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Home Energy Storage System

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About POWEROAD

Poweroad Renewable Energy Co., Ltd., established in 2001, specializes in the R&D and manufacturing of lithium-ion battery energy storage systems (BESS) for commercial & industrial (C&I), residential, and utility-scale applications. With over 1,000 C&I ESS projects delivered worldwide and more than 8 years of global operations, POWEROAD has built proven expertise in energy storage system design, manufacturing, and deployment.

With a strong focus on safety, reliability, and innovation, POWEROAD's solutions are deployed across 72 countries and regions. Through its European subsidiary, POWEROAD GmbH, the company continues to expand its local presence and support the growing energy storage market in Europe.

25 Years

Experience in Battery Industry

POWEROAD GmbH

Germany Subsidiary

5 R&D Centers

In-house BMS/PCS/EMS development

2

Manufacturing Bases

70+

Countries & Regions



Europe Presence, Local Support



POWEROAD GmbH
EU Headquarters in Germany

Warehouse
in Netherlands

Netherlands
Belgium
Germany

**Service Partner
& Warehouse**
in Belgium

Expanding local teams:
Poland, Italy, Spain...

Smart Energy Management

- Real-time monitoring, diagnostics and OTA updates.
- Supports multi user management for distributors and installers.



Lifecycle Partnership

From installation support to long-term collaboration



POWERROAD Home Energy Storage Solutions

Home Battery



Meta Node

Stacking Battery Solution

Low-voltage Battery System
5.12 ~ 245.76 kWh

High-voltage Battery System
20.48 ~ 245.76 kWh



Meta H1
10.65 ~ 212.8 kWh



Meta L2
5.22 ~ 255.78 kWh



Tervol L16
16.07 ~ 241.05 kWh

Inverter



1-phase inverter
3 ~ 6 kW



3-phase inverter
10 ~ 20 kW

Energy Management Software



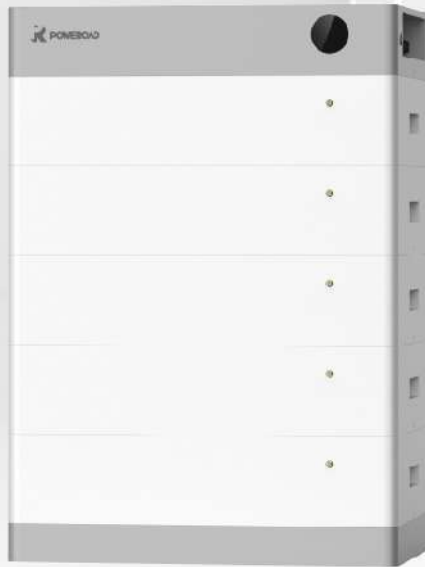
- APP For end users and installers
- Web Portal For distributors



META Node

Stacking Battery

Meta Node is Poweroad's new platform-based residential and small C&I ESS solution, with an unified 5kWh battery module, flexible low-voltage and high-voltage configurations, integrated fire safety protection, optional low-temperature charging down to -20°C, and optional high-efficiency DC EV charging.



Wider Applications, Less Stock

One module for HV series connection and LV parallel expansion, cover more applications with fewer SKUs



Grow with Your Needs

Max.12 packs per tower, 4 towers in parallel, 5-245 kWh capacity



All-Weather Reliability

Built-in heating & IP55 protection for indoor/outdoor reliability



Multi-Layer Safety

Integrated fire safety module, BMS Monitoring



EV DC Charging Ready

With direct DC EV charging support, this system enables faster, more efficient charging



Smart Energy Coordination

Hybrid inverter integration for solar self-consumption, backup power, peak shaving, and VPP-ready applications

Wider Applications, Less Stock.



Up to 4 towers in parallel
Max. **245 kWh**



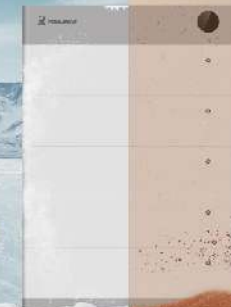
All-Weather Reliability

-20°C

Freezing Cold

55°C

Scorching Heat



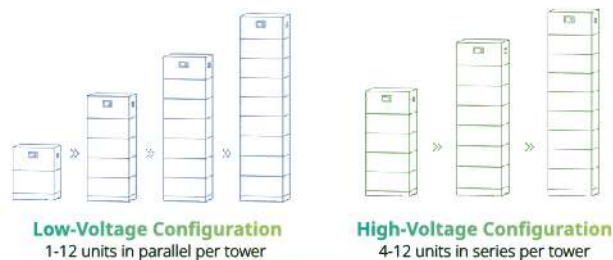
Unlock Value of Your Home Energy

- EV DC Charging*
- PV Self-consumption
- Backup Power
- VPP-ready

*Optional for HV Battery



PARAMETERS



High-voltage Battery System

System Voltage Range (V)	172.8 ~ 688.8
Single-Tower Capacity Range (kWh)	20.48 ~ 61.44
Maximum System Capacity (kWh)	245.76 (4 towers in parallel)
Max. Working Current (A)	100
Rated Working Current (A)	50
Operating Temperature (°C)	-20 ~ 55 (with heating)
Cooling Method	Natural Cooling
Altitude	<2000m
Communication	CAN, RS485 / WiFi / Bluetooth
Protection Rating	IP55
Certifications	IEC 62619, CE, UN 38.3, DGM, MSDS
Master Module Dimension (mm) (W x D x H)	590 × 390 × 112
Base Dimension (mm) (W x D x H)	590 × 390 × 78

