



| BDH-12KSP-LB HYBRID INVERTER PRESENTATION



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RESIDENTIAL ENERGY SOLUTION

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HYBRID INVERTER KEY PARAMETERS

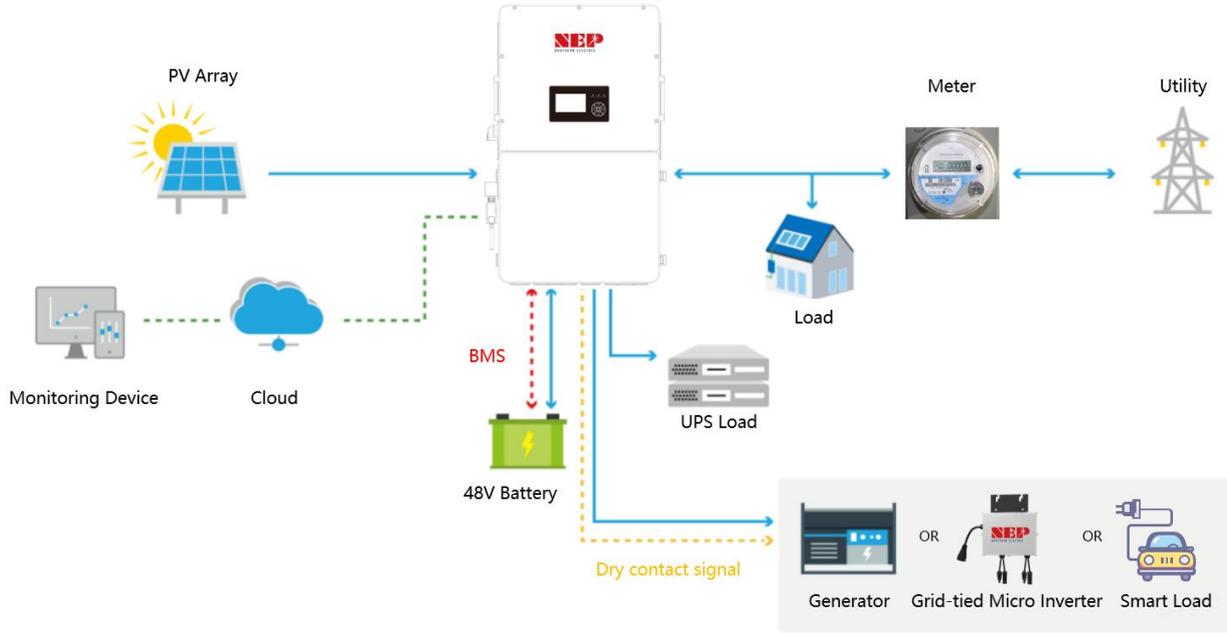
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HYBRID INVERTER APPEARANCE

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HYBRID INVERTER KEY FEATURE

NEP RESIDENTIAL ENERGY SOLUTION



Hybrid Inverter

- BDH-12KSP-LB
- BDH-10KSP-LB
- BDH-8KSP-LB



Wi-Fi Dongle

- Wi-Fi and Bluetooth



Smart Solar Cloud

- APP and Web



Panel Level Monitoring



The BDH-12KSP-LB is a 48V split phase, hybrid inverter/charger capable of utilizing 18kW of PV and efficiently outputting 12kW of power while charging your battery bank. You can parallel up to 10 units for 120kW of AC power and control multiple stations and units using the new NEP monitoring software.

HYBRID INVERTER-Key Parameters



INPUT (PV DC)		BDH-12KSP-LB
Maximum Utilized Solar Power		18000W
Rated PV Input Voltage		360V
PV Input Voltage Range		100~600V
MPPT Operating Voltage Range		120~500V
Start-up Voltage		140V
No. of MPP Trackers		3
No. of Strings per MPPT		2/1/1
Max. Input Current per MPPT		25A/15A/15A
Max. Short Circuit Current per MPPT		31A/19A/19A
Battery		
Battery Type		Lithium-ion/Lead-Acid
Rated Battery Voltage		48V
Battery Voltage Range		40~60V
Max. Charging/Discharging current		250A
Max. Charging/Discharging power		12000W
Force wake up battery from PV function		YES

HYBRID INVERTER-Key Parameters



Grid	
Rated AC Voltage	120V/240V;120V/208V
Rated AC Frequency	50Hz/60Hz
Rated AC Output Current	50A
Rated AC Output Power	12kW@240V/10.4kW@208V
Max. AC Input Current	200A
Max. AC Input Power	48000W
PF	0.99(Adjustable from 0.9 leading to 0.9 lagging)
THDi	< 3%
AC Bypass (Grid)	200A
EPS	
Rated Output Voltage	120V/240V;120V/208V;240V
Rated Output Frequency	50Hz/60Hz
Rated Output Current	50A
Rated Output Power	12kW@240V/10.4kW@208V
Peak Power	With PV: 13.2kW (2h),14.4kW (10 min), 15.6kW (5 min), 20kW (500ms) Without PV: 13.2kW (10 min)
Switching Time	20ms
THDv	< 3%
AC Bypass (Generator)	90A

