



UTL SOLAR

Solar PCU with **Patented rMPPT Technology**



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With **UTL SOLAR**

SOLAR SOLUTION
For your home & business



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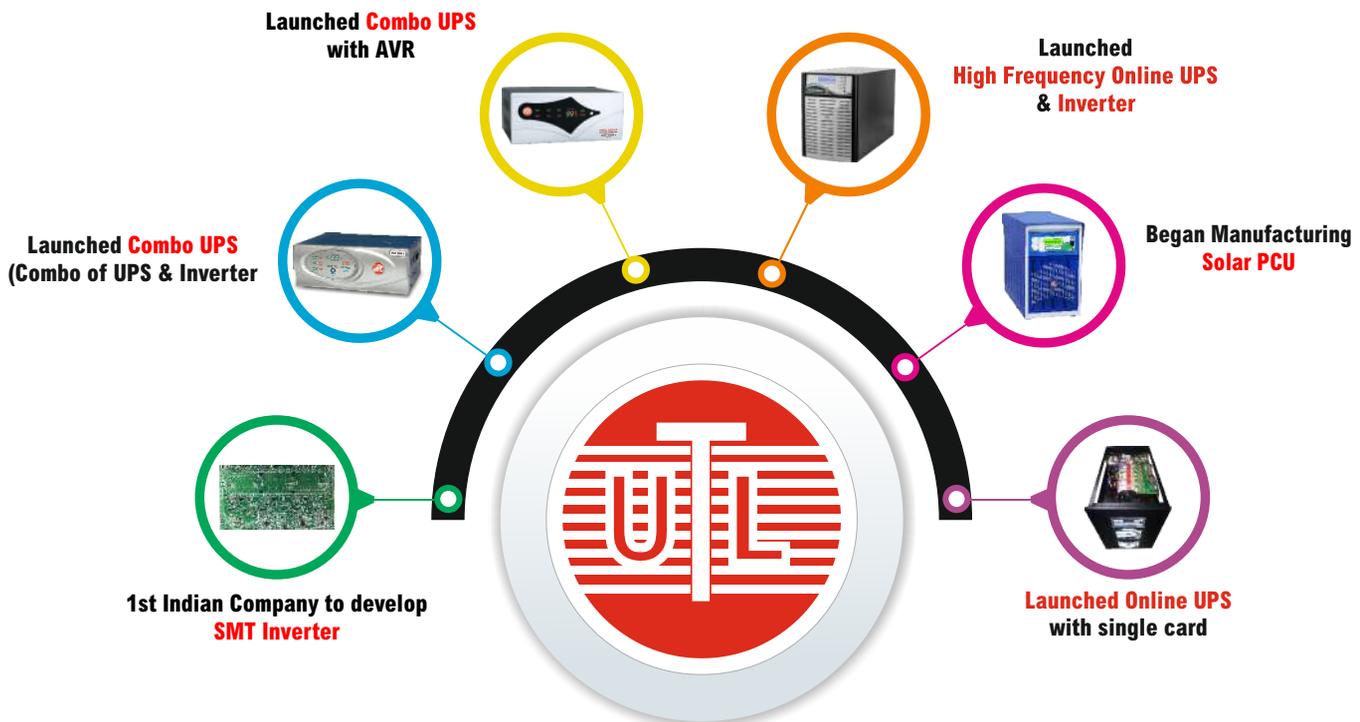




ABOUT UTL

UTL was founded in the year 1996 by 2 proficient engineers **Mr Yogesh Dua** and **Mr Pawan Garg**. UTL is one of the leading brand in power back-up and power generation in India. UTL offers wide range of quality products, has 3 manufacturing units, strong network of distributors and dealers across the globe and highly motivated workforce. We are offering excellent R&D services through the team of more than 60+ R&D professionals and exporting R&D services & UL Certified products to various countries including USA. As the company values long term relationship, our stakeholders and even customers have very long association with UTL.

Some remarkable milestones covered by UTL are...





UTL in 2023-2024

3

Manufacturing Units

29

Years Old Brand

60+

Strong R&D Team

3500+

Service Locations in India

3000+

Associated Man Power

500+

Distributor in INDIA

3600+

Dealers in INDIA

5000000+

Satisfied UTL Consumers

9.2 Bn

UTL Turnover

Manufacturing Energetic Excellence

SOLAR PANEL PLANT, NOIDA, UP



Scan and
View Plant Video



BATTERY PLANT, BAWAL, HARYANA



Scan and
View Plant Video



INVERTER PLANT, PARWANOO, HP



Scan and
View Plant Video



HELIAC (Solar Home PCU)

**“Cost Effective PCU Compatible
with Tubular Batteries.”**

**Model Available
HL1050 to HL4000**



FEATURES

- Inbuilt PWM Solar Charge Controller.
- Multi-Colour LCD Display.
- Freq.-Available 50 & 60Hz.
- Multi Charging Stage (Bulk, Absorption & Float) Auto Equalize in a month.
- Solar Priority for Load & Battery Charging.
- Preference to Solar Power over Grid Power.
- Pure Sine Wave Output.
- Protections : RBP, RSPV, OVL, BL, BH, S.Ckt, I/P HV& LV, OHT.
- Compatible with DG as an Input Source.
- Compatible with IT Load.
- Compatible with LITHIUM, Gel & Tubular Batteries.
- Priority Selection - PCU, Smart & Hybrid for Saving Energy and Money.

HELIAC (Solar Home PCU)

Parameters							
Model No.	HI1050	HL1500	HL1800	HL2000	HI3000	HL3550	HL4000
System Rating (VA)	850	1050	1400	1500	2200	3000	3500
Bulb Load Max. (Linear load : resistive + inductive)	680W	840W	1120W	1200W	1760W	2400W	2800W
Operating DC Voltage	12V			24V		48V	
Switching Element	MOSFET						
Charger Topology	Boost Mosfet						
Max. Battery Capacity	200AH MAX.						
Operating Mode	SMART/PCU/HYBRID						
Optional DG mode	Enable/Disable						
Solar Power Maximum	650W	800W	1000W	1200W	2000W	3000W	
Input Voltage Range (Min - Max) Voc	17V-25V			31V-55V		60V-105V	
Solar Panel Recommended (Watt)	165W x 4P*	165W x 5P*	165W x 6P*	335W x 4P*/400W x 3P* 540W x 2P*	335W x 6P*/400W x 5P* 540W x 4P*	335Wx2S* & 5P*/400Wx2S* & 4P*/540Wx2S* & 3P*	
Parameters (Grid)				Default Value			Variable Settable Range (Each Batt.)
Nominal Grid Voltage	230V 1Φ						
Nominal frequency	50Hz						
Frequency Range	47-53Hz ± 1Hz						
Battery Charging Method 4 Stages	BULK/ABSORPTION/FLOAT/EQUALIZE						
Grid Charging Voltage (Equalize)	After 30 Days						
Default charging mode	TUB/LITHIUM						
Grid - Battery Charging Voltage (TUB)	Boost	14.5V ± 0.2V (Each Battery)					13.5-15V
	Float	13.8V ± 0.2V (Each Battery)					13-14.2V
Grid - Battery Charging Voltage (LITHIUM)	Boost	13.8V ± 0.2V (Each Battery)					13.6V-14.2V
	Float	13.6V ± 0.2V (Each Battery)					13.5V-14.1V
Grid Charging Current	Normal/Boost	12A/15A ± 2A					1A-20A
Optional Grid charging	Enable/Disable	Enable					
Grid Reconnect @ Battery Voltage (TUB)	11.8V ± 0.2V (Each Battery)						
Grid Reconnect @ Battery Voltage (LITHIUM)	12.4V ± 0.2V (Each Battery)						
Grid Low Cut Voltage	170V ± 10V						
Grid Low Cut Recovery	IT Mode Enable	180V ± 10V					
Grid High Cut Voltage		265V ± 10V					
Grid High Cut Recovery	IT Mode Disable	255V ± 10V					
Grid Low Cut Voltage		100V ± 10V					
Grid Low Cut Recovery	IT Mode Enable/Disable	110V ± 10V					
Grid High Cut Voltage		290V ± 10V					
Grid High Cut Recovery	IT Mode Enable	280V ± 10V					
Change Over (Battery to Mains)		<5ms					
Change Over (Mains to Battery)	IT Mode Disable	<12ms					
		<30ms					
Parameters (Inverter)							
Output Phase	1Φ						
Nominal Output Voltage	230V ± 8%						
Nominal Frequency	50 Hz ± 1%						
Battery Low Buzzer (TUB)	10.8V ± 0.2V (Each Battery)						
Battery Low Cut (TUB)	10.5V ± 0.2V (Each Battery)						
Battery Low Buzzer (LITHIUM)	11.9V ± 0.2V (Each Battery)						
Battery Low Cut (LITHIUM)	11.6V ± 0.2V (Each Battery)						
Battery High Cut (TUB)	16.5 ± 0.2V (Each Battery)						
Battery High Cut (LITHIUM)	14.5 ± 0.2V (Each Battery)						
Output Waveform	Sinewave						
Typical Efficiency	>80%			>85%			
Voltage Harmonic	<3% (Linear Load)						
Over Load Capacity	IT Mode Disable	>100% After 30 sec delay (with Alarm) 3Time Auto Reset, 4th Time Shut Down Note : 1HP Motor Load Run for 15min with alarm (1 sec ON 5sec OFF) in 3000 Model.					
	IT Mode Enable	>100% After 30 sec delay 1st Time Shut Down					
Motor 1 HP	NA		Yes (<7.5A)			Yes	
Protection	Overload, Battery Low, Battery High, Output Short Ckt, Battery Reverse (Fuse Blow), Over Heat @90°C ± 10°C, Over/Under frequency, I/P Hi, I/P Low, SPV High						
LED Indication	System ON, (IT mode, TUB/LITHIUM, Boost Chg, DG mode, Grid Chg.) Enable/Disable						
Switches (Micro)	System ON/OFF, UP, Down, Back, Enter(For LCD Calibration)						
Display (Multi Color)	Batt. Voltage, Chg. Current, Grid Voltage, Grid Freq., O/P Voltage, O/P Freq, Load%, Batt. Graph, Overheat, BLK/ABS/FLT, SPV Current, Operating Mode (HYB/PCU/SMT).						
Parameters (Solar)							
Switching Element	Mosfet						
Type of Charger	PWM						
SPV Chgarging Voltage (Boost)	TUBULAR	14.7V ± 0.2V (Each Battery)					14-15.5V
SPV Chgarging Voltage (Reconnect)		14.2V ± 0.2V (Each Battery)					13.1-14.5V
SPV Chgarging Voltage (Boost)	LITHIUM	13.9V ± 0.2V (Each Battery)					13.7-14.4V
SPV Chgarging Voltage (Reconnect)		13.7V ± 0.2V (Each Battery)					13.6-14.3V
Solar Current (Min)	>3A (Below 3A system will act like solar absent)						
Efficiency	≥95%						
Parameters (Environment)							
Operating Temperature	0-50°C						
Cooling	Fan						
Max. Relative Humidity @ 25°C (non Condensing)	95%						
Noise @ 1 meter	50dB						
Standard Compliance	IP21						
System Weight (KG)	10	11	15.5	15	17	25	
Dimension (LXWXH)mm	275x306x128		300x306x167		333x306x275	333x306x315	

Note. * Specification are subject to change without prior notice due to constant improvement in design & technology.*
Above mention battery parameter is according to single battery.

SUN PLUS (Solar Home PCU)

“Affordable Yet, Very Reliable”



**Model Available
SP 960 to SP 1860**

FEATURES

- Maintain battery health for longer life.
- Modified Sine wave output.
- Built-in IT mode.
- Easy Installation & low maintenance.
- Best Regulated output.
- Battery Charging with Multi stage (Bulk, Absorption & Float)
Auto Equalize in a month.
- Protections : RBP, RSPV, OVL, BL, BH, S.Ckt, I/P HV& LV, OHT.
- Inbuilt PWM Solar Charge Controller.
- Priority Mode Selection
1) PCU 2) Hybrid 3) Smart
For Saving Energy & Money.
- Can Operated without Solar.
- LED Display for Operation & Fault.

