Magnizon MPPT module

Product Description

PM4860-MPPT is a pure Solar operated MPPT based, hot swappable 3000W modular design with wide solar PV input voltage upto 160V DC while supplying -48V DC constantly for telecom loads. Smart communication system enables easy solar hybrid configuration using Magnizon MQ48D-Hybrid controller (optional item from Magnizon).

Applications

- Fiber optic network and data room
- Access Network
- Transmission equipment's
- Mobile communications
- Satellite communications ground stations
- SCADA & switchgear applications
- BTS, 4G/5G base stations
- Manufacturing industry

Key Feature

- Nominal PV input：55Vdc～160Vdc
- Wide Working Temperature range：-40ºC～+85ºC
- Wide operating temperature: -40deg C to 70deg C
- Pure off-grid solar operation with advanced MPPT control logic
- Fan speed control design
- Output terminal with hot plug connector
- Digitalized Control: Digitalized primary and secondary controls could realize excellent monitoring and regulation
- High Reliability Design: Fan front to back air flow with latest thermal solution and experienced electric synthetize ensure suitable working environment and high reliability
- High efficiency > 98.8 %
- Maximum power point tracking accuracy> 99.5%
- The solar module is hot-pluggable, with convenient installation and maintenance
- Compact structure, high power density: Size: 41.4×287×132.3(WDH)
- Lower interference and excellent susceptibility gives module more reliable
- Built-in multiple output shunt design meets more load demand and no of output feeders
- Hot-Swappable modules, without injury, on-line maintenance, quick and easy repair
- Comprehensive lighting protection design. B+C or C class options
- Perfect battery management, improves the battery life, and keeps the battery good working condition
- Built-in over current, over voltage, over temperature etc protections and alarms

Compliance standards

- ISO9001:2015, ISO14001:2015, RoHs, CE
- Electrical Safety: IEC60950/ UL60950, EN55022 Class B (emission)
- EMC: IEC61000-4-2/3/4/5/6, IEC61000-4-11
- Harmonics: IEC61000-3-2, IEC61000-3-3

Specifications

| Item	PM4860-MPPT
ENVIRONMENTAL REQUIREMENTS	
Working temperature	-40℃~+85℃
Storage temperature	-40℃~ +85℃
Humidity RH	≤95% RH
Altitude	≤ 2000m (limit power above 2000m), max.: 3000m
PV INPUT	
Input voltage standard	Solar energy PV input, rated 68Vdc, maximal 160Vdc
Input Voltage range	55Vdc to 160Vdc
the maximum static voltage in non-working condition	168Vdc
Input current	65Amp DC
DC OUTPUT	
Efficiency	>98.7% Peak
Voltage range	-42.0Vto-58.0VDC
Rated Power	3000W
Load regulation	≤±0.5%
Voltage regulation factor	≤±0.1%
Total Regulation factor	≤±0.6%
Output DC current	0-63Amp
Error in load sharing	≤±5%
Precision of voltage regulation	≤±0.6%
Protective function	Input overvoltage, under-voltage;
	output overvoltage, overload, short circuit, over-temperature and fan failure
Cooling-down method	Speed air cooling
Electrical Safety	IEC62109-1 & 2
EMC	IEC620402
	IEC61000-4-11
	IEC61000-4-2 (electrostatic discharge)
	IEC61000-4-3 (Radiated immunity)
	IEC61000-4-4 (Fast transient)
	IEC61000-4-5 (Surge immunity)
	IEC61000-4-6 (Conducted immunity)

