

Easy maintenance.

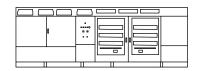
Integrated MV solution in the same enclosure. Advanced grid support.

Compatible with all battery technologies.



Freemaq PCSM





COMMON FEATURES					
	Current Harmonic Distortion (THDi)		<3% per IEEE 519		
AC	Power Factor (cos phi) [2]		0.5 leading 0.5 lagging		
	Reactive Power Compensation		Four quadrant operation		
	Maximum DC Voltage		1500 V		
	DC Voltage Ripple		<3%		
DC	Max. DC Continuous Current (A)		4590		
	Max. DC Short Circuit Current (kA)	5001	500 kA with a time constant of 1 ms		
	Battery Technology		All type of batteries (BMS required)		
	Dimensions [WxDxH] (ft)	.	21.3 x 6.5 x 7.5		
CABINET	Dimensions [WxDxH] (m)	6.5 x 2.0 x 2.3			
	Weight (lbs)	30865			
	Weight (kg)	14000			
	Type of Ventilation	Forced air cooling			
	Degree of Protection	IP55			
	Operating Temperature Range [4]	From -25 °C to +60 °C, >40 °C power derating			
ENVIRONMENT	Operating Relative Humidity Range	From 4% to 100% non-condensing			
	Storage Temperature Range	110111	From -40 °C to +60 °C		
	Communication Protocol	Modbus TCP			
CONTROL	Power Plant Controller	Optional. Third party SCADA systems supported.			
INTERFACE	Keyed ON/OFF Switch	Optional. II	Standard		
PROTECTIONS	Ground Fault Protection	Insulation monitoring device			
	Humidity Control	Active heating			
	General AC Protection & Disconn.		MV switchgear (2L+V)		
	General DC Protection & Disconn.	High-speed fus	High-speed fuses, Motorized DC disconnect switches [6]		
	Overvoltage Protection		Type II for AC and Type I+II for DC		
				Type II for AC and Type I+II for DC	
CEDTIEICATIONS	Overvoitage i Totection	Туре	e il for AC and Type I+II for	БС	
	Safety		09-1 / IEC 62109-2 / IEC 62		
& STANDARDS	Safety		09-1 / IEC 62109-2 / IEC 62		
& STANDARDS	Safety AC Output Power (kVA/kW) @40 °C [1]	IEC 621	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200	2477-2	
& STANDARDS REFERENCES	Safety	IEC 621	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900	2477-2 FP4207MH	
& STANDARDS REFERENCES	AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1] Operating Grid Voltage (kV)	IEC 621	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900	2477-2	
& STANDARDS REFERENCES AC	AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz)	IEC 621	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50	2477-2 FP4207MH	
& STANDARDS REFERENCES AC	AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1] Operating Grid Voltage (kV)	IEC 621 FP4200MH 34.5 kV ±10% 60 Hz	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V	2477-2 FP4207MH ±10% Hz	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX.	AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz)	IEC 621 FP4200MH 34.5 kV ±10% 60 Hz	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50	2477-2 FP4207MH ±10% Hz	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX.	Safety AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary)	34.5 kV ±10% 60 Hz 97.8	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1% including MV transform	±10% Hz	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY	AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary)	34.5 kV ±10% 60 Hz	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform	±10% Hz	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT	Safety AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary)	34.5 kV ±10% 60 Hz 97.8	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH	±10% Hz	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT	Safety AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary)	34.5 kV ±10% 60 Hz 97.8	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m	±10% Hz	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES	Safety AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range [3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) [5]	34.5 kV ±10% 60 Hz 97.8	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH	±10% Hz	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES	Safety AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @40 °C ^[1]	34.5 kV ±10% 60 Hz 97.8	99-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105	±10% Hz	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES	Safety AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range [3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) [5] AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1]	34.5 kV ±10% 60 Hz 97.8	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810	±10% Hz	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC	Safety AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range [3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) [5] AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1] Operating Grid Voltage (kV	34.5 kV ±10% 60 Hz 97.8	99-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810 34.5 kV ±10%	±10% Hz	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC	Safety AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range [3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) [5] AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1] Operating Grid Voltage (kV Operating Grid Frequency (Hz)	97.5 2000 m	99-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810 34.5 kV ±10% 60 Hz	±10% Hz ner 2000 m	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC DC EFFICIENCY & AUX.	