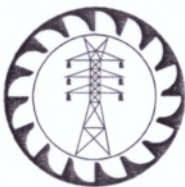


147: 2024

CEB
SPECIFICATION

**MULTIPLE CONNECTION BOXES
FOR LOW VOLTAGE NETWORK**



CEYLON ELECTRICITY BOARD
SRI LANKA



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SPECIFICATION FOR MULTIPLE CONNECTION BOXES FOR LOW VOLTAGE NETWORK

1.0 SCOPE

This specification covers the general requirements of design, manufacture, testing, supply and delivery of Multiple Connection Boxes for Low Voltage Network of following types.

1. Metal Clad Meter Enclosure for Multiple Connections for wall mounted applications
2. 3Ph Metal Clad Bus bar Chambers for wall mounted applications with 30A/60A rated currents.
3. 3Ph Metal Clad Bus bar Chambers for wall mounted applications with 100A/160A/250A / 400A / 600A/ 800A/ 1000A / 1600A rated currents.
4. 60A 3Ph Multiple Service Connection boxes for pole mounted applications.

2.0 SYSTEM PARAMETERS

(a)	Nominal voltage (U)	400 V
(b)	System highest voltage (Um)	440 V
(c)	System frequency	50 Hz
(d)	Method of earthing	Neutral earthed at Substations
(e)	System fault level	25 kA

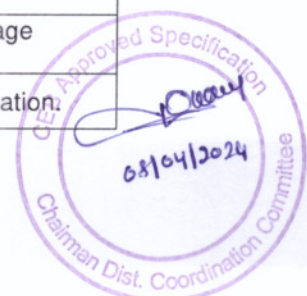
3.0 SERVICE CONDITIONS

(a)	Annual average ambient temperature	30 °C
(b)	Maximum ambient temperature	40 °C
(c)	Average Annual Rain Fall	240 mm
(d)	Maximum relative humidity	90%
(e)	Environmental conditions	Humid tropical climate with heavily polluted atmosphere
(f)	Operational altitude	From M.S.L. to 1900 m above M.S.L.
(g)	Isokeraunic (Thunder days) level	100 days
(h)	Solar Radiation	4.5 kWh/m ² /day

4.0 APPLICABLE STANDARDS

The equipment and components supplied shall be in accordance with the latest editions of the standards specified below and amendments thereof.

(a)	IEC 61439: 2014	Low voltage switchgear and control gear assemblies.
(b)	IEC 60529: 2013	Enclosure for Electrical Apparatus for IP Code.
(c)	ISO 12944: 2018	Paints and varnishes — Corrosion protection of steel structures by protective paint systems.
(d)	IEC 60364:2017	Electrical Installations of buildings.
(e)	IEC 61140: 2016 RLV	Protection against electric shock – Common aspects for installation and equipment.
(f)	IEC 60664: 2018	Insulation co-ordination for equipment with low voltage system.
(g)	BS EN 60085 (2008)	Electrical insulation. Thermal evaluation and designation.



However in the event of discrepancy, details given in this CEB specification supersede above standards.

5.0 BASIC FEATURES

5.1. Metal Clad Meter Enclosure for Multiple Connections

- (a) The construction of metal clad meter enclosure shall be as per the drawing specified in Annex-A1 (Dwg. No. DS&S/2022/147/A1). Enclosure shall have IP 33 rating or higher complying with IEC 60529. This enclosure is used to mount single phase and three phase meters with MCBs.

The meter enclosure shall accommodate following cable sizes:

	Nominal Cable Size	Cable type	No of cables
Incoming Cable	10 to 16 mm ²	PVC/XLPE insulated Copper	16
Outgoing Cable	10 to 16 mm ²	PVC/XLPE insulated Copper	16

- (b) There shall be an ebonite pad/wooden board with a thickness not less than 15mm to mount four programmable static energy meters with MCBs. The wooden board, if supplied, shall be suitably treated to prevent deterioration by termites or fungus attack.
- (c) Metal clad meter enclosure shall be wall mounted type. All steel works shall be constructed of steel sheets with a minimum of thickness of 2mm. The enclosure shall have a base and a cover with padlocking/sealing facility. The cover shall be hinge mounted, without exposing the hinges. Hinges shall not be exposed or accessible to the outside when the door is closed. A glass opening shall be provided as per the drawing in Annex-A1 in the front cover, for easy visibility of meters.
- (d) A flat type beading shall be fitted around the edges of the door/glass to provide protection against dust, drops of water and insects when it is closed. The base and the cover shall be of perfect alignment and good workmanship.
- (e) Fixing brackets of the meter enclosure shall be of thickness not less than 5mm and welded to the base. Brackets shall withstand the weight of the box and the cables connected to the meters. Brackets shall have 10mm hole to insert 8mm anchor bolts to fix the enclosure to the wall and necessary bolts shall be supplied.
- (f) The outer surface of the enclosure shall have smooth and of good finish powder coating suitable for indoor application of light gray (preferably RAL 7035) color or any other approved by CEB. At least it shall be designed and treated for corrosivity environment C3 category as per ISO/EN 12944-2. In the painting process the surface shall be thoroughly cleaned and shall be treated with Zinc rich primer of minimum 60 micron thickness. Then it shall be powder coated with a minimum thickness of 60 micron thickness. The total nominal dry film thickness (NDFT) shall not be less than 120 microns (ISO/EN 12944-2). The inner surface of the enclosure shall be powder coated with a minimum thickness of 60 microns ensuring the overall durability.
- (g) Proper ventilation shall be provided to the enclosure while adhering to the Ingress Protection class.
- (h) A common earthing point which connects all metallic parts except live parts shall be provided. Provisions shall be provided to connect the earthing wire to the common earthing point through



a lug, which goes to the earthing grid.

5.2. 3P Metal Clad Busbar Chambers for wall mounted applications with 30A/60A rated currents.

- (a) These Metal Clad Bus bar chambers shall accommodate four (4) busbars for 3 phases and the neutral. Enclosure shall have IP 33 rating or higher complying with IEC 60529. General construction drawing is attached in Annex-A2 (Dwg. No. DS&S/2022/147/A2)
 - (b) There shall be a wooden mounting pad/ebonite pad/ to fix the MCCBs with a rating 30A/60A. Complete wiring from bus bars to MCCB with 16mm² CU/PVC/PVC cables shall be provided as indicated in the drawing no. DS&S/2022/147/A2.
 - (c) The Busbar Chamber shall be metal enclosed, wall mounted type. All steel works shall be constructed of steel sheets with a minimum of thickness of 2mm. The Busbar Chamber shall have a base and a cover with padlocking/sealing facility. The cover shall be hinge mounted, without exposing the hinges. Hinges shall not be exposed or accessible to the outside when the door is closed. The cover shall be provided with door opening supports and hooks to keep the door open for O&M purposes. A flat type beading shall be fitted around the edges of the door to provide protection against dust, drops of water and insects when it is closed. The base and the cover shall be of perfect alignment and good workmanship.
 - (d) Fixing brackets of the Busbar Chamber shall be of thickness not less than 5mm and welded to the base. Brackets shall withstand the weight of the box and the cables connected to the busbars. Brackets shall have 10mm hole to insert 8mm anchor bolts to fix the busbar chamber to the wall and necessary bolts shall be supplied with the busbar chamber.
 - (e) The outer surface of the enclosure shall have smooth and of good finish powder coating suitable for indoor application of light gray (preferably RAL 7035) / beige (RAL 7032) color or any other color approved by CEB. At least it shall be designed and treated for corrosivity environment C3 category as per ISO/EN 12944-2. In the painting process the surface shall be thoroughly cleaned and shall be treated with Zinc rich primer of minimum 60 micron thickness. Then it shall be powder coated with a minimum thickness of 60 micron thickness. The total nominal dry film thickness (NDFT) shall not be less than 120 microns (ISO/EN 12944-2). The inner surface of the enclosure shall be powder coated with a minimum thickness of 60 microns ensuring the overall durability.
- (a) Cable entry holes to insert cables with sizes from 10mm² to 25mm² shall be provided on the bottom side. A rubber sealing to eliminate the damages to the cable insulation and to prevent insects to the chamber, shall be provided in each cable entry point. The rubber sealing size should accommodate cable sizes from 10mm² to 25mm².
 - (b) Bus bars shall be Flat, Hard-drawn Copper and shall be firmly fixed with horizontally stepped so as to facilitate easy cable connection and disconnection without twisting and sharp bending. The mounting steps shall be made out of Thermosetting Plastic insulating material.
 - (c) Proper ventilation shall be provided to the enclosure while adhering to the Ingress Protection class.
 - (d) A common earthing point which connects all metallic parts except live parts shall be provided. Provisions shall be provided to connect the earthing wire to the common earthing point through a lug, which goes to the earthing grid.



