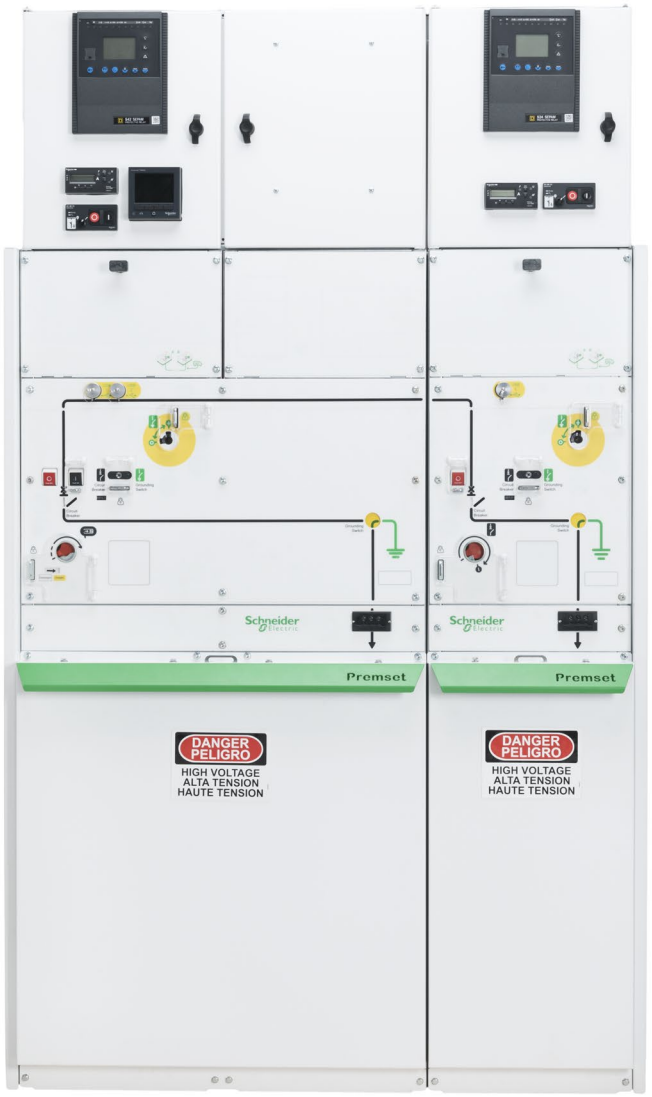
PremSeT™ 15 kV Switchgear

Compact Vacuum Circuit Breaker Switchgear with Shielded Solid Insulation (2SIS) System

Catalog
6045CT1601
2022



Schneider Electric

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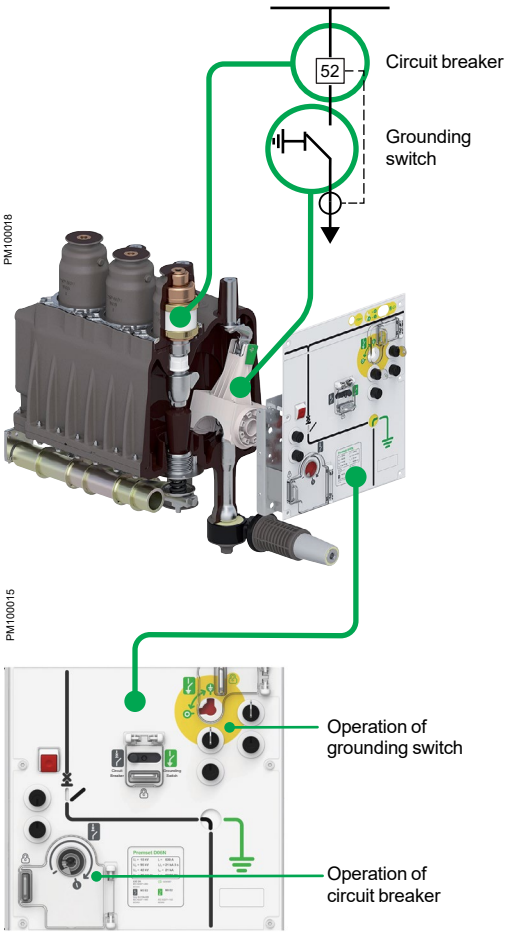


Shielded Solid Insulation System (2SIS)

The entire main circuit is solid insulated with epoxy or EPDM, reducing exposure to live parts:
- Reduced sensitivity to harsh environments (humidity, dust, pollution, etc.)
- Reduction of phase-to-phase fault risks.

The solid insulation is ground shielded
- Extended life expectancy
- 10-year switchgear maintenance cycle

The shielded solid insulation system extends switchgear life, increases reliability and reduces total cost of ownership.

Innovative single-line diagram, new arrangement of main functions

The PremSeT™ single-line diagram is composed of:
- A vacuum circuit breaker
- An isolating ground switch within a sealed tank with air at atmospheric pressure
- MV cables can be directly grounded with the isolating ground switch before opening the cable compartment panels
  - the arrangement of the two devices in series provides double isolation between the busbars and cables
  - the system does not contain SF6 and is RoHS compliant, for your peace of mind regarding end-of-life treatment and environmental concerns

Integrated core units

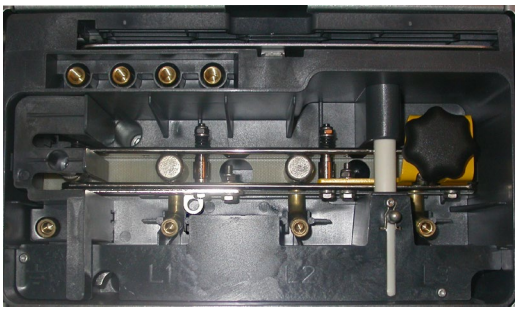
Easy and intuitive operation of the circuit breaker and isolating ground switch:
- Simple operation, with just 3 positions for all units: connected – open – grounded
- Intuitive active mimic bus diagram, with clear indicators for the circuit breaker and grounding switch
- All interlocks between functions are positively driven and built-in as standard

Consistent cubicle architecture for all circuit breakers

Multiple circuit breaker load options and two types of operating mechanisms:
- D01N and D02N: 100 A and 200 A circuit breakers for light load and operation
- D06N: 600 A circuit breaker for simple protection and light operation
- D06H / D12H: 600 A and 1200 A circuit for standard/heavy duty load and operation

Modular system architecture, simplifying installation and upgrades

The entire range of core units is optimized for dedicated applications, sharing:
- Same dimensions and footprint, 14.75 in. (375 mm) base form factor width
- Same auxiliaries such as electrical operation devices, accessories, and options
- Same intuitive operation
- Same elbow-style cable connections



Innovative auxiliary features

Live cable interlock:
An electrical interlock helps prevent the grounding of live cables in main circuit breakers (optional for feeder breakers)

Cable test device interlocked with isolating ground switch, simplifying cable testing and diagnosis:
- Cable testing without accessing the cable compartment
- Test device connection from the front of the switchgear, while cables remain grounded
- Interlocks with grounded wye point

Auto-transfer scheme without traditional iron core VTs
- Open or closed transition (hold-time contact for 3rd party voltage sync device)

Ready for smart grids

Integrated metering and power measurement functions:
- Integration of power measurement in feeders without additional space

Switchgear automation features:
- Modular architecture for scalable solutions (distributed intelligence)
- Linked by field bus using standard ethernet Modbus protocol
- Easy to integrate in SCADA systems via multiple protocols (Modbus, IEC 61850)
- Embedded web interface metering

Architecture and Components

PremSeT switchgear consists of functional units, each representing a type-tested assembly composed of a basic core unit and other functional blocks designed to work together in any combination.

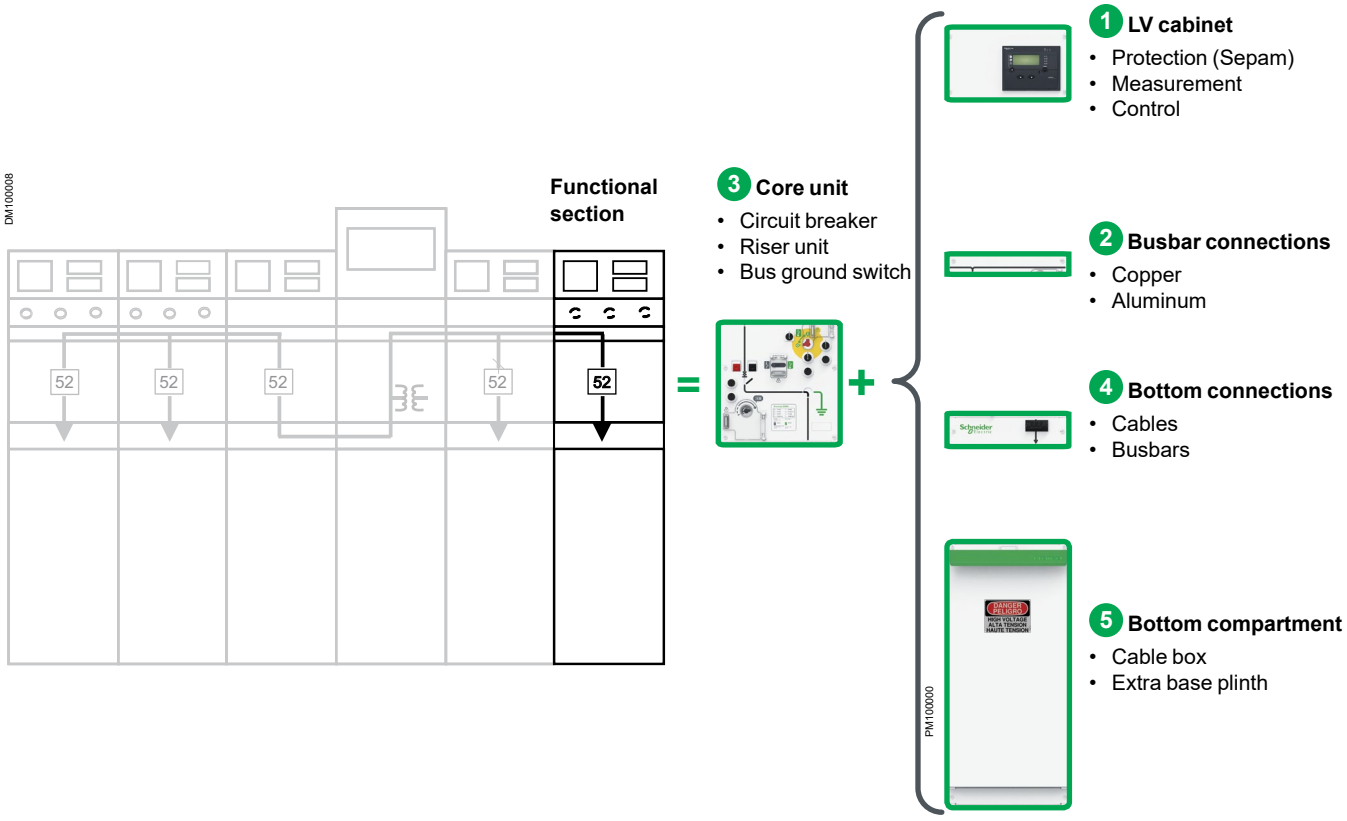
The core units are optimized for each typical application, and the assembly forms an insulated functional unit with reduced sensitivity to the environment.

This PremSeT medium voltage system makes it possible to meet most of your application needs.

- Flexibility and simplicity in the design of functional units
- Reliability of type-tested assemblies
- Small footprint space savings
- Environmentally robust components
- Shorter lead times and the possibility of making last-minute modifications
- Easy extension and upgrades.

Switchgear

Functional section = An assembly of functional blocks



Simplicity with mix-and-match modular architecture based on functional blocks

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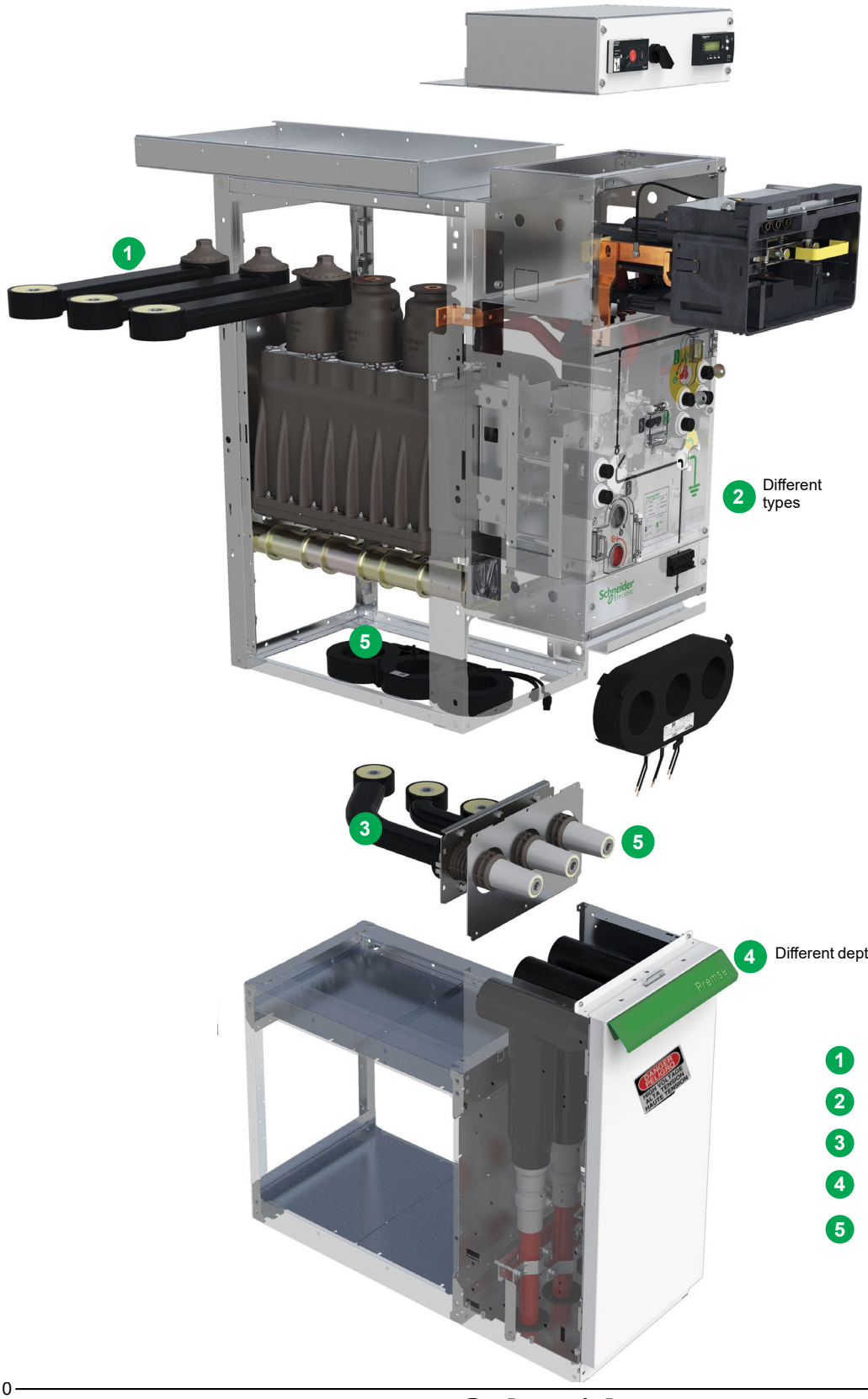


Shielded Solid Insulation System

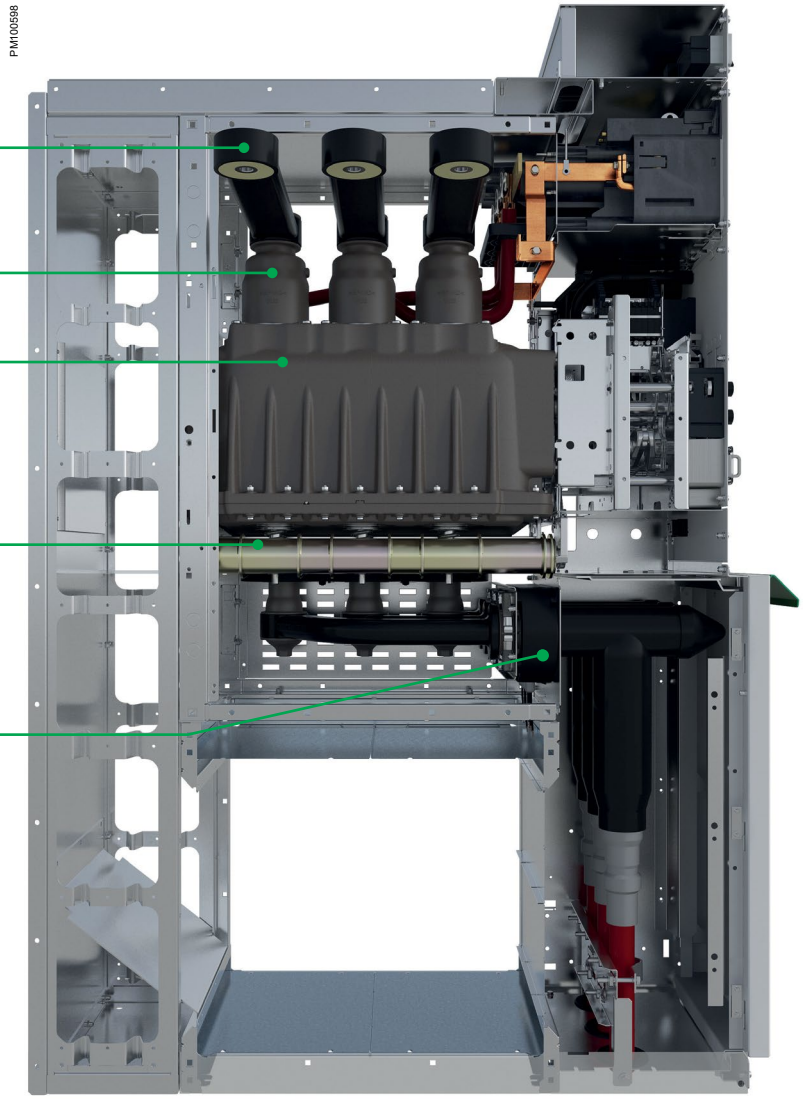
Modular **busbar system** with shielded solid insulation

