RENON

Technical Agreement

R-MPS261125A1-US

MPack 261AS

E-mail: support@renon-usa.com

Buyer:

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Supplier:

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2025 1ST EDITION

Renon Power

We Care About Sustainability

With our own R&D team and automatic production factory, we are dedicated to delivering innovative, reliable, and affordable energy storage solutions to global customers.

At Renon, we believe that sustainable energy is the future. We are passionate about reducing carbon emissions and preserving our planet for future generations. That's why we invest heavily in research and development, leveraging the latest technologies to design and manufacture energy storage systems that are efficient, scalable, and adaptable.

Our products are designed to meet the needs of a wide range of applications, from residential and commercial buildings to industrial facilities and utility-scale projects. Whether you're looking to reduce your energy bills, increase your energy independence, or support your sustainability goals, Renon has the right solution for you.

Our commitment to quality and customer satisfaction is unwavering. We work closely with our clients to understand their unique needs and provide customized solutions that meet or exceed their expectations. We also provide comprehensive technical support, maintenance, and warranty services to ensure that our customers get the most out of their investment.

Join us on our mission to make renewable energy within reach.

PROVIDE INNOVATIVE, RELIABLE, AND AFFORDABLE ENERGY STORAGE SOLUTIONS TO CUSTOMERS WORLDWIDE.

Renewable · Reliable · Remarkable

CONTENTS

1. General Part

This Technical Agreement applies to the **RENON MPack 261AS (Product Model: R-MPS261125A1-US) Energy Storage System (ESS)**. This document defines the technical specifications, scope of supply, and division of responsibilities related to the MPack 261AS ESS, ensuring clarity and alignment between the Buyer and Supplier.

The agreement specifically outlines:

- Product specifications, including technical parameters, system functionality, and performance.
- Scope of supply detailing provided equipment, components, and accessories.
- Clear delineation of responsibilities between the Supplier and the Buyer.

This agreement shall be mutually reviewed, confirmed, and agreed upon by both parties prior to finalizing the order. Issues not explicitly addressed herein will be resolved through mutual consultation and supplementary documentation.

1.1 Scope of Supply by the Supplier

The Supplier shall provide the following equipment and components as part of the MPack 261AS ESS:

Equipment	Description	Quantity	Remarks
Battery Cabinet	Integrated cabinet including Battery System, EMS, BMS, Liquid cooling system, and Fire Suppression System	1 set	
Inverter	Combine the PV array, battery, loads and grid to realize intelligent power management and dispatching	1 set	Solis-125K

Notes:

1) Any additional equipment required for integration with external systems shall be provided by the Buyer unless otherwise specified.

1.2 Work of the Project Site Performed by the Buyer

The Buyer is responsible for the following tasks at the project site:

1.2.1 Transportation & Installation

- Installing the MPack 261AS in the designated location.
- Lifting, positioning, and securing the MPack 261AS at the site.
- Ensuring proper ventilation and cooling in the installation area.

1.2.2 Electrical Connections

- Connecting all external cables as required in section 3.6.
- Ensuring proper battery module connections inside the system.

1.2.3 Commissioning & Integration

- Providing necessary external power and communication infrastructure for the ESS.
- Cooperating with the Supplier during system debugging and final testing.

1.3 Buyer's Responsibility for Site Preparation

- The foundation must be levelled and prepared in accordance with engineering specifications to support the weight of the system.
- Adequate drainage must be implemented to prevent water accumulation around the system.
- Proper earthing and grounding must be established to meet safety requirements.
- If the installation site exceeds the specified environmental conditions, the Buyer must implement additional protective measures, such as shading, enclosures, or environmental controls.

1.4 Other Site-Specific Requirements

- Compliance with local regulations, safety codes, and grid connection standards.
- Any additional work not specified in the Supplier's scope shall be performed by the Buyer.

Notes:

- The Supplier will provide technical support and software debugging during commissioning, but the Buyer must ensure that all necessary site conditions are met before testing.
- Any additional installation requirements shall be agreed upon separately.

2. Terms and Definitions

2.1 Battery System

A collection of battery system that store electrical energy, composed of:

- **Battery Cells:** The smallest unit of energy storage in the system.
- **Battery Modules:** A combination of battery cells electrically connected in a protective casing.
- **Battery Rack:** A structure containing multiple battery modules to form a complete ESS.

2.2 Inverter

The MPack 261AS is equipped with a Solis 125K inverter. This high-performance hybrid inverter enables highly efficient energy conversion and intelligently coordinates the interaction between PV, energy storage, and the grid.

2.3 Battery Management System (BMS)

Monitors and controls the battery's state of charge (SOC), state of health (SOH), temperature, and voltage to ensure safe operation and optimal performance. The BMS system adopts a three-tier control architecture, consisting of:

- Primary **BMU (Battery Monitoring Unit)** for cell-level data acquisition;
- Secondary **BC (Battery Controller)** for pack-level management and protection;
- Tertiary **BA (Battery Aggregator)** for multi-cluster coordination and external system interaction, forming a hierarchical control structure.