Low-voltage Battery System

System Voltage Range (V)	43.2 ~ 57.6
Single-Tower Capacity Range (kWh)	5.12 ~ 61.44
Maximum System Capacity (kWh)	245.76 (4 towers in parallel)
Max. Working Current	100 A (5kWh), 200 A (≥10kWh)
Rated Working Current	50 A (5kWh), 100 A (10kWh), 150 A (15kWh), 200 A (≥20kWh)
Operating Temperature (°C)	-20 ~ 55 (with heating)
Cooling Method	Natural Cooling
Altitude	<2000m
Protection Rating	IP55
Communication	CAN, RS485 / WiFi / Bluetooth
Certifications	IEC 62619, CE, UN 38.3, DGM, MSDS
Master Module Dimension (mm) (W x D x H)	590 × 390 × 85
Base Dimension (mm) (W x D x H)	590 × 390 × 78

PARAMETERS

Unified Battery Module (Used for both LV and HV systems)

Cell Chemistry	LFP
Battery Module Capacity (kWh)	5.12
Scalability	12S or 12P
Max. Working Current (A)	100
Rated Working Current (A)	50
Module Balancing Current (A)	5
Operating Temperature (°C)	-20 ~ 55 (with heating)
Cooling Method	Natural Cooling
Altitude	<2000m
Cycle Life	8000
Protection Rating	IP55
Dimension (mm) (W x D x H)	590 × 390 × 148
Weight (kg)	50
Certifications	IEC 62619, CE, UN 38.3, DGM, MSDS

Smart Charging Module (Optional for HV Battery)

Power (kW)	20
Output Voltage Range (V DC)	200 ~ 500
Charging Cable (m)	3
Charging Port	CCS2
Cooling Method	Air Cooling
Function	Plug-and-charge
Operating Temperature (°C)	-20 ~ 55
Protection Rating	IP55
Dimension (mm) (W x D x H)	590 × 390 × 215



Low Voltage Battery



Meta L2

PARAMETERS

Model	H-S51100			
Configuration	1P	2P	3P	4P
Rated Voltage (V)	51.2			
Rated Capacity (Ah)	102	204	306	408
Rated Energy (kWh)	5.22	10.44	15.66	20.88
Voltage Range (V)	43.2 ~ 57.6			
Standard Charging Current (A)	51	102	153	160
Max. Charging Current (A)	160			
Peak Discharging Current (A)	200 (<3000ms)			
Communication	CAN, RS485 / WiFi, BLE (optional)			
Working Temperature (°C)	0 ~ 50			
Storage Temperature (°C)	-10 ~ 50			
Degree of Protection	IP55			
Dimensions (mm) (W × D × H)	550 × 315 × 305	550 × 315 × 545	550 × 315 × 785	550 × 315 × 1025
Weight (kg)	50	100	150	200
Certifications	MSDS, IEC 62619, CE, UN 38.3, DGM			

* Max. 7pcs in parallel in 1 tower, and max. 7 towers in parallel to achieve 255.78 kWh

Low Voltage Battery



Tervol L16

PARAMETERS

Model	H-L51314
Voltage (V)	51.2
Cell Capacity (Ah)	314
Battery Capacity (kWh)	16.07
Scalability	Max. 15 pcs in parallel (241.05 kWh)
Continuous Charge Current (A)	150
Max. Charge Current (A)	160 @ 60s
Continuous Discharge Current (A)	200
Peak Discharge Current (A)	210 @ 60s
Degree of Protection	IP20
Charging Temperature (°C)	0~50 (-20~50 with heating)
Discharging Temperature (°C)	-20 ~ 55
Heating	Optional
Fire Extinguisher	Aerosol (optional)
Humidity (%)	0 ~ 95 (No Condensing)
Weight (kg)	140
Dimensions (mm) (W × D × H)	440 × 240 × 970
Cycle Life*	8000
Communication	RS485, CAN / Wi-Fi / Bluetooth
Display	4.3-inch touch screen
Certificate	CE-EMC, UN38.3, MSDS, IEC62619

