Solar

Solar inverters

Unlimited Energy

POWER ELECTRONICS

Energy for
the earth.

We are the heart of photovoltaic plants

We manage the entire process in-house, from design and manufacturing to testing.

22 International subsidiaries

+170 GW
COMMISSIONED AC POWER

+13 K
SOLAR INVERTERS SOLD

+2800
SOLAR PROJECTS AROUND THE WORLD

Our vertical integration provides the flexibility and specialization needed to adapt our products to market and customer requirements, while ensuring short delivery times.

Simplicity

Our turnkey solutions simplify installation and maintenance, driving operational efficiency and optimal use of resources. This approach streamlines project execution and delivers significant cost reductions at every stage.

Automation

To meet changing demands without compromising quality, we have automated production processes. This results in greater consistency, speed, and scalability.

Stability

Our stations not only stand out for their efficiency in converting DC to AC power—they also play a key role in providing exceptional stability to the electrical system. This ensures a constant and reliable energy supply, significantly contributing to the sustainability and resilience of the energy infrastructure.

Quality

We pursue excellence in all our processes. That’s why we implement control points throughout the production phases and continuous improvements that position our solutions as a benchmark in the energy market.

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HEM

Our turnkey solution simplifies installation design and reduces connection costs.

HEM

All-in-one simplicity

Easy maintenance. The advantages of a central inverter combined with the modularity of string inverters. Designed for easy on-site replacement, with a safe, reliable, and fast plug-and-play assembly system. Includes four FRUs (Field Replaceable Units).

Bus Plus. Combine solar and storage. The Bus Plus feature allows the connection of up to four Freemaq DC/DC converters. It's the most cost-competitive solution for solar-plus-storage retrofits.

ECON MODE. Eliminates no-load losses by disconnecting the power station from the grid and removing the medium-voltage transformer from the circuit.

Grid support. Capable of operating on any power system, with grid support functionalities that comply with the most demanding grid codes.

Active heating. The active heating function is included by default and activates automatically to prevent internal condensation at very low temperatures when the inverter is not exporting power. It can also switch to reactive power compensation mode.

Multilevel topology. The three-level IGBT topology reduces power-stage losses, increases inverter efficiency, and minimizes total harmonic distortion—achieving high efficiency for the lowest levelized cost of energy (LCOE).

Integrated MV solution in the same enclosure. A turnkey solar solution that simplifies installation design.

iCOOL 4, our most advanced cooling system. Our own ventilation system provides a constant flow of clean air inside the equipment, with no need for liquid cooling.



DC-coupled storage system from 1200 kW to 4800 kW

Can reach a nominal power up to 5260 kVA



HEMK

Offers the advantages
of central and string inverters.
Full front access simplifies
maintenance tasks.

HEMK

High power in a compact unit

Easy maintenance. The advantages of a central inverter combined with the modularity of string inverters. Designed for easy on-site replacement, with a safe, reliable, and fast plug-and-play assembly system. Includes up to four FRUs (Field Replaceable Units).

Bus Plus. Combines solar energy and storage. The Bus Plus feature allows the connection of up to four Freemaq DC/DC converters. It's the most cost-competitive solution for solar-plus-storage retrofits.

Active heating. The active heating function is included by default and automatically prevents internal condensation at very low temperatures when the inverter is not exporting power. It can also switch to reactive power compensation mode.

Grid support. Capable of operating on any power system, with grid support functionalities that comply with the most demanding grid codes.

Multilevel topology. The three-level IGBT topology reduces power-stage losses, increases inverter efficiency, and minimizes total harmonic distortion—achieving high efficiency for the lowest levelized cost of energy (LCOE).





- DC-coupled storage system from 1200 kW to 4800 kW
- Can reach a nominal power up to 5240 kVA
- Six different AC voltages

DC/DC Converters

Maximize the benefits of solar-and-storage plants with our DC/DC converter. Easy to fit in any place and compatible with all battery technologies.

Freemaq DC/DC

Storage for solar plants

Re-designed to maximize the benefits of large-scale solar plants with a solar-plus-storage approach.

Functions: energy shifting, ramp-rate control, frequency response, clipping energy recovery.

Its unique modular design provides the flexibility needed to adapt to the requested power.





The most efficient bidirectional DC/DC converter.

Modular outdoor solution

Nominal power of 1200 kW

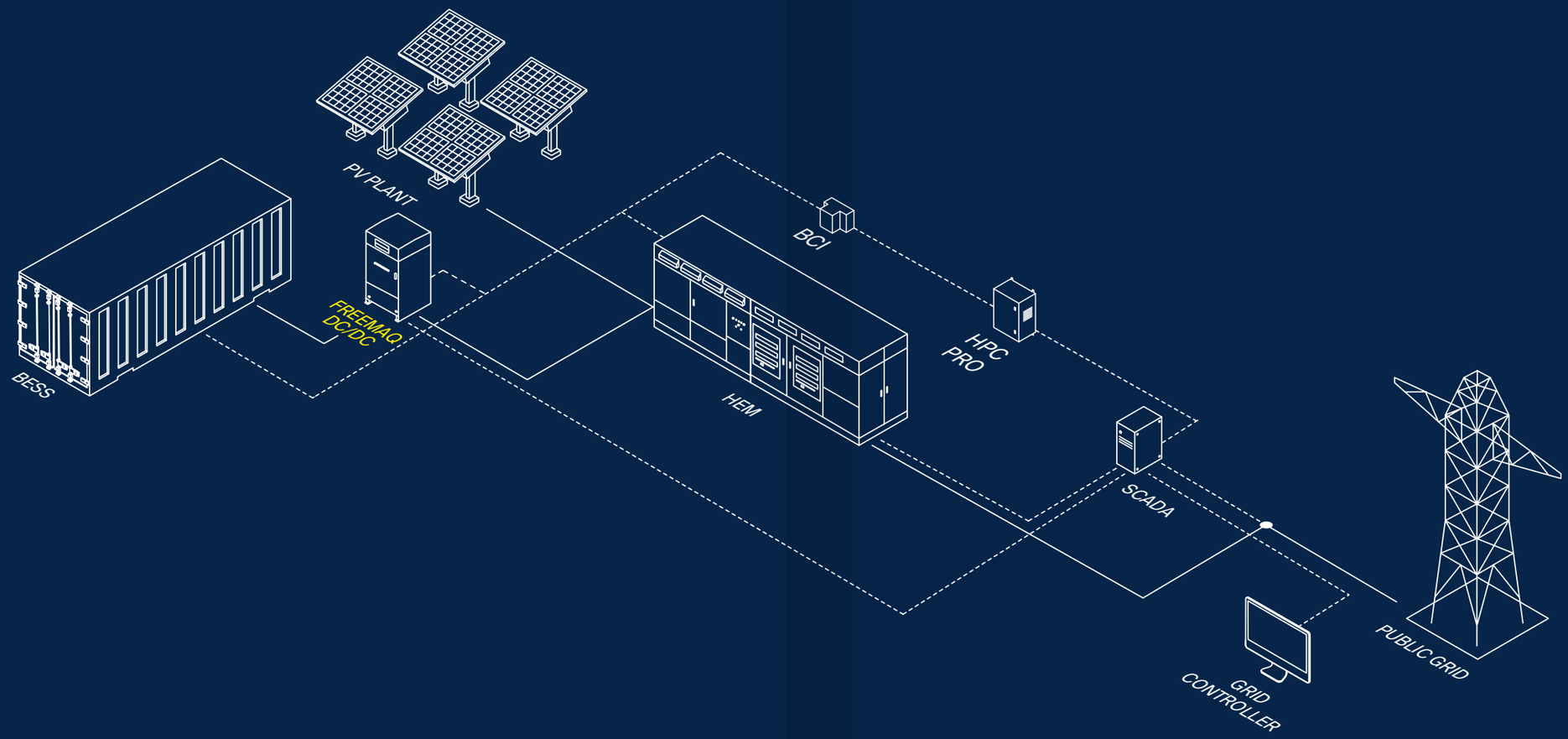
Maximum power up to 1500 V

Avoid oversizing storage capacity with our Freemaq DC/DC. How?

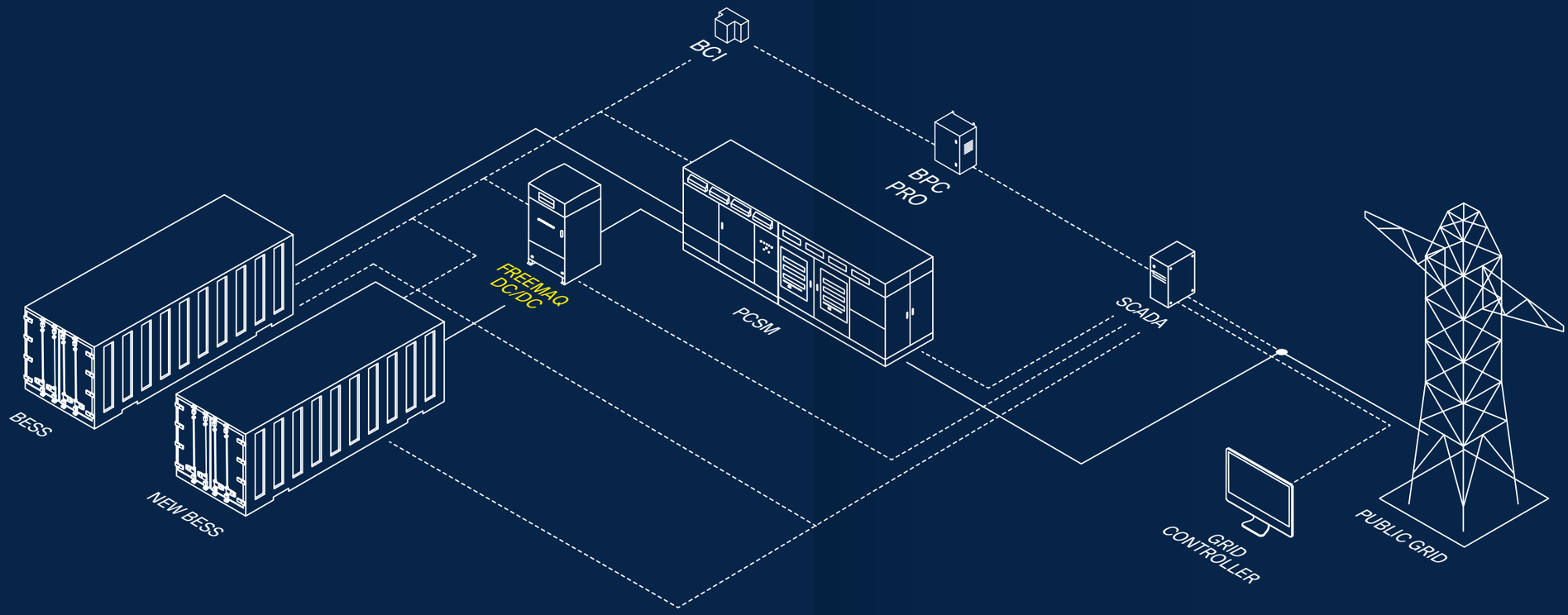
1 Batteries can be installed in different phases, using DC/DC converters to balance the voltage with the existing batteries.

2 Strategically planning staged installation optimizes the initial investment and prevents oversizing while ensuring plant lifespan.

Stored energy can be exported to the utility grid when the price per kWh is higher, optimizing revenue.



Easy to integrate



Easy to integrate

Freesun DC/DC

Advanced Hybrid Solution

Our advanced hybrid solution enables grid-forming operation by connecting our FREESUN DC/DC converter to the PV field and the BESS directly to our storage inverter.

Its unique modular design provides the flexibility needed to adapt to the requested power.





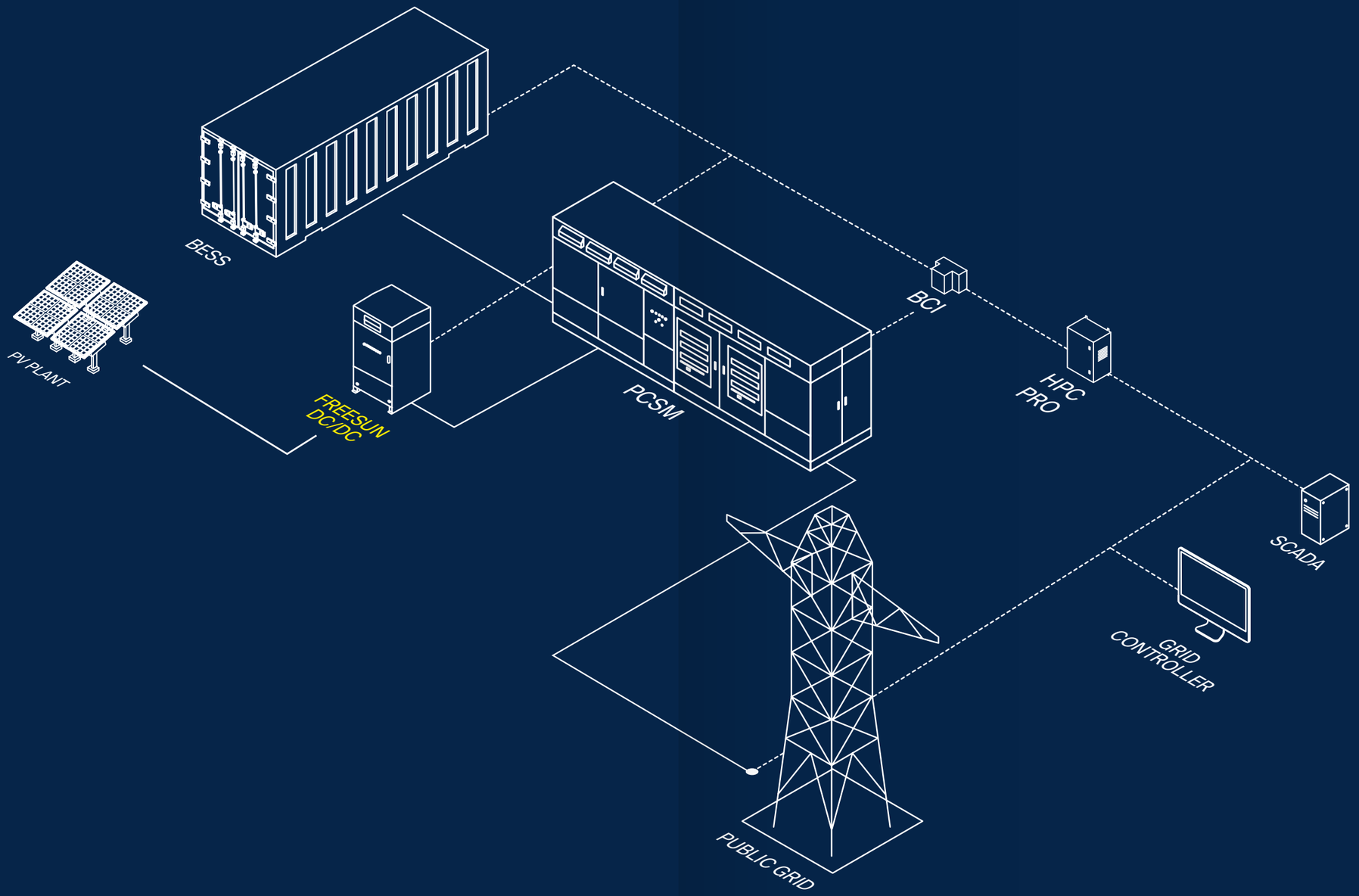
The most efficient bidirectional DC/DC converter.

Modular outdoor solution

Nominal power of 1200 kW

Peak efficiency of 98.9%

Our advanced hybrid solution blends the equipment efficiency and cost reduction of a DC-coupled system with the powerful capabilities of an AC-coupled plant. This unique combination enables full grid-forming operation, providing stability, flexibility, and robust performance—all while optimizing investment and simplifying system design.



Easy to integrate

MV Skid & Twin Skid

Combine the HEMK with our MV stations. Utility-scale solar stations, from low to medium voltage.

MV Skid Compact & Twin Skid Compact

Our MV stations simplify commissioning

Turnkey solution. Our medium voltage solutions facilitate project design and reduce installation costs.

The fastest connection with any HEMK.

Simplify your commissioning. All the medium voltage equipment is already integrated.