SUN PLUS (Solar Home PCU)

Parameters		Rating			
Model No		SUN PLUS 960	SUN PLUS 1060	SUN PLUS 1460	SUN PLUS 1860
System Rating		675VA	875VA	1075VA	1475VA
Operating DC Voltage		12V			24V
Switching Element		Mosfet			
Charger Topology		Triac Based			
Max. Battery Capacity		200AH			
Operating Mode (SMART/PCU/HYBRID)		HYBRID			
Parameters (Grid)		Default Value			
Nominal Grid Voltage		230V 1Φ			
Nominal frequency		50Hz			
Battery Charging Method 4 Stages		Bulk/Absorption/Float/Equalize			
Grid - Battery Charging Voltage (TUB) Default mode	Boost	14.5V ± 0.2V (Each battery)			
	Float	13.8V ± 0.2V (Each battery)			
Grid - Battery Charging Voltage (SMF)	Boost	13.5V ± 0.2V (Each battery)			
	Float	13.5V ± 0.2V (Each battery)			
Grid - Battery Charging Voltage (Equalize)		After 30 days			
Grid Charging Current	Default	Boost Mode			
	Normal/Boost	12A/15A ± 2A			
	Enable/Disable	Enable			
Grid Reconnect @ Battery Voltage		11.8V ± 0.2V (Each battery)			
Grid Low Cut Voltage	IT Mode Enable	170V ± 10V			
Grid Low Cut Recovery		180V ± 10V			
Grid High Cut Voltage		265V ± 10V			
Grid High Cut Recovery		255V ± 10V			
Grid Low Cut Voltage	IT Mode Disable	100V ± 10V			
Grid Low Cut Recovery		110V ± 10V			
Grid High Cut Voltage		290V ± 10V			
Grid High Cut Recovery		280V ± 10V			
Change Over (Battery to Mains)	IT Mode Enable/disable	<5ms			
Change Over (Mains to Battery)		<15ms			
Parameters (Inverter)					
Output Phase		1Φ			
Nominal output voltage		240V ± 10% RMS			
Nominal Frequency		50Hz ± 1%			
Max. Output Current		2.1A	2.5A	2.9A	4.3A
Output Waveform		Modified Sinewave			
Battery Low Buzzer		10.8V ± 0.2V (Each battery)			
Battery Low Cut		10.5V ± 0.2V (Each battery)			
Battery High Cut		17V ± 0.2V (Each battery)			
Typical Efficiency		>82%	>80%	>88%	
Over Load Capacity	IT Mode Disable	>100% After 30 sec delay (with Alarm) 3Time Auto Reset , 4th Time Shut Down			
	IT Mode Enable	>100% After 30 sec delay (with alarm) 1st Time Shut Down >150% Output Goes Down			
Protection		Overload, Battery Low, Battery High, Output Short Ckt, Battery Reverse (Fuse Blown), Over Heat @90°C ± 10°C , SPV High , I/P HV, I/P LV			
LED Indication		System ON, (IT mode, SMF/TUB, Boost Chg, Grid Chg.)Enable/Disable, Mains Status, Overload, Grid chg., Inverter ON, Battery Status, SPV Chg., Fault			
Switches		System ON, (IT Mode, SMF/TUB, Boost Chg, Grid Chg.) Enable/Disable			
Parameters (Inverter)					
Switching Element		MOSFET			
Type of Charger		PWM			
SPV Charging Voltage (TUB)	Boost	15V ± 0.2V (Each Battery)			
	Float	14.2V ± 0.2V (Each Battery)			
SPV Charging Voltage (SMF)	Boost	13.7V ± 0.2V (Each Battery)			
	Float	13.7V ± 0.2V (Each Battery)			
Max. SPV Current		25A	50A	50A	50A
Efficiency		>95%			
Input Voltage Range (Min- Max) Voc		17V-25V			31V-49.5V
Maximum PV Power Recommended		(150W/160W)X2 (Parallel)	(150W/160W)X4 (Parallel)	(150W/160W)X5 (Parallel)	(315W/320W/325W)X4 (Parallel)
Parameters (Environment)					
Operating Temperature		0-50°C			
Cooling		Fan			
Max. Relative Humidity @ 25°C (non Condensing)		95%			
Noise @ 1 meter		50dB			
Standard Compliance		IP20			
Weight (kg)		7.75	8.8	11	14.2
Dimension (LXWXH)		275X276X131mm		306*274*166 mm	

*Specification are subject to change without prior notice due to constant improvement in design & technology.

SUN PLUS PRO (Solar Home PCU)

“Affordable Yet, Very Reliable”



**Model Available
SPP 920 to SPP 1420**

FEATURES

- **Inbuilt rMPPT Solar Charge Controller**
- **Support 12V & 24V Solar Panel with 12V System**
- **Battery Charging at Low Voltage (90V) Mains Input**
- **Compatible with IT Load**
- **Maintain battery health for longer life**
- **Modified Sine wave output**
- **Easy Installation & low maintenance**
- **Battery Charging with Multi stage (Bulk, Absorption & Float)**
Auto Equalize in a month
- **Protections : RBP, RSPV, OVL, BL, BH, S.Ckt, I/P HV & LV, OHT**
- **Priority Mode Selection- 1) Hybrid 2) Smart**
For Saving Energy & Money
- **Can Operated without Solar**
- **LED Display for Operation & Fault**

SUN PLUS PRO (Solar Home PCU)

Parameters		Rating			
Products		SUN PLUS PRO SOLAR PCU			
Model No.		SUN PLUS PRO 920	SUN PLUS PRO 1020	SUN PLUS PRO 1420	SUN PLUS PRO 1820
System Rating		700VA	900VA	1100VA	1500VA
Operating DC Voltage		12V			24V
Switching Element		MOSFET			
Charger Topology		BOOST MOSFET			
Max. Battery Capacity		200AH			
Operating Mode (SMART/HYBRID)		HYBRID			
Parameters (Solar)					
Switching Element		MOSFET			
Type of Charger		MPPT			
SPV Charging Voltage (TUB)	Boost	14.7V ± 0.2V (Each Battery)			
	Float	14.2V ± 0.2V (Each Battery)			
Maximum PV Power Recommended		540Wx1			
Solar PV Maximum Voltage		25 -50 VOC			50 VOC
Efficiency		>95%			
Parameters (Grid)		Default Value			
Nominal Grid Voltage		230V 1Φ			
Nominal frequency		50Hz			
Battery Charging Method 4 Stages		Bulk/Absorption/Float/Equalize			
Grid - Battery Charging Voltage	Boost	14.5V ± 0.2V (Each battery)			
	Float	13.8V ± 0.2V (Each battery)			
Grid - Battery Charging Voltage (Equalize)		After 30 days			
Grid Charging Current	Normal/Boost	15A /18A/12 A ±2A			
Grid Reconnect @ Battery Voltage		11.8V ± 0.2V (Each battery)			
Grid Low Cut Voltage	IT MODE ENABLE	170V ± 10V			
Grid Low Cut Recovery		180V ± 10V			
Grid High Cut Voltage		265V ± 10V			
Grid High Cut Recovery		255V ± 10V			
Grid Low Cut Voltage	IT MODE DISABLE	80V ± 10V			
Grid Low Cut Recovery		90V ± 10V			
Grid High Cut Voltage		280V ± 10V			
Grid High Cut Recovery		275V ± 10V			
Change Over (Battery to Mains)		<8ms			
Change Over (Mains to Battery)		<15ms			
Parameters (Inverter)					
Output Phase		1Φ			
Nominal output voltage		230V±10% RMS			
Nominal Frequency		50 Hz±1%			
Max. Output Current		2.1A	2.9A	3.5A	4.3A
Output Waveform		Modified Sinewave			
Battery Low Buzzer		10.8V ± 0.2V (Each battery)			
Battery Low Cut		10.5V ± 0.2V (Each battery)			
Battery High Cut		16.5V ± 0.2V (Each battery)			
Typical Efficiency		≥80%			≥85%
Over Load Capacity	IT Mode Disable	>100% After 30 sec delay (with Alarm) 3Time Auto Reset , 4th Time Shut Down			
	IT Mode Enable	>100% After 30 sec delay (with alarm) 1st Time Shut Down			
Protection		Overload, Battery Low, Battery High, Output Short Ckt, Battery Reverse (Fuse Blown) , Over Heat @90°C ± 10°C, SPV High, SPV Reverse , I/P HV, I/P LV			
LED Indication		System ON, Grid Status, Over load/Heat , Grid chg., Batt. ON, SPV Chg. Batt. Status .			
Switches		System ON, (IT Mode, Hybrid , Boost Charging)			
Parameters (Environment)					
Operating Temperature		0-45°C			
Cooling		Fan			
Max. Relative Humidity @ 25°C (non Condensing)		95%			
Noise @ 1 meter		50dB			
Standard Compliance		IP20			
Weight (kg)		7.6	8.4	13.3	14
Dimension (LXWXH)		275X305X131mm			302*306*165 mm

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SUN LION 1000

**Wall Mountable rMPPT Solar PCU
with Built-in LiFePO4 Battery.**

(Solar Home PCU)

**Model Available
SUNLION 1000**



FEATURES

- **Inbuilt rMPPT Solar Charge Controller**
- **Support 12V & 24V Solar Panel with 12V System**
- **Battery Charging at Low Voltage (90V) Mains Input**
- **Inbuilt Lithium LiFePo4 Battery**
- **Compatible with IT Load**
- **Zero Battery Maintenance & Long Battery Life**
- **Modified Sine wave output**
- **Battery Charging with Multi stage (Bulk, Absorption & Float)**
- **Protections : RBP, RSPV, OVL, BL, BH, S.Ckt, I/P HV& LV, OHT**
- **Easy Installation & low maintenance**
- **Can Operated without Solar**
- **Multi Color LCD Display for Operation & Fault**
- **Priority Mode Selection- 1) Hybrid 2) Smart For Saving Energy & Money**

SUNLION 1000 (Wall Mounted rMPPT Solar PCU)

Parameters		Rating	
Products		SUN LION SOLAR PCU	
Model No.		SUN LION 1000	
System Rating		800 VA	
Operating DC Voltage		12.8V	
Switching Element		MOSFET	
Charger Topology		BOOST MOSFET	
Max. Battery Capacity		50AH , 640Wh LiFePo4 (Inbuilt)	
Operating Mode (SMART/HYBRID)		HYBRID	
Parameters (Solar)		Variable Settable Range	
Switching Element		MOSFET	
Type of Charger		rMPPT	
SPV Charging Voltage	Boost/Float	13.9V ± 0.2V	13.7V - 14.4V
Maximum PV Power Recommended		540Wx1	
Solar PV Maximum Voltage		25V -50V (VOC)	
Efficiency		>95%	
Parameters (Grid)		Default Value	
Nominal Grid Voltage		230V 1Φ	
Nominal frequency		50Hz	
Battery Charging Method 3 Stages		Bulk/Absorption/Float	
Grid - Battery Charging Voltage	Boost/Float	13.8V ± 0.2V	13.5V-14.2V
Grid Charging Current	Normal/Boost	15A /18A ± 2A	1A-18A
Grid Reconnect @ Battery Voltage		12.4V ± 0.2V	12V - 13V
Grid Low Cut Voltage	IT MODE ENABLE	170V ± 10V	
Grid Low Cut Recovery		180V ± 10V	
Grid High Cut Voltage		265V ± 10V	
Grid High Cut Recovery		255V ± 10V	
Grid Low Cut Voltage	IT MODE DISABLE	80V ± 10V	
Grid Low Cut Recovery		90V ± 10V	
Grid High Cut Voltage		280V ± 10V	
Grid High Cut Recovery		275V ± 10V	
Change Over (Battery to Mains)	IT MODE ENABLE	<8ms	
Change Over (Mains to Battery)		<15ms	
Parameters (Inverter)			
Output Phase		1Φ	
Nominal output voltage		230V±10% RMS	
Nominal Frequency		50 Hz±1%	
Max. Output Current		2.5A	
Output Waveform		Modified Sinewave	
Battery Low Buzzer		11.9V + 0.2V	Battery Low Cut +0.3V
Battery Low Cut		11.6V + 0.2V	11V-12V
Battery High Cut		14.5V + 0.2V	14.5V - 15.0V
Typical Efficiency		>80%	
Over Load Capacity	IT Mode Disable	>100% After 30 sec delay (with Alarm) 3 Time Auto Reset , 4th Time ShutDown	
	IT Mode Enable	>100% After 30 sec delay (with alarm) 1st Time Shut Down	
Protection		Overload, Battery Low, Battery High, Output Short Ckt, Battery Reverse (DC Fuse Blown) , Over Heat @90°C ± 10°C , SPV High, SPV Reverse , I/P HV, I/P LV	
LED Indication		SYSTEM ON, (IT MODE, HYB/SMT , BOOST CHG.) ENABLE/DISABLE	
Switches (Micro)		System ON/OFF, UP, Down, Back, Enter(For LCD Calibration)	
Display (Multi color)		Battery Voltage, Charging Current, Grid Voltage, Grid Frequency, Output Voltage, Output Frequency, Load%, Battery Graph , BLK/ABS/FLT , SPV Current, Operating Mode (HYB/SMT) .	
Parameters (Environment)			
Operating Temperature		0-45°C	
Cooling		Fan	
Max. Relative Humidity @ 25°C (non Condensing)		95%	
Noise @ 1 meter		50dB	
Standard Compliance		IP21	
Weight (kg)		17 KG	
Dimension (LXWXH)		370X325X175mm	

*Specification are subject to change without prior notice due to constant improvement in design & technology.

