



# RFQ / TENDER

Tender No: EFQ-108891

Vendor No: 11001386

BOARD LIST  
BOARD LIST  
TRANSNET FREIGHT RAIL  
PROCUREMENT DEPARTMENT  
2000

Purchaser : Samantha Mgwatyu  
Telephone : 011 584 0738  
Fax Number: 011 7749129

Please quote reference:  
DD6/6000595006

Deliver to:  
TFR Head Office  
Supply Chain Services  
2000 Johannesburg

Closing Date :19.09.2013  
Validity Date :31.12.2013  
RFQ No :6000595006

Currency: ZAR

RFQ/TENDER: CRAC-EFQ-108891

SUPPLY AND DELIVERY OF POWER SUPPLY UNIT WITH BATTERY CHARGING CAPABILITIES (X10)

BIDDER/S ARE HEREBY INVITED TO QUOTE AND SUBMIT QUOTATION/S AT INYANDA HOUSE 1, 21 WELLINGTON ROAD, PARKTOWN-JOHANNESBURG, NOT LATER THAN THURSDAY 19 SEPTEMBER 2013 AT 10:00 PM

1. RETURN OF QUOTATION/S PLEASE FAX: 011 774 9129 OR 774 9186 OR

E-MAIL TO: thuli.mathebula@transnet.net.

TENDER BOX IS OPEN FOR SEVEN DAYS PER WEEK FOR THE RFQ/TENDERS AND QUOTATIONS SUBMISSION.

1.1 QUOTATION/S MUST BE SUBMITTED PUNCTUALLY AT 10:00 ON THE CLOSING DATE AND LATE QUOTATIONS WILL NOT BE CONSIDERED.

1.2 IF DELIVERED BY HAND:

TRANSNET FREIGHT RAIL, SUPPLY CHAIN SERVICES  
GROUND FLOOR  
INYANDA HOUSE 1  
21 WELLINGTON ROAD  
PARKTOWN  
2193

2. CONDITIONS:

2.2 ANY PURCHASE ORDER PLACED AS A RESULT OF YOUR QUOTATION WILL BE SUBJECT TO THE STANDARD TERMS AND CONDITIONS OF CONTRACT, FORM US7(LATEST), GENERAL TENDER CONDITIONS, FORM CSS5 (LATEST ) AND CONDITIONS MENTIONED HEREIN.

2.3 TENDERERS MAY OFFER AN EARLIER VALIDITY DATE, BUT THEIR QUOTATION MAY, IN THAT EVENT, BE DISREGARDED

DATE: ..... SIGNATURE OF TENDERER(S): .....  
CONTACT PERSON: ..... TEL No: .....

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FOR THIS REASON.

2.4 TENDERERS ARE REQUIRED TO OFFER ONLY FIRM PRICES. PRICES SUBJECT TO REVIEW IN TERMS OF CLAUSE 32 OF FORM US7 WILL ONLY BE CONSIDERED SHOULD THE DELIVERY PERIOD REQUIRED EXCEED 6 MONTHS.

2.5 BEST DELIVERY TIME MUST BE OFFERED.

2.6 DISCOUNT (TRADE DISCOUNT), VALUE ADDED TAX (VAT) MUCH BE SHOWN SEPARATELY.

2.7 TRANSNET RESERVES THE RIGHT TO NEGOTIATE PRICES AND COMMERCIAL ASPECTS AFTER THE CLOSING DATE OF THE QUOTATION.

2.8 DIRECT DELIVERY INTIMATES DELIVERY BEING EFFECTED INTO THE WAREHOUSE OR THE ACTUAL POINT OF SUPPLY AND SHOULD THEREFORE INCLUDE ANY TRANSPORTATION MODE DEEMED NECESSARY IN EXECUTING THIS METHOD OF DELIVERY BASIS IN ORDER TO MEET THE REQUIRED DELIVERY DATE. TAX CLEARANCE CERTIFICATES: The Regulations in

terms of the Public Finance Management Act, 1999: Framework for Supply Chain Management as published in Government Gazette No. 25767 dated 5 December 2003, Clause 9 (1) (d), stipulates that the accounting authority of an institution to which these regulations apply must reject any bid from a supplier who fails to provide written proof from the South African Revenue that the supplier either has no outstanding tax obligations or has made arrangements to meet outstanding tax obligations. Tenderers will be disqualified if a valid tax clearance certificate or written proof from the South African Revenue Service that supplier has made arrangements to meet outstanding tax obligations is not submitted with the tender. COMPANY DETAILS: NAME OF COMPANY: \_\_\_\_\_ CONTACT

PERSON: \_\_\_\_\_ TEL. No. \_\_\_\_\_ FAX No. \_\_\_\_\_ REG.