Easy and fast connection

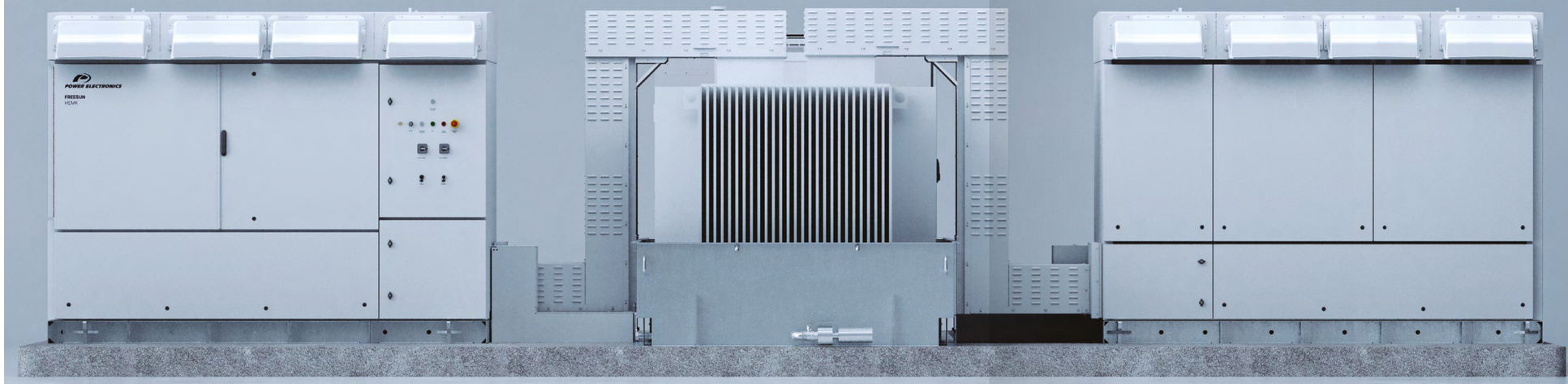
MV Skid Compact



- From 6.6 kV to 36 kV in the high voltage range
- Power outputs from 1910 kVA to 5240 kVA
- From 600 V to 690 V in the low voltage range
- Choose the distribution that best fits your solar plant for one HEMK

For the largest solar plants

Twin Skid Compact



From 11 kV to 36 kV
in the high voltage range

Power outputs from
3820 kVA to 10520 kVA

From 600 V to 690 V
in the low voltage range

Power Plant Controllers

Flexible control technology:
real-time control and monitoring
for advanced utility-scale
applications.

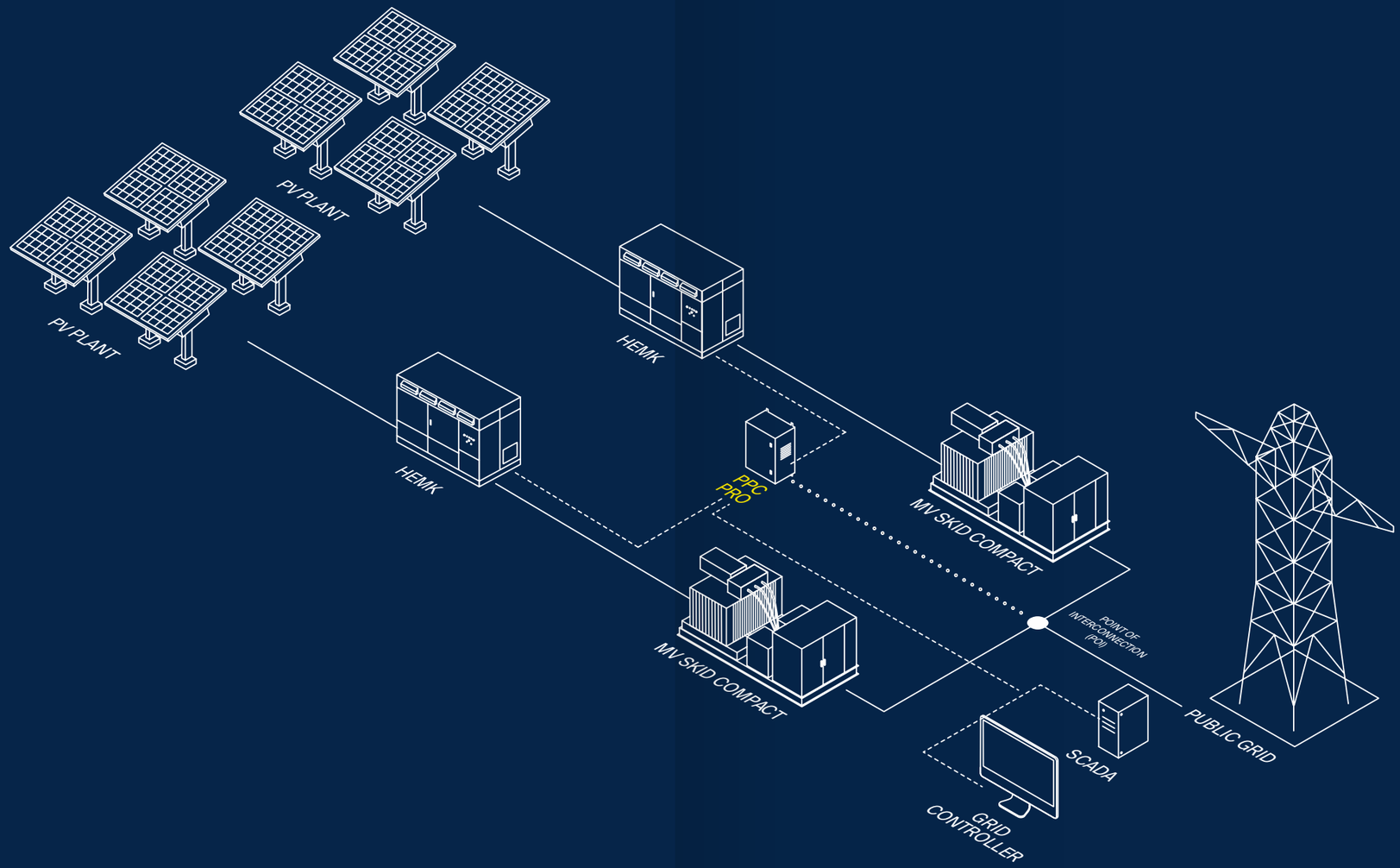
PPC PRO

Control, wherever you are

The PPC PRO is an advanced control solution for PV Plants. It can be the main governor of the most complex power plants by monitoring the point of interconnection (POI) and controlling the power generation. Equipped with the latest PLC technology and implementing sophisticated communication system and regulation algorithms to comply with the most demanding grid codes.

The SCPC PRO is a variant of the PPC PRO equipped with specific software designed for self-consumption applications.





PV plant

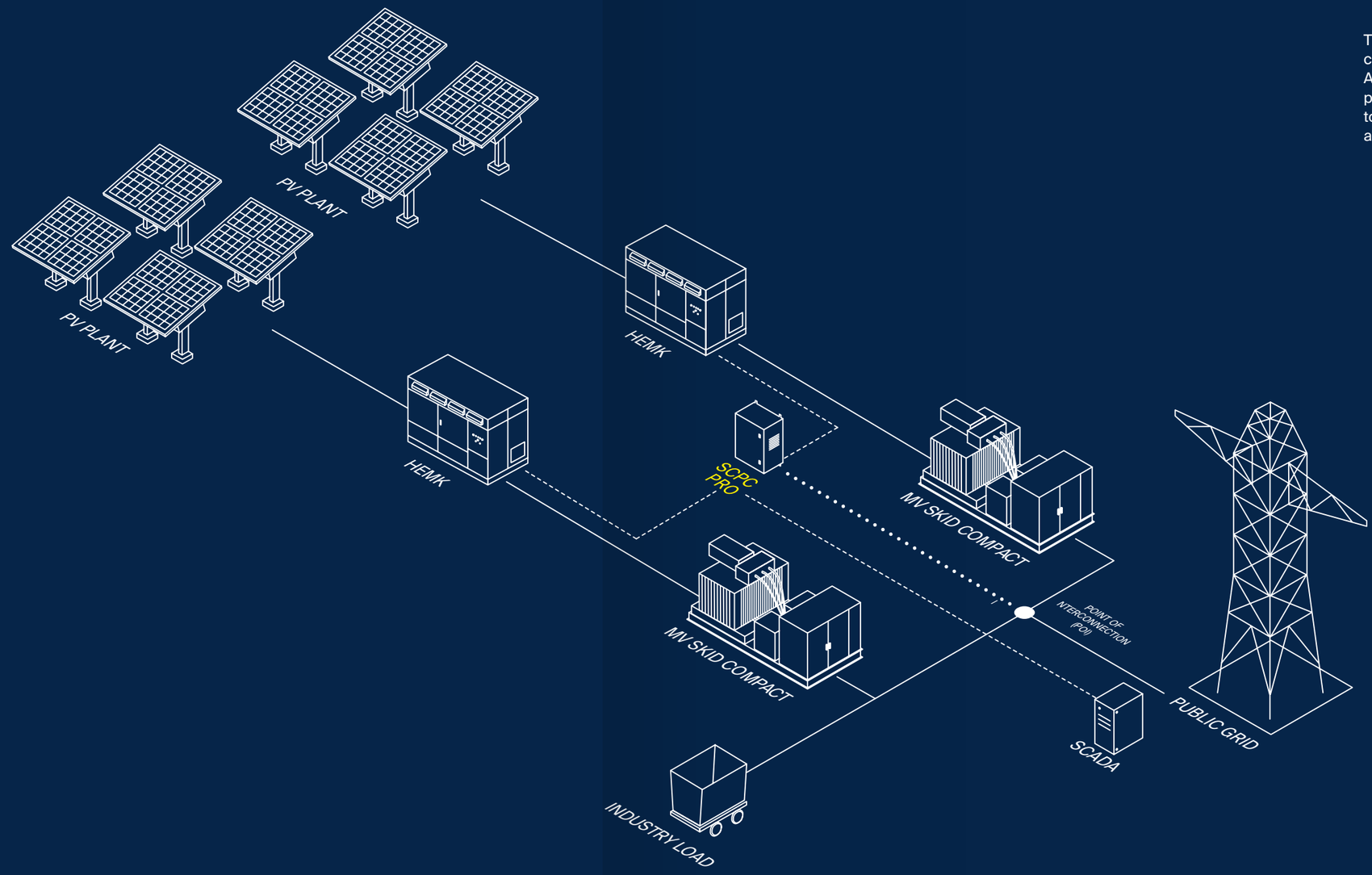
Advanced and reliable functionalities. PPC PRO manages PV plants to ensure compliance with all utility and customer requirements, thanks to its fast and flexible control algorithms.

Smart Q distribution. This algorithm distributes reactive power between inverters depending on available active power, maximizing energy production.

O&M diagnosis functions. Reports warning and fault messages and enables user management, real-time data monitoring, and more.

Maximize system efficiency. Reduce electricity costs by lowering energy consumption from the grid.

The best solution for self-consumption applications. Advanced, reliable and precise algorithms designed to match energy production and consumption.



Self-consumption plant

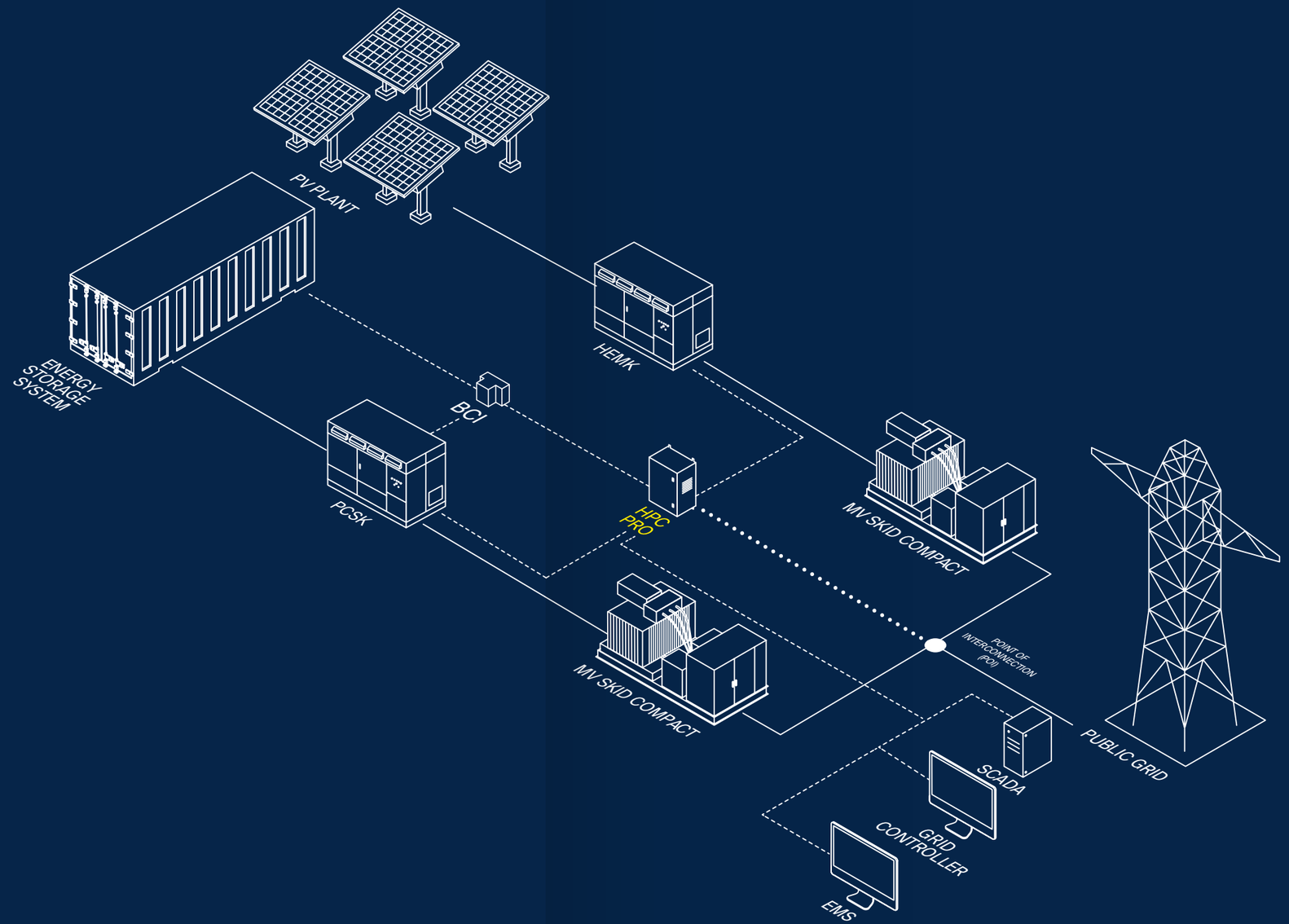
HPC PRO

Wherever you are

The HPC PRO provides an advanced control solution compatible with utility-scale hybrid plants. It offers exceptional flexibility by enabling both AC and DC coupling configurations within the plant. This functionality gives operators the ability to optimize system design according to project needs, whether prioritizing efficiency, cost, or integration with existing infrastructure. This controller plays a key role in monitoring the point of interconnection and managing power generation, especially in complex plants where efficiency and operational safety are essential, including grid-forming control strategies focused on delivering system stability.

Maximize power-block efficiency (inverter + batteries or inverter + DC/DC + batteries) with the Battery Control Interface (BCI).