* Test conditions: 0.5C Charging& Discharging. @25°C, 80% DOD

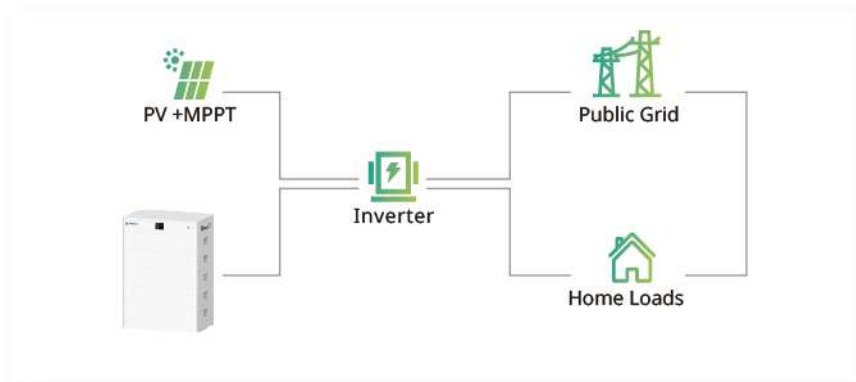
3~6 kW Single Phase Inverter

Compatible with low-voltage batteries



Product Advantages

- 98% Max. efficiency
- Max. Input current 18 A
- IP65 design for outdoor use
- Natural cooling for ultra silence
- 10ms on/off-grid switchover
- Flexible configuration for parallel connection



Compatible Inverters

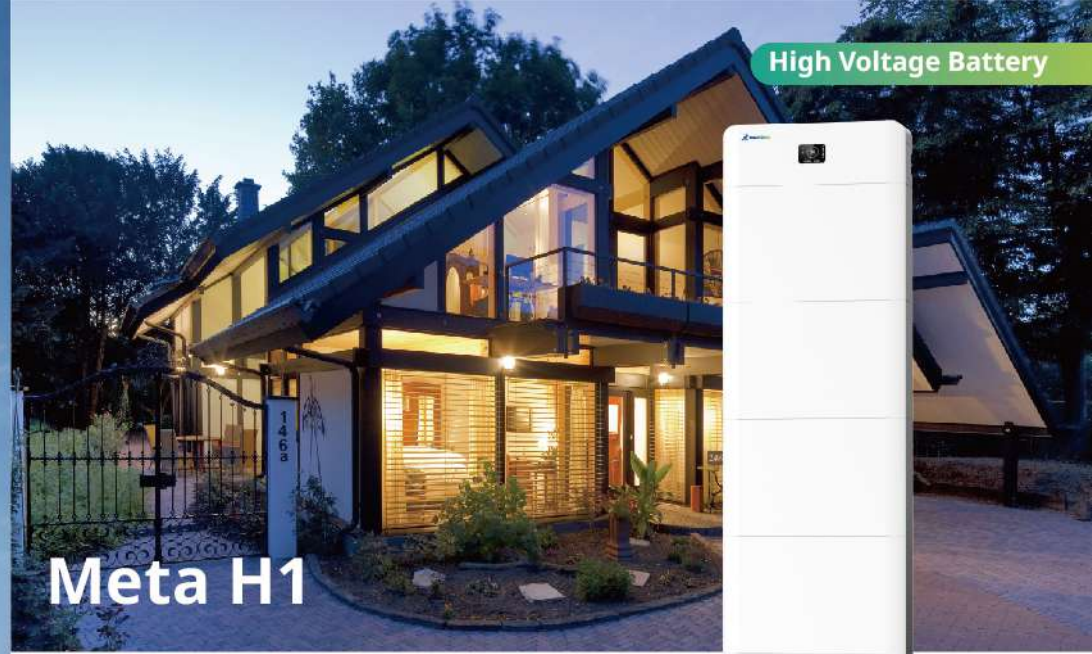


PARAMETERS

Off-grid Output						
Nominal Output Power (kW)	3	3.6	4	4.6	5	6
Nominal Voltage (V)	220/230/240					
Nominal Frequency (Hz)	50/60					
Output THDu	< 2%					
On-grid Output						
Nominal Output Power (kW)	3	3.6	4	4.6	5	6
Max. Input Current from Grid (A)	16.4	22.7		27.2		
Voltage (V)	220/230/240 (184 ~ 276)					
Frequency Range (Hz)	45 ~ 65					
PV Input						
Max. Input Power (kWp)	6	7.2		8		9
Starting Voltage (V)	95					
Max. Input Voltage (V)	600					
MPPT Voltage Range (V)	80 ~ 550 (350 ~ 500 @ full load)					
Number of MPPTs / Max. Input Strings Per MPPT	2/1					
Nominal Input Voltage (V)	360					
Max. Input Current (A)	18 / 18					
Battery Parameters						
Battery Voltage Range (V)	75	85		100		
Max. Continuous Charging/Discharging Current (A)	42 ~ 58					
Nominal Battery Voltage (V)	51.2					
Max. Charging Voltage (V)	≤60					
Efficiency						
Max. Efficiency/European Efficiency	97.5% / 97.2%		97.8% / 97.3%		98% / 97.5%	
Max. Battery Charging/Discharging Efficiency	95.2%					
General Parameters						
Inverter Dimensions (mm) (W × H × D)	500 × 470 × 180					
Weight (kg)	21					
Noise (dBA)	< 25					
Operating Temperature Range (°C)	-25 ~ 60					
Cooling Method	Natural cooling					
Degree of Protection	IP65					
Protection and Certifications						
CE	IEC 62109-1, IEC 62109-2, EN 62109-1, EN 62109-2; EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 62920					
Grid	VDE-AR-N 4105, C10/11, G98/G99, CEI 0-21, EN 50549, NRS 097-2-1, R25, UNE 217001, UNE 217002, NTS 2.1, PEA, MEA, NC RfG					
Suggested Kitting Batteries						
Model	Meta Node, Meta L2 (H-S51100), Tervol L16 (H-L51314)					