No. \_\_\_\_\_ BROAD BASE BLACK ECONOMIC EMPOWERMENT (BBBEE) Transnet fully endorses and supports the Government's Broad-based Black Economic Empowerment Programme and it is strongly of the opinion that all South African Business Enterprises have an equal obligation to redress the past. Transnet will therefore prefer to do business with local business enterprises who share these same values. Transnet will endeavour to do business enterprises that possess a BBBEE "recognition level" of at least a level 5. Transnet urges Tenderers (large enterprises and QSE's - see below) to have themselves accredited by any one of the various Accreditation Agencies available, who do their BBBEE ratings in accordance with the latest Codes (i.e. those promulgated on 9 February 2007) and whose names appear on the present ABVA (Association of BEE Verification Agencies) "List of Full Members" as displayed on the ABVA website ([www.abva.co.za](http://www.abva.co.za)) Although no agencies have, as yet, been accredited by SANAS (SA National Accreditation System), Transnet will, in the interim, accept rating certificates of tenderers who have been verified by any of the listed agencies. Enterprises will be rated by such agency based on the Following: 1. Large Enterprises (i.e. annual turnover > R 35 million: "Rating level base on all seven elements of the BBBEE scorecard. 2. Qualifying Small Enterprises-(QSE) (i.e. annual turnover > R5m but < R35m "Rating based on any four elements of the BBBEE scorecard. NB:

3. Emerging Micro Enterprises-(EME) (i.e. annual turnover < R5m) are exempted from being rated/verified: "Automatic rating of Level 4 BBBEE irrespective of race of ownership, i.e. 100% BBBEE recognition

"Black ownership > 50% or Black Women ownership > 30% automatically qualifies as level 3 BBBEE, i.e. 110% BBBEE recognition.

"EME's should provide certified documentary proof of annual turnover (i.e. audited financials) plus proof of Black ownership if Black ownership > 50% or Black Women ownership > 30% from the EME's Auditor/Accounting Officer.

4. In addition to the above, Tenderers who wish to enter into a Joint Venture or subcontract portions of the contract to BBBEE companies, must state in their tenders the percentage of the total contract value that will be allocated to such BBBEE companies should they be successful in being awarded any business. A rating certificate in respect of such BBBEE JV-partners and /or sub-contractor/s, as well as a breakdown of the distribution of the aforementioned percentage must also be furnished

In view of the high emphasis which Transnet places on Broad-based

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Black Economic Empowerment, Transnet will allow certain preference points for BBBEE in the evaluation of all responses. Depending upon the value of the ensuing business award (i.e. below or in excess of R2m), the 80/20 or 90/10 point preference systems will be utilized where BBBEE will count out of 20 or 10 respectively in the evaluation process.

EACH RESPONDENT IS REQUIRED TO FURNISH PROOF OF THE ABOVE TO TRANSNET FAILURE TO DO SO WILL RESULT IN A SCORE OF ZERO BEING ALLOCATED FOR BBBE Turnover: Kindly indicate your company's annual turnover for the past year R\_\_\_\_\_

"If annual turnover < R5m, please attach certified confirmation from your Auditor/Accounting Officer

"If annual turnover > R5m please attach original or certified copy of accreditation certificate and detailed scorecard by an ABVA accreditation agency (registered as a "Full Member")

## PAYMENT TERMS

The following payment terms will apply as from 1 October 2008.

