



## Bharat Heavy Electricals Limited

Enquiry No. :

Due Date :

Supplier's Ref.:

Date :

### Part A (Techno-Commercial Bid)

### Section IV

#### Specification cum Compliance Certificate for **LT Distribution Panel**

Note:-

1. The 'Offered' Column and where applicable, the 'Deviations' & 'Remarks' Column of this format shall be filled in by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous or unsustainable information against any of the clauses of the specifications / requirements shall be treated as non-compliance.

2. The offer and all documents enclosed with offer should be in English language only.

Name & Address of the supplier:

Telephone No.

Fax No.

e-mail :

Scope: Design, Fabrication, Supply, Erection, Testing and commissioning of Main electrical distribution panel complying with the following specifications

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
<b>1.0</b>	<b>Application and type</b>				
1.1	Application	Main electrical distribution panel			
1.2	Type	Indoor type motor control centre and associated control and accessory equipment mounted there in panel. Non-draw out and cubical type single front type made out of CRCA 1.6 and 2 mm sheet. SEIMENS gray powder coating paint with 7 tank process panel. Suitable for 415V $\pm 10\%$ , 50 Hz, 3 phase 4 wire system. Cable entry from bottom. Base channel of 100x40x6 mm painted black colour provided to prevent corrosion of steel of cubicles due to cleaning / mopping of floors			
<b>2.0</b>	<b>Technical specifications</b>				

