

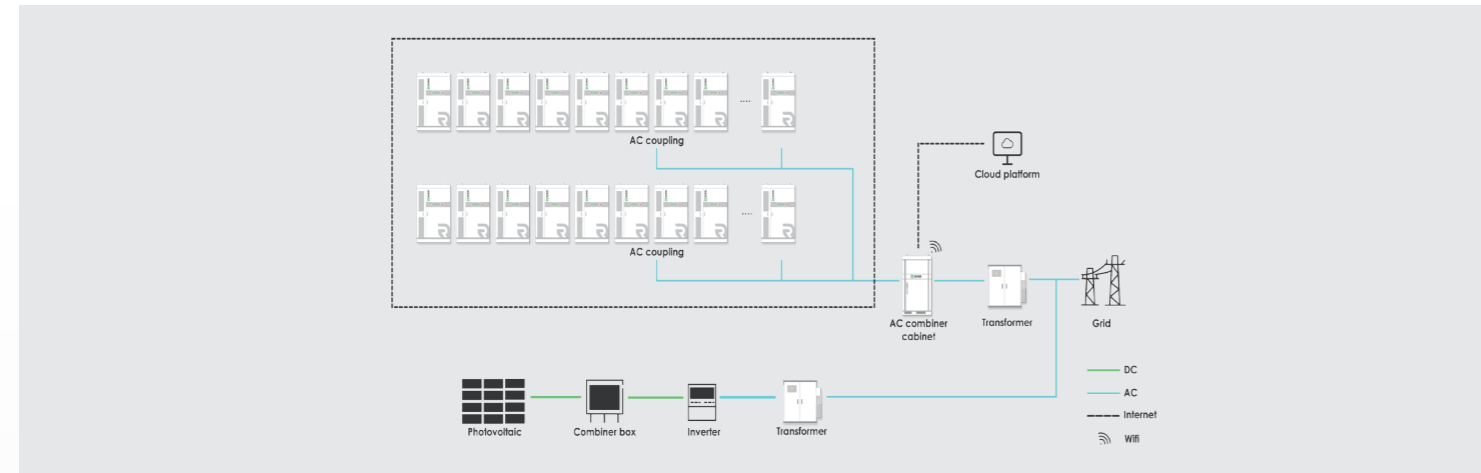
# Matrix Series AC

## WORKING PRINCIPLE

### Introduction

Renon Smart Matrix Series is a distributed liquid cooling system for massive energy storage with AC couple and DC couple solutions to meet different usage requirements.

Smart Matrix enables low-cost, high-density utility projects at a gigawatt-hour scale. It ships ready to install with fully integrated battery modules, Controller System, and other key components. One Matrix-Controller can carry a maximum of 14 systems of the mono pack, matrix arrangement for infinitely scalable. The batteries and software control store and dis patch energy, creating a more stable and economic power grid.



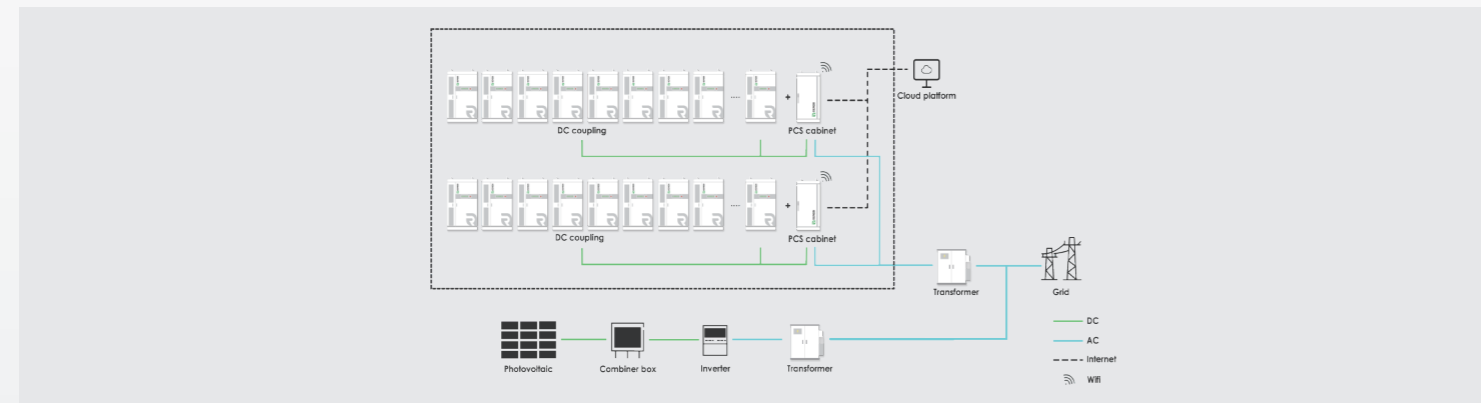
# Matrix Series DC

## WORKING PRINCIPLE

### Introduction

Renon Smart Matrix Series is a distributed liquid cooling system for massive energy storage with AC couple and DC couple solutions to meet different usage requirements. Smart Matrix enables low-cost, high-density utility projects at a gigawatt-hour scale.

