EXCEL POWER SWITCHGEAR PVT LTD

11kV Indoor Metal Clad Vacuum Switchgear

TYPE : EPS-C-11

VOLTAGE : 12 kV

Quality is a Responsibility

Excel Power Switchgear, a high tech manufacturing unit established in 1998, is engaged in R&D, Production, and Manufacturing of Low & Medium Voltage Switchgear. Since then, Our company has displayed a rapid growth in the switchgear industry by attaching primary importance to customer oriented approach and by producing quality products. Our present turnover being 20 million INR, is expected to raise to the amount of 50 million INR just within the next two years.

Excel manufactures a wide range of reliable and dependable switchgear products, which is widely recognized by all clients and consultants. Impressive investments have been made in production machineries. Many sophisticated testing facilities and type tests done in external labs guarantee high quality of our equipment and upto date product range.

The Low & Medium Voltage Switchgear produced has been successfully type tested at national testing institution CRPI, Bangalore as per relevant IS / IEC requirement.

Since Excel started catering to international market by exporting their 11kV/33kV Vacuum Switchgear Panels, the need for testing these products at an international testing institution has arisen. The company will shortly complete the type testing process in CESI Italy/ KEMA Holland successfully.

It is a proven fact that Excel products command a respected clientele including prestigious customers from various sectors. Their repeat orders prove as a testimony for our quality products and customer satisfaction.

Our goal is to provide competitively priced products, supported by reliable after-sales service. The success resulting from our high quality manufacturing operations and designs emboldens the company to progressively capture wider markets both in India and abroad.

SALIENT FEATURES:

1. Conforms to IEC Standard.
2. Type Tested for capacitor switching application.
3. Compatible with SCADA.
4. Horizontal isolation & horizontal withdrawal from panel.
5. Positive mechanical and electrical interlock.
6. Interchangeability.
7. Maintenance free.
8. High degree of operator safety.
9. Extensible on either side.

DRAW-OUT TYPE SWITCHGEAR CONSTRUCTION :

SWITCHGEAR CUBICLE:

The cubicle is made of high grade sheet steel by precision punching, cutting, bending, and welding techniques, with the aid of numerically controlled machines. These ensure all cubicle to be identical in every dimension as well as rigid and distortion-resistant under short-circuit conditions along with transport conditions.

Thus fabricated, the cubicle is painted by epoxy powder coating which provides protection against corrosion. The construction complies fully with the requirement of a metal clad enclosure as defined in IEC 298.

Metal Clad refers to a metal enclosed switchgear in which components are arranged in separate chambers with Metal Partitions intended to be earthed.

Standard Degree of Ingress Protection is IP4X as defined in IEC 529 and for that of partitions, is IP3X. Further more, Higher Degrees of Ingress Protection are also made available on request.

Each Cubicle Unit is Subdivided into the following chambers:

- BUSBAR CHAMBER
- CIRCUIT BREAKER CHAMBER
- CABLE CONNECTION CHAMBER
- METERING CHAMBER

SAFETY INTERLOCKS :

The switchgear is equipped with all necessary interlocks to prevent any maloperation. Basically the following interlocks are provided :

1. The circuit breaker can only be operated in Service & Test position when the interlocks are properly engaged preventing the trolley from being moved in any direction.

2. The trolley interlock can only be released if the circuit breaker is open. Therefore it is only possible to move the circuit breaker trolley in either direction between Service & Test position if the breaker is open.

