TECHNICAL SPECIFICATION FOR FUSE SECTION PILLAR (FSP)

1.1 SCOPE

This specification covers the design, manufacturing and testing of FSP with anti-corrosive, dust proof, rust proof, shock proof, self-extinguishing property, resistant to heat, vermin & water proof, Ultra Violet Stabilized and pilfer resistant made from Thermosetting Plastic i.e. Glass Reinforced Polyester Sheet Moulding Compound (SMC) Confirming to IS: 13410 -1992 and attached technical specification, and IS: 14772-2000 with TPN switch Disconnector fuse & SMC HRC fuse base confirming to IS:13703/1993 (Pt.I & II amended up to date)and other relevant IS.

The equipment offered shall be complete with all parts necessary for their effective and trouble-free outdoor operation. Such parts will be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in the commercial order or not.

It is not the intent to specify herein complete details of design and construction. The equipment offered shall conform to the relevant standards and be of high quality, sturdy, robust and of good design and workmanship complete in all respects and capable to perform continuous and satisfactory operations in the actual service conditions at site and shall have sufficiently long life in service as per statutory requirements.

In these specifications, the design and constructional aspects, including materials and dimensions, will be subject to good engineering practice in conformity with the required quality of the product, and to such tolerances, allowances and requirements for clearances etc. as are necessary by virtue of various stipulations in that respect in the relevant ISO, IEC, BS, IS standards and other statutory provisions.

1.2 SERVICE CONDITIONS

Equipment to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

a) Maximum ambient temperature of air: 50˚C
b) Maximum temperature of air in shade: 4˚C
c) Maximum daily average ambient temperature: 40˚C
d) Maximum yearly average ambient temperature: 30˚C
e) Relative Humidity: up to 95%
f) Average number of thunder storm days per annum: 15

g) Maximum annual Rainfall: 150cm

h) Maximum Altitude above mean sea level: 1000Meter

i) Maximum Wind Pressure: 150 Kg/cm2 (As per IS 802 latest code)

j) Maximum soil temperature at cable depth: 30˚C

k) Maximum soil thermal resistively: 150˚C cm/watt

1.3 TECHNICAL PARAMETERS

FSP should be designed to have maximum utilization of transformer capacity and shall be well equipped with adequate protection to transformer against overload and short circuit and minimum interruption in power supply.

Sl. No	Parameter	Value
1	Rated Supply Voltage	433 volts +/-10%
2	Number of Phases & Frequency	3 phase 4W 50 Hz
3	Rated Current	250A, 630A (as per Single line diagram/BOQ).
4	Neutral	Solidly Grounded
5	MODE OF INSTALLATION	mounted either on plinth near transformer or on M.S. Channels fixed between two Poles
6	Thickness of wall mm	4
7	Bus bar material	Tinned Cu / Al bus bar

1.4 APPLICABLE STANDARDS

All equipment and material shall be designed manufactured and tested in accordance with the latest applicable IEC standard or IS standard except where modified and / or supplemented this specification.

Title	IEC Standard	IS /Other Standard
Low-voltage switchgear and control gear	IEC:60947 (Part-1,2,3)	IS: 13947

Low-voltage switchgear and control gear assemblies	IEC:60439 (Part-2)	-do-
General Requirements for Enclosures for Accessories for Household and Similar Fixed Electrical Installations		IS 14772
Glass reinforced polyester sheet moulding compounds (SMC)		IS 13410
LV Fuses for voltages not exceeding 1000 V ac or 1500 V dc,		IS 13703
MCBs	IEC 60898	IS: 8828

1.5 GENERAL TECHNICAL REQUIREMENTS

a) The minimum size of box from inside shall be 1200(H)x 1000(W)x400(D) mm. and thickness of wall minimum 4 mm.

b) FSP shall be of Grade S-3 SMC material. FSP shall be moulded in a single piece forming the body of the FSP with a cover fitted with base by minimum three nos. concealed stainless steel hinges. The lid/cover shall rest on the collar of the FSP base in such a way that any access from outside is not possible. The stainless steel hinges shall be fitted with the FSP body base and covers rigidly, thereby making the FSP pilfer resistant.

c) The door in closed position should be overlapped in such a manner that no direct entry or access is possible. The FSP shall be closed by SS 'U' Clamp for holding and locking of the door with body base. The "U" Clamp shall have minimum diameter holes through which it is possible to lock the FSP.

d) The door shall open at 90 degrees (Min.). The top surface of box shall have little tapering shape towards both sides of the distribution box for easy flow of rainwater.