It ships ready to install with fully integrated battery modules, Controller System, and other key components. One Matrix-Controller can carry a maximum of 14 systems of the mono pack, matrix arrangement for infinitely scalable. The batteries and software control store and dis patch energy, creating a more stable and economic power grid.



**Address:** 2651 N Green Valley Pkwy, Henderson, NV 89014, United States  
**Email:** info@renonpower.com

© Renon Power Technology Inc. All Rights Reserved.  
 Specifications are subject to change without notice.  
 2023-02-03



info@renonpower.com  
 www.renonpower.com

# AC/DC INTELLIGENT Micro-Grid

## ENERGY STORAGE SYSTEM



### Strong Capacity

Utility-size distributed ESS solution, supporting 56MW of output power and 104MWh of capacity in a standard array.

### Flexible usage

Flexible use such as grid storage battery and VPP is possible.

### Excellent performance

Liquid cooling heat management system for longer life, cell averaging, and efficiency.

### Technology developed by RENON

DCDC controller equalizes system charging and discharging.

# Matrix Series AC

## PARAMETER

### AC-MPpack Specification

Battery Combination	1P416S
Cell Capacity (Ah)	280
Nominal Energy (kWh)	372.736
Nominal DC Voltage (Vdc)	1331.2
Battery Voltage Range(V)	1248-1476.8
C-rate and D-rate	≤1C
Nominal AC Voltage (Vac)	690, 3W+PE
Range AC Voltage (Vac)	586.5-759
Nominal AC Power (kW)	200
Max. AC Power (kW)	220
Max. AC Current (A)	184.1
Nominal Frequency (Hz)	50/60
Factor Range	-1~+1
Max System Efficiency	99%
Switching Time (ms)	<100
Cycle Life	>8000 Cycles
Communication Interface	Ethernet
Enclosure	IP65
Noise level	< 80dB(A)
DOD	90%
THDi	<1.5%
Altitude	≤2000m
Thermal Management (PCS)	Air Cooling
Thermal Management (Battery)	Liquid Cooling

### General Parameters

Operating Temperature	-20°C-50°C
Operating Humidity (RH)	0-100% (non-condensing)
Certifications	UL9540, UL9540A, UL1973, UL1741+SA, IEEE1547, UN 38.3
Warranty[1]	10 Years

[1] Please refer to the warranty manual for details

### Matrix-Controller Specification

Nominal AC Voltage (Vac)	690
Rated Power (kW)	2976
Rated Current (A)	2490
Short-circuit Protection	YES
Ac Access/Output Channel	16/1
Isolation Method	Transformer
Transformer Rated Power (kVA)	2750
LV/MV Voltage (kV)	0.69/35
Transformer Vector	Dy11
Transformer Cooling Type	ONAN (Oil Natural Air Natural)
Oil Type	Mineral oil (PCB free)or degradable oil on request
Communication Interface	Ethernet, Wifi, 4G
Certifications	IEC104, IEC61850,CAN2.0B, Modbus (TCP,RTU)
Enclosure	IP65
Noisr Level	< 50db(A)
Altitude (m)	≤2000

### D-AESS Standard Array

AC-MPpack Quantity	14
Matrix-Controller Quantity	1
Nominal Energy (MWh)	5.2
Nominal AC Power (MW)	2.8
Nominal AC Voltage (Vac)	35KV, 3W+PE

### D-AESS Distributed Matrix

D-AESS Standard Array	20
Matrix-Controller Quantity	1
Nominal Energy (MWh)	104
Nominal AC Power (MW)	56
Nominal AC Voltage (Vac)	35KV, 3W+PE

# Matrix Series DC

## PARAMETER

### DC-MPpack Specification

Battery Combination	1P416S
Cell Capacity (Ah)	280
Nominal Energy (kWh)	372.736
Nominal DC Voltage (Vdc)	1331.2
Battery Voltage Range (V)	1248-1476.8
C-rate and D-rate	≤1C
Max. DC Voltage (Vdc)	1500
Nominal DC Power (kW)	200
Max. DC Current (A)	200
Max. System Efficiency	99%
Switching Time (ms)	< 100
DOD	90%
Cycle Life	8000 Cycles
Communication Interface	Ethernet
Enclosure	IP65
Noise Level	< 80db(A)
Altitude	≤2000m
Thermal Management (DC-DC)	Air Cooling
Thermal Management (Battery)	Liquid Cooling

### General Parameters

Operating Temperature	-20°C-50°C
Operating Humidity (RH)	0-100% (non-condensing)
Certifications	UL9540, UL9540A, UL1973, UL1741+SA, IEEE1547, UN 38.3
Warranty[1]	10 Years

