

EM⁺ Panel System Catalogue 2018



EM⁺ functional system

Electrical Switchboards upto 6300A



The EM⁺ functional system can be used for all types of low-voltage distribution switchboards (main, distribution and sub-distribution) up to 6300 A, in industrial and commercial environments.

Switchboard design is very simple:

A metal structure

The switchboard is made up of one or more frameworks combined side-by-side or back-to-back, on which a complete selection of cover panels and doors can be mounted.

A distribution system

Horizontal busbars or vertical busbars positioned in a lateral compartment or at the rear of the cubicle are used to distribute electricity throughout the switchboard.

Complete functional units

Each device is part of a functional unit comprising:
dedicated mounting plate for device installation
front plate to block direct access to live parts
prefabricated busbar connections
devices for on-site connections.

Each functional unit contributes to a function in the switchboard. The functional units are modular and are arranged rationally, one on top of another, within the enclosure. The system includes everything required for functional unit mounting, supply and onsite connection. The components of the EM⁺ panel system and those of the functional units in particular have been designed and tested taking into account device characteristics. This design approach ensures a high degree of reliability in system operation and optimum safety for personnel.

A safe electrical installation

The total compatibility of electrical devices with the EM⁺ panel system is a key advantage in ensuring a high level of installation dependability.

An upgradeable electrical installation

A modular designed switchboards can be modified easily to integrate new functional units as needed. Maintenance operations, carried out with the switchboard de-energized, are fast and straightforward due to easy access to devices.

Safety of Installations & safety of personnel

Work in a switchboard must be carried out by authorized persons in compliance with all applicable safety regulations. To increase the safety of personnel, devices are installed behind protective front plates (double door); only the operating handles are accessible. Additional internal protection (partitions, barriers) is available to create form 2 or 3 or more special separations to protect against direct contacts with live parts. Terminal barriers are mandatory for installation of SGV/SEW MCCB in EM⁺ panel enclosures.

Electrical switchboards are built using the EM⁺ functional system and Electromech Automation & Engineering Ltd. manufacturing process fully comply with international standard IEC 61439-2 : 2011

Electrical characteristics

Use of the components in the EM plus functional system ensures the creation of switchboards complying with standards IEC 50298, EN 50298, IEC 61439-2 and EN 61439-2, as well as local versions with the following electrical characteristics:
rated insulation level of main busbars: 1000 V
rated operational current I_e: 6300 A
rated peak withstand current I_{pk}: 187kA
rated short-time withstand current I_{cw}: 130 kA rms/1 second
frequency: 50/60 Hz.

Electrical characteristics

Use of the components in the EM plus functional system ensures the creation of switchboards complying with standards IEC 50298, EN 50298, IEC 61439-2 and EN 61439-2, as well as local versions with the following electrical characteristics:
rated insulation level of main busbars: 1000 V
rated operational current I_e: 6300 A
rated peak withstand current I_{pk}: 187kA
rated short-time withstand current I_{cw}: 130 kA rms/1 second frequency: 50/60 Hz.

Mechanical characteristics

Steel sheet metal.
Electrophoresis treatment + hot-polymerized polyester powder coated.
White EM light gray closer to RAL 7038
Can be dismantled (prior information required)
Can be combined side-by-side and back-to-back.
Degree of protection: IP31, IP55 or higher on request.
Degree of protection against mechanical impacts: IK10 with door.
Framework dimensions:
two widths:
- W 300: cable compartment
- W 800: device compartment.
four depths: 500,600, 700, 800 mm (can be crafted fit to the customer's special requirements)
four height: 1200mm, 1400mm, 1600mm, 2000mm.
Indoor cubicles.
Outdoor cubicles (on request).



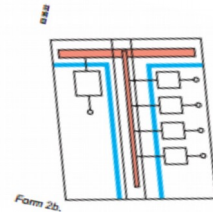
FORMS OF EM PLUS CUBICLES :

In most installations, EM⁺ cubicles do not require partitioning. In this case, the switchboard is a Form 1. Safety being one of its foremost goals, ELECTROMECH offers options and features that go well beyond the recommendations of the standard. The protection of life and property is a standard feature due to ; front plates that require a tool to be removed keylocks on doors, some of which provide access to live parts the systematic installation of terminal shields on SGV circuit breakers covering of the upstream and downstream terminals on the incoming device so that operators are perfectly safe at all points in the switchboard when the incoming device is off (open). What is more, EM Plus offers different levels of partitioning to create separations inside the cubicles and thus create Form 2, 3 electrical switchboards.

Form 2

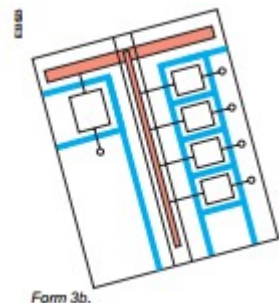
EM Plus Panel System offers Form 2 cubicles

It is a physical separation of horizontal, vertical busbars from the functional units, complying with standard IEC 61439-2.



