SureSeT™
Medium Voltage Metal-clad Switchgear

Medium Voltage Distribution

Catalog

Metal-clad air insulated switchgear up to 15 kV
26 in. wide narrow design

Release date 01/2025

6055CT2201

SQUARE D™

Green Premium™

Schneider Electric™

www.se.com

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General Description

Square D by Schneider Electric, offers a new metal-clad switchgear SureSeT that enables end users to digitally control and monitor their medium voltage equipment in a compartmentalized and compact footprint. SureSeT switchgear offers a two-high circuit breaker design in a narrow 26 in. wide footprint and is powered by EvoPacT, our newly designed MV vacuum circuit breaker. SureSeT switchgear is the Smarter, Smaller, and Stronger metal-clad switchgear.

Smarter

- Embedded sensors enable end users to switch to Proactive Maintenance by providing real-time status of several circuit breaker components.
- Ability to control and monitor equipment from remote device or local HMI without entering the arc flash zone
- Circuit Breaker Health Monitoring alerts the user to circuit breaker health, thermal abnormalities, and environmental changes.
- Product information, records, and project files can be instantly accessed through the Digital Logbook, which is easily accessed by the QR code.
- Cybersecurity compliant with ISA/IEC 62443 – Levels 1 and 2
- Available in two-high circuit breaker configuration

Smaller

- 26 in. wide compact design provides 25% footprint savings compared to conventional metal-clad switchgear.

Stronger

- EvoPacT MV circuit breaker tested to 30,000 circuit breaker open/close operations and 1,000 circuit breaker racking operations
- Fully compliant with Metal-clad MV Switchgear ANSI/IEEE standards
- cULus Listed

Overview

Field of Application

SureSeT MV Metal-clad Switchgear with EvoPacT MV Vacuum Circuit Breaker is designed for various operating requirements in different industries and applications.

Distribution Designs

- HV/MV substation
- MV/MV substation
- MV/LV substation
- Power generation

Large Commercial Industrial Buildings

- E-mobility/automotive
- Healthcare
- Education
- Food and beverage

Infrastructure

- Water treatment plants
- Transportation

Heavy Industrial

- Mining, mineral, metal
- Oil and gas
- Utilities

Data Centers and Networks

Smarter

Ease of Use with Digital Monitoring and Operation

Circuit Breaker Health Monitoring to increase customer efficiency

- Selectable IoT-enabled sensors continuously monitor the circuit breaker and switchgear health in real time and alert the user to abnormalities as soon as they happen.
- Adopting a condition-based maintenance strategy can help prevent unplanned shutdowns and save maintenance time and costs.
- Extended maintenance schedule can be achieved for circuit breakers and switchgear equipped with continuous health monitoring.

Easy access to records

- Every SureSeT MV Metal-clad Switchgear with EvoPacT MV Vacuum Circuit Breaker lineup includes a Digital Logbook, or QR code, which offers digital, paperless delivery of, and easy access to, all project records such as documentation, maintenance reports, and drawings.
- Share files for easier organization and collaboration within a paperless environment on one cyber compliant platform.

Enable local or remote control to reduce risk to personnel and decrease downtime

- Digital control features help reduce risk to maintenance personnel through remote operation. Open, close, rack-in, rack-out of circuit breaker or auxiliary device can be carried out remotely through a mobile device or tablet.
- Embedded sensors provide continuous health information through a dedicated switchgear human machine interface (HMI) with additional digital tools and apps allowing users to perform remote inspection and detect incidents faster without shutdown.
- The HMI can be installed anywhere within the lineup to allow local control and monitoring, independent of any external systems.
- The monitoring information and control functions can be scaled to the needs of each customer. Optionally, the HMI control and monitoring functions can be mirrored on a mobile device or tablet through a point-to-point Wi-Fi connection through a wireless access point.

Smaller

Optimized Footprint without Sacrificing Efficiency

Compact design

- 26 in. wide narrow design provides 25% smaller footprint compared to conventional metal-clad switchgear
- Each section of SureSeT switchgear is 26 in. width x 92.5” depth x 95” height
- Cable connections from top or bottom
- Fixed Low Power Voltage Transformers (LPVTs) are resistive-type VTs that can be used in place of inductive-type VTs to reduce VT compartment space and allow for additional low voltage compartment space

Reduced risk through design

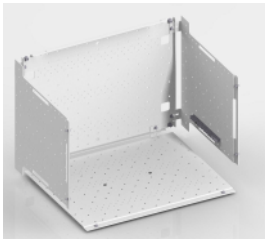
- Fully compartmentalized which means the low voltage compartment is accessible without allowing access to any other live parts in the switchgear
- All major primary circuit components are isolated from each other by grounded metal barriers
- Closed door electrical and/or mechanical operations
- Mechanical and/or electrical interlock systems have been designed to guide operator and improve operations, and can be key or padlocked for increased security

- Live Line Indicator (LLI) or Voltage Presence Indicator System (VPIS) can be mounted on the rear of the switchgear to provide visual indication of voltage presence in the cable compartments before accessing the switchgear

Stronger

Building more resilient operations

- SureSeT switchgear is specifically designed for the North American market
- SureSeT switchgear meets the following standards:
  - ANSI/IEEE C37.20.2: IEEE Standard for Metal-Clad Switchgear
  - ANSI/IEEE C37.09: IEEE Standard Test Procedures for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000V
  - cULus Listed
- Schneider Electric has more than 50 years of experience in medium voltage switchgear design.



Quality design

- EvoPacT MV circuit breaker is tested to 30,000 open/close operations and 1,000 racking operations.
- The key components of SureSeT switchgear are designed in-house by Schneider Electric, such as circuit breaker mechanisms, vacuum interrupter bottles, and contacts.
- The circuit breaker is designed with integrated racking mechanism allowing for ease of maintenance.
- Fillable frame design for low voltage compartments allows original equipment manufacturers (OEM) and panel builders to wire low voltage devices before installation for ease of assembly.

Sustainability

Green Premium

An industry leading portfolio of offers delivering sustainable value

Green Premium™

More than 75% of our product sales offer superior transparency on the material content, regulatory information, and environmental impact of our products:

- RoHS compliance
- REACh substance information
- Industry leading number of PEPs
- Circularity instructions

Discover what we mean by green.

Check your products!

The Green Premium program stands for our commitment to deliver customer valued sustainable performance. It has been upgraded with recognized environmental claims and extended to cover all offers including Products, Services, and Solutions.

CO_2 and Profit & Loss impact through Resource Performance

Green Premium brings improved resource efficiency throughout an asset lifecycle. This includes efficient use of energy and natural resources, along with the minimization of CO_2 emissions.

Cost of ownership optimization through Circular Performance

We're helping our customers optimize the total cost of ownership of their assets. To do this, we provide IoT-enabled solutions, as well as upgrade, repair, retrofit, and remanufacture services.

Peace of mind through Well-being Performance

Green Premium products are RoHS and REACh compliant. We're going beyond regulatory compliance with step-by-step substitution of certain materials and substances from our products.

Improved sales through Differentiation

Green Premium delivers strong value propositions through third-party labels and services. By collaborating with third-party organizations we can support our customers in meeting their sustainability goals such as green building certifications.

Product Environmental Profile (PEP)

Smart Protection for Distribution Networks

Easergy P5

The Easergy P5 presents a major step forward for protection relays, bringing a number of best-in-class features together in one device.

- Built-in arc flash protection
- Advanced cybersecurity compliant to IEC 62443
- Intuitive withdrawable design
- Improved recovery time to decrease outage recovery time
- Greater connectivity featuring seven communication protocols

The Easergy P5's industry leading protection features are complemented by a comprehensive set of tools available on mobile devices such as smartphones, tablets, and desktop computers. This means you get simpler installation, configuration, and maintenance, enabling you to save time and money.