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
2.1	Incomer comprising of	1000 A current capacity TP ACB SEIMENS make, service and test mode, digital ammeters with suitable resin cast type class of insulation "E". Burdon 10 VA, and selector switch, mains ON, ACB tripped, ready to close LED lamp for indication			
2.1.1	3 Pole MDO ACB with under voltage & earth fault relay (01 No) (SIEMENS/L&T/C&S make)	1000 A			
2.1.2	Digital Ammeter (01 No)	Range: 0-1000 Amp, Range such that the ammeter indicate 100% loading between one half and three quarters of full scale Resolution: 0.1Amps Accuracy: $\pm 1\%$ full scale $\pm 1$ digit No of digit: 04 Type: 7 segment LED display with 12 mm character height			
2.1.3	0-500 V Digital Voltmeter (01 No)	Range: 0-500 Volts Resolution: 1 Volt Accuracy: $\pm 1\%$ full scale $\pm 1$ digit No of digit: 04 Type: 7 segment LED display with 12 mm character height			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
2.1.4	Current Transformer (03 Nos)	1000/5 A Accuracy class for CT's class 1% and the saturation factor such that the instrument is not endangered at maximum fault current. CT ratio and ammeter scale such that the ammeter indicates 100% loading between one half and three quarters of full scale.			
2.1.5	Voltmeter selector switch (01 No)	Vendor to confirm			
2.1.6	Ammeter selector switch (01 No)	Vendor to confirm			
2.1.7	Indicating LED lamp (06 Nos)	Vendor to confirm			
<b>2.2</b>	<b>Outgoing Feeders comprising of</b>				
2.2.1	75 kVA (06 Nos)	Vendor to confirm			
2.2.2	20 kVA (03 Nos)	Vendor to confirm			
2.2.3	15 kVA (02 Nos)	Vendor to confirm			
2.2.4	10 kVA (01 Nos)	Vendor to confirm			
2.2.5	S/F unit with HRC fuses (06 Nos) (SIEMENS/L&T/C&S make)	160 A			
2.2.6	S/F unit with HRC fuses (05 Nos) (SIEMENS/L&T/C&S make)	63 A			
2.2.7	S/F unit with HRC fuses (01 Nos) (SIEMENS/L&T/C&S make)	32 A			
2.2.8	Indicating LED lamp (12 Nos)	Vendor to confirm			
2.2.9	Panels shall be fabricated of CRCA Sheet Steel. Applicable Standards for Panel IS:3427, IEC 298, BS 5277, VDE 0670 with upto date amendments.	Vendor to confirm			
2.2.10	Fabrication box with powder coating paint for main panel and O/P panel (01 no for each)	Vendor to confirm			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
2.2.11	Aluminium Bus bar (01 No)	Main Aluminium busbar 100x10x1 suitable for 1000 Amp current carrying capacity TPN with heat shrinkable sleeve to indicate various phase in busbar and the busbar of difference face housed in busbar chambers with suitable separators. Earthing busbar 50x5 mm Al strip through the length of panel along at rear side with 10 mm hole for grounding purposes. All metallic bus through suitable size of copper wire.			
<b>2.3</b>	<b>Capacitor control panel</b>				
<b>2.3.1</b>	<b>Incomer</b>				
2.3.1.1	Switch fuse unit with HRC fuses (01 No) (SIEMENS/L&T/C&S make)	400 Amp			
2.3.1.2	Indicating LED lamps (03 Nos)	Vendor to confirm			
2.3.1.3	Digital Voltmeter (01 No)	Range: 0-500 Volts Resolution: 1 Volt Accuracy: $\pm 1\%$ full scale $\pm 1$ digit No of digit: 04 Type: 7 segment LED display with 12 mm character height			
2.3.1.4	Digital Ammeter (01 No)	Range: 0-400 Amp, Range such that the ammeter indicate 100% loading between one half and three quarters of full scale Resolution: 0.1Amps Accuracy: $\pm 1\%$ full scale $\pm 1$ digit No of digit: 04 Type: 7 segment LED display with 12 mm character height			
2.3.1.5	Ammeter selector switch (01 No)	Vendor to confirm			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
2.3.1.6	Voltmeter selector switch (01 No)	Vendor to confirm			
2.3.1.7	Current Transformer (03 Nos)	400/5 Amp Accuracy class for CT's class 1% and the saturation factor such that the instrument is not endangered at maximum fault current. CT ratio and ammeter scale such that the ammeter indicates 100% loading between one half and three quarters of full scale.			
2.3.1.8	400A Aluminium Bus Bar with colour coded PVC Sleeves	Vendor to confirm			
<b>2.3.3</b>	<b>Outgoing Feeders comprising of</b>				
2.3.3.1	Total capacitor	150 kVAr			
2.3.3.2	06 Nos feeders	25 kVAr			
2.3.3.3	Each feeder with				
a	Switch fuse unit with HRC fuses (01 No) (SIEMENS/L&T/C&S make)	80 Amp			
b	Capacitor contactor (01 No)	For 25 kVAr capacitor			
c	Auto/Manual selector switch (01 No)	Vendor to confirm			
d	On/Off Push Button (02 Nos)	Vendor to confirm			
e	Indicating LED lamp (01 No)	Vendor to confirm			
f	Current Transformer (03 Nos)	100/5 Amp Accuracy class for CT's class 1% and the saturation factor such that the instrument is not endangered at maximum fault current. CT ratio and ammeter scale such that the ammeter indicates 100% loading between one half and three quarters of full scale.			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
g	Digital Ammeter (01 No)	Range: 0-100 Amp, Range such that the ammeter indicate 100% loading between one half and three quarters of full scale Resolution: 0.1Amps Accuracy: $\pm 1\%$ full scale $\pm 1$ digit No of digit: 04 Type: 7 segment LED display with 12 mm character height			
h	Ammeter selector switch (01 No)	Vendor to confirm			
i	Capacitor (01 Set)	25 kVAr			
2.3.4	<b>Automatic power fracture corrector unit (01 No)</b>	Vendor to confirm			
2.3.5	<b>Powder coated fabrication box alongwith Al busbar (01 No)</b>	Vendor to confirm			
2.4	<b>Feeders arrangement</b>				
2.4.1	Fully compartmentalized type, switchgear components for each load housed in one compartments Each feeder comprising of TPN SFU with HRC fuses Compartments door interlocked such that it shall not be possible to open the doors with switch in ON position	Vendor to confirm			
2.5	<b>Wiring</b>				
2.5.1	PVC insulated power conductor of adequate size to suit the rated circuit current, to carry out power wiring of the circuit. Control wiring PVC insulated standard wire size of 1.5 sq.mm copper	Vendor to confirm			
3.0	<b>Pre-dispatch inspection and acceptance</b>				
3.1	BHEL shall conduct pre-dispatch inspection of the panel and witness the tests at the works of the vendor. Dispatch clearance for the panel shall be given by BHEL after witness of all the tests and acceptance of the test results.	Vendor to confirm			
4.0	<b>Tests &amp; Inspection</b>				
4.1	During manufacture and on completion, the panel and major components shall be subject to Routine Tests at the manufacturer's works.	Vendor to agree			
4.2	The test certificates of the panel shall be furnished to BHEL for approval before dispatch. For accessories and other major components, copies of manufacturer's test reports will be submitted for approval.	Vendor to agree			
5.0	<b>Installation, Testing and Commissioning</b>				

