

# COMMERCIAL & INDUSTRIAL ENERGY STORAGE SOLUTION

50kW~2MW / 62kWh~6.4MWh

For **Rural Electrification & Power Resilience** Application





“MAKE SMART  
CLEAN **ENERGY** ACCESSIBLE TO  
EVERY PERSON AROUND THE GLOBE

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# ABOUT ALPHAESS

## AlphaESS

Founded in 2012, AlphaESS is now one of the world-leading energy storage solution and service providers. The company specializes in delivering pre-eminent fit-for-purpose product solutions covering the full power range from small portable power stations all the way up to large utility-scale solutions. With 15+ subsidiaries in the globe, AlphaESS provides local services and supports 100,000+ systems actively running in over 90+ countries.

 **12**  
Years Since Establishment

 **180+**  
Industrial Patents

 **30+**  
Global Subsidiaries & Branches

 **4**  
Product Development Units

 **100,000+**  
Systems Installed Globally

 **90+**  
Countries & Regions



2023 TOP 1  
Australia Market Share  
from SunWiz



2023 H1 TOP 5  
Residential ESS Provider in Germany  
from EUPD Research



2021 TOP 6 Supplier of  
Global Residential ESS  
from IHS Markit



iF & Reddot & G-Mark  
Design Award



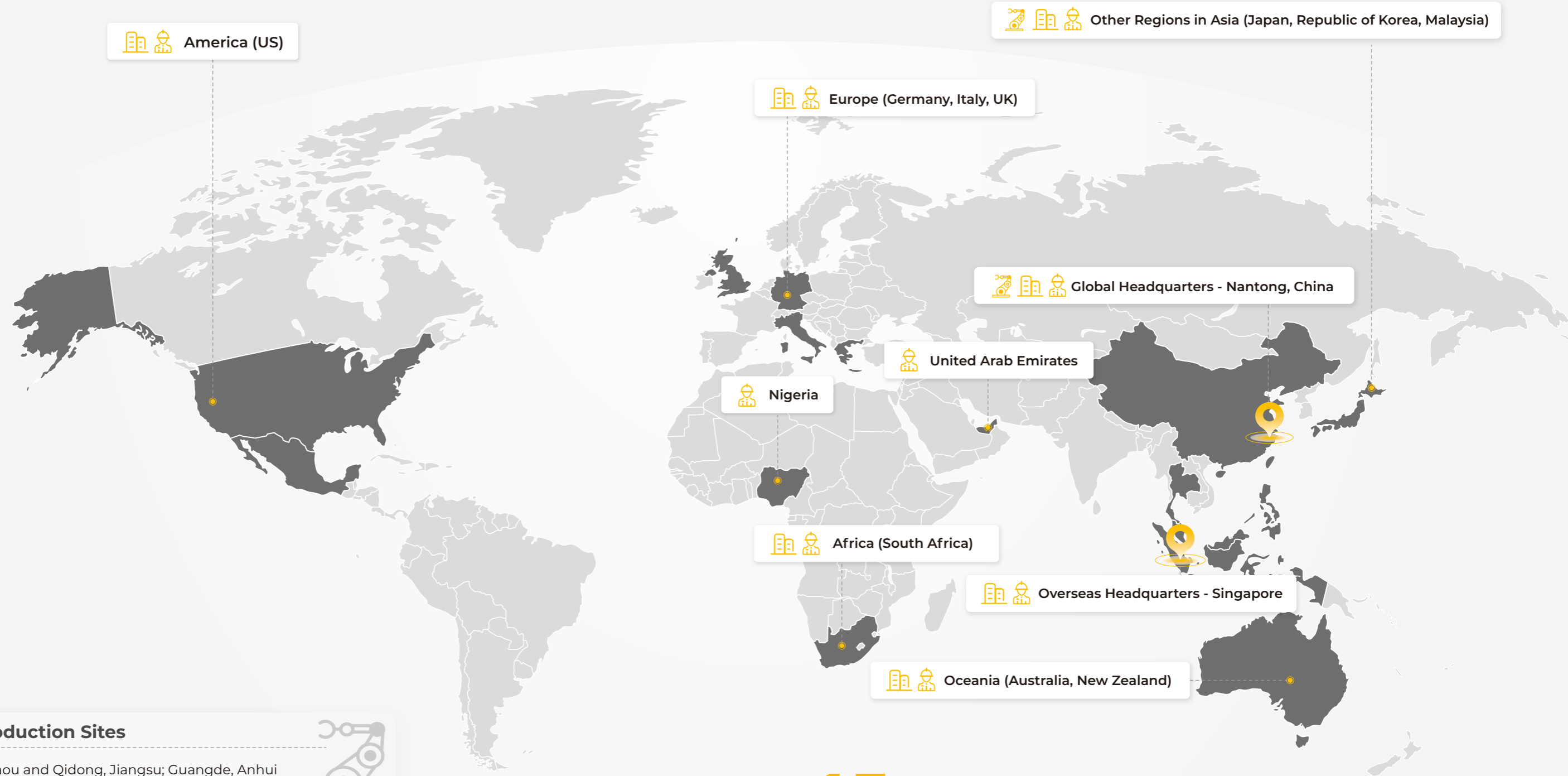
TOP BRAND PV  
(STORAGE)



ESG Transparency Award  
& GlocalIN Top50



# GLOBAL SERVICE NETWORK



## 4 Production Sites

**China:** Tongzhou and Qidong, Jiangsu; Guangde, Anhui  
**Global:** Penang, Malaysia



## 4 R&D Centers

Nantong, Suzhou, Nanjing, Tianjin



## 15 Subsidiaries

**China:** Suzhou, Beijing, Tianjin, Shenzhen, Chengdu, and Nanjing.  
**Global:** European countries, including Germany, Italy, and the UK; Oceanian countries like Australia and New Zealand; the United States; Asian countries like Japan, Republic of Korea and Malaysia.



Note: The data shows the company's global presence as of the end of 2023.



# THE STORY OF "STORION" C&I SOLUTION

## 2024 1.5 GWh C&I SOLUTIONS DEPLOYED WORLDWIDE

Since the launch of our Commercial and Industrial solutions until 2024, AlphaESS has installed a total of over 1.5 GWh C&I systems around the globe. The majority of these deployments have been in regions lacking reliable power infrastructure, providing millions of individuals access to dependable and sustainable clean energy sources.

## 2018 INTERNATIONAL RECOGNITION

Our rural electrification projects in Myanmar was selected by the Intersolar Europe committee as one of the 10 finalists for "outstanding projects award".

## 2017 MILESTONE PROJECT OVER 1 MWh

AlphaESS completed its first large C&I project in Cambodia, installing a 500kW/1.26MWh energy storage container. This milestone project provides steady and cheap electricity to a local pharmaceutical factory and its workers.

## 2015 THE FIRST C&I PROJECT

The first STORION series for commercial application were delivered in six petrol stations (20kW/60kWh × 6) in remote areas of Indonesia where power outages were frequent.

## 2013 THE ORIGIN OF THE NAME

STORage + Lithium-ION = STORION

## TODAY

With a decade of evolvment, the STORION is now a series dedicated for commercial and industrial applications in AlphaESS. Our STORION solution for rural electrification and power resilience applications today are ranging from 30kW to 500kW inverter power and 54kWh to 2MWh in storage capacity.



