



Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

An ISO 9001
Company

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY	Phone: +91 431 257 70 49 Fax : +91 431 252 07 19 Email : ramado@bheltry.co.in Web : www.bhel.com
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	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
	2620800092	01.10.2008	23.10.2008

You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order

Item	Description	Quantity	Delivery (Item required at BHEL on)
10	Medium Voltage Industrial Type Switch Board - 800 Amps as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	4 Sets.	28.02.2009
20	Medium Voltage Industrial Type Switch Board - 600 Amps as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	1 Set	28.02.2009
30	Medium Voltage Industrial Type Switch Board - 800 Amps with 10 Nos. Switches as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	2 Sets	28.02.2009

BHEL commercial terms & conditions with Price Bid and Bank Guarantee formats along with technical specifications can be downloaded from BHEL web site <http://www.bhel.com> or from the Government tender website <http://tenders.gov.in> (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference "2620800092".

Tenders should reach us before 14:00 hours on the due date Tenders will be opened at 14:30 hours on the due date Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present	Yours faithfully, For BHARAT HEAVY ELECTRICALS LIMITED Sr.Manager / MM / Capital Equipment
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Specification for Medium Voltage Industrial Type Switchboard		
Sl.No. 01	Description for BHEL Requirement	Specified/ To be confirmed by
	Design, manufacture and supply of Medium Voltage, floor mounting, free standing, indoor, Industrial type switchboard comprising of fuse switches, busbar chamber and conforming to the specification and features given below.	
1.0	Incomer Fuse Switch unit with fuses:	
1.1	Current rating at 415V, 50Hz	630A
1.2	Configuration	Three poles and neutral
1.3	Type of enclosure	Sheet steel
1.4	Fuses for 3 phases	630A
1.5	Quantity of Incomer fuse switch	1 no.
2.0	Outgoing Fuse switch Units with fuses:	
2.1	Configuration	Three poles and neutral
2.2	Current rating at 415V, 50Hz	400A
2.2.1	Type of enclosure	Sheet steel
2.2.2	Fuses for 3 phases	400A
2.3.3	Make of the Fuse switch	GE, L&T
2.2.3	Quantity of 400A fuse switch	1 nos.
2.3	Current rating at 415V, 50Hz	200A
2.3.1	Type of enclosure	Cast iron
2.3.2	Fuses for 3 phases	200A
2.3.3	Make of the Fuse switch	GE, L&T
2.3.4	Quantity of 200A fuse switch	4 nos.
2.4	Current rating at 415V, 50Hz	100A
2.4.1	Type of enclosure	Cast iron
2.4.2	Fuses for 3 phases	100A
2.4.3	Make of the Fuse switch	GE, L&T
2.4.4	Quantity of 100A fuse switch	1 nos.
3.0	Busbars:	
3.1	Current rating at 415V, 50Hz	800A
3.2	Configuration	Three poles and neutral
3.3	Material	Copper
3.4	Busbar chamber	CRCA sheet steel of min. 2 mm thickness.
4.0	Accessories:	
4.1	Voltmeter with selector switch	Analog type, a.c., 0-500V, 96mm square, accuracy class 1.0
4.2	Voltmeter and switch make	Voltmeter make: L&T/MECO Selector switch make: Kaycee/L&T
4.3	Indication lamp	3 lamps for the phases
4.4	Ammeter with selector switch, with CT 800/5 Amps	Analog type a.c. 0-800A, 96mm square, accuracy class 1.0
4.5	Ammeter and switch make	Ammeter type: Analog type Ammeter make: L&T/MECO make Selector switch make: Kaycee/ L&T
4.6	Kilowatt hour meter, 3 phase 4 wire system	Digital type

