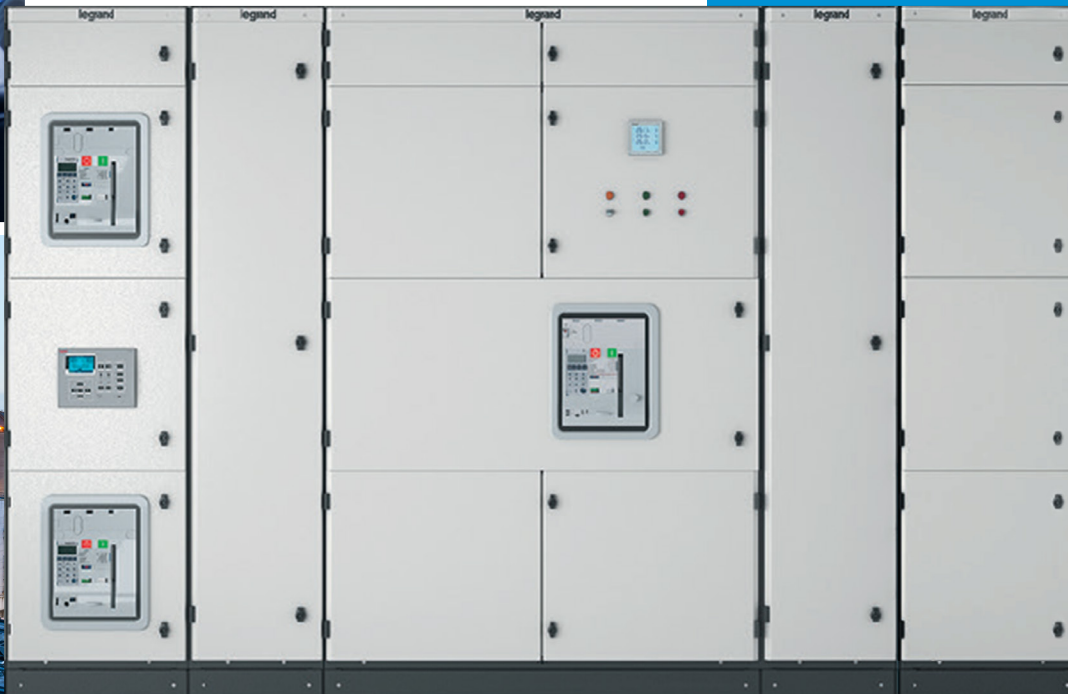


6300A
INTEGRATED SWITCHBOARD SOLUTIONS

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

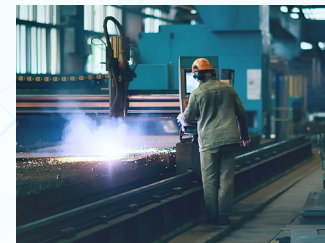
Advantages with XL3 DO:



- 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.