Smart Home Energy Storage Solutions



High Voltage Battery

Meta H1

PARAMETERS

Model	H-S10250HV		
Configuration	2S	3S	4S
Rated Voltage (V)	204.8	307.2	409.6
Rated Capacity (Ah)	52		
Battery Module Quantity (pcs)	2	3	4
Rated Energy (kWh)	10.64	15.96	21.28
Voltage Range (V)	172.8 ~ 230.4	259.2 ~ 345.6	345.6 ~ 460.8
Standard Charging Current (A)	26		
Max. Charging Current (A)	52		
Peak Discharging Current (A)	75 (< 3000ms)		
Communication	CAN, RS485 / WiFi, BLE (optional)		
Working Temperature (°C)	0 ~ 45		
Storage Temperature (°C)	-10 ~ 45		
Degree of Protection	IP55		
Dimensions (mm) (W × D × H)	600 × 155 × 1010	600 × 155 × 1385	600 × 155 × 1760
Weight (kg)	109	157	206
Certifications	MSDS, IEC 62619, CE, UN 38.3, DGM		

* Max. 4pcs in series in 1 tower, and max. 5 towers in parallel to achieve 106.4kWh

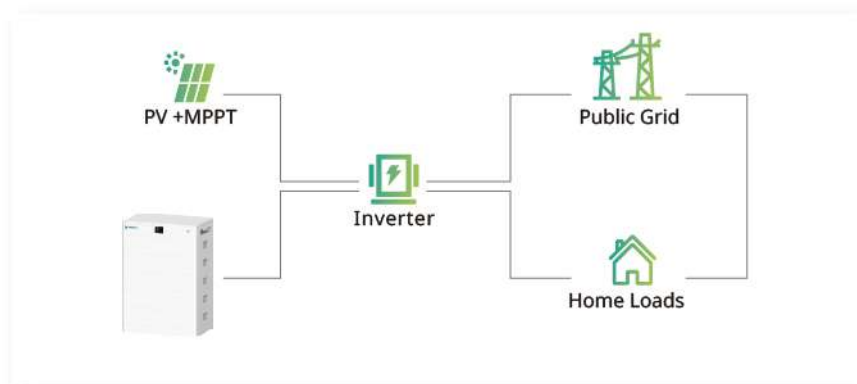
10~20 kW Three Phase Inverter

Compatible with high-voltage batteries



Product Advantages

- Max. 15 units parallel
- 98.2% Max. Efficiency
- IP65 design for outdoor use
- Support 100% three phase unbalance
- Support AC couple
- Support altitude 5000 m (>3000 m derating)
- Two independent battery ports for mixture use of old & new battery



Compatible Inverters



PARAMETERS

Off-grid Output					
Nominal Output Power (kW)	10	12	15	18	20
Nominal Voltage (Vac)	220/380, 230/400 (3/N/PE)				
Nominal Frequency (Hz)	50/60				
Nominal Output Current (A)	15	18	22.5	27	30
Output THDu	< 3%				
On-grid Output					
Nominal Output Power (kW)	10	12	15	18	20
Max. Output Power (kVA)	11	13.2	16.5	19.8	22
Max. Input Power from Grid (kVA)	20	24	30	36	40
Nominal Grid Voltage (Vac)	220/380, 230/400, 240/415 (3/N/PE)				
Grid Voltage Range (V)	184 ~ 276 / 320 ~ 480				
PV Input					
Max. Input Power (kWp)	20	24	30		
Max. Input Voltage (V)	1,000				
Number of MPPTs/Max. Input Strings Per MPPT	2/2				
MPPT Voltage Range (V)	130-960 (250/290/350/410/450 - 850 @ full load)				
Nominal Input Voltage (V)	600				
Starting Voltage (V)	200				
Max. Input Current (A)	25 / 25				
Battery Parameters					
Number of Battery Input	2				
Battery Voltage Range (V)	125-800 (210/250/300/360/400 - 800 @ full load)				
Peak Charging/Discharging Current (A)	35 / 35 for 60s				
Max. Charging/Discharging Current (A)	25 / 25				
Efficiency					
Max. Efficiency/European Efficiency	98.2% / 97.7%				
Max. Battery Charging/Discharging Efficiency	97.8%				
General Parameters					
Inverter Dimensions (mm) (W × H × D)	573 × 509 × 219				
Inverter Weight (kg)	35				
Noise (dBA)	< 45				
Operating Temperature Range (°C)	-25 ~ 60				
Cooling Method	Air cooling				
Degree of Protection	IP65				
Protection and Certifications					
CE	IEC 62109-1, IEC 62109-2, EN 62109-1, EN 62109-2, IEC62477-1; EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 62920				
Grid	VDE-AR-N 4105, C10/11, G98/G99, CEI 0-21, EN 50549, NRS 097-2-1, AS 4777.2, R25, UNE 217001, UNE 217002, NTS 2.1 AS 4777.2:2020+Amd 1:2021, PEA, MEA, IEC 61727, IEC 62116, NC RfG				
Suggested Kitting Batteries					
Model	Meta Node, Meta H1 (H-S10250HV)				