"All suppliers will be paid 30 days from receipt of month end statement.  
i.e. payment term F055

## CONDITIONS:

This quotation is subject to the provisions of the Standard Terms and Conditions of Contract, Form US7, (Latest) and the General Tender Conditions, Form CSS5 (Latest) and any other standard or special conditions mentioned and/or embodied in the quotation request.

## SCHEDULE OF REQUIREMENTS

TENDERERS SHOULD INSERT THEIR PRICE/S UNDER THE APPROPRIATE HEADING HEREUNDER;

IN THIS REGARD THE TENDERER'S ATTENTION IS DIRECTED TO PARAGRAPH 16 OF FORM CSS5 (LATEST).

NB. TENDERERS OFFERING GOODS FROM IMPORTED SUPPLIES MUST SUBMIT THEIR PRICES ON THE DELIVERY BASIS APPEARING UNDER COLUMN (C) OF THIS SCHEDULE OF REQUIREMENTS.

TRANSNET INSISTS ON HONESTY AND INTEGRITY BEYOND REPROACH AT ALL TIMES AND WILL NOT TOLERATE ANY FORM OF IMPROPER INFLUENCING, BRIBERY, CORRUPTION, FRAUD, OR ANY OTHER UNETHICAL CONDUCT ON THE PART OF BIDDERS /TRANSNET EMPLOYEES. IF, IN THE OPION OF TRANSNET,S CHIEF OPERATING OFFICER, A TENDERER/CONTRACTOR/SUPPLIER HAS OR CAUSED TO BE PROMISED, OFFER OR GIVEN TO ANY TRANSNET EMPLOYEE, ANY BRIBE, COMMISSION, GIFT LOAN ADVANTAGE OR OTHER CONSIDERATION, TRANSNET SHALL BE ENTITLED TO REVOKE THE TENDER/CONTRACT BY FOLLOWING ITS INTERNAL POLICIES THAT GOVERN THE ECLUSION PROCESS. IN SUCH AN EVENT TRANSNET WILL BE ENTITLED

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TO PLACE ANY TENDERER/CONTRACTOR/SUPPLIER WHO HAS CONTRAVENED THE PROVISIONS OF TRANSNET'S BUSINESS ETHICS ON ITS LIST OF EXCLUDED TENDERERS. THIS LIST WILL ALSO BE DISTRIBUTED TO ALL OTHER STATE OWNED ENTERPRISES AND GOVERNMENT DEPARTMENTS.

TRANSNET INVITES ITS VALUED SUPPLIERS TO REPORT ANY ALLEGATIONS OF FRAUD, CORRUPTION OR OTHER UNETHICAL ACTIVITIES TO TRANSNET TIP-OFFS ANONYMOUS, AT ANY OF THE FOLLOWING ADDRESSES/ CONTACT NUMBERS:

TOLL-FREE ANONYMOUS HOTLINE-0800 003 056  
EMAIL-transnet@tip-offs.com  
FAX NUMBER-0800 007 788  
FREEPOST DBN 298, UMHLANGA ROCKS, 4320

ADDITIONAL INFORMATION REQUIRED:(WHERE APPLICABLE)

3.1 THE FOLLOWING ADDITIONAL INFORMATION IS REQUIRED:

- (A) DISCOUNT:-----
- (B) SETTLEMENT DISCOUNT:-----
- (C) PRICE/S FIRM:-----
- (D) PRICE/S FIRM UNTIL:-----THEREAFTER SUBJECT TO REVIEW.
- (E) PRICE/S NOT FIRM:-----
- (F) SABS MARK:-----
- (G) SABS PERMIT NO:-----
- (H) BRAND/MAKE/TYPE:-----
- (I) FULL NAME AND ADDRESS OF MANUFACTURER:-----

(J) FULL NAME AND ADDRESS OF INSPECTION POINT:

(K) COUNTRY OF ORIGIN:-----

(L) YEAR 2000 CONTRACT COMPLIANCE:

Vendor/proposers shall indicate their year 2000 compliance with:

- A. Technology Products.
- B. Equipment, products, components or parts
- C. Products and Services

Non-compliance with either (A) or (B) shall result in your bid/proposal being deemed non-responsive. Non-Compliance with (C) may cause you bid/proposal to be deemed non-responsive. If you indicate that none of the following apply, please provide a written justification for your determination. Transnet will review this justification and will make a final determination.