# APPLICATIONS



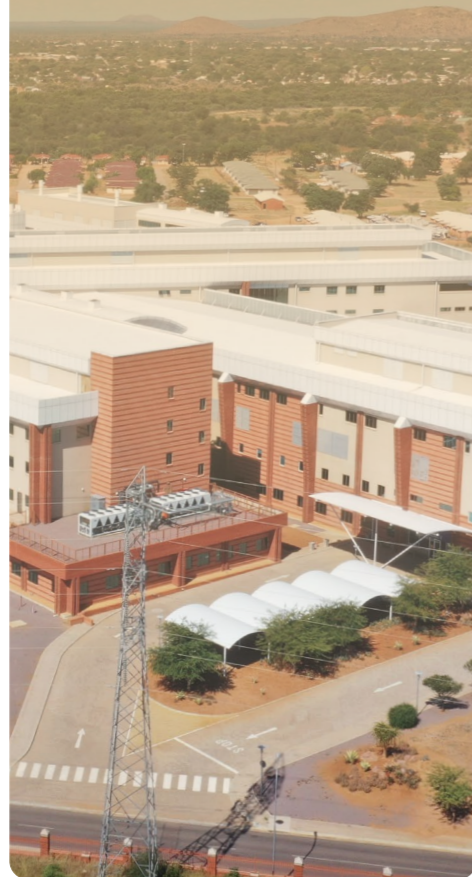
## RURAL ELECTRIFICATION

Lighting Up Villages,  
Powering Up Lives



## SCHOOLS, HOSPITALS AND BANKS

Energy Efficiency for Vital Spaces  
Where Every Watt Matters



## COMMERCIAL OFFICE BUILDINGS

Energy Resilience for  
Business Excellence



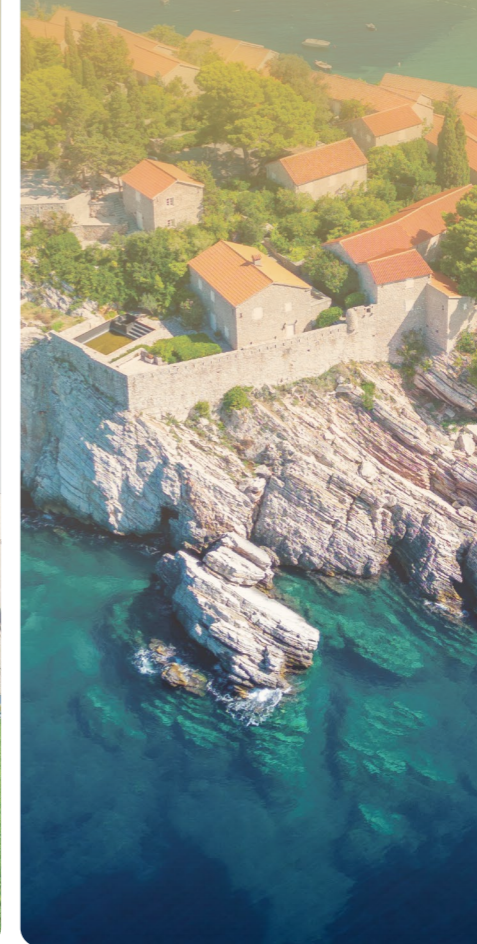
## SMALL FACTORIES

Fueling Industry,  
Energizing Growth



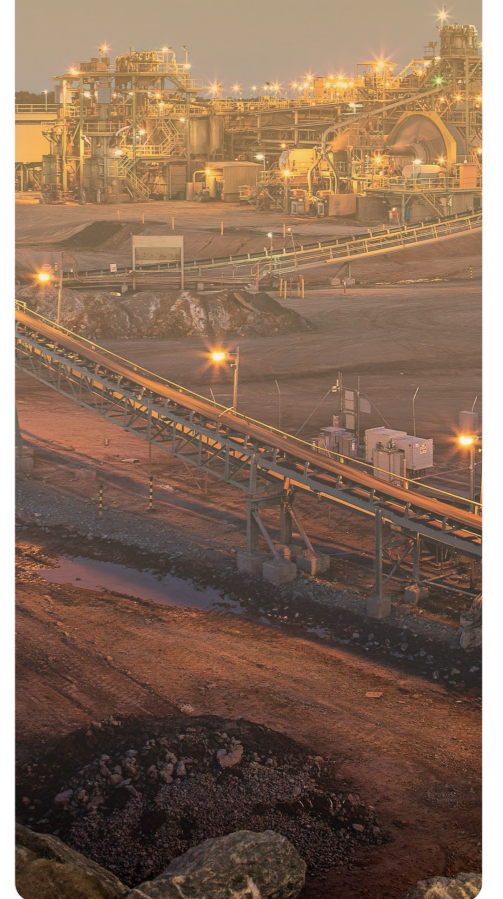
## ISLANDS

Island Energy Independence,  
Harnessing Power from Nature



## MINING SITES

Unearth the Power,  
Illuminate the Depths





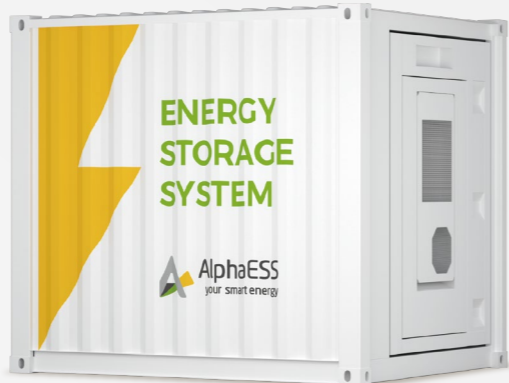
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## PRODUCT INTRODUCTION



**STORION - T50 / T100**

**STORION - TB187.5 ~ 500**



**INDOOR SOLUTION**  
50 / 100 KW | 62 ~ 968 kWh

**OUTDOOR SOLUTION**  
50 / 100 KW | 62 ~ 387 kWh

**INDOOR SOLUTION**  
187.5 / 375 / 500 kW | 0.23 ~ 1.6 MWh

**OUTDOOR SOLUTION**  
187.5 / 375 / 500 kW | 0.23 ~ 1.6 MWh



# STORION – T50 / 100

50 / 100 KW | 62 ~ 968 kWh

## ► System:

Various work modes  
On/Off-grid switching time  $\leq 20\text{ms}$   
Compatible with diesel generator and dual power supply

## ► Inverter Module:

Support 200% PV oversized  
1.1x overload for long term operation, 1.2x for one minute, 1.5x for 200ms

## ► Battery Module:

Different battery packs available: 0.5C 38.4V 210Ah/1C 38.4V 180Ah  
LFP battery cell, long cycle life  
High security & control: cell-level monitoring of batteries



# INDOOR SOLUTION



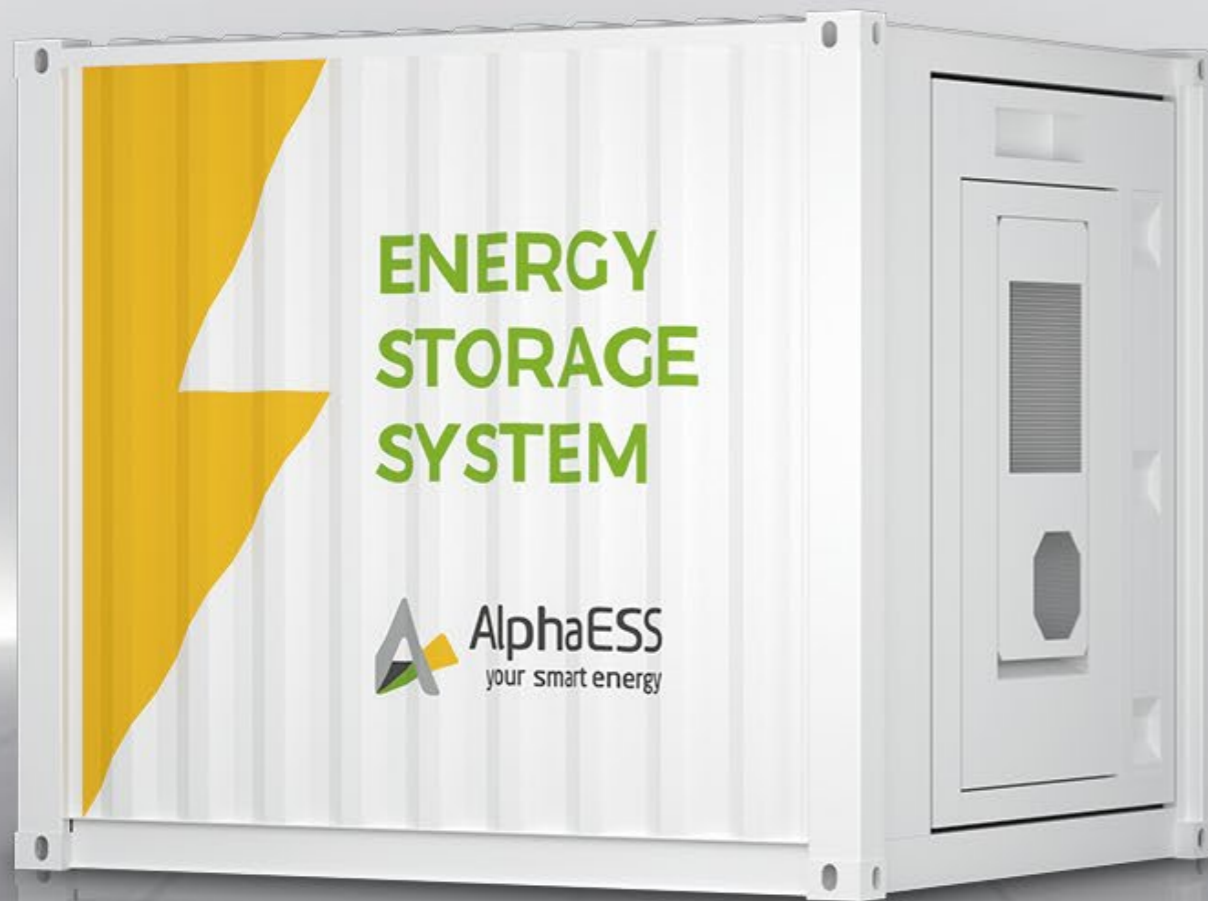
# STORION – T50 / 100

50 / 100 KW | 62 ~ 387 kWh

STORION-T50/100 10ft container is an AlphaESS standardized product for C&I application, the container has built-in batteries, EMS, PCS, fire extinguishing devices and other equipment. Customers can choose different capacity containers according to their needs to meet the required application scenarios.

AlphaESS adheres to the primary principles of safety and intelligent product design, and this product reflects this feature very well.