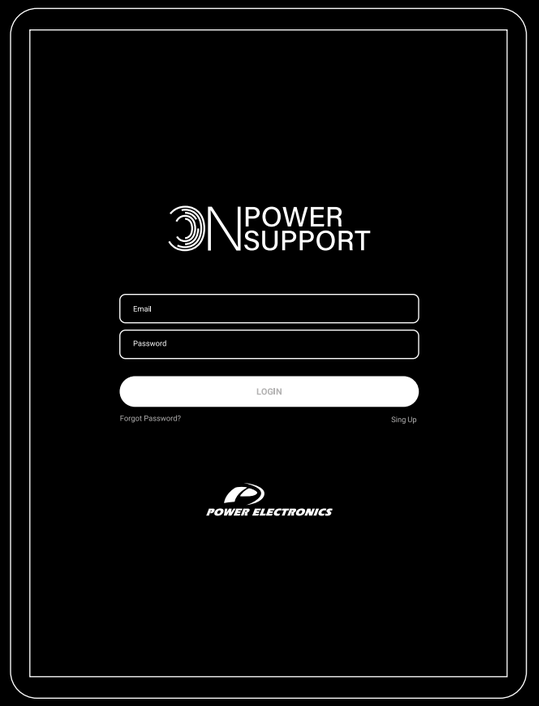
Hybrid plant

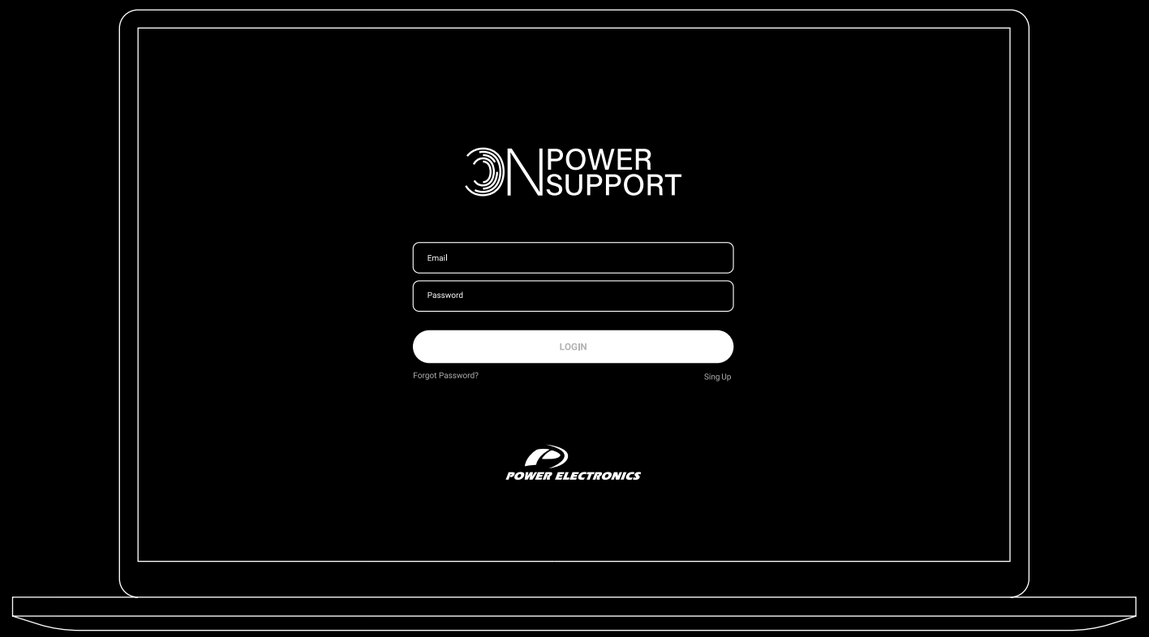
Our secret. The key to our success for more than 37 years: our 24/7 after-sales service, Power On Support.

Power ON Support



Download Power On Support from any device and easily access all your equipment information. Request assistance through the app and our team will respond within 48 hours. Stay updated on your assistance details and review your full service history.





We take care of the legacy generations. Each new generation of **inverters** requires adapting our manufacturing lines to optimize production. Power Electronics has facilities dedicated to producing previous-generation units, manufacturing ongoing subcomponents adapted to equipment no longer in production—extending their operational life.

Long-Term Service. We repair subcomponents or even manufacture equivalent units in our Dedicated Service Factory near our Production Plant. Power Electronics has experience repowering old photovoltaic plants, supplying state-of-the-art equipment adapted to existing electrical configurations while providing all the advantages of the latest generation of **inverters.**

We are here to help you

Vertical Integration throughout the entire process.

Vertical integration is one of our core values. We manage the entire value chain, from design to the on-site commissioning, ensuring precise development of all the power electronics inside our **inverters.**

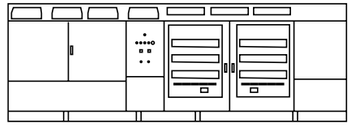
BEFORE COMMISSIONING	– Technical application & design requirement review. – Dedicated Project Management Support. – Hands-on functional & safety product training.
DURING COMMISSIONING	– Dedicated commissioning teams. – Rigorous execution through site operation.
AFTER COMMISSIONING	– Support 24/7, 365 days a year. – Full warranty coverage with extension options and preventative maintenance packages. – Advanced remote monitoring, detailed performance reporting, and interactive portals for tracking metrics directly with Power Electronics.

Datasheets

Find all the specifications of our products here.



Freesun HEM
UL



REFERENCES		FS4105M	FS4010M
AC	AC Output Power (kVA/kW) @40 °C [6]	4105	4010
	AC Output Power (kVA/kW) @50 °C [6]	3810	3720
	Operating Grid Voltage (kV) [7]	34.5 kV ±10%	
DC	DC Voltage Range [8]	913 V - 1500 V	891 V - 1500 V
EFFICIENCY	Efficiency (Max) (η)	97.93% including MV transformer	97.91% including MV transformer
	CEC (η)	97.50% including MV transformer	97.49% including MV transformer
COMMON FEATURES			
AC	Operating Grid Frequency (Hz)	60Hz	
	Current Harmonic Distortion (THDi)	< 3% per IEEE519	
	Power Factor (CosPhi) [1]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night	
DC	Maximum DC Voltage	1500 V	
	Number of Inputs	Up to 40	
	Max. DC Continuous Current (A) [2]	4590	
	Max. DC Short Circuit Current (A) [2]	6940	
	Number of Freemaq DC/DC [2]	Up to 4	
CABINET	Dimensions [WxDxH] (ft)	21.3 x 6.5 x 7.5	
	Dimensions [WxDxH] (m)	6.5 x 2.0 x 2.3	
	Weight (lbs)	30865	
	Weight (kg)	14000	
	Type of Ventilation	Forced air cooling	
ENVIRONMENT	Degree of Protection	NEMA 3R	
	Operating Temperature Range [3]	From -40 °C to +60 °C, >40 °C power derating	
	Operating Relative Humidity Range	From 4% to 100%	
	Storage Temperature Range	From -40 °C to +60 °C	
	Max. Altitude (above sea level) [4]	2000 m	
CONTROL	Communication Protocol	Modbus TCP	
	Power Plant Controller	Optional	
	Keyed ON/OFF Switch	Standard	
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device	
	Humidity Control	Active heating	
	General AC Protection & Disconn.	38 kV MV switchgear (V)	
	General DC Protection & Disconn.	Fuses, Motorized DC disconnect switches	
	Overvoltage Protection	Type II protection for AC and DC	
STANDARDS	Safety	UL 1741 / CSA 22.2 No.107.1-16	
	Installation	NEC 2023	
	Utility Interconnect [5]	UL 1741 SA & SB / RULE 21 / RULE 14H / IEEE 1547.1:2020	

NOTES

[1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[2] Consult Power Electronics for Freemaq DC/DC connection configurations.
[3] Optional available for temperatures below -25 °C.
[4] Consult Power Electronics for altitudes above 1000 m.
[5] Consult Power Electronics for other applicable standards / grid codes.
[6] Values at 1.00·Vac nom and CosPhi=1. Consult Power Electronics for derating curves.
[7] Consult Power Electronics for other configurations.
[8] Consult Power Electronics for derating curves. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.

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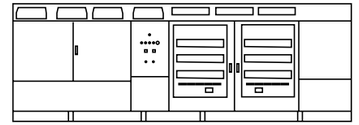
UL



REFERENCES		FS4200M	FS4201M	FS4204M
AC	AC Output Power (kVA/kW) @40 °C [6]	4200		
	AC Output Power (kVA/kW) @50 °C [6]	3900		
	Operating Grid Voltage (kV) [7]	34.5 kV ±10%	13.8 kV ±10%	12.47 kV ±10%
DC	DC Voltage Range [8]	934 V - 1500 V		
EFFICIENCY	Efficiency (Max) (η)	98.00% including MV transformer		
	CEC (η)	97.53% including MV transformer		
COMMON FEATURES				
AC	Operating Grid Frequency (Hz)	60Hz		
	Current Harmonic Distortion (THDi)	< 3% per IEEE519		
	Power Factor (CosPhi) [1]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night		
DC	Maximum DC Voltage	1500 V		
	Number of Inputs	Up to 40		
	Max. DC Continuous Current (A) [2]	4590		
	Max. DC Short Circuit Current (A) [2]	6940		
	Number of Freemaq DC/DC [2]	Up to 4		
CABINET	Dimensions [WxDxH] (ft)	21.3 x 6.5 x 7.5		
	Dimensions [WxDxH] (m)	6.5 x 2.0 x 2.3		
	Weight (lbs)	30865		
	Weight (kg)	14000		
	Type of Ventilation	Forced air cooling		
ENVIRONMENT	Degree of Protection	NEMA 3R		
	Operating Temperature Range [3]	From -40 °C to +60 °C, >40 °C power derating		
	Operating Relative Humidity Range	From 4% to 100%		
	Storage Temperature Range	From -40 °C to +60 °C		
	Max. Altitude (above sea level) [4]	2000 m		
CONTROL	Communication Protocol	Modbus TCP		
	Power Plant Controller	Optional		
	Keyed ON/OFF Switch	Standard		
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device		
	Humidity Control	Active heating		
	General AC Protection & Disconn.	38 kV MV switchgear (V)	15.5 kV SF6 Free MV switchgear (V)	
	General DC Protection & Disconn.	Fuses, Motorized DC disconnect switches		
	Overvoltage Protection	Type II protection for AC and DC		
STANDARDS	Safety	UL 1741 / CSA 22.2 No.107.1-16		
	Installation	NEC 2023		
	Utility Interconnect [5]	UL 1741 SA & SB / RULE 21 / RULE 14H / IEEE 1547.1:2020		

NOTES

[1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[2] Consult Power Electronics for Freemaq DC/DC connection configurations.
[3] Optional available for temperatures below -25 °C.
[4] Consult Power Electronics for altitudes above 1000 m.
[5] Consult Power Electronics for other applicable standards / grid codes.
[6] Values at 1.00·Vac nom and CosPhi=1. Consult Power Electronics for derating curves.
[7] Consult Power Electronics for other configurations.
[8] Consult Power Electronics for derating curves. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.

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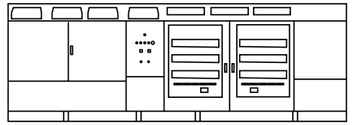
IEC

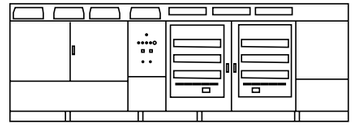


REFERENCES		FS4105MH	FS4010MH
AC	AC Output Power (kVA/kW) @40 °C [1]	4105	4010
	AC Output Power (kVA/kW) @50 °C [1]	3810	3720
	Operating Grid Voltage (kV) [2]	34.5 kV ±10%	
	Operating Grid Frequency (Hz)	60 Hz	
DC	DC Voltage Range [4]	913 V - 1500 V	891 V - 1500 V
EFFICIENCY	Efficiency (Max) (η) (preliminary)	97.76% including MV transformer	97.75% including MV transformer
	Euroeta (η) (preliminary)	97.50% including MV transformer	97.48% including MV transformer
ENVIRONMENT	Max. Altitude (above sea level) [7]	2000 m	
COMMON FEATURES			
AC	Current Harmonic Distortion (THDi)	< 3% per IEEE 519	
	Power Factor (cos phi) [3]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night	
DC	Maximum DC Voltage	1500 V	
	Number of Inputs	Up to 40	
	Max. DC Continuous Current (A) [5]	4590	
	Max. DC Short Circuit Current (A) [5]	6940	
	Number of Freemaq DC/DC [5]	Up to 4	
CABINET	Dimensions [WxDxH] (ft)	21.3 x 6.5 x 7.5	
	Dimensions [WxDxH] (m)	6.5 x 2.0 x 2.3	
	Weight (lbs)	30865	
	Weight (kg)	14000	
	Type of Ventilation	Forced air cooling	
ENVIRONMENT	Degree of Protection	IP55	
	Operating Temperature Range [6]	From -40 °C to +60 °C, >40 °C power derating	
	Operating Relative Humidity Range	From 4% to 100%	
	Storage Temperature Range	From -40 °C to +60 °C	
CONTROL	Communication Protocol	Modbus TCP	
	Power Plant Controller	Optional	
	Keyed ON/OFF Switch	Standard	
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device	
	Humidity Control	Active heating	
	General AC Protection & Disconn.	36 kV MV switchgear (2L+V)	
	General DC Protection & Disconn.	Fuses, Motorized DC disconnect switches	
	Overvoltage Protection	Type II protection for AC and DC	
STANDARDS	Safety	IEC 62109-1 / IEC 62109-2	

NOTES

[1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[2] Consult Power Electronics for Freemaq DC/DC connection configurations.
[3] Optional available for temperatures below -25 °C.
[4] Consult Power Electronics for altitudes above 1000 m.
[5] Consult Power Electronics for other applicable standards / grid codes.
[6] Values at 1.00·Vac nom and CosPhi=1. Consult Power Electronics for derating curves.
[7] Consult Power Electronics for other configurations.
[8] Consult Power Electronics for derating curves. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.

Freesun HEM
IEC

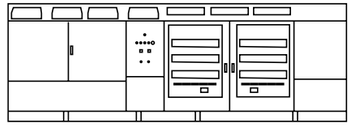


REFERENCES		FS4200MH	FS4206MH	FS4207MH
AC	AC Output Power (kVA/kW) @40°C [1]	4200		
	AC Output Power (kVA/kW) @50°C [1]	3900		
	Operating Grid Voltage (kV) [2]	34.5 kV ±10%	33 kV ±10%	
	Operating Grid Frequency (Hz)	60 Hz	50 Hz	
DC	DC Voltage Range [4]	934 V - 1500 V		
EFFICIENCY	Efficiency (Max) (η) (preliminary)	97.8% including MV transformer		
	Euroeta (η) (preliminary)	97.51% including MV transformer		
ENVIRONMENT	Max. Altitude (above sea level) [7]	2000 m		1000 m
COMMON FEATURES				
AC	Current Harmonic Distortion (THDi)	< 3% per IEEE 519		
	Power Factor (cos phi) [3]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night		
DC	Maximum DC Voltage	1500 V		
	Number of Inputs	Up to 40		
	Max. DC Continuous Current (A) [5]	4590		
	Max. DC Short Circuit Current (A) [5]	6940		
	Number of Freemaq DC/DC [5]	Up to 4		
CABINET	Dimensions [WxDxH] (ft)	21.3 x 6.5 x 7.5		
	Dimensions [WxDxH] (m)	6.5 x 2.0 x 2.3		
	Weight (lbs)	30865		
	Weight (kg)	14000		
	Type of Ventilation	Forced air cooling		
ENVIRONMENT	Degree of Protection	IP55		
	Operating Temperature Range [6]	From -40 °C to +60 °C, >40 °C power derating		
	Operating Relative Humidity Range	From 4% to 100%		
	Storage Temperature Range	From -40 °C to +60 °C		
CONTROL	Communication Protocol	Modbus TCP		
	Power Plant Controller	Optional		
	Keyed ON/OFF Switch	Standard		
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device		
	Humidity Control	Active heating		
	General AC Protection & Disconn.	36 kV MV switchgear (2L+V)		
	General DC Protection & Disconn.	Fuses, Motorized DC disconnect switches		
	Overvoltage Protection	Type II protection for AC and DC		
STANDARDS	Safety	IEC 62109-1 / IEC 62109-2		

NOTES

[1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[2] Consult Power Electronics for Freemaq DC/DC connection configurations.
[3] Optional available for temperatures below -25 °C.
[4] Consult Power Electronics for altitudes above 1000 m.
[5] Consult Power Electronics for other applicable standards / grid codes.
[6] Values at 1.00·Vac nom and CosPhi=1. Consult Power Electronics for derating curves.
[7] Consult Power Electronics for other configurations.
[8] Consult Power Electronics for derating curves. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.

Freesun HEM
UL



REFERENCES		FS4997MU	FS4998MU	FS5000MU
AC	AC Output Power (kVA/kW) @30 °C [1]	4999		5030
	AC Output Power (kVA/kW) @35 °C [1]	4999		5000
	AC Output Power (kVA/kW) @40 °C [1]	4800		4780
	AC Output Power (kVA/kW) @50 °C [1]	4360		4345
	Operating Grid Voltage (kV)	34.5 kV ±10%		
	Rated Impulse Withstand Voltage	150 kV		
	Operating Grid Frequency (Hz)	60 Hz		
DC	DC Voltage Range [3]	934 V – 1500 V	976 V - 1500 V	934 V – 1500 V
	Max. DC Continuous Current (A) [4]	5498		5495
	Max. DC Short Circuit Current (A) [4]	8000		
ENVIRONMENT	Degree of Protection	NEMA 3R		
	Max. Altitude (above sea level) [6]	2000 m		
PROTECTIONS	General AC Protection & Disconnection	38 kV MV switchgear (V)		
COMMON FEATURES				
AC	Current Harmonic Distortion (THDi)	<3% per IEEE 519		
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night		
DC	Maximum DC Voltage	1500 V		
	Number of Inputs	Up to 40		
	Number of Freemaq DC/DC [4]	Up to 4		
EFFICIENCY	Efficiency (Max) (η)	98.00% including MV transformer		
	CEC (η)	97.53% including MV transformer		
CABINET	Dimensions [WxDxH] (ft)	21.3 x 6.5 x 7.5		
	Dimensions [WxDxH] (m)	6.5 x 2.0 x 2.3		
	Weight (lbs)	30865		
	Weight (kg)	14000		
	Type of Ventilation	Forced air cooling		
ENVIRONMENT	Operating Temperature Range [5]	From -40 °C to +60 °C, >30 °C power derating		
	Operating Relative Humidity Range	From 4% to 100%		
	Storage Temperature Range	From -40 °C to +60 °C		
CONTROL	Communication Protocol	Modbus TCP		
	Grid Forming (VISMA) / Black Start Capable	Standard		
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device		
	Humidity Control	Active heating		
	General DC Protection & Disconnection	Fuses, Motorized DC disconnect switches		
	Overvoltage Protection	Type II protection for AC and DC		
STANDARDS	Safety	UL 1741 / CSA 22.2 No.107.1-16		
	Installation	NEC 2023		
	Utility Interconnect [7]	UL 1741 SA & SB / IEEE 1547.1 / IEEE 2800		

NOTES

[1] Values at 1.00·Vac nom and CosPhi=1. Consult Power Electronics for derating curves.
[2] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[3] Consult Power Electronics for derating curves above 1300 Vdc. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.
[4] Consult Power Electronics for Freemaq DC/DC connection configurations.
[5] Optional available for temperatures below -25 °C.
[6] Consult Power Electronics for altitudes above 1000 m.
[7] Consult Power Electronics for other applicable standards / grid codes.