5.3. 3P Metal Clad Busbar Chambers for wall mounted applications with 100A/160A / 250A/ 400A / 1000A / 1600A rated currents.

5.3.1. Construction

- (a) These Metal Clad Bus bar chambers shall accommodate four (4) busbars for 3 phases and the neutral. Enclosure shall have IP 33 rating or higher complying with IEC 60529. General construction drawings with bus bar dimensions are attached in Annex-A-3 to Annex A-6
- (b) The Busbar Chamber shall be metal enclosed, wall mounted type. All steel works shall be constructed of steel sheets with a minimum of thickness of 2mm. The Busbar Chamber shall have a base and a cover with padlocking/sealing facility. The cover shall be hinge mounted, without exposing the hinges. Hinges shall not be exposed or accessible to the outside when the door is closed. The cover shall be provided with door opening supports and hooks to keep the door open for O&M purposes. A flat type beading shall be fitted around the edges of the door to provide protection against dust, drops of water and insects when it is closed. The base and the cover shall be of perfect alignment and good workmanship.
- (c) Fixing brackets of the Busbar Chamber shall be of thickness not less than 5mm and welded to the base. Brackets shall withstand the weight of the box and the cables connected to the busbars. Brackets shall have 12mm hole to insert 10mm anchor bolts to fix the busbar chamber to the wall and necessary bolts shall be supplied with the busbar chamber.
- (d) The outer surface of the enclosure shall have smooth and of good finish powder coating suitable for indoor application of light gray (preferably RAL 7035) / beige (RAL 7032) color or any other CEB approved color. At least it shall be designed and treated for corrosivity environment C3 category as per ISO/EN 12944-2. In the painting process the surface shall be thoroughly cleaned and shall be treated with Zinc rich primer of minimum 60 micron thickness. Then it shall be powder coated with a minimum thickness of 60 micron thickness. The nominal dry film thickness (NDFT) shall not be less than 120 microns. (ISO/EN 12944-2).
- (e) Cable entry holes to insert cables defined in the clause 5.3.2 shall be provided on the bottom side. A rubber sealing to eliminate the damages to the cable insulation and to prevent insects to the chamber, shall be provided in each cable entry point. The rubber sealing size should accommodate cable sizes from 70mm² to 500mm² for bus bar chambers referred in Annex-A4.
- (f) Bus bars shall be Flat, Hard-drawn Copper and shall be firmly fixed with horizontally stepped so as to facilitate easy cable connection and disconnection without twisting and sharp bending. The mounting steps shall be made out of Thermosetting Plastic insulating material. Bus bars shall be insulated except where the holes for cable connections are.
- (g) Proper ventilation shall be provided to the enclosure while adhering to the Ingress Protection class.
- (h) A common earthing point which connects all metallic parts except live parts shall be provided. Provisions shall be provided to connect the earthing wire to the common earthing point through a lug, which goes to the earthing grid.



5.3.2. Ratings

The construction and ratings of the Busbar Chambers shall be as follows.

Busbar Chamber Rating	No of PVC insulated 4 number cable sets (Incoming)	No of PVC insulated 4 number cable sets (Outgoing)
100A	As per dwg. no. DS&S/2023/147/A-3	
160 A/250A	1	3
400 A	1	4
630 A	1	4
800 A	2	5
1000 A	2	5
1600 A	3	6



5.3.3. Danger Board

A plate for Danger Board shall be weather-proof and corrosion-proof and shall be fixed on the cover and shall be designed according to the CEB specification number 069:2018.

5.4. 60A 3Ph Multiple Service Connection boxes for pole mounted applications

The Multiple Service Connection Boxes for pole mounted applications shall be designed for outdoor applications to provide multiple connections from single 1ph/3ph wire tapped from the LV line. Expected fault level is 18 kA.

5.4.1. Enclosure

- The Enclosures of the Multiple Service Connection Boxes shall have a base and cover molded separately and assembled to form a complete unit. The cover shall be fixed to the base with minimum of two hinged/locking points in one side. A sealing mechanism in the opposite side shall be provided. Once sealed the enclosure shall not be openable.
- The enclosures shall be suitable for outdoor use having IP 43 rating or higher complying with IEC 60529. The cover shall have a groove and rubber strip to avoid water seepage/ leak to the enclosure.
- The enclosures shall be weather resistant, withstand ultra violet (UV) radiation conforming the requirements of ISO 4582, preventing the deterioration of the material due to direct sun light and natural weathering. It shall not soften, bend or melt at highest possible atmospheric temperature.
- The material of the enclosure shall be non-metallic, rust free, light gray (preferably RAL 7035) colored having flame retardant properties and it shall not generate burning droplets in the event of fire. Maximum water absorption of the enclosure material in accordance with ISO 62 shall be 0.2%.
- The enclosure shall be of steady construction, perfect alignment and of high quality workmanship. There shall be no imperfection such as cracks, blisters, bubbles, stains, voids, foreign material, fillers, fibers visible at any place and be of smooth, non-porous and homogeneous, ripple free surface. There shall not be any sharp points/edges to cause injuries.

- (f) The cover shall have uniform thickness not less than 2.0mm. The base shall have a uniform thickness not less than 3 mm. The reinforced area shall be suitably thicker.
- (g) Accessories like clamp, handles etc shall be of rust-free material.
- (h) Holes for incoming and outgoing cables shall be provided as per the clause 5.4.2 (b) and rubber grommets of suitable size shall be provided at the bottom of multiple service connection box.
- (i) This shall be mounted on poles using two stainless steel tapes with suitable fixing arrangement or on flat surfaces with screws. The poles will be rectangular or spun concrete poles and wooden poles. All the items required for fixing shall be supplied with the offer.

5.4.2. Electrical Connections

- (a) Proper clearance shall be provided between live parts preventing electrical flashovers during maintenance and usage over time. Cable connection area of Service Connection Box shall have clearance of minimum 60 mm from cable entry side.
- (b) Multiple Service Connection boxes shall accommodate following connection types;

	Nominal Cable Size	No of Cables	Cable type	Fixing Method
Incoming Cable	3x70 mm ² + 54.6mm ²	01 no. 3Ph with neutral	XLPE ABC Aluminium	Removable Screw
Outgoing Cable	10 to 16 mm ²	02 nos. 3Ph (4 wire) or 06 nos. 1Ph (2 wire)	PVC insulated Aluminium	Removable Screw

- (c) Interior bus bar arrangement shall be either copper or aluminium alloy which should be insulated. In case of copper, suitable bimetallic connections such as Tin (Sn) or Nickel (Ni) plating shall be incorporated to directly connect Aluminium conductors.

