|  |  |
| --- | --- |
| **Title** | **Supply of Industrial Enclosure for 35kV Body Power Supply Assembly** |
| **Sub Title** | **Part-A: Scope of Supply and Technical Specifications** |



Tender Document for FABRICATION OF Industrial ENCLOSURE for 35kV BODY POWER SUPPLY Assembly



ITER-India, IPR

Gandhinagar, Gujarat

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## Scope of Work & Supply

The scope of work under this tender cover following points:

1. Preparation & Submission of GA drawings as per requirement describes in Annexure A, industrial enclosure of having dimensions of 800mm wide, ~1400mm depth & 2200mm height.
2. Preparation & Submission of LV Control Circuit schematics, GA, SLDs, cabling diagrams etc., for ITER-India’s approval prior to manufacturing.
3. Getting the approvals of all the drawings with incorporation of review comments if any.
4. Procurement of bought-out items(Industrial Enclosure/Panel, MCCBs, Acrylic Sheets, Exhaust Fans, Lamps etc.,) & coordination of the inspection of major bought-out items with ITER-India & implementing the corrections/suggestion if any observed by ITER-India. Prior approval from ITER-India has to be taken before placing the order of bought-out items.
5. Manufacturing/Fabrication of Industrial enclosure as per approved drawings with recommended items/equipment as per recommended makes.
6. Inspections while fabrication & assembly and prior to dispatch.
7. Assembly of the entire industrial enclosure with LV networks as the per technical specifications with revisions if any needed.
8. Safe & Sound packing of the entire industrial enclosure & Deliver the Industrial enclosure to ITER-India Site, after completing all the LV works along with delivery docs & as-built drawings.
9. Unpacking & Functional testing as per the responsibility matrix, after delivery of all the items under this tender along with one set of documentation including As-Built drawings.
10. And then mounting, integrating/assembly of components provided by ITER-India as per the approved drawings.
11. All the necessary accessories like cable glands, cable bunching accessories, cable ties, tagging tools, cable tags, ferrules etc., are under the scope of supply and should be of brand-new items and of reputed makes are to be used.

## Technical Specifications

* 1. Mechanical Work

1. The industrial enclosure should be of metal clad enclosed and to be fabricated out of high-quality frames and doors of CRCA sheet with thickness not less than 2.5mm or more as per IS-513, free-standing compartmentalized, modular type and shall be dust and vermin proof on caster wheels with stoppers suitable for indoor installation.
2. The structural strength of the industrial enclosure shall be such as to withstand its ultimate mechanical load (including all the individual units mounted in it) without any deformity.
3. The base of industrial enclosure should ensure proper loading on castor wheels and they (castor wheels) should be selected to withstand the whole load (~500kg) of the industrial enclosure without any failure, and those shall be of heavy duty (with non-metallic wheel material) and should have brakes to arrest the movement. The necessary arrangement for fixing the unit on the floor shall also be provided.
4. The Industrial enclosure should be fully modular & user should be able to adjust shelves level throughout the industrial enclosure with all doors on all sides as shown in drawings. The industrial enclosure should enclose the 19” rack mount enclosures easily. Each Shelve should take load about ~50kg.
5. **Doors:** All the doors shall be equipped with durable 4-Point lock system. All the doors must have locks with keys (either distinctive or same for all doors) no other type (square, triangular, socket type etc., are not allowed) of industrial enclosure locks/keys are allowed. All the doors shall be provided with a **PU Foam Gasket** to make the industrial enclosure’s compartments dust & vermin proof. All the doors are to be of hinged type.
6. Lifting facilities shall be provided by removable eyebolt, located at the top of the Industrial enclosure.
7. All the sharp edges of the Industrial enclosure should be rounded/ chamfered off. All types of screws, nuts, bolts and washers used in the assembly must be of zinc passivated type.
8. The Industrial enclosure and associated parts should be painted by surface coating comprising pre-treatment, Electrostatic Powder Spraying & curing.
9. The surfaces to be coated shall be chemically de-rusted & degreased, Zinc Phosphatized & then Passivated after proper drying subjected to spraying of powder. (All sheet metals shall undergo 7 tank pre-treatment procedures strictly and the vendor shall submit the test certificate for the same). The Industrial enclosure shall be coated using Siemens Grey shade (RAL 7032) with a coarse texture.
10. The top of the Industrial enclosure shall be fully covered except for lifting eye bolts & tower lamp (modular) as depicted in the Annexure A.
11. Suitable MS channels shall be placed under the MS sheet to support the weight of components in various shelves.
12. Gland plates must be provided as per the drawing provided in Annexure A along with the relevant gland blanks.
13. Suitable capsule holes shall be placed to hold the components on the various acrylic support plates as depicted in the drawings in Annexure A.
14. The industrial enclosure must have the lamp rails on front & rear ends & also must have the limit switches for all the doors.
15. **Ventilation:** All the sides should have suitable ventilating arrangements. Each air flow vent shall be covered by a grill & dust filters to prevent the entry of foreign material larger than 2mm. Number of exhaust fans are specified in the drawing.
16. Suitable support bars or mounting arrangement should be provided for installing the exhaust fans (included in the scope of supply) on the right, left, rear and top sides of the Industrial enclosure as depicted in *Annexure-E*. The opening of the exhaust fans shall be covered by grills of suitable sizes to avoid the entry of foreign particles. Refer *Table 5* for technical specification of exhaust fans.
17. The supplier shall ensure good workmanship in both while manufacturing/fabrication process & delivering the unit to ITER-India.
18. Tray Dimensions & Schedule of Quantity are as per below mentioned table. The unit shall have punched section frame with which we can mount the trays easily.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.No | Tray Name | Material | Qty | Dimensions (WxDxT) in mm |
|  | Tray#1 – Resistors Tray1 | Acrylic | 1 | 1248x750x20 |
|  | Tray#2 – Resistors Tray2 | Acrylic | 1 | 1248x750x20 |
|  | Tray#3 – HVPS Tray | MS | 1 | 800x750x3 |
|  | Tray#4 – SCU Tray | MS | 1 | 800x750x2 |
|  | Tray#5 – Switch Interface Board | MS | 1 | 800x750x2 |
|  | Tray#6 – Auxiliary Power Supplies | Acrylic | 1 | 1000x750x15 |
|  | Tray#7 – Pump & Radiators | Acrylic | 2 | 850x160x10 |
|  | Tray#8 – HV Switch Tray | Acrylic | 1 | 600x750x25 |
|  | Tray#9 – HV Components Tray | Acrylic | 1 | 1248x750x30 |

