



*Global leaders
in renewable
power technology*

2010 -
2011 Product
Brochure

**DSP Technology Power Conditioning
Units for Renewable Applications**

DSP Technology Power Conditioning Units for Renewable Applications

The **Optimal Power Solutions (OPS)** group of power conditioning products offer a combination of highly reliable, efficient and field hardened products with highly developed functionality for renewable energy systems applications. This ensures that both the core power conditioning unit with bi-directional power control and the system control features are fully integrated for high level performance.



> GEC-250K with solar modules

OPS' utilize digital signal processor (DSP) technology with space vector control for our complete range of products. A DSP is a specialized microprocessor providing fast instruction sequences that are needed in real-time mathematically intensive applications. DSP-based platforms are highly suited to power electronic conversion and energy flow applications. High power quality is ensured under all operating conditions.

The **OPS** product family provides three standard platforms to meet the needs of renewable energy system applications. The complete family offers power conversion products ranging from 5 to 500 kilowatts. These are;

- **HPC** – provides a complete solution for off-grid hybrid power systems.
- **GSC** – provides a unique grid-connected solution with energy storage.
- **GEC** – system for grid-connected applications of solar photovoltaics.

■ **MPPT** – provides high efficiency DC to DC conversion of solar arrays.

A key strength of these products is the high degree of system features and performance options not found in competing products. Our products can be configured to provide comprehensive power control and interface solutions for most distributed generation technologies and can operate in grid-interactive, standalone, hybrid power, and power quality / UPS configurations. In addition, **OPS'** offer mini SCADA and data analysis software that simplifies the system management and maintenance. Power systems using **OPS** power conditioners can supply and enhance utility grids or power off-grid loads.

Further Specification Information available on Group and Individual Products

Hybrid Power Conditioners

HPC SERIES

The Hybrid Power Conditioner offers an integrated power and management solution for off-grid applications where continuous power supply is required. It can operate as a standalone renewable energy system or integrate power sources such as wind turbines, photovoltaics and diesel generator sets.

Available power sources are managed to achieve maximum efficiency and cost effectiveness through a number of control features including **MPPT** control, diesel generator set scheduling, power line phase balancing and sophisticated battery management.

Multiple genset engine control is available as well as 60Hz (frequency) operation. For larger systems the **MPPT** solar charger and multiple generator set switching is housed externally.

Model & Inverter Rating (kVA)	Phases – AC Volts – Freq – DC Volts – PV Charger (kW)	Genset Max Capacity (kVA)	Typical Peak Load Capacity (kVA)	Notes
Single Phase				
HPC-7.5	1Ø-230-50-120-7.5	12	15	
HPC-10	1Ø-230-50-120-10	15	20	
HPC-12.5	1Ø-230-50-120-12.5	18	25	
HPC-15	1Ø-230-50-120-15	23	35	
HPC-17.5	1Ø-230-50-120-17.5	27	40	
Three Phase				
HPC-10	3Ø-415-50-120-10	15	20	
HPC-15	3Ø-415-50-120-15	23	30	
HPC-20	3Ø-415-50-120-20	30	35	
HPC-25	3Ø-415-50-240-25	37	50	
HPC-50	3Ø-415-50-240-50	75	100	
HPC-75	3Ø-415-50-240-75	112	150	
HPC-100	3Ø-415-50-240-100	150	200	
HPC-150	3Ø-415-50-360-0	225	300	Note 1
HPC-200	3Ø-415-50-360-0	300	400	Note 1
HPC-250	3Ø-415-50-360-0	375	500	Note 1

Note 1: PV Charger and External Genset Control is housed in external cabinets.

For Product Standards and Certifications in your region please contact us – info@optimal-power-solutions.com

Grid Support Conditioners

GSC SERIES

The **GSC** series is designed as a distributed generation system for grid connected applications. Integrating renewable sources and batteries, it is effectively an industrial grade uninterruptible power supply (UPS) featuring voltage conditioning to the load supply. This product will reduce operating costs and can be deployed on unreliable grids to improve power quality. The **GSC** utilizes inbuilt **MPPT** control to maximize harvesting of the solar power.

The **GSC** synchronizes with the grid, can export power to enhance system robustness and can integrate a diesel genset if supply cannot be maintained by the grid / utility or renewable inputs. For larger systems the **MPPT** solar charger and generator set switching is housed externally. Alternative 60Hz (frequency) operation is also available upon request.