HYBRID INVERTER-Key Parameters

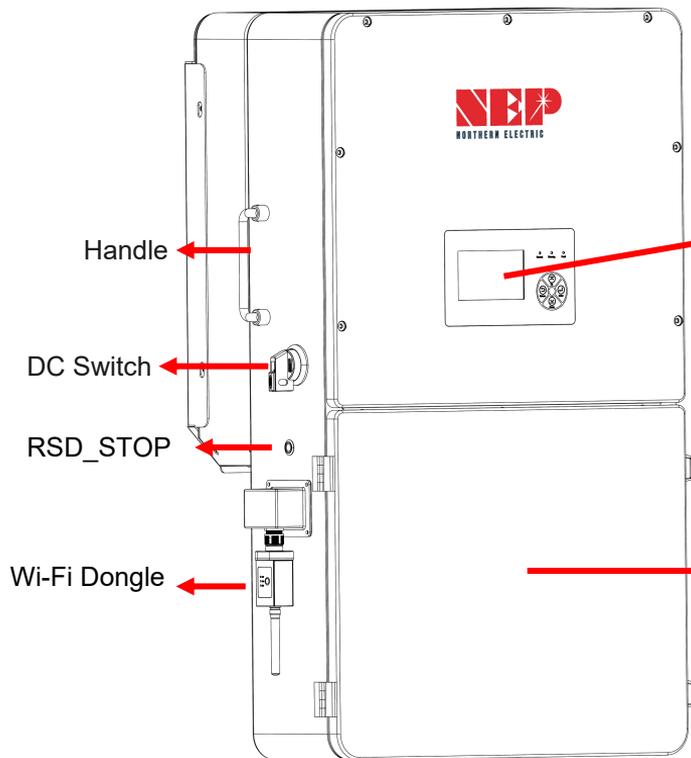


Protection	
PV Reverse Polarity Protection	YES
Over Current/Voltage Protection	YES
Anti-islanding Protection	YES
AC Short-circuit Protection	YES
Ground fault monitoring	YES
Leakage Current Protection	YES
AC/DC Surge Protection Type II	YES
AFCI	YES
RSD	YES
DC Switch	YES
Load Switch(Current)	200A
Battery Switch(Current/Voltage)	2*200A/80VDC
General	
Dimensions(W*H*D)	500*860*290mm/19.68*33.86*11.42inch
Weight	52kg/121.2lbs
Ingress Protection Rating	NAME 4X
Relative Humidity	0~100%
Operating Temperature Range	-25~60°C, >45°C derating
Storage Temperature Range	-25~60°C
Communication Interface	RS485/CAN/Wi-Fi
Display	Color Touch LCD
Cooling Method	Smart Cooling
Topology	Transformer-less
Altitude	<2000m
Warranty	10 years

Standards&Certification

UL STD.1741,1741SA,1741SB;
IEEE STD.1547,1547.1,1547a;
HECO SRD-IEEE-1547.1:2020 Ed.2.0;
CSA STD.C22.2 No.107.1 and 330;
UL1998:2018;
2030.5;
E5000,SA17-18;
PCS CRD:2019