Table 1 Schedule of Trays under the scope of supply

* 1. Electrical Work

1. An input & control circuit (and associated components) shall be placed on any side of the industrial enclosure on a steel sheet/ Electrical service plates with all components neatly mounted on MCB Channels, cabling/wiring within perforated cable trays with screw type terminal blocks at the end neatly. HV cables & LV cables are to be routed with different cable channels.
2. **Service plates(Electrical & Electronics)**: A neatly wiring service plate must enclose all the control & power wiring of the entire unit excluding high voltage part. It should be easily accessible for inspection, maintenance, troubleshooting & repair. Similarly, provision for mounting electronic components should be made with another service plate made with suitable DIN rails & PVC Channels. A clear acrylic sheet of 5mm/3mm must mounted with hinges over the service plates to avoid direct physical contact.
3. All the LV wires/cables employed shall be of annealed-copper, flexible, PVC-FRLS conforming IS 694 and cable termination shall be properly terminated appropriate sizes of lugs & ferrule tags respectively.
4. Single core silicone HV cables of rating 60kV will be provided by ITER-India at ITER-India Site. Respective lugs, HV sleeves, nuts, bolts etc as required are under the scope of supplier.
5. There should be a perforated PVC Channels with cover horizontally placed inside the industrial enclosure at required places (from top to bottom on both sides). And also perforated PVC cable duct or cable tray of appropriate size running from the supply to NO’s and/or NC’s to tower lamps. An MS bar shall be kept for supporting the PVC channels.
6. HVPS contactor should be turn-on only when all the doors are closed & red indication of tower lamp should be illuminated.
7. When any of the door is opened, HVPS contactor should stay turn-off and the tower lamp shall display yellow/amber light with a mutable continuous loud audible alarm (audible alarm /hooter /speaker/buzzer and tower lamps should be embedded)
8. The Front side of the enclosure consists of the indicating lamps (green & red) for High Voltage Power Supply & an emergency pushbutton. When emergency pushbutton is pressed the High Voltage Power Supply shall be turned-Off (HVPS contactor).
9. Final GA drawing of Industrial enclosure should be submitted to ITER-India, by the supplier/manufacturer BEFORE STARTING THE ACTUAL FABRICATION. ITER-India shall review & offer revisions/modifications if required & shall give approval post which the manufacturing shall be initiated.
10. All the equipment/accessories shall be used in here are to be brand new & of reputed make with proven durability & available in market for ready replacement.
11. All the wires/cables are to be of FRLS PVC insulated copper conductor stranded.
12. All terminations are to be made on the terminal blocks with respect to their voltage & current rating. All connections such as PB, limit switches, Emergency PB etc., are to be made on terminal blocks only.
13. Mains MCCB/MCB must be accessible from outside of the industrial enclosure with a ROTARY SWITCH having LOCAKABLE feature.
14. **Grounding/Earthing:** The Industrial Enclosure unit shall have copper grounding bus (30mmx5mmx300mm length). It shall have holes properly threaded for 6mm bolts.
15. Suitably rated protective devices and filters shall be employed against input power lines (MCBs, RCCBs etc.,).
16. All the surfaces/physical layouts of components/systems which are exposed high voltage should be field gradient i.e., the electric field “E” over the components should not create a dense field which shall trigger the corona/PD over the respective geometries.
17. Components and Cables crossing high voltage sections should not create intense voltage fields near the boundaries. Usage of several insulating materials must be avoided to minimize interfaces. Access to HV circuit part shall be restricted by installing acrylic sheets of suitable thickness on 4 sides. Mounting & Assembly of HV components as per drawing

