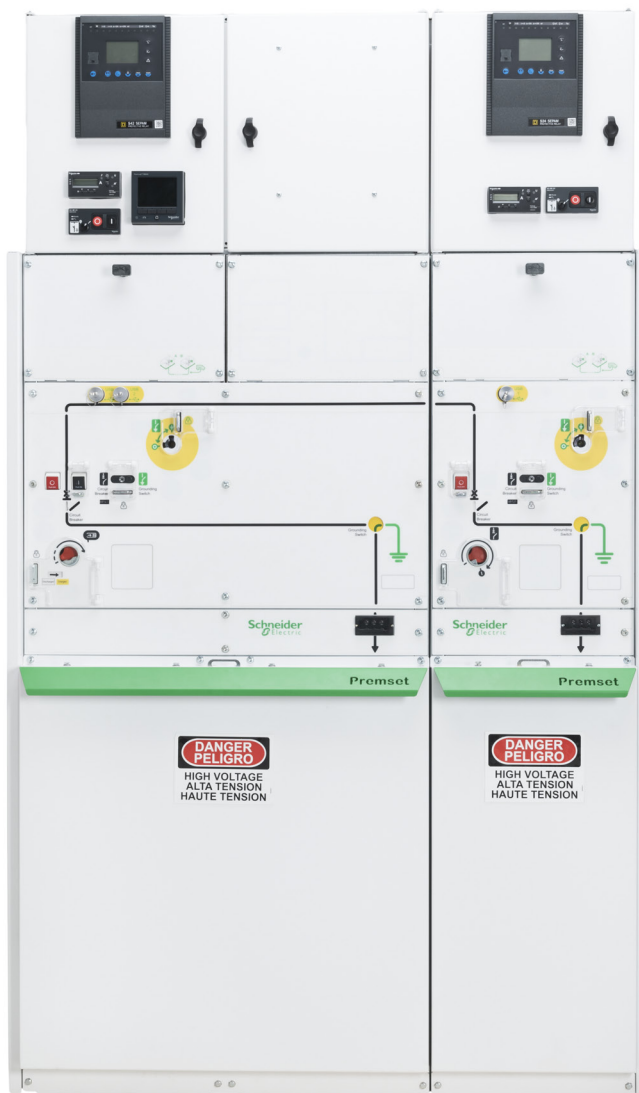


Premset™ 15 kV Switchgear

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

Catalog
6045CT1601
2017



Contents

Introduction	7
Shielded Solid Insulation System (2SIS)	7
Innovative single-line diagram, new arrangement of main functions	7
Integrated core units	7
Consistent cubicle architecture for all circuit breakers	7
Modular system architecture, simplifying installation and upgrading.....	7
Innovative auxiliary features	8
Ready for smart grids.....	8
Architecture and Components	9
Switchgear.....	9
Simplicity with mix-and-match modular architecture based on functional blocks	10
Distributed intelligence	13
Distributed architecture for easy installation, operation, and scalability	15
Web technology	15
Auto-adapting fault passage indicator with remote communication for higher power network availability	16
Sepam protection and control units.....	16
MiCOM protection.....	16
Backup power supply.....	16
LPCTs for Sepam	16
Main applications.....	17
Incomer and feeder functions.....	20
Transformer protection	21
Bus-tie circuit breaker section	22
Bus-tie riser.....	23
Special functions	24
Characteristics / Standards	25
Main electrical characteristics.....	25
Dimensions	26
Normal service conditions	27
Enclosure Rating	27
Environmental characteristics	27

