

Diverse demands.  
Numerous applications.  
**Single solution.**



**MV Switchgear Range**  
from the leaders in LV Switchgear

# ABOUT US

L&T Switchgear, a part of the Electrical and Automation business, is India's largest manufacturer of low voltage switchgear, with the scale, sophistication and range to meet global benchmarks. With over five decades of experience in this field, the company today enjoys a leadership position in the Indian electrical market with growing presence in international markets.

Larsen and Toubro entered into medium voltage field by acquiring Malaysian company TAMCO in 2008. TAMCO has over four decades of experience in MV switchgear and has supplied to large number of customers worldwide. Our ranges of MV products are manufactured at various factories across the world. In India these are manufactured at L&T's state of the art facility at Ahmednagar. Our MV products have worldwide acceptance in sectors like Metals, Power, Oil & Gas, Petrochemicals, Infrastructure, Buildings, etc.



**Switchgear Factory, Mumbai**



**Switchgear Factory, Vadodara**



**Switchgear Factory, Ahmednagar**



# AIR INSULATED SWITCHGEAR (AIS)

Air Insulated Switchgear (AIS) is used for control and protection of electrical distribution system. In our AIS, Vacuum Circuit Breaker (VCB) is used as the switching device with air as the insulating medium in a metal clad enclosure. The protection and control is offered by numerical relays.

The VCB is type tested as per IEC 62271-100 and the metal clad enclosure is type tested as per IEC 62271-200.

The AIS panel is available for the system voltage of 11kV, 22kV and 33kV and for current ratings upto 3150A with natural cooling. The short circuit ratings are available upto 50kA for 3 sec. To prove its suitability for use in severe climatic conditions, the switchgear has been subjected to climatic aging tests according to IEC 60932, and proven to Design Class 2 (the highest class). The switchgear has been designed and tested as per IEC 62271-200 to ensure the safety of the operator in the event of an internal-arc fault. Arc vents are provided in the busbar, cable and VCB compartments.

The switchgear has also been successfully tested to withstand seismic forces of 5-7 on the Richter scale, in accordance with IEC 60068-3-3.



Ahmednagar MV Factory

# OFFERINGS



**11kV, 630A, 26.3kA VCB**



**11kV, 800A, 40kA VCB**

Fault Level (kA)		26.3				40/50			
Current Rating (A)									
Rated Voltage	Type of Panel	630A	800A	1250A	2000A	800A	1250A	2000A	3150A
12kV	Full panel	✓	✓	✓	✓	✓	✓	✓	✓
	Sub-cubicle	✓	✓	✓	✓				
	Half panel	✓	✓	✓	✓	✓	✓	✓	✓
	ICOG panel	✓	✓	✓	✓	✓	✓	✓	✓

Fault Level (kA)		25		
Current Rating (A)				
Rated Voltage	Type of Panel	630	1250	2000
24kV	Full panel	✓	✓	✓
	ICOG panel	✓	✓	✓

Fault Level (kA)		31.5		
Current Rating (A)				
Rated Voltage	Type of Panel	800	1250	2000
36kV	Full panel	✓	✓	✓
	ICOG panel	✓	✓	✓





## PANEL OPTIONS

- Full Panel: Complete panel with VCB compartment, cable compartment, bus bar compartment and LV compartment
- ICOG Panel: Incoming Outgoing full panel
- Sub-cubicle: VCB compartment, i.e. VCB with PDS in enclosure with door and safety interlocks (for 12kV, 26.3kA)
- Half Panel:

Half panel for 11kV, 26.3kA consists of VCB and fabrication of VCB compartment, busbar compartment and cable compartment. LV compartment, LV components, control wiring, main busbar, CTs and PTs are not included.

Half panel for 11kV, 40kA consists of VCB and fabrication of VCB compartment, busbar compartment, LV compartment and cable compartment. LV components, control wiring, main busbar, CTs and PTs are not included.

## GENERAL

- Complies with IEC 62271-100, 62271-102 and 62271-200
- Metal clad, fully compartmentalized panel
- Horizontal isolation, horizontal draw-out & floor mounted trolley type VCB
- Panel readily extensible on both sides
- Panel is designed to meet temperature rise limits as per Standards
- Fully type tested at renowned laboratories
- Partition class is PM
- Mechanical endurance class is M2
- Electrical endurance class is E2
- Loss of Service Continuity category is LSC2B
- Indoor type panel with ingress protection rating IP-4X & IP-53 (For 12kV, 26.3kA)

## SAFETY

- Automatic independent safety shutters to prevent accidental contact with live parts
- Pad lockable door to ensure operator safety
- All operations are behind close door

## USER FRIENDLY

- Compact, light weight & hence easy to maneuver
- Generous space for cable termination
- Safety Shutters with individual padlocking facility are available.  
Both the shutters can be independently kept in open or close position during maintenance.
- Draw out and fixed type PT available

## UNIQUE

- Inbuilt anti-pumping feature in VCB
- Current rating upto 3150A with natural cooling
- Internal arc classification AFLR upto 40kA for 1 second and 50kA for 0.5 second (for full panel only)
- Compact and safe