Switchgear and Circuit Breaker Health Monitoring and Control

SureSeT Switchgear is available with 3 different tiers of Digital Connectivity.

- SureSeT
- SureSeT Active
- SureSeT Active Plus

SureSeT comes with easy upgrade capability utilizing our standard MV circuit breaker.

SureSeT Active enables facilities to react faster to help prevent unplanned downtime with 24/7 cloud connectivity and switchgear health monitoring with environmental and thermal monitoring through Powerlogic sensors.

- Thermal monitoring with TH110 and CL110
- Data Cubicle Hub
- HMI Screen
- WLAN Access point for remote access

SureSeT Active Plus is comprehensive monitoring with complete circuit breaker health diagnosis and alerts from anywhere, as well as digital control with operation and racking of circuit breakers and auxiliary trucks through your local HMI or connected device.

- Thermal monitoring
- Auxiliar circuit monitoring
- Racking compatibility monitoring
- Operating mechanism condition monitoring
- Vacuum interrupter
- Endurance monitoring
- Data Cubicle Hub
- HMI Screen
- WLAN Access point for remote access

For More information please review the Digital Monitoring User Guide.

Continuous Switchgear health monitoring

Power supply connections in medium voltage cubicles are one of the most critical points in substations, especially for those made in:

- Power cable connections
- Busbar connections

TH110 Characteristics	
Rated supply	Starting current: for energy harvesting 0.4 A/cm of the peripheral AC live part (Batteryless) Supply is not disturbed by temporary overvoltage within the limit of the HV or LV switchgear.
Wireless communication protocol	Zigbee Green Power at 2.4 GHz
Height	15 mm (0.59 in.)
Depth	31 mm (1.22 in.)
Width	31 mm (1.22 in.)
Ambient air temperature for operation	-25°C (-13°F) to +80°C (176°F)
Product weight	0.015 kg (0.033 lb)
Advantages: • Helps prevent unscheduled downtime • Improved equipment availability • Optimization of maintenance and transition to predictive maintenance	

PowerLogic TH110

PowerLogic CL110

PowerLogic TH110: Thermal monitoring sensors

PowerLogic TH110 sensors help ensure continuous thermal monitoring for detecting potential hot spots in all critical connections made in the field.

It is an improved method of monitoring compared to conventional infrared measurement equipment due to:

- Continuous health status information and hence greater reliability
- Transformer dielectric strength remains intact
- Reduces supervision costs compared to infrared

PowerLogic TH110 sensors are self-powered from the mains current (a minimum of 5 A is required).

PowerLogic CL110: Humidity monitoring sensors

PowerLogic CL110 sensors measure the temperature of the contact surface and the relative humidity. These are designed for:

- Detecting humidity conditions that are excessive for proper operations
- Calculating transformer aging

PowerLogic CL110 sensor is equipped with a battery (life > 15 years).

Key benefits

- No battery (TH110 only)
- Wireless communication
- High performance
- Measuring point in contact
- Easy installation
- Compact footprint
- Remote monitoring and alarms

Scalable to your Monitoring and Control Needs

EvoPacT MV circuit breakers are a critical pillar of EcoStruxure Connected Products, Schneider Electric IoT-enabled, open and interoperable system architecture.

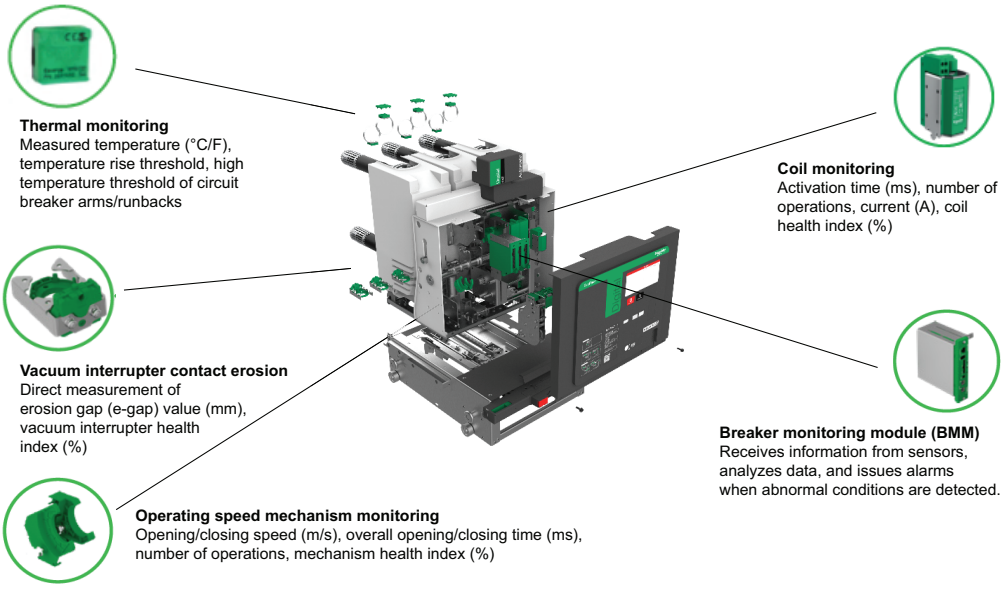
Through connected data, customers benefit from greater visibility, improved control, and valuable insights from connected products. Connectivity is scalable in packaged designs to suit a variety of approaches to digital integration.

Circuit breaker health monitoring

Circuit breaker health monitoring uses sensors embedded within the circuit breaker to measure strategic data of the most critical points including:

- Thermal monitoring of circuit breaker primary connections
- Operating speed of circuit breaker mechanism
- Vacuum interrupters contact erosion gap
- Health of closing and tripping coils
- Health of spring charging motors
- Health of circuit breaker/VT/CPT racking motors, when equipped

Alarms and notifications are displayed on the HMI screen when action is required.



Local and remote monitoring

Substation monitoring can be achieved through local and remote monitoring or nearby control. The Substation Monitoring Device (SMD) provides several tracking and measuring functions, as well as monitoring features, for:

- Thermal monitoring
- Environmental monitoring
- Circuit breaker health monitoring

The SMD collects all alarming indications available in the substation using digital input information. The SMD also collects information using Modbus protocol over Ethernet or Modbus RTU communication. The collected alarms are then presented on the HMI locally and made available remotely.

The SMD consists of the main control unit connected to optional components over Modbus TCP/IP:

- Local HMI
- Wireless sensors (TH110 and CL110) paired to EcoStruxure Panel Servers
- Circuit breaker monitoring module and sensors
- WLAN access point for connecting mobile devices and tablets

The local HMI has screen mirroring features which support remote control and monitoring. To take advantage of these features, the HMI can be connected to a WLAN access point to mirror the HMI to a mobile device / tablet or directly wired to a Modbus TCP/IP compatible device.

The SMD supports local and/or remote monitoring. Local monitoring is provided via a human machine interface (HMI) touch screen color display. The HMI display is physically connected to the rest of the SMD system and may be mounted on the equipment front panels or in a separate control box.

The switchgear HMI provides the following informational screens:

- Single line diagram (SLD) of equipment showing the status of devices and the presence of alarms
- Condition monitoring screen showing data related to the configured monitoring functions
- System setting screens that may be used to modify user preferences such as language, unit of measurement, and phase labeling
- Diagnostic screens may be used to verify the correct function of the devices and sensors that are part of the SMD

Remote control through personal device

SureSeT switchgear includes digital technology that unlocks remote control capabilities through the HMI or mobile device / tablet so users can operate the circuit breaker outside of the arc flash zone.

