

**PANELMASTER**



**PanelMaster Design Guide**

# PANELMASTER

SERI NR:  
4508001

Is your panels type-tested or just looks so ?



Is there a fire risk in your panels?

Are your panels short circuit current resistant?

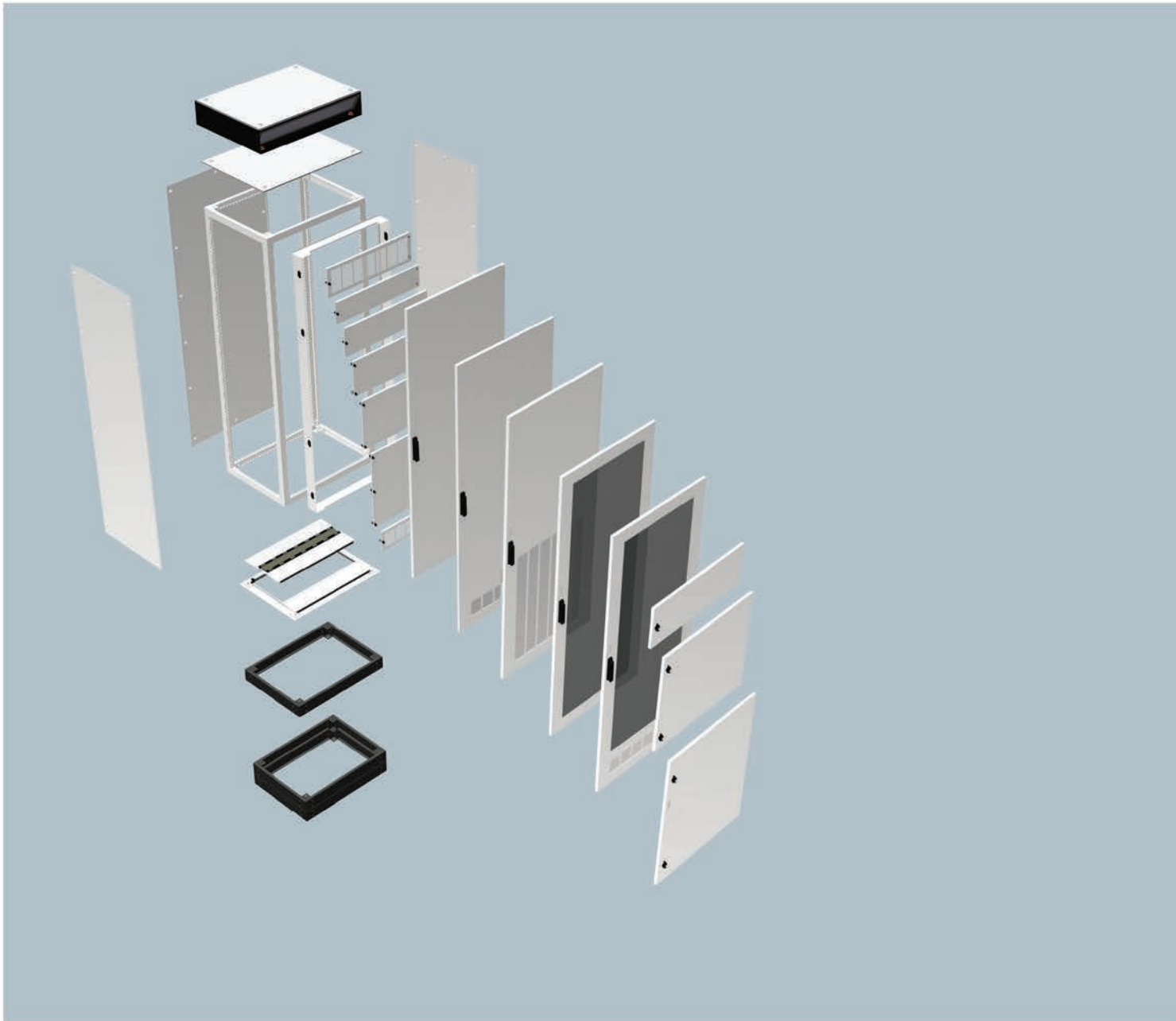
Are your panels seismic resistant?

Are your panels internal arc fault resistant?

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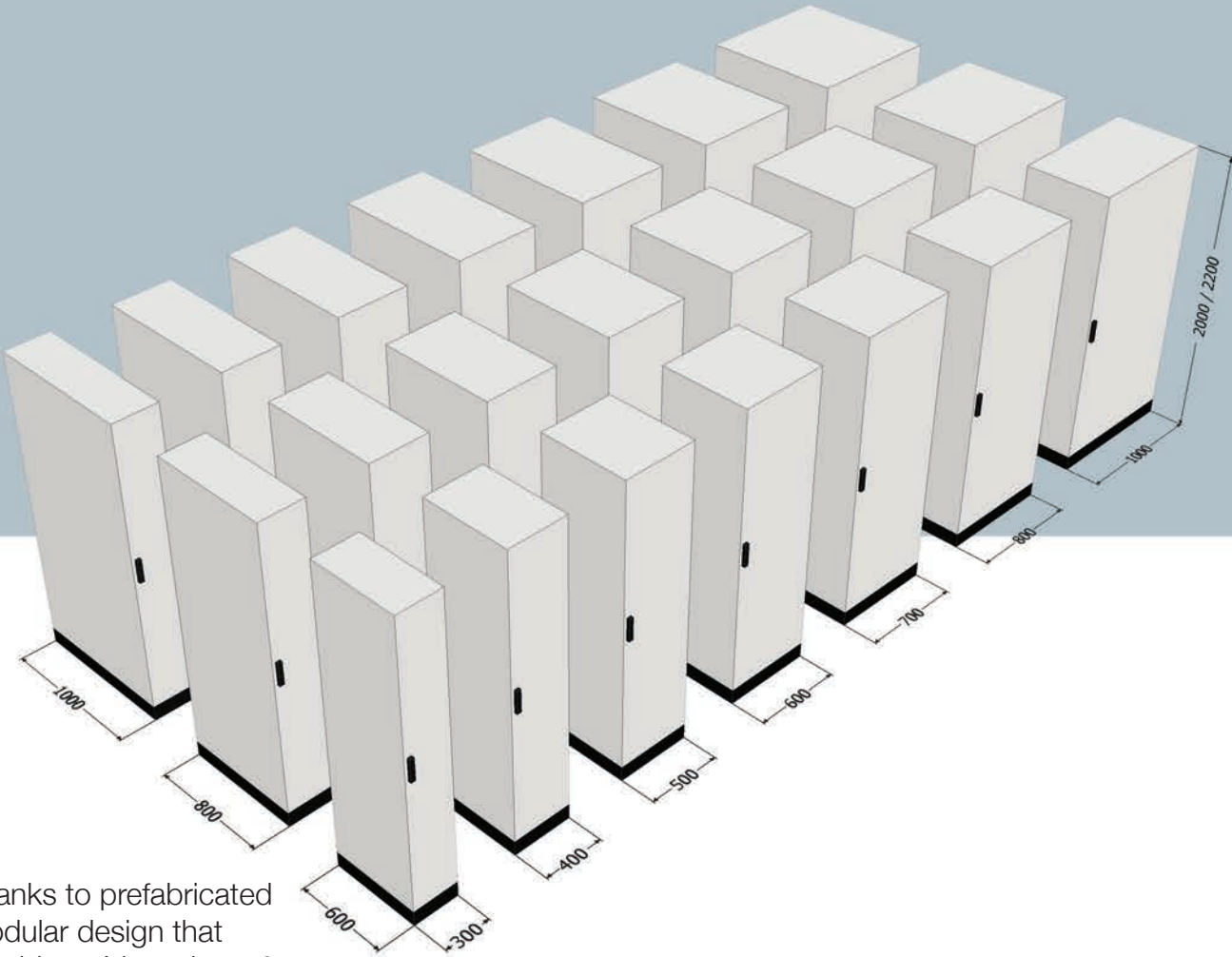
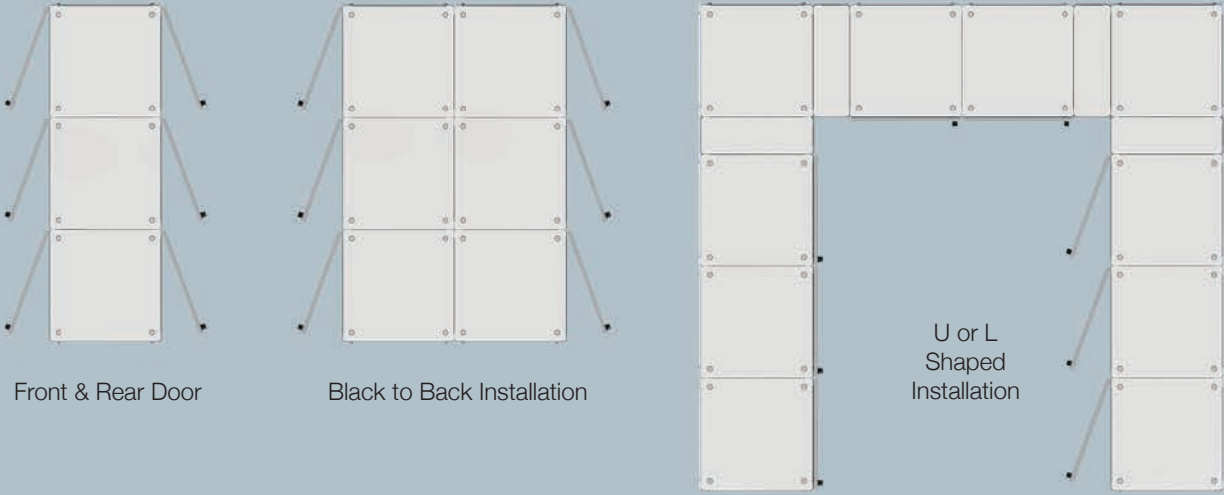
# Wide configuration options



## Flexible Configuration

- Plain Door
- Glazed Door
- Partial Door
- Door with Ventilation
- Front and Rear Access
- With Cover Plate
- IP31, IP41, IP55
- Top Natural Ventilation Modules

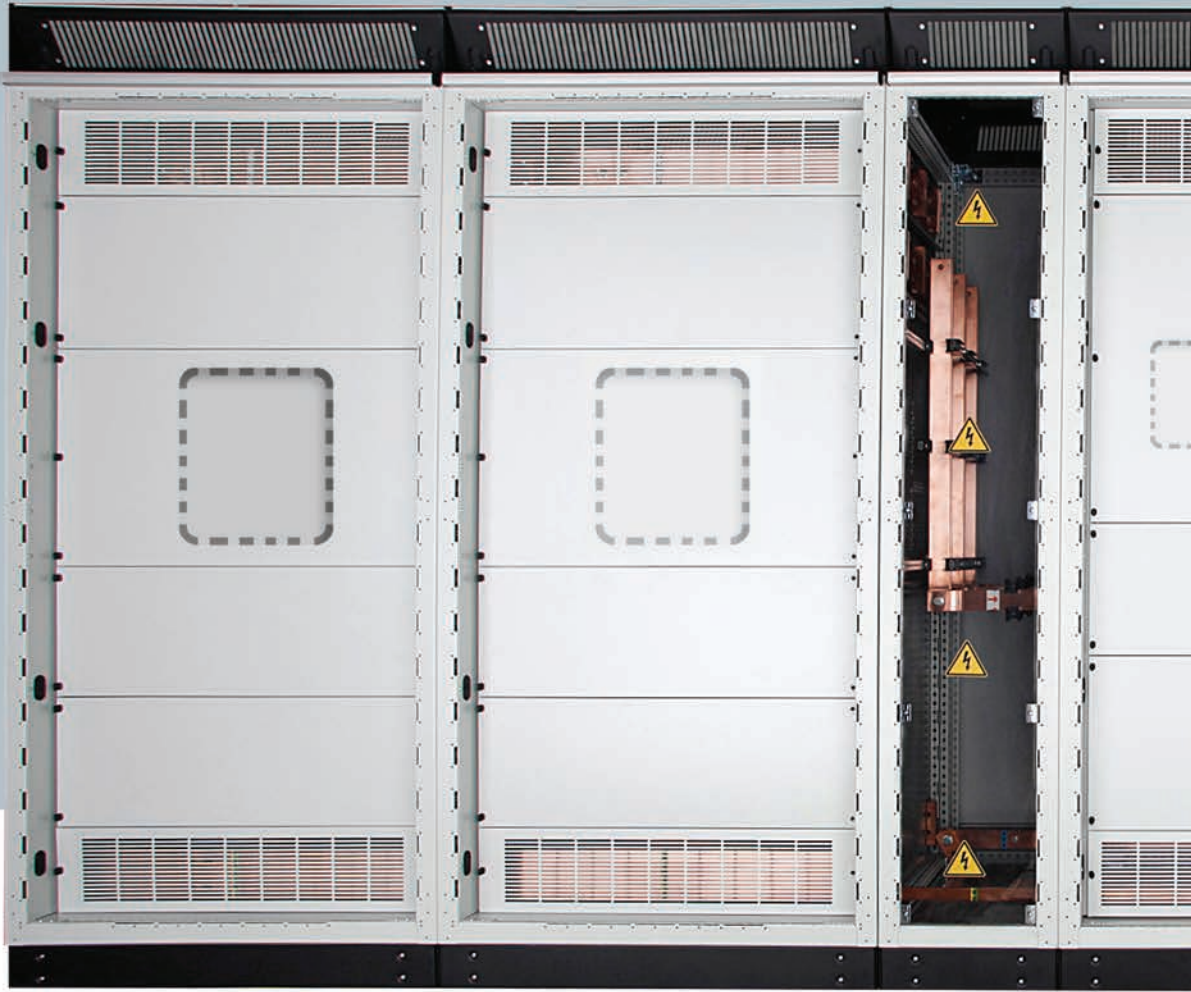




Thanks to prefabricated modular design that provides wide variety of dimensions.



# Freedom of switchgear brand selection



**ABB**



**CHNT**



**EAT·N**

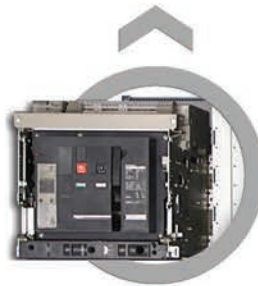




**legrand**



**MITSUBISHI  
ELECTRIC**



**Schneider  
Electric**



**SIEMENS**

## TEST CERTIFICATE

**DEKRA**

**Issued to:**  
EAE Elektroteknik San. Ve Tic. A.Ş.  
İskali O.S.B. Ziraatçılık Mah.  
Eski Turgut Özal Cad.  
No: 20 34306 Başpaşalı / İstanbul  
Turkey

**For the product:**  
Low-voltage switchgear and controlgear assembly

**Trade name:**  
EAE

**Type/Model:**  
PANELMASTER

**Ratings:**  
U<sub>e</sub> 415 V, U<sub>i</sub> max. 1000 V, U<sub>sm</sub> max. 12 kV, I<sub>u</sub> up to 6900 A, Form 4k,  
I<sub>n</sub> max. 120 kA - 1.0 s (main busbar), I<sub>n</sub> max. 70 kA - 1.0 s (distribution busbar),  
I<sub>sc</sub> max. 100 kA at 415 V or 100 kA at 600 V (ACB),  
I<sub>sc</sub> max. 80 kA at 415 V (MCCB). For more details see annex.

**Manufactured by:**  
EAE Elektroteknik San. Ve Tic. A.Ş.  
İskali O.S.B. Ziraatçılık Mah.  
Eski Turgut Özal Cad.  
No: 20 34306 Başpaşalı / İstanbul  
Turkey

**Subject:**  
Design verification

**Requirements:**  
IEC 61439-2:2011  
Clauses 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 10.8, 10.9, 10.10, 10.11, 10.12,  
10.13, 8.101

**Remarks:**  
This certificate provides a summary of existing certificates for PANELMASTER  
Year of performance of tests: 2012/2016 (see general notes on tests in the report)

This Test Certificate is granted on account of an examination by DEKRA, the results of which are laid down in report no. 2183883.01-INC, dated 20 June 2016.

The examination has been carried out on one single specimen of the product, submitted by the manufacturer. The Attestation does not include an assessment of the manufacturer's production conformity of his production with the specimen tested by DEKRA is not the responsibility of DEKRA.

Amstern, 20 June 2016

Number: 2183883.100  
**DEKRA Certification B.V.**  
F.S. Skillekens  
Certification Manager

Integral publication of this certificate and adjoining reports is allowed.  
DEKRA Certification B.V. Member 1051, 6825 MJ Amstern, P.O. Box 5108, 6802 ED Amstern, The Netherlands  
T +31 88 88 83000 F +31 88 88 83000 www.dekra-certification.com Company registration 08003268

## STATEMENT OF CONFORMITY

**Issued to:**  
Elektroteknik San. Ve Tic. A.Ş.  
genişçe Sanayi  
Eski Turgut Özal  
No 20  
İskali - İstanbul

**For the product:**  
Low-voltage switchgear and controlgear assemblies

**Type/Model:**  
EAE / E-Kabin S Series

**Ratings:**  
I<sub>n</sub> max. 120 kA at 415 V, I<sub>u</sub> 200 ms  
I<sub>n</sub> max. 70 kA at 415 V, I<sub>u</sub> 300 ms

**Manufactured by:**  
Elektroteknik San. Ve Tic. A.Ş.  
genişçe Sanayi  
Eski Turgut Özal  
Cadde No 20  
34306 İskali - İstanbul  
Turkey

**Subject:**  
The performance of testing under conditions of arcing due to internal fault

**Requirements:**  
IEC/TR 61641, ed. 3.0 2014-09

**Remarks:**  
This Attestation of Conformity is granted on account of an examination by DEKRA, the results of which are laid down in report no. 2191220.01-INC, 9 February, 2016.

The examination has been carried out on single samples of multiple configurations representative of the manufacturer's production. The Attestation does not include an assessment of the manufacturer's production conformity of his production with the specimen tested by DEKRA is not the responsibility of DEKRA.

Amstern, 9 February, 2016

Number: 2191220.01A  
**DEKRA Certification B.V.**  
H.R.M. Berends  
Certification Manager

Integral publication of this attestation and adjoining reports is allowed.  
DEKRA Certification B.V. Member 1051, 6825 MJ Amstern, P.O. Box 5108, 6802 ED Amstern, The Netherlands  
T +31 88 88 83000 F +31 88 88 83000 www.dekra-certification.com Company registration 08003268

## SEISMIC Qualification Certificate

Friday, 11 April 2012

**LAB test procedure number 126403E2, Issue 0, dated 2/04/2012: "Standard Procedure for the Seismic Qualification of an Assembly of a PANELMASTER type Electric Cabinet from "EAE ELEKTROTEKNIK SAN VE TIC. A.Ş." and a KVC type Busbar from "EAE ELEKTROTEKNIK SAN VE TIC. A.Ş." according to IEC Standard EN60068-3-3:1993"**

**Tested:**  
- First F1 vibration, sine-torsion method  
- First F2 vibration, sine-torsion method  
- First F3 vibration, sine-torsion method  
- First F4 vibration, sine-torsion method  
- First F5 vibration, sine-torsion method  
- First F6 vibration, sine-torsion method  
- First F7 vibration, sine-torsion method  
- First F8 vibration, sine-torsion method  
- First F9 vibration, sine-torsion method  
- First F10 vibration, sine-torsion method  
- First F11 vibration, sine-torsion method  
- First F12 vibration, sine-torsion method  
- First F13 vibration, sine-torsion method  
- First F14 vibration, sine-torsion method  
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- First F96 vibration, sine-torsion method  
- First F97 vibration, sine-torsion method  
- First F98 vibration, sine-torsion method  
- First F99 vibration, sine-torsion method  
- First F100 vibration, sine-torsion method

**Lab Name:** VIBLAB, S.A. (Instituted by ENAC, Spanish National Accreditation Entity)  
ENAC Certificate number 54/LE131.

**Lab Address:** Polígono Industrial de Astesau, Zona B - 44  
Apartado 247  
20159 ASTEAU (SPAIN)

**Equipment tested:** An "ASSEMBLY of a PANELMASTER type Electrical Switchgear from "EAE ELEKTROTEKNIK SAN VE TIC. A.Ş." and a KVC type Busbar from "EAE ELEKTROTEKNIK SAN VE TIC. A.Ş." according to drawing "Seismic Test Assembly-01w", dated 18/12/2011.  
Photograph included here below shows the Assembly on the test platform.

Certificate number "1217INC"

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**Purpose:**

IEC 61439-1 / 2 standard contains essential conditions in order to ensure the safety of life and property in low voltage type test panel systems. It contains mechanical test as well as fully equipped panel electrical tests. The verification of the temperature rise and the short circuit protection are the most important tests. It consist of Design Verification and Routine Tests.

There are two type of manufacturers



Both manufacturer have responsibilities as below.

Responsibilities of Original Manufacturer and Assembly Manufacturer (IEC 61439-1/2)	
Original Manufacturer	Manufacturing of Low Voltage Enclosures
	Making design verification by testing, calculation or comparison method and get certification.
	Preparing installation manuals for panel builders
Assembly Manufacturer	Assembly and electrical installation of panels based on original manufacturer installation guides.
	Making routine test verification
	Preparing the panel as ready to use by making all installations, get ready for the shipment

In order to make a type-tested panel, both manufacturers must fulfill their responsibilities.

In order for the original manufacturer to produce type-tested panels, all requirements that stipulated by IEC 61439-1 / 2 type tests must be fulfilled.

- ✓ Strength of materials and parts (IEC 61439-1 - 10.2)
- ✓ Degree of protection of enclosures (IEC 61439-1 - 10.3)
- ✓ Clearances and creepage distances (IEC 61439-1 - 10.4)
- ✓ Protection against electric shock and integrity of protective circuits ( IEC 61439-1 - 10.5)
- ✓ Incorporation of switching devices and components (IEC 61439-1 - 10.6)
- ✓ Internal electrical circuits and connections (IEC 61439-1 - 10.7)
- ✓ Terminals for external conductors (IEC 61439-1 - 10.8)
- ✓ Dielectric properties (IEC 61439-1 - 10.9)
- ✓ Verification of temperature rise (IEC 61439-1 - 10.10)
- ✓ Short-circuit withstand strength (IEC 61439-1 - 10.11)
- ✓ Electromagnetic compatibility (IEC 61439-1 - 10.12)
- ✓ Mechanical operation (IEC 61439-1 - 10.13)

## Internal Arc Test ( IEC 61641 ) :

**Purpose:** By the current and pressure formed after the arc in the panel is damped in a controlled manner to ensure the safety of the people and property.