EASE OF MAINTENANCE

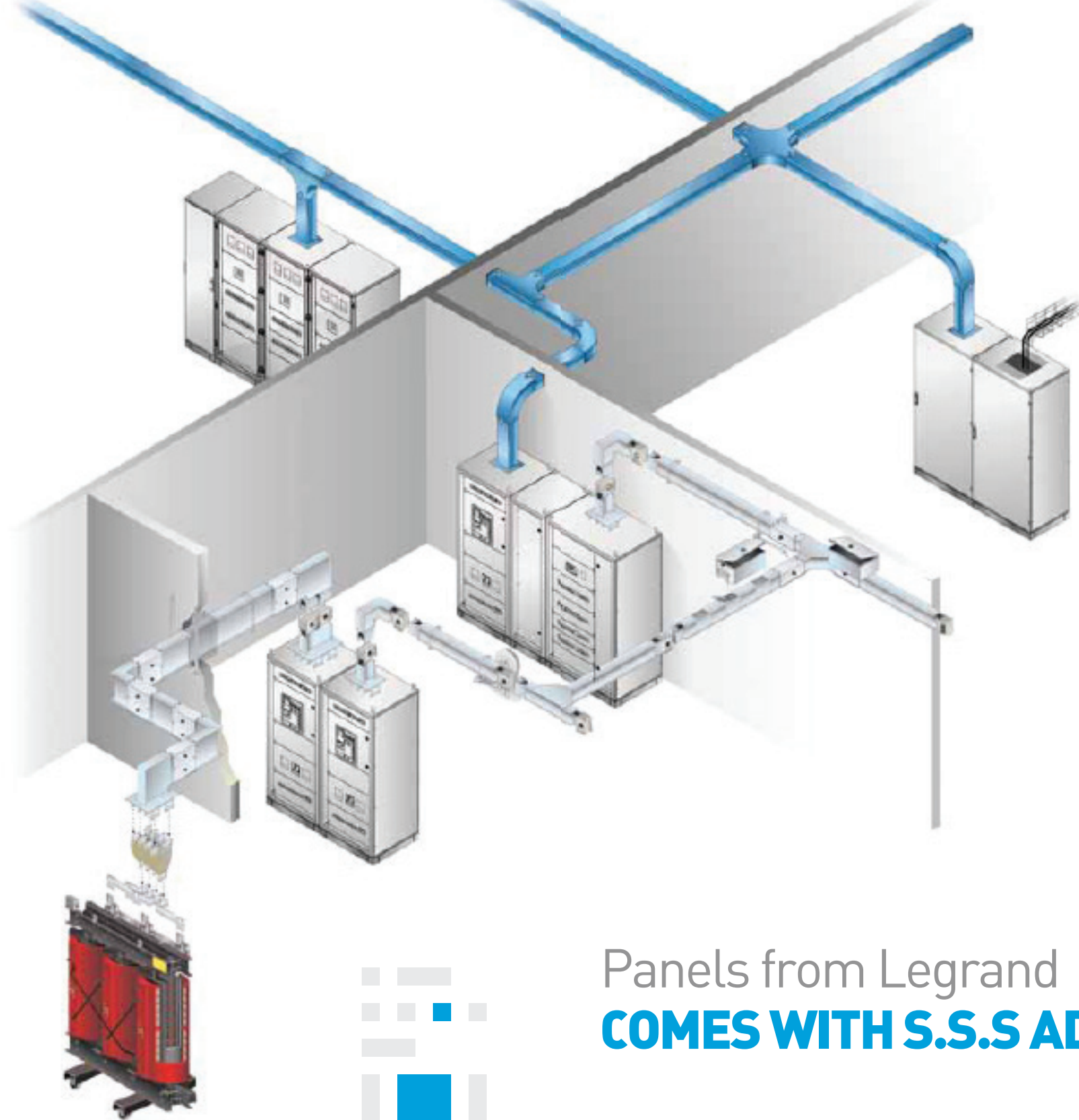
- Sufficient cabling space with real front access for ease of maintenance.



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



- Compact solution enable 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: XL³ 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: ACAE 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: ACAE
Via Tito Livio, 5 – 24123 – BERGAMO (Italy)



Authorized Signature: Virginio Scaroni
Date: 2019.07.15



MOD 007 pag 1 Revisione 07





Certificate of Conformity

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

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.

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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



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



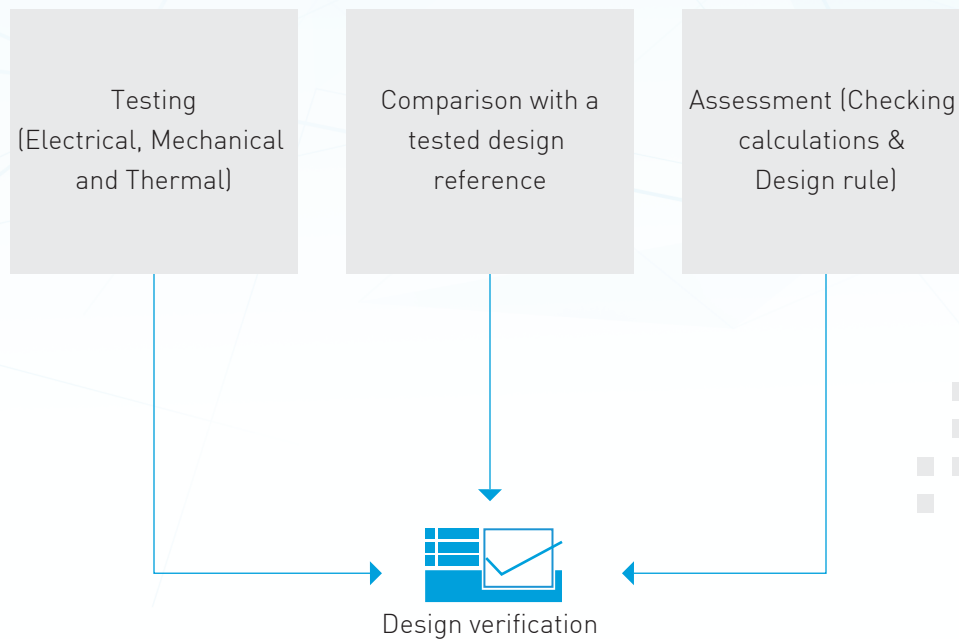
Authorized Signature: Virginio Scaroni
Date: 2019.07.15