Vacuum bottles with shielded solid insulation

Integrated isolating ground switch enclosed in tank with shielded solid insulation

Built-in current **sensors** for optimized protection and control located under the core unit and/or around bushings

Front aligned cable **connections** with shielded solid insulation, designed for easy cable installation

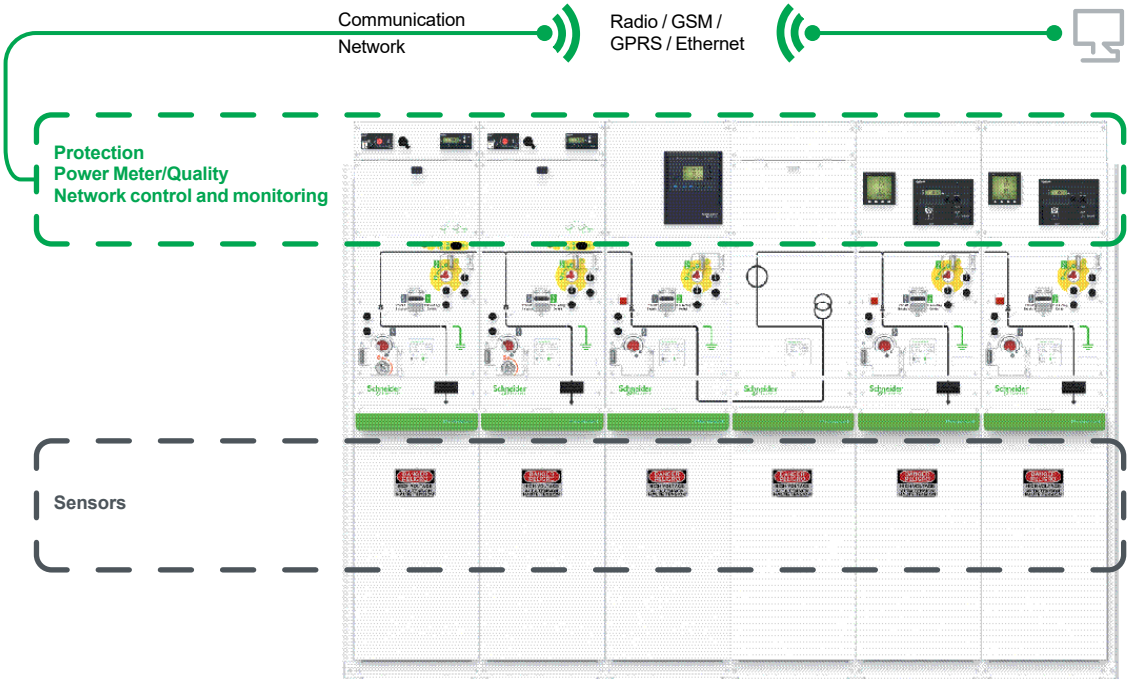


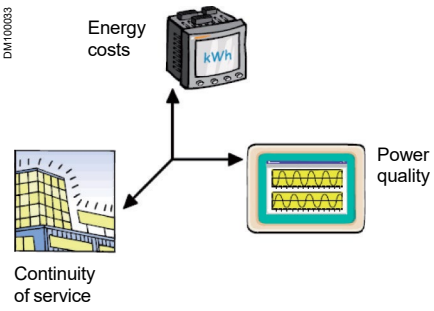
Distributed intelligence

With PremSeT switchgear, intelligence can be added to functional units by integrating protection, control, and monitoring devices.

These devices have dedicated locations and cabling and are daisy-chained throughout the various functional units using RJ45 connectors and Modbus protocol. A gateway can be used to connect the monitoring and controls to a supervision system via Ethernet, TCP-IP, and/or radio-frequency communication.

PremSeT switchgear is web-enabled providing you access to information on your electrical installation via a PC with a standard web browser.





Energy quality applications

PremSeT switchgear is designed to integrate distributed intelligence for switchgear automation, protection, and energy quality applications.

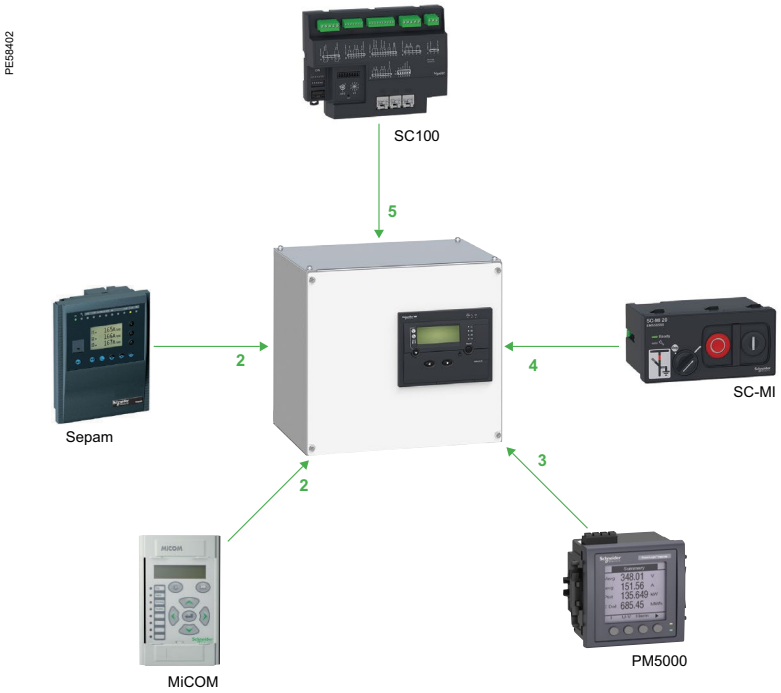
1 - Fault detection
- Voltage indicators: VPIS, VDS

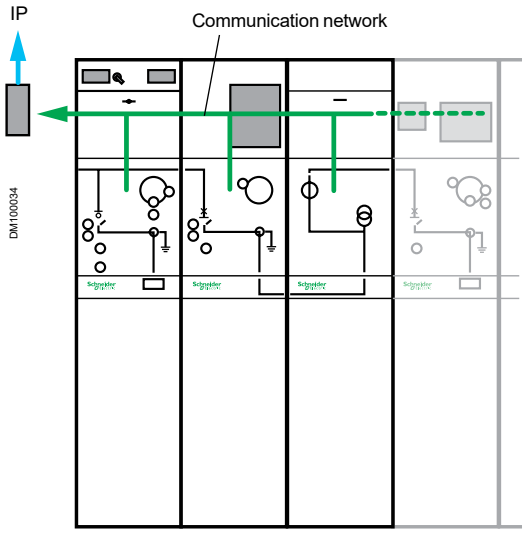
2 - Protection
- Auxiliary powered: Sepam™ and MiCOM™ protection relays (others available)

3 - Measurement
- Power/Quality Waveform Meter: ION9000
- Power Meter: PM5000
- Power/Quality Meter: PM8000

4 - Local control
- Switch/Breaker control panel: SC100
- Control switch: SC-MI

5 - Remote control
- Embedded intelligent devices
- Switch controller for local communication network: SC100
- Switch controller for remote communication network : SC110

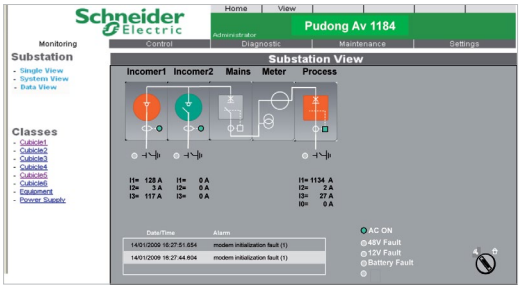




Distributed architecture for easy installation, operation, and scalability

The protection and automation services used in the PremSeT system are designed **to optimize switchgear performance and compactness**. They can be used to build a robust distributed architecture suited to harsh environments.

- Modular architecture for scalable solutions from local control up to complex switchgear automation, optimizing cost and performance by letting you choose only what you need
- Each circuit breaker is fully integrated in a functional section with a dedicated location and cabling
- Pre-engineered, pre-tested, and cost effective, the system includes the necessary sensors, bus and cable connections, power supplies, communication solutions, and HMIs
- Easy integration based on field bus communication between automation, protection, and metering devices with a plug-and-play system that scans and configures the system
- The field bus uses standard Ethernet Modbus protocol open to third-party devices
- Each device has a compatible XML description file based on Common Information Model (CIM) / IEC 61850 standard. This allows easy configuration to communicate with Supervisory Control and Data Acquisition (SCADA) system.



Web technology

PremSeT switchgear integrates Web technology so that access to information on your electrical installation is as easy as opening a Web page.
All you need is a standard Web browser and a PC connected via:

- Your local area network
- Pluggable connection to the PremSeT switchgear

PF89030

Sepam

Sepam protection and control units

Sepam 20, 40, and 80 series digital protection relays take full advantage of Schneider Electric's experience in electrical network protection to meet your needs.

- Effective switchgear protection of electrical networks
- Accurate measurements and detailed diagnostics
- Integral equipment control
- Local or remote indication and operation

The Sepam range complies with IEC 61850.

PM102898

MiCOM range

MiCOM protection

MiCOM protection provides the user with a choice of cost-optimized solutions for specific protection requirements within the distribution network. The MiCOM relay series offers comprehensive protective function solutions for all power supply systems, as well as for various functional and hardware project stages.

PM100587

LPCT

LPCTs for Sepam

Low Power Current Transformers (LPCT) use air-core technology that offers a number of advantages in PremSeT cubicles.

- Simpler selection: a single sensor can be used for both measurement and protection over the entire range of operating currents
- Easy installation: the LPCT output is plugged directly into the Sepam relay with reduced risk of overvoltage when disconnecting
- Flexibility of use: easy adaptation to changes in power levels and/or protection settings during MV system design or service life
- High accuracy up to the short-time circuit current with minimal saturation
- Compact design: small size and weight allows easy integration in PremSeT cubicles.

Overview

EcoStruxure™ ready solutions

A new generation of intelligent electronic equipment and sensors

Key benefits:

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

Characteristics	
Power supply source	Self-powered. Derives power directly from the circuit
Minimum activation current	5 A
Accuracy	+/- 1 ºC
Range	-25 ºC / +115 ºC
Wireless communication	ZigBee Green Power 2,4 GHz
Dimensions	31 x 31 x 13 mm
Weight	15 g
Continuous monitoring and supervision cost reduction	

Easergy TH110


Easergy CL110

Advantages:

- Prevention of unscheduled downtime.
- Improved equipment availability.
- Optimization of maintenance and transition to predictive maintenance

PremSeT Connected is equipped with our new generation of wireless intelligent sensors, using the Zigbee Green Power communication protocol, in order to help ensure reliable and secure data transmission.

Continuous thermal monitoring

Power supply connections in Medium Voltage (MV) cubicles are one of the most critical points in substations, especially for those made in:

- Power Cable Connections
- Removable CB connections

Loose and inadequate connections cause increased resistance at localized points that will lead to thermal runaway until the connections exceed rated temperatures.

Preventive maintenance can be complicated under severe operating conditions also due to limited accessibility and visibility of the contacts. Continuous thermal monitoring is the most appropriate way to detect early an affected connection.

Easergy TH110: Thermal monitoring sensors

Easergy 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

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

Easergy CL110: Environmental monitoring sensors

Easergy 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 operation
- Calculating transformer aging

The Easergy CL110 sensor is equipped with a battery (life > 15 years)

Substation Monitoring Device (SMD)

Easergy TH110 is connected to the Substation Monitoring Device (SMD) that collects the data for local signaling, data analysis and close-up visualization. Specific monitoring algorithms allow detecting deviations from the threshold as a function of specific installation characteristics also with respect to variable loads or abnormal behaviors emerging from the comparison of phases.

Main applications

Buildings

Industry

Data centers and networks

Energy and infrastructure

Why PremSeT Switchgear?

PremSeT switchgear is compact, modular and has reduced sensitivity to harsh environments. For these reasons, it offers the highest reliability and efficiency for a wide range of applications.

Typical applications

PremSeT switchgear is applicable to a variety of industries and designs.

Industries

- Healthcare
- Data centers
- Water / wastewater treatment
- Large commercial and high-rise buildings
- Industrial manufacturing
- Metals and mining
- Food and beverage

Distribution designs

- MV/LV substations
- MV radial distribution
- MV loop distribution
- MV distributed generation

PremSeT switchgear's advanced communication possibilities allow for applications such as:

- Local or remote control
- MV automatic transfer system (ATS)
- Building management or electric distribution management systems

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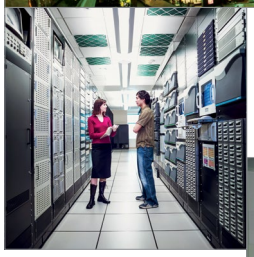

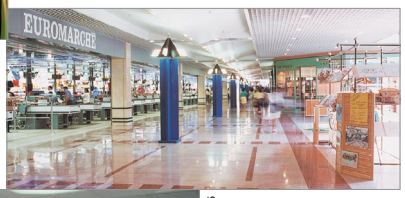

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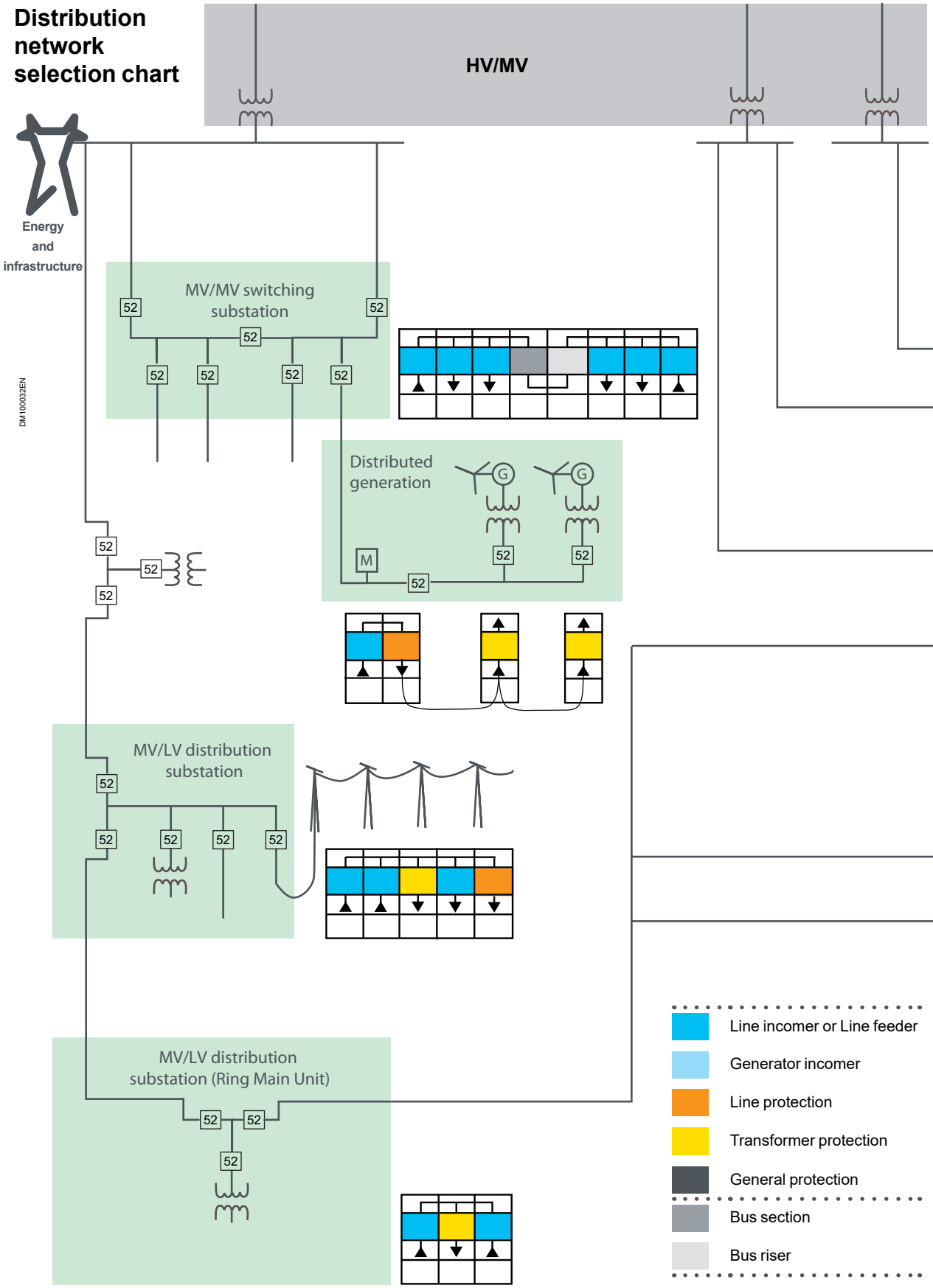
Distribution network selection chart



