प्लाज़्मा अनुसंधान संस्थान
INSTITUTE FOR PLASMA RESEARCH
परमाणु ऊर्जा विभाग, भारत सरकार का एक सहायता प्राप्त संस्थान
An Aided Institute of Department of Atomic Energy, Government of India

इन्दिरा पुल के पास, भाट, गांधीनगर – 382 428 भारत
दूरभाष: (079) 2396 2020/2021/2028
फैक्स: 91-079-23962277
वेब: www.ipr.res.in

NEAR INDIRA BRIDGE, BHAT
DIST. GANDHINAGAR - 382 428 (INDIA)
Phone: (079) 2396 2020/2021/2028
Fax : 91-079-23962277
Web : www.ipr.res.in

ENQUIRY

ENQUIRY NO : IPR/EQL/19-20/003
Date : 04-04-2019

Due on : 02-05-2019 by 1:00 PM IST

Reminder-1 Dt: 26-04-2019

Please send your offer in sealed envelope specifying Enquiry No, Date & Due Date, ALONG WITH your credentials for the following items:

Important Note:

Please note that e-mail quotations are not acceptable however you may send your queries (if any) to localpurchase@ipr.res.in

Please ensure your sealed quotation reaches this office not later than above mentioned due date and time.

Kindly go through the following documents properly before quoting which are available on the IPR web portal i.e., http://www.ipr.res.in/documents/tender_terms.html / attached herewith.

1) Instructions to the bidders & Terms and conditions (refer Form No: **IPR-LP-01.V4**)
2) Bidding format

GST for Goods and Services (IGST/CGST/SGST TAX BENEFITS): Please refer **clause no: 8** of Form No: **IPR-LP-01.V4**

QUOTATION SHOULD BE ADDRESSED TO PURCHASE OFFICER ONLY

Sr No	Description	Quantity
1	Design, fabrication, inspection, testing & Supply of Low Voltage Distribution Board (3 Phase / 1 Phase MDB), with all accessories	1.0 No

2	Erection, Testing & commissioning of Low Voltage Distribution Board (3 Phase / 1 Phase MDB) at site.	1.0 Job

Note: Note : (1) Unsigned quotations are not acceptable. Quotation should be submitted duly signed on ALL PAGES invariably
(2) TDS as per CGST Act : As per provisions of section No. 51 of the CGST Act 2017, TDS @ 2% (IGST 2% or CGST 1% and SGST 1%) will be deducted while making payment to the suppliers where total value of orders/contracts/work orders exceeds Rs. 2.5 Lakhs, in the event of order in Indian Rupees

Encl: As Per Attachment

Sd/-

Mr. D. Ramesh
Purchase Officer-II

Information to Vendors: We are working towards a single platform for our future requirement. Hence, please refer IPR website i.e, http://www.ipr.res.in/documents/tenderseng.html for our future requirement.

PROJECT INFORMATION & AUXILIARY FACILITIES

1	Purchaser	Institute For Plasma Research, Village Bhat, Gandhinagar - 382 428, Gujarat, INDIA. Phone : (079)-23962000 Fax : (079)-23969017 Web: www.ipr.res.in
2	Site elevation (avg.)	55 meters above MSL
3	Ambient temperature	Max.(annual):47 °C; Min. (annual): 4 °C; Average (annual): 35 °C Design (max): 50°C, (min): 4°C
4	Relative humidity	Max. : 95%; Min. : 10%
5	Rainfall	823 mm average (annual) June-August
6	Wind data	Max. wind speed : 130 km/h Prevailing direction : SW to W Design wind pressure : 150 kgm^{-2}
7	Seismic data	0.08 g (as per latest guidelines)
8	Accessibility by road : by rail : by sea : by air :	 upto site (on Hansol-Gandhinagar H-way) Ahmedabad Rly. Stn. (12 km.) Bombay Harbour (525 km.) Ahmedabad Airport (6 km.)
9	Auxiliary power supply (each of the voltages can be made available at one point of connection to the sources)	AC 230 ± 10% V
10	Expected date of commissioning.	3 months after the date of approval of drawings

SPECIFICATION FOR LOW VOLTAGE DISTRIBUTION BOARD

1.1 SCOPE:

The scope covers design, fabrication, inspection and testing at contractor's/his sub-contractor's work, Supply, installation and commissioning at IPR site of ONE (1) number of low voltage distribution Board (3 phase / 1 phase MDB), with all accessories, as specified in this document.