The remote control function provides a way of performing the following operations either in the same room but outside the arc flash zone, or from a completely separate control room.

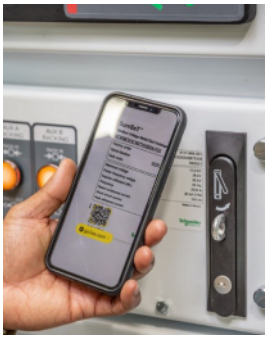
- Open/close circuit breakers
- Rack in/out circuit breakers
- Rack in/out auxiliary devices

Remote control is achieved by connecting Wi-Fi enabled devices like laptops, tablets, or smart phones to the HMI through a WLAN access point. Remote control uses a password to limit access to authorized users and can be switched to local only on the switchgear, to switch off remote operation functions.

Digital tools

Digital Logbook		
Software and Services		
Edge Control	• Designed for power-critical and energy-intensive facilities to maximize uptime and operational efficiency	EcoStruxure Power Monitoring Expert
	• Energy supply management software for electro-intensive sites	EcoStruxure Power Operation
	• Reduce downtime by monitoring and optimizing your critical connected products.	EcoStruxure Asset Advisor
Services	• A set of tailored service contracts that combine the power of our EcoStruxure™ platform with dynamic maintenance	EcoStruxure Service Plans

Digital Logbook



Simple asset management through a single Digital Logbook gives you all project documentation you'll need during the manufacture, installation, operation, and maintenance of your equipment.

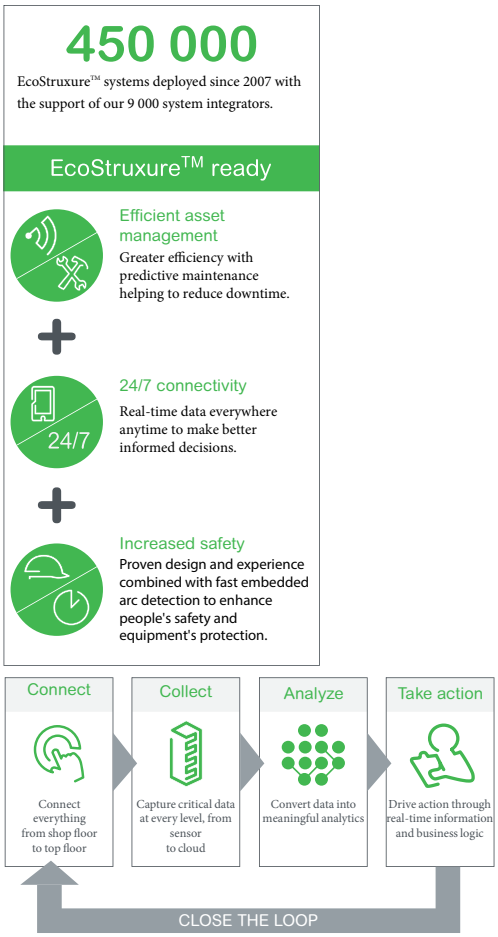
Using the Digital Logbook, all documentation can be easily shared with your partners within a paperless environment on one cyber compliant platform.

A QR code is provided for every EvoPacT MV circuit breaker and SureSeT switchgear lineup. Throughout the SureSeT switchgear lifecycle, the Digital Logbook gives you instant access to:

- User manuals
- Design drawings
- Single-line drawings
- Factory- and site-acceptance tests
- Spare parts lists
- Maintenance records and schedules

Digital and EcoStruxure™ Ready Solutions

What is EcoStruxure?



EcoStruxure is our open, interoperable, IoT-enabled system architecture and platform. EcoStruxure delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity.

EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level. This includes Connected Products, Edge Control, and Apps, Analytics & Services, which are supported by Customer Lifecycle Software.

Turn data into action

EcoStruxure architecture lets customers maximize the value of data. Specifically, it helps them:

- Translate data into actionable intelligence and better business decisions.
- Make informed decisions to help secure uptime and operational efficiency thanks to real-time control platforms.
- Gain visibility to their electrical distribution by measuring, collecting, aggregating, and communicating data.

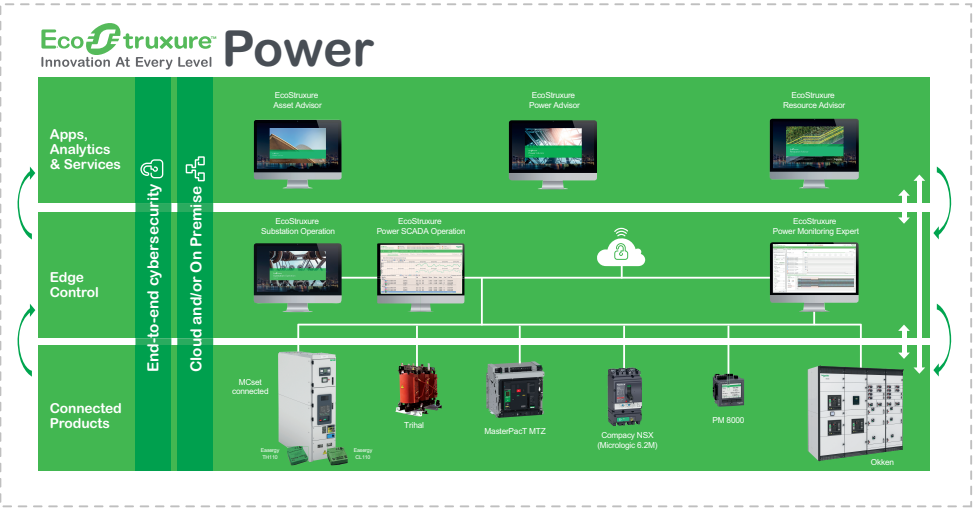
EcoStruxure Power

Power distribution is changing

The world is getting smarter. Every day, it is becoming more decentralized, decarbonized, and digitized. And as your products become more connected, so do you.

With these innovations come increased demand, new regulations, and an opportunity to improve your existing infrastructure.

That's why it's more important than ever to install equipment, software, and services that will keep everything running smoothly in the present, and prepared for the future.



EcoStruxure Grid

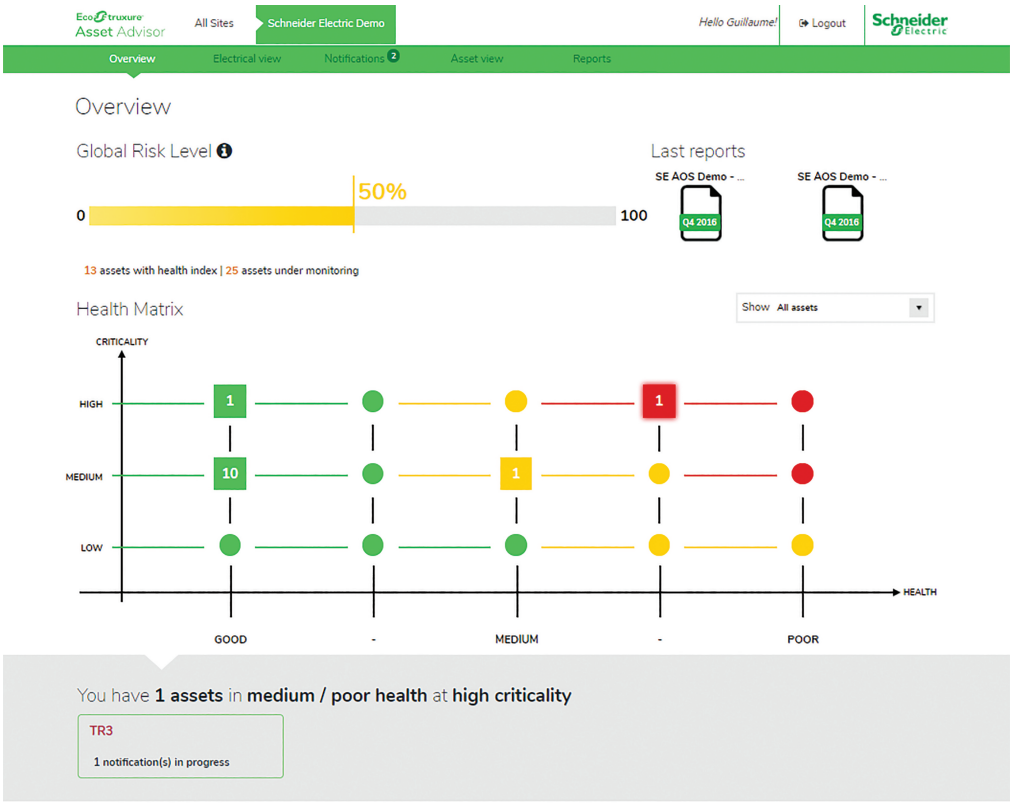
All the Schneider Electric protection, metering, and control devices can be connected to our substation monitoring device.

