

Saudi Electricity Company



الشركة السعودية للكهرباء

SEC DISTRIBUTION MATERIALS SPECIFICATION

31-SDMS-01, Rev. 03

DATE: 24-03-2010G

31-SDMS-01

REV. 03

SPECIFICATIONS

FOR

LOW VOLTAGE DISTRIBUTION PANEL

**This specification is property of SEC and
subject to change or modification without any notice**



CONTENTS

| Clauses: | Page No. |
|--|----------|
| 1.0 SCOPE | 3 |
| 2.0 CROSS REFERENCES | 3 |
| 3.0 APPLICABLE CODES AND STANDARDS | 3 |
| 4.0 DESIGN AND CONSTRUCTION REQUIREMENTS | 4 |
| 4.1 General | 4 |
| 4.2 Incoming Transformer Connections | 5 |
| 4.3 Busbars | 5 |
| 4.4 Generator Connection | 6 |
| 4.5 Neutral Busbar | 6 |
| 4.6 Current Transformer | 6 |
| 4.7 Ammeters and voltmeters | 6 |
| 4.8 KWH-Meter Wiring Provision | 6 |
| 4.9 Outgoing MCCB's | 7 |
| Table-1 | 8 |
| 4.10 Grounding | 9 |
| 4.11 Internal Lighting | 9 |
| 4.12 Auxiliary Supply | 9 |
| 4.13 L.V. Outgoing Cable Support | 9 |
| 4.14 Labels | 10 |
| 4.15 Enclosure | 10 |
| 4.16 Dimensions | 11 |
| 5.0 NAME PLATE | 12 |
| 6.0 MONOGRAMS & DANGER PLATES | 12 |
| 7.0 TESTING | 12 |
| 7.1 Type (Design) Test | 12 |
| 7.2 Routine Test | 13 |
| 8.0 INSPECTION | 13 |
| 9.0 PACKING AND SHIPPING | 13 |
| 10.0 GUARANTEE | 14 |
| 11.0 SUBMITTALS | 14 |
| 12.0 DATA SCHEDULE | 15 |

LIST OF FIGURES-DRAWINGS

| <u>Figure No.</u> | <u>Description</u> | |
|-------------------|---|----|
| 1. | Low Voltage Distribution Panel with door closed | 18 |
| 2. | Low Voltage Distribution Panel with door open | 19 |
| 3. | Low Voltage Distribution Panel Internal View | 20 |
| 4. | Gland Plates Layout | 21 |
| 5. | Interconnection Mechanism | 22 |
| 6. | Wooden Cables Clamps | 23 |
| 7. | Circuits Label | 24 |



1.0 SCOPE

This SEC Distribution Material Specification (SDMS) specifies the minimum technical requirements for design, materials, manufacturing, testing, inspection and performance for low voltage distribution panels, to be used in the distribution substations of the Saudi Electricity Company (SEC) in Saudi Arabia.

2.0 CROSS REFERENCES

This material standard specification shall be read in conjunction with SEC specification No. 01-SDMS-01(latest revision), titled "General Requirements For All Equipment/Materials" which shall be considered as an integral part of this SDMS, also be read in conjunction with SEC purchase order (P.O.) requirements or contract schedules.

3.0 APPLICABLE CODES AND STANDARDS:

The latest revision of the following codes and standards shall be applicable for the equipment/materials covered in this specification. In case of any deviation, the vendor/manufacturer may propose equipment/material conforming to an alternate code or standard without jeopardizing the requirements of this SDMS. However, the provision of SEC standard shall supersede the provision of these standards in case of any differences.

- | | | |
|-----|------------|---|
| 3.1 | 11-SDMS-01 | 1000V XLPE Insulated Unarmoured Power Cables. |
| 3.2 | 37-SDMS-01 | Low Voltage Moulded Case Circuit Breakers For Service Connections. |
| 3.3 | 37-SDMS-02 | Low Voltage Moulded Case Circuit Breakers For low voltage distribution panels 400 Amps. |
| 3.4 | IEC 60529 | Classification of Degree of Protection. |
| 3.5 | 50-SDMS-01 | Current Transformers up to 36 KV. |
| 3.6 | 38-SDMS-03 | LV Digital Panel Meters. |
| 3.7 | IEC 60408 | Low Voltage Air-Break Switches, Air-Break Disconnectors, Air-Break Switch-Disconnectors and Fuse-Combination Units. |
| 3.8 | IEC 60947 | Low Voltage Switchgear And Control Gear. |



- 3.9 IEC 60114 Indicating Instruments.
- 3.10 IEC 60439-1 Temperature Rise for Low Voltage Panel.
- 3.11 ASTM B103 Phosphor Bronze Plate, Sheets, Strip & Rolled Bar.
- 3.12 ASTM D1535 Paints, Color.
- 3.13 ASTM B117 Coating.
- 3.14 ASTM D1654 Salt Spray Test.
- 3.15 ASTM D3359 Tape (Scratch) Test.
- 3.16 ASTM A153 Zinc Coating (hot-dip) On Iron and Steel Hardware.

4.0 DESIGN AND CONSTRUCTION REQUIREMENTS

4.1 General

- 4.1.1 The panel shall be supplied in two types for indoors and outdoors use, which contains incoming transformer connections, busbars, instruments panel, 400A molded case circuit breakers (MCCB) for out-going circuits, neutral busbar, earthing terminals, and the provision for generator connections.
- 4.1.2 All cable terminations shall be easily accessible from the front.
- 4.1.3 All insulating materials shall be non-hygroscopic and resistant to tracking and cracking.
- 4.1.4 Panel completes with all its fittings and attachments shall be capable of withstanding the effects of direct solar radiation at their installed locations. The temperature of metal surfaces exposed to direct solar radiation shall be regarded as 75° C, plus the effect of any internal heating.
- 4.1.5 Thermal inter-action shall not unduly affect the performance of any components.
- 4.1.6 All parts of equal size and shape shall be interchangeable. The general design shall be made with minimum number of joints.
- 4.1.7 All connections inside the panel shall have a minimum clearance which shall not be less than 25.4 mm between phase and ground as per NEMA standards. In case



the above clearance cannot be obtained, adequate insulating material shall be provided.