# TECHNICAL SPECIFICATIONS



**VCB Compartment**



**Busbar Compartment**

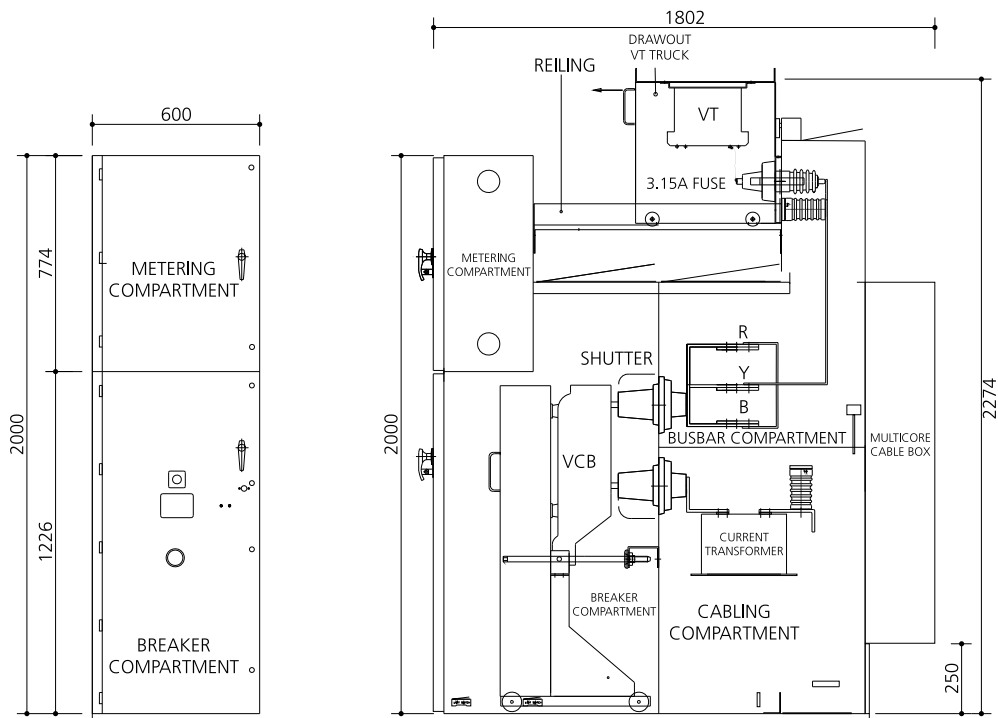
Standards	IEC 62271-100, IEC 62271-102, IEC62271-200				
Voltage	12kV		24kV	36kV	
Frequency	50 Hz				
Normal current (A)	630, 800 1250, 2000	800, 1250 2000, 3150	800, 1250 2000, 3150	630, 1250 2000	800, 1250 2000
Short time current rating	26.3kA	40kA	50kA	25kA	31.5kA
Duration of short circuit withstand	3 sec				
Making Capacity	65.75kA	100kA	125kA	62.5kA	79kA
Impulse withstand voltage	75kVp			125kVp	170kVp
One minute power frequency withstand	28kV (rms)			50kV (rms)	70kV (rms)
Suitable for operating sequence	O-0.3 sec-CO-3 min-CO				
Break time	<3 cycles				
Mechanical life	>10,000 operations				
Degree of protection	IP4X				
Closing and tripping coil voltage	24V, 110V, 220V DC				
Spring charging motor voltage	24V, 110V, 220V DC/230V AC				
Auxiliary contacts*	6NO + 6NC				

\* 12NO+12NC auxiliary contacts can be given on request for 40kA VCBs. \* 5NO+5NC auxiliary contacts are there for 11kV, 630/800/1250A, 26.3kA VCBs.