2.4 Energy Management System (EMS)

A system that enables **remote and local monitoring of the ESS,** facilitating real-time operation management and performance tracking. It consists of:

- Communication Interface: **Supports** Modbus (TCP/IP) or other industry-standard protocols **to integrate with external controllers and grid management systems.**
- Local Touchscreen Display: A device-mounted HMI (Human-Machine Interface) **for direct system control and monitoring.**
- Cloud-Based Software Platform: **Provides** remote monitoring, historical data analysis, and system diagnostics **via an internet connection.**

2.5 Fire Suppression System

A **built-in safety system** designed to **detect, alarm, and suppress fires** within the ESS. It includes:

- Smoke and heat detectors to identify potential hazards.
- Automatic suppression mechanisms **to mitigate fire risks.**

- Compliance with relevant safety regulations and industry standards.

2.6 Liquid Cooling System

A built-in cooling system aim to guarantees precise temperature management to maximize battery lifespan and efficiency.

2.7 Energy Storage System (ESS)

The complete MPack 261AS ESS , consisting of:

- Battery System
- EMS
- BMS
- Liquid Cooling System
- Fire Suppression System
- Inverter

2.8 SOC (State of Charge) & SOH (State of Health)

- SOC (State of Charge): The remaining available energy in the battery, expressed as a percentage of its full capacity.
- SOH (State of Health): A measure of the battery's overall condition, indicating how much capacity it retains compared to its original state.

2.9 Maximum Power Point Tracking (MPPT)

An intelligent control technology used in photovoltaic (PV) systems. By continuously monitoring the output characteristics (voltage and current) of PV arrays and dynamically adjusting the operating parameters of power electronic converters, it ensures the PV system always operates at its Maximum Power Point (MPP). Thereby maximizing PV generation efficiency.

2.10 On-Grid & Off-Grid Mode

- **On-Grid Mode:** The ESS operates while connected to the grid, supporting grid stability and energy management.
- **Off-Grid Mode:** The ESS functions independently of the grid, supplying power to isolated loads when the grid is unavailable.

3. Technical Requirements

3.1 Scope of System Design

The MPack 261AS is an outdoor battery energy storage system (ESS) that integrates five battery modules and an inverter, supported by a full suite of management and safety systems including EMS, BMS, liquid cooling, and fire suppression.

3.1.1 Parameters of the Battery Cabinet

Parameter	
Battery System	
Cell Type	LFP 3.2V/314Ah
Module Configuration	1P52S
System Combination(Modules)	5 in series
Capacity(kWh)	261.2
Nominal Voltage(V)	832
Operation Voltage Range(VDC)	702~936
Discharge Depth	90% DoD
General Parameters	
Maximum AC Parallel Units	6
Round-Trip Efficiency (Annual Average)	85%*
Thermal Management Mode	Liquid Cooling
Communication Interface	CAN,RS485, Ethernet
Dimensions-W*D*H	43.3 × 57.5 × 93.5 in (±0.5 in) 1100 × 1460 × 2376mm (±10 mm)
Weight	6173lb (2800kg) ± 5%
Noise Level @1m	<75 dB(A)
IP Rating	IP54
Certifications	ANSI/CAN/UL1973:2022 ANSI/CAN/UL9540:2023, UL9540A:2025 UL1741:2012 Ed.3+R:19May2023 UL1741:2021 Ed.3(Supplement SB) CSA C22.2#1071:2016 Ed.4+U1 IEEE 1547:2018,EEE 1547:2020

*Test Conditions: Ambient temperature of 25°C ± 2°C. Prior to testing, the ESS shall be left undisturbed in the test environment for a sufficient period to ensure all components reach thermal equilibrium.

3.1.2 Parameters of the **Inverter**

Parameter	Solis-125K
DC Input (PV side)	
Max. Power of PV Array (kW)	250
Max. Voltage(V)	1000
Rated Voltage(V)	600
Start-up Voltage(V)	180
MPPT Voltage Range(V)	150 ~ 950
Max. Input Current(A)	42*10
Max. Short Circuit Current(A)	60*10
MPPT Number / Max. Input Strings Number	10/20
AC Input (Generator)	
Max. Input Power(kW)	125
Max. Input Current(A)	150
Rated Input Voltage	3P/(N)/PE, 480V
Rated Input Frequency(Hz)	50/ 60
AC Output (Grid Side)	
Rated Output Power(kW）	125
Max. Apparent Output Power(kVA)	125
Rated Grid Voltage	3P/(N)/PE, 480 V
Rated Grid Frequency(Hz）	50/60
Rated Grid Output Current(A)	150
Power Factor	0.99/-0.8~0.8
THDi	≤3%
AC Output (Back-up)	
Rated Output Power(kW)	125
Max. Apparent Output Power(kVA)	1.2 times of rated power, 100s 1.4 times of rated power, 10s 1.6 times of rated power, 200ms
Back-up Switch Time(ms)	< 10
Rated Output Voltage	3/(N)/PE, 480 V
Rated Frequency(Hz)	50/ 60
THDv (@linear Load)	< 2%
General Parameters	
Dimensions-W*D*H	46.2 × 32.0 × 15.8in (1174 × 814 × 400mm)
Weight	375lb (170kg)

3.2 Charge and Discharge Limitations

The charge and discharge performance of the **MPack 261AS ESS** is determined by the **EMS**. The system dynamically adjusts charge and discharge power based on **state of charge (SOC), temperature, and BMS protection settings** to ensure safe operation and long-term battery health. The EMS coordinates various factors through hierarchical decision-making, with the logical priority hierarchy as follows: Safety Protection > Battery Hard Constraints > External Power Demand.