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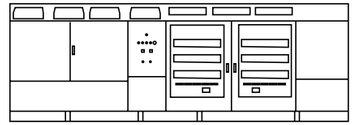
UL



REFERENCES		FS5004MU	FS5075MU
AC	AC Output Power (kVA/kW) @30 °C [1]	5030	5260
	AC Output Power (kVA/kW) @35 °C [1]	5000	5075
	AC Output Power (kVA/kW) @40 °C [1]	4780	4860
	AC Output Power (kVA/kW) @50 °C [1]	4345	4430
	Operating Grid Voltage (kV)	22.8 kV ±10%	34.5 kV ±10%
	Rated Impulse Withstand Voltage	125 kV	150 kV
	Operating Grid Frequency (Hz)	60 Hz	
DC	DC Voltage Range [3]	934 V – 1500 V	976 V – 1500 V
	Max. DC Continuous Current (A) [4]	5495	5498
	Max. DC Short Circuit Current (A) [4]	8000	
ENVIRONMENT	Degree of Protection	NEMA 3R	
	Max. Altitude (above sea level) [6]	2000 m	
PROTECTIONS	General AC Protection & Disconnection	24 kV SF6 Free MV switchgear (V)	38 kV MV switchgear (V)
COMMON FEATURES			
AC	Current Harmonic Distortion (THDi)	<3% per IEEE 519	
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night	
DC	Maximum DC Voltage	1500 V	
	Number of Inputs	Up to 40	
	Number of Freemaq DC/DC [4]	Up to 4	
EFFICIENCY	Efficiency (Max) (η)	98.00% including MV transformer	
	CEC (η)	97.53% including MV transformer	
CABINET	Dimensions [WxDxH] (ft)	21.3 x 6.5 x 7.5	
	Dimensions [WxDxH] (m)	6.5 x 2.0 x 2.3	
	Weight (lbs)	30865	
	Weight (kg)	14000	
	Type of Ventilation	Forced air cooling	
ENVIRONMENT	Operating Temperature Range [5]	From -40 °C to +60 °C, >30 °C power derating	
	Operating Relative Humidity Range	From 4% to 100%	
	Storage Temperature Range	From -40 °C to +60 °C	
CONTROL	Communication Protocol	Modbus TCP	
	Grid Forming (VISMA) / Black Start Capable	Standard	
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device	
	Humidity Control	Active heating	
	General DC Protection & Disconnection	Fuses, Motorized DC disconnect switches	
	Overvoltage Protection	Type II protection for AC and DC	
STANDARDS	Safety	UL 1741 / CSA 22.2 No.107.1-16	
	Installation	NEC 2023	
	Utility Interconnect [7]	UL 1741 SA & SB / IEEE 1547.1 / IEEE 2800	

NOTES

[1] Values at 1.00·Vac nom and CosPhi=1. Consult Power Electronics for derating curves.
[2] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[3] Consult Power Electronics for derating curves above 1300 Vdc. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.
[4] Consult Power Electronics for Freemaq DC/DC connection configurations.
[5] Optional available for temperatures below -25 °C.
[6] Consult Power Electronics for altitudes above 1000 m.
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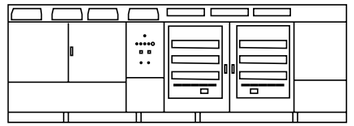
IEC



REFERENCES		FS4999MH	FS5000MH	FS5001MH	FS5002MH
AC	AC Output Power (kVA/kW) @30 °C [1]	4999	5030		
	AC Output Power (kVA/kW) @35 °C [1]	4999	5000		
	AC Output Power (kVA/kW) @40 °C [1]	4860	4780		
	AC Output Power (kVA/kW) @50 °C [1]	4430	4345		
	Operating Grid Voltage (kV)	33 kV ±10%	34.5 kV ±10%	33 kV ±10%	30 kV ±10%
	Rated Impulse Withstand Voltage	150 kV	145 kV	150 kV	145 kV
	Operating Grid Frequency (Hz)	50 Hz	60 Hz	50 Hz	
DC	DC Voltage Range [3]	976 V – 1500 V	934 V – 1500 V		
	Max. DC Continuous Current (A) [4]	5498	5495		
	Max. DC Short Circuit Current (A) [4]	8000			
ENVIRONMENT	Degree of Protection	IP55			
	Max. Altitude (above sea level) [6]	1000 m	2000 m	1000 m	
PROTECTIONS	General AC Protection & Disconnection	36 kV MV switchgear (2L+V)			
COMMON FEATURES					
	Current Harmonic Distortion (THDi)	<3% per IEEE 519			
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night			
DC	Maximum DC Voltage	1500 V			
	Number of Inputs	Up to 40			
	Number of Freemaq DC/DC [4]	Up to 4			
EFFICIENCY	Efficiency (Max) (η)	98.00% including MV transformer			
	CEC (η)	97.53% including MV transformer			
CABINET	Dimensions [WxDxH] (ft)	21.3 x 6.5 x 7.5			
	Dimensions [WxDxH] (m)	6.5 x 2.0 x 2.3			
	Weight (lbs)	30865			
	Weight (kg)	14000			
	Type of Ventilation	Forced air cooling			
ENVIRONMENT	Operating Temperature Range [5]	From -40 °C to +60 °C, >30 °C power derating			
	Operating Relative Humidity Range	From 4% to 100%			
	Storage Temperature Range	From -40 °C to +60 °C			
CONTROL	Communication Protocol	Modbus TCP			
	Grid Forming (VISMA) / Black Start Capable	Standard			
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device			
	Humidity Control	Active heating			
	General DC Protection & Disconnection	Fuses, Motorized DC disconnect switches			
	Overvoltage Protection	Type II protection for AC and DC			
STANDARDS	Safety	IEC 62109-1 / IEC 62109-2			
	Utility Interconnect [7]	IEC 62116 / G99 / VDE 4110-4120-4130 / CEI 0-16 / NTS 2.1 / EN 50549			

NOTES

[1] Values at 1.00·Vac nom and CosPhi=1. Consult Power Electronics for derating curves.
[2] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[3] Consult Power Electronics for derating curves above 1300 Vdc. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.
[4] Consult Power Electronics for Freemaq DC/DC connection configurations.
[5] Optional available for temperatures below -25 °C.
[6] Consult Power Electronics for altitudes above 1000 m.
[7] Consult Power Electronics for other applicable standards / grid codes.

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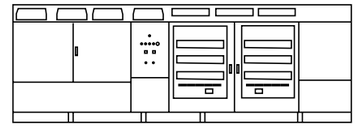

REFERENCES		FS5003MH	FS5006MH	FS5075MH	FS5076MH
AC	AC Output Power (kVA/kW) @30 °C [1]	5030		5260	
	AC Output Power (kVA/kW) @35 °C [1]	5000		5075	
	AC Output Power (kVA/kW) @40 °C [1]	4780		4860	
	AC Output Power (kVA/kW) @50 °C [1]	4345		4430	
	Operating Grid Voltage (kV)	20 kV ±10%	33 kV ±10%	34.5 kV ±10%	33 kV ±10%
	Rated Impulse Withstand Voltage	125 kV	150 kV	145 kV	150 kV
	Operating Grid Frequency (Hz)	50 Hz	60 Hz		50 Hz
DC	DC Voltage Range [3]	934 V – 1500 V		976 V – 1500 V	
	Max. DC Continuous Current (A) [4]	5495		5498	
	Max. DC Short Circuit Current (A) [4]	8000			
ENVIRONMENT	Degree of Protection	IP55			
	Max. Altitude (above sea level) [6]	1000 m		2000 m	1000 m
PROTECTIONS	General AC Protection & Disconnection	24 kV SF6 Free MV switchgear (2L+V)	36 kV MV switchgear (2L+V)		
COMMON FEATURES					
	Current Harmonic Distortion (THDi)	<3% per IEEE 519			
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night			
DC	Maximum DC Voltage	1500 V			
	Number of Inputs	Up to 40			
	Number of Freemaq DC/DC [4]	Up to 4			
EFFICIENCY	Efficiency (Max) (η)	98.00% including MV transformer			
	CEC (η)	97.53% including MV transformer			
CABINET	Dimensions [WxDxH] (ft)	21.3 x 6.5 x 7.5			
	Dimensions [WxDxH] (m)	6.5 x 2.0 x 2.3			
	Weight (lbs)	30865			
	Weight (kg)	14000			
	Type of Ventilation	Forced air cooling			
ENVIRONMENT	Operating Temperature Range [5]	From -40 °C to +60 °C, >30 °C power derating			
	Operating Relative Humidity Range	From 4% to 100%			
	Storage Temperature Range	From -40 °C to +60 °C			
CONTROL	Communication Protocol	Modbus TCP			
	Grid Forming (VISMA) / Black Start Capable	Standard			
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device			
	Humidity Control	Active heating			
	General DC Protection & Disconnection	Fuses, Motorized DC disconnect switches			
	Overvoltage Protection	Type II protection for AC and DC			
STANDARDS	Safety	IEC 62109-1 / IEC 62109-2			
	Utility Interconnect [7]	IEC 62116 / G99 / VDE 4110-4120-4130 / CEI 0-16 / NTS 2.1 / EN 50549			

NOTES

[1] Values at 1.00·Vac nom and CosPhi=1. Consult Power Electronics for derating curves.
[2] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[3] Consult Power Electronics for derating curves above 1300 Vdc. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.
[4] Consult Power Electronics for Freemaq DC/DC connection configurations.
[5] Optional available for temperatures below -25 °C.
[6] Consult Power Electronics for altitudes above 1000 m.
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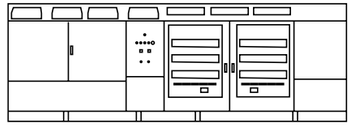

REFERENCES		FS5077MH	FS5078MH	FS5080MH
AC	AC Output Power (kVA/kW) @30 °C [1]		5260	
	AC Output Power (kVA/kW) @35 °C [1]		5075	
	AC Output Power (kVA/kW) @40 °C [1]		4860	
	AC Output Power (kVA/kW) @50 °C [1]		4430	
	Operating Grid Voltage (kV)	30 kV ±10%	20 kV ±10%	33 kV ±10%
	Rated Impulse Withstand Voltage	145 kV	125 kV	150 kV
	Operating Grid Frequency (Hz)	50 Hz		60 Hz
DC	DC Voltage Range [3]	976 V – 1500 V		
	Max. DC Continuous Current (A) [4]	5498		
	Max. DC Short Circuit Current (A) [4]	8000		
ENVIRONMENT	Degree of Protection	IP55		
	Max. Altitude (above sea level) [6]	1000 m		
PROTECTIONS	General AC Protection & Disconnection	36 kV MV switchgear (2L+V)	24 kV SF6 Free MV switchgear (2L+V)	36 kV MV switchgear (2L+V)
COMMON FEATURES				
DC	Current Harmonic Distortion (THDi)	<3% per IEEE 519		
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night		
	Maximum DC Voltage	1500 V		
	Number of Inputs	Up to 40		
	Number of Freemaq DC/DC [4]	Up to 4		
EFFICIENCY	Efficiency (Max) (η)	98.00% including MV transformer		
	CEC (η)	97.53% including MV transformer		
CABINET	Dimensions [WxDxH] (ft)	21.3 x 6.5 x 7.5		
	Dimensions [WxDxH] (m)	6.5 x 2.0 x 2.3		
	Weight (lbs)	30865		
	Weight (kg)	14000		
	Type of Ventilation	Forced air cooling		
ENVIRONMENT	Operating Temperature Range [5]	From -40 °C to +60 °C, >30 °C power derating		
	Operating Relative Humidity Range	From 4% to 100%		
	Storage Temperature Range	From -40 °C to +60 °C		
CONTROL	Communication Protocol	Modbus TCP		
	Grid Forming (VISMA) / Black Start Capable	Standard		
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device		
	Humidity Control	Active heating		
	General DC Protection & Disconnection	Fuses, Motorized DC disconnect switches		
	Overvoltage Protection	Type II protection for AC and DC		
STANDARDS	Safety	IEC 62109-1 / IEC 62109-2		
	Utility Interconnect [7]	IEC 62116 / G99 / VDE 4110-4120-4130 / CEI 0-16 / NTS 2.1 / EN 50549		

NOTES

[1] Values at 1.00·Vac nom and CosPhi=1. Consult Power Electronics for derating curves.
[2] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[3] Consult Power Electronics for derating curves above 1300 Vdc. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.
[4] Consult Power Electronics for Freemaq DC/DC connection configurations.
[5] Optional available for temperatures below -25 °C.
[6] Consult Power Electronics for altitudes above 1000 m.
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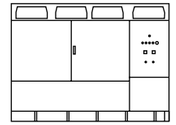
690V

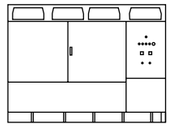


690V		FRAME 2	FRAME 3	FRAME 4
REFERENCES		**FS2195K**	**FS3290K**	**FS4390K**
AC	AC Output Power (kVA/kW) @40°C [1]	2195	3290	4390
	AC Output Power (kVA/kW) @50°C [1]	2035	3055	4075
	Max. AC Output Current (A) @40°C	1837	2756	3674
	Operating Grid Voltage (VAC)	690V ±10%		
	Operating Grid Frequency (Hz)	50/60 Hz		
	Current Harmonic Distortion (THDi)	< 3% per IEEE519		
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night		
DC	DC Voltage Range [3]	976V - 1500 V		
	Maximum DC Voltage	1500 V		
	Number of Inputs	Up to 20	Up to 30	Up to 40
	Max. DC Continuous Current (A) [4]	2295	3443	4590
	Max. DC Short Circuit Current (A) [4]	3470	5205	6940
	Number of Freemaq DC/DC [4]	Up to 4		
EFFICIENCY	Efficiency (Max) (η)	98.84%	98.87%	98.94%
	Euroeta (η)	98.34%	98.49%	98.51%
CABINET	Dimensions [WxDxH] (ft)	9.8 x 6.5 x 7.5		
	Dimensions [WxDxH] (m)	3.0 x 2.0 x 2.3		
	Weight (lbs)	8600	9700	10365
	Weight (kg)	3900	4400	4700
	Type of Ventilation	Forced air cooling		
ENVIRONMENT	Degree of Protection	NEMA 3R / IP55		
	Operating Temperature Range [5]	From -25°C to +60°C, >40°C power derating		
	Operating Relative Humidity Range	From 4% to 100%		
	Storage Temperature Range	From -40°C to +60°C		
	Max. Altitude (above sea level)	2000m / >2000m power derating (Max. 4000m)		
CONTROL	Communication Protocol	Modbus TCP		
	Power Plant Controller	Optional		
	Keyed ON/OFF Switch	Standard		
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device		
	Humidity Control	Active heating		
	General AC Protection & Disconn.	Circuit breaker		
	General DC Protection & Disconn.	Fuses, Motorized DC disconnect switches		
	Overvoltage Protection	Type II protection for AC and DC		
STANDARDS	Safety	UL 1741 / CSA 22.2 No.107.1-16 / IEC 62109-1 / IEC 62109-2		
	Installation	NEC 2023		
	Utility Interconnect	UL 1741 SA & SB / RULE 21 / RULE 14H / IEEE 1547.1 2020 / IEC 62116:2014		

NOTES

[1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[2] Consult Power Electronics for Freemaq DC/DC connection configurations.
[3] Optional available for temperatures below -25 °C.
[4] Values at 1.00·Vac nom and cosφ=1. Consult Power Electronics for derating curves.
[5] Consult Power Electronics for derating curves. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.