Form 3b

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



EM+ PANELS: FORMS OF INTERNAL SEPARATION COMPLIANT TO IEC 61439-2 : 2011

Main Criteria	Sub-Criteria	Form
No Internal Separation.		Form 1
Separation of busbars from all functional units.	Terminals of external conductors not separated from busbars.	Form 2a
	Terminals of external conductors separated from busbars.	Form 2b
<ul style="list-style-type: none"> - Separation of busbars from all functional units. - Separation of all functional units from one another. - Separation of terminals for external conductors and the external conductors from functional units but not from the terminals of another functional units. 	Separation of busbars from the functional units, and separation of all functional units from one another. Separation of the terminals, for external conductors, from the functional units, but not from each other. Terminals for external conductors not separated from busbars	Form 3a
	Separation of busbars from the functional units, and separation of all functional units from one another. Separation of the terminals, for external conductors, from the functional units, but not from each other. Terminals for external conductors separated from busbars.	Form 3b
Main Criteria	Sub-Criteria	Form
<ul style="list-style-type: none"> - Separation of busbars from all functional units. - Separation of all functional units from one another. - Separation of terminals for external conductors associated with functional unit from the terminals of any functional unit and the busbars. - Separation of external conductors from the busbars. - Separation of the external conductors associated with functional from other functional units & their terminals. - External conductors need to be separated from each other. 	Functional units separated from each other and busbars, cable glanded on the functional unit compartment. Terminals associated with functional units to be located in the same compartments as the functional unit. Separation by metallic or non-metallic barrier.	Form 4a
	Functional units separated from each other and busbars, cable glanded on the common cabling together. Terminal associated with functional units to be separated from those of other functional units and located in separate compartments. Busbar Separation by insulated coverings, busbar separations by metallic non-metallic rigid barriers & terminals separated by insulated coverings, busbar separated by metallic or non-metallic barriers. terminals separated by metallic or non-metallic barriers	Form 4b

EM Plus functional units

Functional units include switchgear mounting plates, front plates, connectors, connections, connection supports, phase barriers.....

Switchgear	Product Reference
AE630-SW to AE2000-SW	EM-6320-0001
AE2500-SW to AE4000-SW	EM-2540-0002
AE5000-SW to AE 6300-SW	EM-5060-0003
NF32 to NF400	EM-3240-0004
NF630 to NF1600	EM-6316-0005
Source Changeover(MCCB/MN/ACB)	EM-3263-0006
BH-D6	EM-0663-0007

Busbars Selection: Horizontal Busbars upto 1600A

Busbar Calculation

Permissible Current (A)	Number of bars/phase
630	1 bar 60 x 5
800	1 bar 80 x 5
1000	1 bar 50 x 10
1250	2 bar 60 x 5
1600	2 bar 80 x 5

Note : The bars are secured by insulated supports attached to the framework. The permissible current values for the busbars are given for an ambient temperature of 35 °C around the switchboard. Special cross section busbars can be designed based on customer's recommendations. Cross section for above 1600A switchboard shall be designed in consultation with customer based on application and customer's functional requirements.

MS Sheet used in cubicles:

Frames are made with MS Sheet 14 SWG(2mm) & side, top & bottom plates are of 16 SWG(1.6mm). Distributions Boards are made by 18 SWG sheet. In all cases. MS sheets are treated & painted in phases in treatment plant & powder coated painting plant.

De-rusting: Rusts are removed by chemical washing (Acid-Treatment).
 Bathing: Chemical are removed by bathing in the fresh water.
 Special Chemical are added on structures and dried in natural temperature.
 Structures are painted (powder coated) & tested.
 Properties of MS sheet used:
 Carbon 0.16 to 0.18 %
 Manganese 0.70 to 0.90 %
 Silicon maximum 0.40%
 Sulfur maximum 0.04%
 Phosphorous maximum 0.04%



Typical 11kV Metalclad Switchgear with Mitsubishi Equipment's

(Please send request for details & arrangement)

At ELECTROMECH, we make what matters work. By making power safe, efficient and reliable, we improve the quality of life for customers who experience our products and services. We have the power to make a difference and we do every day. We remain dedicated to the spirit of innovation and ideas that inspire us to uphold the quality commitment we give to our customers compliant to the IEC Standards & requirements of quality management system ISO 9001: 2008.

ELECTROMECH AUTOMATION & ENGINEERING LTD.

Head Office : Shatabdi Center, 12th Floor, 292 Inner Circular Road, Fakirapool, Motijheel C/A, Dhaka 1000

Phone : 88 02 –7192826, Fax : 88 02 7193516

Mobile : 88 01709377900-99

E-mail : info@electromechbd.com, www.electromechbd.com

Factory : Mohakash Road, Sanarpar, Demra, Dhaka

Phone : 88 02 7502611

Chittagong Office :1267/A, Goshaldanga, Agrabad C/A.

Mobile:8801709377991-95

Jessore Office : House # 4/A,(3rd floor), Netaji Suvash Chandra Rd.

Daratana, Jessore. Mobile: 88 01709377970