## OUTDOOR SOLUTION



### Features

► **All-in-one design, compact internal space arrangement, space-saving**

► **Easy installation**

Most devices are pre-assembled at the factory

Just install the battery and external wiring at first installation

► **Flexible capacity configuration**

PCS is available in 50/100 kVA power

The battery capacity ranges from 62kWh~389kWh

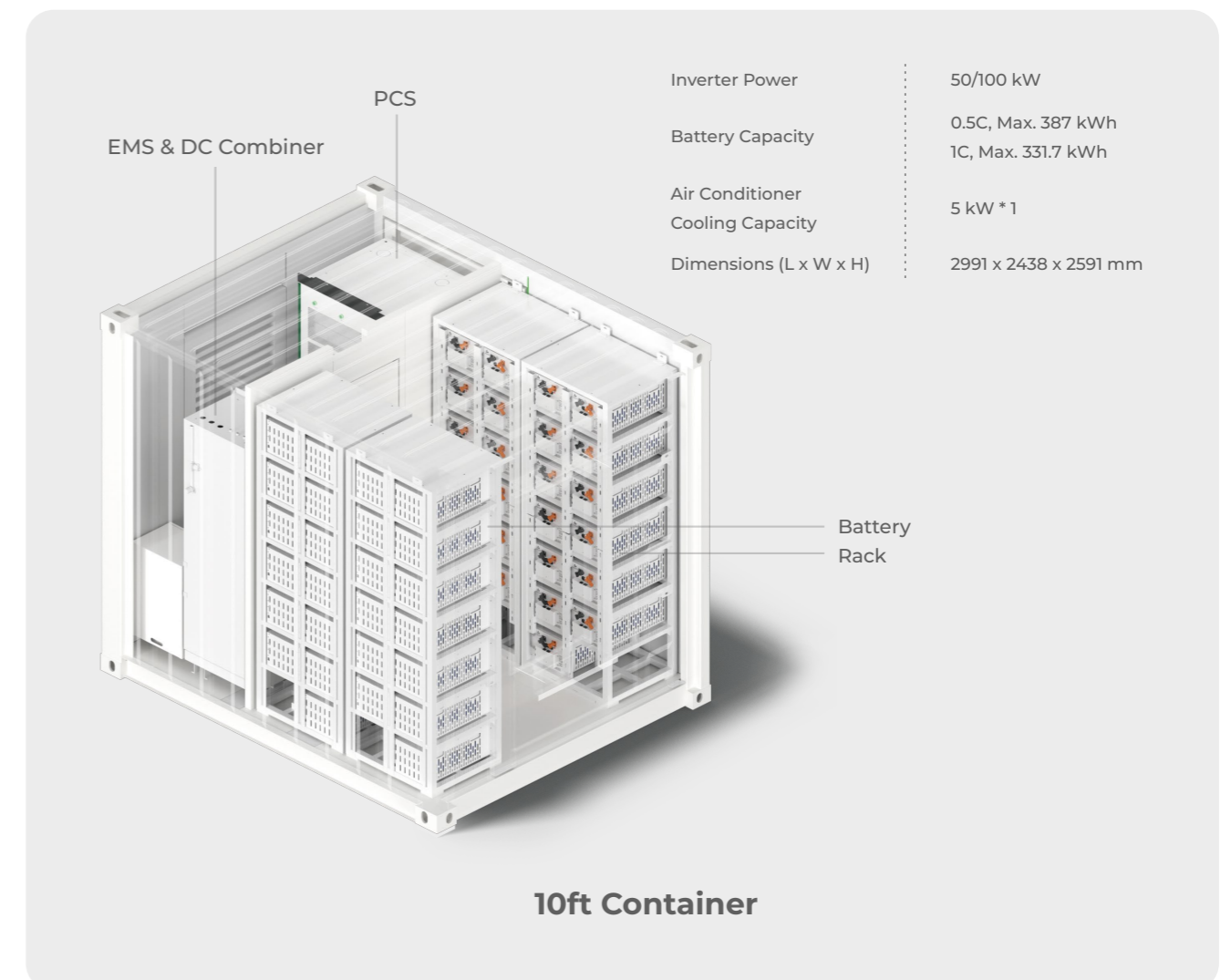
► **Safety**

Constant temperature control at 23±2°C, air-conditioning system self-checking & EMS cell-level detection

Smoke & temperature detection, automatic alarm system + manual one-touch fire suppression

Support fully submerged HFC-propane fire extinguisher

► **IP54 rating for outdoor installation**





# COMPONENTS

## PCS T50/100

- 50/100kVA Output Power
- Integrated STS and Transformer Module

The PCS has a modular design with built-in STS and Transformer. With the PCS, you can achieve bi-directional energy transfer with batteries, grids, and PVs, helping you to achieve more functionality and maximize your revenue from using the Storion system.



## EMS & DC Combiner ALPCC-400

- Max. 10 Clusters in Parallel
- Max. 400A Output Current

This cabinet has built-in DC combiner, and EMS components, which can realize parallel connection of batteries and remotely cell-level monitored and cluster-level controlled.

Built-in SCADA monitoring screen for data checking and local configuration.



## 0.5C Battery Module

Module	M38210-S
Nominal Capacity	8.1 kWh
Max. Charging/Discharging Current	105A
Depth of Discharge	90%

## Configuration Rack

BLMU	HV900105-III
Rack	2 columns, 7 layers
Battery Number	9~12
Capacity	72.6 kWh~96.8 kWh
Dimensions (W x D x H)	743.3 x 602 x 2241.5 mm
Overall Weight	642 ~ 890 kg



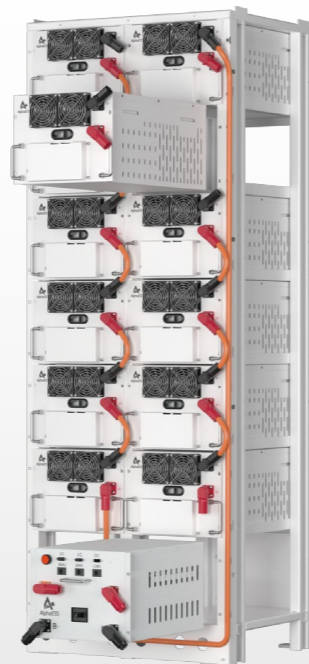
# BATTERY CLUSTER SYSTEM

## 1C Battery Module

Module	M38180-S
Nominal Capacity	6.9 kWh
Max. Charging/Discharging Current	180A
Depth of Discharge	90%

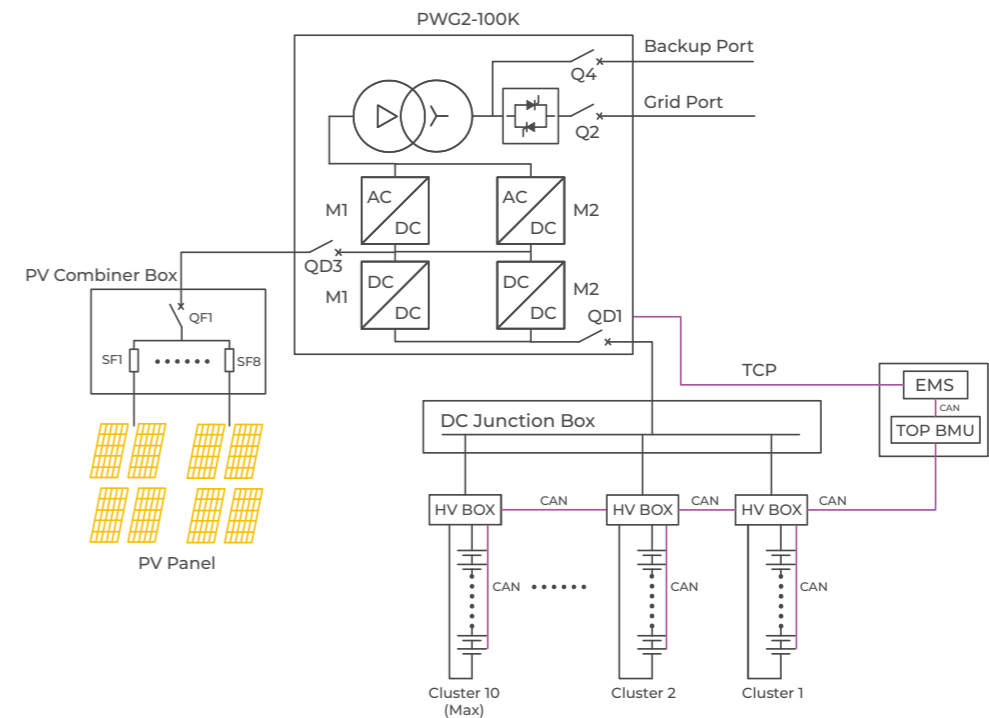
## Configuration Rack

BLMU	HV900180-II
Rack	2 columns, 7 layers
Battery Number	9~12
Capacity	62.2 kWh~82.9 kWh
Dimensions (W x D x H)	710 x 572 x 1950 mm
Overall Weight	667 ~ 913 kg



# WIRING DIAGRAM

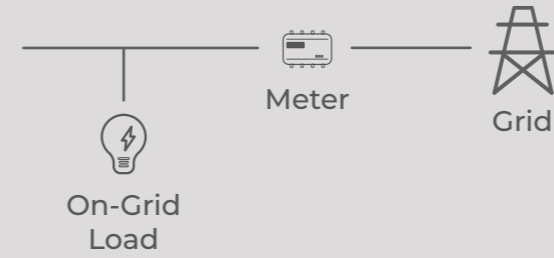
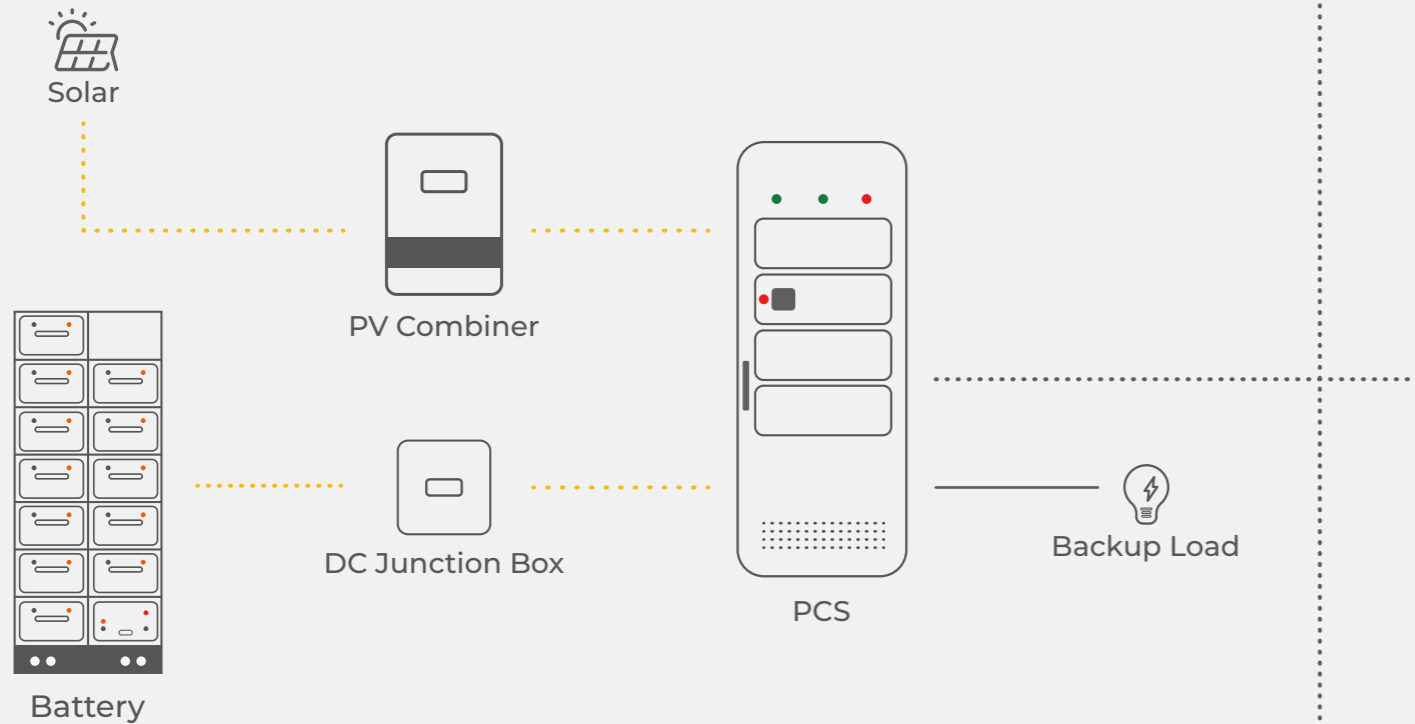
## STORION - T50 / 100





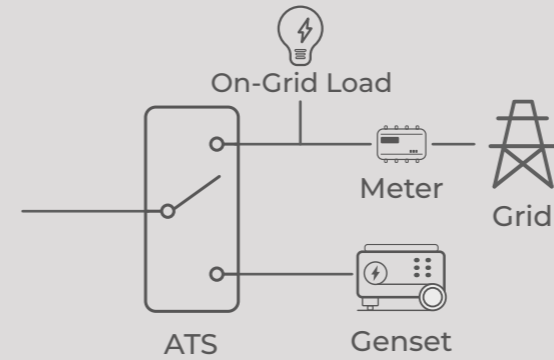
# SOLUTIONS

## DC-Coupled System



### OPTION 1 On-Grid System

The grid, solar, and battery can supply the load together, offering flexibility in setting priorities or selecting different operating modes. In the event of a grid outage, the on-grid load will be disconnected, and the system will seamlessly switch to supplying the backup load, keeping you unaffected by power disruptions.



