



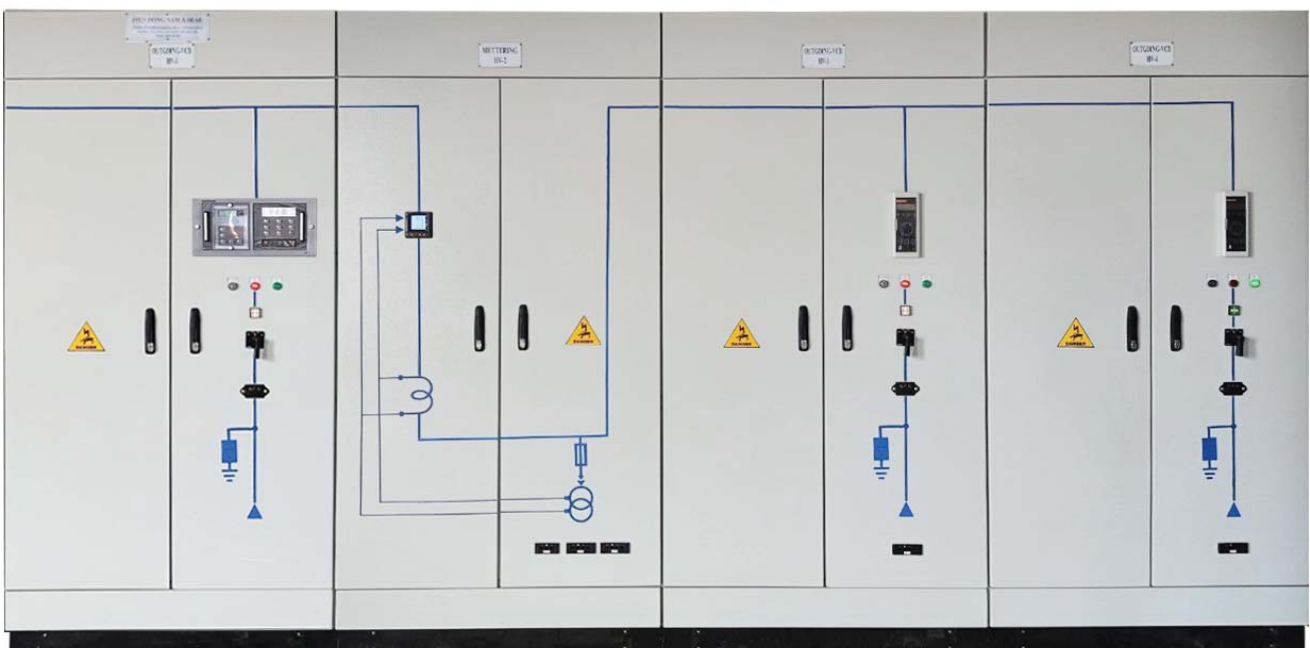
SEMV-H TYPE UP TO 36KV

METAL-CLAD SWITCHGEAR

SEMV-H are manufactured strictly in compliance with the local and international standards. Type tests are performed to ensure their reliability, as well as R&D efforts that are manufacturing to produce economical and easily-maintainable products

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General

SEMV-H metal-clad switchgear was designed with advanced international technology and has been comprehensively and successfully type-tested.

SEMV-H switchgear is typically used in power plants, transformer substations and switching substation of public utilities and is suitable to provide control and protection for motors, transformers, capacitors.

The rated voltage of SEMV-H up to 36kV, and the rated current ranges from 630A to 4000A. All SEMV-H switchgear with switching devices are equipped with VCB.

SEMV-H is especially suitable for the application in industrial and public utilities, such as iron and steel mill, mining, oil & gas, and infrastructure projects such as buildings, airports, pump stations etc.

The design of the SEMV-H switchgear conforms to IEC standards.



Excellent Performance

Comprehensive and Reliable Interlocking System

SEMV-H is equipped with a comprehensive system of preventive mechanical interlockings to protect the equipment operation and service personnel from dangers of maloperation. The interlockings are designed to prevent.

- A closed circuit breaker being inserted into or Withdrawn from the service position.
- A circuit breaker being closed in other than the service, test positions.
- A circuit breaker being racked into the service position if the secondary contacts plug has not been fitted.
- Insertion of the circuit breaker into service position or withdrawal from service position if the door of circuit breaker compartment is opened.
- Closing of earthing switch when the circuit breaker is locked in the service position.
- Opening of the door of cable compartment when the earthing switch IS in open position.
- Disengagement of secondary plug from socket when the circuit breaker is located at service position.

Shutter Locking System

SEMV-H is equipped with shutters in front of the spouts in the circuit breaker compartment and when the circuit breaker is in the test or pull-out position, the shutter will automatically close and lock to provide the designed IP protection and to prevent from mistake-opening which will cause lethal danger in some cases to the operating personnel during maintenance.

Design on Safety

On the top of all three high voltage compartments. SEMV-H is equipped with pressure relief flops, which will open automatically to the rear Side of switch-gear when pressure loading is enabled because of internal arcing faults in the corresponding compartment. The pressure relief flops protects from the following dangerous Situation which will endanger the operating personnel or extend the effect of the fault to the whole switchgear system:

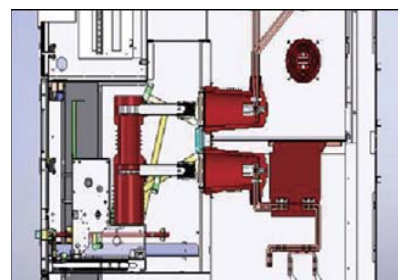
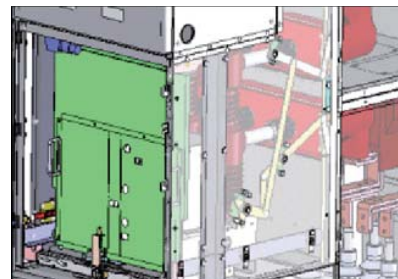
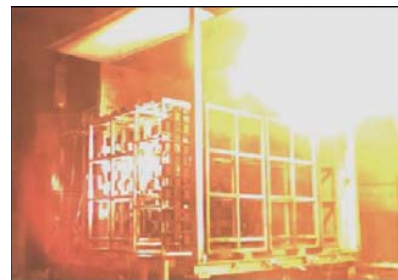
- Burn-through of barriers to adjacent compartments
- Burn-through of partitions to adjacent panels

Over-pressure loading to adjacent compartments and panels

Properly closed doors, shutters, etc open themselves
Ports of switchgear fly off.

Arc-proof

The enclosed of SEMV-H is designed with ingress protection degree of IP2X as per IEC 62271-200. The metallic and earthed enclosure protects the operational against the approach with live ports and against contact with moving parts inside the switchgear panel. It also protects the switchgear against the penetration of external bodies which could cause a severe short-circuit of the system. Although all specialists are in basic agreement that manufacturers and end users have to mind preventing faults in switchgear installations in which internal arcing occurs, however, it is also known that such faults cannot be completely prevented in all cases. This is the reason why in most countries the internal arcing test is a compulsory condition for medium voltage metal-clad switchgear. Thanks to its completed metal-clad design and its sturdy hinge and locking system of doors. SecoGear has successfully passed the internal arcing fault test in accordance to IEC 62271-200 in all three high voltage compartments.