HYBRID INVERTER-Appearance

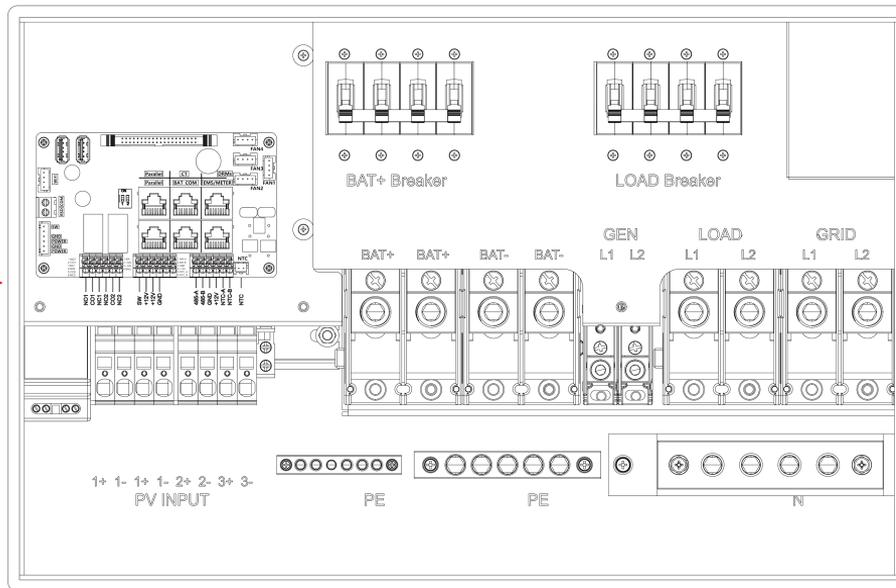


Outdoor rated: NEMA 4X

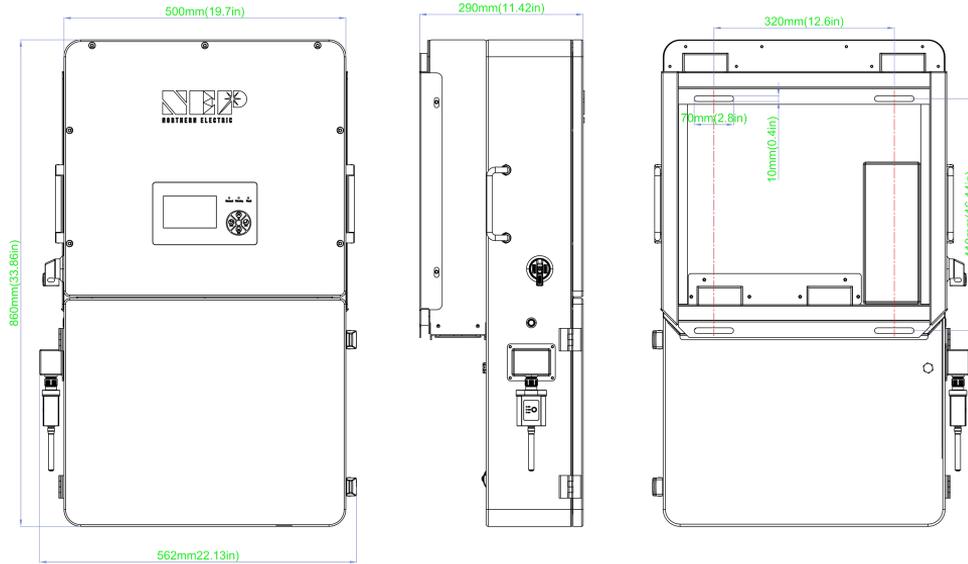


LCD Display

Pre-wired
conjunction box

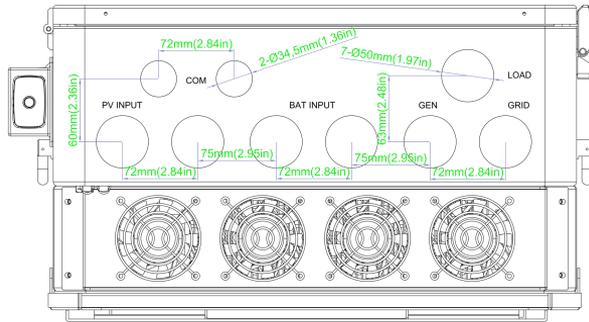


HYBRID INVERTER-Appearance



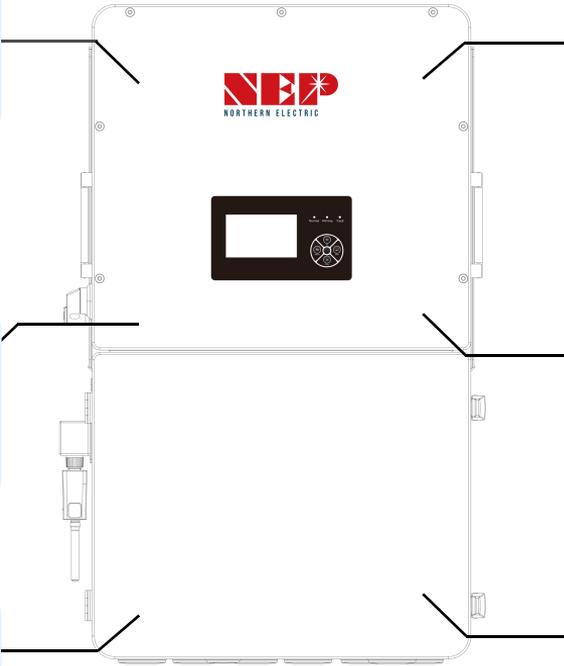
Dimensions (W*H*D)
500*860*290mm/19.68*33.86*11.42inch

Weight 52kg/121.2lbs



HYBRID INVERTER-Key Feature

- 3 MPPT inputs, 150% PV Usable Power
- 600VDC Max, lower cable sizing
- Eliminating the need for a combiner box



- Intelligent Management, local & remote monitoring
- LCD color touch screen

- Support battery voltage range 40~60Vdc
- Lithium or Lead-acid battery
- Closed-loop communication with most LFP battery



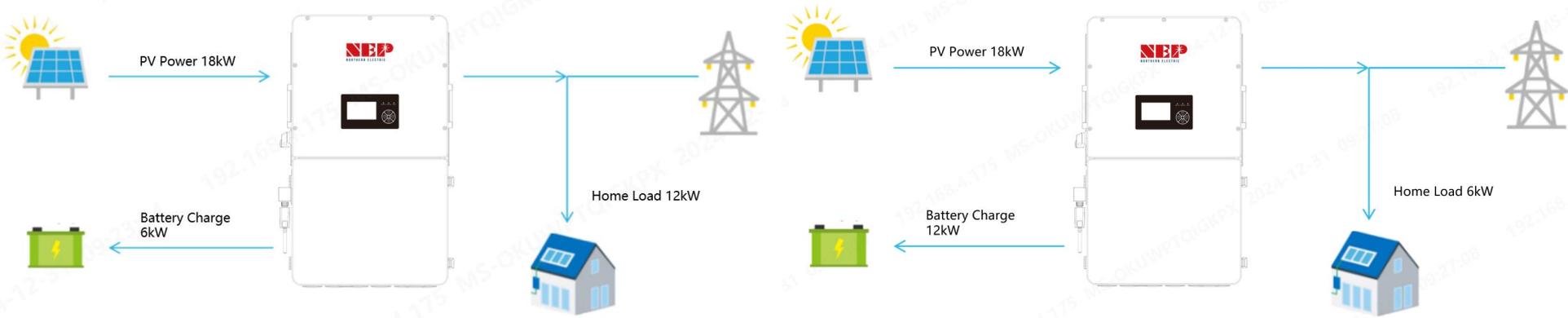
- Continuous 110% AC over load (off grid)
- Maximum 160% AC over load (off grid)
- 200A AC passthrough for whole home backup
- 120/240V, 120/208V & 208V 3 Phase capable
- Seamless backup transition (20ms)
- Split Phase parallel-up to 10 unit