Freesun HEMK
660V

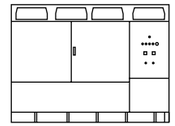


660V		FRAME 2	FRAME 3	FRAME 4
REFERENCES		**FS2101K**	**FS3151K**	**FS4200K**
AC	AC Output Power (kVA/kW) @40°C [1]	2100	3150	4200
	AC Output Power (kVA/kW) @50°C [1]	1950	2925	3900
	Max. AC Output Current (A) @40°C	1837	2756	3674
	Operating Grid Voltage (VAC)	660V ±10%		
	Operating Grid Frequency (Hz)	50/60 Hz		
	Current Harmonic Distortion (THDi)	< 3% per IEEE519		
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night		
DC	DC Voltage Range [3]	934V - 1500 V		
	Maximum DC Voltage	1500 V		
	Number of Inputs	Up to 20	Up to 30	Up to 40
	Max. DC Continuous Current (A) [4]	2295	3443	4590
	Max. DC Short Circuit Current (A) [4]	3470	5205	6940
	Number of Freemaq DC/DC [4]	Up to 4		
EFFICIENCY	Efficiency (Max) (η)	98.86%	98.89%	98.95%
	Euroeta (η)	98.36%	98.51%	98.53%
CABINET	Dimensions [WxDxH] (ft)	9.8 x 6.5 x 7.5		
	Dimensions [WxDxH] (m)	3.0 x 2.0 x 2.3		
	Weight (lbs)	8600	9700	10365
	Weight (kg)	3900	4400	4700
	Type of Ventilation	Forced air cooling		
ENVIRONMENT	Degree of Protection	NEMA 3R / IP55		
	Operating Temperature Range [5]	From -25°C to +60°C, >40°C power derating		
	Operating Relative Humidity Range	From 4% to 100%		
	Storage Temperature Range	From -40°C to +60°C		
	Max. Altitude (above sea level)	2000m / >2000m power derating (Max. 4000m)		
CONTROL	Communication Protocol	Modbus TCP		
	Power Plant Controller	Optional		
	Keyed ON/OFF Switch	Standard		
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device		
	Humidity Control	Active heating		
	General AC Protection & Disconn.	Circuit breaker		
	General DC Protection & Disconn.	Fuses, Motorized DC disconnect switches		
	Overvoltage Protection	Type II protection for AC and DC		
STANDARDS	Safety	UL 1741 / CSA 22.2 No.107.1-16 / IEC 62109-1 / IEC 62109-2		
	Installation	NEC 2023		
	Utility Interconnect	UL 1741 SA & SB / RULE 21 / RULE 14H / IEEE 1547.1 2020 / IEC 62116:2014		

NOTES

[1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[2] Consult Power Electronics for Freemaq DC/DC connection configurations.
[3] Optional available for temperatures below -25 °C.
[4] Values at 1.00·Vac nom and cosφ=1. Consult Power Electronics for derating curves.
[5] Consult Power Electronics for derating curves. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.

Freesun HEMK
645V

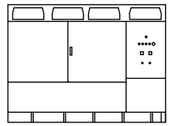


645V		FRAME 2	FRAME 3	FRAME 4
REFERENCES		**FS2055K**	**FS3080K**	**FS4105K**
AC	AC Output Power (kVA/kW) @40°C [1]	2055	3080	4105
	AC Output Power (kVA/kW) @50°C [1]	1905	2855	3810
	Max. AC Output Current (A) @40°C	1837	2756	3674
	Operating Grid Voltage (VAC)	645V ±10%		
	Operating Grid Frequency (Hz)	50/60 Hz		
	Current Harmonic Distortion (THDi)	< 3% per IEEE519		
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night		
DC	DC Voltage Range [3]	913V - 1500 V		
	Maximum DC Voltage	1500 V		
	Number of Inputs	Up to 20	Up to 30	Up to 40
	Max. DC Continuous Current (A) [4]	2295	3443	4590
	Max. DC Short Circuit Current (A) [4]	3470	5205	6940
	Number of Freemaq DC/DC [4]	Up to 4		
EFFICIENCY	Efficiency (Max) (η)	98.85%	98.88%	98.81%
	Euroeta (η)	98.24%	98.39%	98.41%
CABINET	Dimensions [WxDxH] (ft)	9.8 x 6.5 x 7.5		
	Dimensions [WxDxH] (m)	3.0 x 2.0 x 2.3		
	Weight (lbs)	8600	9700	10365
	Weight (kg)	3900	4400	4700
	Type of Ventilation	Forced air cooling		
ENVIRONMENT	Degree of Protection	NEMA 3R / IP55		
	Operating Temperature Range [5]	From -25°C to +60°C, >40°C power derating		
	Operating Relative Humidity Range	From 4% to 100%		
	Storage Temperature Range	From -40°C to +60°C		
	Max. Altitude (above sea level)	2000m / >2000m power derating (Max. 4000m)		
CONTROL	Communication Protocol	Modbus TCP		
	Power Plant Controller	Optional		
	Keyed ON/OFF Switch	Standard		
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device		
	Humidity Control	Active heating		
	General AC Protection & Disconn.	Circuit breaker		
	General DC Protection & Disconn.	Fuses, Motorized DC disconnect switches		
	Overvoltage Protection	Type II protection for AC and DC		
STANDARDS	Safety	UL 1741 / CSA 22.2 No.107.1-16 / IEC 62109-1 / IEC 62109-2		
	Installation	NEC 2023		
	Utility Interconnect	UL 1741 SA & SB / RULE 21 / RULE 14H / IEEE 1547.1 2020 / IEC 62116:2014		

NOTES

[1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[2] Consult Power Electronics for Freemaq DC/DC connection configurations.
[3] Optional available for temperatures below -25 °C.
[4] Values at 1.00·Vac nom and cosφ=1. Consult Power Electronics for derating curves.
[5] Consult Power Electronics for derating curves. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.

Freesun HEMK
630V

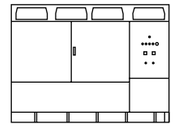


630V		FRAME 2	FRAME 3	FRAME 4
REFERENCES		**FS2005K**	**FS3005K**	**FS4010K**
AC	AC Output Power (kVA/kW) @40°C [1]	2005	3005	4010
	AC Output Power (kVA/kW) @50°C [1]	1860	2790	3720
	Max. AC Output Current (A) @40°C	1837	2756	3674
	Operating Grid Voltage (VAC)	630V ±10%		
	Operating Grid Frequency (Hz)	50/60 Hz		
	Current Harmonic Distortion (THDi)	< 3% per IEEE519		
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night		
DC	DC Voltage Range [3]	891V - 1500 V		
	Maximum DC Voltage	1500 V		
	Number of Inputs	Up to 20	Up to 30	Up to 40
	Max. DC Continuous Current (A) [4]	2295	3443	4590
	Max. DC Short Circuit Current (A) [4]	3470	5205	6940
	Number of Freemaq DC/DC [4]	Up to 4		
EFFICIENCY	Efficiency (Max) (η)	98.79%	98.82%	98.88%
	Euroeta (η)	98.28%	98.43%	98.45%
CABINET	Dimensions [WxDxH] (ft)	9.8 x 6.5 x 7.5		
	Dimensions [WxDxH] (m)	3.0 x 2.0 x 2.3		
	Weight (lbs)	8600	9700	10365
	Weight (kg)	3900	4400	4700
	Type of Ventilation	Forced air cooling		
ENVIRONMENT	Degree of Protection	NEMA 3R / IP55		
	Operating Temperature Range [5]	From -25°C to +60°C, >40°C power derating		
	Operating Relative Humidity Range	From 4% to 100%		
	Storage Temperature Range	From -40°C to +60°C		
	Max. Altitude (above sea level)	2000m / >2000m power derating (Max. 4000m)		
CONTROL	Communication Protocol	Modbus TCP		
	Power Plant Controller	Optional		
	Keyed ON/OFF Switch	Standard		
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device		
	Humidity Control	Active heating		
	General AC Protection & Disconn.	Circuit breaker		
	General DC Protection & Disconn.	Fuses, Motorized DC disconnect switches		
	Overvoltage Protection	Type II protection for AC and DC		
STANDARDS	Safety	UL 1741 / CSA 22.2 No.107.1-16 / IEC 62109-1 / IEC 62109-2		
	Installation	NEC 2023		
	Utility Interconnect	UL 1741 SA & SB / RULE 21 / RULE 14H / IEEE 1547.1 2020 / IEC 62116:2014		

NOTES

[1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[2] Consult Power Electronics for Freemaq DC/DC connection configurations.
[3] Optional available for temperatures below -25 °C.
[4] Values at 1.00·Vac nom and cosφ=1. Consult Power Electronics for derating curves.
[5] Consult Power Electronics for derating curves. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.

Freesun HEMK
615V

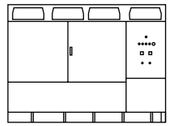


615V		FRAME 2	FRAME 3	FRAME 4
REFERENCES		**FS1955K**	**FS2935K**	**FS3915K**
AC	AC Output Power (kVA/kW) @40°C [1]	1955	2935	3915
	AC Output Power (kVA/kW) @50°C [1]	1815	2725	3635
	Max. AC Output Current (A) @40°C	1837	2756	3674
	Operating Grid Voltage (VAC)	615V ±10%		
	Operating Grid Frequency (Hz)	50/60 Hz		
	Current Harmonic Distortion (THDi)	< 3% per IEEE519		
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night		
DC	DC Voltage Range [3]	870V - 1500 V		
	Maximum DC Voltage	1500 V		
	Number of Inputs	Up to 20	Up to 30	Up to 40
	Max. DC Continuous Current (A) [4]	2295	3443	4590
	Max. DC Short Circuit Current (A) [4]	3470	5205	6940
	Number of Freemaq DC/DC [4]	Up to 4		
EFFICIENCY	Efficiency (Max) (η)	98.75%	98.78%	98.77%
	Euroeta (η)	98.20%	98.35%	98.37%
CABINET	Dimensions [WxDxH] (ft)	9.8 x 6.5 x 7.5		
	Dimensions [WxDxH] (m)	3.0 x 2.0 x 2.3		
	Weight (lbs)	8600	9700	10365
	Weight (kg)	3900	4400	4700
	Type of Ventilation	Forced air cooling		
ENVIRONMENT	Degree of Protection	NEMA 3R / IP55		
	Operating Temperature Range [5]	From -25°C to +60°C, >40°C power derating		
	Operating Relative Humidity Range	From 4% to 100%		
	Storage Temperature Range	From -40°C to +60°C		
	Max. Altitude (above sea level)	2000m / >2000m power derating (Max. 4000m)		
CONTROL	Communication Protocol	Modbus TCP		
	Power Plant Controller	Optional		
	Keyed ON/OFF Switch	Standard		
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device		
	Humidity Control	Active heating		
	General AC Protection & Disconn.	Circuit breaker		
	General DC Protection & Disconn.	Fuses, Motorized DC disconnect switches		
	Overvoltage Protection	Type II protection for AC and DC		
STANDARDS	Safety	UL 1741 / CSA 22.2 No.107.1-16 / IEC 62109-1 / IEC 62109-2		
	Installation	NEC 2023		
	Utility Interconnect	UL 1741 SA & SB / RULE 21 / RULE 14H / IEEE 1547.1 2020 / IEC 62116:2014		

NOTES

[1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[2] Consult Power Electronics for Freemaq DC/DC connection configurations.
[3] Optional available for temperatures below -25 °C.
[4] Values at 1.00·Vac nom and cosφ=1. Consult Power Electronics for derating curves.
[5] Consult Power Electronics for derating curves. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.

Freesun HEMK
600V

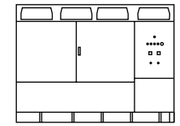


600V		FRAME 2	FRAME 3	FRAME 4
REFERENCES		**FS1910K**	**FS2865K**	**FS3820K**
AC	AC Output Power (kVA/kW) @40°C [1]	1910	2865	3820
	AC Output Power (kVA/kW) @50°C [1]	1775	2660	3545
	Max. AC Output Current (A) @40°C	1837	2756	3674
	Operating Grid Voltage (VAC)	600V ±10%		
	Operating Grid Frequency (Hz)	50/60 Hz		
	Current Harmonic Distortion (THDi)	< 3% per IEEE519		
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night		
DC	DC Voltage Range [3]	849V - 1500 V		
	Maximum DC Voltage	1500 V		
	Number of Inputs	Up to 20	Up to 30	Up to 40
	Max. DC Continuous Current (A) [4]	2295	3443	4590
	Max. DC Short Circuit Current (A) [4]	3470	5205	6940
	Number of Freemaq DC/DC [4]	Up to 4		
EFFICIENCY	Efficiency (Max) (η)	98.82%	98.85%	98.78%
	Euroeta (η)	98.18%	98.33%	98.35%
CABINET	Dimensions [WxDxH] (ft)	9.8 x 6.5 x 7.5		
	Dimensions [WxDxH] (m)	3.0 x 2.0 x 2.3		
	Weight (lbs)	8600	9700	10365
	Weight (kg)	3900	4400	4700
	Type of Ventilation	Forced air cooling		
ENVIRONMENT	Degree of Protection	NEMA 3R / IP55		
	Operating Temperature Range [5]	From -25°C to +60°C, >40°C power derating		
	Operating Relative Humidity Range	From 4% to 100%		
	Storage Temperature Range	From -40°C to +60°C		
	Max. Altitude (above sea level)	2000m / >2000m power derating (Max. 4000m)		
CONTROL	Communication Protocol	Modbus TCP		
	Power Plant Controller	Optional		
	Keyed ON/OFF Switch	Standard		
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device		
	Humidity Control	Active heating		
	General AC Protection & Disconn.	Circuit breaker		
	General DC Protection & Disconn.	Fuses, Motorized DC disconnect switches		
	Overvoltage Protection	Type II protection for AC and DC		
STANDARDS	Safety	UL 1741 / CSA 22.2 No.107.1-16 / IEC 62109-1 / IEC 62109-2		
	Installation	NEC 2023		
	Utility Interconnect	UL 1741 SA & SB / RULE 21 / RULE 14H / IEEE 1547.1 2020 / IEC 62116:2014		

NOTES

[1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[2] Consult Power Electronics for Freemaq DC/DC connection configurations.
[3] Optional available for temperatures below -25 °C.
[4] Values at 1.00·Vac nom and cosφ=1. Consult Power Electronics for derating curves.
[5] Consult Power Electronics for derating curves. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.

Freesun HEMK



REFERENCES		FS4997K	FS4998K	FS4999K
AC	AC Output Power (kVA/kW) @30 °C [1]	4999		
	AC Output Power (kVA/kW) @35 °C [1]	4999		
	AC Output Power (kVA/kW) @40 °C [1]	4860		
	AC Output Power (kVA/kW) @50 °C [1]	4430		
	Max. AC Output Current (A) @30 °C	4183		
	Operating Grid Voltage (VAC)	660 V ±10%	690 V ±10%	
DC	DC Voltage Range [3]	934 V - 1500 V	976 V – 1500 V	
	Max. DC Continuous Current (A) [4]	5498	5495	5498
	Max. DC Short Circuit Current (A) [4]	8000		
COMMON FEATURES				
AC	Operating Grid Frequency (Hz)	60 Hz		50 / 60 Hz
	Current Harmonic Distortion (THDi)	< 3% per IEEE 519		
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night		
DC	Maximum DC Voltage	1500 V		
	Number of Inputs	Up to 40		
	Number of Freemaq DC/DC [4]	Up to 4		
EFFICIENCY	Efficiency (Max) (η)	98.95%		
	Euroeta (η)	98.53%		
CABINET	Dimensions [WxDxH] (ft)	9.8 x 6.5 x 7.5		
	Dimensions [WxDxH] (m)	3.0 x 2.0 x 2.3		
	Weight (lbs)	10365		
	Weight (kg)	4700		
	Type of Ventilation	Forced air cooling		
ENVIRONMENT	Degree of Protection	NEMA 3R / IP55		
	Operating Temperature Range [5]	From -40 °C to +60 °C, >30 °C power derating		
	Operating Relative Humidity Range	From 4% to 100%		
	Storage Temperature Range	From -40 °C to +60 °C		
	Max. Altitude (above sea level)	2000 m / >2000 m power derating (max. 4000 m)		
CONTROL	Communication Protocol	Modbus TCP		
	Grid Forming (VISMA) / Black Start Capable	Standard		
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device		
	Humidity Control	Active heating		
	General AC Protection & Disconn.	Circuit breaker		
	General DC Protection & Disconn.	Fuses, Motorized DC disconnect switches		
	Overvoltage Protection	Type II protection for AC and DC		
STANDARDS	Safety	UL 1741 / CSA 22.2 No.107.1-16 / IEC 62109-1 / IEC 62109-2		
	Installation	NEC 2023		
	Utility Interconnect [6]	UL 1741 SA & SB / IEEE 1547.1 / IEC 62116 / G99 / VDE 4110-4120-4130 / CEI 0-16 / NTS 2.1 / EN 50549 / IEEE 2800		

NOTES

[1] Values at 1.00·Vac nom and cosφ=1. Consult Power Electronics for derating curves. The maximum AC output power must be limited to meet the P-Q capability requirement at the inverter level of some grid codes.
[2] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[3] Consult Power Electronics for derating curves above 1300 Vdc. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.
[4] Consult Power Electronics for Freemaq DC/DC connection configurations.
[5] Optional available for temperatures below -25 °C.
[6] Consult Power Electronics for other applicable standards / grid codes.