Excellent Performance

Space Heaters

In order to avoid risk of condensation inside the switchgear due to humidity, SecoGear is equipped with space heaters in both cable and circuit breaker compartments. To guarantee efficiency, the space heaters should be permanently energized during installation and commissioning period, after that, space heaters can be permanently energized or be controlled by humidity sensors

Highest Resistance to Climate and Environment

SecoGear is equipped with the following components, which guarantee high level of independence of climatic and environmental conditions.

Epoxy resin embedded pole vacuum circuit breaker.

Ribbed insulators and bushings.

Totally enclosed under all operation conditions.

Thanks to these integrants, SecoGear had successfully passed the high altitude application test up to 2000m above the sea level, the grade II pollution test, the condensation test, the salty fog test. Etc.

Remote Control Solution

- Only for special order

Remote control from 0 central control room that is an indispensable requirement for intelligent switchgear system, the following functions of SecoGear are provided:

- Moving a motorized withdrawable unit into the test or service position.
 - Opening and closing of the switching device.
- Feeder earthing and short-circuiting with motor driven earthing switch.

Reliability

- 1 Low voltage and 3 high voltage compartments are completely separated from each other, which limits influence from the individual compartment and prevents the over spreading of accident.
 - SEMV-H is equipped with a Quick-action earthing switch with short-circuit making capability.
 - The busbar is protected by heat shrinkable material with high dielectric strength, and provided with inter-unit bushing to prevent travelling of arcing to other panels
- SEMV-H is outfitted with the highly reliable VCB with excellent electrical performance.

Safety

- The switchgear is designed with 0 number of interlocking systems to prevent maloperations.
 - The circuit breaker can only be moved from test position into service position and vice versa when the circuit breaker is opened.
 - The earthing switch can not be closed when the circuit breaker is in service position and in the positions from test to service.
 - The door of the cable compartment can be opened only when the earthing switch is closed, and at the same time the earthing switch can be opened only when the door is closed.
 - The secondary plug can only be inserted or removed when the circuit breaker is in the test position.
 - The circuit breaker can only be closed when the circuit breaker is precisely in the definite test or service position.
 - When the circuit breaker is removed from service position the metal shutters will close automatically.
 - The switchgear is internally arc proof.
 - All high voltage compartments are designed with pressure relief and pressure relief flaps located on the top of the switchgear
- Any overpressure inside the panel resulting from internal arcing is released by pressure relief flaps.

Adaptability

- The cable compartment provides ample space for easy connection of cables.
- Standard current Transformers, zero sequence current transformers, voltage transformers, surge arresters, relays and other instruments can be easily installed inside the switchgear.
- SecoVac vacuum circuit breakers with the same rating are interchangeable without any adjustment
- CNC punching and bending machine ensures high quality and consistent dimensions and weights of the cubicle.



Certificate and Partnership

DIRECTORATE FOR STANDARDS, METROLOGY AND QUALITY (STAMEQ)
VIETNAM CERTIFICATION CENTRE (QUACERT)



CERTIFICATE

This is to certify that the Quality Management System of
SOUTHEAST ASIA ELECTRICAL TRADING JOINT STOCK COMPANY

Head office: 115/9A Hamlet 1, Xuan Thoi Son Commune, Hoc Mon District, Ho Chi Minh City, Viet Nam
Representative Office: 196/1/15 Cong Hoa Street, Ward 12, Tan Binh District, Ho Chi Minh City, Viet Nam
Factory: D11/54C Quach Dieu Street, Hamlet 4, Vinh Loc A Commune, Binh Chanh District, Ho Chi Minh City, Viet Nam

has been assessed and found to conform with the requirement of the following standard
TCVN ISO 9001:2015 / ISO 9001:2015

Certification Scope: Manufacture, Trade and Installation of Electrical Panels Low Voltage and Medium Voltage up to 36 kV; Manufacture and Installation Cable Ladder and Cable Tray

Certificate Number: HT 4487.20.19

The validity of this Certificate: from to 25 September 2020 to 24 September 2023

Original Certification: 25 September 2020

The Director General of STAMEQ: 
MSc. Tran Van Vinh

The Chairman of the Certification Board: 
Dr. Pham Hong

The Director of QUACERT: 
MSc. Pham Le Cuong

QUACERT - 8 Hoang Quoc Viet, Cau Giay, Hanoi, Vietnam.
The validity of this certificate can be checked at website: www.quacert.gov.vn and www.iso-anz.org/register

Authorized License Certificate

Awarded to
SOUTHEAST ASIA ELECTRICAL TRADING JOINT STOCK COMPANY
196/1/15 Cong Hoa Street, ward 12, Tan Binh district, Ho Chi Minh City, Vietnam

LS ELECTRIC Co., Ltd. confirms that Southeast Asia Electrical Trading Joint Stock Company is authorized to manufacture, assemble, test and sell as follow;

Product
Susol LV Switchgear – MDB (Form 4B)
For upto 5000A(2000/2500/3200/4000/5000A), 100kA/1sec, 65kA/3sec

- ACB (Metasol) Panel 7 Species
- MCCB (Susol/Metasol) Panel 14 Species
- Junction Panel




Kwak Soo Hyuk
Southern East Asia Sales Director
LS ELECTRIC Co., Ltd.

This certificate is valid until December 11th, 2024

Vinacontrol CE

GIẤY CHỨNG NHẬN

CERTIFICATE
Số/ No.: 05236-QPV

Chứng nhận sản phẩm
This is to certify that the product

Tủ điện đóng cắt và tủ điều khiển hạ thế
Low-voltage switchgear and controlgear assemblies

Kiểu loại: Theo phụ lục kèm theo quyết định số 05236-QPV/QĐ-CNSPHC ngày 18/12/2018
Types: According to appendix attached to decision no. 05236-QPV/QĐ-CNSPHC dated 18/12/2018

Nhãn hiệu/ Trademark: SEAE
Của/ of

CÔNG TY TNHH THƯƠNG MẠI ĐIỆN ĐÔNG NAM Á
SOUTHEAST ASIA ELECTRICAL TRADING COMPANY LIMITED

Trụ sở chính: 115/9A ấp 1, xã Xuân Thới Sơn, huyện Hóc Môn, thành phố Hồ Chí Minh
Head office: 115/9A Hamlet 1, Xuan Thoi Son Commune, Hoc Mon District, Ho Chi Minh City
Văn phòng: 196/1/15 đường Cộng Hòa, phường 12, quận Tân Bình, thành phố Hồ Chí Minh
Office: 196/1/15 Cong Hoa Street, Ward 12, Tan Binh District, Ho Chi Minh City
Được sản xuất tại nhà máy: D11/54C Quách Diệu, ấp 4, xã Vĩnh Lộc A, huyện Bình Chánh, thành phố Hồ Chí Minh
Made in factory: D11/54C Quach Dieu, Hamlet 4, Vinh Loc A Commune, Binh Chanh District, Ho Chi Minh City