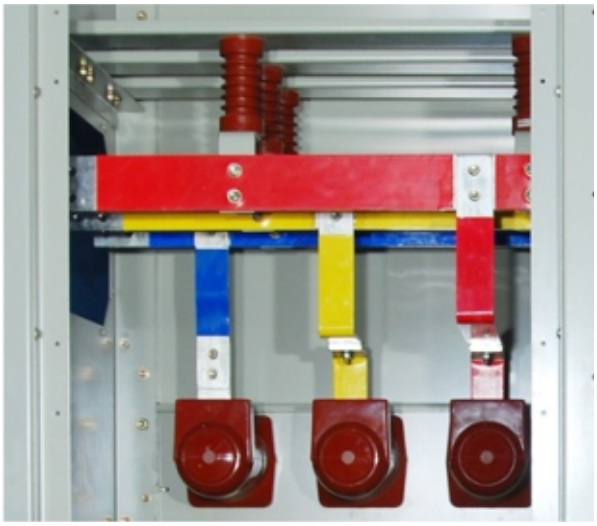
3. The earthing switch (optional) cannot be closed when the circuit breaker trolley is in Service position or the circuit breaker trolley cannot be moved in to Service position when the earthing switch is closed.

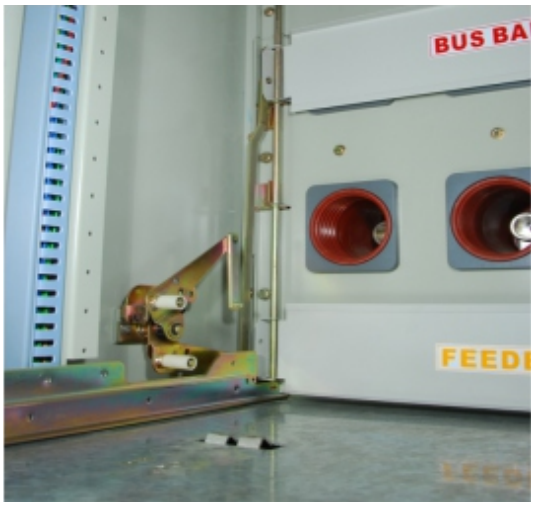
4. Interchangeability of circuit breaker trolley is only possible with the identical trolley of the same ratings, and this is secured by means of interlock pins.

The above mechanical interlocks are also supported by the usual and necessary electrical interlocks for each switchgear unit.

BUSBAR CHAMBER:

The busbar chamber contains highly conductive, tin- plated or insulated flat, rectangular copper bars of proper current carrying cross-section supported by epoxy resin cast insulators which are rigid enough to withstand all thermal and electrodynamic stress. The Flat tee off connections join the busbar directly to the contact spouts of the individual feeder. The Busbars have been designed to be generally maintenance free, but access to them can be gained by removal of the bolted pressure relief flap on the Busbar Chamber (for the main bus bar) and/ or by opening the rear cover of this chamber. The end covers are easily removable to permit extension work to be carried out without disturbing the existing facilities.





EARTHING & SHUTTER MECHANISM:

A spring loaded copper-earth contact is mounted on the base of the circuit breaker chamber to ensure proper earthing of the movable structure on or between its two positions (Service & Test) by means of a sliding earthing contact under the VCB trolley.

CIRCUIT BREAKER CHAMBER :

The circuit breaker chamber is equipped with a Cassette Type Vacuum Circuit Breaker with horizontal isolation which can be mounted on a trolley for insertion. The trolley has both SERVICE and TEST locations within the chamber. Access to the Circuit Breaker is possible through a hinged and lockable front door. The Circuit Breaker can be operated with the front door closed.

Each Circuit Breaker Chamber comprises individually operated metallic shutters for BUSBAR and CABLE connection and a sliding earthing connection.

VACUUM CIRCUIT BREAKER :

VCB Type EPS-C-11 has been designed and type tested in accordance with IEC 62271-100 and IS 13118.

The Vacuum Circuit Breaker is the heart of the Switchgear which consists of the Vacuum Interrupter, spring charged motor, closing solenoid, opening solenoid, anti pumping device, contact arm with isolating contact, buffer system, with-drawable trolley and multi pole control wiring plug & socket through which the circuit breaker is coupled with the control and protection circuit. The With-drawable trolley mechanism establishes the mechanical connection between the panel and the circuit breaker.

