

	PURCHASE SPECIFICATION, GROUP: PHOTOVOLTAICS ITEM : 3 KVA UPS WITH BATTERIES	PS-439-1264
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TECHNICAL SPECIFICATION

FOR

SUPPLY OF 3 KVA UPS WITH BATTERIES

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1.0 INTRODUCTION

This technical specification provides BHEL's requirement for Design, engineering, manufacture, supply and I&C support of 3 KVA UPS (Uninterrupted Power Supply) along with batteries.

2.0 SCOPE OF SUPPLY

Sl. No	Item Description	Quantity
2.1	3KVA UPS (Uninterrupted Power Supply)	As per BHEL tender requirement
2.2	Battery bank for 3 KVA UPS – Capacity of 14400 WH (min.), Sealed Maintenance-Free (AGM) type with mounting rack	
2.3	Spares for UPS & Battery One Set of spares shall consist of following items: Circuit Breaker of each type used - 1 No Complete IGBT Bridge/Power Module - 1 No Printed circuit Control cards each type used - 1No Colling Fan -1 No	
2.4	I&C Support for UPS and Battery Note : 1 AU = I&C support for 1 set of UPS and Battery	

3.0 TECHNICAL SPECIFICATION

3.1) Standards and Codes applicable for UPS:

Standard/Code	Description
IEC 62040-1	Uninterruptible power systems (UPS) - Part 1: General and safety requirements for UPS
IEC 62040-2	Uninterruptible power systems (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements
IEC 62040-3	Uninterruptible power systems (UPS) - Part 3: Method of specifying the performance and test requirements

3.2) The UPS shall automatically provide continuous, regulated AC power to critical loads under normal and abnormal conditions, including loss of input AC power.

3.3) The UPS system shall consist of the following major equipment.

- i. UPS Module
 - a. Insulated Gate Bipolar Transistor (IGBT) Converter
 - b. Insulated Gate Bipolar Transistor (IGBT) Inverter
 - c. Digital Signal Processor (DSP) using Pulse Width Modulation (PWM) for Direct Digital Control (DDC) of all UPS control and monitoring functions
 - d. Static bypass switch
- ii. Battery bank
- iii. Battery protective and disconnect device
- iv. Maintenance bypass switch
- v. LCD display panel and LED indications
- vi. Integrated UPS Communications Protocols capable of communicating with SCADA system

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3.4) The UPS shall be forced air cooled by internally mounted fans. The fans shall be redundant in nature to ensure maximum reliability. The fans shall be easily replaceable without the use of special tools.

Sl. No	Parameter	Specification
1.	Topology	Online double conversion UPS
2.	Input	
	Voltage	415 V $\pm$ 10% AC or 230 V $\pm$ 10% AC
	Frequency	50 $\pm$ 5 Hz
	Power factor	0.95
3.	Output	
	Voltage	230V $\pm$ 1% AC
	Frequency	50 Hz
	Power factor	0.8
4.	Battery	
	Type	Sealed, Maintenance-Free (AGM) battery
	Capacity	14400Wh (min.), preferably 150Ah @96V
	Mounting arrangement	Rack mounted
5.	Monitoring and communication	
	LED Indicators	Load on Inverter, Battery operation, Load on Bypass, Overload, LCD Fault, UPS Fault
	Electrical contacts	Closing contacts for each of the following conditions: 1. Unit on Battery 2. Low Battery 3. Summary Alarm 4. UPS On 5. Input Fail
	Local Display	LCD/ LED
	SCADA communications	RS-232 & RS-485 Interface Port
	Overall efficiency	>90%
	Electrical Protection	Input/ output under voltage, over temperature, overload, Short circuit, battery low trip
6.	Enclosure Protection	IP 20 or better

4.0 Documents to be submitted along with offer without which offer shall be liable for rejection:

1. Technical Data sheets of all equipment
2. Drawings – GA, SLD, BOM, Mounting arrangement etc.
3. Type Test certificates for all equipment as applicable
4. Vendor credentials of previously-made supplies

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5.0 Documents to be submitted within 1 week after receipt of Purchase order

1. Technical datasheet of all equipment shall be submitted to BHEL for approval.
2. Manufacturing Quality Plan (MQP) indicating all tests/checks per relevant IS/IEC standards, as called in this document and any other relevant standards shall be submitted to BHEL for approval.
3. Type test certificates and reports of all equipment
4. Operation and maintenance manual of all equipment

6.0 Inspection and testing of equipment at vendor works:

BHEL and/ or BHEL customer shall witness the testing of UPS and batteries as per relevant IS/ IEC standards. All routine tests and acceptance tests on final products shall be done as per MQP approved by the BHEL.

7.0 Installation & Commissioning (I&C) Support:

Vendor shall depute their service engineer during installation and commissioning stage for required checks and assist BHEL in commissioning of UPS and Battery. A single lump-sum price per transformer basis shall be offered for commissioning support. The lump-sum price shall include all the costs that will be incurred by the vendor towards the above activities including travel, boarding, lodging and any other contingency expenses.

8.0 Service during Warranty period:

During the warranty period, whenever a technical problem is encountered with supplied equipment, BHEL will report the same to the vendor.

1. All failed material replacements during warranty period shall be in scope of the vendor.
2. Vendor shall ensure that the problem is attended to by their service engineer within two days from the date of reporting.