Safety AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range [3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) [5] AC Output Power (kVA/kW) @40 °C [1] AC Output Power (kVA/kW) @50 °C [1] Operating Grid Voltage (kV Operating Grid Frequency (Hz) DC Voltage Range [3]	97.7	09-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810 34.5 kV ±10% 60 Hz 913 V - 1500 V	±10% Hz ner 2000 m	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC DC EFFICIENCY & AUX. SUPPLY	Safety AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary)	97.7	99-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810 34.5 kV ±10% 60 Hz 913 V - 1500 V 6% including MV transform	±10% Hz ner 2000 m	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES	Safety AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary)	97.7	99-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810 34.5 kV ±10% 60 Hz 913 V - 1500 V 6% including MV transform 0% including MV transform	±10% Hz ner 2000 m	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES EFFICIENCY & AUX. SUPPLY ENVIRONMENT	Safety AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary)	97.7	99-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810 34.5 kV ±10% 60 Hz 913 V - 1500 V 6% including MV transform 0% including MV transform	±10% Hz ner 2000 m	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES ENVIRONMENT REFERENCES EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES	AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5]	97.7	99-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810 34.5 kV ±10% 60 Hz 913 V - 1500 V 6% including MV transform 0% including MV transform 2000 m FP4010MH	±10% Hz ner 2000 m	
& STANDARDS REFERENCES AC OC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC OC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES	AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5]	97.7	99-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810 34.5 kV ±10% 60 Hz 913 V - 1500 V 6% including MV transform 2000 m FP4010MH 4010	±10% Hz ner 2000 m	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES	AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @ 40°C ^[1] AC Output Power (kVA/kW) @ 50°C ^[1]	97.7	99-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810 34.5 kV ±10% 60 Hz 913 V - 1500 V 6% including MV transform 2000 m FP4010MH 4010 3720	±10% Hz ner 2000 m	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC	AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @ 40°C ^[1] AC Output Power (kVA/kW) @ 50°C ^[1] Operating Grid Voltage (kV)	97.7	99-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810 34.5 kV ±10% 60 Hz 913 V - 1500 V 6% including MV transform 0% including MV transform 2000 m FP4010MH 4010 3720 34.5 kV ±10%	±10% Hz ner 2000 m	
& STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC DC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES	AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @ 40 °C ^[1] AC Output Power (kVA/kW) @ 50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Voltage (kV) Operating Grid Frequency (Hz)	97.5	99-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810 34.5 kV ±10% 60 Hz 913 V - 1500 V 6% including MV transform 2000 m FP4010MH 4010 3720 34.5 kV ±10% 60 Hz	2477-2 FP4207MH ±10% Hz ner 2000 m	
CERTIFICATIONS & STANDARDS REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES AC DC EFFICIENCY & AUX. SUPPLY ENVIRONMENT REFERENCES	AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @40 °C ^[1] AC Output Power (kVA/kW) @50 °C ^[1] Operating Grid Voltage (kV Operating Grid Frequency (Hz) DC Voltage Range ^[3] Efficiency (Max) (η) (preliminary) Euroeta (η) (preliminary) Max. Altitude (above sea level) ^[5] AC Output Power (kVA/kW) @ 40 °C ^[1] AC Output Power (kVA/kW) @ 50 °C ^[1] Operating Grid Voltage (kV) Operating Grid Voltage (kV) Operating Grid Frequency (Hz) DC Voltage Range ^[3]	97.7	99-1 / IEC 62109-2 / IEC 62 FP4203MH 4200 3900 33 kV 50 934 V - 1500 V 0% including MV transform 1000 m FP4105MH 4105 3810 34.5 kV ±10% 60 Hz 913 V - 1500 V 6% including MV transform 0% including MV transform 2000 m FP4010MH 4010 3720 34.5 kV ±10% 60 Hz 891 V - 1500 V	2477-2 FP4207MH ±10% Hz ner 2000 m ner	

NOTES [1] Values at 1.00-Vac nom and $cos\phi$ =1.

Consult Power Electronics for derating curves and overload capability in grid forming mode.

[2] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$.

[3] 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.

[4] Optional available for temperatures down to -35 °C.

[5] Consult Power Electronics for altitudes above 1000 m.

V. 1.4.1 20251027 [6] Battery short circuit disconnection must be done on the battery side.