## Assembly Components for Integration Work

* 1. List of Assembly Components

These shall be made available for assembly & integration work at ITER-India Site.

|  |  |  |  |
| --- | --- | --- | --- |
| S.No | Name of Component | Dimensions (mm) | Qty |
|  | COTS HVPS | 481x600x350 | 01 |
|  | GES Connectors | 350x70 (LxD) | 02 |
|  | Silicone Coated Resistors | 550x60 (LxD) | 24 |
|  | Behlke Switch | 400x350x200 | 01 |
|  | Pumps Units | 200x200x200 | 02 |
|  | Radiator Units | 600x200x150 | 02 |
|  | Voltage Divider | 600x380 (LxD) | 02 |
|  | Switch Interface box | 481x250x90 | 01 |
|  | Low Voltage PSU Set | 481x600x90 | 01 |
|  | Single core Silicone Cable | 1C-0.25mm2 (Box) | 01 |

Table 2 List of the Free Issue materials

## BoM, Technical Specifications & List of Recommended makes for the Bought-Out Items

* 1. Bill of Material

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Component Description** | **Rating** | **Qty** |
|  | Industrial Enclosure  Thickness - min. 2.5 mm sheet (As per Section 2) | CRCA sheet | 1 |
|  | Service Plates (As per Section 2) | As required | 1 |
|  | 4 pole MCCB with Door operated rotary handle kit with having **LOCAKABLE** feature | 63A | 2 |
|  | 4 pole MCB Miniature circuit breaker, 25 kA | 63A | 2 |
|  | 4 pole MCB Miniature circuit breaker, 10 kA | 32A | 3 |
|  | 2 pole MCB Miniature circuit breaker, 10 kA | 16A | 6 |
|  | 4 pole Power contactor with OLR | 40A | 2 |
|  | 2 Pole RCCB for lighting & socket safety | 16A & 30 mA | 2 |
|  | Emergency pushbutton | 230V AC | 2 |
|  | Door Limit Switches | 230V AC | 16 |
|  | Exhaust Fans (8 inch/204mm) ≥180 CFM | 230V AC | 30 |
|  | Exhaust Fans (12 inch/300mm) ≥180 CFM | 230V AC | 4 |
|  | Tower Lamps | 230V AC | 2 |
|  | Indicating lamp assembly & compact LED type lamp | 220/240V AC | As required |
|  | Industrial Rack-mount Extension Board & Switches | 1Ph-240V, 16A | 2 No’s |
|  | PVC-FRLS Wires for internal wiring | As required | |
|  | PVC Channels & PVC Duct hose | As required | |
|  | Terminal Blocks (16 mm2 cable connection) | As required | |
|  | Other Auxiliaries | As required | |

Table 3 Bill of Materials (Indicative, but not limited to)

* 1. Technical Specifications for the Industrial Enclosure

|  |  |  |
| --- | --- | --- |
| S.No | Technical Specifications | |
|  | Dimensions | As per the approved drawing |
|  | Material | CRCA Sheet of 2.5mm Thickness |
|  | Door Locking | 4-Point Lock system for all doors |
|  | Lamps Rails | Should be available on all sides |
|  | Limit Switches | Provision should be made on all doors as per the drawings |
|  | Gaskets | PU Foam Gaskets on all doors |
|  | Modularity | Should be modular as per the drawings |
|  | Service Plates | Should be available as per the requirements & drawings |
|  | Earth Bus | Should be available as per drawings |
|  | Portability | Wheels for portability |

Table 4 Technical Specifications for the Industrial Enclosure

* 1. Technical Specifications for the Exhaust Fans

|  |  |  |
| --- | --- | --- |
| S.No | ITER-India Technical Specifications | |
|  | No of Phases | 1 |
|  | Operating Voltage | 230V±10%, 50Hz |
|  | Protection | Impedance |
|  | CFM | ≥180 CFM |
|  | Cut-out Dimensions | ≥ 180x180x60 mm3(Spherical or Rectangular) |
|  | Housing | With rubber gasket to arrest noise  With Finger Guard on inside & Vent covers on outside |
|  | Motor Type | Brushless AC motor |
|  | Grills | Shall be provided on outside (RAL 7035) |
|  | Mounting Position | Front Side as per drawing |
| Rear Front Side as per drawing |
|  | Number of Fans | 8” /204mm = Total 30 Numbers (6 No’s spare)  12”/304mm = Total 4Numbers (2 No’s spare) |
| 8” /204mm: 12 No’s on front & 12 No’s on rear.  300mm: 2 No’s on rear side as depicted in the Drawings |