Phù hợp với tiêu chuẩn kỹ thuật quốc gia/ conforms to the technical regulation:
TCVN 7994-1:2009 (IEC 60439-1: 2004)

được phép sử dụng Dấu phù hợp tiêu chuẩn chất lượng/ and can bear the quality standard Conformity mark

Phương thức chứng nhận/ Certification mode: Phương thức 5/ Method 5
(Thông tư số 28/2012/TT-BKHCH ngày 12/12/2012 của Bộ Khoa học và Công nghệ/
Circular No. 28/2012/TT-BKHCH dated 12/12/2012 of the Ministry of Science and Technology)

Ngày ban hành/ Date issued: 18/12/2018
Hiệu lực đến/ Valid to: 17/12/2021

Tổ chức chứng nhận Vinacontrol
Vinacontrol Certification Body

Chủ tịch Hội đồng Chứng nhận
The Chairman of the Certification Board

PHAN VAN HUNG


TCVN 7994-1:2009


ĐỒ THỊNH THẮNG

Head Office: 81 Nguyen Thung Hoa, Hanoi, Vietnam
Tel: (+84-24) 3944-8099 / Fax: (+84-24) 3944-9051 / Website: www.vinacontrol.com

VIỆT NAM
THƯƠNG HIỆU CHỌN KHÁCH HÀNG TỰ NHIÊN
CONSUMER CHOICE BRAND
2018
MARK OF QUALITY

Certificate of Registration

Consumer Choice Brand Index (CCBI)

This is certify that



Southeast Asia Electrical trading Co.,Ltd
No. 1188A, Xuan Thoi Son ward, Hoc Mon dist, Ho Chi Minh city

Has been assessed and registered by The Intellectual Property Association of Ho Chi Minh City, Saigon Enterprises Network & met the criteria of Consumer Choice Brand Index 2018, under the supervision of The AQA International Quality Management System

Supporting Units
- Ministry of Science and Technology - Southern office Rep.
- Department of Intellectual Property office in Ho Chi Minh City
- Department of Copyright office in Ho Chi Minh City

Certification No: CCBI-0092-2018 Survey No: D648680E036
Date: 25-07-2018 Valid until: 25-07-2024

