Vitronics Controls

An ISO 9001-2008 Certified OEM Company

Helia

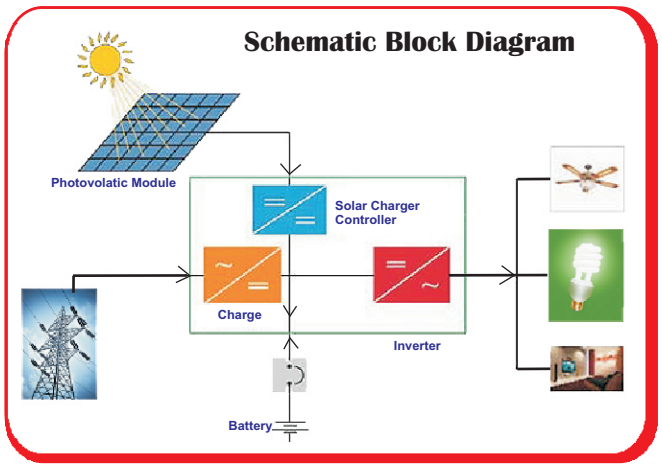
Online Solar PCU

Zero changeover time

DSP Based
High Ruggedness
User Settable all Parameters
Inbuild MPPT 30% more power
Remote Monitoring (Optional)

GRID SHARING SOLAR PCU

- Excellent Load sharing between Solar and Grid.
- Ensures 100%utilization of Solar power by using highly efficient built-in MPPT Converter
- Rugged Industrial grade IGBT Inverter with complete galvanic isolation,ensures high quality power delivery.
- High efficiency battery charger ensures extended battery life by providing temprature compensation and Float cum Boost Charging.



Working of GRID SHARING SOLAR PCU

[A] PRIORITY: SOLAR - > GRID - > BATTERY

- **When solar energy is sufficient** then total o/p load will operate on solar through MPPT & Inverter. Excess solar power will charge batteries.
- **When solar energy is weak** then inverter is taking DC source from solar & balance from grid.
- When solar energy is absent then the entire load is working on grid via grid charger
- When grid is absent then the load will be shifted onto batteries and moment the grid energy resumes load will be shifted back to grid. During this sequence any discharge of batteries will be refurbished via grid & available solar.
- All the operational logic will work with a zero transfer time for sensitive loads & O/P will be 230V.

[B] PRIORITY: SOLAR - > BATTERY - > GRID

- **When solar energy is sufficient** then total o/p load will operate on solar through MPPT & Inverter. Excess solar power will charge batteries.
- **When solar energy is weak** then inverter is taking DC source from solar & balance from batteries.
- When batteries reach to set discharge level (50% kept as a buffer) the o/p load is shifted to grid without any change over time.
- After shifting load to grid the batteries are charged from solar energy and if solar energy not sufficient to charge the batteries, then remaining DC power is taken from grid charger. Once the batteries are fully charged to set level then load is shifted back onto battery backup from grid.
- During changeover of load from battery backup to grid supply (i.e battery discharged upto set level) and if grid supply is absent then load is shifted to inverter to use buffer battery backup(i.e balance %)
- When grid returns during which inverter is working on buffer battery backup then the load is shifted to grid & batteries are charging through solar or grid as per logic explained above.

Online Solar PCU
Features

- DSP based; less components, small size less electricity bill more efficiency.
- Soft Start features; protects appliances at start up.
- Supply the highest quality pure sine wave power; protects your expensive equipments.
- Over load and D.C. low protection
- Software controlled Auto self testing
- Fully computer friendly UPS operation.
- Intelligent Auto sense; continuously monitors health of system.
- AC input low & high voltage cut off protections in both, invertor & U.P.S.modes.
- ZERO Change over from Mains to inverter mode.
- Software controlled Auto reset feature for over load, Short ckt & low battery.
- Very low no load current for prolonged battery operation under standby.
- Cooling fan improves reliability of system.
- Excellent load sharing between Solar and Grid
.
- Ensures 100% utilization of Solar power by using highly efficient built-in MPPT Converter.
- Rugged Industrial grade IGBT inverter with complete galvanic isolation, ensures high quality power delivery.
- The GSS UPS is most ideal solution for utilities with only day time loads like for Banks,Institutions, Industries.
- Here the Battery use can be minimal or nil.
- Further GSS UPS ensures always a steady power as by default there is a stabilizer as it s an Online UPS and there is no changeover unlike in inverter.
- High efficiency battery charger ensures extended battery life by providing temperature compensation and float cum Boost Charging.
- There you have galvanic isolation provided in the UPS at the output side to protect the critical load.