- Build in Arc Fault Protection and NEP Rapid Shutdown Transmitter
- Integrated Panel Level Monitoring function



- Microgrid supported, enabling grid-independent operation (GEN, Micro/String inverter system)
- 90A AC passthrough for generator
- SmartLoad supported

150% PV Usable Power



Situation1 : PV panel power 18kWp, provide the home load 12kWp, the other energy provide battery charging 6kWp

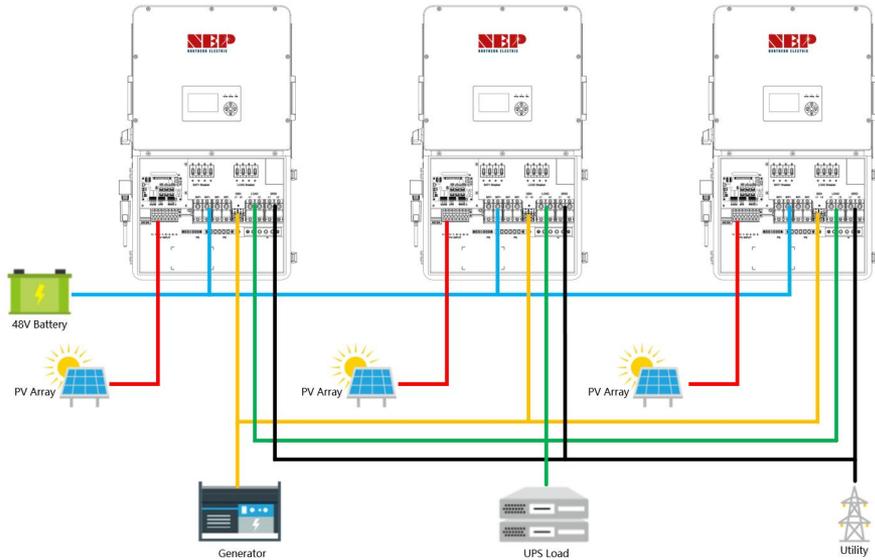
Situation2 : PV panel power 18kWp, provide the home load 6kWp, the other energy provide battery charging 12kWp

Support more solar energy input and increase the energy storage system LCOE(Levelized Cost of Energy).