Hierarchy	Factor	Logical Description
1	Safety Protection	When a fault signal from the BMS, PCS, or grid is triggered, the EMS immediately terminates charging/discharging (highest priority).
2	Battery Hard Constraints	SOC/SOH/temperature limits provided by the BMS directly restrict the power command range of the EMS.
3	External Power Dispatch	Real-time demands such as power dispatch from third-party EMS are prioritized within safe battery limits.

3.2.1 Charge and Discharge Power Limits

Parameter	R-MP261135A1-US
Maximum DC Charge/ Discharge Current (A)	186

3.2.2 Temperature and SOC-Based Charge/Discharge Limitations

Discharge Current Limitations (Continuous Current in Amperes, A)

The following table shows the **maximum allowable discharge current** under different SOC and **cell temperature** conditions:

%/℃	0<SOC<5	5≤SOC<10	10≤SOC<20	20≤SOC<30	30≤SOC<40	40≤SOC<50	50≤SOC<60	60≤SOC<70	70≤SOC<80	80≤SOC<90	90≤SOC<100	SOC=100
-31	0	0	0	0	0	0	0	0	0	0	0	0
-30≤T < -25	0	0	0	0	37	74	112	112	112	112	112	112
-25≤T < -20	0	0	0	37	37	74	112	112	112	112	112	112
-20≤T < -15	0	0	37	74	112	112	112	112	112	112	112	112
-15≤T < -10	0	0	37	74	112	112	112	112	112	112	112	112
-10≤T < -5	37	37	74	112	112	112	112	112	112	112	112	112
-5≤T < 0	37	37	112	112	112	112	112	112	112	112	112	112
0≤T < 5	37	74	112	112	112	112	112	112	112	112	112	112
5≤T < 10	37	74	186	186	186	186	186	186	186	186	186	186
10≤T < 15	37	74	186	186	186	186	186	186	186	186	186	186
15≤T < 20	37	74	186	186	186	186	186	186	186	186	186	186
20≤T < 25	37	74	186	186	186	186	186	186	186	186	186	186
25≤T < 30	37	74	186	186	186	186	186	186	186	186	186	186
30≤T < 35	37	74	186	186	186	186	186	186	186	186	186	186
35≤T < 40	37	74	186	186	186	186	186	186	186	186	186	186
40≤T < 45	37	74	157	157	157	157	157	157	157	157	157	157
45≤T < 50	37	74	74	74	74	74	74	74	74	74	74	74
50≤T < 55	37	37	37	37	37	37	37	37	37	37	37	37
T≥55	0	0	0	0	0	0	0	0	0	0	0	0

Charge Current Limitations (Continuous Current in Amperes, A)

The following table shows the **maximum allowable charge current** under different SOC and **cell temperature** conditions:

%/℃	0≤SOC<5	5≤SOC<10	10≤SOC<20	20≤SOC<30	30≤SOC<40	40≤SOC<50	50≤SOC<60	60≤SOC<70	70≤SOC<80	80≤SOC<90	90≤SOC<95	95≤SOC<99	99≤SOC<100	SOC=100
-1≤T＜0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0≤T＜5	37	37	37	37	37	37	37	37	37	37	37	0	0	0
5≤T＜10	74	74	74	74	74	74	74	74	74	74	74	0	0	0
10≤T＜15	74	74	74	74	74	74	74	74	74	74	74	0	0	0
15≤T＜20	157	157	157	157	157	157	157	157	157	157	157	157	74	0
20≤T＜25	186	186	186	186	186	186	186	186	186	186	186	186	74	0
25≤T＜30	186	186	186	186	186	186	186	186	186	186	186	186	74	0
30≤T＜35	186	186	186	186	186	186	186	186	186	186	186	186	74	0
35≤T＜40	186	186	186	186	186	186	186	186	186	186	186	186	74	0
40≤T＜45	157	157	157	157	157	157	157	157	157	157	157	157	74	0
45≤T＜50	157	157	157	157	157	157	157	157	157	157	157	157	74	0
50≤T＜55	74	74	74	74	74	74	74	74	74	74	74	74	0	0
T≥55	0	0	0	0	0	0	0	0	0	0	0	0	0	0

3.3 Operation Condition and Energy Retention

The **MPack 261AS ESS** is designed to operate within specific environmental conditions to ensure optimal performance, longevity, and safety. This section outlines the operational requirements, energy retention capabilities, and transportation conditions based on industry standards.

