

ANNEXURE - I

BHARAT HEAVY ELECTRICAL LIMITED, JHANSI

Project	Testing Facility
Equipment	Oscilloscope Recorder
Location	Trfr. Testing
Quantity	One number
P.I. No.	636210620

SPECIFICATION FOR OSCILLOSCOPE RECORDER FOR RSO MEASUREMENT OF POWER TRANSFORMER WINDINGS

Note :

- VENDOR** must submit complete information against clause No-13.0 (Qualifying Condition). The offer meeting this clause would only be processed.
- The "Specified/to be confirmed by vender Offered" Coloumn and where applicable, the "Devitaions" Coloumn of the format shall be filled in by the Vendor and submitted along with the offer. Technical details also submitted with the offer,- Inadequate/ Incomplete, Ambiguos, of unsustainable information against any of the clauses of the specification / requirement shall be treated as non- compliance.
- The offer and all documents enclosed with offer should be in English language only.

SCOPE:

SUPPLY & COMMISSIONING OF OSCILLOSCOPE RECORDER FOR RSO MEASUREMENT AS PER SPECIFICATION BELOW

S.NO.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY VENDER	DEVIATIONS
1.0 PURPOSE OF THE EQUIPMENT :			
1.1	Oscilloscope Recorder is required for RSO Measurement of Power Transformer windings during RSO / Transfer Surge testing of power transformer with HAEFELY make Recurring Surge Generator (RSG).	VENDOR TO CONFIRM	
	Quantity : 1 No.		
1.2	Job to be tested : Power transformers	VENDOR TO CONFIRM	
2.0 RECORDER SPECIFICATION :			
2.1	Number of channels : 4 Analog channels (Isolated inputs) + 8 Logic channels	VENDOR TO CONFIRM	
2.2	Maximum sampling rate : 1 Mega Samples per second (1µs cycle, all channels simultaneously)	VENDOR TO CONFIRM	
2.3	Memory capacity : 1 Mega Words / ch	VENDOR TO CONFIRM	
2.4	External memory : CF card up to 2GB, USB memory	VENDOR TO CONFIRM	
2.5	Time accuracy : sampling time accuracy :±0.0005%, Clock precision :±3s/day	VENDOR TO CONFIRM	
2.6	Backup function : Clock and settings - 10 years or more	VENDOR TO CONFIRM	
2.7	External control : External trigger input, Trigger output, external start input, external stop input, status output ground pin	VENDOR TO CONFIRM	
2.8	PC Interface : USB 2.0 High Speed mini-B receptacle	VENDOR TO CONFIRM	
2.9	High-speed function (high speed recording) :		
2.9.1	Time axis : 100 µs to 100 ms/div, 10 range, resolution : 100 points/div	VENDOR TO CONFIRM	
2.9.2	Sampling period : 1/100 of time axis ranges (Minimum sampling period 1µs, all channels simultaneously)	VENDOR TO CONFIRM	
2.10	Real-time function (actual time recording) :		

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2.10.1	Recording interval : 100 μ s to 1 min, 19 settings	VENDOR TO CONFIRM	
2.10.2	Display time axis : 10 ms to 1 day/div, 22 ranges	VENDOR TO CONFIRM	
2.11	Trigger Function : Single/Repeat recording possibility	VENDOR TO CONFIRM	
2.11.1	Trigger source : 1) Analog input CH1 - CH4 2) Logic input LA1 - LA4, LB1 - LB4 (4 ch x 2 probes) 3) External trigger 4) Internal trigger : Fixed-time recording for specified measurement interval (month/day/hours/minutes/seconds)	VENDOR TO CONFIRM	
2.12	Analog Input :		
2.12.1	Measurement functions : 4-channel voltage measurement, switchable between instantaneous value (waveform) and RMS value	VENDOR TO CONFIRM	
2.12.2	Input Connectors : Isolated BNC connectors	VENDOR TO CONFIRM	
2.12.3	Maximum rated voltage to earth : 600 V AC/DC CAT III, 300 V AC/DC CAT IV	VENDOR TO CONFIRM	
2.12.4	Measurement range : 10 mV to 100 v/div, $\sqrt{3}$ ranges, full scale : 10 div, AC voltage that can be measured and displayed using high-speed function : 600 Vrms	VENDOR TO CONFIRM	
2.12.5	Low-pass Filter : 5 Hz / 50 Hz / 500 Hz / 5 kHz	VENDOR TO CONFIRM	
2.12.6	Highest Sampling rate : 1 MS/s (simultaneous sampling in 4 channels) Instantaneous value	VENDOR TO CONFIRM	
2.13	Measurement Accuracy : $\pm 0.5\%$ f.s.	VENDOR TO CONFIRM	
2.14	Screen Display : 5.7 inch VGA-TFT colour LCD (640 x 480 dot) items : waveform display; simultaneous display of waveform and gauge; simultaneous display of waveform, gauge and settings; simultaneous display of waveform and calculation results; simultaneous display of waveform and cursor values (A/B cursor values) are supported when using real-time functionality : waveform and comments, value display, simultaneous display of waveform and values.	VENDOR TO CONFIRM	
3.0	LOGIC PROBE :		
3.1	Input : 4 channels	VENDOR TO CONFIRM	
4.0	PRINTER : Detachable Thermal Printer with extra paper rolls and accessories.	VENDOR TO CONFIRM	
5.0	ACCESSORIES :		
5.1	All accessories necessary for complete operation of the equipment	VENDOR TO CONFIRM	
6.0	SPARES :		
6.1	All necessary spares for two years trouble-free operation	VENDOR TO CONFIRM	

