

Plug & Save

Kokam ALL in ONE Series

Rev. 1.2



All in ONE Series

In 2017, **Kokam** launched the new **ALL in ONE** series to meet growing demand for high capacity ESS modular systems. This product meets the growing demand for a fully integrated and modular larger scale ESS (Energy Storage System) system for on and off grid applications with a high degree of functionality for ancillary services such as frequency regulation, Batteries, PCS, inverters and Switchgears are essential to build an ESS. Kokam' s ALL in ONE series integrates these devices to minimize transportation and installation costs. The ALL in ONE series has ALL in ONE Indoor, ALL in One Outdoor Skid Type and ALL in One Outdoor E-House Type to cover customer's diverse usage needs.

All in ONE Outdoor Skid Type



AGTO Model

(Renewable Energy Connection)

- PCS : 75, 100kW
- LiB : 200, 300, 400kWh

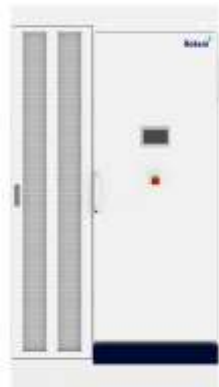


AGTO Model

(PV Integrated)

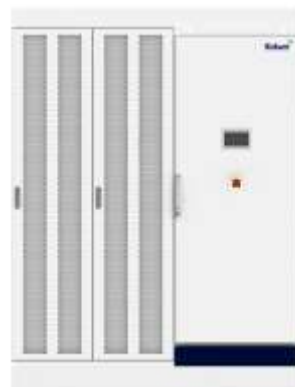
- PCS : 75, 100kW
- LiB : 200, 300, 400kWh