All bolts & nuts shall be installed in a way that they could not be unbolted from outside the panel. Extra length of fasteners shall be avoided.

4.2 Incoming Transformer Connections:

4.2.1 For unit and package substations, incoming transformer connections shall be through L.V. busbars. Removable copper links shall be provided to enable the disconnection of incoming transformer busbar connection from L.V. busbar.

4.2.2 For stand-alone L.V. Panels they shall permit the use of single core copper cable of the size 630mm² with compression lugs as shown in Figure (2) of SEC specification No. 12-SDMS-02. These lugs will be supplied by SEC. M10x70mm bolts with nuts and washers shall be provided. Number of incoming cables shall be as specified as in Table-1 of this specification.

4.3 Busbars:

4.3.1 The Busbars shall be hard drawn high conductive tinned copper of uniform cross section as per UNS No. C53400 of ASTM B103 or approved equivalent.

4.3.2 The cross sectional area of busbars shall be as per Table-1 of this specification.

4.3.3 All bolted electrical joints shall be secured by corrosion proof steel fasteners. All bolts, nuts, washers and studs shall be galvanized and comply with SEC specification No. 01-SDMS-01.

4.3.4 Two insulating cover plates, each equipped with a window, shall be UV resistant, unbreakable, transparent, minimum 3 mm thick, heat resistant, non-hygroscopic and polycarbonate door. The cover shall be gasketed/hinged and fitted with locking bar to secure them at the center. Hinges shall be fitted by bolts made from stainless steel or brass.

4.3.5 Adequate removable and insulating barrier between the operator and the live busbars shall be provided.

4.3.6 Phase busbars shall be sequence marked in color from front to back red, yellow, blue and neutral busbar shall be marked black. The marking shall be done by indelible paint at both ends and the middles of the busbars.



4.3.7 Busbars shall be spaced and staggered in such a way that installation of MCCBs and associated cables can be achieved without any difficulty using common tool.

4.3.8 Phase busbars shall have the provision to accommodate SEC approved CTs as per SEC specification No. 50-SDMS-01 (latest revision) for the ratios given in table 1.

4.4 **Generator Connection:**

Holes of 13mm diameter for installation of mobile generator shall be provided. The distance between each two holes shall be 50mm center to center.

The holes shall be suitable for lugs provided by SEC, two (2) for L.V. Panel up to 1600A rating and four (4) for L.V. Panel exceeding 1600A.

4.5 **Neutral Busbar:**

The size of neutral busbar shall be as per Table-1 of this specification. It shall be connected to the frame by insulated bolts, easily removable link. Holes of 13mm diameter shall be provided for each outgoing cable connection (lug type).

4.6 **Current Transformer:**

Three Current Transformers conforming to SEC specification No. 50-SDMS-01 shall be installed at the incoming busbars of the distribution panel for metering purpose. CTs secondary neutral terminals shall be earthed. The current rating is indicated in Table-1 of this specification, Insulation Class-E and 120°C

4.7 **Ammeters And Voltmeters:**

L.V. panel shall be equipped with a digital panel meter according to SEC specification No. 38-SDMS-03 latest revision and supplied from SEC approved manufacture, CT ratio shall be pre programmed by panel manufacturer .

4.8 **KWH-Meter Wiring Provision:**

All wiring shall be 2.5 mm² copper conductor and black PVC. Connectors shall be full ring insulated crimp type. CT short circuit links shall be provided on terminal block. KWH-Meter wiring shall be made directly without Fuses. Dual wired terminal block for connection of a 3-phase 4-wire CT KWH-Meter shall be provided inside the metering panel.

**4.9 Outgoing MCCBs:**

4.9.1 Provision for installation of 400A MCCBs according to SEC specification No. 37-SDMS-02 latest revision shall be already made for each outgoing feeder and also suitable for installing at least three (3) SEC approved MCCBs.

Unless otherwise specified in the tender, number of MCCBs supplied/installed in the L.V. Panel shall be $(n - 2)$ where n is the no. of outgoing MCCBs in Table-1.

4.9.2 MCCB outgoing terminals shall be suitable for direct connection of 300mm² Al. cable as per SEC specification No. 11-SDMS-01 by means of bimetallic lugs with M10 bolt and palm width of 30mm. as per Figure No. 5 of SEC specification No.12-SDMS-02

4.9.3 One Mechanical Link to connect two nearby MCCBs in parallel shall be provided with each panel. It shall be as per attached drawing in page No. 22

4.9.4 These MCCBs shall comply with the following:

- (A) Easily interchangeable with at least 3 SEC approved manufacturers, if possible.
- (B) Without lock and without terminal spreaders.
- (C) With current limiting functions.