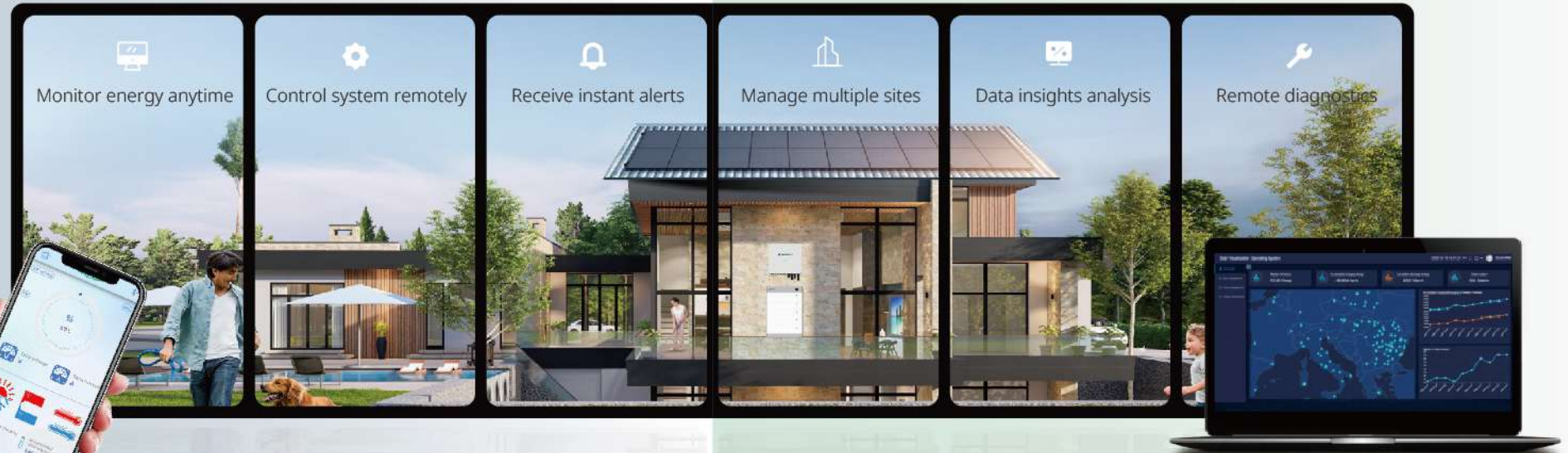
Poweroad APP & Web Portal

Poweroad IoE APP

For Homeowners & Installers

Unified Web Portal

For Distributors



Powerful digital tools to reduce O&M cost and improve energy efficiency.



Devices Management



Battery Data



OTA Update



Alarm Notifications



Enables real-time monitoring and control for distributors through a unified web portal



