SMARTEN®
FUSION IS THE FUTURE

ULTRA ECO

TRANSFORMER BASED HYBRID PCU SINGLE PHASE

1 KVA - 50 KVA

Key Features

- SCALABLE POWER
- MAXIMUM EFFICIENCY
- SMART MONITORING
- ULTIMATE VERSATILITY
- ADVANCED PROTECTION

The ULTRA ECO Single Phase Transformer-Based Hybrid PCU is engineered to deliver reliable, efficient, and uninterrupted power for homes, small businesses, commercial facilities, and off-grid applications. By intelligently integrating solar energy, battery storage, and grid power, it ensures maximum energy utilization while reducing dependence on conventional electricity.

Built with a robust transformer-based design, ULTRA ECO provides superior protection against voltage fluctuations and demanding power conditions, ensuring long-term durability and dependable performance. Featuring advanced MPPT technology, over 93% system efficiency, and Wi-Fi-enabled remote monitoring, it offers optimized solar harvesting, intelligent energy management, and minimal maintenance.

Designed to meet international standards, the ULTRA ECO Single Phase PCU is the ideal choice for reliable backup power and sustainable energy solutions across global residential and light commercial applications.

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SMARTEN POWER SYSTEMS LIMITED

TRANSFORMER BASED HYBRID PCU SINGLE PHASE

1 KVA - 50 KVA

TECHNICAL SPECIFICATIONS - SINGLE PHASE

	INVERTER RATING (KVA)	1KVA	2KVA	3KVA	5KVA	5KVA	7.5KVA	10KVA	15KVA	20KVA	25KVA	30KVA	40KVA	50KVA
A. SOLAR CHARGE CONTROLLER (SCC)														
1	Charger Type & Topology	Buck Type MPPT												
2	PV Total Nominal Capacity (KVA)	1KW	2KW	3KW	5KW	5KW	7.5KW	10KW	15KW	20KW	25KW	30KW	40KW	50KW
3	No. of MPPT Channels	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Per Channel PV Capacity (w / Nominal Peak)	1KW / 1.1KW	2KW / 2.2KW	3KW / 3.3KW	5KW / 5.5KW	5KW / 5.5KW	7.5KW / 8.2KW	10KW / 11KW	15KW / 16.5KW	20KW / 22KW	25KW / 27.5KW	30KW / 33KW	40KW / 44KW	50KW / 55KW
5	Max. open Circuit PV Volts (Voc)	240	240	240	240	300	300	400	700	700	700	700	700	700
6	MPPT Voltage Range (Volts)	70-240	70-240	70-240	70-240	96-300	96-300	140-400	240-700	240-700	240-700	240-700	240-700	240-700
7	PV Minimum Voltage (Volts)	48	48	48	48	96	96	120	240	240	240	240	240	240
8	Max. I / P Amps per channel (Amps)	15	30	45	75	35	55	60	45	60	75	80	105	132
9	Max. Battery Amps during PV Charging(Amps)	20	40	60	100	50	73	78	60	78	80	97	129	161
10	Max. SCC O / P (Amps)	20	40	60	100	50	73	78	60	78	80	97	129	161
11	Battery type Supported	VRLA / LMLA / Li-Ion / Li-Ph (User Settable)												
12	Min. Battery AH (Suggested)	150	150	150	150	150	150	150	300	300	300	300	300	300
13	Peak charging Efficiency (%)	> 93												
B. SOLAR INVERTER														
1	No. of Phases / Connection Type	1-Phase / 2 wire												
2	Nominal Battery Voltage (Volts)	48	48	48	48	96	96	120	240	240	240	240	240	240
3	Battery Ripple	5% for VRLA & LMLA / 1% for Li-Ion & Li-Ph Battery												
4	Nominal Output Voltage / Frequency (Volts / Hz)	230 / 50												
5	Output Amps	3.47	6.96	10.43	17.39	17.39	26.09	34.78	52.17	69.57	86.96	104.3	139.1	173.9
6	Voltage Regulation / Frequency Regulation (in standalone Mode)	± 2% / ± 0.5 Hz												
7	THD	< 3%												
8	Load Power Factor	0.8 lag to unity												
9	Efficiency (%): Peak / 100% Load / 25% Load	> 89 / > 88 / >	> 89 / > 88 /	> 89 / > 86	> 90 / > 87 /	> 90 / > 86	> 90 / > 87 /	> 89 / > 86	> 89 / > 86	> 89 / > 86	> 89 / > 88 /	> 91 / > 86	> 91 / > 86	> 91 / > 86