The human machine interface (HMI) can be installed anywhere within the substation to allow local control and monitoring, independent of any external systems.

The monitoring information and control functions can be scaled to the needs of each customer. Optionally, the HMI control and monitoring functions can be mirrored on a mobile device or tablet through a point-to-point Wi-Fi connection through a wireless access point.

EcoStruxure Asset Advisor

Apps, analytics, and services to improve operations efficiency



Imagine having access to key data about your electrical distribution equipment whenever you need it, along with experienced professionals who help you make better informed decisions.

That's what you get with EcoStruxure Asset Advisor from Schneider Electric connected service.

With EcoStruxure Asset Advisor, you know exactly which assets need to be serviced or replaced to help you better plan your expenses.

Move from reactive to condition-based maintenance

- Breakthroughs in connectivity, sensor technology, and advanced analytics create an opportunity for you to improve your maintenance strategy on new circuit breakers.
- Discover new ways to optimize your critical electrical assets performance and help secure your overall equipment efficiency.

Our EcoStruxure Asset Advisor solution

Connect your new MV circuit breaker to leverage Schneider Electric expertise and analytics to assess the health of your cubicles:

- Cloud based monitoring with timely analysis of raw data sampled in the field
- 24/7 support from Connected Service Hub experts
- Unlock the value of data by smart alarming, indicators, and status insights.
- Users are empowered to schedule the right maintenance at the right time.
- Friendly user interface with customizable widgets and smartphone app
- Complaint with strong cybersecurity guidelines to secure product development life cycle

Schneider Electric approaches cybersecurity holistically

- Data is collected through secured gateways.
- Transport of data is secured to help prevent data access or manipulation.
- Your data is hosted in the Schneider Electric Data Center.
- Results are displayed on secured dashboard (reports, diagnostics, and notifications).
- You remain the owner of your data.

Operation Performance	• Lower unscheduled downtimes • Increase asset useful life • Reduce time to fix • Comply more fully with regulations
Financial Efficiency	• Lower Total cost of Ownership (TCO) • Decrease downtime cost • Decrease average maintenance cost/fix
Reduced Risk	• Reduce personnel risk through: ◦ Maintenance expertise continuity in high turnover environment ◦ Early indication of impending equipment downtime
Peace of Mind	• New asset ecosystem insights • Consistent experience across sites • Right people at the right time

Click here to download the free version of EcoStruxure Asset Advisor.

Services | Schneider Electric Global

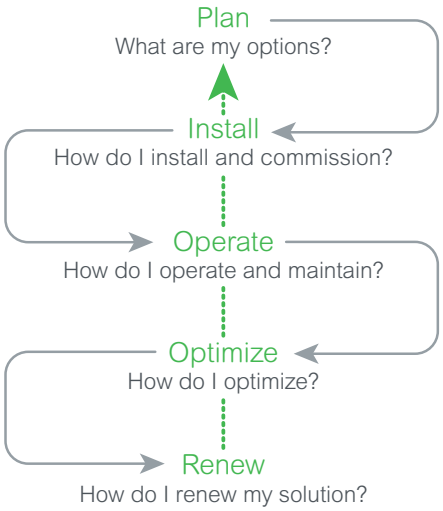
Schneider Electric Services

Peace of mind throughout the product life cycle

How can you cut costs and improve performance at the same time?

When it comes to your electrical distribution infrastructure, the answer is straightforward: get professional expertise.

Life Cycle Services



When it comes to your electrical distribution installation, we can help you:

- Increase productivity and reliability.
- Mitigate risk and limit downtime.
- Keep equipment up to date and extend lifespan.
- Cut cost and increase savings.
- Improve your return on investment.

CONTACT US!

https://www.se.com/ww/en/work/services

Plan

Schneider Electric helps you plan the design and execution of your solution, looking at how to improve your process and optimize your time:

- Technical feasibility studies: Design a solution in your environment.
- Preliminary design: Accelerate turnaround time to reach a final design.

Install

Schneider Electric will help you install solutions based on your plans to improve efficiency and reliability.

- Project management: Complete your projects on time and within budget.
- Commissioning: Ensure your actual performance matches the design, through on-site testing and commissioning, and tools and procedures.

Operate

Schneider Electric helps you improve your installation uptime and control your capital expenditure through its service offer.

- Asset operation solutions: Provide the information you need to enhance installation performance, and optimize asset maintenance and investment.
- Advantage service plans: Customize service plans that cover preventive, predictive, and corrective maintenance.
- On-site maintenance services: Deliver extensive knowledge and experience in electrical distribution maintenance.
- Spare parts management: Ensure spare parts availability and optimized maintenance budget.
- Technical training: Build the necessary skills and competencies to properly operate your installations.
- MP4 electrical assessment: Define an improvement and risk management program.

Renew

Schneider Electric extends the life of your system (under installation, operation, and environmental conditions) while providing upgrades.

- ECOFIT™: Keep up to date and improve the performance of your electrical installations (for example, LV, MV, and protection relays).
- MV product end of life: Recycle and recover outdated equipment with end-of-life services.

SureSeT Switchgear Range

Description

Schneider Electric Square D SureSeT metal-clad switchgear powered by EvoPacT MV vacuum circuit breakers provides control and protection of medium voltage power equipment.

SureSeT switchgear offers a two-high circuit breaker design in a narrow 26 in. wide footprint that is fully compartmentalized for circuit breaker, auxiliary equipment, and low voltage compartment. SureSeT switchgear is designed to be configured in various combinations to meet customer requirements.

SureSeT switchgear with EvoPacT MV circuit breakers are tested in accordance with IEEE C37.20.2. EvoPacT MV circuit breakers are tested per IEEE C37.09. SureSeT switchgear and EvoPacT are UL and cULus Listed.

Ratings

Maximum Voltages

4.76 kV, 15 kV

Continuous Current – Circuit Breakers

1200 A, 2000 A

Continuous Current – Main Bus

2000 A

Symmetrical Interrupting Capacity

25 kA, 40 kA

Basic Impulse Level

95 kV, peak (impulse) dielectric withstand

Enclosure

Type 1 – Indoor enclosure

Paint Color

White RAL 9003 finish standard.