**Criteria:** The following criteria should be met after the test.

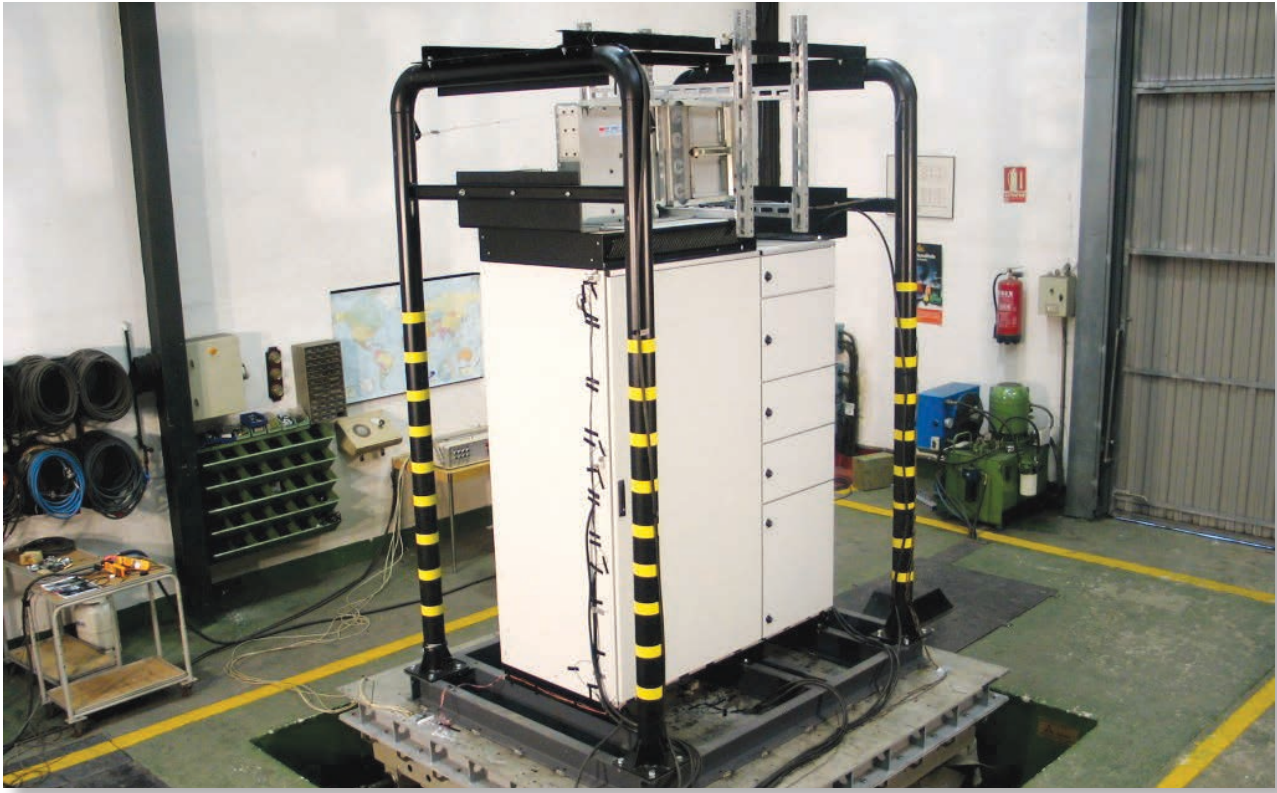
- Doors and covers do not open and remain effectively in place and provide a minimum level of protection in accordance with the requirements of IP1X
- No parts of the ASSEMBLY are ejected which have a mass of more than 60 g except those which are dislodged and fall between the ASSEMBLY and the indicators
- Arcing does not cause holes to develop in the external parts of the enclosure below 2 m, at the sides declared to be accessible as a result of burning
- The indicators do not ignite.
- The protective circuit for accessible parts of the enclosure is still effective in accordance with IEC 61439-2
- The ASSEMBLY is capable of confining the arc to the defined area where it was initiated, and there is no propagation of the arc to other areas within the ASSEMBLY
- After clearing of the fault or after isolation or disassembly of the affected functional units in the defined area, emergency operation of the remaining ASSEMBLY is possible. This is verified by a dielectric test, but with a test voltage of 1,5 times the rated operational voltage for 1 min.



Internal Arc Faults threaten personnel and equipment safety. Safety measures against internal arc faults are as important as type tests. The high current generated after the arc should be damped by the plates placed on the flow path and the pressure generated by the arc flow stopper placed at the beginning and end of the enclosure.

For this reason, it is very important for the safety of people and property that the enclosures to be used pass the IEC 61641 internal arc test successfully and certified according to that.

**Purpose:** In earthquakes, the low voltage enclosure are intended to work according to the following criteria.



3 different earthquake levels are described in the standard.

Earthquake Description and Scale		
Earthquake Description	ag m/sn <sup>2</sup>	Richter Scale
Light and moderate earthquakes	2	< 5,5
Moderate and strong earthquakes	3	5,5 – 7 arası
Strong and very strong earthquakes	5	>7

### Criteria

**Criteria 0:** Devices that does not show any faults during and after the test.

**Criteria 1:** Devices that experiences a fault during the test but returns to normal after the test.

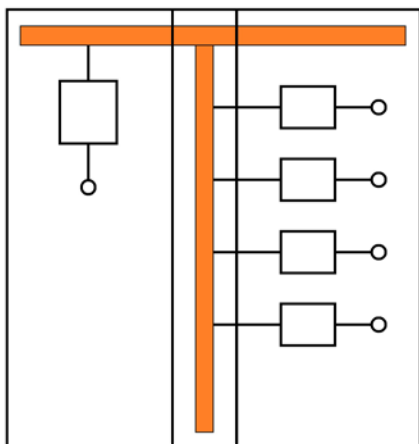
**Criteria 2:** Devices that has experienced a failure during the test and requires re-installation and adjustment after the test but does not require any part replacement or repair.

It is very important that low voltage enclosures have seismic certification according to IEC 60068 for the avoid any energy interruption in earthquake-risk areas.

## Form / Separation Classes (IEC 61439-2) :

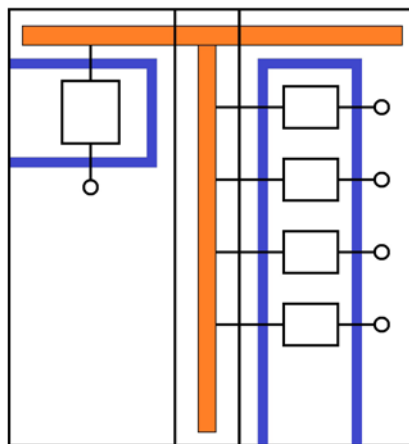
**Purpose:** It is aimed to ensure the safety of people and property by preventing direct or indirect contact to energized parts during normal operation or maintenance in low voltage enclosures. For this purpose, the functional units and busbars are positioned in different sections according to the form class.

**Form 1**



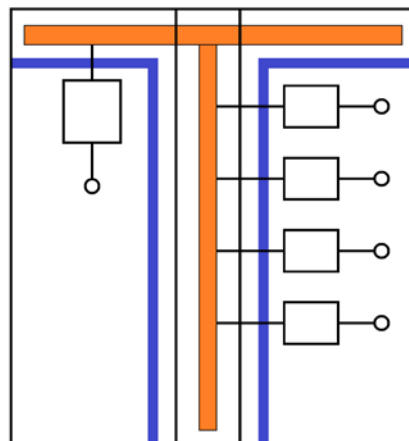
- No internal separation

**Form 2a**



- Separation of busbars from all functional units.
- Terminals not separated from busbars.

**Form 2b**

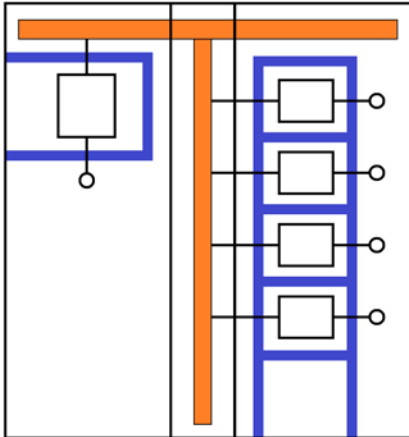


- Separation of busbars from all functional units.
- Terminals separated from busbars.

**Rule 1:** Images are representative images created to describe form classes. May vary in applications.

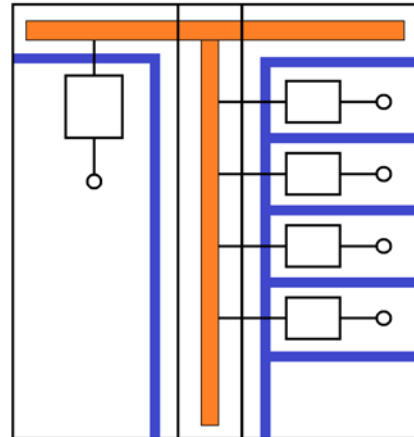


**Form 3a**



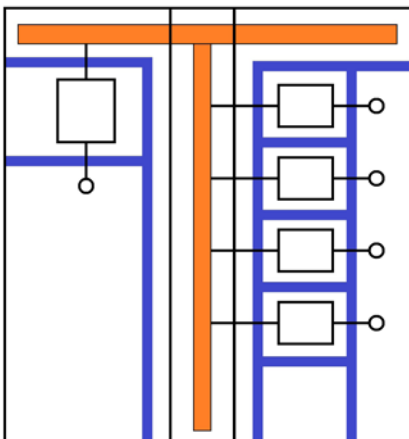
- Separation of busbars from all functional units
- Separation of all functional units from one another
- Separation of terminals for external conductors and external conductors from the functional units, but not from the terminals of other functional units
- Terminals not separated from busbars

**Form 4a**



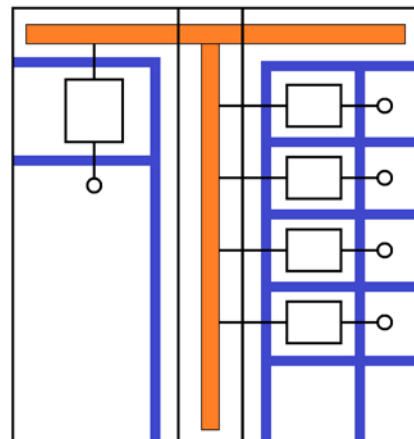
- Separation of busbars from all functional units
- Separation of all functional units from one another
- Separation of terminals for external conductors associated with a functional unit from the terminals of any other functional unit and the busbars
- Separation of the external conductors from the busbars
- Separation of the external conductors associated with a functional unit from other functional units and their terminals
- External conductors need not be separated from each other
- Terminals in same compartment as associated functional unit

**Form 3b**



- Separation of busbars from all functional units
- Separation of all functional units from one another
- Separation of terminals for external conductors and external conductors from the functional units, but not from the terminals of other functional units
- Terminals and external conductors separated from busbars

**Form 4b**

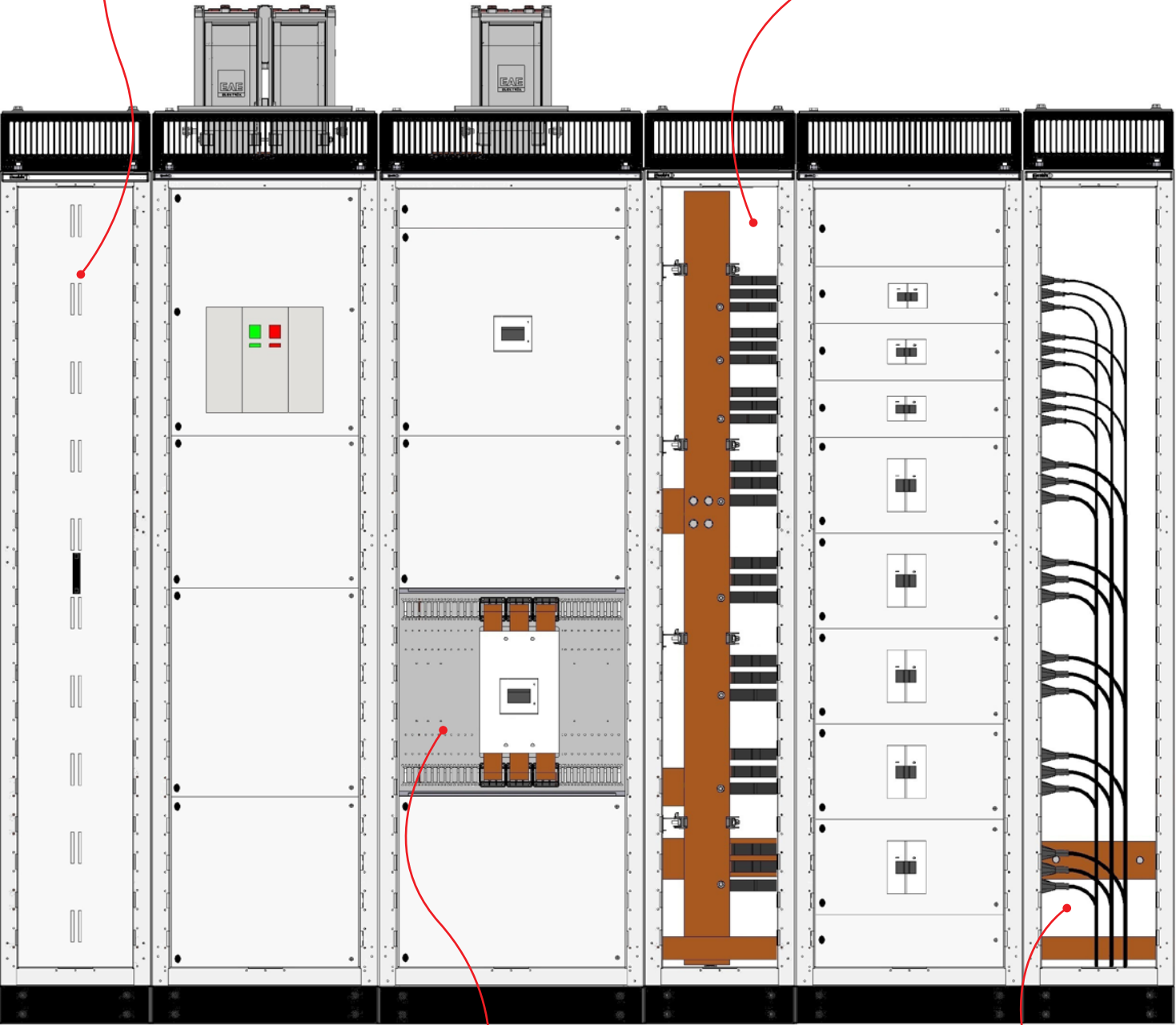


- Separation of busbars from all functional units
- Separation of all functional units from one another
- Separation of terminals for external conductors associated with a functional unit from the terminals of any other functional unit and the busbars
- Separation of the external conductors from the busbars
- Separation of the external conductors associated with a functional unit from other functional units and their terminals
- External conductors need not be separated from each other
- Terminals not in same compartment as associated functional unit



Busbar Section  
Separation Module

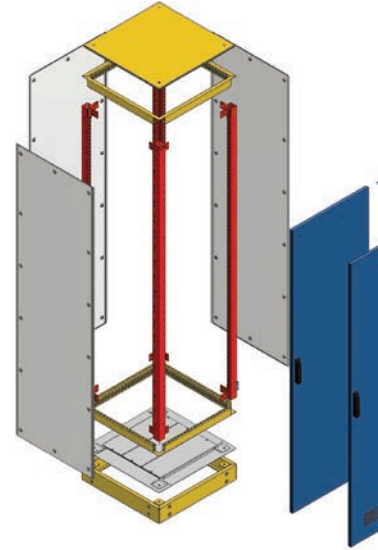
Busbar Section



Vertical MCCB  
Separation Module

Cable Section

**Enclosure Selection :**



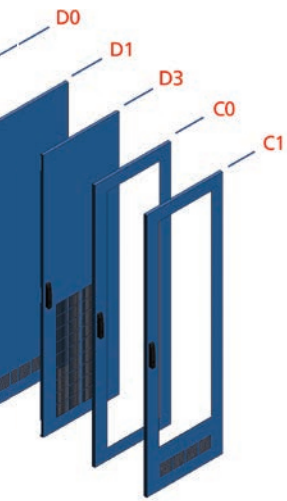
			ENCLOSURE				
Width	Depth	Height	Module Set	Vertical Profile Set	Additional Plinth	Ventilation Module	Busbar Trunking Riser Module
300	600	2000	ESMS0306	ESDP20	EGBZ0306	EGHM0306	EGBY0306
	800		ESMS0308		EGBZ0308	EGHM0308	EGBY0308
	1000		ESMS0310		EGBZ0310	EGHM0310	EGBY0310
400	600		ESMS0406		EGBZ0406	EGHM0406	EGBY0406
	800		ESMS0408		EGBZ0408	EGHM0408	EGBY0408
	1000		ESMS0410		EGBZ0410	EGHM0410	EGBY0410
500	600		ESMS0506		EGBZ0506	EGHM0506	EGBY0506
	800		ESMS0508		EGBZ0508	EGHM0508	EGBY0508
	1000		ESMS0510		EGBZ0510	EGHM0510	EGBY0510
600	600		ESMS0606		EGBZ0606	EGHM0606	EGBY0606
	800		ESMS0608		EGBZ0608	EGHM0608	EGBY0608
	1000		ESMS0610		EGBZ0610	EGHM0610	EGBY0610
700	600	ESMS0706	EGBZ0706	EGHM0706	EGBY0706		
	800	ESMS0708	EGBZ0708	EGHM0708	EGBY0708		
	1000	ESMS0710	EGBZ0710	EGHM0710	EGBY0710		
800	600	ESMS0806	EGBZ0806	EGHM0806	EGBY0806		
	800	ESMS0808	EGBZ0808	EGHM0808	EGBY0808		
	1000	ESMS0810	EGBZ0810	EGHM0810	EGBY0810		
1000	600	ESMS1006	EGBZ1006	EGHM1006	EGBY1006		
	800	ESMS1008	EGBZ1008	EGHM1008	EGBY1008		
	1000	ESMS1010	EGBZ1010	EGHM1010	EGBY1010		
1200	600	ESMS6606	EGBZ1206	EGHM1206	EGBY1206		
	800	ESMS6608	EGBZ1208	EGHM1208	EGBY1208		
	1000	ESMS6610	EGBZ1210	EGHM1210	EGBY1210		
1400	600	ESMS7706	EGBZ1406	EGHM1406	EGBY1406		
	800	ESMS7708	EGBZ1408	EGHM1408	EGBY1408		
	1000	ESMS7710	EGBZ1410	EGHM1410	EGBY1410		

**Rule 1:** If the enclosure height is 2200mm; Vertical Profile Set, Fixed Cover Plate Rail Set, Fixed Cover and Front Door, Order Codes 2 digits, should be changed from 20 to 22.  
(For Example ESDP20 should be ESDP22.)

**Rule 2:** 100mm plinth is included in Module Set Standard Supply Content.

**Rule 3:** The switchgear is only allowed for Partial Door applications, to come out of the switchboard door.





COVER / FIX PLATES, DOORS

Fixed Cover Plate Rail Set	Fixed Panel (Rear Use)	Fixed Panel (Side Use)	D0 Type Front Door	D1 Type Front Door	D3 Type Front Door	C0 Type Front Door	C1 Type Front Door
-	EGSK2003	EGSK2006 EGSK2008 EGSK2010	ESOK2003D0	ESOK2003D1	-	-	-
EGOS2004	EGSK2004	EGSK2006 EGSK2008 EGSK2010	ESOK2004D0	ESOK2004D1	ESOK2004D3	ESOK2004C0	ESOK2004C1
EGOS2005	EGSK2005	EGSK2006 EGSK2008 EGSK2010	ESOK2005D0	ESOK2005D1	ESOK2005D3	ESOK2005C0	ESOK2005C1
EGOS2006	EGSK2006	EGSK2006 EGSK2008 EGSK2010	ESOK2006D0	ESOK2006D1	ESOK2006D3	ESOK2006C0	ESOK2006C1
EGOS2007	EGSK2007	EGSK2006 EGSK2008 EGSK2010	ESOK2007D0	ESOK2007D1	ESOK2007D3	ESOK2007C0	ESOK2007C1
EGOS2008	EGSK2008	EGSK2006 EGSK2008 EGSK2010	ESOK2008D0	ESOK2008D1	ESOK2008D3	ESOK2008C0	ESOK2008C1
EGOS2010	EGSK2010	EGSK2006 EGSK2008 EGSK2010	ESOK2010D0	ESOK2010D1	ESOK2010D3	-	-
EGOS2066	EGSK2066*	EGSK2006 EGSK2008 EGSK2010	ESOK2066D0	ESOK2066D1	ESOK2066D3	-	-
EGOS2077	EGSK2077**	EGSK2006 EGSK2008 EGSK2010	ESOK2077D0	ESOK2077D1	ESOK2077D3	-	-

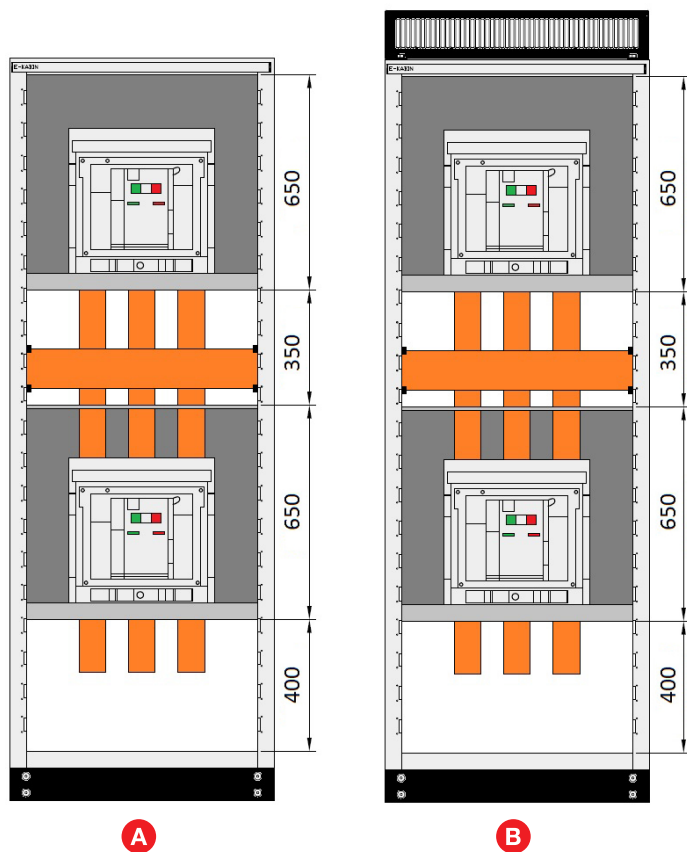
**Rule 4 :** If enclosure door is ventilated type, F type ventilated cover plate must be used behind of the door ventilation area.