Operating Mechanism : The mechanism employed in the circuit breaker is stored energy system that uses a charging motor to compress the closing spring. During the closing operation, the energy stored in the closing spring is released. This allows the mechanism to close the vacuum interrupter contacts, compress the contact pressure springs, charge the opening spring and overcome frictional force. When the circuit breaker is opened, the energy stored in the opening and contact pressure spring is released and the vacuum interrupter contacts are opened.

TECHNICAL FEATURES :

Spring Charging Motor

Rated Supply Voltage (Un)	:	11/ 220V AC / DC
Operating Range	:	85....110% Un
DC Power Consumption	:	80 Watts
AC Power Consumption	:	130VA
Starting Current	:	3A
Charging	:	5 sec

Closing Solenoid

Rated Supply Voltage (Un)	:	24/ 48/ 110/ 220
DC Operating Range	:	85...110% Un
DC Power Consumption	:	220 Watts
Closing Time	:	50 ms

Opening Solenoid

Rated Supply Voltage (Un)	:	24/ 48/ 110/ 220
DC Operating Range	:	70....110% Un
DC Power Consumption	:	220 Watts
Closing Time	:	30 ms

CABLE & CT CHAMBER :

The cable chamber normally contains cable contact spouts, cast resin wound or ring type current transformer, earthing switch (optional) lightning arrestor with adequate space for termination of power and control cables. The horizontal bus connection between current transformer and cable terminals are held by the epoxy cast resin support insulator wherever necessary.

To increase the safety in case of watering, all live parts are positioned at least 300mm above floor level. The cable termination height is more than 650mm above floor level.

The cable termination compartment is normally maintenance free, but any access is possible just by removal of the lower back cover of the switchgear.

METERING CHAMBER :

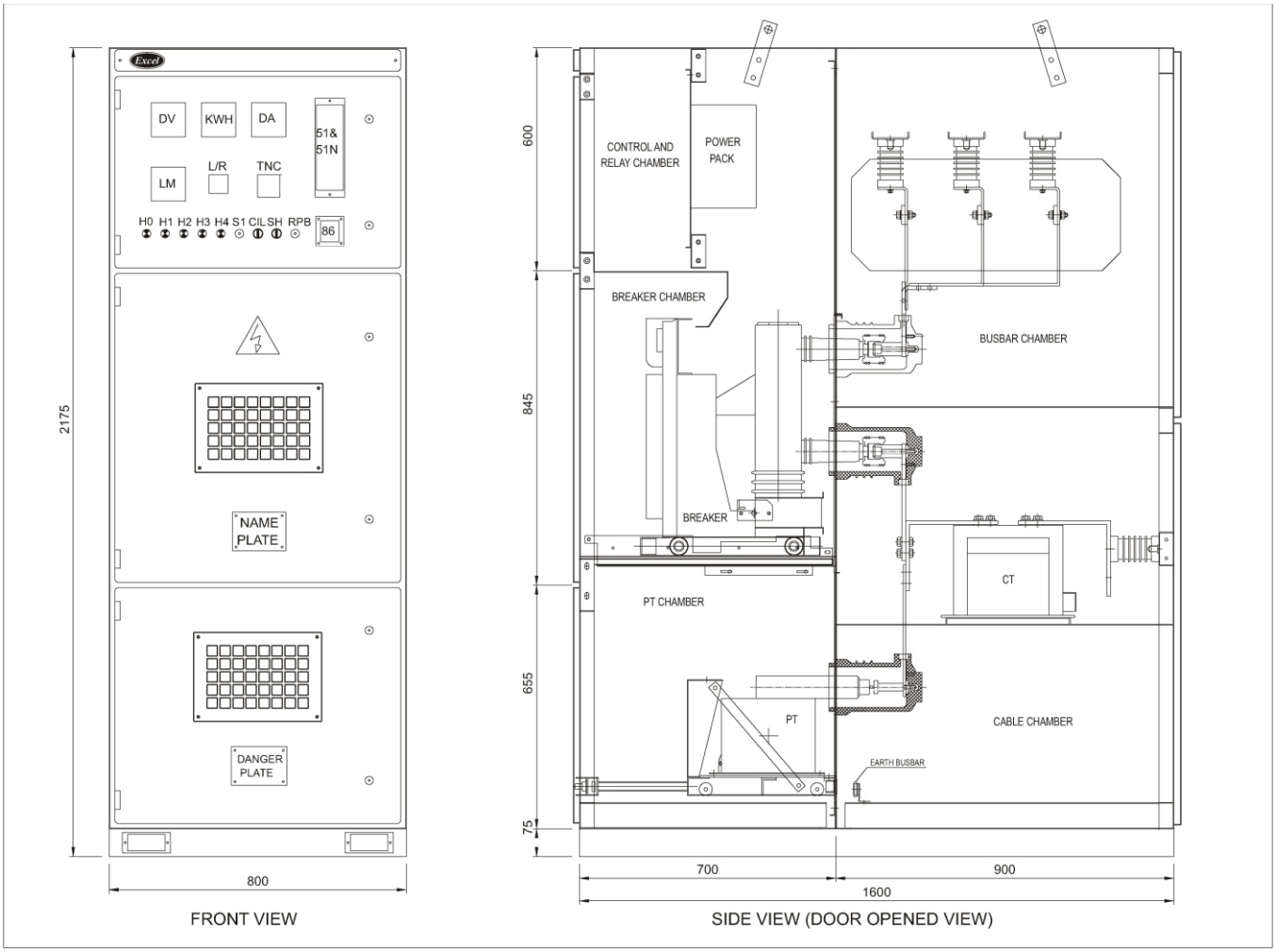
Metering chamber is equipped on top of the breaker chamber and encased separately from the high voltage section.

