

### Technical Specifications for Online - 6kVA UPS System

Sr.No	Specifications	Requirement
1	<b>Capacity (in kVA / kW)</b>	<b>6kVA/6kW 1-Phase Input / 1-Phase Output</b>
2	<b>Technology and Capability</b>	
2.1	Online Double Conversion	True Online configuration with double conversion UPS & Zero transfer time.
2.2	DSP Based System <b>(Mandatory)</b>	DSP based control with advanced technology.
2.3	Wide Input voltage Range	Wide Input voltage range from (100 - 280VAC)
2.4	Auto Restart & Battery Independent	Auto restart capability with the Independent battery bank operation of the UPS.
2.5	Designed Power Factor 1 <b>(Mandatory)</b>	UPS should be designed at Rated PF of 1 i.e. 6kVA/6kW UPS rating.
2.6	Generator & Cold start compatibility	Generator compatibility with cold start and AC start features.
2.7	Fully Rated Power (kVA=kW) <b>(Mandatory)</b>	Fully rated power (kVA=kW) for maximum power availability.
2.8	N+X Upto 4 Systems <b>(Mandatory)</b>	Possibility of enhancing UPS capacity / redundancy by operating UPS in N+X Parallel.Redundant Configuration upto 4 units.
2.9	PFC & Inverter Based Technology	UPS should have topology for both PFC (power factor correction) & inverter based technology.
<b>3</b>	<b>Model Name &amp; Number</b>	
3.1	6kVA / 6kW	<b>Make / Model / Part No</b> to be specified by the vendor
<b>4</b>	<b>Input</b>	
4.1	Input facility -Phases / Wires	Single-Phase / 2-Wire & Gnd (1Phase & Neutral + Ground)
4.2	Nominal Voltage	200/208/220/230/240 VAC
4.3	Nominal Voltage Range	200/208 (de-rating to 90%) : 100VAC-280 VAC 220/230/240 : 100Vac-280 VAC
4.4	Nominal Input Frequency	50/60Hz ± 10Hz (Auto Selectable)
4.5	Input Frequency Range	40 to 70 Hz
4.6	Input Power Factor	> 0.99(full load)
4.7	Generator Compatibility	Compatibility to genset supply required
4.8	Input Protection	Should be provided at the input of the UPS suitable for the full rated capacity of the UPS.
<b>5</b>	<b>Output</b>	
5.1	Nominal Output voltage	200/208/220/230/240 VAC
5.2	Output Voltage Regulation	± 1% for linear load
5.3	Nominal Output Frequency	50/60Hz ±0.05 Hz
5.4	Output Frequency Regulation	± 0.1Hz
5.5	Output Frequency Slew Rate	< 1Hz/sec
5.6	Output Wave Form	Pure sine wave
5.7	Output Voltage Distortion (THDu)	< 3% for linear load.
5.8	Crest Factor	3:1 On Full Load (Minimum)
5.9	Output Short circuit Protection	Electronic Protection
<b>6</b>	<b>Transfer Time</b>	
6.1	Transfer Time (Mode of operation)	Zero ms from Mains mode to Battery Mode Zero ms from Battery Mode to Mains mode
6.2	Transfer Time (Inverter to Bypass / Bypass to Inverter)	2-4ms
6.3	Automatic Bypass switch	UPS should be capable of automatic change.
<b>7</b>	<b>Efficiency (At Nominal Voltage &amp; Resistive Load up to kW rating of UPS)</b>	
7.1	Overall Efficiency (AC to AC) - Online (Double Conversion)	Upto 95%(on 100% load)
7.2	ECO Mode Efficiency	98%
<b>8</b>	<b>Overload</b>	
8.1	Inverter Overload capacity	<105%for Continuous,<105~<125for 2Min,<125~<150for 30Sec
<b>9</b>	<b>Display Panel (In-build LC Display &amp; LED )</b>	