Chairman
The Intellectual Property Association of HCMC

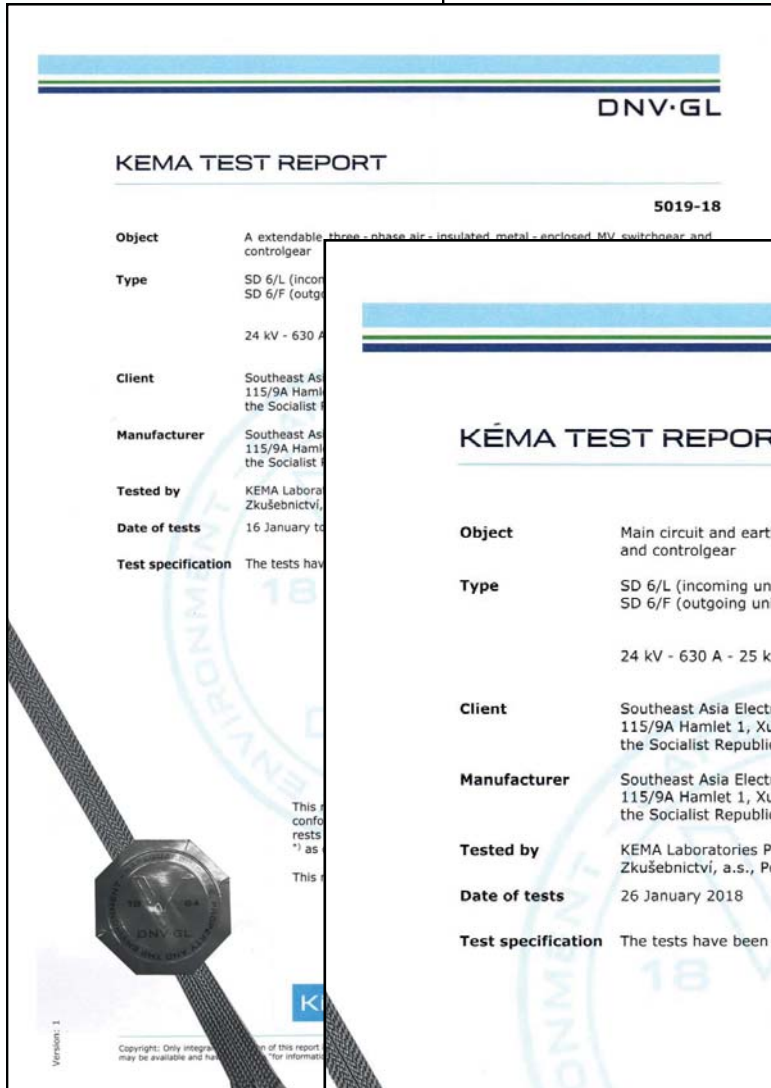
Ph.D NGUYEN VAN VIEN

Manager of Viet Nam
American Quality Assessors (AQA) International

Ph.D NGUYEN PHUC NGHIEP



Certificate and Partnership



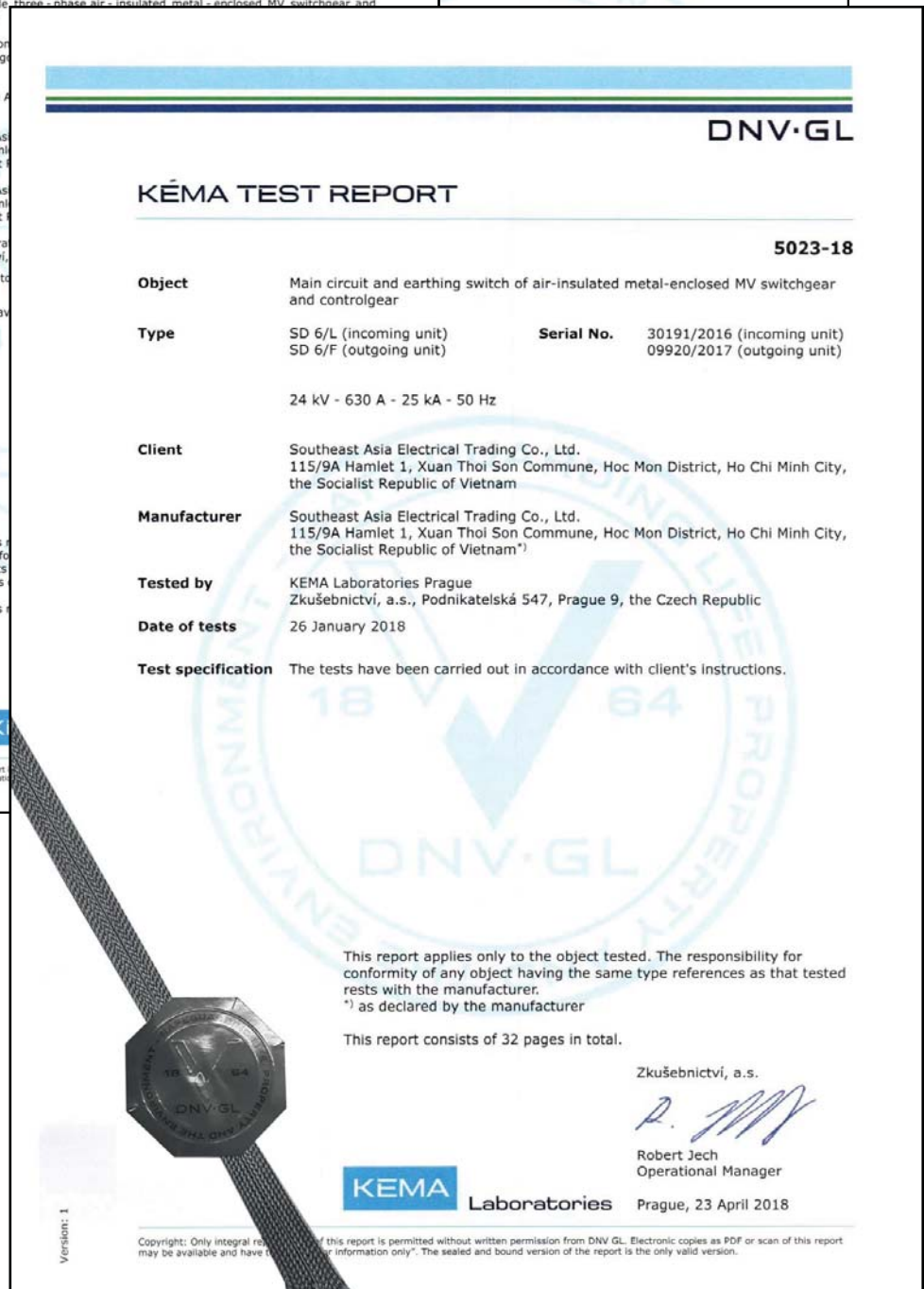
5018-18

three-phase air-insulated metal-enclosed MV switchgear and controlgear

Serial No. 30191/2016 (incoming unit)
09920/2017 (outgoing unit)

24 kV - 630 A - 25 kA - 50 Hz

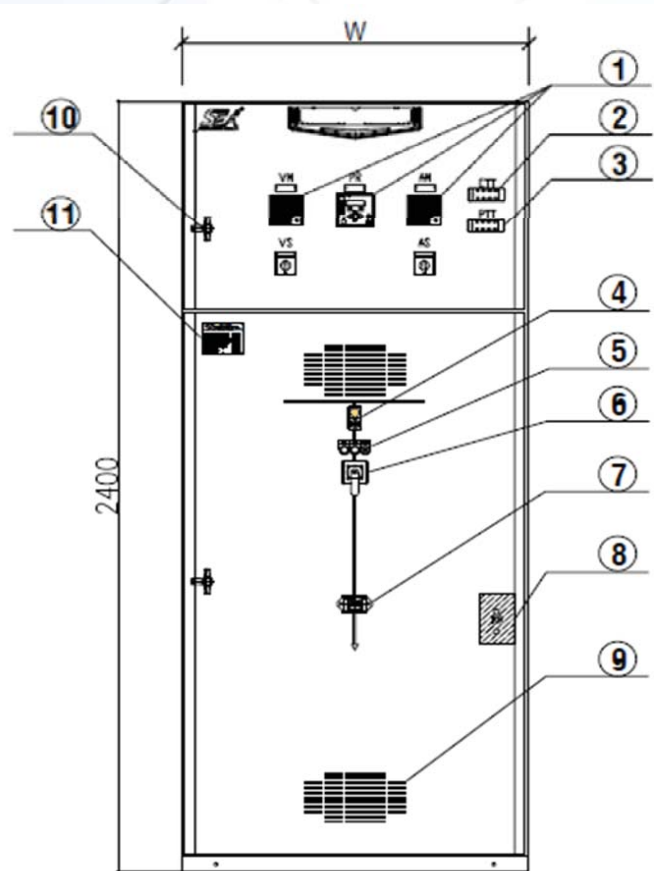
Southeast Asia Electrical Trading Co., Ltd.
115/9A Hamlet 1, Xuan Thoi Son Commune, Hoc Mon District, Ho Chi Minh City, the Socialist Republic of Vietnam



Outline construction

External structure

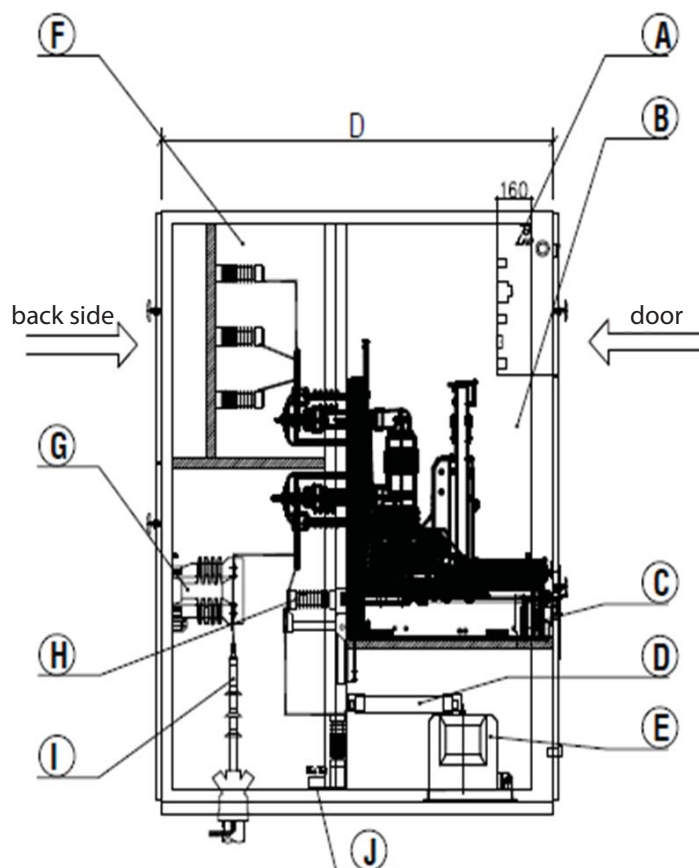
1. Meter and Protection relay
2. Contactor check current
3. Contactor check pressure
4. On/off status of circuit breaker VCB/LBS
5. Lamp for the on/off status of the circuit breaker
6. Switch on/off of the circuit breaker VCB/ LBS
7. Indicator lamp
8. Earthing switch
9. Ventilation
10. Doorknob
11. Label