ONLINE SOLAR PCU(1Ph in 1Ph out)

Technical Specification

Parameters	Units	Rating			
System Rating	KVA	5	6	7.5	10
Operating DC Voltage	V	96	120	120	180
Photovoltage Input					
Input Voltage Range (Min-Max)	VOC	144 - 360	180-450		270-450
Maximum PV Power Recommended	KW	5.0	6.0	7.5	10
Number of Charge Controller		1			
MPPT Based Charge Controller					
Switching Element		IGBT			
Controller		DSP			
Type of Charge		MPPT			
Priority		Solar/Grid/Battery			
Efficiency		95			
Configurable Parameters					
Battery Low Buzzer	V	Battery Low Cut + 0.2			
Battery Low Cut	V	10-11.7			
Battery High Cut	V	15-17			
Battery Charging voltage by SPV	V	13.5-16			
Battery Charging Current by SPV	A	12-50			
Battery Charging Voltage by Grid	V	12.8-14.5			
Battery Charging Current by Grid	A	5-15			
Grid Low Cut Voltage	V	N/A			
Grid High Cut Voltage	V	N/A			
Output Voltage Low	V	170-190			
Output Voltage High	V	250-260			
Battery					
Temp. Compensation		@ 3mV/cell; 18mV/Battery			
Grid Disconnect (Solar Available)	V	13-14.5 & 20%-90% of Solar Charging Current			
Grid Reconnect	V	10.2-12.5			
Inverter					
Switching Element		IGBT			
Control		PWM			
Nominal Output Voltage	VAC	220			
Output Supply Phase		1 Phase, 3 Wire			
Output Waveform		Sinewave			
Nominal Frequency	HZ	50.0			
Load Current	A	18	21.8	27.2	36.3
Voltage Regulation	%	1.00			
Output Voltage Distortion with 100% Linear Load	%	< 3			
Overload Capacity	%	100-110 : 10 Minutes	150-200 : 2sec	>400 : 20ms	
		110-120 : 2 Minutes	200-300 : 1sec		
		120-150 : 30 sec	300-400 : 250ms		
Peak Efficiency	%	86			
Noise @ 1 meter	DB	55			
Cooling		Temp. Controlled Fan			
Protections		Overload, Battery Low, Battery High, Output Low, Output High, Output			
		Short Ckt., Overload, Under Frequency, Over Frequency, Solar Panel Reverse			
Display Parameters		Battery Voltage, Charging Current, Discharging Current, Charging KWH,			
		Discharging KWH, Battery Status Bar Graph			
		Solar Voltage, Solar Current, Instantaneous Power, Cumulative Power			
		Grid Voltage, Grid Current, Cumulative Power, Instantaneous Power,			
		Grid Frequency Output Voltage, Output Current, Cumulative Power,			
		Instantaneous Power, Output Frequency			
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 Hign, Under Frequency,			
		Over Frequency			
Environment					
Operating Temperature	°C	0-50			
Max Relative Humudity@25°C (non Condensing)	%	95			
Degree of Protection		Ip21			
Data Logging		Optional			
Dimension (LXWXH) Inch		24X13X23		26X13X26	
Weight		65	70	80	94

ONLINE SOLAR PCU(3Ph in 1Ph out)

Technical Specification

POWER RATING	25KVA/360V	30KVA/360V	40KVA/360V
INPUT			
Voltage range	400V± 20% Three phase four wire		
Frequency range	50Hz±6Hz		
Power Factor	0.94		
Charger Topology	Buck		
Connection Type	Terminal Block		
SOLAR			
K watt	25	30	40
Voc(min-max)	540-810		
Vmp	430-730		
Configuration 72 Cell	5 string of 16 panel	6 string of 16 panel	8 string of 16 pane
Switching devices	IGBT		
Switching Frequency	16KHZ		
Charge Controller	One		
Charge Toplology	Buck		
Type of Charge	PWM with MPPT		
OUTPUT			
voltage	2202V/230V±1%		
Load Current	86.9A	104.3A	145A
Efficiency(AC to DC)	>90%@Full load		
Frequency	50HZ		
Waveform	Pure Sine Wave		
Transient Response	<8(10%-90% Linear Load)		
Voltage Harmonics	>3% (Linear Load)		
Overload Capacity	100-110%@10 Min, 110-120%@20 Min, 120-150%@30 Min, 150-200%@2s, 200-300%@1s, 300-400%@250ms,>400%@ms		
Crest Factor	3:1		
Voltage Regulation	±1%		
Freqency Regulation	±0.05HZ		
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	0-95% (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

ONLINE SOLAR PCU(3Ph in 1Ph out)