Year 2000 Compliance means that (A) the information Technology,  
(B) Equipment/Products/Components/Parts (Collectively Products)

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supplied.

(C) Products and Services contracted, will accurately process date and time data from into and between the 20th and 21th centuries. The year 1999 and 2000 and for all leap year. Process date and time includes, but is not limited to, data calculation, logistical functions, program branching, format conversion, edits and validations and the use of dates in comparisons, sorting sequencing, merging, retrieving, searching and indexing. Furthermore year 2000 compliance when (A) used in combination with other information technology, (B) used in combination with other products, (C) used in combination with their(Vendor) other date required interfaces, shall accurately process date and time data (A) if the other technology, (B) if the other products, (C) either passed to or received from their other customers/suppliers, properly exchange date and time data with it/ them.

Comply: \_\_\_\_\_ Does not Comply: \_\_\_\_\_ Not Comply: \_\_\_\_\_

Justification:-----

(M) SURPLUS MATERIAL:

TENDERERS MUST INDICATE IF THEY WILL BE PREPARED TO PURCHASE BACK FROM TRANSNET ANY SURPLUS MATERIAL WHICH MAY BE SOME AVAILABLE FROM ANY RESULTING PURCHASE ORDER/CONTRACT ORIGINATED FROM THE QUOTATION SUBMITTED:

(N) PAYMENT OVERSEAS:

ONLY IF TRANSNET LIMITED IS REQUESTED BY THE TENDERER TO EFFECT PAYMENT OVERSEAS DIRECT TO THE TENDERER'S PRINCIPAL/SUPPLIER THE FOLLOWING INFORMATION IS REQUIRED:

\* EXCHANGE RATE ON WHICH THE QUOTATION PRICE IS BASED: R 1.00 SA CURRENCY BEING EQUAL TO----- (FOREIGN CURRENCY).

\* PERCENTAGE IN RELATION TO THE QUOTATION PRICE TO BE REMITTED OVERSEAS:

\* NAME OF COUNTRY TO WHICH PAYMENT IS TO BE MADE:

\* APPLICABLE DATE OF EXCHANGE RATE:

\* BENEFICIARY'S NAME AND FULL ADDRESS:

\* BENEFICIARY'S BANKERS AND FULL ADDRESS:

\* APPLICABLE ACCOUNT NUMBER:

DATE: .....

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(O) DELIVERY DATE:  
TENDERERS MUST FURNISH THEIR ACTUAL DELIVERY AND MANUFACTURING PERIOD  
HEREUNDER NOTWITHSTANDING THE DELIVERY DATES SPECIFIED BY TRANSNET.

THE FOLLOWING MUST ALSO BE FURNISHED IN REGARD TO THE ABOVE:

1. PERIOD REQUIRED TO OBTAIN RAW MATERIAL.....(DAYS)
2. MANUFACTURING PERIOD.....(DAYS)
3. PERIOD TO TRANSPORT MATERIAL TO DESTINATION..-(DAY)

MATERIAL NO.	1.(PERIOD)	2. (PERIOD)	3. (PERIOD)

FUNCTIONALITY AND WEIGHT RATING BASE ON FOLLOWING ELEMENTS:  
 1. COMPETITIVE PRICING, QUALITY EQUIPM. MANUFACT (SANS)(LEAD TIME DEL)80%  
 2. BBBEE CERTIFICATE & SCORECARD 20%  
 FOR MORE CLARITY PLEASE CONTACT: GCINIKHAYI OR NELISA AT (011) 773 6693 OR 071 875 9462

Item	Qty	Material	Description	R.....
00010	1		POWER SUPPLY UNIT (x10)	Each

Delivery Date: 01.11.2013

FULL DETAILS OF DESCRIPTION

DATE: ..... SIGNATURE OF TENDERER(S): .....