Table 5 Technical Specifications for the Exhaust Fans

* 1. Technical Specifications for the Tower Lamp

|  |  |  |
| --- | --- | --- |
| S.No | Technical Specifications | |
|  | Outer Diameter | ≥50mm |
|  | No of Tiers | 3 No’s (Red, Amber/Yellow and Green) |
|  | Light Mode | Flashing/Blinking |
|  | Buzzer Sound level | ~ 80dB Acoustic (with disable feature) |
|  | Buzzer Mode | Intermittent (with disable feature) |
|  | Voltage Range | 1-phase, 230V±10%, 50Hz |
|  | Operating Temperature | 50°C |
|  | Application | Indoor |
|  | Mounting | Panel Mountable (on Top) |

Table 6 Technical Specifications for the Tower Lamp

* 1. Technical Specifications for the MCCBs & MCBs

|  |  |  |
| --- | --- | --- |
| S.No | Technical Specifications | |
|  | Rated Voltage | 3-Ph: 440V, 50Hz  1-Ph: 240V, 50Hz |
|  | Current Rating | As needed per circuit |
|  | Breaking Capacity Current | 3-Ph: 25kA(for MCCBs), 10kA (MCBs)  1-Ph: 10kA (MCBs) |
|  | Tripping Curve | C |

Table 7 Technical Specifications for the MCCBs/MCB/Rotary Switches

* 1. List of Recommended Makes

The successful bidder shall select all the equipment & accessories like Enclosure, MCBs, contactors, fans, tower lamps, socket boxes, cable glands, cable bunching accessories, cable ties, tagging tools, cable tags, ferrules etc., are under the scope of supply and should be of brand-new items and of recommended/reputed makes or its equivalent are to be used. If recommended makes are not available, then the successful bidder may seek the consent of the purchaser.

|  |  |  |
| --- | --- | --- |
| S.No | Name of the Component | RecommendedMakes |
|  | Industrial enclosure Make | Schneider/Rittal/Saral/BCH/Siemens |
|  | MCCB’s /MCBs/Rotary Switches | Anchor/Schneider/L&T/Siemens/  Standard/Crompton Greaves |
|  | Exhaust Fans (8 inch/204mm & 300mm) | Schneider/Vents/ pfannenberg/CG/Rexnord/Murata Electronics/Atomberg |
|  | Tower Lamps | L&T/Schneider/Siemens |
|  | Socket Boxes & Switches | Schneider/L&T/Siemens/ Standard/Crompton Greaves |
|  | Pilot Lamps, Emergency PB, NO and NC blocks, Terminal Blocks | Schneider/L&T/Siemens/Siemens/WAGO/Phoenix or any other reputed product complying the specifications |
|  | Door limit switches. | Schneider/L&T/Siemens/Omron/Kaycee/ Essen Deinki |
|  | Cables/Wires | Havells/Finolex/KEI/Grandlay/RR Kabel/ Gloster |
|  | Power contactor | Siemens /L&T / Schneider / Legrand / ABB / C&S |
|  | Surge Voltage Protection | Siemens /Schneider/L&T/Legrand/ABB |

Table 8 List of Recommended makes

## Important Guidelines

These are some guidelines that supplier shall be informed while executing the project.

* 1. General
     1. The BPS unit structure shall be made up of rigid and self-supporting structure of suitable steel profiles and shall be free of sharp edges/corners. The structural strength of the unit shall be such as to withstand its ultimate mechanical load (with all the individual units mounted) without any deformity. The base of unit shall ensure uniform floor loading. The gauge of steel that is used for the fabrication of unit shall be not less than 2.5 mm (minimum).
     2. Since it is a custom requirement to fit in all the essential HV & LV components, the requirement on the size of unit is as follows **800mm wide, ~1400mm depth & 2200mm height**.
     3. BPS unit shall have all the common visual alarms and meters shall be clearly visible. In case of a door arrangement on the front side of unit, all the meters and alarm indications are permitted, however, the fixtures on the door shall not restrict the movement of door in any way.
  2. Electrical
     1. All the termination (electrical cables entries) points shall be easily accessible to reduce the complexity while operation, alteration and maintenance activities.
     2. All the current carrying parts shall be separated by physical barriers to ensure safety. All the terminals except AC earth shall be electrically isolated. Fuses and Circuit-breakers provided shall be easily accessible and properly rated so as for easy replacement.
     3. Input terminals of the unit shall be clearly marked as R, Y, and B, N, and E and Output DC terminals (HV) as + ve and -ve respectively.
     4. There should be a clear and prominent "DANGER" Marking at the termination blocks. And it must be noted that all visual indications shall be placed at proper height on the BPS unit so as the indications shall be visible and reachable for operating personnel.
     5. All insulated conductors shall be of the suitable ratings, which are enough to withstand the maximum current and voltage during overload and/or fault/abnormal conditions.
     6. All wiring shall be neatly secured in position and adequately supported. Where cables/wires pass through the metal industrial enclosure, suitable size of cable glands/grommets shall be used. All the wires and cables used shall be of low smoke zero halogen fire retardant (LSZH) as per IS1554 and IS 694 or IEC 61034 with latest amendments and they shall be properly rated to prevent excessive heating. Proper indication (tagging) on cable shall be provided for all the cables.
  3. Precautions that must be followed during the work in Site

1. The supplier is required to take necessary measures to ensure the safety of personnel & equipment.
2. The supplier is fully responsible for the safety of the man, materials & machinery while executing the site work. Site safety norms are to be followed at all times.
3. Work should be done only in the presence of ITER-India representative(s).
4. Scratches, dents and tool marks are not allowed on the LV Cable’s surfaces, industrial enclosure & other equipment in site.