(\*) If enclosure width is 1200 mm; it should be use 2 pieces of 600mm Fixed Panel for rear side.

(\*\*) If enclosure width is 1400 mm; it should be use 2 pieces of 700mm Fixed Panel for rear side.

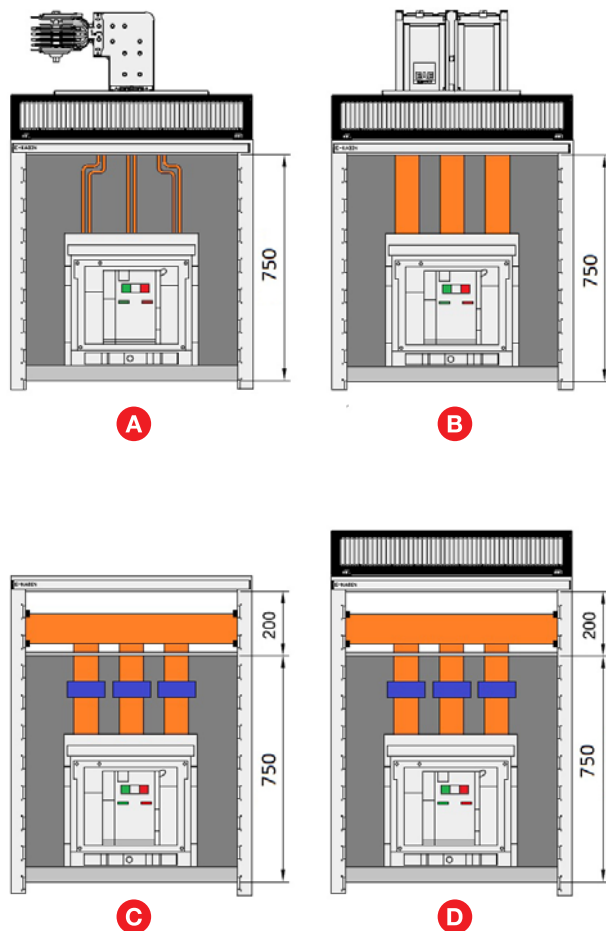
## ACB Separation Modules :

### TYPE 1 (650 mm)



- A** Without HM module and Busbar Module - ACB terminals are horizontal
- B** With HM Module - Without Busbar Module - ACB terminals are horizontal

### TYPE 2 (750 mm)



- A** With HM Module - Busbar terminals are vertical acc. to front door - ACB terminals are vertical
- B** With HM Module - Busbar terminals are horizontal acc. to front door, ACB terminals are horizontal
- C** Without HM module - Main busbar connected to ACB - with 1 set current transformer
- D** With HM module - Main busbar connected to ACB - with 1 set current transformer

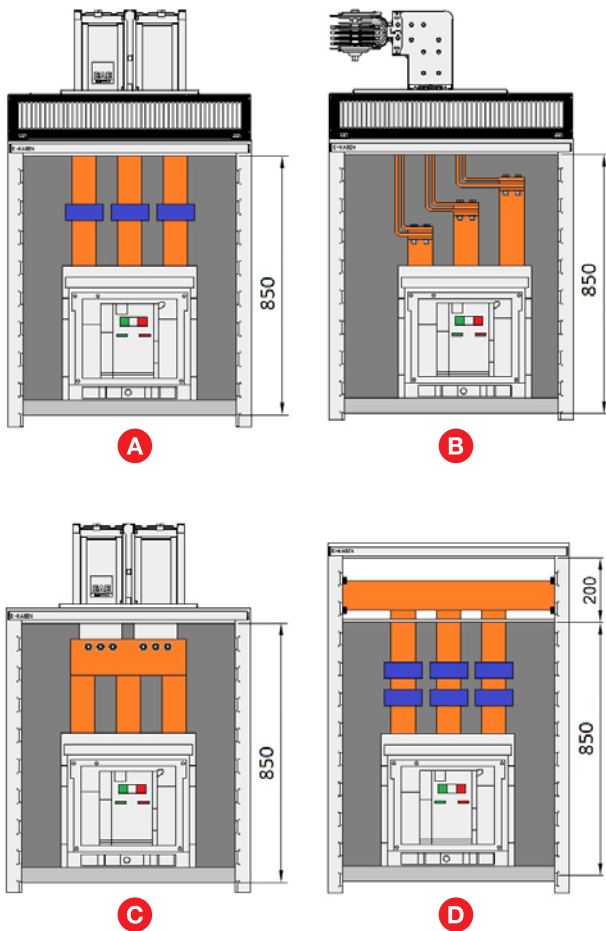
### SB Modules, width and depts (mm), according to ACB Brands

Current	a P L	ABB		CHINT		EATON		GE		LEGRAND		MITSUBISHI		SCHNEIDER		SIEMENS	
		Fixed	Withdrawable	Fixed	Withdrawable	Fixed	Withdrawable	Fixed	Withdrawable	Fixed	Withdrawable	Fixed	Withdrawable	Fixed	Withdrawable	Fixed	Withdrawable
1000	3P	600x600	600x800	600x600	600x800	600x600	600x600	600x600	600x800	600x600	600x800	600x600	600x600	600x600	700x800	600x600	600x800
	4P	600x800	700x800	700x800	700x800	600x800	600x800	700x800	700x800	600x800	600x800	700x800	700x800	800x800	800x800	600x800	600x800
1250	3P	600x600	600x800	600x600	600x800	600x600	600x600	600x600	600x800	600x600	600x800	600x600	600x600	600x600	700x800	600x600	600x800
	4P	600x800	700x800	700x800	700x800	600x800	600x800	700x800	700x800	600x800	600x800	700x800	700x800	800x800	800x800	600x800	600x800
1600	3P	600x600	600x800	600x600	600x800	600x600	600x600	600x600	600x800	600x600	600x800	600x600	600x600	600x600	700x800	600x600	600x800
	4P	600x800	700x800	700x800	700x800	600x800	600x800	700x800	700x800	600x800	600x800	700x800	700x800	800x800	800x800	600x800	600x800
2000	3P	600x600	600x800	600x600	600x800	700x600	700x600	600x600	600x800	600x600	600x800	700x600	700x600	600x600	700x800	600x600	600x800
	4P	600x800	700x800	700x800	700x800	800x800	800x800	700x800	700x800	600x800	600x800	800x800	800x800	800x800	800x800	600x800	600x800
2500	3P	600x600	600x800	700x600	700x800	700x600	700x600	600x600	700x800	600x600	600x800	700x600	700x600	600x600	700x800	700x600	700x800
	4P	600x800	700x800	800x800	800x800	800x800	800x800	700x800	800x800	600x800	600x800	800x800	800x800	800x800	800x800	800x800	800x800
3200	3P	600x600	700x800	700x600	700x800	700x600	700x600	700x600	700x800	600x600	700x800	700x600	700x600	600x600	700x800	700x600	700x800
	4P	800x800	800x800	800x800	800x800	800x800	800x800	800x800	800x800	800x800	800x800	800x800	800x800	800x800	800x800	800x800	800x800
4000	3P	600x800	700x800	800x800	800x800	700x800	700x800	700x800	700x800	600x800	700x800	1000x800	1000x800	600x800	700x800	700x800	700x800
	4P	800x1000	1000x1000	1000x800	1000x1000	800x1000	800x1000	800x1000	800x1000	800x1000	800x1000	1200x1000	1200x1000	800x1000	800x1000	800x1000	800x1000
5000	3P	1000x800	1000x800	-	-	1200x800	1200x800	1000x800	1000x800	-	-	1000x800	1000x800	1000x800	1000x800	1000x800	1000x800
	4P	1200x1000	1200x1000	-	-	1400x1000	1400x1000	1200x1000	1200x1000	-	-	1200x1000	1200x1000	1200x1000	1200x1000	1200x1000	1200x1000
6300	3P	1000x800	1000x800	-	-	1200x800	1200x800	1000x800	1000x800	-	-	1000x800	1000x800	1000x800	1000x800	1000x800	1000x800
	4P	1200x1000	1200x1000	-	-	1400x1000	1400x1000	1200x1000	1200x1000	-	-	1200x1000	1200x1000	1200x1000	1200x1000	1200x1000	1200x1000

**Rule 1 :** The distance between the ACB terminals and the bottom horizontal profile of the panel must be at least 200 mm.

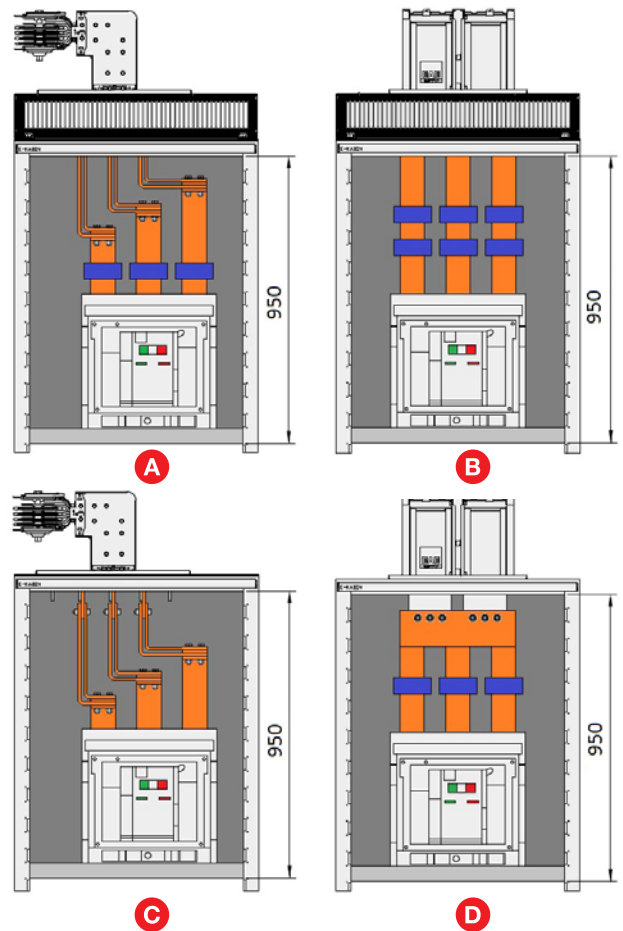
All dimensions are in millimeters.

## TYPE 3 (850 mm)



- A** With HM Module - Busbar terminals are horizontal acc. to front door- ACB terminals are horizontal- with 1 set current transformer
- B** With HM Module - Busbar terminals are vertical acc. to front door- ACB terminals are horizontal
- C** Without HM Module - Busbar terminals are horizontal acc. to front door - ACB terminals are horizontal
- D** Without HM module - Main busbar connected ACB - with 2 sets current transformer

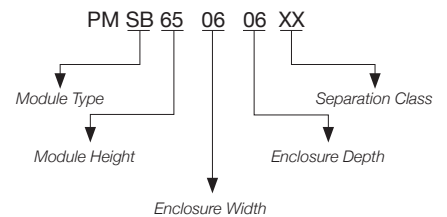
## TYPE 4 (950 mm)



- A** With HM Module - Busbar terminals are vertical acc. to front door- ACB terminals are horizontal- with 1 set current transformer
- B** With HM Module - Busbar terminals are horizontal acc. to front door- ACB terminals are horizontal- with 2 set current transformer
- C** Without HM Module - Busbar terminals are vertical acc. to front door - ACB terminals are horizontal
- D** Without HM Module - Busbar terminals are horizontal acc. to front door - ACB terminals are horizontal - with 1 set current transformer

### ACB Separation Modules - SB

WxD	H	Type 1 (650 mm)	Type 2 (750 mm)	Type 3 (850 mm)	Type 4 (950 mm)
600x600		PMSB650606XX	PMSB750606XX	PMSB850606XX	PMSB950606XX
600x800		PMSB650608XX	PMSB750608XX	PMSB850608XX	PMSB950608XX
600x1000		PMSB650610XX	PMSB750610XX	PMSB850610XX	PMSB950610XX
700x600		PMSB650706XX	PMSB750706XX	PMSB850706XX	PMSB950706XX
700x800		PMSB650708XX	PMSB750708XX	PMSB850708XX	PMSB950708XX
700x1000		PMSB650710XX	PMSB750710XX	PMSB850710XX	PMSB950710XX
800x600		PMSB650806XX	PMSB750806XX	PMSB850806XX	PMSB950806XX
800x800		PMSB650808XX	PMSB750808XX	PMSB850808XX	PMSB950808XX
800x1000		PMSB650810XX	PMSB750810XX	PMSB850810XX	PMSB950810XX
1000x600		PMSB651006XX	PMSB751006XX	PMSB851006XX	PMSB951006XX
1000x800		PMSB651008XX	PMSB751008XX	PMSB851008XX	PMSB951008XX
1000x1000		PMSB651010XX	PMSB751010XX	PMSB851010XX	PMSB951010XX
1200x600		PMSB651206XX	PMSB751206XX	PMSB851206XX	PMSB951206XX
1200x800		PMSB651208XX	PMSB751208XX	PMSB851208XX	PMSB951208XX
1200x1000		PMSB651210XX	PMSB751210XX	PMSB851210XX	PMSB951210XX
1400x600		PMSB651406XX	PMSB751406XX	PMSB851406XX	PMSB951406XX
1400x800		PMSB651408XX	PMSB751408XX	PMSB851408XX	PMSB951408XX
1400x1000		PMSB651410XX	PMSB751410XX	PMSB851410XX	PMSB951410XX

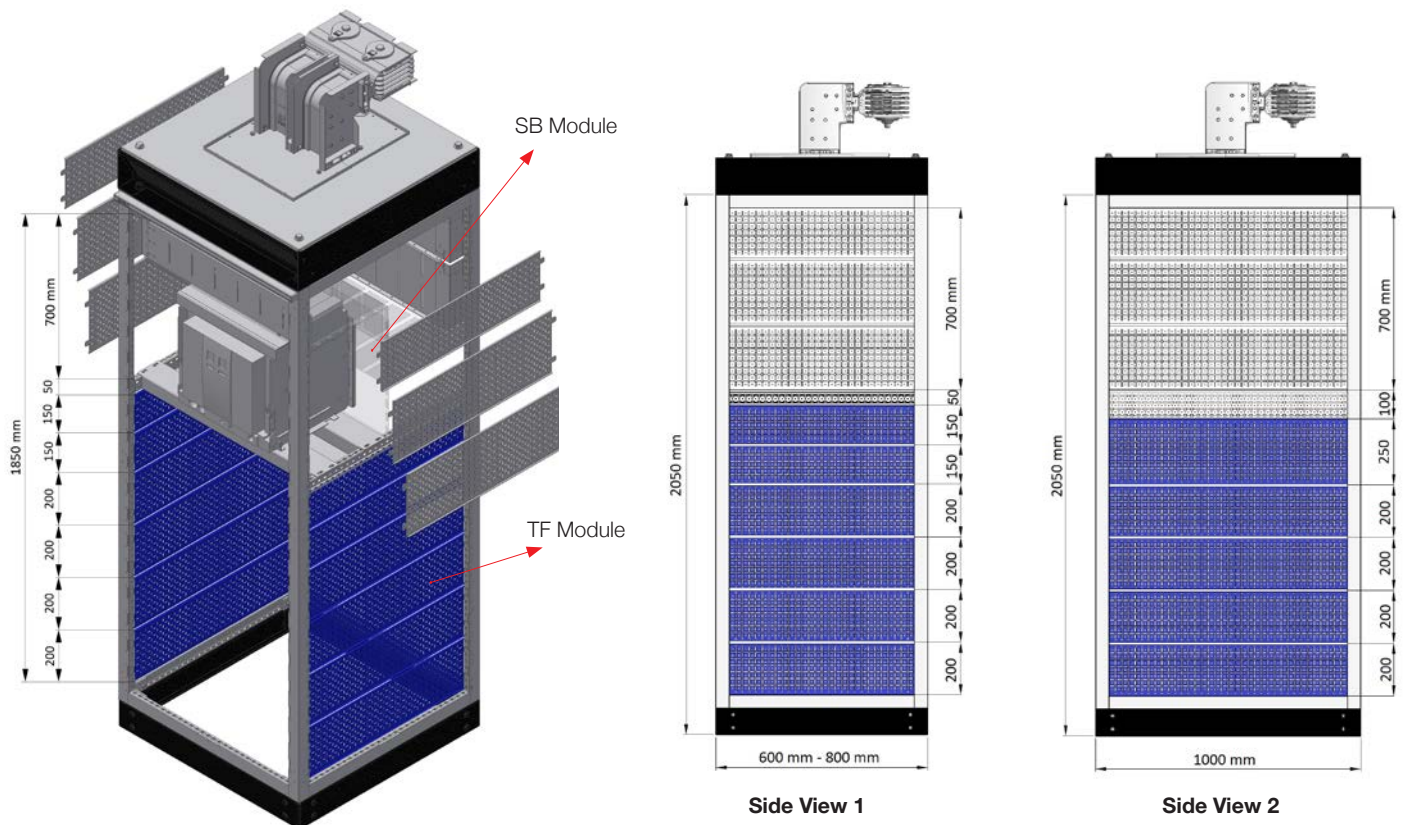


**Rule 2:** The XX section at the end of the SB order codes differs according to the separation/form class of the switchboard.

For Form 1 panels, XX should be replaced by F1, for Form 2b panels, 2b and for Form 4b panels, 4b.

All dimensions are in millimeters.

## ACB Terminal Separation Modules :



ACB Terminal Separation Modules - TF			
Depth \ Height	600	800	1000
150	PMTF1506	PMTF1508	PMTF1510
200	PMTF2006	PMTF2008	PMTF2010
250	PMTF2506	PMTF2508	PMTF2510

**Rule 1 :** These modules are used to separate ACB terminals in Form 4B enclosures.

**Rule 2 :** These modules do not need to be used in Form 2B panels.

**Rule 3 :** Each order code is a set and consists of two plates.

**Rule 4 :** For enclosures with a depth of 1000 mm, the TF module should be selected by calculating the total TF usage area by reducing 50 mm. (Side View 2)





Flat Separation Module - DF							
Width Height	500	600	700	800	1000	1200	1400
100	P MDF1005	P MDF1006	P MDF1007	P MDF1008	P MDF1010	P MDF1012	P MDF1014
150	P MDF1505	P MDF1506	P MDF1507	P MDF1508	P MDF1510	P MDF1512	P MDF1514
200	P MDF2005	P MDF2006	P MDF2007	P MDF2008	P MDF2010	P MDF2012	P MDF2014
250	P MDF2505	P MDF2506	P MDF2507	P MDF2508	P MDF2510	P MDF2512	P MDF2514
300	P MDF3005	P MDF3006	P MDF3007	P MDF3008	P MDF3010	P MDF3012	P MDF3014
350	P MDF3505	P MDF3506	P MDF3507	P MDF3508	P MDF3510	P MDF3512	P MDF3514

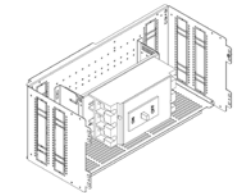
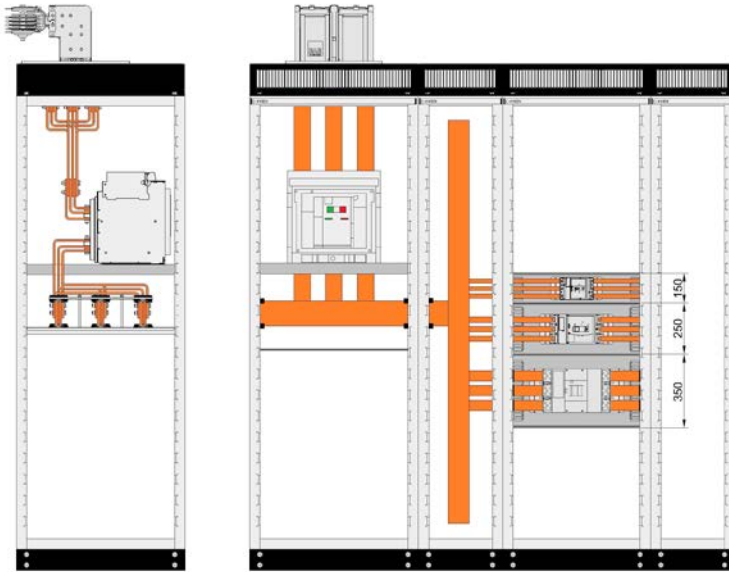
**Rule 1 :** If required by the employer, the DF modules are used to cover the live parts that are open on the front of the enclosure.

**Rule 2 :** A 100 mm DF must be used to cover the areas where the vertical MCCB's are connected to the main busbar and busbar trunking module.

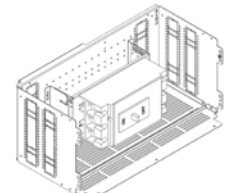
(For busbar trunking module and vertical MCCB connections without ventilation module, 200 mm DF must be used.)

**Note :** In order to prevent the formation of electromagnetic field, Flat separation modules are produced from aluminum material.