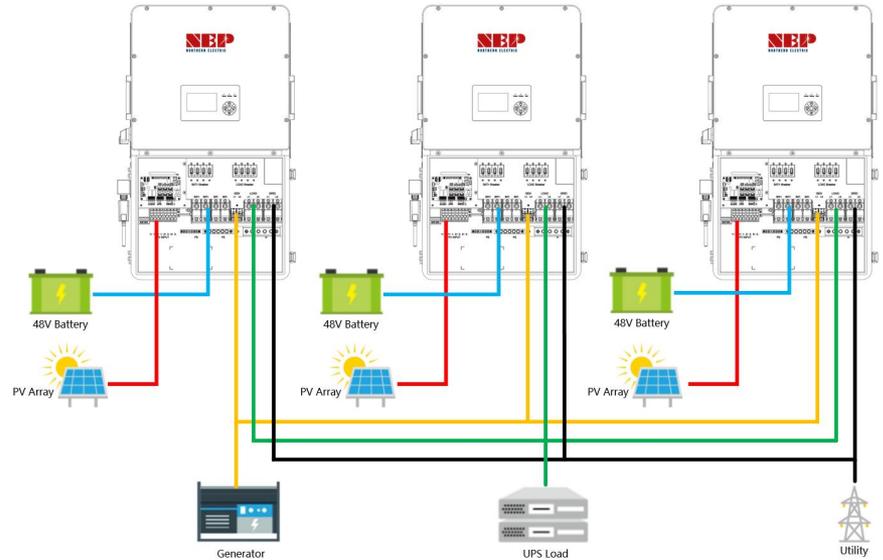
Compatible Battery



Flexible Battery Configuration



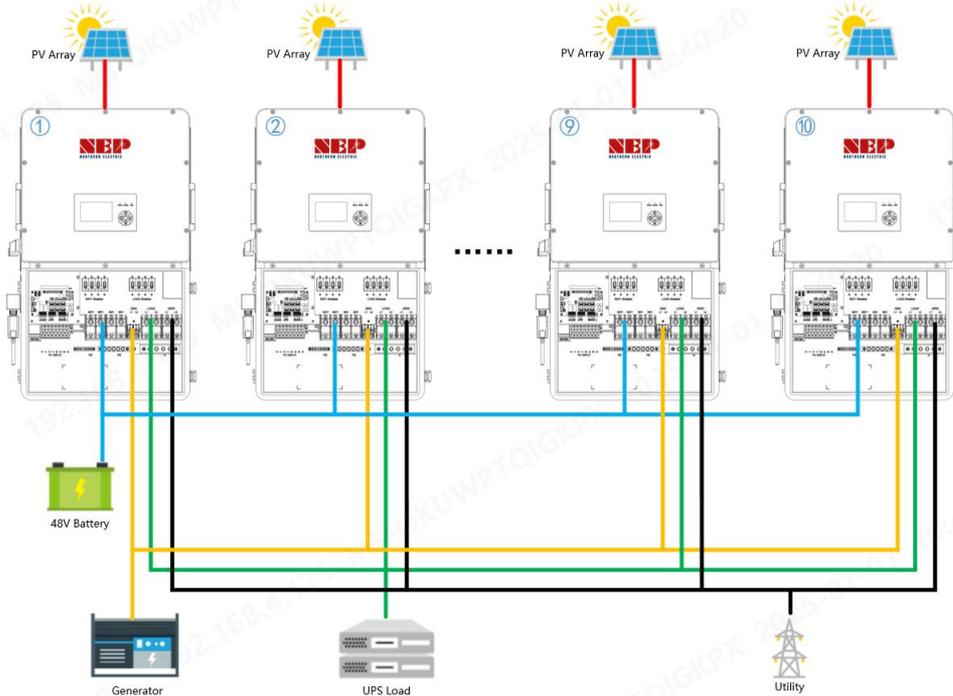
Centralized utility battery parallel system



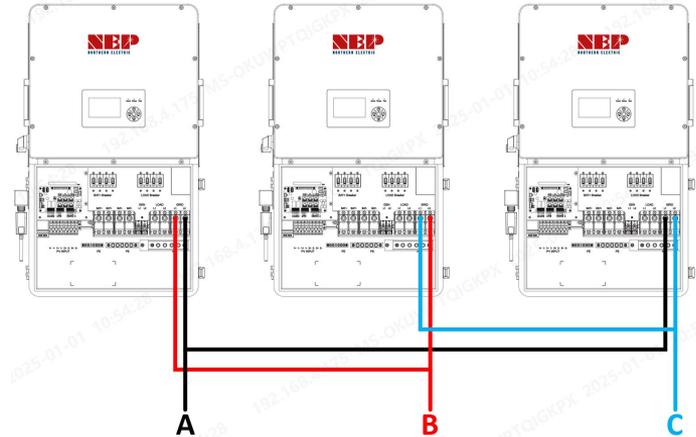
Independent battery parallel system

Support Parallel

Split Phase parallel-up to 10 unit

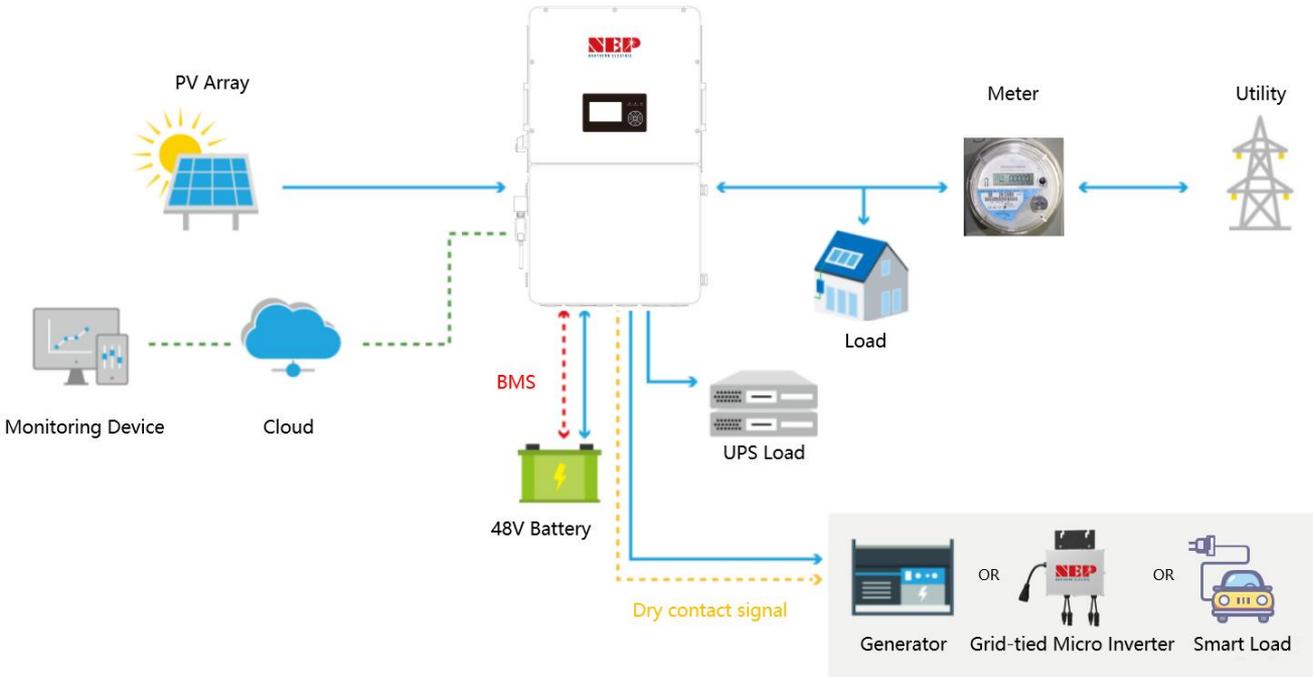


3 Phase-208Vac parallel



Multiple inverters can be installed together to deliver more power. When AC loads are present, all units effectively share the load.