### OPTION 2 Dual Power Supply System

This solution requires an additional ATS device for seamless power source switching. In the event of a grid outage, the ATS will automatically switch to the generator side. The EMS controls the generator's operation, ensuring continuous power supply. This ensures that either the generator or the STORION system is always operational, guaranteeing uninterrupted backup power for essential loads.



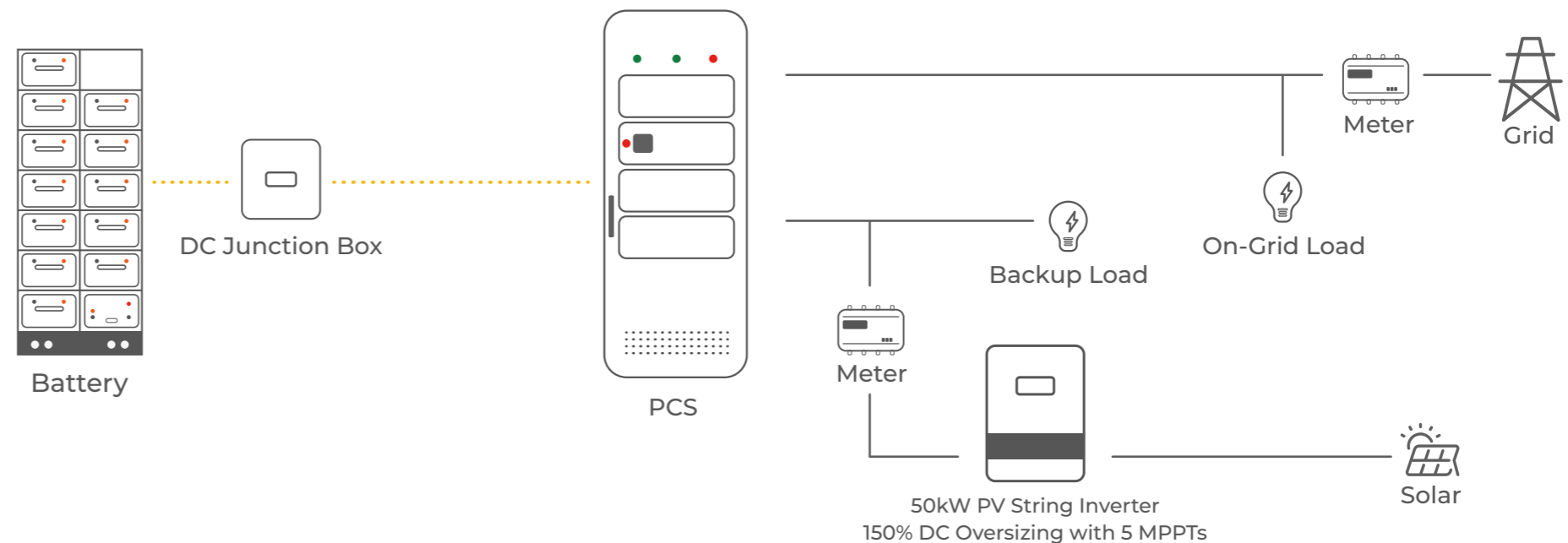
### OPTION 3 Off-Grid System

The generator is managed by the EMS via dry contact, allowing users to control its operation based on preset schedules, battery SOC, or manually. This setup ensures continuous operation of either the generator or the STORION system at any given time. Both the diesel generator and the STORION system work together seamlessly, guaranteeing a reliable power supply for customers residing in remote off-grid areas.

## AC-Coupled System

**For some multi-orientation PV array application scenario, 6 MPPTs can maximize the energy output.**

To enable this solution, add an additional inverter and connect it to the backup side. In off-grid mode, the STORION system forms a microgrid, ensuring continuous operation of the PV inverters. Generated power is prioritized for backup loads, with excess power recharging batteries via the T50/100. If a PV inverter's output decreases, STORION supplements the load; if it fails, STORION fully powers the backup load.





# STORION – T50 / 100 SPECIFICATIONS

System Technical Specifications		
Item	STORION-T50	STORION-T100
<b>DC Data</b>		
Depth of Discharge (DoD)	90% (On-Grid), 85% (Off-Grid)	
Battery Voltage Range	250 ~ 520 V	
Battery Energy Range	62.21 ~ 967.68 kWh (Indoor) / 62.21 ~ 387.01 kWh (Outdoor)	
Standard Battery Cluster	1 ~ 10 (Indoor) / 1 ~ 4 (Outdoor)	
PV Voltage Range	650 ~ 900 V	
MPPT Voltage Range	520 ~ 800 V	
Number of MPPT	1	
<b>AC Data - Grid</b>		
Rated Power	50 kVA	100 kVA
Max. Output Power	55 kVA	110 kVA
Max. Grid Input Power	100kVA (with STS), 50kVA (without STS)	200kVA (with STS), 100kVA (without STS)
Rated Grid Voltage	3L/N/PE, 340~460 V	
Grid Frequency	50/60 Hz	
Rated Current	72 A	144 A
<b>AC Data - Backup</b>		
Rated Output Power	50 kVA	100 kVA
Rated Output Voltage	360~440 V	
Rated Frequency	50Hz/60Hz	
Overload Capacity	100%~110% (Long-term); 110%~120% (1 min); 120%~150% (200ms)	
<b>General Data</b>		
Ingress Protection	IP20 (Indoor) / IP54 (Outdoor)	
Operating Temperature Range	-20°C~50°C	
Relative Humidity	0~95% (No Condensation)	
Max. Working Altitude	3000m / 9842ft	
Container Material	High-Strength Weather-Resistant Steel	
External Protective Coating	C3 Corrosion Resistance, UV Resistance, Anti-aging	
Warranty	3 Years Product Warranty	
Cooling Method	Forced Air Cooling / HVAC	
Communication Interfaces	NRS 097-2-1:2017 Edition 2.1, EN IEC 61000-6-2&4, IEC62109-1:2010, IEC62109-2:2011, Amd:1:2021, IEC62619, UN38.3	

Battery		
Battery Module	M38180-S	M38210-S
Battery Type	LiFePO <sub>4</sub>	
Pack	3.2V/90Ah@2P12S	3.2V/105Ah@2P12S
Internal Resistance	≤10mΩ	≤10mΩ
Energy Capacity	6.912 kWh	8.064 kWh
Usable Capacity	6.22 kWh	7.25 kWh
Depth of Discharge (DoD)	90%	
Rated Voltage	38.4 V	
Operating Voltage Range	36~43.2 V	
Max. Charging/Discharging Current	180 A	105 A
Cycle Life	80%EOL with ≥6000@1C 25°C	80%EOL with ≥6000@0.5C 25°C
Operating Temperature Range	-10°C~50°C	
Ingress Protection	IP21	
Relative Humidity	15%~85%	
Warranty	3 Years Product Warranty, 10 Years Performance Warranty	
Communication	CAN	
Dimensions (WxDxH)	326x654x250 mm	326x560x222 mm
Weight	64 kg	62 kg
String Pack Quantity	9~12	

High Voltage Box		
Model	HV900180-II	HV900105-III
Rated Current	180 A	105 A
Max. Current	220 A	138 A
Rated Voltage	900 VDC	
Ultimate Breaking Capacity	250 kA	
Auxiliary Power Supply	220 VAC	
BCMU Power Dissipation	4 W	
Dimensions (W×D×H)	91.5x440x250.1 mm	
Weight	20 kg	

Battery Cluster System		
Configuration	HV900180-II, M38180-S, Rack	HV900105-III, M38210-S, Rack
Dimensions (W×D×H)	710×572×1950mm	743.3× 602×2241.5mm
Battery Racks	2×7	
Overall Weight	731~913kg	704~890kg
Single Cluster Capacity	62.2~82.9kWh	72.6~97.2kWh
Max. Charging/Discharging Current	180A	105A
Battery Cluster Work Voltage Range	324 ~ 518.4 V	

Inverter		
Model	PWG2-50k	PWG2-100k
PV Voltage Range	650 ~ 900 V (MPPT 520~800V)	
MPPT Number	1	
Battery Voltage Range	250 ~ 520 V	
Max. PV Input Current	192A	384A
Max. Charging/Discharging Current	150A	300A
Nominal Power	50kVA	100kVA
Rated Voltage	400 V	
Grid Voltage Range	340 ~ 460 V, 3L/N/PE	
Power Factor Range	0.99/-1~1	
Overload Capacity	100%~110% (Long-term); 110%~120% (1 min); 120%~150% (200ms)	
Rated AC Current	72A	144A
Off-Grid Output Voltage Range	360~440V	
Rated Output Frequency	50/60Hz	
Dimensions (W×D×H)	800×800×2160mm	
Weight	520kg	750kg