## Factory Inspection

ITER-India Official(s) shall visit the manufacturer’s site during fabrication and/or prior to delivery for the compliance. Deviations from the specifications, if any, should be rectified as per the suggestions prior to delivery.

## Despatch Clearance

Despatch of ordered items shall be only after receipt of Despatch Clearance Letter from the Purchaser.

## Delivery & Completion Duration

The supplier shall commit to the delivery date which is 4 months or less from the date of issue of Purchase order.

## Packing & Shipment

The material should be appropriately packed with one set of documentation & dispatched to ITER-India Lab, IPR with the following address:

**ITER-India Lab Building,**

**Institute for Plasma Research,**

**Near Indira Bridge, P.O. Bhat Gandhinagar -382 428, India**

Prior information of the material dispatch shall be given to ITER-India Purchase Officer

## Final Acceptance

Final acceptance shall be given only after successful completion of following tests:

1. Visual Inspection
   * ITER-India Official(s) shall visually inspect the Industrial enclosure after completion of work according to the approved drawings.
2. Functional Tests of the industrial enclosure and control circuits.

## Responsibility Matrix

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Responsibility** | **ITER-India** | **Supplier** |
|  | Design & Performance of HV Circuit | ✓ | ✕ |
|  | Design & Performance of LV Circuit | ✕ | ✓ |
|  | Preparation of GA Drawings | ✕ | ✓ |
|  | Review & Approval of Drawings | ✓ | ✕ |
|  | Fabrication of the Industrial Enclosure | ✕ | ✓ |
|  | Manufacturing Inspections & PDI | ✓ | ✓ |
|  | Packing. Loading, Unloading & Delivery | ✕ | ✓ |
|  | Installation & Commissioning (under supervision) | ✕ | ✓ |
|  | Demonstration & Verification of LV Control & Instrumentation | ✕ | ✓ |
|  | Clearing & Cleaning of Site after works | ✕ | ✓ |
|  | Demonstration & Verification of HV Control & Instrumentation | ✓ | ✕ |

Table 9 Responsibility matrix

## Warranty

The Supplier should provide one-year standard warranty from date of final acceptance, i.e., repair/replace free of cost for equipment/ accessories & against the workmanship in case of a failure during the warranty period.

## Accident Liability:

The supplier will take all possible precautions to avoid damage to the Purchaser’s property during its onsite activities. Supplier shall also take insurance covering third party liability for the personnel and equipment and/or tools deployed at Purchaser’s site against all risks, such as injuries, loss of life etc. Supplier will be fully responsible for payment of compensation. In the event of loss and/or damage to Purchaser’s property / any item(s) / equipment and/or injury or loss of life to Purchaser’s personnel during the course of onsite activities due to the supplier default. Supplier will be fully responsible and liable for such damages and/or losses and payment of appropriate compensation as assessed by the Purchaser. Supplier will relieve the Purchaser from all the risk and liabilities under this clause.

## Site Clearance:

On completion of the work, the Supplier shall clear away and remove from the site, all surplus materials, remainder, waste material and temporary works of every kind and clear/clean the whole site.

## Facilities Provided by ITER-India

Necessary water, space and electricity will be provided at purchase site by the purchaser.

## Mode of Payment and Payment Schedule

100% Payment will be released within 30 days from the date of date of final acceptance and error free invoice along with testing and assembly report and warranty certificate complete in all respect.

## Compliance Sheet

|  |  |  |  |
| --- | --- | --- | --- |
| S.No | Name of Work/Component | Reference Sections | Vendor Specification & Compliance |
|  | Industrial Enclosure’s  Mechanical Work | As per Section 2/Mechanical Work |  |
|  | Industrial Enclosure’s  Electrical Work (Service Plates & Wiring, etc.,) | As per Section 2/Electrical Work |  |
|  | Accessories BoM | As per Section 15 |  |