3.3.1 Operation & Storage Environment Conditions

To ensure optimal battery performance, longevity, and safety, the **MPack 261AS** must be operated and stored under the following conditions:

Parameter	Requirement
Operating Temperature	-13~131°F(-25~55°C), derating above 104°F(40°C)；
Storage Temperature Range	-22~131°F (-30~55°C)
Relative Humidity	0 to 95% RH (non-condensing)
Altitude Limit	≤9843ft (3000m)

- Temperature Impact: If the ambient temperature exceeds 104°F(40°C), the system will automatically reduce power output to prevent overheating.

3.3.2 Energy Retention Performance

The **MPack 261AS ESS** is designed to **retain stored energy efficiently over time**, ensuring reliable performance when needed. The energy retention capabilities are defined based on industry-standard **self-discharge rates and idle consumption**.

Parameter	Retention Performance
Self-Discharge Rate (Monthly, at 77°F/25°C) (Shutdown State)	≤ 0.3%
Energy Retention After 24 Hours (Shutdown State)	≥ 99%

Note:

- Higher temperatures can accelerate self-discharge rates, which should be considered for long-term storage applications.

3.3.3 Transportation and Handling Requirements

To ensure the safety and integrity of the MPack 261AS ESS during transportation, the system must comply with international shipping and handling standards.

The MPack 261AS ESS is not approved for mobile/vehicle-mounted energy storage applications.

Aspect	Requirement
Transportation Mode	Suitable for land and sea transportation
Compliance Standard	UN38.3
Handling Precautions	Must be transported upright; avoid excessive tilting
Packing Standard	Secured with anti-vibration mounts and shock-absorbing materials
Storage During Transit	-4°F to 113°F(-20°C to 45°C) ,avoid prolonged exposure to extreme heat or moisture
Base Requirements	Level the base with a spirit level and ensure its surface is within 0.2in(5mm) of the floor level. If the levelness deviation is excessive, remove and reinstall the four base support brackets of the cabinet for leveling.

3.4 The Structure and Topology

3.4.1 Internal Structure

The internal layout of the MPack 261AS are shown clearly in the provided layout diagram below. Major system components and their installation positions are directly marked on the diagram for reference during installation, commissioning, and maintenance.

Front Door panel color: Signal White (RAL 9003)

Enclosure color: Light Grey (RAL 7035)

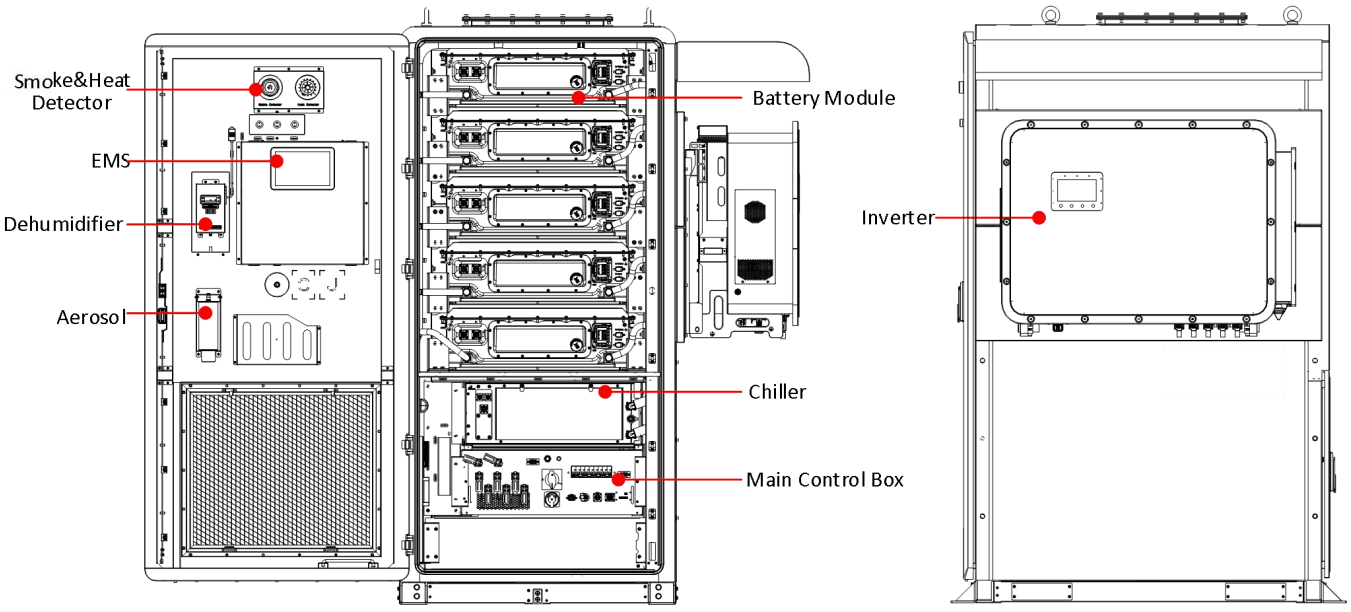

Figure 1 –MPack 261AS Overall Layout

*The inverter's appearance may vary with product upgrades. The actual shipped version shall prevail.