PV Inverter (GW50KS-MT)	
PV Voltage Range	200 ~ 950V
MPPT Number/String Number	5/2
Max. PV Input Current	30A
Nominal Output Power	50kVA
Grid Rated Voltage	320 ~ 460V 3L/N/PE
Max. Output AC Current	80A
AC Grid Frequency Range (Hz)	45 ~ 55 / 55 ~ 65Hz
Operating Temperature Range (°C)	-30 ~ +60°C
Dimensions (W×D×H)	520 × 660 × 220mm
Weight	55kg
Max. Efficiency	98.60%

DC Junction Box (EMS 4.0)		
TOP BMU Box	TOP BMU Power	48W
Junction Box	Communication	RS-485×6, CAN×3
	Max. Voltage	900V
	Max. Current	400A
	Weight	100kg
	Dimensions (W×D×H)	600×600×1650mm



# STORION – TB187.5 / 375 / 500

187.5 / 375 / 500 kW | 0.23 ~ 1.6 MWh

- ▶ AC-Coupled and DC-Coupled solutions are both available
- ▶ Modular design, easy for installation
- ▶ On/Off-grid switching times  $\leq 20$ ms
- ▶ Flexible capacity configuration  
Wide PCS power ranges: 187.5 / 375 / 500 kVA  
Battery capacity ranges: 0.23 MWh ~ 1.6 MWh
- ▶ DC-Coupled systems support 160% PV oversize
- ▶ Various working modes for different application scenarios
- ▶ LFP battery cell, high security, long cycle life

# INDOOR SOLUTION





# STORION – TB187.5 / 375 / 500

187.5 / 375 / 500 kW | 0.23 ~ 1.6 MWh

STORION – TB187.5/375/500 20ft / 40ft container is an AlphaESS standardized product for large-scale C&I application, the container has built-in batteries, EMS, PCS, STS, transformer, air conditioner, fire extinguishing devices and other equipment. Customers can choose different capacity containers according to their needs, to meet the required application scenarios.

### ► Easy Installation

Most devices are pre-assembled at the factory  
Just install the battery and external wiring at first installation

### ► Flexible Configuration

PCS is available in 187.5/375/500kVA three options  
The battery capacity ranges from 0.23 MWh ~ 1.6 MWh

### ► Safety

Constant temperature control at 23±2°C, air-conditioning system self-checking & EMS cell-level detection  
Smoke & temperature detection, automatic alarm system + manual one-touch fire suppression  
Support fully submerged HFC-propane fire extinguisher

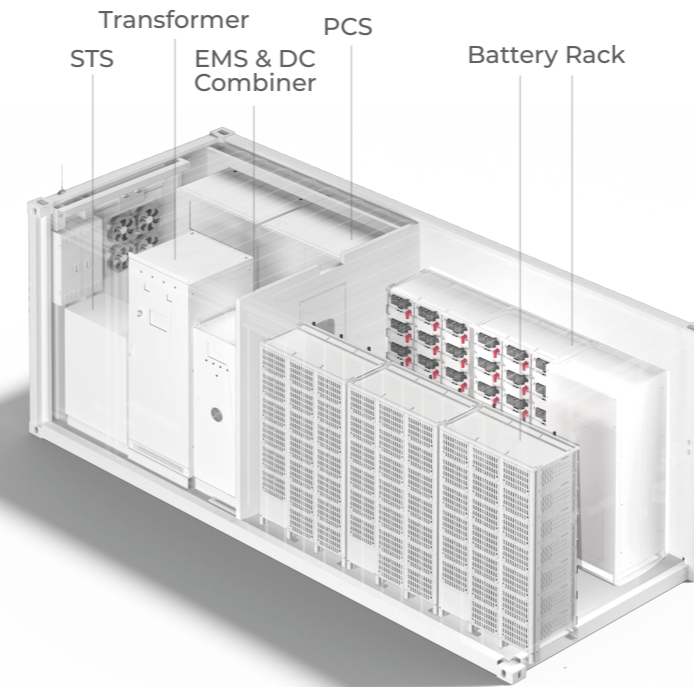
### ► Outdoor Installation

The IP54 rating supports installation in various environments



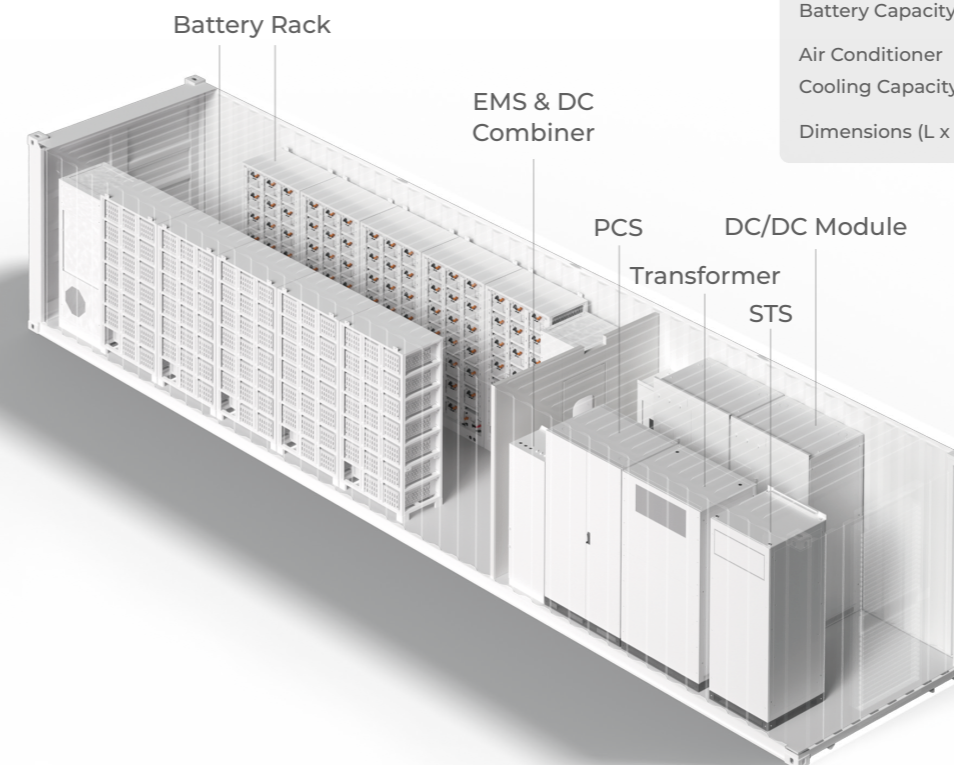
# OUTDOOR SOLUTION

## 20FT / 40FT CONTAINER



Inverter Power	187.5/375/500 kW
Battery Capacity	0.5C, Max. 806 kWh 1C, Max. 553 kWh
Air Conditioner Cooling Capacity	12.5 kW*1 (0.5C) 7.5 kW*2 (1C)
Dimensions (L x W x H)	6058 x 2438 x 2591 mm

20ft Container



Inverter Power	187.5/375/500 kW
Battery Capacity	0.5C, Max. 1.61 MWh
Air Conditioner Cooling Capacity	7.5 kW * 2
Dimensions (L x W x H)	12191 x 2438 x 2591 mm

40ft Container



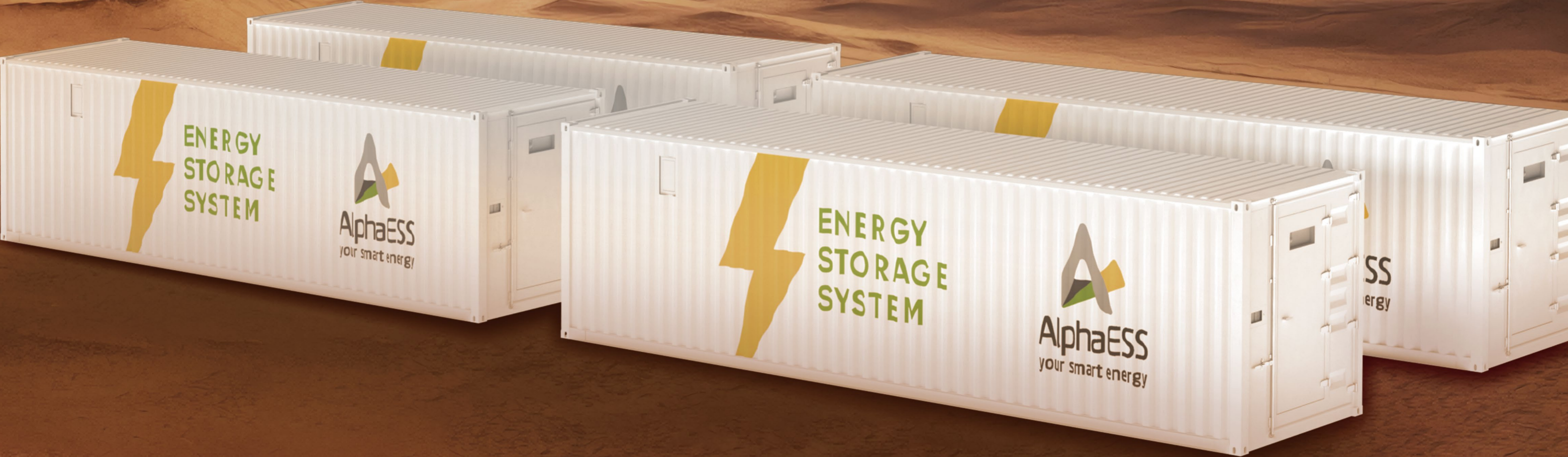
# 40FT CABINET EXPANSION



SUPPORT UP TO FOUR

STORION-TB500 40FT CONTAINER IN PARALLEL

TOTAL CAPACITY: **2MW / 6.4MWh**





# COMPONENTS

## EMS4.0 & DC Combiner ALPCC-630/1250

- Max. 10 Clusters in Parallel
- Max. 630A/1250A Output Current

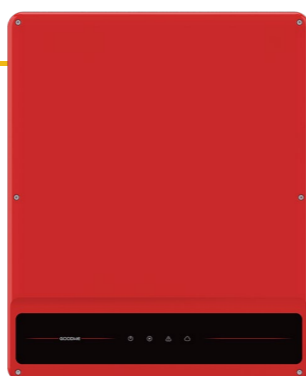
This cabinet has built-in DC combiner, TOP BMU, and EMS components, which can realize parallel connection of batteries and can be remotely monitored at cell level and controlled at cluster level by TOP BMU and EMS. The door of the cabinet has a built-in SCADA monitoring screen for data checking and local configuration.