Table (1)
Low Voltage Distribution Panel

| Components | TRANSFORMER RATING | | | | | | | |
|---|---|--------------|------------------|--------------|-------------------|--------------|--------------------|--------------|
| | 300kVA | | 500kVA | | 1000kVA | | 1500kVA | |
| | 231/133 V | 400/231 V | 231/133 V (I) | 400/231 V | 231/133 V (II) | 400/231 V | 231/133 V (III) | 400/231 V |
| L.V. Panel incoming busbar/link rating (A) minimum | 800 | 500 | 1600 | 800 | 3000 | 1600 | 4000 | 2500 |
| CT rating on incoming busbars (A) | 800/5 | 800/5 | 1500/5 | 800/5 | 3000/5 | 1500/5 | 4000/5 | 3000/5 |
| Incoming cables for standalone L.V panel | 2/ph 1/N | 2/ph 1/N | 2/ph 1/N | 2/ph 1/N | 4/ph 2/N | 2/ph 1/N | 6/ph 3/N | 4/ph 2/N |
| For L.V. panel used in unit/package substations | Incoming connection shall be through removable copper busbar links from back of the panel | | | | | | | |
| Number of Outgoing MCCB's | 4 | 2 | 8 | 4 | 12 | 8 | 14 | 10 |
| Minimum Spacing MCCB's | Not less than 10mm | | | | | | | |
| Phase Busbars min. cross section (mm ²) | 10x50 | 10x50 | 10x100 | 10x50 | 2x10x100 | 10x100 | 3x10x100 | 2x10x100 |
| Phase Busbars min. Rating, (A) | 800 | 500 | 1600 | 800 | 3000 | 1600 | 4000 | 2500 |
| Neutral Busbar min. Size (mm ²) | 5x50 | 5x50 | 10x50 | 5x50 | 10x100 | 10x50 | 2x10x100 | 10x100 |
| Neutral Busbar min. Rating, (A) | 400 | 250 | 800 | 400 | 1600 | 1000 | 2500 | 1600 |
| Ammeter Scale | As per specification No. 38-SDMS-03 latest edition | | | | | | | |
| Voltmeter Scale | | | | | | | | |
| Symmetrical Short Circuit Rating for 2 sec. (RMS), kA | 25 | 25 | 25 | 25 | 40 | 25 | 65 | 40 |

Notes:

- A) The above table is applicable for all ratings of Unit & Package substations.
- B) The Stand-alone L.V panel designs shall be rated by current for dual voltage as indicated in the table as:
- (I) 1600A L.V. panel to be used for 300kVA (400/231, 231/133V), 500kVA (400/231, 231/133V) and 1000kVA (400/231V) transformer ratings, but the outgoing MCCBs shall be as given in the table for each rating.



- (II) 3000A L.V. panel to be used for 1000kVA (231/133V) and 1500kVA (400/231V) transformer ratings, but the outgoing MCCBs shall be as given in the table for each rating.
- (III) 4000A L.V. panel to be used for 1500kVA (231/133V) transformer rating.
- (IV) System voltage selector switch shall be provided in the metering panel to insure that dual voltage 231/133V and 400/231V are rated for 1600A and 3000A panels

4.10 Grounding:

- 4.10.1 Two terminals having M12 stud with nuts and washers made of stainless steel shall be provided on enclosure of the panel with clear identified grounding mark.
- 4.10.2 All hinged parts shall be connected to the frame work (enclosure) through minimum 35mm² bolted copper braids.

4.11 Internal Lighting:

The L.V. Panel shall be fitted with a 100 Watt lamp controlled by the door's operated switch. The auxiliary circuit supplying the lamp shall have a separate miniature circuit breaker located at an accessible position on the metering panel.

4.12 Auxiliary Supply:

- 4.12.1 A pre-wired terminal block for 3 phases, 4-wire connections shall be installed inside the metering panel. The terminals size shall be suitable for 10mm² standard wiring. 10A miniature circuit breakers shall be provided in the circuit.
- 4.12.2 The L.V. Panel shall be equipped with a 220V three pin socket outlet on the metering panel, completed with plug top and labeled with the appropriate voltage. The position of the socket outlet shall not impede cable installation or termination.
Wiring shall be done by 4mm² copper, 85°C black PVC insulation with crimping type connectors.

4.13 L.V. Outgoing Cable Support:

- 4.13.1 Cable support clamps shall be provided and fixed above L.V. Panel's base frame just below cable break-out position. They shall be adequate to support the cable in normal service and when subjected to short circuit tests per attached drawing in page No. 23.
L.V. Panel's base frame cover shall be fabricated in two half plate, each plate is divided into three sections for easy installation and removal of outgoing cables. Sealable cable entry holes shall be provided.



4.13.2 Adequate vertical clearance of 500mm for phases, 400mm for neutral above cable clamps and horizontal spacing shall be provided to permit connection of the phase conductors on MCCB terminals, whatever their formation.

All L.V. Cables shall be terminated from front in a horizontal plane at one level and clamped inside L.V. Panel.

4.13.3 Access to the L.V. Cables Termination shall be made from the front by means of gasketed/hinged doors fitted with locking bar to secure them at the center. Hinges shall be fitted by bolts made from stainless steel or brass.

4.14 **Labels:**

4.14.1 Each outgoing circuit shall be provided with three layers trifolyt label plate (white/black/white) of 3mm thickness, dimension of 30mm x 80mm, bolted and blank (non-numbered)

4.14.2 These label plates shall be fixed above the MCCB in suitable place.

4.14.3 Insertion Pocket for circuit number plate/sheet per attached drawing in page No. 18 shall be provided in the left side of the panel's door.

4.15 **Enclosure:**

The enclosure shall be designed as follows:

4.15.1 Weather proof and provided with watershed top. Enclosure shall be made of galvanized steel sheet at least 3mm thickness or Aluzinc at least 2 mm thickness.

4.15.2 Adequate ventilation shall be provided by means of canopy, louvers....etc. to allow natural circulation of air. Ventilation shall be suitable screened to prevent the entry of insects and foreign bodies. Screen material shall be made of strong enough stainless steel. Degree of protection shall be IP 43, and IP 30 of IEC 60529 for Outdoor and Indoor applications respectively.

4.15.3 For stand-alone L.V. Panels, enclosure shall be suitable for mounting on a flat base at ground level. Holes shall be provided for fixing M16 size foundation bolts.



4.15.4 Access to the L.V. Outdoor panel shall be from front by means of gasketed/hinged doors fitted with locking bar to secure them at the top and bottom, and one stainless steel hasp set for separate pad locking.