1.2 CODES AND STANDARDS:

The design, materials, construction, manufacture, inspection, testing and performance of MDB shall comply with all currently applicable statutory regulation and safety codes in the locality where the equipment will be installed. The equipment shall also confirm to the latest applicable standards and codes of practice. Some of the reference standards are mentioned in this tender document.

1.3 DESIGN FEATURES:

a) The MDBs are required for distributing power to various system and utilities.
b) The MDB shall be suitable for use in rated voltage of 415V earthed electrical system having maximum system voltage of 415V+/-10%.
c) The design and construction of the panel shall be strong enough to take the load of breaker, bus bars, cables, relays instruments etc. and withstand rated maximum fault level and rigorous adverse weather conditions. Provision shall be made for expansion and contraction of enclosure due to temperature.
d) The breaker, bus bars, cables etc. shall be suitable for continuous operation under site conditions indicated elsewhere with conductor temperature of 105 °C maximum. Also the conductor temperature during short circuit shall not exceed 250 °C. Bus bars shall be suitable for short time overloads.
e) The MDB shall be 100% insulated, which means there shall be no access to any live part All joint shall be shrouded with special removable PVC blocks.
f) The hinged door shall be designed to withstand internal arcing and shall be interlocked in such a way that it cannot be opened with the breaker in closed position. Further all operations shall be possible with door closed.
g) Special insulating barrier shall be provided where bus bar passes from one panel to another to restrict arc from propagating, across the full length of the board in event of bus fault.
h) Wiring circuits fed from a supply common to a number of feeder panels shall be protected so that failure of a circuit in any one feeder does not prevent operation of other feeders.
i) Circuit of one feeder panel should be capable of isolation for maintenance purposes without affecting other circuits.
j) Doors, covers and all non-current carrying metallic parts shall be earthed through flexible copper wires. This should also include instrument casing and cable armour, which should also be connected to the earth bus.

1.4 CONSTRUCTIONAL FEATURES:

1.5 The Basic Cubicle:

a) The basic enclosure shall be fabricated from Cold rolled sheet steel material, of thickness not less than 2 mm in all sides. For all the load bearing application sheet steel thickness shall not be less than 2 mm. Doors and covers shall be made of cold rolled sheet steel of thickness not less than 1.6 mm. Stiffeners shall be provided wherever required. The panel frames shall be fabricated using cold rolled sheet steel of thickness not less than 2.5 mm.
b) The doors and removable covers shall be provided with neoprene gaskets to make the panel dust and vermin proof.
c) Any metal to metal joint anywhere inside the panel shall be gasketted to achieve zero gap. Between two panels special T type gasket shall be provided for zero gap and aesthetics.
d) The panel board shall be complete with all internal wiring, bus-bars, labels, accessories etc. as specified.
e) Labels shall be provided for all identifiable like breakers, relays, indicating lamps, control switches, selector switches and accessories etc.
f) The panel door shall be opened only by means of tools to prevent unauthorized opening.
g) Painting: Seven-tank process treatment shall be followed for treatment of the fabrication parts of the panel. Two coats of epoxy based primer shall be applied before applying two final coats of epoxy paint which shall have good weather resistance and heat transfer properties. Electrostatic epoxy powder coating shall be applied after pre-treatment. The colour of painting shall be RAL 7032.
h) The cubicle shall be stand mount type. The stand shall be of cage type and shall be fabricated from not less than ISA 35x35x5 mm. The stand shall be painted with anti-rust paint and final coat of black epoxy paint.
i) Proper fixing of the stand and panel shall be done by suitable anchor fastners/nuts/bolts.