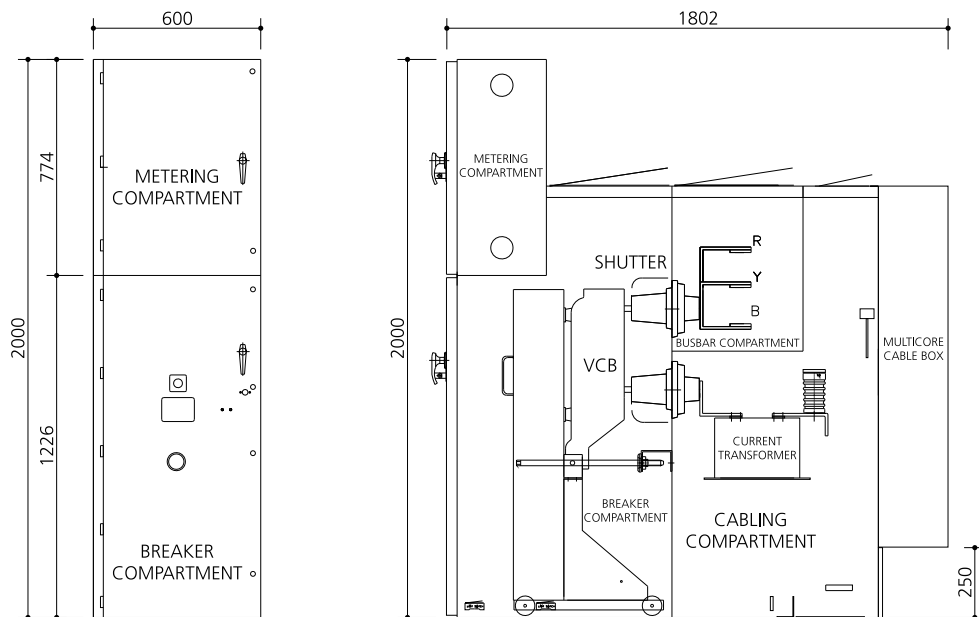


# DIMENSIONAL DRAWING

## 12KV, 630A, 26.3KA Full Panel With PT

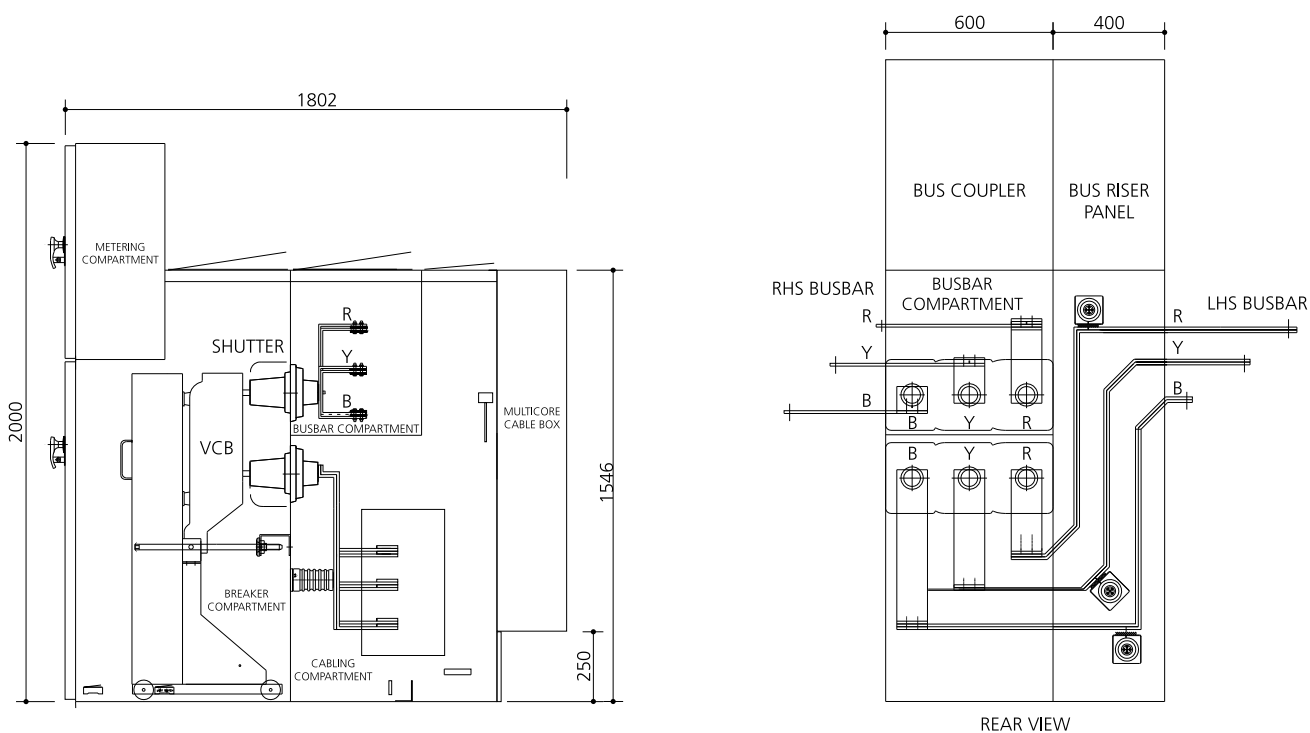


## 12KV, 630A, 26.3KA Full Panel Without PT

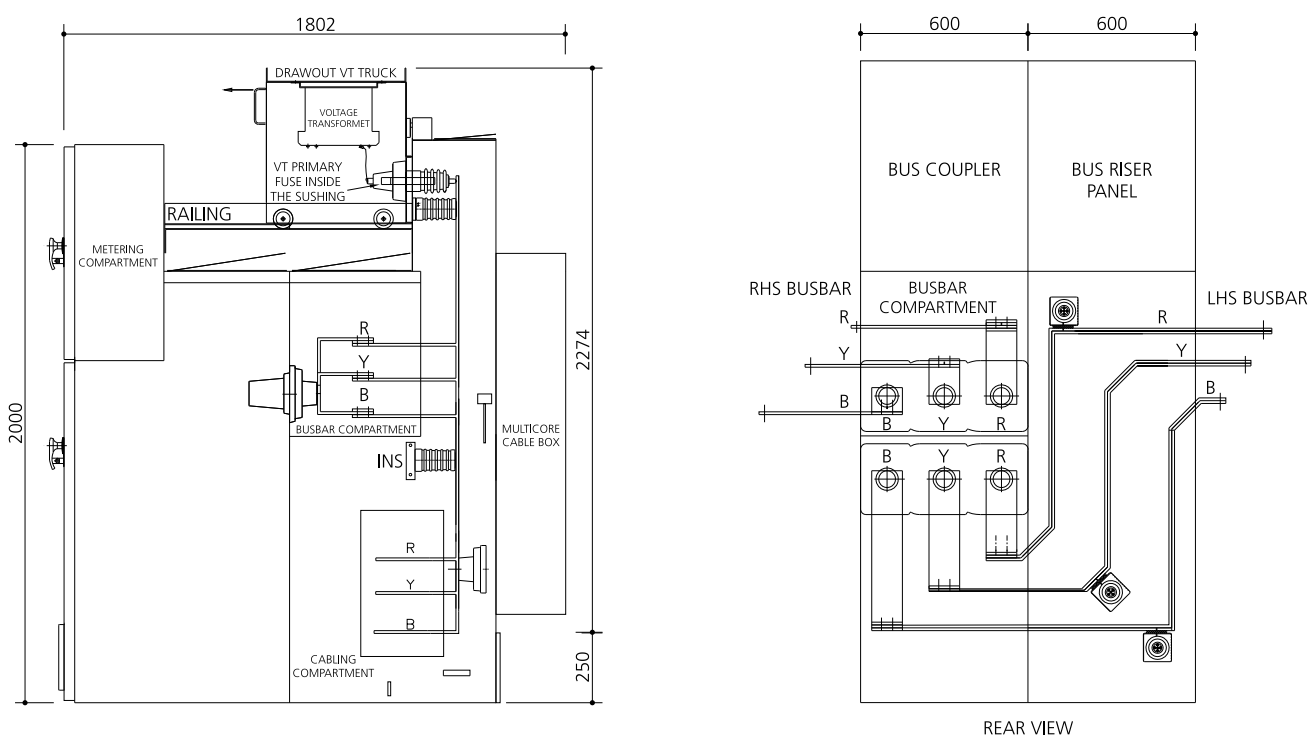