Based on customer's specification, protective relays, meters, control switches, indicating lamps and other pilot devices are flush mounted on the hinged and lockable front door. Sufficient space is available inside the chamber to arrange all the secondary control equipment, fuses, MCB's, auxiliary relays, terminal blocks, etc.

DRAWOUT TYPE PT :

Potential transformers are mounted on a handle- operated, drawable trolley with isolating primary and secondary contacts. The Potential Transformers are of resin cast type protected by primary and secondary fuses.

General Drawing



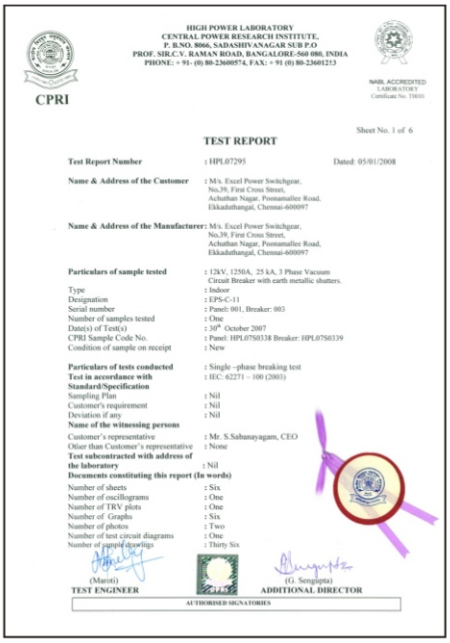
All Dimensions are in mm

Current Rating	Width	Depth	Height
630 / 1250 A	650 / 800	1600	2175
1600 / 2000 A	1000	1600	2175
2500 / 3150 A	1000	1800	2175

TECHNICAL CHARACTERISTICS

DESCRIPTION	UNIT					
TYPE REFERENCE		**EPS-C-11**				
TECHNICAL SPECIFICATION						
RATED VOLTAGE	kV	12				
RATED IMPULSE WITH STAND	kVpk	75				
RATED POWER FREQUENCY WITH STAND	kV	28				
FREQUENCY	Hz	50				
RATED NORMAL CURRENT	A	630	1250	2000	2500	3150
RATED SHORT CIRCUIT BREAKING CURRENT	kA	25		31.5 / 40		
RATED TRANSIENT RECOVERY VOLTAGE	kV	20.6				
RATED SHORT CIRCUIT MAKING CURRENT	kApk	62.5		78.75		
RATED OPERATING SEQUENCE		O-0.3sec-CO-3min-CO				
RATED DURATION OF SHORT CIRCUIT	sec	3				
DC COMPONENT	%	47				
RATED SINGLE CAPACITOR BREAKING CURRENT	A	400				
RATED CABLE CHARGING BREAKING CURRENT	A	25				
RATED CLOSING TIME	ms	50 ms				
RATED OPENING TIME	ms	30 ms				
APPLICABLE STANDARDS		IEC 60694		IEC 62271-100		IS 13118

