







दिनांक एवं हस्ताक्षर SIGN & DATE		उत्पाद क्रय विनिर्देश				CG 78604																																																																			
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SUPERSEDES INVENTOR	सामग्री सूची संख्या की	<p>BASED ON BHEL EXPERIENCE</p>																																																																							
COPYRIGHT AND CONFIDENTIAL <small>The information on this documents is the property of Bharat Heavy Electrical Limited.It</small>		<p>PURCHASE SPECIFICATION</p> <p>FOR</p> <p>GENERATOR PROTECTION PANEL</p> <p>(NUMERICALLY CONTROLLED)</p>																																																																							
स्वामित्व अधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रत्यक्ष		<table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> <td>नाम NAME</td> <td>दिनांक एवं हस्ताक्षर SIGNATURE & DATE</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>अनुवादक</td> <td>TRANSLATED BY</td> <td></td> </tr> <tr> <td>QAX</td> <td></td> <td></td> <td>निर्माणकर्ता</td> <td>WORKED BY</td> <td>Manju Azad</td> </tr> <tr> <td>TSX</td> <td></td> <td></td> <td>जांचकर्ता</td> <td>CHECKED BY</td> <td>Vineet Jain</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>B.R.Dhingra</td> </tr> <tr> <td colspan="3"></td> <td colspan="3">स्वीकृति : APPROVED : A.K.Jain</td> </tr> <tr> <td>REV.NO. 01</td> <td></td> <td></td> <td>निर्माण : PREPARED :</td> <td>जारी : ISSUED :</td> <td>दिनांक : DATE :</td> </tr> <tr> <td>Dt.28.03.2008</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>										नाम NAME	दिनांक एवं हस्ताक्षर SIGNATURE & DATE										अनुवादक	TRANSLATED BY		QAX			निर्माणकर्ता	WORKED BY	Manju Azad	TSX			जांचकर्ता	CHECKED BY	Vineet Jain	सहमत विभाग AGREED DEPTT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता	SUPERVISED BY	B.R.Dhingra				स्वीकृति : APPROVED : A.K.Jain			REV.NO. 01			निर्माण : PREPARED :	जारी : ISSUED :	दिनांक : DATE :	Dt.28.03.2008																	
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सामग्री सूची संख्या को अधिकृत करता है	SUPERSEDES INVENTORY NO.	1.0 SCOPE OF SUPPLY			
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सामग्री सूची संख्या INVENTORY NO.	REV.NO. 01	निर्माणकर्ता WORKED BY	Manju Azad		
		जांचकर्ता CHECKED BY	Vineet Jain		