- i) Three Hinges for each door shall be fitted by bolts made from stainless steel or brass.
- ii) Pressure fit type gasket shall be provided. Glue fit type is not acceptable.
- iii) Locking shall be as follows :
 - Handle shall be high grade stainless steel.
 - Shall be operated by central handle.
 - Handle shall have integral lock and shall be inaccessible by means of stainless steel pivoted cover with a hasp for padlocking both doors as shown in as per attached drawing in page No. 18.
 - Integral lock cylinder type and manufacturer shall be approved as per the SEC approved manufactures list.
 - Locking rotation shall be maintained within 90 degrees.
 - Top and bottom locking bars shall be provided with roller for each engagement of the locking bars with the panel frame.
- iv) Separate 3mm thickness stainless steel hasp and cover set provided for padlocking the front door of the panel.
- v) Fitted with lifting device at both side, and located such that the unit is balanced when lifted.

4.15.5 All doors shall be provided with door stoppers and locking at open position to protect them from swinging in order to avoid accidents.

4.15.6 Access to the indoor type L.V. panel shall be directly from the front without doors.

4.15.7 Finishing Color:

The enclosure shall be adequately protected against corrosion and painted as per SEC specification No. 01-SDMS-01.

4.16 Dimensions:

Maximum overall dimensions for stand-alone L.V. Panel shall be as follows:

| Source Rating | Length (mm) | Width (mm) | Height (mm) |
|---------------|-------------|------------|-------------|
| 1600 A | 1800 | 550 | 1900 |
| 3000 A | 2000 | 550 | 1900 |
| 4000 A | 2500 | 650 | 1900 |

**5.0 NAME PLATE:**

Each panel shall be provided with an aluminum name plate fixed inside on left door bearing the following information engraved on it with minimum in Arabic and in English:

- Reference to SEC specification
- Rated voltage (V)
- Rated current of busbar (A)
- Rated current of incoming unit (A).
- Rated current of outgoing unit (A).
- Short circuit current rating (kA)
- CT Ratio installed.
- SEC purchase order number
- SEC item number
- Manufacturer's / Vendor's name
- Year of manufacture
- Gross weight when fully equipped (kg)
- Serial number

6.0 MONOGRAM & DANGER PLATES:

Danger plate and SEC monogram as per SEC drawings No. SEC-01-01 and SEC-01-02 respectively shall be provided and installed at the front (on SEC approved location) of the L.V. Panel using M5 hot dipped galvanized/stainless steel/brass fasteners (oval head rounded neck bolts with nuts and external tooth lock washers) not removable/accessible from the front i.e. without opening the door/front cover.

SEC shall approve location and samples of danger and monogram plates prior the installation.

7.0 TESTING:

Panels shall be tested in accordance with the latest standards and as specified herein. All test results shall be provided for review and acceptance by SEC.

7.1 Type (Design) Test:**7.1.1 Short Circuit Test:**

The panel shall be capable of carrying the short circuit current (RMS, Symmetrical) for two (2) seconds.



7.1.2 Temperature Rise Test:

- a) Temperature rise test shall be conducted as per IEC 60439-1.
- b) Temperature rise test at any point shall not exceed 60°C relevant to the maximum ambient temperature as specified in SEC specification No. 01-SDMS-01.
- c) For Instruments inside the panel, the temperature rise shall not exceed the allowable temperature of the instruments.

7.1.3 Salt Spray Test and Tape (Scratch) Test shall be as given in SEC specification No. 01-SDMS-01.

7.1.4 Certified test reports of Design test performed on an identical unit shall be submitted to SEC for review and approval during bidding stage.

7.2 Routine Test:

All Routine Tests prescribed in the relevant IEC shall be performed on all units prior to delivery to SEC.

8.0 INSPECTION:

SEC may wish to witness tests or to visit factory during manufacture of any or all items covered in this specification. Accordingly the supplier shall give an advanced notice to SEC of the manufacturing and testing schedule.

9.0 PACKING AND SHIPPING:

Packing and shipping shall generally be as per SEC General Requirements No. 01-SDMS-01 including the following:

- 9.1 The panel shall be delivered ready for service.
- 9.2 Supplier shall contact Materials Department of SEC for additional packing, handling and shipment instructions as applicable.
- 9.3 Packing crates shall be marked with following :
 - Manufacturer's name
 - Country of origin
 - SEC purchase order number



- SEC item number
- Gross weight in kilograms
- Handling instructions
- Final destination store

10.0 GUARANTEE:

The vendor shall guarantee the panel against all defects arising out of faulty design or workmanship or defective materials for a period of two years from the date of delivery or one year from the date of commissioning of the panel.

11.0 SUBMITTALS:

- 11.1 The vendor shall fill and submit one copy of the attached Technical Data Schedule with the quotation. In addition to Data Schedule, clause by clause compliance to this specification shall also be confirmed/ submitted.
- 11.2 Detailed dimensional drawings of the panel, showing all mounting arrangements, terminals, electrical clearances between phase and earth, hinges, cable clamps, locking arrangement and name plate shall be submitted.
- 11.3 Single line diagram shall be submitted.
- 11.4 The supplier shall provide literature describing field experience under similar service conditions to those in section 4.0. A reference's sale list shall be included. This shall detail the quantities sold, name and address of the user, number of years in service, in each case.
- 11.5 A comprehensive list of manufacturer's recommended spare parts with full details (item description, part No., manufacturer name, supplier name ...etc) shall be submitted separately
- 11.6 Catalogue that indicates the part No. of all the components inside the panel shall be submitted.
- 11.7 Detail drawing showing the installation of revenue metering CT as required in this specification.