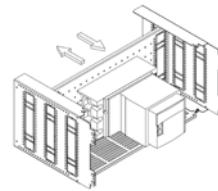
# Horizontal MCCB Separation Modules :



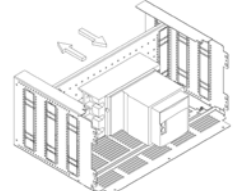
SG Module for MCCB without motor  
(Cover plate application)



SI Module for MCCB without motor  
(Partial door application)



MG Module for MCCB with motor  
(Cover plate application)



MF Module for MCCB with motor  
(Partial door application)

## Horizontal MCCB's Separation Modules

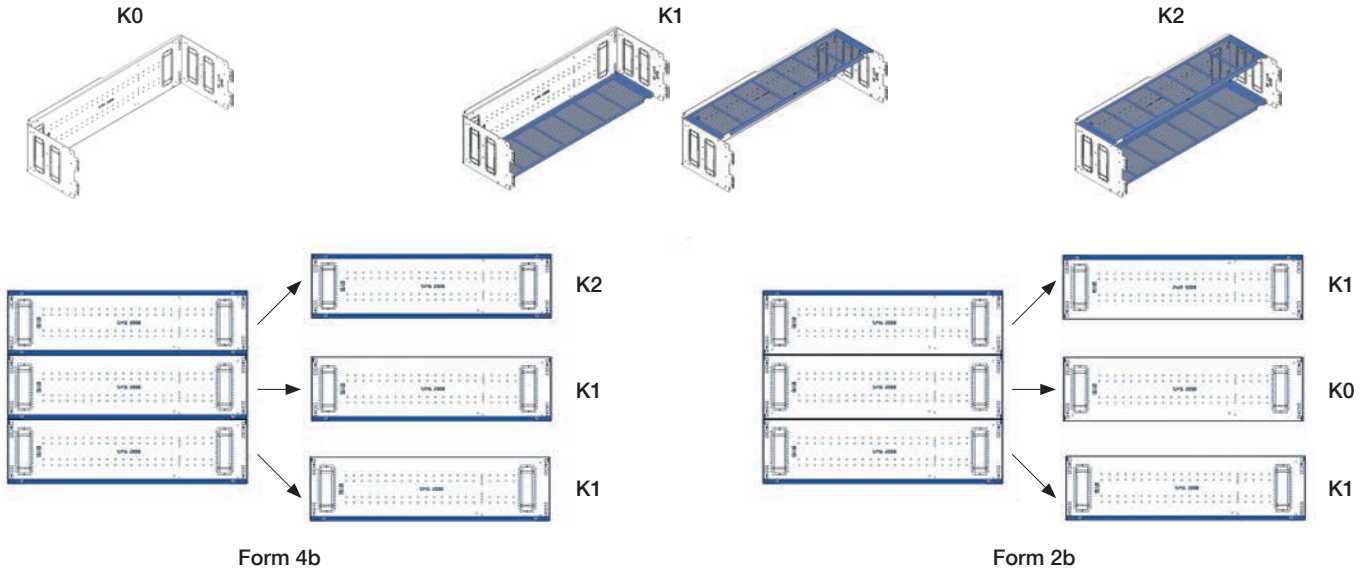
		3 Pole						
W	H	Form Class	150 mm	200 mm	250 mm	250 mm		
			(up to 250 A)	(up to 400 A)	(up to 630 A)	(up to 1600 A)		
COVER PLATE APPLICATION	PM SG	500	2B	PMSG1505K13352B	PMSG2005K13452B	PMSG2505K13452B	PMSG2505K13702B	
			4B	PMSG1505K13354B	PMSG2005K13454B	PMSG2505K13454B	PMSG2505K13704B	
		600	2B	PMSG1506K13352B	PMSG2006K13452B	PMSG2506K13452B	PMSG2506K13702B	
			4B	PMSG1506K13354B	PMSG2006K13454B	PMSG2506K13454B	PMSG2506K13704B	
		700	2B	PMSG1507K13352B	PMSG2007K13452B	PMSG2507K13452B	PMSG2507K13702B	
			4B	PMSG1507K13354B	PMSG2007K13454B	PMSG2507K13454B	PMSG2507K13704B	
	800	2B	PMSG1508K13352B	PMSG2008K13452B	PMSG2508K13452B	PMSG2508K13702B		
			PMSG1508K13354B	PMSG2008K13454B	PMSG2508K13454B	PMSG2508K13704B		
		4B	PMSG1510K13352B	PMSG2010K13452B	PMSG2510K13452B	PMSG2510K13702B		
			PMSG1510K13354B	PMSG2010K13454B	PMSG2510K13454B	PMSG2510K13704B		
	PARTIAL DOOR APPLICATION	PM SI	500	2B	PMSI15053352B	-	PMSI25053452B	PMSI25053702B
				4B	PMSI15053354B	-	PMSI25053454B	PMSI25053704B
600			2B	PMSI15063352B	-	PMSI25063452B	PMSI25063702B	
			4B	PMSI15063354B	-	PMSI25063454B	PMSI25063704B	
700			2B	PMSI15073352B	-	PMSI25073452B	PMSI25073702B	
			4B	PMSI15073354B	-	PMSI25073454B	PMSI25073704B	
800		2B	PMSI15083352B	-	PMSI25083452B	PMSI25083702B		
			PMSI15083354B	-	PMSI25083454B	PMSI25083704B		
		4B	PMSI15103352B	-	PMSI25103452B	PMSI25103702B		
			PMSI15103354B	-	PMSI25103454B	PMSI25103704B		
COVER PLATE APPLICATION WITH MOTOR MCCB		PM MG	500	2B	PMMG1505K13352B	PMMG2005K13452B	PMMG2505K13452B	PMMG2505K13702B
				4B	PMMG1505K13354B	PMMG2005K13454B	PMMG2505K13454B	PMMG2505K13704B
	600		2B	PMMG1506K13352B	PMMG2006K13452B	PMMG2506K13452B	PMMG2506K13702B	
			4B	PMMG1506K13354B	PMMG2006K13454B	PMMG2506K13454B	PMMG2506K13704B	
	700		2B	PMMG1507K13352B	PMMG2007K13452B	PMMG2507K13452B	PMMG2507K13702B	
			4B	PMMG1507K13354B	PMMG2007K13454B	PMMG2507K13454B	PMMG2507K13704B	
	800	2B	PMMG1508K13352B	PMMG2008K13452B	PMMG2508K13452B	PMMG2508K13702B		
			PMMG1508K13354B	PMMG2008K13454B	PMMG2508K13454B	PMMG2508K13704B		
		4B	PMMG1510K13352B	PMMG2010K13452B	PMMG2510K13452B	PMMG2510K13702B		
			PMMG1510K13354B	PMMG2010K13454B	PMMG2510K13454B	PMMG2510K13704B		
	PARTIAL DOOR APPLICATION WITH MOTOR MCCB	PM MF	500	2B	PMMF15053352B	-	PMMF25053452B	PMMF25053702B
				4B	PMMF15053354B	-	PMMF25053454B	PMMF25053704B
600			2B	PMMF15063352B	-	PMMF25063452B	PMMF25063702B	
			4B	PMMF15063354B	-	PMMF25063454B	PMMF25063704B	
700			2B	PMMF15073352B	-	PMMF25073452B	PMMF25073702B	
			4B	PMMF15073354B	-	PMMF25073454B	PMMF25073704B	
800		2B	PMMF15083352B	-	PMMF25083452B	PMMF25083702B		
			PMMF15083354B	-	PMMF25083454B	PMMF25083704B		
		4B	PMMF15103352B	-	PMMF25103452B	PMMF25103702B		
			PMMF15103354B	-	PMMF25103454B	PMMF25103704B		

**Rule 1 :** Insulators are included in the scope of supply for SG, SI, MG and MF type modules.

**Rule 2 :** In this table, the order codes of SG and MG modules with cover type K1 are given. Modules with cover types K0 and K2 must be selected according to the form class.

**Rule 3 :** In Form 2b panels where SG and MG will be used, 2 cover type K1 switch modules are selected for each section and the other switch modules are selected as cover type K0.

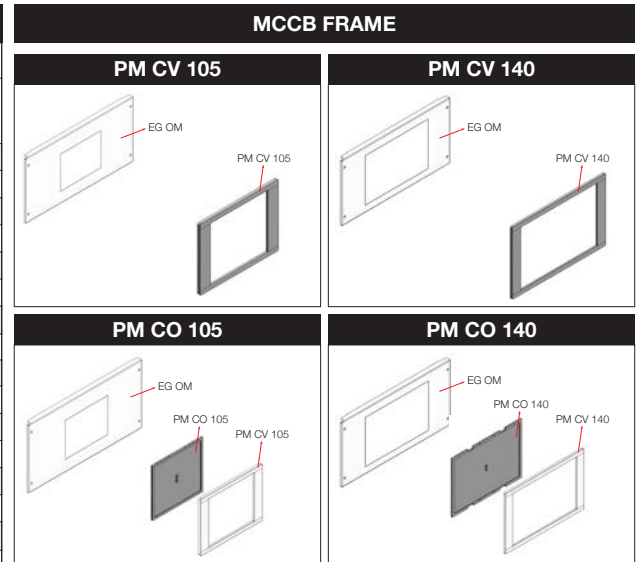
**Rule 4 :** In Form 4b panels where SG and MG will be used, 1 cover type K2 switch modules are selected for each section and the other switch modules are selected as cover type K1.



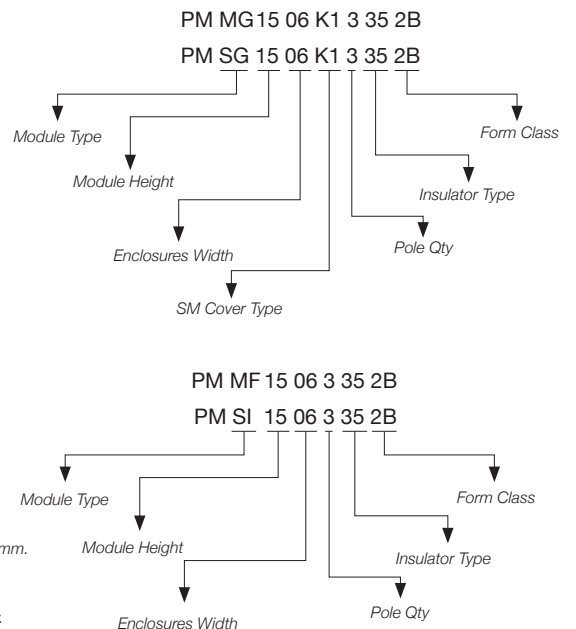
Form 4b

Form 2b

4 Pole		
200 mm (up to 250 A)	250 mm (up to 630 A)	350 mm (up to 1600 A)
PMSG2005K14352B	PMSG2505K14452B	PMSG3505K14702B
PMSG2005K14354B	PMSG2505K14454B	PMSG3505K14704B
PMSG2006K14352B	PMSG2506K14452B	PMSG3506K14702B
PMSG2006K14354B	PMSG2506K14454B	PMSG3506K14704B
PMSG2007K14352B	PMSG2507K14452B	PMSG3507K14702B
PMSG2007K14354B	PMSG2507K14454B	PMSG3507K14704B
PMSG2008K14352B	PMSG2508K14452B	PMSG3508K14702B
PMSG2008K14354B	PMSG2508K14454B	PMSG3508K14704B
PMSG2010K14352B	PMSG2510K14452B	PMSG3510K14702B
PMSG2010K14354B	PMSG2510K14454B	PMSG3510K14704B
-	PMSI25054452B	PMSI35054702B
-	PMSI25054454B	PMSI35054704B
-	PMSI25064452B	PMSI35064702B
-	PMSI25064454B	PMSI35064704B
-	PMSI25074452B	PMSI35074702B
-	PMSI25074454B	PMSI35074704B
-	PMSI25084452B	PMSI35084702B
-	PMSI25084454B	PMSI35084704B
-	PMSI25104452B	PMSI35104702B
-	PMSI25104454B	PMSI35104704B
PMMG2005K14352B	PMMG2505K14452B	PMMG3505K14702B
PMMG2005K14354B	PMMG2505K14454B	PMMG3505K14704B
PMMG2006K14352B	PMMG2506K14452B	PMMG3506K14702B
PMMG2006K14354B	PMMG2506K14454B	PMMG3506K14704B
PMMG2007K14352B	PMMG2507K14452B	PMMG3507K14702B
PMMG2007K14354B	PMMG2507K14454B	PMMG3507K14704B
PMMG2008K14352B	PMMG2508K14452B	PMMG3508K14702B
PMMG2008K14354B	PMMG2508K14454B	PMMG3508K14704B
PMMG2010K14352B	PMMG2510K14452B	PMMG3510K14702B
PMMG2010K14354B	PMMG2510K14454B	PMMG3510K14704B
-	PMMF25054452B	PMMF35054702B
-	PMMF25054454B	PMMF35054704B
-	PMMF25064452B	PMMF35064702B
-	PMMF25064454B	PMMF35064704B
-	PMMF25074452B	PMMF35074702B
-	PMMF25074454B	PMMF35074704B
-	PMMF25084452B	PMMF35084702B
-	PMMF25084454B	PMMF35084704B
-	PMMF25104452B	PMMF35104702B
-	PMMF25104454B	PMMF35104704B

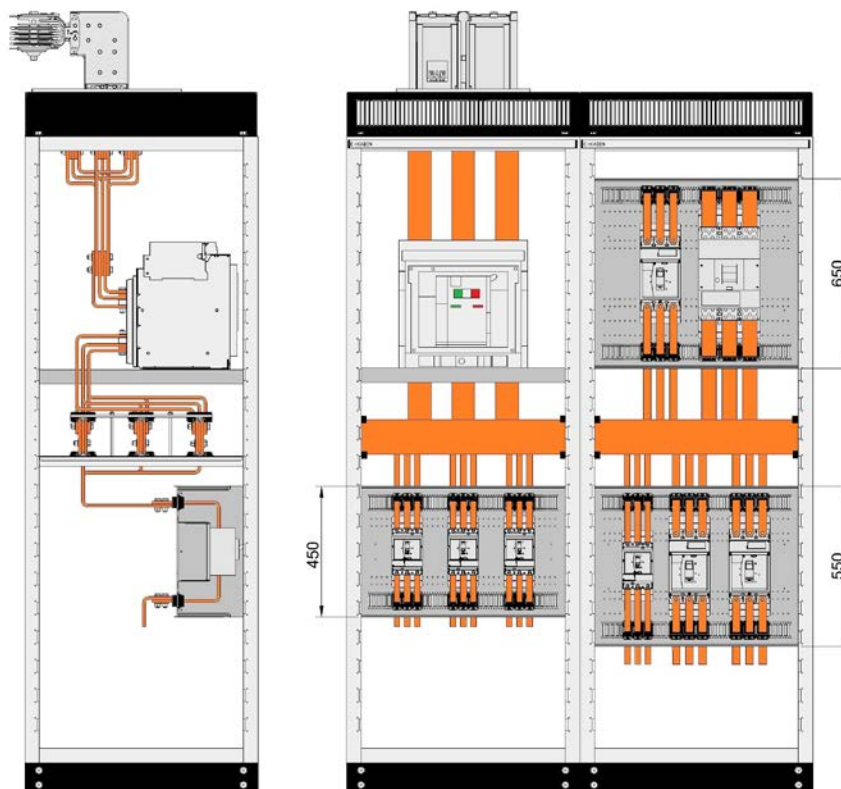


**Note:** For Schneider NSX 100-250 A MCCB only PMCV105, for NSX 400/630 A MCCB only PMCV140 should be used. For other brand MCCB's, up to 250 A, PMCV 105 and PMCO105 (105 mm width), up to 630 A PMCV 140 and PMCO140 (140 mm width) should be used together.



- Rule 5:** Panel width for horizontal MCCB's up to 250 A should be minimum 500 mm, Panel width for horizontal MCCB's up to 630 A should be minimum 600 mm, Panel width for horizontal MCCB's up to 1600 A should be minimum 700 mm.
- Rule 6:** MCCB modules with a height of 200 mm cannot be used in partial door applications.
- Rule 7:** According to the MCCB size to be used in PM SG and PM SI module, SY (Riser Plate) should be selected separately. (SY Riser Plates do not need to be used for PM MF and PM MG modules.)
- Rule 8:** For each MCCB's, the MCCB frame should be used.

## Vertical MCCB Separation Modules :

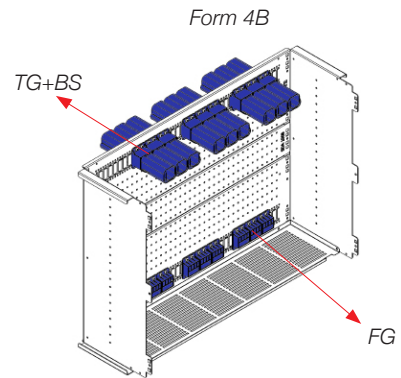
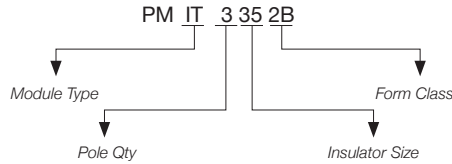
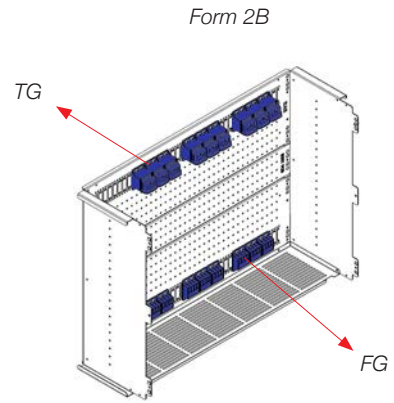
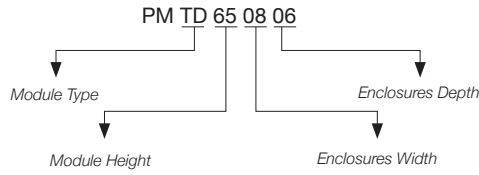


Vertical MCCB Separation Modules										
Width	Depth	Pole Qty	TD COVER PLATE APPLICATION				TU PARTIAL COVER APPLICATION			
			450 mm (up to 250 A)	550 mm (up to 630 A)	650 mm (up to 1600 A)	750 mm (up to 1600 A)	450 mm (up to 250 A)	550 mm (up to 630 A)	650 mm (up to 1600 A)	750 mm (up to 1600 A)
500	600	3P-4P	PMTD450506	PMTD550506	PMTD650506	PMTD750506	PMTU450506	PMTU550506	PMTU650506	PMTU750506
500	800	3P-4P	PMTD450508	PMTD550508	PMTD650508	PMTD750508	PMTU450508	PMTU550508	PMTU650508	PMTU750508
500	1000	3P-4P	PMTD450510	PMTD550510	PMTD650510	PMTD750510	PMTU450510	PMTU550510	PMTU650510	PMTU750510
600	600	3P-4P	PMTD450606	PMTD550606	PMTD650606	PMTD750606	PMTU450606	PMTU550606	PMTU650606	PMTU750606
600	800	3P-4P	PMTD450608	PMTD550608	PMTD650608	PMTD750608	PMTU450608	PMTU550608	PMTU650608	PMTU750608
600	1000	3P-4P	PMTD450610	PMTD550610	PMTD650610	PMTD750610	PMTU450610	PMTU550610	PMTU650610	PMTU750610
700	600	3P-4P	PMTD450706	PMTD550706	PMTD650706	PMTD750706	PMTU450706	PMTU550706	PMTU650706	PMTU750706
700	800	3P-4P	PMTD450708	PMTD550708	PMTD650708	PMTD750708	PMTU450708	PMTU550708	PMTU650708	PMTU750708
700	1000	3P-4P	PMTD450710	PMTD550710	PMTD650710	PMTD750710	PMTU450710	PMTU550710	PMTU650710	PMTU750710
800	600	3P-4P	PMTD450806	PMTD550806	PMTD650806	PMTD750806	PMTU450806	PMTU550806	PMTU650806	PMTU750806
800	800	3P-4P	PMTD450808	PMTD550808	PMTD650808	PMTD750808	PMTU450808	PMTU550808	PMTU650808	PMTU750808
800	1000	3P-4P	PMTD450810	PMTD550810	PMTD650810	PMTD750810	PMTU450810	PMTU550810	PMTU650810	PMTU750810
1000	600	3P-4P	PMTD451006	PMTD551006	PMTD651006	PMTD751006	PMTU451006	PMTU551006	PMTU651006	PMTU751006
1000	800	3P-4P	PMTD451008	PMTD551008	PMTD651008	PMTD751008	PMTU451008	PMTU551008	PMTU651008	PMTU751008
1000	1000	3P-4P	PMTD451010	PMTD551010	PMTD651010	PMTD751010	PMTU451010	PMTU551010	PMTU651010	PMTU751010

**Rule 1 :** For each MCCB, the isolator must be selected from the isolator set selection table according to the current of the MCCB.

