
Rated AC power	10000VA
Rated grid voltage（V）	400/230; 380/220
Rated grid frequency（Hz）	50/60
Rated AC current（A）	14.5
Max. AC current（A）	16
LOAD side	
Rated power（W）	10000
Rated AC voltage（V）	400/380
Electrical connection	3/N/PE
On-off grid switching time	≤10ms
Rated frequency（Hz）	50/60
Rated current（A）	14.5
Max. AC current （A）	16
Common Parameters	
Size（widthXhighXdepth） （mm）	548mm*550mm*188mm
Weight（KG）	<40
IP grade	IP65
Heat dissipation mode	Natural cooling
display	LED & APP
Communication mode	Wi-Fi、RS485、GPRS

High beauty and powerful function



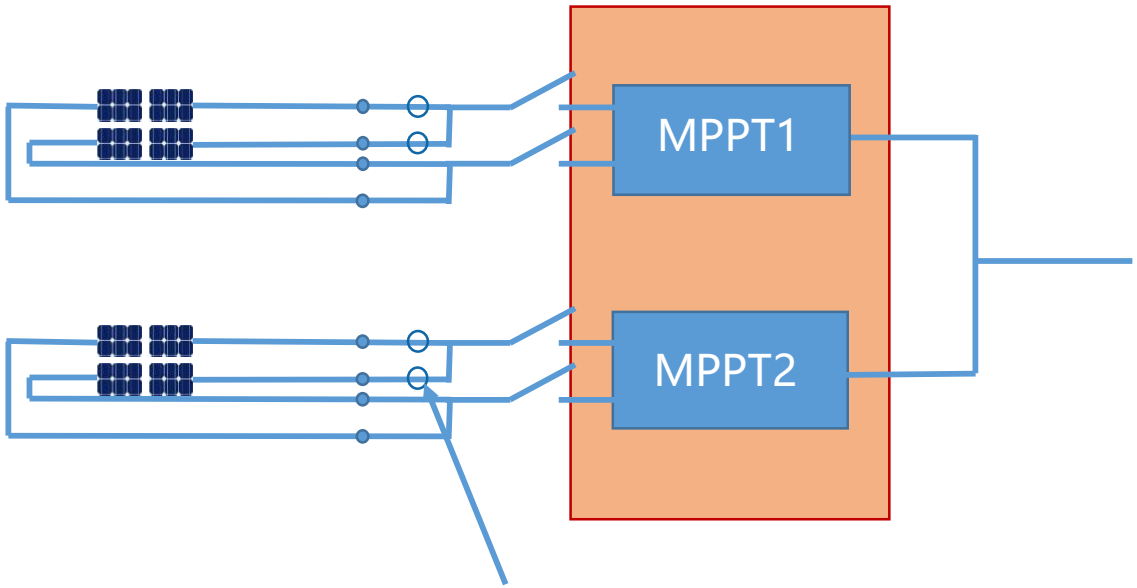
Battery full power charging and discharging
Wide voltage range,Flexible configuration

5kW: 48V
10kW: 180V-800V

System

ACGS

Increase the generating capacity



High-precision

sensor 0.5% accuracy

Number of PV input branches : 2

Number of MPPT trackers : 2

3.6kW 5kW MPPT voltage range： 125V-550V

10kW 5kW MPPT voltage range： 180V-880V

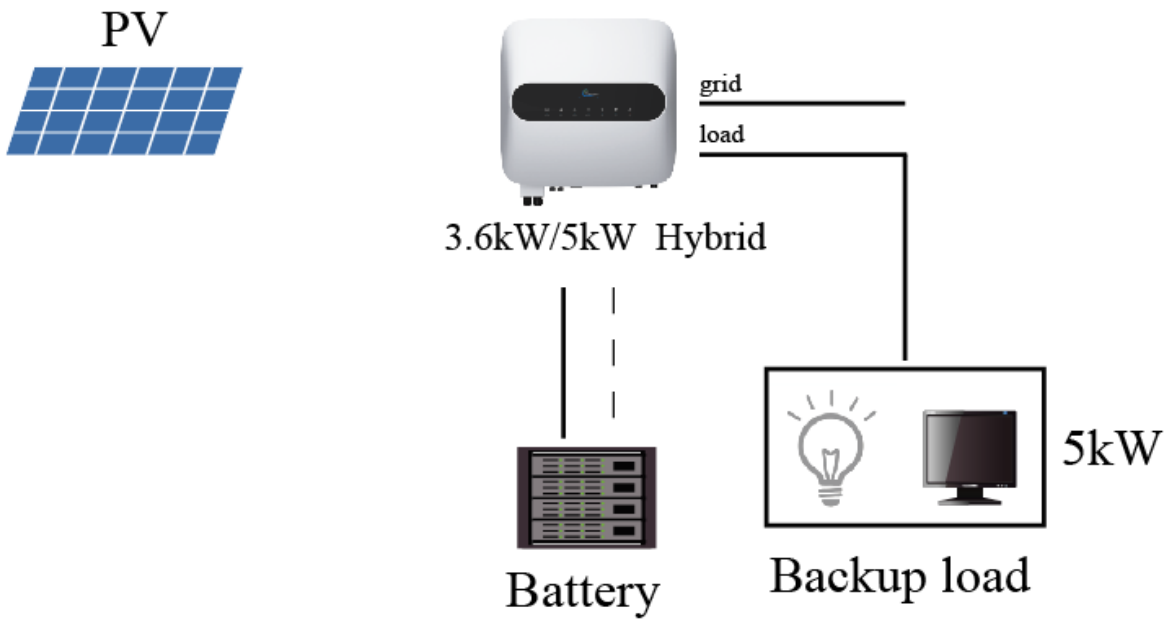
Max. PV input current : 14A/14A

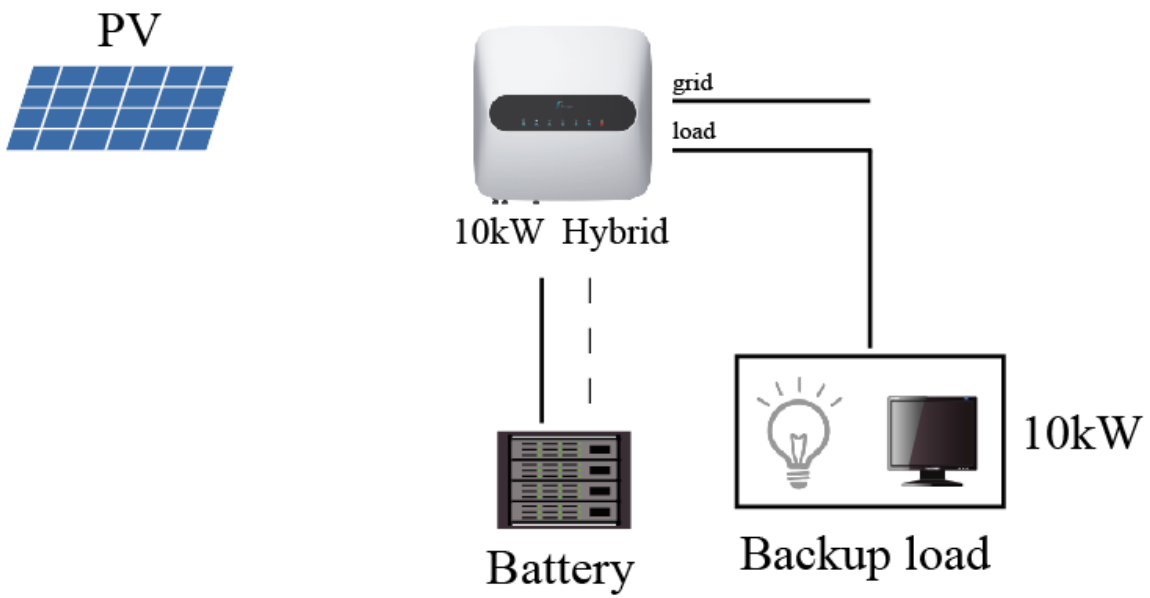
- Sensor 0.5% accuracy , high tracking accuracy of MPPT
- Support double-sided module, increase power generation
- Turn on early , turn off late
- High efficiency, max.$\eta_{PV \rightarrow grid} \geq 98\%$

Sermatec

ACGS

Enough off-grid load capacity





Charging/discharging current : 70A/100A

Backup load : 5kW

Battery full power charging and discharging

Battery voltage range : 40V-60V

Charging/discharging current : 25A/25A

Backup load : 10kW

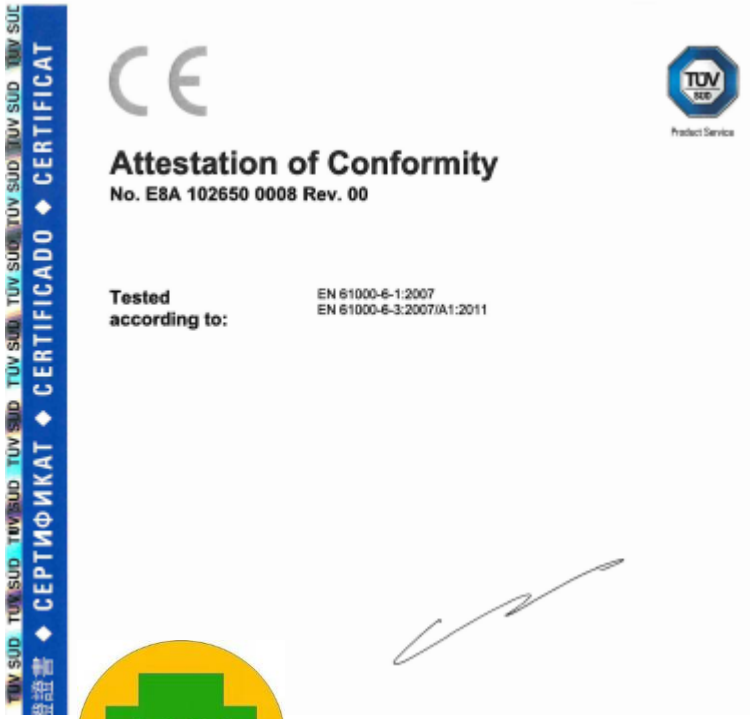
Battery full power charging and discharging

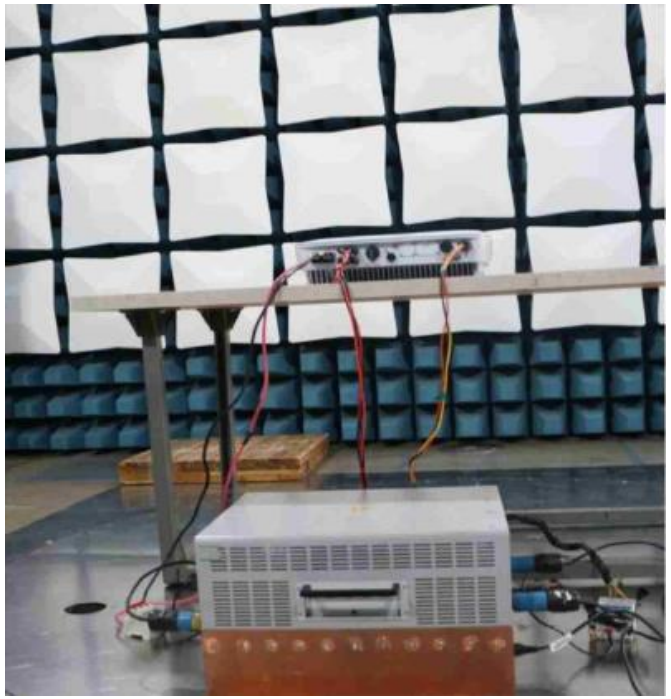
Battery voltage range : 180V-800V

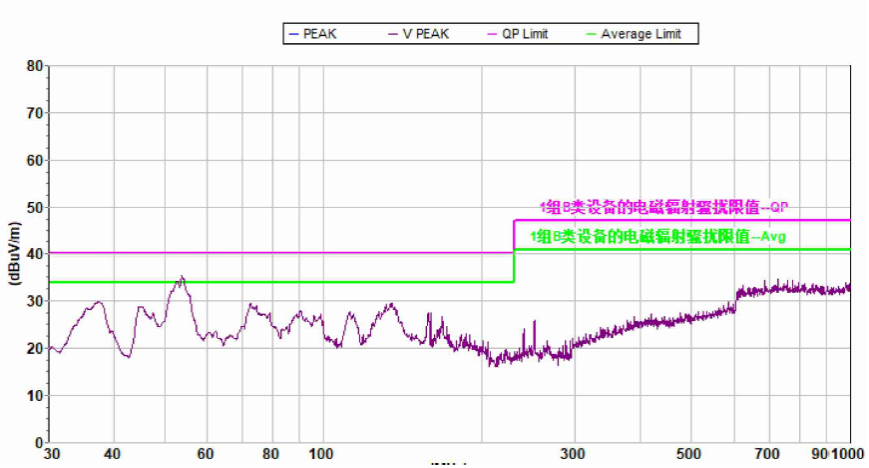
Safety---EMC

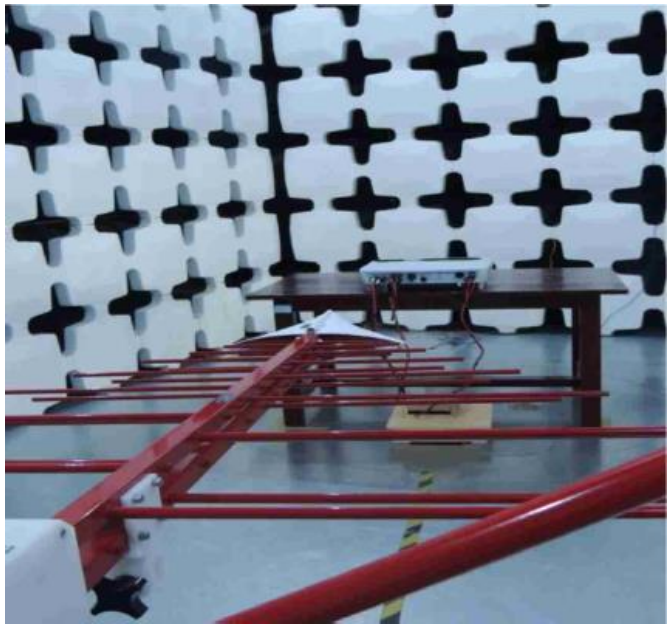
Achieve class B standard.

