PPS Enviro Power
Powering The Future

MNRE
CRISIL GRADE
2012-2014
SP 1A

STATIC POWER PACK

OVERVIEW

The "Static Power Pack - SPP" is designed to operate as a multi-function power conditioning system utilises high performance micro processors which integrate real time system control and SCADA Monitoring. The "SPP" module generates high quality sine wave mains type voltages and supports bidirectional operation; ie, drawing AC power from the genset and converting it to DC battery charge current or the reverse (the conversion of DC to AC mains voltage.

The inverter module can operate in parallel with either single or dual Diesel Generators with the power to the load being supplied by the DG Set and possibly also the inverter depending on the level of the site load and availability of solar/wind resources. The inverter supports high peak, short duration loads while the DG Set maintains the base site load.

Based on the Solar Power available, the connected load and battery state of charge the unit configures itself as either a charger or inverter and will intelligently start an optional Diesel Genset if the battery reserve could not be maintained by the renewable energy contribution and there is loss of grid power. In charging mode, the system maintains the battery voltage at a user specified value and charges the battery in accordance with the manufacturer's specification thus maximizing the life of the battery bank.

In the event of failure or extreme fluctuations in the grid, the power conditioner automatically disconnects the load and transfers the load to battery power with the available renewable energy

In the event of battery state dropped below the preset level, an optional Diesel Genset will be started automatically by the inverter and brought on line to supply the load and charge the battery.

Once the Grid supply resumes back in the range of predetermined level and stable, the Diesel Genset will be turned off by the inverter and the inverter will go parallel with the Grid to support the site load as well as to charge the battery.

TüV
InterCert
SAAR
ISO 9001:2008
ISO 14001:2004
Certificate No.: 12-QE-1800043-TIC

VERSION 1.0

PPS Enviro Power
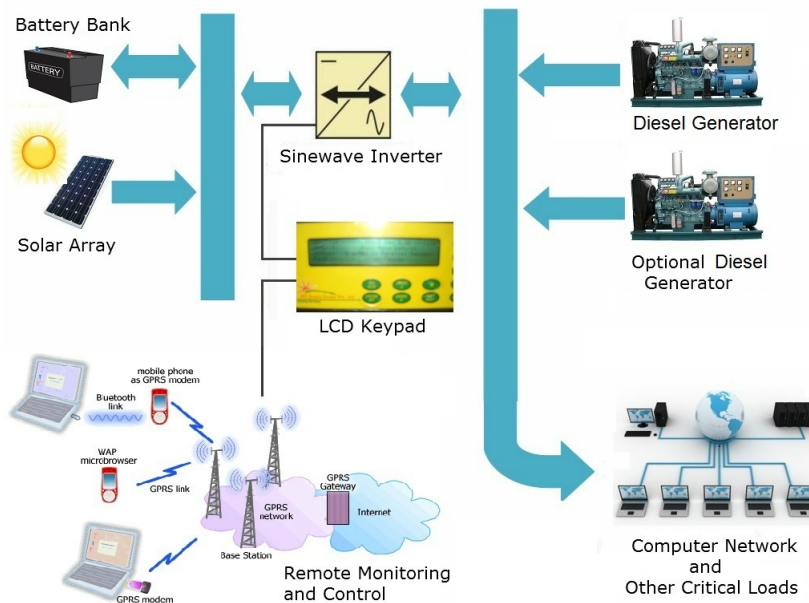Powering The Future

SALIENT FEATURES:

- High Efficiency inverter systems for optimized power conversion at all times.
- Full Automatic Operation with no break in supply during the transitions from one mode to another mode.
- LCD Display and keypad for system control, monitoring, instantaneous data, event logs, data logs and changing set points.
- Automatic starting, transfer and no-break transfer to an optional Generator for extended grid failure.
- Integrated MPPT Solar Charge Controller
- Can be custom build to meet customer requirements.
- Built for harsh working environment.

BASIC SYSTEM OPERATION:

Under light load conditions with the battery in a "Full State of Charge" the available solar power will supply the load via the inverter.
Under medium and heavy load conditions, all available solar power is used to charge the battery. Any excess solar power is used to handle the site load via inverter.

In the event of low solar power being available, the system configures itself as a Charger and the automatically starts the DG Set for charging the batteries in addition to supporting the load.

Once the battery reached the predetermined level of charge, all available renewable energy will be utilized to power the site load and reduce the power drawn from the Grid.

