

दिनांक एवं हस्ताक्षर SIGN & DATE		उत्पाद मानक (हीप : हरिद्वार) PRODUCT STANDARD (HEEP: HARIDWAR)	TG60677																																																						
			पृष्ठ 5 का 1 Page 1 of 5																																																						
SUPERSEDES INVENTORY NO	Based on own experience																																																								
<u>ON LINE HARMONIC ANALYZER</u>																																																									
1.0 General This specification covers the requirement of On Line Harmonic Analyzer along with accessories for measurement and analysis of Harmonics in power supply. The Harmonic Analyzer shall be used in Thermal Power Plant at Generator output.																																																									
2.0 Compliance with Standard The document is prepared based on BHEL experience.																																																									
3.0 Scope: The system shall comprise the following:-																																																									
(a) Measurement & Analysis of Harmonics at Generator output. The power will be generated at voltage 21/√3 KV and current 24,000A. Measurement shall be done thru CT's & PT's (not in vendor's scope).																																																									
(b) The system with built in timer & calendar, shall Measure, Monitor, Analyze & Data Log values of Power Quality.																																																									
(c) The equipment shall have 4 voltage inputs (3Φ & Neutral) and 3 (3Φ) or 4 (3Φ +N) Current inputs. The system shall be able to measure other derived parameters like Active power, Reactive power, Power factor etc. besides Harmonics & Total Harmonic Distortion.																																																									
(d) Display of equipment shall be Graphic LCD/ LED with backlight.																																																									
(e) The equipment shall have self Diagnostic feature in case of equipment fails/ connection malfunction.																																																									
सार्वजनिक एवं गोपनीय इस दस्तावेज में दी गई सूचना भारत की सार्वजनिक संपत्ति है, इसका प्रयोग एवं प्रसारण अन्य से किसी भी प्रकार से बिना अनुमति के किया जाये,	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;"></td> <td style="width:15%;"></td> <td style="width:15%;"></td> <td style="width:15%;"></td> <td style="width:15%; text-align: center;">नाम NAME</td> <td style="width:20%; text-align: center;">दिनांक एवं हस्ताक्षर SIGNATURE & DATE</td> </tr> <tr> <td>TSX</td> <td>Sandeep Gupta</td> <td>08/11/19</td> <td>अनुवादक</td> <td>TRANSLATED BY</td> <td></td> </tr> <tr> <td>GRI</td> <td>Ram Sanyal</td> <td>19/10/19</td> <td>निर्माणकर्ता</td> <td>WORKED BY</td> <td>BRIJ LAL RAM</td> </tr> <tr> <td>QUALITY</td> <td>Chandra</td> <td>26/10/19</td> <td>जांचकर्ता</td> <td>CHECKED BY</td> <td>MAYURI KATIYAR</td> </tr> <tr> <td>सहमत विभाग AGREED DEPTT.</td> <td>नाम NAME</td> <td>दिनांक एवं हस्ताक्षर DATE & SIGNATURE</td> <td>पर्यवेक्षणकर्ता</td> <td>SUPERVISED BY</td> <td>RAJNISH GUPTA</td> </tr> <tr> <td colspan="3" style="text-align: center;"> SUPERSEDES </td> <td colspan="2"> स्वीकृति APPROVED : AGM (CIE) </td> <td style="text-align: center;"> दिनांक DATE: </td> </tr> <tr> <td colspan="3"> REV.NO. 02 </td> <td colspan="2"> निर्माण PREPARED : CIE </td> <td style="text-align: center;"> जारी ISSUED : TSX </td> </tr> <tr> <td colspan="3"> DI. 30.09.19 </td> <td colspan="2"></td> <td style="text-align: center;"> दिनांक DATE: </td> </tr> <tr> <td colspan="3"> CHANGE ADVICE NO. TGE-19-47 </td> <td colspan="2"></td> <td style="text-align: center;"> 03.06.08 </td> </tr> </table>							नाम NAME	दिनांक एवं हस्ताक्षर SIGNATURE & DATE	TSX	Sandeep Gupta	08/11/19	अनुवादक	TRANSLATED BY		GRI	Ram Sanyal	19/10/19	निर्माणकर्ता	WORKED BY	BRIJ LAL RAM	QUALITY	Chandra	26/10/19	जांचकर्ता	CHECKED BY	MAYURI KATIYAR	सहमत विभाग AGREED DEPTT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता	SUPERVISED BY	RAJNISH GUPTA	SUPERSEDES			स्वीकृति APPROVED : AGM (CIE)		दिनांक DATE:	REV.NO. 02			निर्माण PREPARED : CIE		जारी ISSUED : TSX	DI. 30.09.19					दिनांक DATE:	CHANGE ADVICE NO. TGE-19-47					03.06.08
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SUPERSEDES INVENTORY	(f) The equipment shall communicate to a PC via serial RS 232C/ USB interface. Other mode of recording is acceptable subject to approval. (g) Instrument can be programmed either directly or via PC. Compatibility with MS windows for the purpose of downloading recorded data is desirable. (h) The equipment shall have a CAT-III – 600V rating or better. (i) The equipment shall operate at 240V AC. <u>The equipment shall be supplied with current/ voltage leads and associated cables.</u> (j) Supply shall include <u>Application Software</u> for easy download of recorded data & Transient events.				
