



Solar Hybrid DSP uses both Solar Power as well as A.C. Mains for charging the battery bank according to priority setting providing the users availability of uninterrupted power supply.

## KEY FEATURES

- User friendly Wide LCD display for battery user interface
- Smart Load sharing compatibility
- Monitoring/data logging feature for better system information at user end (optional)
- Selectable charging current with high charging (HI) and Normal Charging (Low)
- PV availability, battery charging from solar power indication with solar power priority
- User friendly, control and selection switches with LCD indication on front panel
- Protections such as Mains MCB Trip, Overload, Short Circuit, Battery Low, Over Temperature indication with
- Buzzer as well as display on LCD available
- Power Saving through No Load Shutdown Feature
- Maximum Solar Power Utilization during charging and backup mode = PV pole reversal protection indication on LCD

- Deep discharge battery charging from A.C. Mains as well as Solar
- No Humming Noise (Silent UPS)
- AC Mains available, battery charging/charged and its voltage indication provided on LCD display

## **TECHNICAL SPECIFICATIONS**

Operate on both Solar Power as well as Grid Power. It is integrated with in-built fully regulated 50Amp PWM Solar Charge Controller for maximum Solar Power Utilization.

Upgradable on 70Amp PWM Solar Charge Controller.

It senses the availability of Solar power, Grid power and accordingly gives preference to charging through solar power and switches.

It is designed to give you maximum benefit from the solar energy and minimize your electricity bill drastically.

Highly efficient battery charging from the solar energy as a result you will get non-stop power, save money, save electricity and protect the environment.

Advanced DSP technology for absolute and stable and 100% pure sine wave output.

Indications for Mains ON, UPS ON, Battery Low, Charging/Discharging, Over Load, Short Circuit, Thermal Trip, Solar available/Not available and PV Reverse on LCD Display.

User-Friendly LCD for the display of mode of operation and all parameters.

## **DUAL MODE OF WORKING UPS AND NORMAL**

UPS Mode : Fast switching input operating range from 180V to 260V

Normal Mode : Wide Input operating range from 100V to 290V

## **DUAL SOLAR MODE HYBRID AND PCU MODE**

Hybrid Mode : Intelligent battery charging through the Solar Power and Grid Power

PCU Mode : Charge sharing and ability of running load with solar and battery hence saving grid power and utilizing maximum solar power to minimize the electricity bill

## DUAL BATTERY CHARGING MODE: TUBULAR AND SMF BATTERY

- Different Battery selection mode to enhance the battery life
- Intelligent overload sensing circuitry with auto retries facility
- Programmable thermal protection cooling fan which operates as needed
- High Power new generation MOSFET cable to handle high in-rush surge current
- Double stage MOSFET Over Current Protection by measuring Rds ON
- Highest efficiency at lower cost
- Pure Sine Wave Output with low Total Harmonic Distortion (THD)
- High End ARM Cortex based design of Solar Charge Controller for charging through Solar Power
- Eco friendly operation
- Solar PV Reverse Voltage Protection
- Electronic Over Current Charging Protection
- Reverse Current Flow Protection from Battery to Solar Panel generally during night
- No mechanical contact for charge Controller
- Designed for continuous reliable and robust operation

# If solar is available and battery declared as full charged, then Mains will automatic cut till battery discharge upto pre-defined level in PUC mode.

Model	3 KVA	3.8 KVA	5.2 KVA	5.2 KVA	7.5 KVA	7.5 KVA	10 KVA
Nominal Battery Voltage	48 VDC			96 VDC	96 VDC	120 VDC	120 VDC
Solar Panel Connected for 50 Amps PWM Charge Controller (Max.)	2500 WP	3000 WP	4000 WP	4000 WP	6000 WP	6000 WP	8000 WP

## AC MAINS MODE

Input Voltage Range (Normal Mode)	100 to 290 VAC $\pm$ 5 VAC (Wide Range)	
Input Voltage Range (UPS Mode)	180 to 260 VAC $\pm$ 5 VAC	
Changeover Time Maximum	< 30 ms (in Normal Mode) and < 10 ms (in UPS)	
Max. Charging Current	5A to 18A $\pm$ 1A (User Programmable)	
Boost Charging Voltage	14 VDC to 15 VDC $\pm$ 0.2 VDC per Battery (User	
Boost Charging Voltage (Factory Default)	14.4 $\pm$ 0.2 VDC for Tubular 13.8 $\pm$ 0.2 VDC	28.8 $\pm$ 0.4 VDC for Tubular 27.6 $\pm$ 0.2 VDC
Float Charging Voltage (Factory Default)	13.7 $\pm$ 0.2 VDC for Tubular 13.5 $\pm$ 0.2 VDC	27.4 $\pm$ 0.4 VDC for Tubular 27.0 $\pm$ 0.2 VDC

## BATTERY BACKUP MODE

Output Voltage at No Load	220 VAC $\pm$ 7 VAC	
Output Frequency	50.0Hz $\pm$ 0.5Hz	
Output Wave Form (AT No Load)	100% Pure Sine Wave	
Battery Low Alarm	10.6 $\pm$ 0.2 VDC	21.2 $\pm$ 0.2 VDC
Battery Low Protection	10.4 $\pm$ 0.2 VDC	20.8 $\pm$ 0.2 VDC
Overload (Normal/UPS)	120% (30 Sec.)	
Short circuit (Normal/UPS)	300%	