RFQ NUMBER: CRAC --JHB-10869

## SPECIFICATION (1)

SUPPLY UNIT WITH BATTERY CHARGING  
CAPABILITIES

"PREVIEW COPY ONLY"

CRAC-EFD-0891

SPECIFICATION

SPECIFICATION SWITCHED MODE POWER SUPPLY /  
CHARGER FOR FIXED  
UHF/VHF RADIO TRANSCIVER EQUIPMENT

REVISION 2.00

TRANSNET



**GENERAL SPECIFICATION FOR SWITCHED MODE  
POWER SUPPLY / CHARGER  
FIXED UHF/VHF RADIO TRANSCIVER  
EQUIPMENT**

"PREVIEW COPY ONLY"

NOVEMBER 2006

Revision 2.00

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Author : M Zulu

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## DOCUMENT AUTHORISATION

FUNCTION	NAME	TITLE & DIVISION	SIGNATURE	DATE
Compiled by :	M. Zulu	Transmission Engineering	M. Zulu	19/01/2007
Authorised by:	DF Botha	Group Executive, Technology	DF Botha	19/01/2007
Reviewed by :	T Dean	Head of Quality Assurance	T Dean	19/01/2007
Reviewed by :	M Nuttall	Divisional Manager Transmission	M Nuttall	19/01/2007

## I DISTRIBUTION

Once updated, a copy of the latest revision will be published in the document management system in use. E-mail to this effect will be sent to the relevant personnel or heads of department.

## II DOCUMENT CHANGE HISTORY

ISSUE NO.	DATE ISSUED	ISSUED BY	HISTORY DESCRIPTION
1.00	January 2001	Transmission Engineering	New document
2.00	November 2006	Transmission Engineering	Converted to ISO 900 Standard

## III CHANGES SINCE LAST REVISION

CLAUSES	DESCRIPTION
All clauses	Converted to ISO standard
	Additions/changes and upgrades to the existing specifications to allow the unit to be more universal

**IV ABBREVIATIONS, ACRONYMS AND DEFINITIONS**

ABBREVIATIONS AND ACRONYMS	DESCRIPTION
MTBF	Mean Time Between Failure
RMS	Root Means Square
UHF	Ultra High Frequency
VHF	Very High Frequency
ISO	International Standards Organization
PC Board	Printed Circuit Board
MV	millivolt
IBM	International Business Machines
AC	Alternating current
dBA	Decibel "A" Weighted
DOS	Disk Operating System

**V RELEVANT DOCUMENTATION**

DOCUMENT NO.	DESCRIPTION	LOCATION
ISO 9000	Quality Management Systems	External
BS 3939 Graphic symbols for Electrical Power	Telecommunications and Electronic Diagrams	External
SCAG-53	Number has changed to SPC-00140 Document Control	Document Control Centre

Doc. No. :

Author : M Zulu

1 to 11/19/2001 10:23:15 AM 10/1/2001 10:23:15 AM  
 UHF/VHF Radio Receiver Equipment (1 Jun 2001) doc

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**1. SCOPE**

- 1.1 This specification covers Transnet freight Ralls's requirements for the supply of power supply unit with battery charging capability for use with fixed VHF, UHF radio transceivers.

**2. COMPLIANCE**

2.1 Tenderers shall submit their main offers in terms of this specification. Deviations which are of a minor nature, and do not depart materially from this specification will be considered at the discretion of Transnet Freight Rail

2.2 Offers, which include deviations of a minor nature, not departing greatly from the specification, will be considered at the discretion of Transnet Freight Rail

2.3 Tenderers may offer alternatives for consideration. Alternative offers are to be reflected on a separate schedule and the following particulars are to be provided:

2.4 A fully detailed technical description in English explaining the functioning of the individual components, the operation of the items of equipment as well as the procedure to be followed in clearing faults and maintenance.

2.5 Drawings and brochures supporting the offer.

2.6 Details of deviations from the specifications of Transnet Freight Rail,

2.7 The value of imported and local components of complete items is to be stated separately.

**3. SERVICE CONDITIONS**

- 3.1 The equipment offered must be suitable for continuous operation under the following conditions :

Ambient temperature	: -10° to 60° Celsius.
Relative humidity	: As high as 95 %.
Altitude	: 0 to 2 000 metres.
Air pollution	: Heavily saline laden industrial and locomotive fumes containing metallic dust.
Relative humidity	As high as 95%.