3.4.2 Application Topology

MPack 261AS supports flexible configurations. The application topology provided clearly demonstrates typical deployment scenarios, including necessary external connections and responsibilities.

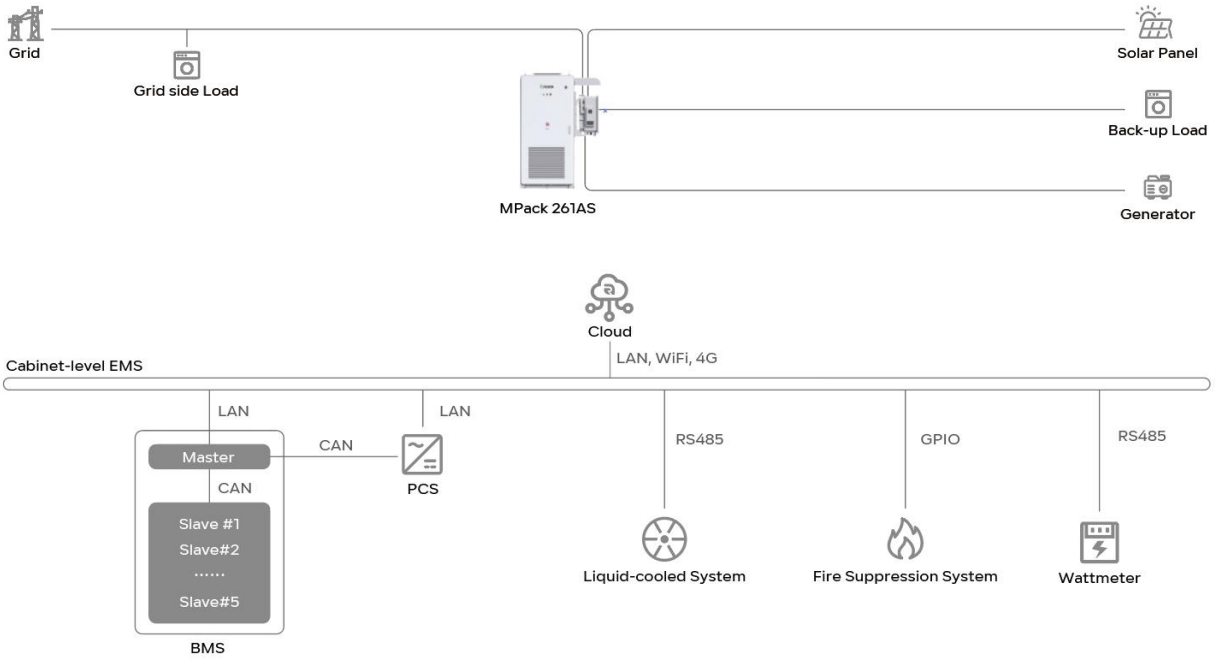

Figure 2 – Cabinet-Level System Layout & EMS Structure

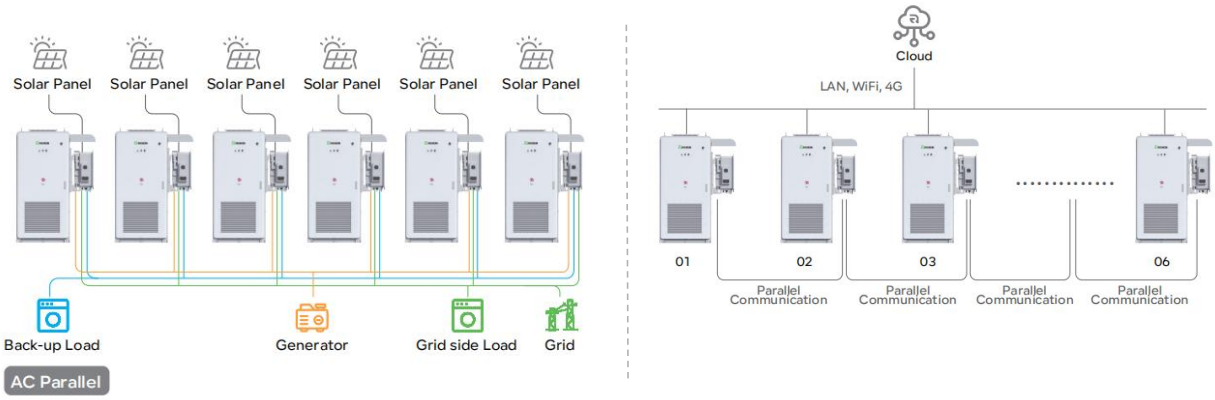

Figure 3 – Array-Level System Layout & EMS Structure

3.5 Electrical Schematic Diagram

The figure below shows the electrical schematic diagram of the MPack 261AS.