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Sl.No. 01	Description for BHEL Requirement	Specified/ To be confirmed by
4.7	Kilowatt hour meter make	L&T/Energon
5.0	Approx. overall dimensions of the Panel	Vendor to specify
6.0	Make of the Fuse switches- L&T/ Siemens/ GE make only	Vendor to specify
6.1	Technical leaflet of the fuse switch offered to be enclosed with the offer.	Vendor to confirm
7.0	General Features of the Fuse switches:	
7.1	The switches shall be totally enclosed and fully shrouded	
7.2	Provided with On/Off indication and two earthing terminals	
7.3	Quick make, quick break mechanism, independent of the speed of the operator.	
7.4	Double break isolation arrangement ensuring complete isolation of fuse units when unit is in off position	
7.5	All current carrying parts shall be hard silver plated	
7.6	Units to be provided with bolted type neutral links with facility to disconnect neutral easily.	
7.7	Interlock to ensure the lid cannot be opened until the switch is in off position and the possibility to defeat the interlock by a competent examiner.	
7.8	Provided with phase-phase, phase-earth barrier	
8.0	General Features of Switchboard:	
8.1	The panel shall be of Industrial type construction with enclosed busbar chamber in the middle and the fuse switch units mounted on the top and bottom of the busbar chamber.	
8.2	Busbars shall be made of high conductivity copper with 60mmx10mm or equivalent cross section.	
8.3	The neutral busbars shall have a continuous current rating of 50% of the phase busbars. All busbars shall be insulated, colour coded for easy identification of individual phases and neutral.	
8.4	The earth busbar of size 6 x 50mm G.I.Flat shall run through out the length of the switchboard and be terminated at the two ends.	
8.5	High tensile bolts and spring washers shall be provided on all busbars and connection joints.	
8.6	All sheet steel used in the panel shall undergo a rigorous metal treatment process involving alkaline degreasing, descaling in dilute sulphuric acid, phosphating and painting.	
8.7	The switches shall be provided with cable adapter boxes in sheet steel for termination of armoured aluminium cable suitable for the current rating of the switches.	

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Sl.No. 01	Description for BHEL Requirement	Specified/ To be confirmed by
8.8	Adequate number of busbar supports shall be provided to withstand short circuit current.	
8.9	The busbar chamber covers shall be fitted with dust proof neoprene gaskets.	
8.10	The switchboard shall be provided with 50x50x6mm size angle for main frame and 40x40x6mm angle for aux. frames for floor mounting.	
8.11	The connections from the busbars to the switches shall be through flexible insulated copper conductors of adequate cross section.	
8.12	The switchboard shall be painted with one coat of red oxide primer and two coats of enamel paint to match the colour of the switches.	
8.13	The construction of the panel shall generally conform to the Indian Electricity Rules and switches shall conform to the relevant IS 375/1963 (including danger sign board)	
9.0	Qualifying Conditions:	
9.1	Only those vendors who have supplied and commissioned same or higher capacity switchboard that is working satisfactorily for at least one year after commissioning should quote.	
9.2	Information about the companies where similar equipments have been supplied with copy of few purchase orders is to be submitted.	
10.0	Scope of Supply	Quantity
10.1	Industrial type switchboard of the configuration and specification as furnished above	4 nos.

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Specification for Medium Voltage Industrial Type Switchboard		
Sl.No. 02	Description for BHEL Requirement	Specified/ To be confirmed by
	Design, manufacture and supply of Medium Voltage, floor mounting, free standing, indoor, Industrial type switchboard comprising of fuse switches, busbar chamber and conforming to the specification and features given below.	
1.0	Incomer Fuse Switch unit with fuses:	
1.1	Current rating at 415V, 50Hz	400A
1.2	Configuration	Three poles and neutral
1.3	Type of enclosure	Sheet steel
1.4	Fuses for 3 phases	400A
1.5	Quantity of Incomer fuse switch	1 no.
2.0	Outgoing Fuse switch Units with fuses:	
2.1	Configuration	Three poles and neutral
2.2	Current rating at 415V, 50Hz	63A
2.2.1	Type of enclosure	Cast iron
2.2.2	Fuses for 3 phases	63A
2.2.3	Make of the Fuse switch	GE, L&T
2.2.4	Quantity of 63A fuse switch	4 nos.
2.3	Current rating at 415V, 50Hz	32A
2.3.1	Type of enclosure	Cast iron
2.3.2	Fuses for 3 phases	32A
2.3.3	Make of the Fuse switch	GE, L&T
2.3.4	Quantity of 32A fuse switch	2 nos.
3.0	Busbars:	
3.1	Current rating at 415V, 50Hz	600A
3.2	Configuration	Three poles and neutral
3.3	Material	Copper
3.4	Busbar chamber	CRCA sheet steel of min. 2 mm thickness.
4.0	Accessories:	
4.1	Voltmeter with selector switch	Analog type, a.c., 0-500V, 96mm square, Accuracy class 1.0
4.2	Voltmeter and switch make	Voltmeter make: L&T/MECO Selector switch make: Kaycee/L&T
4.3	Indication lamp	3 lamps for the phases
4.4	Ammeter with selector switch, with CT 200/5 Amps	Analog type a.c., 0-200A, 96mm square, accuracy class 1.0
4.5	Ammeter and switch make	Ammeter type: Analog type Make: L&T/MECO make Selector switch make: Kaycee/ L&T
4.6	Kilowatt hour meter, 3 phase 4 wire system	Digital type
4.7	Kilowatt hour meter make	L&T/Energion
5.0	Approx. overall dimensions of the Panel	Vendor to specify
6.0	Make of the Fuse switches- L&T/ Siemens/ GE make only	Vendor to specify
6.1	Technical leaflet of the fuse switch offered to be enclosed with the offer.	Vendor to confirm
7.0	General Features of the Fuse switches:	
7.1	The switches shall be totally enclosed and fully shrouded	
7.2	Provided with On/Off indication and two earthing terminals	
7.3	Quick make, quick break mechanism, independent of the speed of the operator.	