GAMMA⁺ LiON

Wall Mountable rMPPT Solar PCU
with Built-in LiFePO4 Battery.

Model Available
GAMMA⁺ 1200



FEATURES

- Inbuilt LiFePO4 Battery with Zero battery maintenance & Long battery life.
- Controller-based design Pure Sine Wave.
- Built-in rMPPT charge controller that supports 1kW panels.
- Compact design with Multi-colour LCD Display.
- Preference to Solar Power over Grid Power.
- Multi-functional smart Options Priority Selection - PCU, Smart & Hybrid for Saving Energy & Money
- 5 years warranty on both Inverter and battery



**FAST
CHARGING**



**2X
LONGER LIFE**



**ZERO
MAINTENANCE**



**5 YEARS
WARRANTY**

GAMMA+ LiON (Wall Mounted rMPPT Solar PCU)

Parameters			
Product		Solar PCU	
Model No.		Gamma+ LiON 1200	
System Rating		1000VA	
Operating DC Voltage		25.6V	
Switching Element		MOSFET	
Max. Battery Capacity		48AH , 1.2Kw LiFePo4 (Inbuilt)	
Grid Charger Topology		Boost Charging Topology	
Operating Mode	SMART/PCU/HYBRID	Smart mode (Default)	
Optional DG mode	Enable/Disable	Disable (Default)	
Solar Power Maximum		1000W	
Input Voltage Range (Min, - Max) Voc		30V-106V	
Parameters (Grid)		Default Value	Variable settable Range (Each Batt.)
Nominal Grid Voltage		230V 1Φ	
Nominal frequency		50Hz	
Frequency Range		47-53Hz + 1Hz	
Battery Charging Method 3 Stages		Bulk/Absorption/Float	
Grid - Battery Charging Voltage	Boost/Float	13.8V+0.2V (Each Battery)	13.5V-14.2V
Grid Charging Current	Normal/Boost	15A/18A +2A	1A -20A
Optional Grid charging	Enable/Disable	Enable	
Grid Reconnect @ Battery Voltage		12.4V +0.2V (Each Battery)	12-13V
Grid Low Cut Voltage	IT mode Enable	170V ± 10V	
Grid Low Cut Recovery		180V ± 10V	
Grid High Cut Voltage		265V ± 10V	
Grid High Cut Recovery		255V ± 10V	
Grid Low Cut Voltage	IT mode Disable	100V ± 10V	
Grid Low Cut Recovery		110V ± 10V	
Grid High Cut Voltage		290V ± 10V	
Grid High Cut Recovery		280V ± 10V	
Change Over (Battery to Mains)	IT mode Enable/Disable	<8ms	
Change Over (Mains to Battery)	IT mode Enable	<12ms	
	IT mode Disable	<30ms	
Parameters (Inverter)			
Output Phase		1Φ	
Nominal Output Voltage		220V	
Output voltage range		220V±8%	
Nominal Frequency		50 Hz±1%	
Max. Output Current		3.0A	
Battery Low Buzzer		11.9V+0.2V (Each Battery)	NA
Battery Low Cut		11.6V+0.2V (Each Battery)	11-12V
Battery High Cut		14.5+0.2V (Each Battery)	NA
Output Waveform		Sinewave	
Typical Efficiency		>82%	
Voltage Harmonic		<3% (Linear Load)	
Over Load Capacity	IT Mode Disable	>100% After 30 sec delay (with alarm) 3Time Auto Reset , 4th Time Shut Down	
	IT Mode Enable	>100% After 30 sec delay (with Alarm) 1st Time Shut Down	
Protection		Overload, Battery Low, Battery High, Output Short Ckt, Battery Reverse (Through MCB) , Over Heat @90°C ± 10°C, Over/Under frequency, I/P High, I/P Low, SPV High, SPV Low	
LED Indication		System ON, (IT mode , Boost Chg , DG mode , Grid Chg.) Enable/Disable	
Switches (Micro)		System ON/OFF, UP, Down, Back, Enter (For LCD Calibration)	
Display (Multi color)		Battery Voltage, Charging Current, Grid Voltage, Grid Frequency, Output Voltage, Output Frequency, Load %, Battery Graph, Overheat, SPV Current, Operating Mode (HYB/PCU/SMT)	
Parameters (Solar)			
Switching Element		Mosfet	
SPV Charging Voltage	Boost/Float	13.9V+0.2V (Each Battery)	13.6-14.4V
Solar Charging Current (Battery)		20A+2A (Default)	11-22A
Battery Charging Method 3 Stages		Bulk/Absorption/Float	
Efficiency		>94%	
Parameters (Environment)			
Operating Temperature		0-50°C	
Cooling		Fan	
Max. Relative Humidity @ 25°C (Non Condensing)		95%	
Noise @ 1 meter		50dB	
Standard Compliance		IP20	
System Weight (KG)		23.5	
Dimension (LXWXH)mm		520 X 362 X 180	

GAMMA+ (Solar Home PCU)

“Get Two Battery Back -up in Single Battery”

Model Available
GPP1012-GPP3350



FEATURES

- Controller based design, Pure Sine Wave, Built in rMPPT Charge Controller.
- Multi-colour LCD Display.
- Freq.:- Available - 50Hz & 60Hz.
- Charging Multi Stage (Bulk, Absorption & Float)
- Solar Priority of load & Battery Charging.
- Preference to Solar Power over Grid Power.
- Pure sine wave output.
- Protections : RBP, RSPV, OVL, BL, BH, S.Ckt, I/P HV & LV, OHT.
- Compatible with DG as an input Source.
- Compatible with IT Load.
- Compatible with Tubular Batteries (Lithium) .
- Priority Selection - PCU, Smart & Hybrid for Saving Energy and Money.
- Support 1HP Motor in Model No 2600 and 3350.



GAMMA+ (Solar Home PCU)

Parameters		Gamma+ PCU					
Model Name		Gamma+ PCU					
Model No.		GPP 1012	GPP 1024	GPP 2000	GPP 2600	GPP 3350	
System Rating		1000VA		1500VA	2000VA	3000VA	
Operating DC Voltage		12V		24V			
Switching Element		MOSFET					
Charger Topology		Boost Mosfet					
Max. Battery Capacity		200AH					
Operating Mode		SMART/PCU/HYBRID					
Optional DG mode		Enable/Disable					
Input Voltage Range (Min - Max) Voc		15V-53V		30V-106V			
Solar Power Maximum		1000W	1000W	1500W	2000W	2160W	
Solar Panel Recommended (Watt)		165x6P, 200X5P (335x3P*) (400/440/540X2P*)	(335x3P*) (400/440/540X2P*) or 2S*)	335 (2S* & 2P*) 400 (2S* & 2P*), (540X3P*) Parallel	335 (2S* & 3P*) (400/440 (2S* & 3P*), (540X3P*) Parallel	335 (2S* & 3P*) 400/440 (2S* & 2P*) 540(2S* & 2P*)	
Parameters (Grid)		Default Value					Variable Settable Range (Each Batt.)
Nominal Grid Voltage		230V 1Φ					
Nominal frequency		50Hz					
Frequency Range		47-53Hz ± 1Hz					
Battery Charging Method 3 Stages		Bulk/Absorption/Float					
Default charging mode		TUB / LITHIUM					
Grid - Battery Charging Voltage (TUB)		Boost 14.5V ± 0.2V (Each Battery)					13.5-15V
		Float 13.8V ± 0.2V (Each Battery)					13-14.2V
Grid - Battery Charging Voltage (LITHIUM)		Boost / Float 13.8V ± 0.2V (Each Battery)					13.5V-14.2V
Grid Charging Current		Normal/Boost 10A/15A ± 2A					1A-20A
Optional Grid charging		Enable/Disable					
Grid Reconnect @ Battery Voltage (TUB)		Enable 11.8V ± 0.2V (Each Battery)					11-12V
Grid Reconnect @ Battery Voltage (LITHIUM)		12.4V ± 0.2V (Each Battery)					12-13V
Grid Low Cut Voltage		IT Mode Enable 170V ± 10V					
Grid Low Cut Recovery		180V ± 10V					
Grid High Cut Voltage		265V ± 10V					
Grid High Cut Recovery		255V ± 10V					
Grid Low Cut Voltage		IT Mode Disable 100V ± 10V					
Grid Low Cut Recovery		110V ± 10V					
Grid High Cut Voltage		290V ± 10V					
Grid High Cut Recovery		280V ± 10V					
Change Over (Battery to Mains)		IT Mode Enable/Disable <8ms					
Change Over (Mains to Battery)		IT Mode Enable <12ms					
		IT Mode Disable <30ms					
Parameters (Inverter)							
Output Phase		1Φ					
Nominal Output Voltage		220V					
Output voltage range		220V ± 8%					
Nominal Frequency		50 Hz ± 1%					50Hz/60Hz
Max. Output Current		2.9A	2.9A	4.3A	5.6A	9A	
Battery Low Buzzer (TUB)		10.8V ± 0.2V (Each Battery)					Battery Low Cut-0.3V
Battery Low Cut (TUB)		10.5V ± 0.2V (Each Battery)					10-11.5V
Battery High Cut (TUB)		16.5 ± 0.2V (Each Battery)					16.5-17.5V
Battery Low Buzzer (LITHIUM)		11.9V ± 0.2V (Each Battery)					Battery Low Cut-0.3V
Battery Low Cut (LITHIUM)		11.6V ± 0.2V (Each Battery)					11-12V
Battery High Cut (LITHIUM)		14.5 ± 0.2V (Each Battery)					14.5-15V
Output Waveform		Sinewave					
Typical Efficiency		>80%					>82%
Voltage Harmonic		<3% (Linear Load)					
Over Load Capacity		IT Mode Disable >100% After 30 sec delay (with alarm) 3Time Auto Reset , 4th Time Shut Down Note : 1HP Motor Load Run for 15min with alarm (1 Sec ON, 5 Sec OFF) in 2600 Model .					
		IT Mode Enable >100% After 30 sec delay (with Alarm) 1st Time Shut Down >150% Output Goes Down					
Motor 1 HP		NA					Yes (<6.5A) Yes
Protection		Overload, Battery Low, Battery High, Output Short Ckt, Battery Reverse (Fuse Blown), Over Heat @90°C ± 10°C, Over/Under frequency, I/P HV, I/P LV, SPV High, SPV Low					
LED Indication		System ON, (IT mode, TUB/LITHIUM, Boost Chg, DG mode, Grid Chg.) Enable/Disable					
Switches (Micro)		System ON/OFF, UP, Down, Back, Enter (For LCD Calibration)					
Display (Multi Color)		Battery Voltage, Charging Current, Grid Voltage, Grid Frequency, Output Voltage, Output Frequency, Load %, Battery Graph, Overheat, SPV Current, Operating Mode (HYB/PCU/SMT)					
Parameters (Solar)							
Switching Element		Mofset					
Type of Charger		MPPT					
SPV Chgarging Voltage (TUB)		Boost 14.7V ± 0.2V (Each Battery)					14-15.5V
		Float 14.2V ± 0.2V (Each Battery)					13.1-14.5V
SPV Charging Voltage (LITHIUM)		Boost / Float 13.9V ± 0.2V (Each Battery)					13.6-14.4V
SPV Charging Current		18A ± 2A (Default)					11-40A
Battery Charging Method 3 Stages		Bulk/Absorption/Float					
Efficiency		>94%					
Parameters (Environment)							
Operating Temperature		0-50°C					
Cooling		Fan					
Max. Relative Humidity @ 25°C (non Condensing)		95%					
Noise @ 1 meter		50dB					
Standard Compliance		IP20					
BIS Approved		Yes					
System Weight (KG)		12.4	12.5	16	17.6	27	
Dimension (LXWXH)mm		327.8 X305.5 X 116		333.8 X 305.5 X 158.6		340 X 305.5 X 360	

Note. 1) Specification are subject to change without prior notice due to constant improvement in design & technology.

