Flatpack2 48/1500 HE SOLAR

Solar Charger Module

Total green telecom site accomplished!

With the MPPT* algorithm ensuring close to 100% panel utilization and an efficiency up to 96.5%, the galvanic isolated solar charger sets new standards for renewable power in telecom.

The combination of innovative design, efficiency and reliability makes the Flatpack2 HE SOLAR stand out.

Applications

Autonomous and Hybrid Solar Sites

The Flatpack2 HE SOLAR charger is suitable for any telecom site with autonomous (solar only) or hybrid solar power. It can be used in parallel with any other Flatpack2 rectifiers feed by generator or unreliable mains on a hybrid side.

The Flatpack2 HE SOLAR charger is fully integrated with the standard Flatpack2 family which means it can be used in any FP2 system solutions with "4AC" power shelves and Smartpack controller.

Typically each charger is fed by one string of 4 to 6 solar panels. Galvanic isolation between solar panels and batteries/telecom equipment provides high level of surge protection and reliability.

Product Features and Advantages

***Maximum Peak Power Tracking (MPPT)**

The charger uses a digitalized advanced control algorithm that finds the solar panel voltage that generates the maximum power independent of sun availability. The charging is continuous according to performance profile for panels. In addition to finding the profiles peak power a full scan is performed at a fixed interval to stay on peak even with panel failures and major shadings. This gives close to 100% panel utilization.

Smartpack Controller

All standard control and monitoring features are available for FP2 systems with solar charger plus additional features like warnings for shaded/dirty solar panels and energy monitoring.

Energy Logging

Integrated energy logging feature will monitor the power supplied from solar panels through the charger. As well as other sources like standard rectifiers supplied from generator or mains when in use.

Energy log is stored on a historical basis in controller. The kWh or Wh supplied and consumed on site is stored on hourly, daily and weekly basis. Values can be seen 52 times back in time from the last log.

Generator Control

To minimize the diesel generator fuel consumption on a hybrid site the controller utilizes calculated backup capacity data and optional time delay to give start/stop signals.

Forced charging can be triggered by daily time schedule, monthly periodical run time and emergency charge based on fast battery voltage drops. Charge mode during generator run is selectable between normal temperature compensated float charge and boost charge.

See reverse side for specifications

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Additional Technical Specifications

Input

Voltage	Nominal: 170 – 230 VDC Tolerances: 85-265 VDC
Start-up voltage	150VDC
Maximum Current	9.5 A_{rms} maximum at nominal input and full load 10 A_{rms} maximum at 85VDC and full load
Input Protection	○ Varistors for transient protection ○ Fuse in both lines ○ Reverse polarity

Output

Voltage	○ Default: 53.5 VDC ○ Float/Boost: 48 – 57.6 VDC ○ Stand by/Test: 43.5-48 VDC For input voltages > 230VDC output stand by/test voltage is limited
Maximum Output Power	○ 1500 W, derating below 170V input ○ 800W at 85V input
Maximum Current	31.3 Amps at 48 VDC
Current Sharing	Passive, to optimize the power available from each string of solar panels
Static voltage regulation*	±0.5% from 10% to 100% load
Dynamic voltage regulation*	±5.0% for 10-90% or 90-10% load variation, regulation time < 50ms
Ripple and Noise*	○ < 250 mV peak to peak, ○ 30 MHz bandwidth ○ < 2 mV rms psophometric
Output Protection	○ Overvoltage shutdown ○ Hot plug-in - Inrush current limiting ○ Short circuit proof ○ High temperature protection

* Based on power supplied not limited by solar panels

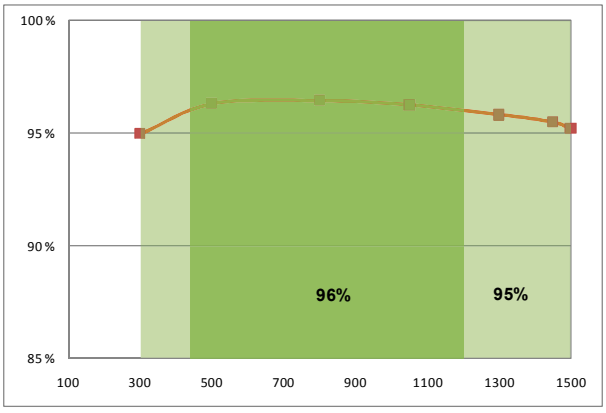
Other Specifications

Efficiency	>96% at 30-80% load and 200VDC input
Isolation	3.0 KVAC – input and output 1.5 KVAC – input earth 0.5 KVDC – output earth
Alarms:	○ High temperature shutdown ○ Charger Failure ○ Overvoltage shutdown on output ○ Fan failure ○ Low voltage alarm at 43.5V ○ CAN bus failure
Warnings:	○ Low input voltage ○ Low temperature shutdown ○ Charger in power derate mode ○ Remote battery current limit activated ○ Input voltage out of range, flashing at overvoltage ○ Loss of CAN communication with control unit, stand alone mode
Visual indications	○ Green LED: ON, no faults ○ Red LED: charger failure ○ Yellow LED : charger warning
Operating temp	-40 to +75°C (-40 to +167°F), derating linear above +55°C (+131°F) to 1200W at +75°C (+167°F)
Storage temp	-40 to +85°C (-40 to +185°F)
Cooling	Fan (front to back airflow)
Fan Speed	Temperature and current regulated
MTBF	> 350, 000 hours Telcordia SR-332 Issue I, method III (a) ($T_{ambient}$: 25°C)
Acoustic Noise	< 20dBA at nominal input and full load ($T_{ambient}$ <= 25°C) < 56dBA at nominal input and full load ($T_{ambient}$ > 40°C)
Humidity	Operating: 5% to 95% RH non-condensing Storage: 0% to 99% RH non-condensing
Dimensions	109 x 41.5 x 327mm (wxhxd) (4.25 x 1.69 x 13”)
Weight	1.950 kg (4.3lbs)

Applicable Standards

Electrical safety	IEC 60950-1 UL 60950-1 CSA 22.2
EMC	ETSI EN 300 386 V.1.3.2 EN 61000-6-1 (immunity, light industry) EN 61000-6-2 (immunity, industry) EN 61000-6-3 (emission, light industry) EN 61000-6-4 (emission, industry)
Environment	ETSI EN 300 019-2-1 Class 1.2 ETSI EN 300 019-2-2 Class 2.3 ETSI EN 300 019-2-3 Class 3.2 ETSI EN 300 132-2 RoHS compliant

Efficiency at 200VDC input



Part no.	Description
241115.650	Flatpack2 48/1500 HE SOLAR