Standard Features

SureSeT metal-clad switchgear as defined by IEEE C37.20.2 and includes:

- Withdrawable circuit breakers
- Fully compartmentalized construction
- Grounded metal barriers enclose all live components
- Automatic shutters over primary contacts
- Fluidized-bed epoxy insulated bus
- Mechanical and electrical interlocks
- Disconnect type voltage transformers or low power voltage transformers
- Disconnect type control power transformers with primary fuses
- Grounded circuit breaker truck in and between test-disconnected and connected positions
- Low voltage control compartment isolated from primary voltage areas
- Front and rear access required

Handling:

- Switchgear shipping sections are furnished with four lifting lugs and are shipped on pallets. Shipping split: One or two section cubicles.

Figure 1 - Front View

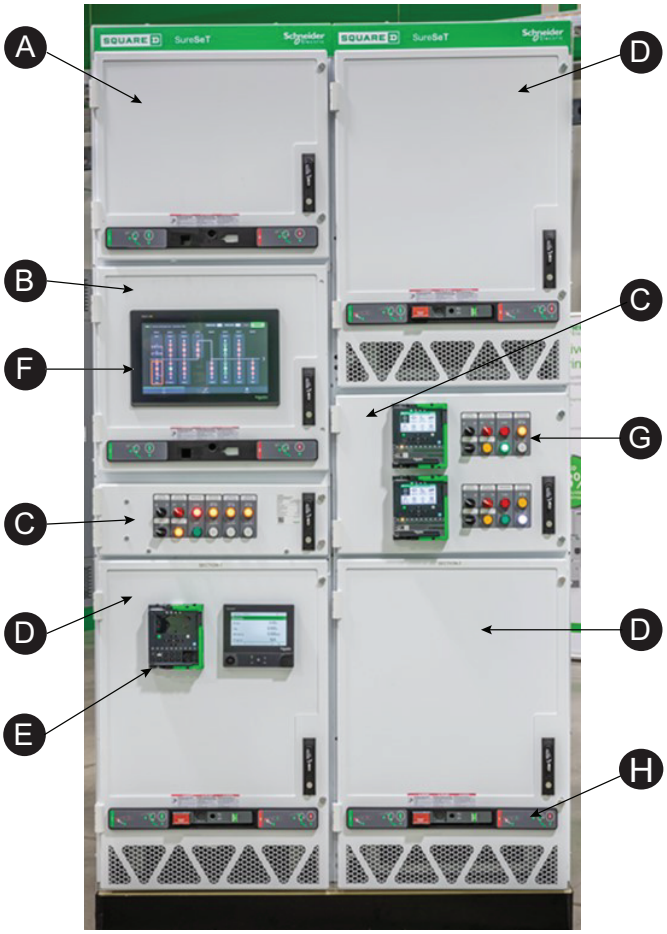


Figure 2 - Rear View

Table 1 - Legend

A	Auxiliary Compartment – Position A	**F**	Human Machine Interface (HMI) Screen (only available with Digital Monitoring package)
B	Auxiliary Compartment – Position B	**G**	Control Panel with local/remote switch, operational pushbuttons, and racking time delay
C	Low Voltage Compartment	**H**	Racking Mechanism Faceplate
D	Upper and Lower Circuit Breaker Compartment	**I**	Cable Connections
E	Instruments can be mounted on the panel doors in front of the circuit breakers or auxiliary drawouts.	**J**	Busbar Connection for Auxiliary to Main

For more details on circuit breaker cubicle, refer to EvoPacT ANSI Circuit Breaker and Breaker Cell, page 31.

Technical Characteristics

SureSeT Switchgear Characteristics	
Main Characteristics	
Brand	Square D™ by Schneider Electric
Range series of product	SeT Series
Range of product	SureSeT
Product or component type	Metal-Clad MV Switchgear
Insulation types	Group A. Bushings and stand-off insulators are molded fiberglass polyester.
	Group B. Bushings are epoxy, stand-off insulators are porcelain.
Ratings of SureSeT switchgear with EvoPacT Series	
Rated maximum voltage range available (kV rms)	5–15.0
Rated power frequency withstand range available (kV rms)	19–36
Rated lightning impulse withstand insulation levels available (kV peak)	60–95
Rated frequency (Hz)	60
Rated continuous current range available (A)	1200–2000
Rated momentary withstand current range available (kA peak)	65–104
Rated 2 second short-time withstand current (kA sym)	25–40
Enclosure category	B
Internal arc withstand	Non-Arc Rated
Schneider Electric environmental Eco-Design Level	Green Premium 2
RoHS compliant	Applicable
REACH compliant	Applicable
California Proposition 65	Applicable
Ambient and Operating Conditions	
Type	Type 1 Indoor
Applicable Codes and Standards	
cULus	Listed
IEEE	Compliant
NEMA	Compliant
CSA	Compliant
IEC/IEEE	Compliant
Seismic IBC / ASCE 7	Compliant
3–cycle interrupting rating	Rated
ANSI/IEEE C37.20.2, C37.09, C37.54, C37.55	Rated

General Characteristics

General Characteristics		
Designation		**Endurance**
Rated operation sequences		O - 0.3 s - CO - 15 s - CO
		O - 0.3 s - CO - 3min - CO
		O - 3min - CO - 3min - CO
Mechanical endurance	Number of operations	30000

Operating Conditions and Standards

Designed to operate in the following conditions:

Operating Conditions		
Ambient air temperature	Minimum value	23°F (–5°C)
	Maximum value	104°F (40°C)
	Average measured over 24 hour period	≤ +95°F
Maximum altitude above sea level	1,000 m (3,300 ft)	
Atmosphere	No dust, smoke, salt corrosive, or flammable gas or vapor	
Humidity	Average relative humidity over 24 hours	≤ +95 %
	Average relative humidity over 1 month	≤ +90 %

For more information, refer to the
SureSeT Medium Voltage, Metal-Clad, Indoor Switchgear User Guide

Other service conditions

If operated beyond the normal service conditions, the circuit breaker is subject to accelerated aging.

The circuit breaker may only be used under conditions other than the normal service conditions with express written permission from Schneider Electric.

Storage

In order to preserve all of the device's characteristics when stored for prolonged periods, we recommend storing the device in its original packaging, in dry conditions, and sheltered from the sun and rain at a temperature between –40°F (–40°C) and +158°F (70°C).

The maximum storage period is 12 months.

If the device was stored:

- Between 6 and 12 months: perform basic preventative maintenance to help ensure a correct device operation.
- Beyond 12 months: contact your Schneider Electric local service representative for device check-up.

Standards

SureSeT switchgear meets the following ANSI/IEEE standards:

- **ANSI/IEEE C37.20.2:** IEEE Standard for Metal-Clad Switchgear
- **ANSI/IEEE C37.09:** IEEE Standard Test Procedures for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000V

Functions and Characteristics

General Bus and Compartment

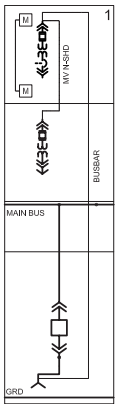
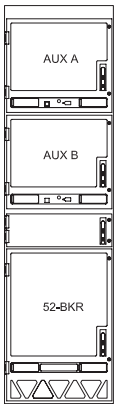
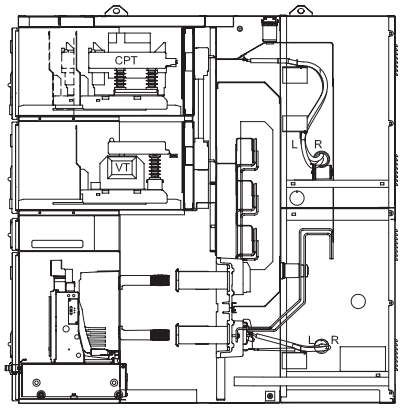
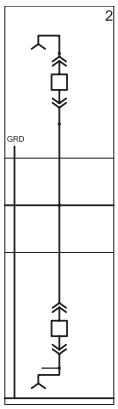
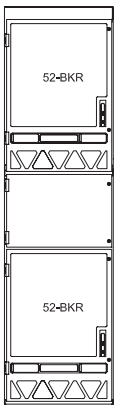
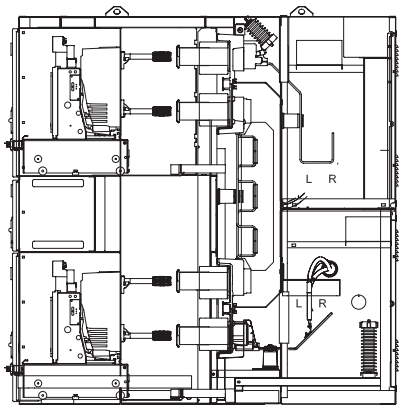
1200 A and 2000 A risers and main buses are always silver-plated copper with epoxy coating.