Inside structure

SITE ELEVATION

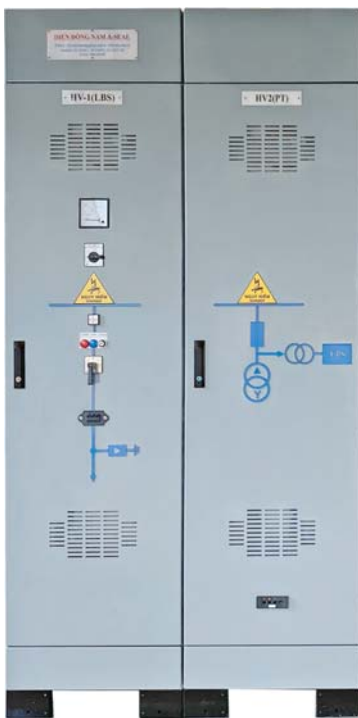
- A: Low Voltage compartment
- B: Switchgear equipment VCB/LBS compartment
- C: Earthing compartment
- D: Fuse
- E: Power Transformer
- F: Busbar compartment
- G: Current transformer
- H: Potentiometer
- I: input/output Cable compartment
- J: Electric cabinet dryer



MV Series – List of available units



MEDIUM VOLTAGE CABINET 7.2kV



Technical Characteristics		Specifications						
Rated Voltage (kV)		7.2						
Number of electrode		3						
Rated frequency (Hz)		50/60						
Withstand voltage at industrial frequency for 1 min (kV)		20						
Lightning impulse withstand voltage (kV)		60						
Electrical cabinet protection level		IP4X						
Short-circuit current (kA/s)		20/3, 25/3	31.5/3,		50/3			
Rated current (A)		630, 1250, 2000	1250, 2000	3150	1250, 2000	2500, 3150	4000	5000
Dimensions (mm)	Wide	750, 1000	750, 1000	750, 1000	750, 1000	750, 1000	750, 1000	750, 1000
	Deep	1800, 2000	1800, 2000	1800, 2000	1800, 2000	1800, 2000	2400	2200
	High	2400						
Applied standard		IEC 62271-100						

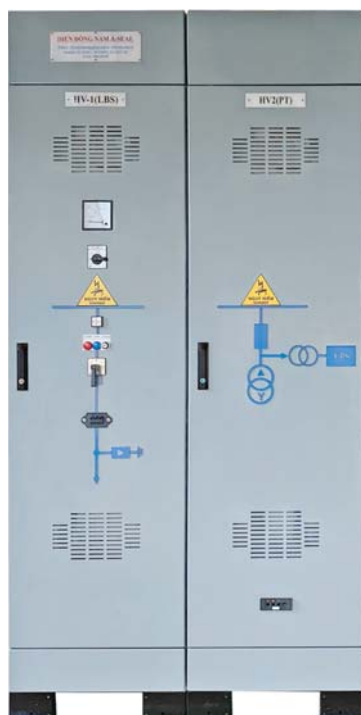
MV Series – List of available units

MEDIUM VOLTAGE CABINET 12kV



Technical Characteristics		Specifications						
Rated Voltage (kV)		12						
Number of electrode		3						
Rated frequency (Hz)		50/60						
Withstand voltage at industrial frequency for 1 min (kV)		28						
Lightning impulse withstand voltage (kV)		75						
Electrical cabinet protection level		IP4X						
Short-circuit current (kA/s)		25/3	40/3		50/3			
Rated current (A)		630, 1250, 2000	1250, 2000	3150	1250, 2000	2500, 3150	4000	5000
Dimensions (mm)	Wide	750, 1000	750, 1000	750, 1000	750, 1000	750, 1000	750, 1000	750, 1000
	Deep	1800, 2000	2000, 2200	2000, 2200	2000, 2200	2000, 2200	2400	2200, 2400
	High	2400						
Applied standard		IEC 62271-100						

MEDIUM VOLTAGE CABINET 17.5kV



Technical Characteristics		Specifications						
Rated Voltage (kV)		17.5						
Number of electrode		3						
Rated frequency (Hz)		50/60						
Withstand voltage at industrial frequency for 1 min (kV)		38						
Lightning impulse withstand voltage (kV)		95						
Electrical cabinet protection level		IP4X						
Short-circuit current (kA/s)		25/3	40/3		50/3			
Withstand crest Current frequency (kA)		25/1	40/0.1		50/0.5			
Rated current (A)		630, 1250, 2000	1250	3150	1250, 2000	2500, 3150	4000	
Dimensions (mm)	Wide	750, 1000	750, 1000	750, 1000	750, 1000	750, 1000	750, 1000	
	Deep	1800, 2000	2000, 2200	2000, 2200	2000, 2200	2000	2200	
	High	2400						
Applied standard		IEC 62271-100						

MV Series – List of available units

MEDIUM VOLTAGE CABINET 24kV



Technical Characteristics		Specifications				
Rated Voltage (kV)		24				
Number of electrode		3				
Rated frequency (Hz)		50/60				
Withstand voltage at industrial frequency for 1 min (kV) công		50				
Lightning impulse withstand voltage (kV)		125				
Electrical cabinet protection level		IP4X				
Short-circuit current (kA/s)		25/3		40/3		
Withstand crest Current frequency (kA)		25/1		40/0.5		
Rated current (A)		630, 1250	2000	2500	1250, 2000	3150
Dimensions (mm)	Wide	1000, 1200	1000, 1200	1000, 1200	1000, 1200	1000, 1200
	Deep	1800, 2000	1800, 2000	1800, 2000	1800, 2000	1800, 2000
	High	2400				
Applied standard		IEC 62271-100				

MEDIUM VOLTAGE CABINET 36kV



Technical Characteristics		Specifications	
Rated Voltage (kV)		36	
Number of electrode		3	
Rated frequency (Hz)		50/60	
Withstand voltage at industrial frequency for 1 min (kV) ở tần số công nghiệp		70	
Lightning impulse withstand voltage (kV)		170	
Electrical cabinet protection level		IP4X	
Short-circuit current (kA/s)		25/3, 31.5/3, 40/3	
Withstand crest Current frequency (kA)		40/1	
Rated current (A)		1250/2000/3150	
Kích thước(mm)	Rộng	1200	
	Sâu	2250~3000	
	Cao	2400	
Tiêu chuẩn áp dụng		IEC 62271-100	