- 3.2 Component parts, including wiring, must be manufactured and processed to ensure reliable operation under these conditions.

- 3.3 The equipment must be suitable for operation under the stated conditions without the use of blower fans, heaters or air-conditioners etc.

#### 4. MATERIAL SCHEDULES

##### 4.1 Schedule of Requirements

- 4.1.1 The Schedule of Requirements lists the major items of the equipment and work required for the development of the complete system(s) described in the main specification.
- 4.1.2 A quotation per item required, the tender value would be the sum of totals of every item.

##### 4.2 Alternative Schedules of requirements

- 4.2.1 Should the Tenderer offer alternatives, and they, separate quotations must be made and consecutively numbered.

##### 4.3 Schedule of Unit Prices

- 4.3.1 A price list must be provided of all modules, units, subassemblies and replacement parts that make up items listed in the Schedule of Requirements.
- 4.3.2 Each item in the Schedule of Requirements must be reducible to the units of the price list. The cost of an item in the Schedule of Requirements must not differ from the sum of its constituent parts.
- 4.3.3 Should any system reconfiguration be necessary, this price list must be used for establishing the value of the variation order.
- 4.3.4 Should any spares be require, these will be selected from this price list the manufacturers' mean time between failure (MTBF) must be stated.
- 4.3.5 The price list must also indicate country of origin, as it will serve as the basis for the calculation of escalation, rate of exchange differences and local preference (if applicable).
- 4.3.6 The Schedule of Unit Price should therefore have the following headings: "UNIT NO", "PART NO", "DESCRIPTION", "PRICE", "MTBF", "ORIGIN", "and DELIVERY PERIOD".

## 5. GENERAL DESIGN PARAMETERS

### 5.1 General Requirements

- 5.1.1 The power supply unit and charger and any other heavy mains driven equipment must be capable of satisfactory operation from a 220/250 volt, 50 hertz single-phase mains supply, with a possible voltage variation of +10% and a possible frequency variation of +2%.
- 5.1.2 The power supply and charger modules must be capable of continuous operation on full load under the specified climatic conditions without resort to cooling fans.
- 5.1.3 The power supply and charger modules must be of the switch mode rectifier type and adequately rated to cater for the output voltages and currents called for. Sealed or encapsulated control boards will not be accepted.
- 5.1.4 Under normal operation, the power supply module must supply continuous rated current to the load and the charger module must supply a specified float voltage and continuous float current to the batteries as specified in the Schedule of Requirements.

### 5.2 Power supply with Charger Units

- 5.2.1 Power supply with charger must be a 19" rack mountable. The enclosure dimensions must be as stipulated in the Schedule of Requirements.
- 5.2.2 The components employed in the manufacturing of the charger must be of a high grade, of sound construction and stable in value under all operating conditions.
- 5.2.3 The rectifier bridge must be of a full-wave silicon type incorporating special fusing and surge suppression facilities for the protection of the silicon diodes against short circuits and forward and reverse voltage transients. Details of the actual precautions taken in offered equipment must be included in the tender.
- 5.2.4 All terminals must be clearly and indelibly designated with the relevant voltages and polarities and must be of a form, which must prevent stranded conductor wires from spreading.
- 5.2.5 A readily accessible fuse shall be provided in the DC output circuit of the charger. It must, however, be possible to isolate the battery and the load individually by the removal of links.
- 5.2.6 The power supply unit and charger must be modular to enable expansion and operate in parallel to increase overall output power.

- 5.2.7 The power supply and charger modules must be marked with the ratings of input voltage, frequency, output voltage and output current as well as type number, serial number and name of manufacturer.
- 5.2.8 Adequate provision must be made in the design of the equipment to protect electronic components in the power equipment and in the load against voltage transients induced by switching or lightning surges conducted into the equipment by the power leads. Details of the protection offered must be included in the tender.