**DATA SCHEDULE****Low Voltage Distribution Panel (Sheet 1 of 3)**

SEC Inquiry No. _____

Item No. _____

| Clause | DESCRIPTION | SEC SPECIFIED VALUES | VENDOR PROPOSED VALUES |
|------------|--|--|------------------------|
| 4.0 | DESIGN AND CONSTRUCTION REQUIREMENTS | | |
| 4.1 | General | | |
| | Rated voltage | 231V/133V, $\pm 5\%$ 400V/231V, $\pm 5\%$ | |
| | Symmetrical Short Circuit Rating for 2 seconds (RMS) | kA | |
| | Phase busbar rating | (A) | |
| | Neutral busbar rating | (A) | |
| 4.1.8 | Min. clearance between phases and phase to ground | 25.4 mm | |
| 4.2 | Incoming Transformer Connection | | |
| 4.2.1 | Removable copper links | | |
| 4.2.3 | No. of incoming cables (for Stand-alone) | As per Table-1 | |
| 4.3 | Busbars | | |
| 4.3.1 | Material | Tinned Copper | |
| | Minimum thickness of tin plating | 5% of nominal composition | |
| 4.3.2 | Size of phase busbar | | |
| 4.3.3 | Electrical joints (bolts, nuts, washers) | Plated as per SEC's Spec. No. 01-SDMS-01 | |
| 4.3.4 | Insulating barrier to cover live parts | Yes | |
| 4.3.5 | Busbar color | Red/Yellow/Blue Black for neutral | |
| 4.4 | Provision for generator connection | | |
| | | Yes | |
| 4.5 | Size of neutral busbar | | |
| 4.6 | Current Transformer : | | |
| | Class | 0.5 | |
| | Min. Burden | 10 VA | |
| | Error co-efficient | < 5 | |
| | Insulation class | Class E-120°C | |
| | Type and make | | |

**DATA SCHEDULE****Low Voltage Distribution Panel (Sheet 2 of 3)**

SEC Inquiry No. _____

Item No. _____

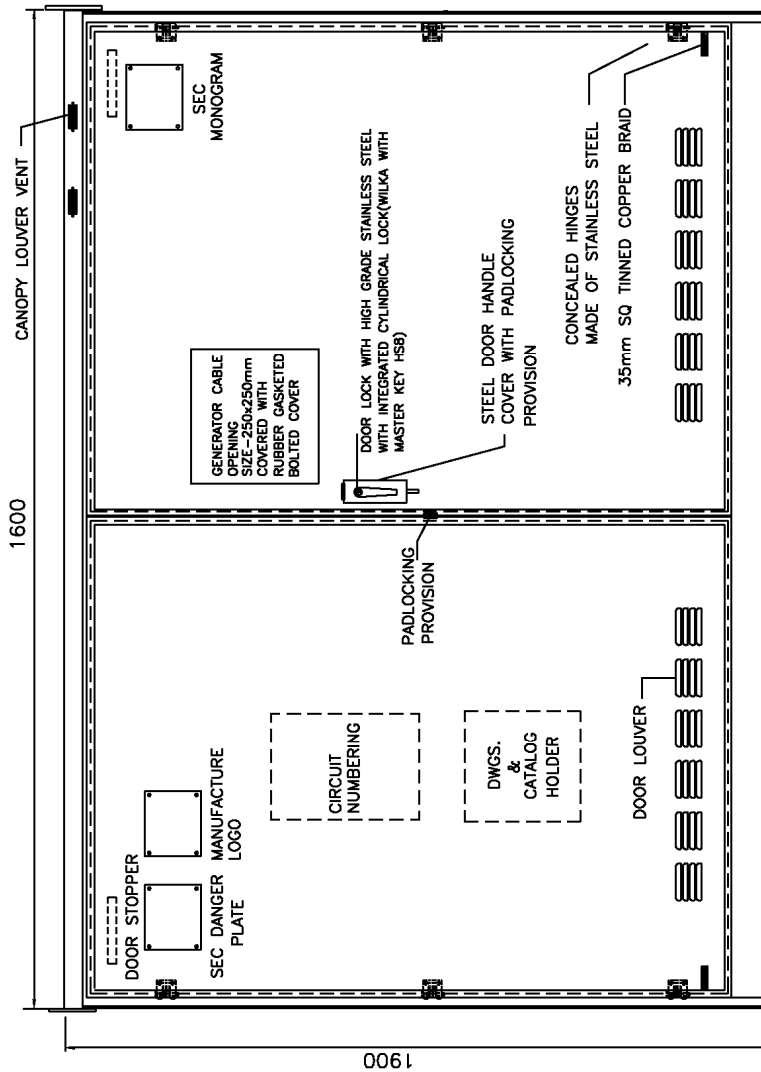
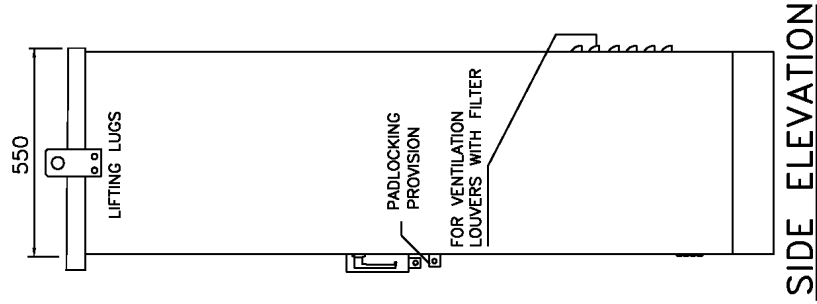
| Clause | DESCRIPTION | SEC SPECIFIED VALUES | VENDOR PROPOSED VALUES |
|--------|--|--|------------------------|
| 4.7 | Ammeters: Type and make | | |
| 4.7.3 | Size | 96mm x 96mm | |
| 4.8 | Voltmeters: Type and make | | |
| 4.8.2 | Size | 96mm x 96mm | |
| 4.9 | KWH-Meter Wiring Provision | | |
| 4.11 | Outgoing MCCB's: Type, Model & Make Rated current Dimensions(L x W x D) mm No. of supplied MCCBs No. of provisions for fixing MCCB's | 400 A | |
| 4.12 | Grounding : Two terminals of M12 stud Copper braid for hinged parts | Yes 35mm ² | |
| 4.13 | Internal Lighting | 100W | |
| 4.14 | Auxiliary Supply: | | |
| 4.15 | L.V. Cable Supports | | |
| 4.16 | Labels | | |
| 4.17 | Enclosure: Material Thickness of sheet Degree of protection Type of gasket Locking arrangement Finishing color | Steel sheet/Aluzinc 3mm/2mm IP43/IP30 Pressure fit clause 4.17.4 As per 01-SDMS-01 | |
| 4.18 | Dimensions L x W x H (mm) (for Stand-alone L.V. panel) | | |
| 6.0 | MONOGRAM & DANGER PLATES | Yes | |