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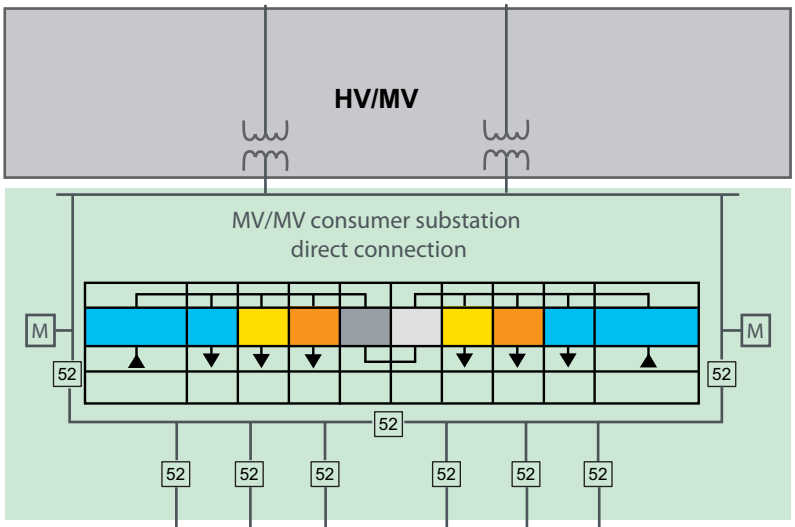
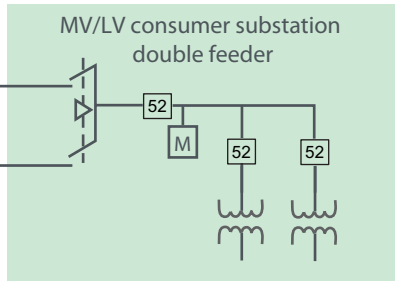
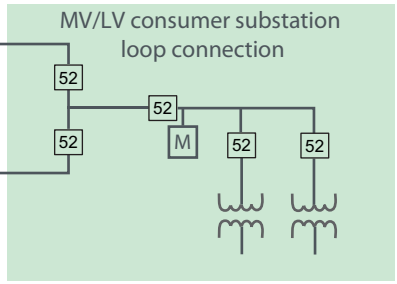
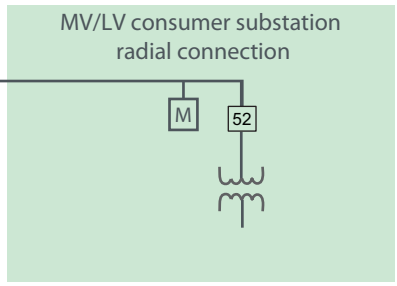
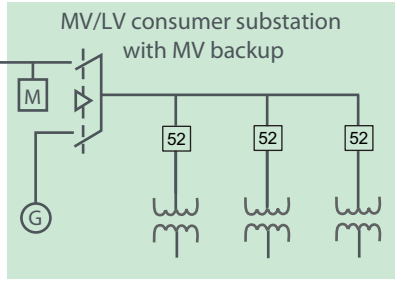
Buildings and Industry selection chart



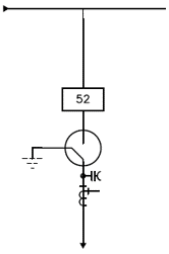
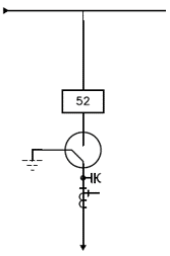
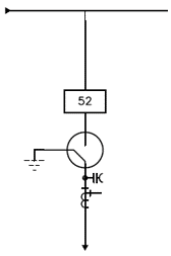
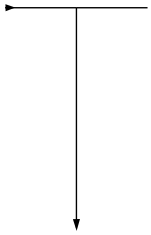








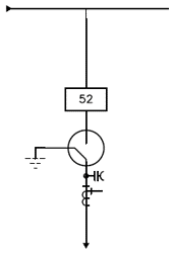
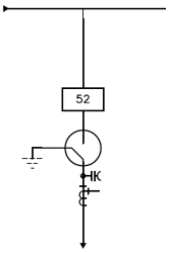
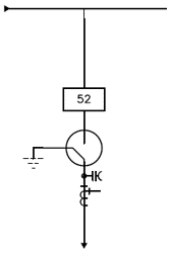
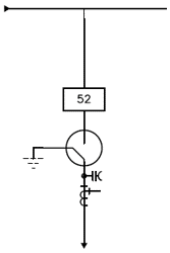
Incomer and feeder functions

Function			Line main / Line feeder			
Single-line diagram						
Core unit type			**D06N**	**D06H**	**D12H**	**G06**
Dimension	width: in. (mm)		14.75 (374.65)	14.75 (374.65)	29 (736.6)	14.75 (374.65)
Typical application of protection			General protection	Line protection	Line protection	
				Generator protection	Generator incomer	
Core unit			Latching CI1 mechanism and integrated grounding switch	Circuit breaker with stored-energy OCO mechanism and integrated grounding switch	Circuit breaker with stored-energy OCO mechanism and integrated grounding switch	Direct connection to busbars
See details ▶		*Page*	*28*	*29*	*31*	*32*
Grounding switch			■(1)	■(1)	■(1)	
Live cable interlock		*51*	□	□	□	
Protection (only one option possible)						
Sepam 20	Auxiliary powered	*49*	□	□	□	□
Sepam 40, 80	Auxiliary powered	*49*	□	□	□	□
MiCOM	Auxiliary powered	*49*	□	□	□	□
Metering (only one option possible)						
PM5000	Power Meter	*52*	□	□	□	□
PM8000	Power/Quality Meter	*53*	□	□	□	□
ION9000	Revenue Meter		□	□	□	□
Control						
Electrical operation		*28*	□	□	□	
Controller and accessories		*28*	□	□	□	
Additional opening coil (MX or MN)		*37*	□	□		
Auxiliary contacts		*54*	□	□	□	
Voltage indication (only one option possible)						
VPIS or VDS	Voltage indication	*50*	□	□	□	□
LPVT	Low-power voltage transformers	*44*	□	□	□	
Metering current transformers (only one option possible)						
ARU1	Ring CTs	*43*	□	□	□	□
ARC6	Ring CTs	*43*	□	□		□

■ *Required* □ *Optional*

(1)For core units without a grounding switch, contact your local Schneider Electric representative for availability.

Transformer protection

Transformer protection			
			
D01N	**D02N**	**D06H**	**D12H**
14.75 (374.65)	14.75 (374.65)	14.75 (374.65)	29 (736.6)
Transformer protection	Transformer protection	Transformer protection	Transformer protection
Circuit breaker with latching CI1 mechanism and integrated grounding switch	Circuit breaker with latching CI1 mechanism and integrated grounding switch	Circuit breaker with stored-energy OCO mechanism and integrated grounding switch	Circuit breaker with stored-energy OCO mechanism and integrated grounding switch
27	*27*	*29*	*31*
■ *(1)*	■ *(1)*	■ *(1)*	■ *(1)*
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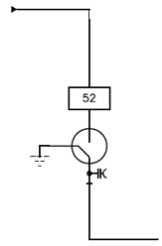
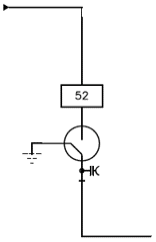
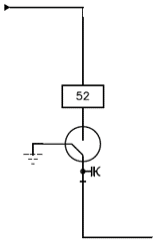
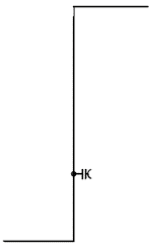
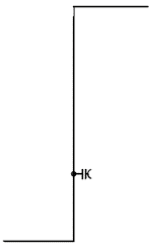
Bus-tie circuit breaker section

Function			Bus-tie circuit breaker section		
Single-line diagram					
Core unit type			**D06N**	**D06H**	**D12H**
Dimension	width: in. (mm)		14.75 (374.65)	14.75 (374.65)	29 (736.6)
Typical application of protection			Bus segment isolation and power redundancy	Bus segment isolation and power redundancy	Bus segment isolation and power redundancy
Core unit			Circuit breaker with latching CI1 mechanism and integrated grounding switch	Circuit breaker with stored-energy OCO mechanism and integrated grounding switch	Circuit breaker with stored-energy OCO mechanism and integrated grounding switch
See details ▶		*Page*	*28*	*29*	*31*
Grounding switch			■*(1)*	■*(1)*	■*(1)*
Cable testing device		*8*			
Live cable interlock		*51*			
Protection (only one option possible)					
Sepam 20	Auxiliary powered	*49*	□	□	□
Sepam 40, 80	Auxiliary powered	*49*	□	□	□
MiCOM	Auxiliary powered	*49*	□	□	□
Metering (only one option possible)					
PM5000	Power Meter	*52*			
PM8000	Power/Quality Meter	*53*			
ION9000	Revenue Meter				
Control					
Electrical operation		*28*	□	□	□
Controller and accessories		*28*	□	□	□
Additional opening coil (MX or MN)		*37*	□	□	
Auxiliary contacts		*54*	□	□	□
Voltage indication (only one option possible)					
VPIS or VDS	Voltage indication	*50*	□	□	□
LPVT	Low-power voltage transformers	*44*	□	□	□
Metering current transformers (only one option possible)					
ARU1	Ring CTs	*43*			
ARC6	Ring CTs	*43*			

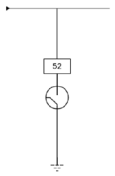
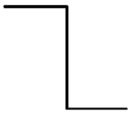
■ *Required* □ *Optional*

(1) For core units without a grounding switch, contact your local Schneider Electric representative for availability.

Bus-tie riser

Bus-tie riser	
	
G12	**G06**
14.75 (374.65)	14.75 (374.65)
Direct connection to busbars	Direct connection to busbars
32	*32*
□	□
□	□
□	□
□	□

Special functions

Function			Special functions		
Single-line diagram					
Core unit type			**ES-B**	**CPT**	**Transition**
Dimension	width: in. (mm)		14.75 (374.65)	14.75 (374.65)	14.75 (374.65)
Typical application of protection					
Core unit			Dedicated to busbar grounding	Air insulated section dedicated to providing internal control power	Air insulated section dedicated to close coupling to dry-type transformer, Motorpact motor controller
See details ▶		*Page*	*34*	*35*	*36 and 37*
Grounding switch					
Cable testing device		*8*			
Live cable interlock		*51*			
Protection (only one option possible)					
Sepam 20	Auxiliary powered	*49*			
Sepam 40, 80	Auxiliary powered	*49*			
MiCOM	Auxiliary powered	*50*			
Metering (only one option possible)					
PM5000	Power Meter	*52*			
PM8000	Power/Quality Meter	*53*			
ION9000	Revenue Meter				
Control					
Electrical operation		*28*	□		
Controller and accessories		*28*	□		
Additional opening coil (MX or MN)		*37*	□		
Auxiliary contacts		*54*	□		
Voltage indication (only one option possible)					
VPIS or VDS	Voltage indication	*50*	□		
LPVT	Low-power voltage transformers	*44*	□		
Metering current transformers (only one option possible)					
ARU1	Ring CTs	*43*			
ARC6	Ring CTs	*43*			

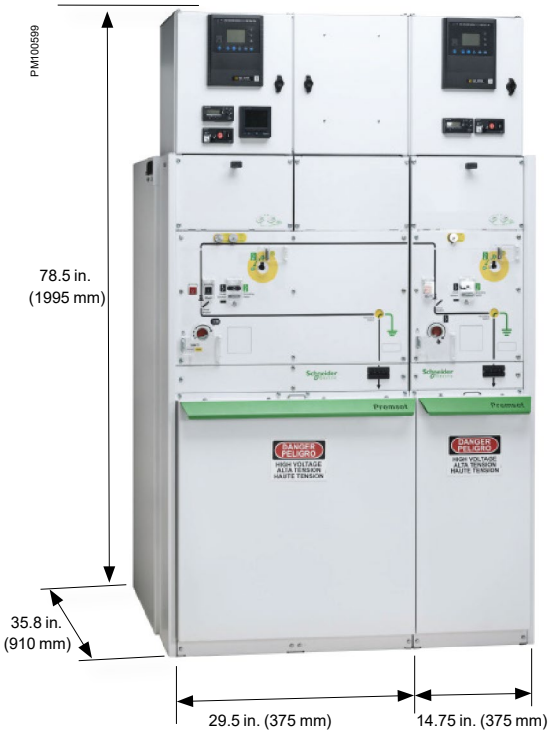
■ *Required* □ *Optional*

(1)Core units without grounding switch, contact your local Schneider Electric representative for availability.

Characteristics / Standards

Main electrical characteristics

Voltage			
Rated Maximum Voltage	kV	5	15
Rated frequency	Hz	60	
Insulation level			
Rated Power Frequency Withstand 1 min			
	kV		36
Rated lightning impulse withstand voltage (BIL)			
	kV		95
Current			
Rated Continuous Current - Main Bus	A	600, 1200	
Rated short-time withstand current	up to kA	25kA/2s	
Rated short-circuit breaking current			
Circuit breaker: D01N, D02N, D06N, D06H, D12H	up to kA	25	



Standard Dimensions

Uniform dimensions for the entire system

- Width: 14.75 in. (375 mm) for all 600 A circuit breaker units
- 1200 A circuit breaker units: 29.5 in. (750 mm) wide, but still fully compatible with the rest of the system
- Depth: 35.8 in. (910 mm), for front cable connection
- Height: 78.5 in. to 86.5 in. (1550 to 1995 mm), depending on the LV cabinet (see Dimensions and Weights on page 59)
- Cable connections: 27.5 in. (700 mm) high front-aligned connections

For detailed dimensions showing front connection and rear connection, please see Dimensions and Weights on page 59.

Applicable standards

PremSeT units meet all the following international standards:

- ANSI/IEEE C37.20.3: IEEE Standard for Metal-Enclosed Interrupter Switchgear
- ANSI/IEEE C37.04: Standard rating structure for AC high-voltage circuit breakers
- ANSI/IEEE C37.06: Standard AC high-voltage circuit breakers rated on a symmetrical current basis
- ANSI/IEEE C37.09: Standard test procedure for AC high-voltage circuit breakers rated on a symmetrical current basis
- ANSI/IEEE C37.11: Standard requirements for electrical control for AC high-voltage circuit breakers rated on a symmetrical current basis
- NEMA SG4: Alternating-Current High Voltage Circuit Breaker
- NEMA SG5: Power Switchgear Assemblies
- NEMA SG6: Power Switching Equipment
- IEC 60044-8: Instrument transformers - Part 8: Low Power Current Transducers
- IEC 61869-2: Instrument transformers – Part 1: Current transformers
- IEC 61869-3: Instrument transformers – Part 2: Voltage transformers
- IEC 60255: Electrical relays

Normal service conditions

Enclosure Rating

- Indoor Enclosure, (ANSI C37.20.3)

Environmental characteristics

Altitude above sea level (max.)	• 10,000 ft (3000 m) (1)
Ambient air temperature	• Storage : from -40 °F to +175°F (-40 °C to +80 °C) • Operation: from -13 °F to +104 °F (-25°C to +40 °C)
Humidity	• <= 95% Relative Humidity

(1) Over 10,000 ft (3000 m), please contact your local Schneider Electric representative.

Outdoor Service Conditions

PremSeT's outdoor solution consists of modular enclosures that house the PremSeT switchgear. The outdoor modular enclosures are offered in two different widths, 29.5" (750 mm) or 44.25" (1125 mm). The 29.5" wide outdoor section accommodates two (2) 600A indoor cubicles or one (1) 1200A indoor cubicle. The 44.25" wide outdoor section accommodates three (3) 600A indoor cubicles or one (1) 1200A and (2) 600A indoor cubicles.

Enclosure Rating

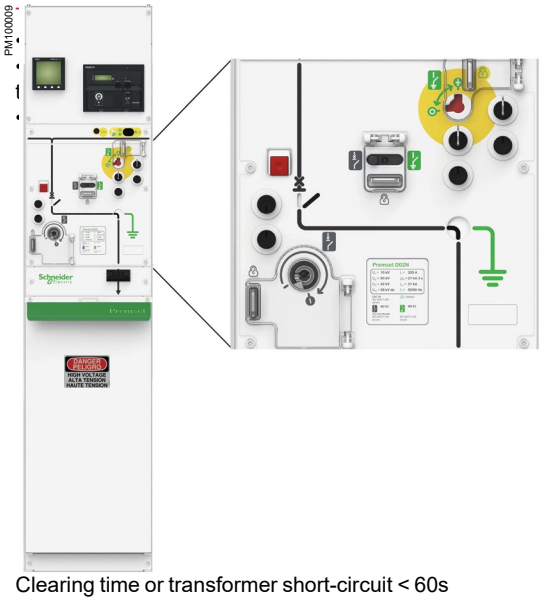
- Enclosure is Outdoor Category A (ANSI C37.20.3)
- Bottom cable entry/exit only
- 17.75" LV box and 10" plinth only
- Front and rear access required

Front View

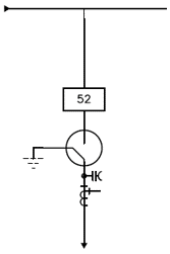
Side View

Circuit breaker

D01N, D02N



Clearing time or transformer short-circuit < 60s



Basic equipment

- core unit
  - vacuum circuit breaker providing both load and fault breaking
  - integral two-position isolating ground switch (cable side)
- mechanism:
  - operating circuit breaker with CI1 type operating mechanism featuring pushbutton opening and anti-reflex lever-operated closing
  - both operation speeds are independent of operator action
  - mechanical interlocking between the circuit breaker and grounding switch
- top or bottom cable entry/exit with type C cable elbow connection accommodating up to two (qty 2) 500-kcmil cables per phase
- voltage presence indicator
- cable box with 27.5 in. (700 mm) length cable connection and 11.4 in. (290 mm) deep door
- standard built-in padlocking facility for main circuit breaker, grounding switch, and interlock (shackle diameter < 0.35 in. (9 mm))
- camera for visible disconnect of isolating ground switch
- interlocking between cable box door and grounding switch

Accessories

Operation accessories options

- electrical remote operation
- auxiliary contacts on circuit breaker and grounding switch
- voltage present /absent contact
- local/remote control switch
- auxiliary power shut down switch
- operation counter
- additional tripping coil
- pushbutton protection cover

Connections options

- surge arresters with cable connection
- deeper cable box door (13.8 in. (350 mm) or 17.8 in. (450 mm))
- Larger low-voltage control cabinet
- base plinth (10.2 in. (260 mm) or 20.5 in. (520 mm))

Interlocking options

- key-type interlocking
  - main circuit breaker in open position (1 or 2 keylocks)
  - grounding switch in cable grounded position (1 or 2 keylocks)
  - grounding switch in 'line' position(1 or 2 keylocks)
- live cable interlocking (standard equipment for main incoming circuit breakers)

Protection relay option

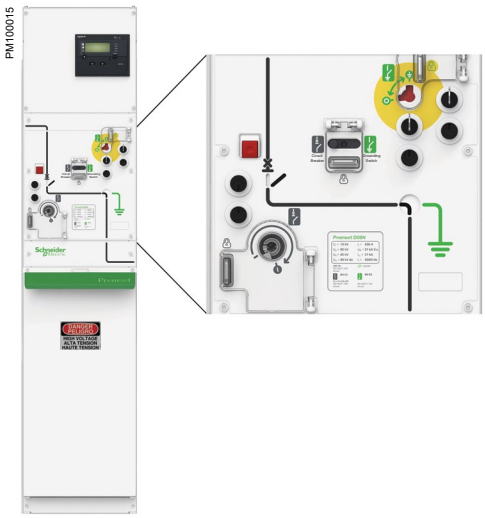
- protection relay
  - Sepam
  - MiCOM
  - others available