## PV String Inverter

- 60kVA, 6MPPTs
- 150% Oversizing

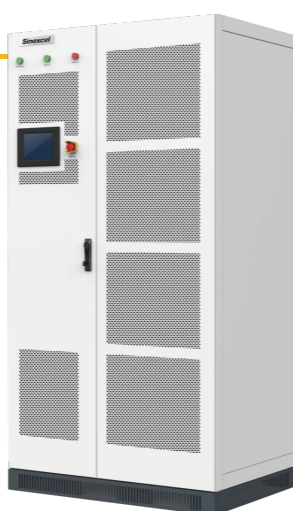
The PV string inverter has excellent performance, through communication with the EMS, can realize a variety of logic control, configuration and other functions, and in the STS backup output port, the output of the energy will be supplied to the load first, and the excess will be delivered to the battery or feed in grid, which can maximize the efficiency of energy conversion.



## DC / DC Module

- 400kVA, 8MPPTs
- Max. 2 Modules in Parallel Operation

The DC/DC module can be integrated into the TB series configuration to enable a DC-coupled solution. This module consists of eight 50kW DC/DC converters, each equipped with 8 MPPTs, and supports two units connected to TB series PCS in parallel. For TB500, up to 160% DC oversizing is attainable, optimizing energy utilization. During sunny conditions, part of the electricity output can be directed to supply the load while the other part charges the battery, effectively maximizing the self-consumption rate.



The TB series three-phase battery inverter is one of the best products on the market today. It has six power options to match different customer needs, and the product has a modular design with modular STS and Transformer for easy installation and lining up.

## PCS TB187.5/375/500 Battery Inverter

- 3~8 × 62.5kVA PCS
- 340 ~ 460V , 50/60Hz, 3L/N/PE

PCS is an important component of a microgrid. It can bidirectional invert DC and AC, and adjust the current waveform to be consistent with the grid, to realize the interaction with the grid. It supports a range of voltages up to 460V, so multiple batteries and PV arrays can be connected in series or parallel.



## STS 300/800kVA

- On/Off-Grid Switching Time ≤ 20ms

STS is responsible for switching between on-grid and off-grid states. When the system detects a grid abnormality, the STS can switch to off-grid mode within 20ms. This ensures that the electronic equipment connected to the system is not affected by a power outage. A rated power of 800kW ensures circuit safety during switching.



## Transformer 500kVA

- Isolation and Transfer from Delta Grid to Star Grid

The transformer has a maximum input voltage of 380V and a maximum output voltage of 400V. In addition, it supports switching between star and delta circuits to isolate the grid and the devices connected to the system, thus maximizing the protection of the system from grid fluctuations.





# COMPONENTS

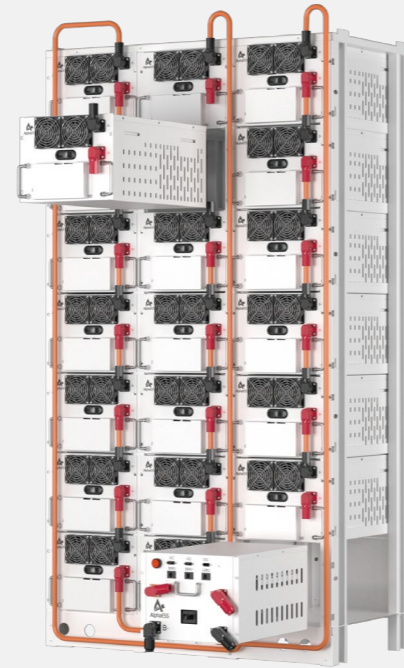
## BATTERY CLUSTER SYSTEM

### ► 1C Battery Module

Module	M38180-S
Nominal Capacity	6.9 kWh
Max. Charging/Discharging Current	180 A
Depth of Discharge	90%

### ► Configuration Rack

BLMU	HV900180-II
Rack	3 columns, 7 layers
Battery Number	17~20
Capacity	110.6kWh~138.24kWh
Dimensions (W x D x H)	1049 x 556.3 x 1950mm
Overall Weight	1233~1425kg

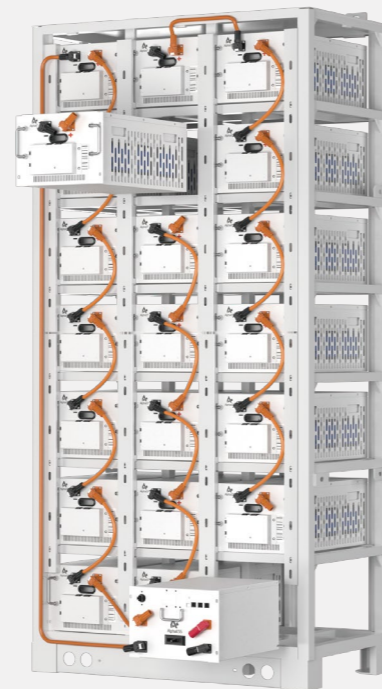


### ► 0.5C Battery Module

Module	M38210-S
Nominal Capacity	8.1 kWh
Max. Charging/Discharging Current	105A
Depth of Discharge	90%

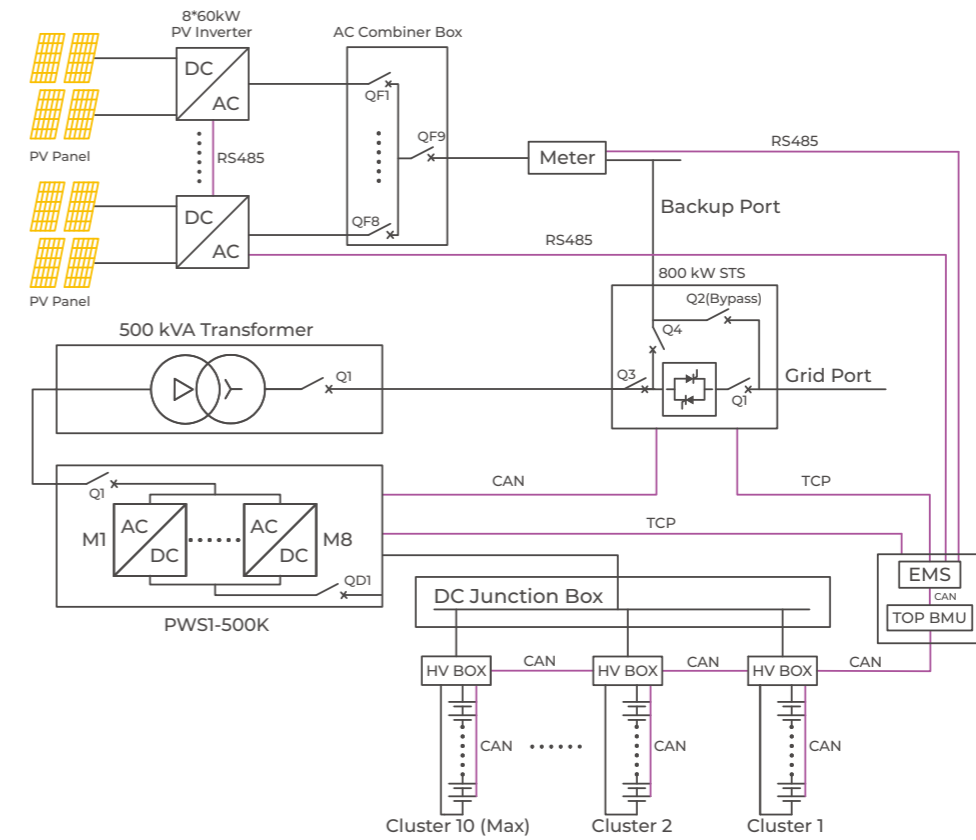
### ► Configuration Rack

BLMU	HV900105-III
Rack	3 columns, 7 layers
Battery Number	17~20
Capacity	129.3kWh~161.3kWh
Dimensions (W x D x H)	1072.5 x 602 x 2241.5mm
Overall Weight	1200~1386kg