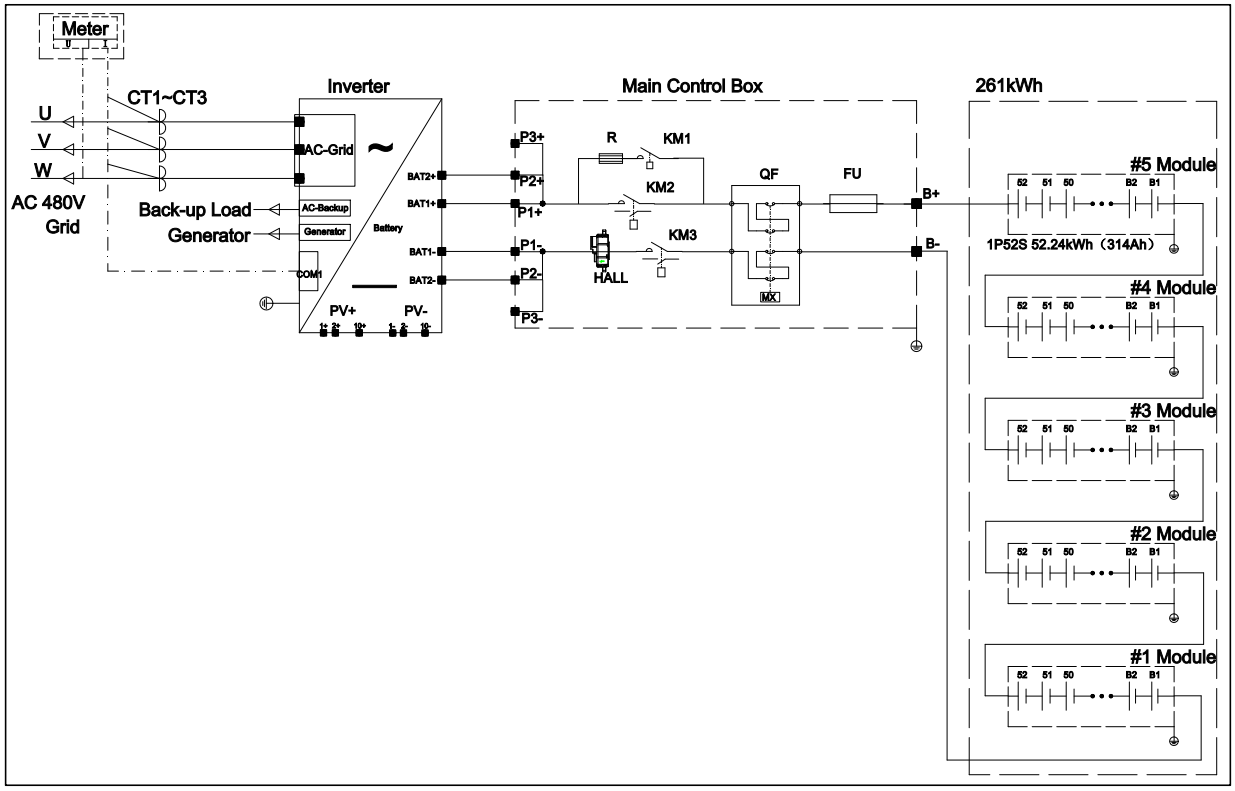

Figure 4 –Electrical Schematic Diagram

3.6 External Interfaces

This section specifies all external interface requirements and standards of the MPack 261AS ESS to ensure seamless and standardized onsite integration. Unless otherwise specified, the cables mentioned in the following sections shall be provided by the Buyer.

3.6.1 DC Interface

External Interface	Quantity	Description
DC Interface	3 sets	P1+/P2+,P1-/P2-: For power cable (RENON-supplied) connection from MPack 261AS to the inverter. P3+,P3- (Reserved only for connection to another battery cabinet when required): Recommend cable: flame-retardant copper cable; Cable specification: 35mm²(2AWG) , rated voltage< 1500VAC; Connector Plug: FSE80180P-35A4K 180A (RENON-Supplied);

Note: When wiring the connector plug, the buyer must use a professional crimping tool for termination.

3.6.2 Auxiliary Power Supply Interface

The Buyer is required to provide adequate auxiliary power supply (AC 190-250V, Power≥5kW, 50/60Hz). The AC-IN interface is used for auxiliary power input.

External Interface	Quantity	Description
Auxiliary Power Input Interface	1 set	AC-IN Terminal Block(L1/L2), 50/60Hz; Recommended cable specification: 16mm²(6AWG), rated voltage ≥600VAC; Terminal: RV2-5;

Note:

- This split-phase configuration consists of two live wires (L1-L2) , typical for North American residential/commercial installations.

3.6.3 Grounding Interface

External Interface	Quantity	Description	Remark
Protective Grounding (PE)	1 set	Recommended cable: flame-retardant grounding cable; Cable specification: 35mm²(2AWG) ; Terminal: SC35-10;	Ground resistance shall be ≤1Ω. Buyer responsible for external grounding construction and validation.
Functional Grounding (FG)	1 set	Recommended cable: flame-retardant grounding cable; Cable specification: 35mm²(2AWG) ; Terminal: SC35-8;	

3.6.4 Interface of the Inverter Connection

External Interface	Quantity	Description
DC Cable (From MPack 261AS to Inverter)	2 sets	Renon provides cables for Buyer connection, each of which is marked with a corresponding Cable Code. For details, please refer to the installation manual.
Communication Interface (LAN)	1 set	
Communication Interface (CAN)	1 set	
Grounding Cable	1 set	