1.6 The Breaker Compartment:

a) The MCB compartment shall be separate, which houses the MCB with Door operating mechanism.
b) MCBs shall be arranged in multi-tier form if design permits looking at its size and thermal properties for better optimization of overall size of enclosure and of available space.
c) A spacious cable chamber at the rear of the panel shall be provided. It shall be suitable for receiving number of cables of different size as mentioned in Cable schedule. The cable box shall be accessed through removable rear cover.
d) The cable box shall be design for cable entry from top or bottom as mentioned in BOM.
e) Sufficient distance between cable gland plate and terminal lug shall be provided for cable termination.
f) For cable entry, a removable 2 mm MS gland plate shall be provided.

g) Various Clearances shall be as per the standards and practices.
h) Control wiring shall be done using 650 V grade grey PVC stranded wire 1.5 sq.mm for control and 2.5 sq.mm for CT circuit.
i) As a standard practice, all control cables shall be neatly bunched together with ferrules at either end of each wire. As per application colour ferrules shall be provided.
j) The wire bunch shall be passed through PVC ducts.
k) For safety and reliability, cable bunch shall be routed through flexible metallic conduit wherever it passes through HV compartments like breaker, PT chamber etc.
l) Bus wiring shall be through grommets. Separate terminal stack shall be provided for inter-panel wiring.
m) All wiring practices shall be as per IS-375.

1.7 MINIATURE CIRCUIT BREAKER (MCB)

a) MCB shall fully conform to IS: 13032/IEC 60898
b) MCBs shall be designed for circuit protection of 415 V (3 phase + neutral) and 230 V (1 phase + neutral), three phase four wire AC distribution system. They shall be designed for use in panel boards as outgoing breakers and for protection of feeder circuits and connecting equipment.
c) The contact indication of MCB shall be Red-ON and Green-OFF.
d) The MCB shall be of C type tripping curve.

1.8 INDUSTRIAL PLUGS & SOCKETS:

a) The Industrial Plugs and socket shall fully conform to IS: 13032/IEC 60309
b) The Industrial plugs and socket shall confirm to IP 44
c) The Industrial panel socket shall be flush mount type, High grade thermoplastic material, 16A, 3 Pin socket, suitable for 230V 1 phase AC supply.
d) Each Plug shall be supplied with the compatible industrial plug of the same rating.

1.9 INDICATION:

a) A set of indicating lamps of reputed make like Siemens or Teknic showing Voltage status (R, Y, B) shall be provided for MCB Incomer.
b) Protective fuses/MCBs of 4 A rating associated with all indicating lamps shall be provided.

1.10 EARTHING:

a) The earth bus shall be robust and capable of carrying full short circuit current for 1 sec.
b) Doors, covers and all non-current carrying metallic parts shall be earthed through flexible copper wires. This should also include instrument casing and cable armour, which should also be connected to the earth bus.

c) The earth bus shall have provisions for terminals at each end for connecting to grid earthing.

1.11 BILL OF MATERIAL

Distribution Board	Configuration	Incomer			Outgoing		
		Device	Rating	Protection & Indication	Device rating	Device rating	Qty
MDB, 1 Nos.	(Horizontal/Vertical tier arrangement) Stand Mount, Top & Bottom Cable Entry	MCB+ ELCB	TPN, 40A, 10kA	ELCB, 100 mA, R, Y, B Indication	R Phase	16A SP MCB,10 kA with 16 A Single phase Industrial Socket & Plug	4
					Y Phase	16A SP MCB,10 kA with 16 A Single phase Industrial Socket & Plug	4
					B Phase	16A SP MCB,10 kA with 16 A Single phase Industrial Socket & Plug	4
					3 Phase Plug-Socket	16A TPN MCB,10 kA with 16 A 3-Phase Industrial Socket & Plug	1

1.12 DRAWING:

Detailed Power and Control circuit drawing along with fabrication drawings showing breaker arrangement and the overall size of bus bars, enclosure, fixing details, support, joints, etc. shall be submitted by the successful bidder for approval of purchaser. The bidder shall incorporate purchaser's comments/modification suggested. Actual fabrication of the Panels shall be carried out only after the approval of the purchaser.