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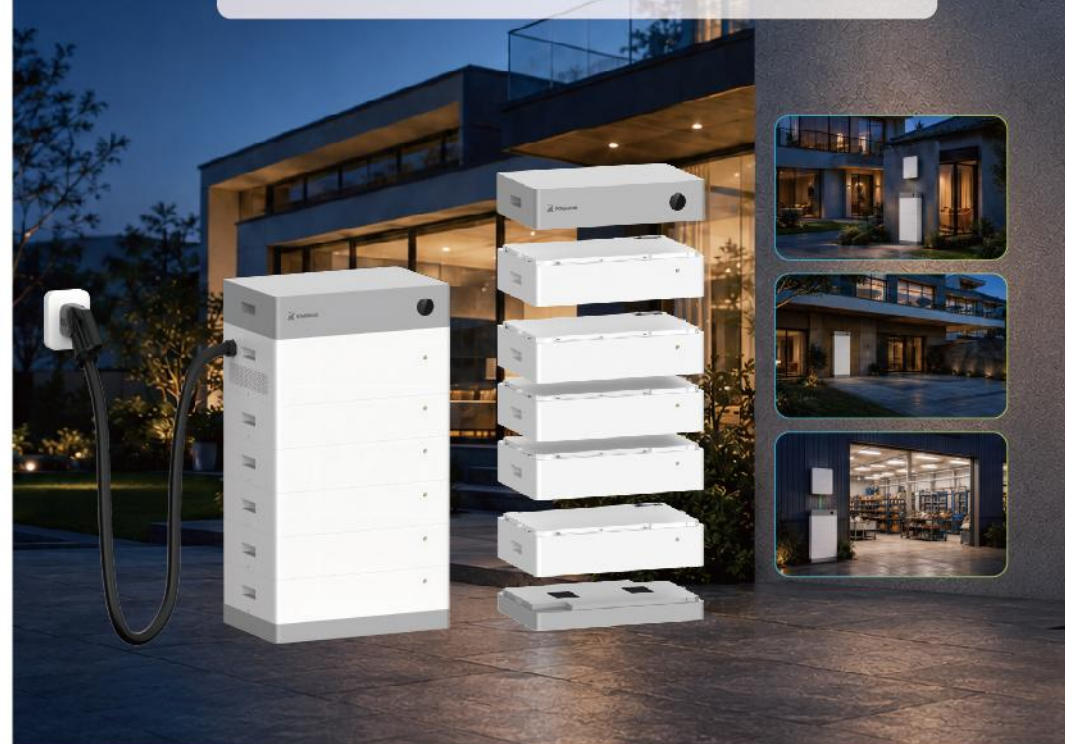
POWERROAD
202608-EN



Meta Node

Stacking Battery Solution

One Platform From Home to Small Business



Single-Phase Home



Three-Phase Home



Small C&I



Why the Market Needs a New Solution



Limited Scalability

Conventional home storage systems are difficult to expand as energy needs grow.



Complex Installation

C&I systems often require complicated installation and commissioning.



Overstocking

Complex SKUs, stacking inventory and low efficiency.



META Node covers residential and small commercial applications through one modular battery platform



One Module

The META Node Solution



One Platform Covers All

5-Minute to Stack

15-Minute Commissioning

Indoor & Outdoor Ready

IP55 · -20°C to 55°C

Flexible Capacity

- 5–60 kWh Residential
- Up to 245 kWh Small C&I

One Battery Platform

- Single-Phase / Three-Phase
- Low-Voltage / High-Voltage

Three-layer Safety

Built-in fire protection + BMS + EMS

Unlock More Value

- Self-Consumption / TOU Optimization
- Demand Charge Reduction / Off-Grid Backup