Microgrid supported

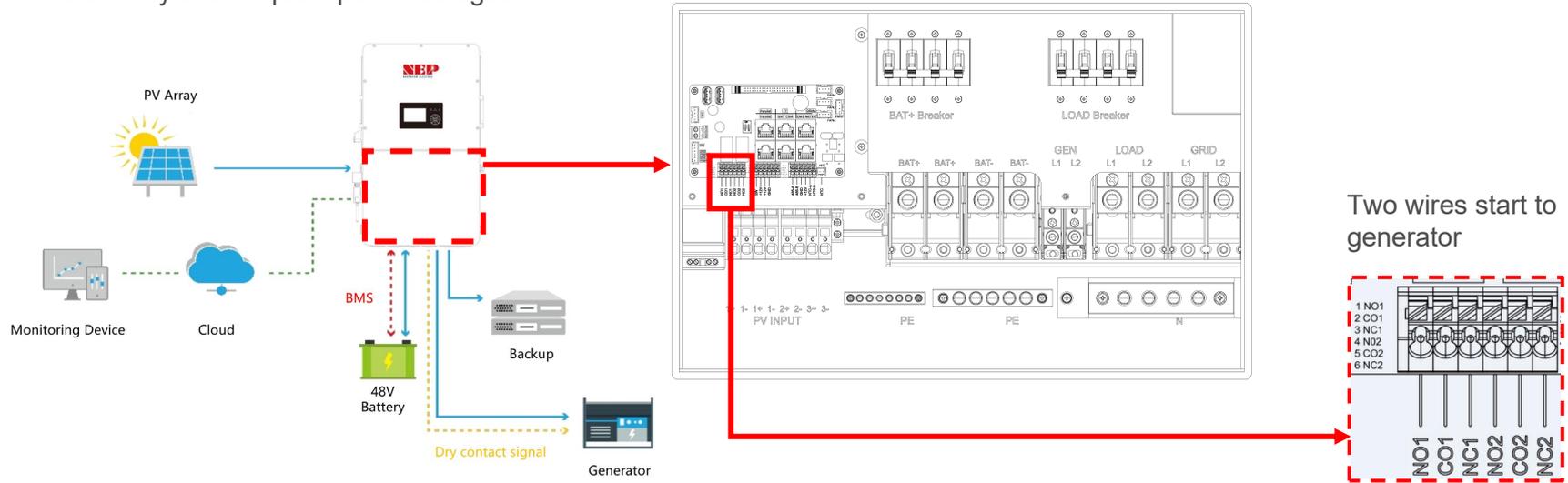


Multiple application

- ① Generator input mode
- ② Micro/String inverter input mode
- ③ SmartLoad

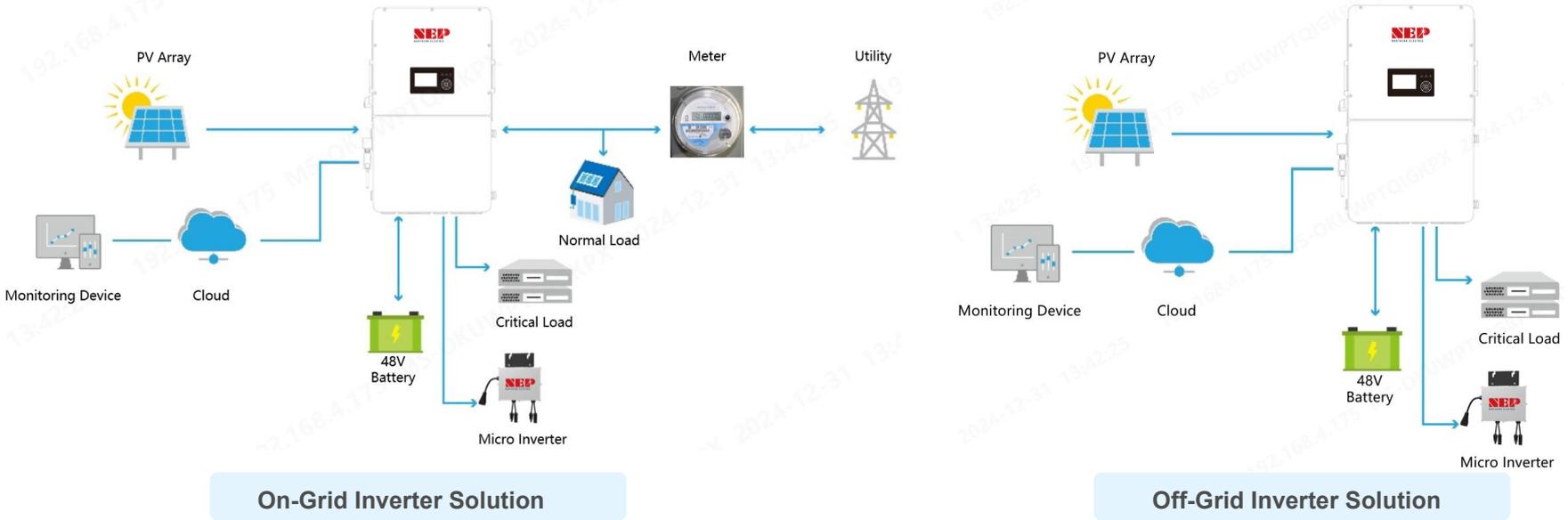
① Generator input mode ② Micro/String inverter input mode ③ SmartLoad