2) Solar Panel Max. (*S- Series, *P- Parallel)

ALFA PRO+ SOLAR PCU

“Most Featureful Solar PCU”

Model Available
1kVA-20kVA

rMPPT™ Offgrid Solar PCU
(1Ph in 1Ph out)



FEATURES

- DSPIC based Pure Sine Wave Design.
- Inbuilt in rMPPT charge controller (upto 30% more efficient).
- Maximum preference to Solar Power.
- Wi-Fi based Remote Monitoring (GSM Optional).
- Comply with IEC 61683 and IEC 60068-2-(1,2,14,30) standards.
- Reverse AC Voltage Protection.
- User friendly & Easily accessible LCD Display with all AC & DC Parameter Configurable by Display Switches & Digital LCD (20X4).
- User Friendly Control :- Output Voltage, Chg. Voltage - SPV/ Grid, Chg. Current - SPV/Grid, Grid Reconnect, Batt. Low.
- Priority based working modes - Smart/PCU/Hybrid (for saving energy & money).
- Grid Charging, IT Load - Enable/Disable by LCD.

PCU Mode Priority

Solar/Battery/Grid

Hybrid Mode Priority

For Load - Grid/Solar/Battery
For Charging - Solar/Grid

Smart Mode Priority

For Day Time - Solar/Battery/Grid
For Night Time - Grid/Battery

Application

Hospital



School



Industries



Home



Petrol Pump



Bank



ALFA PRO+ SOLAR PCU (1Ph in 1Ph out)

Parameters	Units	Rating												
Model No (APP)		1024	2048	3748	5048	5096	7596	8120	10120	10180	15180	15240	20240	
System Rating	KVA	1	2	3.75	5	5	7.5	7.5	10	10	15	15	20	
Operating DC Voltage	V	24	48			96		120		180		240		
Photovoltaic Input														
Input Voltage Range (Min-Max)	VDC	45-90	80-160			160-400		200-500	200-400	300-625		400-650		
Maximum PV Power Recom.	KW	1.0	2.0	3.75	5.0		7.5		10		15		20	
Solar Charge Controller Rating	A	40	40	72	100	50	75	60	80	50	80	60	80	
MPPT Based Charging Controller														
Switching Element		Mosfet				IGBT								
Controller		DSP												
Type of Charger		MPPT												
Efficiency	%	95												
Configurable														
Parameter													Default Value	
Battery Low Buzzer	V	Batt. Low Cut +0.2											11.2	
Battery Low Cut**	V	10-11.7											11.0	
Battery High Cut (INV.)	V	SPV Present-SPV CHG. REF +1V for 15Sec, SPV CHG. REF +1.5V for 2Sec											16	
		SPV Absent-SPV CHG. REF for 15Sec, SPV CHG. REF +0.2V for 2Sec											14.7	
Battery Charging Voltage by SPV	V	12.8-16											14.5	
Battery Charging Current by SPV	A	12-60											18	
Battery Charging Voltage by Grid	V	12.5-15.5											14	
Battery Charging Current by Grid	A	6-15											10	
Grid Low Cut Voltage (IT Mode/	V	NA/120-200											175/120	
Grid High Cut Voltage Normal)	V	NA/245-280											260/280	
Grid Charging		Enable/Disable											Enable	
IT Load		Enable/Disable											Disable	
Operating Mode		Smart/PCU/Hybrid											Smart	
Output Voltage Low	V	170-190											185	
Output Voltage High	V	250-260											255	
No Load Shut Down		Enable/Disable											Disable	
Input Source		Grid/Genset											Grid	
Li Ion Parameter														
100AH														
No. of Cells		8	15			30	38	56		75				
Battery Low Buzzer	V	24.4	45.75			91.5	115.9	170.8		228.75				
Battery Low Cut**	V	23.6	44.25			88.5	112.1	165.2		221.25				
Battery Charging Voltage by SPV	V	28.4	53.25			106.5	134.9	198.8		266.25				
Battery Charging Current by SPV	A	20	20			20	20	20		20				
Battery Charging Voltage by Grid	V	28	52.5			105	133	196		262.5				
Battery Charging Current by Grid	A	10	10			10	10	10		10				
Battery														
Grid Disc. (Solar Available) PCU/SMART		@14.5/Battery for 2minutes or 13.5/Battery-100% Current												
Grid Rec. (PCU Mode/ Smart Mode)	V	11-12											11.5	
Inverter														
Switching Element		Mosfet					IGBT							
Control		PWM												
Nominal Output Voltage	VAC	220, 1Phase, 3Wire Pure Sine Wave												
Nominal Frequency	Hz	50.0												
Load Current	A	4.5	9	13.5	18	18	27	27	36	36	54	72		
Voltage Regulation	%	1												
Output Voltage Distortion with 100% Linear Load	%	<3												
Overload Capacity (IT LOAD DISB)		100-120(2time auto reset) : 60sec 120-150(2time auto reset) : 30sec 150-200 : 2sec 200-300 : 1sec 300-400 : 250ms >400 : 20ms												
Overload Capacity (IT LOAD ENB)	%	100-110 : 10 Min 110-120 : 2 Min 150-200 : 2Sec 200-300 : 1Sec 300-400 : 250ms >400 : 20ms												
Peak Efficiency	%	>82					>88							
Noise @ 1meter	dB	50												
Cooling		Temp Controlled, Fan												
Protections		Overload, Battery Low, Battery High, Output Low, Output High, Output Short Ckt., Overheat, Under Frequency, Over Frequency, Solar Panel Reverse												
Display Parameters		Battery Voltage, Charging Current, Discharging Current, Charging KWH, Discharging KWH, Solar Voltage, Solar Current, Instantaneous Power, Cumulative Power, Grid Voltage, Grid Current, Grid Frequency, Output Voltage, Output Current, Output Frequency IT Load En/Dn Grid Charger En/Dn, Operating Mode PCU/SMT/HYD												
Switches		Reset for System ON/OFF, UP, DOWN, BACK, ENTER (for LCD Configuration)												
Indications		System ON, Inverter ON, SPV Charging, Grid Charging, Battery Low/High, Overload, Overheat, Mains Low, Mains High, Under Frequency, Over Frequency, Fault												
Environment														
Operating Temperature	C	0-50												
Max Relative Humidity @25°C(non condensing)	%	95												
Degree of Protection		IP21												
Data Loggin	Inch	30 Day Data Storage												
Dimension (LxWxH)	Kg.	18 X 10 X 18				24 X 13 X 23				24 X 13 X 26				32 X 16 X 25
Weight (Approx)		32	40	44	50	71	65	80	103	120		165		

*Specification are subject to change without prior notice due to constant improvement in design & technology.

**Once Battery Get Full Charged then Batt Low cut as per specification otherwise battery low buzzer 11.3V Per Batt. & Batt low cut 11.2V Per Batt.

SIGMA PRO Grid Export Solar PCU

rMPPT Hybrid Solar PCU
(1Ph in 1Ph out)



Model Available
1kVA-15KVA

A SMART PCU
Which Stores as well as Exports Electricity

FEATURES

- DSPIC based Pure Sine Wave Design.
- Inbuilt in rMPPT charge controller (upto 30% more efficient).
- Grid Interactive.
- Maximum Preference to Solar Power.
- Wi-Fi based remote monitoring (GSM Optional).
- Certified by IEC 61683, 61727, 60529, 60068-2 (1,2,14,30) & 62116 standards.
- Robust Design-20 years product life, 5 yrs of warranty.
- User Friendly & Easily accessible LCD Display with all AC and DC Parameter Configurable by Display Switches & Digital LCD (20X4).
- User Friendly Control :- Output Voltage, Chg. Voltage - SPV/Grid, Chg. Current - SPV/Grid, Grid Reconnect, Batt. Low.
- Reverse AC Voltage Protection.
- Priority based working modes - Smart/PCU/Hybrid (for saving energy & money).
- Grid Export Mode, Grid Charging & IT Load - Enable/Disable by Display Switch.

PCU Mode Priority

Solar/Battery/Grid

Hybrid Mode Priority

For Load - Grid/Solar/Battery
For Charging - Solar/Grid

Smart Mode Priority

For Day Time - Solar/Battery/Grid
For Night Time - Grid/Battery

Grid Export Mode

Solar/Grid/Battery

Application





SIGMA PRO Grid Export SOLAR PCU (1Ph in 1Ph out)

Parameters	Units	Rating												
Model (UGE)		1024	1048	2048	3048	4048	5048	5096	8120	10120	10180	15180	15240	
System Rating	KVA	1	1	2	3	4	5	7.5	7.5	10		15		
Operating DC Voltage	V	24	48					96	120	180		240		
Photovoltaic Input														
Input Voltage range(Min.-Max.)	V _{oc}	45-90	80-195					180-360	200-400	220-400	300-540	400-650		
Maximum PV power recommended	kW	1	2	3	4	5	7.5	10	15					
Solar Charge Controller Rating	A	40	20	40	60	80	100	50	75	60	80	55	60	
MPPT Based Charge Controller														
Switching Element		MOSFET					IGBT							
Controller		DSP												
Type of Charger		MPPT												
Peak Efficiency	%	95												
Parameters		Configurable										Default Value		
Battery Low Buzzer	V	Batt. Low Cut +0.2										11.2		
Battery Low cut	V	10-11.7										11		
Battery High cut (INV.)	V	SPV Present-SPV CHG. REF +1.3V for 15Sec, SPV CHG. REF +1.8V for 2Sec										15.5		
		SPV Absent-SPV CHG. REF +0.5V for 15Sec, SPV CHG. REF +1.2V for 2Sec										15		
Battery Charging Voltage with SPV	V	12.8-16										14.5		
Battery Charging Current with SPV	A	12-60										18		
Battery Charging Voltage with Grid	V	12.5-15.5										14		
Battery Charging Current with Grid	A	6-15										10		
Grid low cut volt. (IT Mode Enb/Dis)	GRID EXPORT	NA/120-200										175/120		
Grid high cut volt. (IT Mode Enb/Dis)	MODE DISABLE	NA/245-280										260/280		
Grid Charging	V	Enable/Disable										Enable		
IT Mode		Enable/Disable										Disable		
Operating mode		Smart/PCU/Hybrid/Grid Export										Smart Mode		
Input Source		Grid/Genset(for Genset, Grid Export Mode must be Disable)										Grid		
Output voltage low	V	170-190										185		
Output voltage high	V	250-260										255		
Li Ion Parameter		100AH												
No. of Cells		8	15					30	38	56	75			
Battery Low Buzzer	V	24.4	45.75					91.5	115.9	170.8	228.75			
Battery Low Cut**	V	23.6	44.25					88.5	112.1	165.2	221.25			
Battery Charging Voltage by SPV	V	28.4	53.25					106.5	134.9	198.8	266.25			
Battery Charging Current by SPV	A	20	20					20	20	20	20			
Battery Charging Voltage by Grid	V	28	52.5					105	133	196	262.5			
Battery Charging Current by Grid	A	10	10					10	10	10	10			
Grid Export Mode Enable														
Grid Low/recover	V	185/195												
Grid High/recover	V	280/275												
Synchronization voltage range	V	185-280V												
Synchronization frequency range	HZ	47 to 53												
Maximum Charging Current from Grid (Import)	A	6-15										10		
Battery														
Grid Disconnect (Solar Available) PCU/SMART		@14.5V/Battery for 2 minutes OR 13.5V/Battery-100% Current (if Grid Chg. Volt. Ref. set to 14.0V)												
Grid Reconnect (PCU Mode / Smart Mode), Import ON (Grid Export mode)	V	11-12										11.5		
Inverter														
Switching Element		MOSFET					IGBT							
Control		PWM												
Nominal Output voltage		220, 1Phase, 3 Wire, Pure Sine Wave												
Nominal frequency	Hz	50												
Load Current	A	4.5	9	13.5	14.2	18	27	36	54					
Voltage regulation	%	1												
Output voltage distortion with 100% linear load	%	<3												
Overload capacity	%	IT Load 100-120(2Time auto Reset) : 60sec Disable 120-150(2Time auto Reset) : 30sec		IT Load 100 - 110%:10min; 110 - 120%: 2min; 120 -150%:30sec;		Grid Tie Over Load Indication @>200% ON >200 - 300% : 10min >300 - 400% : 1min >400% : 250ms								
Peak efficiency	%	>85												
Noise @ 1 meter	dB	50												
Cooling		Either Load Based (On ≥ 60, Off ≤ 50) or Temperature Based (On ≥ 55°C ±3°C, Off ≤ 42°C ±3°C)												
Protections		Overload, Battery Low, Battery High, Output Low, Output High, Input Low, Input High, SPV Low, SPV High, Output Short Ckt., Input Short Ckt., Over Temp., Under Frequency, Over Frequency, Solar Panel Reverse, Anti-islanding, Surge Protection, Grid/Solar Charger Open Circuit, NTC Open.												
Display Parameters		Battery Voltage, Charging Current, Discharging Current, charging KWH and discharging KWH												
		Solar Voltage, Solar Current, Instantaneous Power, Cumulative Energy												
		Grid Voltage, Grid Current, Frequency, Import Power, Import Energy ,												
		Export Power, Export Energy												
		Output Voltage, Output Current, Frequency, Instantaneous Power & Commutative Energy												
Switches		Grid, Inverter & SPV Charger Status												
		System Info : Grid CHG-EN, IT Load-EN, Input Source-Grid, Operation Mode-Smart Reset for System ON/OFF, UP , DOWN, BACK, ENTER (for LCD Configuration)												
Indications		System ON, Inv. ON, SPV Charging, Grid Charging, Grid Tie ON, Battery Low/High, Overload / Overheat, Mains Low / Mains High, Under frequency/Over frequency, Operating modes (smart, Hybrid, PCU and Gridexport), Fault, HOE												
Environment														
Operating temperature	°C	0-45												
Max. Relative Humidity @ 25 C (non condensing)	%	95												
Degree of Protection		IP-21										IP-20		IP-21
BIS Certification		No	Yes					No						
Data Logging		30 Days Data Storage												
Dimension (LxWxH)	Inch	15x16x15	18 x 10 x 20					23 x 13 x 26			26 x 13 x 26	30 x 16 x 27	26 x 13 x 26	
Weight (Approx)	kg	30	35	43	50	52	60	70	78	103	160	120		