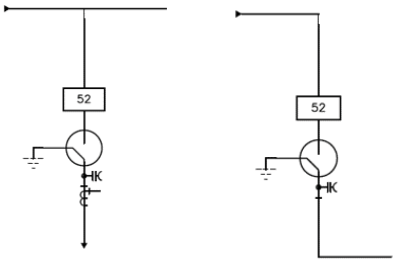
Technical characteristics

Rated voltage		(kV)
Rated Maximum Voltage		15 kV
Rated Continuous Current		
	Main busbar Max	600A, 1200A
	D01	100A
	D02	200A
	D06	600A
	D12	1200A
	G06	600A
	G12 bus riser only	1200A
Rated Max Power Frequency Withstand Voltage		36 kV, 1min
Rated Max Lighting Impulse Withstand Voltage		95 kV BIL
Rated Interrupted Current		25 kA
Rated Short-time Withstand Current		25 kA, 2 sec
Rated Momentary Withstand Current (Peak)		65 kA
Rated Interrupting Time-Circuit Breaker		3 cycles
No Load Mechanical Endurance		
	D06, D12H-Circuit Breaker	10,000
	D01, D02-Circuit Breaker	2,000
	D01, D02, D06, D12, ESB-Switch	500
Enclosure		
	Indoor per ANSI C37.20.3	
	Outdoor type A per C37.20.3	
UL/CUL Listed, IEEE C37.20.3		

D06N - General protection

The D06N uses vacuum and 2SIS technology
- the smallest VCB in the world, only 14.75 in. (375 mm) wide
- rated current is 600 A





Basic equipment
- Core unit
  - vacuum circuit breaker providing both breaking load and fault breaking
  - integral two-position isolating ground switch (cable side)
- mechanism:
  - CI1 type operating mechanism featuring pushbutton opening and anti-reflex lever-operated closing
  - both operation speeds are independent of operator action
  - mechanical interlocking between the circuit breaker and grounding switch
- top or bottom cable entry/exit with type C cable elbow connection accommodating up to two (qty 2) 500-kcmil cables per phase
- voltage presence indicator
- cable box with 27.5 in. (700 mm) length cable connection and 11.4 in. (290 mm) deep door
- standard built-in padlocking facility for main circuit breaker, grounding switch, and interlock (shackle diameter < 0.35 in. (9 mm))
- camera for visible disconnect of isolating ground switch
- interlocking between cable box door and grounding switch

Accessories

Operation accessories options
- electrical remote operation
- auxiliary contacts on circuit breaker and grounding switch
- local/remote control switch
- auxiliary power shut down switch
- operation counter
- pushbutton protection cover

Connections options
- 1200 A three-phase upper busbars with cable connection
- surge arresters with cable connection
- deeper cable box door (13.8 in. (350 mm) or 17.7 in. (450 mm))
- compact cable box with 500 mm length cable connection
- larger low-voltage control cabinet
- base plinth (10.2 in. (260 mm) or 20.5 in. (520 mm))

Interlocking options
- key-type interlocking
  - main circuit breaker in open position (1 or 2 keylocks)
  - grounding switch in cable grounded position (1 or 2 keylocks)
  - grounding switch in 'line' position (1 or 2 keylocks)
- live cable interlocking (standard equipment for main incoming circuit breakers)

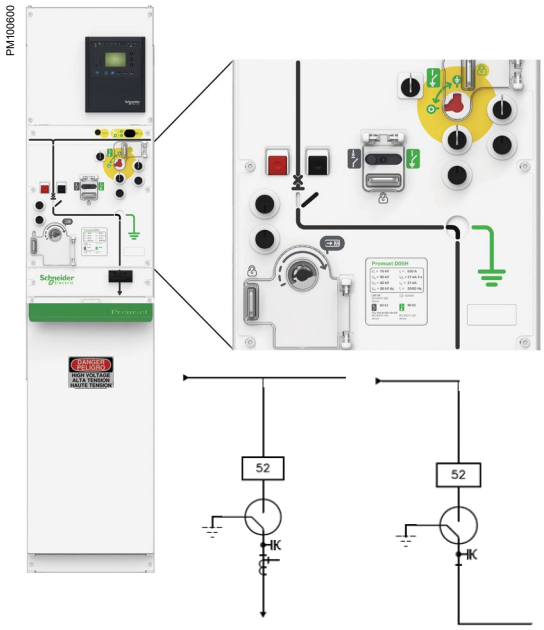
Protection relay option
- protection relay
  - Sepam
  - MiCOM
  - others available

Technical characteristics

Rated voltage		(kV)	5	15
Rated current		A	600	
Rated short-time withstand current and duration	for switchgear with tk=1s	up to kA	25	25
Short-circuit breaking capacity		up to kA	25	25
Rated making capacity of main circuit breaker and grounding switches	when fr=50 Hz	kA peak	62	62
	when fr=60 Hz	kA peak	65	65
No-load mechanical endurance of main circuit breaker		Number of operation cycles	10000	
Operating sequence			O - 0.3s - CO-15s - CO	
Maximum number of fault breaking operations at rated short-circuit breaking capacity			50	
Total clearing time at Isc		ms	<50	
No-load mechanical endurance of grounding switch		Number of operation cycles	1000	
Fault making operations of grounding switch		Number of operation cycles	5	

D06H - Heavy-duty line protection

The D06H uses vacuum interrupter and 2SIS technology
- the smallest VCB in the world, only 14.75 in. (375 mm) width
- rated current is 600 A



Basic equipment
- core unit
  - vacuum circuit breaker providing both load and fault breaking
  - integral two-position isolating ground switch (cable side)
- mechanism
  - operating circuit breaker with stored energy type operating mechanism (O-CO) with pushbutton opening and closing and spring charging using a handle, independent of operator action
  - heavy-duty operating cycle (O-0.3 s-CO-15 s-CO)
  - anti-reflex lever-operated mechanism for grounding switch, independent of operator action
  - mechanical interlocking between the circuit breaker and grounding switch
- top or bottom cable entry/exit with type cable elbow connection accommodating up to two
  (qty 2) 500-kcmil cables per phase
- voltage presence indicator
- cable box with 27.5 in. (700 mm) length cable connection and 11.4 in. (290 mm) deep door
- standard built-in padlocking facility for main circuit breaker, grounding switch, and interlock (shackle diameter < 0.35 in. (9 mm))
- camera for visible disconnect of isolating ground switch
- interlocking between cable box door and grounding switch

Accessories

Operation accessories options
- electrical remote operation
- auxiliary contacts on circuit breaker and grounding switch
- local/remote control switch
- auxiliary power shut down switch
- operation counter
- pushbutton protection cover

Connections options
- surge arresters with cable connection
- deeper cable box door
- larger low-voltage control cabinet
- base plinth

Interlocking options
- key-type interlocking
  - main circuit breaker in open position (1 or 2 keylocks)
  - grounding switch in cable grounded position (1 or 2 keylocks)
  - grounding switch in 'line' position(1 or 2 keylocks)
- live cable interlocking (standard equipment for main incoming circuit breakers)

Protection relay option
- protection relay
  - Sepam
  - MiCOM
  - others available

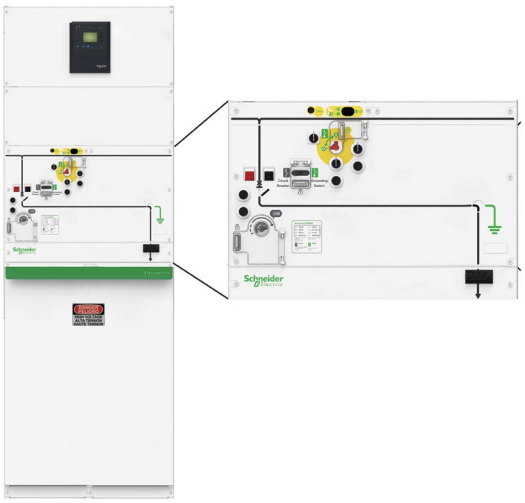
Technical characteristics

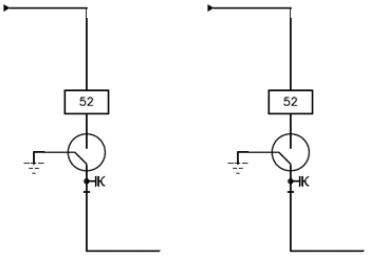
Rated voltage		(kV)	5	15
Rated current		A	600	
Rated short-time withstand current and duration	for switchgear with tk=1s	up to kA	25	25
Short-circuit breaking capacity		up to kA	25	25
Rated making capacity of main circuit breaker and grounding switches	when fr=50 Hz	kA peak	62	62
	when fr=60 Hz	kA peak	65	65
No-load mechanical endurance of main circuit breaker		Number of operation cycles	10000	
Operating sequence			O - 0.3s - CO-15s - CO	
Maximum number of fault breaking operations at rated short-circuit breaking capacity			50	
Total clearing time at Isc		ms	<50	
No-load mechanical endurance of grounding switch		Number of operation cycles	1000	
Fault making operations of grounding switch		Number of operation cycles	5	

D12H - Heavy-duty line protection

The D12H uses vacuum interrupter and 2SIS technology
- 29 in. (750 mm) width
- rated current is 1200 A

PM100600





Basic equipment

- core unit
  - vacuum circuit breaker providing both load and fault breaking
  - integral two-position isolating ground switch (cable side)
  - grounding switch uses air technology in sealed-for-life tank at atmospheric pressure
- mechanism
  - operating circuit breaker with stored energy type operating mechanism (O-CO) with pushbutton opening and closing and spring charging using a handle, independent of operator action
  - heavy-duty operating cycle (O-0.3 s-CO-15 s-CO)
  - anti-reflex lever-operated mechanism for grounding switch, independent of operator action
  - mechanical interlocking between the circuit breaker and grounding switch
- protection current sensors
  - ARU2
- three-phase busbars for top connection (1200 A)
- top or bottom cable entry/exit with type C cable elbow connection accommodating up to four (qty 4) 500-kcmil cables per phase
- voltage presence indicator
- cable box with 27.5 in. (700 mm) length cable connection and 11.4 in. (290 mm) deep door
- standard built-in padlocking facility for main circuit breaker, grounding switch, and interlock (shackle diameter < 0.35 in. (9 mm))
- camera for visible disconnect of isolating ground switch

Accessories

Operation accessories options
- electrical remote operation
- auxiliary contacts on circuit breaker and grounding switch
- local/remote control switch
- auxiliary power shut down switch
- operation counter
- pushbutton protection cover

Connections options
- surge arresters with cable connection
- deeper cable box door (17.8 in. (450 mm)
- base plinth (10.2 in. (260 mm) or 20.5 in. (520 mm))

Interlocking options
- key-type interlocking
  - main circuit breaker in open position (1 or 2 keylocks)
  - grounding switch in cable grounded position (1 or 2 keylocks)
  - grounding switch in ‘line’ position(1 or 2 keylocks)
- interlocking between cable box door and main circuit breaker and grounding switch live cable interlocking

Protection relay option
- protection relay
  - Sepam
  - MiCOM
  - others available

Technical characteristics

Rated voltage			(kV)	5	15
Rated current			A	1200	
Rated short-time withstand current and duration			up to kA	25	25
Short-circuit breaking capacity			up to kA	25	25
Rated making capacity of main circuit breaker and grounding switches	when fr=50 Hz		kA peak	62	62
	when fr=60 Hz		kA peak	65	65
No-load mechanical endurance of main circuit breaker		Number of operation cycles		10000	
Operating sequence				O - 0.3s - CO-15s - CO	
Maximum number of fault breaking operations at rated short-circuit breaking capacity				50	
Total clearing time at Isc			ms	<50	
No-load mechanical endurance of grounding switch		Number of operation cycles		1000	
Fault making operations of grounding switch		Number of operation cycles		5	

(1) Please contact your local Schneider Electric representative for availability

Bus Riser

G06, G12

The G06 and G12 core unit is a simple bus riser

- G06 can be used in various functional units: cable bus tap, bus riser. G12 is only bus riser
- 14.75 in. (375 mm) wide

PM100584bis

Basic equipment

- Top or bottom cable entry/exit with type C cable elbow connection accommodating up to two (qty 2) 500-kcmil cables per phase (only for G06)
- Voltage presence indicator
- Cable box with 27.5 in. (700 mm) length cable connection and 11.4 in. (290 mm) deep door

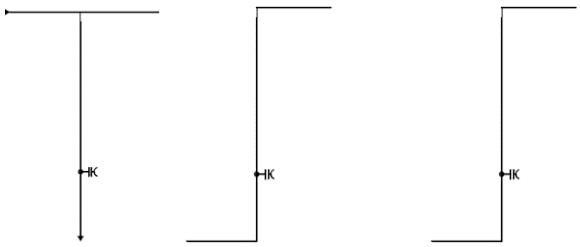
Accessories

Connections options

- surge arresters with cable connection (only for G06)
- deeper cable box door (17.8 in. (450 mm))
- larger low-voltage control cabinet
- base plinth (10.2 in. or 20.5 in. (260 mm or 520 mm))

Technical characteristics

Rated voltage			(kV)	5	15
Rated current			A	600 (G06), 1200 (G12)	
Rated short-time withstand current and duration	for switchgear with tk=1s		up to kA	25	25

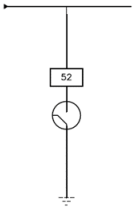


G06 *G12*

Special functions

ES-B - Busbar grounding switch

The ES-B core unit is dedicated to busbar grounding:



Basic equipment

- Internal ground switch for bus bar grounding
- Mechanism:
  - operating load switch with anti-reflex lever-operated mechanism (CIT type), independent of operator action
  - standard built-in padlocking facility for main circuit breaker, grounding switch, and interlock (shackle diameter < 0.35 in. (9 mm)

Accessories

Connections options

- larger low-voltage control cabinet
- base plinth (10.2 in. or 20.5 in. (260 mm or 520 mm))

Interlocking options

- optional keylocking
- 1 or 2 keylocks for locking the ES-B function in the "open" position.

Auxiliary contacts

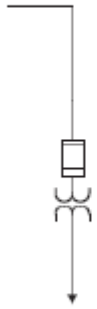
- 1 optional changeover contact

Technical characteristics

Rated voltage		(kV)	5	15
Rated current	(Arms)		600	
Rated short-time withstand current and duration		up to kA	25	25
Rated making capacity of circuit breaker and grounding switch	when fr=50 Hz	kA peak	62	62
	when fr=60 Hz	kA peak	65	65
No-load mechanism endurance of circuit breaker	Number of operation cycles		1000	
Fault making operations of grounding switch	Number of operation cycles		5	

CPT - Control Power Transformer

The CPT core unit supplies internal control power:
- 5 kVA
- 14.75 in. (375 mm) wide



Basic equipment

- Air insulted (non-shielded solid), fused control power transformer for 120/240 VAC applications

Accessories

Feature options
- indoor or outdoor application
- line side or load side connection
- left or right side connection
- with or without isolation switch
- base plinth (10.2 in. or 20.5 in. (260 mm or 520 mm))

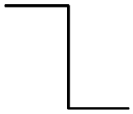
Accessibility
- front and side access is required for indoor
- front and rear access is required for outdoor

Technical Characteristics

Rated voltage	(kV)
CPT Size	5 kVA
Fixed (non draw-out)	-
Rated Max Voltage	15 kV
Rated Power Frequency Withstand Voltage	36 kV
Rated Basic Impulse Voltage	95 kV BIL
Rated Continuous Current	25 KA, 2 sec
Primary Voltages (kV)	2.4, 4.16, 4.8, 7.2, 8.32, 12, 12.47, 13.2, 13.8, 14.4
Secondary Voltage	120

Transition - Dry-type Transformer

The transition section is dedicated to close coupling to transformers
- 14.75 in. (375 mm) wide
- rated current is up to 600A



Basic equipment
- G06 bus riser section close coupled to transformer through air insulated (non-shielded solid) busbar connection
- For application only with Schneider Electric medium voltage dry type transformers:
  - Power Cast II
  - Unit Cast
  - Power Dry II

Accessories

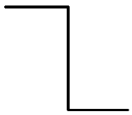
Feature options
- indoor application only
- left or right side connection
- base plinth (10.2 in. or 20.5 in. (260 mm or 520 mm))

Technical characteristics

Rated voltage	(kV)
Rated Max Voltage	15 kV
Rated Power Frequency Withstand Voltage	36 kVm, 1 min
Rated Basic Impulse Voltage	95 kV BIL
Rated Continuous Current	200A, 600A
Rated Short Circuit Withstand Current	25 kA, 2 sec
Rated Peak Withstand Current	65 kA

Transition - Motorpact Motor Controller

The transition section is dedicated to close coupling to Motorpact motor controller
- 14.75 in. (375 mm) wide
- rated current is up to 600A



Basic equipment

- G06 bus riser section close coupled to Motorpact transition section through air insulated (non-shielded solid) busbar connection
- Complete solution is composed of the following sections (from left to right):
  - PremSeT circuit breaker section
  - PremSeT transition section
  - Motorpact transition section
  - Motorpact motor controller section

Accessories

Feature options
- indoor application only
- left or right side connection
- base plinth (10.2 in. or 20.5 in. (260 mm or 520 mm))

Technical characteristics

The ratings for the PremSeT – Motorpact application must be coordinated:

Rated voltage	(kV)
Rated Max Voltage	7.2 kV
Rated Power Frequency Withstand Voltage	20 kV
Rated Basic Impulse Voltage	60 kV BIL
Rated Continuous Current	600A
Rated Short Circuit Withstand Current	25 kA, 2 sec
Rated Peak Withstand Current	65 kA

Operating mechanisms

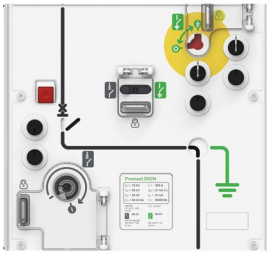
Introduction

Three operating mechanisms meet all the needs of the various core units of the PremSeT range.
They provide user-friendly operation over the entire life of your switchgear.

They share the same range of auxiliaries for electrical operation and remote indications.