Main components

Vacuum Circuit Breakers & LBS

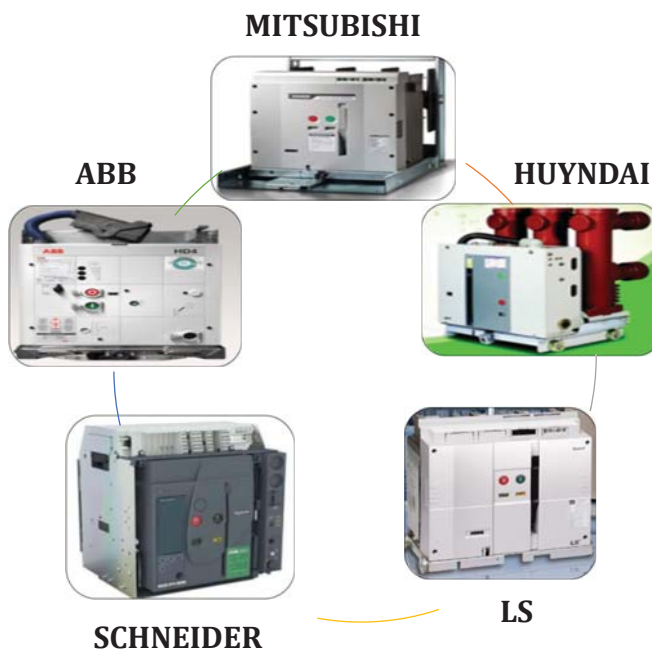


Vacuum Circuit Breakers

Vacuum circuit breakers (VCBs) are installed in medium voltage distribution lines to protect the service life and loading device. In the event of a fault such as overcurrent, short circuit and earth fault current, the VCB operates by breaking the circuit through an internal vacuum circuit breaker which is actuated by a signal from a separate external relay.

High-end products improve the convenience and reliability of medium voltage switchgear configurations with accessories: UVT, magnet lock, Interlocking, Key lock, Temperature sensor, MOC, TOC, Ground S/W.

Maximize compatibility with existing products on the market: Schneider, ABB, LS, SIEMEN, HUYNDAI,...

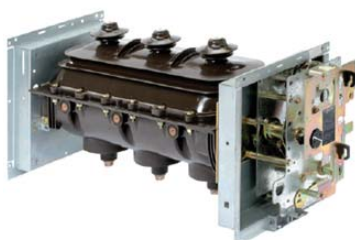


Technical Characteristics	Specifications			
Rated Voltage (kV)	7.2	12	24	36
Number of electrode	3			
Rated frequency (Hz)	50/60			
Rated current (A)	630 up to 5000A			
Applied standard	IEC 62271-100			
Withstand voltage at industrial frequency for 1 min (kV)	20	28	50	70
Lightning impulse withstand voltage (kV)	60	75, 95	125	170
Withstand crest Current frequency (kA)	52, 65	40, 63, 80, 100, 125	40, 63, 80	65
Short-circuit current (kA/3s)	20, 25	16, 25, 31.5, 40, 50	16, 25, 31.5	25

LBS

The loading breaker has the same structure as the Recloser, but it does not have closing roll, cutting roll and controller, so it cannot be controlled remotely or combined with relay protection to perform the protection function. LBS is superior to ordinary circuit breakers and Disconnectors Switches that can be switched on/off at full loading. LBS opening/closing is usually done manually. To perform the protection function LBS must be used in conjunction with a fuse. It Installed indoors or outdoors.

SEAE's high-end medium voltage cabinets are compatible with existing LBSs on the market of equipment manufacturers such as: RB, Schneider, ABB, LS, ...



Technical Characteristics	Specifications			
Rated Voltage (kV)	7.2	12	24	36
Number of electrode	3			
Rated frequency (Hz)	50/60			
Rated current (A)	400, 630, 1250			
Applied standard	IEC 60265, 62271-200 62271-102, 60694			
Withstand voltage for 1 min (kV)	20	28	50	70
Lightning impulse withstand voltage (kV)	60	75	125	170
Withstand crest Current frequency (kA)	31.5 - 65			
Short-circuit current (kA/s or 3s)	12.5, 16, 20, 25			25

Main components

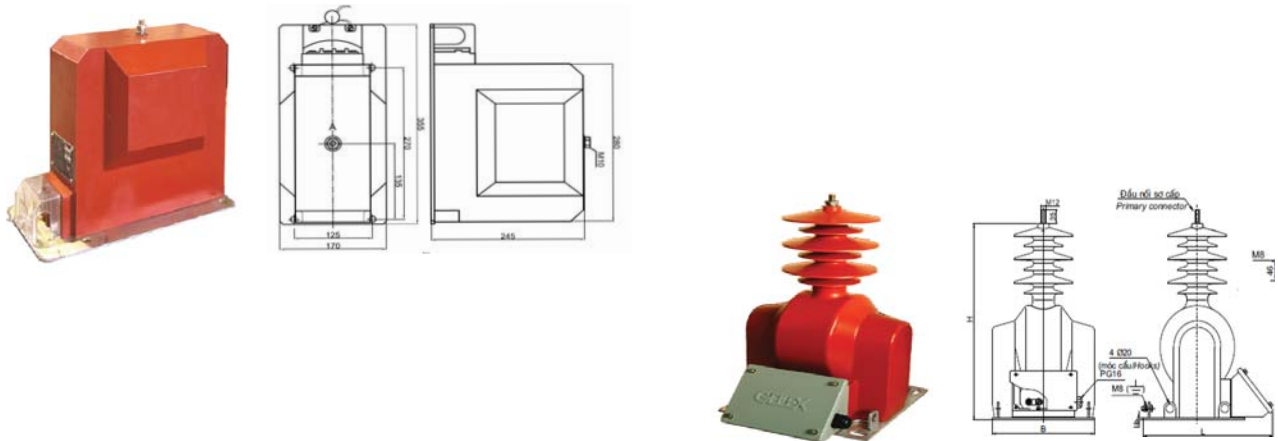
Measuring device

Voltage and current transformers are molded in a vacuum by epoxy resin system of Huntsman with very good mechanical and electrical properties, withstand sudden temperature changes, withstand the impact of long-term breakdown voltages

The current transformer/transformer can be installed in any position by the four bolts that snap into the four holes on the base. The base is made of steel, solid structure and galvanized.

Voltage Transformer

The transformer is designed with 1 or more ratios, the ratio can be changed by changing the connection on the secondary side. Up to 1 or 2 secondary winding. The secondary winding is used for measurement or protection purposes. Voltage transformer outputs are integrally molded to the body, terminal cover with cap and sealing position.