Sl.No. 02	Description for BHEL Requirement	Specified/ To be confirmed by
7.4	Double break isolation arrangement ensuring complete isolation of fuse units when unit is in off position	
7.5	All current carrying parts shall be hard silver plated	
7.6	Units to be provided with bolted type neutral links with facility to disconnect neutral easily.	
7.7	Interlock to ensure the lid cannot be opened until the switch is in off position and the possibility to defeat the interlock by a competent examiner.	
7.8	Provided with phase-phase, phase-earth barrier	
8.0	General Features of Switchboard:	
8.1	The panel shall be of Industrial type construction with enclosed busbar chamber in the middle and the fuse switch units mounted on the top and bottom of the busbar chamber.	
8.2	Busbars shall be made of high conductivity copper with 40mmx10mm or equivalent cross section.	
8.3	The neutral busbars shall have a continuous current rating of 50% of the phase busbars. All busbars shall be insulated, colour coded for easy identification of individual phases and neutral.	
8.4	The earth busbar of size 6 x 50mm G.I.Flat shall run through out the length of the switchboard and be terminated at the two ends.	
8.5	High tensile bolts and spring washers shall be provided on all busbars and connection joints.	
8.6	All sheet steel used in the panel shall undergo a rigorous metal treatment process involving alkaline degreasing, descaling in dilute sulphuric acid, phosphating and painting.	
8.7	The switches shall be provided with cable adapter boxes in sheet steel for termination of armoured aluminium cable suitable for the current rating of the switches.	
8.8	Adequate number of busbar supports shall be provided to withstand short circuit current.	
8.9	The busbar chamber covers shall be fitted with dust proof neoprene gaskets.	
8.10	The switchboard shall be provided with 50x50x6mm size angle for main frame and 40x40x6mm angle for aux. frames for floor mounting.	
8.11	The connections from the busbars to the switches shall be through flexible insulated copper conductors of adequate cross section.	
8.12	The switchboard shall be painted with one coat of red oxide primer and two coats of enamel paint to match the colour of the switches.	
8.13	The construction of the panel shall generally conform to the Indian Electricity Rules and switches shall conform to the relevant IS 375/1963 (including danger sign board)	
9.0	Qualifying Conditions:	



Sl.No. 02	Description for BHEL Requirement	Specified/ To be confirmed by
9.1	Only those vendors who have supplied and commissioned same or higher capacity switchboard that is working satisfactorily for at least one year after commissioning should quote.	
9.2	Information about the companies where similar equipments have been supplied with copy of few purchase orders is to be submitted.	
10.0	Scope of Supply	Quantity
10.1	Industrial type switchboard of the configuration and specification as furnished above	1 no.

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Specification for Medium Voltage Industrial Type Switchboard		
Sl.No 03	Description for BHEL Requirement	Specified/ To be confirmed by
	Design, manufacture and supply of Medium Voltage, floor mounting, free standing, indoor, Industrial type switchboard comprising of fuse switches, busbar chamber, adopter boxes and conforming to the specification and features given below.	
1.0	Incomer Fuse Switch unit with fuses:	
1.1	Current rating at 415V, 50Hz	630A
1.2	Configuration	Three poles and neutral
1.3	Type of enclosure	Sheet steel
1.4	Fuses for 3 phases	630A
1.5	Quantity of Incomer fuse switch	1 no.
2.0	Outgoing Fuse switch Units with fuses:	
2.1	Configuration	Three poles and neutral
2.2	Current rating at 415V, 50Hz	400A
2.2.1	Type of enclosure	Sheet steel
2.2.2	Fuses for 3 phases	400A
2.2.3	Quantity of 400A fuse switch	1 no.
2.3	Current rating at 415V, 50Hz	200A
2.3.1	Type of enclosure	Cast iron
2.3.2	Fuses for 3 phases	200A
2.3.3	Make of the Fuse switch	GE, L&T
2.3.4	Quantity of 200A fuse switch	3 nos.
2.4	Current rating at 415V, 50Hz	100A
2.4.1	Type of enclosure	Cast iron
2.4.2	Fuses for 3 phases	100A
2.4.3	Make of the Fuse switch	GE, L&T
2.4.4	Quantity of 100A fuse switch	3 nos.
2.5	Current rating at 415V, 50Hz	63A
2.5.1	Type of enclosure	Cast iron
2.5.2	Fuses for 3 phases	63A
2.5.3	Make of the Fuse switch	GE, L&T
2.5.4	Quantity of 100A fuse switch	3 nos.
3.0	Busbars:	
3.1	Current rating at 415V, 50Hz	800A
3.2	Configuration	Three poles and neutral
3.3	Material	Copper
3.4	Busbar chamber	CRCA sheet steel of min. 2 mm thickness.
4.0	Accessories:	
4.1	Voltmeter with selector switch	Analog type, AC, 0-500V, 96mm square, accuracy class 1.0 Voltmeter make: L&T/ MECO make Selector switch make: Kaycee/ L&T
4.2	Ammeter with selector switch, with CT 800/5 Amps	Ammeter type: Analog type Ammeter make: L&T/ MECO make Selector switch make: Kaycee/ L&T
4.3	Kilowatt hour meter, 3 phase 4 wire system	Digital type L&T/Energon make