1.13 UNLOADING AND STORAGE:

VENDOR has to take the complete responsibility of the unloading of the MDBs at proper location at the site. The accessories shall be unloaded and store at vendor's responsibility at the site. Vendor will be fully responsible for timely unloading of equipment and accessories. IPR will not bear any expenses for the delay in unloading the equipment in the scope of this specification.

TECHNICAL SPECIFICATIONS FOR L.T. CIRCUIT BREAKER PANELS

Sr. No.	Parameters	Data
1	**General :**	
	Type of L. T. Panel	MCCB/MCB Panel
	Application	For Distribution
	Installation	Indoor
	Type of panel mounting	Stand mounted
	Ambient temperature	as per Proj. Inf – I
2	**System Data :**	
	Rated Voltage	230 V / 415 V
	Rated Frequency	50 Hz
	No. of Phases	3 ph, 4 wire
	Fault Level	As per BOM
	Grounding	Effective
3	**Ratings :**	**MCB**
	Rated normal current	as per BOM
	No. of Poles	3 P + N
	Rated Voltage	415 V
	Rated Frequency	50 Hz
	Rated insulation voltage	690 V
	Type of Mounting	Fixed
	Releases	Thermal
	Method of operation	Local
	Industrial Plug & Socket	Flush mount type panel socket, 16A, IP 44, High grade thermoplastic material
4	**Accessories :**	
	Visual indicating lamp	R, Y, B phase indication -230V 1ph AC
	Door lock	1) with contacts required
5	**Enclosure :**	Cubical pattern, stand mount type, sheet steel, dust and vermin proof suitable for indoor installation with IP-52 degree of protection.
6	**Clearances :**	Various electrical clearances like phase to phase & phase to earth on poles, busbars, cable & busduct terminating boxes etc. shall be in accordance with applicable standards and Indian Electricity Rules.

INSPECTION/TESTING

The vendor shall arrange all the testing facilities for below mentioned factory acceptance tests and inspection in presence of purchaser's representatives, at factory on his own cost.

The factory acceptance test certificates shall be furnished to the purchaser for prior approval before dispatch of any equipment from the works and the approval in writing from the purchaser to affect the dispatch of the equipment.

The test reports shall be submitted completed with identification data including serial number of equipment.

Test shall be performed in presence of purchaser's representative, if so desired by the purchaser.

The successful bidder should give at least two weeks advance notice of the date when the tests are to be carried out.

Following Factory Acceptance Tests shall be carried out at on the complete panel at factory:

- Physical inspection of MDBs.
- Verification of BOM
- High Voltage Test at 2500 V for one minute.
- Insulation Resistance Test at 1000 V Megger.
- Phase Sequence Test.
- Continuity Test.

REFERENCE STANDARDS:

Sr. No.	Description	Standard No.
1.	L.T. Panels	IS – 8623
2.	MCB boards	IS - 13032
3.	MCCB	IS - 13947 part 2
4.	Current Transformer	IS - 2705
5.	Potential Transformer	IS - 3156
6.	Distribution Board	IS - 13032 / 8623
9.	Bus bars and bus bars connection	IS - 159
10.	Bus bar supporting insulators	IS - 2544

INSTALLATION AND COMMISSIONING

The vendor shall be responsible for the site mobilization to install and commissioning of the MDBs.

Fixing the panel at the desired location in the IPR is in the scope of the Vendor. This includes grouting, fixing bolts; foundation bolts etc. along with supply of required hardware for fixing of distribution boards. The Vendor shall take the approval of the Engineer-in-charge before the commencement of the work.