All in ONE Indoor



AGTI Model

- PCS: 50kW
- LiB: 100kWh



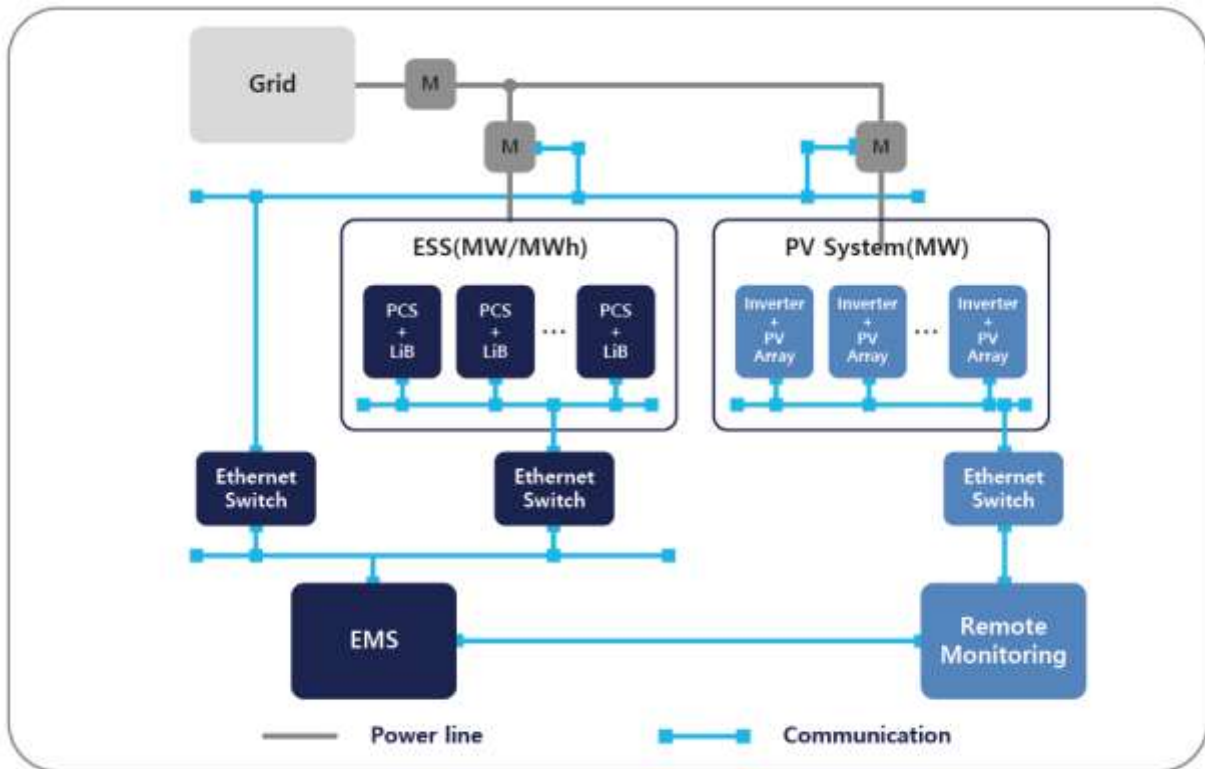
AGTI Model

- PCS: 75, 100kW
- LiB: 200kWh

ALL in ONE Outdoor PV System Connection



Configuration Diagram of ALL in ONE with PV



1 PV : Photovoltaic

2 LiB : Lithium Ion Battery

3 BMS : Battery Management System

4 PCS : Power Conditioning System

5 Ethernet Switch : Switching Hub for Ethernet

6 EMS : Energy Management System

ALL in ONE Outdoor

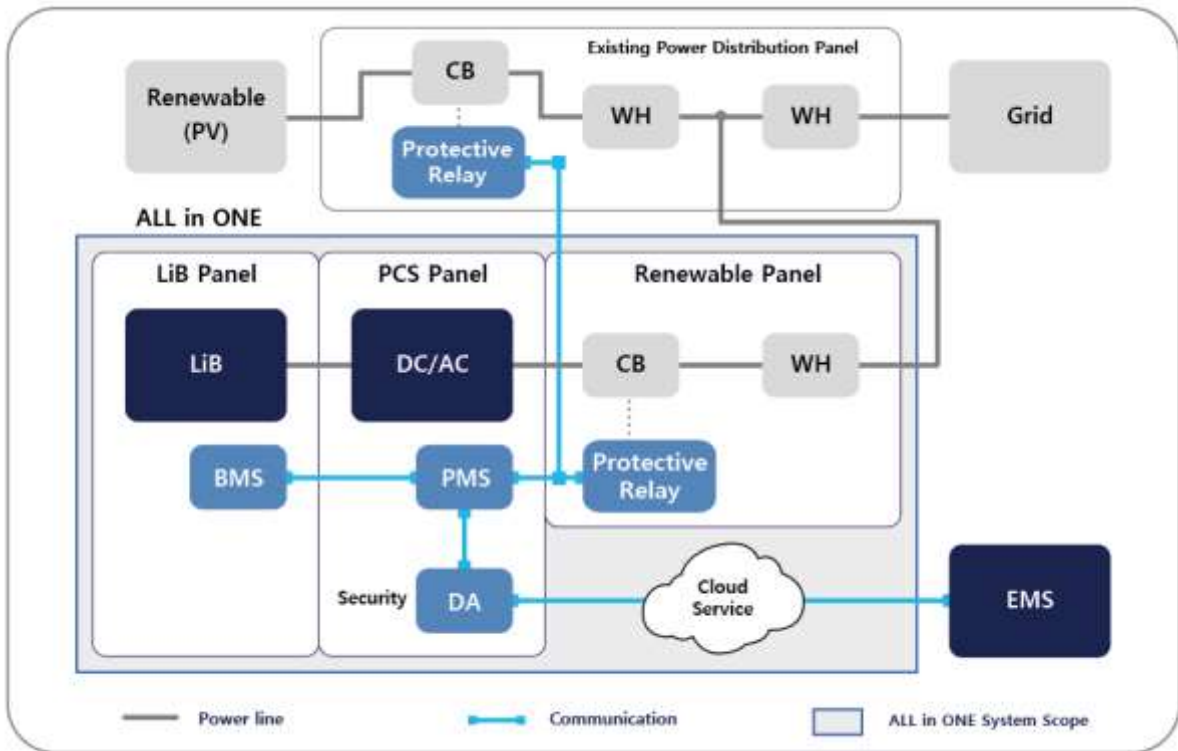
Renewable Energy Connection System

For Additional Installation to existing Power Station



AGTO Model

Configuration Diagram of ALL in ONE Renewable Energy Connection System



1 PV : Photovoltaic

2 LiB : Lithium Ion Battery

3 BMS : Battery Management System

4 PCS : Power Conditioning System

5 Ethernet Switch : Switching Hub for Ethernet

6 EMS : Energy Management System

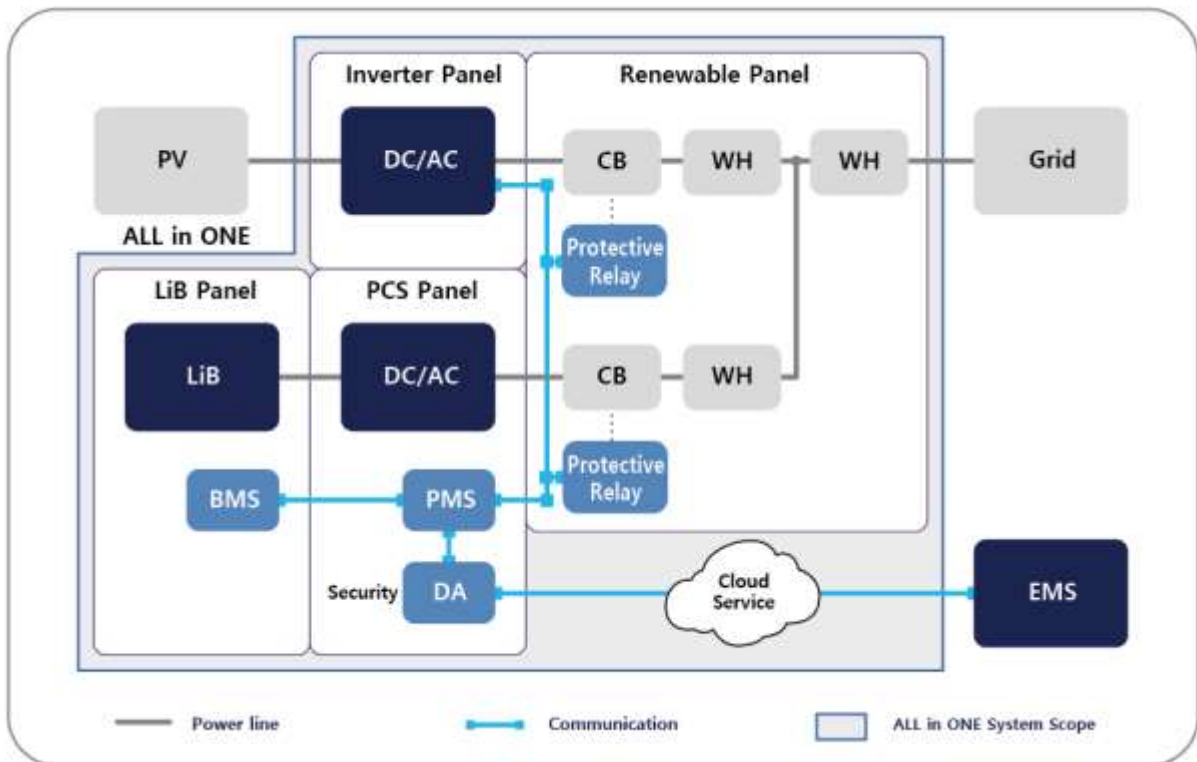
ALL in ONE Outdoor PV Integrated System

For Whole New Construction of Power Station



AGTO Model

Configuration of ALL in ONE PV Integrated System



- 1 PV : Photovoltaic
- 2 LiB : Lithium Ion Battery
- 3 BMS : Battery Management System

- 4 PCS : Power Conditioning System
- 5 Ethernet Switch : Switching Hub for Ethernet
- 6 EMS : Energy Management System



ALL in ONE Outdoor

ALL in ONE Outdoor is designed in skid type which is very easy to transport and install. **ALL in ONE Outdoor** is a Grid-Tied Model which operates in grid connected state, and various applications are available such as Peak Cut, Frequency Regulation, and Renewable Energy Connection depending on customer's usage purpose.

ALL in ONE Outdoor (Grid-Tied Model)

Model Comparison	AGTO 75-200	AGTO 75-300	AGTO 100-200	AGTO 100-300
PERFORMANCE SPECIFICATIONS				
AC Battery Capacity	200kWh	300kWh	200kWh	300kWh
AC Rated Output	75kW	75kW	100kW	100kW
Availability	Above 97%	Above 97%	Above 97%	Above 97%
Round Trip Efficiency	92%	92%	92%	92%
ENVIRONMENTAL SPECIFICATIONS				
Ambient Temperature	-20℃ ~ +50℃	-20℃ ~ +50℃	-20℃ ~ +50℃	-20℃ ~ +50℃
Humidity	0~95%, Non-Condensing	0~95%, Non-Condensing	0~95%, Non-Condensing	0~95%, Non-Condensing
IP Protection (LiB Enclosure)	IP54	IP54	IP54	IP54
IP Protection (PCS & Distribution Panel)	IP44	IP44	IP44	IP44
Environment	Outdoor	Outdoor	Outdoor	Outdoor
AC Grid Connection	3phase 4wire 380V	3phase 4wire 380V	3phase 4wire 380V	3phase 4wire 380V
Electrical Transformer	Built In	Built In	Built In	Built In
MECHANICAL SPECIFICATIONS				
Dimensions (W/D/H)	3,000mm X 2,000mm X 2,883mm (Renewables Connection)			
Dimensions (W/D/H)	4,000mm X 2,000mm X 2,883mm (PV Integrated)			
Weight (Renewables Connection)	5,000kg	5,900kg	5,000kg	5,900kg
Weight (PV Integrated)	6,200kg	7,300kg	6,200kg	7,300kg
EMS SPECIFICATIONS				
EMS System	EMS based on cloud			
Security	SSR-VPN Tunneling, Firewall Policy Set up, Server Access Control			
COMPLIANCE SPECIFICATIONS				
EMC	EM61000-6-2, EM61000-6-4, EM61000-3-3, EM61000-3-12			
PCS Requirements ¹	SGSF-025-4, KS C IEC 62477-1			
Battery Requirements ²	KBIA-10104-01, KBIA-10104-02			
OPTION	Renewable Energy Connected Distribution Panel, PV Integrated Distribution Panel, PV Inverter(100kW), EMS Server System			

¹ SGSF-025-4 : Performance Test Requirement of Electric Storage System Type PCS / KS C IEC 62477-1 : Safety Requirement of Power Electronic Converter and System

² KBIA-10104-01, KBIA-10104-02 : Safety and Performance Test Method Energy Storage Type Lithium Secondary Battery

* Product image and specification above may vary under the circumstances.