For main bus compartment, Group A and B, pass-through barriers are molded polyester glass as standard for 25 kA and 40 kA.

Ground bus is ground bare copper.

Available Structures

Table 2 - Typical Section Configurations

Main-Feeder Lower / Auxiliary A, B Upper		Top In / Out
		
Feeder Lower / Feeder Upper		**Top In / Out**
		

Dimensions and Weight

Dimensions

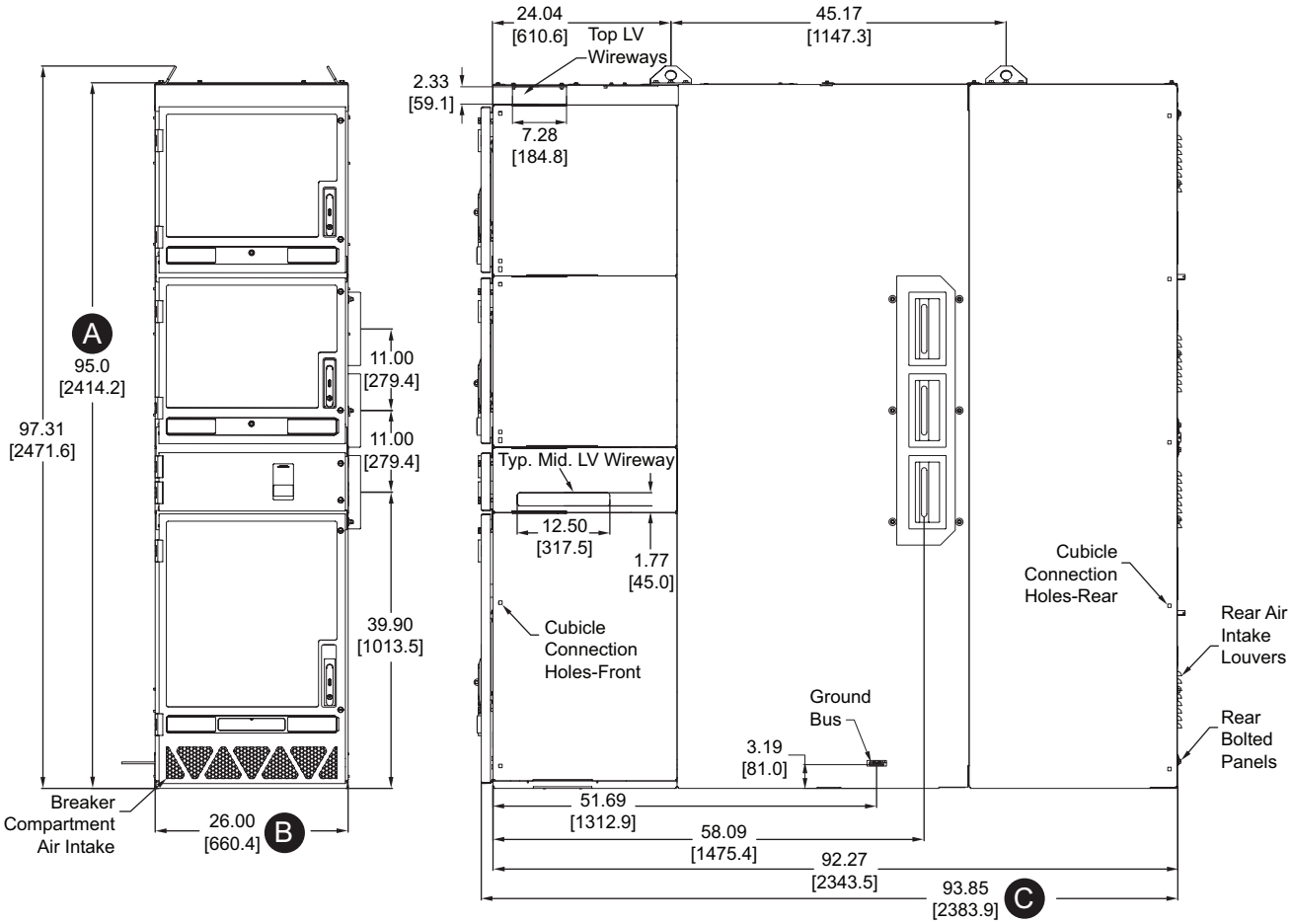


Table 3 - Switchgear and Component Approximate Dimensions

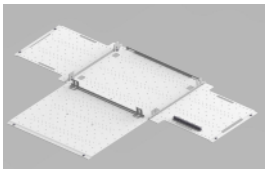
Item		Dimension
A	Section Height	95 in. (2,413 mm)
B	Section Width	26 in. (660 mm)
C	Section Depth	92.5 in. (2,350 mm)

Weight

Table 4 - Switchgear and Component Approximate Weights

Item	Rating	Weight
Switchgear Section (two-high section)	Up to 40 kA	3,600 lb (1,633 kg)
Circuit Breaker	1200 A, 40 kA	340 lb (155 kg)
	2000 A, 40 kA	410 lb (186 kg)
VT Drawer (three VTs)	15 kV	215 lb (98 kg)
CPT Drawer	15 kVA	348 lb (158 kg)
Low Power Voltage Transformers (three LPVTs)	15 kV	25 lb (11 kg)

Partner Ready Design



SureSeT switchgear is available as a semi-assembled offer to our OEMs and panel builders.

SureSeT switchgear is designed with OEMs and panel builders in mind. The front doors of the circuit breaker, auxiliary, and low voltage compartments are designed as removable panels or inserts that can be procured or prefabricated by our partners before the switchgear is prepared. This allows our partners to install and wire low voltage devices to the panels ahead of time so that when the switchgear arrives, the panels can be easily inserted and mounted to the compartment door frames.

This partner-ready design enables our OEMs and panel builders to achieve:

- Easy and simple installation and wiring of low voltage devices
- Efficiency in planning and assembly
- Faster lead times compared to fully assembled offer

Please reach out to your Schneider Electric representative for more information on the SureSeT switchgear semi-assembled offer for OEMs and panel builders.

Components and Accessories

EvoPacT Circuit Breaker and Breaker Compartment

EvoPacT MV circuit breakers move on side-mounted rollers supported on rails inside the cell. Circuit breakers can roll on bottom-mounted wheels outside the cell.

Circuit Breaker Compartment, 1200 A and 2000 A

These are mounted in a one- or two-high structure, and auxiliary devices can be mounted above a circuit breaker in a single high structure. Instruments can be mounted on the door in front of the circuit breaker.

Doors are standard left-hand hinged and come with two thumb screws per door. Doors are also available with a latching system. Please see your sales representative for more information. Through-door racking is standard on the circuit breaker. For details on through-door indicator position see Instruction Bulletin NNZ9886800.