**Rule 2 :** If current transformers connected to MCCB, the module height should be increased by 100 mm.

**Rule 3 :** Depending on the MCCB size used in each module, the MCCB riser plate (SY) must be selected separately.



TM COVER PLATE + MOTORISED MCCB APPLICATION				TN PARTIAL DOOR + MOTORISED MCCB APPLICATION			
450 mm (up to 250 A)	550 mm (up to 630 A)	650 mm (up to 1600 A)	750 mm (up to 1600 A)	450 mm (up to 250 A)	550 mm (up to 630 A)	650 mm (up to 1600 A)	750 mm (up to 1600 A)
PMTM450506	PMTM550506	PMTM650506	PMTM750506	PMTN450506	PMTN550506	PMTN650506	PMTN750506
PMTM450508	PMTM550508	PMTM650508	PMTM750508	PMTN450508	PMTN550508	PMTN650508	PMTN750508
PMTM450510	PMTM550510	PMTM650510	PMTM750510	PMTN450510	PMTN550510	PMTN650510	PMTN750510
PMTM450606	PMTM550606	PMTM650606	PMTM750606	PMTN450606	PMTN550606	PMTN650606	PMTN750606
PMTM450608	PMTM550608	PMTM650608	PMTM750608	PMTN450608	PMTN550608	PMTN650608	PMTN750608
PMTM450610	PMTM550610	PMTM650610	PMTM750610	PMTN450610	PMTN550610	PMTN650610	PMTN750610
PMTM450706	PMTM550706	PMTM650706	PMTM750706	PMTN450706	PMTN550706	PMTN650706	PMTN750706
PMTM450708	PMTM550708	PMTM650708	PMTM750708	PMTN450708	PMTN550708	PMTN650708	PMTN750708
PMTM450710	PMTM550710	PMTM650710	PMTM750710	PMTN450710	PMTN550710	PMTN650710	PMTN750710
PMTM450806	PMTM550806	PMTM650806	PMTM750806	PMTN450806	PMTN550806	PMTN650806	PMTN750806
PMTM450808	PMTM550808	PMTM650808	PMTM750808	PMTN450808	PMTN550808	PMTN650808	PMTN750808
PMTM450810	PMTM550810	PMTM650810	PMTM750810	PMTN450810	PMTN550810	PMTN650810	PMTN750810
PMTM451006	PMTM551006	PMTM651006	PMTM751006	PMTN451006	PMTN551006	PMTN651006	PMTN751006
PMTM451008	PMTM551008	PMTM651008	PMTM751008	PMTN451008	PMTN551008	PMTN651008	PMTN751008
PMTM451010	PMTM551010	PMTM651010	PMTM751010	PMTN451010	PMTN551010	PMTN651010	PMTN751010

**Insulator Selection according to Busbar Size**

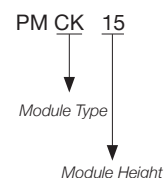
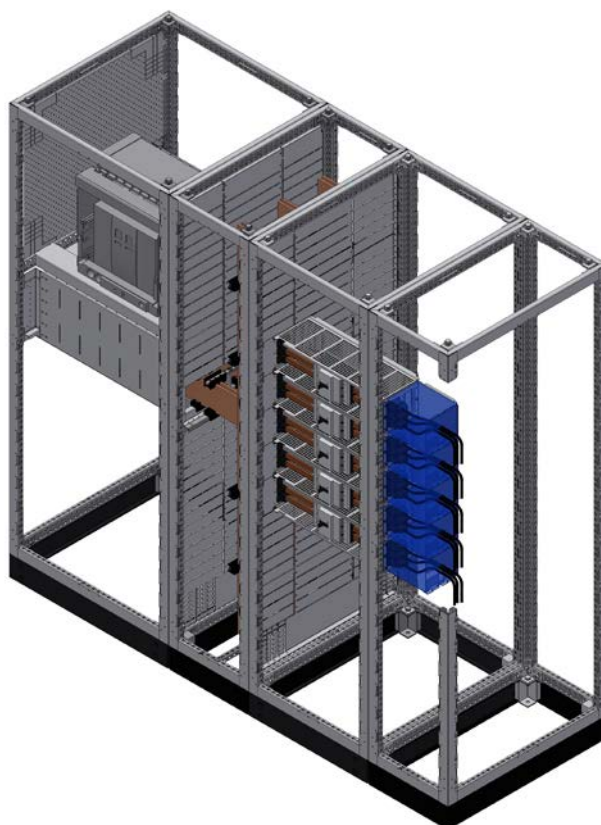
Insulator Size	35	45	70
TG	20x10 mm	30x10 mm	50x10 mm
FG	20x10 mm	30x10 mm	50x10 mm

**Vertical MCCB Separation Module Insulator Sets**

		MCCB ≤ 250 A	MCCB ≤ 630 A	MCCB ≤ 800 A	MCCB ≤ 1600 A
3P	2B	PMIT3352B	PMIT3452B	PMIT3702B	PMFG670
	4B	PMIT3354B	PMIT3454B	PMIT3704B	
4P	2B	PMIT4352B	PMIT4452B	PMIT4702B	PMFG870
	4B	PMIT4354B	PMIT4454B	PMIT4704B	



## Box Type Separation Modules for Horizontal MCCB Outgoings :



Form 4b Box Type Separation Modules for Horizontal MCCB Outgoings - CK			
150 mm	200 mm	250 mm	350 mm
PMCK15	PMCK20	PMCK25	PMCK35

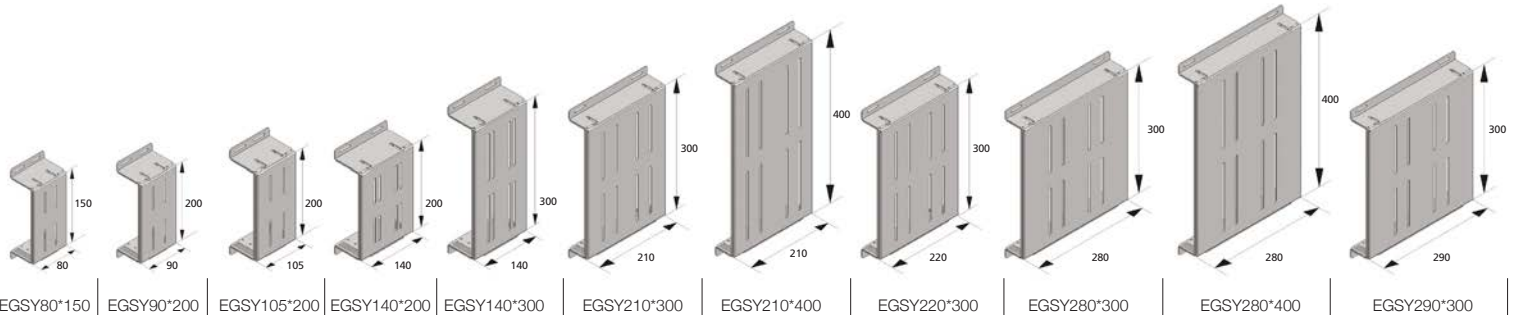
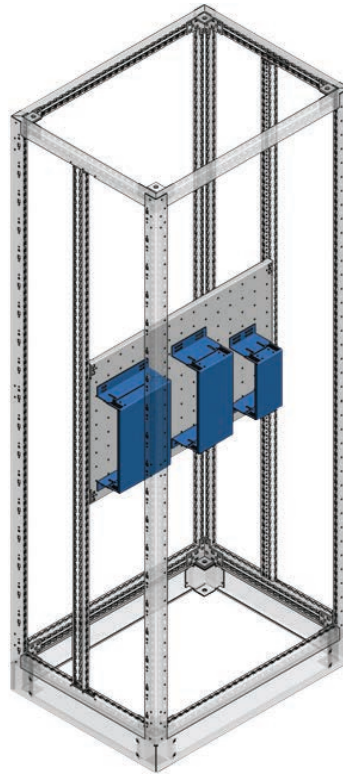
**Rule 1 :** These products can be optionally used for separating horizontal MCCB outgoing on Form 4b panels, according to customer specific demand.

**Rule 2 :** These products do not need to be used in Form 2B panels.

**Rule 3 :** If this boxes are used behind the horizontal MCCB separation modules, the panel depth must be at least 800 mm

**Rule 4 :** If this boxes are used in the cable section, the cable section width should be at least 400 mm up to 630 A and a minimum 600 mm up to 1600 A.

SY - MCCB Riser Plates											
ABB			CHINT			EATON			GE		
Model	3P	4P	Model	3P	4P	Model	3P	4P	Model	3P	4P
TMAX-T1	EGSY80*150	EGSY105*200	NM8S-125	EGSY105*200	EGSY140*200	NZM1-LZM1	EGSY90*200	EGSY140*200	FD	EGSY80*150	EGSY140*200
TMAX-T2	EGSY90*200	EGSY140*200	NM8S-250	EGSY105*200	EGSY140*200	NZM2-LZM2	EGSY105*200	EGSY140*200	FE	EGSY105*200	EGSY140*200
TMAX-T3	EGSY105*200	EGSY140*200	NM8S-400	EGSY140*300	EGSY210*300	NZM3-LZM3	EGSY140*200	EGSY210*300	FG	EGSY140*300	EGSY210*300
TMAX-T4	EGSY105*200	EGSY140*200	NM8S-630	EGSY140*300	EGSY210*300	NZM4-LZM4	EGSY210*400	EGSY280*400	FK	EGSY210*400	EGSY280*400
TMAX-T5	EGSY140*300	EGSY210*300	NM8S-800	EGSY210*400	EGSY280*400						
TMAX-T6	EGSY210*300	EGSY280*300	NM8S-1250	EGSY210*400	EGSY280*400						
TMAX-T7	EGSY210*300	EGSY280*300	NM8S-1600	EGSY210*400	EGSY280*400						



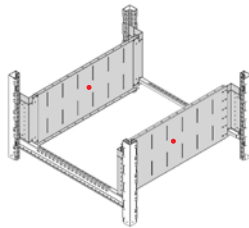
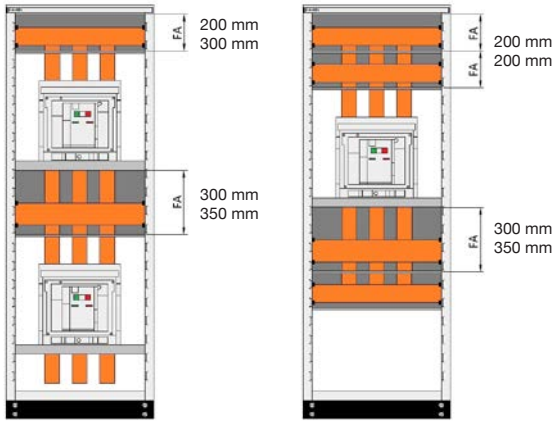
**Rule 1 :** SY riser plates must be selected separately for each MCCB to be used in MCCB separation modules.

**According to MCCB Brands**

LEGRAND			MITSUBISHI			SCHNEIDER			SIEMENS		
Model	3P	4P	Model	3P	4P	Model	3P	4P	Model	3P	4P
DPX®160	EGSY90*200	EGSY140*200	NF125	EGSY105*200	EGSY140*200	NSX100	EGSY105*200	EGSY140*200	3VL1	EGSY105*200	EGSY140*200
DPX®250	EGSY105*200	EGSY140*200	NF160	EGSY105*200	EGSY140*200	NSX160	EGSY105*200	EGSY140*200	3VL2	EGSY105*200	EGSY140*200
DPX®630	EGSY140*300	EGSY210*300	NF250	EGSY105*200	EGSY140*200	NSX250	EGSY105*200	EGSY140*200	3VL3	EGSY105*200	EGSY140*200
DPX®1600	EGSY210*400	EGSY280*400	NF400	EGSY140*300	EGSY210*300	NSX400	EGSY140*200	EGSY210*300	3VL4	EGSY140*300	EGSY210*300
			NF630	EGSY140*300	EGSY210*300	NSX630	EGSY140*300	EGSY210*300	3VL5	EGSY210*300	EGSY280*300
			NF800	EGSY210*300	EGSY280*300	NSX800	EGSY220*300	EGSY290*300	3VL6	EGSY210*400	EGSY280*400
						NS1000	EGSY220*300	EGSY290*300	3VL7	EGSY210*400	EGSY280*400
						NS1250	EGSY220*300	EGSY290*300	3VL8	EGSY210*400	EGSY280*400
						NS1600	EGSY220*300	EGSY290*300			

# Main Busbar Separation Modules

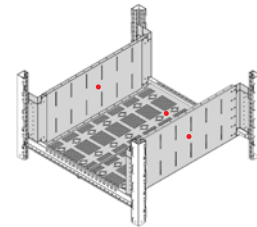
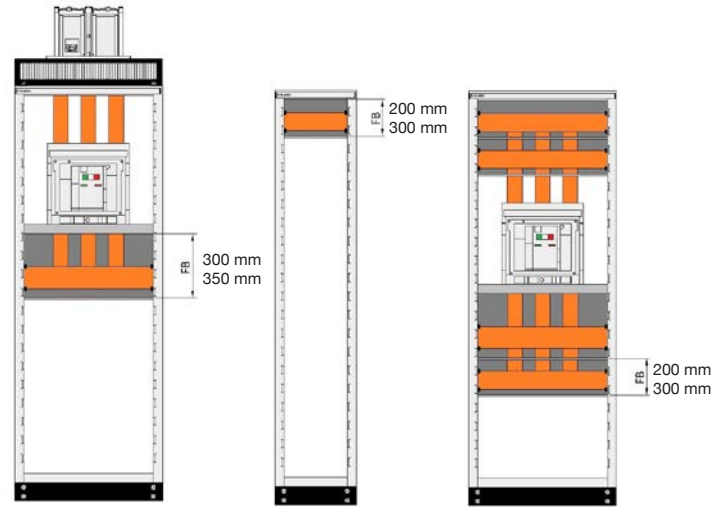
**FA**



Top and Bottom Open

• Aluminium

**FB**



Top Open, Bottom Closed

• Aluminium

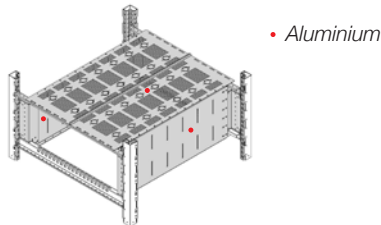
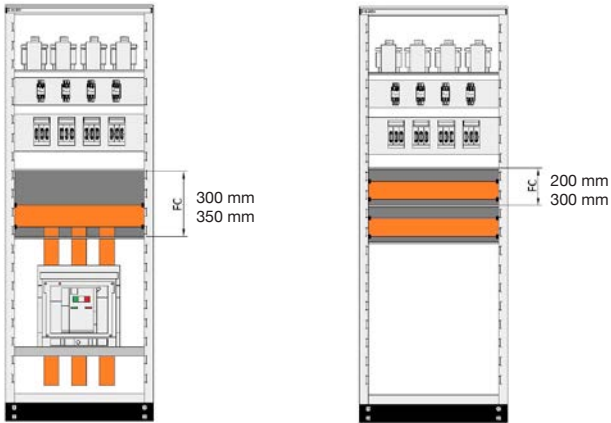
H W x D	FA Tipi			FB Tipi			200 mm * Up to 120x10mm <sup>2</sup>
	200 mm * Up to 120x10mm <sup>2</sup>	300 mm * Up to 160x10mm <sup>2</sup>	350 mm * Up to 160x10mm <sup>2</sup>	200 mm * Up to 120x10mm <sup>2</sup>	300 mm * Up to 160x10mm <sup>2</sup>	350 mm * Up to 160x10mm <sup>2</sup>	
400x600	PMFA200406	PMFA300406	PMFA350406	PMFB200406	PMFB300406	PMFB350406	PMFC200406
400x800	PMFA200408	PMFA300408	PMFA350408	PMFB200408	PMFB300408	PMFB350408	PMFC200408
400x1000	PMFA200410	PMFA300410	PMFA350410	PMFB200410	PMFB300410	PMFB350410	PMFC200410
500x600	PMFA200506	PMFA300506	PMFA350506	PMFB200506	PMFB300506	PMFB350506	PMFC200506
500x800	PMFA200508	PMFA300508	PMFA350508	PMFB200508	PMFB300508	PMFB350508	PMFC200508
500x1000	PMFA200510	PMFA300510	PMFA350510	PMFB200510	PMFB300510	PMFB350510	PMFC200510
600x600	PMFA200606	PMFA300606	PMFA350606	PMFB200606	PMFB300606	PMFB350606	PMFC200606
600x800	PMFA200608	PMFA300608	PMFA350608	PMFB200608	PMFB300608	PMFB350608	PMFC200608
600x1000	PMFA200610	PMFA300610	PMFA350610	PMFB200610	PMFB300610	PMFB350610	PMFC200610
700x600	PMFA200706	PMFA300706	PMFA350706	PMFB200706	PMFB300706	PMFB350706	PMFC200706
700x800	PMFA200708	PMFA300708	PMFA350708	PMFB200708	PMFB300708	PMFB350708	PMFC200708
700x1000	PMFA200710	PMFA300710	PMFA350710	PMFB200710	PMFB300710	PMFB350710	PMFC200710
800x600	PMFA200806	PMFA300806	PMFA350806	PMFB200806	PMFB300806	PMFB350806	PMFC200806
800x800	PMFA200808	PMFA300808	PMFA350808	PMFB200808	PMFB300808	PMFB350808	PMFC200808
800x1000	PMFA200810	PMFA300810	PMFA350810	PMFB200810	PMFB300810	PMFB350810	PMFC200810
1000x600	PMFA201006	PMFA301006	PMFA351006	PMFB201006	PMFB301006	PMFB351006	PMFC201006
1000x800	PMFA201008	PMFA301008	PMFA351008	PMFB201008	PMFB301008	PMFB351008	PMFC201008
1000x1000	PMFA201010	PMFA301010	PMFA351010	PMFB201010	PMFB301010	PMFB351010	PMFC201010
1200x600	PMFA201206	PMFA301206	PMFA351206	PMFB201206	PMFB301206	PMFB351206	PMFC201206
1200x800	PMFA201208	PMFA301208	PMFA351208	PMFB201208	PMFB301208	PMFB351208	PMFC201208
1200x1000	PMFA201210	PMFA301210	PMFA351210	PMFB201210	PMFB301210	PMFB351210	PMFC201210
1400x600	PMFA201406	PMFA301406	PMFA351406	PMFB201406	PMFB301406	PMFB351406	PMFC201406
1400x800	PMFA201408	PMFA301408	PMFA351408	PMFB201408	PMFB301408	PMFB351408	PMFC201408
1400x1000	PMFA201410	PMFA301410	PMFA351410	PMFB201410	PMFB301410	PMFB351410	PMFC201410

**Rule 1 :** If the main busbar passes through the bottom of the panel, the main busbar module shall be positioned at least 50 mm above the horizontal profile of the panel.

**Rule 2 :** If the main busbar passes through the bottom of the panel, the position of the earth busbar must be taken into account.

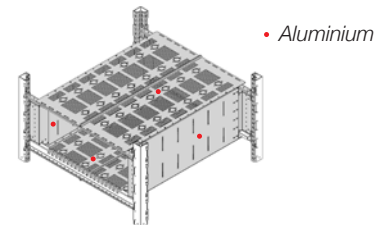
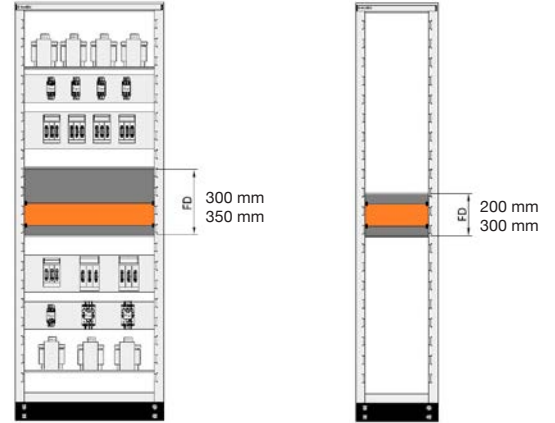
**Rule 3 :** In case of cable connection to the main busbar, PM KR (cable gland) accessory on the module should be used.

## FC



Top Closed, Bottom Open

## FD



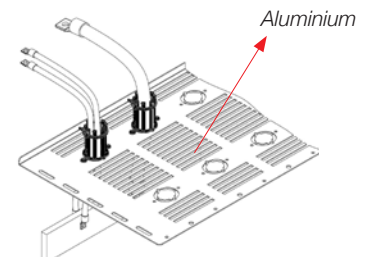
Top and Bottom Closed

FC Tipi		FD Tipi		
300 mm	350 mm	200 mm	300 mm	350 mm
<i>* Up to 160x10mm<sup>2</sup></i>	<i>* Up to 160x10mm<sup>2</sup></i>	<i>* Up to 120x10mm<sup>2</sup></i>	<i>* Up to 160x10mm<sup>2</sup></i>	<i>* Up to 160x10mm<sup>2</sup></i>
PMFC300406	PMFC350406	PMFD200406	PMFD300406	PMFD350406
PMFC300408	PMFC350408	PMFD200408	PMFD300408	PMFD350408
PMFC300410	PMFC350410	PMFD200410	PMFD300410	PMFD350410
PMFC300506	PMFC350506	PMFD200506	PMFD300506	PMFD350506
PMFC300508	PMFC350508	PMFD200508	PMFD300508	PMFD350508
PMFC300510	PMFC350510	PMFD200510	PMFD300510	PMFD350510
PMFC300606	PMFC350606	PMFD200606	PMFD300606	PMFD350606
PMFC300608	PMFC350608	PMFD200608	PMFD300608	PMFD350608
PMFC300610	PMFC350610	PMFD200610	PMFD300610	PMFD350610
PMFC300706	PMFC350706	PMFD200706	PMFD300706	PMFD350706
PMFC300708	PMFC350708	PMFD200708	PMFD300708	PMFD350708
PMFC300710	PMFC350710	PMFD200710	PMFD300710	PMFD350710
PMFC300806	PMFC350806	PMFD200806	PMFD300806	PMFD350806
PMFC300808	PMFC350808	PMFD200808	PMFD300808	PMFD350808
PMFC300810	PMFC350810	PMFD200810	PMFD300810	PMFD350810
PMFC301006	PMFC351006	PMFD201006	PMFD301006	PMFD351006
PMFC301008	PMFC351008	PMFD201008	PMFD301008	PMFD351008
PMFC301010	PMFC351010	PMFD201010	PMFD301010	PMFD351010
PMFC301206	PMFC351206	PMFD201206	PMFD301206	PMFD351206
PMFC301208	PMFC351208	PMFD201208	PMFD301208	PMFD351208
PMFC301210	PMFC351210	PMFD201210	PMFD301210	PMFD351210
PMFC301406	PMFC351406	PMFD201406	PMFD301406	PMFD351406
PMFC301408	PMFC351408	PMFD201408	PMFD301408	PMFD351408
PMFC301410	PMFC351410	PMFD201410	PMFD301410	PMFD351410

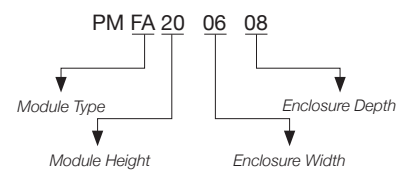
**Rule 4:** If main busbar is below the ACB, main busbar separation modules with a height of 350 mm should be used up to 160x10 mm<sup>2</sup>.

**Rule 5:** In double-layer busbar systems, if main busbar is below the ACB, a 350 mm FA type and a 200 mm FB module should be used.

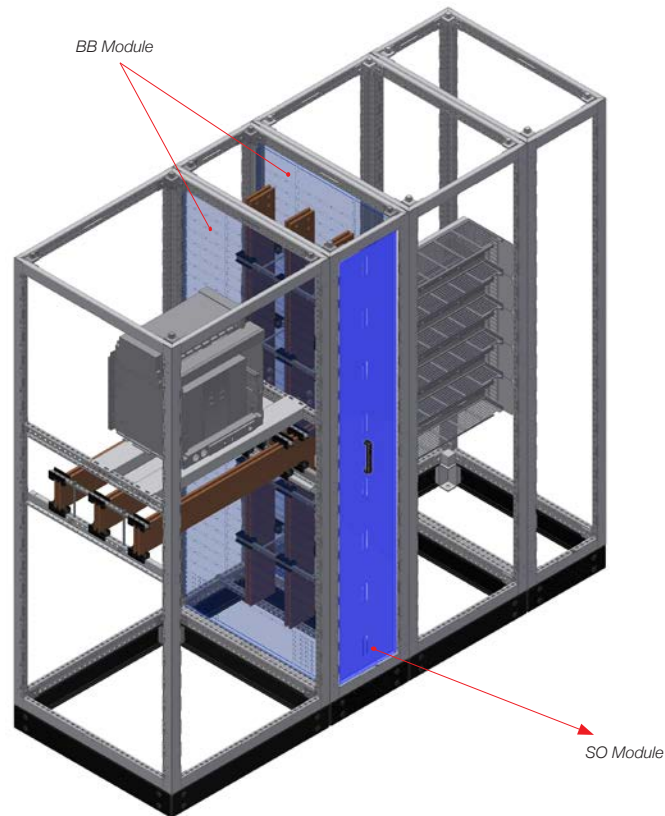
**Rule 6:** In double-layer busbar systems, if main busbar is above the ACB, two 200 mm FA type modules should be used.