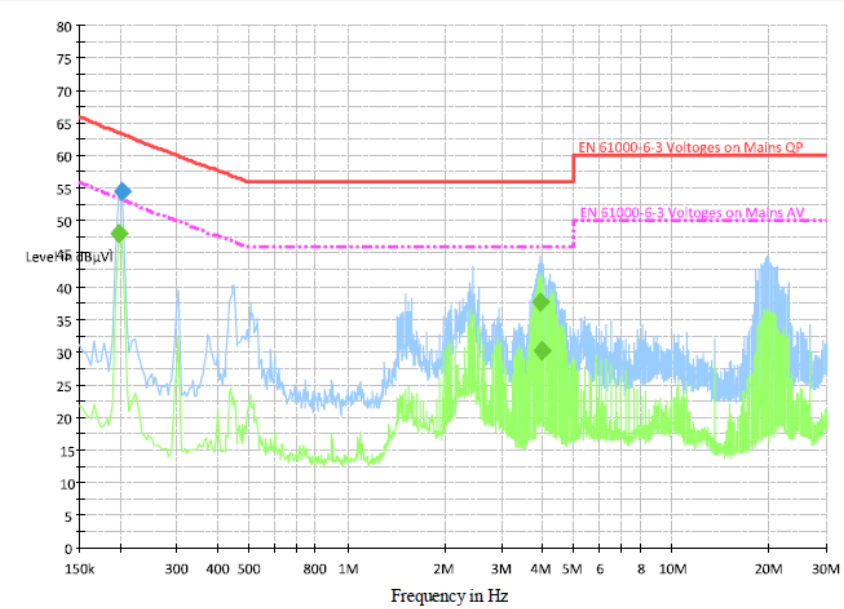
Class B --- household electrical appliances standard



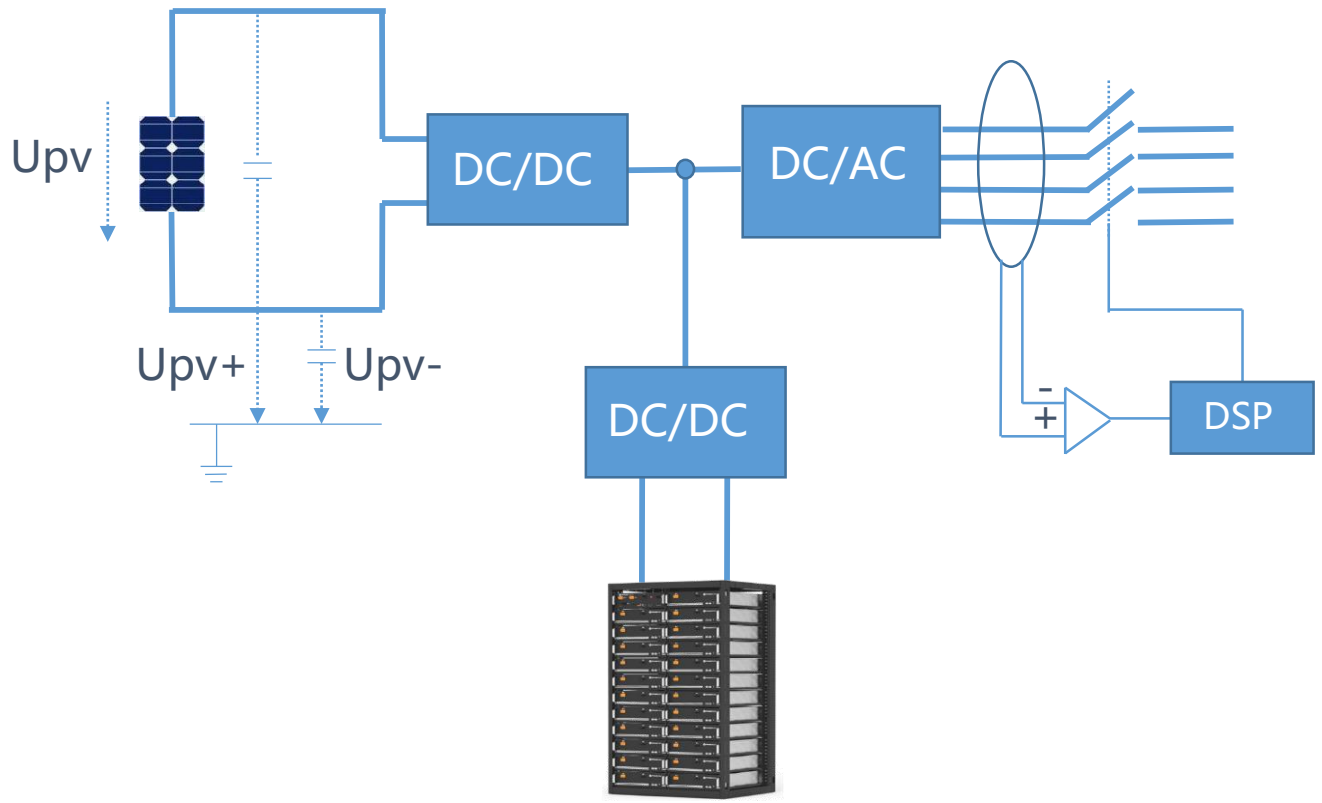








Safety--- Active fault isolation



Certified by TUV Testing Center

IEC 62109-1			
Clause	Requirement – Test	Result – Remark	Verdict
7.3.7.8.5	Wound components		P
7.3.7.8.6	Potting materials		N/A
7.3.8	Residual Current-operated protective (RCD) or monitoring (RCM) device compatibility	Internal RCM is used according to IEC 62109-2 test	P
	against insulation faults in some domestic and industrial installations, additional to that provided by the installed equipment.		
7.3.9	Capacitor discharge		P
7.3.9.1	Operator access area		P
	Equipment shall be so designed that there is no risk of electric shock in operator access areas from charge stored on capacitors after disconnection of the PCE.		P
7.3.9.2	Service access areas		P
	Capacitors located behind panels that are removable for servicing, installation, or disconnection shall present no risk of electric shock or energy hazard from charge stored on capacitors after disconnection of the PCE.		P
7.4	Protection against energy hazards		P
7.4.1	Determination of hazardous energy level		P
	A hazardous energy level is considered to exist if		P
	a) The voltage is 2 V or more, and power available after 60 s exceeds 240 VA.		N/A
	b) The stored energy in a capacitor is at a voltage, U of 2 V or more, and the stored energy, E, calculated from the following equation, exceeds 20J: $E = 0,5\ CU^2$		P
7.4.2	Operator Access Areas		P
	Equipment shall be so designed that there is no risk of energy hazard in operator access areas from accessible circuits.		P
7.4.3	Services Access Areas		P
7.5	Electrical tests related to shock hazard	see appended table	P
7.5.1	Impulse voltage test (type test)		P
7.5.2	Voltage test (dielectric strength test)		P
7.5.2.1	Purpose of test		P
7.5.2.2	Value and type of test voltage		P

Intelligent residual current monitoring RCM and circuit cut-off protection to prevent electric shock and isolate actively

Quality

Protection grade: IP65, Natural cooling, Noise < 29dB;

The embedding technology, good heat dissipation.

embedding technology, increase the thermal conductivity

Natural cooling

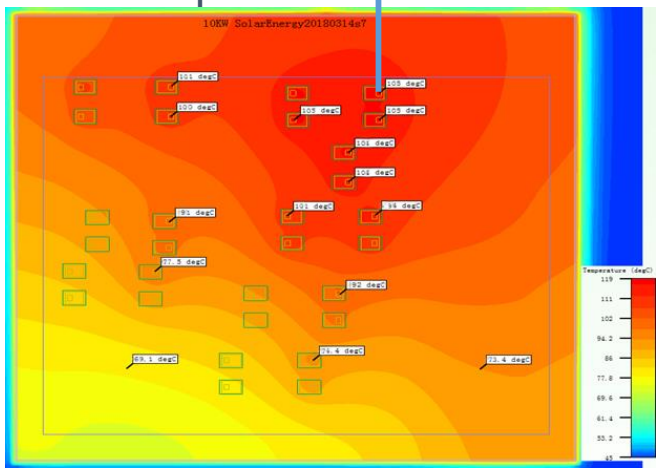
< 29dB

(Equivalent to library environment)

105℃

45℃ ambient temperature

full load operation



Uniform distribution of heat dissipation

Fully evaluate device loss

Rational layout

Quality

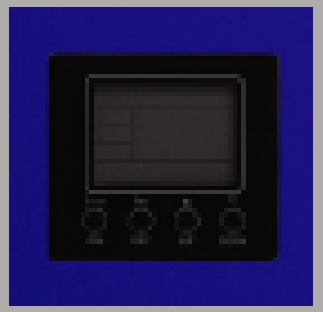
Integrated open molding, no welding spot, high thermal conductivity aluminum alloy material.

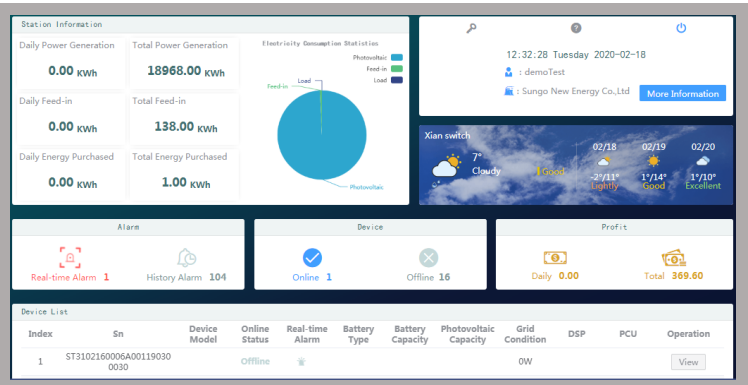
25 years of design life .

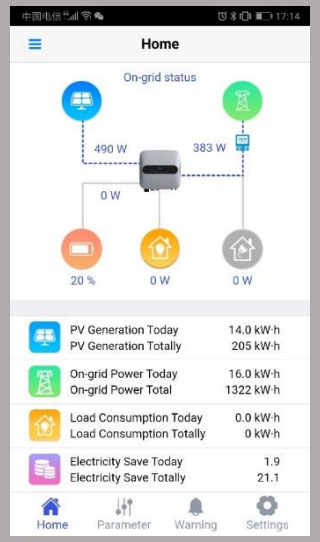
Sermatec

ACGS

HMI







LCD，3--5years

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App+Cloud platform

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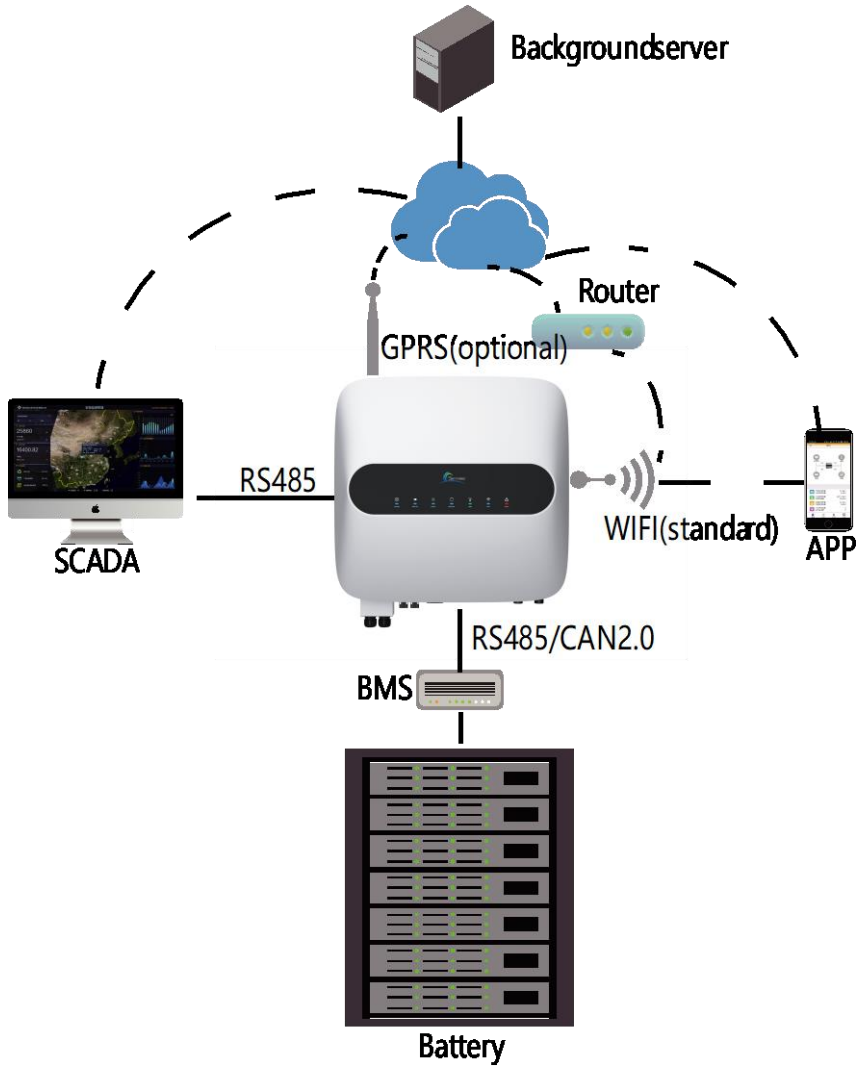
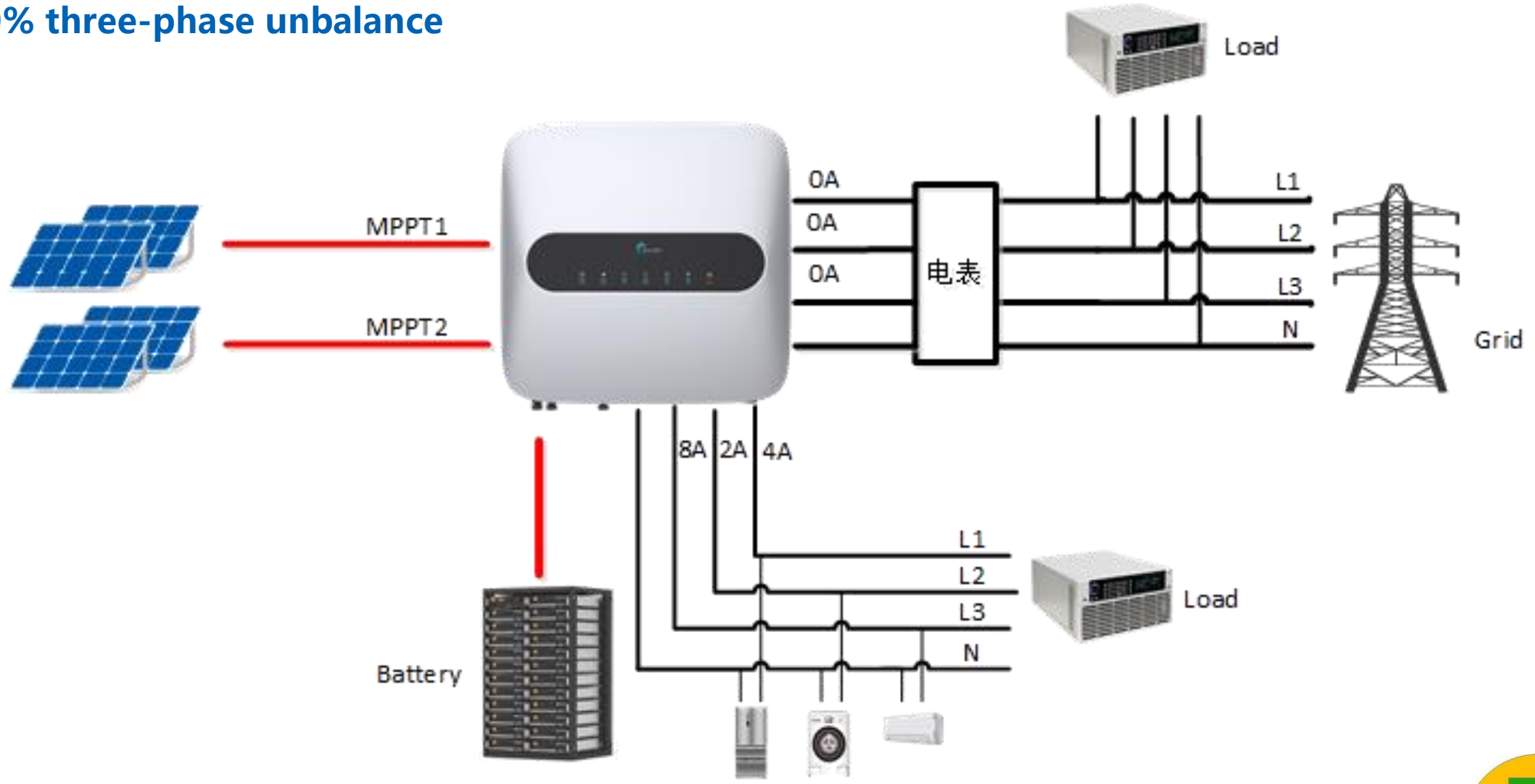