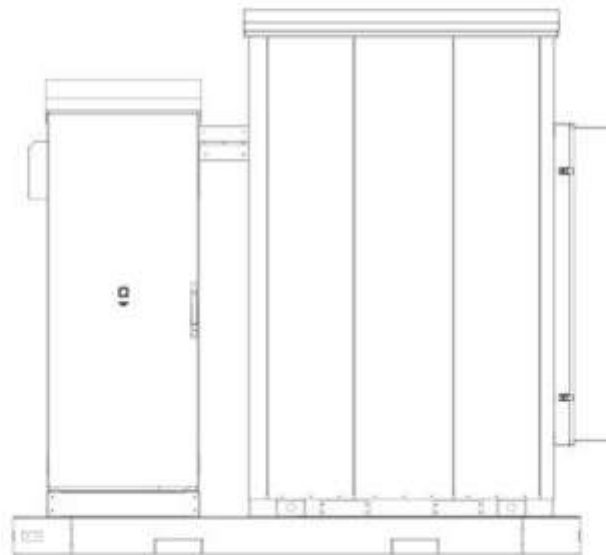
ALL in ONE Outdoor

Renewable Energy Connection System Layout

Model : AGTO 75-200R / AGTO 75-300R, AGTO 100-200R, AGTO 100-300R



FRONT VIEW

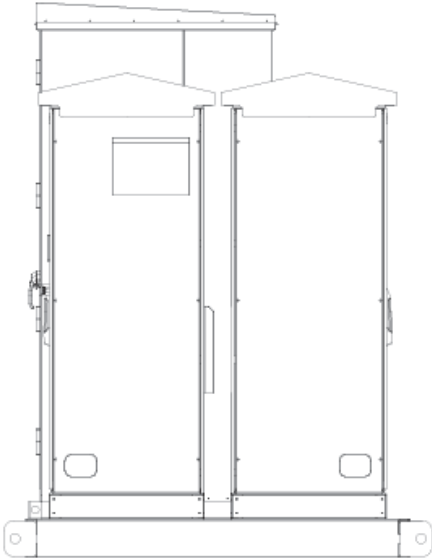


REAR VIEW

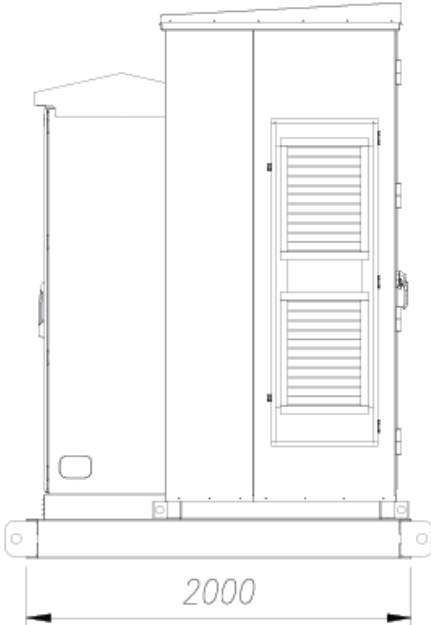
ALL in ONE Outdoor

Renewable Energy Connection System Layout

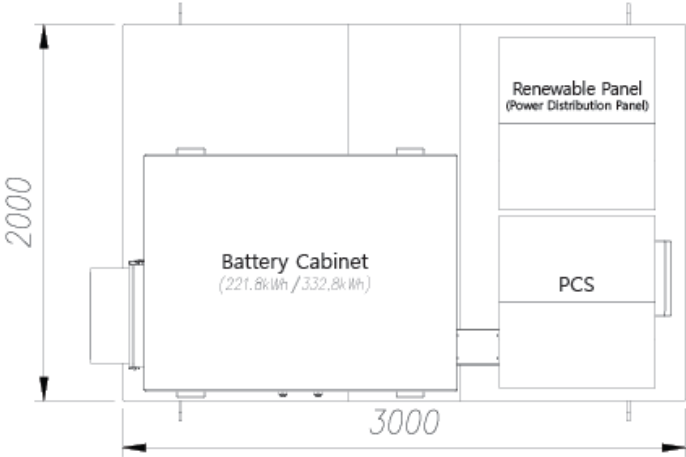
Model : AGTO 75-200R / AGTO 75-300R, AGTO 100-200R, AGTO 100-300R



