

# CENTRE FOR ATMOSPHERIC SCIENCES

Indian Institute of Technology Delhi

Dated: 27-02-2013

**Sub: NIQ**

## **Specifications 30 KVA UPS System With Automatic Phase Corrector**

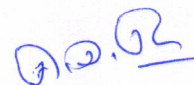
Sealed quotations are invited for a "30 KVA UPS System With Automatic Phase Corrector" with the following specifications:

<b>Technical Specifications for 30 KVA UPS System With Automatic Phase Corrector</b>	
<b>30 KVA 3-Phase Input / 3-Phase Output</b>	
<b>Technology and Capability</b>	a) True Online configuration with double conversion UPS
	b) Microprocessor /DSP based control, using IGBT devices and high switching frequency PWM (>15kHz)
	c) Active Power Factor Correction (APFC) in converter to improve Input Power Factor > 0.95
	d) Possibility of enhancing UPS capacity / redundancy by operating UPS in 1+1 Parallel Redundant Configuration (PRS).
	e) Capability of Independent or Common battery bank operation of the UPS when operated in PRS
	f) Isolation to be provided between input and output preferably by a high frequency transformer

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<b>Input</b>	
Input facility -Phases / Wires	3-Phase / 4-Wire (R, Y, B, N)
Input Voltage Range	270 - 485V AC (On Full Load)
Nominal Input Frequency	50 / 60 Hz (Auto selectable)
Input Frequency Range	45 to 55 Hz
Input Power Factor	> 0.95 on Full Load
Input Current Harmonic Distortion (THDi)	< 10% on full resistive Load (with Mains THDu less than 1%)
Generator Compatibility	Compatibility to generator set supply required
Input Protection (Thru In-built 1P MCB)	Should be provided at the input of the UPS suitable for the full rated capacity of the UPS
<b>Output</b>	
Nominal Output voltage	220VAC $\pm$ 1% (per Phase), 415 $\pm$ 1%
Nominal Output Frequency	50 / 60 Hz (Auto selectable)
Output Wave Form	Pure sine wave
Output Voltage Distortion (THDu)	$\leq$ 2% (For R Load) $\leq$ 5% (For RCD Load)
Crest Factor	3:1,
Output Short circuit Protection	Electronic / MCB
<b>Transient Response / Recovery</b>	
Transient Response: Dynamic Regulation for 10% to 90% step linear load	+/- 10 %
Transient Recovery to steady state condition after 10% to 90% step linear load	< 1 cycle
<b>Transfer Time</b>	
Transfer Time (Mode of operation)	Nil from Mains mode to Battery Mode Nil from Battery Mode to Mains mode

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Transfer Time (Inverter to Bypass / Bypass to Inverter)	< 2 ms (Synchronized Mode)
Automatic & Bi-directional static by-pass (In-built)	Should be provided to take care of uninterrupted transfer of load from Inverter to bypass (under overload / fault conditions) & automatic retransfer from bypass to inverter (on removal of overload / fault conditions)
Maintenance Bypass	<ol style="list-style-type: none"> <li>1. UPS should have option for manual maintenance bypass</li> <li>2. Transfer of load to maintenance bypass should be without disruption of the connected load</li> <li>3. The maintenance bypass should provide for Hot-swap of the faulty UPS for repairs / service</li> </ol>
<b>Efficiency (At Nominal Voltage &amp; Resistive Load up to kW rating of UPS)</b>	
Overall Efficiency (AC to AC) – Online- (Double Conversion)	> 92% (On Full Load)
Overall Efficiency (AC to AC) -ECO Mode- (Bypass feeding the load under normal conditions)	> 96 % (On Full Load)
<b>Overload</b>	
Inverter Overload capacity	125% 300 sec 150% 30 sec
<b>Display Panel (In-built LC Display / LED)</b>	
Measurements	Input: Voltage / Frequency Bypass: Voltage / Frequency Output: Voltage / frequency Battery: Remaining time / Battery Level Indicator Load: Percentage / Load Level Indicator
Fault Indication	Charger Failure Battery Failed