TYPE TEST REPORT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CPRI

NABL ACCREDITED LABORATORY Certificate No. T0010

Sheet No. 1 of 6

TEST REPORT

Test Report Number : HPL07295 Dated: 05/01/2008

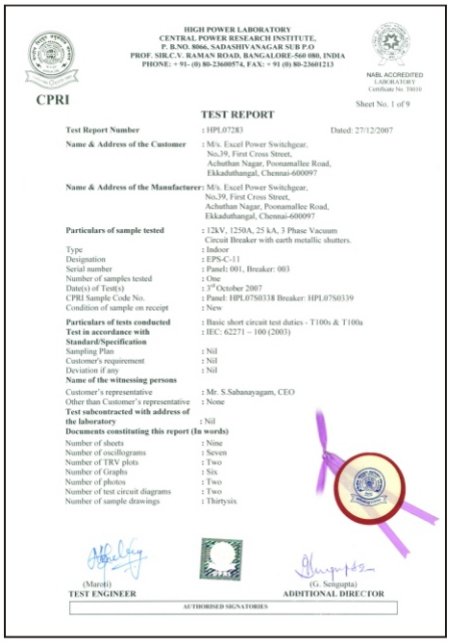
Name & Address of the Customer : M/s. Excel Power Switchgear, No.39, First Cross Street, Achuthan Nagar, Poonamallee Road, Ekkaduthangal, Chennai-600097

Name & Address of the Manufacturer: M/s. Excel Power Switchgear, No.39, First Cross Street, Achuthan Nagar, Poonamallee Road, Ekkaduthangal, Chennai-600097

Particulars of sample tested : 12kV, 1250A, 25 kA, 3 Phase Vacuum Circuit Breaker with earth metallic shutters.
Type : Indoor
Designation : EPS-C-11
Serial number : Panel: 001, Breaker: 003
Number of samples tested : One
Date(s) of Test(s) : 30th October 2007
CPRI Sample Code No. : Panel: HPL0750338 Breaker: HPL0750339
Condition of sample on receipt : New

Particulars of tests conducted : Single –phase breaking test
Test in accordance with : IEC: 62271 – 100 (2003)
Standard/Specification
Sampling Plan : Nil
Customer's requirement : Nil
Deviation if any : Nil
Name of the witnessing persons
Customer's representative : Mr. S.Sabanayagam, CEO
Other than Customer's representative : None
Test subcontracted with address of the laboratory : Nil
Documents constituting this report (In words)
Number of sheets : Six
Number of oscillograms : One
Number of TRV plots : One
Number of Graphs : Six
Number of photos : Two
Number of test circuit diagrams : One
Number of sample drawings : Thirty Six

(Maruti) TEST ENGINEER
(G. Sengupta) ADDITIONAL DIRECTOR
AUTHORISED SIGNATORIES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NABL ACCREDITED LABORATORY Certificate No. T0010