# DIMENSIONAL DRAWING

## 12KV, 630A, 26.3KA Bus coupler Panel



## 12KV, 630A, 26.3KA Bus Riser Panel With Bus PT

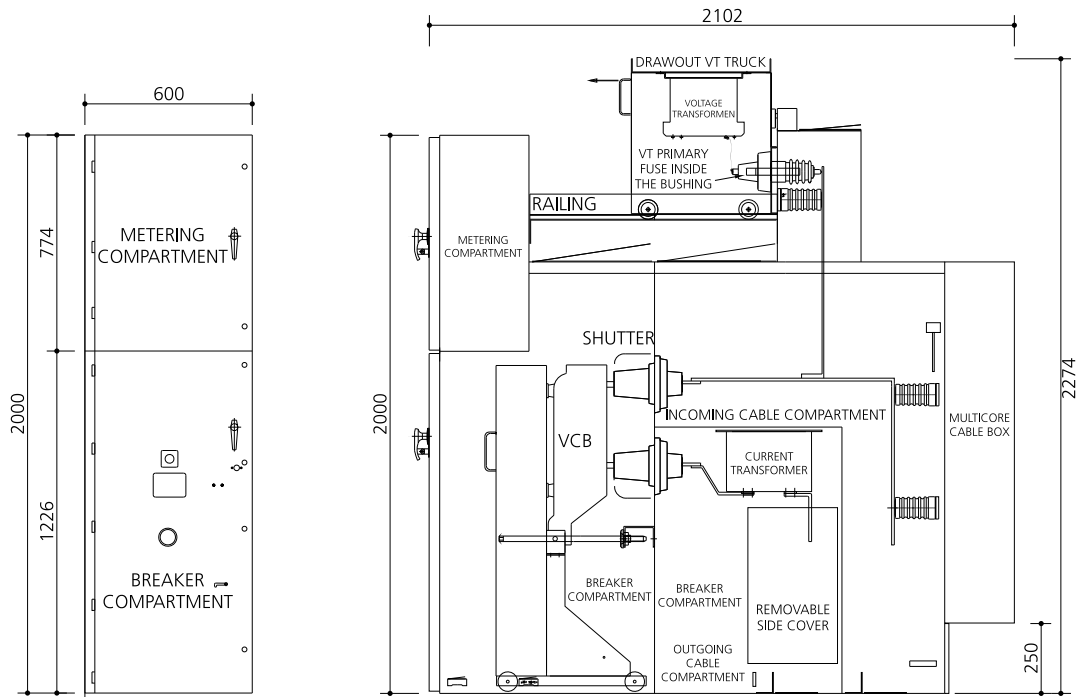


\* If the bus riser panel is without bus PT, its width will be 400mm.