RIGHT SIDE VIEW



LEFT SIDE VIEW

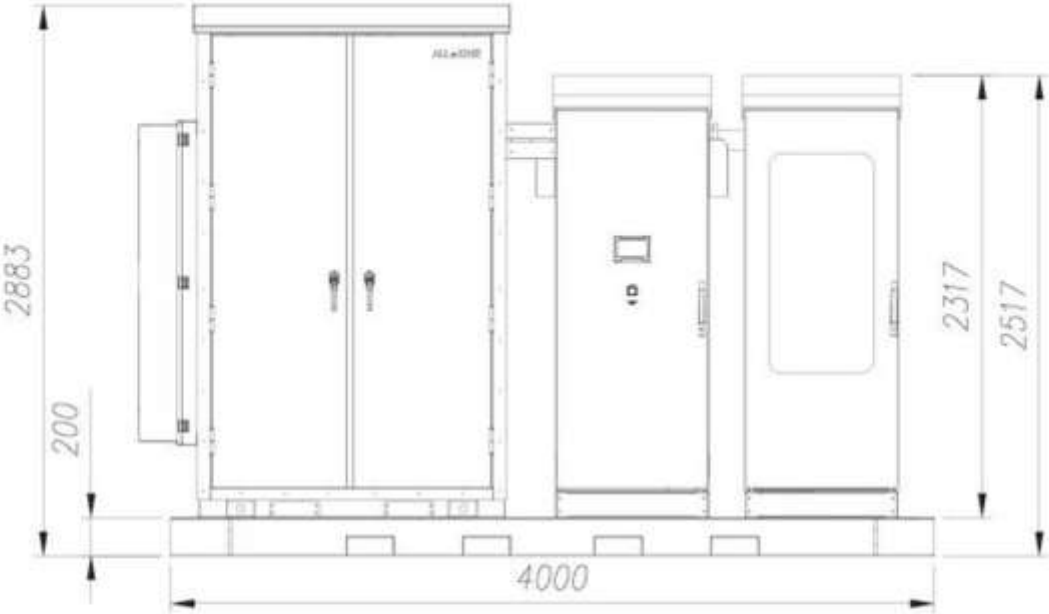


TOP VIEW

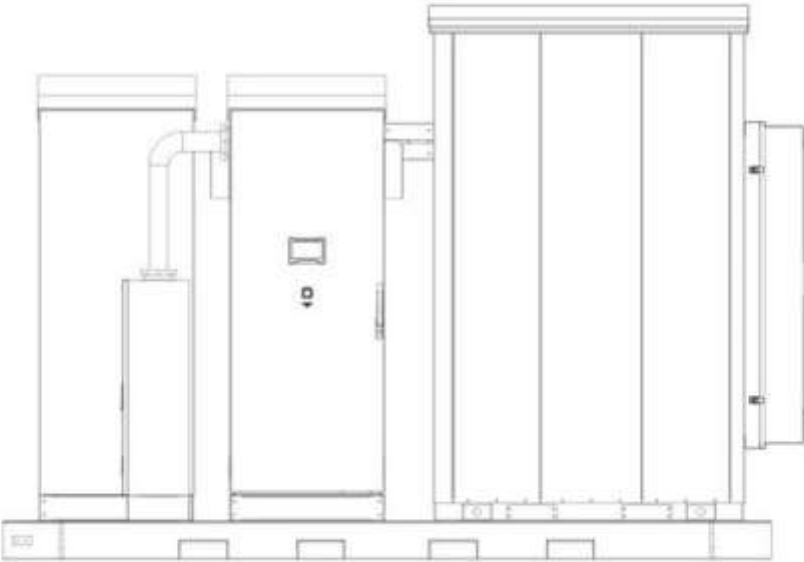
ALL in ONE Outdoor

PV Integrated System Layout

Model : AGTO 75-200T / AGTO 75-300T, AGTO 100-200T, AGTO 100-300T



FRONT VIEW

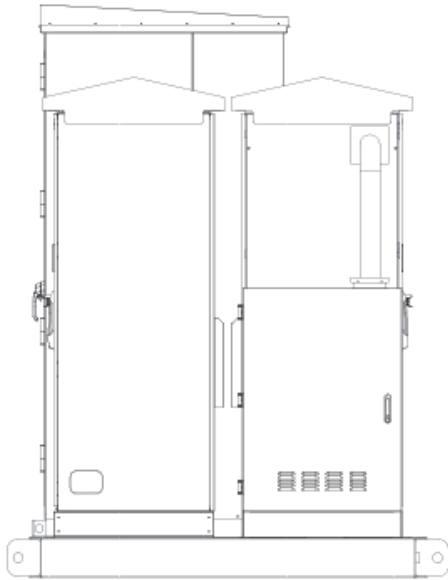


REAR VIEW

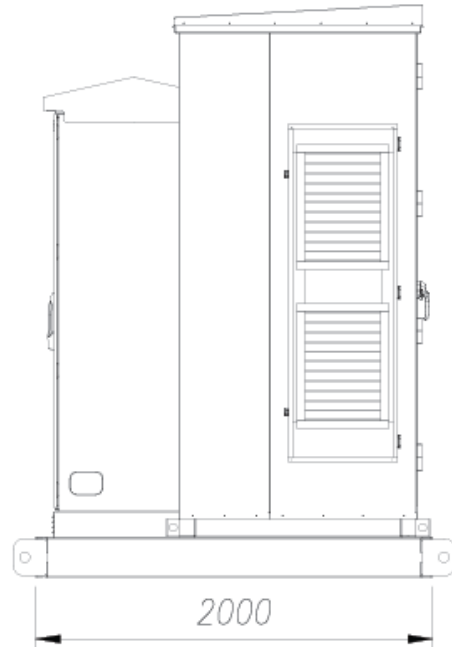
ALL in ONE Outdoor

PV Integrated System Layout

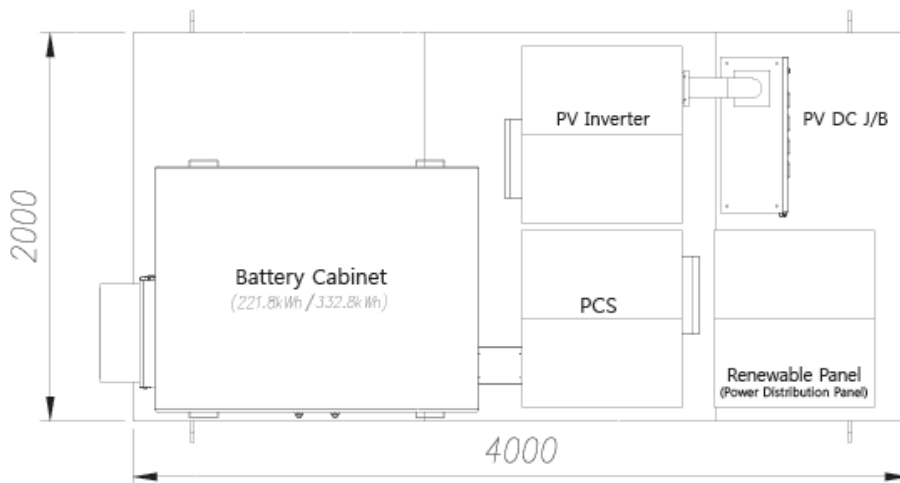
Model : AGTO 75-200T / AGTO 75-300T, AGTO 100-200T, AGTO 100-300T