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.

Method of verification as per IEC 61439-1

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 ← 30 and IP → 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.




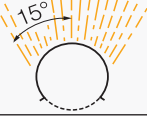
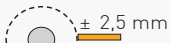
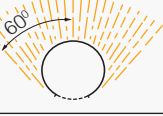


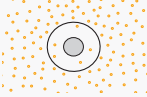
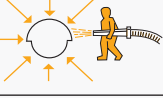
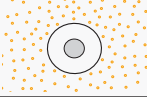
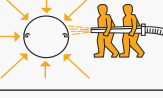

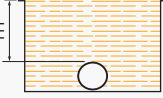
■ Mechanical operation check

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			2nd figure--: protection against liquids		
IP	tests		IP	tests	
0		No protection	0		No protection
1	 ± 50 mm	Protected against solid bodies larger than 50 mm (eg-:accidental contact with the hand)	1		Protected against vertically-falling drops of water (condensation)
2	 ± 12,5 mm	Protected against solid bodies larger than 50 mm (eg-:finger)	2	 15°	Protected against drops of water falling at up to 15° from the vertical
3	 ± 2,5 mm	Protected against solid bodies larger than 2.5 mm (eg-: tools,wires)	3	 60°	Protected against drops of rain water at up to 60° from the vertical
4	 ± 1 mm	Protected against solid bodies larger than 1 mm (eg-:fine tools and small wires)	4		Protected against projections of water from all directions
5		Protected against dust (no harmful deposit)	5		Protected against jets of water from all directions
6		Completely protected against dust	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

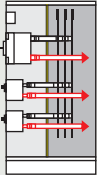
The main objective is to maintain the availability of the power supply while allowing safe working and limiting the effects of any internal fault in the panel.

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

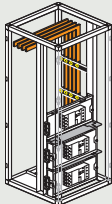
The use of forms enables the panel to be divided into closed protected spaces in order to achieve four objectives:

- 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 2a

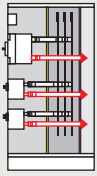


Separation of busbars from functional units.
Terminals for external conductors are separated from busbars.

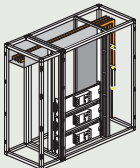


In XL3, the separation with the busbars is provided directly by the fixing plates. The devices are connected on rare terminals.

Form 2b

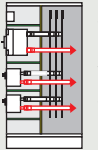


Separation of busbars from functional units
Terminals for external conductors are separated from busbars.

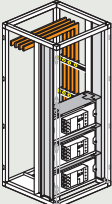


The devices are connected on the side-mounted busbar on front terminals, through a vertical separation between the enclosure and the cable sleeve

Form 3a

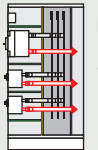


Separation of busbars from functional units and separation of all functional units from each other. Terminals for external conductors are not separated from busbars.

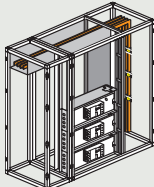


Separation of busbars from functional units and separation of all functional units from each other. Terminals for external conductors are not separated from busbars.

Form 3b

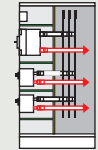


Separation of busbars from functional units and separation of all functional units from each other. Terminals for external conductors are separated from busbars.

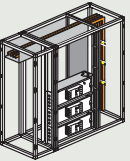


Form 3b is constructed based on form 2b with the addition of horizontal separation between the devices

Form 4a

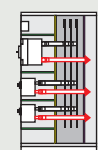


Separation of busbars from functional units and separation of all functional units from each other including the terminals for external conductors which are an integral part of the functional unit. Terminals for external conductors are in the same compartment as the functional unit.