**DATA SCHEDULE****Low Voltage Distribution Panel (Sheet 3 of 3)**

SEC Inquiry No. _____ Item No. _____

- A. Additional technical information or features specified by SEC:
- B. Additional supplementary data or features proposed by vendor/supplier:
- C. Other particulars to be filled up by vendor/supplier:
(use separate sheet if needed)

| Address | Manufacturer | Vendor/Supplier |
|-------------------------------|--------------|-----------------|
| Name of Company | | |
| Location and Office Address | | |
| Authorized Name and Signature | | |
| Date | | |
| Official seal / stamp | | |

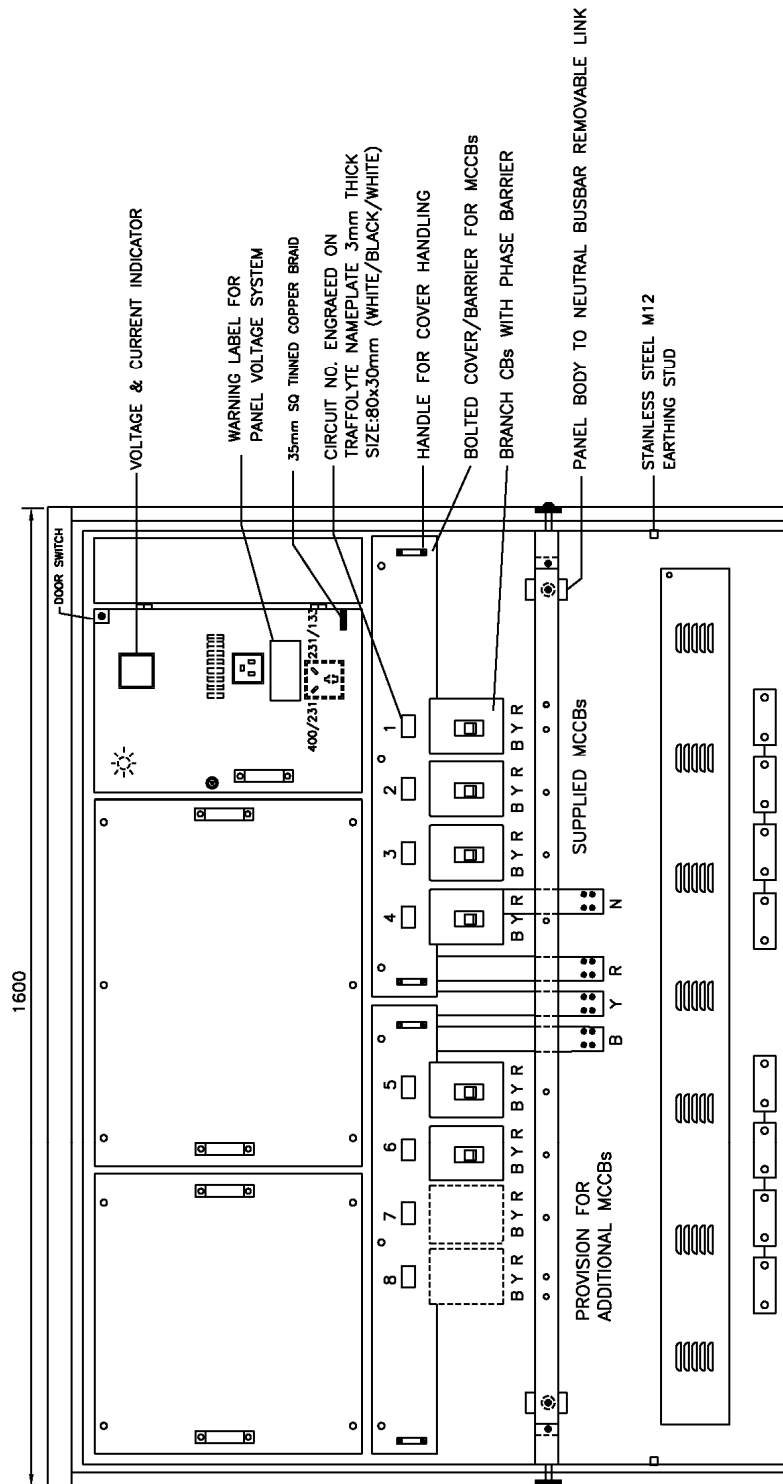




SEC DISTRIBUTION MATERIALS SPECIFICATION

31-SDMS-01, Rev. 03

DATE: 24-03-2010G

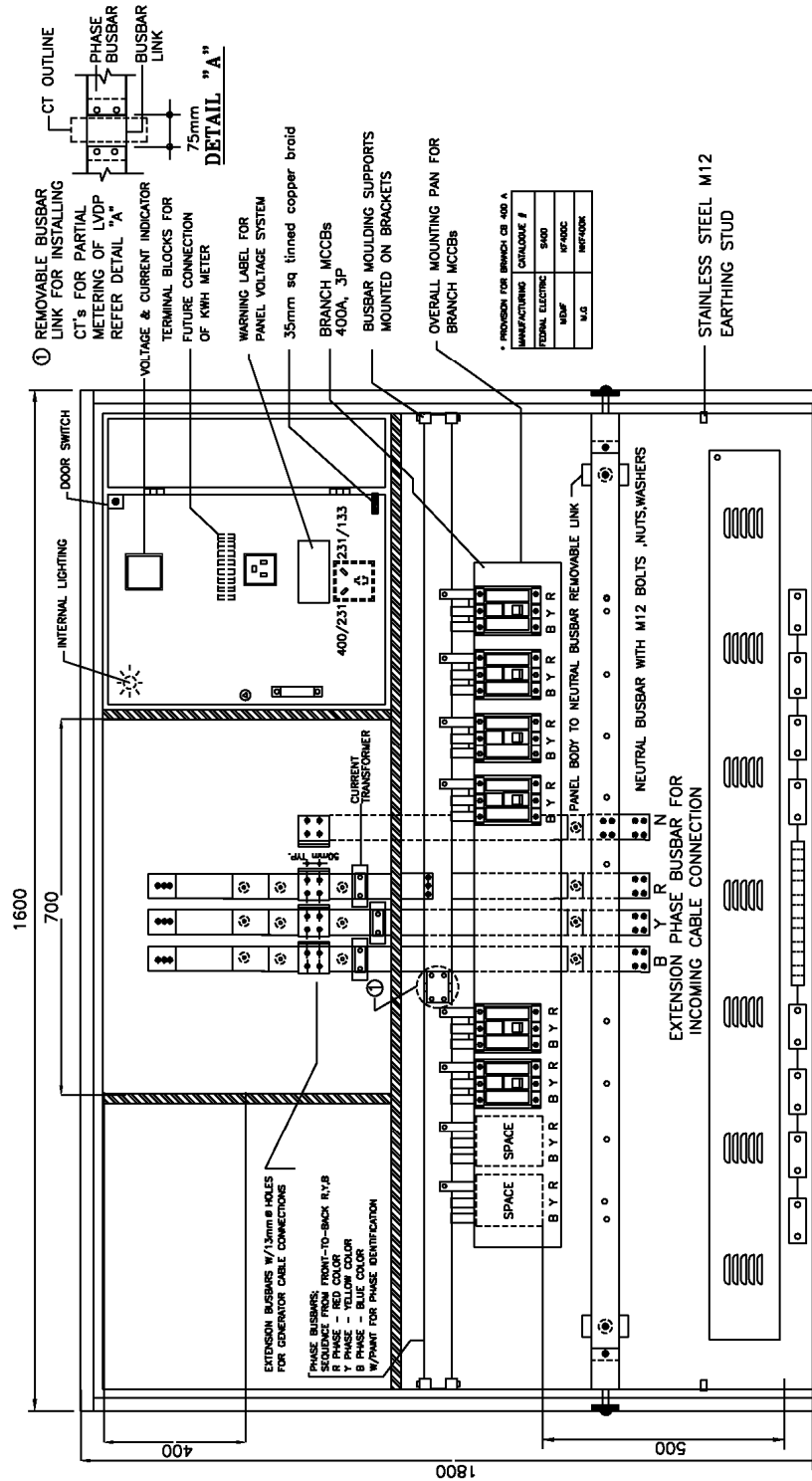




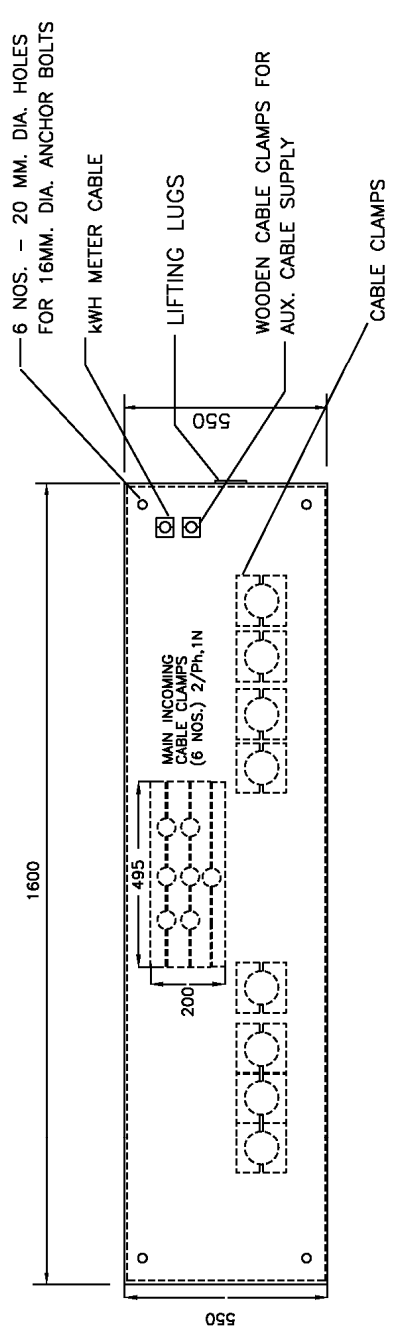
SEC DISTRIBUTION MATERIALS SPECIFICATION