RIGHT SIDE VIEW



LEFT SIDE VIEW



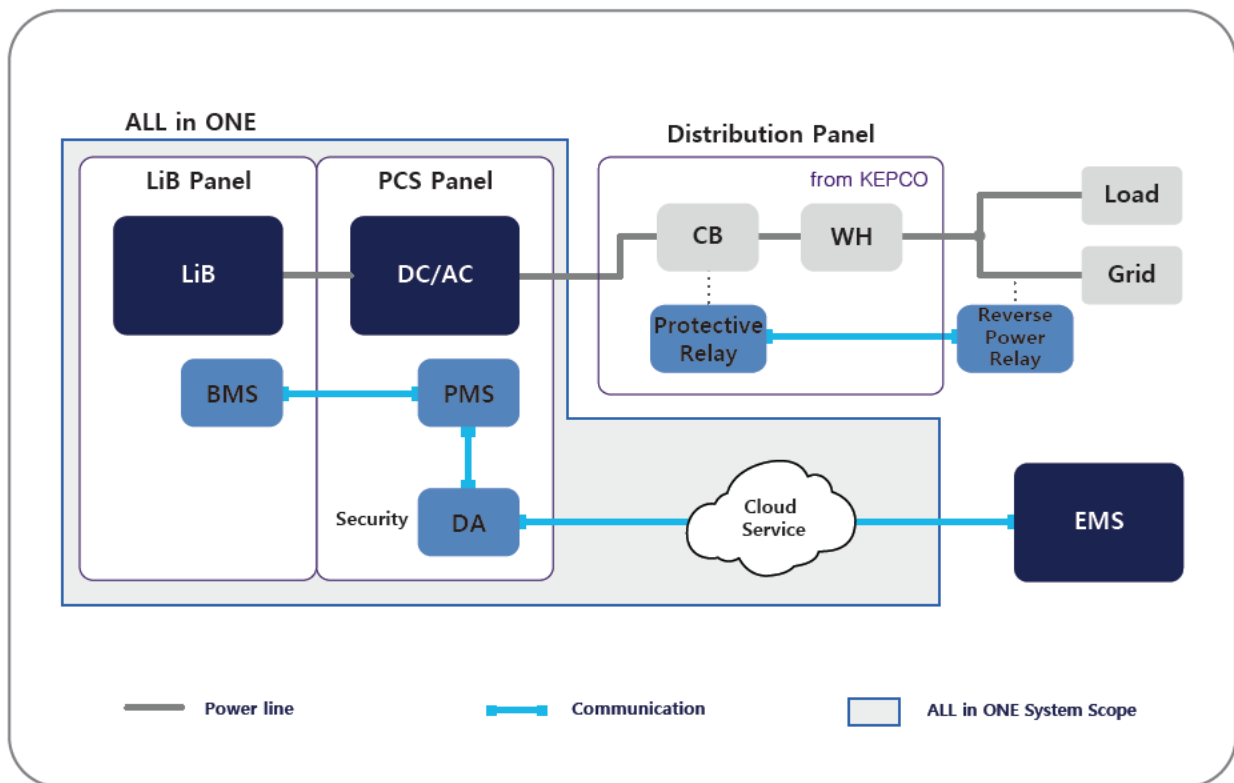
TOP VIEW

ALL in ONE Indoor Electricity Price Saving System



AGTI Model

Configuration of ALL in ONE Electricity Price Saving System



1 PV : Photovoltaic

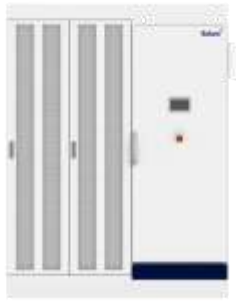
2 LiB : Lithium Ion Battery

3 BMS : Battery Management System

4 PCS : Power Conditioning System

5 Ethernet Switch : Switching Hub for Ethernet

6 EMS : Energy Management System



ALL in ONE Indoor

ALL in ONE Indoor is an integrated product which includes the essential elements of ESS such as the PCS and battery..

ALL in ONE Indoor is a Grid-Tied model which operates in grid connected state, and various applications are available such as Peak Cut, Frequency Regulation and Renewable Energy Connection depending on customer's usage purpose.

ALL in ONE Indoor (Grid Tied Model)

Model Comparison	AGTI 50-100	AGTI 75-200	AGTI 100-200
PERFORMANCE SPECIFICATIONS			
AC Battery Capacity	100kWh	200kWh	200kWh
AC Rated Output	50kW	75kW	100kW
Availability	Above 97%	Above 97%	Above 97%
Round Trip Efficiency	89%	92%	92%
ENVIRONMENTAL SPECIFICATIONS			
Ambient Temperature	18℃ ~ 28℃	18℃ ~ 28℃	18℃ ~ 28℃
Humidity	0~95%, Non-Condensing	0~95%, Non-Condensing	0~95%, Non-Condensing
IP Protection (LiB Enclosure)	IP20	IP20	IP20
IP Protection (PCS)	IP20	IP20	IP20
Environment	Indoor	Indoor	Indoor
AC Grid Connection	3phase 4wire 380V	3phase 4wire 380V	3phase 4wire 380V
Electrical Transformer	Built In	Built In	Built In
MECHANICAL SPECIFICATIONS			
Dimensions (W/D/H)	1,430mm X 800mm X 2,450mm	1,950mm X 800mm X 2,450mm	1,950mm X 800mm X 2,450mm
Weight	2,400kg	3,250kg	3,250kg
EMS SPECIFICATIONS			
EMS System	EMS based on cloud		
Security	SSR-VPN Tunneling, Firewall Policy Set up, Server Access Control		
COMPLIANCE SPECIFICATIONS			
EMC	EM61000-6-2, EM61000-6-4, EM61000-3-3, EM61000-3-12		
PCS Requirements ¹	SGSF-025-4, KS C IEC 62477-1		
Battery Requirements ²	KBIA-10104-01, KBIA-10104-02		
OPTION	EMS Server System		

¹ SGSF-025-4 : Performance Test Requirement of Electric Storage System Type PCS / KS C IEC 62477-1 : Safety Requirement of Power Electronic Converter and System

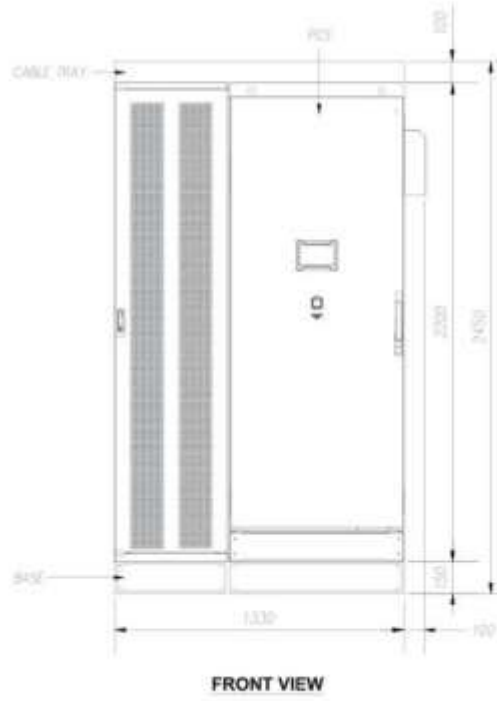
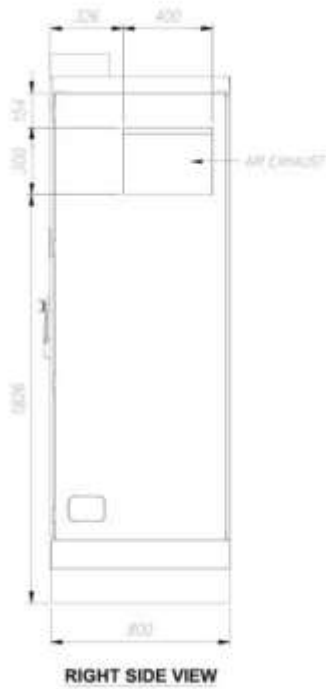
² KBIA-10104-01, KBIA-10104-02 : Safety and Performance Test Method Energy Storage Type Lithium Secondary Battery

* Product image and specification above may vary under the circumstances.