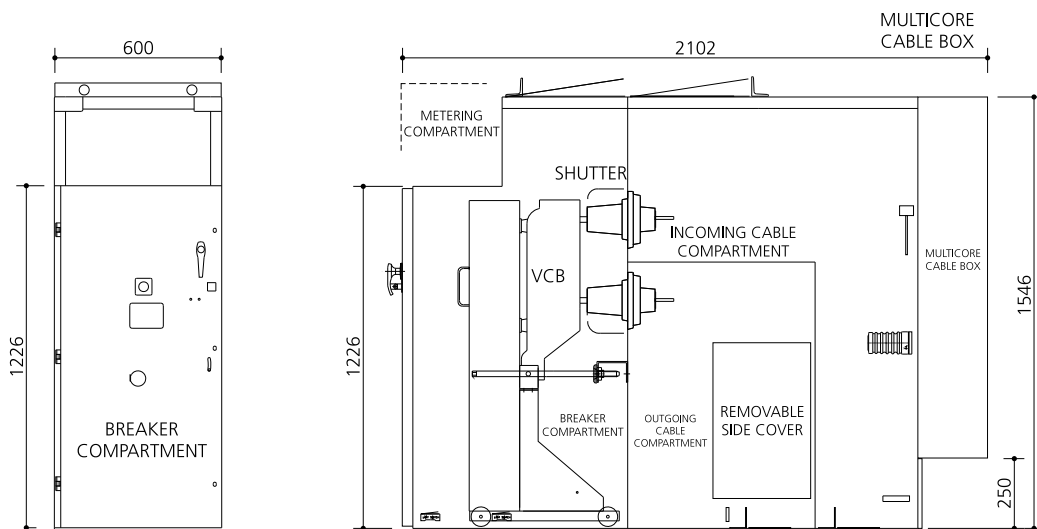


# DIMENSIONAL DRAWING

## 12KV, 630A, 26.3KA ICOG Full Panel With PT

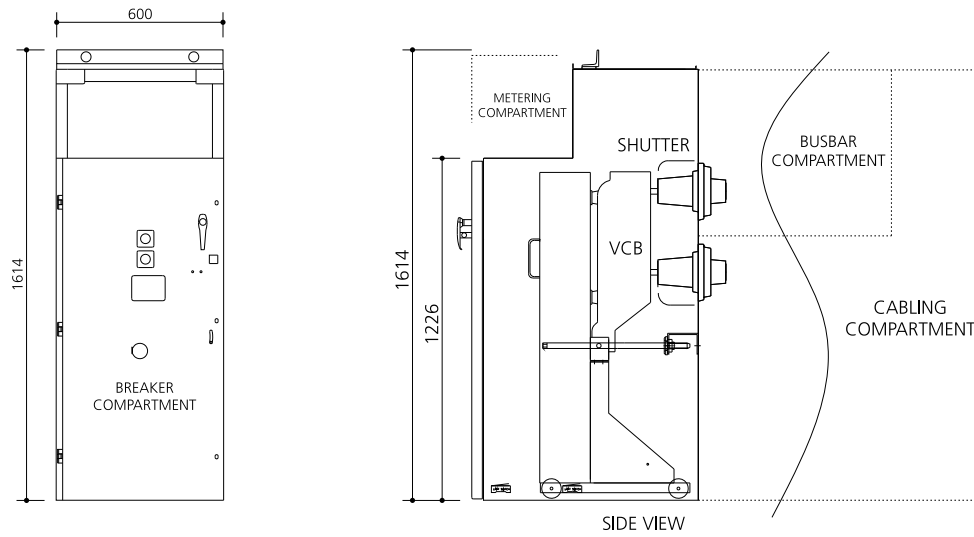


## 12KV, 630A, 26.3KA Half ICOG Full Panel Without CT, PT

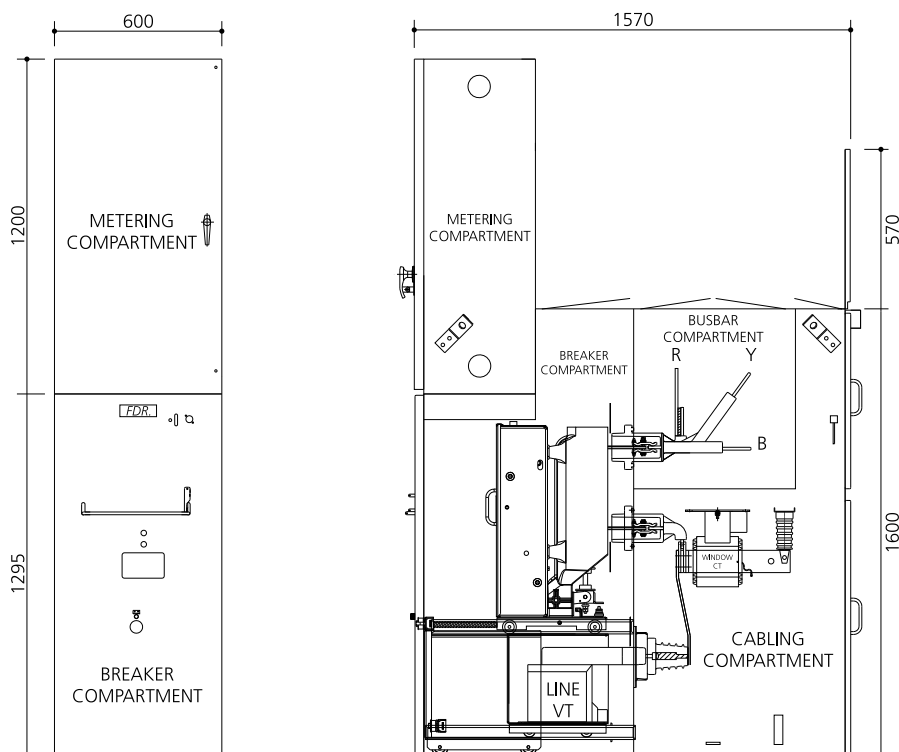


# DIMENSIONAL DRAWING

## 12KV 630A, 26.3KA Subcubicle

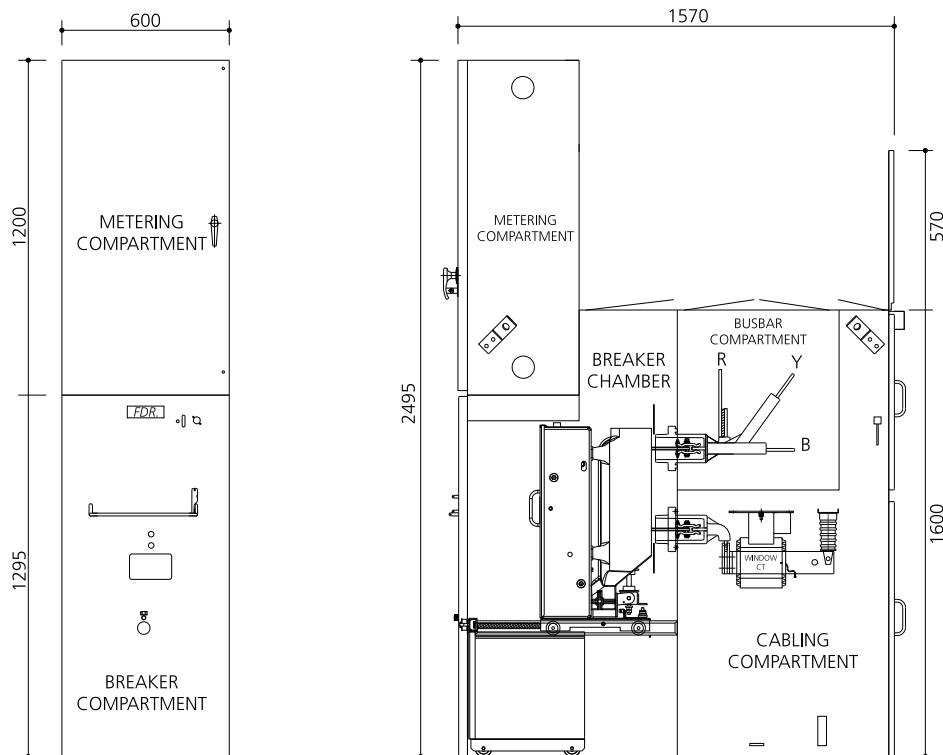


## 12KV, 800A, 40KA Full Panel With PT

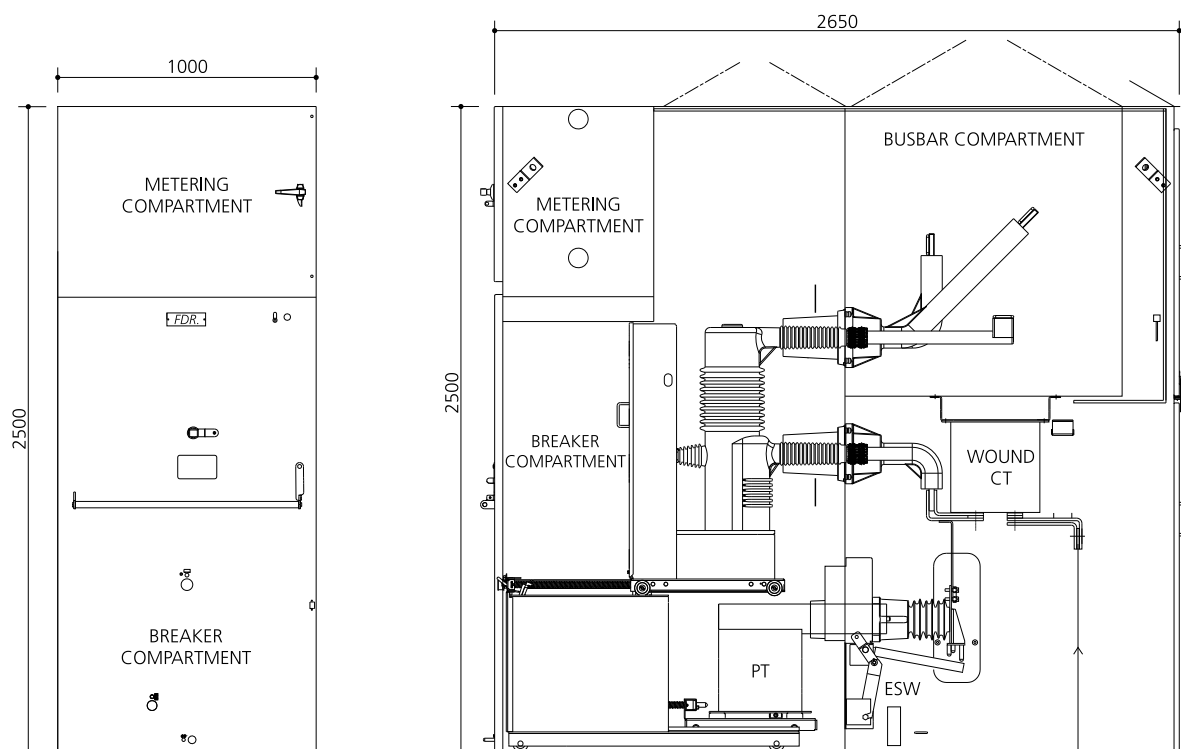


# DIMENSIONAL DRAWING

## 12KV, 800A 40KA Full Panel Without PT



## 33kV, 800A, 31.5kA Full Panel with PT



# DIMENSIONS

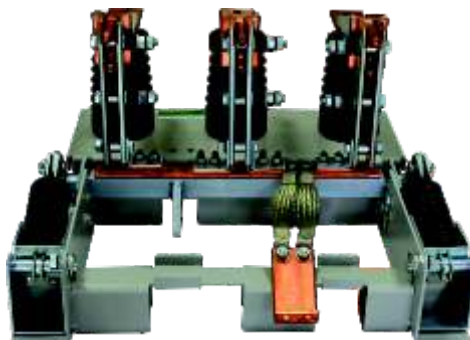
Current Rating(A)		630	800	1250	2000
Rated voltage	Dimensions				
12kV (26.3kA)	Width (mm)	600	600	600	800
	Depth (mm)	1802	1802	1802	2102
	Height (mm)	2274	2274	2274	2274
24kV (25kA)	Width (mm)	900		900	900
	Depth (mm)	2372		2372	2372
	Height (mm)	2300		2300	2300
36kV (31.5kA)	Width (mm)		1000	1000	1000
	Depth (mm)		2650	2650	2650
	Height (mm)		2500	2500	2500

Current Rating(A)		800	1250	2000	3150
Rated voltage	Dimensions				
12kV (40kA)	Width (mm)	600	600	800	1000
	Depth (mm)	1570	1570	1970	1970
	Height (mm)	2495	2495	2495	2495

\*Depth may vary with cable size and number of current transformers. \*Height may change (increase/decrease) depending on LV components/Relays.  
 \* All dimensions are in mm.

## OPTIONAL ACCESSORIES

- **Surge arresters**
- **Annunciator**
- **Power pack**
- **Earthing Truck**  
Earthing truck can be provided to earth either line or busbar during maintenance.
- **Earthing Switch**  
Integral earthing switch can be provided for earthing cable/line. Bus earthing switch can also be provided in a separate bus earthing panel. Earth switch are provided with full making capacity.





# SAFETY INTERLOCKS

## 1. SECONDARY DISCONNECTING SWITCH (SDS) INTERLOCKS

- VCB cannot be racked in unless the SDS plug is inserted.
- SDS plug cannot be removed when VCB is in service or intermediate position.
- SDS plug can be removed only when the VCB is in test or isolated position.

