

6300A  
INTEGRATED SWITCHBOARD SOLUTIONS

# XL<sup>3</sup> DO

**FUTURE READY  
ENCLOSURES DESIGNED  
TO OUTPERFORM  
ALL CONDITIONS**



THE GLOBAL SPECIALIST  
IN ELECTRICAL AND DIGITAL BUILDING INFRASTRUCTURES

**legrand®**  
LIVE THE ADVANTAGE



# THE FUTURE-READY INTEGRATED SWITCHBOARD SOLUTIONS FROM LEGRAND

XL3 D0 is ready for challenges; it is **Safe**, offers **Simple** custom-made configuration and enables **Smartness** through digitalisation.

## Advantages with XL3 D0:



- Design verified assembly in accordance with IEC 61439, guarantees safe investment.



- Internal arc withstand ensures additional personal safety.



- Design Ambient of 50°C to withstand the harsh Indian conditions.



- Available in IP43/54 configuration ensures further safety.



- Be Connected and take control through communication capable products.



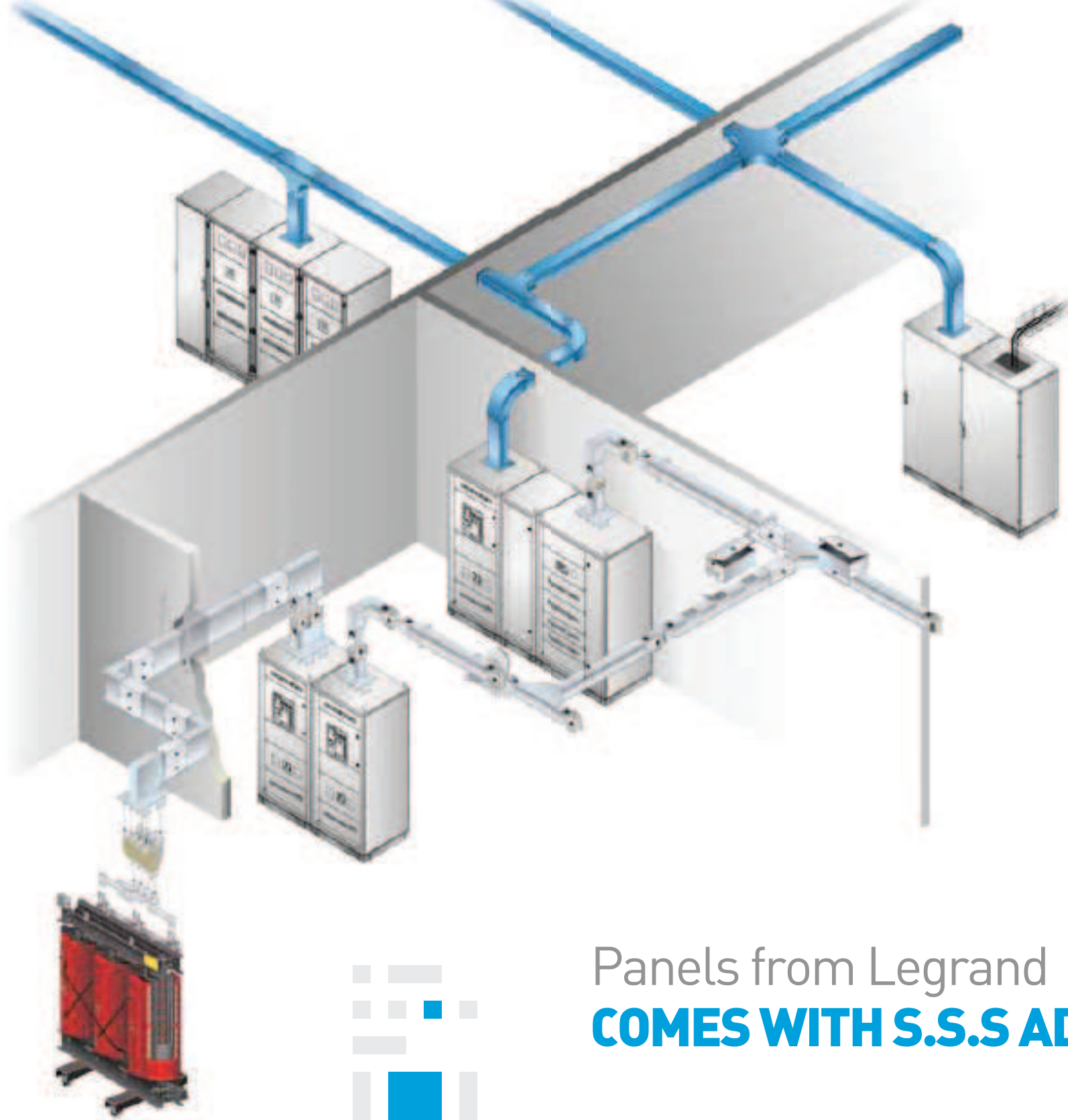
- Sufficient cabling space with real front access for ease of maintenance.