3.6.5 Communication and Control Interface

External Interface	Quantity	Description
Ethernet (LAN)	4 ports	Four LAN ports are reserved on the IES: For connection to the host computer/ external network/ external EMS.
RS485	3 sets	RS485 Terminal Block (D1/2,D4/5,D7/8) Reserved for connecting additional Buyer-supplied devices with RS485 interfaces
CAN	3 sets	CAN Terminal Block (D1/2,D4/5,D7/8) Reserved for connecting additional Buyer-supplied devices with CAN interfaces
Control Interface	6 channels	DI/DO Terminal Block (D1~9,D11~13) Reserved for inputting other signals to the EMS: • 4 channels of DI (passive); • 2 channels of DO.

Notes:

- Buyer shall ensure the availability of stable network connectivity.
- Supplier provides all internal communication cables and terminations within the ESS.
- External communication cables from ESS to Buyer's monitoring systems shall be provided by the Buyer.

3.7 Data Provided by EMS

The MPack 261AS ESS provides comprehensive real-time monitoring data locally via an integrated Human-Machine Interface (LCD display) and remotely through network interfaces using Modbus TCP/IP communication protocols.

The following table summarizes monitoring data provided by the ESS

Data Item	Unit	LCD	Remote Access	Remark / Access Rights
System Voltage (DC)	V	√	√	Real-time monitoring
System Current (DC)	A	√	√	
Energy Capacity (State of Charge, SOC)	%	√	√	
Battery Cell Temperature	°C / °F	√	√	Real-time monitoring, alarm triggers
System Operating Temperature	°C / °F	√	√	
System Alarms and Faults	Alarm Codes	√	√	Real-time fault diagnosis, notification
Communication Status	Status Indicator	√	√	Indicate network /Communication health
Fire & Gas Detection Status	Status Indicator	√	√	Real-time safety monitoring
Historical Performance Data	Logs/Charts	√	√	Local and remote query, historical logs

Remote Monitoring Access and Permissions:

- Remote monitoring interface supports secure access via Ethernet connection using Modbus TCP/IP protocols.
- Buyer authorized personnel can access real-time data, historical performance records, system alarms, and diagnostics remotely.
- Supplier retains remote access for system diagnostics, troubleshooting, and technical support purposes.

3.8 Fire Suppression System

The MPack 261AS ESS cabinet integrates a comprehensive aerosol-based fire extinguishing system designed to quickly detect and respond to potential fire hazards, thereby ensuring system safety and reliability.

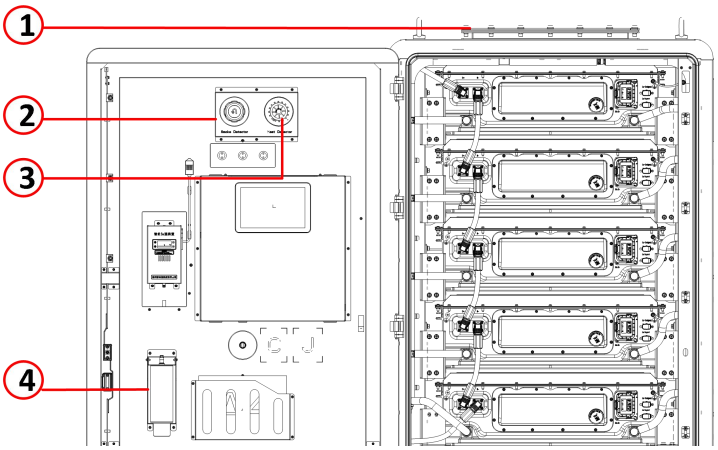

Figure 5 -Detailed Fire Suppression System

Integrated Components and Functions:

No.	Component	Function/Remarks
1	Explosion Vent Panel	ESS explosion vent rapidly relieves pressure during thermal runaway.
2	Smoke Detector	Real-time smoke concentration detection
3	Heat Detector	Real-time temperature monitoring and detection of abnormal heat conditions
4	Aerosol Fire Extinguisher	Aerosol-based automatic fire suppression triggered upon detection of smoke and/or excessive heat

Operational Features:

- Automatic detection and activation, no manual intervention required.
- Real-time status monitoring accessible via local LCD and remote monitoring interface.
- Provides immediate notifications and alarms upon activation, ensuring timely incident response.

3.9 Installation Site Environmental Requirements

This section provides essential physical specifications and site installation requirements to ensure smooth onsite planning and installation.

The Buyer must ensure that the installation environment meets the following requirements to ensure the safe and reliable operation of the MPack 261AS ESS.

3.9.1 General Environmental Requirements

- Relative Humidity: The system should be installed in an environment with a humidity range of 0 to 95% (non-condensing).
- Altitude: The installation site should not exceed an altitude of 9843ft (3000m).