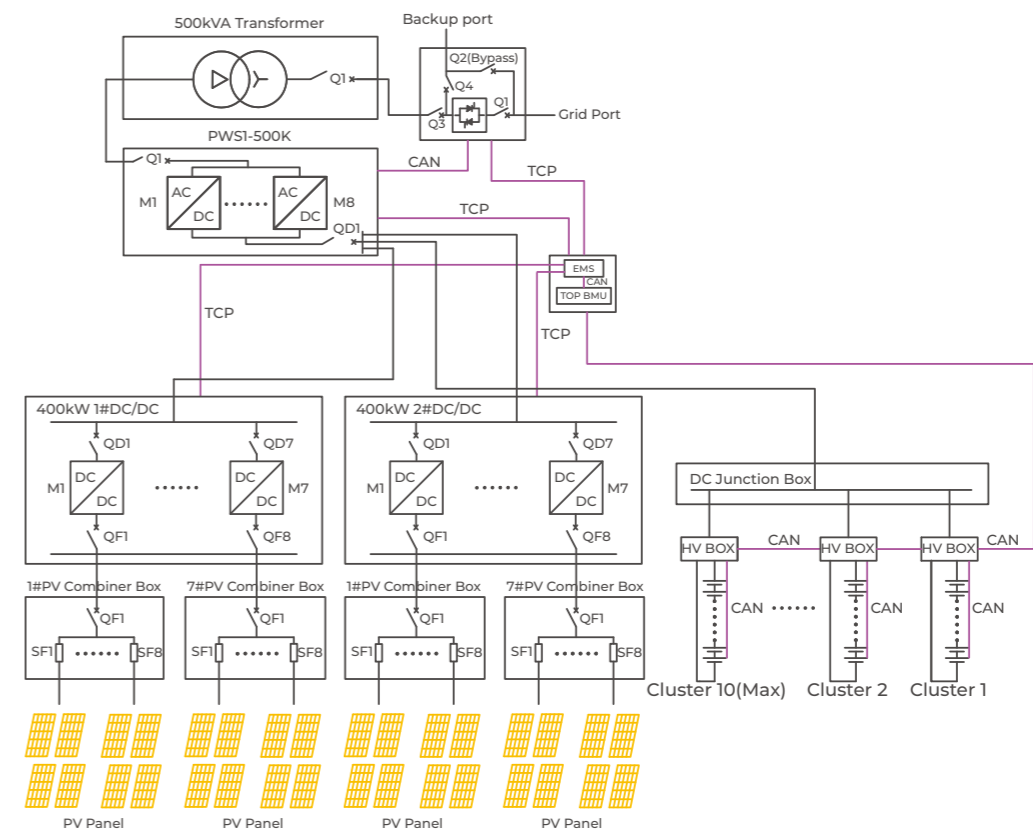


# WIRING DIAGRAM

## AC-Coupled Solution



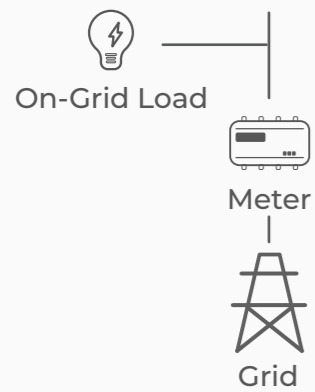
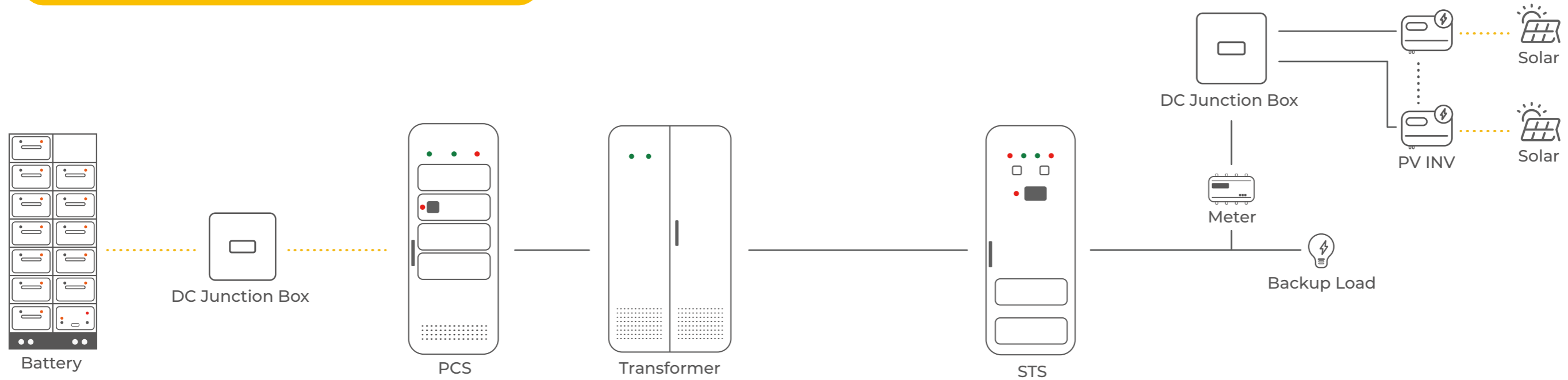
## DC-Coupled Solution





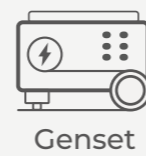
# SOLUTIONS

## AC-Coupled System



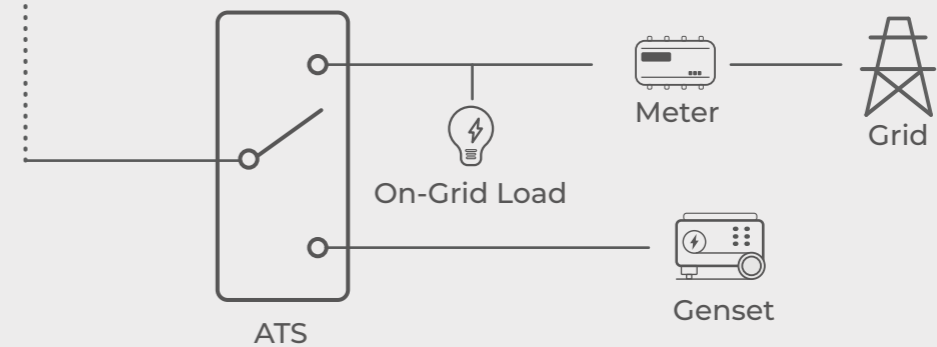
### OPTION 1 On-Grid System

By integrating grid, solar, and battery sources, our system allows customers to select various operating modes. In the event of a grid outage, the on-grid load will be disconnected, and the system will automatically switch to supplying backup load, keeping you unaffected by power disruptions.



### OPTION 2 Off-Grid System

The generator is managed by the EMS via dry contact, allowing users to control its operation based on preset schedules, battery SOC, or manually. This setup ensures continuous operation of either the generator or the STORION system at any given time. Both the diesel generator and the STORION system work together seamlessly, guaranteeing a reliable power supply for customers residing in remote off-grid areas.



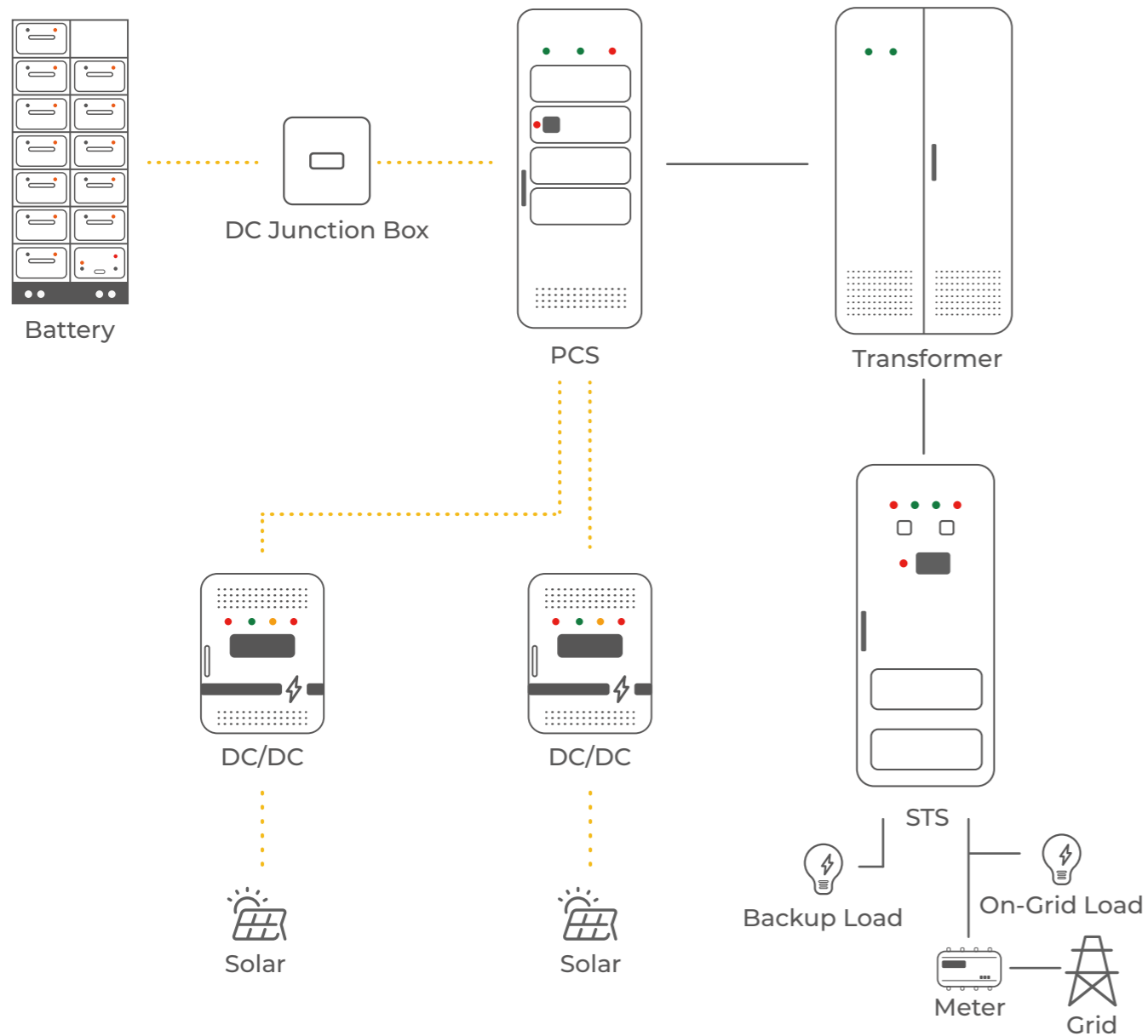
### OPTION 3 Dual Power Supply System

This solution requires an additional ATS device for seamless power source switching. In the event of a grid outage, the ATS will automatically switch to the generator side. The EMS controls the generator's operation, ensuring continuous power supply. This setup ensures that either the generator or the STORION system is always operational, guaranteeing uninterrupted backup power for essential loads.