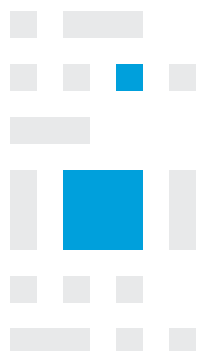
- The wide choice of columns offers an unlimited number of XL3 D0 enclosure configurations, so you can optimise and adapt your solutions to different types of environment.



- Compact solution guarantees space saving.



Panels from Legrand  
**COMES WITH S.S.S ADVANTAGE**





# SMART. SAFE. SIMPLE & MORE...

Effectively leveraging the evolving technologies and understanding consumer insights, we at Legrand continuously innovate to make things that are not just essential, but actually desirable.

The new range of XL3 DO is conceptualise, designed and developed to increase the efficiency of power distribution thereby reduce its wastage through connected devices from Legrand.

The modularity in design is been optimise for every inch while lending flexibility in installation and can be easily accommodated in restrictive space environment.

The safe design assembly is tested as per IEC 61439 and withstand internal arc as per IEC 61641.

These enclosures are designed for perfect synergy with various Legrand devices such as ACBs, MCCBs, Capacitors, MCBs, Metering devices and OMPs like VSP, MPCB...

XL3 DO offers a smart, safe, simple switchboard beneficial to your power distribution needs of infrastructure, commercial, industries, data centres or any other critical installation.



# CERTIFIED WITH ROBUST TESTING PROCESS





## Certificate of Conformity

LOVAG-Certificate No.: IT 19.085  
Page 1 of 1

This Certificate applies only to the apparatus verified. The responsibility for conformity of any apparatus having the same designation with that verified rests with the manufacturer or responsible vendor.

This certificate has been prepared according to LOVAG (Low Voltage Agreement Group) Objectives and Operating Principles of mutual recognition. The responsible certification body as a member of LOVAG issues a Certificate of Conformity with the above mentioned Standard(s) following the exclusive use of LOVAG Verification instruction wherever applicable.

Only integral reproduction of this Certificate or reproductions of this page accompanied by any page(s) on which are stated the verifications performed and the assigned rated characteristics of the apparatus verified, are permitted without written permission from the LOVAG Signatory responsible for this Certificate

**Designation Type:** XL<sup>3</sup> DO

**Manufacturer:** Novateur Electrical & Digital System Pvt Ltd (Legrand Group)  
61/62, Kalpataru Square, Off Andheri-Kurla Road Andheri (E), Mumbai – 400059 India

**Applicant:** Novateur Electrical & Digital System Pvt Ltd (Legrand Group)  
61/62, Kalpataru Square, Off Andheri-Kurla Road Andheri (E), Mumbai – 400059 India

**Verified by:** ACAIE Laboratory:  
IB01 Varese (Italy)

The apparatus, constructed in accordance with the description mentioned in the Report listed in this Certificate has been subjected to the series of proving verifications in accordance with IEC 61439-2 Ed.2.0 (2011-08) and EN 61439-2 (2011-10):

- 10.11 Short-circuit withstand strength

The results are shown in the Report in accordance to LOVAG. The values obtained and the general performance are considered to comply with the above Standard(s) and to justify the characteristics assigned by the manufacturer as stated below:

This document includes: Test report No. 1706  
Issue date: 2019.06.05



**Responsible Certification Body: ACAIE**  
Via Tito Livio, 5 – 24123 – BERGAMO (Italy)

*Virginia Scaroni*  
Authorized Signature: Virginia Scaroni  
Date: 2019.07.15



PRO N°0708  
Signatory of EA, IAF and ILAC  
Mutual Recognition Agreements

MOD 007 pag 1 Revisione 07





## Certificate of Conformity

LOVAG-Certificate No.: IT 19.087  
Page 1 of 2

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- 10.2.2 Resistance to corrosion (Severity A)
- 10.2.3.2 Resistance to abnormal heat and fire due to internal electric effects
- 10.4 Clearances and creepage distances
- 10.5 Protection against electric shock and integrity of protective circuit
- 10.6 Incorporation of switching devices and components
- 10.7 Internal electric circuits and connections
- 10.8 Terminals for external conductors
- 10.9 Dielectric properties
- 10.10.2.3.5 Temperature rise
- 10.11 Short-circuit withstand strength
- 10.12 Electromagnetic compatibility
- 10.13 Mechanical operation