Built-in WIFI module

Support multiple networking modes.

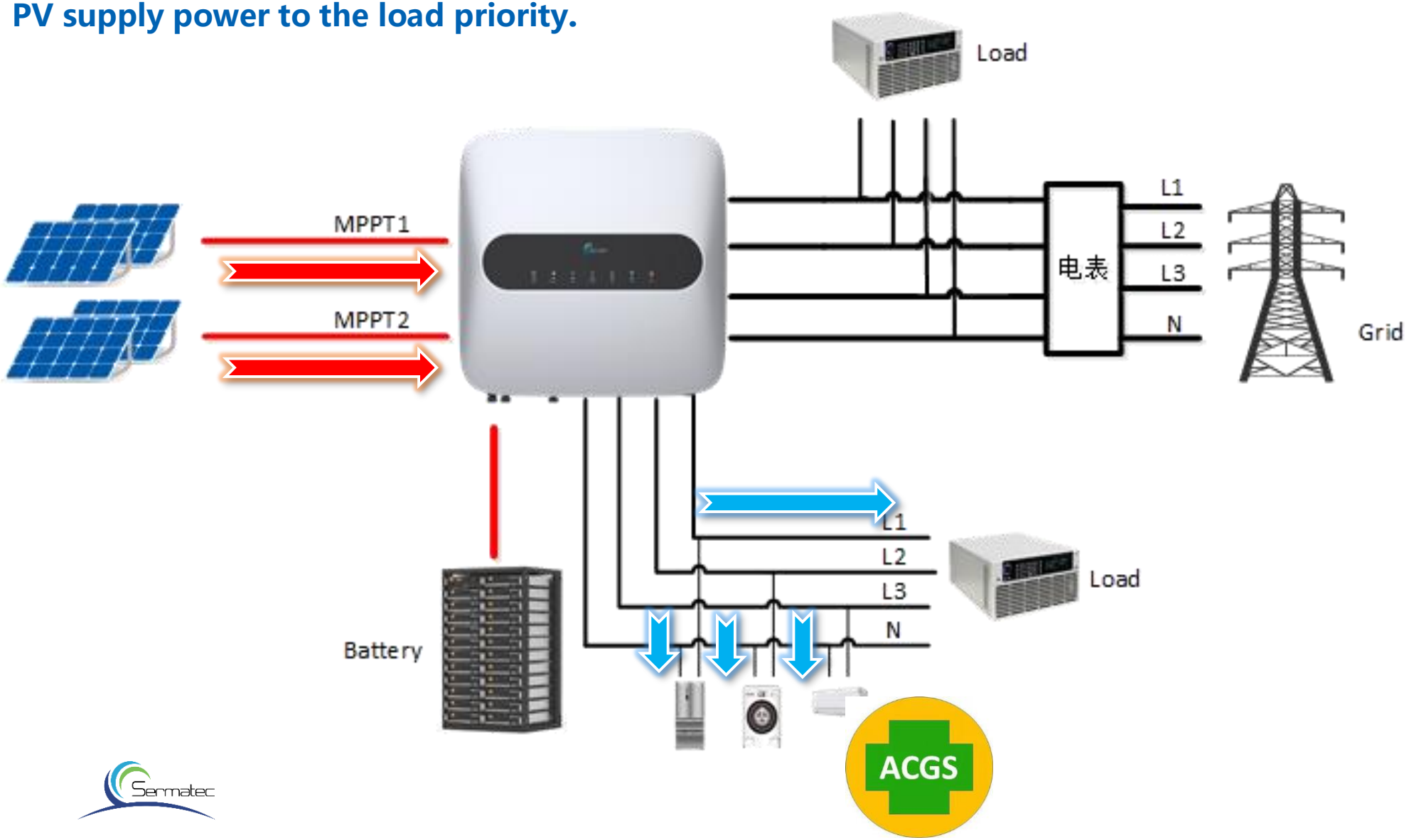
100% three-phase unbalance



Anti-reflux function, automatic follow load, meet the application of vector metering and absolute value metering meters

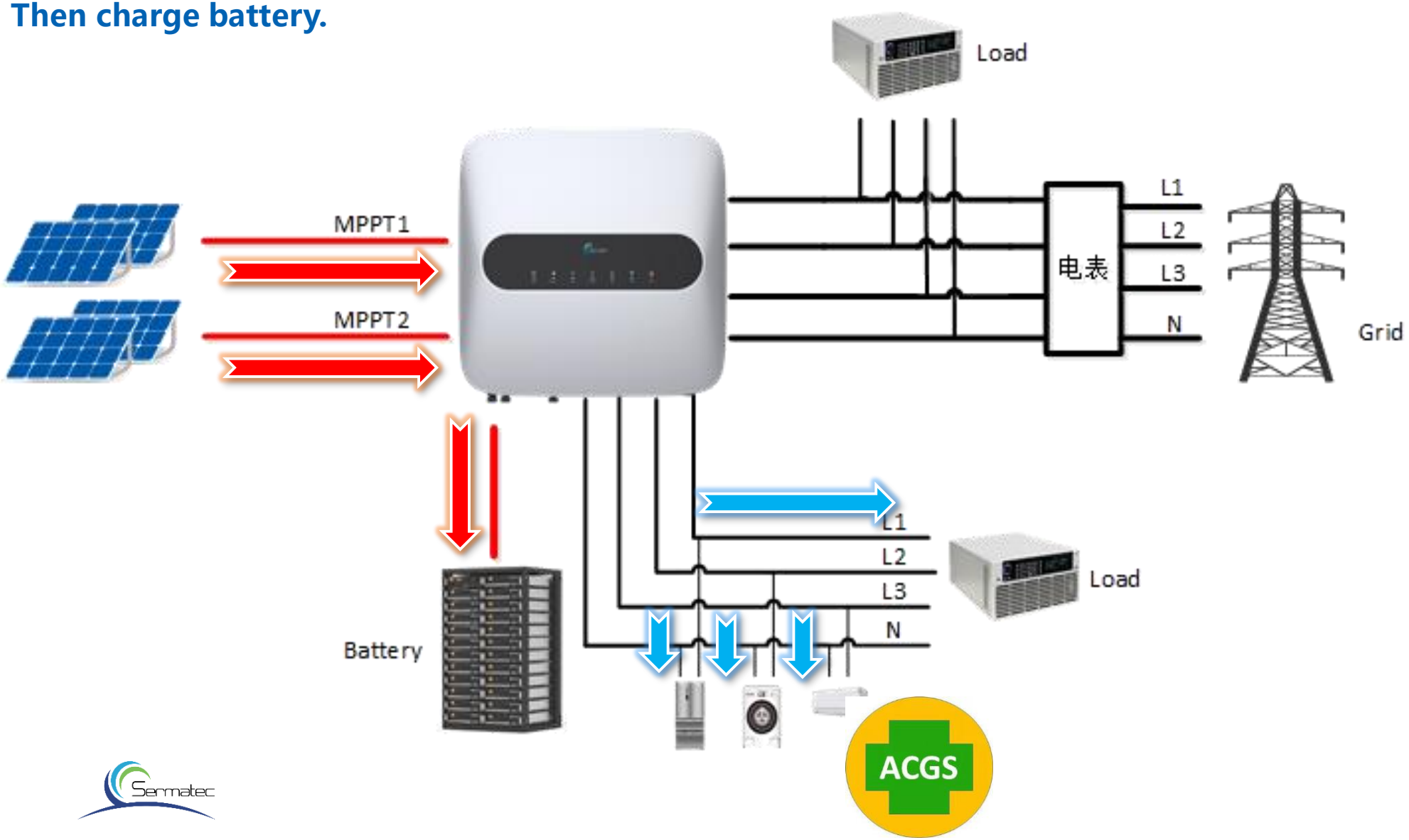
General mode

PV supply power to the load priority.



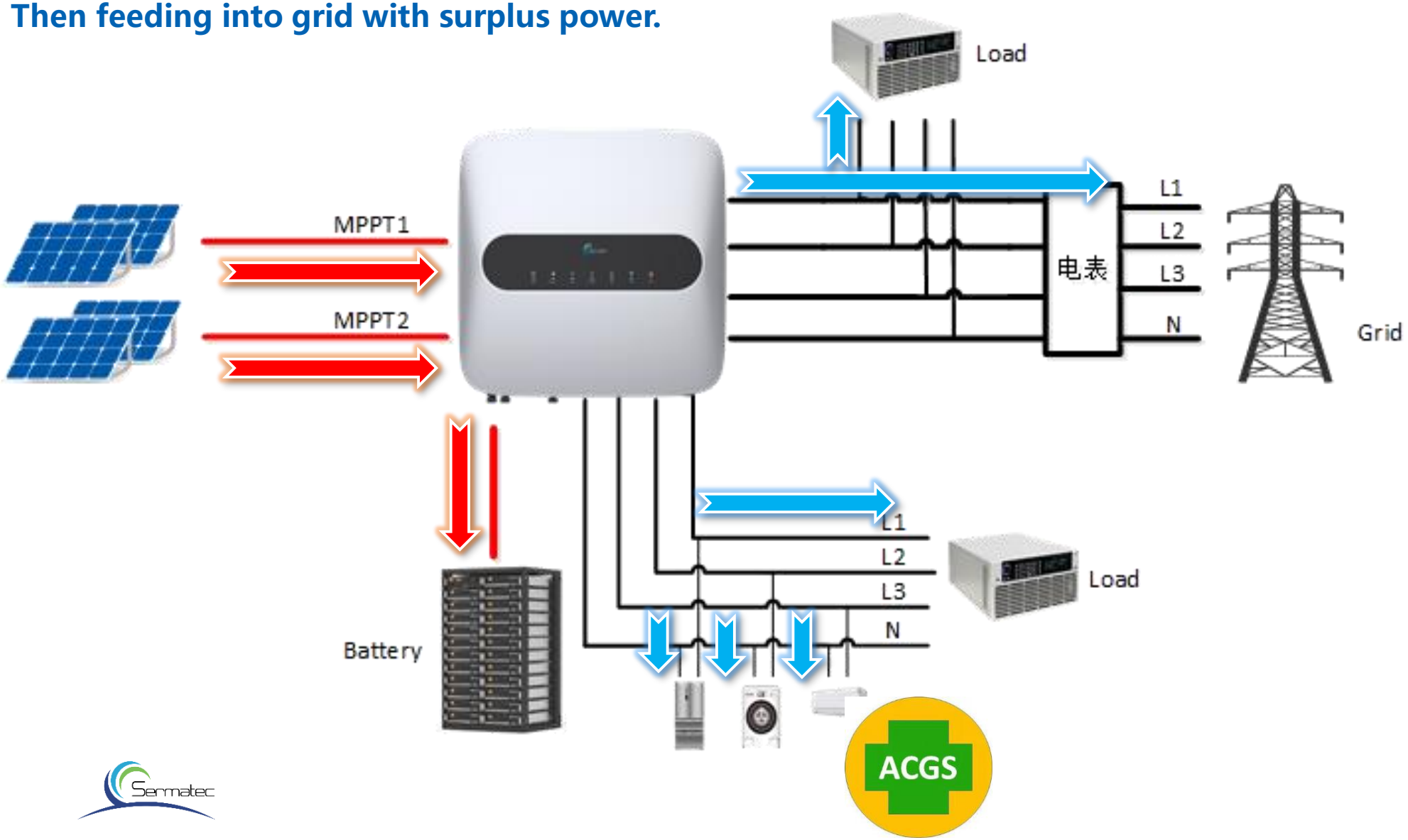
General mode

Then charge battery.