Table 10 Work Compliance Table

* 1. Technical Specifications for the Industrial Enclosure

|  |  |  |  |
| --- | --- | --- | --- |
| S.No | Technical Specifications | | Vendor Specification & Compliance |
|  | Dimensions | As per the approved drawing |  |
|  | Material | CRCA Sheet of 2.5mm Thickness |  |
|  | Door Locking | 4-Point Lock system for all doors |  |
|  | Lamps Rails | Should be available on all sides |  |
|  | Limit Switches | Provision should be made on all doors as per the drawings |  |
|  | Gaskets | PU Foam Gaskets on all doors |  |
|  | Modularity | Should be modular as per the drawings |  |
|  | Service Plates | Should be available as per the requirements & drawings |  |
|  | Earth Bus | Should be available as per drawings |  |
|  | Portability | Wheels for portability |  |

Table 11 Compliance for the Industrial Enclosure

* 1. Technical Specifications for the Exhaust Fans

|  |  |  |  |
| --- | --- | --- | --- |
| S.No | ITER-India Technical Specifications | | Vendor Specification & Compliance |
|  | No of Phases | 1 |  |
|  | Operating Voltage | 230V±10%, 50Hz |  |
|  | Protection | Impedance |  |
|  | CFM | ≥180 CFM |  |
|  | Cut-out Dimensions | ≥ 180x180x60 mm3(Spherical or Rectangular) |  |
|  | Housing | With rubber gasket to arrest noise  With Finger Guard on inside & Vent covers on outside |  |
|  | Motor Type | Brushless AC motor |  |
|  | Grills | Shall be provided on outside (RAL 7035) |  |
|  | Mounting Position | Front Side as per drawing |  |
| Rear Front Side as per drawing |  |
|  | Number of Fans | 8” /204mm = Total 30 Numbers (6 No’s spare)  12”/304mm = Total 4Numbers (2 No’s spare) |  |
| 8” /204mm: 12 No’s on front & 12 No’s on rear.  300mm: 2 No’s on rear side as depicted in the Drawings |  |

Table 12 Compliance for the Exhaust Fans

* 1. Technical Specifications for the Tower Lamp

|  |  |  |  |
| --- | --- | --- | --- |
| S.No | Technical Specifications | | Vendor Specification & Compliance |
|  | Outer Diameter | ≥50mm |  |
|  | No of Tiers | 3 No’s (Red, Amber/Yellow and Green) |  |
|  | Light Mode | Flashing/Blinking |  |
|  | Buzzer Sound level | ~ 80dB Acoustic (with disable feature) |  |
|  | Buzzer Mode | Intermittent (with disable feature) |  |
|  | Voltage Range | 1-phase, 230V±10%, 50Hz |  |
|  | Operating Temperature | 50°C |  |
|  | Application | Indoor |  |
|  | Mounting | Panel Mountable (on Top) |  |

Table 13 Compliance for the Tower Lamp

* 1. Technical Specifications for the MCCBs & MCBs

|  |  |  |  |
| --- | --- | --- | --- |
| S.No | Technical Specifications | | Vendor Specification & Compliance |
|  | Rated Voltage | 3-Ph: 440V, 50Hz  1-Ph: 240V, 50Hz |  |
|  | Current Rating | As needed per circuit |  |
|  | Breaking Capacity Current | 3-Ph: 25kA(for MCCBs), 10kA (MCBs)  1-Ph: 10kA (MCBs) |  |
|  | Tripping Curve | C |  |

Table 14 Compliance for the MCCBs/MCB/Rotary Switches

* 1. Bill of Material

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No** | **Component Description** | **Rating** | **Qty** | **Vendor Compliance** |
|  | Industrial Enclosure  Thickness - min. 2.5 mm sheet (As per Section 2) | CRCA sheet | 1 |  |
|  | Service Plates (As per Section 2) | As required | 1 |  |
|  | 4 pole MCCB with Door operated rotary handle kit with having **LOCAKABLE** feature | 63A | 2 |  |
|  | 4 pole MCB Miniature circuit breaker, 25 kA | 63A | 2 |  |
|  | 4 pole MCB Miniature circuit breaker, 10 kA | 32A | 3 |  |
|  | 2 pole MCB Miniature circuit breaker, 10 kA | 16A | 6 |  |
|  | 4 pole Power contactor with OLR | 40A | 2 |  |
|  | 2 Pole RCCB for lighting & socket safety | 16A & 30 mA | 2 |  |
|  | Emergency pushbutton | 230V AC | 2 |  |
|  | Door Limit Switches | 230V AC | 16 |  |
|  | Exhaust Fans (8 inch/204mm) ≥180 CFM | 230V AC | 30 |  |
|  | Exhaust Fans (12 inch/300mm) ≥180 CFM | 230V AC | 4 |  |
|  | Tower Lamps | 230V AC | 2 |  |
|  | Indicating lamp assembly & compact LED type lamp | 220/240V AC | As required |  |
|  | Industrial Rack-mount Extension Board (6 Socket) & Switches | 240V, 5/15A | 2 No’s |  |
|  | PVC-FRLS Wires for internal wiring | As required | |  |
|  | PVC Channels & PVC Duct hose | As required | |  |
|  | Terminal Blocks (16 mm2 cable connection) | As required | |  |
|  | Other Auxiliaries | As required | |  |