Fewer SKUs



Leaner Inventory



Simpler Deployment



Lower Service Costs

Everyday Home Energy Needs



Balcony
Solar Self-Consumption



Basement
TOU Savings



Courtyard
Emergency Backup

Whole-Home Energy Secure



Villa
Whole-Home Backup

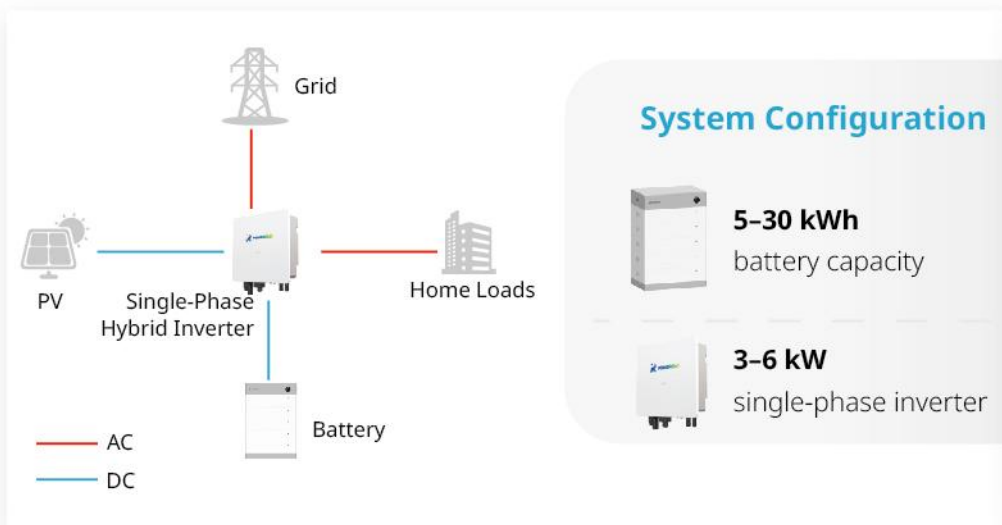


Premium Home
Higher PV Consumption

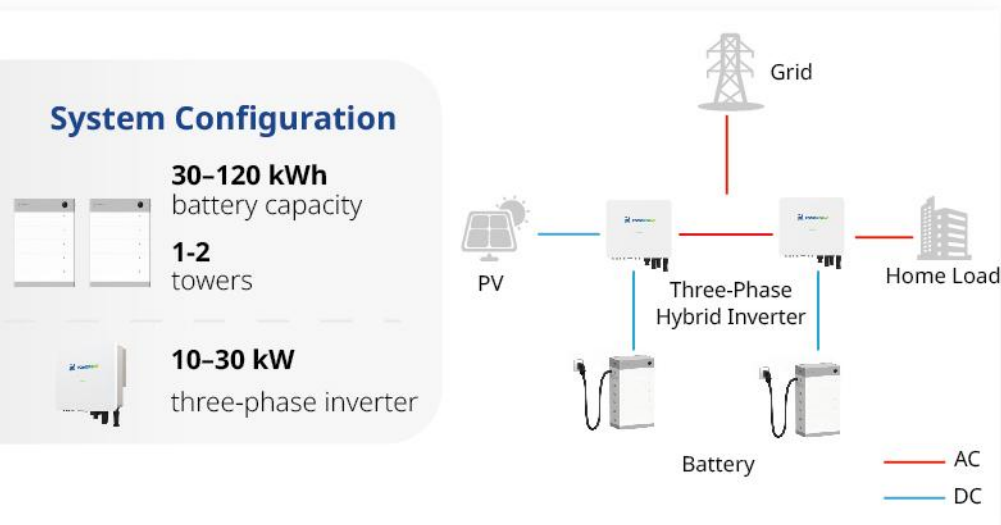


Pool & EV Charging
Stable Power for High Loads

Single-Phase Home Energy Storage



Three-Phase Home Energy Storage



Benefits



Lower electricity bills
Store clean energy and use it when rates are high.



Backup power for outages
Keep your home running when the grid goes down.

Benefits



Built-in DC Fast Charging



Three-phase load balancing



Compact Footprint



Built-in Fire Safety Protection



Indoor-friendly



Simple DIY Installation



200% Backup Power



Multiple inverter parallel connection



META Node Small C&I Energy Storage

Scalable Energy Storage for Commercial Growth



15 ~ 50 kWh

Small Stores
Pharmacies

50 ~ 120 kWh

Restaurants
Supermarkets

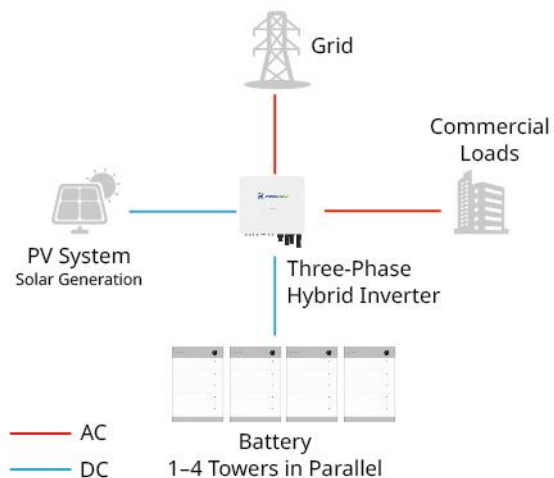
120 ~ 245 kWh

Workshops
Processing Plants
Small Factories

Powering Small Business Growth



Small C&I Energy Storage



15-245 kWh battery capacity



10-125 kW
three-phase inverter



Energy Arbitrage

Store low-cost energy and discharge it during peak price periods.



Demand Charge Reduction

Lower peak demand and reduce monthly demand charges.



Backup Power

Provide reliable power during outages to keep operations running.



PV Self-Consumption

Maximize PV usage and reduce reliance on the grid.



DC EV Charging

Fast Charging While You Shop

Demand Charge Reduction



-20°C ~ 55°C

Self-heating, Build to Last All Seasons



IP55 Protection

Stack It Outside, Rain or Shine



Built-in Aerosol

Pack-level Fire Suppression in 5s



Emergency Backup

Peace of Mind

SYSTEM PARAMETERS

High-voltage Battery System

System Voltage Range	172.8 ~ 688.8 V
Single-Tower Capacity Range	20.48 ~ 61.44 kWh
Maximum System Capacity	245.76 kWh (4 towers in parallel)
Max.Working Current	100 A
Rated Working Current	50 A
Operating Temperature	-20°C ~ 55°C (Optional heating)
Cooling Method	Natural Cooling
Altitude	<2000m
Communication	RS 485 / WiFi / Bluetooth
Protection Rating	IP55
Certifications	IEC 62619, CE, UN 38.3, DGM, MSDS
Master Module Dimension (W x D x H)	590 × 390 × 112 mm
Base Dimension (W x D x H)	590 × 390 × 78 mm

Low-voltage Battery System

System Voltage Range	43.2 ~ 57.6 V
Single-Tower Capacity Range	5.12 ~ 61.44 kWh
Maximum System Capacity	245.76 kWh (4 towers in parallel)
Max. Working Current	100 A (5kWh), 200 A (≥10kWh)
Rated Working Current	50 A (5kWh), 100 A (10kWh), 150 A (15kWh, 200 A (≥20kWh)
Operating Temperature	-20°C ~ 55°C (Optional heating)
Cooling Method	Natural Cooling
Altitude	<2000m
Protection Rating	IP55
Communication	RS 485 / WiFi / Bluetooth
Certifications	IEC 62619, CE, UN 38.3, DGM, MSDS
Master Module Dimension (W x D x H)	590 × 390 × 85 mm
Base Dimension (W x D x H)	590 × 390 × 78 mm