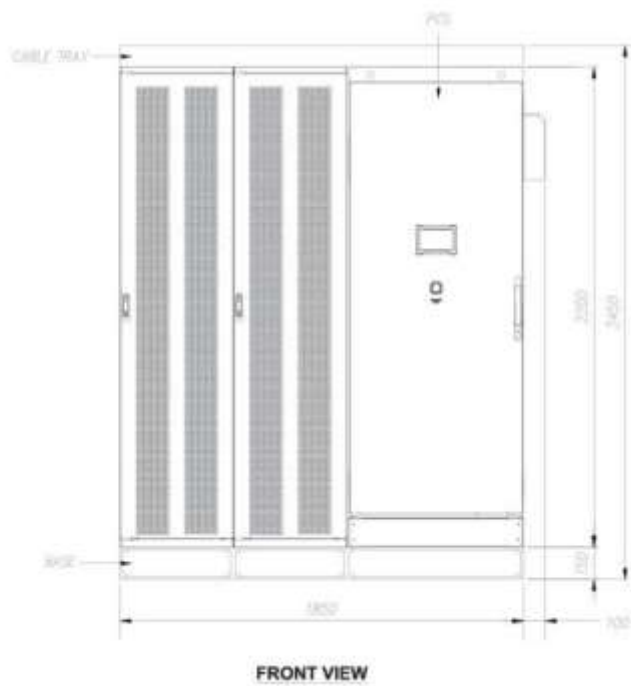
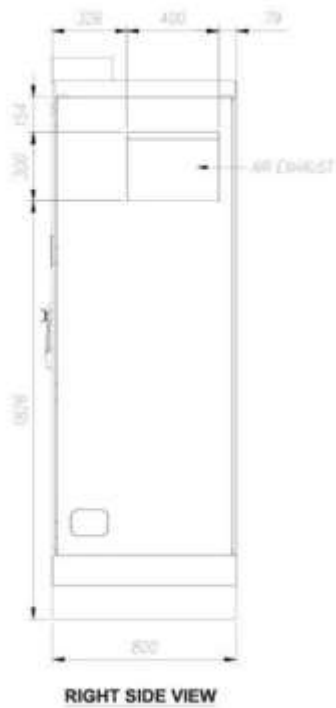
ALL in ONE Indoor

Electricity Price Saving System Layout

Model : AGTI 50-100



Model : AGTI 75-200 / AGTI 100-200



ALL in ONE Outdoor E-House Type

Scalable model up to 4MWh

There are two models of AGTO 400-1500, AGTO 800-4000 which are scalable from 1.2MWh to 4MWh. E-House type ALL in ONE Outdoor series are available for diverse purposes such as efficient operation of renewable energy, stable power supply, and improving load factor via peak load reduction in places with high capacity: power plants, industrial complex, public facilities, and self-sufficient energy islands.