PM KR 05 - 5 SETS



## Busbar Section Separation Modules :



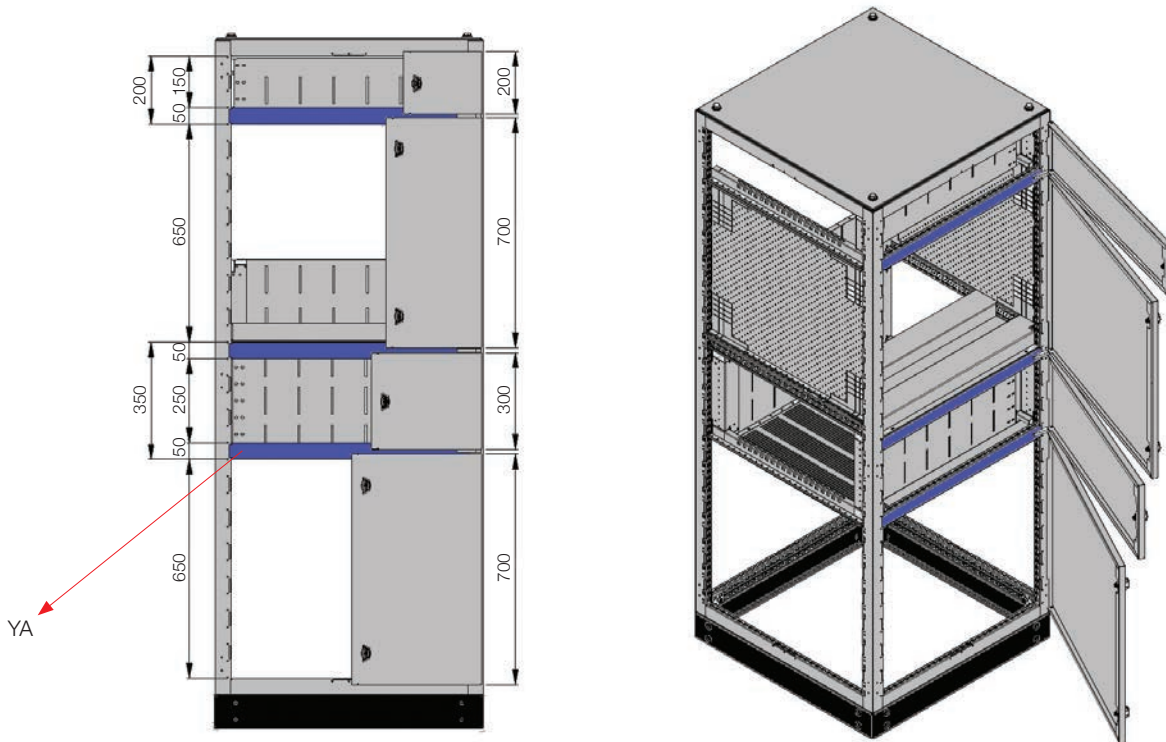
Busbar Section Separation Module - BB		
Height	Depth	BB
200	600	PMBB0206
200	800	PMBB0208
200	1000	PMBB0210
300	600	PMBB0306
300	800	PMBB0308
300	1000	PMBB0310
350	600	PMBB03506
350	800	PMBB03508
350	1000	PMBB03510
400	600	PMBB0406
400	800	PMBB0408
400	1000	PMBB0410
2000	600	PMBB2006
2000	800	PMBB2008
2000	1000	PMBB2010
2200	600	PMBB2206
2200	800	PMBB2208
2200	1000	PMBB2210

Busbar Section Separation Module - SO	
Width	SO
300	EGS02020
400	EGS02030
600	EGS02050

- Rule 1 :** 1 SO fixed cover should be used for all busbar sections.  
(It is not necessary to use SO for cable sections).
- Rule 2 :** For the busbar sections to be used in the middle, 2 full length BBs should be used or sufficient BB parts should be selected.  
(If the busbar section has a SK (fixed cover), it is sufficient to use BB on the other side.)
- Rule 3 :** It is not necessary to use the BB modules for cable sections.
- Rule 4 :** Cable section width should be minimum 400 mm.

Minimum Busbar Section Width according to Busbar Cross Section		
Busbar Cross Section	For Single Layer Busbar	For Double Layer Busbar
Up to 100x10 mm	300 mm	600 mm
120x10 mm - 160x10 mm	400 mm	600 mm





PK Partial Door					
Width \ Height	500	600	700	800	1000
200	ESPK0205	ESPK0206	ESPK0207	ESPK0208	ESPK0210
200	ESPK0205D1	ESPK0206D1	ESPK0207D1	ESPK0208D1	ESPK0210D1
300	ESPK0305	ESPK0306	ESPK0307	ESPK0308	ESPK0310
300	ESPK0305D1	ESPK0306D1	ESPK0307D1	ESPK0308D1	ESPK0310D1
400	ESPK0405	ESPK0406	ESPK0407	ESPK0408	ESPK0410
500	ESPK0505	ESPK0506	ESPK0507	ESPK0508	ESPK0510
600	ESPK0605	ESPK0606	ESPK0607	ESPK0608	ESPK0610
700	ESPK0705	ESPK0706	ESPK0707	ESPK0708	ESPK0710
800	ESPK0805	ESPK0806	ESPK0807	ESPK0808	ESPK0810
900	ESPK0905	ESPK0906	ESPK0907	ESPK0908	ESPK0910
1000	ESPK1005	ESPK1006	ESPK1007	ESPK1008	ESPK1010
1100	ESPK1105	ESPK1106	ESPK1107	ESPK1108	ESPK1110
1200	ESPK1205	ESPK1206	ESPK1207	ESPK1208	ESPK1210
YA Profile	ESYA05	ESYA06	ESYA07	ESYA08	ESYA10
Front Bar	ESOET05	ESOET06	ESOET07	ESOET08	ESOET10

**Rule 1 :** The partial door system is applicable for panels from 500 mm to 1000 mm in width.

**Rule 2 :** YA Profile and Front Bar should be selected separately for partial door application.

**Rule 3 :** When the YA Profile is positioned over the main busbar module, the PK measurement differs according to the module as follows;

- a) The height of the PK module is the same as the height of the busbar module at the top.
- b) The PK height is always 50 mm higher than the SB and MCCB module height.
- c) The PK height is 50 mm less than the main busbar module height used in the middle of the panel.

**Rule 4 :** For IP31 panels, partial doors to be used at bottom should be D1 type. (For example: ES PK 0206 D1)

**Rule 5 :** Only for partial door applications, switchgears can come out of the door.

**Internal Arc Modules :**



PanelMaster Internal Arc Modules - IB			
Depth \ Height	600	800	1000
2000	PMIB2006	PMIB2008	PMIB2010
2200	PMIB2206	PMIB2208	PMIB2210

**Rule 1 :** If internal arc protection is required, an internal arc protection module should be placed on both sides of the panel.

**Rule 2 :** Order codes includes one pieces of module, in order to cover both sides it should be ordered 2 pcs.

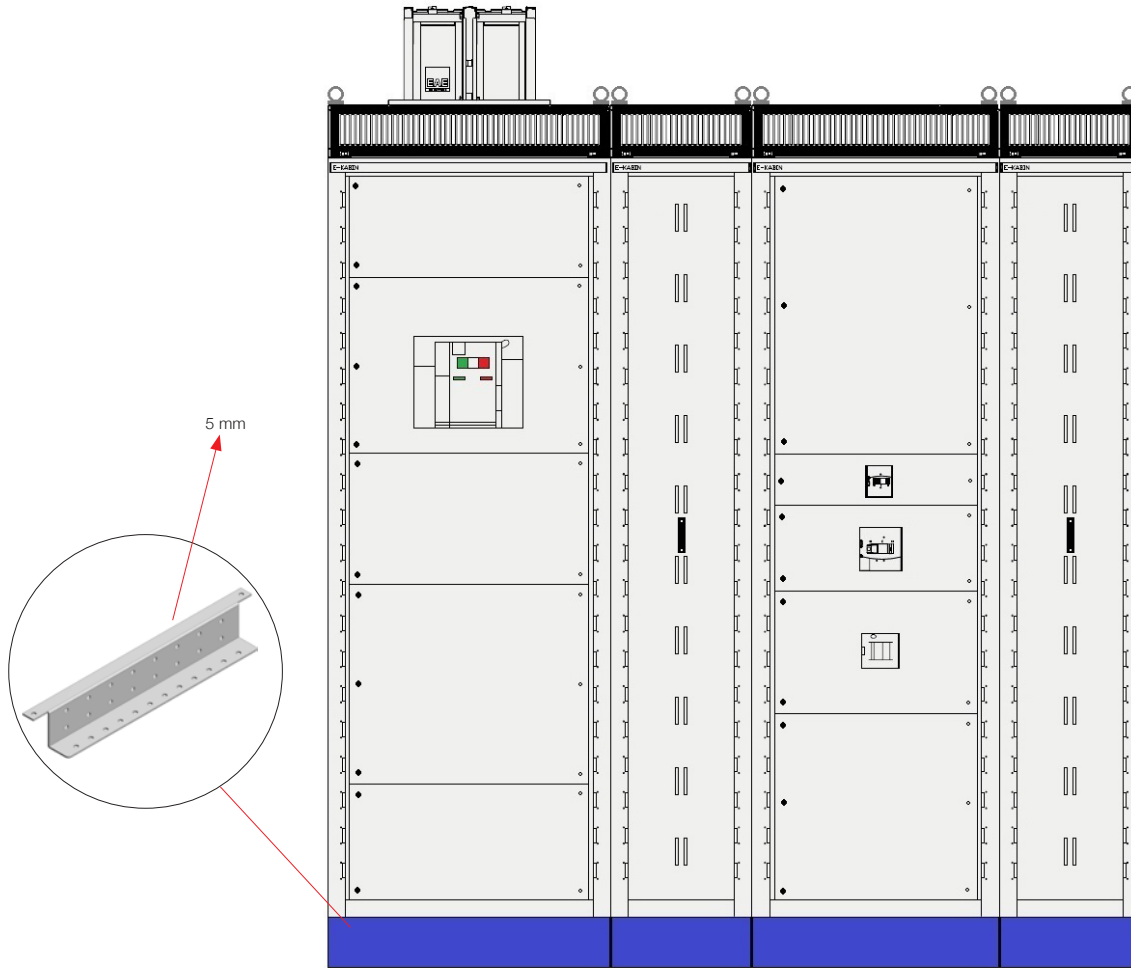
Current Stopper Plate for Main Busbars - ID			
Depth	600	800	1000
	PMID06	PMID08	PMID10

**Rule 3 :** ID current stop plates should be used to each point where the main busbars terminate.

**Rule 4 :** Four double-layer busbars, 2 pcs ID current stop plates should be used to each point where the main busbars terminate.

Current Stopper Plate for Vertical Distribution Busbars			
Depth \ Width	600	800	1000
300	PMIY0306	PMIY0308	PMIY0310
400	PMIY0406	PMIY0408	PMIY0410
600	PMIY0606	PMIY0608	PMIY0610

**Rule 5 :** ID current stop plates should be used to each point where the vertical distribution busbars terminate.



Seismic Plinth Profiles - SS									
Width	300	400	500	600	700	800	1000	1200	1400
	EGSS03	EGSS04	EGSS05	EGSS06	EGSS07	EGSS08	EGSS10	EGSS12	EGSS14

**Rule 1 :** If seismic protection is required, seismic base profiles should be used according to panel width.





**Rule 2 :** Order code contain a set of seismic profiles for the panel section.





**Rule 3 :** In facilities where seismic protection is required, precautions should be taken according to the rules specified in the specifications (seismic hanger, steel rope, etc. installation).

**Rule 4 :** For IP31 panels which contains ventilation module, for each section EG HMT LIFTING KIT should be used.

**Rule 5 :** For IP55 panels EG AT 01 should be used for each section.

**Accessories :**

		<b>Mounting Plates</b>	<b>Cover Plate</b>	<b>A Type Cover Plate</b>	<b>F Type Cover Plate</b>
Width	Module Height				
600	50	EGMP0506	-	-	-
	100	EGMP1006	EGOM1006	-	-
	150	EGMP1506	EGOM1506	EGOM1506A	EGOM1506F
	200	EGMP2006	EGOM2006	EGOM2006A	EGOM2006F
	250	EGMP2506	EGOM2506	-	-
	300	EGMP3006	EGOM3006	-	-
	350	EGMP3506	EGOM3506	-	-
	400	EGMP4006	-	-	-
	500	EGMP5006	-	-	-
	600	EGMP6006	-	-	-
	650	-	EGOM6506	-	-
750	-	EGOM7506	-	-	
700	50	EGMP0507	-	-	-
	100	EGMP1007	EGOM1007	-	-
	150	EGMP1507	EGOM1507	EGOM1507A	EGOM1507F
	200	EGMP2007	EGOM2007	EGOM2007A	EGOM2007F
	250	EGMP2507	EGOM2507	-	-
	300	EGMP3007	EGOM3007	-	-
	350	EGMP3507	EGOM3507	-	-
	400	EGMP4007	-	-	-
	500	EGMP5007	-	-	-
	600	EGMP6007	-	-	-
	650	-	EGOM6507	-	-
750	-	EGOM7507	-	-	
800	50	EGMP0508	-	-	-
	100	EGMP1008	EGOM1008	-	-
	150	EGMP1508	EGOM1508	EGOM1508A	EGOM1508F
	200	EGMP2008	EGOM2008	EGOM2008A	EGOM2008F
	250	EGMP2508	EGOM2508	-	-
	300	EGMP3008	EGOM3008	-	-
	350	EGMP3508	EGOM3508	-	-
	400	EGMP4008	-	-	-
	500	EGMP5008	-	-	-
	600	EGMP6008	-	-	-
	650	-	EGOM6508	-	-
750	-	EGOM7508	-	-	
1000	50	EGMP0510	-	-	-
	100	EGMP1010	EGOM1010	-	-
	150	EGMP1510	EGOM1510	EGOM1510A	EGOM1510F
	200	EGMP2010	EGOM2010	EGOM2010A	EGOM2010F
	250	EGMP2510	EGOM2510	-	-
	300	EGMP3010	EGOM3010	-	-
	350	EGMP3510	EGOM3510	-	-
	400	EGMP4010	-	-	-
	500	EGMP5010	-	-	-
	600	EGMP6010	-	-	-
	650	-	EGOM6510	-	-
750	-	EGOM7510	-	-	

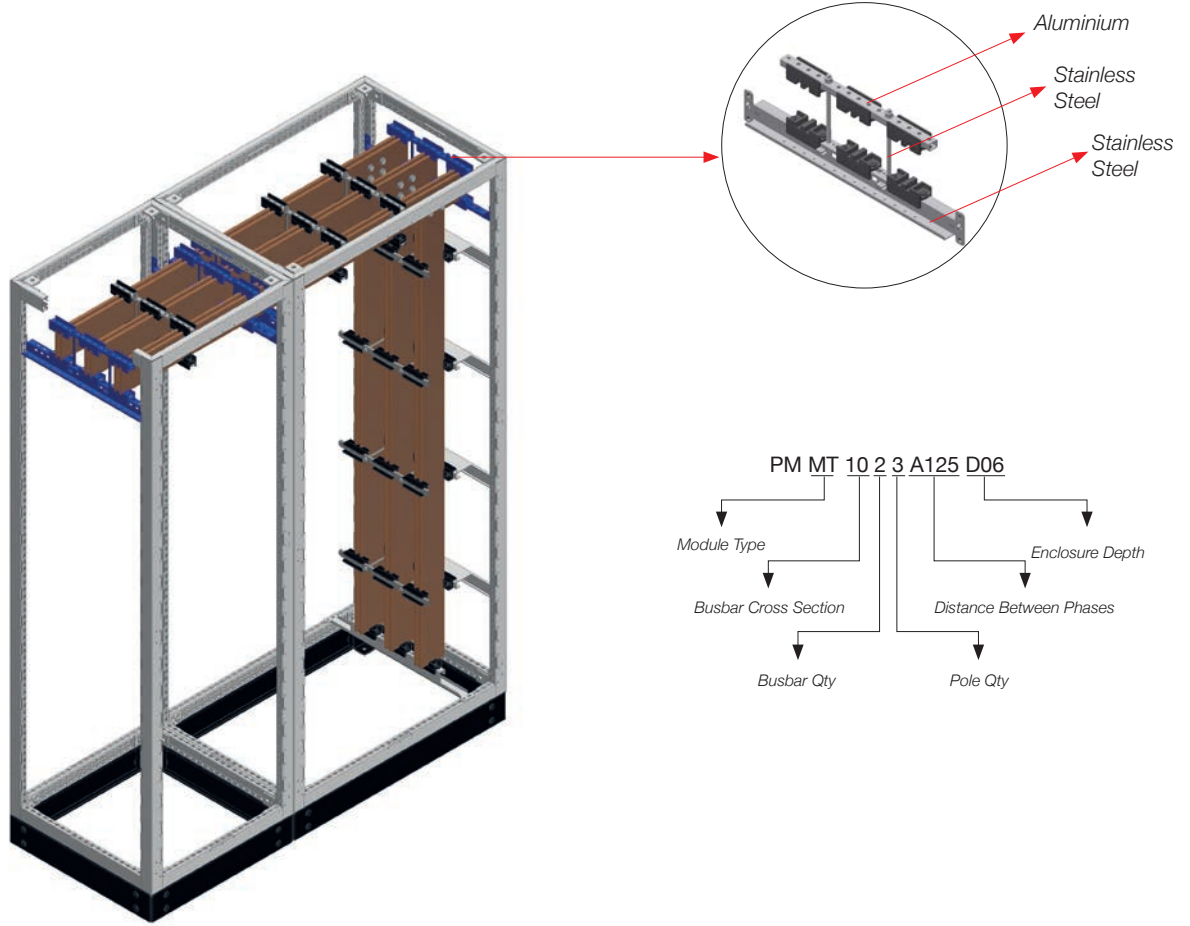
RS Special Mounting Rail	SP Special Mounting Profile	MC Mounting Rail (Through Depth)	MB Mounting Rail (Through Depth)
			
EGRS06	EGSP06	EGMC0500	EGMB0500
EGRS07	EGSP07	EGMC0600	EGMB0600
EGRS08	EGSP08	EGMC0700	EGMB0700
EGRS10	EGSP10	EGMC0900	EGMB0900



**Insulators :**

**PM MT**

These insulators should be placed at both ends of the panel sections for standard busbar distribution.



PM MT Insulator Selection Table					
Enclosure Depth	Distance Between Phases	3P		4P	
		2 Busbar per Pole	3 Busbar per Pole	2 Busbar per Pole	3 Busbar per Pole
600	125	PMMT1023A125D06	-	-	-
800	125	PMMT1023A125D08	-	PMMT1024A125D08	-
1000	125	PMMT1023A125D10	-	PMMT1024A125D10	-
800	150	PMMT1023A150D08	PMMT1033A150D08	-	-
1000	150	PMMT1023A150D10	PMMT1033A150D10	PMMT1024A150D10	PMMT1034A150D10
800	200	PMMT1023A200D08	PMMT1033A200D08	-	-
1000	200	PMMT1023A200D10	PMMT1033A200D10	-	-

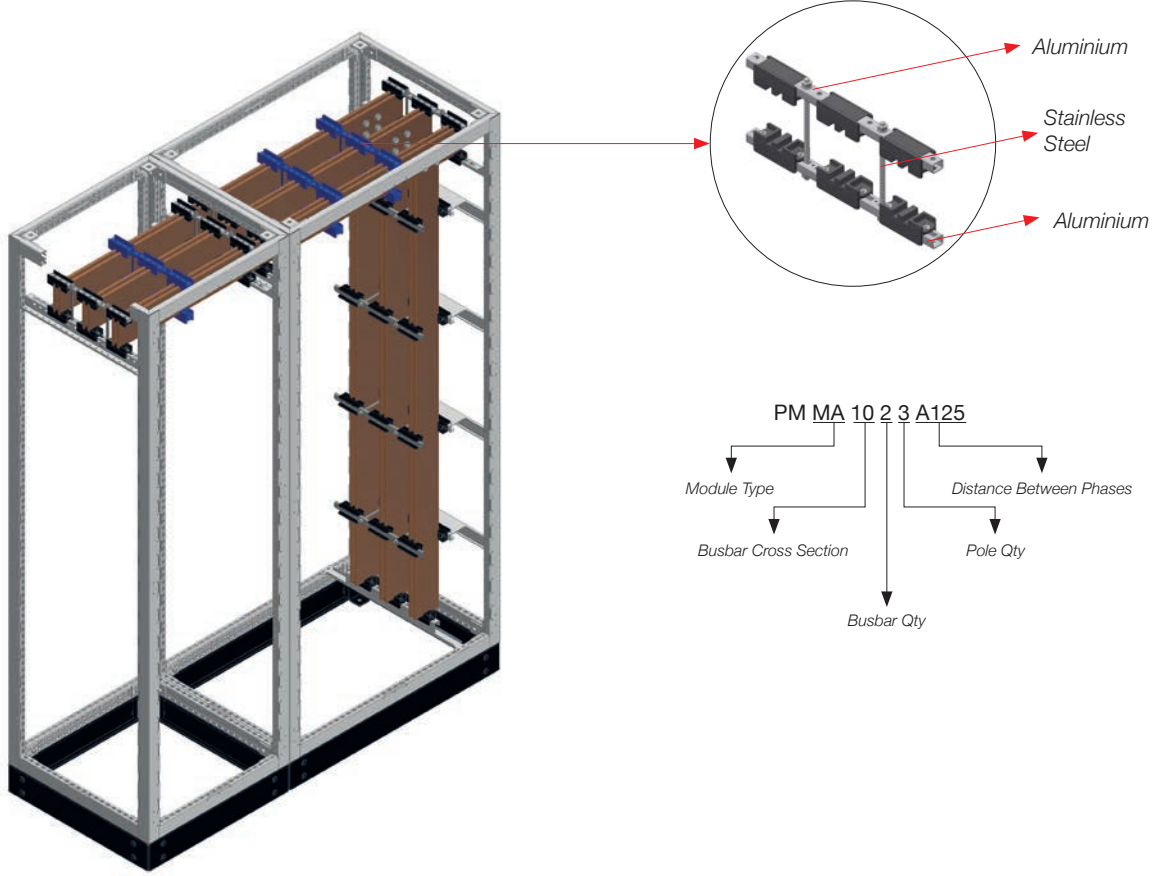
- Rule 1 :** For panels which has main busbar current up to 3200 A, distance between phases can be selected as 125 mm, 150 mm or 200 mm.
- Rule 2 :** For panels which has main busbar current up to 4000 A, 5000 A and 6300 A, distance between phases can be selected as 150 mm or 200 mm.
- Rule 3 :** For formed panels with a depth of 1000 mm, the distance between the 4-pole main busbar phase should be maximum 150 mm.
- Rule 4 :** Please check the PanellMaster design and application rules in order to determine which phase distances to be used at which depths.
- Rule 5 :** Each order code includes a set of insulators for 1 panel section.