## 2. BREAKER RACK IN/RACK OUT INTERLOCKS

- VCB cannot be racked in/racked out when it is in closed position and is possible only when it is in open position.
- VCB can be closed only when it is either in test or service position
- VCB cannot be closed in the intermediate position.

## 3. EARTHING SWITCH INTERLOCKS

- Earthing switch cannot be closed when VCB is in service position.
- VCB cannot be racked in from isolated or test position to service position when earthing switch is closed.
- Earthing switch can be closed only when VCB is in isolated or test position.

## 4. OTHER INTERLOCKS

- VCB cannot be closed electrically unless spring is fully charged.
- VCB compartment door cannot be opened when VCB is in service position & can be opened only when the VCB is in test position
- Safety shutter opens automatically when the VCB is racked in the service position.
- Safety shutter closes automatically when the VCB is racked out from the service position.

\* Rear door interlock can be provided on request. Rear door cannot be opened when the VCB is in service position and can be opened only when the VCB is in test position

# ORDERING PARAMETERS

Application	Feeder/Transformer/Motor/Capacitor/Generator Protection/Other			
Voltage	12kV		24kV	36kV
Current Rating (A)	630, 800, 1250, 2000	800, 1250, 2000, 3150	630, 1250, 2000	800, 1250, 2000
Short Circuit Breaking Capacity	26.3kA	40kA / 50kA	25kA	31.5kA
Panel Option	Full Panel/Half Panel/ICOG/Sub-cubicle			
Panel Version	With PT/Without PT			
Frequency	50 Hz			
Busbar Type	Copper/Aluminium			
CT Details	Ratio/Burden/Accuracy Class			
PT Details	Ratio/Burden/Accuracy Class			
Meters	A/V/MFM/TVM/Other			
Control Supply Voltage	24/110/220V DC or 230V AC			



# Get the Switchgear Training Edge!

Aimed at maximizing productivity, conserving energy, minimizing costs and enhancing safety, our Electrical & Automation training programmes have benefitted over 1.15 Lakh professionals in the last 27 years. These training programmes are highly beneficial as they provide right exposure and impart knowledge on selection, installation, maintenance and testing of Electrical & Automation products.

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- Low Voltage & Medium Voltage Switchgear
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- Energy Conservation & Management

**Please contact any of the training centres for participation and detailed training programme schedule.**



### Pune

Larsen & Toubro Limited  
Switchgear Training Centre  
T-156/157, MIDC, Bhosari,  
Pune: 411 026.  
Tel: (020) 2712 0037 / 2712 0653  
Fax: (020) 2712 2933  
E-mail : [STC-PUNE@LNTEBG.COM](mailto:STC-PUNE@LNTEBG.COM)



### Lucknow

Larsen & Toubro Limited  
Switchgear Training Centre  
C-6&7, UPSIDE, P.O. Sarojini Nagar,  
Lucknow: 226 008.  
Tel: (0522) 247 6015 / 9794454455  
Fax: (0522) 247 6015  
E-mail : [STC-LUCKNOW@LNTEBG.COM](mailto:STC-LUCKNOW@LNTEBG.COM)



### Delhi

Larsen & Toubro Limited  
Switchgear Training Centre  
32, Shivaji Marg, Near Moti Nagar Metro Station  
P.O. Box 6223, New Delhi: 110015.  
Tel: +91 011 41419515 / 41419516 / 41419500  
Fax: +91 011 41419600  
E-mail : [STC-DELHI@LNTEBG.COM](mailto:STC-DELHI@LNTEBG.COM)



### Coonoor

Larsen & Toubro Limited  
Switchgear Training Centre Ooty-Coonoor  
Main Road, Yellanahalli  
P.O., The Nilgiris - 643 243.  
Tel: (0423) 251 7107  
Fax: (0423) 251 7158  
E-mail : [STC-COONOOR@LNTEBG.COM](mailto:STC-COONOOR@LNTEBG.COM)



### Vadodara

Larsen & Toubro Limited  
Switchgear Training Centre  
Behind L&T Knowledge City,  
Near Village Ankhola,  
Vadodara - 390 019.  
Tel: +91 265 245 7805  
E-mail : [STC-VADODARA@LNTEBG.COM](mailto:STC-VADODARA@LNTEBG.COM)



### Kolkata

Larsen & Toubro Limited  
Switchgear Training Centre  
4th Floor, 3-B, Shakespeare Sarani,  
Kolkata: 700071  
Tel: +91 033 44002151  
E-mail : [STC-KOLKATA@LNTEBG.COM](mailto:STC-KOLKATA@LNTEBG.COM)

## Electrical Standard Products (ESP) Branch Offices:

### REGISTERED OFFICE AND HEAD OFFICE

L&T House, Ballard Estate  
P. O. Box 278  
**Mumbai 400 001**  
Tel: 022-67525656  
Fax: 022-67525858  
Website: www.Larsentoubro.com

### ELECTRICAL STANDARD PRODUCTS (ESP)

501, Sakar Complex I  
Opp. Gandhigram Rly. Station  
Ashram Road  
**Ahmedabad 380 009**  
Tel: 079-66304006-11  
Fax: 079-66304025  
e-mail: esp-ahm@LNTEBG.com

38, Cubbon Road, P. O. Box 5098  
**Bangalore 560 001**  
Tel: 080-25020100 / 25020324  
Fax: 080-25580525  
e-mail: esp-blr@LNTEBG.com

131/1, Zone II  
Maharana Pratap Nagar  
**Bhopal 462 011**  
Tel: 0755-3080511 / 05 / 08 / 13 / 17 / 19  
Fax: 0755-3080502  
e-mail: esp-bho@LNTEBG.com

