



4EVER

Series 303 - 40KVA - 100KVA

For industrial automation & process machines, CNC laser machines, motor loads etc.



4EVER

DSP SOLAR HYBRID PCU

INDUSTRIAL GRADE DESIGN

- DSP based Technology
- MPPT Charge Controller

SAVES APPROXIMATELY

35% - 40%
of electricity on mains in comparison to online UPS

Works like an Online UPS, without Double Conversion Losses

Zero Transfer-time
Mains voltage conditioned





SOLAR POWER CONDITIONING UNIT (PCU)

is an integrated system consisting of a solar charge controller, inverter and a grid charger. It provides the facility to charge the battery bank through either a Solar or Grid/DG set. The PCU continuously monitors the state of battery voltage, solar power output and the load. Due to constant usage of power, if the battery voltage goes below a set level, the PCU will automatically transfer the load to the Grid/DG power and also charge simultaneously. The PCU always gives preference to the solar power and will use Grid/DG power only when the solar power / battery charger is unable to meet the load requirement.

SALIENT FEATURES

WIDE INPUT VOLTAGE WINDOW

By adapting to wide range of input voltages, the 4Ever series avoid battery usage during minor power fluctuation, saving its capacity for times when utility power is completely lost.

PRIORITY TO SOLAR BATTERY MAINS

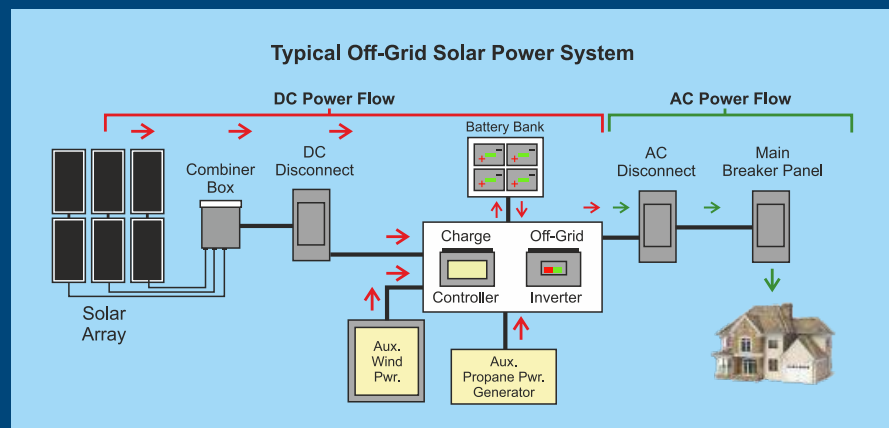
Maximum utilization of solar energy to reduce power consumption and utility bill.

BATTERY CHARGING THROUGH SOLAR ONLY

Reduce power consumption and utility bill.

HIGHER INPUT EFFICIENCY

High efficiency 98%, small size, economic price point coupled with the ability to correct low or high line voltage conditions make this the dominant type of UPS.



How is a Solar Power Conditioning Unit Different from a Regular Inverter?

A solar power conditioning unit basically contains parts like a solar charger, battery mechanism, output selector mechanism, control algorithm, grids (main utility) charger as well as an inverter. It functions as an integrated system which gives the user the facility of charging the battery through either solar power or a grid/DG set. Getting a power inverter for home would be enough to meet all the requirements of energy.

Each unit of the PCU functions to improve efficiency and performance. The solar charger, using either PWM or MPPT technology, is the device that converts the received solar energy and charges the battery. The inverter plays the role of converting the stored DC voltage in the battery to AC power to the required output voltage. The grid charger is used when solar energy isn't available and through it, energy from the grid can be used for charging the battery. The selector mechanism is the relay that makes it possible to prioritize solar energy and make sure grid energy is used if the solar energy is exhausted. The control algorithm also sets the PCU apart from a normal inverter by prioritizing and selecting the source of charging the battery. The battery bank stores the solar charger for another usage.