*Specification are subject to change without prior notice due to constant improvement in design & technology.

*If battery is not fully charged, battery low cut voltage is 11.5V/batt. If battery is fully charged, battery low cut voltage is equal to set Voltage.

ZETA PRO SOLAR PCU

“A Smart PCU - Which Stores as well as Exports Electricity”

Model Available in
7.5kVA-50KVA

rMPPT™ Hybrid Solar PCU
(3Ph in 3Ph out)



FEATURES

- DSPIC based Pure Sine Wave Design.
- Inbuilt in rMPPT charge controller (upto 30% more efficient*).
- Grid Interactive.
- Maximum Preference to Solar Power.
- 31 days data logs inbuilt and AC & DC energy meter inbuilt.
- Wi-Fi Based Monitoring & RS485 Communication
- Robust Design-20 years product life, 5 yrs of warranty.
- User Friendly & Easily accessible LCD Display with all AC and DC Parameter Configurable by Display Switches & Digital LCD (20X4).
- User Friendly Control :- Output Voltage, Chg. Voltage - SPV/Grid, Chg. Current - SPV/Grid, Grid Reconnect, Batt. Low.
- Reverse AC Voltage Protection.
- Priority based working modes - Smart/PCU/Hybrid (for saving energy & money).
- Grid Export Mode, Grid Charging & IT Load - Enable/ Disable by Display Switch.
- Phase Sequence Protection.
- Li-Ion Compatible.

PCU Mode Priority

Solar/Battery/Grid

Hybrid Mode Priority

For Load - Grid/Solar/Battery
For Charging - Solar/Grid

Smart Mode Priority

For Day Time - Solar/Battery/Grid
For Night Time - Grid/Battery

Grid Export Mode

Solar/Grid/Battery

Application

Hospital



School



Industries



Home



Petrol Pump



Bank



* As Compare with PWM

ZETA PRO SOLAR PCU (3Ph in 3Ph out)

Parameters	Units	Rating			
System Rating	KVA	7.5	10	15	
Operating DC Voltage	VDC	96	120	180	
Photovoltaic Input					
Input open circuit voltage range(Min-Max)	Voc	160-360	200-360	300- 540	
Maximum PV Power Recommended / No. of Charge Controller		7.5KW / 1	10KW / 1	15KW / 1	
Switching Element / Type of Charger / Solar Charge Controller Rating		IGBT / MPPT / 80A			
Peak Efficiency (DC to DC)	%	95			
PANEL CONFIGURATION (S-SERIES, P-PARALLEL)		400W-6S X 3P 440W-6S x 3P 540W-7S x 2P	335W-6S X 5P, 390/400W-5S x 5P 540W-5S x 4P	335W-9S X 5P, 390/400W-8S or 7S x 5P 540W-7S x 4P	
Grid parameter		Configurable			Default
Input Voltage (R,Y,B w.r.t.. N) Nominal	VAC	220V/ Phase			
Frequency Range (R,Y,B w.r.t.. N)	Hz	50 ±3			
Supply Phase & Connection		3Phase / 4Wire			
Switching Element / Bypass Element / Grid charger Efficiency (AC-DC)		IGBT/ SCR / >85%			
Grid Low Cut Voltage R-Y-B w.r.t N (IT Mode-Enable/Disable)	VAC	NA/120-200			175/120
Grid High Cut Voltage R-Y-B w.r.t N (IT Mode-Enable/Disable)	VAC	NA/245-280			260/280
Grid Charger		Enable/Disable			Enable
Grid Export		Enable/Disable			Disable
IT Load		Enable/Disable			Disable
Input Source		Grid/Genset(for Genset, Grid Export Mode must be Disable)			Grid
Grid Export Mode Enable Parameter		Configurable			Default
Grid Low Cut/Recover Voltage R-Y-B w.r.t N	AC	185/195			
Grid High Cut/Recover Voltage R-Y-B w.r.t N	VAC	280/275			
Synchronization voltage range	VAC	185-280			
Synchronization frequency range	Hz	50±3			
Battery Parameter		Configurable			Default
Battery Low Buzzer	VDC	Batt.Low Cut+0.2			11.2
Battery Low Cut	VDC	10-11.7			11
Battery High Cut(Inverter)	VDC	SPV Present- SPV Chg. Ref.+ 1.0V for 15Sec., SPV Chg. Ref.+1.5V for 2Sec			16
		SPV Absent- SPV Chg. Ref for 15Sec, SPV Chg. Ref + 0.2V for 2Sec			14.7
Battery Charging Voltage with SPV	VDC	12.8-16			14.5
Battery Charging Current with SPV	A	12-60			18
Battery Charging Voltage with Grid	VDC	12.5-15.5			14.2
Battery Charging Current with Grid	A	6-15			10
Operation Mode		Smart/Hybrid/PCU			Smart
Grid Disconnect (Solar Available) PCU/SMART	VDC	@14.5V/Battery for 2 minutes or 13.5V/Battery with 100% Charging Current			
Grid Reconnect (PCU Mode/SMART Mode)	VDC	11-12			11.5
Temperature Compensation		@3mV/cell/°C			
Inverter Parameter		Configurable			Default
Switching Element / Control	VAC	IGBT/ PWM			
Nominal Output Voltage (R,Y,B w.r.t.. N)	VAC	220V,230V,240V/ Phase			230V
Output Voltage Low Cut (R,Y,B w.r.t.. N) (Inv. Mode)	VAC	170-190			185
Output Voltage High Cut (R,Y,B w.r.t.. N)(Inv. Mode)		250-260			255
Output Supply Phase / Output Waveform	Hz	3Phase / 4Wire / Pure Sine Wave			
Frequency	A	50± 0.05			
Output Current Per Phase (R,Y,B)	%	8.6	11.6	17.4	
Voltage Regulation	%	±1			
THDv	%	Less than 3% Linear load			
Overload Capacity (IT LOAD DISABLE)	%	100 - 120 % @ 60 Sec (2 Times Retry) , 120 - 150 % @ 30 Sec(2 Times Retry) ,150 - 200 % @ 2 Sec			
Overload Capacity (IT LOAD ENABLE)	%	100 - 110 % @ 10 Min,110 - 120 % @ 2Min, 120 - 150 % @ 30 Sec			
Overload Capacity (Grid Tie ON)	%	200 - 300 % @ 10 Min,300 - 400 % @ 1Min,>400% @250ms			
Peak Efficiency		>85			
Manual Bypass		Rotary Switch			
Cooling		Temperature Controlled Fan			
Protections		Overload, Battery Low, Battery High, Output AC Low, Output AC High, Input AC Low, Input AC High, SPV High, SPV Low, Output AC Short Circuit, Input AC Short Circuit, Over temperature, Under Frequency, Over Frequency, Grid/Solar Charger Open Circuit, NTC Open, Solar Panel Reverse, Anti-islanding, Surge Protection			
Display Parameters		Input R Y B Voltage/Current/Frequency/Import Power/Export Power/Import Energy/Export Energy, Output R Y B Voltage/Current/Frequency/Power/Energy, Solar Voltage/Current/Power/Energy, Battery Voltage/Chg. Current/ Discharging Current/Charging KWh/Discharging Kwh, Inverter Status , Grid Charger Status, Solar Charger Status			
Switches		Reset Switch for System ON/OFF, UP, DOWN, BACK, ENTER(for LCD Configuration)			
LED Indications		System ON, Inverter ON, Grid Charger ON, Grid Tie ON, SPV Charger ON, Grid High/Low R Y B, Grid Frequency under and over R Y B, Output High/Low R Y B, Battery Low/High ,SPV Low/ High, Inverter/Grid charger Overheat, MPPT Overheat, Fault, Overload R Y B, HOE R Y B			
Environment					
Operating Temperature	°C	0 - 50			
Max. Relative Humidity @25°C (non condensing)	%	95			
Noise at 1 Meter / Degree of Protection		60 dBA / IP20			
REMOTE MONITORING SYSTEM (RMS)		Wi Fi			
Data Log		31 Days			
Dimension (L X W X H)	Inch	33 X 16.3 X 27.5			
Weight	Kg	90	105	125	

*Specification are subject to change without prior notice due to constant improvement in design & technology.