### 5.3 Output Ratings

- 5.3.1 The power supply unit and charger modules must be capable of supplying the full rated load (100%), but must be inherently current-limited to protect against overload from 100% of the nominal rated current up to a short circuit without disconnecting from the mains, blowing fuses.
- 5.3.2 The power supply unit and charger must not have a noise figure greater than 10 mV RMS and 100 mV peak-to-peaks.
- 5.3.3 The line regulation must not exceed 1% of output voltage setting, and the load regulation must not exceed 5% of output voltage settings.
- 5.3.4 The line regulation must not exceed 1% of output voltage setting, and the load regulation must not exceed 5% of output voltage settings.

### 5.4 Power Supply unit with Charger Operation after Mains Failure

- 5.4.1 In the event of the mains or power supply unit module failing and condition must be extended. The batteries must provide load current without any interruption [instant changeover].
- 5.4.2 On restoration of the incoming supply the power supply unit with charger must continue with normal operation as stipulated in subclause 5.1.4.



**5.5 Alarm Conditions**

5.5.1 An alarm circuit(s), incorporated within the charger, must give local and remote audible and/or visual indication of the following conditions with the tripping and resetting requirements as shown:

CONDITION			
Mains failure or charger switched	Yes	Self	Self
Fuse failure	Yes	Yes	Manual
Battery low non-urgent	Yes	No	Self
Battery low urgent	Yes	No	Self
Load shed	Yes	No	Self

5.5.2 Tripping implies that the AC supply Contractor must be opened and be kept open until the fault is cleared, either automatically or manually.

5.5.3 The tenderer shall state the minimum adjustment ranges and respective settings for the different alarms.

ALARM	MINIMUM	SETTINGS
	ADJUSTABLE RANGE	LEAD-ACID
Battery over Voltage		
Battery Low Non-Urgent		
Load Shed		
Battery Low Urgent		

5.5.4 For the purpose of remote indication this alarm circuit must be wired to sets of labelled terminals, the contacts used to supply the remote indication must be of the change-over type, with all three contacts wired to terminals and must be able to carry a current of 1 ampere. See subclause 5.1.1 alarms to be extended. A facility must be provided to silence the audible alarm locally without inhibiting the operation of the relay contacts.

5.5.5 Should the alarm circuit(s) fail, it must be possible for the power supply unit and charger modules to operate in full mode with the alarm circuit(s) removed.



- 5.5.6 The alarm circuit module should be equipped with standard communications interface, such as RS232 by which various alarm centralized monitoring system can be established. Further details of the protocol to be used may be specified in the Schedule of Requirements.

## 5.6 Indicators

- 5.6.1 Alarm and operational conditions as well as the state of any PC board mounted relay, must be indicated internally by means of high-brightness type light emitting diodes.
- 5.6.2 The following conditions must be indicated externally on the front panel of the power supply unit and charger by means of high-brightness type light emitting diodes or liquid crystal display (with back lighting):

- POWER SUPPLY UNIT SERVICE
- MODULE IN FLOAT
- MODULE IN BOOST
- MAINS FAILURE
- FUSE FAILURE
- BATTERY HIGH/LOW URGENT
- BATTERY LOW NON-URGENT
- LOAD SHED

## 5.7 Noise Limitations

5.7.1 The total maximum level of acoustic noise generated by the components of the charger, e.g. transformer hum, under any load conditions must not exceed 55 dBA measured at a distance of 1 metre from the side of the charger in any direction. This must be achieved in the design of the components and not by cabinet silencing.

5.7.2 Wide-band noise should not exceed 55 mV (3, 4 - 150 kHz) and 25 mV (150 kHz - 30 MHz).

5.7.3 The radiation of spurious frequencies in the radio operating band must not be greater -119, 0 dBm, measured at 1m from the PS & Charger.

5.7.4 Desensitisation of radio receiver (conductive). The PS & Charger must not desensitise any connected radio receiver with more than 1 dB, with a power lead of 1 m in length.

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## 5.8 Load Disconnect (Load shed)

- 5.8.1 The load is to be automatically disconnected (load shed), from the charger, when the battery voltage has dropped to 8% volts. On restoration of power to the charger, the load must be automatically re-connected.