Under this mode, the GEN Port works as an input port from the generator. This mode is suitable for areas that are strongly relied on electricity and frequent power outages

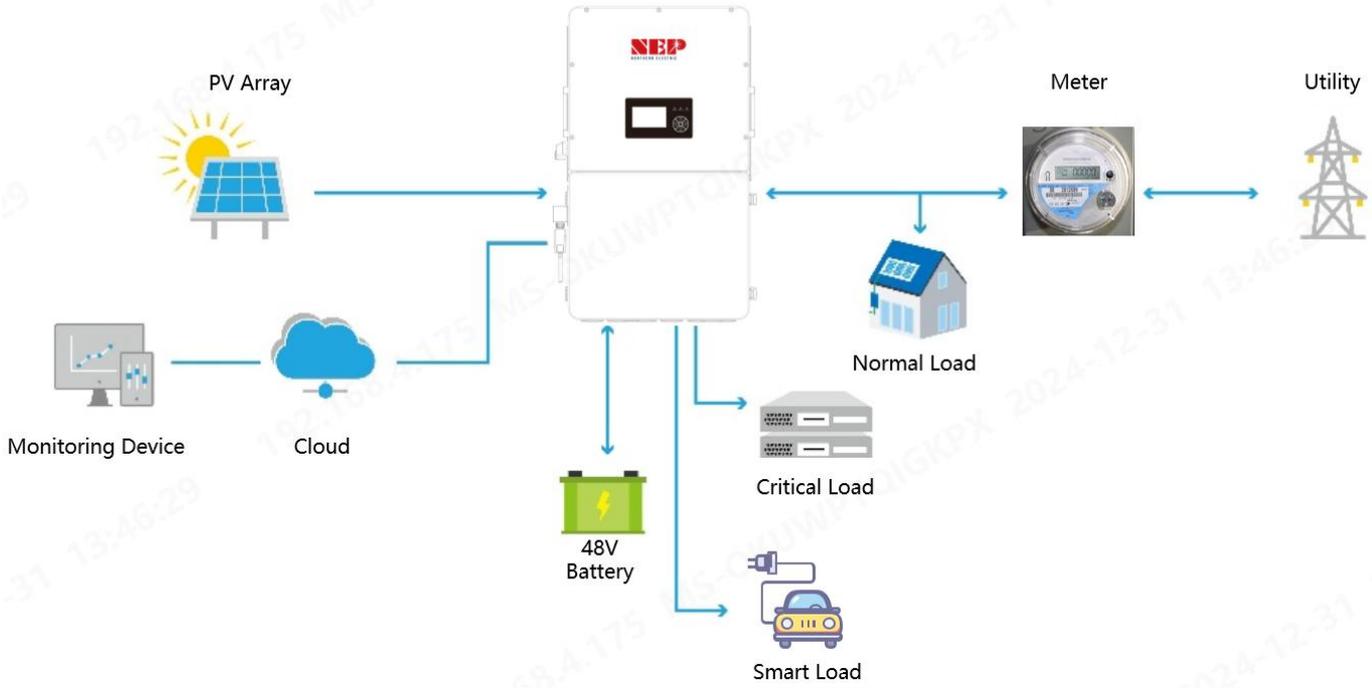


- The Generator Input can charge the battery or support the backup load.
- 90A AC passthrough for generator
- Automatically Control: resulting in reduced fuel consumption , noise and vibration

Under this mode, the GEN Port works as an input port from other grid-tied inverter. AC Coupling with existed solar system