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S.NO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY VENDOR	DEVIATIONS
7.0	DOCUMENTATION :		
7.1	Instruction manual	VENDOR TO CONFIRM	
7.2	Maintenance manual along with circuit diagrams and schematics	VENDOR TO CONFIRM	
7.3	Test and Guarantee Certificate	VENDOR TO CONFIRM	
7.4	Calibration certificate traceable to National / International standard	VENDOR TO CONFIRM	
7.5	List of customers where equipment had been supplied earlier and performance certificate of the same	VENDOR TO CONFIRM	
8.0	EQUIPMENT INSPECTION :		
8.1	Inspection at BHEL-Jhansi works before commissioning	VENDOR TO CONFIRM	
8.2	Demonstration of all features of the equipment and all other accessories	VENDOR TO CONFIRM	
9.0	TRAINING :		
9.1	BHEL testing engineer and maintenance person should be trained at BHEL works in the area of	VENDOR TO CONFIRM	
	(a) Use of all Features of the equipment, programming for Measuring System & supplied accessories etc.	VENDOR TO CONFIRM	
	(b) Electrical, Electronic & maintenance for equipment & other accessories supplied		
		VENDOR TO CONFIRM	
10.0	COMMISSIONING :	VENDOR TO CONFIRM	
10.1	Supplier to take full responsibility for carrying out the start up and commissioning	VENDOR TO CONFIRM	
10.2	Demonstration of all features of the Oscilloscope Recorder & all accessories to the satisfaction of BHEL for their operational use	VENDOR TO CONFIRM	
10.3	Demonstration by actual use of all supplied components and accessories to their full capacity	VENDOR TO CONFIRM	
10.4	Commissioning spares, required for commissioning of the equipment within stipulated time	VENDOR TO CONFIRM	
11.0	PACKING :		
11.1	Air worthy / sea worthy & rigid packing for all items of complete equipment, all accessories and other supplied items to be included for above type of packing	VENDOR TO CONFIRM	
		VENDOR TO CONFIRM	
12.0	GUARANTEE :	VENDOR TO CONFIRM	
12.1	24 Months from the date of acceptance of the complete equipment	VENDOR TO CONFIRM	
		VENDOR TO CONFIRM	
13.0	QUALIFYING CONDITION :		

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S.NO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY VENDOR	DEVIATIONS
13.1	Only those vendors, who have supplied more than one no. Oscilloscope Recorder in the past five years and such oscilloscopes are presently working satisfactorily for more than one year after commissioning, should quote . The following information is to be submitted by the Vendor about the companies where oscilloscope recorders had been supplied. This is required from all the vendors for qualification of their offer.	VENDOR TO CONFIRM	
	1 . Name of the customer / company where similar elevating platform is installed. (copy of purchase order to be furnished)	VENDOR TO SPECIFY	
	2 . Complete postal address of the customer.	VENDOR TO SPECIFY	
	3 . Year of supplying / commissioning.	VENDOR TO SPECIFY	
	4 . Name and designation of the contact person the costomer.	VENDOR TO SPECIFY	
	5 . Phone. FAX, no andE-mail address of the contact person of the customer.	VENDOR TO SPECIFY	
	6 . Performance certificate from the customer regarding satisfactory performance of oscilloscope recorder supplied to them	VENDOR TO SUBMIT	
14.0	BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false/ incorrect, the offer shall be rejected.		



S. N. MANDAL

Sr. MANAGER (Testing)