**Insulators :**

**PM MA**

This insulator should be used at certain distances in between PMMT insulators, according to the short circuit current of the panel.

*(Please check the PanelMaster Design and Application Rules for determination of insulator installation distances)*



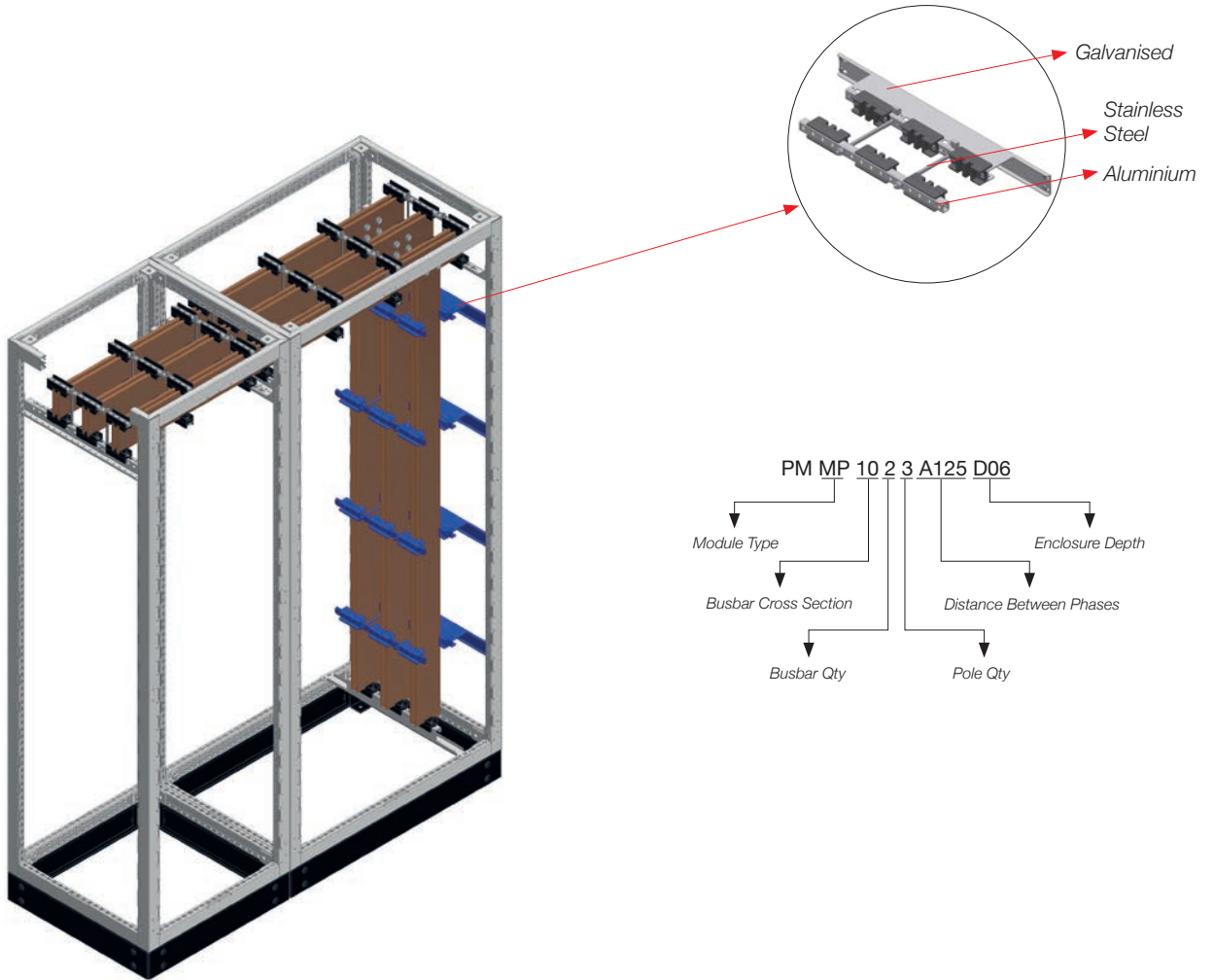
PM MA Insulator Selection Table				
Distance Between Phases	3P		4P	
	2 Busbar per Pole	3 Busbar per Pole	2 Busbar per Pole	3 Busbar per Pole
125	PMMA1023A125	-	PMMA1024A125	-
150	PMMA1023A150	PMMA1033A150	PMMA1024A150	PMMA1034A150
200	PMMA1023A200	PMMA1033A200	PMMA1024A200	PMMA1034A200

**Insulators :**

**PM MP**

This insulator is suitable for vertical distribution busbars located in busbar section and it should be used at appropriate distances, according to the short circuit current of the panel.

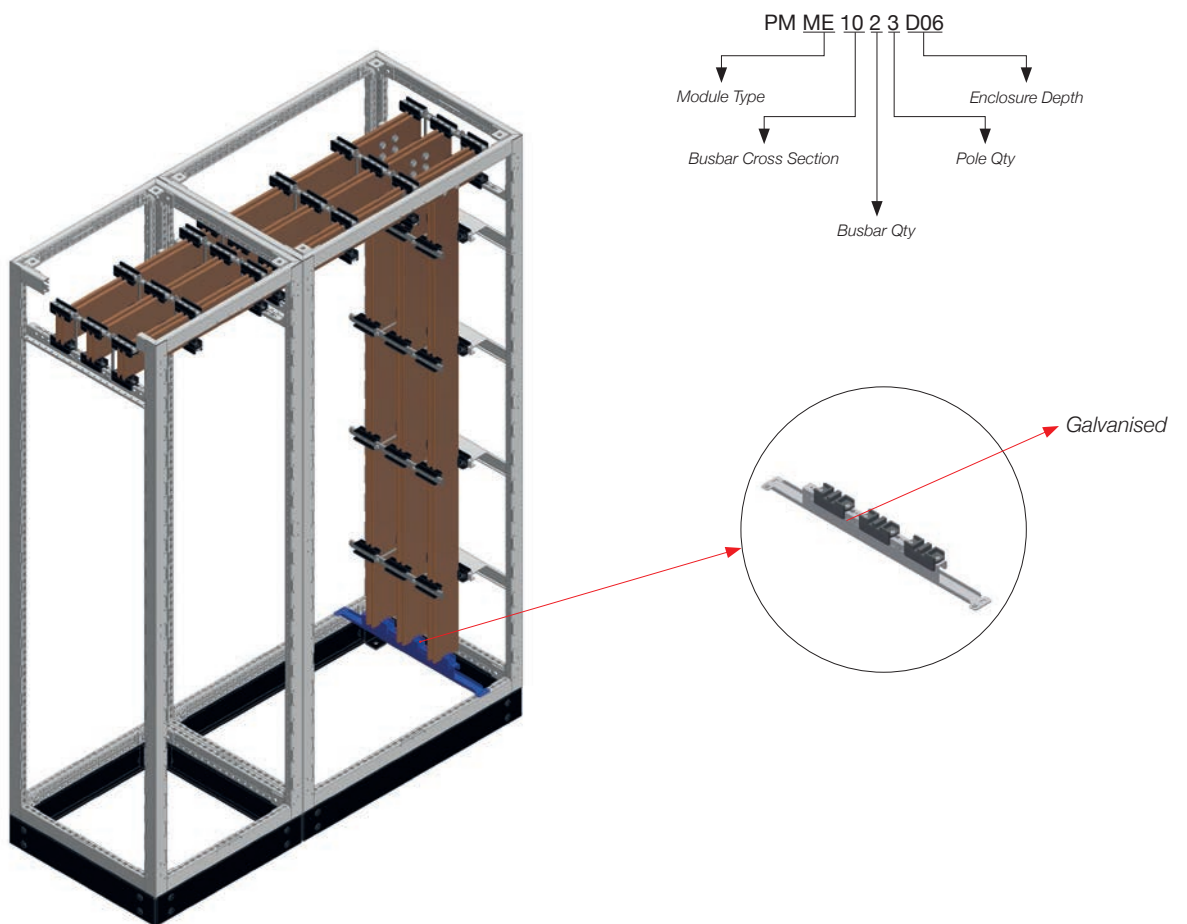
*(Please check the PanelMaster Design and Application Rules for determination of insulator installation distances)*



PM MP Insulator Selection Table					
Enclosure Depth	Distance Between Phases	3P		4P	
		2 Busbar per Pole	3 Busbar per Pole	2 Busbar per Pole	3 Busbar per Pole
600	125	PMMP1023A125D06	-	-	-
800	125	PMMP1023A125D08	-	PMMP1024A125D08	-
1000	125	PMMP1023A125D10	-	PMMP1024A125D10	-
800	150	PMMP1023A150D08	PMMP1033A150D08	-	-
1000	150	PMMP1023A150D10	PMMP1033A150D10	PMMP1024A150D10	PMMP1034A150D10
800	200	PMMP1023A200D08	PMMP1033A200D08	-	-
1000	200	PMMP1023A200D10	PMMP1033A200D10	-	-

**PM ME**

This insulator should be used at the bottom of the vertical distribution busbars.

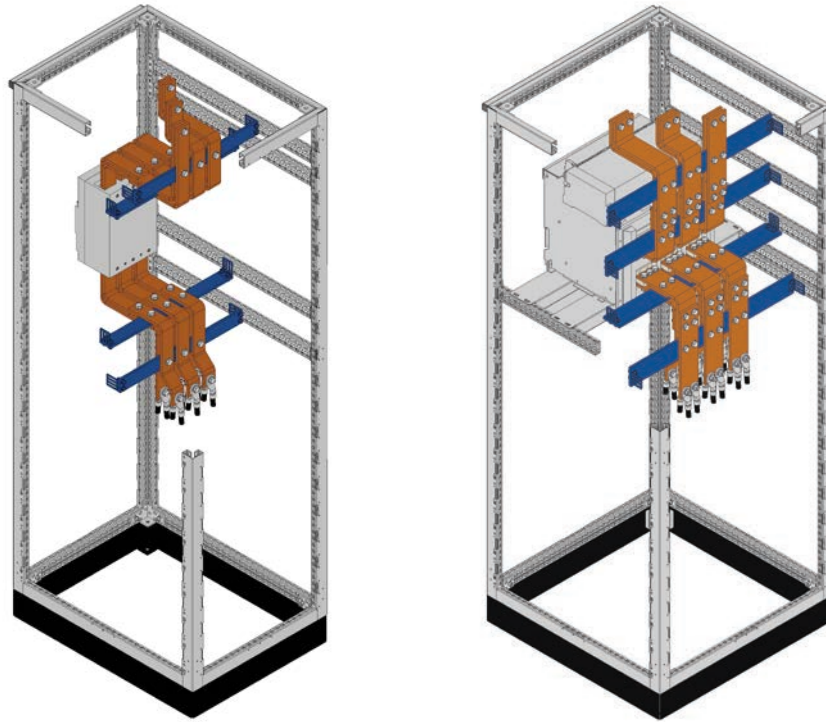


PM ME Insulator Selection Table				
Enclosure Depth	3P		4P	
	2 Busbar per Pole	3 Busbar per Pole	2 Busbar per Pole	3 Busbar per Pole
600	PMME1023D06	-	-	-
800	PMME1023D08	PMME1033D08	PMME1024D08	-
1000	PMME1023D10	PMME1033D10	PMME1024D10	PMME1034D10

## Insulators :

### EB GF

This insulators used for ACB and MCCB's busbar connections.



PM GF Insulator Selection Table		
Enclosure Width	GF50	GF75
600	PMGF5006	PMGF7506
700	PMGF5007	PMGF7507
800	PMGF5008	PMGF7508
1000	PMGF5010	PMGF7510
1200	-	PMGF7512
1400	-	PMGF7514

**Rule 1 :** It should be used GF75 for ACB's connection busbar and GF50 for MCCB's connection busbar.



**Busbar Cross Section and Short Circuit Currents :**

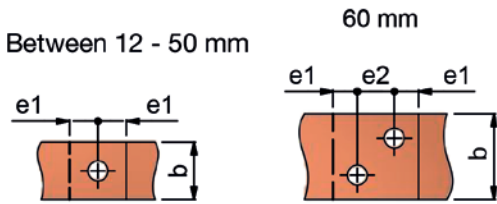
PanelMaster Main Busbar Cross Section								
Current	IP31				IP55			
	Main Busbar	Distribution Busbar	Neutral Busbar	Earthing Busbar	Main Busbar	Distribution Busbar	Neutral Busbar	Earthing Busbar
<b>1000 A</b>	1x(60x10)	1x(50x10)	1x(30x10) or 1x(60x10)	1x(40x5)	1x(60x10)	1x(50x10)	1x(30x10) or 1x(60x10)	1x(40x5)
<b>1250 A</b>	2x(40x10) or 1x(80x10)	2x(30x10)	1x(40x10) or 1x(80x10)	1x(40x5)	2x(40x10) or 1x(80x10)	2x(30x10)	1x(40x10) or 1x(80x10)	1x(40x5)
<b>1600 A</b>	2x(50x10) or 1x(100x10)	2x(40x10)	1x(50x10) or 1x(100x10)	1x(50x5)	2x(50x10) or 1x(100x10)	2x(40x10)	1x(50x10) or 1x(100x10)	1x(50x5)
<b>2000 A</b>	2x(60x10) or 1x(120x10)	2x(50x10)	1x(60x10) or 1x(120x10)	1x(30x10)	2x(60x10) or 1x(120x10)	2x(50x10)	1x(60x10) or 1x(120x10)	1x(30x10)
<b>2500 A</b>	2x(80x10)	2x(80x10)	1x(80x10) or 2x(80x10)	1x(40x10)	2x(100x10)	2x(80x10)	1x(100x10) or 2x(100x10)	1x(50x10)
<b>3200 A</b>	2x(100x10)	2x(100x10)	1x(100x10) or 2x(100x10)	1x(50x10)	2x(120x10)	2x(100x10)	1x(120x10) or 2x(120x10)	1x(60x10)
<b>4000 A</b>	2x(120x10)	2x(120x10)	1x(120x10) or 2x(120x10)	1x(60x10)	3x(120x10)	2x(120x10)	2x(100x10) or 3x(120x10)	1x(100x10)
<b>5000 A</b>	3x(120x10)	3x(120x10)	2x(100x10) or 3x(120x10)	1x(100x10)	3x(160x10) or 2x2x(100x10)	3x(120x10)	2x(120x10) or 2x2x(100x10)	1x(120x10)
<b>6300 A</b>	2x2x(100x10)	2x2x(100x10)	2x(100x10) or 2x2x(100x10)	1x(100x10)	2x2x(120x10)	2x2x(100x10)	2x(120x10) or 2x2x(120x10)	1x(120x10)

Distance Between Insulators according to Short Circuit Current													
Current	Distance Between Phases	125 mm				150 mm				200 mm			
		50	65	85	100	50	65	85	100	50	65	85	100
<b>1000 A</b>	1x(60x10)	44 cm	32 cm	19 cm	14 cm	49 cm	37 cm	22 cm	16 cm	56 cm	43 cm	33 cm	27 cm
	1x(80x10)	51 cm	32 cm	19 cm	14 cm	56 cm	39 cm	22 cm	16 cm	65 cm	50 cm	38 cm	27 cm
<b>1250 A</b>	2x(40x10)	47 cm	32 cm	19 cm	14 cm	50 cm	38 cm	22 cm	16 cm	55 cm	42 cm	32 cm	27 cm
	1x(100x10)	55 cm	32 cm	19 cm	14 cm	63 cm	39 cm	22 cm	16 cm	72 cm	56 cm	38 cm	27 cm
<b>1600 A</b>	2x(50x10)	54 cm	32 cm	19 cm	14 cm	58 cm	39 cm	22 cm	16 cm	65 cm	50 cm	38 cm	27 cm
	1x(120x10)	55 cm	32 cm	19 cm	14 cm	66 cm	39 cm	22 cm	16 cm	79 cm	61 cm	38 cm	27 cm
<b>2000 A</b>	2x(60x10)	55 cm	32 cm	19 cm	14 cm	65 cm	39 cm	22 cm	16 cm	73 cm	57 cm	38 cm	27 cm
	2x(80x10)	55 cm	32 cm	19 cm	14 cm	55 cm	32 cm	22 cm	16 cm	55 cm	32 cm	19 cm	14 cm
<b>2500 A</b>	2x(100x10)	55 cm	32 cm	19 cm	14 cm	66 cm	39 cm	22 cm	16 cm	>100 cm	65 cm	38 cm	27 cm
	2x(100x10)	55 cm	32 cm	19 cm	14 cm	66 cm	39 cm	22 cm	16 cm	>100 cm	65 cm	38 cm	27 cm
<b>3200 A</b>	2x(120x10)	55 cm	32 cm	19 cm	14 cm	66 cm	39 cm	22 cm	16 cm	>100 cm	65 cm	38 cm	27 cm
	2x(120x10)	-	-	-	-	66 cm	39 cm	22 cm	16 cm	>100 cm	65 cm	38 cm	27 cm
<b>4000 A</b>	3x(120x10)	-	-	-	-	66 cm	39 cm	22 cm	16 cm	66 cm	65 cm	38 cm	27 cm
	3x(120x10)	-	-	-	-	66 cm	39 cm	22 cm	16 cm	66 cm	39 cm	22 cm	16 cm
<b>5000 A</b>	3x(160x10)	-	-	-	-	66 cm	39 cm	22 cm	16 cm	>100 cm	39 cm	22 cm	16 cm
	2x2x(100x10)	-	-	-	-	>100 cm	>100 cm	>100 cm	62 cm	>100 cm	>100 cm	>100 cm	62 cm
<b>6300 A</b>	2x2x(100x10)	-	-	-	-	-	-	-	-	>100 cm	>100 cm	>100 cm	62 cm
	2x2x(120x10)	-	-	-	-	-	-	-	-	>100 cm	>100 cm	>100 cm	>100 cm

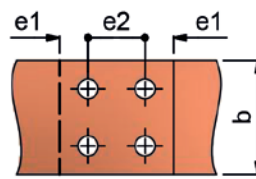
- Rule 1 :** Please refer to PanelMaster Design and Application Rules for different insulation distances.
- Rule 2 :** If there is any conflict between the technical information contained in this document and the technical information contained in the PanelMaster Design and Application Rules, the information in the PanelMaster Design and Application Rules is valid.
- Rule 3 :** In order to use the busbar cross sections according to IP31, the panel must be formed according to IP31 rules. In this context, the HM module must be used in all IP31 panels and the front doors must be selected from the types of doors with air opening in order to provide air flow.