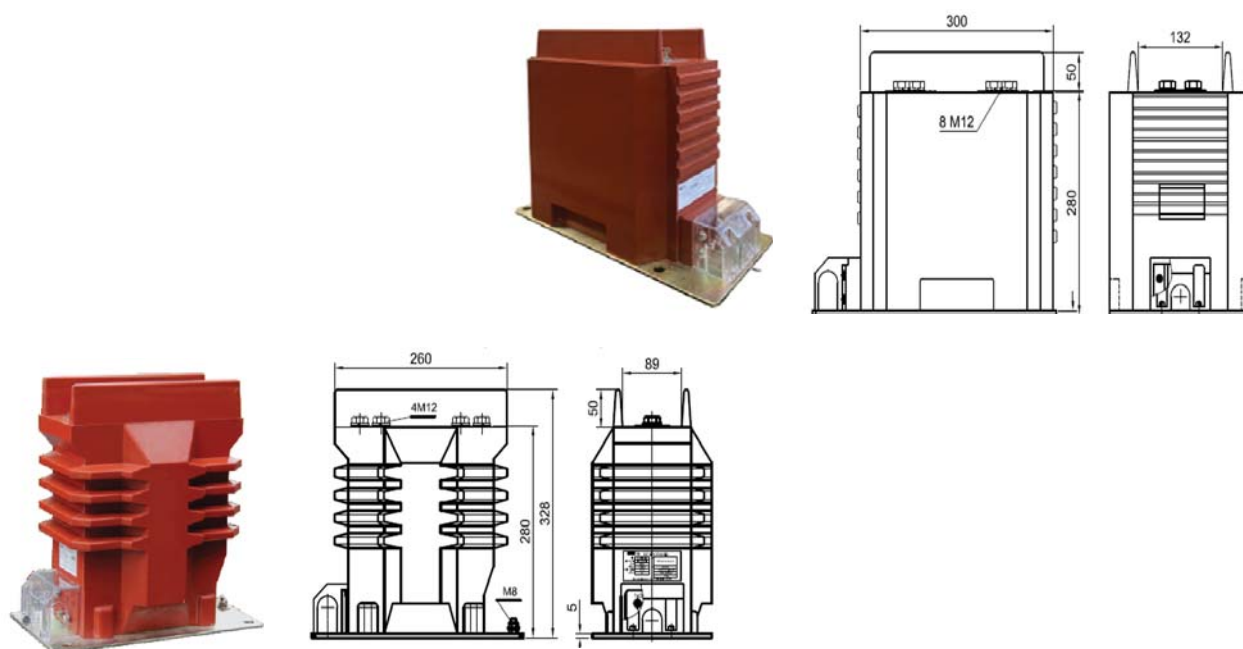


Technical Characteristics	Specifications		
Highest voltage for equipment (kV)	7.2	12	24
Withstand voltage at industrial frequency for 1 min (kV)	20	28	50
Lightning impulse withstand voltage (kV)	40	75	125
Rated frequency (Hz)	50		
Mounting position	Indoor/Outdoor		
Loading / Accurate measurement (VA/CL)	10-50VA/0.5-1		
Loading / Accurate protection (VA/cl)	10-100VA/3P-6P		
Continuous rated overvoltage ability (kV)	1.2* Un		
Rated overvoltage ability at 30s or 8hours (kV)	1.9* Un		
Minimum Leakage current distance (mm/kV)	31		
Working temperature	0-50 độ C		
Limit of temperature rising	60 độ C		
Rated primary voltage (V)	6000:√3; 10000:√3, 22000:√3		
Rated Secondary Voltage (V)	100; 110; 120; 100:√3;110:√3; 100:3; 110:3		
Applied standard	IEC60044-2; IEC61869-3; TCVN 7697-2 TCVN 11845-3		

Measuring device

Current transformer

The current transformer is designed with 1 or more ratios, the ratio can be changed by connecting the secondary side. There are 3 secondary windings used for measurement or protection purposes. To prevent danger, the secondary circuit of the current transformer must always be connected to the load or short circuit. One terminal of the secondary winding must be grounded during operation. The current transformers outputs are integrally molded to the body, terminal cover with cap and sealing position.



Technical Characteristics	Specifications		
Highest voltage for equipment (kV)	7.2	12	24
Withstand voltage at industrial frequency for 1 min (kV)	20	28	50
Lightning impulse withstand voltage (kV)	40	75	125
Rated frequency (Hz)	50		
Mounting position	Indoor/Outdoor		
Nominal short-current - I _{th} (A)	80*I _n /1s, 25kA/1s		
Nominal current - I _n (A)	Jan-00		
Loading / Accurate measurement (VA/CL)	10-50VA/0.5-1		
Loading / Accurate protection (VA/cl)	10-100VA/ 5P5, 5P10, 5P20, ..		
Working temperature	0-50 độ C		
Limit of temperature rising	60 độ C		
Rated primary voltage (V)	5, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 150, 200, 250, 300, 400, 500, 600, 750, 1000, 1200, 1600, 2000, 2500, 3150		
Rated Secondary Voltage (V)	5A, 1A		
Applied standard	IEC 60044-1; IEC 61869-2; TCVN 7697-1		

Main components

Measuring deviceg

Protection fuse



Fuse is designed to protect equipments in medium voltage cabinets and other equipment (distribution transformers, compensate capacitor, motors) from the thermal effects of short-circuit current and over current. The timeline characteristic corresponds to the IEC 60282-1 standard.ính dòng thời gian tương ứng với tiêu chuẩn IEC 60282-1.

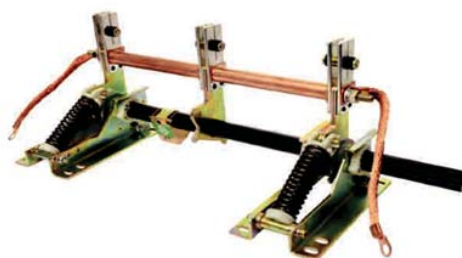
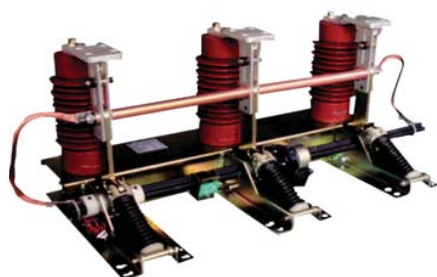
Operating voltage (kV)	Potestas (kVA)	50	75	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	
7.2	Primary current of the Voltage transformer Ip at 6kV(A)	5	7	10	12	15	19	24	30	39	48	61	77	96	120	154	192	
	Crest Curren (A)	58	86	115	145	185	230	289	364	462	577	727	923	1154	1440	1848	2310	
	Rated current (A)	Imin.	10	16	25	32	40	40	50	50	63	80	100	100	125	160	200	250
		Imax.	16	20	32	40	50	50	63	63	80	100	125	125	160	200	250	315
12	Primary current of the Voltage transformer Ip at 6kV(A)	3	4	6	7	9	12	14	18	23	29	36	46	58	72	92	115	
	Crest Curren (A)	35	52	70	86	110	138	173	218	276	346	437	554	692	866	1109	1380	
	Rated current (A)	Imin.	6	10	10	16	20	25	32	40	50	50	63	80	100	100	125	160
		Imax.	10	16	16	20	25	32	40	50	63	63	80	100	125	125	160	200
24	Primary current of the Voltage transformer Ip at 6kV(A)	1	2	3	4	5	6	7	9	12	14	18	23	29				
	Crest Curren (A)	18	26	35	43	55	70	86	109	138	173	217	277	346				
	Rated current (A)	Imin.	4	4	6	6	10	10	16	20	25	32	40	50	50			
		Imax.	6	6	10	10	16	16	20	25	32	40	50	63	63			
36	Primary current of the Voltage transformer Ip at 6kV(A)	1	1	2	2	3	4	5	6	8	10	12	15	19				
	Crest Curren (A)	12	17	23	29	37	46	58	73	92	115	145	185	230				
	Rated current (A)	Imin.	2	4	6	6	6	10	10	16	20	20	25	40	50			
		Imax.	4	6	10	10	10	16	16	20	25	25	32	50	63			

Earthing switch

Quick earthing switch is manufactured by Green power company or by SEAE, it is fitted manual operating mechanism, and have the ability of making short circuit.