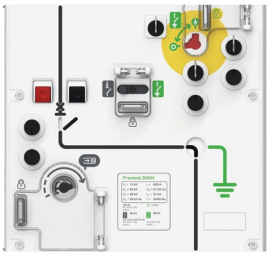
Units	Type of operating mechanism		
	CIT	CI1	OCO
D01N,D02N,D06N		■	
D06H			■
D12H			■
ES-B	■		

PM100009



CI1 mechanism in D02N unit

PM100600



OCO mechanism in D06H unit

Range of operating mechanisms

Three operating mechanisms have been designed together with the core units to optimize performance and helps ensure user-friendly operation.
They are totally integrated within the core units and will operate over the total life expectancy of the switchgear.
Periodic checkup of the mechanism can be done to help ensure the performance depending on the environmental conditions.

All three mechanisms share the same features:

- intuitive operation
- position indications and easy-to-read mimic diagrams
- operator devices including motor-mechanism, opening coils (MX, MN), closing coils (XF), and auxiliary switches
- accessories including padlocking and keylock devices
- grounding switch mechanism, fully interlocked with the main device

Specific care has been taken to reinforce the harsh environment withstanding on mechanism and auxiliaries as well:

- plating for the operating mechanism parts has been tested to withstand harsh environment
- tripping and operating coil are encased in a sealed core
- motor is encased in a protective aluminum cover
- auxiliary switches are sealed-type

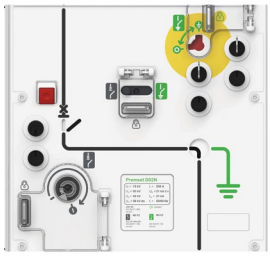
Operating mechanism type	CIT		CI1		OCO		
Unit application	Bus bar		Circuit breaker		Bus bar and circuit breaker		
Main circuit switch	Closing	Opening	Closing	Opening	Spring charging	Closing	Opening
Manual operating mode	Hand lever	Hand lever	Hand lever	Push button	Hand lever	Push button	Push button
Electrical operating mode (option)	N/A	N/A	Motor	Coil	Motor	Coil	Coil
Network application	Remote control network management		Remote control transformer protection		Remote control network management, need of quick reconfiguration (generator source, loop)		
Grounding switch	Closing	Opening	Closing	Opening	N/A	Closing	Opening
Manual operating mode	Hand lever	Hand lever	Hand lever	Hand lever	Hand lever	Hand lever	Hand lever

CIT operating mechanism

- disconnect function
  - opening or closing by lever or motor
- grounding-switch function
  - opening or closing by lever
  - operating energy is provided by a compressed spring which causes the contacts to open or close when released
- auxiliary contacts
  - switch 1 or 2 block (2NO+2NC/block)
  - grounding switch 1 or 2 block (1NO+1NC/block) (1)
- motor option
- operation counter

CI1 operating mechanism

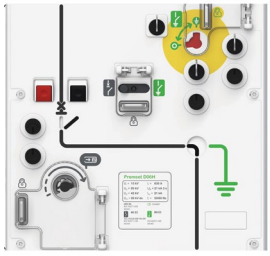
PM100009



CI1 mechanism in D02N unit

- circuit breaker function
  - closing by lever or motor
  - operating energy is provided by a compressed spring which causes the contacts to open or close when released
  - opening or closing by push button (O) or trip unit
- grounding-switch function
  - opening or closing by lever
  - operating energy is provided by a compressed spring which causes the contacts to open or close when released
- auxiliary contacts
  - switch 1 or 2 blocks (2NO+2NC/block)
  - grounding switch 1 or 2 blocks (1NO+1NC/block) (1)
- motor option
- opening releases
  - low energy shunt trip (MiTOP™) with SDE contact
  - open release (MX)
  - undervoltage release (MN)
- operation counter

PM100600



OCO mechanism in D06H unit

OCO operating mechanism

- circuit breaker function
  - closing by two steps:
    1. operating mechanism recharging by lever or motor
    2. stored energy released by push-button (I) or trip unit
  - opening by push button (O) or trip units
- grounding-switch function
  - opening or closing by lever
  - operating energy is provided by a compressed spring which causes the contacts to open or close when released
- auxiliary contacts
  - switch 1 or 2 blocks (2NO+2NC/block)
  - grounding switch 1 or 2 blocks (1NO+1NC/block) (1)
- motor option
- closing releases
- opening releases
  - low energy shunt trip (MiTOP) with SDE contact
  - open release (MX)
  - undervoltage release (MN)
- operation counter

(1) When motor is selected, only 1 block grounding switch auxiliary contact is available

Accessories

PM100582

MCH motor mechanism

Motor mechanism (MCH)

The MCH electrical motor mechanism is used to charge the main springs that store the operating energy for the core unit mechanism.

- on the CIT mechanism, it allows electrical opening and closing of the core unit.
- on the CI1 mechanism, it allows electrical charging and closing of the core unit.
- on the OCO mechanism, it allows electrical charging of the core unit.

The motor mechanism is equipped with a “spring charged” limit switch that stops spring charging when the springs are fully charged. This contact is also used to indicate the “spring charged” status.

Characteristics		
Power supply	DC : 24, 48, 125, and 250 V	AC (50/60 Hz): 120 and 220 V
Threshold	85% to 110% of nominal voltage	
Consumption (VA or W)	180 W	180 VA
Motor overcurrent	2 to 3 Amps for 0.1 s	
Charging time	6 s maximum	
Operating rate	3 cycles maximum per minute	

PM100002

XF and MX shunt closing releases

Shunt closing coil (XF) and opening coil (MX)

XF shunt closing coil

This coil is dedicated to the OCO mechanism, allowing for electrical closing as soon as the springs are charged.

MX shunt trip coil

This coil is dedicated to the CI1 and OCO mechanisms, allowing for electrical opening of the core unit. It can lock the unit in open position as long as the remote order is maintained.

Characteristics			
Power supply		DC 24-30 VDC, 48-60 VDC 100-130 VDC, 200-250 VDC	AC (50/60 Hz) 48-60 VAC, 110-130 VAC 220-240 VAC
Threshold	XF	85% to 110% of nominal voltage	
	MX	70% to 110% of nominal voltage	
Consumption (VA or W)	Triggering	250 W	250 VA
	Latched	2.5 W	2.5 VA

PM100001

MN undervoltage release

Undervoltage coil (MN)

This coil allows the electrical opening of the core unit in the event of an undervoltage. It can also be used for positive opening and locking in the event of a voltage drop, loss of auxiliary power, etc.
It can be associated with a time delay unit.

Characteristics			
Power supply		DC 24-30 VDC, 48-60 VDC	AC (50/60 Hz) 48-60 VAC, 110-130 V AC
Threshold	Opening	35% to 70% of nominal voltage	
	Closing	85% of nominal voltage	
Consumption (VA or W)	Triggering	200 W	250 VA
	Latched	4.5 W	2.5 VA

PM100032

Rotary type contacts (OC)

“On/Off” auxiliary position contacts

These auxiliary contacts indicate the “open” or “closed” position of the circuit breaker.

- rotary type changeover contacts directly controlled by the circuit breaker mechanism
- indication contacts are proposed:
  - for standard relaying applications
  - for low level control applications with PLCs or electronic circuits.

This version is compatible with Sepam series 20, series 40, and series 80 units.

Characteristics			
Breaking capacity (A)	Standard		Minimum load: 100 mA/24 V
Cos j: 0.3 Utilization category: AC12/DC12	V AC	240/380	10/6 (1)
		480	10/6 (1)
		690	6
	V DC	24/48	10/6 (1)
		125	10/6 (1)
		250	3

(1) Standard contacts: 10 A

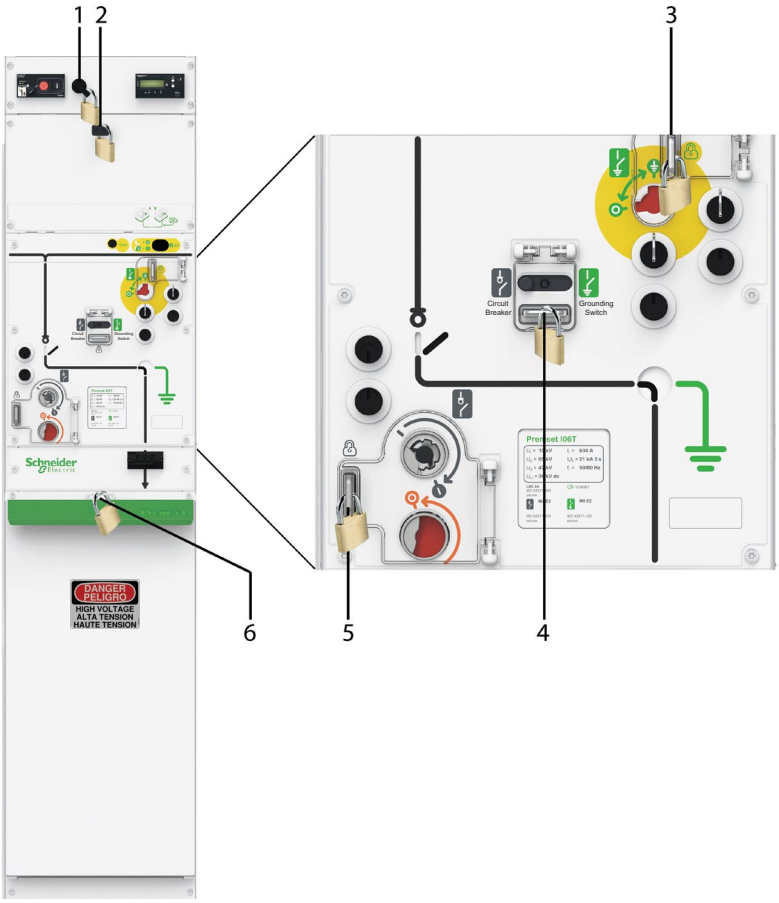
Padlocking and keylocking

Padlocking

The following devices can be padlocked under the current cubicle design:

1. Electrical operation lock out switch
2. Cable test device access
3. Grounding switch
4. Main/Grounding interlock selector
5. Main circuit breaker and/or spring charging (according to the core unit type)
6. Cable compartment

An option is available for padlocking the push button cover.

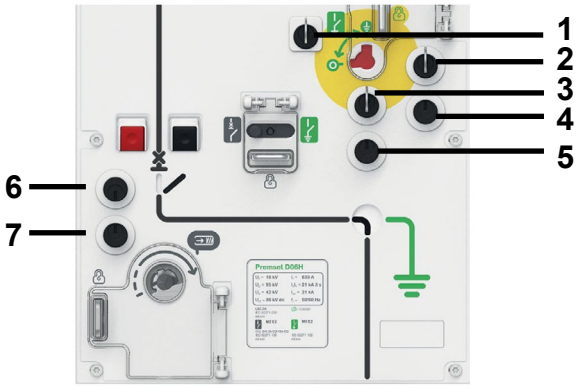


Keylocking (optional)

Up to 7 key lockings options are available on the switching device.

1. Lock for overriding the live cable.
2. Main lock for locking the grounding switch in the line/open position.
3. Main lock for locking the grounding switch in the grounded/closed position.
4. Additional lock for locking the grounding switch in the line/open position.
5. Additional lock for locking the grounding switch in the grounded/closed position.
6. Main lock for locking the main circuit breaker selector in the open position.
7. Additional lock for locking the main circuit breaker selector in the open position.

Key lock options 2-7 provide the possibility to have interlocking between/among different cubicles. The key lock configuration can be modified after commissioning.



2SIS Current and voltage

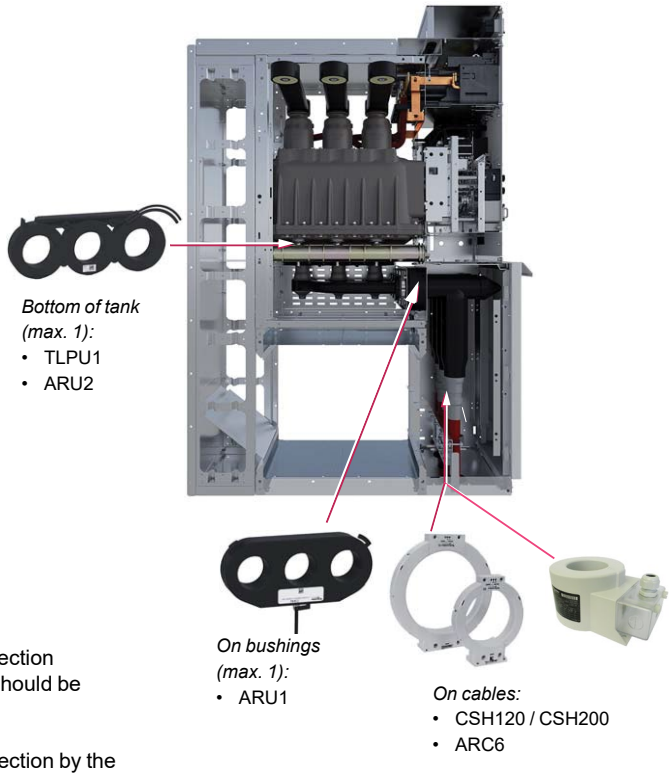
Instrument Transformers and Sensors for PremSeT Switchgear

Current Transformers and Sensors by Unit

Unit type	Protection sensors		Zero sequence		Metering CT	
	Under core unit		Bushing	Cable	Bushing	Cable
	TLPU1	ARU2	CSHU	CSH120 CSH200	ARU1	ARC6
D01N	■	■	■	■	■	■
D02N	■	■	■	■	■	■
D06N	■	■	■	■	■	■
D06H	■	■	■	■	■	■
D12H	■ (1)	■		■	■	

(1) Please contact your local Schneider Electric representative for availability.

CT locations



Bottom of tank (max. 1):
- TLPU1
- ARU2

On bushings (max. 1):
- ARU1

On cables:
- CSH120 / CSH200
- ARC6

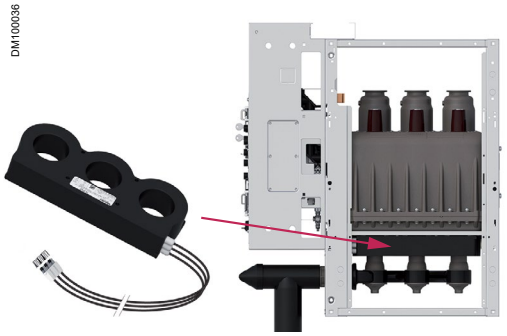
CSH120/200

For Sepam or third party protection relays, if sensitive ground fault protection is required, a ground fault toroidal CT of the CSH120 or CSH200 type should be installed around the cables.

- CSH120 and CSH200 core balance CTs provide more sensitive protection by the direct measurement of ground fault currents.
- CSH120 - 4.72 in. (120 mm) internal diameter
- CSH200 - 7.9 in. (200 mm) internal diameter

2SIS - Current Transformers for PremSeT Switchgear

DM100036



TLPU1 (LPCT type)

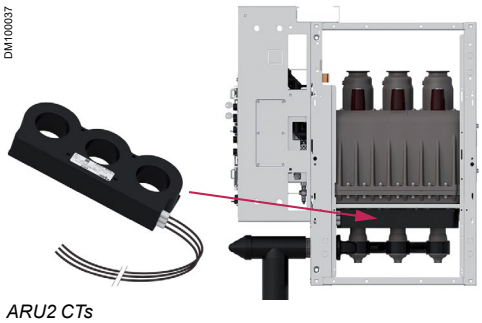
TLPU1 (LPCT)

A standard Low Power Current Transformer (LPCT) of the TLPU1 type can be located under the core unit. LPCTs provide a voltage output over a single large range.

- characteristics according to IEC 60044-8
- two secondary windings for measurement and protection
- frequency 50-60Hz

Rated voltage	0.72 kV
Insulation voltage	3 kV - 1 min
Rated short-time withstand current	25 kA
Withstand time	3 sec
Rated primary current	100 A
Secondary voltage	22.5 mV at 100 A
Rated burden	> 2kΩ
Measurement accuracy class Protection	Cl 0.5 5P250

DM100037



ARU2 CTs

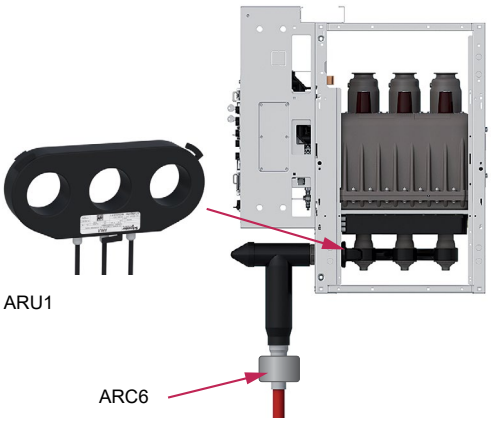
ARU2 (Protection)

A standard ring type current transformer of the ARU2 type (1A, 5P20 class) can be located under the core unit.

- characteristics according to IEC 61869-2
- one secondary winding for protection
- frequency 50-60 Hz

Rated primary and secondary current (A)		100/1	200/1	400/1	600/1	800/1	1000/1	1200/1
Rated short-time current		25 kA						
Withstand time		3 sec						
Protection	rated burden	1.5 VA	2.5 VA			5 VA		
	accuracy class	5P-20						

DM100038



ARU1 (Metering)

The ARU1 is a block comprising a three ring-type current transformer.

- Located around the bushings for all of switchgear units: D01N, D02N, D06N, D06H, and D12H

Rated primary and secondary current (A)		100/1	200/1	400/1	600/1	300/5	400/5	600/5	800/5	1000/5	1200/5
Rated short-time withstand current		25 kA									
Withstand time		3 sec									
Measurement	rated burden	2.5 VA				5 VA					
	accuracy class	Cl 0.5 s Fs≤5				Cl 0.2 s Fs≤5					

PE90925

ARC6

ARC6 (Metering)

The ARC6 is a ring-type current transformer.

- Located around cable for all switchgear units: D01N, D02N, D06N and D06H
- Offers higher accuracy than ARU1 when primary current is less than 600 A
- Only installed on single-core screened cable with a deeper cable compartment door in single cable per phase applications

Rated primary and secondary current(1) (A)		100/5	150/5	200/5	300/5	400/5	600/5
Rated short-time withstand current		25 kA					
Withstand time		3 sec					
Measurement	rated burden	5 VA			15 VA		
	accuracy class	Cl 0.2 s FS ≤5					

(1) For two secondary windings, please contact your local Schneider Electric representative.