Sheet No. 1 of 9

TEST REPORT

Test Report Number : HPL07283 Dated: 27/12/2007

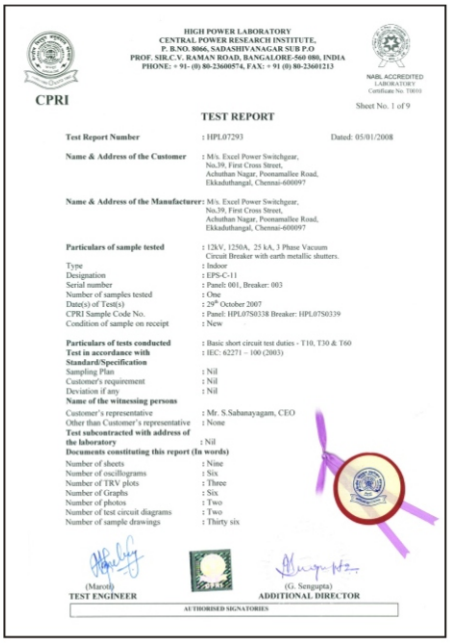
Name & Address of the Customer : M/s. Excel Power Switchgear, No.39, First Cross Street, Achuthan Nagar, Poonamallee Road, Ekkaduthangal, Chennai-600097

Name & Address of the Manufacturer: M/s. Excel Power Switchgear, No.39, First Cross Street, Achuthan Nagar, Poonamallee Road, Ekkaduthangal, Chennai-600097

Particulars of sample tested : 12kV, 1250A, 25 kA, 3 Phase Vacuum Circuit Breaker with earth metallic shutters.
Type : Indoor
Designation : EPS-C-11
Serial number : Panel: 001, Breaker: 003
Number of samples tested : One
Date(s) of Test(s) : 3rd October 2007
CPRI Sample Code No. : Panel: HPL0750338 Breaker: HPL0750339
Condition of sample on receipt : New

Particulars of tests conducted : Basic short circuit test duties - T100s & T100a
Test in accordance with : IEC: 62271 – 100 (2003)
Standard/Specification
Sampling Plan : Nil
Customer's requirement : Nil
Deviation if any : Nil
Name of the witnessing persons
Customer's representative : Mr. S.Sabanayagam, CEO
Other than Customer's representative : None
Test subcontracted with address of the laboratory : Nil
Documents constituting this report (In words)
Number of sheets : Nine
Number of oscillograms : Seven
Number of TRV plots : Two
Number of Graphs : Six
Number of photos : Two
Number of test circuit diagrams : Two
Number of sample drawings : Thirtysix

(Maruti) TEST ENGINEER
(G. Sengupta) ADDITIONAL DIRECTOR
AUTHORISED SIGNATORIES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CPRI

NABL ACCREDITED LABORATORY Certificate No. T0010

Sheet No. 1 of 9

TEST REPORT

Test Report Number : HPL07293 Dated: 05/01/2008

Name & Address of the Customer : M/s. Excel Power Switchgear, No.39, First Cross Street, Achuthan Nagar, Poonamallee Road, Ekkaduthangal, Chennai-600097

Name & Address of the Manufacturer: M/s. Excel Power Switchgear, No.39, First Cross Street, Achuthan Nagar, Poonamallee Road, Ekkaduthangal, Chennai-600097

Particulars of sample tested : 12kV, 1250A, 25 kA, 3 Phase Vacuum Circuit Breaker with earth metallic shutters.
Type : Indoor
Designation : EPS-C-11
Serial number : Panel: 001, Breaker: 003
Number of samples tested : One
Date(s) of Test(s) : 29th October 2007
CPRI Sample Code No. : Panel: HPL0750338 Breaker: HPL0750339
Condition of sample on receipt : New

Particulars of tests conducted : Basic short circuit test duties - T10, T30 & T60
Test in accordance with : IEC: 62271 – 100 (2003)
Standard/Specification
Sampling Plan : Nil
Customer's requirement : Nil
Deviation if any : Nil
Name of the witnessing persons
Customer's representative : Mr. S.Sabanayagam, CEO
Other than Customer's representative : None
Test subcontracted with address of the laboratory : Nil
Documents constituting this report (In words)
Number of sheets : Nine
Number of oscillograms : Six
Number of TRV plots : Three
Number of Graphs : Six
Number of photos : Two
Number of test circuit diagrams : Two
Number of sample drawings : Thirty six

(Maruti) TEST ENGINEER
(G. Sengupta) ADDITIONAL DIRECTOR
AUTHORISED SIGNATORIES

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