# SOLUTIONS

## DC-Coupled System



► **For some scenarios with PV oversizing requirements**

- Need extra DC/DC modules
- Support Max. two DC/DC modules in parallel
- Each DC/DC module has 8 MPPTS
- Adapt to multi-orientation PV arrays to maximize energy output

► **Maximum 160% PV oversizing**

► **Integrated DC/DC modules in containers, saves space and installation time**

# STORION – TB187.5 / 375 / 500 SPECIFICATIONS

## System Technical Specifications

Item	STORION-TB500	STORION-TB375	STORION-TB187.5
<b>DC Data</b>			
Battery Type	LiFePO <sub>4</sub>		
Depth of Discharge (DoD)	90% (On-Grid), 85% (Off-Grid)		
Battery Voltage Range	600 ~ 900 V		
Battery Energy Range	235 ~ 1612.8 kWh		
Standard Battery Cluster	2 ~ 10		
<b>AC Data - Grid</b>			
Rated Power	500 kVA	375 kVA	187.5 kVA
Max. Output Power	550 kVA	412.5 kVA	206.25 kVA
Rated Grid Voltage	3L / N / PE, 340 ~ 460 V		
Rated Frequency	50 / 60 Hz		
Rated Current	760 A	570 A	285 A
<b>General Data</b>			
Ingress Protection	IP20 (Indoor) / IP54 (Outdoor)		
Operating Temperature Range	-20°C ~ 50°C		
Relative Humidity	0 ~ 95% (No Condensation)		
Max. Working Altitude	3000m / 9842ft		
Warranty	3 Years Product Warranty		
Container Material	High-Strength Weather-Resistant Steel		
External Protective Coating	C3 Corrosion Resistance, UV Resistance, Anti-aging		
Cooling Method	Forced Air Cooling / HVAC		
Communication Interfaces	RS485, CAN, Ethernet		
Certifications	NRS 097-2-1:2017 Edition 2.1, EN IEC 61000-6-2&4:2019, IEC 61727:2004, IEC 62116:2014, IEC62109-1:2010, IEC62109-2:2011		

## PV Inverter (GW60KS-MT)

PV Voltage Range	200 ~ 950V
MPPT Number/String	6/2
Max. PV Input Current	30A
Nominal Output Power	60kVA
Grid Rated Voltage	320 ~ 460V 3L/N/PE
Max. Output AC Current	96A
AC Grid Frequency Range	45 ~ 55 / 55 ~ 65Hz
Operating Temperature Range	-30 ~ +60°C
Dimension (W*D*H)	520 × 660 × 220mm
Weight	55kg
Max. Efficiency	98.60%



# STORION – TB187.5 / 375 / 500 SPECIFICATIONS

Inverter			
Model	PWSI-500KTL	PWSI-375KTL	PWSI-187.5KTL
Battery Voltage Range	600 ~ 900 V		
Max. Charging / Discharging Current	873 A	655 A	327 A
Nominal Power	500 kW	375 kW	187.5 kW
Rated Voltage	400 V		
Grid Voltage Range	340 ~ 460 V, 3L / N / PE		
Power Factor Range	0.99 / -1 ~ 1		
Overload Capacity	105%~115% (10 min); 115%~125% (1 min); 125%~150% (200ms)		
Rated AC Current	760 A	570 A	285 A
Off-Grid Output Voltage Range	360 ~ 440 V		
Rated Output Frequency	50 / 60 Hz		
Dimensions (W×D×H)	1100×800×2160 mm		

DC/DC Converter	
Model	PDS-400K
HV DC Bus Voltage	LV voltage+40V ~ 850V
HV DC Bus Current	0~130A×8
LV PV / Battery Input Voltage	250~800V
LV PV / Battery Input Current	0~130A×8
Power Rating	50kW×8
Cooling	Forced Air Cooling
Noise	75dB
Enclosure	IP20
Altitude	3000m
Peak Efficiency	98.60%
Operation Temperature	-20°C to 50°C (De-rating over 45°C)
Dimensions (W×H×L)	1100×2160×800mm
Weight	Cabinet 280kg + Module 40kg*n (n=1~8)

Transformer	
Rated Capacity	500 kVA
Input Voltage	380 V
Output Voltage	400 V
Group of Connections	Dyn11
Insulation Class	H
No-Load Current	5%
Full Load Efficiency	≥99.17%
Ambient Temperature	-25 ~ 50°C
Weight	1580 kg
Dimensions (W×H×L)	1100×800×2160 mm
CT Perforation Size	60×40 mm, 100×40 mm

STS	PWD-800K	PWD-300K
Rated Capacity	800 kW	300 kW
Rated Voltage	400 V	400 V
Input Voltage Range	-15% ~ 15%	-48% ~ 20%
Output Voltage Range	-15% ~ 15%	-48% ~ 20%
Nominal Current	1155 A	434.8 A
AC Frequency	50Hz / 60Hz±2.5Hz	50Hz / 60Hz
Switching Time Gap	≤20 ms	≤30 ms
Ingress Protection	IP20	IP20
Wiring Mode	Three Phase, 4 Wires	Three Phase, 4 Wires
Max. Efficiency	99.5% (Full Load)	99.5% (Full Load)
Cooling Method	Forced Air Cooling	Forced Air Cooling
Dimensions (W×H×L)	800×800×2160 mm	440×300×645 mm
Weight	450 kg	50 kg
Altitude	3000 m	3000 m

Battery		
Battery Module	M38180-S	M38210-S
Battery Type	LiFePO <sub>4</sub>	LiFePO <sub>4</sub>
Pack	3.2V / 90Ah@2P12S	3.2V / 105Ah@2P12S
Internal Resistance	≤10 mΩ	≤10 mΩ
Energy Capacity	6.912 kWh	8.064 kWh
Usable Capacity	6.22 kWh	7.25 kWh
Depth of Discharge (DoD)	90%	90%
Rated Voltage	38.4 V	38.4 V
Operating Voltage Range	36 ~ 43.2 V	36 ~ 43.2 V
Max. Charging / Discharging Current	180 A	105 A
Cycle Life	80%EOL with ≥ 6000@1C 25°C	80%EOL with ≥ 6000@0.5C 25°C
Operating Temperature Range	-10°C ~ 50°C	-10°C ~ 50°C
Ingress Protection	IP21	IP21
Relative Humidity	15% ~ 85%	15% ~ 85%
Warranty	3 Years Product Warranty, 10 Years Performance Warranty	
Communication	CAN	CAN
Dimensions (W×D×H)	326×654×250 mm	326×560×222 mm
Weight	64 kg	62 kg
String Pack Quantity	17 ~ 20	17 ~ 20
Certifications	IEC62619, IEC62477, UN38.3	
Model	HV900180-II	HV900105-III
Rated Current	180 A	105 A
Max. Current	220 A	138 A
Rated Voltage	900 VDC	900 VDC
Ultimate Breaking Capacity	250 kA	250 kA
Auxiliary Power Supply	220 VAC	220 VAC
BCMU Power Dissipation	4 W	4 W
Dimensions (W×D×H)	91.5×440×250.1 mm	91.5×440×250.1 mm
Weight	20 kg	20 kg

Battery Cluster System		
Configuration	HV900180-II, M38180-S, Rack	HV900105-III, M38210-S, Rack
Dimensions (W×D×H)	1049×556.3×1950 mm	1072.5×602×2241.5 mm
Battery Racks	3×7	3×7
Overall Weight	1233 ~ 1425 kg	1200 ~ 1386 kg
Single Cluster Capacity	235 ~ 138.24 kWh	274.18 ~ 161.28 kWh
Max. Charging / Discharging Current	180 A	105 A
Battery Cluster Work Voltage Range	612 ~ 864V	612 ~ 864V

DC Junction Box		
TOP BMU Box	TOP BMU Power	30 W
	Communication	RS-485×6, CAN×3
	SCADA Power	18 W
Junction Box	Max. Voltage	900 V
	Max. Current	630 A / 1250 A
	Operating Temperature Range	-30°C ~ 50°C
	Weight	145 kg
	Dimensions (W×D×H)	600×600×1650 mm

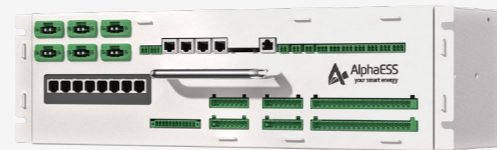
Meter (Optional)		
Model	DTSU666	
Voltage Input	Rated Voltage	230V AC / 400V AC
	Accuracy Class	±1%
Communication Mode	RS485, Modbus RTU	
General Parameters	Dimensions (W×D×H)	72×101×80 mm
CT Model	AKH-0.66, K-60×40, AKH-0.66, K-100×40	
CT Current Ratio	800 / 5A, 1250 / 5A	



# 4 SMART ENERGY

## EMS 4.0

EMS4.0, the fourth generation of AlphaESS's EMS products, was officially released in 2024. Since the first release in 2013, the R&D team has continually updated the EMS to meet market demands and technological advancements. Its robust performance and features assist users in commercial and industrial sectors in tackling complex issues, adapting to various applications, and offering versatile solutions.



Alpha ESS EMS 4.0

### • Rich Functions

Self-Consumption; multiple time periods charging and discharging; SOC calibration; PmeterOffset; Peak Shaving; Modbus scheduling (RTU); Battery-only function; Diesel control; Dual power supply function; API data reading; Remote upgrade

### • Friendly Display

SCADA monitoring system, display screen with Windows operating system; Space-saving and Security

### • Space-Saving and Security

Integrated battery DC convergence cabinet in the box, and external SCADA HMI display screen, space-saving and an additional layer of box protection, increasing security.

### • Reserved Communication Port

It is convenient for users to control other equipments through the STORION system.



## AlphaCloud ( C&I Version )

- ▶ Customizable system scheme drawing for clearer demonstration of energy flow
- ▶ Cell level monitoring to help monitor the energy storage system in all aspects.
- ▶ Visualization of energy production and consumption statistics, helping users to clearly understand the situation of power consumption.
- ▶ Remote configuration and upgrading, eliminating the pain point that installers need come to the site to deal with all issues.
- ▶ One page contains monitoring of all systems installed, helping users to carry out daily maintenance efficiently.





# 5 PROJECT CASES

50kW / 100kW & 100kWh - 300kWh

Myanmar

Solar - Battery - Diesel Generator Microgrid System



100 kW / 250 kWh

Australia

PV + Storage + Off-Grid



500 kW / 1 MWh

Zimbabwe

PV + Storage + Genset



50 kW / 103 kWh

Indonesia

PV + Storage + Genset





1.5 MW / 4.5 MWh

China  
Peak Shaving + Demand Response



50 kW / 103 kWh

Australia  
PV + Storage + Off-Grid



50 kW / 163 kWh

Nigeria  
PV + Storage



100 kW / 102.6 kWh

Nigeria  
PV + Storage + Genset





**2.5 MW / 5 MWh**

China

Peak Shaving and Frequency Regulation



**1 MW / 2 MWh**

Ghana

Microgrid



**50 kW / 130 kWh**

Kenya

Off-grid



**50 kW / 266 kWh**

Thailand

PV + Storage + Genset





## ENERGY STORAGE SOLUTIONS

Residential

Commercial & Industrial

Utility



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