Low-Power Voltage Transformer (LPVT)

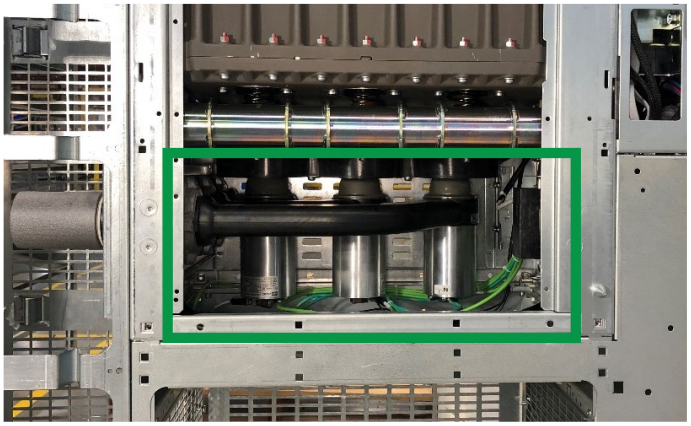
The LPVT is a resistive divider sensor that is directly connected to the medium voltage bus and has a low voltage output signal that uses a power amplifier to scale the output signal up to a 120 V signal for metering and relaying devices. The LPVT sensors can be mounted on cable side, bus side, or both for voltage measurements.

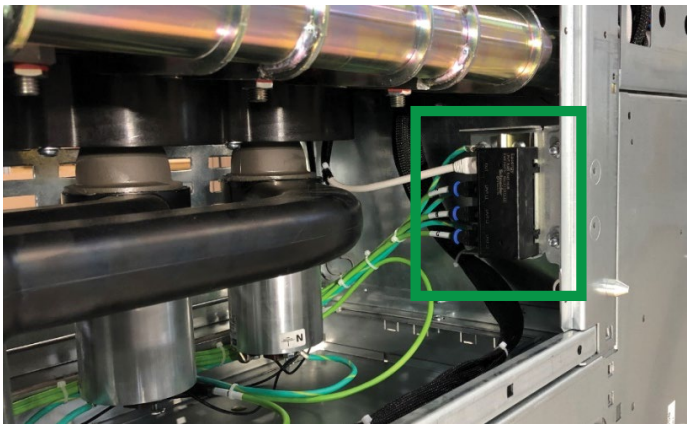
LPVT Sensor

LPVT Hub

LPVT Amplifier

Protection, metering, and automation devices





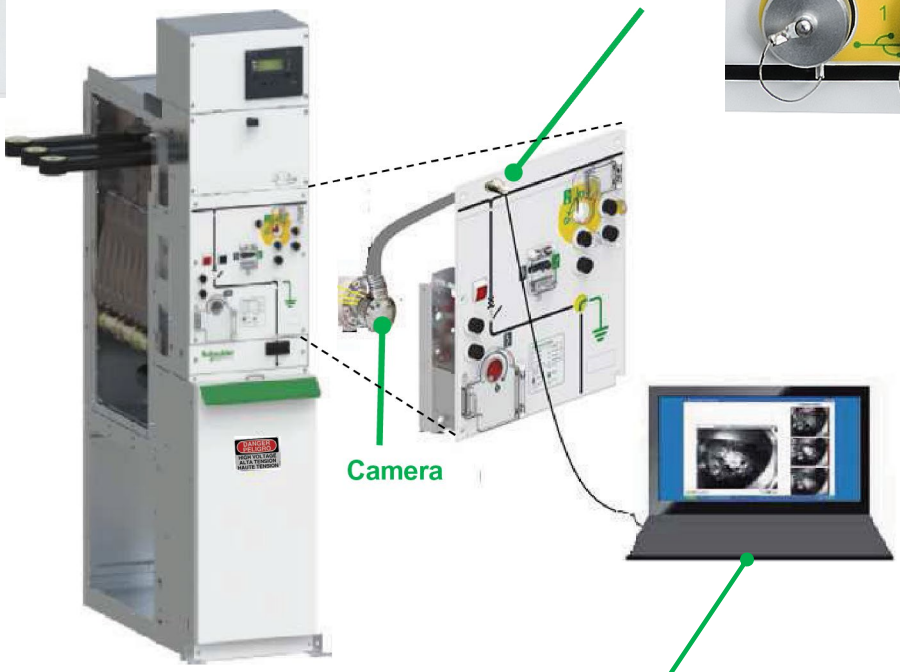
Monitoring Camera System for the Disconnect Switch

The camera system allows the user to monitor the position of the grounding switch within the enclosure, meeting the visible disconnect requirement for the National Electric Code.

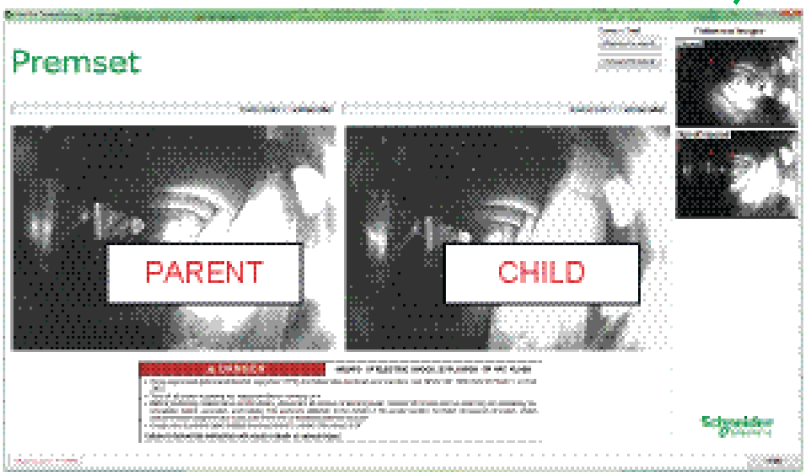
For 600 A, one USB port is included. For 1200 A, two ports are included.

600 A

1200 A



Example of 1200 A Camera View



Protection

Selection guide

PremSeT circuit breaker sections (D01N, D02N, D06N, D06H, D12H) can be equipped for protection with:
- An external Sepam, MiCOM, or other compatible relay.

PE88030

Sepam range

PM102888

MiCOM range

Sepam range protection

Protection relays of the Sepam range are also available and have the following characteristics:
- External auxiliary power
- Open range
- From basic to more sophisticated protection
- Standard CTs and trip actuators (see page 42)

MiCOM range protection

MiCOM protection provides the user with a choice of cost-optimized solutions for specific protection requirements within the distribution network.
The MiCOM relay series offers comprehensive protective function solutions for all power supply systems as well as for various functional and hardware project stages.

Quick selection table

		Sepam / Micom series	
		General	
		Sepam	**MiCOM**
Protection functions			
Phase overcurrent (ANSI 50-51)		■	■
Ground fault phase (ANSI 51N)	Standard (sum of current method)	■	■
	High sensitivity (ground fault CTs)	■	■
Thermal overload (ANSI 49)		■	■
Cold load pick-up		■	■
Other protection functions (1)		■	■
Measurement functions			
Phase current		■	■
Ground current		■	■
Phase peak demand current		■	■
Load history	Cumulative time	■	■
Control and monitoring functions			
Trip indication	Local (with origin of the fault)	■	■
	Remote (one contact)	■	■
	Output relays	■	■
Trip circuit supervision (ANSI 74TC)		■	■
Time-tagged events	Local on display (5 last trips)	■	■
	Remote, via communication	■	■
External tripping input		■	■
Overcurrent and breaking profile	Number of phase and ground trips (2)	■	■
Serial communication port	Modbus RS485	■	■
Digital inputs/outputs for control functions		■	■
Power supply			
Type of supply	Self-powered or auxiliary	Auxiliary	Auxiliary

(1) See Sepam brochure #3000BR0404 .

(2) The number of trips is displayed in 4 levels:
For D01 and D02: < 200 A, < 2 kA, < 8 kA, > 8 kA
For D06 and D06H: < 600 A, < 10 kA, < 20 kA, > 20 kA.

(*) Contact your local Schneider Electric representative for availability.

Protection relay selection

Protection relays

Sepam series 20	Sepam series 40	MiCOM Px20	Sepam series 80	MiCOM Px30
 PE90511	 PE90511	 PE90366	 PE90512	 PE90437
Functions			**Functions**	

Provides protection of network for each application: Substations (incomer or feeder type) / Transformers / Motors / Generators / Busbars / Capacitors
Each relay series offers all the functions required for:

- Effective protection of life and property
- Accurate measurements and detailed diagnosis
- Integral equipment control
- Local or remote indications and operation

Sepam series 20	Sepam series 40	MiCOM Px20	Sepam series 80	MiCOM Px30
Self power / Auxiliary supply				
Auxiliary supply	Auxiliary supply	Auxiliary supply	Auxiliary supply	Auxiliary supply
Protection				
• Current (1 or 5A) or Voltage	• Current (1 or 5A) or Voltage	• Current (1 or 5 A) or Voltage	• Current (1 or 5A or LPCT) or Voltage	• Current (1 or 5 A) or Voltage
- Phase and Ground basic	*- Phase and Ground basic* *- Directional*	*- Phase and Ground basic* *- Directional*	*- Phase and Ground basic* *- Directional* *- Synchro-check* *- Differential*	*- Phase and Ground basic* *- Directional* *- Synchro-check* *- Differential* *- Line differential* *- Distance*
Display				
• Standard User-Machine Interface (UMI) • Remote User Machine (UM)	• Standard UMI • Remote UM	Standard UMI	• Standard UMI • Remote UM • Mimic based UMI	• Standard UMI • Remote UM • Mimic based UMI
Other characteristics				
		Withdrawable hardware	Removable software cartridge	
Input / Output (up to)				
10 / 8	10 / 8	7 / 8	42 / 23	50 / 26
I/O terminals				
• Screw type • Ring lug	• Screw type • Ring lug	Ring lug	• Screw type • Ring lug	• Screw type • Ring lug
Temperature sensor (up to)				
8	8 to 16	10 (motor)	8 to 16	1/9/10
Communication protocol				
• Modbus RTU • IEC 60870-5-103 • DNP3 • Modbus TCP/IP • IEC 61850 • No GOOSE	• Modbus RTU • IEC 60870-5-103 • DNP3 • Modbus TCP/IP • IEC 61850 • No GOOSE • RSTP(1)	• Modbus RTU • IEC 60870-5-103 • DNP3	• Modbus RTU • IEC 60870-5-103 • DNP3 • Modbus TCP/IP • IEC 61850 • Customized GOOSE • RSTP(1)	• Modbus RTU • IEC 60870-5-103 • DNP3 • IEC 61850 with GOOSE • RSTP(1) • SHRP / PRP(1)
Logic equations				
	Comprehensive logic equations	Basic logic equations	Control logic by ladder diagram	Comprehensive logic equations
Safety standards				
			IEC 61508 - SIL2	
IEC and specific country standards (UL, CSA, GOST...)	**IEC and specific country standards (UL, CSA, GOST...)**	**IEC and specific country standards (GOST...)**	**IEC and specific country standards (UL, CSA, GOST...)**	**IEC and specific country standards (GOST...)**

(1) Ethernet high availability communication

PE60300

Sepam: protection digital relays

Sepam is a range of digital monitoring protection and control units. It is at the standard of protection, monitoring, and control system for the Schneider Electric switchgear: all the necessary protection, metering, control, monitoring, and signaling functions are performed by Sepam protection relays.

The Sepam range is defined to provide an optimal solution for each application, and includes, for example:

- Sepam S, substation incomer and feeder
- Sepam B, bus sectioning
- Sepam T, transformer feeder
- Sepam M, motor feeder
- Sepam G, generator feeder
- Sepam C, capacitor feeder

The Sepam range consists of the Sepam series 20, series 40, and series 80, a range of modular protection relays to adapt to your needs.

PM102898

MiCOM protection relays

MiCOM protection provides the user with a choice of cost-optimized solutions for specific protection requirements within the distribution network.
The MiCOM relay series offers comprehensive protective function solutions for all power supply systems, as well as for the various functional and hardware project stages.
With their modular design, the MiCOM device platforms provide the user with multifunctional equipment that can act as :

- Grid protection equipment
- Combined protection and control systems

MiCOM devices integrate most standard communication protocols used in station control systems and SCADA systems.

The continuous further development of these products helps ensure compatibility with technical progress in the field of switchgear and control gear communication.

MiCOM offers varying levels of functionality and hardware

- Series 10 is designed for universal overcurrent protection for the primary or back-up protection on LV or MV systems
- Series 20 fulfills the basic requirements of industrial, utility, and building applications, providing simplicity and ease of use in a wide range of installations
- Series 30 is designed to meet the rigorous requirements of MV and HV applications with particular focus on feeder and transformer protection and control
- Series 40 fulfills the protection requirements for a wide market of utility and industrial systems and offers a complete range of protection functions

Voltage indicator and relay

VPIS and VDS

PE56366

VPIS

Voltage presence indicators

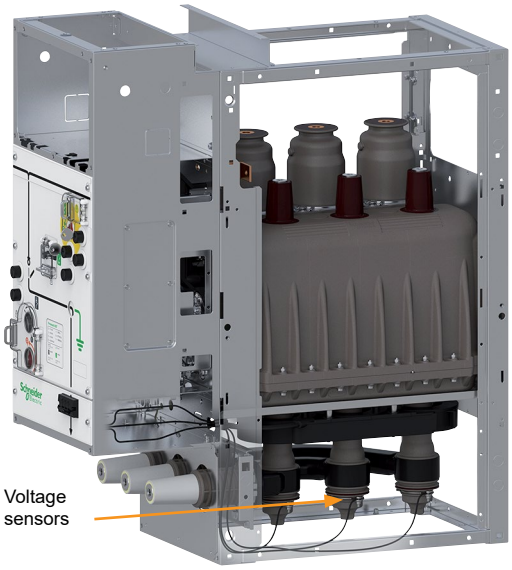
A voltage presence indicating device can be integrated in all functional units, either on the cable or busbar side. It can be used to check whether voltage is present across the cables.

Two devices are available:

- VPIS: Voltage Presence Indicator System, as defined by standard IEC 62271-206
- VDS: Voltage Detecting System, as defined by standard IEC 61243-5.

The VPIS can be fitted with a voltage output (VPIS-VO) dedicated to various voltage detection applications such as automatic transfer switches, voltage absence or presence contacts, live-cable grounding switch lockout, etc.

PM100033

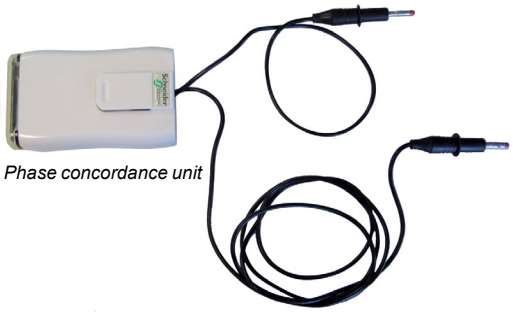


Voltage sensors on busbars or cables

Voltage sensors

A voltage sensor is integrated in all the functional sections. It provides a signal with an accuracy of 5% to the VPIS through a 30 pF capacitive divider.
The sensor is integrated in the tightening cap used to fix the busbar or cable connections. The voltage can be detected either on the cable side or the busbar side.

PE56830



Phase concordance unit

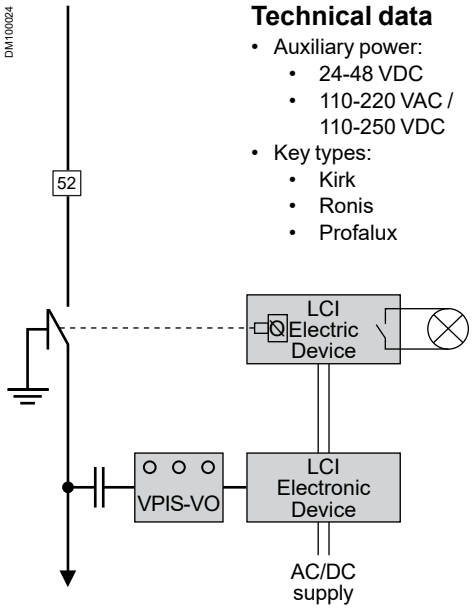
Phase concordance unit (VPI62421)

This unit is used to check phase concordance.

PB103790

Pocket battery

Live cable interlock



Technical data

- Auxiliary power:
  - 24-48 VDC
  - 110-220 VAC / 110-250 VDC
- Key types:
  - Kirk
  - Ronis
  - Profalux

Functions

The “live cable interlock” (LCI) function is an electrical interlock that helps prevent the operator from closing the grounding switch on live cables.

Even if all the grounding switches integrated in PremSeT core units have full making capacity performance, an LCI may be useful to help avoid creating faults by inadvertently grounding live cables.

Characteristics

The system is composed of:

- A mechanical locking assembly acting directly on the line / ground selector, including an override key that can be used to bypass the locking device
- An undervoltage coil for operation of the mechanical lockout system (see Undervoltage coil (MN) on page 39)
- A dedicated electronic auxiliary-powered voltage relay (ESL) fitted with an auxiliary contact for remote indication of “locked” position
- A VPIS indicator on the cable side, with a voltage output (VPIS-VO), to detect and send the voltage signal to the relay

Operation

- Normal case: the system is powered by auxiliary power. The selector cannot be moved from “line” to “ground,” as long as voltage is detected on the cable by the VPIS.
- In case of auxiliary power loss, with the cables live or not, a feature blocks the system so the selector cannot be operated. Override is possible only by unlocking the system with a key or when auxiliary power is restored.

Technical data

- Auxiliary power:
  - 24-48 VDC: ESL100 A
  - 110-220 VAC / 110-250 VDC: ESL100 E
- Key types:
  - tubular
  - flat
- Undervoltage coil

PM5000 Series Power Meter
PM8000 Series Power Quality Meter

PowerLogic PM5000 series help you:
- Reduce energy costs
- Simplify installation
- Improve continuity of service for optimal management of your electrical installation and higher productivity

PB111776

PM5000 Series Power Meter

Applications and main features

The PowerLogic PM5000 power meter is the ideal fit for cost management applications. It provides the measurement capabilities needed to allocate energy usage, perform tenant metering and sub-billing, pin-point energy savings, optimize equipment efficiency and utilization, and perform a high level assessment of the power quality of the electrical network.