All in ONE Outdoor E-House Type



AGTO E-House Type

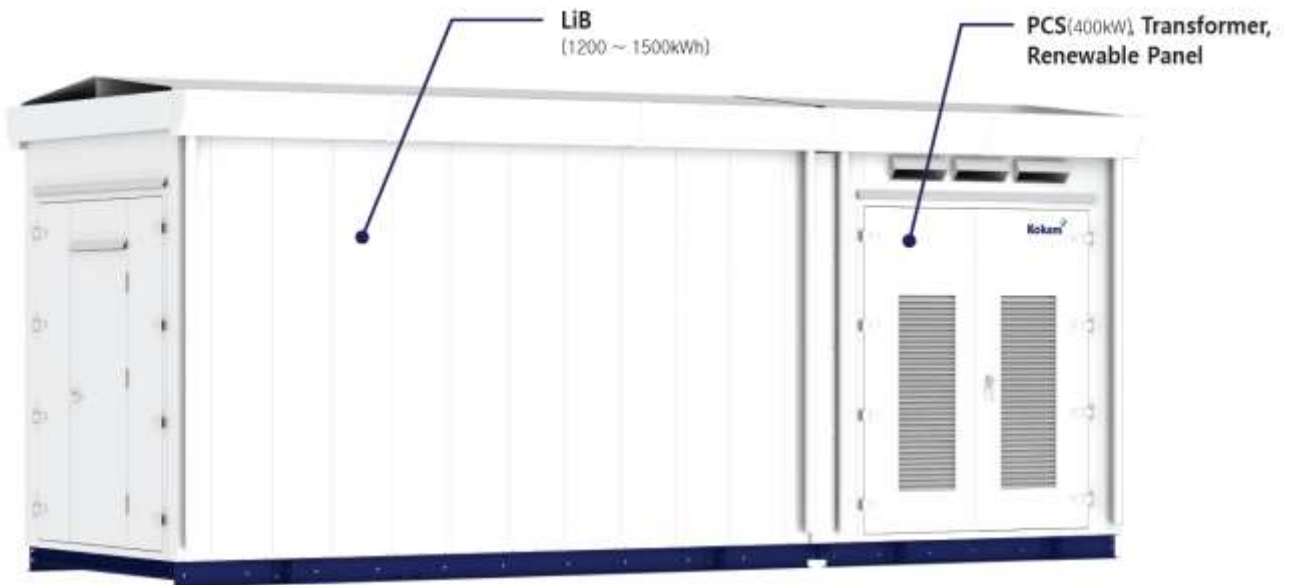
- PCS: 400kW
- Battery: 1.2MWh ~ 1.5MWh



AGTO E-House Type

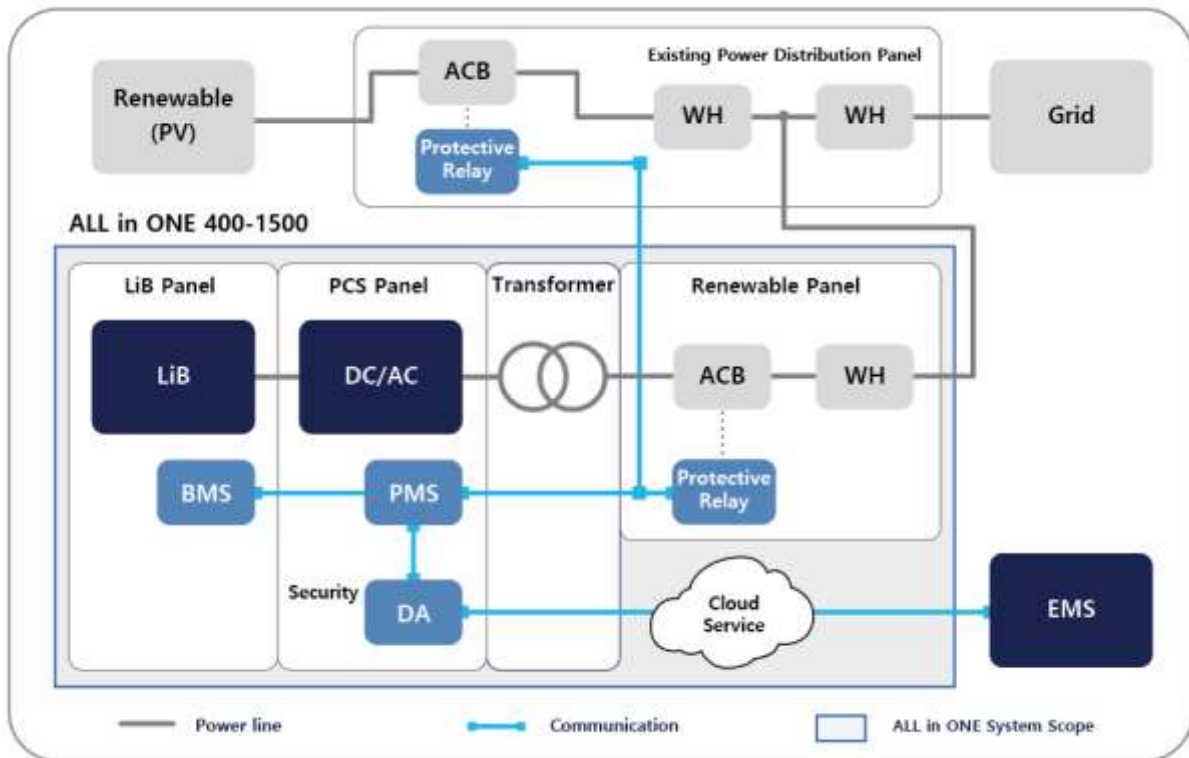
- PCS: 800kW
- Battery: 1.6MWh ~ 4MWh

ALL in ONE Outdoor E-House Type Renewable Energy Connection System



AGTO Model

Configuration Diagram of ALL in ONE Renewable Energy Connection System



1 PV : Photovoltaic

2 LiB : Lithium Ion Battery

3 BMS : Battery Management System

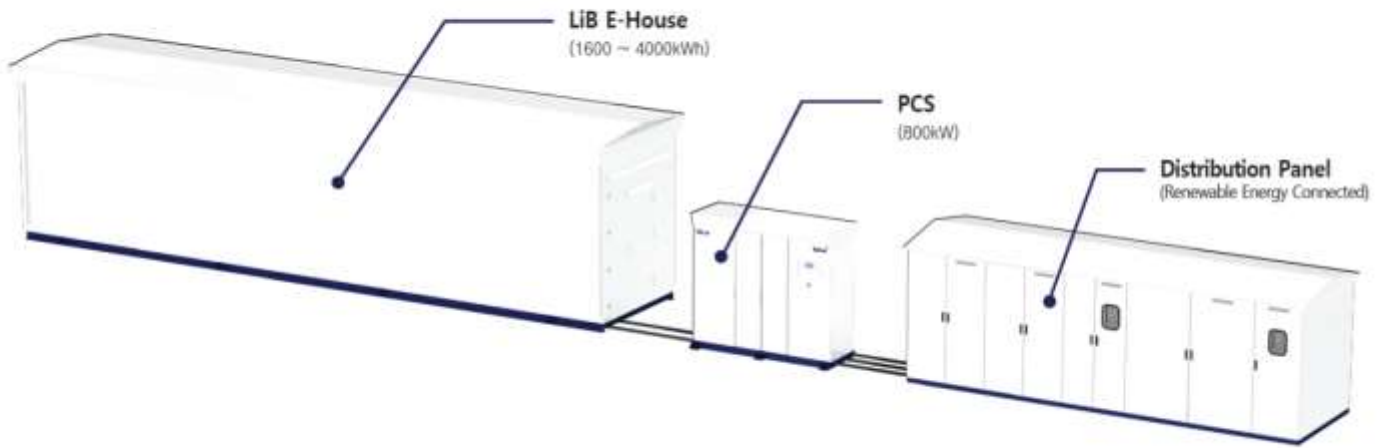
4 PCS : Power Conditioning System

5 Ethernet Switch : Switching Hub for Ethernet

6 EMS : Energy Management System

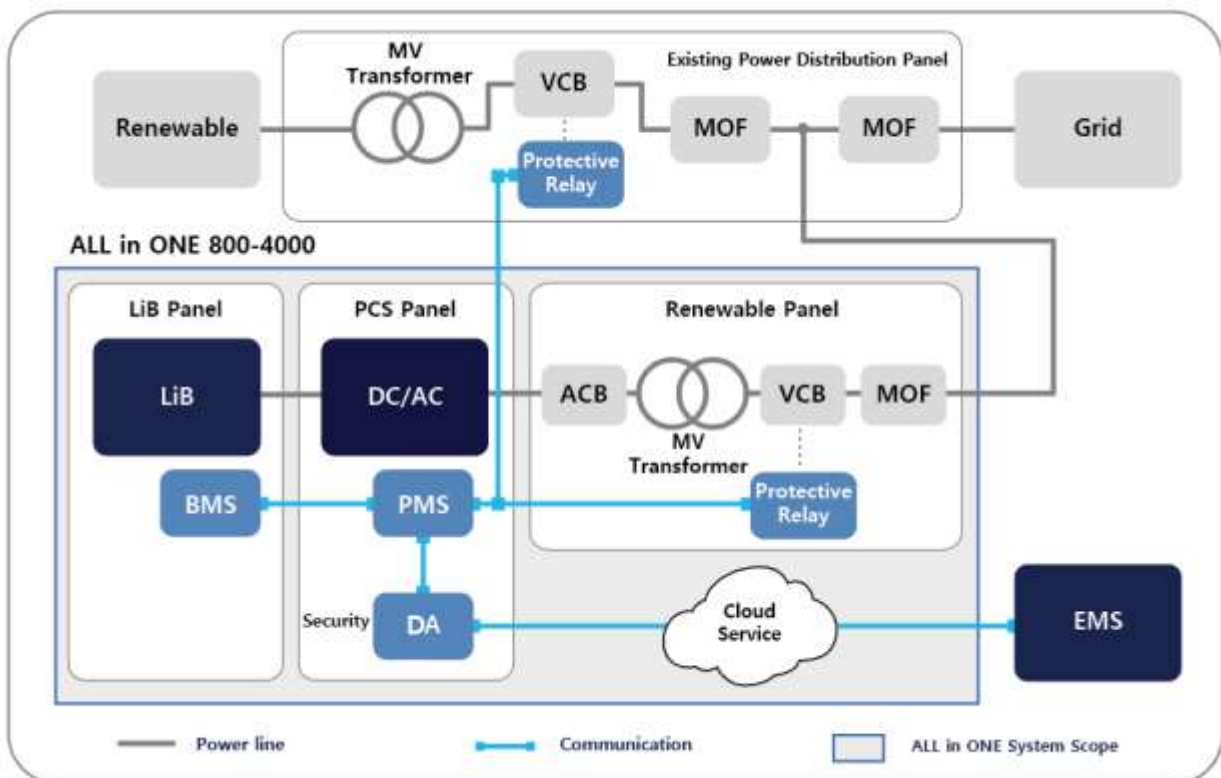
ALL in ONE Outdoor E-House Type

Renewable Energy Connection System (High Voltage)



AGTO Model

Configuration Diagram of ALL in ONE Renewable Energy Connection (High Voltage) System



1 PV : Photovoltaic

2 LiB : Lithium Ion Battery

3 BMS : Battery Management System

4 PCS : Power Conditioning System

5 Ethernet Switch : Switching Hub for Ethernet

6 EMS : Energy Management System



ALL in ONE Outdoor

ALL in ONE Outdoor E-House integrates essential elements for ESS such as the PCS, battery and renewable panel. High capacity Outdoor E-House of ALL in ONE series has two models of AGTO 400-1500, AGTO 800-4000.

ALL in ONE Outdoor E-House is Grid-Tied model which operates in grid connected state, and various applications are available such as Peak Cut, Frequency Regulation and Renewable Energy Connection depending on customer's usage purpose.