Sl.No 03	Description for BHEL Requirement	Specified/ To be confirmed by
4.4	Voltmeter, ammeter, energy meter and switch make	Vendor to specify
4.5	Indication lamp	3 lamps for the phases
5.0	Approx. overall dimensions of the Panel	Vendor to specify
6.0	Make of the Fuse switches- L&T/ GE make only	Vendor to specify
6.1	Technical leaflet of the fuse switch offered to be enclosed with the offer.	Vendor to confirm
7.0	General Features of the Fuse switches:	
7.1	The switches shall be totally enclosed and fully shrouded	
7.2	Provided with On/Off indication and two earthing terminals	
7.3	Quick make, quick break mechanism, independent of the speed of the operator.	
7.4	Double break isolation arrangement ensuring complete isolation of fuse units when unit is in off position	
7.5	All current carrying parts shall be hard silver plated	
7.6	Units to be provided with bolted type neutral links with facility to disconnect neutral easily.	
7.7	Interlock to ensure the lid cannot be opened until the switch is in off position and the possibility to defeat the interlock by a competent examiner.	
7.8	Provided with phase-phase, phase-earth barrier	
8.0	General Features of Switchboard:	
8.1	The panel shall be of Industrial type construction with enclosed busbar chamber in the middle and the fuse switch units mounted on the top and bottom of the busbar chamber.	
8.2	Busbars shall be made of high conductivity aluminium alloy with 60mmx10mm or equivalent cross section.	
8.3	The neutral busbars shall have a continuous current rating of 50% of the phase busbars. All busbars shall be insulated, colour coded for easy identification of individual phases and neutral.	
8.4	The earth busbar of size 6 x 50mm G.I.Flat shall run through out the length of the switchboard and be terminated at the two ends.	
8.5	High tensile bolts and spring washers shall be provided on all busbars and connection joints.	
8.6	All sheet steel used in the panel shall undergo a rigorous metal treatment process involving alkaline degreasing, descaling in dilute sulphuric acid, phosphating and painting.	

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Sl.No 03	Description for BHEL Requirement	Specified/ To be confirmed by
8.7	The switches shall be provided with cable adopter boxes in sheet steel for termination of armoured aluminium cable suitable for the current rating of the switches.	
8.8	Adequate number of busbar supports shall be provided to withstand short circuit current.	
8.9	The busbar chamber covers shall be fitted with dust proof neoprene gaskets.	
8.10	The switchboard shall be provided with 50x50x6mm size angle for main frame and 40x40x6mm angle for aux. frames for floor mounting.	
8.11	The connections from the busbars to the switches shall be through flexible insulated copper conductors of adequate cross section.	
8.12	The switchboard shall be painted with one coat of red oxide primer and two coats of enamel paint to match the colour of the switches.	
8.13	The construction of the panel shall generally conform to the Indian Electricity Rules and switches shall conform to the relevant IS.	
8.14	The space between switches shall not be less than 150mm for easy and free operation of switch handles.	
8.15	The panel should be provided with 440volt danger boards.	
8.16	Outgoing, incoming and switch fuse unit rating engravings made of perfect sheet or equivalent material should be provided.	
8.17	All switches are to be provided with suitable adopter boxes.	
9.0	Qualifying Conditions:	
9.1	Only those vendors who have supplied and commissioned same or higher capacity switchboard that is working satisfactorily for at least one year after commissioning should quote.	
9.2	Information about the companies where similar equipments have been supplied with copy of few purchase orders is to be submitted.	
10.0	Scope of Supply	Quantity
10.1	Industrial type switchboard of the configuration and specification as furnished above	2 nos.

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