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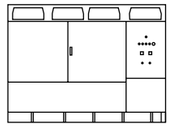
Freesun HEMK



REFERENCES		FS5000K	FS5075K
AC	AC Output Power (kVA/kW) @30 °C [1]	5030	5260
	AC Output Power (kVA/kW) @35 °C [1]	5000	5075
	AC Output Power (kVA/kW) @40 °C [1]	4780	4860
	AC Output Power (kVA/kW) @50 °C [1]	4345	4430
	Max. AC Output Current (A) @30 °C	4400	
	Operating Grid Voltage (VAC)	660 V ±10%	690 V ±10%
DC	DC Voltage Range [3]	934 V – 1500 V	976 V – 1500 V
	Max. DC Continuous Current (A) [4]	5495	5498
	Max. DC Short Circuit Current (A) [4]	8000	
COMMON FEATURES			
AC	Operating Grid Frequency (Hz)	60 Hz	50 / 60 Hz
	Current Harmonic Distortion (THDi)	< 3% per IEEE 519	
	Power Factor (CosPhi) [2]	0.5 leading ... 0.5 lagging adjustable / Reactive power injection at night	
DC	Maximum DC Voltage	1500 V	
	Number of Inputs	Up to 40	
	Number of Freemaq DC/DC [4]	Up to 4	
EFFICIENCY	Efficiency (Max) (η)	98.95%	
	Euroeta (η)	98.53%	
CABINET	Dimensions [WxDxH] (ft)	9.8 x 6.5 x 7.5	
	Dimensions [WxDxH] (m)	3.0 x 2.0 x 2.3	
	Weight (lbs)	10365	
	Weight (kg)	4700	
	Type of Ventilation	Forced air cooling	
ENVIRONMENT	Degree of Protection	NEMA 3R / IP55	
	Operating Temperature Range [5]	From -40 °C to +60 °C, >30 °C power derating	
	Operating Relative Humidity Range	From 4% to 100%	
	Storage Temperature Range	From -40 °C to +60 °C	
	Max. Altitude (above sea level)	2000 m / >2000 m power derating (max. 4000 m)	
CONTROL	Communication Protocol	Modbus TCP	
	Grid Forming (VISMA) / Black Start Capable	Standard	
PROTECTIONS	Ground Fault Protection	GFDI and insulation monitoring device	
	Humidity Control	Active heating	
	General AC Protection & Disconn.	Circuit breaker	
	General DC Protection & Disconn.	Fuses, Motorized DC disconnect switches	
	Overvoltage Protection	Type II protection for AC and DC	
STANDARDS	Safety	UL 1741 / CSA 22.2 No.107.1-16 / IEC 62109-1 / IEC 62109-2	
	Installation	NEC 2023	
	Utility Interconnect [6]	UL 1741 SA & SB / IEEE 1547.1 / IEC 62116 / G99 / VDE 4110-4120-4130 / CEI 0-16 / NTS 2.1 / EN 50549 / IEEE 2800	

NOTES

[1] Values at 1.00·Vac nom and cosφ=1. Consult Power Electronics for derating curves. The maximum AC output power must be limited to meet the P-Q capability requirement at the inverter level of some grid codes.
[2] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.
[3] Consult Power Electronics for derating curves above 1300 Vdc. In the event of overvoltage in the grid, the minimum DC voltage will vary proportionally with the AC voltage.
[4] Consult Power Electronics for Freemaq DC/DC connection configurations.
[5] Optional available for temperatures below -25 °C.
[6] Consult Power Electronics for other applicable standards / grid codes.

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Freemaq DC/DC



REFERENCES		FD1200
DC INPUT & OUTPUT	DC Rated Power (kW) @ 30 °C	1200
	DC Rated Power (kW) @ 40 °C	1120
	DC Rated Power (kW) @ 50 °C	1040
	Max. DC Output Current (A) @ 30 °C	1200
	Max. DC Output Current (A) @ 40 °C	1120
	Max. DC Output Current (A) @ 50 °C	1040
	DC Coupling Bus Voltage Range (Vdc) [1]	720 - 1500
	DC ESS Voltage Range (Vdc) [1]	720 - 1500
	Maximum DC PV Input Voltage (Vdc)	1500
	DC Voltage Ripple	<3%
	Max. DC Short Circuit Current ESS (kA)	500 kA with a time constant of 1 ms
	Max. DC Short Circuit Current PV (kA)	14
	Battery Technology	Compatible with all battery technologies
EFFICIENCY	Efficiency (Max)	99.18%
CABINET	Dimensions [WxDxH] (ft)	3.94 x 5.90 x 7.56
	Dimensions [WxDxH] (m)	1.20 x 1.80 x 2.30
	Cooling	Forced air
	Enclosure Protection Degree	NEMA 3R / IP54
CONNECTIONS	Number of PV connections	4 negative / 4 positive
	Number of Connections from Inverter (BESS)	4 positive / 4 negative
ENVIRONMENT	Operating Temperature Range [2]	From -25 °C to +60 °C, >30 °C power derating
	Relative Humidity	From 4% to 100%
	Max. Altitude (above sea level)	4000 m (> 2000 m power derating)
CONTROL	Interfaces	Emergency stop pushbutton and indicator lights
	Communications Protocol	Modbus TCP
PROTECTIONS	Inverter side [3]	Motorized DC disconnect switch
	BESS side [4]	Motorized DC disconnect switch and ultra-fast fuses
STANDARDS	Safety	UL1741, IEC 62109-1

NOTES

[1] Consult Power Electronics for derating curves.
[2] Consult Power Electronics for temperatures below -25 °C.
[3] In case of augmentation application, ultra-fast fuses are included on the inverter side.
[4] Battery short circuit disconnection must be done on the battery side.

Freesun DC/DC

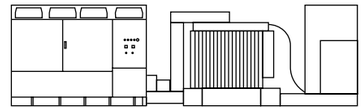


REFERENCES		FD1200R
DC INPUT & OUTPUT	DC Rated Power (kW) @ 30 °C	1200
	DC Rated Power (kW) @ 40 °C	1120
	DC Rated Power (kW) @ 50 °C	1040
	Max. DC Output Current (A) @ 30 °C	1200
	Max. DC Output Current (A) @ 40 °C	1120
	Max. DC Output Current (A) @ 50 °C	1040
	DC PV Voltage Range (Vdc) [1]	720 - 1500
	DC ESS Voltage Range (Vdc) [1]	720 - 1500
	Maximum DC PV Input Voltage (Vdc)	1500
	DC Voltage Ripple	<3%
	Max. DC Short Circuit Current ESS (kA)	500 kA with a time constant of 1 ms
	Max. DC Short Circuit Current PV (kA)	3
EFFICIENCY	Efficiency (Max)	99.18%
CABINET	Dimensions [WxDxH] (ft)	3.94 x 5.90 x 7.56
	Dimensions [WxDxH] (m)	1.20 x 1.80 x 2.30
	Cooling	Forced air
	Enclosure Protection Degree	NEMA 3R / IP54
CONNECTIONS	Number of PV connections	6 negative / 6 positive
	Number of Connections from Inverter (BESS)	3 positive / 3 negative
ENVIRONMENT	Operating Temperature Range [2]	From -25 °C to +60 °C, >30 °C power derating
	Relative Humidity	From 4% to 100%
	Max. Altitude (above sea level)	4000 m (> 2000 m power derating)
CONTROL	Interfaces	Emergency stop pushbutton and indicator lights
	Communications Protocol	Modbus TCP
PROTECTIONS	PV Side	PV fuses and motorized DC disconnect switch
	Inverter Side	Ultra-fast fuses and motorized DC disconnect switch
STANDARDS	Safety	UL1741, IEC 62109-1

NOTES

[1] Consult Power Electronics for derating curves.
[2] Consult Power Electronics for temperatures below -25 °C.

MV Skid Compact

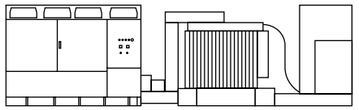


REFERENCES		MVS04200H100	MVS04200H080	MVS04200H050	MVS04200H040
RATINGS	Rated power @ 40 °C	4200 kVA			
	Operating Grid Frequency	50 Hz			
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	20 kV	22 kV	30 kV	33 kV
	LV rated voltage	660 V			
	Transformer cooling	ONAN / KNAN			
	Transformer vector group	Dy11			
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level			
		PT100 optional			
	Transformer index of protection	IP54			
	Transformer losses	IEC standard (IEC Tier-2 optional)			
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional			
	Switchgear configuration [3]	Double feeder (2L)			
	Switchgear protection [3]	Circuit breaker (V)			
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)			
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)			
	Rated impulse withstand voltage	125 kV		170 kV	
CONNECTIONS	MV connections	Close-coupled plug & play solution			
	MV AC wiring	MV bridge between transformer and protection switchgear prewired			
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >40 °C power derating			
	Maximum altitude (above sea level) [1]	1000 m (optionally up to 4000 m)			
	Relative humidity	4% to 95%			
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid			
	UPS system [4]	1 kVA / 1 kW. Optional			
OTHER EQUIPMENT	Safety mechanism	Interlocking system			
	Fire suppression system	Optional accessory for transformer oil retention tank			
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1			

NOTES

[1] Consult with Power Electronics for other options.
[2] For lower temperatures, consult with Power Electronics.
[3] SF6 free optional available.
[4] Consult with Power Electronics for UPS autonomy.

MV Skid Compact

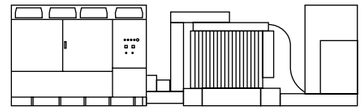


REFERENCES		MVS04390H100	MVS04390H080	MVS04390H050	MVS04390H040	MVS04390H031
RATINGS	Rated power @ 40 °C	4390 kVA				
	Operating Grid Frequency	50 Hz				60 Hz
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	20 kV	22 kV	30 kV	33 kV	34,5 kV
	LV rated voltage	690 V				
	Transformer cooling	ONAN / KNAN				
	Transformer vector group	Dy11				
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level				
		PT100 optional				
	Transformer index of protection	IP54				
	Transformer losses	IEC standard (IEC Tier-2 optional)				
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional				
	Switchgear configuration [3]	Double feeder (2L)				
	Switchgear protection [3]	Circuit breaker (V)				
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)				
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)				
	Rated impulse withstand voltage	125 kV		170 kV		
CONNECTIONS	MV connections	Close-coupled plug & play solution				
	MV AC wiring	MV bridge between transformer and protection switchgear prewired				
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >40 °C power derating				
	Maximum altitude (above sea level) [1]	1000 m (optionally up to 4000 m)				
	Relative humidity	4% to 95%				
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid				
	UPS system [4]	1 kVA / 1 kW. Optional				
OTHER EQUIPMENT	Safety mechanism	Interlocking system				
	Fire suppression system	Optional accessory for transformer oil retention tank				
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1				

NOTES

[1] Consult with Power Electronics for other options.
[2] For lower temperatures, consult with Power Electronics.
[3] SF6 free optional available.
[4] Consult with Power Electronics for UPS autonomy.

MV Skid Compact



REFERENCES		MVS05030H100	MVS05030H080	MVS05030H050	MVS05030H040
RATINGS	Rated power @ 30 °C	5030 kVA			
	Operating Grid Frequency	50 Hz			
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	20 kV	22 kV	30 kV	33 kV
	LV rated voltage	660 V			
	Transformer cooling	ONAN / KNAN			
	Transformer vector group	Dy11y11			
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level			
		PT100			
	Transformer index of protection	IP54			
	Transformer losses	IEC standard (IEC Tier-2 optional)			
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional			
	Switchgear configuration [3]	Double feeder (2L)			
	Switchgear protection [3]	Circuit breaker (V)			
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)			
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)			
	Rated impulse withstand voltage	125 kV		170 kV	
CONNECTIONS	MV connections	Close-coupled plug & play solution			
	MV AC wiring	MV bridge between transformer and protection switchgear prewired			
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >30 °C power derating			
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)			
	Relative humidity	4% to 95%			
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid			
	UPS system [4]	1 kVA / 1 kW. Optional			
OTHER EQUIPMENT	Safety mechanism	Interlocking system			
	Fire suppression system	Optional accessory for transformer oil retention tank			
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1			

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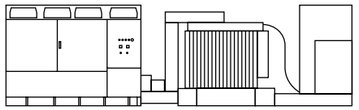
MV Skid Compact



REFERENCES		MVS05030H020	MVS05030H010	MVS05240H100	MVS05240H080
RATINGS	Rated power @ 30 °C	5030 kVA		5240 kVA	
	Operating Grid Frequency	50 Hz			
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	35 kV	36 kV	20 kV	22 kV
	LV rated voltage	660 V		690 V	
	Transformer cooling	ONAN / KNAN			
	Transformer vector group	Dy11y11			
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level			
		PT100			
	Transformer index of protection	IP54			
	Transformer losses	IEC standard (IEC Tier-2 optional)			
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional			
	Switchgear configuration [3]	Double feeder (2L)			
	Switchgear protection [3]	Circuit breaker (V)			
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)			
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)			
	Rated impulse withstand voltage	185 kV		125 kV	
CONNECTIONS	MV connections	Close-coupled plug & play solution			
	MV AC wiring	MV bridge between transformer and protection switchgear prewired			
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >30 °C power derating			
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)			
	Relative humidity	4% to 95%			
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid			
	UPS system [4]	1 kVA / 1 kW. Optional			
OTHER EQUIPMENT	Safety mechanism	Interlocking system			
	Fire suppression system	Optional accessory for transformer oil retention tank			
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1			

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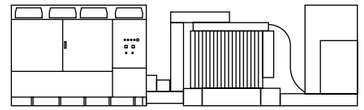
MV Skid Compact



REFERENCES		MVS05240H050	MVS05240H040	MVS05240H020	MVS05240H010
RATINGS	Rated power @ 30 °C	5240 kVA			
	Operating Grid Frequency	50 Hz			
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	30 kV	33 kV	35 kV	36 kV
	LV rated voltage	690 V			
	Transformer cooling	ONAN / KNAN			
	Transformer vector group	Dy11y11			
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level			
		PT100			
	Transformer index of protection	IP54			
	Transformer losses	IEC standard (IEC Tier-2 optional)			
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional			
	Switchgear configuration [3]	Double feeder (2L)			
	Switchgear protection [3]	Circuit breaker (V)			
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)			
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)			
	Rated impulse withstand voltage	170 kV		185 kV	
CONNECTIONS	MV connections	Close-coupled plug & play solution			
	MV AC wiring	MV bridge between transformer and protection switchgear prewired			
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >30 °C power derating			
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)			
	Relative humidity	4% to 95%			
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid			
	UPS system [4]	1 kVA / 1 kW. Optional			
OTHER EQUIPMENT	Safety mechanism	Interlocking system			
	Fire suppression system	Optional accessory for transformer oil retention tank			
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1			

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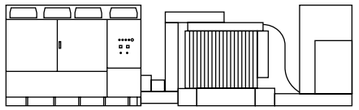
MV Skid Compact



REFERENCES		MVS05260H100	MVS05260H080	MVS05260H050
RATINGS	Rated power @ 30 °C	5260 kVA		
	Operating Grid Frequency	50 Hz		
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	20 kV	22 kV	30 kV
	LV rated voltage	690 V		
	Transformer cooling	ONAN / KNAN		
	Transformer vector group	Dy11y11		
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level		
		PT100		
	Transformer index of protection	IP54		
	Transformer losses	IEC standard (IEC Tier-2 optional)		
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional		
	Switchgear configuration [3]	Double feeder (2L)		
	Switchgear protection [3]	Circuit breaker (V)		
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)		
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)		
	Rated impulse withstand voltage	125 kV		170 kV
CONNECTIONS	MV connections	Close-coupled plug & play solution		
	MV AC wiring	MV bridge between transformer and protection switchgear prewired		
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >30 °C power derating		
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)		
	Relative humidity	4% to 95%		
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid		
	UPS system [4]	1 kVA / 1 kW. Optional		
OTHER EQUIPMENT	Safety mechanism	Interlocking system		
	Fire suppression system	Optional accessory for transformer oil retention tank		
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1		