Earthing switch contains indicator of opening and closing position. The Operating mechanism is operated manually. Mechanical interlock mechanism can be installed on the rod of operating mechanism, interlocking with circuit breaker truck, or the interlock electromagnet can be installed, then implement the electrical interlock.

Earthing switch contains auxiliary contact, and it can supply the signal for opening and closing state of earthing switch



Earthing Switch Technical Parameters

No.	Item	Unit	Parameters		
1	Rated Voltage	kV	12	24	40.5
2	Center Distance Between Phases	kV	150; 210	210; 275	280; 350
3	Rated Short Time Withstand Current	kA/s	...50/4	31.5/4	31.5/4
4	Rated Short Circuit Making Capacity (peak)	kA	...120	80	80
5	Power Voltage Of Interlock Electromagnet	V	48 - 220 VAC/DC	48 - 220 VAC/DC	48 - 220 VAC/DC

Main components

Measuring device

Cable terminations



Cable termination kit - Raychem Indoor

Indoor terminations for screened paper Insulated (MIND) cables with one metal sheath per phase 10 kV, 22 kV and 35 kV

Nominal voltage U_0/U (kV)	Cross section (mm ²)
6/10	35 - 70
	95 - 500
12/20	35 - 50
	70 - 185
	240 - 500
20/35	50 - 95
	120 - 185
	240 - 500

Cable termination kit - Raychem Outdoor

Outdoor terminations for screened paper Insulated (MIND) cables with one metal sheath per phase 10 kV, 22 kV and 35 kV

Nominal voltage U_0/U (kV)	Cross section (mm ²)
6/10	35 - 70
	95 - 500
12/20	35 - 50
	70 - 185
	240 - 500
20/35	50 - 95
	120 - 185
	240 - 500



Cable termination kit 3M - Three Phase

	6/10(12)kV	12/20(24)kV		12/20(24)kV	
	Indoor/outdoor	Indoor	Outdoor	Indoor	Outdoor
1 Phase	QTII(X)4S-11	QTII(X)4S-12	QTII(X)6S-12	QTII(X)6S-13	QTII(X)8S-13
3 Phase	QTII(X)4S-31	QTII(X)4S-32	QTII(X)6S-32	QTII(X)6S-33	QTII(X)8S-33

Measuring device

Relay



REF601 features:

- Cable and feeder protection in solidly earthed
- Resistance earthed and isolated neutral networks
- Phase currents are measured with current sensors type Rogowski coil
- Earth-fault
- Current can be internally calculated or measured with conventional current transformers
- Functions : 50/51, 50N/51N...



REF615, 630 features

- Directional/non-directional overcurrent protection
- Directional and non-directional earth-fault protection
- Phase-segregated line-differential protection
- System voltage supervision
- Measuring
- Circuit-breaker control capability
- Compliant to IEC 61850
- Functions : 50/51, 50N/51N
- Optional : 27, 59, 49 RMS, 66, 79...



REF610 features

- REF610 is a protection relay mainly designed for the protection of incoming and out-going feeders in MV distribution substations.
- REF610 can also be used as back-up protection for motors, transformers and generators, in industrial as well as in utility applications.
- Function : 50/51, 50N/51N, 27, 59, 49 RMS, 66, 79...



GE Relays, features:

- Overcurrent and earth fault protection with adjustable time reset
- Earth fault protection insensitivity to transformer
- RMS thermal overload protection
- Directional earth fault protection suitable for all earthing systems
- Voltage and frequency protection functions
- Communication: Modbus RTU, IEC61850...
- Main functions: 50/51, 50N/51N, 46, 49RMS, 27, 59, 81, 79...

Installation information



- The switchgear installation foundation dimension and erection dimension as show in draw-ings
- For the arrangement of single array, an operator corridor of 2.5 m is appropriate in front of the switchgear while for the arrangement of two arrays, an operator corridor of 3 m is appropriate.
- According to the specific project requirement and drawing notes, move the switchgears to the specific position. If the switchgear array is quite long (more than10 sets of switchgear), it should start assembly from the center position.
- During transportation of the switchgear, only special transportation vehicles such as hoist or fork truck is allowed to use. Both roll and crowbar are prohibited. Never attempt to push the withdrawable part into the com- partment and transport them together. Only after the compart-ment body is erected well, the withdrawable part is allowed to push into the compartment.
- Loose the top cover bolts of the busbar compartment and remove the cover plate.
- Loose the fixing bolts in the front of the busbar compartment and remove the assembling partition.
- Loose the fixing bolts of the horizontal draw-out partition under the circuit breaker compart-ment and remove the horizontal partition.
- Loose and remove the cable cover plate.
- Remove the cover plate from the left side control line raceway of the switchgear and remove the cover plate of the front right control line raceway in the same way.
- Remove the suspension plate and fixtures.
- Erect the switchgear on the foundation one by one and keep the alignment within 2 mm in both horizontal and vertical directions.

Cautions during maintenance of switchgear

In addition to the related maintenance procedures, the serviceman should pay more attention on following recommendations:

- Check the withdrawable circuit breaker condition in accordance with the installation and operation instructions of vacuum circuit breaker.
- Check the withdrawable circuit breaker driving mechanism and its interlock to meet the requirement in the instructions.
- Check main circuit contact condition, remove old grease on the fixed contact, check contact for damage, check spring for distortion, and check coating for oxidation under high temperature. Fix the problem immediately if any abnormal condition is found.
- Check auxiliary circuit contact for any abnormal condition and repair it if necessary.
- Check each part of the earthing circuit for earthing continuity such as earthing contact, main earthing electrode and wiring between compartments.
- Check fasteners on each part for loose and retighten it if necessary

Transportation and storage

- Toppling over, upside down and strenuous vibration must be prohibited and always keep the switchgear far from fire.
- Protect the switchgear from raining and moisture.
- Without permission, never attempt to disassemble the electrical apparatus and parts.



SOUTHEAST ASIA ELECTRICAL TRADING JOINT STOCK COMPANY

Viet Nam

Head Office: 196/1/15 Cong Hoa Street, Ward 12, Tan Binh District, HCMC

Factory: D11/54C Quach Dieu Street - Hamlet 4 - Vinh Loc A Commune - Binh Chanh District - HCMC

Factory: Lot 49G, Quang Minh Industrial Zone, Me Linh District, Hanoi City

Cambodia

Business address: #9E1Z, Road No 217-Sangkat Phsa Thmery 2, Khan Doun Penh, Phnom Penh, Cambodia

Factory: Warehouse #80G, Phum III, SK Chroy Changva, Khan Chroy Changva, Phnom Penh