6.0 REQUIREMENTS FOR SELECTION

6.1. Quality Assurance

The manufacturer shall possess ISO 9001:2015 or latest Quality Assurance Certification for the design, manufacture and testing of Busbar Chambers. The Bidder shall furnish a copy of the ISO certificate certified as true copy of the original by the manufacturer, along with the offer.

6.2. Manufacturing Experience

The manufacturer shall have minimum of five (5) years experience in manufacturing Low voltage Electrical Panel Boards. The make and the model offered shall have satisfactory sales records in the international market for more than three (3) years. Manufacturer shall furnish a list of purchasers with year and quantity of the product offered with the offer to prove his manufacturing experience.

Makes already supplied for the last three (3) years to CEB with proven sales records, excellent performance records and well known to CEB will be exempted from above requirements.



6.3. Type Tests

Test certificates referred to shall be from an **accredited independent** testing laboratory acceptable to the purchaser. Proof of accreditation by a national / international authority shall be forwarded with the offer. Test reports shall be complete including all the pages as issued by the testing authority and shall be in English language. Parts of test reports shall not be acceptable.

Following Type Test certificates in accordance with standards specified, issued by an independent laboratory or Type Tests witnessed by CEB shall be provided **as applicable**.

- (i) Flammability test
- (ii) Clearances and creepage distances
- (iii) Protection against Electric Shock test
- (iv) Resistance to Heat
- (v) Resistance to abnormal heat and fire
- (vi) Degree of protection.
- (vii) Power frequency voltage withstand test.
- (viii) Measurement of insulation resistance
- (ix) Mechanical Strength/ Impact resistance test
- (x) UV stabilization (in case of item 5.4)

However, if the same model has been supplied and tested under CEB supervision, and that has been satisfactorily operated in the past three (3) years, the need of type tests being from an accredited independent test laboratory will be exempted.

6.4. Sample

A sample shall accompany the Bid to facilitate analysis and evaluation, as mandated in the bid document.

The samples of unsuccessful Bidders will be returned once the award is made. The sample of the successful Bidder shall be retained and set off from the total quantity to be supplied.

7.0 INFORMATION TO BE FURNISHED WITH OFFER

The following documents shall be furnished with the offer.

- a) Catalogues describing the equipment, type, model number and all the features (in English Language).
- b) Mechanical characteristics incorporating overall dimensions, weight, constructional features, interlocks/access covers and doors
- c) Dimensional drawings of items offered
- d) Completed schedule of Technical Requirements and Guaranteed Technical Particulars
- e) Certified copy of the quality assurance conforming to ISO 9001:2015 or latest as per clause 6.1
- f) Evidentiary documents should be produced as a proof of manufacture's experience and performance as per clause 6.2
- g) Type test certificates as per clause 6.3

8.0 MARKING AND PACKAGING

8.1. Rating Plate

Rating plate shall be weather-proof and corrosion-proof. The plate shall be positioned in the front of the unit and be clearly visible and legible from the normal operating location of the connection



Cabinet.

Name plate shall provide with following information:

- (i) The Mark "CEB".
- (ii) Manufacturer's identification (Name or trade mark), warranty period and year of manufacture
- (iii) Serial number and Ratings.
- (iv) Number and the year of relevant standard.

Markings shall be clearly legible and durable. The letters size shall be at least 3mm high.

8.2. Packing

- (a) The equipment shall be packed in a suitable manner to prevent damage during transport up to Purchaser's warehouse.
- (b) The all accessories related to fixing shall be kept inside each box.

9.0 INSPECTION AND TESTING

9.1. Routine Test:

Following routine tests shall be performed as per IEC 61439-1 **as applicable**.

- (i) Degree of protection.
- (ii) Clearances and creepage distances
- (iii) Protection against Electric Shock test
- (iv) Power frequency voltage withstand test
- (v) Mechanical Strength/ Impact resistance test

9.2. Inspection:

The Successful bidder shall make necessary arrangements for inspection by an Engineer appointed by the CEB and also to carry out in his presence necessary Routine or Sample Tests on the materials and busbar chamber offered. CEB may waive off the inspection with the condition of witnessing the aforesaid performance tests by an independent testing authority acceptable to CEB. In such a situation a notice of waive off will be issued in advance to the supplier.

9.3. Acceptance /Sample Tests:

The following Acceptance/Sample tests shall be witnessed by the Engineer.

- (i) Visual Inspection, dimension check to verify workmanship, finish and appearance.
- (ii) Verification of clamps, lugs and cable sizes, marking and lengths as specified.
- (iii) Degree of protection.
- (iv) Clearances and creepage distances.

10.0 ANNEX

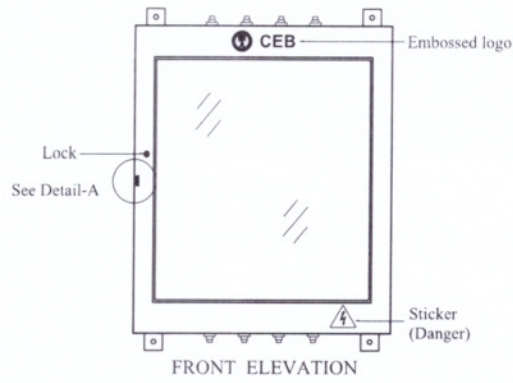
Annex – A1 : Drawing No. DS&S/2022/147-A1 – Metal Clad Meter Enclosure for Multiple Service Connections

Annex – A2: Drawing No. DS&S/2022/147-A2 – 3Ph Metal Clad Busbar Chambers for wall mounted applications with 30A/60A rated currents

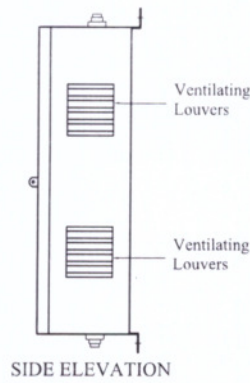


- Annex – A3: Drawing No. DS&S/2023/147-A3 – 3Ph Metal Clad Busbar Chambers for building mounted applications with 100A current
- Annex – A4: Drawing No. DS&S/2023/147-A4 – 3Ph Metal Clad Busbar Chambers for building mounted applications with 160A/250A current
- Annex – A5: Drawing No. DS&S/2023/147-A4 – 3Ph Metal Clad Busbar Chambers for building mounted applications with 400A/600A/800A current
- Annex – A6: Drawing No. DS&S/2023/147-A4 – 3Ph Metal Clad Busbar Chambers for building mounted applications with 1000A/1600A current
- Annex – B1: Schedule of Technical Requirements and Guaranteed Technical Particulars for Metal Clad Meter Enclosure for Multiple Service Connections
- Annex – B2: Schedule of Technical Requirements and Guaranteed Technical Particulars for 3Ph Metal Clad Busbar Chambers for wall mounted applications with 30A/60A rated currents
- Annex – B3: Schedule of Technical Requirements and Guaranteed Technical Particulars for 3Ph Metal Clad Busbar Chambers for building mounted applications with 100A/ 160A/ 400A/ 1000A/ 1600A rated currents
- Annex – B4: Schedule of Technical Requirements and Guaranteed Technical Particulars for 60A 3Ph Multiple Service Connection boxes for pole mounted applications
- Annex – C : Non-Compliance Schedule