① Generator input mode ② Micro/String inverter input mode ③ SmartLoad



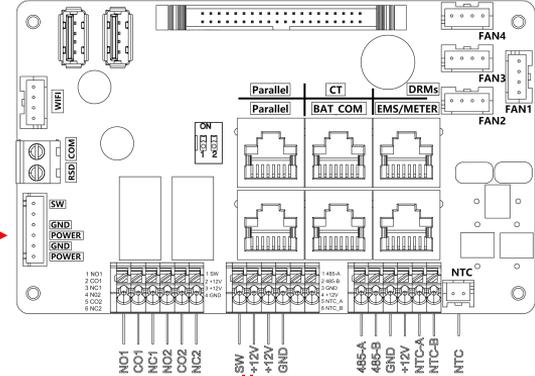
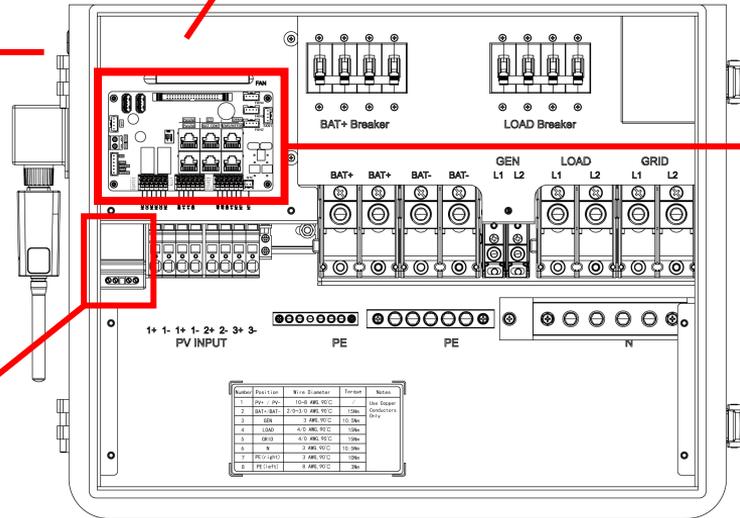
- Make full use of solar energy
- Intelligently manage load prioritization and ensure power supply for critical loads

Integrated AFCI&RSD

Inverter
RSD
Button



Integrated AFCI



External RSD Emergency Button

The system can also utilize an External E-Stop Switch if the local AHJ deems it necessary

Build in **NEP**
Rapid Shutdown Transmitter

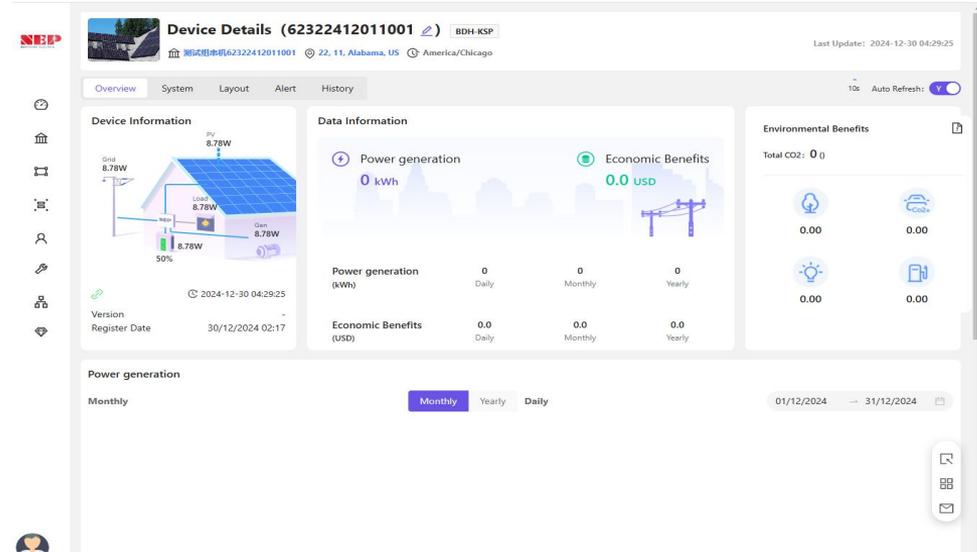


Integrated Panel Level Monitoring



- Each panel real-time voltage
- String current
- Real-time Temperature
- Alert
- 1 minute data granularity

Intelligent Management-Remote WIFI And Local Monitoring



Local/Remote	Software	Connection	APP/Web	Function	Application
Remote	NEPViewer	WIFI	APP/Web	Monitoring	For End user
	NEPViewer Business	WIFI	APP/Web	Monitoring, Configuration, Upgrade, Trouble shooting	For Installers, Operators
Local	NEPViewer	Bluetooth	APP	Monitoring, Configuration, Upgrade, Trouble shooting	For End user, Installers, Operators

Application Modes

On Grid Modes:

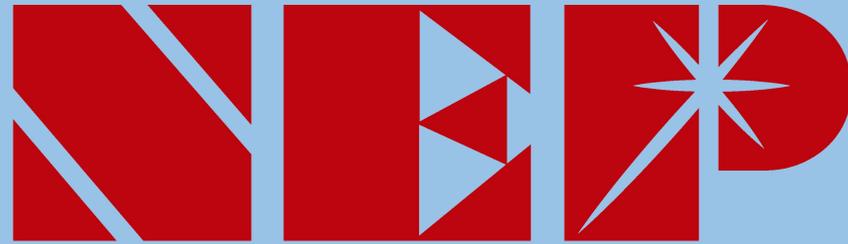
- 1 Self Used Mode**
Application: Areas where with high electricity prices and low subsidies
Energy priority : Load > Battery > Grid
- 2 Back-up mode**
Application: For areas where power grid is unstable
Energy priority : Load > Battery > Grid
(if battery SOC \leq cutoff SOC, the load is powered by the grid)
- 3 Force Time Use Mode**
Application: For areas with high subsidies
Energy priority : Load > Grid > Battery

Off Grid Mode:

When the grid power blackout the system automatically switches to Off Grid mode



Thank You



NORTHERN ELECTRIC