ALL in ONE Outdoor (Grid-Tied Model)

Model Comparison	AGTO 400-1500	AGTO 800-4000
PERFORMANCE SPECIFICATIONS		
AC Battery Capacity	1.2 ~ 1.5 MWh (Scalable)	1.6 ~ 4MWh (Scalable)
AC Rated Output	400kW	800kW
Availability	Above 97%	Above 97%
Round Trip Efficiency	92%	92%
ENVIRONMENTAL SPECIFICATIONS		
Ambient Temperature	-20℃ ~ +50℃	-20℃ ~ +50℃
Humidity	0~95%, Non-Condensing	0~95%, Non-Condensing
IP Protection (LiB Enclosure)	IP44	IP44
Environment	Outdoor	Outdoor
AC Grid Connection	3phase 4wire 380V	3phase 4wire 22,900V
Electrical Transformer	Built In	Exterior
MECHANICAL SPECIFICATIONS		
Dimensions (W/D/H)	7,736mm X 2,882mm X 3,406mm	12,190mm X 2,882mm X 3,406mm (Battery Enclosure) 2,600mm X 2,240mm X 2,350mm (PCS Enclosure) 7,000mm X 950mm X 2,505mm(Distribution Panel)
Weight	16 tons	31 tons
EMS SPECIFICATIONS		
EMS System	EMS based on cloud	
Security	SSR-VPN Tunneling, Firewall Policy Set up, Server Access Control	
COMPLIANCE SPECIFICATIONS		
EMC	EM61000-6-2, EM61000-6-4, EM61000-3-3, EM61000-3-12	
PCS Requirements ¹	SGSF-025-4, KS C IEC 62477-1	
Battery Requirements ²	KBIA-10104-01, KBIA-10104-02	
OPTION	EMS Server System, Renewable Energy connected Distribution Panel	

¹ SGSF-025-4 : Performance Test Requirement of Electric Storage System Type PCS / KS C IEC 62477-1 : Safety Requirement of Power Electronic Converter and System

² KBIA-10104-01, KBIA-10104-02 : Safety and Performance Test Method Energy Storage Type Lithium Secondary Battery

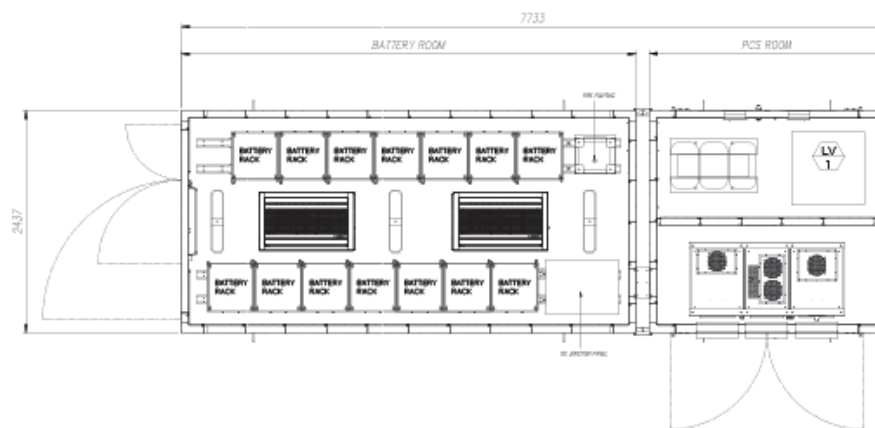
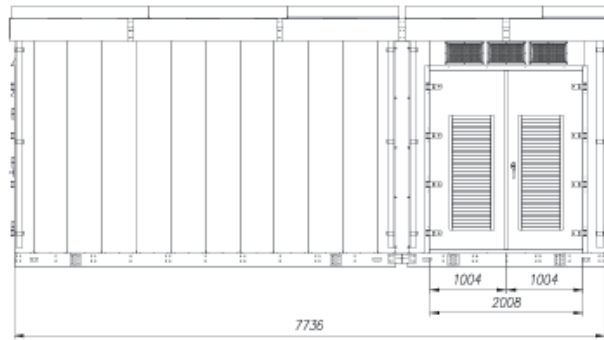
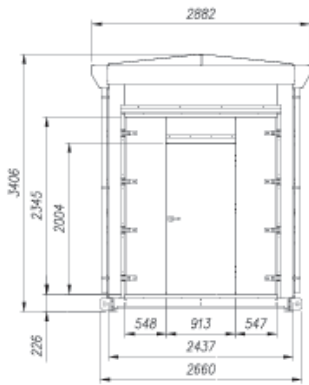
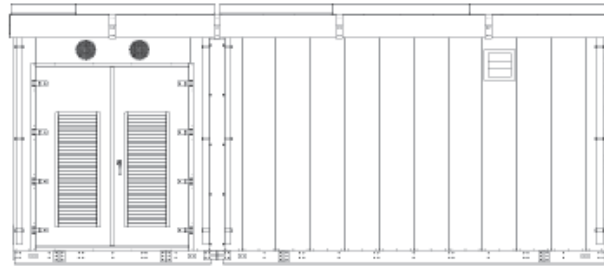
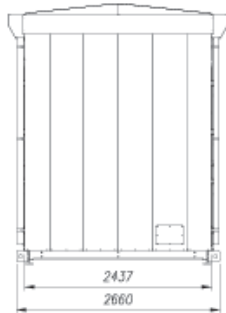
** Product image and specification above may vary under the circumstances.

* ALL in ONE product is a system including PCS, batteries, transformer, switchgear

ALL in ONE Outdoor E-House Type

Renewable Energy Connection System Layout

Model : AGTO 400-1500

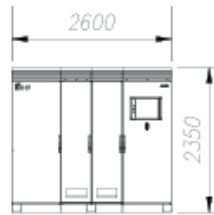


ALL in ONE Outdoor E-House Type

Renewable Energy Connection System (High Voltage) Layout

Model : AGTO 800-4000

800kW PCS

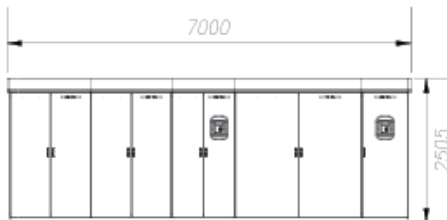


FRONT VIEW

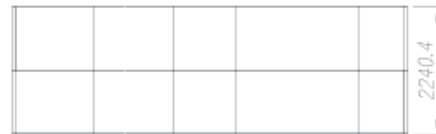


TOP VIEW

Distribution Panel

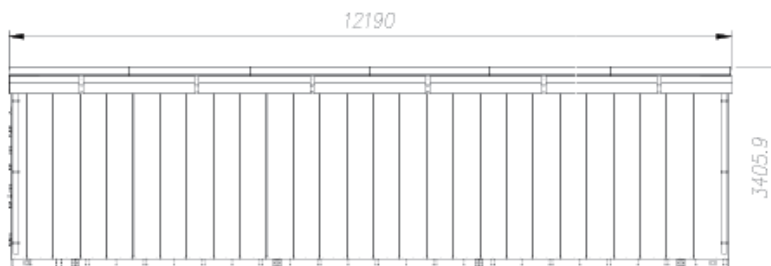


FRONT VIEW

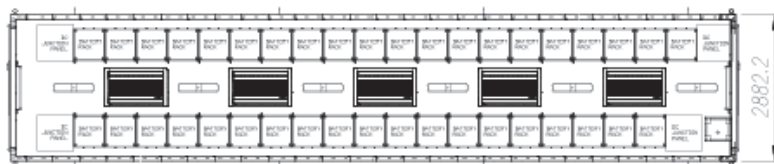


TOP VIEW

LiB E-House



FRONT VIEW



TOP VIEW



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