All the installation tools and commissioning spares are to be provided by Vendor. This includes crane of suitable capacity, trailer, megger (1 kV) and any other instruments or tools required during the erection and commissioning.

The installation work should be carried out immediately after receipt of intimation from IPR in that regard.

During commissioning the successful Vendor has to perform all the required operational tests mentioned in the scope.

Following acceptance tests should be carried out at site:

- Physical inspection of LV Distribution Boards.
- Insulation Resistance Test at 1000 V / 500 V Megger.
- Phase Sequence Test.
- Continuity Test.
- Interlocks and Operation test

1. DRAWINGS, OPERATION/INSTRUCTION MANUALS :

1. Drawing shall be submitted to IPR for approval after placement of the purchase order before commencing the manufacture and construction. The drawing and data to be submitted after Purchase Order should include the following:
   a) Assembly drawing of the switchgear showing plan, elevation and typical sectional views and locations of breaker compartment, cable terminations, busbar chamber, metering and relay compartment and terminal blocks for external wiring connections. Marshalling panel GA drawing showing the layout of the terminal block and cabling etc.
   b) Schematic diagrams for control and protection of circuit breakers.
   c) Foundation plan showing location of foundation channels, anchor bolts and anchors, floor plans and openings for cables/bus ducts etc.
   Foundation plan showing location of foundation channels, anchor bolts and anchors, floor plans etc.
2. Along with the delivery of MDBs the Vendor shall supply operation/instruction manuals/catalogs for all the equipment, drawings of accessories and circuit diagram.
3. Three sets of final drawings shall be provided along with the delivery of the Panels.
4. Reproducible for all drawings shall be supplied.

Price Bid Format:

(Bidders are requested to offer their price bids in the following format)

Sr. No.	Description	Qty units	Basic Rate (In □)	Packing and Forwarding (P&F)	Applicable GST	Rate (Incl. P&F and GST)	Total Amount (In □)
		(a)	(b)	(c)	(d)	e= b+c+d	F= a x e
1.	Design, fabrication, inspection, testing & Supply of Low Voltage Distribution Board (3 Phase / 1 Phase MDB), with all accessories	1 Nos					
3.	Erection, Testing & commissioning of Low Voltage Distribution Board (3 Phase / 1 Phase MDB) at site.	01 Job		NA			

TECHNICAL Compliance sheet must be filled by vendor

Sr. No.	Parameters	Data	Vendor Compliance(Fill values wherever necessary)
1	**General :**		
	Type of L. T. Panel	MCCB/MCB Panel	
	Application	For Distribution	
	Installation	Indoor	
	Type of panel mounting	Stand mounted	
	Ambient temperature	as per Proj. Inf – I	
2	**System Data :**		
	Rated Voltage	230 V / 415 V	
	Rated Frequency	50 Hz	
	No. of Phases	3 ph, 4 wire	
	Fault Level	As per BOM	
	Grounding	Effective	
3	**Ratings :**	**MCB**	
	Rated normal current	as per BOM	
	No. of Poles	3 P + N	
	Rated Voltage	415 V	
	Rated Frequency	50 Hz	
	Rated insulation voltage	690 V	
	Type of Mounting	Fixed	
	Releases	Thermal	
	Method of operation	Local	
	Industrial Plug & Socket	Flush mount type panel socket, 16A, IP 44, High grade thermoplastic material	
4	**Accessories :**		
	Visual indicating lamp	R, Y, B phase indication - 230V 1ph AC	
	Door lock	1) with contacts required	
5	**Enclosure :**	Cubical pattern, stand mount type, sheet steel, dust and vermin proof suitable for indoor installation with IP-52 degree of protection.	

6	**Clearances :**	Various electrical clearances like phase to phase & phase to earth on poles, busbars, cable & busduct terminating boxes etc. shall be in accordance with applicable standards and Indian Electricity Rules.	