e) Earth bolt of 6 mm diameter X 20 mm. length with 2 nos. nuts, 2 nos. washers and 1 no. spring washer shall be provided. The earthing arrangement shall be of M.S. with Zinc passivation. All corners of the FSP should be round & not pointed ones. All metal parts shall be zinc passivated.

f) The FSP should have a three pole AC-23 – 1250 / 800 / 630 AMP TPN switch Disconector fuse with bolted HRC Fuses which can provide Isolation and Protection. 1250 / 800 / 630 AMP Protection Switch should be as per IS: 13947-3/ IEC-947-, having test reports either from NABL or COFRAC accredited lab for AC-23 A utilization test, short circuit test for 80KA rms.

g) The FSP should have 5 nos. of 3 phase & neutral outgoing circuit with HRC SMC fuse base and appropriate size of lugs fitted with busbar.

h) Anodized aluminum operating instructions in GUJARATI shall be fixed inside the door. The letter should be cleared legible and readable. The letters of the instructions should be of sufficient size to read with normal eye.

i) The FSP should have Bus bar of EC grade tinned copper bus bar 50x8 mm / Aluminum bus bar 15x60 mm duly insulated of for all phase and neutral.

1.6 TESTS

a) The bidder shall submit type test report for complete FSP as per BS 214/1959 or IS 8623/93 and for box as per IS-14772-2000 & IS: 13410- 1992 from CIPET, Ahmedabad/ERDA, Baroda or NABL accredited lab. for the box as well as TPN switch disconnector fuse & SMC fuse base along with the offer. Type Test Certificate should not be older than 5 years as on the date of tender opening.

b) ROUTINE TEST: Manufacturer has to carryout routine test during production to check the essential requirements that are likely to vary during production. Manufacturer has to keep records of the same and to be produced for verification of inspector when asked at the time of inspection of lot.

c) TYPE TEST (For SMC box):

From the offered lot sample may be picked up at discretion of purchaser for type test at CIPET, Ahmedabad/ERDA, Baroda or NABL accredited lab for each lot offer. The charges for the type test shall be borne by bidder. On passing the type test successfully, the lot shall be accepted. In case, the boxes are not confirmed to type test, another sample form the lot shall be selected and the tested again. On receipt of unsatisfactory results, the lot shall be rejected and new lot shall be offered for inspection keeping aside old lot offered and rejected earlier by the Company. However, Company reserves the right to accept the boxes by levying penalty as per description of the company.

d) TYPE TEST (For Isolator/box):

Type test reports not more than 5 years old from the date of tender from Government approved and NABL accredited lab.

1) Type Test for complete FSP as per BS214/1959 or IS8623/93.

2) Type test report for Switch Disconnector as per IS 13947/1993 (all parts) or its latest amendment.

e) ACCEPTANCE TESTS:

The bidder should have all the testing facilities at their works & shall offer testing as under.

Following acceptance tests shall be carried out, on 2% of the offered quantity on sample boxes selected at random, while inspecting the lot of materials offered.

- Visual examination
- Verification of dimensions as per approved drawings.
- Verification of fittings
- HV test at 5.2 (3.5*1.5) KV for Bus bar, 11KV for SMC material of Box.
- Insulation resistance test with 2.5KV DC megger of each box.
- Temperature rise test in accordance with relevant IS for the rated capacity of Switch disconnector fuse.
- Earth continuity checking test.
- Operations test on Switch disconnector or fuse as well as SMC HRC fuse base & fuse link.

Note: MGVCL reserve the right to select one sample from whole tender quantity and will send Govt. approved/ NABL accredited lab. For complete acceptance test of all material. Cost of the same is to be paid by contractor.

1.7 DRAWING & CALIBRATION OF INSTRUMENT

The tenderer shall submit detailed constructional and dimensional drawing of complete FSP details of Units and TPN switch Disconnector fuse, incoming and outgoing circuit, Louvers details, clearance details along with the offer.

(a) The firm has to submit list of testing equipment's instruments, stating Sr. No., Make, Capacity, date of last calibration along with test certificate of each instrument along with the offer, same is also required to be provided to inspecting officer at the time of prototype inspection as well as regular lots. The calibration shall be either from original manufacturer of the equipment's / instruments or from Government approved laboratory.

