

Corrigendum No. – 3

Tender Enquiry No- TPSODL/OT/2026-27/2500001198

Work Description - Rate Contract for performance based 11 kV & LT Network Maintenance & Allied Work, 33 KV Network Maintenance and Operational Assistance of 33/11 kV Sub-Stations of TPSODL for 3 years.

Amendment details:

1. The tender calendar of events has been amended & revised calendar of events will be as follows:

a.	Last date and time of receipt of Bids	10/07/2026 17:00 Hrs.
b.	Date & Time of opening technical bids & EMD	10/07/2026 17:00 Hrs. onwards

2. The preferred make of the following tool is also amended:

Category	Item Description	Quantity	Revised Preferred Make
Testing Instruments	Non-contact type LT line tester.	1 per Skilled person	Taparia or Equivalent

3. The Technical specification of Portable battery charger (24V) is provided which was missing in the tender document.

Warm's Regards,

Shubhranshu Shekhar Sahu

Web www.tpsouthernodisha.com

TP SOUTHERN ODISHA DISTRIBUTION LIMITED

(A Tata Power and Odisha Government Joint Venture)

BPR North Star Building | 2nd Floor | Khodasingi | Berhampur | Odisha - 760010

Note-This document does not require signature.

 (A Joint Venture of Tata Power and Government of Odisha)	TP SOUTHERN ODISHA DISTRIBUTION LIMITED		F02-(09.07.04)
			Revision: 03
			Eff. Date: 03-07-26
Name of the Document	TECHNICAL SPECIFICATION FOR PORTABLE BATTERY CHARGER		
Document No.	ENG-GEN-4067	Document Revision No.	00
Prepared By	Reviewed By	Approved By	Issued By
JYOTI RANJAN SAHU SIBANI PANDA	Shailendra Kumar Jaiswal	Ashok Saraf	Dnyaneshwar Ramchandra Dharmadhikari

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1. SCOPE

This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading of Portable Battery Charger at stores complete with all accessories for efficient and trouble free-operation.

The offered material shall be complete with all components necessary for their effective and trouble-free operation. Such components shall be deemed to be within the scope of Bidder's supply irrespective of whether those are specifically brought out in this specification and/or the commercial order or not.

2. APPLICABLE STANDARDS:

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian/International standards and shall conform to the regulations of the local statutory authorities.

IS 6619: 1972	Safety Code for Semi-conductor Rectifier Equipment
UL 1564	UL Standard for Safety Industrial Battery Chargers
IEC 61000-4-17	Electromagnetic compatibility (EMC) – Part 4-17: Testing and measurement techniques – Ripple on DC input power port immunity test
SAE ARP1816	Charger for Battery Powered Ground Support Equipment
IEC 61000-4-2	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test

3. CLIMATIC CONDITIONS OF THE INSTALLATION:

S.NO	CONDITIONS	VALUES
1	Maximum ambient temperature	50 deg C
2	Max. Daily average ambient temp	35 deg C
3	Min Ambient Temperature	0 deg C
4	Maximum Humidity	95%
5	Average Annual Rainfall	150cm
6	Average No. of rainy days per annum	120
7	Altitude above MSL not exceeding	1000m
8	Wind Pressure	300 Km/hr.
9	Earthquakes of an intensity in horizontal direction	Equivalent to seismic acceleration of 0.3g
10	Earthquakes of an intensity in vertical direction	Equivalent to seismic acceleration of 0.15g (g being acceleration due to gravity)

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TPCODL/TPNODL/TPSODL/TPWODL service area has heavy saline conditions along the coast and High cyclonic Intensity winds with speed up to 300 Kmph. The atmosphere is generally laden with mild acid and dust in suspension during the dry months and is subjected to fog in cold months.