NOTES

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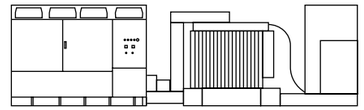
MV Skid Compact



REFERENCES		MVS05260H040	MVS05260H020	MVS05260H010
RATINGS	Rated power @ 30 °C	5260 kVA		
	Operating Grid Frequency	50 Hz		
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	33 kV	35 kV	36 kV
	LV rated voltage	690 V		
	Transformer cooling	ONAN / KNAN		
	Transformer vector group	Dy11y11		
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level		
		PT100		
	Transformer index of protection	IP54		
	Transformer losses	IEC standard (IEC Tier-2 optional)		
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional		
	Switchgear configuration [3]	Double feeder (2L)		
	Switchgear protection [3]	Circuit breaker (V)		
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)		
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)		
	Rated impulse withstand voltage	170 kV	185 kV	
CONNECTIONS	MV connections	Close-coupled plug & play solution		
	MV AC wiring	MV bridge between transformer and protection switchgear prewired		
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >30 °C power derating		
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)		
	Relative humidity	4% to 95%		
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid		
	UPS system [4]	1 kVA / 1 kW. Optional		
OTHER EQUIPMENT	Safety mechanism	Interlocking system		
	Fire suppression system	Optional accessory for transformer oil retention tank		
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1		

NOTES

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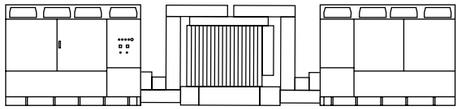
Twin Skid Compact



REFERENCES		MVT05730H100	MVT05730H080	MVT05730H050	MVT05730H040
RATINGS	Rated power @ 40 °C	5730 kVA			
	Operating Grid Frequency	50 Hz			
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	20 kV	22 kV	30 kV	33 kV
	LV rated voltage	600 V			
	Transformer cooling	ONAN / KNAN			
	Transformer vector group	Dy11y11			
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level			
		PT100 optional			
	Transformer index of protection	IP54			
	Transformer losses	IEC standard (IEC Tier-2 optional)			
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional			
	Switchgear configuration [3]	Double feeder (2L)			
	Switchgear protection [3]	Circuit breaker (V)			
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)			
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)			
	Rated impulse withstand voltage	125 kV		170 kV	
CONNECTIONS	MV connections	Close-coupled plug & play solution			
	MV AC wiring	MV bridge between transformer and protection switchgear prewired			
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >40 °C power derating			
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)			
	Relative humidity	4% to 95%			
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid			
	UPS system [4]	3 kVA / 3 kW. Optional			
OTHER EQUIPMENT	Safety mechanism	Interlocking system			
	Fire suppression system	Optional accessory for transformer oil retention tank			
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1			

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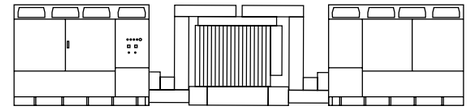
Twin Skid Compact



REFERENCES		MVT06300H100	MVT06300H080	MVT06300H050	MVT06300H040
RATINGS	Rated power @ 40 °C	6300 kVA			
	Operating Grid Frequency	50 Hz			
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	20 kV	22 kV	30 kV	33 kV
	LV rated voltage	660 V			
	Transformer cooling	ONAN / KNAN			
	Transformer vector group	Dy11y11			
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level			
		PT100 optional			
	Transformer index of protection	IP54			
	Transformer losses	IEC standard (IEC Tier-2 optional)			
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional			
	Switchgear configuration [3]	Double feeder (2L)			
	Switchgear protection [3]	Circuit breaker (V)			
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)			
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)			
	Rated impulse withstand voltage	125 kV		170 kV	
CONNECTIONS	MV connections	Close-coupled plug & play solution			
	MV AC wiring	MV bridge between transformer and protection switchgear prewired			
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >40 °C power derating			
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)			
	Relative humidity	4% to 95%			
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid			
	UPS system [4]	3 kVA / 3 kW. Optional			
OTHER EQUIPMENT	Safety mechanism	Interlocking system			
	Fire suppression system	Optional accessory for transformer oil retention tank			
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1			

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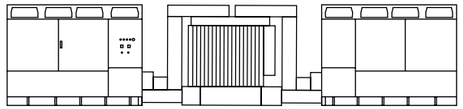
Twin Skid Compact



REFERENCES		MVT08400H100	MVT08400H080	MVT08400H050	MVT08400H040
RATINGS	Rated power @ 40 °C	8400 kVA			
	Operating Grid Frequency	50 Hz			
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	20 kV	22 kV	30 kV	33 kV
	LV rated voltage	660 V			
	Transformer cooling	ONAN / KNAN			
	Transformer vector group	Dy11y11			
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level			
		PT100 optional			
	Transformer index of protection	IP54			
	Transformer losses	IEC standard (IEC Tier-2 optional)			
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional			
	Switchgear configuration [3]	Double feeder (2L)			
	Switchgear protection [3]	Circuit breaker (V)			
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)			
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)			
	Rated impulse withstand voltage	125 kV		170 kV	
CONNECTIONS	MV connections	Close-coupled plug & play solution			
	MV AC wiring	MV bridge between transformer and protection switchgear prewired			
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >40 °C power derating			
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)			
	Relative humidity	4% to 95%			
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid			
	UPS system [4]	3 kVA / 3 kW. Optional			
OTHER EQUIPMENT	Safety mechanism	Interlocking system			
	Fire suppression system	Optional accessory for transformer oil retention tank			
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1			

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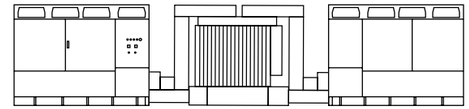

REFERENCES		MVT08780H100	MVT08780H080	MVT08780H050	MVT08780H040	MVT08780H031
RATINGS	Rated power @ 40 °C	8780 kVA				
	Operating Grid Frequency	50 Hz				60 Hz
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	20 kV	22 kV	30 kV	33 kV	34,5 kV
	LV rated voltage	690 V				
	Transformer cooling	ONAN / KNAN				
	Transformer vector group	Dy11y11				
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level				
		PT100 optional				
	Transformer index of protection	IP54				
	Transformer losses	IEC standard (IEC Tier-2 optional)				
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional				
	Switchgear configuration [3]	Double feeder (2L)				
	Switchgear protection [3]	Circuit breaker (V)				
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)				
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)				
	Rated impulse withstand voltage	125 kV		170 kV		
CONNECTIONS	MV connections	Close-coupled plug & play solution				
	MV AC wiring	MV bridge between transformer and protection switchgear prewired				
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >40 °C power derating				
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)				
	Relative humidity	4% to 95%				
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid				
	UPS system [4]	3 kVA / 3 kW. Optional				
OTHER EQUIPMENT	Safety mechanism	Interlocking system				
	Fire suppression system	Optional accessory for transformer oil retention tank				
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1				

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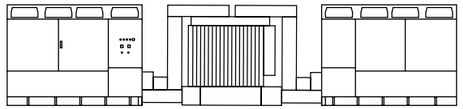
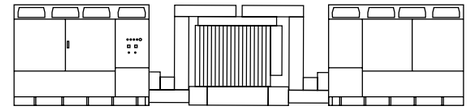


REFERENCES		MVT10060H100	MVT10060H080	MVT10060H050	MVT10060H040
RATINGS	Rated power @ 30 °C	10060 kVA			
	Operating Grid Frequency	50 Hz			
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	20 kV	22 kV	30 kV	33 kV
	LV rated voltage	660 V			
	Transformer cooling	ONAN / KNAN			
	Transformer vector group	Dy11y11			
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level			
		PT100			
	Transformer index of protection	IP54			
	Transformer losses	IEC standard (IEC Tier-2 optional)			
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional			
	Switchgear configuration [3]	Double feeder (2L)			
	Switchgear protection [3]	Circuit breaker (V)			
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)			
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)			
	Rated impulse withstand voltage	125 kV		170 kV	
CONNECTIONS	MV connections	Close-coupled plug & play solution			
	MV AC wiring	MV bridge between transformer and protection switchgear prewired			
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >30 °C power derating			
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)			
	Relative humidity	4% to 95%			
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid			
	UPS system [4]	3 kVA / 3 kW. Optional			
OTHER EQUIPMENT	Safety mechanism	Interlocking system			
	Fire suppression system	Optional accessory for transformer oil retention tank			
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1			

NOTES

[1] Consult with Power Electronics for other options.
[2] For lower temperatures, consult with Power Electronics.
[3] SF6 free optional available.
[4] Consult with Power Electronics for UPS autonomy.

Twin Skid Compact



REFERENCES		MVT10060H020	MVT10060H010	MVT10480H100	MVT10480H080
RATINGS	Rated power @ 30 °C	10060 kVA		10480 kVA	
	Operating Grid Frequency	50 Hz			
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	35 kV	36 kV	20 kV	22 kV
	LV rated voltage	660 V		690 V	
	Transformer cooling	ONAN / KNAN			
	Transformer vector group	Dy11y11			
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level			
		PT100			
	Transformer index of protection	IP54			
	Transformer losses	IEC standard (IEC Tier-2 optional)			
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional			
	Switchgear configuration [3]	Double feeder (2L)			
	Switchgear protection [3]	Circuit breaker (V)			
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)			
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)			
	Rated impulse withstand voltage	185 kV		125 kV	
CONNECTIONS	MV connections	Close-coupled plug & play solution			
	MV AC wiring	MV bridge between transformer and protection switchgear prewired			
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >30 °C power derating			
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)			
	Relative humidity	4% to 95%			
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid			
	UPS system [4]	3 kVA / 3 kW. Optional			
OTHER EQUIPMENT	Safety mechanism	Interlocking system			
	Fire suppression system	Optional accessory for transformer oil retention tank			
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1			

NOTES

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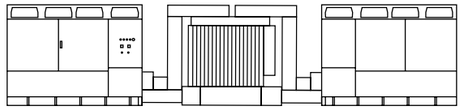
Twin Skid Compact



REFERENCES		MVT10480H050	MVT10480H040	MVT10480H020	MVT10480H010
RATINGS	Rated power @ 30 °C	10480 kVA			
	Operating Grid Frequency	50 Hz			
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	30 kV	33 kV	35 kV	36 kV
	LV rated voltage	690 V			
	Transformer cooling	ONAN / KNAN			
	Transformer vector group	Dy11y11			
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level			
		PT100			
	Transformer index of protection	IP54			
	Transformer losses	IEC standard (IEC Tier-2 optional)			
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional			
	Switchgear configuration [3]	Double feeder (2L)			
	Switchgear protection [3]	Circuit breaker (V)			
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)			
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)			
	Rated impulse withstand voltage	170 kV		185 kV	
CONNECTIONS	MV connections	Close-coupled plug & play solution			
	MV AC wiring	MV bridge between transformer and protection switchgear prewired			
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >30 °C power derating			
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)			
	Relative humidity	4% to 95%			
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid			
	UPS system [4]	3 kVA / 3 kW. Optional			
OTHER EQUIPMENT	Safety mechanism	Interlocking system			
	Fire suppression system	Optional accessory for transformer oil retention tank			
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1			

NOTES

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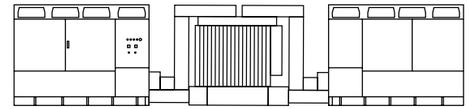
Twin Skid Compact



REFERENCES		MVT10520H100	MVT10520H080	MVT10520H050
RATINGS	Rated power @ 30 °C	10520 kVA		
	Operating Grid Frequency	50 Hz		
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	20 kV	22 kV	30 kV
	LV rated voltage	690 V		
	Transformer cooling	ONAN / KNAN		
	Transformer vector group	Dy11y11		
	Transformer protection	Protection relay for pressure, temperature (two levels) and gassing / dielectric level		
		PT100		
	Transformer index of protection	IP54		
	Transformer losses	IEC standard (IEC Tier-2 optional)		
	Oil retention tank	Galvanized steel. Integrated with hydrocarbon filter. Optional		
	Switchgear configuration [3]	Double feeder (2L)		
	Switchgear protection [3]	Circuit breaker (V)		
	Switchgear short circuit rating [1]	16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)		
	Switchgear IAC [1]	A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)		
	Rated impulse withstand voltage	125 kV		170 kV
CONNECTIONS	MV connections	Close-coupled plug & play solution		
	MV AC wiring	MV bridge between transformer and protection switchgear prewired		
ENVIRONMENT	Ambient temperature range [2]	From -25 °C to +60 °C, >30 °C power derating		
	Maximum altitude (above sea level) [1]	Up to 1000 m (optionally up to 4000 m)		
	Relative humidity	4% to 95%		
AUXILIARY SERVICES	User cabinet	Optionally, LV cabinet in the skid		
	UPS system [4]	3 kVA / 3 kW. Optional		
OTHER EQUIPMENT	Safety mechanism	Interlocking system		
	Fire suppression system	Optional accessory for transformer oil retention tank		
STANDARDS	Compliance	IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1		

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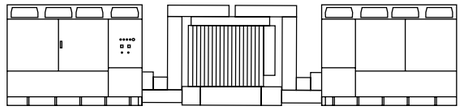
Twin Skid Compact



REFERENCES		MVT10520H040	MVT10520H020	MVT10520H010
RATINGS	Rated power @ 30 °C		10520 kVA	
	Operating Grid Frequency		50 Hz	
MEDIUM VOLTAGE EQUIPMENT	MV rated voltage	33 kV	35 kV	36 kV
	LV rated voltage		690 V	
	Transformer cooling		ONAN / KNAN	
	Transformer vector group		Dy11y11	
	Transformer protection		Protection relay for pressure, temperature (two levels) and gassing / dielectric level	
			PT100	
	Transformer index of protection		IP54	
	Transformer losses		IEC standard (IEC Tier-2 optional)	
	Oil retention tank		Galvanized steel. Integrated with hydrocarbon filter. Optional	
	Switchgear configuration [3]		Double feeder (2L)	
	Switchgear protection [3]		Circuit breaker (V)	
	Switchgear short circuit rating [1]		16 kA / 1 s (optionally: 20 kA / 1 s, 20 kA / 3 s or 25 kA / 1 s)	
	Switchgear IAC [1]		A-FLR 16 kA / 1 s (optionally 20 kA or 25 kA)	
	Rated impulse withstand voltage	170 kV	185 kV	
CONNECTIONS	MV connections		Close-coupled plug & play solution	
	MV AC wiring		MV bridge between transformer and protection switchgear prewired	
ENVIRONMENT	Ambient temperature range [2]		From -25 °C to +60 °C, >30 °C power derating	
	Maximum altitude (above sea level) [1]		Up to 1000 m (optionally up to 4000 m)	
	Relative humidity		4% to 95%	
AUXILIARY SERVICES	User cabinet		Optionally, LV cabinet in the skid	
	UPS system [4]		3 kVA / 3 kW. Optional	
OTHER EQUIPMENT	Safety mechanism		Interlocking system	
	Fire suppression system		Optional accessory for transformer oil retention tank	
STANDARDS	Compliance		IEC 62271-212, IEC 62271-200, IEC 60076, IEC 61439-1	

NOTES

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[2] For lower temperatures, consult with Power Electronics.
[3] SF6 free optional available.
[4] Consult with Power Electronics for UPS autonomy.