MODULE PARAMETERS

Unified Battery Module (Used for both LV and HV systems)

Cell Chemistry	LFP
Battery Module Capacity	5.12 kWh
Scalability	12S or 12P
Max. Working Current	100 A
Rated Working Current	50 A
Module Balancing Current	5 A
Operating Temperature	-20°C ~ 55°C (with heating)
Cooling Method	Natural Cooling
Altitude	<2000m
Cycle Life	8000
Protection Rating	IP55
Dimension (W x D x H)	590 × 390 × 148 mm
Weight	50 kg
Certifications	IEC 62619, CE, UN 38.3, DGM, MSDS

Smart Charging Module (Optional for HV Battery)

Power	20 kW
Output Voltage Range	200 ~ 500 V DC
Charging Cable	3 m
Charging Port	CCS2
Cooling Method	Air Cooling
Function	Plug-and-charge
Operating Temperature	-20°C ~ 55°C
Protection Rating	IP55
Dimension (W x D x H)	590 × 390 × 215 mm

Compatible Inverters





Tervol L16 Floor-Standing Battery

Tervol L16 is a low-voltage lithium-ion phosphate battery designed for household energy storage. With a 16.07kWh capacity, offering a reliable power supply to support a wide range of household appliances without concerns about power interruptions. Moreover, it helps reduce electricity costs by utilizing time-of-use tariffs and shifting usage to off-peak hours.

This battery features a built-in Wi-Fi module, a user-friendly display screen, and real-time monitoring capabilities. In addition, it supports up to 15 parallel units, enabling a total energy capacity ranging from 16.07 kWh to 241.05 kWh.



Easy to Extend

Modular design enables easily extension to 241.05 kWh



Flexible

Compatible with main streaming inverters



Reliable

Grade-A LiFePO4 battery & Own-developed BMS



Safe Guarded

Pre-charge function for a safe initial connection



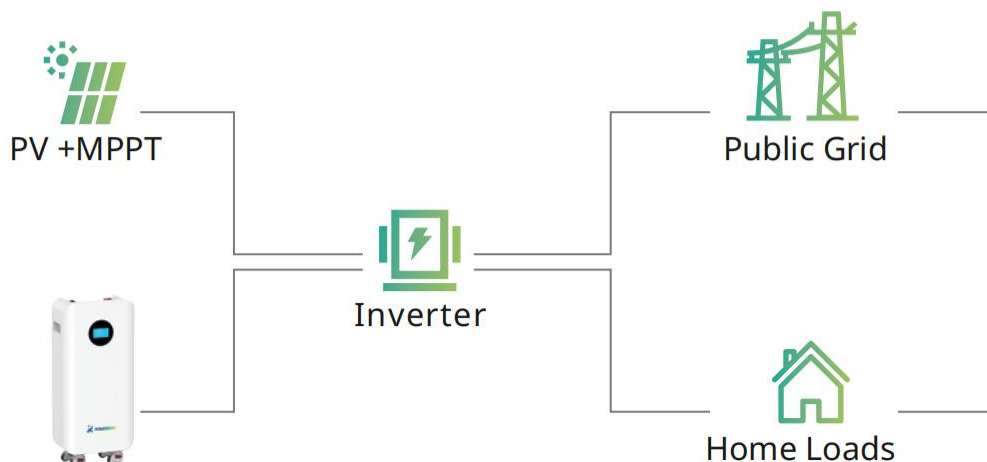
Own-developed IoE

Bluetooth/WiFi connection and RS485/CAN communication available



Convenient

Remote debugging / upgrading /pairing with inverters





Tervol L16 Floor-Standing Battery

TECHNICAL PARAMETER

Model	H-L51314
Voltage	51.2 V
Cell Capacity	314 Ah
Battery Capacity	16.07 kWh
Scalability	Max. 15 pcs in parallel (241.05 kWh)
Continuous Charge Current	150 A
Max. Charge Current	160 A @ 60S
Continuous Discharge Current	200 A
Peak Discharge Current	210 A @ 60S
Degree of Protection	IP20
Charging Temperature	0 ~ 50 °C
Discharging Temperature	-20 ~ 55 °C
Humidity	0 ~ 95 % (No Condensing)
Weight	140 kg
Dimensions (W × D × H)	440 × 240 × 970 mm
Cycle Life*	8000
Communication	RS485, CAN / Wi-Fi / Bluetooth
Display	4.3-inch touch screen
Certificate	CE-EMC, UN38.3, MSDS, IEC62619

* Test conditions: 0.5C Charging& Discharging. @25°C, 80% DOD

Compatible inverters



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POWEROAD reserves the right to modify the specifications and features without prior notice.