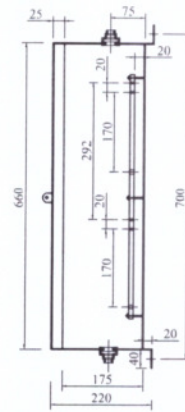




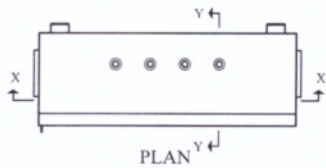
FRONT ELEVATION



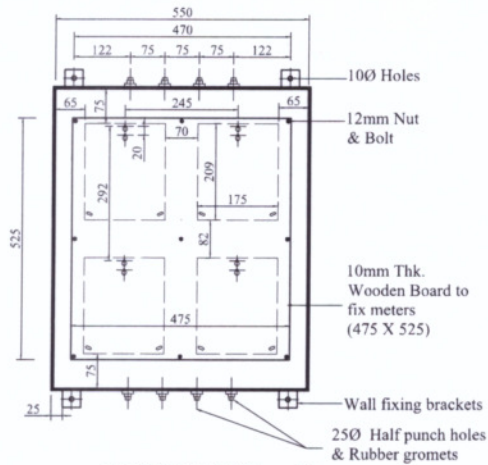
SIDE ELEVATION



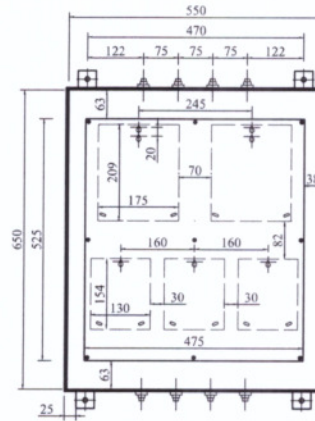
SECTION Y-Y



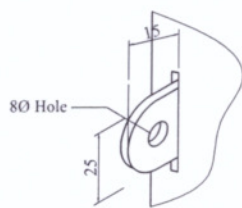
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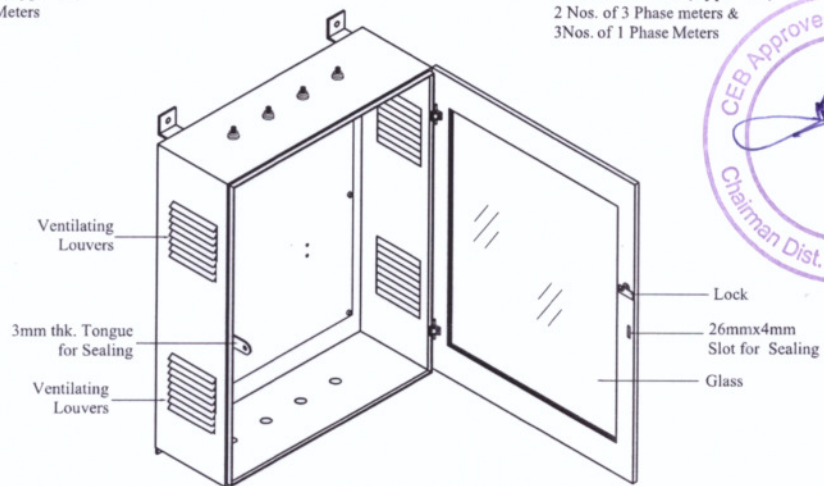
SECTION X-X (Type - I)
4 Nos. of 3 Phase Meters



SECTION X-X (Type - II)
2 Nos. of 3 Phase meters &
3Nos. of 1 Phase Meters



DETAIL AT - A

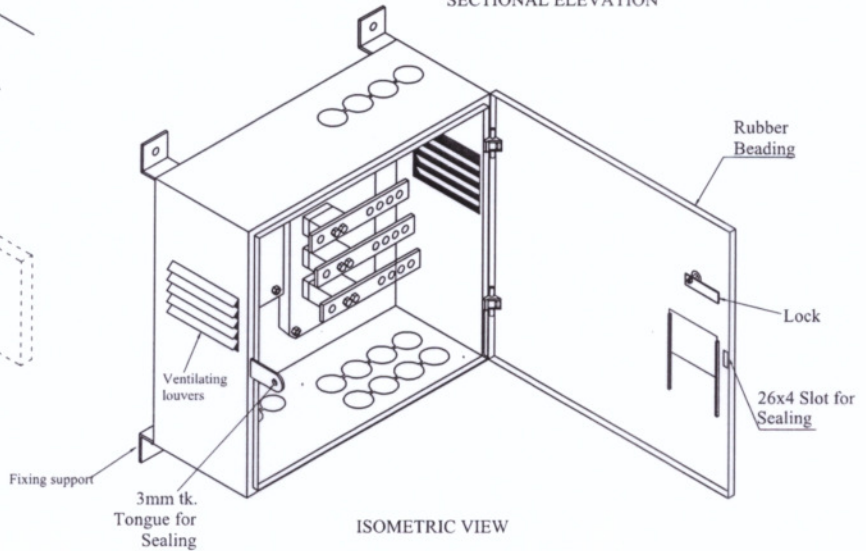
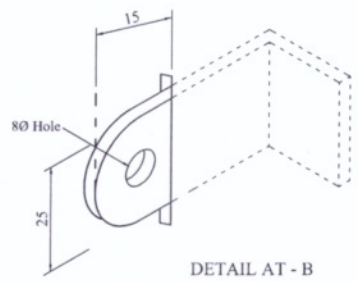
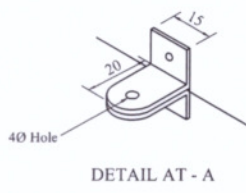
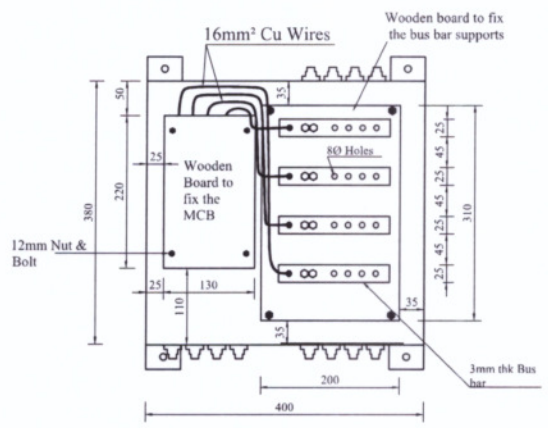
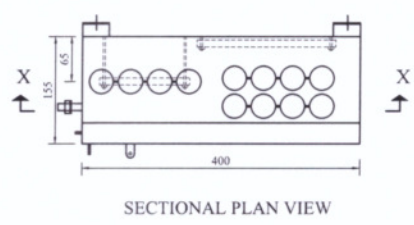
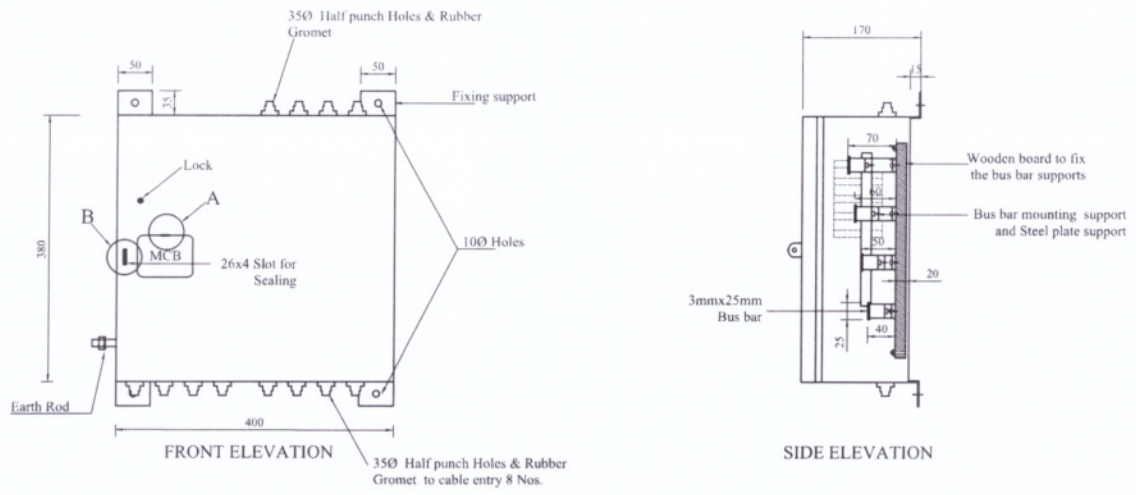