4. GENERAL TECHNICAL REQUIREMENTS

S. No.	Parameters	TPSODL Requirements	
		48 V	24V
A	Battery Charger		
1.	AC input voltage	415 V $\pm$ 10% AC, 3 Phase, 4 Wire	415 V $\pm$ 10% AC, 3 Phase, 4 Wire
2.	AC input frequency	50 Hz $\pm$ 5 %	50 Hz $\pm$ 5 %
3.	Output Current rating	25 A	25 A
4.	DC output voltage settings:	Nominal: 48V; Range: 42 V DC to 57 V DC	Nominal: 24V; Range: 23V DC to 27 V DC
5.	Output Voltage Regulation	$\pm$ 0.5% of set output voltage value for +10% to -15% input voltage variations and for 10-100% of load variations	$\pm$ 0.5% of set output voltage value for +10% to -15% input voltage variations and for 10-100% of load variations
6.	Efficiency	$\geq$ 85% At full load	$\geq$ 85% At full load
7.	Power Factor	$\geq$ 0.98	$\geq$ 0.99
8.	Ripple voltage	$\leq$ 200mV (P-P)	$\leq$ 200mV (P-P)
9.	Galvanic Isolation	The rectifier stage must have galvanic isolation	The rectifier stage must have galvanic isolation
10.	Switchgear:		
	a) input side (AC)	16A MCB suitable for three phase AC supply	16A MCB suitable for three phase AC supply
	b) output side (DC)	2 pole, 63A MCB suitable for DC operation	2 pole, 63A MCB suitable for DC operation

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11.	Protections	a) Surge suppressors/SPD (Both incomer & outgoing)	a) Surge suppressors/SPD (Both incomer & outgoing)
		b) Soft start	b) Soft start
		c) Battery charger current limit	c) Battery charger current limit
		d) Control circuit & Voltmeter fuses	d) Control circuit & Voltmeter fuses
		e) Rectifier protection HRC fuses	e) Rectifier protection HRC fuses
		f) Blocking diode	f) Blocking diode
		g) Input/output over voltage	g) Input/output over voltage
		h) Short circuit at output terminals	h) Short circuit at output terminals
		i) Thermal protection (Fire safety protection)	i) Thermal protection (Fire safety protection)
		j) AC under-voltage	j) AC under-voltage
		k) AC over-voltage	k) AC over-voltage
		l) DC load under-voltage	l) DC load under-voltage
		m) DC load over-voltage	m) DC load over-voltage
		n) Battery under-voltage	n) Battery under-voltage
		o) Battery over-voltage	o) Battery over-voltage
		p) Fault at rectifier module	p) Fault at rectifier module
		q) Insulation fault	q) Insulation fault
12.	Operating temperature	0°C to 55°C	0°C to 55°C

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13.	Bus bars (copper)	Suitable size for carrying 100 A (min.) current.	Suitable size for carrying 100 A (min.) current.
14.	Connection to back-up battery bank, load and battery at site	through dedicated MCBs via bus-bar	through dedicated MCBs via bus-bar
15.	Mounting arrangement	Cabinet/ rack	Cabinet/ rack
16.	Ingress Protection	IP 42	IP 42
17.	Cooling arrangement	suitable cooling arrangement (natural / forced air with fan) should be provided	suitable cooling arrangement (natural / forced air with fan) should be provided
18.	Alarms (at display of Portable Battery Charger)	AC Mains Fail/MCB trip (at charger input)	AC Mains Fail/MCB trip (at charger input)
		DC Fail/MCB trip (at charger output to load)	DC Fail/MCB trip (at charger output to load)
		DC Fail/MCB trip (at charger output to battery)	DC Fail/MCB trip (at charger output to battery)
		AC under-voltage	AC under-voltage
		AC over-voltage	AC over-voltage
		DC load under-voltage	DC load under-voltage
		DC load over-voltage	DC load over-voltage
		Battery under-voltage	Battery under-voltage
		Battery over-voltage	Battery over-voltage
		Fault at rectifier module	Fault at rectifier module
		Insulation fault	Insulation fault
19.	LED indications (at Rectifier Module)	Power ON (Green)	Power ON (Green)
		Alarm (Red)	Alarm (Red)
		Over-temperature (Red)	Over-temperature (Red)