The results are shown in the Report in accordance to LOVAG. The values obtained and the general performance are considered to comply with the above Standard(s) and to justify the characteristics assigned by the manufacturer as stated at pages no. 2

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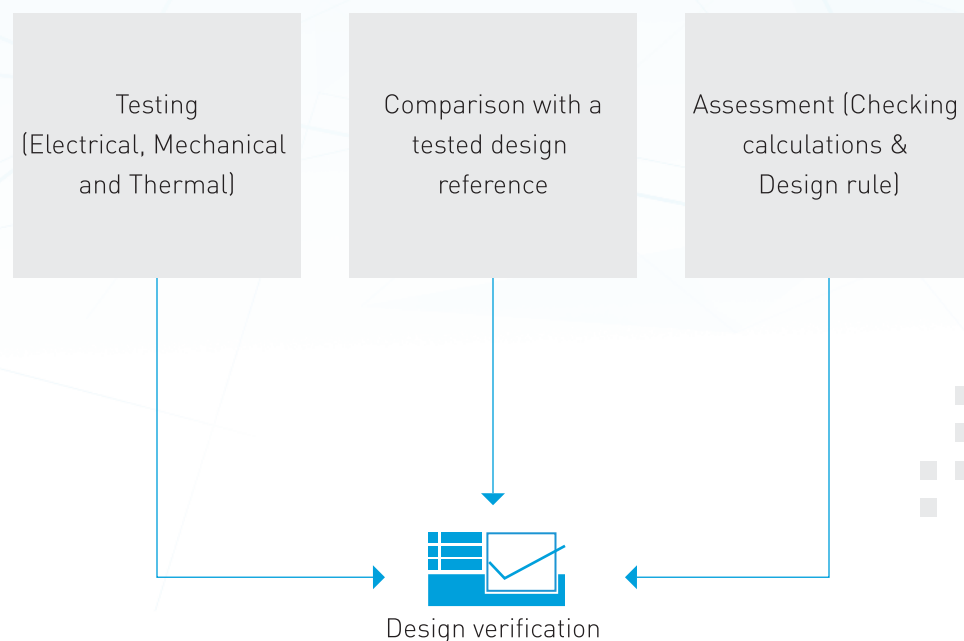


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MOD 007 pag 1 Revisione 07

# THE MAIN GOALS OF STANDARD IEC 61439 IS TO ACHIEVE **ELECTRICAL SAFETY, ELECTRICAL AVAILABILITY & AGREEMENT** WITH END-USER REQUIREMENTS

Design verifications can be provided by the following methods



Annex D of IEC 61439-1 defines which verification can be provided by which method. If there are alternative methods, the choice is the original manufacturer's responsibility.

## List of Design Verifications performed on XL3

Characteristic to be verified		Verification options available		
		Verification by testing	Verification by calculation	Verification by design rules
10.2	Strength of material and parts	Yes	No	No
10.3	Degrees of protection of enclosures	Yes	No	Yes
10.4	Clearances and creepage distances	Yes	Yes	Yes
10.5.2	Effective continuity between parts and PE	Yes	No	No
10.5.3	Effectiveness of the ASSEMBLY for external faults	Yes	Yes	Yes
10.6	Incorporating of apparatus	No	No	Yes
10.7	Internal electrical circuits and connections	No	No	Yes
10.7	Terminals for external conductors	No	No	Yes
10.8	Power frequency withstand voltage	Yes	No	No
10.9.3	Impulse withstand voltage	Yes	No	Yes
10.10	Temperature rise limits	Yes	Yes	Yes
10.11	Short-circuit withstand strength	Yes	Yes	Yes
10.12	EMC	Yes	No	Yes
10.13	Mechanical operation	Yes	No	No

**XL3 has been certified in accordance of IEC 61439**, to ensure Electrical safety, Electrical continuity & agreement of end user requirement.

Tests are carried out officially on assemblies representative of the usual wiring configurations and equipment layouts.

## ■ Temperature rise limits

### Temperature rise test on assemblies

This test checks that assemblies operate correctly under maximum operating conditions (current, number of devices, volume of enclosure).