ZETA PRO SOLAR PCU (3Ph in 3Ph out)

Parameters	Units	Rating			
System Rating	KVA	20	30	40	50
Operating DC Voltage	VDC	240			
Photovoltaic Input					
Input open circuit voltage range(Min-Max)	Voc	400-720			
Maximum PV Power Recommended / No. of Charge Controller		20KW / 1	30KW / 1	40KW / 1	50KW / 1
Switching Element / Type of Charger / Solar Charge Controller Rating		IGBT / MPPT / 80A	IGBT / MPPT / 125A	IGBT / MPPT / 160A	IGBT / MPPT / 200A
Peak Efficiency (DC to DC)	%	95			
Panel configuration		335W-12 Panel in Series X 5 String, 440W-11 Panel in series x 4 string 540W-12 Panel in series x 3 string	335W-13 Panel in Series X 7 String, 440W-10 Panel in series x 7 string 540W-11 Panel in series x 5 string	335W-12 Panel in Series x 10 String, 440W-10 Panel in series x 9 string 540W-11 Panel in series x 7 string	335W-12 Panel in Series X 12 String, 440W-10 Panel in series x 11 string 540W-10 Panel in series x 9 string
Grid parameter					Default
Input Voltage (R,Y,B w.r.t.. N) Nominal	VAC	220V/ Phase			
Frequency Range (R,Y,B w.r.t.. N)	Hz	50 ±3			
Supply Phase & Connection		3Phase / 4Wire			
Switching Element / Bypass Element / Grid charger Efficiency (AC-DC)		IGBT/ SCR / >85%			
Grid Low Cut Volt. Range R-Y-B w.r.t N (IT Mode-Enable/Disable)	VAC	NA/120-200			175/120
GridHigh Cut Volt. Range R-Y-B w.r.t N (IT Mode-Enable/Disable)	VAC	NA/245-280			260/280
Grid Charger		Enable/Disable			Enable
Grid Export Mode		Enable/Disable			Disable
IT Load		Enable/Disable			Disable
Input Source		Grid/Genset(for Genset, Grid Export Mode must be Disable)			Grid
Grid Export Mode Enable Parameter					
Grid Low Cut/Recover Voltage R-Y-B w.r.t N	AC	185/195			
Grid High Cut/Recover Voltage R-Y-B w.r.t N	VAC	280/275			
Synchronization voltage range	VAC	185-280			
Synchronization frequency range	Hz	50±3			
Battery Parameter					Default
Battery Low Buzzer	VDC	Batt.Low Cut+0.2			
Battery Low Cut	VDC	10-11.7			
Battery High Cut(Inverter)	VDC	SPV Present- SPV Chg. Ref.+ 1.0V for 15Sec., SPV Chg. Ref.+1.5V for 2Sec			
		SPV Absent- SPV Chg. Ref for 15Sec, SPV Chg. Ref + 0.2V for 2Sec			
Battery Charging Voltage Range with SPV	VDC	12.8-16			
Battery Charging Current Range with SPV	A	12-60			
Battery Charging Voltage Range with Grid	VDC	12.5-15.5			
Battery Charging Current Range with Grid	A	6-15			
Operation Mode		Smart/Hybrid/PCU			
Grid Disconnect (Solar Available) PCU/SMART	VDC	@14.5V/Battery for 2 minutes or 13.5V/Battery with 100% Charging Current			
Grid Reconnect Range (PCU Mode Smart Mode)	VDC	11-12			
Temperature Compensation		@3mV/cell/°C			
Inverter Parameter					Default
Switching Element / Control		IGBT/ PWM			
Nominal Output Voltage (R,Y,B w.r.t.. N)	VAC	230V/ Phase			
Output Volt. Range Low Cut R-Y-B w.r.t N (Inv. Mode)	VAC	170-190			185
Output Volt. Range High Cut R-Y-B w.r.t N (Inv. Mode)	VAC	250-260			255
Output Supply Phase / Output Waveform		3Phase / 4Wire / Pure Sine Wave			
Frequency	Hz	50± 0.05			
Output Current Per Phase (R,Y,B)	A	23	34.7	46.3	57.9
Voltage Regulation	%	±1			
THDv	%	Less than 3% Linear load			
Overload Capacity (IT LOAD DISABLE)	%	100 - 120 % @ 60 Sec (2 Times Retry), 120 - 150 % @ 30 Sec(2 Times Retry),150 - 200 % @ 2 Sec			
Overload Capacity (IT LOAD ENABLE)	%	100 - 110 % @ 10 Min,110 - 120 % @ 2Min, 120 - 150 % @ 30 Sec			
Overload Capacity (Grid Tie ON)	%	200 - 300 % @ 10 Min,300 - 400 % @ 1Min,>400% @250ms			
Peak Efficiency	%	>85			
Manual Bypass		Rotary Switch			
Cooling		Temperature Controlled Fan			
Protections		Overload, Battery Low, Battery High, Output AC Low, Output AC High, Input AC Low, Input AC High, SPV High, SPV Low, Output AC Short Circuit, Input AC Short Circuit, Over temperature, Under Frequency, Over Frequency, Grid/Solar Charger Open Circuit, NTC Open, Solar Panel Reverse, Anti-islanding, Surge Protection			
Display Parameters		Input R Y B Voltage/Current/Frequency/Import Power/Export Power/Import Energy/Export Energy, Output R Y B Voltage/Current/Frequency/Power/Energy, Solar Voltage/Current/Power/Energy, Battery Voltage/Charg. Current/ Discharging Current/Charging KWh/Discharging Kwh, Inverter Status , Grid Charger Status, Solar Charger Status			
Switches		Reset Switch for System ON/OFF, UP, DOWN, BACK, ENTER(for LCD Configuration)			
LED Indications		System ON, Inverter ON, Grid Charger ON, Grid Tie ON, SPV Charger ON, Grid High/Low R Y B, Grid Frequency under and over R Y B, Output High/Low R Y B, Battery Low/High, SPV Low/ High, Inverter/Grid charger Overheat, MPPT Overheat, Fault, Overload R Y B, HOE R Y B			
Environment					
Operating Temperature	°C	0 - 50			
Max. Relative Humidity @25°C (non condensing)	%	95			
Noise at 1 Meter / Degree of Protection		60 dBA / IP20			
Dimension (L X W X H)	Inch	33 X 16.5 X 27.5	27.5 X 27.5 X 67.5		
Weight	Kg	145	300	350	400

*Specification are subject to change without prior notice due to constant improvement in design & technology.

MARS Online Solar PCU

“3 Phase with Zero Changeover Time”

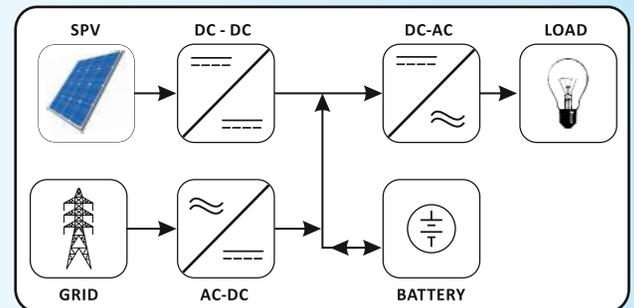
rMPPT™ Online Solar PCU



Available in
5-20KVA (3 in - 1 Out)

FEATURES

- DSPIC based design Pure Sine wave, inbuilt rMPPT charge controller.
- Thermal Protection.
- Maximum Preference to Solar Power.
- Ethernet based monitoring (Optional).
- Noiseless in Operation.
- Robust Design - 20 years Product life.
- Configurable Priority.
 - a) Solar/Battery/Grid
 - b) Solar/Grid/Battery
- AC and DC Parameter Configurable from LCD.
- AC-Output Voltage.
- DC- Charging Voltage Battery Charging Current, Battery Low Cut/High Cut.
- High Surg Capability (up to 300%) for starting heavy load.
- High Efficiency & High Reliability.



Working Mode

Solar/Grid/Battery
or
Solar/Battery/Grid

Application



MARS ONLINE SOLAR PCU (3Ph in 1Ph out)

Input	Power Rating	5kVA/240V	7.5kVA/240V	10kVA/240V	15kVA/240V	20kVA/360V	
	Voltage Range	400V±20% Three phase four wire					
	Frequency	50Hz ±3%					
	Power Factor	>0.92					
	Charger Topology	Buck					
	Connection Type	Terminal Block					
Solar	K Watt	5KW	7.5KW	10KW	15KW	20KW	
	Voc (min-max)	400V - 740V					
	Vmp	288V - 660V					
	Panel Configuration (S-SERIES, P-PARALLEL)	335W	14S X 1P	11S X 2P	10S X 3P	11S X 4P	15S X 4P
		440W	11S X 1P	9S X 2P	11S X 2P	11S X 3P	15S X 3P
		540W	9S X 1P	14S X 1P	10S X 2P	10S X 3P	13S X 3P
	Switching Devices	IGBT					
	Switching Freq.	16KHz					
	No. of Charger Controller	One					
	Charger Topology	Buck					
	Type of Charger	PWM with MPPT					
	Peak Efficiency (DC - DC)	96%					
	Parameter	Configurable				Default	
	Battery Low Buzzer	Batt Low Cut + 0.2				10.7V	
	Battery Low Cut	10-11.7V				10.5V	
	Battery High Cut (Charger)	Batt Volt By SPV + 0.7				14.5	
	Batt. CHG. Volt. by Grid	13-14.5V				13.3V	
	Batt. CHG. Current. by Grid	3-12A				10A	
	Batt. CHG. Volt. by SPV	13.5-15V				13.8V	
	Batt. CHG. Current. by SPV	5-24V				18V	
	Grid Charger Reconnect	Enable /Disable				Disable	
	Output Voltage Low Cut	170-190V				180V	
Output Voltage High Cut	250-260V				255V		
Output	Voltage	220V/230V/240V±1% (1phase 2 wire)					
	Load Current	17.4A	26.08A	34.78A	52.17A	69.6A	
	Efficiency (AC - AC)	>90%@Full Load					
	Frequency	50Hz					
	Waveform	Pure Sine Wave					
	Transient Response	<8 (10%~90% Linear Load)					
	Voltage Harmonics	<3% Linear Load					
	Overload Capacity	100 to 110%-10 Min., 110 to 120%-2 Min.; 120 to 150%-30 Sec; 150 to 200%-2 Sec; 200 to 300%-1sec.; 300 to 400%-250msec., >400%-20-30msec					
	Crest Factor	3:1					
	Voltage Harmonics	±1%					
	Frequency Regulation	±0.05Hz					
	Connection Type	Terminal Block					
	Alarm	Battery Low, battery High, Overload					
	LED Indication	#UPS ON #Mains CHG. #Overload #Output High/Low #Battery High/Low, #Bypass #SPVCG. ON #SPV High/Low #CHG. OVERHEAT #AC Input High/Low R,Y,B #fault					
	LCD (20*4) Display	#Input Voltage & Freq. R,Y,B #Output Voltage, Freq. & Load% # Battery Voltage #Charging Current #Solar Voltage, Solar Current, Solar Watt, #Working Status					
	Protections	#Output Overvoltage/Undervoltage, #Overload, #Output Shortcircuit, #Battery Overvoltage/ undervoltage #SPV Under Voltage/ Over Voltage #Input Under Voltage/Over Voltage					
	Miscellaneous	Transfer Time	0 msec				
Extended Battery Charging		Optional					
Caster Wheels		Yes					
Environmental	Operating Environment	0-50° C					
	Operating Relative Humidity	(5%-95%) Non-condensed					
	Storage Environment	0-75° C					
	Operational Logic	SOLAR BATTERY GRID SOLAR GRID BATTERY					
	Storage Relative Humidity	0-95%					
	Degree of Protection	IP20					
	Remote Monitoring	Ethernet (Optional)					
Dimension (LXWXH) Inch	30x16x27						

*Specification are subject to change without prior notice due to constant improvement in design & technology.



MARS ONLINE SOLAR PCU (3Ph in 3Ph out)