Power Plant Controller

PPC PRO



MECHANICAL DATA	Material	Steel
	Installation	Wall or floor mounted [4]
	Cable entry	Bottom in & out
	Maintenance	Front Access Required
	Cooling	Forced Ventilation
	Weight [1]	85 kg / 188 lbs
	Dimensions (H x W x D) [1]	1000 x 845 x 300 (mm) / 40 x 33.27 x 12 (inches)
ELECTRICAL DATA	Maximum consumption	230 W
	AC Voltage input	230 Vac (IEC) [±10%], 120 Vac (UL) [±10%]
	DC Voltage input	120 - 290 Vdc
	Frequency input	50/60 Hz
COMMUNICATIONS	Compatible inverters	HEM, HEMK, PCSM, PCSK
	Communication protocols	Modbus TCP/ ADS for inverter control [2]
	Communication Switch	8 RJ45 Ports + 2 optional monomode or multimode FO transceivers
ENVIRONMENTAL CONDITIONS	Temperature range	From -25 °C to +50 °C
	Humidity	From 5% to 95 % non-condensing
	Protection degree	IP54 / NEMA 12
	Pollution degree	PD3
	Maximum altitude	4000 m / 13123 ft
	Impact Protection	IK10
STANDARDS	Marking	CE
	Standards	UL 6200 / IEC 61010-1 / UL 3141
FUNCTIONALITIES [3]	General	The PPC is the specific solution for photovoltaic (PV) plants. Its main function is to ensure that the plant accurately follows grid commands, complies with regulatory requirements, and maximizes energy production.
	Active power control	It measures and controls the active power (P) delivered by the plant in real time. It ensures compliance with grid codes, including P(f), ramps, and power limits.
	Reactive power control	It measures and controls the reactive power (Q) delivered by the plant in real time. It ensures compliance with grid codes, including reactive power control, power factor control, voltage control, Q(V) curve, Q(P) curve, ramp rate, SQD.
	Diagnosis functions	Warning / fault messages real-time data monitoring, plant phasor operation diagrams. O&M Diagnostic.
	Others	It manages multiple solar inverters, distributing commands in an optimal and stable manner. Internal measurement and compatibility with power analyzers, P/Q plant limitations, hot standby redundancy, controlled plant start, individual inverter control, line drop compensation, security process when plant failures occur.
OTHERS	Web server	For local and remote monitoring / control
	Customizable solution	Flexible solution based on a powerful modular and programmable controller

NOTES

[1] Weight and dimensions may vary depending on the specific project.
[2] Consult with Power Electronics for further information.
[3] Consult Power Electronics for functionalities and availability.
[4] If floor installation is required, an optional plinth must be added.

Power Plant Controller

BPC PRO



MECHANICAL DATA	Material	Steel
	Installation	Wall or floor mounted [4]
	Cable entry	Bottom in & out
	Maintenance	Front Access Required
	Cooling	Forced Ventilation
	Weight [1]	85 kg / 188 lbs
	Dimensions (H x W x D) [1]	1000 x 845 x 300 (mm) / 40 x 33.27 x 12 (inches)
ELECTRICAL DATA	Maximum consumption	230 W
	AC Voltage input	230 Vac (IEC) [±10%], 120 Vac (UL) [±10%]
	DC Voltage input	120 - 290 Vdc
	Frequency input	50/60 Hz
COMMUNICATIONS	Compatible inverters	HEM, HEMK, PCSM, PCSK
	Communication protocols	Modbus TCP/ ADS for inverter control [2]
	Communication Switch	8 RJ45 Ports + 2 optional monomode or multimode FO transceivers
ENVIRONMENTAL CONDITIONS	Temperature range	From -25 °C to +50 °C
	Humidity	From 5% to 95 % non-condensing
	Protection degree	IP54 / NEMA 12
	Pollution degree	PD3
	Maximum altitude	4000 m / 13123 ft
	Impact Protection	IK10
STANDARDS	Marking	CE
	Standards	UL 6200 / IEC 61010-1 / UL 3141
FUNCTIONALITIES [3]	General	The BPC manages battery-based energy storage (BESS) plants. Battery plants require more dynamic control strategies, as they can both generate and absorb energy. Control charge and discharge cycles to obtain the longest possible battery life. Grid Following operation mode.
	Active power control	It measures and controls the active power (P) delivered by the plant in real time. Advanced capabilities include closed-loop control and generation ramping. It manages the State of Charge (SOC), load balancing, and safety limits. It allows the execution of auxiliary services such as primary and secondary frequency regulation. Negative and positive active power setpoints.
	Reactive power control	It measures and controls the reactive power (Q) delivered by the plant in real time. It ensures compliance with grid codes, including reactive power control, power factor control, voltage control, Q(V) curve, Q(P) curve, ramp rate, SQD.
	Diagnosis functions	Warning / fault messages real-time data monitoring, plant phasor operation diagrams. O&M Diagnostic.
	Others	It manages multiple storage inverters, distributing commands in an optimal and stable manner. Internal measurement and compatibility with power analyzers, P/Q plant limitations, hot standby redundancy, controlled plant start, individual inverter control, line drop compensation, security process when plant failures occur. It coordinates multiple PCS to ensure a fast and stable response.
OTHERS	Web server	For local and remote monitoring / control
	Customizable solution	Flexible solution based on a powerful modular and programmable controller

NOTES

[1] Weight and dimensions may vary depending on the specific project.
[2] Consult with Power Electronics for further information.
[3] Consult Power Electronics for functionalities and availability.
[4] If floor installation is required, an optional plinth must be added.



Power Plant Controller

HPC PRO



MECHANICAL DATA	Material	Steel
	Installation	Wall or floor mounted [4]
	Cable entry	Bottom in & out
	Maintenance	Front Access Required
	Cooling	Forced Ventilation
	Weight [1]	85 kg / 188 lbs
	Dimensions (H x W x D) [1]	1000 x 845 x 300 (mm) / 40 x 33.27 x 12 (inches)
ELECTRICAL DATA	Maximum consumption	230 W
	AC Voltage input	230 Vac (IEC) [±10%], 120 Vac (UL) [±10%]
	DC Voltage input	120 - 290 Vdc
	Frequency input	50/60 Hz
COMMUNICATIONS	Compatible inverters	HEM, HEMK, PCSM, PCSK
	Communication protocols	Modbus TCP/ ADS for inverter control [2]
	Communication Switch	8 RJ45 Ports + 2 optional monomode or multimode FO transceivers
ENVIRONMENTAL CONDITIONS	Temperature range	From -25 °C to +50 °C
	Humidity	From 5% to 95 % non-condensing
	Protection degree	IP54 / NEMA 12
	Pollution degree	PD3
	Maximum altitude	4000 m / 13123 ft
	Impact Protection	IK10
STANDARDS	Marking	CE
	Standards	UL 6200 / IEC 61010-1 / UL 3141
FUNCTIONALITIES [3]	General	It simultaneously coordinates photovoltaic generation and storage capacity. It can operate with a single power setpoint at the POI or with separate setpoints for PV and BESS. It dynamically adjusts the contribution of each technology according to grid or customer needs. Grid Following mode.
	Active power control	It measures and controls the active power (P) delivered by the plant in real time. Advanced capabilities include closed-loop control and generation ramping. It manages the State of Charge (SOC), load balancing, and safety limits. It allows the execution of auxiliary services such as primary and secondary frequency regulation. Negative and positive active power setpoints.
	Reactive power control	It measures and controls the reactive power (Q) delivered by the plant in real time. It ensures compliance with grid codes, including reactive power control, power factor control, voltage control, Q(V) curve, Q(P) curve, ramp rate, SQD.
	Diagnosis functions	Warning / fault messages real-time data monitoring, plant phasor operation diagrams. O&M Diagnostic.
	Others	It manages multiple inverters, distributing commands in an optimal and stable manner. Internal measurement and compatibility with power analyzers, P/Q plant limitations, hot standby redundancy, controlled plant start, individual inverter control, line drop compensation, security process when plant failures occur.
OTHERS	Web server	For local and remote monitoring / control
	Customizable solution	Flexible solution based on a powerful modular and programmable controller

NOTES

[1] Weight and dimensions may vary depending on the specific project.
[2] Consult with Power Electronics for further information.
[3] Consult Power Electronics for functionalities and availability.
[4] If floor installation is required, an optional plinth must be added.

Power Plant Controller

BPC PRO VISMA



MECHANICAL DATA	Material	Steel
	Installation	Wall or floor mounted [4]
	Cable entry	Bottom in & out
	Maintenance	Front Access Required
	Cooling	Forced Ventilation
	Weight [1]	85 kg / 188 lbs
	Dimensions (H x W x D) [1]	1000 x 845 x 300 (mm) / 40 x 33.27 x 12 (inches)
ELECTRICAL DATA	Maximum consumption	230 W
	AC Voltage input	230 Vac (IEC) [±10%], 120 Vac (UL) [±10%]
	DC Voltage input	120 - 290 Vdc
	Frequency input	50/60 Hz
COMMUNICATIONS	Compatible inverters	HEM, HEMK, PCSM, PCSK
	Communication protocols	Modbus TCP/ ADS for inverter control [2]
	Communication Switch	8 RJ45 Ports + 2 optional monomode or multimode FO transceivers
ENVIRONMENTAL CONDITIONS	Temperature range	From -25 °C to +50 °C
	Humidity	From 5% to 95 % non-condensing
	Protection degree	IP54 / NEMA 12
	Pollution degree	PD3
	Maximum altitude	4000 m / 13123 ft
	Impact Protection	IK10
STANDARDS	Marking	CE
	Standards	UL 6200 / IEC 61010-1 / UL 3141
FUNCTIONALITIES [3]	General	The BPC manages battery-based energy storage (BESS) plants. Battery plants require more dynamic control strategies, as they can both generate and absorb energy. Control charge and discharge cycles to obtain the longest possible battery life. Grid Forming mode (follow V and f references). Blackstart and grid synchronization capabilities.
	Active power control	It measures and controls the active power (P) delivered by the plant in real time. Advanced capabilities include closed-loop control and generation ramping. It manages the State of Charge (SOC), load balancing, and safety limits. It allows the execution of auxiliary services such as primary and secondary frequency regulation. Negative and positive active power setpoints.
	Reactive power control	It measures and controls the reactive power (Q) delivered by the plant in real time. It ensures compliance with grid codes, including reactive power control, power factor control, voltage control, Q(V) curve, Q(P) curve, ramp rate, SQD.
	Diagnosis functions	Warning / fault messages real-time data monitoring, plant phasor operation diagrams. O&M Diagnostic.
	Others	It manages multiple storage inverters, distributing commands in an optimal and stable manner. Internal measurement and compatibility with power analyzers, P/Q plant limitations, hot standby redundancy, controlled plant start, individual inverter control, line drop compensation, security process when plant failures occur. It coordinates multiple PCS to ensure a fast and stable response.
OTHERS	Web server	For local and remote monitoring / control
	Customizable solution	Flexible solution based on a powerful modular and programmable controller

NOTES

[1] Weight and dimensions may vary depending on the specific project.
[2] Consult with Power Electronics for further information.
[3] Consult Power Electronics for functionalities and availability.
[4] If floor installation is required, an optional plinth must be added.

Power Plant Controller

HPC PRO VISMA



MECHANICAL DATA	Material	Steel
	Installation	Wall or floor mounted [4]
	Cable entry	Bottom in & out
	Maintenance	Front Access Required
	Cooling	Forced Ventilation
	Weight [1]	85 kg / 188 lbs
	Dimensions (H x W x D) [1]	1000 x 845 x 300 (mm) / 40 x 33.27 x 12 (inches)
ELECTRICAL DATA	Maximum consumption	230 W
	AC Voltage input	230 Vac (IEC) [±10%], 120 Vac (UL) [±10%]
	DC Voltage input	120 - 290 Vdc
	Frequency input	50/60 Hz
COMMUNICATIONS	Compatible inverters	HEM, HEMK, PCSM, PCSK
	Communication protocols	Modbus TCP/ ADS for inverter control [2]
	Communication Switch	8 RJ45 Ports + 2 optional monomode or multimode FO transceivers
ENVIRONMENTAL CONDITIONS	Temperature range	From -25 °C to +50 °C
	Humidity	From 5% to 95 % non-condensing
	Protection degree	IP54 / NEMA 12
	Pollution degree	PD3
	Maximum altitude	4000 m / 13123 ft
	Impact Protection	IK10
STANDARDS	Marking	CE
	Standards	UL 6200 / IEC 61010-1 / UL 3141
FUNCTIONALITIES [3]	General	It simultaneously coordinates photovoltaic generation and storage capacity. It can operate with a single power setpoint at the POI or with separate setpoints for PV and BESS. It dynamically adjusts the contribution of each technology according to grid or customer needs. Grid Forming mode (follow V and f references). Blackstart and grid synchronization capabilities.
	Active power control	It measures and controls the active power (P) delivered by the plant in real time. Advanced capabilities include closed-loop control and generation ramping. It manages the State of Charge (SOC), load balancing, and safety limits. It allows the execution of auxiliary services such as primary and secondary frequency regulation. Negative and positive active power setpoints.
	Reactive power control	It measures and controls the reactive power (Q) delivered by the plant in real time. It ensures compliance with grid codes, including reactive power control, power factor control, voltage control, Q(V) curve, Q(P) curve, ramp rate, SQD.
	Diagnosis functions	Warning / fault messages real-time data monitoring, plant phasor operation diagrams. O&M Diagnostic.
	Others	It manages multiple inverters, distributing commands in an optimal and stable manner. Internal measurement and compatibility with power analyzers, P/Q plant limitations, hot standby redundancy, controlled plant start, individual inverter control, line drop compensation, security process when plant failures occur.
OTHERS	Web server	For local and remote monitoring / control
	Customizable solution	Flexible solution based on a powerful modular and programmable controller

NOTES

[1] Weight and dimensions may vary depending on the specific project.
[2] Consult with Power Electronics for further information.
[3] Consult Power Electronics for functionalities and availability.
[4] If floor installation is required, an optional plinth must be added.

Power Plant Controller

SCPC PRO



MECHANICAL DATA	Material	Steel
	Installation	Wall or floor mounted [4]
	Cable entry	Bottom in & out
	Maintenance	Front Access Required
	Cooling	Forced Ventilation
	Weight [1]	85 kg / 188 lbs
	Dimensions (H x W x D) [1]	1000 x 845 x 300 (mm) / 40 x 33.27 x 12 (inches)
ELECTRICAL DATA	Maximum consumption	230 W
	AC Voltage input	230 Vac (IEC) [±10%], 120 Vac (UL) [±10%]
	DC Voltage input	120 - 290 Vdc
	Frequency input	50/60 Hz
COMMUNICATIONS	Compatible inverters	HEM, HEMK, PCSM, PCSK
	Communication protocols	Modbus TCP/ ADS for inverter control [2]
	Communication Switch	8 RJ45 Ports + 2 optional monomode or multimode FO transceivers
ENVIRONMENTAL CONDITIONS	Temperature range	From -25 °C to +50 °C
	Humidity	From 5% to 95 % non-condensing
	Protection degree	IP54 / NEMA 12
	Pollution degree	PD3
	Maximum altitude	4000 m / 13123 ft
	Impact Protection	IK10
STANDARDS	Marking	CE
	Standards	UL 6200 / IEC 61010-1 / UL 3141
FUNCTIONALITIES [3]	General	The SCPC PRO is a plant controller model specifically designed for photovoltaic self-consumption systems. It is a variant of the PPC PRO equipped with specialized software to ensure that the energy generated is used within the installation without being fed back into the grid.
	Active power control	It measures and controls the active power (P) delivered by the plant in real time to ensure that the generated energy is used on-site without being fed back into the grid. It improves operational stability in the face of rapid changes in consumption. Advanced capabilities include closed-loop control and generation ramping.
	Reactive power control	It measures and controls the reactive power (Q) delivered by the plant in real time to ensure that the generated energy is used on-site without being fed back into the grid.
	Diagnosis functions	Warning / fault messages real-time data monitoring, plant phasor operation diagrams. O&M Diagnostic.
	Others	Internal measurement and compatibility with power analyzers, P/Q plant limitations, hot standby redundancy, controlled plant start, individual inverter control, line drop compensation, security process when plant failures occur.
OTHERS	Web server	For local and remote monitoring / control
	Customizable solution	Flexible solution based on a powerful modular and programmable controller

NOTES

[1] Weight and dimensions may vary depending on the specific project.
[2] Consult with Power Electronics for further information.
[3] Consult Power Electronics for functionalities and availability.
[4] If floor installation is required, an optional plinth must be added.

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NOTES

WARRANTY
Power Electronics (the Seller) warrants that their Products are free of faults and defects for a period of 5 years, valid from the date of delivery to the Buyer. It shall be understood that a product is free of faults and defects when its condition and performance is in compliance with its specification.

The warranty shall not extend to any Products whose defects are due to (i) careless or improper use, (ii) failure to observe the Seller's instructions regarding the transport, installation, functioning, maintenance and the storage of the Products, (iii) repairs or modifications made by the Buyer or third party without prior written authorization of the Seller, (iv) negligence during the implementation of authorized repairs or modifications, (v) if serial numbers are modified or illegible, (vi) anomalies caused by, or connected to, the elements coupled directly by the Buyer or by the final customer, (vii) accidents or events that place the Product outside its storage and operational specification, viii) continued use of the Products after identification of a fault or defect.

The warranty excludes components that must be replaced periodically such as fuses, lamps & air filters or consumable materials subject to normal wear and tear.

The warranty excludes external parts that are not manufactured by the Seller under the brand of Power Electronics.

The Seller undertakes to replace or to repair, himself, at their discretion, any Product or its part that demonstrates a fault or defect, which is in conformance with the aforementioned terms of the warranty. Reasonable costs associated with the disassembly/ assembly, transport and customs of equipment will also be undertaken by the Seller except in cases of approved intervention by the Buyer and/or their representative where cost allocation has been previously agreed.



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