10	Over Loads :	100-110% - 60 sec												
11		110-125% - 30 sec												
12		125-150% - 5 sec												
13	Max Allowed Phase Imbalance (%)	N / A												
14	Auto Bypass Feature	Provided												
15	Parallel Operation with Grid / DG	Provided												
16	Power Export to Grid Facility Enable / Disable	Enable / Disable (User Settable)												
17	Anti islanding from Grid	Provided												
C. GRID CHARGER														
1	Grid Voltage Range (Voltage Sync. Range)	160V-280V (Phase to Neutral)												
2	Grid Frequency Range (Freq. Sync. Range)	50 Hz ± 5%												
3	Max Grid Import Power (KVA)	1KVA	2KVA	3KVA	5KVA	5KVA	7.5KVA	10KVA	15KVA	20KVA	25KVA	30KVA	40KVA	50KVA
4	Max Battery Amps During Grid Charging (Amps)	13	27	40	68	34	51	54	40	54	68	72.5	96.6	120.8
5	Peak charging Efficiency (%)	> 87												
PROTECTIONS														
1	PV Side	Reverse Polarity, Surge Protection												
2	Battery Side	Reverse Polarity, Over / Under Voltage, Current Limit												
3	Grid Side	Over / Under Voltage, Over / Under Frequency, Anti-islanding, Surge Protection												
4	Load Side	Overloads, Short circuit												
5	System Protection	Over Temperature, Trip, Breakers at all Inputs, Emergency stop												
D. USER INTERFACE														
1. DISPLAY INTERFACE														
	DISPLAY INTERFACE	Graphical Display with mimic diagram												
2. DISPLAYED PARAMETERS														
1	Battery Parameters	Voltage, Charging Current, Discharging Current, AH-in, AH-out, Cumulative AH-in, Cumulative AH-out, charging state-charging / Discharging.												
2	PV Parameters	Voltage, Current, Power, Cumulative, Today Generation, Irradiance, Ambient Temperature.												
3	Grid Parameters	Voltage, Current, Frequency, Export Power, Import Power, Export Cumulative Energy, Import Cumulative Energy, Power Factor												
4	Load Parameters	Voltage, Current, Frequency, Power, Cumulative, Power Factor												
5	Data Logging	90 Days PV Generation, Export Energy, Import Energy, Load Energy.												
6	System Level	Faults and warnings												
3. INDICATIONS / PROTECTION														
1	LED Indications:	Power ON, PV Available / Charging, Inverter ON, Grid Import / Export Mode, Fault, HYBRID / OFF GRID Mode												
2	User Keypad for Settings Change	Keypad for Settings Input												
3	Breakers at all inputs / Space Heater / Emergency	Provided												
4	Over shoot due to misbehaviour of BHMS	Provided												
5	Remote monitoring: Optional*	Data monitoring through GPRS (Optional)												
	Designed and Manufactured the product as for IEC	**Tested as per IEC 61683, IEC 61727, IEC 62116 / IS 16169 EN 50530 and IEC 60068 (1, 2, 14, 30).**												
MISCELLANEOUS														
1	Degree of Protection	IP31												
2	Cooling Method	Temp. Controlled Force Cooling												
3	Operating Temperature	0-55°C ambient operation												
4	Humidity (Non-condensing)	Max. 95% Non-Condensing												
5	Altitude (above sea level)	1000m above sea level												
6	Dimensions in mm (H X W X D)	360X280X530	360X280X560	360X280X665	360X280X665	476X375X675	526X375X775	526X375X775	715x650x750			715X1000X750		
7	Approx. Weight (kg)	30	35	60	80	80	130	140	160	215	245	260	300	350

Note: The specifications are subject to change due to continuous improvements. Higher rating systems are available on request.

MAKE IN INDIA

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