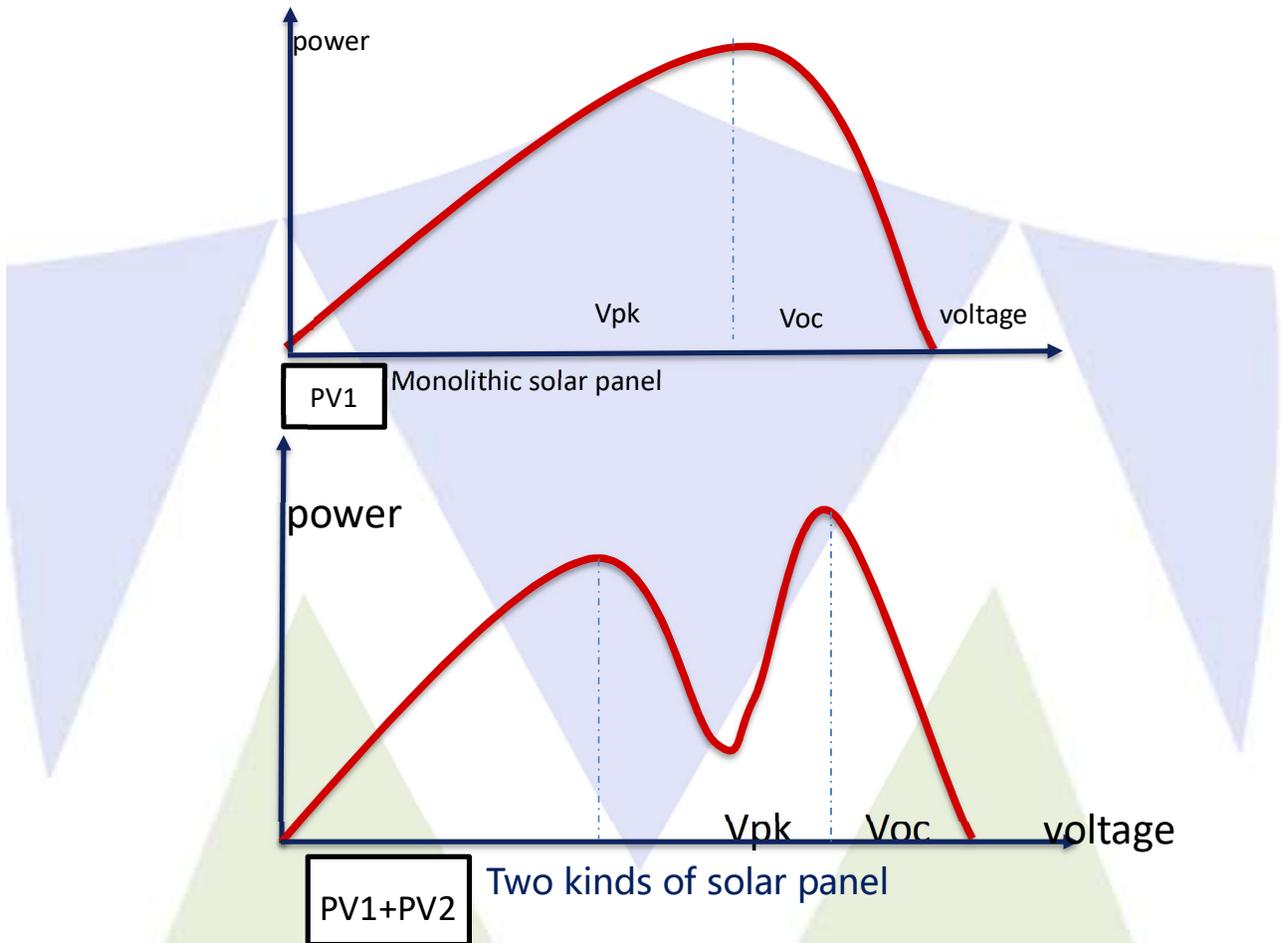| Harmonics	IEC61000-3-3
	IEC61000-3-2
Environment	ETSI EN 300 019-2 (-1, -2, -3)
	ETSI EN 300 132-2
	TELCORDIA NEBS GR63 CORE ZONE H
	RohS Compliant
Certificate	CE
Quality standards	ISO9001:2015, ISO14001:2015, RoHs
Dimensions mm (W×D×H)	41.4 × 287 × 132.3 (WxDxH)
Weight (kgs)	3kg

Indicator Functional Specification

Indicator	Normal	Anomaly		Abnormal cause
Working indicator (green LED)	On	Off		The power supply is not working
		Flashing		The control module operates the rectifier module
Alarm indicator (yellow LED)	Off	On		AC input overvoltage, under voltage, short circuit, over temperature
		Flashing		Communication interrupt
Fault indicator (red LED)	Off	On		Rectifier module fault, PFC output overvoltage
		Flashing		Rectifier module fan fault

Control scheme of MPPT module
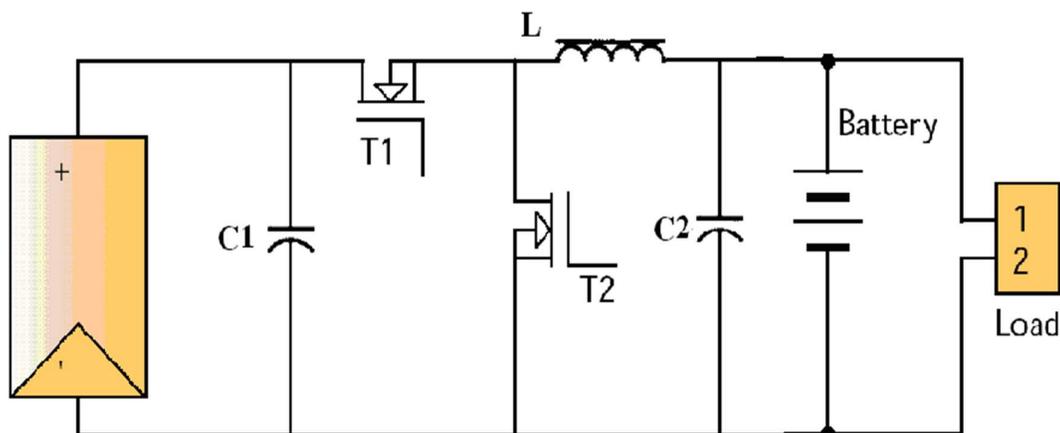
MPPT Module Use DC / DC converter (BUCK Topology structure using synchronous rectification). The maximum power point is found by the maximum power tracking algorithm and the maximum power output of the solar cell is obtained.

MPPT module perfomance graphs and algorithms

power

Vpk   Voc   voltage

PV1   Monolithic solar panel

power

Vpk   Voc   voltage

PV1+PV2   Two kinds of solar panel

MPPT Tracking Algorithm

- Algorithm combining large scan and small scan.

- Large scan first determines the best working interval.

- Small scans determine specific operating points and quickly find the maximum power point.

- Support single peak, multi-peak detection, Low light intensity automatic adaptation function