Table 5 - General Characteristics for EvoPacT Withdrawable MV Circuit Breakers

Designation			
Rated voltage	Ur	kV	5/15
Rated frequency	fr	Hz	50/60
Rated power frequency withstand voltage	Ud	kV	19/36
Rated short-circuit breaking current	Isc	kA	25/40
Rated duration of short circuit	K	s	2
Rated continuous current	Ir	A	1200/2000
Rated operating sequences			O - 0.3 s - CO - 15 s - CO
			O - 0.3 s - CO - 3min - CO
			O - 3min - CO - 3min - CO
No load mechanical endurance	Number of operations		30,000

Table 6 - Standard Electrical Characteristics according to IEEE C37.09, NEMA C37.54 CLASS S1 M2

Common Characteristics						
Rated voltage	Ur	kV	5		15	
Rated frequency	fr	Hz	60		60	
Rated power frequency withstand voltage (1 min) Phase-phase and Phase-ground	Ud	kV	19		36	
Rated impulse basic insulation level withstand voltage (1 min) Phase-phase and Phase-ground	Up	kV	60		95	
Rated operating sequence			O - 0.3 s - CO - 15 s - CO		O - 0.3 s - CO - 15 s - CO	
Rated continuous current		A	1200/2000		1200/2000	
Rated short-circuit and short-time breaking		kA Sym	25	40	25	40
Rated duration of short circuit		s	2	2	2	2
Rated peak withstand current		kA	65	104	65	104

Table 6 - Standard Electrical Characteristics according to IEEE C37.09, NEMA C37.54 CLASS S1 M2 (Continued)

Common Characteristics		
Percentage DC component		47%
Interrupting time	ms	50 ms, 3.00 cycles, 60Hz

Table 7 - Electrical Characteristics for Capacitor Rated Circuit Breakers

Capacitor Switching Rated Circuit Breakers (C2)			
		Ir 1200A	Ir 2000A
Rated capacitor back-to-back bank current	A	630	400, 1000
Rated cable-charging breaking current	A	25	25, 31.5
Rated line-charging breaking current	A	2–10	2–10
Rated capacitor bank inrush making current	kApk	20	20
No load mechanical endurance	cycles	30,000	
Classification		C2-M2	

Table 8 - Electrical Characteristics for Generator Rated Circuit Breakers according to IEC/IEEE 62271-37-013

Generator Rated Circuit Breakers			
Rated continuous current	A	1200/2000	
Rated short-circuit and short-time breaking current	kA Sym	25	25
Rated duration of short circuit	kA	2	2
Close-and-latch current	kApk	68.5	68.5
Interrupting time		3 cycles	
Classification		G2-M3	
Rated operating sequence		CO - 30 min - CO	
Rated voltage		5 kV	15 kV
Rated power frequency withstand voltage		20 kV	38 kV

Table 9 - Designed to Operate in the Following Conditions according to ANSI/IEEE

Operating Conditions		
Ambient air temperature	Minimum	23°F (-5°C)
	Maximum	104°F (40°C)
Altitude (maximum without derating)	Standalone circuit breaker	Less than or equal to 3300 ft (1000 m)
Atmosphere	No dust, smoke, salt corrosive, or flammable gas or vapor	
Humidity	Average relative humidity over 1 month	≤ 90%

Circuit Breaker Racking Mechanism

The racking mechanism, racking port, and position indicator are integrated on the circuit breaker. To help reduce the risk of personnel exposure to live medium voltage components, every circuit breaker compartment is equipped with a mechanical trip pushbutton operable with the front door closed.

The mechanical trip pushbutton enables manual tripping of the circuit breaker. It is also interlocked with the racking port to allow for manual racking in the event that power is lost, and operations cannot be performed electrically. The mechanical trip pushbutton also comes with padlock provision.

Through-the-door racking is standard, and the door must be closed when racking the device from one position to another. The racking port can also be padlocked.

Further information on the circuit breaker racking mechanism, racking port, and position indicator can be found in JYT3013100, EvoPacT™ Medium Voltage Vacuum Circuit Breaker (VCB) User Guide.

MOC Switch (Mechanism Operated Contacts)

- Mounted on left-hand side above each circuit breaker in the circuit breaker compartment 25–40 kA
- Operates in the Test and Connected Positions as standard
- 10 contacts as standard, 13 contacts available
- Rated to 10,000 Cycles.

TOC Switch (Truck Operated Contacts)

- Mounted on right-hand side above each circuit breaker in the circuit breaker compartment up to 25 and 40 kA
- Auxiliary Contacts same as MOC
- 10 contacts as standard
- Rated to 1,000 Cycles

Current Transformers (CTs)

CTs are front-accessible, bushing/window-type, 600 V rated, single- or multi-ratio CTs can be mounted in the compartment around the insulating tubes of the line or load-side primary high-voltage contact bushing assembly. A maximum of four CTs, depending on accuracy, can be mounted per phase—two on the line side and two on the load side.

- 1 or 2 standard-accuracy CTs on line and/or load side or
- 1 high-accuracy CT on one side, plus 1 or 2 standard-accuracy CTs on the other.

Please reach out to your Schneider Electric representative for more information.

Auxiliary Compartments-Control Power Transformers, Voltage Transformers, and Low Power Voltage Transformers

Both VT and CPT drawers are available with extension rails for ease of maintenance and access. The extension rails can be retracted in and out to allow the VTs and CPTs to slide out from their compartment and rest on the rails for easy inspection, maintenance, installation, or replacement. Extension rails are fully extendable and support the weight of the drawer.

- Instruments can be mounted on the door in front of auxiliary device drawers.
- To help protect cable-connected auxiliary devices, use copper bus bars that are fully insulated with epoxy coating for the primary connections between the main or cable bus and the VT and CPT compartments. Connections may also be made with shielded MV cables. Please speak with your sales representative for more information.
- Wiping ground contacts are standard.
- Manual operation is the standard for VT and CPT drawers. Drawers can be upgraded to motorized racking for ease of maintenance to help reduce risk to personnel. The door must be closed when racking the drawer from one position to another. The racking port can be padlocked.
- Through-door racking is also available.

LPVT

Voltage Transformer Details

- Customers can select up to three 5 kV or 15 kV VTs. For increased space savings, LPVTs (Low Power Voltage Transformers) are also available and are mounted behind the LV box. See LPVT Application Sheet or reach out to your Schneider Representative for more details.

5/15KV SureSeT Voltage Transformers

System Line Voltage	Rated VT Primary Voltage (V)	Rated VT Secondary Voltage (V)	Ratio	Thermal Rating @ 86°F (30° C) (VA)	VT Connection	Ground Riser	Style	Fuse Included	Number of Fuses/ Connections	Fuse Rating	MFR Part No.	Bill Rating (kV)
2,400	2,400	120	20:01	750	Open Delta	Yes	PTG3	Yes	2	2E	PTG3-2-60-242FFGC2*	60
	2,400	120	20:01		Wye	No		No	1	2E	PTG3-1-60-242S	
4,200	4,200	120	35:01:-00	750	Open Delta	Yes	PTG3	Yes	2	1E	PTG3-2-60-422FFGC2*	
	4,200	120	35:01:-00		Wye	No		No	1	1E	PTG3-1-60-422S	
7,200	7,200	120	60:01:-00	1,500	Open Delta	No	PTG5	No	2	1E	PTG5-2-110-722SS	110
	7,200	120	60:01:-00	300	Wye	No	UCI-17	No	1	.5E	753380204	
8,400	8,400	120	70:01:-00	1,500	Open Delta	No	PTG5	No	2	1E	PTG5-2-110-842SS	
	8,400	120	70:01:-00	300	Wye	No	UCI-17	No	1	.5E	753380205	
12,000	12,000	120	100:01-:00	1,500	Open Delta	No	PTG5	No	2	.5E	PTG5-2-110-123SS	
	12,000	120	100:01-:00	300	Wye	No	UCI-17	No	1	.5E	753380206	
12,470	12,470	120	104:01-:00	1500	Open Delta	No	PTG5	No	2	.5E	PTG5-2-SD-02293SS	
	7,200	120	60:01:-00	300	Wye	No	UCI-17	No	1	.5E	753380204	
13,200	13,200	120	100:01-:00	1,500	Open Delta	No	PTG5	No	2	.5E	PTG5-2-110-1322SS	
	13,200	120	100:01-:00	300	Wye	No	UCI-17	No	1	.5E	753380207	
13,800	13,800	120	115:01-:00	1,500	Open Delta	No	PTG5	No	2	.5E	PTG5-2-110-1382SS	
	13,800	120	115:01-:00	300	Wye	No	UCI-17	No	1	.5E	753380208	
14,400	14,400	120	120:01-:00	1,500	Open Delta	No	PTG5	No	2	.5E	PTG5-2-110-1442SS	
	14,400	120	120:01-:00	300	Wye	No	UCI-17	No	1	.5E	753380209	