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	Battery Low Overload
Indications	AC indicator Battery Mode of Operation Bypass feeding the load UPS Fault
<b>Alarms</b>	
Audible Alarms	Battery Low beep / DC Fault beep/ UPS Overload beep/ output short circuit fault beep/ Shutdown beep
<b>Battery Backup / Battery Bank &amp; Charger</b>	
Backup Required	1 Hr.
Battery Bank Voltage	240 V DC or higher
Minimum VAH required for 1 hour backup	36000VAH
Batteries Type	Sealed Maintenance Free (SMF) - 12V Cells 160AH
Battery Makes	Quanta (Amara Raja) / Rocket Exide
Number of Battery Bank	1 No.
Minimum Charger Rating	The charger should be able to deliver charging current Equivalent to 10% of Battery Ah rating offered.
Charger type / Charging Method & Charging Voltages	Constant Voltage Constant Current Solid state SMPS charger Float Voltage: 2.25 - 2.26 VPC minimum Boost Voltage: 2.30 - 2.33 VPC minimum
Battery recharge time (After complete-discharge) to 90% capacity	10-12 hours
Battery Housing (Vendor to provide the GA drawings of the offered Battery Rack)	Should be compact and space saving open racks complete interconnectors
Battery End Cell Voltage	1.75 VPC

<b>Interfaces</b>	
USB Port	Communication through USB
REPO (Remote Emergency Power OFF)- / ROO (Remote ON - OFF) Port	Should be provided as standard in the UPS
Interface to NMS (Network Management System)	SNMP Card for connecting the UPS to LAN thru Ethernet port & monitoring thru NMS should be available (SNMP Card / NMS software)
Interface to DCS (Distributed Control System)	Relay I/O Card or PFC (Potential free contacts) for connecting to UPS to DCS / PLC / SCADA system for communicating UPS operating status
Monitoring and control remote UPSs through TCP/IP network (SNMP) and through USB also	
Collect the information of all of your UPSs in one program	
Hierarchical design, easy to manage all UPSs	
Batch configuration of SNMP devices	
Notification: e-mail, network broadcast and audible alarm	
Scheduled tests, shutdown/restarts of the UPS	
Monitoring and display UPS parameters, such as: voltage, current, frequency and loading, etc.	
Able to generate all of the UPSs report during the assigned period	
Account and password configuration for multiple users	
Support database connection through ODBC	
Able to save the users operation log, UPS event log and historical parameters in database.	
Provides the Manager Client to check the event log and historical parameters from database	
<b><i>Each and every IP defined through UPS and controlled by UPS in emergency to shutdown</i></b>	

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<b>Restart / Testing Capability</b>	
Cold Start	UPS should start up On AC Supply (Mains) without DC Supply (Batteries) On DC Supply (Batteries) without AC Supply (Mains)
Automatic Restart	UPS should start up automatically on mains resumption after battery low shutdown
Self-Diagnosis	UPS should be capable to carry out self-test of Rectifier / Charger /Battery & Inverter module during start-up
<b>Physical</b>	
Operating Temperature	0 <sup>0</sup> to 40 <sup>0</sup> C
Storage Temperature	-15 <sup>0</sup> to 50 <sup>0</sup> C
Operating Humidity	0% ~ 95%RH (No Condensing)
Type of Cooling	Forced Air
Noise Level	< 59 dbA at 1 meter distance
Air Filters	UPS should have internal anticorrosion air filters for dust filtration
Reliability	MTBF greater than 100000 hours
<b>Certifications</b>	
Manufacturer	QMS: As per ISO 9001 EMS: As per ISO 14001 OSHAS: As per ISO 18001
Product Safety Certifications	All mandatory certificates must be provided
<b>Authorization certificate from OEM</b>	Required
<b>Automatic Phase Corrector</b>	
Technology	Electronic circuitry controlled
Rating	95Amp

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Indication	RYB phase indication, Phase Reverse Phase OK indication
By pass	Manual Bypass must be available
Phase Reversal	Automatic correction

**Terms & Conditions:**

- i. Separate sealed technical and commercial bids should be submitted in separate envelopes. Otherwise the quotation will be rejected.
- ii. The envelopes should be marked with "**Quotation for 30 KVA UPS System With Automatic Phase Corrector**" and whether it is "Technical" or "Commercial".
- iii. Attach Technical Literature.
- iv. Certificate of the quoted model (copy to be attached).
- v. A minimum of 3 years comprehensive on-site warranty for UPS and a one-year warranty for batteries.
- vi. The quotation must be submitted in Rupee only.
- vii. Delivery period should not exceed 3 weeks from the date of placement of order
- viii. The quotation must reach the following address **on or before 15-03-2013 at 5:30 P.M.**

*Dr. Krishna AchutaRao  
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**NOTE:** The committee reserves all rights to accept or reject any or all quotations without assigning any reasons.



Prof. G. Bhuvaneshwari  
Chairperson, Purchase Committee