ISOMETRIC VIEW

ALL DIMMENSIONS ARE IN MILLIMETRES

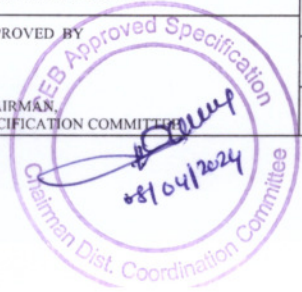


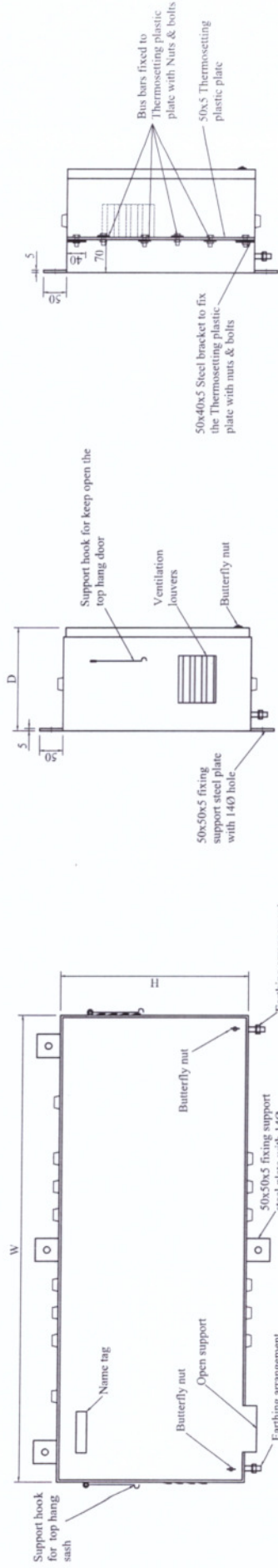
 CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATION		SCALE : NOT TO SCALE		
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DESIGNED BY	APPROVED BY		DATE : JAN. 2023		
			DRG. NO : DS&S/2022/147-A1		
DISTRIBUTION COORDINATION BRANCH	EE (DC)	CHAIRMAN, SPECIFICATION COMMITTEE	SOURCE : WPN / SP / 2021 / 01		



ALL DIMMENSIONS ARE IN MILLIMETRES

 CEYLON ELECTRICITY BOARD DISTRIBUTION COORDINATION BRANCH	DISTRIBUTION STANDARDS & SPECIFICATION		SCALE : NOT TO SCALE	
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	DESIGNED BY	APPROVED BY	DATE : JAN. 2023	
	EE (DC)	CHAIRMAN, SPECIFICATION COMMITTEE	DRG. NO : DS&S/2022/147-A2	
			SOURCE : DS&S/2018/147a	

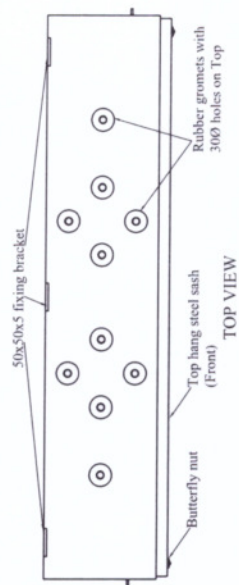




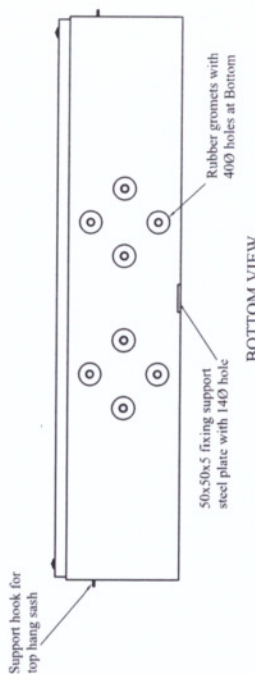
SECTIONAL SIDE VIEW

SIDE VIEW

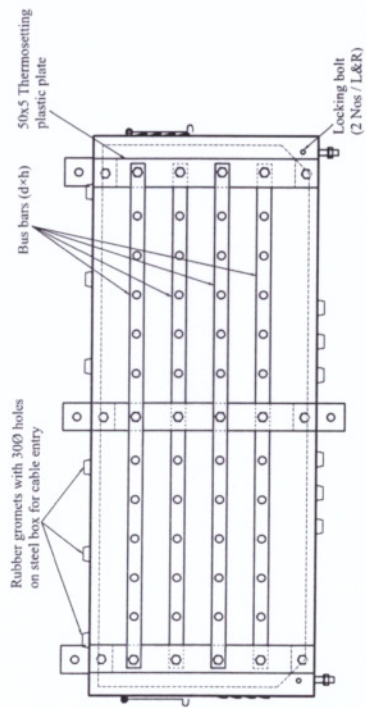
FRONT VIEW



TOP VIEW



BOTTOM VIEW



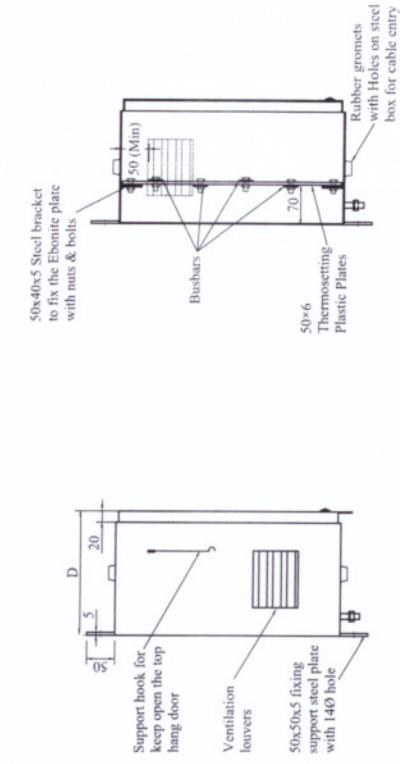
SECTIONAL FRONT VIEW

BUS BARS	100A
Bus Bar Cross Section (d x h) per Phase	1 / 5 x 20
No. of Holes (Connections) per Phase / Hole Diameter	10 / 120
Bolt size for Connectors	100
W (mm)	1000
H (mm)	400
D (mm)	220
No. of Holes with rubber gromet / Hole diameter (Top)	10 / 400
Hole diameter (Bottom)	8 / 400