Control Power Transformer Details

- 5, 10, or 15 kVA single-phase CPTs are available.
- The secondary circuit breaker on the drawout truck is mechanically interlocked.
- Padlock provision is standard

Low Power Voltage Transformers

Low Power Voltage Transformers are voltage sensors based on resistor dividers for low power digital protection and measuring devices, LPVT provide a low voltage output signal compatible with the new generation of digital relays and secondary equipment with high input impedance.

Due to its reduced size and weight, it brings an easy installation compared with standard VT and allows to have bigger instrument compartments because of the removal of the traditional VT drawer solutions.

Benefits of LPVTS include:

- Insensitive to core saturation due to over-voltages and ferroresonance free due to lack of magnetic cores
- No issues for short-circuits on secondary side.
- Can support the protection function 25 - Synchronizing or Synchronism-Check Device.
- No need of MV fuses
- Cost saving solution during planning and execution due to the ability to serve a wider range of applications with fewer models. This leads to easier specification and design for consultants and reduces required inventory for integrators, resulting in potentially shorter lead times for end users.
- The same product reference can guarantee both metering and protection purpose with a wide operating voltage range.

Application Details

A quantity of 3 for each cubicle that requires LPVTs shall be used and connected phase to ground. Each LPVT is provided with a shielded RJ45 cable.

1 x LPVT HUB **EMS59573** is required in all cubicles featuring LPVTs and it shall be mounted in the LV box, the signals coming from the 3 LPVTs are merged into this HUB.

In case the required protection relay/meter/voltage sensing device does not feature a LPVTs input option, the transducer **P7M12025** is required to connect the LPVTs to the device voltage inputs. A power supply is required for this transducer and shall be UL Listed Class 2 or an Industrial Control Low Voltage Limited Energy Power Supply

LPVT and standard VT cradle/drawers cannot be used in the same line-up.

See LPVT application and specification sheet for more details E85875.

LPVT for nominal system voltage ranging from 2.4kV to 6.9kV, 3 required	LPVT17A	
LPVT for nominal system voltage 12kV to 14.4kV, 3 required	LPVT24	
Easergy range LPVT voltage HUB, 1 required	EMS59573	
LPVT Transducer Only when the protecting device does not have LPVT input. Multiple protecting devices can be connected to the transducers up to max. burden allowed	P7M1202	

LPVT Selection Line Volt (Phase Volt)	Solidly Grounded	LPVT Selection Line Volt (Phase Volt)	Low Resistance Grounded	Ungrounded
2400V (1385V)	LPVT17A			
4160V (2400V)				
4800V (2770V) LPV				
6900V (3985V				
8320V (4800V				
12000V (6930)	LPVT24A			
12470V (7200V)				
13200V (7620V)				
13800V (7970V)				
14400V (8315V				

Accuracy

Accuracy classes according to **IEC 61869-11**

0.5 for measure

3P for protection

Limits of ratio error and phase error for measuring LPVT.

Accuracy class	Percentage Ratio Error ε, εcor U ± %			Phase Error φe, φcor φo ±					
				Minutes			Centiradians		
	At Voltage (% of rated)			At Voltage (% of rated)			At Voltage (% of rated)		
	80	100	120	80	100	120	80	100	120
0,5	0,5	0,5	0,5	20	20	20	0,6	0,6	0,6

Limits of ratio error and phase error for protection and multipurpose LPVT.

Accuracy class	Percentage Ratio Error ε, εcor U ± %					Phase Error φe, φcor φo ±									
						± Minutes					Centiradians				
	At Voltage (% of rated)					At Voltage (% of rated)					At Voltage (% of rated)				
	2	20	80	100	*Fv*-X1-00	2	20	80	120	*Fv*-X1-00	2	20	80	100	*Fv*-X1-00
3P	6	3	3	3	3	240	240	120	120	120	7	3,5	3,5	3,5	3,5

Weight

LPVT Rating	Weight
LPVT - (3) LPVT17A	25 lb. (11 kg)
LPVT - (3) LPVT24A	25 lb. (11 kg)

CPT Drawout

- 5, 10 or 15kVA single phase CPT are available.
- The secondary breaker on the drawout truck is mechanically interlocked.
- Padlock provision is standard.
- For CPT and Fuse Selectrion see E58400.
- For CPT specificatons see E85115.

For Seismic Applications, CPTS must be mounted on the floor in the lower compartment.

Installation and Connection

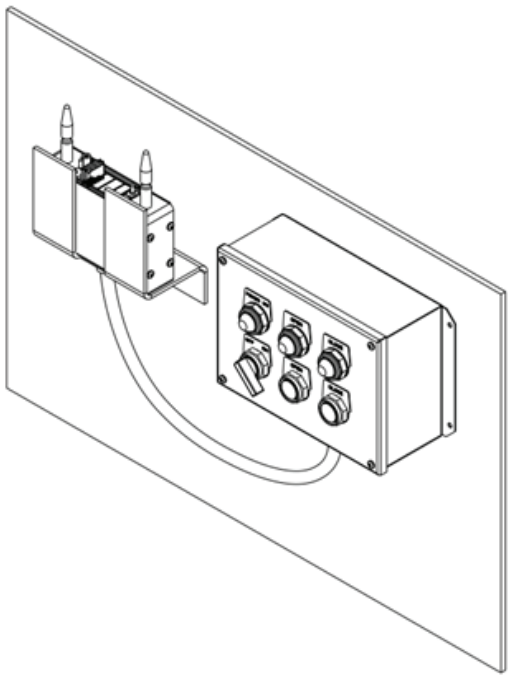
Recommended minimum space requirements around the equipment:

- Rear of equipment – 36 in. (915 mm)
- Front of equipment – 72 in. (1,830 mm)
- Side of equipment – 26 in. (661 mm)

For additional installation and connection instructions, please refer to the SureSeT Medium Voltage, Metal-Clad, Indoor Switchgear User Guide.

Spares and Accessories

Breaker Test Cabinets



An optional test cabinet is available. The test cabinet consists of a small metal enclosure including:

- A power on-off selector switch.
- An amber light indicating the power is on.
- A red light indicating the circuit breaker is closed.
- A green light indicating the circuit breaker is open.
- Close and open push buttons.
- An 8 ft. (2.44 m) cable with a secondary control receptacle that can be plugged directly into the EvoPacT circuit breaker top secondary control plug.

Test cabinet can be wall-mounted as shown. Refer to documentation provided with test cabinet for mounting and electrical diagrams.

Please reach out to your Schneider Representative for parts availability and pricing.

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6055CT2201