3.9.2 Site Selection Considerations

The **MPack 261AS ESS must not be installed in the following locations:**

- Areas with high levels of dust, sand, or salt spray, **unless** adequate protective measures are implemented .
- Locations exposed to corrosive gases (e.g., H_2, SO_2) or potentially explosive atmospheres.
- Spaces with insufficient ventilation, as this may lead to component overheating.
- Areas within a straight-line distance of 1.55 miles (2.5 km) from the coastline. If installation within 1.55 miles (2.5 km) of the coastline is unavoidable, consult RENON for a validated technical protection solution.

3.9.3 Installation and Spacing Requirements:

- Maintain minimum clearances to ensure proper ventilation and maintenance access

		Minimum Clearance
Front		98.4in (2500mm)
Rear		47.2in (1200mm)
Side	No inverter	3.9in (100mm)
	With inverter	39.0in (1000mm) 【This clearances are measured from the inverter surface】

- Installation surface must be flat, stable, and capable of bearing the full operational weight.
- Ensure the site provides adequate drainage and protection from flooding.

3.9.4 Handling and Installation Precautions

- Utilize appropriate lifting equipment for handling; ensure safe operation following OSHA and applicable local safety standards.
- Avoid impact or collision during transportation and installation.
- It is suggested to use an internal combustion engine-driven forklift (however, under the condition that the side inverter wiring harness is connected to the bottom of the battery cabinet, the use of a forklift is not allowed). Choose a forklift with a load capacity ≥ 8818.5lb (4000kg).
- It is recommended to use crane lifting. Ensure that the lifting strap specifications match the load, without aging or damage. Slowly lift the junction cabinet 7.9in-11.8in (200mm~300mm) off the ground. Choose a crane with a load capacity≥ 11023lb (5000kg), using four lifting ropes, each rope should have a load capacity suggestion ≥ 4409.3lb (2000kg).
- Comply with provided installation manual.

4. EMS Control

4.1 Control Modes and Authority

The MPack 261AS ESS supports both local and remote control modes, providing flexibility and security in system operation management. Clear control authority definitions are outlined as follows:

- Local Control
  Local operation is executed via the ESS cabinet-mounted Human-Machine Interface (LCD touchscreen), enabling on-site manual control, monitoring, and emergency intervention.
- Remote Control
  Remote operation utilizes secure network communication (Ethernet Modbus TCP/IP) to execute control commands and real-time monitoring. Authorized personnel can remotely start/stop, configure operation modes, adjust operational parameters, and monitor system status.

Priority and Switching between Control Modes:

- The system defaults to Remote Control mode under standard operation conditions.
- Local manual intervention always has higher priority over remote control for safety and emergency situations. Local actions will immediately override any remote commands.
- After local manual control intervention, remote control can be re-enabled by authorized personnel via the local interface.

4.2 Automatic and Manual Control Priority

- ESS operates in Automatic Control Mode during regular system operations, governed by pre-set operation parameters and protection algorithms.
- Local Manual Control mode, initiated at the cabinet interface, will override automatic or remote operations immediately upon activation. This ensures personnel and equipment safety during emergencies or maintenance scenarios.
- Returning the system from Manual Control back to Automatic Control mode must be manually confirmed by authorized operators after ensuring safe operation conditions.

4.3 Local EMS Function of Standard Cabinet

The local Energy Management System (EMS) collects real-time data from battery storage and power distribution via protocols like Modbus, with capability to forward data to third-party systems for coordinated equipment control and remote adjustment. Featuring WiFi/4G dual-mode communication, it supports customizable charge/discharge strategies, rigorous Buyer access control, and safety alarms triggered by voltage/current anomalies, while its intelligent algorithms enable load tracking and demand management to optimize energy costs.

4.4 PV System Operating Modes

The MPack 261AS ESS supports the following 3 PV system operating modes:

Mode	Description
Self-use	PV power flow priority sequence: loads > battery > grid. In this mode, the system stores excess PV power into the battery after the loads are supplied.If "allow export" turned on, when the battery is charged full, or there is no battery, the excess PV power will be exported (sold) back to the grid.If the system is set to not export any power, then the inverter will curtail the PV power (derate the inverter output power).
Selling First	PV power flow priority sequence: loads > grid > battery. In this mode, the system exports any excess PV power after the loads are supplied. If the export power quota has been met, then the remaining PV power will be stored in the battery.Notice: This mode should not be used if export power set to zero.
Off Grid	PV power flow priority sequence: loads > battery. This mode only used when the system are not electrically connected to the grid at all. This mode is like Self-Use Mode, but the PV power will be curtailed if the PV power output is battery power + load power.

4.5 Uninterrupted Power for Backup Loads

Featuring a 200kW peak power output (1.6x rated) and UPS-grade switching speed (<10ms) on its backup port, the MPack 261AS ESS ensures uninterrupted operation of crucial loads during on-grid/off-grid switching.

5. Installation Instruction

For detailed installation guidance, cable connection methods, and equipment commissioning procedures, please refer to the **Installation Manual - MPack 261AS - US**.

6. Revision Table

The document revision history is tracked in the following table:

Revision Number	Date (MM/DD/YYYY)	Description
1.0	Dec 20, 2025	Initial version

(Supplier): _____

Representative:

Signature:

Title:

Date:

(Buyer): _____

Representative:

Signature:

Title:

Date:

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