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20.	Dimensions ((L X B X H) in mm	To be provided by bidder	To be provided by bidder
21.	Mobility	Wheel Arrangement	

5. GENERAL COSTRUCTION:

The portable DC battery charger shall be of rugged, compact, lightweight, and portable construction, suitable for indoor and outdoor field operation. The charger shall be designed for charging Sealed Maintenance-Free (SMF) Valve Regulated Lead Acid (VRLA) batteries and shall be suitable for operation from a 415 V AC $\pm 10\%$, 3-phase, 4-wire, 50 Hz $\pm 5\%$ input supply. The charger shall employ a thyristor-based controlled rectifier topology with microcontroller-based control and shall incorporate an automatic Constant Current (CC) and Constant Voltage (CV) charging algorithm. During the initial charging stage, the charger shall operate in CC mode, delivering a user-selectable constant charging current, limited to the rated output current of the charger, until the battery terminal voltage reaches the preset boost charging voltage. Thereafter, the charger shall automatically transition to CV mode, maintaining the preset boost charging voltage while the charging current progressively reduces as the battery approaches full charge. Upon completion of the charging cycle, the charger shall automatically switch to Float Charging Mode by reducing the output voltage to the specified float voltage, thereby maintaining the battery in a fully charged condition without overcharging or causing undue stress to the battery.

The charger shall provide automatic transition between CC, CV (Boost), and Float charging modes without operator intervention. The charging parameters shall be adjustable and suitable for charging 12 V, 24 V, and 48 V SMF VRLA battery banks of the specified capacity.

The charger shall be provided with adequate protection against reverse battery polarity, output short circuit, overload, over-current, over-voltage, over-temperature, input phase failure, phase reversal, input supply fluctuations, and battery disconnection. The charger shall automatically recover to normal operation upon removal of the fault condition without requiring manual reset.

The charger shall be provided with a digital display indicating output voltage, charging current, charging mode (CC/CV/Float), AC supply healthy status, charger ON, battery charging status, and fault indications. All components shall be suitably rated for continuous operation at full load under the specified environmental conditions and shall conform to the latest applicable IEC and IS standards.

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The portable battery charger is required for charging the batteries and as a DC conversion unit for supply to the relay units in case of supply failures along with a situation of deep-discharged batteries/ battery failure at any site.

5.1 General Features:

1. The battery charger with other components and integral DCDB shall be housed in a common cubicle with separate compartments for charger and for DCDB with adapter. The chargers shall be indoor, floor mounted, self-supporting sheet metal enclosed cubicle type. The bidder shall supply all necessary base frames, anchor bolts and hardware. The panel frame shall be fabricated using cold rolled sheet steel of thickness not less than 2.0 mm. Removable undrilled gland plates of at least 3.0 mm sheet steel and lugs for all cables shall be supplied by the bidder. The lugs for cables shall be made of electrolytic copper with tin coat. The charger shall have sufficient vermin proof. Ventilation louvers shall be backed with fine brass wire mesh. All doors and covers shall be fitted with EPDM gaskets. The Chargers shall have hinged double leaf doors provided on front and/or backside for adequate access to the Charger internals. All the Charger cubicle doors shall be properly earthed. The degree of protection of Charger enclosure shall be at least IP-42.
2. Conformal coating on all electronics components to be considered.
3. All indicating instruments, control & selector switches and indicating lamps shall be mounted on the front side of the charger.
4. Electronic equipment shall be of modular design consisting of plug in modules in standard 19 inches metallic racks with metallic card guides. The cards should be provided with proper handles. Card to card wiring should be preferably through a mother board. Unplanned jumpering and track modifications are not permitted. Mechanical interlocks to prevent wrong insertion of cards should be provided. Each card shall have its junction and test points identified. Maintenance aids such as extension printed wiring boards and jumper leads shall be provided.
5. The layout of charger components shall be such that their heat losses do not give rise to excessive temperature within the Charger panel surface. Operating temperature range shall be minus 5°C to plus 60°C. Location of the electronic modules will be such that temperature rise of the location, in no case, will exceed 10°C over ambient air temperature outside the charger.
6. Locking facilities shall be provided as following:
The Charger enclosure door locking requirements shall be met by the application of padlocks. Padlocking arrangement shall allow ready insertion of the padlock shackle but shall not permit excessive movement of the locked parts with the padlock in position.