Plot No. 559, Annapurna Complex  
Lewis Road  
**Bhubaneswar 751 014**  
Tel: 0674-6451342, 2436690, 2436696  
Fax: 0674-2537309  
e-mail: nayakd@LNTEBG.com

SCO 32, Sector 26-D  
Madhya Marg, P. O. Box 14  
**Chandigarh 160 019**  
Tel: 0172-4646840, 4646853  
Fax: 0172-4646802  
e-mail: esp-chd@LNTEBG.com

L&T Construction Campus  
TC-1 Building, II Floor  
Mount-Poonamallee Road  
Manapakkam  
**Chennai 600 089**  
Tel: 044-2270 6800  
Fax: 044-22706940  
e-mail: esp-maa1@LNTEBG.com

67, Appuswamy Road  
Post Bag 7156  
Opp. Nirmala College  
**Coimbatore 641 045**  
Tel: 0422-2588120 / 1 / 5  
Fax: 0422-2588148  
e-mail: esp-cbe@LNTEBG.com

Khairasol, Degaul Avenue  
**Durgapur 713 212**  
Tel: 2559848, 2559849, 2559844  
Fax: 0343-2553614  
e-mail: esp-dgp@LNTEBG.com

5, Milanpur Road, Bamuni Maidan  
**Guwahati 781 021**  
Tel: +91 8876554410 / 8876554417  
Fax: 361-2551308  
e-mail: hazrasudipto@LNTEBG.com

II Floor, Vasantha Chambers  
5-10-173, Fateh Maidan Road  
**Hyderabad 500 004**  
Tel: 040-67015052  
Fax: 040-23296468  
e-mail: esp-hyd@LNTEBG.com

Monarch Building, 1st Floor  
D-236 & 237, Amrapali Marg  
Vaishali Nagar  
**Jaipur 302 021**  
Tel: 0141-4385914 to 18  
Fax: 0141-4385925  
e-mail: esp-jai@LNTEBG.com

Akashdeep Plaza, 2nd Floor  
P. O. Golmuri  
**Jamshedpur 831 003**  
Jharkhand  
Tel: 0657-2312205 / 38  
Fax: 0657-2341250  
e-mail: esp-jam@LNTEBG.com

Skybright Bldg; M. G. Road  
Ravipuram Junction, Ernakulam  
**Kochi 682 016**  
Tel: 0484-4409420 / 4 / 5 / 7  
Fax: 0484-4409426  
e-mail: esp-cok@LNTEBG.com

3-B, Shakespeare Sarani  
**Kolkata 700 071**  
Tel: 033-44002572 / 3 / 4  
Fax: 033-22821025 / 7587  
e-mail: esp-ccu@LNTEBG.com

A28, Indira Nagar, Faizabad Road  
**Lucknow 226 016**  
Tel: 0522-4929905 / 04  
Fax: 0522-2311671  
e-mail: esp-Lko@LNTEBG.com

No: 73, Karpaga Nagar, 8th Street  
K. Pudur  
**Madurai 625 007**  
Tel: 0452-2537404, 2521068  
Fax: 0452-2537552  
e-mail: esp-mdu@LNTEBG.com

L&T Business Park  
Tower B, 5th Floor  
Saki Vihar Road, Powai  
**Mumbai 400 072**  
Tel: 022-67052874 / 2737 / 1156  
Fax: 022-67051112  
Email: esp-bom@Lntebg.com

12, Shivaji Nagar  
North Ambajhari Road  
**Nagpur 440 010**  
Tel: 0712-2260012 / 6606421  
Fax: 2260030 / 6606434  
e-mail: esp-nag@LNTEBG.com

32, Shivaji Marg  
P. O. Box 6223  
**New Delhi 110 015**  
Tel: 011-41419514 / 5 / 6  
Fax: 011-41419600  
e-mail: esp-del@LNTEBG.com

L&T House  
P. O. Box 119  
191/1, Dhole Patil Road  
**Pune 411 001**  
Tel: 020-66033395 / 66033279  
Fax: 020-26164048 / 26164910  
e-mail: esp-pnq@LNTEBG.com

Crystal Tower,  
4th Floor, G. E. Road  
Telibandha  
**Raipur - 492 006**  
Tel: 0771-4283214  
e-mail: esp-raipur@LNTEBG.com

3rd Floor  
Vishwakarma Chambers  
Majura Gate, Ring Road  
**Surat 395 002**  
Tel: 0261-2473726  
Fax: 0261-2477078  
e-mail: esp-sur@LNTEBG.com

Radhadaya Complex  
Old Padra Road  
Near Charotar Society  
**Vadodara 390 007**  
Tel: 0265-6613610 / 1 / 2  
Fax: 0265-2336184  
e-mail: esp-bar@LNTEBG.com

Door No. 49-38-14/3/2, 1st floor,  
NGGO's Colony, Akkayyapalem,  
**Vishakhapatnam - 530016**  
Tel: 0891 279 1126, 271 1125  
Fax: 0891 279 1100  
e-mail: esp-viz@LNTEBG.com

Product improvement is a continuous process. For the latest information and special applications, please contact any of our offices listed here.



Larsen & Toubro Limited Electrical Standard Products  
Powai Campus, Mumbai 400 072  
**Customer Interaction Center (CIC)**  
BSNL / MTNL (toll free) : 1800 233 5858  
Reliance (toll free) : 1800 200 5858  
Tel : 022 6774 5858, Fax : 022 6774 5859  
E-mail : cic@LNTEBG.com Website : www.LNTEBG.com