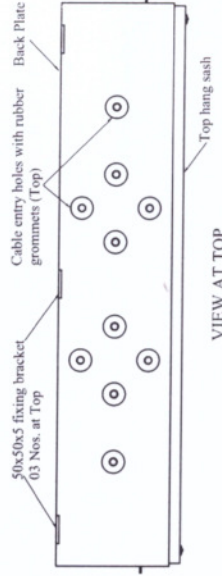
ALL DIMENSIONS ARE IN MILLIMETRES

DISTRIBUTION STANDARDS & SPECIFICATION		SCALE : NOT TO SCALE
100A 3 PHASE BUSBAR CHAMBER FOR MULTIPLE SERVICE CONNECTIONS		DRAWN : HARSHA
DESIGNED BY	APPROVED BY	DATE : JAN. 2023
EE (DC)	CHAIRMAN, SPECIFICATION COMMITTEE	DRG. NO : DS&S/2023/147-A3
DISTRIBUTION COORDINATION BRANCH		SOURCE :

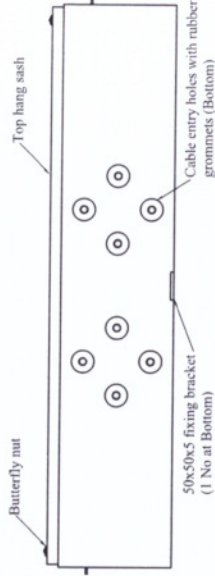


SECTIONAL SIDE VIEW

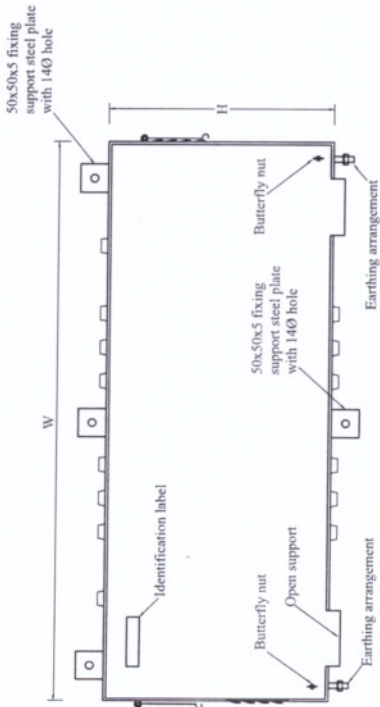
SIDE VIEW



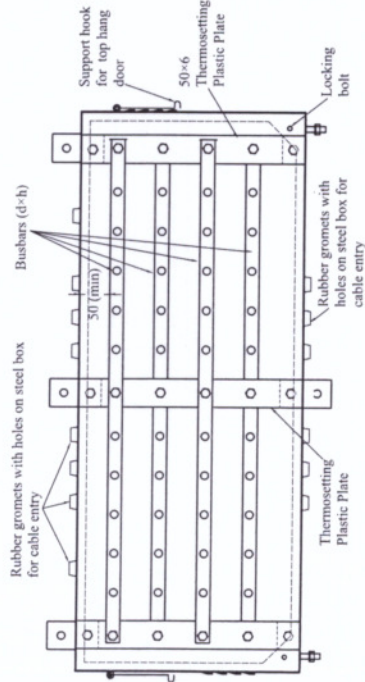
VIEW AT TOP



VIEW AT BOTTOM



FRONT VIEW



SECTIONAL FRONT VIEW

BUS BARS		ENCLOSURES	
Phase Conductor Bus Bar Cross Section (d x h)	1/ 5 x 25	W (mm)	995
No. of Holes for Cable Connections / Hall Diameter	10/100	H (mm)	400
Bolt size for Connectors	80	D (mm)	220
		No. of Holes with rubber grommets / Hole diameter (Top)	10/400
		No. of Holes with rubber grommets / Hole diameter (Bottom)	8/400

ALL DIMENSIONS ARE IN MILLIMETRES

DISTRIBUTION STANDARDS & SPECIFICATION

SCALE : NOT TO SCALE

160A / 250A, 3 PHASE BUSBAR CHAMBER FOR MULTIPLE SERVICE CONNECTIONS

DRAWN : HARSHA

DATE : JAN, 2023

DESIGNED BY APPROVED BY

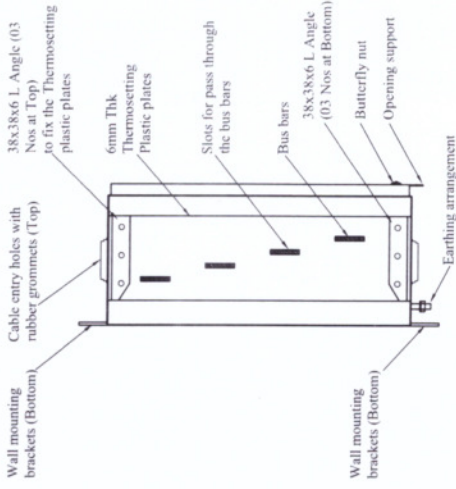
CHAIRMAN, SPECIFICATION COMMITTEE

EE (DC)