WIRING:

1. Each Charger shall be furnished completely wired up to power cable lugs and terminal blocks ready for external connection. The power wiring shall be carried out with 1.1 KV

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grade PVC insulated cables conforming to IS:1554 (Part-I). The control wiring shall be of 1.1KV grade PVC insulated stranded copper conductors of 2.5sq.mm. Conforming to IS: 694. Control wiring terminating at electronic cards shall not be less than 1.0 sq. mm. Control terminal shall be suitable for connecting two wires with 2.5 sq.mm. Stranded copper conductors. All terminals shall be numbered for ease of connections and identification. At least 20% spare terminals shall be provided for circuits.

2. Power and control wiring within panels shall be kept separate. Any terminal or metal work which remains alive at greater than 415 V, when panel door is opened, shall be fully protected by shrouding.
3. An air clearance of at least ten (10) mm shall be maintained throughout all circuits, except low voltage electronic circuits, right up to the terminal lugs. Whenever this clearance is not available, the live parts should be insulated or shrouded.

AC Terminations:

1. The input terminal should be three phases and cleared marked as R Y B and N and for AC three phase, AC input termination shall be suitably protected against the accidental touch/contact with the working staff for their protection and shall also have clear and prominent be "Danger" marking.
2. Screening shall be provided between AC and DC components to prevent accidents. The AC input connection to the rectifier module shall be by means of locking type plug and socket arrangement.
3. All the connection between distribution and modules shall be through proper rated cables only. Fuses and circuit breakers for each modules shall be easily accessible and properly rated.

DC Terminations:

1. The output of each rectifier in the negative load shall be taken through full rated ISI marked MCBs. All the AC, DC control & alarm cabling shall be supplied with the rack. All DC +ve and - ve leads shall be clearly marked.

Battery Temperature Compensation:

1. The charger shall be provided with the appropriate circuitry to interface with the temperature probe assembly. With the probe, the charger shall automatically compensate gassing and constant voltage setting inversely proportional to the probe's temp/ battery ambient temp., so that over charging at high temperature and under charging at low temperature can be prevented.

Blocking Arrangements:

1. Blocking arrangement shall be provided in the positive pole of the output circuit of the charger to prevent reverse current flow from the DC battery into the charger.

5.2: Terminals:

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Separate terminals shall be provided on portable battery charger for connecting load (min. 12 numbers of outgoing) through DC Distribution Box (DCDB) and for connecting battery terminals. All terminals shall be of suitable size nickel plated steel. Suitable nickel-plated copper lugs shall be provided by the supplier for the use of purchaser for connecting the load wiring. All connectors and leads shall be suitable for carrying discharge current for 30 min. continuously and rated for short-circuit duty of 4 kA for 1 second.

5.3 Connectors:

Nickel plated copper connectors shall be used for connecting the terminals of battery charger with the battery bank. Bolts, nuts and washers shall be nickel plated/ stainless steel. All terminals and interconnectors shall be fully insulated or shall have insulation shrouds.

5.4 Cooling and ventilation:

Proper arrangement of natural air or forced air fan cooling (if required) to be provided for the portable battery charger to restrict the temperature rise beyond 40°C.

5.5 Stand and racks:

Suitable corrosion resistant portable battery charger racks and cable supports shall be provided. Metallic racks shall be properly earthed. The bottom tier of stand shall have a ground clearance of 150 mm (minimum), above the floor. Racks shall be made of alkali resistant powder coated steel or stainless steel to ensure corrosion resistance.