It allows to define the heat balance elements for an average temperature rise in the air in assemblies of less than 30°C and a temperature rise in the terminals less than 70°C.

### Temperature rise test on busbars

The various currents given for all the bar and distribution systems have been checked under the most severe conditions, according to the degree of ventilation of the enclosure (IP  $\leftarrow$  30 and IP  $\rightarrow$  30), so that the temperature rise of the bars does not exceed 65°C.

## ■ Short-circuit resistance

### Short-circuit currents and short-circuit current breaking may cause different kinds of stresses

- Extremely high forces between conductors
- Very high temperature rise in a very short time
- Air ionisation
- Overpressure due to arc breaking and resulting in high forces applied to the assembly Assemblies will be so constructed that an internal short-circuit is not to be expected and that short-circuit currents not exceeding the rated values do not impair the condition of the equipment incorporated in the Assembly or any of its functions.

## ■ Protection against electric shock

Persons and livestock nearing and operating the Assembly must be protected against electric shock, which means hazardous-live-parts must not be accessible, and accessible conductive parts must not be hazardous live, either under normal conditions (basic protection or protection against direct contact), or under single-fault conditions (fault protection or protection against indirect contact).

Assemblies are verified for Degrees of protection provided by enclosures, Mechanical function and Strength of material and parts to ensure the same.

## ■ Protection of persons against risk of fire or explosion

An Assembly must not present a fire hazard to adjacent material and contribute to, or propagate a fire.

Unless otherwise specified protection against risk of fire or explosion includes resistance to internal faulty glowing elements.

Assemblies are verified with Glow wire test and with **Special internal arc test according to IEC TR 61641 to ensure maximum safety.**

## ■ Strength of material and parts

### They cover the following checks:

- Resistance to mechanical impact
- Rust resistance
- Resistance to damp
- Resistance of insulating materials to heat
- Fire resistance – Glow wire test
- Mechanical performance of assemblies and fixings

## ■ Effectiveness of the protective circuit

- The continuity of the protective circuit is a decisive factor for safety. It is checked in accordance with standard IEC 61439-1 at a test current of 25 A between the terminal connecting the protective conductors and all the exposed conductive parts.
- At a high fault current that could occur following accidental detachment of a conductor. The protective circuits (conductors, terminals or collector bars), are sized and tested to withstand the maximum short-circuit thermal stress that could occur according to the current at the supply end of the assembly.

## ■ Clearances and creepage distances

The methods for measuring creepage distances and clearances in standard IEC 60664-1 are repeated in full in appendix F of standard IEC 61439-1. The distances are measured between live parts with different polarities, and also between live parts and the exposed conductive parts. When modular devices and equipment are installed in accordance with the specified conditions, the distances are observed for the insulation voltages of these devices.

## ■ Mechanical operation check



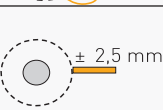
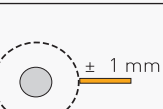
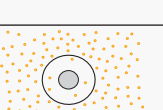
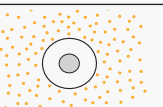
In accordance with the provisions of the standard, tests are carried out on parts such as opening and closing of doors, locking and unlocking of handles which need verification by test as per IEC 61439-1, the number of operating cycles shall be 200. The test is done to ensure mechanical strength is sufficient to stresses to which they may be subjected during normal service, and during short circuit conditions.

# Degree of protection (IP) provided by enclosure


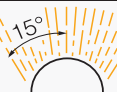






The IP defines the ability to protect people and to prevent entry of solid objects (first number) and against liquids (second number). The additional letter indicates the protection against access to dangerous parts.

## IP degrees of protection in accordance with standard IEC 60529

### 1st figure--: protection against solid bodies

IP	tests	
0		No protection
1	 ± 50 mm	Protected against solid bodies larger than 50 mm (eg:-accidental contact with the hand)
2	 ± 12,5 mm	Protected against solid bodies larger than 50 mm (eg:-finger)
3	 ± 2,5 mm	Protected against solid bodies larger than 2,5 mm (eg:- tools,wires)
4	 ± 1 mm	Protected against solid bodies larger than 1 mm (eg:-fine tools and small wires)
5		Protected against dust (no harmful deposit)
6		Completely protected against dust

### 2nd figure--: protection against liquids

IP	tests	
0		No protection
1		Protected against vertically-falling drops of water (condensation)
2	 15°	Protected against drops of water falling at up to 15° from the vertical
3	 60°	Protected against drops of rain water at up to 60° from the vertical
4		Protected against projections of water from all directions
5		Protected against jets of water from all directions
6		Protected against jets of water of similar force to heavy seas
7	 15 cm min	Protected against the effects of immersion
8		Protected against prolonged effects of immersion under pressure