9.1	Measurements (On LCD)	Input: Voltage & Frequency, Bypass: Voltage & Frequency, Output: Voltage, frequency, Kilowatt & kVA, Battery: Remaining time & Battery Level Indicator, Load Percentage & Load Level Indicator, Ambient temperature.
9.2	Fault Indication (On LCD)	Abnormal I/P, I/P Fuse blown, Rectifier Abnormal, BUS start abnormal, Battery start abnormal, BUS start abnormal in battery mode, +BUS voltage too high & low, -BUS voltage too high & low, Inverter O/P voltage abnormal, Overload shutdown, Charge voltage too high, Damaged Batteries, Battery missing, Battery voltage to low & Over temperature Protection.
9.3	Indications (LED)	Green & Red (For output & Fault)
9.4	Setable data through (LCD)	Inverter Voltage, Inverter Frequency, Frequency converter, ECO Mode, Overload alarm, Buzzer, Charging current, Battery Capacity, Battery String & Parallel ID
<b>10</b>	<b>Alarms</b>	
10.1	Audible Alarms	Replace Battery, Overload warning & shutdown, High Temp, Low Battery, High Temp warning & shutdown
<b>11</b>	<b>Battery Backup / Battery Bank &amp; Charger for 6 KVA Online UPS</b>	
11.1	Backup Required	1 Hour on 6 KVA load
11.2	Battery Bank Voltage	192 VDC
11.3	Batteries Type	Sealed Maintenance Free (SMF) - 12V Cells, VRLA, GEL
11.4	Battery Makes	Amara Raja / Exide / HBL / Amco / Rocket / Amaron
11.5	Number of Battery Banks	Single Bank system.
11.6	Minimum Charger Rating (Including internal / external)	The charger should be able to deliver charging current equivalent to 10% of Battery Ah rating offered. (In case of external chargers, suitable monitoring of the chargers should be provided in the UPS. Also all external chargers taking AC input must have PFC - Power factor correction)
11.7	Charger type / Charging Method & Charging Voltages	Float Cum Boost Voltage Solid state SMPS charger
11.8	Battery recharge time (After complete discharge) to 90% capacity	3hour to 90%
11.9	Battery End Cell Voltage	1.75 V/cell
<b>12</b>	<b>Interfaces</b>	
12.1	Serial Communication RS232 Port (Mandatory)	RS232 Port should be provided as standard in the UPS.
12.2	USB port available (Mandatory)	However there should be provision for USB port also in the UPS.
12.3	REPO port available (Mandatory)	However there should be provision for REPO port also in the UPS.
12.4	Interface to Mini TVSS card	Mini TVSS card is available (OPTIONAL)
12.5	Interface to NMS (Network Management System) - To be quoted as option	SNMP (IPV6) Card for connecting the UPS to LAN thru Ethernet port & monitoring thru NMS should be available (The cost of SNMP Card / NMS software to be quoted separately) (OPTIONAL)
12.6	Interface to BMS (Building Management System) - To be quoted as option	ModBus Card for connecting to UPS to BMS thru RS485 & monitoring thru BMS (OPTIONAL)
12.7	Interface to DCS (Distributed Control System) - To be quoted as option	Relay I/O Card or PFC (Potential free contacts) for connecting to UPS to DCS / PLC / SCADA system for communicating UPS operating status (OPTIONAL)
<b>13</b>	<b>Restart / Testing Capability</b>	
13.1	Cold Start	UPS should start up On AC Supply (Mains) without DC Supply (Batteries) On DC Supply (Batteries) without AC Supply (Mains)
13.2	Automatic Restart	UPS should start up automatically on mains resumption after battery low shutdown
13.3	Self Diagnosis	UPS should be capable to carry out self test of Rectifier / Charger / Battery & Inverter module during start-up
<b>14</b>	<b>Physical</b>	

14.1	Normal Operating Temperature	0 to 40 deg C
14.2	Storage Temperature	-15 to 50 deg C
14.3	Operating Humidity	5% ~ 95%RH (No Condensing)
14.4	Operating Altitude	0-1000m
14.5	Type of Cooling	Forced Air
14.6	Noise Level should reduce with Load <b>(Mandatory)</b>	< 50 dbA at 1 meter distance
14.7	Form Factor	Tower mountable
14.8	Air Filters	UPS should have internal anticorrosion air filters for dust filtration. <b>(OPTIONAL)</b>
14.9	Dimension (w x d x h) in mm	23934300 mm <sup>3</sup>
14.10	Weight - in kg	11Kg
14.11	Reliability	MTBF greater than 100000 hours
14.12	Packaging Material / Vibration Withstand & Drop Test	Recyclable (No CFC) & 1. Vibration testing as per ISTA -1G Non-operational with Packing
14.13	Standard Package of UPS to include the following minimum accessories	1. UPS 2. Parallel Cable 3. USB Cable 4. CU Terminal_ Type A 5. CU Terminal_ Type B 6. CU Terminal_ Type C 7. Battery Terminal Box 8. Battery Terminal Box Cover 9. Screw for Battery Terminal Box Cover 10. Cable Tie 11. User Manual
14.14	Grounding	UPS should have grounding arrangement.
<b>15</b>	<b>8 - Batteries of 12 V 26 AH</b>	
15.1	Backup Required	20-30 minutes on 3 KVA load
15.2	Battery Bank Voltage	192 VDC
15.3	Batteries Type	Sealed Maintenance Free (SMF) - 12V Cells, VRLA, GEL
15.4	Battery Makes	Amara Raja / Exide / HBL / Amco / Rocket/ Amaron
15.5	Number of Battery Banks	Single Bank system.
15.6	Charger type / Charging Method & Charging Voltages	Float Cum Boost Voltage Solid state SMPS charger
15.7	Battery recharge time (After complete discharge) to 90% capacity	3hour to 90%
15.8	Battery End Cell Voltage	1.75 V/cell
15.9	Buy Back Amount	Directly deducted from the price of new batteries of 12V 26 AH
<b>16</b>	<b>Certifications</b>	
16.1	Manufacturer	<b>QMS:</b> As per ISO 9001: 2008 <b>EMS:</b> As per ISO 14001: 2004 <b>OSHAS:</b> As per ISO 18001: 2007
16.2	Product Safety Certifications (Mandatory)	<b>IEC 62040-1:2008</b> <b>ESD:IEC61000-4-2: level4</b> <b>RS : IEC61000-4-3: level3</b> <b>EFT: IEC61000-4-4:level4</b> <b>SURGE: IEC61000-4-5:level4</b> <b>CS: IEC61000-4-6: level3</b> <b>IEC61000-4-8</b> <b>IEC 61000-2-2</b> <b>EN 62040-2:2006</b> <b>EN 61000-3-2:2009</b> <b>EN 61000-3-3:2013</b>
16.3	ROHS compliance	UPS should be ROHS compliance