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.	4.0 Technical Specifications: (a) Environmental Operating Conditions: Operating Range: 32 - 122 ° F (0 - 50 ° C) Relative humidity: Max. 70% (non-condensing) Power Requirement: The equipment shall operate on 240V AC. Adapter shall be part of equipment, with provision of internal battery backup for 8-10 hours. (b) Sampling Rate: 1024 samples/ period. Other sample rates may can considered subject to Approval. Sampling Time: 2 sec. to 3000 sec. for data logging. Swell/Sag Detection Response: ½ cycle resolution (c) The equipment shall be provided with minimum 512K memory with programming intervals. (d) Voltage Measurement Range: Maximum Input Voltage 600V. Scaling: Programmable Display Range: 1- 24 KV (using input ratios) The voltage signals will be derived from PT's 21/ √3 KV/ 110/√3 KV. The PTs shall be of burden 60VA, (Accuracy 0.5/3P). <i>Suitable probes shall be part of the offer.</i> Accuracy: ± 1% ± 5 digits or better.				
स्वतंत्रता एवं गोपनीय इस दस्तावेज़ में दी गई जानकारी भारत भारती लिमिटेड की संपत्ति है और इसका उपयोग केवल भारत भारती लिमिटेड के लिए ही किया जाना है।					
निम्न एवं प्रमाणित SIGN & DATE					
मातृगी कुंजी संख्या INVENTORY NO.	REV. NO. 02		निर्माणकर्ता WORKED BY	BRIJ LAL RAM	Brij Lal 04/10/19
			जांचकर्ता CHECKED BY	MAYURI KATIYAR	Mayuri 04/10/19

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SUPERSEDES INVENTORY मासिक प्रती मन्त्र में अतिरिक्त प्रमाण है	(e) Current Measurement: Ranges of current probes: AC: 0.1 - 100 A Display Range: 1 kA – 24kA (using input ratios) The current signals shall be derived from CTs 24000/ 5A, Accuracy 0.2. <i>Suitable probes shall be part of the offer</i> Accuracy: $\pm 2\%$ of Range or better. (f) Harmonics Measurement: Range: 1 to 50th Harmonic Accuracy: $\pm 4\%$ rdg $\pm 2\%$ or better The analyzer shall be able to measure Harmonics in AC voltage/ current in %/ magnitude. Equipment shall display THD and individual harmonics through all signals on Equipment window. (g) Offline signal post processing capability: There shall be facility to retrieve Power Data & Harmonics on meter screen. (h) Power, Energy, Power Factor Display Range: 1 MW - 650 MW (using input ratios) Accuracy: $\pm 3\%$				
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स्वतंत्रता एवं गोपनीय इस दस्तावेज में की गई प्रमाण और तथ्यांक निम्नलिखित में से किसी एक द्वारा प्रमाणित किया जा रहा है कि इस दस्तावेज में कोई भी जानकारी या विवरण जो इस दस्तावेज में प्रमाणित किया गया है, वह सत्य और विश्वसनीय है।	5.0 Additional Features (optional): The Harmonic Analyzer shall preferably have a complete solution for the measurement and analysis of other aspects of power: ♦ High-speed ♦ Swell/ Dip/ Outage analysis ♦ Demand analysis ♦ Data logging				
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SUPERSEDES INVENTORY मूल्यी पूर्ण मानक की अतिरिक्त प्रतय है	8.0 Quality Plan: The complete Quality Plan (3 copies) giving details of Tests to be provided with offer. 9.0 Guarantee/ Warranty Each equipment shall be guaranteed for a minimum period of 18 months from date of supply. 10.0 Packing/ Despatch (a) The equipment shall be dispatched in such a way that no damage occurs during transit and storage. (b) The packing box/ boxes shall be properly identified and marked giving details of dimensions, net/ gross weight. (c) Five sets of detailed Operation and Maintenance (O&M) manual to be supplied along with item. 11.0 Cross Referred Documents : (a) IEC/EN 61010-1 (b) EMC: IEC/EN 61326-1 (c) EN 50160, EN61000-4-30 (d) IEC 61000-4-7				
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स्वसामग्रीकार एवं गोपनीय इस दस्तावेज में दी गई प्रतय सामग्री पूर्ण गोपनीयता के अधीन है। इसका प्रयोग केवल मूल्यी के द्वारा ही किया जा सकता है। इस दस्तावेज को किसी भी प्रकार के बिना अनुमति के प्रसारित नहीं किया जा सकता।					
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