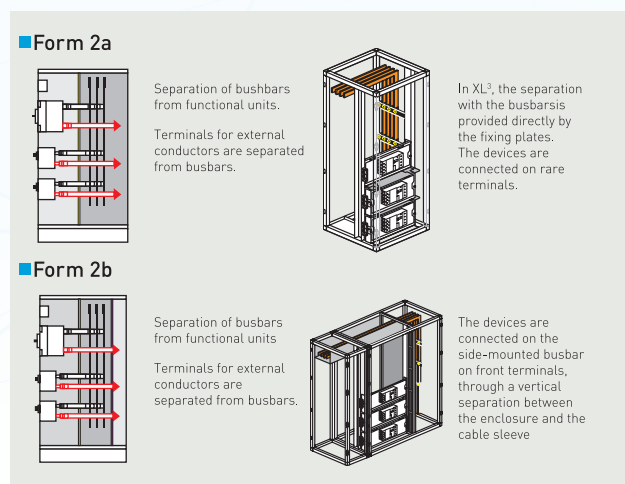
# FORMS OF INTERNAL SEPARATION ENSURES SAFE WORKING

The main objective is to maintain the availability of the power supply while allowing safe working and limiting the effects of any internal fault in the panel.

The type of form chosen will be determined according to the qualification of those involved, the protection required and the required level of maintainability.

The use of forms enables the panel to be divided into closed protected spaces in order to achieve four objectives:

- Protection against direct contact with dangerous parts of neighbouring functional units conductive parts.
- Protection against the entry of solid objects.
- Limitation of the effects of the spread of electric arcs
- Facilitation of panel maintenance operations.

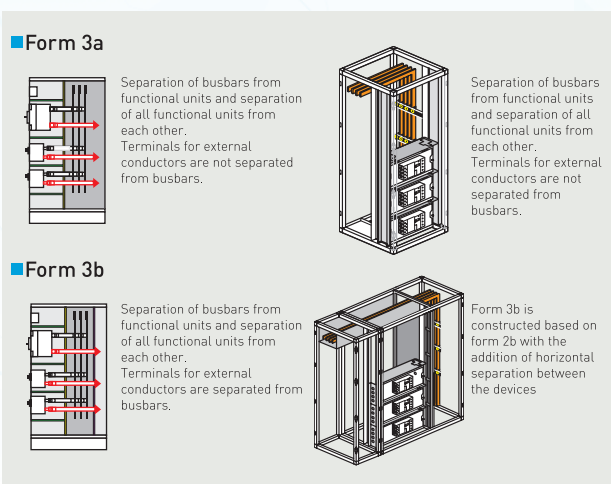


## Form 1

Form 1 does not require any separation between the components inside the enclosure.

## Forms 2a and 2b

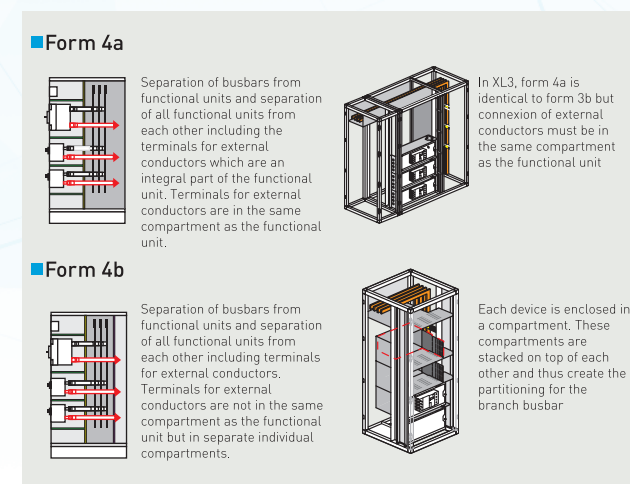
Form 2a is the simplest for protecting against accidental contact with the busbars, which are considered to be the most dangerous components. Form 2b includes additional separation to make it safe to work on outgoing lines.



## Forms 3a and 3b

In form 3a, each device is isolated in a compartment which protects it from the effects of incidents which may occur on another device.

Form 3b combines the advantages of form 3a and form 2b, separating the output terminals and the busbars. Form 3a does not cover completely the form 2b. The difference relates to the terminals for external conductors separated from busbar in form 2b and necessary in form 3a (see following diagrams for further understanding).