In a single 3.8 x 3.8 in. (96 x 96 mm) unit, with a graphical display, (plus optional remote display) all three phases, neutral and ground can be monitored simultaneously.

Highly accurate devices with 3rd party certification.

The Power Meter series 5000 is available in multiple versions including:
- PM5100, basic version with pulse output, class 0.5S accuracy
- PM5110, RS485 port with Modbus communication, class 0.5S accuracy
- PM5340, multi-tariff, data logging, Ethernet communication, class 0.5S accuracy
- PM5560, multi-tariff, data logging, WAGES metering, Gateway, class 0.2S accuracy, simultaneous communication via Modbus TCP and BACnet/IP

Characteristics

- High-accuracy energy metering: IEC 62053-22 Class 0.5S or Class 0.2S
- Multiple communication options: RS485, Ethernet or both
- Dual Ethernet ports (PM5560 models) to daisy chain meters together - less wiring, simpler installation
- Ethernet-to-serial gateway functionality (PM5560)
- Protocol options include Modbus RTU, Modbus TCP and BACnet/IP
- Data logging (PM5340, PM5560 models)
- Multiple tariffs (PM5340, PM5560 models)
- Complete WAGES monitoring with 4 Digital Inputs & 2 Digital Outputs
- Onboard web pages (PM5560 models) for viewing real-time and logged information
- Bright, anti-glare graphical display with intuitive menu-driven navigation

PowerLogic PM8000 series:
Compact, high-performance meters for cost and network management applications on feeders and critical loads.

- Detailed PQ compliance reporting, and expert-level root-cause analytics.
- Power monitoring, logging, and forecasting to help ensure your electrical system stays within operating tolerances, avoiding the risk of overloads, unbalances, or high-peak demand

PB113683

PM8000 Series Power Quality Meter

Applications and main features

The PowerLogic PM8000 series meter is a highly accurate, power and energy meter with unmatched flexibility and usability. The meter combines accurate 3-phase energy and power measurements with data logging, power quality analysis, alarming and I/O capabilities not typically available in such a compact meter.

The PM8000 series meters are compliant with stringent international standards for metering accuracy and power quality measurements. Ideal for industrial and critical power installations that are responsible for maintaining the operation and profitability of a facility.

The PM8000 series is available in the versions:

- PM8240, panel mount, integrated display
- PM8244, DIN rail mount, remote display

Characteristics

- High-accuracy energy metering: IEC 62053-22 Class 0.2S
- Time synchronization
- Multi-tariff support
- WAGES metering support
- PQ compliance monitoring: IEC 61000-4-30 class S, IEC 62586, EN 50160, IEEE 519
- PQ analysis capabilities: Dip & swell detection, waveform capture, disturbance direction detection, trending & forecasting
- Protocols: ION, Modbus, DNP3, IEC 61850
- Ports: RS-485, dual-port Ethernet, Ethernet-to-serial gateway
- Graphical, color display
- Onboard, customizable web pages
- Modular I/O extension modules.
- IEC 62053-22 class 0.5S for real energy helps ensure accurate energy measurement for sub-billing and cost allocation
- Trend curves and short-term forecasting (PM850 and PM870)
- Five channels for WAGES (water, air, gas, electricity, steam) metering capability on all models (a single channel can aggregate pulses from multiple inputs)
- Modular and upgradeable
- Optional remote display (can be located as far as 33 ft (10 m) from the metering unit)
- Optional Ethernet communication port offers Modbus TCP/IP protocol, e-mail on alarm, web server, and Ethernet-to-serial gateway
- Auxiliary supply for PM devices are 110 to 240 Vac and 110 Vdc

Control

Electrical operation auxiliaries: SC100 and SC110

The SC100 and SC110 are intelligent electronic devices designed to control and monitor all the components involved in the remote control of core units.

They integrate all the necessary functions for remote control:
- Electrical interlocking
- Remote control supervision
- Front panel interface for local operation
- Built-in Modbus communication and plug-and-play design makes the SC100 and SC110 and the remote control facility:
  - easy to use
  - easy to upgrade

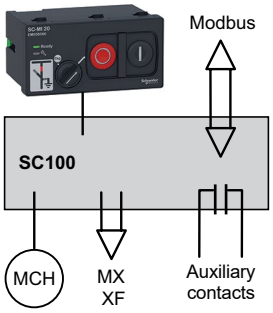
PM100043

SC110A

PM100038

SC-MI control panel

DM100025



The SC100 and SC110 are installed in the low voltage cabinet of the functional unit. They control and monitor all the devices needed for electrical operation: MCH, MX, XF, auxiliary contacts.

SC100 and SC110 universal intelligent controllers

SC100 and SC110 are compact devices with digital inputs and outputs to monitor all the components associated with the electrical operation of the core unit: MCH, MX, XF, auxiliary contacts. They can be associated with a control switch (SC-MI).

Switchgear control functions
- Coil and motor operation
- Information on core unit status: circuit breaker, grounding switch, handle insertion, etc.
- Built-in electrical interlocks: anti-pumping and anti-reflex functions
- External interlocking feature
- Lockout of electrical operation after tripping (option)
- Modbus communication for remote control via data transmission.

Switchgear monitoring
- Diagnosis information: motor consumption, etc.
- Core unit auxiliary contacts status
- Logging of time-stamped events
- Modbus communication for remote indication of monitoring information.

SC100 - SC110 types

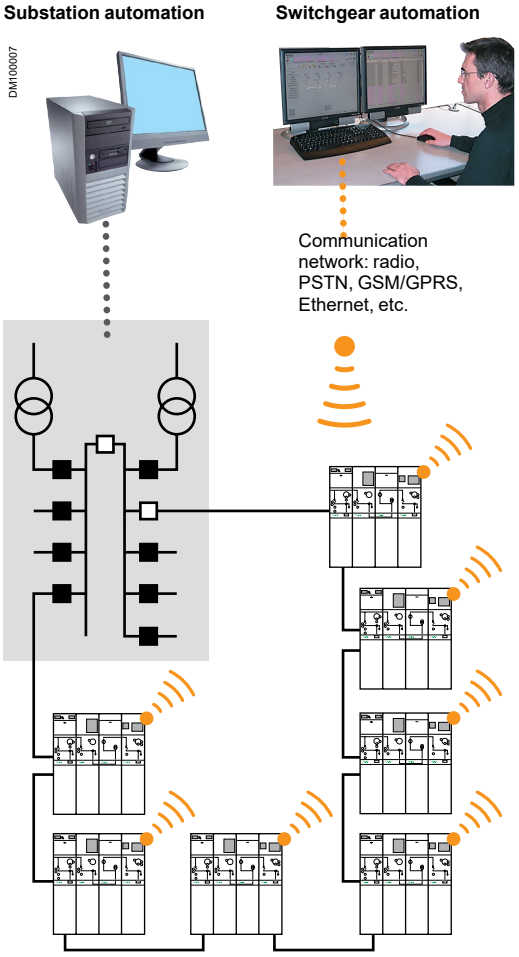
	SC100-A	SC100-E	SC110-A	SC110-E
24-60 Vdc	■		■	
110-250 Vdc/Vac		■		■
Network communication			■	■

SC-MI control panels

	SC-MI 10	SC-MI 20
On/Off pushbuttons	■	■
Remote/local switch		■

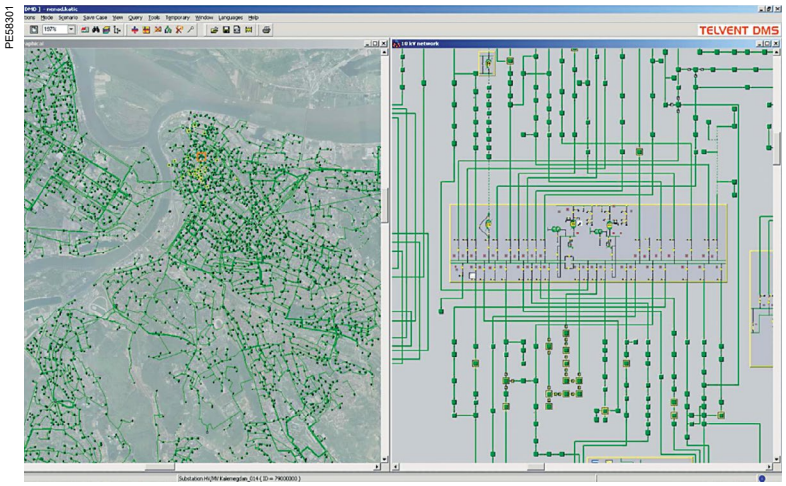
(*) Contact your local Schneider Electric representative for availability.

Architecture of switchgear automation



Continuity of service supervised by an overall telecontrol solution

Schneider Electric offers you a complete solution, including:
- PremSeT switchgear that can be easily adapted for telecontrol
- The SCADA and DMS system.



Telvent DMS system

PremSeT range, more than ready

PremSeT switchgear is suited to telecontrol thanks to options such as:
- Motorized operating mechanism
- Auxiliary fault and position indication contacts
- Current sensors for fault detection.

Busbar and cable arrangements

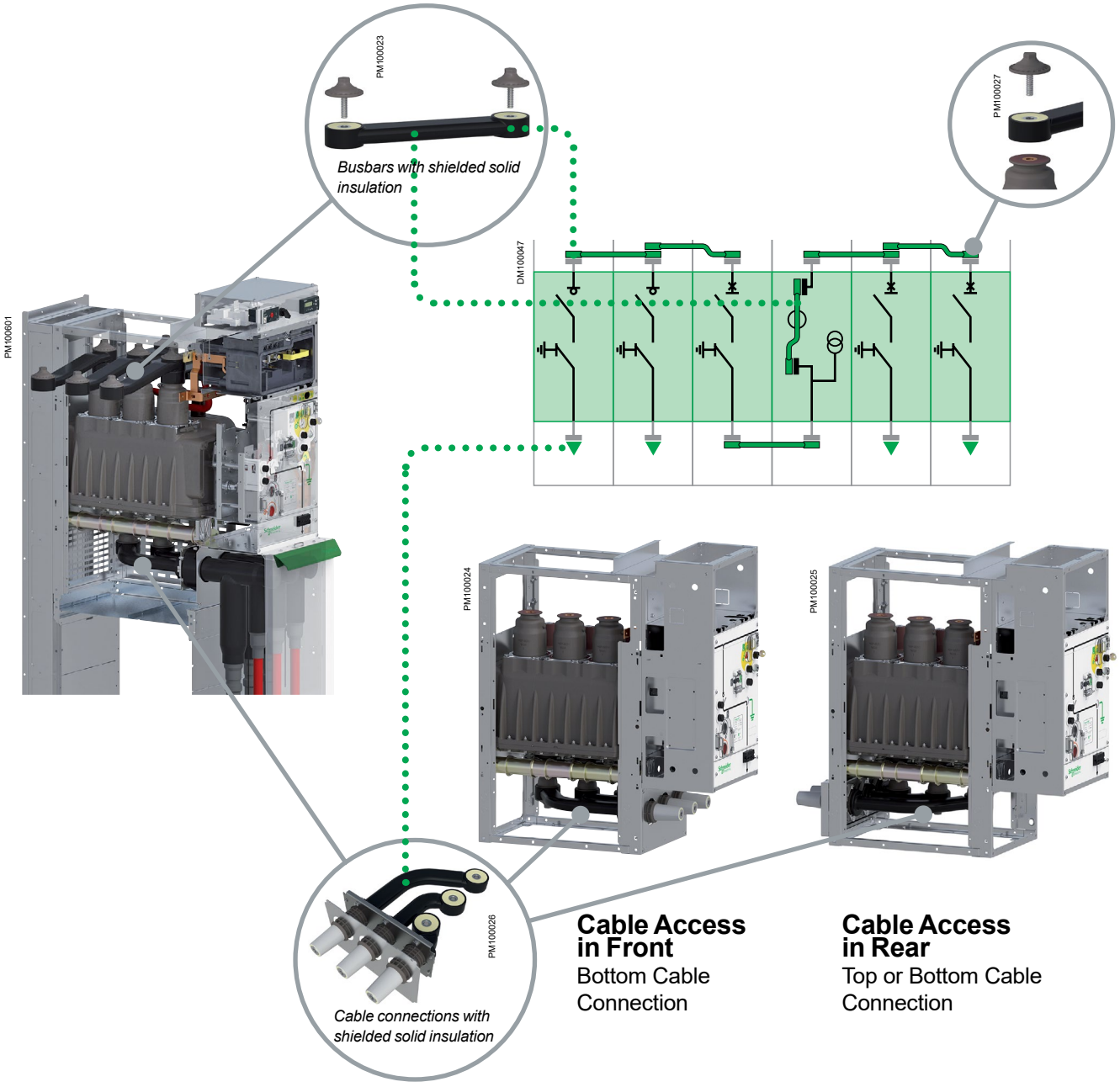
- 2SIS connections with shielded solid insulation. Periodic checkup of the mechanism can be done to help ensure the performance depending on the environmental conditions.
- Flat and smooth interface between connections, allowing flexibility: easier floor installation.
- Only one cable connection set, used everywhere: many possibilities for cable entry arrangements.

Universal system of power connections

The PremSeT system is based on a set of common elements used throughout the system:

- 2 types of bus bar elements used to make up the busbar system, as well as risers and downstream connections between cubicles.
- One set of 3 connections for cables

The connection interface between these elements is always the same (a Schneider Electric patented design), allowing a wide variety of arrangements.



Cable connections

- Only one type of bushing to simplify installation, but various arrangements of connections to fit any application.
- Large choice of cable box and bottom compartment dimensions.

PM100000

LV cabinet

Cable test

Top connection

Core unit

Bottom connection

Bottom compartment

D06H

PM100022

Bottom compartment

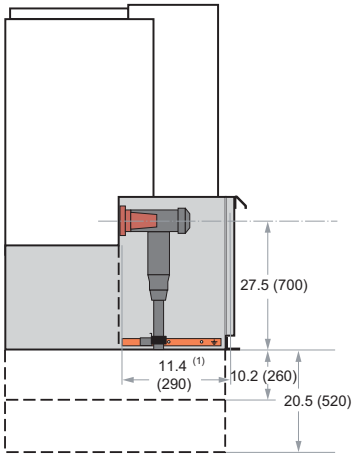
The bottom compartment is the lower part of PremSeT cubicles. It has been designed separately from the rest of the cubicle to offer different versions.

- Standard height, for cable connections at a height of 27.5 in. (700 mm).
- For higher installations, raising plinths can be fitted as accessories, with two different heights available.

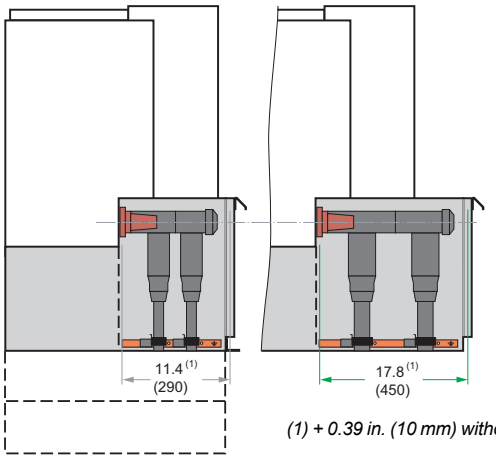
Cable connections

- Cable boxes are available in 2 different depths to meet the needs of various types of installations: number of cables, type of connections, bending radius of cables, surge arresters.
- Cable bushings are standardized “type C”, M16 screw type bushings as defined by standard IEC 60137, in order to simplify the choice and installation of connections.
- Cable bushings meet the following standards:
  - CENELEC EN 50180 – Bushings above 1 kV up to 52 kV and from 250 A to 3.15 kA for liquid filled transformers
  - CENELEC EN 50181 Type C – Plug-in type bushings above 1 kV up to 52 kV and from 250A to 2.50 kA for equipment other than liquid filled transformers
- Cable connections are always horizontally aligned, 27.5 (700 mm) high depending on height of the bottom compartment (please refer to dimension drawings starting on page 59).

DM100046



As an option, 2 raising plinths are available: 10.2 in. (260 mm) and 20.5 in. (520 mm) heights



(1) + 0.39 in. (10 mm) without internal arc performance.

Compatible cable connections

Here are some examples of compatible cable connections. As the PremSeT system is designed with shielded solid insulation, we strongly recommend using directed field cable connectors for better reliability and longer life expectancy.
*All preferred vendors.

Supplier	Performance	Reference	1 cable/ phase	1 cable/ phase + Surge Arres.	2 cables / phase (1)	Cross section AWG or kcmil (mm²)	Type
Euromold* (Nexans)	Up to 12 kV, 600 A	400LB	x			4 to 500 (25 to 300)	Elbow connector
		400TB	x			2 to 500 (35 to 300)	T connector
		430TB	x			2 to 500 (35 to 300)	T connector
		440TB	x			350 to 1000 (185 to 630)	T connector
		400TB+440PB-XSA		x		2 to 500 (35 to 300)	+ Surge Arrestor
		440TB+440PB-XSA		x		350 to 1000 (185 to 630)	+ Surge Arrestor
		430TB+300SA		x		2 to 500 (35 to 300)	+ Surge Arrestor
	up to 15 kV, 600 A	K400LB	x			4 to 500 (25 to 300)	Elbow connector
		K400TB	x			2 to 500 (35 to 300)	T connector
		K430TB	x			2 to 500 (35 to 300)	T connector
		K440TB	x			350 to 1000 (185 to 630)	T connector
		K400TB+K440PB-XSA		x		2 to 500 (35 to 300)	+ Surge Arrestor
		K440TB+K440PB-XSA		x		350 to 1000 (185 to 630)	+ Surge Arrestor
		K430TB+300SA		x		2 to 500 (35 to 300)	+ Surge Arrestor
NKT Cables GmbH	up to 12 kV, 600 A	CB12-630	x			4 to 500 (25 to 300)	T connector
		CB12-630 + CSA12		x			+ Surge Arrestor
		CB12-630 + CC12-630			x		+ Coupling Connector
	up to 15 kV, 600 A	CB24-630	x			4 to 500 (25 to 300)	T connector
		CB24-630 + CSA24		x			+ Surge Arrestor
		CB24-630 + CC24-630			x		Coupling Connector
Suedkabel	up to 12 kV, 600 A	SET 12	x			350 to 1000 (185 to 300)	Elbow connector
		SEHDT 13				500 to 1000 (300 to 500)	T connector
		SET B + SEHDK 13.1			x	400 to 500 (240 to 300)	+ Coupling Connector
	up to 15 kV, 600 A	SET 24	x			3/0 to 400 (95 to 240)	Elbow connector
		SEHDT 23				500 to 1000 (300 to 630)	T connector
		SET B + SEHDK 23.1			x	300 to 400 (150 to 240)	+ Coupling Connector
Tyco*	up to 15 kV, 600 A	RSTI L56xx	x			4 to 500 (25 to 300)	T connector
		RSTI L56xx + RSTI-CC-66SAxx10		x			+ Surge Arrestor
		RSTI L56xx + RSTI CC L56xx			x		+ Coupling Connector
ABB Kabeldon	up to 12 kV, 600 A	CSE-A 12630	x			350 to 1000 (185 to 300)	Elbow connector
		2xCSE-A 12630			x	400 to 500 (240 to 300)	+ Coupling Connector
	up to 15 kV, 600 A	CSE-A 24630	x			3/0 to 400 (95 to 240)	Elbow connector
		2xCSE-A 24630			x	300 to 400 (150 to 240)	+ Coupling Connector
Prysmian	up to 15 kV, 600 A	FMCTs-400	x			300 to 400 (150 to 240)	T connector

(1) For 2 cables /phase + surge arrester, please contact your local Schneider Electric representative.