1.8 PROTO TYPE

The successful tenderer shall have to offer 1 No. Prototype FSP for carrying out tests mentioned at specification clause No. e (acceptance test) at their works or at Government approved Laboratory, where no adequate testing facility is available at firm's work in presence of MGVCL's representative. In case of brought out items like SMC **HRC** Fuse Units, Disconnector switch the same have to be either tested at firm's work or at the works of original manufacturer or at Government approved / recognized laboratory in case of non-availability of adequate testing facility either at firm's works of original manufacturer. However, all the testing expenditures of prototype sample testing. Acceptance tests for routine inspection of lots will be borne by the firm

only after successful passing of the prototype unit in all the tests and after obtaining the written approved from the competent authority of MGVCL for prototype box and drawing approval, the firm can commence bulk manufacturing of the ordered boxes. The expenses towards prototype test including visit of our Engineers (2 Nos.) other than your works shall be borne by the bidder.

1.9 RAW MATERIALS

Test certificate for the material used in the lot offered and document for purchase of raw material should be maintained by manufacturer and produced to inspector as and when required.

1.10 FACILITY

The bidder shall have facility to test the box for routine tests and acceptance as per IS – 14772: 2000 and IS – 13410 & MGVCL's specifications at their works. The bidder has to submit list of Machinery & Equipment / Testing instruments etc. along with the offer.

1.11 INSPECTION AND TESTING

During the inspection manufacturer will offer all facilities to inspector without any charge.

1.12 DISPATCH

The FSP shall be dispatched duly packed so as to ensure that no damage occurs during transport.

1.13 GUARANTEE

If the goods, stores and equipments found defective due to bad design or workmanship the same should be repaired or replaced free of charge if reported within **24** months from the date of commissioning of equipments. Supplier will be responsible for the proper performance of the equipments materials for the respective guarantee period.

1.14 GTP

The vendor shall furnish all necessary guaranteed technical particulars in the prescribed Performa enclosed hereinafter.

SR. NO.	PARTICULARS	DETAILED PARTICULARS	TO BE OFFERED BY BIDDER
1	Maker's name	To be intimated by the supplier	
2	Material	Glass reinforced polyester sheet moulding compound	
3	Grade of Material	SMC confirming to IS: 13410:1992 Grade S 1	
4	Properties of Material of Construction of Distribution Box		
	Heat Deflection Temperature (Ref.Std. IS: 13411)	180°C (Minimum)	
	Exposure to flame (Ref. Std. IS: 4249)	Self-extinguishing	
	Melting Point (Ref. Std. IS: 13360)	Does not melt	
	Glow wire test at 650 C	As per IS 11000 Part-2/sec-1	
	Degree of protection	IP-43 as per IS-12063 / 87	

	Dielectric Strength at 90 C in oil	9 KV/mm (Min) as per IS: 6262-1971	
5	Inside dimension of Box	To be mentioned by the supplier	
	a. Height	1200 mm (min)	
	b. Width	1000 mm (min)	
	c. Depth	400 mm (min)	
	d. Thick ness of sheet	4.0 mm (Min)	
6	**Earthing Arrangement**		
	Earthing bolt	Two no. Zinc Passivated MS bolt with 2 nuts and 2 washers & 1 no. spring washer with each bolt.	
	Dia. & Length of earthing bolts	Dia. 6 mm Length 25 mm	
7	Door Locking	For holding of door with base 'U' shaped SS clamp to be provided	
8	Manufacturer's short name & short name of Purchaser	To be provided on the front side of the box	
9	Locking arrangement		
10	Colour of Meter Box	Off White / Grey	
11	1200 / 800 / 630 AMP TPN switch Disconnector fuse.	Having 3 Phase & 1 Neutral with 1200 / 800 / 630 AMP Current Carrying capacity with pad locking arrangement	
12	**For Box:**		
12.1	Name or Trademark of manufacturer		
12.2	Rated Voltage		
12.3	KVA Rating		
12.4	Thickness of Enclosure		
12.5	Hinges Inside / Outside specify		
13	**For TPN switch Disconnector fuse unit**		
13.1	Name or Trademark of manufacturer		
13.2	Type designation		
13.3	Rated Current		
13.4	Rated Duty		
13.5	Utilization Category		
13.6	Rated short time withstand current for 2 second		
14	**HRC SMC Fuse Base**		
14.1	Name of Trade Mark of Manufacturer		
14.2	Rated Current		
14.3	Rated Voltage		

14.4	Breaking Capacity		
14.5	HRC SMC Fuse Base Material &size		
14.6	Contact Material		
15	**HRC Fuse Link**		
16.1	Name or Trade Mark of Manufacturer		
16.2	Rated Current		
16.3	Rated Voltage		
17	One no. of Box Spanner is to provide with 10 nos. quantity supply		
18	The Contact area of Lug & Busbar should not be lesser than each other		