Table 15 Compliance Table for Bill of Materials

## Annexures

## Annexure-A Electrical Drawings

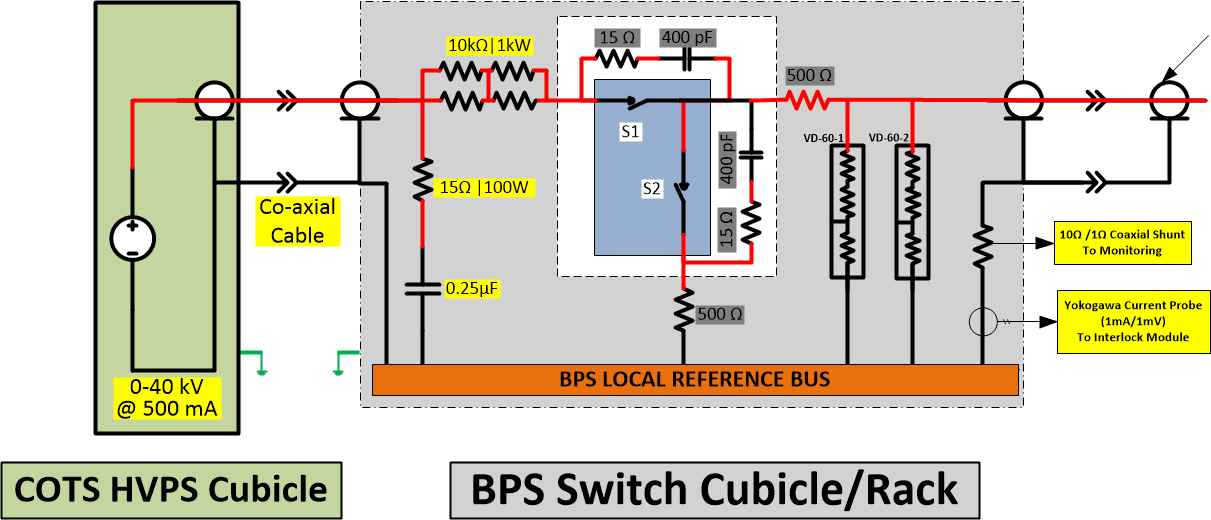


Figure 1 Circuit Diagram of the internal High Voltage Circuit

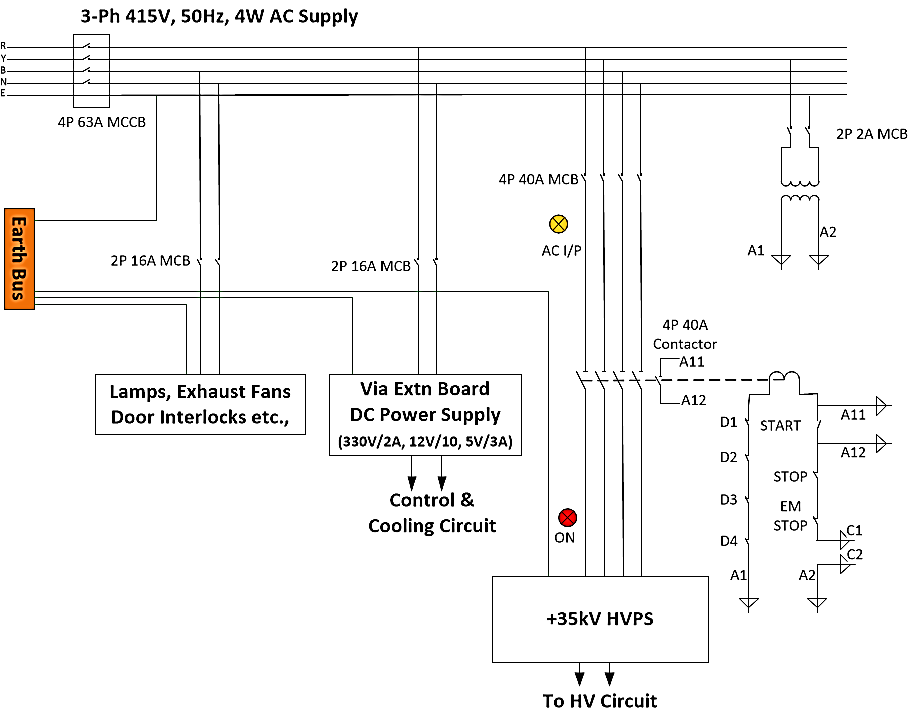


Figure 2 Typical LV SLD of Heavy-Duty Industrial Enclosure (Suggestive)

## Annexure-B: Site Visit(optional)

### ITER-INDIA, INSTITUTE FOR PLASMA RESEARCH

### 

## 

Date:

(to be attached with the quotation as one of the conditions (optional) for meeting the eligibility criteria)

|  |  |
| --- | --- |
| GeM Bid No. |  |
| GeM Bid Date |  |
| GeM Bid Due Date |  |

This is to certify that

|  |
| --- |
| Mr. |

|  |
| --- |
| of M/s |

has / have visited the Institute for Plasma Research on

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | 2 | 0 | 2 | 4 |

to understand the work and get acquainted themselves with details SoW to enable them to quote against the enquiry for Supply of Industrial Enclosure for 35kV Body Power Supply Assembly.