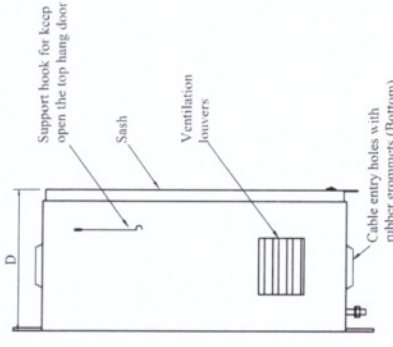


DISTRIBUTION COORDINATION BRANCH

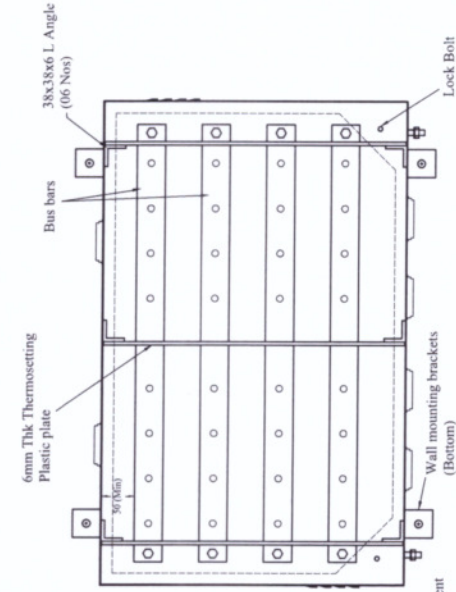




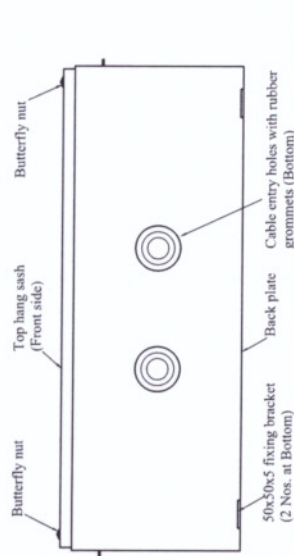
SECTIONAL SIDE VIEW



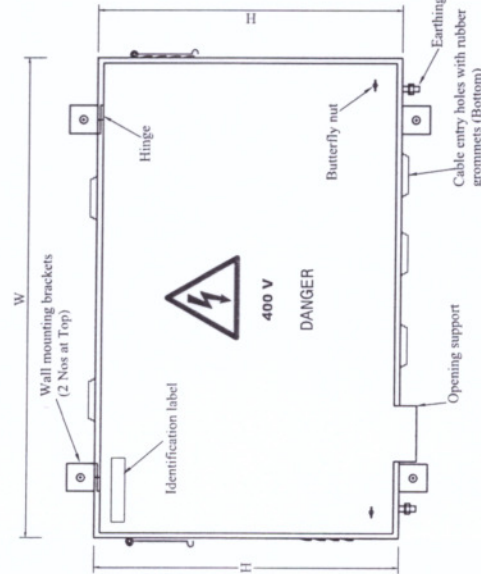
SIDE VIEW



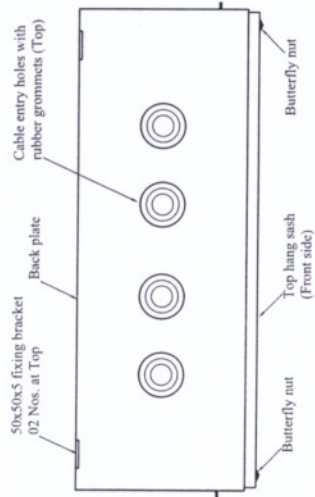
SECTIONAL FRONT VIEW



VIEW AT BOTTOM



FRONT VIEW



VIEW AT TOP

BUS BARS		400A	600A	800A
Bus Bar Cross Section (d×h)		1/ 5×40	1/ 6×50	1/ 10×50
No. of Holes for Cable Connections / Hall Diameter		8/100	8/100	8/120
Bolt size for Connectors		8Ø	8Ø	10Ø
W (mm)		850	855	850
H (mm)		400	400	400
D (mm)		320	320	320
No. of Holes with rubber grommet / Hole diameter (Top)		8/800	8/800	4/800
No. of Holes / Hole diameter (Bottom)		2/800	2/800	2/800

ALL DIMENSIONS ARE IN MILLIMETRES

DISTRIBUTION STANDARDS & SPECIFICATION

SCALE : NOT TO SCALE

400A / 600A / 800A, 3 PHASE BUSBAR CHAMBER FOR MULTIPLE SERVICE CONNECTIONS

DRAWN : HARSHA

DATE : JAN. 2023

DRG. NO : DS&S/2023/147-A5

APPROVED BY

CHAIRMAN, SPECIFICATION COMMITTEE

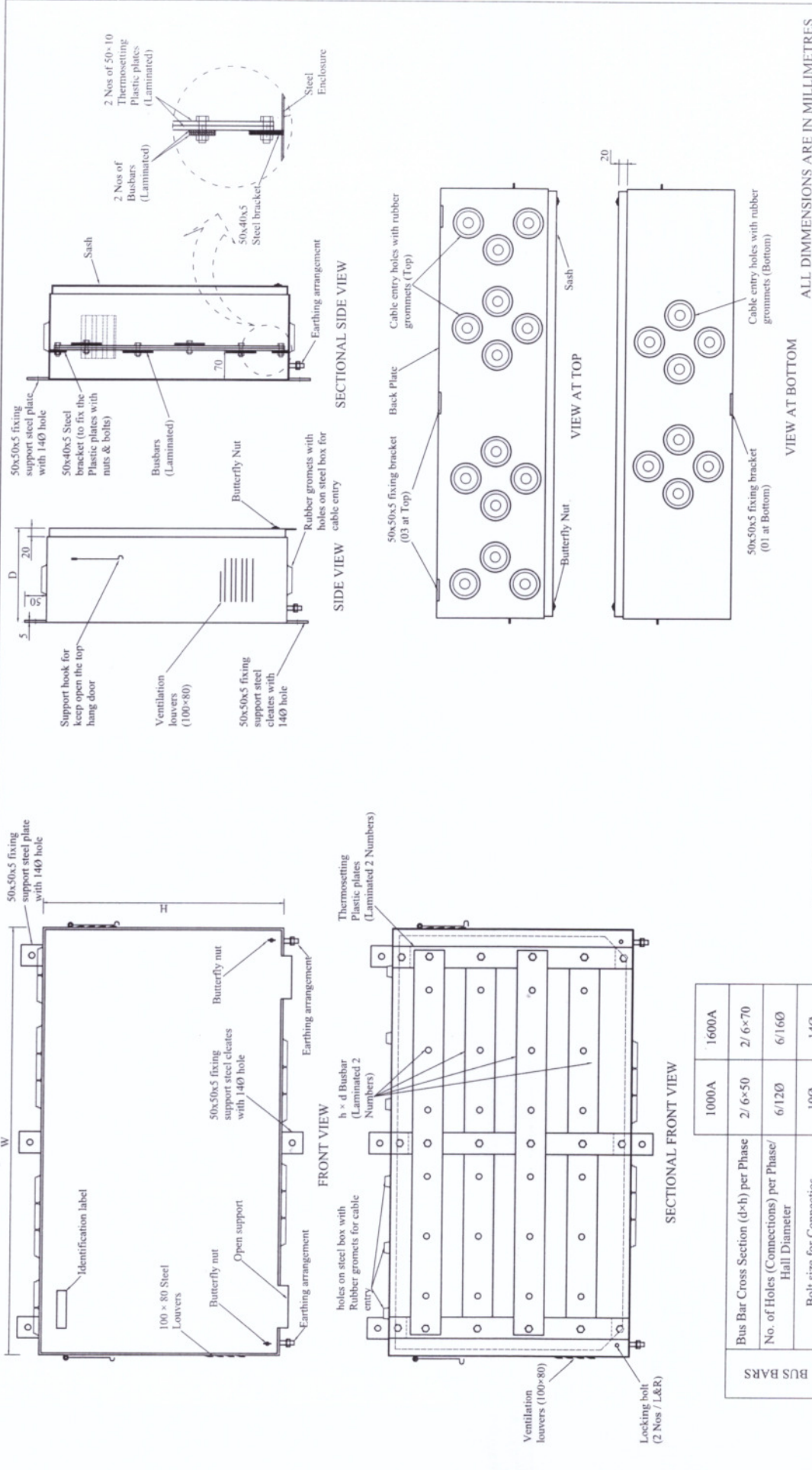
DESIGNED BY

EE (DC)



DISTRIBUTION COORDINATION BRANCH





ALL DIMENSIONS ARE IN MILLIMETRES

DISTRIBUTION STANDARDS & SPECIFICATION		SCALE : NOT TO SCALE	
1000A / 1600A 3 PHASE BUSBAR CHAMBER FOR MULTIPLE SERVICE CONNECTIONS		DRAWN : HARSHA	
DESIGNED BY		APPROVED BY	
DISTRIBUTION COORDINATION BRANCH		CHAIRMAN, SPECIFICATION COMMITTEE	
CEYLON ELECTRICITY BOARD		DATE : JAN. 2023	
DISTRIBUTION COORDINATION BRANCH		DRG. NO : DS&S/2023/147-A6	
EE (DC)		SOURCE :	

BUS BARS	1000A	1600A
Bus Bar Cross Section (d×h) per Phase	2/ 6×50	2/ 6×70
No. of Holes (Connections) per Phase/ Hole Diameter	6/120	6/160
Bolt size for Connectors	100	140
W (mm)	1200	1210
H (mm)	560	560
D (mm)	270	270
No. of Holes with rubber grommet / Hole diameter (Top)	14/800	14/800
No. of Holes / Hole diameter (Bottom)	8/800	8/800



Annex- B1

**SCHEDULE OF TECHNICAL REQUIREMENTS AND GUARANTEED TECHNICAL PARTICULARS
(Metal Clad Meter Enclosures for Multiple Service Connections)**

(CEB Requirements shall be filled by the procurement entity and information of the offer shall be filled by the manufacturer)