[1] Please refer to the warranty manual for details

### Matrix-Controller Specification

Max. DC Voltage (Vdc)	1500
Rated Power (kW)	2800
Rated Current (A)	2800
Short-circuit Protection	YES
AC Access/Output Channel	16 / 1
Communication Interface	Ethernet, Wifi, 4G
Certifications	IEC104,IEC61850, CAN2.0B,Modbus (TCP, RTU)
Enclosure	IP65
Noise Level	< 50db(A)
Altitude	≤2000m

### D-DESS Standard Array

DC-MPpack Quantity	14
Matrix-Controller Quantity	1
Nominal Energy (MWh)	5.2
Nominal AC Power (MW)	2.8
Max. AC Voltage (Vdc)	1331.2

### D-DESS Distributed Matrix

D-DESS Standard Array	20
Nominal Energy (MWh)	104
Nominal AC Power (MW)	56
Max. AC Voltage (Vdc)	1331.2

# AC/DC INTELLIGENT Micro-Grid

水冷蓄電池システム



## 💡 システムモジュール化

システムをモジュール化し最大56MWの出力、104MWの構成が可能

## 💡 優れたパフォーマンス

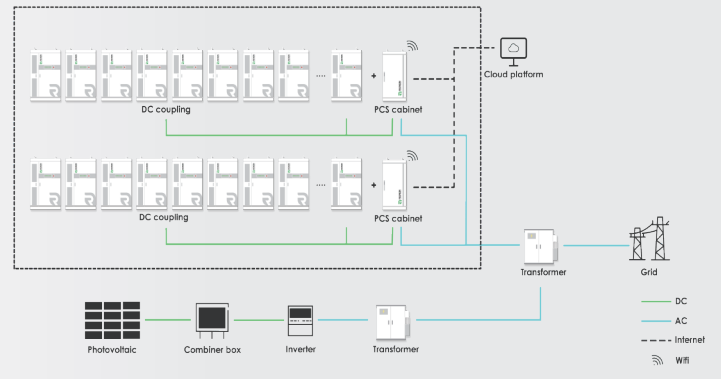
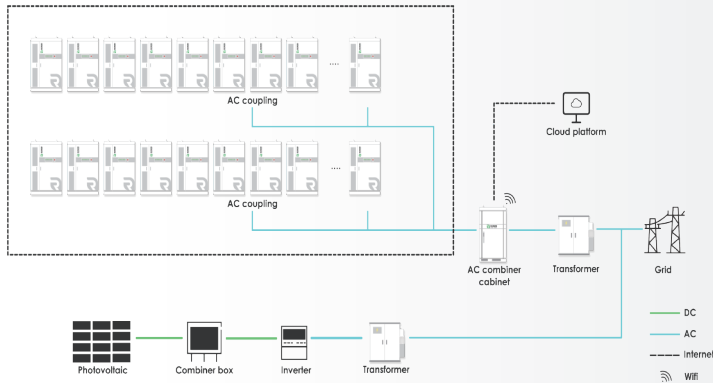
液体冷却熱管理システムにより、長寿命化、セルの平均化、効率UP

## 💡 フレキシブルな使用方法

系統用蓄電池やVPPなどフレキシブルな使用が可能

## 💡 RENONPOWERの開発技術

DCDCコントローラーにより、システム充放電の均等化



## AC-MPack仕様

電池モジュール	1P416S
セル容量 (Ah)	280
定格容量 (kWh)	372.736
定格電圧 (Vdc)	1331.2
バッテリー電圧範囲 (Vdc)	1248~1476.8
充放電レート	≤1C
定格電圧 (Vac)、配線方法	690 三相4線式
電圧範囲 (Vac)	586.5~759
出力電力 (kW)	200
最大出力電力 (kW)	220
最大出力電流 (A)	184.1
周波数 (Hz)	50/60
力率範囲	-1~+1
最大効率	99%
サイクル寿命	> 8000 サイクル
通信方式	Ethernet
保護レベル	IP65
ノイズレベル	<80db(A)
DOD	90%
THDi	<3%
標高	≤2000m
冷却方法 (PCS)	空冷
冷却方法 (バッテリー)	液体冷却

## 一般仕様

動作温度範囲	-20°C~50°C
湿度	0%~100%, 結露しないこと
認証 (取得予定)	UL9540, UL9540A, UL1973, UL1741+SA, IEEE1547, UN 38.3
保証	最大10年

## DC-MPack仕様

電池モジュール	1P416S
セル容量 (Ah)	280
定格容量 (kWh)	372.736
定格電圧 (Vdc)	1331.2
バッテリー電圧範囲 (Vdc)	1248~1476.8
充放電レート	≤1C
最大電圧(Vdc)	1500
出力電力 (kW)	200
最大電流 (A)	200
最大効率	99%
DOD	90%
サイクル寿命	8000 サイクル
通信方式	Ethernet
保護レベル	IP65
ノイズレベル	<80db(A)
標高	≤2000m
冷却方法(DC-DC)	空冷
冷却方法 (バッテリー)	液体冷却



E-mail: : info.jp@renonpower.com  
ホームページ: www.renonpower.com

© Renon Power Technology Inc. All Rights Reserved. Specifications are subject to change without notice.  
2023-03-01