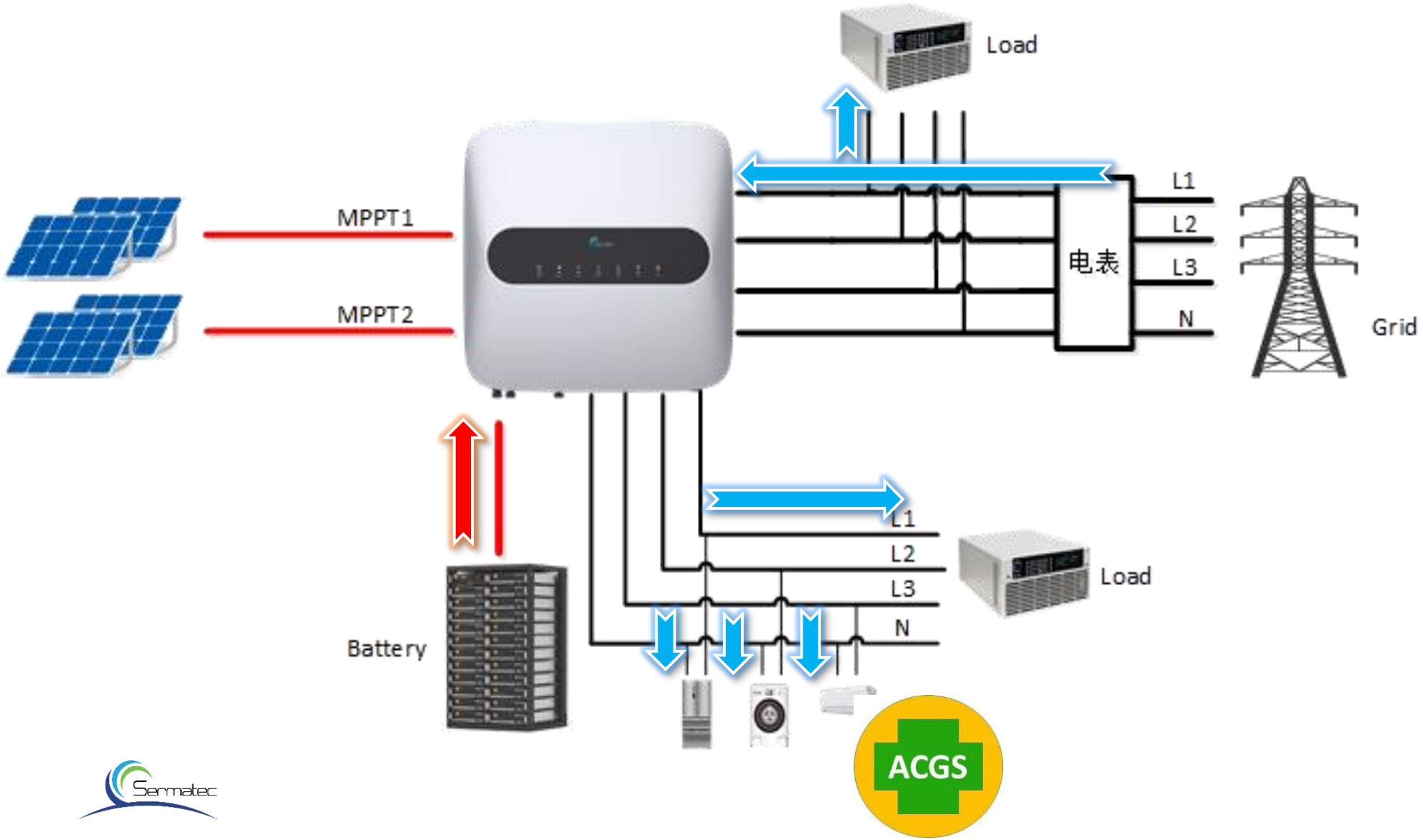
General mode

Then feeding into grid with surplus power.



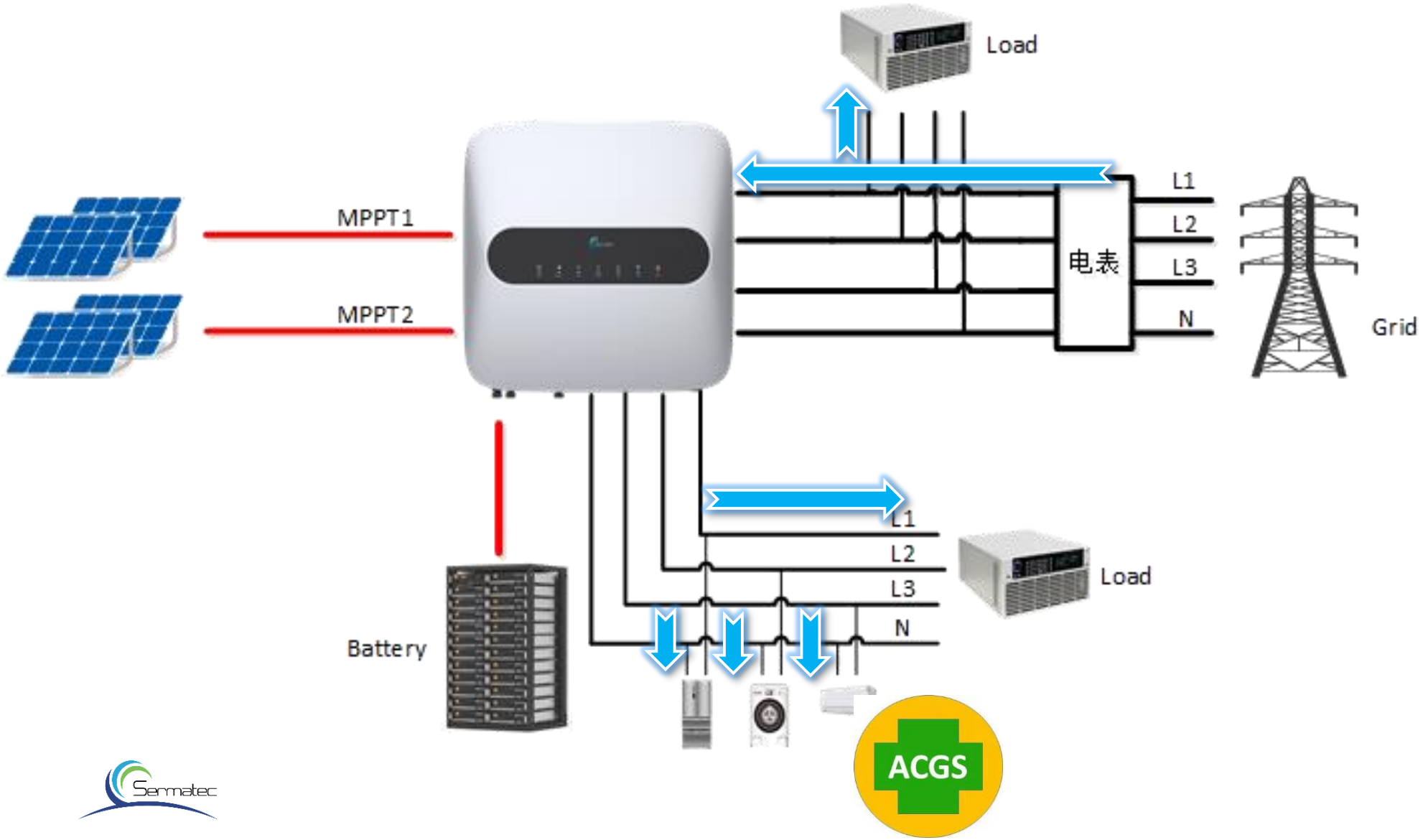
General mode

When PV is insufficient , batteries and grid supply power to the load together.



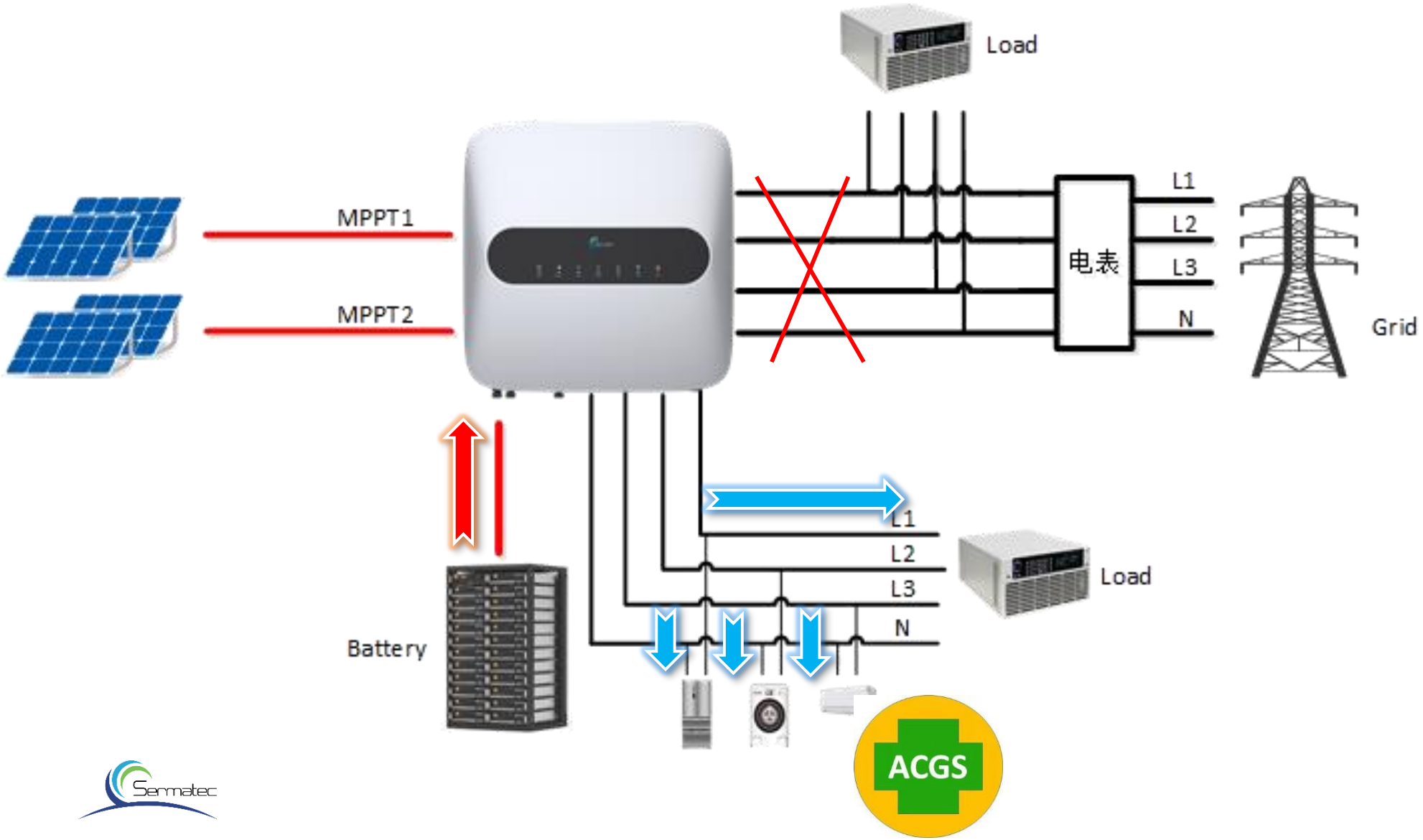
General mode

Battery SOC discharge to 50% , stop discharge.



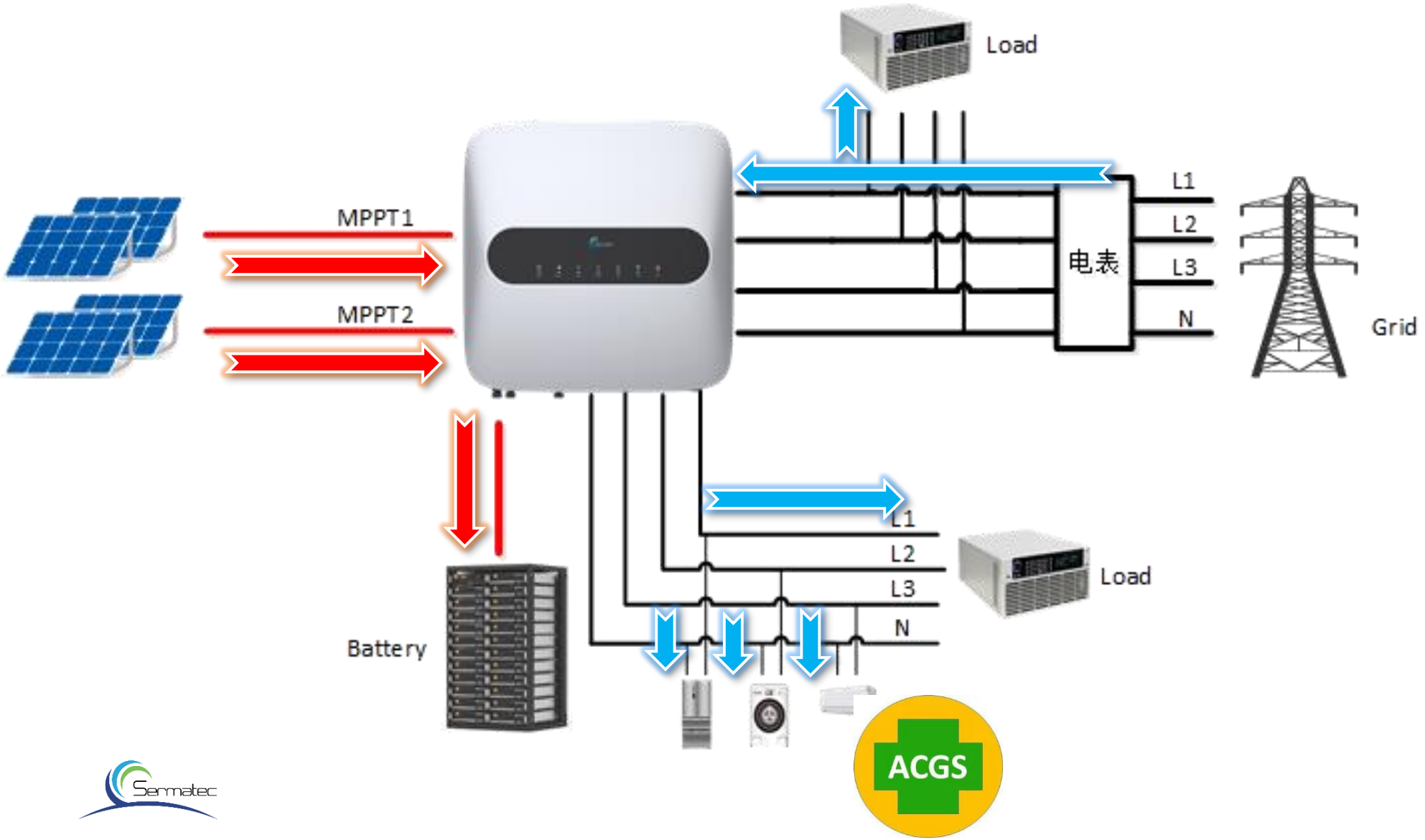
General mode

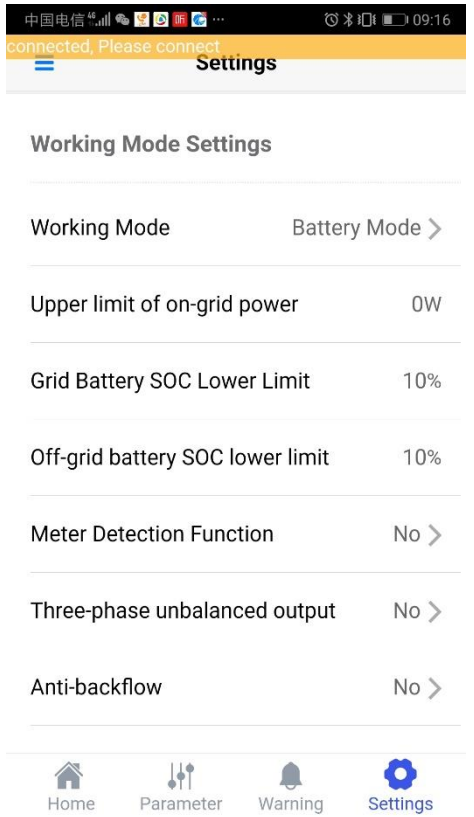
When turn to off-grid , Battery will continue to discharge till SOC 10%.