Basically, the solar inverter is a device that prioritizes solar charging although it does avail of an option where even if the battery is charged through solar during the day, in the presence of a mains facility, the load will be fed through the mains itself by using the bypass mode. The inverter mode of the battery allows for the solar energy that was stored in the battery to be used when the AC mains are absent. As long as the electricity needs are being met through the mains, the solar power remains stored within the battery itself. This way, there is no leakage of the energy that was received and it is used to its full efficiency. The solar inverter price for home is quite affordable as well.

As with the inverter, the solar power conditioning unit (PCU) also prioritizes the solar charging of the battery during the solar day. Until the full charge voltage of the battery is reached, the charging of the battery is continued. This is generally 14.2 V for a small inverter battery. Once the full charging is completed with the battery, then the electricity load is fed using the battery i.e. in inverter mode. This means that AC power will not have to be used in the presence of solar power. Only once the battery becomes fully discharged – which happens till around 11 V generally – does the mains take the over-charging and then begin to feed the load as well. This system makes sure that the mains energy is used to feed the load only once the solar energy is completely finished and in any other case, the use of solar energy remains the priority. Hence, a home inverter with battery price is affordable and worth it.

Technical Specifications

TECHNOLOGY		MPWM using IGBT				
Rating		40KVA	50KVA	60KVA	80KVA	100KVA
DC Bus (V)		360	360	360	360	360
INPUT						
Input Voltage Window		330V - 470V				
Input Frequency		50Hz \pm 10%				
SOLAR INPUT						
Technology		MPPT Converter				
Operating MPPT Voltage		120 - 325 V				
Maximum Panel current		Depends on Solar Panel				
Reverse Polarity Protection		Short Circuit Diode				
Back feed Protection		Protected using reverse diode				
MPPT Efficiency		96% (Peak)				
OUTPUT						
Transfer time	Mains to Inverter	Near Zero < 2 msec				
	Inverter to Mains	Near Zero < 2 msec				
Voltage on mains		180V - 250V (P-N)				
Voltage on Inverter		230V (\pm) 1% P/N 415 \pm 1% (P-P)				
Power Factor		0.8 lag				
Frequency on Inverter mode		50 Hz \pm 0.5Hz				
Waveform on Inverter mode		Pure Sinewave				
Over Load Capacity	100%	Continuous				
	125%	1 Minute				
Mode of Operation		Designed for Continuous operation				
Inverter Protection		Advanced Electronic Protection for device safety backed up with MCB's & fast acting fuses, high speed pulse by pulse electronic device protection over voltage / under voltage protection, electronic over current trip				
Efficiency	On Inverter Mode	> 84% on full load				
	On Mains Mode	> 98%				
Cold start facility		Yes				
LED Indication (5 LED with Multi function)		Input on (R Y B), Output on (R Y B), Solar On, Battery Low, Overload				
PROTECTIONS		High Speed Pulse by Pulse Electronic Protection, Linear Current Limiting, Under Voltage Trip, Short Circuits and Overload Trip, Battery Deep Discharge, Mains High & Low Cut				
Multifunctional Solar LCD energy meter		Solar Voltage, Solar current, Solar Power, Energy Generated (Energy generated & delivered to load), Input Voltage, Output Voltage, Battery Voltage, Load Current, Output Frequency				
ALARMS		Power Failure, Battery Low, UPS Fault				
PHYSICAL						
Enclosure Protection Grade		IP - 20				
Cooling		Forced Air				
Cable Entry		Rear side				
ENVIRONMENTAL						
Acoustic Noise level		<60db @ 1.5 meter				
Ambient Temperature		0 to 40 Deg C				
Storage Temperature		-10 to 70 Deg C				
Humidity		Up to 95% RH Non condensing				
Altitude		< 3000 Feet above sea level (without derating)				
Extreme climatic conditions		AC Environment is required if the temperature goes beyond the normal operating				
BATTERY						
Battery Type		SMF / Tubular				
Voltage		120 - 360 V				
Battery Low advance warning at		11V / Battery				
Battery Low cut off at		10.5V / Battery				
Charging Current	Mains mode	10A				
	Solar Mode	Depends on Solar Panel				
Dimension		40 KVA		50KVA -100KVA		
Depth X Height X Width (in mm)		850 X 1130 X 470		1220 X 1310 X 690		

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