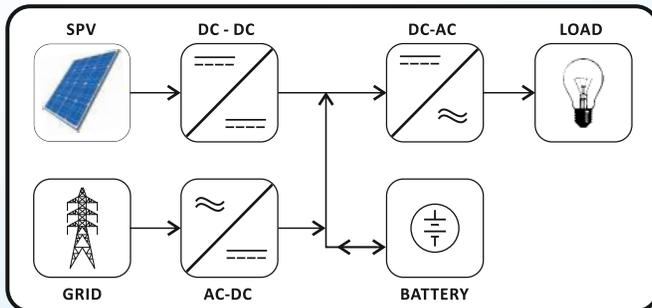
Input	Power Rating	5kVA/240V	7.5kVA/240V	10kVA/240V	15kVA/240V	
	Voltage Range	400V±20% Three phase four wire				
	Frequency	50Hz ±3%				
	Power Factor	>0.92				
	Charger Topology	Buck				
	Connection Type	Terminal Block				
Solar	K Watt	5KW	7.5KW	10KW	15KW	
	Voc (min-max)	400V - 740V				
	Vmp	288V - 660V				
	Panel Configuration (S-SERIES, P-PARALLEL)	335W	14S X 1P	11S X 2P	10S X 3P	11S X 4P
		440W	11S X 1P	9S X 2P	11S X 2P	11S X 3P
		540W	9S X 1P	14S X 1P	10S X 2P	10S X 3P
	Switching Devices	IGBT				
	Switching Freq.	16KHz				
	No. of Charger Controller	One				
	Charger Topology	Buck				
	Type of Charger	PWM with MPPT				
	Peak Efficiency (DC - DC)	96%				
	Parameter	Configurable			Default	
	Battery Low Buzzer	Batt Low Cut + 0.2			10.7V	
	Battery Low Cut	10-11.7V			10.5V	
	Battery High Cut (Charger)	Batt Volt By SPV + 0.7			14.5	
	Batt. CHG. Volt. by Grid	13-14.5V			13.3V	
	Batt. CHG. Current. by Grid	3-12A			10A	
	Batt. CHG. Volt. by SPV	13.5-15V			13.8V	
	Batt. CHG. Current. by SPV	5-24V			18V	
	Grid Charger Reconnect	Enable /Disable			Disable	
Output Voltage Low Cut	170-190V			180V		
Output Voltage High Cut	250-260V			255V		
Output	Voltage	380V/400V/415V ±1% (3phase 4 wire)				
	Load Current	5.8A	8.7A	11.6A	17.4A	
	Efficiency (AC - AC)	>90%@Full Load				
	Frequency	50Hz				
	Waveform	Pure Sine Wave				
	Transient Response	<8 (10%~90% Linear Load)				
	Voltage Harmonics	<3% Linear Load				
	Overload Capacity	100 to 110%-10 Min., 110 to 120%-2 Min.; 120 to 150%-30 Sec; 150 to 200%-2 Sec; 200 to 300%-1sec.; 300 to 400%-250msec., >400%-20-30msec.				
	Crest Factor	3:1				
	Voltage Harmonics	±1%				
	Frequency Regulation	±0.05Hz				
	Connection Type	Terminal Block				
	Alarm	Battery Low, battery High, Overload				
	Indication	LED	#UPS ON #Mains CHG. #Overload R,Y,B #Output High/Low R,Y,B #Battery High/Low #SPVCHG. ON #SPV High/Low #CHG. OVERHEAT #AC Input High/Low R,Y,B #FAULT.			
LCD (20*4)		#Input Voltage & Freq. R,Y,B #Output Voltage, Freq. & Load% R,Y,B # Battery Voltage #Charging Current #Solar voltage, Solar Current, Solar Watt, #Working & Fault Status.				
Protections	Parameters	#Output Overvoltage/Undervoltage, #Overload, #Output Shortcircuit, #Battery Overvoltage/undervoltage #SPV Under Voltage/ Over Voltage #Input Under Voltage/Over Voltage.				
Miscellaneous	Transfer Time	0 msec				
	Extended Battery Charging	Yes				
	Caster Wheels	Yes				
Environmental	Operating Environment	0-50° C				
	Operating Relative Humidity	(5%-95%) Non-condensed				
	Storage Environment	0-75° C				
	Storage Relative Humidity	0-95%				
	Degree of Protection	IP20				
	Remote Monitoring	Ethernet (Optional)				
	Dimension (LXWXH) Inch	23x13x26			30x16x27	

*Specification are subject to change without prior notice due to constant improvement in design & technology.

STAR Online Solar PCU

“3 Phase with Zero Changeover Time for Heavy Loads”

Available in
20-120kVA



Online Solar PCU



FEATURES

- Upto 30% more Efficient because of rMPPT Charge Controller.
- Short Circuit, Input Under/Over Voltage Protection.
- Advanced DSPic based Design Pure Sine Wave
- User Configurable Parameters.
- Lightning, Surge Protection by SPD.
- Ethernet based Monitoring with Solar Data logs.
- Intelligent Charge Sharing.
- Inbuilt Solar Energy Meter with 31 days data logs. with Configurable (Optional)

Working Mode

Solar/Grid/Battery
or
Solar/Battery/Grid

Application



STAR ONLINE PCU 20-40KVA (3Ph in 1Ph out)

Power Rating	20kVA/240V	25kVA/240V	25kVA/360V	30kVA/360V	40kVA/360V	
Input						
Voltage Range	400V± 20% Three phase four wire					
Frequency	50 Hz ±3Hz					
Power Factor	0.94					
Charger Topology	Buck					
Connection Type	Terminal Block					
Solar						
K watt	20	25		30	40	
Voc (min-max)	360-720	360-720		540-810		
Vmp	320-680		430-730			
Panel Configuration (S-SERIES, P-PARALLEL)	335W	12SX5P	15SX5P	15SX5P	15SX6P	15SX8P
	440W	12SX4P	11SX5P	14SX4P	14SX5P	15SX6P
	540W	12SX3P	12SX4P	12SX4P	14SX4P	15SX5P
switching devices	IGBT					
switching freq.	16KHZ					
charge controller	One					
Charger Topology	Buck					
Type of Charger	rMPPT					
Output						
Voltage	220V/230V/240V Default 230V± 1%					
Load Current	69.6A	86.9A		104.3A	139A	
Efficiency(AC to AC)	>90% @ Full Load					
Frequency	50 Hz					
Waveform	Pure Sine Wave					
Transient Response	<8 (10%~90% Linear Load)					
Voltage Harmonics	< 3 % (Linear load)					
Overload Capacity	100- 110%@10 Min, 110 -120%@2 Min; 120-150%@30s; 150- 200%@ 2s; 200- 300% @1s; 300-400%@250ms; >400%@20ms					
Crest Factor	3:1					
Voltage Regulation	± 1%					
Frequency Regulation	± 0.05 Hz					
Connection Type	Terminal Block					
Audible warning						
Alarm	Battery Low, Battery High, Overload					
Indications						
LED	UPS ON # CHG ON # Input R,Y,B High / low # Output Low-High # Overload # Fault # Batt. Low/High # SPV Low/High # SPV CHG ON #					
LCD (20*4)	Output Voltage, Load & Freq. # Battery Voltage # Charging Current # Input Voltage, Freq R, Y, B # Solar Voltage # Solar Current # Solar Watt # Working Status					
Protections						
Parameters	# Output Overvoltage/Undervoltage # Overload # Output Short Circuit # Battery Overvoltage/Undervoltage #Input Overvoltage/Undervoltage					
Miscellaneous						
Transfer Time	0 msec					
Extended Battery Charging	Optional					
Caster wheels	Yes					
Environmental						
Operating Environment	0-50 °C					
Operating Relative Humidity	5 - 95 % (Non-condensed)					
Storage Environment	0-75 °C					
Storage Relative Humidity	0-95%					
Degree of Protection	IP 20					
Remote Monitoring	Ethernet (Optional)					
Dimension (LXWXH) Inch	39X26X35				34X34X43	

*Specification are subject to change without prior notice due to constant improvement in design & technology.

STAR ONLINE PCU 20-120KVA (3Ph in 3Ph out)

Power Rating	20kVA/240V	20kVA/360V	25kVA/240V	30kVA/360V	40kVA/360V	50kVA/360V	60kVA/360V	80kVA/360V	100kVA/360V	120kVA/360V	
Input											
Voltage Range	400V±20% Three phase four wire										
Frequency	50 Hz ± 3Hz										
Power Factor	0.95										
Charger Topology	Buck										
Connection Type	Terminal Block										
Solar											
K watt	20		25	30	40	50	60	80	100	120	
Voc (min-max)	400-720	540-810	400-720		540-810						
Panel Configuration (S-SERIES, P-PARALLEL)	335W	12SX5P	15SX4P	15SX5P	15SX6P	15SX8P	15SX10P	15SX12P	15SX16P	15SX20P	15SX24P
	440W	12SX4P	15SX3P	11SX5P	14SX5P	15SX6P	14SX8P	14SX10P	15SX12P	14SX16P	15SX18P
	540W	12SX3P	13SX3P	12SX4P	14SX4P	15SX5P	13SX8P	14SX8P	15SX10P	12SX16P	13SX18P
Switching devices	IGBT										
Switching freq.	16KHZ										
No. of Charge Controller	One										
Charger Topology	Buck										
Type of Charger	MPPT										
Peak Efficiency(DC to DC)	96%										
Output											
Voltage (Ph-Ph)	380/ 400V/415V ± 1% Configurable by LCD Display										
Load Current Per Phase	23A		29A	34.8A	46.3A	57.9A	69.5A	92.75A	115.9A	139A	
Efficiency(AC to AC)	>88% @ Full Load						>90% @ Full Load				
Frequency	50 Hz										
Waveform	Pure Sine Wave										
Transient Response	<8 (10%~90% Linear Load)										
Voltage Harmonics	< 3 % (Linear load)										
Overload Capacity	100- 110%@10 Min, 110 -120%@2 Min; 120-150%@30s; 150- 200%@ 2s; 200- 300% @1s; 300-400%@250ms; >400%@20ms										
Crest Factor	3:1										
Voltage Regulation	± 1%										
Frequency Regulation	± 0.05 Hz										
Connection Type	Terminal Block										
Audible warning											
Alarm	Battery Low, Battery High, Overload										
Indications											
LED	UPS On #Mains Chg. # Battery High / Low # Overload R,Y,B # Output High/Low R,Y,B # AC Input High / Low R,Y,B # SPV Charging ON # CHG. Overheat # SPV High/ Low										
LCD (20*4)	#Input Voltage & Freq. R,Y,B # Output Voltage, Freq. & Load % R,Y,B # Battery Voltage # Charging Current # Solar Voltage, Solar Current, Solar Watt # Working Status										
Protections											
Parameters	#Input Overvoltage/Undervoltage # Overload # Output Short Circuit # Battery Overvoltage #Input Overvoltage/Undervoltage.										
Miscellaneous											
Transfer Time	0 msec										
Extended Battery Charging	Optional										
Caster wheels	Yes										
Environmental											
Operating Environment	0-50 °C										
Operating Relative Humidity	5 - 95 % (Non-condensed)										
Storage Environment	0-75 °C										
Storage Relative Humidity	0-95%										
Degree of Protection	IP 20										
Remote Monitoring	Ethernet (Optional)										
Dimension (LXWXH) Inch	39X26X35				34X34X43			49X34X69			

*Specification are subject to change without prior notice due to constant improvement in design & technology.

PWM (Solar Charge Controller)

**Available in
10A & 20A**



FEATURES

- **Controller Based PWM Technology.**
- **Works Efficiently.**
- **LED/LCD Indication.**
- **Over Charging Current Protection.**
- **Over Charging Voltage Protection.**
- **Battery Reverse Protection.**
- **Overload Protection.**
- **SPV Reverse Polarity Protection.**
- **Reverse current flow from Battery Solar Array Protection.**

PWM (Solar Charge Controller)

General				
Model	PWM1224/10A LED		PWM1224/20A LCD	
DC Voltage	12V	24V	12V	24V
Precise Control	Micro controller			
Operating Temperature	0-50°C			
Storage Temperature	-20° to 70°C			
Battery Type	Tubular			
Battery Capacity	200 AH Max.			
Battery Charging Regulation Mode	PWM			
Operating Solar Input Voltage (Voc) Max	25V	49.5V	25V	49.5V
Solar Module Size(Max)	165W*1	390W*1	165W*2 (Parallel)	390W*2 (Parallel)
Electrical				
Nominal Battery voltage	12/24V DC (Auto Sensing)			
SPV Chg. Voltage Boost	14.5V	29V	15.5V	31V
Solar Current (max)	10A		20A	
Load Current Max.	10A		20A	
Charge Controller Efficiency	>95%			
Idle Consumption	<30mA			
Min. Solar Input Voltage(Voc) @ Startup	17V±2V	30V±2V	17V±2V	30V±2V
Load Condition				
USB Port	5V / 2A			
Battery Low Voltage Load Disconnect	10.8V±0.2V	21.6V±0.4V	10.8V±0.2V	21.6V±0.4V
Battery Low Voltage Load Recovery	12.6V±0.2V	25.2V±0.4V	12.6V±0.2V	25.2V±0.4V
Battery High Voltage Load Disconnect	15.0V±0.2V	30.0V±0.4V	16.0V±0.2V	32.0V±0.4V
Battery High Voltage Load Recovery	14.0V±0.2V	28.0V±0.4V	15.5V±0.2V	31.0V±0.4V
LED Indication				
Solar ON	Green		NA	
Solar Over Load	Red		NA	
Batt. High	Green		NA	
Batt. Low	Red		NA	
Load ON	Green		NA	
Over Load	Red		NA	
Display Parameter				
Batt. Voltage, Batt. Current	NA		Yes	
Solar Status: Absent, Charging OFF, Overload	NA		Yes	
Load Current	NA		Yes	
Charger ON	NA		Yes	
Overload				
100%	Continues			
101%-120%	10 Min ON/1 Min OFF		30 Sec. ON/1 Min OFF	
121%-150%	30 Sec. ON/1 Min. OFF		1 Sec. ON/1 Min. OFF	
150%-200%	2 Sec. ON/1Min. OFF		250mSec. ON/1Min. OFF	
>200%	250mSec. ON 1 Min. OFF			
Protections				
Battery Voltage (High/Low)	Available			
Battery Reverse	Available			
SPV Reverse	Available			
SPV Current (High/Low)	Available			
Reverse Current Flow from Battery to Solar Panel Array	Available			
Load short Circuit through DC Fuce	Available			
Physical				
Weight	130gm		300gm	
Dimension (LXWXH) MM	75x132x36 mm		100x161x50 mm	