Battery mode-----Battery backup

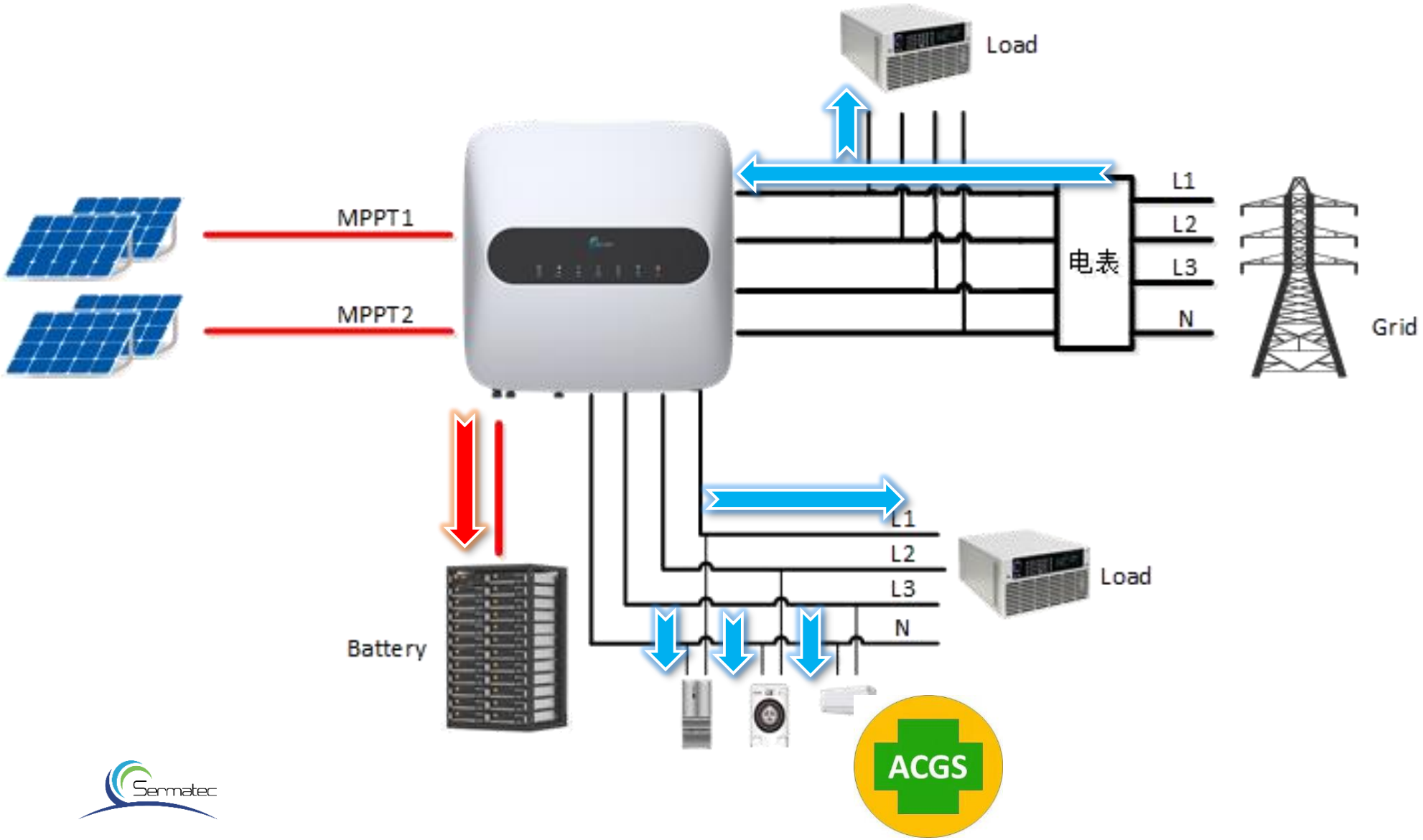
PV and grid supply power to load and charge batteries together.

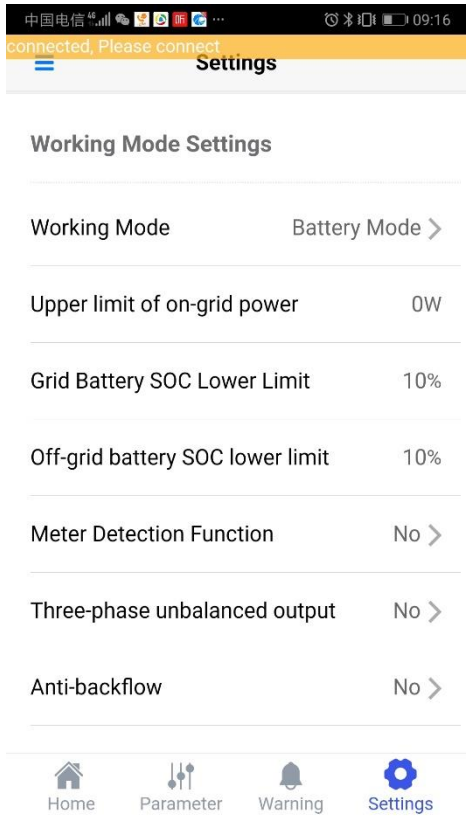




Battery mode-----Battery backup

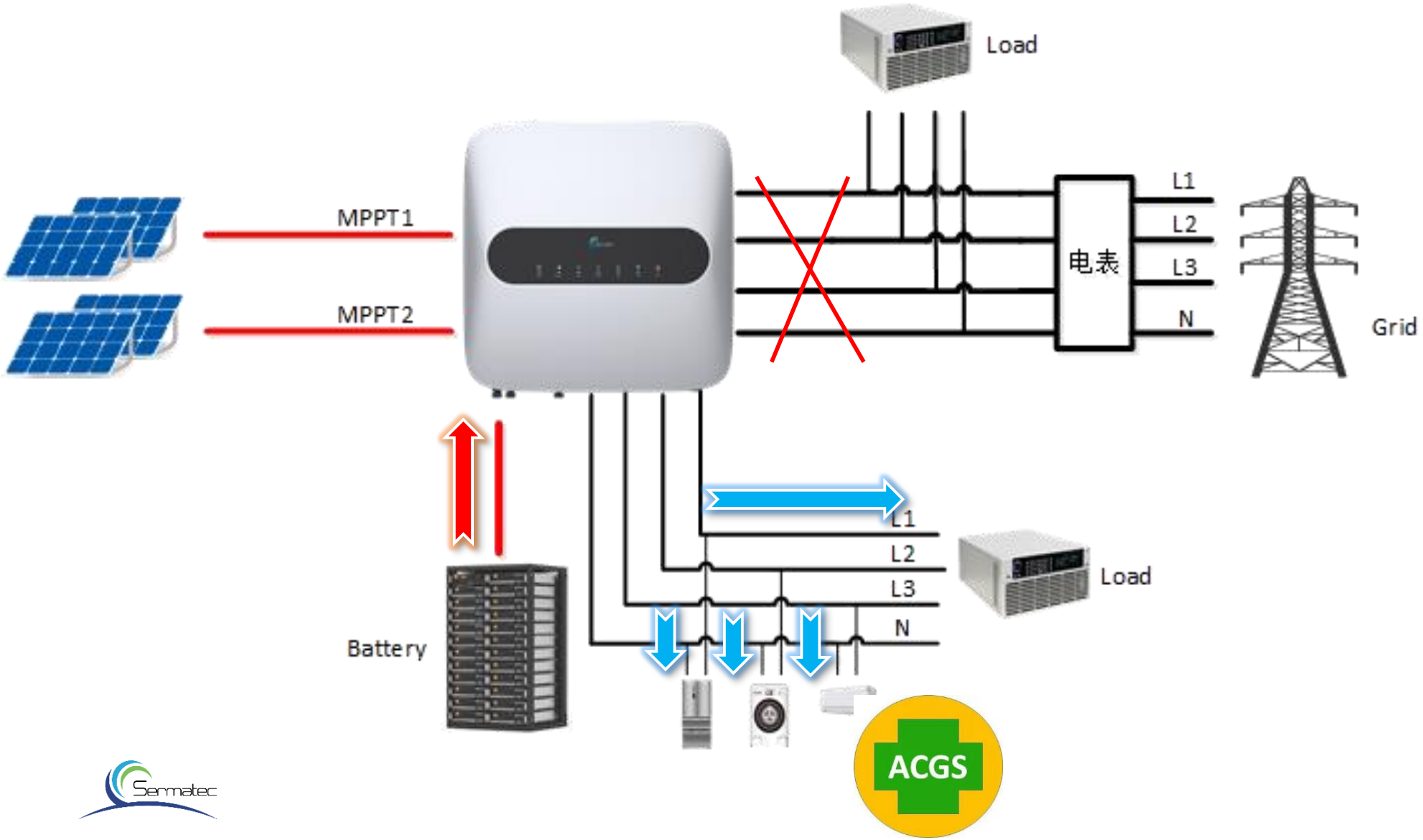
When the grid is normal, the battery SOC is always in full state.

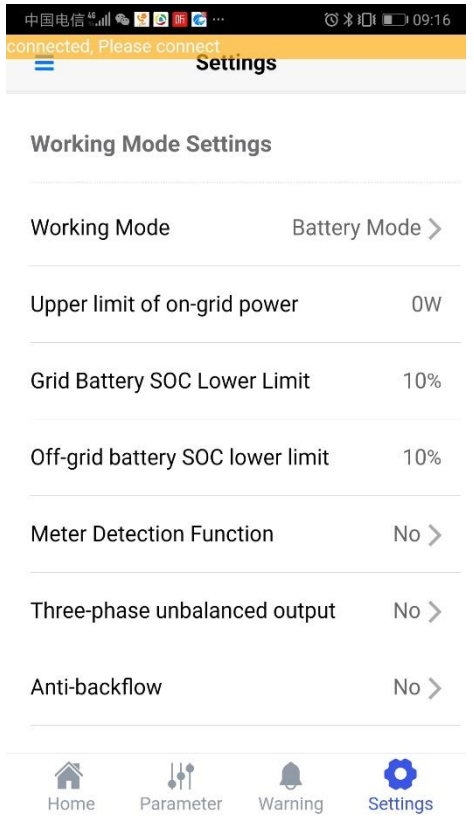




Battery mode-----Battery backup

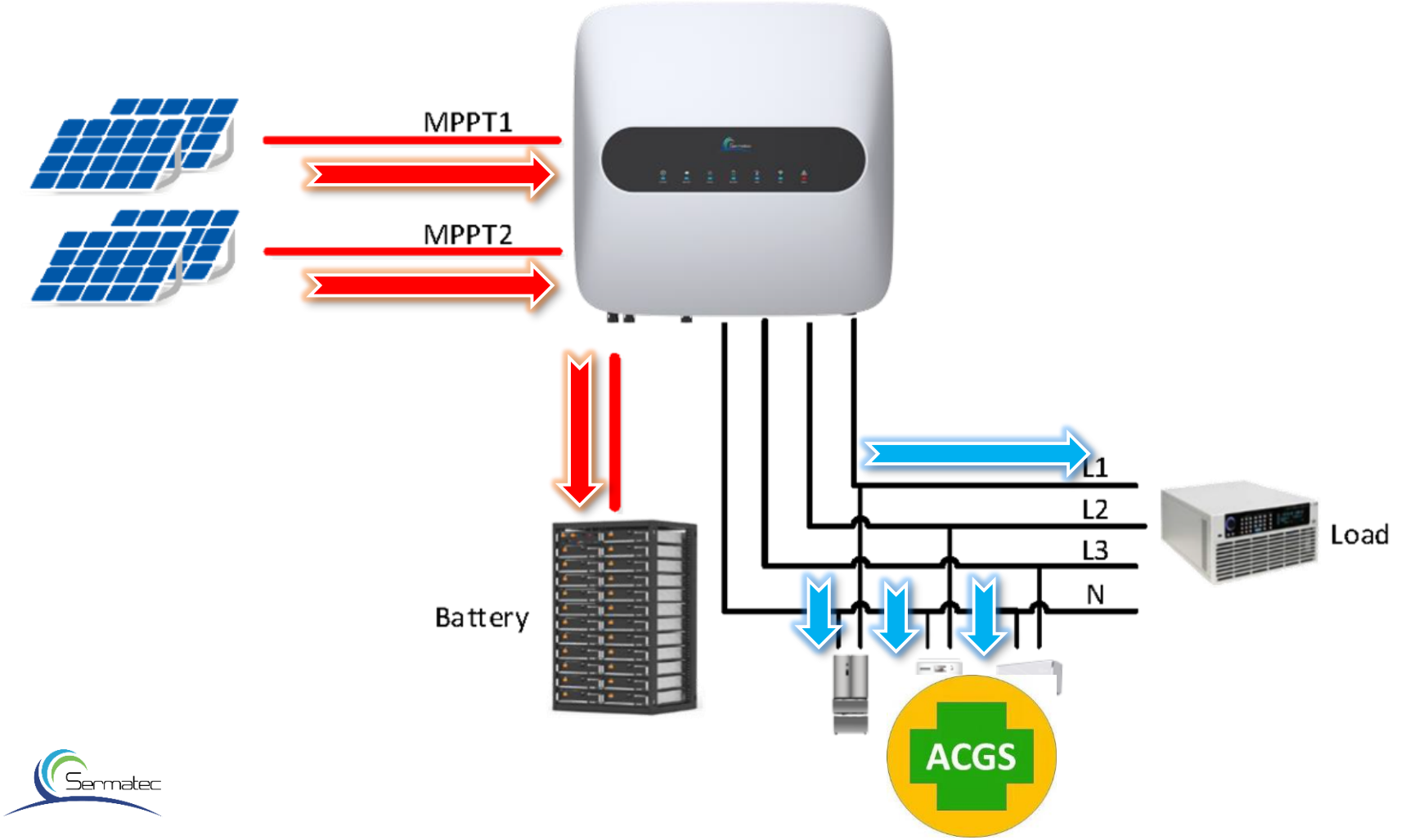
Batteries discharge only when the grid is abnormal.