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
5.1	The installation includes fixing and any other job required to be carried out for installation of the panel. The bidder shall arrange to conduct all the required pre-commissioning tests.	Vendor to agree			
5.2	Supplier to take full responsibility for carrying out the start up, testing of panel, it's control & all types of other supplied equipment, etc. Service requirement like power, air & water shall be provided by BHEL . Other requirements like helping personnel shall also be provided by BHEL. Details of these requirements should be informed by vendor in advance.	Vendor to agree			
5.3	Successful working of full capacity of the panel by the supplier shall be considered as part of commissioning.	Vendor to agree			
5.4	Tools, Tackles, instruments and other necessary equipments required to carry out all above activities should be brought by the supplier.	Vendor to agree			
5.5	Commissioning spares, required for commissioning of the panel within stipulated time, shall be brought by the supplier on returnable basis.	Vendor to agree			
5.6	Portion, if any, of the panel, accessories and other supplied items where paint has rubbed off or peeled during transit or erection should be repainted and merged with the original surrounding paint by the vendor.	Vendor to agree			
5.7	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to agree			
<b>6.0</b>	<b>Packing</b>				
6.1	Rigid packing for all items of complete panel with all Accessories and other supplied items to avoid any damage/loss in transit. When panel is despatched in containers, all small loose items shall be suitably packed in boxes.	Vendor to confirm			
<b>7.0</b>	<b>Guarantee</b>				
7.1	Guarantee for 24 months from the date of acceptance of the machine at BHEL works. During this Guarantee period at least 2 visits per year and/or whenever called by BHEL (within 24 hours of call) by the service engineer of the supplier to be made & the parts, items, spares etc. needing replacement to be replaced by the supplier free of cost. In support a Performance Bank Guarantee of 10% of Basic Value of P.O. valid for 24 months from the date of commissioning will have to be furnished by supplier	Vendor to confirm			
<b>8.0</b>	<b>Drawings and documents to be furnished by the tenderer</b>				
	Three sets of following documents (Hard copies) in English language should be supplied along with the machine. Only originals shall be supplied. Photocopies will not be accepted.				
<b>8.1</b>	<b>Along with the offer</b>				

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
8.1.1	Typical general arrangement drawing showing construction features, base dimensions and details and assemblies/sub-assemblies/parts including Electrical circuit diagrams.	Vendor to confirm			
8.1.2	Type test certificates of similar type panel, as tested.	Vendor to confirm			
8.1.3	Technical leaflets of all other major components and BOIs.	Vendor to confirm			
8.1.4	Complete Master List of parts used in the machine	Vendor to confirm			
<b>8.2</b>	<b>After placement of order</b>				
8..2.1	Complete dimensional assembly drawings showing plan, elevation, section views and weights	Vendor to confirm			
8..2.2	Plan showing exact location and details of the structural steel base, anchor points and terminations of power bus and control cables (location of terminal blocks)	Vendor to confirm			
8..2.3	Detailed control wiring drawings	Vendor to confirm			
8..2.4	Elementary or schematic diagrams	Vendor to confirm			
8..2.5	Installation, operation and maintenance manual.	Vendor to confirm			
<b>9.0</b>	<b>Spares</b>				
	Itemised breakup of (1) standard/essential mechanical, electrical and electronic accessories & spares (included in Basic machine cost), (2) Optional in sufficient quantity as per recommendation of Vendor for 5 years (After initial 24 month's Guarantee period) for trouble free operation should be offered by vendor. <b>(Unit Price of each item of spare should be offered in the price bid)</b>	Vendor to confirm			
<b>10.0</b>	<b>General</b>				
10.1	Model	Vendor to confirm			
10.2	Total weight	Vendor to confirm			
10.3	Detailed catalogues, sketch/photographs of the m/c and accessories/ attachments should be submitted with the offer.	Vendor to Submit			

**Signature & Seal of Tenderor**