31-SDMS-01, Rev. 03

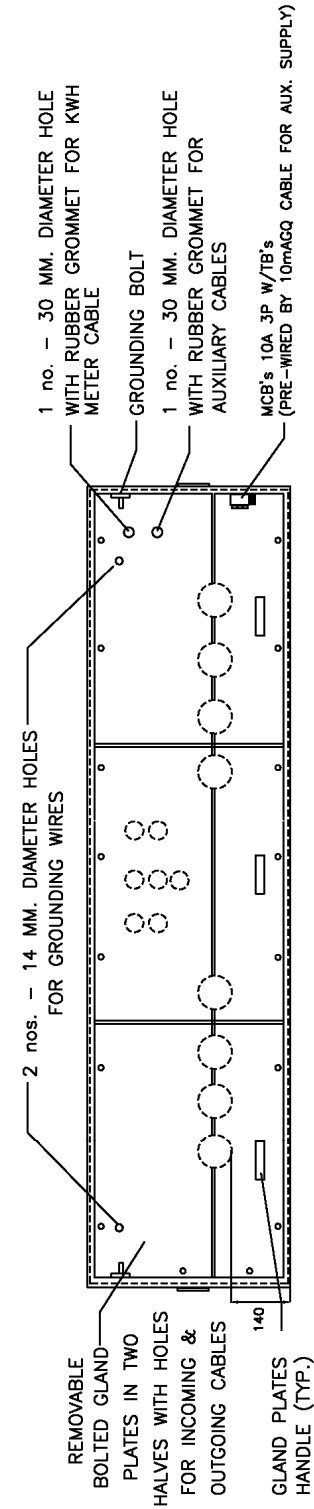
DATE: 24-03-2010G



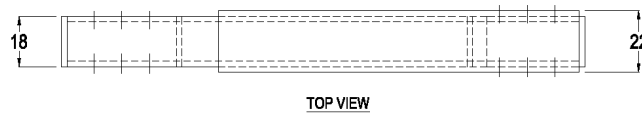
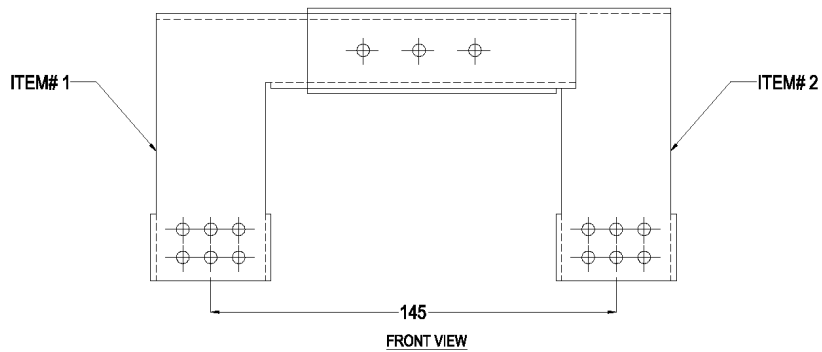
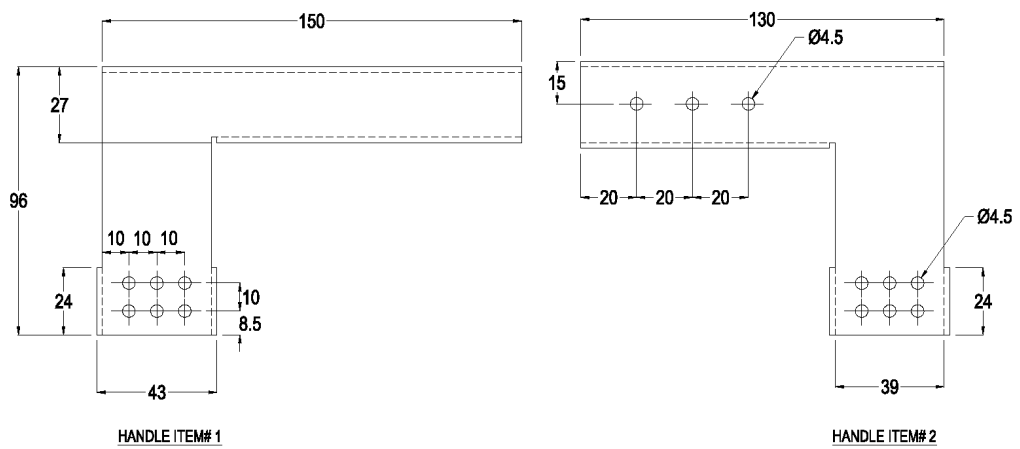
PANEL INTERNAL LAYOUT
SHOWING ARRANGEMENT OF COMPONENTS



PLAN VIEW

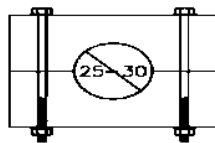


GLAND PLATES LAYOUT
FOR STAND ALONE PANELS

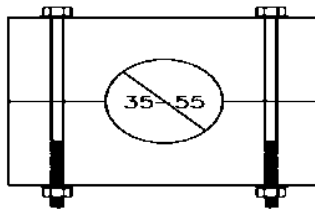


INTERCONNECTION MECHANISM

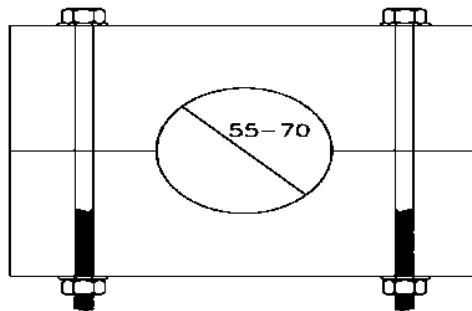
MATERIAL:
2mm GALVANIZED STEEL SHEETS



WOODEN CABLE CLAMPS FOR AUXILIARY SUPPLY CABLES



WOODEN CABLE SUPPORTS FOR INCOMING CABLES



WOODEN CABLE SUPPORTS FOR OUTGOING CABLES

FIG-3: WOODEN CABLE CLAMPS

ALL DIMENSIONS ARE IN MILLIMETER



| CIRCUIT NUMBER | DESCRIPTION |
|----------------|-------------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |

NOTE

TABLE SIZE SHALL BE PROPORTIONAL TO THE INSIDE OF THE LEFT SIDE DOOR OF THE PANEL

FIG-4: CIRCUITS LABEL