Technical Specification

Power Rating	5kVA/240V	7.5kVA/240V	10kVA/240V	15kVA/240V	20kVA/240V
INPUT					
Voltage range	400V± 20% Three phase four wire				
Frequency range	50Hz±20Hz				
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				
Configuration 72 Cell	16 panel in series *1 string	12 panel in series *2string	16 panel in series *2string	12 panel in series *4string	16 panel in series *4string
Switching devices	IGBT				
Switching Frequency	16KHz				
No. of Charge Controller	One				
Charge Toplology	Buck				
Type of Charge	PWM with MPPT				
Peak Efficiency (DC-DC)	96%				
Parameter	Configurable				
Battery Low Buzzer	Batt Low Cut + 0.2				
Battery Low Cut	10-11.7V				
Battery High Cut (Charger)	Batt Volt By SPV + 0.7				
Batt. CHG. Volt. by Grid	13-14.5V				
Batt. CHG. Current. by Grid	3-12A				
Batt. CHG. Volt. by SPV	13.5-15V				
Batt. CHG. Current. by SPV	5-24A				
Grid Charger Reconnect	Enable /Disable				
Output Voltage Low Cut	170-190V				
Output Voltage High Cut	250-260V				
OUTPUT					
Voltage	220V/230V/240V±1% (1phase 2 wire)				
Load Current	17.4A	26.08A	34.78A	52.17A	69.56A
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 40%-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				
LCD (20*4) Display	#SPV High/Low #CHG. OVERHEAT #AC Input High/Low R,Y,B #fault				
	#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 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	23X13X26		30X16X27		38X26X35

ONLINE SOLAR PCU (3Ph in 3Ph out)

Technical Specification

Power Rating	**5kVA/240V**	**7.5kVA/240V**	**10kVA/240V**	**15kVA/240V**	**20kVA/240V**
INPUT					
Voltage range	400V± 20% Three phase four wire				
Frequency range	50Hz±20Hz				
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				
Configuration 72 Cell	16 panel in series *1 string	12 panel in series *2string	16 panel in series *2string	12 panel in series *4string	16 panel in series *4string
Switching devices	IGBT				
Switching Frequency	16KHz				
No. of Charge Controller	One				
Charge Toplology	Buck				
Type of Charge	PWM with MPPT				
Peak Efficiency (DC-DC)	96%				
Parameter	Configurable				
Battery Low Buzzer	Batt Low Cut + 0.2				
Battery Low Cut	10-11.7V				
Battery High Cut (Charger)	Batt Volt By SPV + 0.7				
Batt. CHG. Volt. by Grid	13-14.5V				
Batt. CHG. Current. by Grid	3-12A				
Batt. CHG. Volt. by SPV	13.5-15V				
Batt. CHG. Current. by SPV	5-24A				
Grid Charger Reconnect	Enable /Disable				
Output Voltage Low Cut	170-190V				
Output Voltage High Cut	250-260V				
OUTPUT					
Voltage	380V/400V/415V±1% (3phase 4 wire)				
Load Current	5.8A	8.7A	11.6A	17.4A	23.2A
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 40%-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 R,Y,B#Output High/Low #Battery High/Low #Bypass#SPVCG.ON				
LCD (20*4) Display	#SPV High/Low #CHG. OVERHEAT #AC Input High/Low R,Y,B #fault				
	#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 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	23X13X26		30X16X27		38X26X35

ONLINE SOLAR PCU (3Ph in 3Ph out)

Technical Specification

Power Rating	**20kVA/360V**	**30kVA/360V**	**40kVA/360V**	**50kVA/360V**	**60kVA/360V**	**80kVA/360V**	**100kVA/360V**	**120kVA/360V**
INPUT								
Voltage range	400V± 20% Three phase four wire							
Frequency range	50Hz±20Hz							
Power Factor	>0.92							
Charger Topology	Buck							
Connection Type	Terminal Block							
SOLAR								
K watt	20KW	30kw	40KW	50KW	60KW	80KW	100KW	120KW
Voc(min-max)	540V - 810V							
Vmp	430V - 730V							
Configuration 72 Cell	4 string of 16 panel	6 string of 16 panel	8 string of 16 panel	10 string of 16 panel	12 string of 16 panel	16 string of 16 panel	20 string of 16 panel	24 string of 16 panel
Switching devices	IGBT							
Switching Frequency	16KHz							
No. of Charge Controller	One							
Charge Toplology	Buck							
Type of Charge	PWM with MPPT							
Peak Efficiency (DC-DC)	96%							
OUTPUT								
Voltage	380V/400V/415V±1% Configurable by LCD Display							
Load Current	23A	34.8A	46.3A	57.9A	69.5A	92.75A	115.9A	139A
Efficiency (AC - AC)	>88% @ 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 40%-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 R,Y,B #Output High/Low #Battery High/Low R,Y,B #							
	AC Input High / low R,Y,B #SPV Charging ON#CHG.Overheat #SPVHigh/Low							
LCD (24*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	# Output 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		

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.

Authorised Dealer

Vitronics Controls
An ISO 9001- 2008

VITRONICS CONTROLS PVT. LTD.
S. No. 58/7A/1, Opp. Kheteshwar Ashram, Gokul Nagar,
Katraj Kondhwa Road, Kondhwa Bk.Pune - 411 048, India.
Tel. : +91 20 2696 2548, 2696 1311, +91 9404731535
Email:marketing@vitronicscontrols.com