Model & Inverter Rating (kVA)	Phases – AC Volts – Freq – DC Volts – PV Charger (kW)	Grid / Genset Min Capacity (kVA)	Max Local Load (kVA/phase)	Notes
Single Phase				
GSC-7.5	1Ø-230-50-120-7.5	7.5	5	
GSC-10	1Ø-230-50-120-10	10	8	
GSC-12.5	1Ø-230-50-120-12.5	12.5	10	
GSC-15	1Ø-230-50-120-15	15	12	
GSC-17.5	1Ø-230-50-120-17.5	17.5	15	
Three Phase				
GSC-10	3Ø-415-50-120-10	10	2.8	
GSC-15	3Ø-415-50-120-15	15	4	
GSC-20	3Ø-415-50-120-20	20	5.5	
GSC-25	3Ø-415-50-240-25	25	7	
GSC-50	3Ø-415-50-240-50	50	14	
GSC-75	3Ø-415-50-240-75	75	20	
GSC-100	3Ø-415-50-240-100	100	27	
GSC-150	3Ø-415-50-360-0	150	40	Note 1
GSC-200	3Ø-415-50-360-0	200	54	Note 1
GSC-250	3Ø-415-50-360-0	250	67	Note 1

Note 1: PV Charger and External Genset Control (if applicable) is housed in external cabinets.

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Model & Inverter Rating (kVA)	Phase – AC Volts – Freq – Minimum DC Volts	Grid Export Capacity (kW)	Maximum PV Input (kWp)
Single Phase			
GEC-5	1Ø-230-50-135	5	5.8
GEC-7.5	1Ø-230-50-135	7.5	8.6
GEC-10	1Ø-230-50-135	10	11.5
GEC-12.5	1Ø-230-50-135	12.5	14.3
GEC-17.5	1Ø-230-50-135	17.5	20.1
Three Phase			
GEC-10	3Ø-415-50-135	10	11.5
GEC-15	3Ø-415-50-135	15	17.2
GEC-20	3Ø-415-50-135	20	23
GEC-25	3Ø-415-50-270	25	28.7
GEC-50	3Ø-415-50-270	50	57.5
GEC-75	3Ø-415-50-270	75	86.2
GEC-100	3Ø-415-50-450	100	115
GEC-150	3Ø-415-50-450	150	172.5
GEC-200	3Ø-415-50-450	200	230
GEC-250	3Ø-415-50-450	250	287.5
Three Phase Transformer-less			
GEC-100-TL	3Ø-270-50-450	100	115
GEC-250-TL	3Ø-270-50-450	250	287.5
GEC-500-TL	3Ø-270-50-450	500	575

Grid Export Conditioners

GEC SERIES

The **GEC** series is a unique grid-connect power conditioner by world standards. A fast and efficient **MPPT** extracts the maximum available power from the solar array and exports it to the grid via the **GEC** inverter. The **GEC** provides high quality power for weak grid networks where the grid suffers voltage surges, sags and notches.

In some cases the utility operator will choose to “load shed” on an individual phase basis. As an option, the **GEC** can be configured to act on a phase-by-phase basis and export power on one, two or three phases. This maximizes energy export into the grid, enhancing the financial viability of the project. Alternative 60Hz (frequency) operation is available upon request.

OPS is pleased to release a transformer-less **GEC** with three new models as outlined in the specification table. These products provide higher efficiency for particular project applications.

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Maximum Power Point Tracker

MPPT SERIES

This product can be deployed as a standalone product or with **HPC / GEC** units above 100 kVA in capacity. Our **MPPT** chargers use sophisticated algorithms to ensure maximum power is delivered from the solar array to the battery bank. This results in the maximum energy transfer between the photovoltaics and the energy storage.

Typically, the larger models of **MPPT** require a separate distribution and control panel (DCDB) to integrate the solar input with the battery / power conversion system. The **MPPT** is offered in single, dual or triple channel where each channel is up to 60kW each.



➤ HPC-250 Front Panel

Model Channel and Rating (kVA)	No of Channels – PV Charger – Battery DC Volts	Channel Rating (kW)	Total Rating (kW)	Min-Max Voltage Range (V-DC)
MPPT-1-25	1CH-25K-240	25	25	300-600
MPPT-1-50	1CH-50K-240	50	50	300-600
MPPT-2-100	2CH-100K-240	50	100	300-600
MPPT-2-120	2CH-120K-240	60	120	300-600
MPPT-3-180	3CH-180K-240	60	180	300-600
MPPT-2-120	2CH-120K-360	60	120	450-800
MPPT-2-150	2CH-150K-360	75	150	450-800
MPPT-3-180	3CH-180K-360	60	180	450-800
MPPT-3-225	3CH-225K-360	75	225	450-800

Note 1 : The minimum PV string operating voltage must be equal to or greater than the minimum **MPPT** voltage range value whilst the PV string open circuit voltage must be equal to or less than the **MPPT** maximum voltage range value.



➤ External AC Switching Cabinet

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