**Busbar Hole Templates :**

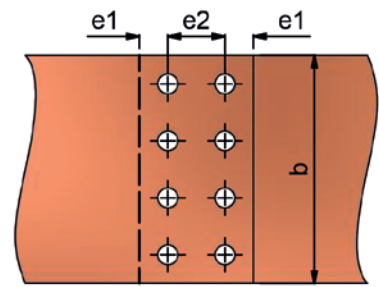
**Horizontal Connection**



Between 80 - 120 mm

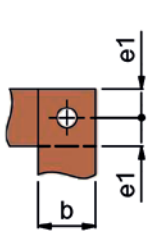


160 mm

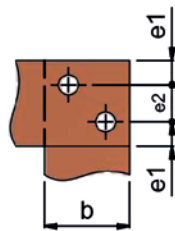


**Corner Connection**

Between 12 - 50 mm



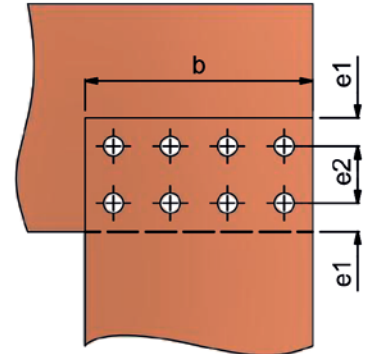
60 mm



Between 80 - 120 mm



160 mm



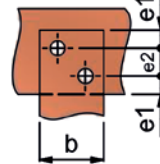
<b>b</b>	<b>d</b>	<b>e1</b>	<b>e2</b>	<b>e3</b>	<b>Screw</b>
<b>12</b>	6,6	7,5			M6
<b>20</b>	9	10			M8
<b>25</b>	11	12,5			M10
<b>30</b>	11	15			M10
<b>40</b>	14	20			M12
<b>50</b>	14	25			M12
<b>60</b>	14	17	26	26	M12
<b>80</b>	14	20	40	40	M12
<b>100</b>	14	20	40	50	M12
<b>120</b>	14	20	40	60	M12
<b>160</b>	14	20	40	40	M12

**T Connection**

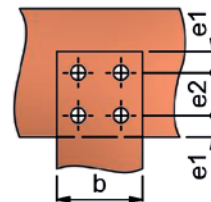
Between 12 - 50 mm



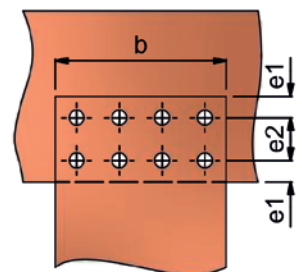
60 mm



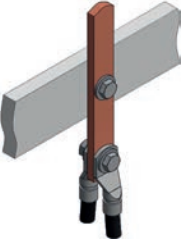
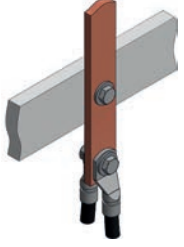
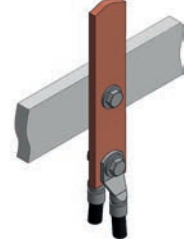
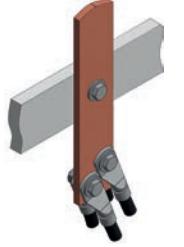
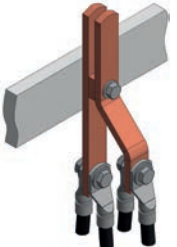
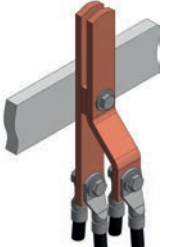
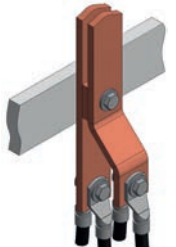
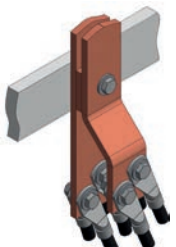
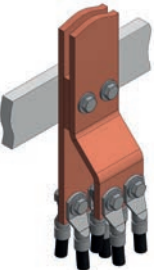
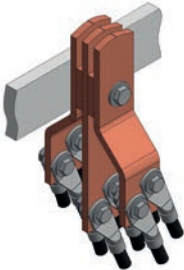
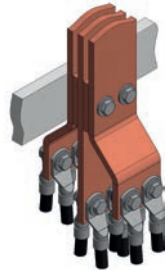
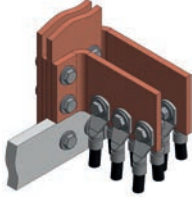

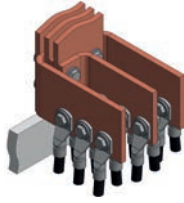
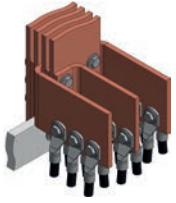
Between 80 - 120 mm



160 mm



**Cable Connection Terminals :**

<b>PanelMaster Cable Connection Terminals</b>			
<b>1x(30x10)</b>	<b>1x(40x10)</b>	<b>1x(50x10)</b>	<b>1x(60x10)</b>
 <p>2 pcs 240 mm<sup>2</sup> cable can be connected.</p>	 <p>2 pcs 240 mm<sup>2</sup> cable can be connected.</p>	 <p>2 pcs 240 mm<sup>2</sup> cable can be connected.</p>	 <p>4 pcs 240 mm<sup>2</sup> cable can be connected.</p>
<b>2x(30x10)</b>	<b>2x(40x10)</b>	<b>2x(50x10)</b>	<b>2x(60x10)</b>
 <p>4 pcs 240 mm<sup>2</sup> cable can be connected.</p>	 <p>4 pcs 240 mm<sup>2</sup> cable can be connected.</p>	 <p>4 pcs 240 mm<sup>2</sup> cable can be connected.</p>	 <p>8 pcs 240 mm<sup>2</sup> cable can be connected.</p>
<b>2x(80x10)</b>	<b>3x(60x10)</b>	<b>3x(80x10)</b>	<b>2x(100x10)</b>
 <p>8 pcs 240 mm<sup>2</sup> cable can be connected.</p>	 <p>12 pcs 240 mm<sup>2</sup> cable can be connected.</p>	 <p>12 pcs 240 mm<sup>2</sup> cable can be connected.</p>	 <p>12 pcs 240 mm<sup>2</sup> cable can be connected.</p>
<b>2x(120x10)</b>	<b>3x(100x10)</b>	<b>4x(120x10)</b>	
 <p>12 pcs 240 mm<sup>2</sup> cable can be connected.</p>	 <p>18 pcs 240 mm<sup>2</sup> cable can be connected.</p>	 <p>18 pcs 240 mm<sup>2</sup> cable can be connected.</p>	

**PanelMaster Design Steps :**

For starting the panel design following informations are needed:

- a) Single line diagram
- b) IP protection class
- c) Switchgear brand
- d) Short circuit current
- e) Form / Separation class

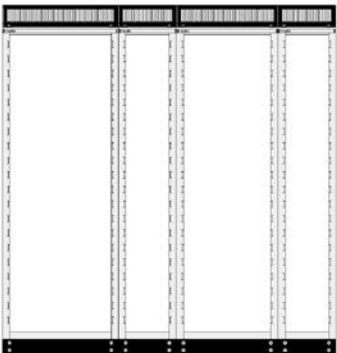


Based on this information, the panel layout drawings are created.

*(In order to design Panel layout drawing, you can get benefit from sample panel designs at page 46-50. )*



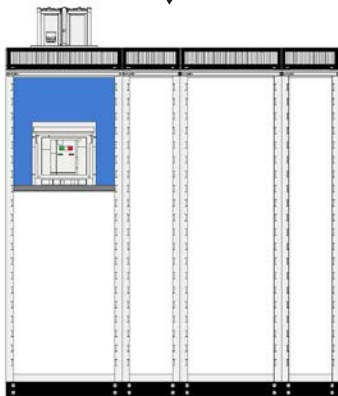
Select panel mainframe according to panel front view.



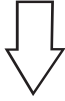
(page 16 - 17)



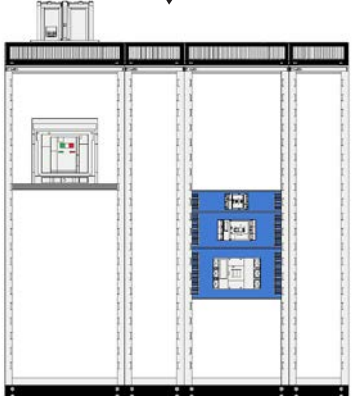
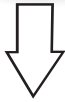
Select ACB Separation Modules according to ACB informations.



(page 18 - 20)

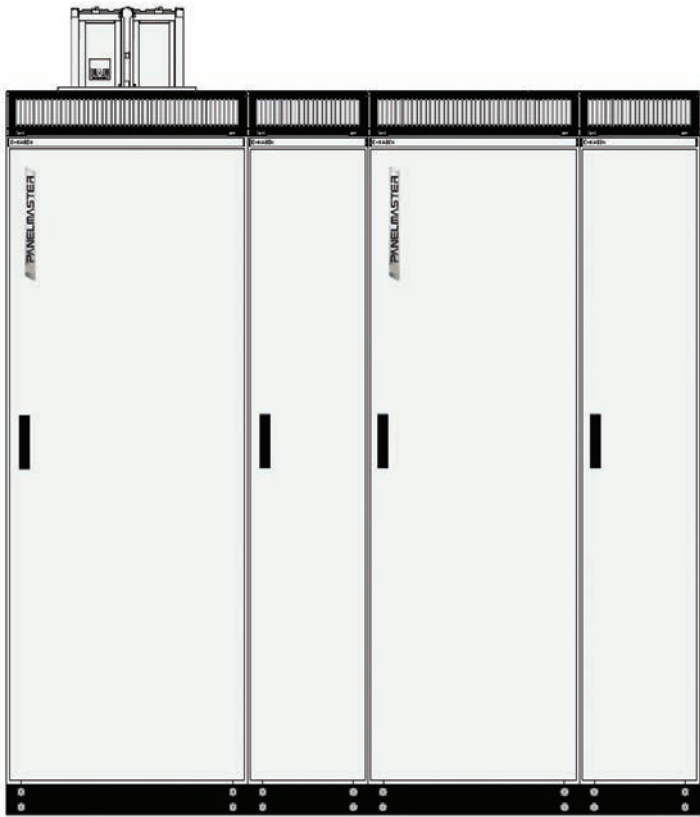


Select MCCB Separation Modules according to MCCB informations.



(page 22 - 25)

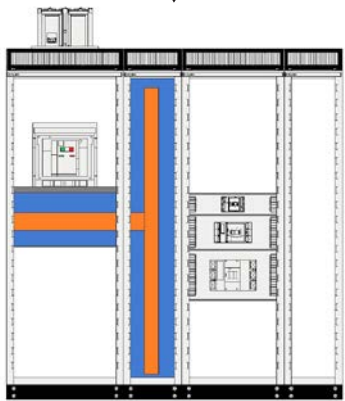
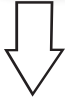




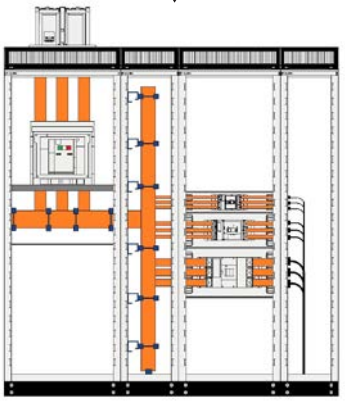
Select Main Busbar Separation Modules and Busbar Section Separation Modules according to busbar system.

Select insulators according to busbar system and short circuit current.

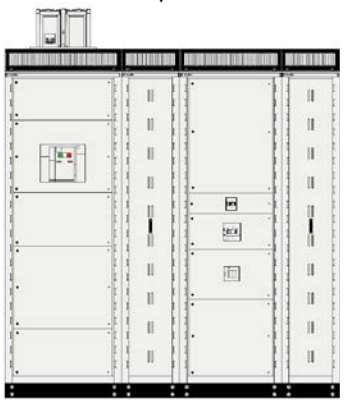
Finally; Select cover plates and doors.



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(page 28 - 30)

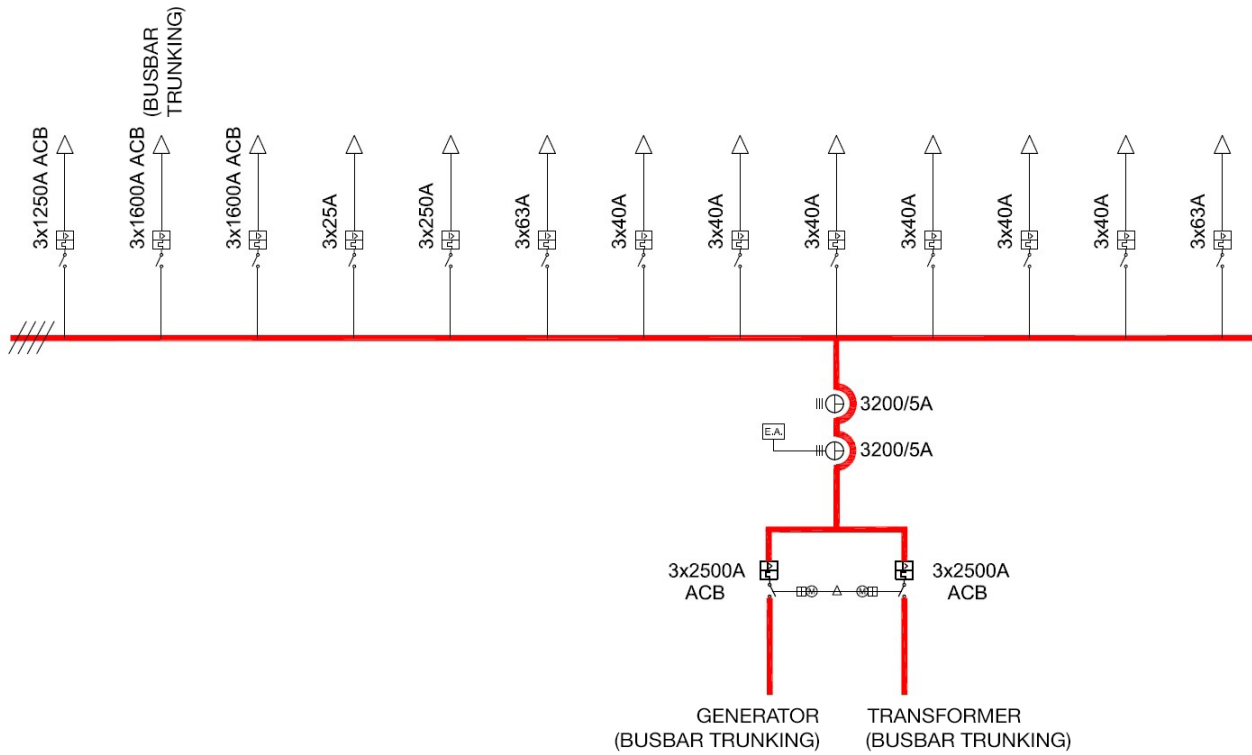
(page 36 - 40)

(page 17 and 34/35)

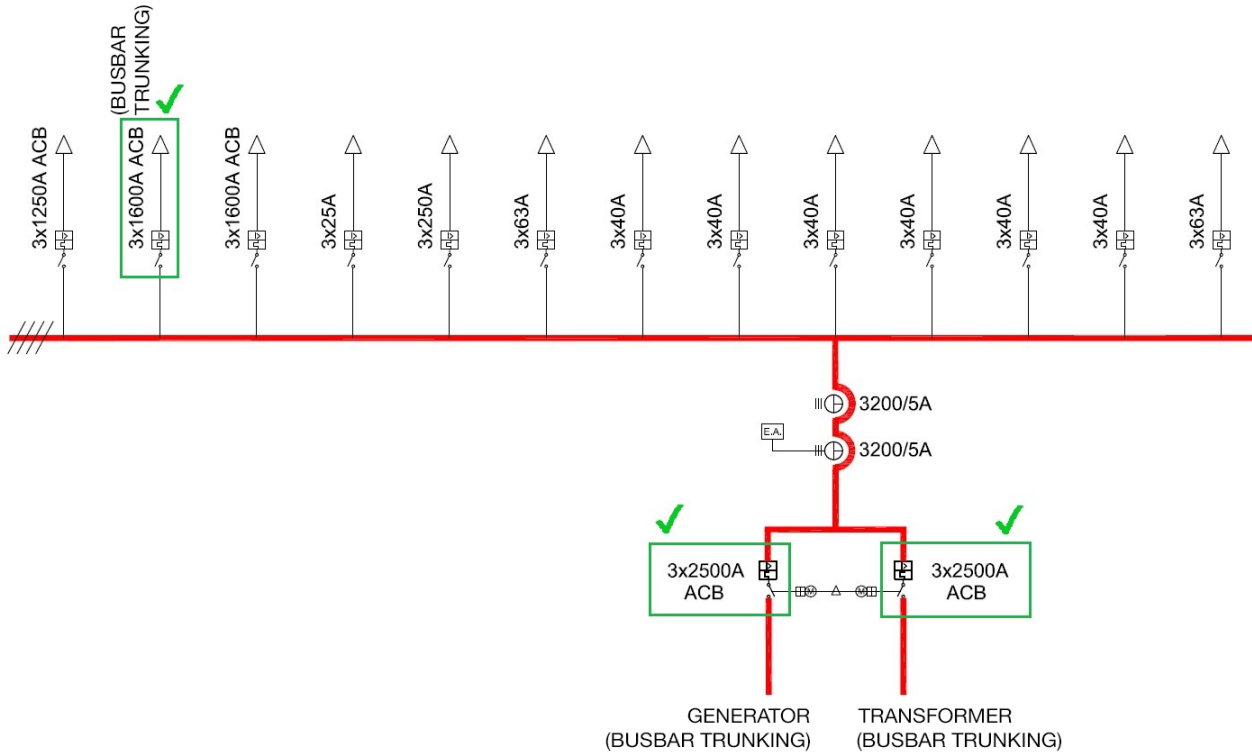


## Sample Panel Design :

### Sample single line diagram



Determine the CB's which have Busbar Trunking Connections



Place all Circuit Breakers with Busbar Trunking at upper part of panels



## Sample Panel Design :

Place all ACB's with cable connection below the ACB's which has busbar trunking connections.

*(In order to use 2 ACB in the same formed section, the height of the panel should be selected as 2200 mm and ventilation module should be used.)*



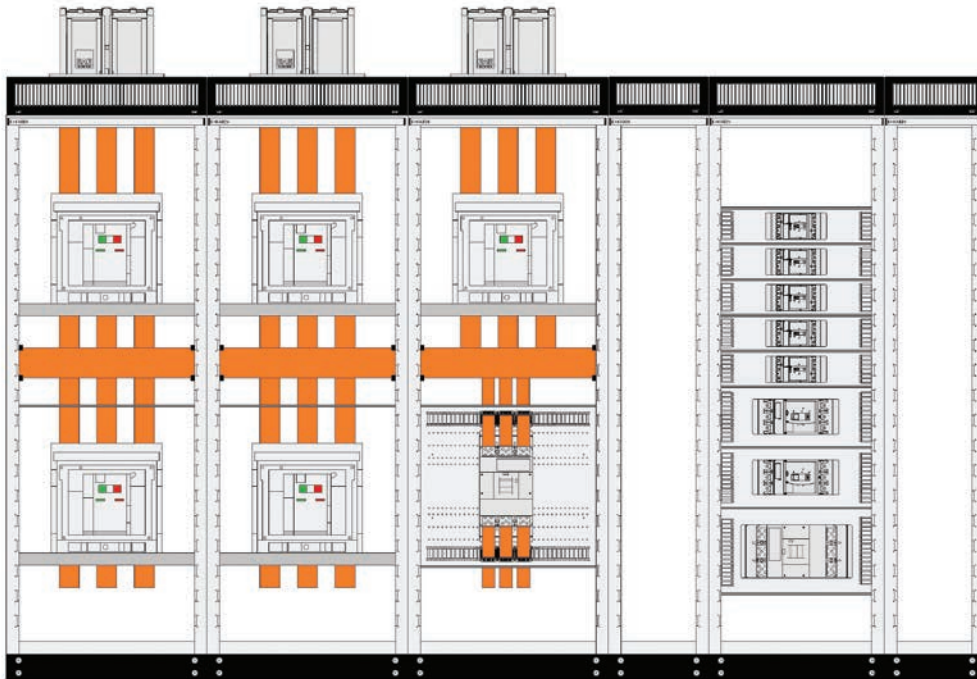
For easy connections, the MCCB's can be positioned horizontally in a separate section.

*(If there is enough space at below of the ACB'S, MCCB's can be positioned vertically at this area.)*

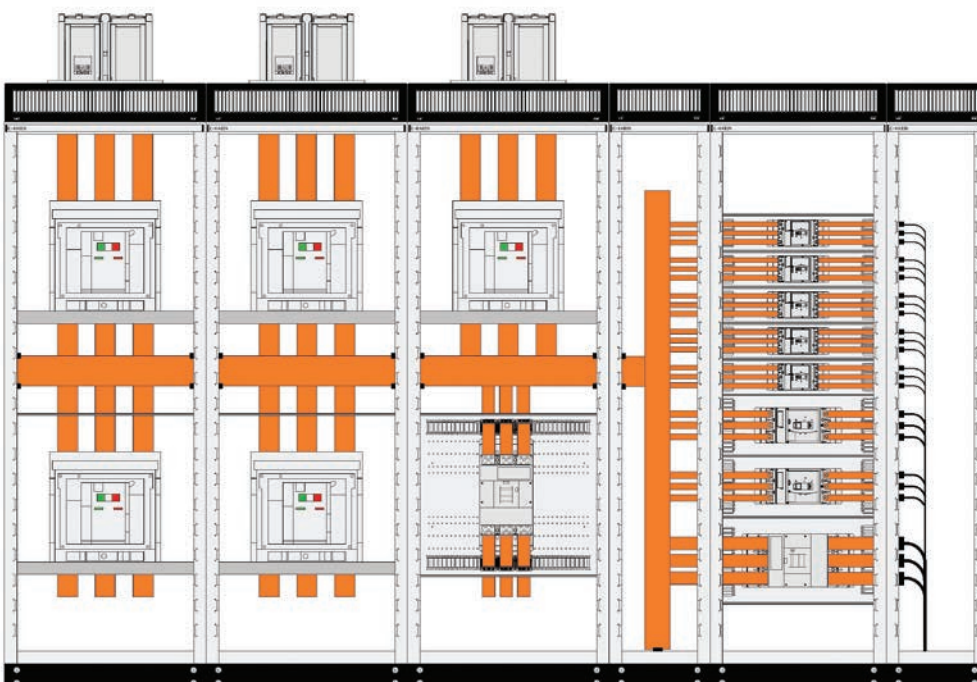


In order to make easy connections, main busbar can be placed in the middle.

*(Main busbar should continue up to last MCCB section.)*



Distribution busbar is positioned vertically for busbar sections in order to supply horizontal Circuit Breakers.



## Sample Panel Design :








Cover plates of appropriate size are selected

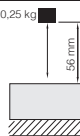
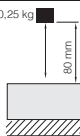
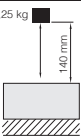
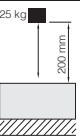
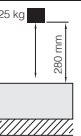
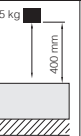
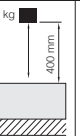
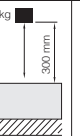
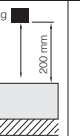
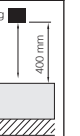


Panel doors are selected and panel design is finalized.





Degree of Protection - IP										
IPXX	Protection against ingress of water									
		Non-protected	Protected against vertically falling water drops	Protected against vertically falling water drops when enclosure tilted up to 15°	Protected against spraying water	Protected against splashing water	Protected against water jets	Protected against powerful water jets	Protected against the effects of temporary immersion in water	Protected against the effects of continuous immersion in water
		0	1	2	3	4	5	6	7	8
Non-protected	0	IP00	-	-	-	-	-	-	-	-
 Protected against solid foreign objects of $\geq 50$ mm $\varnothing$	1	IP10	-	-	-	-	-	-	-	-
 Protected against solid foreign objects of $\geq 12.5$ mm $\varnothing$	2	IP20	IP21	-	-	-	-	-	-	-
 Protected against solid foreign objects of $\geq 2.5$ mm $\varnothing$	3	IP30	IP31	IP32	-	-	-	-	-	-
 Protected against solid foreign objects of $\geq 1.0$ mm $\varnothing$	4	IP40	IP41	IP42	IP43	-	-	-	-	-
 Protected against ingress of dust (dust-protected)	5	-	-	-	-	IP54	IP55	IP56	-	-
 Protected against ingress of dust by underpressure (dust-tight)	6	-	-	-	-	-	IP65	IP66	IP67	-

IK Mechanical Impact Protection										
										
IK Value	01	02	03	04	05	06	07	08	09	10
Impact value (Joule)	0.14	0.20	0.35	0.50	0.70	1	2	5	10	20
Falling Height (mm)	56	80	140	200	280	400	400	300	200	400
Equivalent Weight (kg)	0.25	0.25	0.25	0.25	0.25	0.25	0.50	1.70	5	5



**ELEKTROTEKNİK**

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