## CHARGING MODE - SOLAR CHARGE CONTROLLER - 50 AMP

Max. Charging Current	5A to 30Amp. $\pm$ 1.5Amp. (User Programmable)
Charge Controller Efficiency	>98%

## DISPLAYING PARAMETERS

Ac Mains Voltage	Output Voltage	O/P Load in % on Battery
O/P Load in % on Solar	Actual O/P Wattage	Battery Voltage
Charging Mode	Grid Charging Current	Solar Charging Current
Solar Load Current	Solar Kwh (Saving)	

### Faults Status

Overload	PV Reverse	PV High
Short Circuit	Mains Fuse Trip	Overload Temp
Low Battery	High Battery	Grid Overload
Inverter Status	Solar Availability Status	

## DESCRIPTION OF SWITCHES ON FRONT PANEL

S.No.	Switch	Function(s)	Switch Led Status
1	POWER	ON/OFF the UPS Output	System ON - Led ON System OFF - Led ON
2	INV/UPS	When it is Short Pressed it Enables UPS/Inverter Mode Selection When it is Long Pressed Enables the UPS Parameter Setting : The LCD Displays : "Edit Parameters Setting" The Switches function now Change to : POWER - Enter/OK Switch INV/UPS - Increment Value SMF/TUB - Decrement Value HYBRID/PCU - Back/Exit Switch	
3	SMP/TUB	When it is Short Pressed it Enable TUBULAR or SMF Battery Selection	
4	HYBRID/PCU	When it Short Pressed it Enable the Hybrid PCU Mode Selection	



## PROTECTIONS

PV Reverse, Reverse Current Flow (to PV Module), Battery Voltage Low (3 Auto Retries), Over Load (6 Auto Retries), Battery Full Charge, Over Temperature, Short Circuit.

## DESCRIPTION OF SWITCHES ON FRONT PANEL

S.No.	LED	Description
1	GREEN	LED ON - Full Solar Used LED Blinking - Partial Solar Used LED OFF - No Solar Used
2	RED	LED ON - PV Reverse Protection LED OFF - No Protection Selected

## UPS PARAMETER SETTING

### Default Values & Limits

- Maximum Battery Voltage  
SMF Battery: 13.8V (Cannot be Changed)  
Tubular Battery: Min: 14.0V Default: 14.4V Max: 15.0V
- Battery Low Cut Voltage  
Min: 10.4V Default: 10.6V (PCU Mode), 11.0V (HYBRID Mode) Max: 11.5V
- Maximum Grid Charging Current  
Min: 05A Default: 15A Max: 18A
- Maximum Solar Charging Current  
Min: 05A Default: 30A Max: 50A

\*\*Solar Charging Current cannot be set less then Maximum Grid Charging.

- Grid Reconnect Voltage  
Tubular Battery: Min: 11.5V Default: 12.0V Max: 12.5V  
SMF Battery: Min: 12.0V Default: 12.0V Max: 12.2V

\*\*Grid Reconnect Voltage is always greater then Battery Low Cut Voltage by 0.5V.

## SETTING PROCESS

- Step 1: Long press the INV/UPS Switch until LCD Display: "Edit Parameter Settings"
- Step 2: Press POWER Switch (Enter/OK in Setting Mode) then "MAX BATT VOLTAGE Setting Screen will appear if TUBULAR Battery Selected else "BATT LOW CUT" Setting Screen appear
- Step 3: To Change the Maximum Battery Voltage Value press INV/UPS Switch (Increment Value in Setting Mode) or SMF/TUB Switch (Decrement Value in Setting Mode)
- Step 4: After Setting Maximum Battery Voltage Now press POWER Switch (Enter/OK in Setting Mode) then "BATT LOW CUT" Setting screen will appear
- Step 5: To Change the Battery Low Cut Voltage Value press INV/UPS Switch (Increment Value in Setting Mode) or SMF/TUB Switch (Decrement Value in Setting Mode)
- Step 6: After Setting Battery Low Cut Voltage Now press POWER Switch (Enter/OK in Setting Mode) then "MAX GRID CHG" Setting Screen will appear
- Step 7: To Change the Maximum Grid Charging Current Value press INV/UPS Switch (Increment Value in Setting Mode) or SMF/TUB Switch (Decrement Value in Setting Mode)
- Step 8: After Setting Maximum Grid Charging Current Now press POWER Switch (Enter/OK in Setting Mode) then "MAX SOL CHG" Setting screen will appear
- Step 9: To Change the Maximum Solar Charging Current value press INV/UPS Switch (Increment Value in Setting Mode) or SMF/TUB Switch (Decrement Value in Setting Mode)
- Step 10: After Setting Maximum Solar Charging Current Now press POWER Switch (Enter/OK in Setting Mode) then "GRID RECONNECT" Setting Screen will appear
- Step 11: To Change the Grid Reconnect Voltage Value press INV/UPS Switch (Increment Value in Setting Mode) or SMF/TUB Switch (Decrement Value in Setting Mode)