5.6 Painting

The racks shall be painted with anti-corrosive paint of 80- micron thickness (minimum) of shade RAL 7032.

5.7 Packing

Bidder shall ensure that all the equipment covered by this specification shall be prepared for rail/ road transport (local equipment) and be packed in such a manner as to protect it from any damage in transit.

6. NAME PLATE AND MARKINGS

The unit shall be provided with a name plate clearly visible and effectively secured against removal. The name plate shall be indelibly and distinctly marked with all essential particulars as per relevant standards along with the following:

- i) Manufacturer's name
- ii) Month and Year of manufacture
- iii) Serial number and Type designation

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- iv) Rated input voltage
- v) Rated input voltage
- vi) Maximum input current
- vii) Maximum output current
- viii) Guarantee period.
- ix) Reference standard
- x) Property of TPSODL

7. TESTS

All routine, acceptance & type tests shall be carried out in accordance with the relevant standards mentioned in clause 2.0. All routine & acceptance tests shall be witnessed by the purchaser/his authorized representative. All the components shall also be type tested as per the relevant standards. Following tests shall be necessarily conducted on the metering cubical in addition to others specified in IS/IEC/IEEE/UL standards.

- Type test:
 - i) Voltage regulation test at NO LOAD
 - ii) Voltage regulation test at FULL LOAD
 - iii) Power losses in rectifier assemblies
 - iv) Measurement of Efficiency
 - v) Ripple Content Check
 - vi) Efficiency Test
 - vii) Temperature Rise Test
 - viii) Degree of Protection Test
 - ix) HV Test
 - x) Insulation Resistance
 - xi) Test for Protection Device
 - xii) Measurement of power Factor
 - xiii) Automatic Voltage regulator operation
- Routine & Acceptance test:
 - i) Visual Inspection & Dimensions
 - ii) Checking of Wiring & Continuity of Circuits
 - iii) Ripple content measurement
 - iv) No load test
 - v) Load test with voltage regulation
 - vi) Insulation Resistance
 - vii) Efficiency tests
 - viii) Auto/Manual operation test
 - ix) Alternating Current Measurement
 - x) Auxiliary Devices
 - xi) Temperature rise test
 - xii) Operational Tests for Protection, Alarm, Indication

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- xiii) HV test
- xiv) Complete charging cycle

8. TYPE TEST CERTIFICATES

The Bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA/Other Govt. Lab as per relevant IS. Type tests should have been conducted during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports, i.e. any test report not acceptable, same shall be carried out without any cost implication to TPSODL.

9. PRE-DISPATCH INSPECTION

Equipment shall be subject to inspection by a duly authorized representative of the Purchaser. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material is liable to rejection. The bidder shall grant free access to the places of manufacture to the Purchaser's representatives at all times when the work is in progress. Inspection by the Purchaser or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by the Purchaser.

Following documents shall be sent along with material.

- a) Test reports
- b) MDCC issued by DISCOM
- c) Invoice in duplicate
- d) Packing list
- e) Drawings & catalogue
- f) Guarantee / Warrantee card
- g) Delivery Challan
- h) Other Documents (as applicable)

10. INSPECTION AFTER RECEIPT AT STORE / SITE:

The material received at Purchaser Store / site will be inspected for acceptance and shall be liable for rejection if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Engineering department.

If any deviation or anomaly observed at this stage same need to be rectified by bidder at bidders' own cost at earliest.

11. GUARANTEE

Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the

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Purchaser up to a period of at least 60 months from the date of commissioning or 66 months from the date of last supplies made under the contract whichever is earlier , Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.

In case of GP failure, BA shall report at site within 48 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by BA within 15 days of intimation of failure.

12. PACKING

Bidder shall ensure that all equipment covered by this specification shall be prepared for rail/road transport (local equipment) and be packed in such a manner as to protect it from damage in transit. The packing should be in such manner that during storage the Panels and its components should not be damaged.