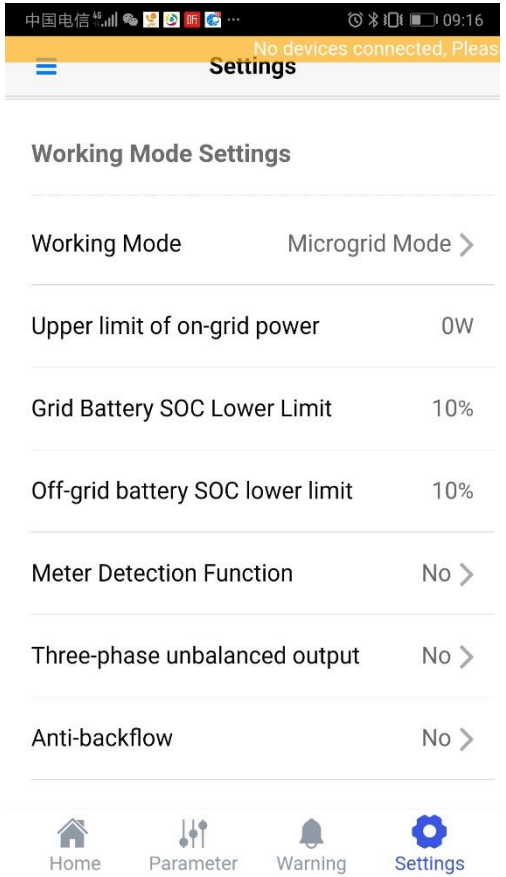




Micro-grid mode-----Suitable for non-grid scenarios

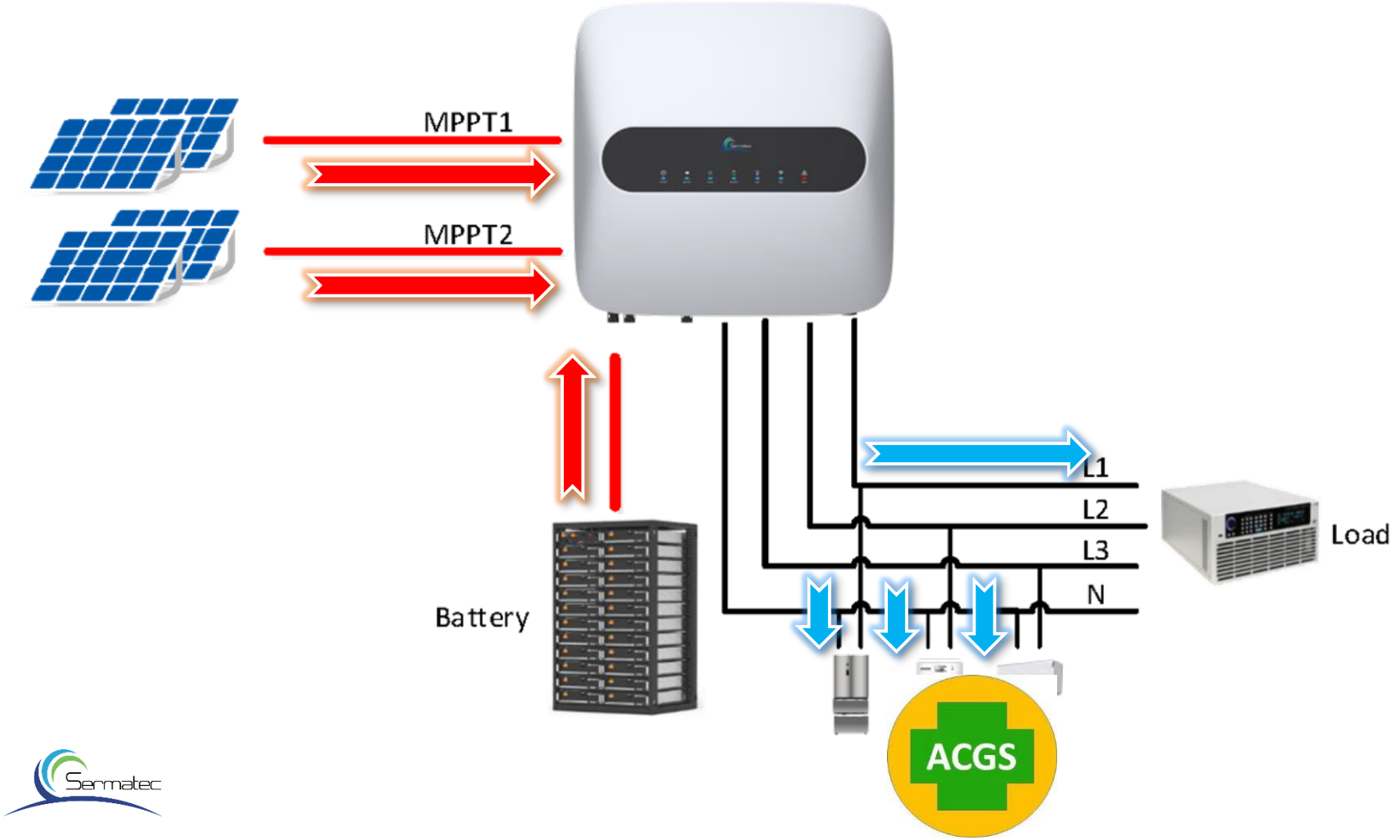
If PV is sufficient, PV supply power to the load priority, then charge battery.

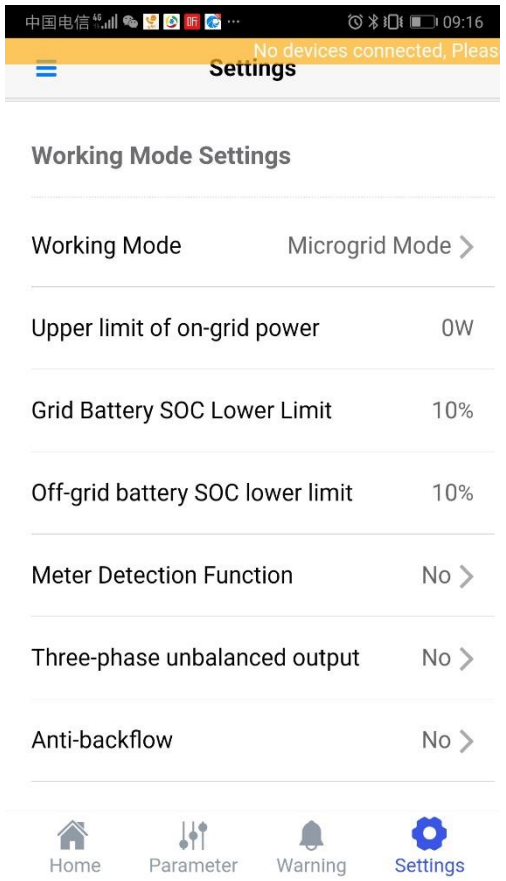




Micro-grid mode-----Suitable for non-grid scenarios

When PV is insufficient, Batteries supply power to the load.

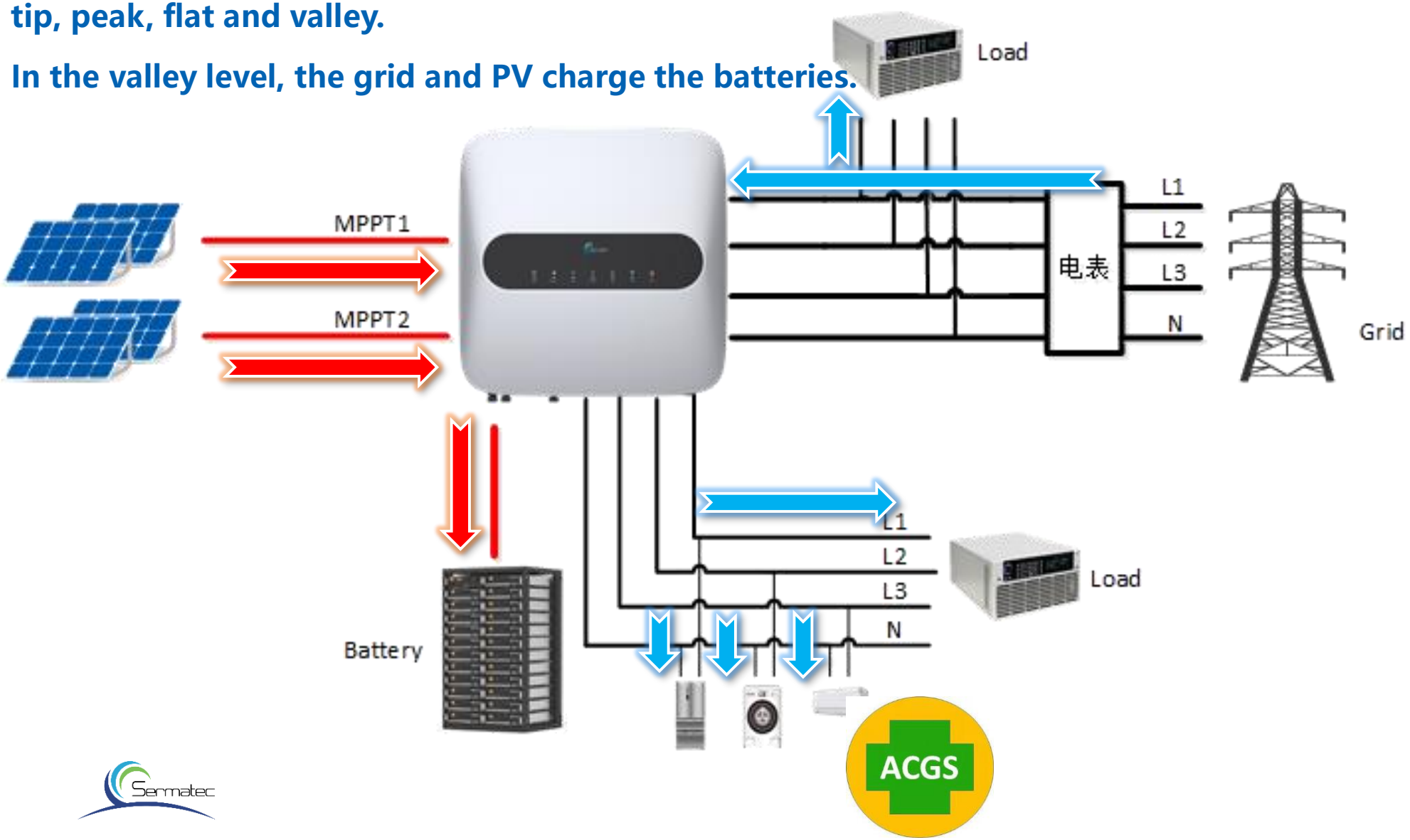


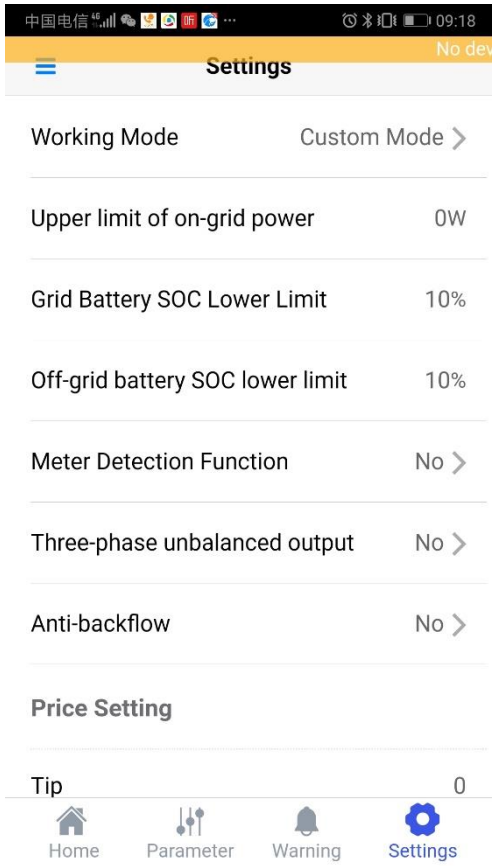


Custom mode

According to the difference of electricity price, a day can be divided into four periods: tip, peak, flat and valley.

In the valley level, the grid and PV charge the batteries.

