

BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL
TRANSFORMER ENGINEERING DEPARTMENT

FORM NO: TRE-2003A

Sht 1 of 1 sheets

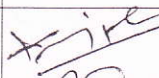

ANNEXURE TO INDENT-CUM-ENQUIRY - **240644264** DTD.:-
DESCRIPTION OF EQUIPMENT : **AUTOMATIC TRANSFORMER WINDING
RESISTANCE**
WORK ORDER NO. : 61089-A-512-01
CUSTOMER : M/S SINGRENI COLLIERIES CO. LTD.

SPECIFICATION OF AUTOMATIC TRANSFORMER WINDING RESISTANCE METER

The Microprocessor controlled fully Automatic Transformer Winding Resistance Meter shall conform to enclosed specification TRE 157. Additionally the following requirements regarding installation, commissioning & training shall also be applicable:

TRAINING, INSTALLATION & COMMISSIONING:

Installation & commissioning of the system is also in the scope of supply. The supplier shall provide training to customer's engineers at site on intimation by BHEL for commissioning, operation and maintenance of the equipment at each site, and shall obtain certificate from customer regarding impart of training. For this supplier should quote the charges, if any in the offer.

REV	DATE	ALT CKD	REV-	DATE	ALT- CKD-	REV 00	NAME	SIGN	DATE
						PREP	P. PRAJAPAT		01.08.14
						CKD	R.K.SINGH		01.08.14
DWI/TCB/TRE/010									

**PRODUCT PURCHASING SPECIFICATION
TRANSFORMER ENGINEERING DEPARTMENT
BHEL BHOPAL**

Specification No. **TRE 157**
Page 1 of 2 Pages
Rev. 02 Dt. : 09-01-2003

SPECIFICATION FOR TRANSFORMER DC WINDING RESISTANCE KIT
(PRECISION LOW RESISTANCE MEASURING SET)

1. GENERAL

The instrument shall be used for measuring D.C. winding resistance of Transformers/ reactors, where large induction is present.

2. TECHNICAL REQUIREMENTS

- 2.1 Test kit shall be able to withstand inductive kicks from transformer windings.
- 2.2 Variation in test current shall not result in loss of accuracy.
- 2.3 The display of resistance should be through LED/ LCD without requiring any balancing of decades to obtain suitable readings.
- 2.4 It should use four wire method and no lead compensation shall be required for measurement.
- 2.5 A minimum test current of 25 A D.C. should be used for winding resistance measurement to drive the magnetic core in the saturation and to eliminate any isolation of the magnetic field to obtain the steady readings.
- 2.6 The test kit shall be portable.
- 2.7 Built in discharge circuit shall be provided to discharge the specimen when test is completed, when current leads accidentally disconnects or when instrument power supply is lost.
- 2.8 Technical parameter –
- Resolution - 1 Milli Ohms
 - Range - 0 to 110 Ohms
 - Accuracy - $\pm 0.1\%$ of full scale reading or better.
 - Open circuit voltage - 30 Volts D.C. Min.

2.9 General requirements –

The instrument shall contain all standard accessories including test leads of 20 meters with suitable clamps/ connectors and carrying case.

REV	DATE	ALT Ckd & Appd	REV	DATE	ALT Ckd & Appd	REV 01	NAME	SIGN	DATE
			02	09.01.03	<i>[Signature]</i>	PREP	R.K SINGH	-sd-	21-10-00
			Updated:			Ckd & Appd	T.K GANGULI	-sd-	21-10-00

PRODUCT PURCHASING SPECIFICATION
TRANSFORMER ENGINEERING DEPARTMENT
BHEL BHOPAL

Specification No. **TRE 157**

Page 2 of 2 Pages

Rev. 02 Dt. : 09-01-2003

The instrument should have been proven for repeatability of test results in charged switchyard conditions. Documentary evidence shall be furnished alongwith the bid.

Input supply of the kit shall be 230 Volts AC, 50 Hz variation $\pm 15\%$ and $\pm 5\%$ in voltage and frequency. The kit shall be compatible for EMI / EMC environment.

- 2.10 A typical test certificate shall be furnished alongwith the offer indicating routine and type tests.
- 2.11 Two set of descriptive leaflets/ catalogues, outline drawings, principal of operation etc. shall be submitted alongwith offer.
- 2.12 List of accessories to be supplied with the instrument shall be furnished alongwith the offer.
- 2.13 Spare items and optional accessories, if any, shall also to be quoted separately.

3. **DEVIATION**

Any deviation from the above specification may be indicated point wise with proper justification.

4. **GUARANTEE**

The equipment shall be guaranteed for a period of 30 months from the date of dispatch or 24 months from the date of commissioning whichever is later. Free after sales service is to be provided by the supplier during guarantee period.

5. **INSPECTION & DESPATCH**

- 5.1 Four-sets of inspection, routine, acceptance and calibration test reports, operation and maintenance manual, descriptive catalogue/ leaflets shall be sent alongwith dispatch document. One set shall be supplied alongwith the equipment.
- 5.2 The supplier shall furnish a list of all fittings and components in the dispatch details giving description and quantity of each item (Quantity of each item shall be mentioned). All items shall be properly packed in wooden boxes so as to avoid scratches/damage in transit.