Deliver materials to the Project site in supplier's or manufacturer's original wrappings and containers, labeled with supplier's or manufacturer's name, material or product brand name, and equipment tag number or service name as identified within the Contract Documents.

No single use plastic to be used in packing material. Packing should be done with environment friendly recyclable materials.

13. TENDER SAMPLE

Demonstration shall be provided by the bidders at the time of bid evaluation.

14. TRAINING

The vendor shall include in his offer Training for operation team of the respective DISCOM at circle level. The training shall cover development, integration, installation and commissioning of both software & hardware components of the system. The training of 2 days shall be given at site by OEM.

The vendor shall provide hands-on training on the system. All required training materials such as system catalogues, test instruments, demo equipment, and simulation jigs, etc. shall be provided by the vendor. The training shall equip the Purchaser's engineers for installation, commissioning, operation and post-warranty maintenance of hardware, software (Operating System, Administration and Applications), protocols and all third-party systems.

15. QUALITY CONTROL

The manufacturer shall have a well-organized Quality Assurance Plan (QAP) to assure that items and services comply with this specification.

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JYOTI RANJAN SAHU SIBANI PANDA	Shailendra Kumar Jaiswal	Ashok Saraf	Dnyaneshwar Ramchandra Dharmadhikari

The QA Plan shall identify the various stages of manufacturing, quality checks to be performed at each stage and the customer hold points. The document shall also furnish details of method of inspection, acceptance criteria and standards.

TP Discom authorized representative shall have right to review the inspection reports of manufacturer's in-house inspection which may not be considered as customer hold points in QAP.

16. TESTING FACILITIES

Bidder/OEM shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standard.

17. MANUFACTURING ACTIVITIES

The successful bidder will have to submit GTP & Drawing with 15 days from placement of order/OLA for approval. The date of Code-2 / Code-1 / CAT-A / CAT-B approval given by TATA Power DISCOM will be treated as first day for assessment of LD (if applicable).

Acceptable Products: MV GIS specified herein shall be the product of a single manufacturer, including the vacuum interrupter and numerical relays. Products and manufacturers specified are to establish a standard of quality for design, function, materials, and appearance. Products shall be modified as necessary by the manufacturer for compliance with requirements.

18. SPARES, ACCESSORIES AND TOOLS

Recommended and mandatory spares to be supplied by the bidder, without any cost implication to TPSODL.

19. DRAWINGS & DOCUMENTS

Following drawings and documents shall be prepared based on Purchaser specifications and statutory requirements and shall be submitted with the bid:

- Completely filled in General Technical Particulars
- General arrangement drawing for portable battery charger (with SLD and detailed circuit diagram).
- Experience List
- Type test certificates

After the award of the contract, soft copies of following drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval.

Sr. No.	Description	For Approval	For Review Information	Final Submission
1.	Technical Parameters	✓		✓
2.	GA Drawing	✓		✓
3.	Installation Instruction			✓
4.	Transport/ Shipping dimension drawing		✓	✓
5.	QA & QC Plan	✓	✓	✓

 (A Joint Venture of Tata Power and Government of Odisha)	TP SOUTHERN ODISHA DISTRIBUTION LIMITED		F02-(09.07.04)
			Revision: 03
			Eff. Date: 03-07-26
Name of the Document	TECHNICAL SPECIFICATION FOR PORTABLE BATTERY CHARGER		
Document No.	ENG-GEN-4067	Document Revision No.	00
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6.	Test Certificates	✓	✓	✓
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All the documents & drawings shall be in English language.

Instruction Manual (in English language) covering erection and maintenance instructions and all relevant information and drawings pertaining to the main equipment as well as auxiliary devices shall also be submitted by the BA.

20. GUARANTEED TECHNICAL PARTICULARS

Clause-wise compliance to this specification

21. SCHEDULE OF DEVIATIONS

(TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

S.NO	CLAUSE NO.	DETAILS OF DEVIATION WITH JUSTIFICATION.

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature Designation