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सामग्री सूची संख्या को अधिकृत करता है SUPERSEDES INVENTOR Y NO.	<p>PURPOSE</p> <p>For the protection of Generators (rating 800/1000MW) during testing . The same protection panel shall be suitable for testing of 800 and 1000MW generators (one at a time). The numerical relay shall have settings for both the ratings of the generator and the same shall be selectable from front of the protection panel.</p> <p>2.0 CONSTRUCTION</p> <p>The generator protection equipment shall be of modular design and electronics unit shall supplied in a standard cubicle. The protection relay panels covered under these specification shall be of simplex type, with glass door on the front for viewing inside signal & tripping relays LED's, with its own base frame suitable for indoor mounting. The cubicle shall be provided with bottom plates to cover the cable slots and same shall be used as cable gland plates.</p> <p>The weight bearing members such as panel front, base frame shall be fabricated from 2.5 mm CRCA steel sheet and other cubicle components from 2 mm sheet steel. The cubicle has rear as well as front opening hinged type lockable doors and to prevent wrapping of panels, all heavy devices shall be adequately supported by means of brackets or straps.</p> <p>The cubicle shall be adequately ventilated, dust, moisture and vermin proof, conforming to the degree of protection not less than IP41, provided with anti vibration rubber pads/strips of shock absorbing materials, anti-condensation heaters, interior illumination arrangement by using compact fluorescent lamps and 5/15A plug socket- arrangement.</p> <p>A grounding Copper busbar of suitable size shall be provided along the bottom for connecting the same to common earthing system. Neoprene gaskets of suitable thickness shall be interposed between all metal joints. Door edges shall be lined with rubber seals.</p>				
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SUPERSEDES INVENTORY NO.	सामग्री सूची संख्या को अधिकारित करता है	<p>All measuring instruments, relays etc. conforming to relevant IS shall be so mounted that the removal or replacement can be accomplished individually without intercepting of service to adjacent equipment.</p> <p>The control wiring shall be with min1.5 sq. mm copper wire as per approved drawings and shall be neatly bunched and supported properly inside the panels. Individual identification labels for the panel mounted equipment on the front and back shall also be provided. For CT's secondary wiring shall be done with min 2.5sq. mm copper cable.</p> <p>The external paint shade of the protection panel shall be pebble grey shade no. RAL 7032 (semi Mat finish) and internally white enameled and pretreatment shall be as per our standard no. HW0674197.</p> <p>Vendor should specify the paint thickness for review by the purchaser.</p> <p>3.0 SCHEDULE OF EQUIPMENT</p> <p>The equipment mounted on Protection Panel shall be complete with Numerical protection relays, microprocessor based design/static auxiliary relays, timers, trip supervision relays, meters, switches, facia windows, metrosil surge diverters and interposing CT's/PT's and Transducers to meet the protection requirements as per the list of protections.</p> <p>All the numerical relays shall comply with IEC 61850 protocol.</p> <p>Minimum two nos. potential free contacts of each relay for trip and alarm shall be made available. For DCS 10 potential free contacts also shall be made available.</p> <p>The protection relays shall have the self diagnosis and supervision functions. Local control of the protection relay shall be provided by convenient menu based programme to enable settings to be carried out, the values of parameters to be viewed, messages and measured values to be read etc. The operator program shall run on a PC connected to the interface on the front of protection device.</p> <p>A digital multifunction meter shall be provided on the front side of the panel for measurement of voltage, current at each phase and frequency.</p>			
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सामग्री सूची संख्या INVENTORY NO.	REV.NO. 0154		निर्माणकर्ता WORKED BY	Manju Azad	
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सामग्री सूची संख्या को अधिकृत करता है SUPERSEDES INVENTORY NO.	<p>Full schematic for generator protection system incorporating the features mentioned below shall be supplied by the vendors.</p> <ul style="list-style-type: none"> ▪ Built in testing facility to enable the protection system to recognize any defective unit or program. ▪ Simple and user friendly assignment of parameter for protection functions, as well as inputs & outputs for each protection function. ▪ The inputs & outputs shall be freely selectable and programmable. ▪ All the measured and set parameters as well as signal and tripping commands shall be documented ▪ Communication facilities between protection and operator or higher order control system shall be provided. ▪ The protection system shall be capable of recording the events and disturbances that occurs during testing of Generators. ▪ The man machine communication (MMC) for setting and reading the relay shall be possible without knowledge of programming, by using menu driven program on PC. ▪ Trip Circuit Supervision ▪ VT supervision. <p>The system shall be complete in all respect and the supplier shall ensure its successful operation. The system engineering shall be the responsibility of the supplier and the purchaser shall furnish all the necessary information's available with him during detailed engineering.</p>				
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SUPERSEDES INVENTOR Y NO. सामग्री सूची संख्या को अधिकृतित करता है	<div> <div> 4.0 TESTS AND INSPECTION </div> <div> <p>The vendor shall submit the detailed manufacturing quality plan in quadruplicate for BHEL approval in BHEL Q.P. format, clearly indicating the tests to be conducted at their works along with reference standards and acceptance norms therein. The test certificates of all the equipments/instruments used in the system shall be submitted to BHEL along with acceptance test certificate at the time of inspection.</p> <p>The protection panel shall be fabricated based only on the approved drawings of the purchaser and shall be inspected before the dispatch at the vendor's works. The vendor shall intimate the purchaser about the readiness of the equipment for his inspection 30 days in advance. The vendor shall submit all the test certificates in triplicate for the panels and bought out items.</p> <p>Minimum following routine tests shall be carried out at the vendor's works on complete equipment in the presence of purchaser's representative.</p> <ul style="list-style-type: none"> a) Physical checkup of both front and internally mounted equipment b) Continuity checkup of panel wiring c) Meggering of the panel using 500V megger for insulation resistance before and after HV test d) AC and DC functional tests on relays at 80% and 120% of control voltage. e) High voltage test on the wiring with all the equipment in the circuit at 2.0KV, 50 Hz for 1 minute. f) Dimensional check as per approved drawing. </div> </div>				
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SUPERSEDES INVENTOR Y NO.	सामग्री सूची संख्या को अधिकृतित करता है	<p>5.0 DRAWINGS AND DOCUMENTS REQUIRED WITH OFFER</p> <p>While submitting the offer, the General arrangement, dimensional layout of installation and detailed technical specifications of the equipments along with the technical literature for the equipments offered, proposed single line diagram and support document indicating the past experience for the similar equipment, in triplicate shall be included.</p> <p>Quality plan duly filled in BHEL format (enclosed with this specification) shall also be submitted in triplicate.</p> <p>Details such as VA burden, knee point voltage, excitation current and secondary resistance of CT's for PS class shall be given along with the offer. VA burden and other specification of PT's shall also be indicated. The ratios and accuracy class of CT's and PT's are being given in this specification. Vendor may give their comments on the same, if they feel any change is required in these values.</p> <p>6.0 DRAWINGS AND DOCUMENTS REQUIRED AFTER ORDER</p> <p>Within 1 months after the receipt of the purchaser order, 6 copies of all related drawings/documents listed necessary for the approval of the purchaser shall furnished by the vendor.</p> <ul style="list-style-type: none"> General arrangement drawing showing the disposition of various equipment in protection panel Foundation and floor cutout details for protection panels. Device list listing various components along with their make, component number, type, model number, rating, quantity etc. included in the system along with technical specifications. Detailed Schematic Diagrams and Terminal details Complete wiring diagram of relay panel showing the interconnections between / various CT's, PT's and relays. 			
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			जांचकर्ता CHECKED BY	Vineet Jain																													

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