		CEB Requirement	Offered
1.	Name of the Manufacturer		
2.	Country of Origin		
3.	Offered Model		
4.	Material of enclosure		
5.	Thickness of the base		
6.	Thickness of the cover		
7.	Sealing method		
8.	Applicable voltage level	V	
9.	No of incoming cables		
10.	Applicable incoming cable size	mm ²	
11.	No of outgoing cables		
12.	Applicable outgoing cable size	mm ²	
13.	Ingress Protection Class of the enclosures	IP 33 or higher	
14.	Mounting Method	As per cl. 5.1	
15.	Applicable corrosivity category	C3 (min)	
16.	Outer surface paint thicknesses	As per cl. 5.1 (f)	
17.	Colour code of the painting	RAL 7035/ colour approved by CEB	
18.	Whether constructed as per dwg. No DS&S/2022/147/A1?	Yes	
19.	Whether ISO 9001:2015 or latest quality assurance certificate provided with the offer as per clause 6.1?	Yes	
20.	Whether evidence provided for the requirements stipulated in clause 6.2?	Yes	
21.	Whether complete type test certificates as per clause 6.3 are furnished with the offer?	Yes	
22.	Whether sample is provided as stipulated in clause 6.4?	Yes	
23.	Whether information as per clause 7.0 is furnished with the offer?	Yes	

.....
Signature and seal of the Manufacturer

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Date

I/We certify that the above data are true and correct

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Signature and seal of the Bidder

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Date



Annex- B2

**SCHEDULE OF TECHNICAL REQUIREMENTS AND GUARANTEED TECHNICAL PARTICULARS
(3Ph Metal Clad Busbar Chambers for wall mounted applications with 30A/60A rated currents)**

(CEB Requirements shall be filled by the procurement entity and information of the offer shall be filled by the manufacturer)

		CEB Requirement	Offered
1.	Name of the Manufacturer		
2.	Country of Origin		
3.	Offered Model		
4.	Material of enclosure		
5.	Thickness of the base		
6.	Thickness of the cover		
7.	Sealing method		
8.	Applicable voltage level	V	
9.	Applicable incoming cable sizes	mm ²	
10.	Applicable outgoing cable sizes	mm ²	
11.	Ingress Protection Class of the enclosures	IP 33 or higher	
12.	Mounting Method	As per cl. 5.2	
13.	Applicable corrosivity category	C3 (min)	
14.	Outer surface paint thicknesses	As per cl. 5.2 (e)	
15.	Colour code of the painting	RAL 7035/ RAL 7035/ colour approved by CEB	
16.	Whether constructed as per dwg. No DS&S/2022/147/A2?	Yes	
17.	Whether ISO 9001:2015 or latest quality assurance certificate provided with the offer as per clause 6.1?	Yes	
18.	Whether evidence provided for the requirements stipulated in clause 6.2?	Yes	
19.	Whether complete type test certificates as per clause 6.3 are furnished with the offer?	Yes	
20.	Whether sample is provided as stipulated in clause 6.4?	Yes	
21.	Whether information as per clause 7.0 is furnished with the offer?	Yes	

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Signature and seal of the Manufacturer

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Date

I/We certify that the above data are true and correct

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Signature and seal of the Bidder

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Date



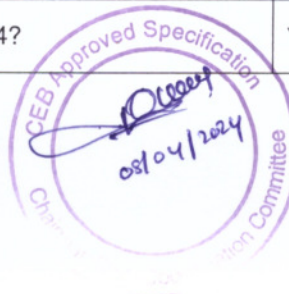
Annex- B3

**SCHEDULE OF TECHNICAL REQUIREMENTS AND GUARANTEED TECHNICAL PARTICULARS
(3P Metal Clad Busbar Chambers for wall mounted applications with 100A/160A/ 250A/ 400A/
1000A/ 1600A rated currents)**

(CEB Requirements shall be filled by the procurement entity and information of the offer shall be filled by the manufacturer. For each rating of busbar chamber a separate sheet shall be filled)

		CEB Requirement	Offered
1.	Name of the Manufacturer		
2.	Country of Origin		
3.	Offered Model		
4.	Applicable voltage level	V	
5.	Current Rating	A	As specified in the price schedule
6.	Operating frequency	Hz	
7.	Enclosure		
	(a) Material		
	(b) W		
	(c) D	As per the relevant drawing	
	(d) H		
	(e) Thickness	Minimum 2mm	
	(f) Colour	RAL 7035 preferred	
	(g) Finishing of the surface	As per clause 5.3.1 (d)	
	(h) No of incoming cables / holes		
	(i) Size of incoming cable / hole		
	(j) Sealing Method		
	(k) Whether the rubber beading is available around the cover	Yes	
	(l) Ingress Protection Class	IP 33	
8.	Bus bar		
	(a) Material	Hard drawn Copper	
	(b) Dimensions		
	(c) No of holes in a bus bar	As per the relevant drawing	
	(d) Size of holes		
	(e) Bus bars Insulated / Un-insulated	Insulated	
	(f) No of outgoing cables		
	(g) Size of outgoing cable		
	(h) Material of busbar mounting steps	Thermosetting plastic	
9.	Fixing Brackets		
	(a) thickness	Minimum 5mm	
	(b) diameter of the holes for anchor bolts	12mm	
10.	Whether the provisions for earthing of all metallic parts except live parts is provided	Yes	
11.	Whether ISO 9001:2015 or latest quality assurance certificate provided with the offer as per clause 6.1?	Yes	
12.	Whether evidence provided for the requirements stipulated in clause 6.2?	Yes	
13.	Whether complete type test certificates as per clause 6.3 are furnished with the offer?	Yes	
14.	Whether sample is provided as stipulated in clause 6.4?	Yes	

20/23



15.	Whether information as per clause 7.0 is furnished with the offer?	Yes	
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Signature and seal of the Manufacturer

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Date

I/We certify that the above data are true and correct

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Signature and seal of the Bidder

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Date



Annex- B4

**SCHEDULE OF TECHNICAL REQUIREMENTS AND GUARANTEED TECHNICAL PARTICULARS
(60A 3Ph Multiple Service Connection boxes for pole mounted applications)**

(CEB Requirements shall be filled by the procurement entity and information of the offer shall be filled by the manufacturer)

		CEB Requirement	Offered
1.	Name of the Manufacturer		
2.	Country of Origin		
3.	Offered Model		
4.	Material of enclosure		
5.	Thickness of the base		
6.	Thickness of the cover		
7.	No of hinged points in one side	As per clause 5.4.1 (a)	
8.	Sealing method		
9.	Applicable voltage level	V	
10.	Current Rating	A	
11.	Operating frequency	Hz	
12.	No of incoming cables	As per the clause 5.4.2 (b)	
13.	Size of the incoming cables		
14.	No of outgoing cables		
15.	Size of the outgoing cables		
16.	Clearance in cable entry side	Minimum 60mm	
17.	Material of bus bars		
18.	Termination method		
19.	Ingress Protection Class of the enclosure	IP 43 or higher	
20.	Colour of the Enclosure	As per clause 5.4.1 (d)	
21.	Mounting Method	As per clause 5.4.1 (i)	
22.	Whether ISO 9001:2015 or latest quality assurance certificate provided with the offer as per clause 6.0?	Yes	
23.	Whether evidence provided for the requirements stipulated in clause 6.2?	Yes	
24.	Whether complete type test certificates as per clause 6.3 are furnished with the offer?	Yes	
25.	Whether sample is provided as stipulated in clause 6.4?	Yes	
26.	Whether information as per clause 7.0 is furnished with the offer?	Yes	

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Signature and seal of the Manufacturer

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Date

I/We certify that the above data are true and correct

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Signature and seal of the Bidder

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Date



Non-Compliance Schedule

On this schedule the bidder shall provide a list of non-compliances with this specification, documenting the effects that such non-compliance is likely to have on the equipment life and operating characteristics. Each non-compliance shall be referred to the relevant specification clause.

Clause No.	Non-Compliance

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Signature and seal of the Manufacturer

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Date

I/We certify that the above data are true and correct

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Signature and seal of the Bidder

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Date