## Forms 4a and 4b

The requirements of form level 4a further increase the safety of working on outgoing lines by isolating the output terminals in the same compartment as the device. Form 4b provides maximum safety by separating all the functions from one another. Form 4a does not cover completely the form 3b since solutions for connecting external conductors are different. They are associated with the functional unit in the form 4a while being deported in the form 3b (see following diagrams for further understanding).

# TECHNICAL DETAILS

## GENERAL DATA

Applications	power distribution, motor control
MCC (Motor Control Centre)	up to 250 kW
PCC (Power Control Centre)	incomer & feeder up to 6300 A
Standards	IEC 61439-1 & 2, IEC 60529 IEC TR 61641
Damp heat withstand	IEC 60068-2-30
Salt spray withstand	IEC 60068-2-11
Glow wire test	IEC 60695-2-11

## ELECTRICAL DATA

Voltage	up to 690 Vac
Pollution degree	3
Rated frequency	50 / 60 Hz
Insulation voltage	1000 Vac
Rated impulse withstand voltage	12 kV
Main busbar rating	up to 6300A
Rated short time withstand current (I <sub>cw</sub> )	up to 100 kA rms - 1s (peak current up to 220 kA)
Rated Conditional short-circuit current (I <sub>cc</sub> )	up to 100kA
Internal arc withstand current	85kA for 0.4 s

## COMMUNICATION

Protocols	Modbus, Ethernet TCP/IP
Cable entry	top / bottom
Access	Front / Rear
Degree of protection (IP)	43 / 54
Form	upto 4b
Installation	indoor
Operating temperature	- 5 °C to 50 °C

## DIMENSIONS (MM)

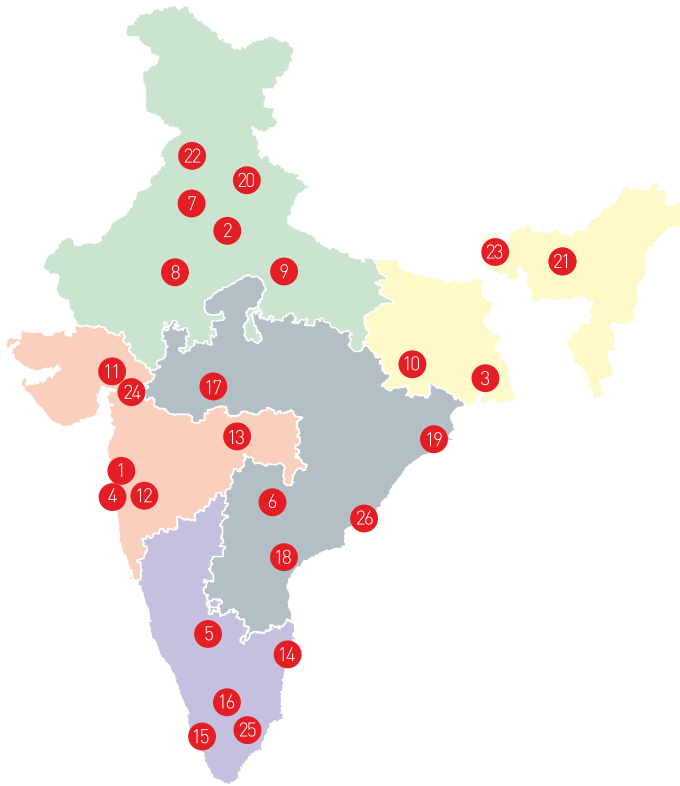
Height	2000/2200/2400
Width	350/450/600/800/1000/1400
Depth	400/600/800/1000/1200
Modular pitch	50mm





## Notes

The image shows a full-page view of a blank sheet of white paper with horizontal ruling lines. The paper is centered and takes up most of the frame. In the background, there are faint, overlapping geometric shapes in light blue and pale yellow, creating a subtle pattern behind the white paper. The ruling lines are evenly spaced and run horizontally across the entire width of the page. There are no margins or other markings on the paper.



#### Technical assistance from Legrand

Telephonic technical assistance for selection of products, technical information, guidance, wiring diagrams and estimation is now made available to you at each Regional Office. Contact the Technical Officer of Legrand at the following telephone numbers

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Fax : (022) 3041 6201  
Website : [www.legrand.co.in](http://www.legrand.co.in)

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(011) 2699 0028 / 29 / 30 / 31  
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Fax : (033) 4021 3537
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