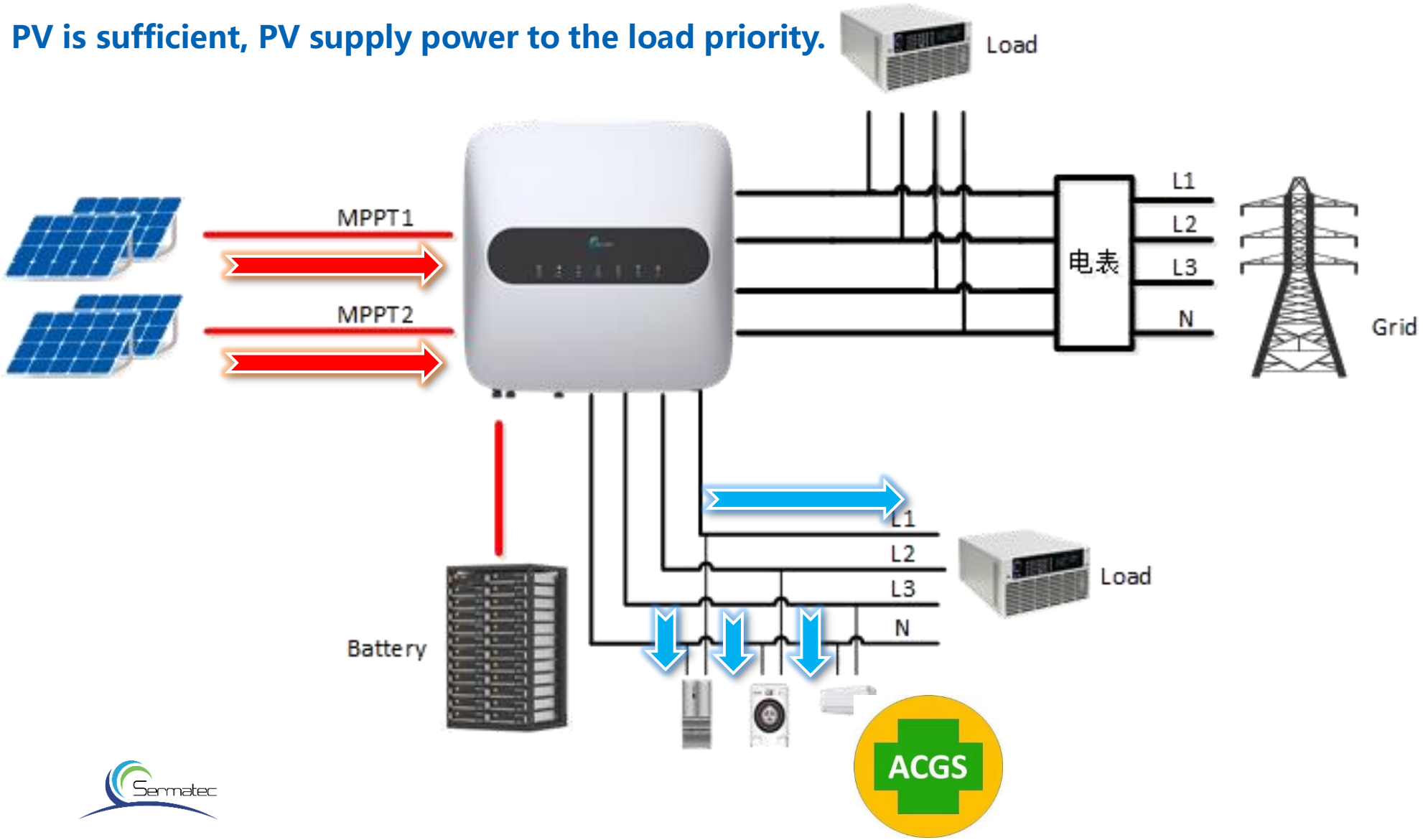


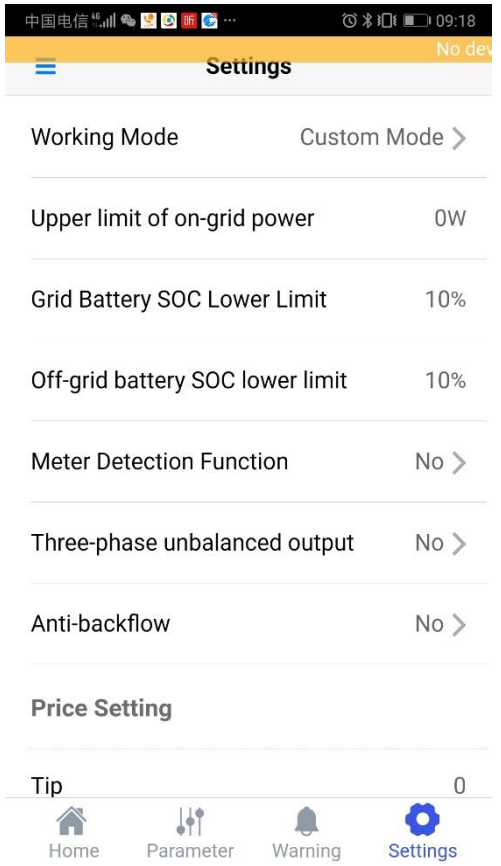


Custom mode

In the Flat Time period, when the PV is sufficient, the battery can be charge.

PV is sufficient, PV supply power to the load priority.

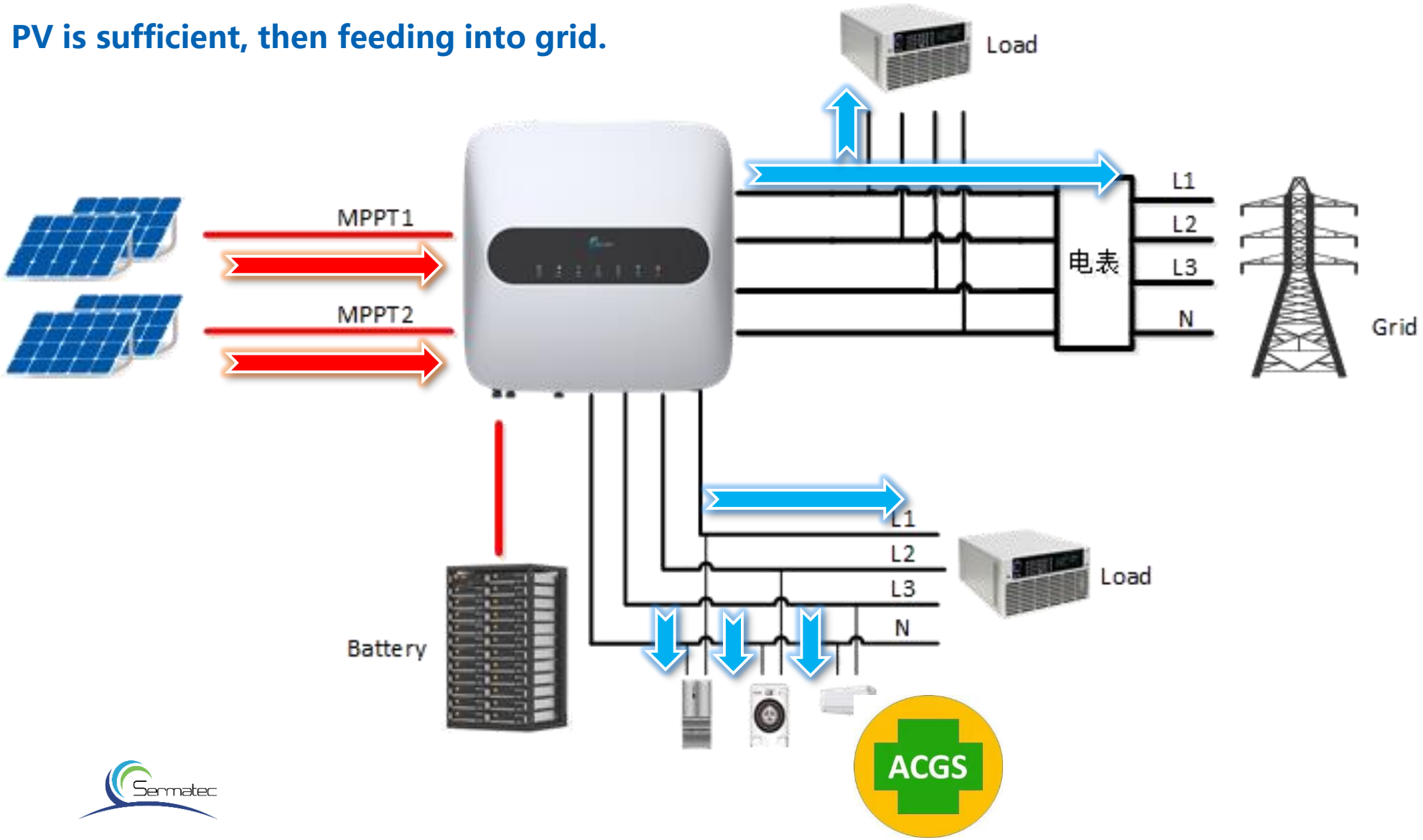


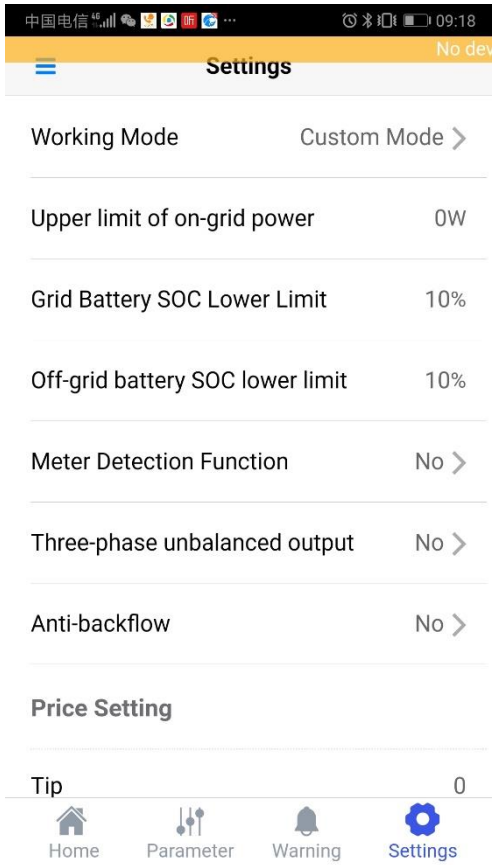


Custom mode

In the Flat Time period, when the PV is sufficient, the battery can be charge.

PV is sufficient, then feeding into grid.

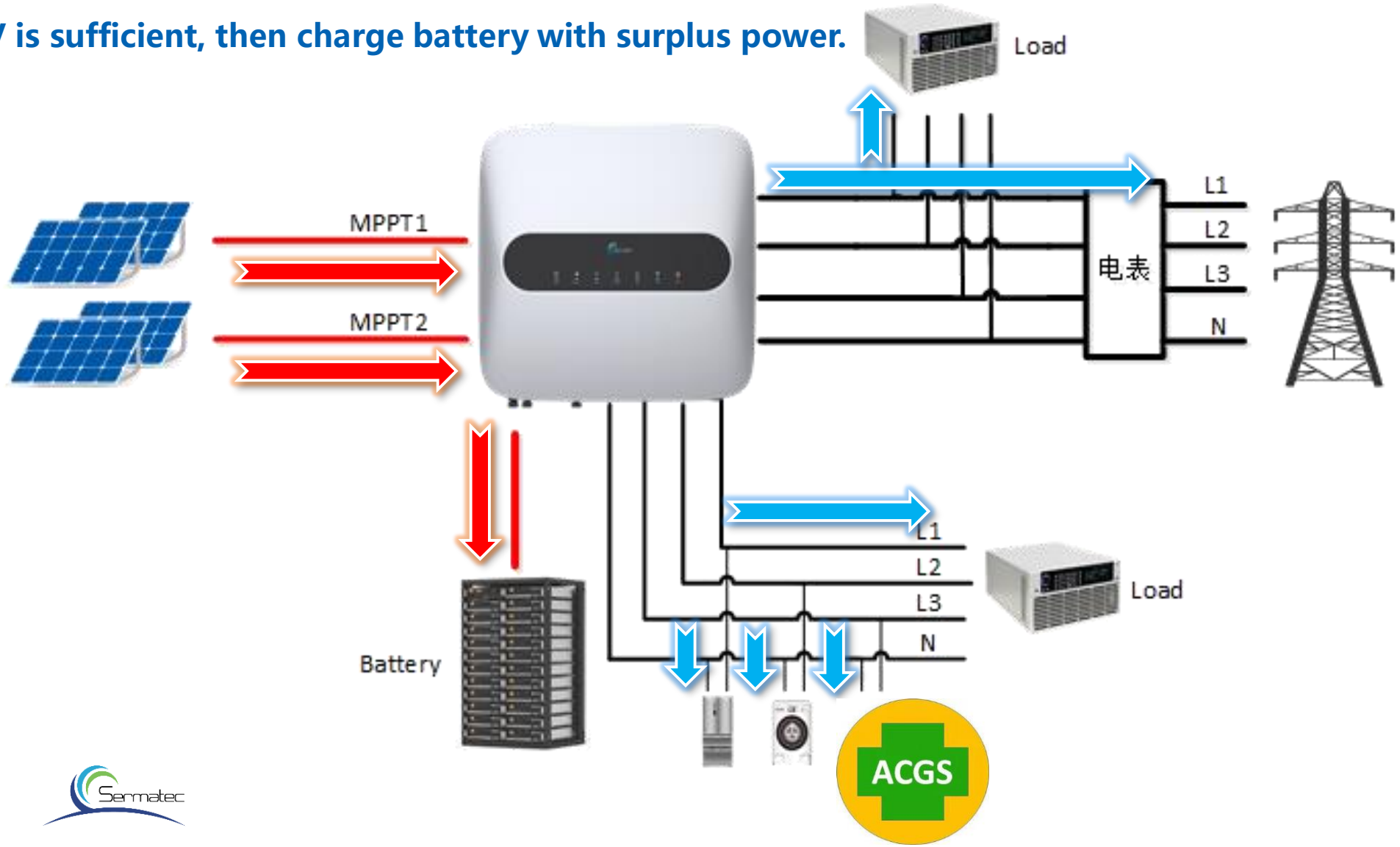


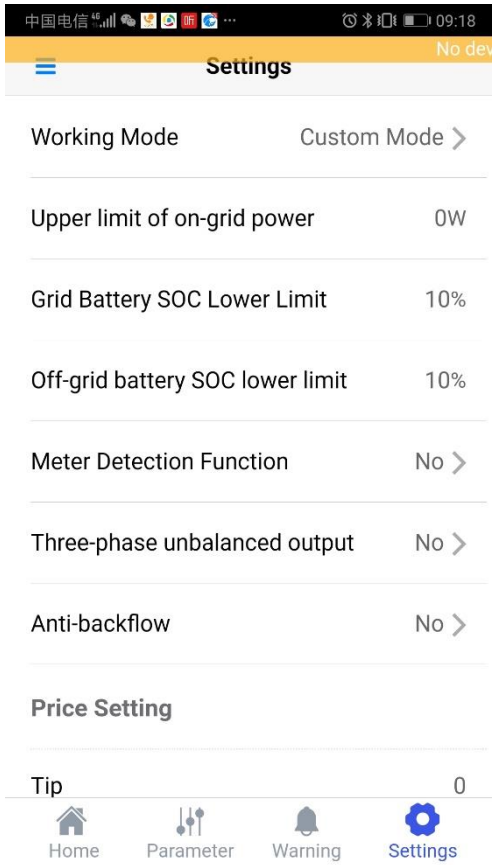


Custom mode

In the Flat Time period, when the PV is sufficient, the battery can be charge.

PV is sufficient, then charge battery with surplus power.

