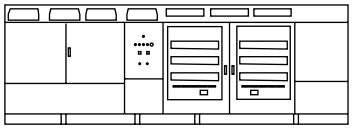
# PCSM

## IEC

**Easy maintenance.**
**Integrated MV solution in the same enclosure.**
**Advanced grid support.**
**Compatible with all battery technologies.**

# Freemaq PCSM
## IEC



| REFERENCES | | FP5020MH | FP5021MH | FP5022MH |
|---|---|---|---|---|
| AC | AC Output Power (kVA/kW) @30 °C [1] | | 5240 | |
| | AC Output Power (kVA/kW) @35 °C [1] | | 5020 | |
| | AC Output Power (kVA/kW) @40 °C [1] | | 4800 | |
| | AC Output Power (kVA/kW) @50 °C [1] | | 4360 | |
| | Operating Grid Voltage (kV) | 34.5 kV ±10% | 33 kV ±10% | 30 kV ±10% |
| | Operating Grid Frequency (Hz) | 60 Hz | 50 Hz | 50 Hz |
| | Current Harmonic Distortion (THDi) | | <3% per IEEE 519 | |
| | Power Factor (CosPhi) [2] | | 0.5 leading ... 0.5 lagging | |
| | Overload Capability | | 166% - 100 ms / 150% - 5 s / 120% - 8 s / 110% - 15 s | |
| DC | DC Voltage Range Full Power [3] | | 976 V – 1500 V | |
| | Maximum DC Voltage | | 1500 V | |
| | DC Voltage Ripple | | <3% | |
| | Max. DC Continuous Current (A) | | 5478 | |
| | Max. DC Short Circuit Current (kA) | | 500 kA with a time constant of 1 ms | |
| | Battery Technology | | All type of batteries (BMS required) | |
| EFFICIENCY & AUX. SUPPLY | 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 | Degree of Protection | | IP55 | |
| | Operating Temperature Range [4] | | From -25 °C to +60 °C, >30 °C power derating | |
| | Operating Relative Humidity Range | | From 4% to 100% non-condensing | |
| | Storage Temperature Range | | From -40 °C to +60 °C | |
| | Max. Altitude (above sea level) [5] | 2000 m | 1000 m | |
| CONTROL INTERFACE | Communication Protocol | | Modbus TCP | |
| | Power Plant Controller | | Optional | |
| | Keyed ON/OFF Switch | | Standard | |
| PROTECTIONS | Ground Fault Protection | | Insulation monitoring device | |
| | Humidity Control | | Active heating | |
| | General AC Protection & Disconnection | | 36 kV MV switchgear (2L+V) | |
| | General DC Protection & Disconnection | | High-speed fuses, Motorized DC disconnect switches [6] | |
| | Overvoltage Protection | | Type 2 for AC and Type 1+2 for DC | |
| CERTIFICATIONS & STANDARDS | Safety | | IEC 62109-1 / IEC 62109-2 / IEC 62477-1 / IEC 62477-2 | |
| | 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 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 below to -25 °C.
[5] Consult Power Electronics for altitudes above 1000 m.
[6] Battery short circuit disconnection must be done on the battery side.
[7] Consult Power Electronics for other applicable standards / grid codes.

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