NOTE: The dielectric performance of cable box is reduced to 75 kV BIL when using unscreened connections.

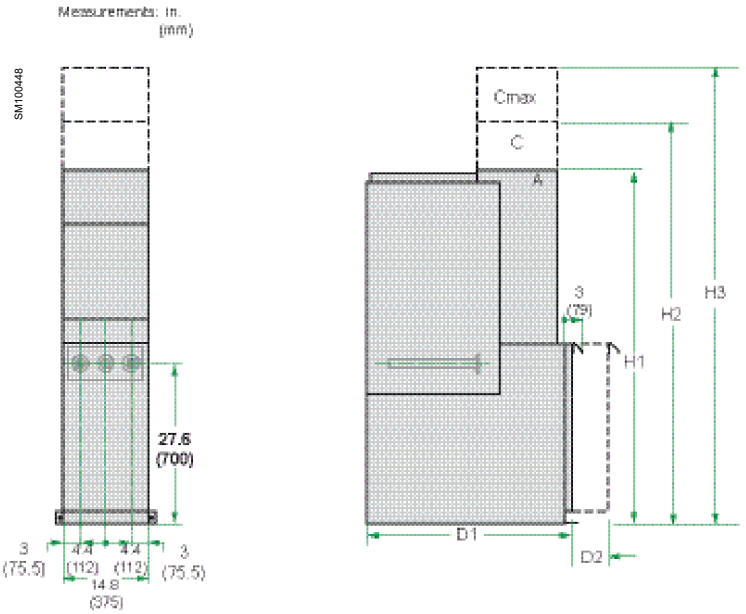
Dimensions

Dimensions and Weights

Main Unit		Additional Heights (add to Main Unit height) in. (mm)	Additional Heights (add to Main Unit height) in. (mm)				Width in. (mm)	Depth in. (mm)				Approximate Weight (2) lb (kg)	
Type	Height in. (mm	Standard Low Voltage Compart-ment (Cmax)	Optional Reduced Height Low Voltage Compart-ment (C) (1)	Optional Standard Plinth	Optional Tall Plinth	Optional Wireway		Standard Door Front Connect	Deeper Door Rear Connect	Deeper Door Front Connect	Deeper Door Rear Connect	Front Connect	Rear Connect
D01, D02, D06, ESB	61.02 (1550)	25.43 (646)	17.60 (447)	10.24 (260)	20.47 (520)	2.40 (61)	14.76 (375)	37.5 (953)	54.72 (1390)	45.79 (1163)	62.99 (1600)	441 (200)	606 (275)
CPT												386 (175)	551 (250)
G06, G12 Transitions												220 (100)	386 (175)
D12							29.53 (750)					1102 (500)	1268 (575)

[1]A reduced height low voltage compartment may limit control options.
[2]Add 88 lb (40 kg) for cable base plinth.

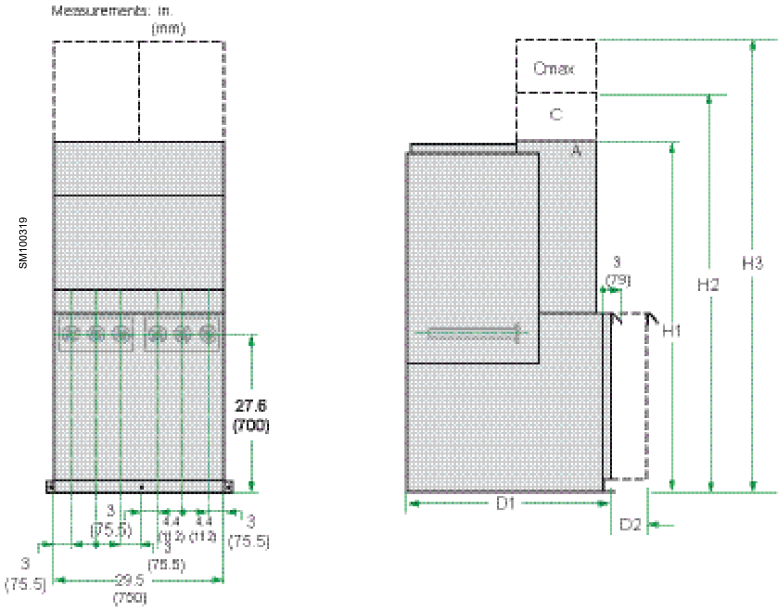
Front Connection:
14.75 in. (375 mm) Wide Cubicle, 600 A
Cable termination height: 27.5 in. (700 mm)



H1	No LV box	61 in. (1550 mm)
H2	LV box C	78.5 in. (1994 mm)
H3	LV box Cmax	86.5 in. (2198 mm)
D1	Depth standard door	35.83 in. (910 mm)
D2	Additional depth door	8.66 in. (220 mm)

NOTE: Dimensions are the same for bar-connected cubicles.

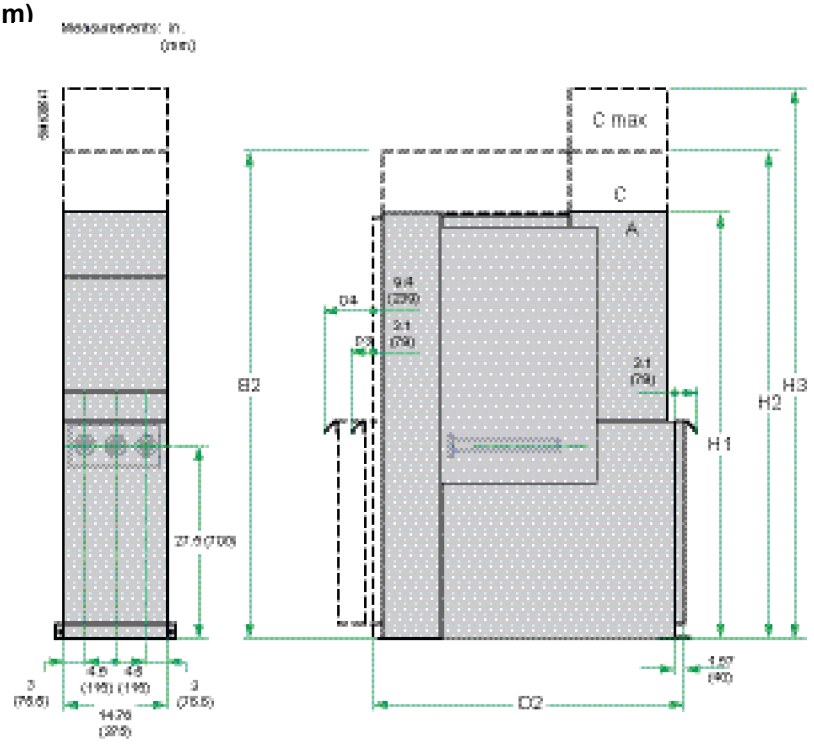
Front Connection:
29.5 in. (750 mm) Wide Cubicle, 1200 A
Cable termination height: 27.5 in. (700 mm)



H1	No LV box	61 in. (1550 mm)
H2	LV box C	78.5 in. (1994 mm)
H3	LV box Cmax	86.5 in. (2198 mm)
D1	Depth standard door	35.83 in. (910 mm)
D2	Additional depth door	8.66 in. (220 mm)

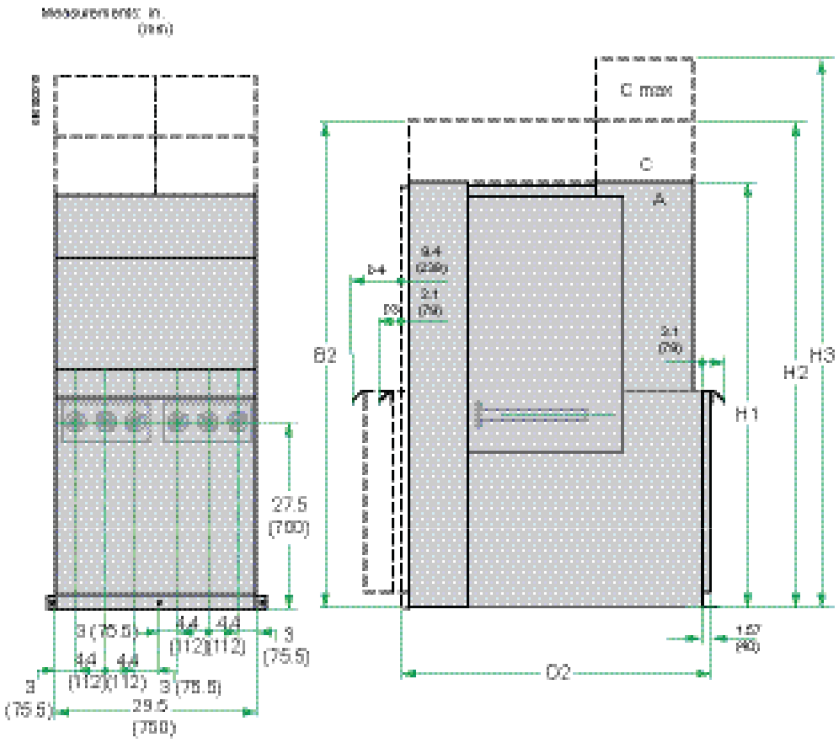
NOTE: Dimensions are the same for bar-connected cubicles.

Rear Connection:
14.75 in. (375 mm) Wide Cubicle, 600 A
Cable termination height: 27.5 in. (700 mm)



H1	No LV box	61 in. (1550 mm)
H2	LV box C	78.5 in. (1994 mm)
H3	LV box C max	86.5 in. (2198 mm)
B2	Top cable entry	73.4 in. (1864 mm)
D2	Standard depth rear connection	49.7 in. (1262 mm)
D3	Standard door depth	3.1 in. (79 mm)
D4	Additional door depth	9.4 in. (239 mm)

Rear Connection:
29.5 in. (750 mm) Wide Cubicle, 1200 A
Cable termination height: 27.5 in. (700 mm)



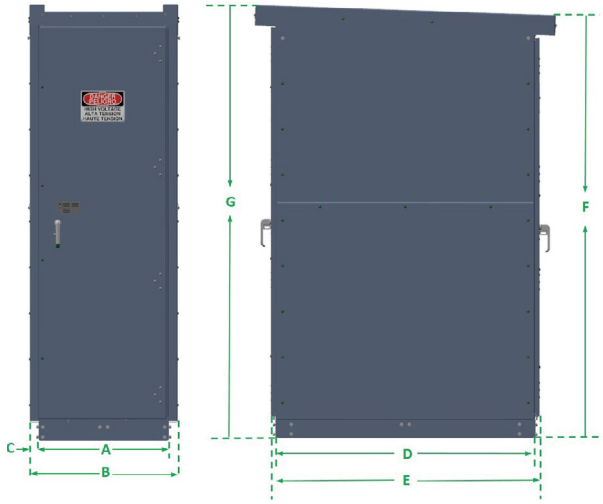
H1	No LV box	61 in. (1550 mm)
H2	LV box C	78.5 in. (1994 mm)
H3	LV box C max	86.5 in. (2198 mm)
B2	Top cable entry	73.4 in. (1864 mm)
D2	Standard depth rear connection	49.7 in. (1262 mm)
D3	Standard door depth	3.1 in. (79 mm)
D4	Additional door depth	9.4 in. (239 mm)

Floor preparation

Units may be installed on ordinary concrete floors, with or without trenches, depending on the type and cross-section of cables. Required civil works are identical for all units.

Outdoor

The outdoor modular enclosures are offered in two different widths, 29.5" (750 mm) or 44.25" (1125 mm).



	Size A	Size B
A	29.62 in. (752.3 mm)	44.37 in. (1127 mm)
B	33.63 in. (854.2 mm)	48.37 in. (1228.6 mm)
C	2 in. (50.8 mm)	29.62 in. (752.3 mm)

	Size A / Size B
D	59.69 in. (1516.12 mm)
E	61.56 in. (1563.62 mm)
F	97.43 in. (2474.22 mm)
G	99.78 in. (2534.41 mm)

Floor preparation

Units may be installed on ordinary concrete floors, with or without trenches, depending on the type and cross-section of cables. Required civil works are identical for all units.

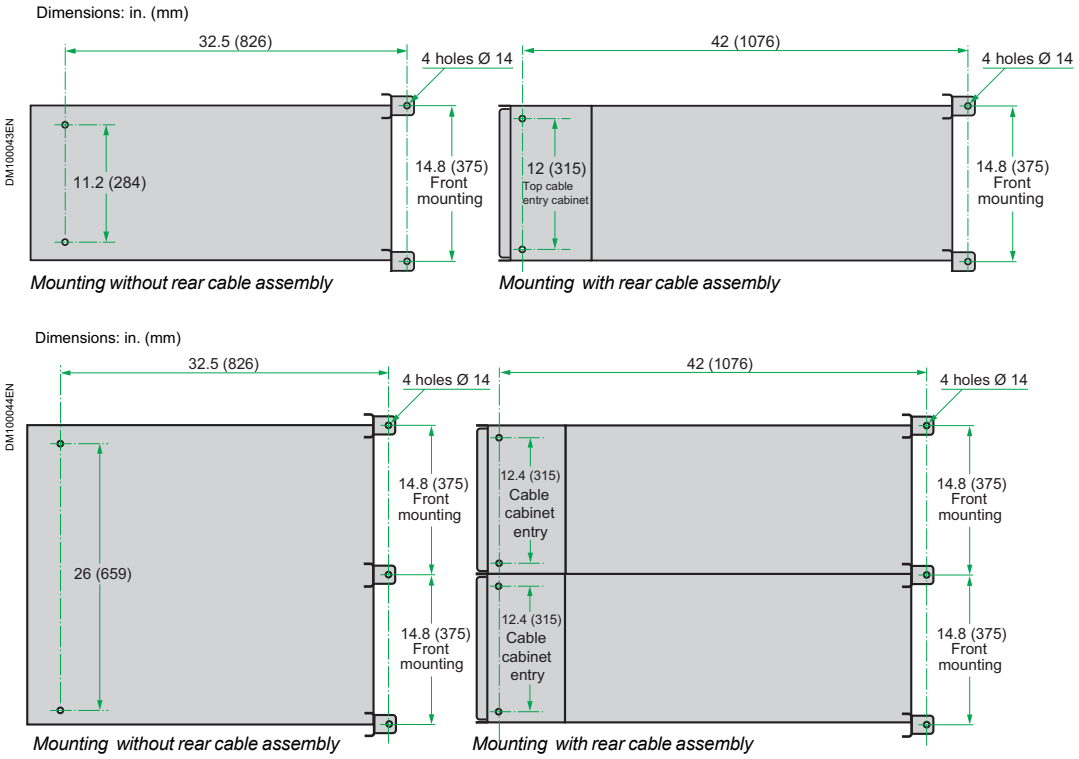
Mounting units

With each other

The units are simply bolted together to form the MV switchgear lineup (bolts supplied).

To the floor

- For switchgear comprising up to three units, the four corners of the switchgear must be fixed to the floor using:
  - bolts (not supplied) screwed into nuts set into the floor using a sealing pistol
  - threaded rods grouted into the ground

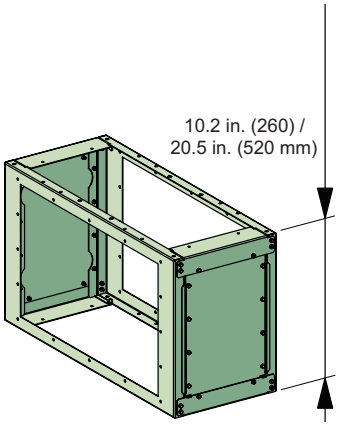


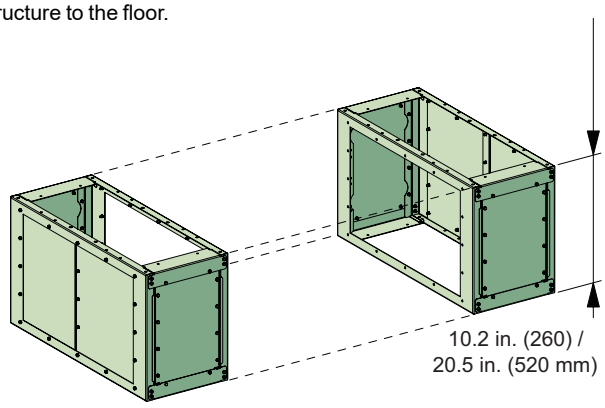
Civil engineering

Additional raising plinths

For installations with conduit or trenches without proper cable bending space, base plinths are available to allow for easier installation.

These plinths are available in two different heights, 10.2 in. (260 mm) and 20.5 in. (520 mm). Two of the shorter plinths or one plinth of each size can be stacked together to add an additional maximum height of 30.7 in. (780 mm).
The switchgear must be assembled on the base plinth prior to fastening the entire structure to the floor.





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