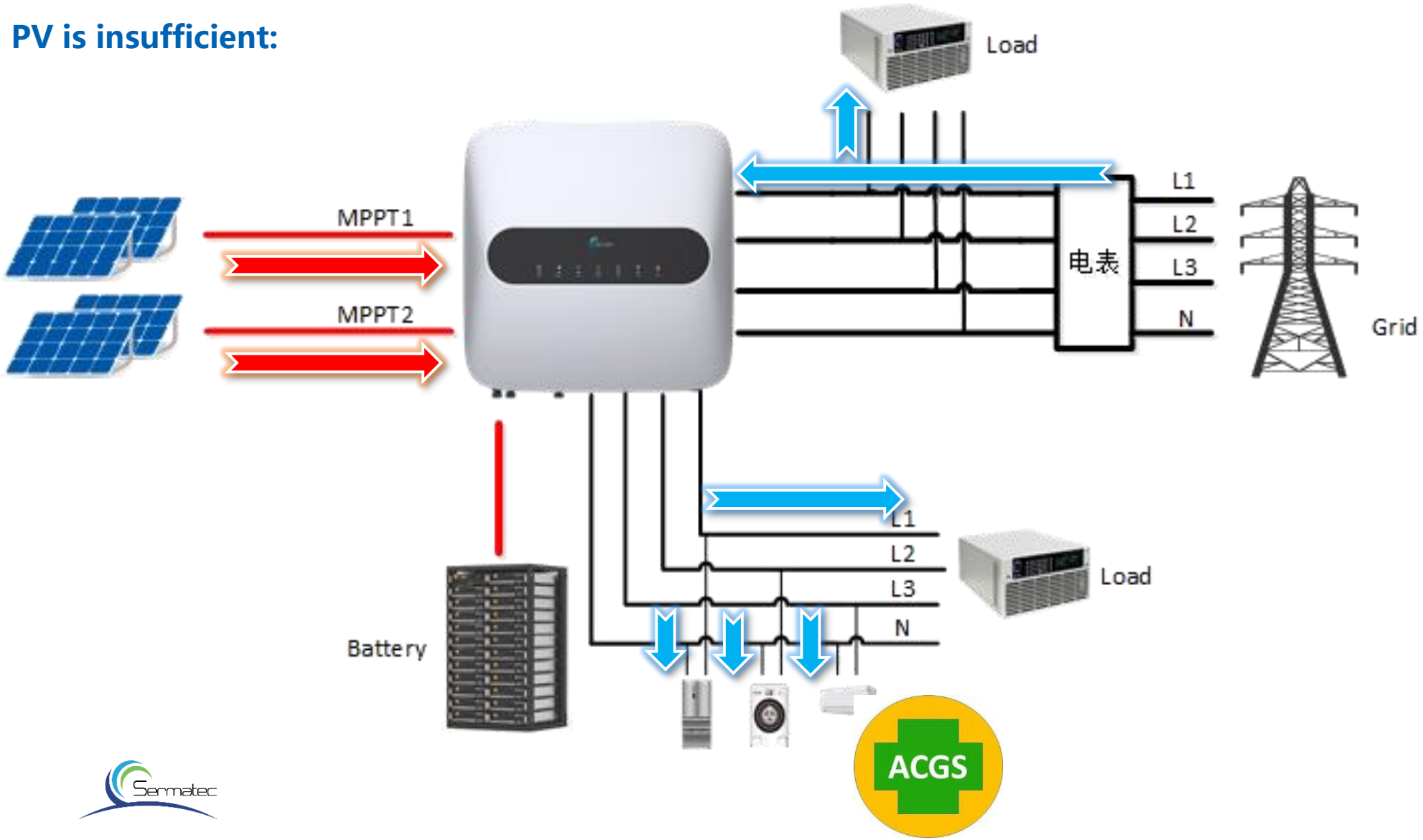


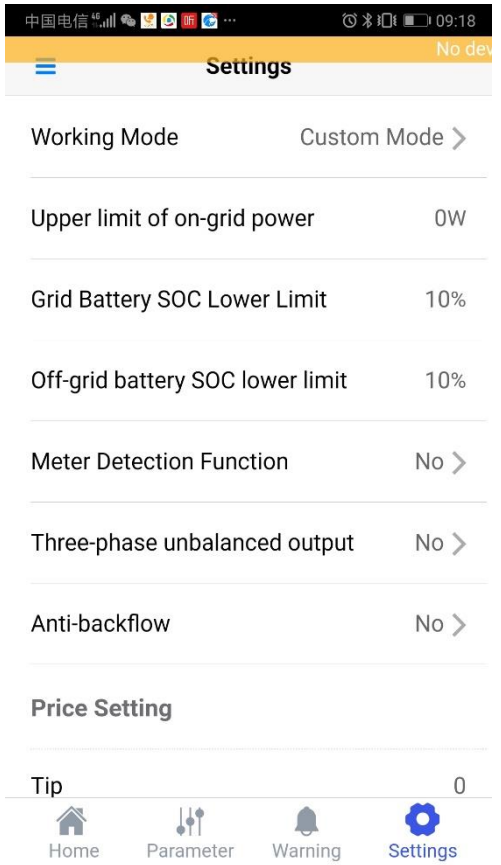


Custom mode

In the Flat Time period, when the PV is sufficient, the battery can be charge.

PV is insufficient:

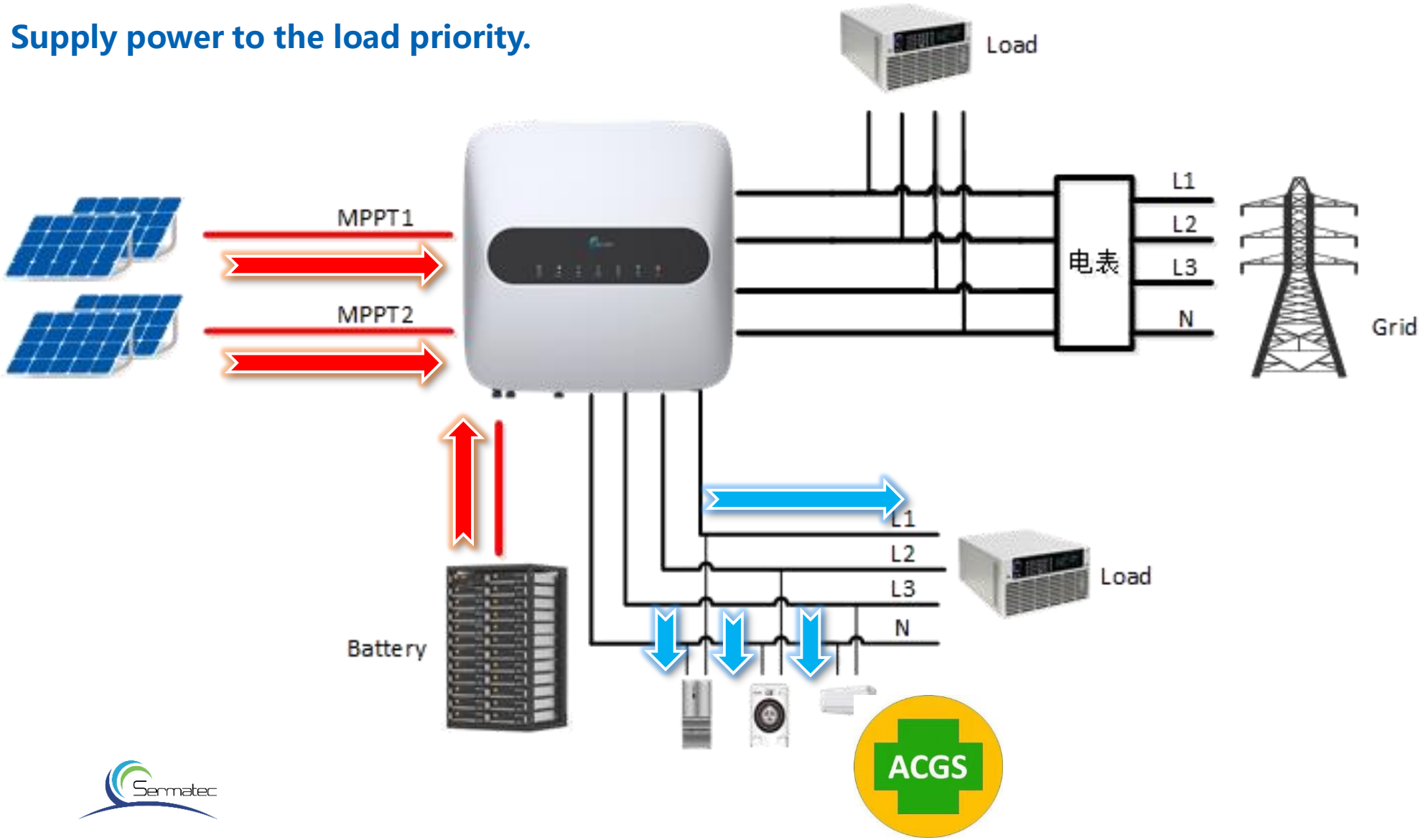


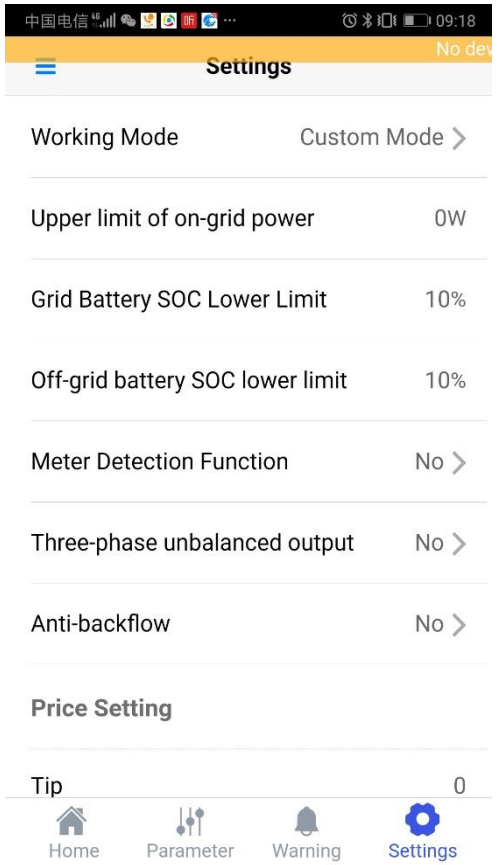


Custom mode

In Tip and Peak Time period.

Supply power to the load priority.

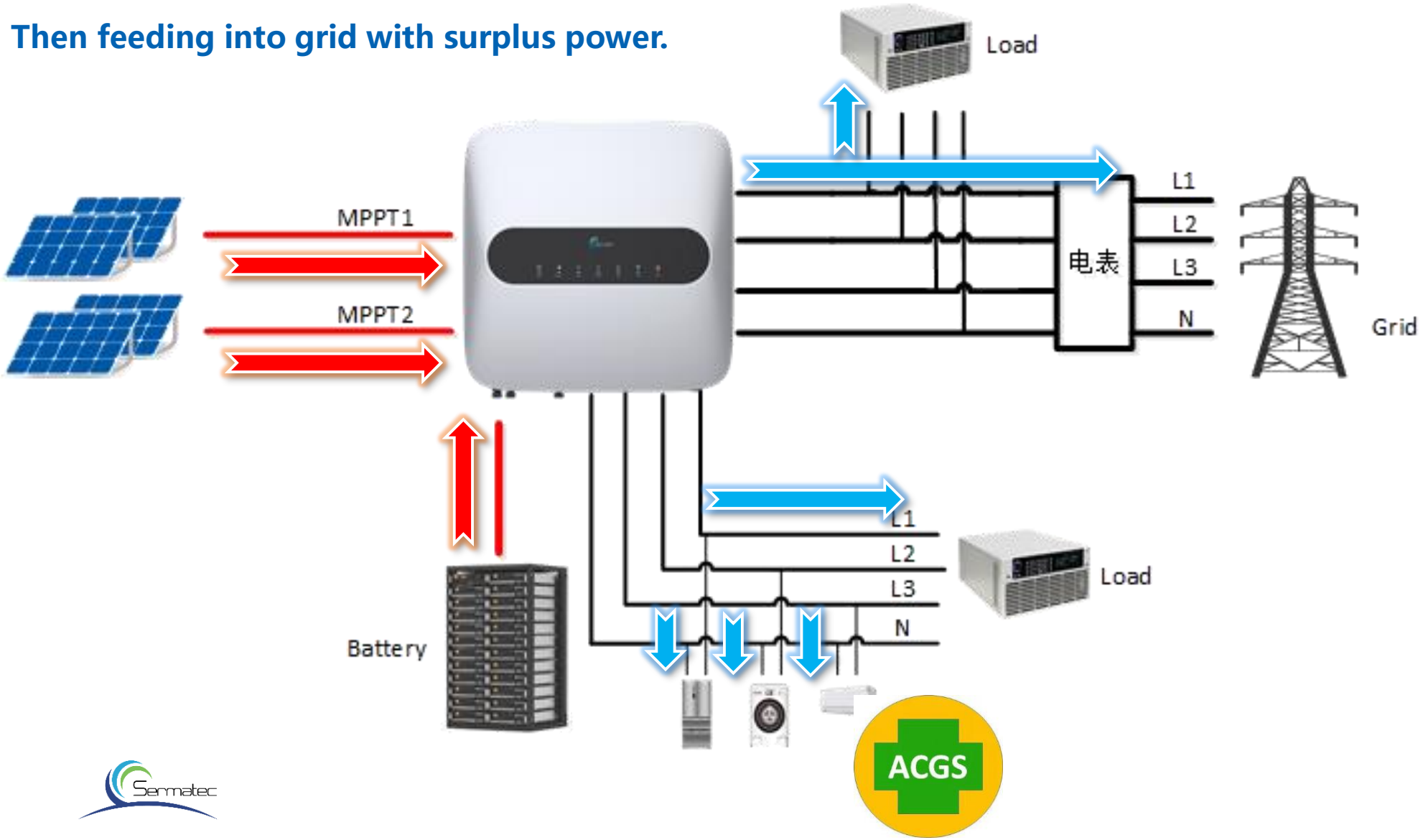


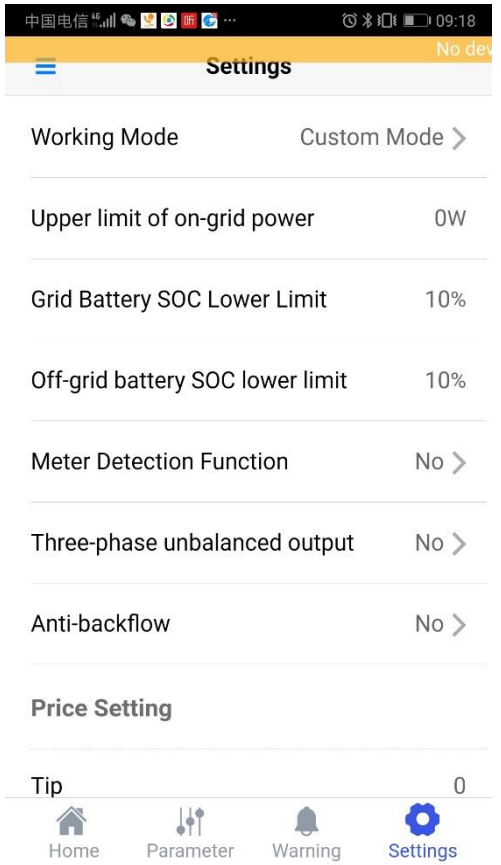


Custom mode

In Tip and Peak Time period.

Then feeding into grid with surplus power.





Hybrid inverter to extend the capacity of existing inverter