TECHNICAL SPECIFICATION FOR 220 V D.C. DISTRIBUTION BOARD

1.0 SCOPE

The scope of this specification covers for supply of one no. indoor type 220V DC Distribution board from where DC supply will be catered to various control & Relay panels including testing at manufacturerôs work site, packing & forwarding to site.

2.0 STANDARDS :

The DC Distribution board offered under this specification shall conform to latest revision of relevant Indian Standard Specification.

3.0 D.C Distribution Board shall be provided with

a. One no. name plate showing the details such as manufacturerôs name, Sl. No, rating etc.

b. One no. danger board scripted in Odia and English.

c. One no. flush mounted of standard size, reputed make DC selector switch

d. Two nos. flush mounted DC Ammeter of standard size & reputed make with selector switch.

e. One no. flush mounted DC Voltmeter of standard size & reputed make with selector switch

f. 2 nos. DC Shunt 100/5

g. 3No. 2Pole, 100A MCCB with required spreader & extended rotary handle having breaking Capacity of 15KA at 220V DC, (Confirms to IS/IEC60947-2 & IEC60947-2)

h. 64 Nos. 2Pole, 32A MCB breaking Capacity of 15KA at 250V DC. (Confirms to IS/IEC60947-2 & IEC60947-2)

i. A cubicle light with fuse and switch shall be provided inside the cubicle operating on D.C.

The accuracy class for all indicating and integrating meters shall be class 1

4.0 GENERAL TECHNICAL REQUIREMENTS

4.1Sheet Metal Work:

4.1.1 The board frame shall be fabricated using pressed & shaped steel sheet of minimum 2 mm size for all sides .

4.1.3 All panel edges and door edges shall be reinforced against distortion. Cut outs shall be true in shape and devoid of sharp edges.

4.1.4 The complete structure shall be rigid, self-supporting free from vibration,twists & bends.

4.2 Constructional Features

4.2.1 A metal sill frame made of M.S. channel of 75 x 50 mm ISMC shall be provided as base frame, properly drilled for mounting the board. Necessary hardware shall also be provided for the same. 4.2.2 It shall be provided with cable entry at bottom with 3 mm removable gland plate.

4.2.3 The board shall be of Width 1700 mm, Height 1400 mm & Depth 500mm, and it shall be of single front execution. The board shall be provided with gasket all round including removable covers & doors. All the operating devices shall be provided only on the front of the board.

4.2.4 All equipment associated with a single circuit shall be housed in a Separate module compartment. The compartment shall be sheet steel enclosed on all sides and rear. The front of the compartment shall be provided with hinged door.

4.2.5 Only the handles of switches, push buttons knobs and cut-outs for lamps & meters shall be arranged on front of the respective compartment toPermit operation without opening the door. All cut-outs shall be gasketed for dust proofing.

4.2.6 All doors shall be provided with concealed type hinges and captive screws.

4.3 Painting :

All sheet steel work shall be phosphated in accordance with the following procedure.

4.3.1 Oil, grease, dirt and swan shall be thoroughly removed by emulsion cleaning.

4.3.2 Rust and scale shall be removed by pickling with dilute acid followed bywashing with running water, rinsing with slightly alkaline hot water anddrying.

4.3.3 After phosphating, through rinsing shall be carried out with clean water,followed by final rinsing with dilute dichromate solution and over drying.

4.3.4 The panel then powder coated (colour -Siemens Grey outside & Milky) white inside with an approved colour shade as per IS.

4.3.5 The final finished thickness of paint film on steel shall not be less than 50 microns, and shall not be more than 80 microns.

4.3.6 Finished painted appearance of equipment shall present an aesthetically, pleasing appearance, free from dents and uneven surfaces.

4.4 **Main Bus & Taps**:

4.4. 1The board shall be provided with a Main copper bus bar of electrolytic copper confirming IS 8130/84, which will be liberally rated. It will receive D.C. input from incoming cables through TBs and Switch & HRC fuse for each +Ve and ï Ve line of D.C Supply. The input to MCB of each outgoing feeder shall be extended from +Ve D.C and ï Ve D.C bus. The thickness and width of bus bar shall not be less than 4 mm and 25 mm respectively.

4.4.2 Bus bars shall be of uniform cross section.

4.4.3 The bus bars shall be made of high conductivity copper.

4.4.4 Bus bars shall be adequately supported and braced to withstand the Stresses due to the specified short circuit currents. Bus bar supports shall be made of hylum sheets, glass reinforced moulded plastic material or cast resin.

4.4.5 Separate supports shall be provided for each phase of the bus bars

4.4.6 Bus bar joints shall be complete with high tensile steel bolt and washers and nuts. Bus bars shall be thoroughly cleaned at the joint locations and a suitable contact grease shall be applied just before making a joint.

4.5 MCCB/MCB :

4.5.1 The MCCB/MCB of reputed make like Siemens, L & T, ABB, Schneider, GE etc. shall be provided with a quick make- quick break type of switching mechanism which a definite speed of travel of moving contacts is ensured.

4.5.2 The MCCB/MCB shall employ a maintenance free contact system designed to minimize the let through energies while handing abnormal currents.

4.5.3 An indicator showing ON, OFF and TRIPPED positions

4.6.Indicating Instruments and Meters :

4.6.1 Electrical indicating instruments shall be of reputed make.

4.6.2 Indicating instruments shall have provision for zero adjustment outside the cover.

4.6.3 Instrument dials shall be parallax free with black numerals on a white dial.

4.6.4 The meters and shunts shall be of good quality suitable to give a long and satisfactory service.

4.7 Control & Selector Switches:

4.7.1 The control & selector switches shall be adequately rated for the purpose intended and shall be rotary type. They shall be provided with escutcheon plates clearly marked to show the position.

4.8 Internal Wiring:

4.8.1 Each MCB shall be then connected to Terminal Blocks by using insulated Copper cable of not less than 4 mm2. The design of DCDB shall be such that there shall be minimum voltage drop. Special care shall be taken to avoid voltage drop at every level. The wiring shall be neat and clean without any congestion and shall be supported mechanically as well as tied up to withstand transit vibrations. More than two wires shall not be terminated at a point.

4.9 Engraved identification ferrules, marked to correspond with the wiring diagrams shall be fitted to each wire. Ferrules shall be of yellow colour with black lettering.

4.9.1 Wiring shall be terminated on preferably stud type terminal blocks such that the wires are connected by cable-lugs with nuts & washers/lock nuts.

4.10 Terminal Blocks (150nos.)

4.10.1 Terminal shall be of reputed make. It shall comprise finely threaded pairs of brass studs of at least 4 mm diameter, links between each pair of studs,washers, nuts and lock nuts. The studs, shall be accurately locked within the mounting base to prevent their turning. Insulated barriers shall be provide between adjacent terminals.

4.10.2 Terminal blocks shall be adequately rated to carry the current of the associated circuit .

4.11 Earthing : Proper earthing arrangements shall be provided on the DCDB