Battery Bank

Solar Array

Sinewave Inverter

LCD Keypad

Diesel Generator

Optional Diesel Generator

mobile phone as GPRS modem
Bluetooth link
WAP microbrowser
GPRS link
GPRS modem in PCMCIA card
Base Station
GPRS network
GPRS Gateway
Internet
Remote Monitoring and Control

Computer Network and Other Critical Loads

TüV
INTERCERT
SAAR
ISO 9001:2008
ISO 14001:2004
Certificate No.: 12-QE-1800043-TIC

See reverse for Technical Specifications

VERSION 1.0

PPS Enviro Power
Powering The Future

MNRE
CRISIL GRADE
2012-2014
SP 1A

TECHNICAL SPECIFICATIONS – 10kVA/15kVA/20kVA/25kVA/30kVA/45kVA/50kVA/60kVA/90kVA/120kVA

Parameters	Information
Output Voltage	Stand Alone Mode: Inverter output set at nominal voltage Parallel Mode: Inverter to follow generator voltage to ±10% of the nominal output voltage before switching to stand alone mode.
Output Frequency	Stand Alone Mode: Inverter output set at nominal frequency Parallel Mode: AC Synchronized operation. Synchronization window can be operator adjusted via set points. Maximum Range: ±3Hz
Surge Rating	150% of rated output for 30 seconds
Nominal Output Voltage	415Vac, Three Phase, 4 Wire Output
Nominal Output Frequency	50Hz
Efficiency	>92% at full load
Solar Charge Controller	Integrated MPPT based
DG Set	
Nominal Capacity	Same as nominal inverter rating
Grid Acceptable Range	AC voltage ± 17%, Frequency ± 3
Waveform	Pure Sine Wave
Total Harmonic Distortion	< 3%
Crest Factor	3:1
Front Panel Interface	• 40 x 4 LCD panel with keypad for display • Output Voltage / Current / Frequency / Power • Input Voltage / Current • Accumulated Output kWhrs • Temperature (either from ambient or panel sensor)
RFI	Designed to minimize both conducted and radiated RFI emissions
Cooling	Fan forced
Internal Protection System	• Over / Under Voltage • Over / Under Frequency • Over / Under Temperature • Inverter Overload • Solar, Battery, Load, Genset Breaker • Peak Current (Short Circuit) Protection
Front Panel Control	• Emergency Stop Button • DG Set – Auto/Manual By-pass switch
Alarm Signals	Via system fault relay (voltage free contact)
Earthing Provisions	AC Bypassing to earth on inverter and DC Inputs
Control Type	Voltage source, microprocessor assisted output regulation
Power Control	Phase Controlled Pulse Width Modulation (PWM)
Power Switching Device	High Efficiency IGBT
Environmental	
Operating Temperature Range	-10°C to +55°C
Humidity	0 – 95% non condensing
Enclosure	IP 21

TÜV
INTERCERT
SAAR
ISO 9001:2008
ISO 14001:2004
Certificate No.: 12-QE-1800043-TIC

VERSION 1.0

Parameters	Information							
Mechanical	10kVA	15kVA	20kVA	25kVA	30kVA	45kVA	50kVA	60kVA
Height x Width x Depth (mm)	1000 x 550 x 1000	1600 x 800 x 500	1600 x 1000 x 500	1800 x 1000 x 800		1800 x 1200 x 800		1800 x 1200 x 800
Weight (Kgs)	480	650	700	780	850	950	1000	1200

Metering

LCD Keypad Display	• Instantaneous Grid or Diesel and Inverter per phase kW, voltage, PF and Frequency • Grid or Diesel on-line status • Battery Voltage, Current, Temperature • Solar Charge Current • Solar Radiation • Wind Charge Current • Wind Speed • Inverter kWh Summation (Input / Output) • Grid kWh Summation (Import/Export) • Solar kWh Summation • Battery (import/export) Summation • Delivered Energy (to load) kWh

Data Logging (Optional)

GSC Link Software Capabilities	• Instantaneous feedback of power, voltage, power factor and frequency of the grid, diesel and the inverter system • Instantaneous site power • Periodic logging of power, voltage, power factor and frequency of the grid diesel and the inverter system • Periodic logging of battery statistics including battery voltage, current, temperature and renewable current contribution • Adjustable logging period from 60 second averages to 24 hour daily logs • Time and date stamped log entries • Time and date annotated fault log, holding the fault description, operating statistics and fault source • Bulk log download for immediate data importation into a spreadsheet
Download Log Capabilities	Date and time stamped with selectable log periods from 1 minute to 24 hours: • Solar Charge Voltage / Current • Wind Charge Current • Battery Voltage / Current / Temperature • Grid or Diesel kW, Voltage, pf, Frequency • Inverter kW, Voltage, pf, Frequency • Download System Faults • System Overload • Grid Fault / Inverter Fault • Download System Summations • Inverter Input / Output kWh • Grid kWh Summation (Import / Export) • Solar kWh Summation • Battery (Import / Export) Summation • Delivered Energy (to load) kWh
Computer Port Isolation	Standard non-isolated RS 232

TÜV
INTERCERT
SAAR
ISO 9001:2008
ISO 14001:2004
Certificate No.: 12-QE-1800043-TIC

VERSION 1.0