(Engineer-In charge)

ITER-India, Gandhinagar

## Annexure-C: Self Declaration

**Self-Declaration**

To

The Sr. Officer (Purchase & Stores) ,

ITER-India

Ref: Enquiry Number ----

Sub: Self declaration regarding the site visit

Dear Sir,

I confirm that I have visited the site and acquainted with the scope of supply & scope of work before submitting the bid. And I also confirm that, if the job is awarded to me, I will complete the Job within the stipulated time (as per Contract/Purchase Order Schedule) on urgent and priority basis.

Signature -------------

(Bidder Seal/Stamp)

(Name of the Bidder) Date:

## Annexure-D: Mechanical Drawings

**Refer Mechanical Drawing PDF file attached in Additional Scope of Work.**

## Annexure-E:

Self-declaration by Bidder of a country sharing/not sharing land border with India

[ON THE LETTER HEAD OF THE COMPANY]

Ref: 1) Our bid/offer No. ………………………………………… dated ………………..

2) Bid for Supply of Industrial Enclosure for 35kV Body Power Supply Assembly

**Restrictions on procurement from Bidders from a country or countries, or class of countries under Rule 144(xi) of the General Financial Rules 2017.**

We have read the clause regarding restrictions on procurement from Bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries, and solemnly certify that we fulfil all requirements in this regard and are eligible to be considered. We certify that:

* + - * 1. *we are not from such a country or, if from such a country, we are registered with the Competent Authority (copy enclosed). and;*
        2. *we shall not subcontract any work to a contractor from such countries unless such contractor is registered with the Competent Authority and solemnly certify that we are not from such a country or, if from such country, we are registered with the Competent Authority (copy enclosed). We hereby certify that we fulfil all requirements in this regard and are eligible to be considered.”*

Penalties for false or misleading declarations:

We hereby confirm that the particulars given above are factually correct and nothing is concealed and also undertake to advise any further changes to the above details. We understood that any wrong or misleading self-declaration by us would be violation of Code of integrity and would attract penalties as mentioned in this tender document, including debarment.

Signature Bidder’s stamp

Name:

Position:

Address:

Tel:

Fax:

## Annexure-F: Letter for Acceptance of Tender

***(This form should be printed on bidder’s letter head duly signed, stamped and sent by the bidder along with of the Bid)***

**From: Date:**

Name and address of Applicant Bidder

Name of Contact Person

Contact Number (Tel. no., mobile no., Fax no., E-mail)

**To:**

Sr. Officer (Purchase & Stores)

ITER-India, Institute for Plasma Research,

Block A, Sangath Skyz, Bhat-Motera Road, Koteshwar,

Ahmedabad 380005,

Gujarat, INDIA Tel:  + 91-79-2326 9656

Email: [purchase@iterindia.](mailto:purchase@iterindia.)in

Subject : Acceptance of the Tender for Supply of Industrial Enclosure for 35kV Body Power Supply Assembly

Ref. : GeM Bid No. GEM/2024/B/5529151

Dear Sir/Madam,

* + - 1. I/ We have downloaded / obtained the tender document(s)
      2. I / We hereby certify that I / we have read the entire tender documents i.e. Technical Specifications and Other Terms and Conditions of Tenders including Annexures A to F of the tender, which form part of the tender agreement and I / we shall abide hereby by the scope of work / technical specifications/ terms / conditions / clauses contained therein.
      3. The corrigendum(s) issued from time to time by your department/ organisation too have also been taken into consideration, while submitting this acceptance letter.
      4. In this regard, we would like to confirm the following **(Please √ against applicable point).**

□ I/ We hereby **unconditionally accept** entire tender documents i.e. GeM bid as per ref. above including ATC, Part-A and all annexures(A to F) .

□ We accept entire tender documents i.e. GeM bid as per ref. above including ATC, Part-A and all annexures(A to F), **except following deviations**.

**List of deviations attached as an enclosure to this letter.**

* + - 1. I / We do hereby declare that our Firm has not been blacklisted/ debarred by any Govt. Department/Public sector undertaking.
      2. I / We certify that all information furnished by our Firm is true & correct and, in the event, that the information is found to be incorrect/untrue or found violated, then your department/ organisation shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.

Signature

Bidder’s stamp

Name:

Position:

**Note: If any deviations are proposed, these must be clearly indicated as a separate annexure to this Letter of Acceptance instead of merely enclosing bidder’s printed conditions of Sale. Deviations, if any, shall be reflected in this letter of acceptance (or enclosure to this letter) only and not elsewhere in the bid, failing which, the Purchaser shall consider bidder’s acceptance on entire tender document with no deviation.**