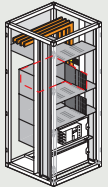


In XL3, form 4a is identical to form 3b but connexion of external conductors must be in the same compartment as the functional unit

Form 4b



Separation of busbars from functional units and separation of all functional units from each other including terminals for external conductors. Terminals for external conductors are not in the same compartment as the functional unit but in separate individual compartments.



Each device is enclosed in a compartment. These compartments are stacked on top of each other and thus create the partitioning for the branch busbar

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 _{cw})	up to 100 kA rms - 1s (peak current up to 220 kA)
Rated Conditional short-circuit current (I _{cc})	up to 100kA
Internal arc withstand current	85kA for 0.4 s

COMMUNICATION

Protocols	Modbus, Ethernet TCP/IP
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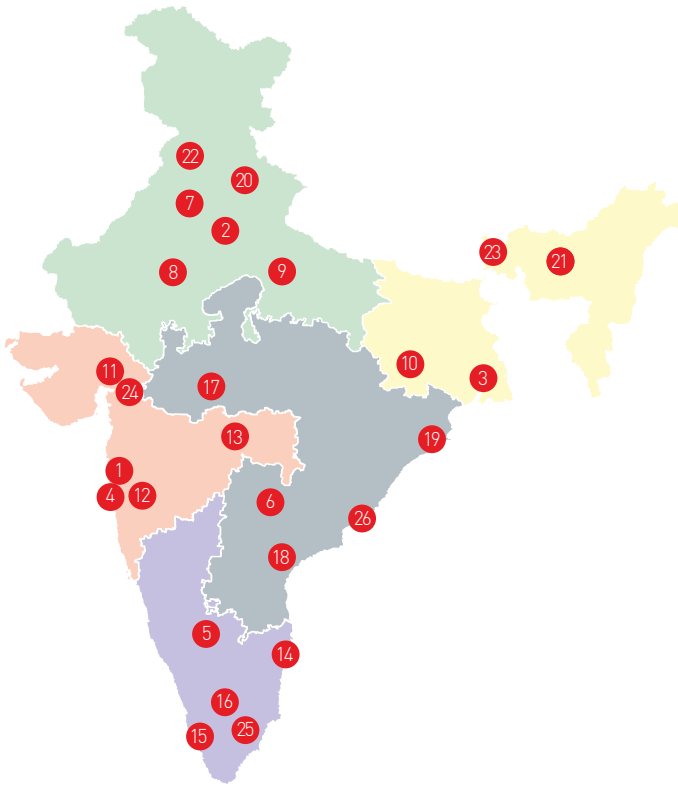
MECHANICAL DATA

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





Head office

- 61 & 62, 6th Floor,
Kalpataru Square, Kondivita Road,
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MUMBAI – 400 059.
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Website : www.legrand.co.in

Regional sales offices

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Industrial Estate, Mathura Road,
NEW DELHI - 110 044.
Tel : (011) 3990 2200, 2699 0046,
(011) 2699 0028 / 29 / 30 / 31
Fax : (011) 2699 0047
- Bhakta Towers, 2nd & 3rd Floor,
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KOLKATA – 700 098.
Tel : (033) 4021 3535 / 36
Fax : (033) 4021 3537
- C/203, Corporate Avenue, Atul Projects,
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LUCKNOW - 226 010.
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RANCHI - 834 001.
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- A 101-102, Mondeal Heights,
Besides Novotel Hotel, Sarkhej
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Near Ashwamegh Marriage Hall,
Behind HP Petrol Pump,
Off Karve Road, Erandwane,
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Fax : (020) 6729 5604
- Plot No.95, II Floor, Shreyash Heights,
VIP Road, Ramdaspath,
NAGPUR – 440 010.
Tel : (0712) 662 7857 / 858
Fax : (0712) 662 7859
- 10 B, (10th Floor), Prestige Center Court
Office Block Vijaya Forum Mall, #183,
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3rd Floor, Bye Pass Junction, Edappally,
COCHIN – 682 024.
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VIJAYAWADA – 520 010.
Tel : (0866) 248 2393/6393/5393
- Plot No. 359,
Saheed Nagar, 2nd Floor,
BHUBANESWAR – 751 007.
Tel : (0674) 254 0623

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