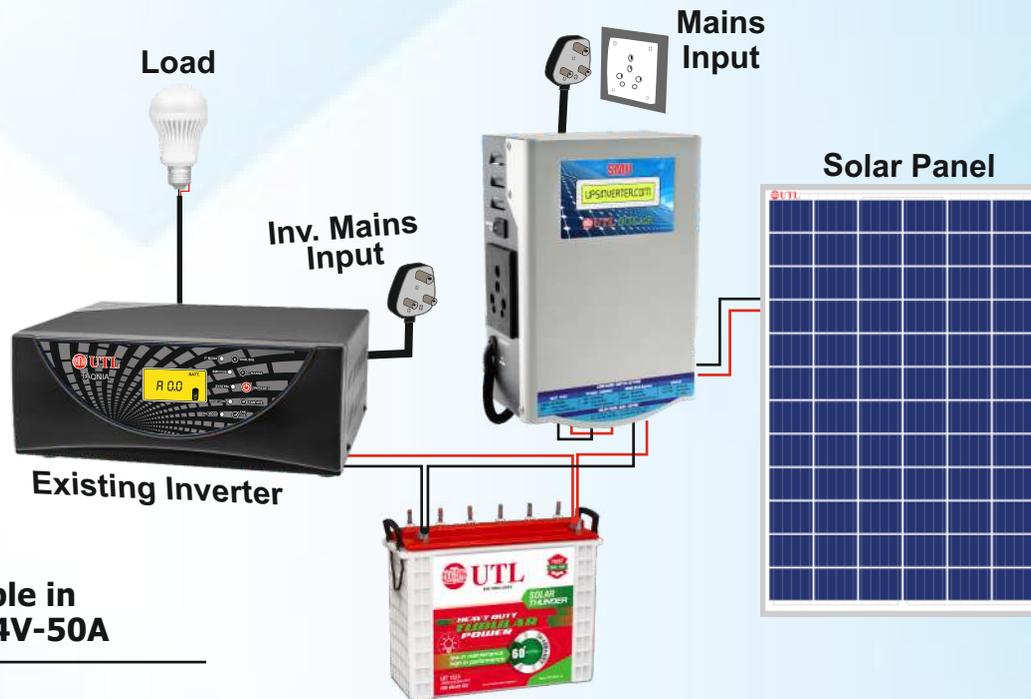
Protect Solar Charge Controller from direct Sunlight & Water.

Panel open circuit voltage should not to do be more than specified voltage.

*Specification are subject to change without prior notice due to constant improvement in design & technology.

SMU (PWM) Solar Management Unit

“Convert your Home Inverter into Solar Inverter”



Available in
12V/24V-50A

FEATURES

- High speed and high performance micro-controller.
- High reliability with longer operational life.
- Inbuilt protection to avoid battery undercharge and over-charge.
- Inbuilt PWM Technology Charge Controller.
- Automatic voltage selection for 12V or 24V.
- Solar Prioritization.
- Compact design with wall mounting.
- Eco friendly.

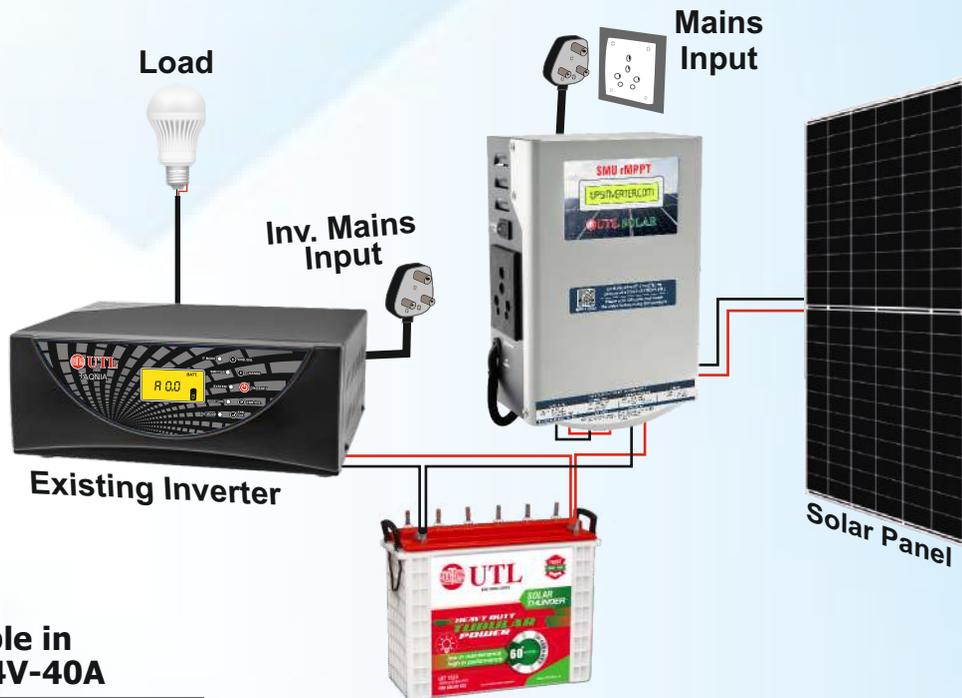
SOLAR MANAGEMENT UNIT

General	
Model	SMU122450
Operating Temperature	0°C to 50°C
Storage Temperature	-10°C to 60°C
System Operating Voltage	12V/24V DC
Battery Type	Tubular/SMF
Battery Capacity Max.	200AH
Battery Charging Regulation Method	4 Stage PWM (Bulk/Absorption/Float/Equalize)
Maximum Solar Power	12V : 800W, 24V : 1700W
Max. Solar Panels Recommended	12V, 25A:150W/165W *3 (Parallel)
	12V, 50A:150W/165W *5 (Parallel)
	24V, 25A:250W/315W/325W*3 (Parallel)
	24V, 50A : 250W*6 , 315W/325W*5, 390W/400W/425W*4 (Parallel)
Electrical	
Nominal Grid Voltage	230V AC 1Φ
Grid Low Cut	90V ± 10V
Grid High Cut	290V ± 10V
Charging Current (Solar)	50A/25A
Charge Controller Efficiency	>95%
Idle Consumption	<20mA
Max. Solar input Voltage (Voc)	17V-25V (12V Batt.)
	31V-49.5V (24V Batt.)
Min. Solar input voltage (Voc) @ Start-up	15V/30V ± 2%
Solar Panel Recovery Voltage	17V/34V ± 2%
Max. Solar Current	50A By Default
Efficiency	>95%
Battery Set Points @ 25°C	
Bulk Voltage Tubular Battery	14.6V/29.2V ± 2%
Absorption Voltage Tubular Battery	14.2V/28.4V ± 2%
Float Voltage Tubular Battery	14V/28V ± 2%
Bulk Voltage SMF Battery	13.7V/27.4V ± 2%
Float Voltage SMF Battery	13.5V/27.0V ± 2%
Absorption Duration	3Hr
Equalize Voltage	14.9V/29.8V ± 2%
Equalize Duration	3Hr
Equalize calender	28 days
Mains reconnect when Solar not present	At any Batt. Voltage
Mains reconnect when insufficient Solar Power	<11.8V/ 23.6V ± 2%
Mains disconnect when sufficient Solar Power For Tubular	>13.8V/27.6V ± 2%
Mains disconnect when sufficient Solar Power For SMF	13.7V/27.4V ± 2%
Display Parameters	Protections
1. Batt. Voltage, Batt. Current, Batt. Type	1. Battery Reverse Polarity
2. Solar Voltage, Solar Current	2. Batt. Reverse Current
3. Mode Selection	3. Over Current of SPV : >56A/28A
4. Solar Status: High, Low, Overload, Overheat	4. Solar High Voltage
5. Saving- KWh	5. SPV Reverse Polarity
6. Mains Present, Low, High, Absent	6. Load Short Circuit through AC Fuse
7. Max. PV Current	7. Solar Low Voltage
	8. Over Temperature
Physical	
Ingress Protection	IP-20
Fixing	Wall Mounted
Weight (Kg)	2.33
Dimension (LxWxH) Inch	9.6 X 6.9 X 4.9

*Specification are subject to change without prior notice due to constant improvement in design & technology.

SMU (rMPPT) Solar Management Unit

“Convert your Home Inverter into Solar Inverter”



Available in
12V/24V-40A

FEATURES

- High speed and high performance micro-controller.
- High reliability with longer operational life.
- Inbuilt protection to avoid battery undercharge & over-charge.
- Inbuilt rMPPT Technology Charge Controller.
- 3 Stage Charging BLK, ABS, FLT.
- Automatic Voltage selection for 12V or 24V.
- Solar Prioritization.
- Compact design with Wall Mounting.
- Eco friendly.
- Transient and Surge Protection.
- Over Temperature Protection.



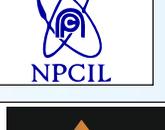
SOLAR MANAGEMENT UNIT

General		
Model	SMUMPPT122440	
Nominal System Voltage	12V DC	24V DC
Battery Capacity Max.	200AH	
Battery Type	Tubular/SMF	
Battery Charging Regulation Method	3 Stage (Bulk/Absorption/Float)	
Solar Charger Type	MPPT	
Solar Power (Max.)	600W	1200W
Max. Solar Panel (Recommended)	150W/165W X2 (Series) X 2 (Parallel) 315W/325W/330W/335W X 2 (Parallel) 390WX1	315W/325W/330W/335WX4 (Parallel) 390W/425WX3. 540WX2 (Parallel) 315W/325W/330W/335WX 2 (Series) X 2 (Parallel)
Max. Solar input Voltage(Voc)	15V-49.5V	30V-99V
Idle Consumption	<20mA	
Efficiency	>95%	
Battery set points		
Tubular	Boost Voltage :- 14.5V \pm 0.2V	Boost Voltage :- 29.0V \pm 0.2V
	Float voltage :- 14V \pm 0.2V	Float voltage :- 28V \pm 0.2V
	Bulk Absorption :14.8V \pm 0.2V	Bulk Absorption :29.6V \pm 0.2V
SMF	Boost/Float Voltage : 13.8V \pm 0.2V	Boost/Float Voltage : 27.6V \pm 0.2V
	Bulk Absorption : 14.1V \pm 0.2V	Bulk Absorption : 28.2V \pm 0.2V
Battery Current Max.	40A	
Grid		
Mains Low cut /Recovery	90V/100V \pm 10V	
Mains high cut /Recovery	290V/280V \pm 10V	
Mains reconnect when Solar not present	At any Batt. Voltage	
Mains Disconnect	If Battery reaches boost level then after <5 min. Mains will be disconnected.	
Mains Reconnect	Battery volt. : 11.8V	Battery volt. : 23.6V
Display Parameters		
Display Type	LCD	
Display Parameters	Batt. Voltage, Batt. Current, Batt. Type(TUB/SMF), Solar Voltage, Solar Current, Solar Saving- KWh, Mode Selection (Auto/Manual), Mains Present, Absent	
Protections		
Protections	Battery Reverse Polarity (Fuse blown), Batt. Reverse Current, SPV Over Current, Solar High Voltage, SPV Reverse Polarity, Over Temperature, Mains High Cut, Mains Low Cut	
Operating Temperature	0°C to 50°C	
Storage Temperature	0°C to 60°C	
Ingress Protection	IP-20	
Fixing	Wall Mounted	
Weight (Kg)	2.6	
Dimension (LXWXH) Inch	9.25 x 9 x 4.15	

* Specifications are subject to change without prior notice due to constant improvement in design & technology.

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- Sales Office:** 2/8A, Plot No-63, 2nd Floor Rama Road Industrial Area Opp. Kirti Nagar Metro Station New Delhi-110015
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- Manufacturing Unit 3 :** Plot No. 5 & 14, Sector 6, HSIIDC, IMT BAWAL, Rewari, Bawal, , HR- 123501, India

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