## 6. OUTPUT VOLTAGE AND CURRENT

- 6.1 The nominal output voltage and current will be specified in the "Schedule of Requirements".
- 6.2 When charging, the float charger voltage for 12 volt batteries shall be 13, 5 volts to 13, 8 volts.
- 6.3 When charging the float charger voltage for 48 volts batteries shall be 54 volts to 55, 2 volts.
- 6.4 The line regulation shall be such as to maintain the charge voltage and current within the specified limits over line voltage variations of +10%.
- 6.5 The response of the charger module on application of full load shall during power supply module/mains failure be less than 10 milliseconds and shall be stated by the tenderer.
- 6.6 The efficiency of the PS & Charger shall be  $\approx 70\%$ .

## 7. COMPONENTS

- 7.1 Equipment must only use semiconductor devices as active elements.
- 7.2 The tenderer must state if any components are single-sourced, or custom made to a design not available elsewhere in South Africa.
- 7.3 Should any component or unit be programmable, a software listing of the programs must be provided. This listing must be available on a flexible diskette or another (stated) medium suitable for loading into a personal computer, operating on an IBM or compatible DOS system.

## 8. LAYOUT

- 8.1 The equipment layout shall be planned to facilitate fault clearance and maintenance.
- 8.2 Where adjustment is made by soldering, the tags must be accessible and clearly marked.

- 8.3 All the units must be clearly marked with their type and code numbers, which must be cross-referenced to the relevant circuit diagrams.
- 8.4 All units and printed circuit boards must be of the plug in type and the contacts must be cross-referenced to the relevant circuit diagrams.
- 8.5 Printed circuit board contacts must be of generous design to ensure reliability and long life.
- 8.6 The cabling of equipment must be executed with colour coded insulated wires, the colours being clearly marked on the relevant wiring diagrams. Ribbon cable may be used, but must be clearly labelled.
- 8.7 Locking mechanisms must be provided to ensure that plugged-in units are not dislodged in any circumstances.

## 9. EQUIPMENT FINISH

- 9.1 The equipment must have a glossy finish, which will not mark or scratch easily and will be durable. Tenderers must state the colour of the equipment offered in the tender and submit a sample if not already approved by Transnet Freight Rail.
- 9.2 Where rack sides are not fully equipped, blanking-off (dummy) panels must be fitted to all vacant positions.
- 9.3 Special attention shall be paid to the dust-proofing properties of the equipment; it will generally be used near railway stations in dust- and smoke-laden atmosphere.



## 11. ACCEPTANCE TESTS

- 11.1 Transnet Freight Rail will conduct acceptance tests on the equipment. The equipment will not be accepted until these tests have been completed and it has been confirmed that the equipment supplied is fully in accordance with the requirements of the specification and/or the stated claims of the tenderer as accepted by Transnet Freight rail
- 11.2 The tenderer shall agree to rectify any defects at no cost to Transnet where the equipment does not meet the tender requirements, and/or the stated claims of the supplier, as accepted by Transnet Freight Rail
- 11.3 The equipment will be examined in terms of clause 6 to determine its suitability for the use as far as quality and maintenance is concerned.
- 11.4 Maintenance and Service
- 11.4.1 The tenderer shall give full particulars of the maintenance, spare parts and service facilities, which will be available in the Republic of South Africa. The names and addresses of the persons concerned shall be furnished.
- 11.4.2 The tenderer shall list the major centres where maintenance facilities can be provided and shall state if repairs under guarantee can be undertaken at these centres.
- 11.4.3 Tenderers shall state what provision shall be made to ensure an adequate supply of locally available spare components for a period of 10 years after the order is placed.
- 11.4.4 Transnet Freight rail will not consider tenders from those tenderers who cannot provide an efficient spares and maintenance service. Tenderers shall state whether they are prepared to agree to an inspection of their maintenance premises by Transnet freight Rail's engineering personnel.

## 12. GUARANTEE

- 12.1 All equipment offered should be covered by a twelve (12) months guarantee, valid from the date that the equipment is accepted by Transnet.
- 12.2 Transnet will not consider tenders, which do not include a guarantee for the full 12 month period.

## Power supply unit dimensions

Height= 2U

Width= 485 mm

Length= 210 mm

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