Premset™ Medium Voltage Switchgear

Contents

Circuit breaker	28
D01N, D02N	28
D06N - General protection.....	29
D06H - Heavy-duty line protection.....	30
D12H - Heavy-duty line protection.....	32
Bus Riser	33
G06, G12	33
Special functions	34
ES-B - Busbar grounding switch	34
Operating mechanisms	35
Introduction	35
Accessories	37
Padlocking and keylocking.....	39
2SIS Current and voltage	40
Instrument Transformers and Sensors for Premset Switchgear	40
2SIS - Current Transformers for Premset Switchgear	41
Low-Power Voltage Transformer (LPVT).....	43
Monitoring Camera System for the Disconnect Switch	44
Protection.....	45
Selection guide	45
Protection relay selection	47
Sepam: protection digital relays	48
MiCOM protection relays	48
Fault passage indicators.....	49
Flair 21D, 22D, and 23DM	49
Sensors	50
Voltage indicator and relay	51
VPIS and VDS	51
Live cable interlock	52
Functions	52

Characteristics	52
Operation	52
Technical data.....	52
PM5000 Series Power Meter.....	53
PM8000 Series Power Quality Meter.....	53
PM5000 Series Power Meter	53
PM8000 Series Power Quality Meter	54
Control.....	55
Electrical operation auxiliaries: SC100 and SC110	55
Architecture of switchgear automation	56
Busbar and cable arrangements	57
Cable connections	58
Bottom compartment	58
Cable connections.....	58
Compatible cable connections	59
Dimensions	60
Dimensions and Weights	60
Floor preparation	63
Mounting units	63
Civil engineering	63
Additional raising plinths.....	63

Premset™ Medium Voltage Switchgear

Contents

Introduction



Shielded Solid Insulation System

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

The shielded solid insulation system extends switchgear life and increases reliability.

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

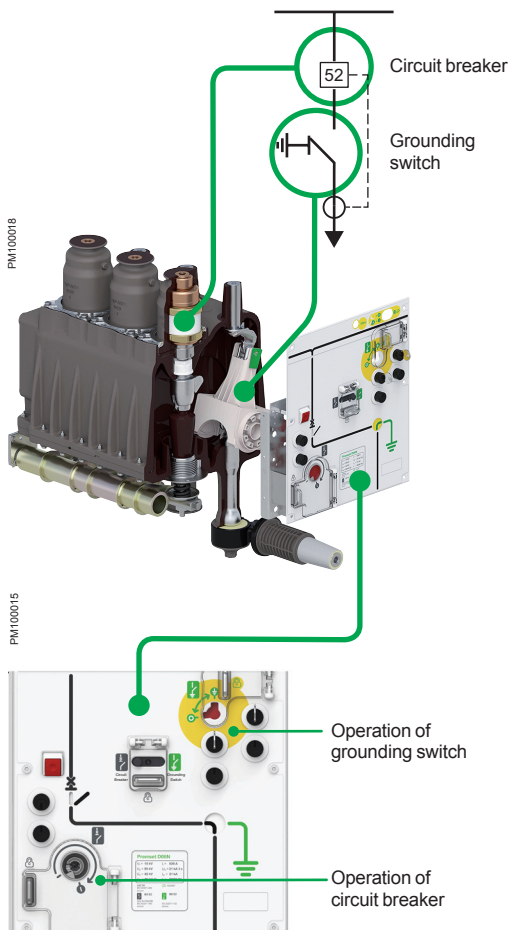
Multiple circuit breaker load options and two types of operating mechanisms:

- 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

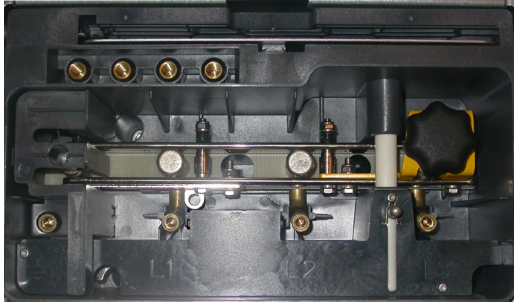
The entire range of core units is optimized for dedicated applications, sharing:

- 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



Premset™ Medium Voltage Switchgear

Overview



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

Self-powered protection with embedded communications

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 is made up 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.

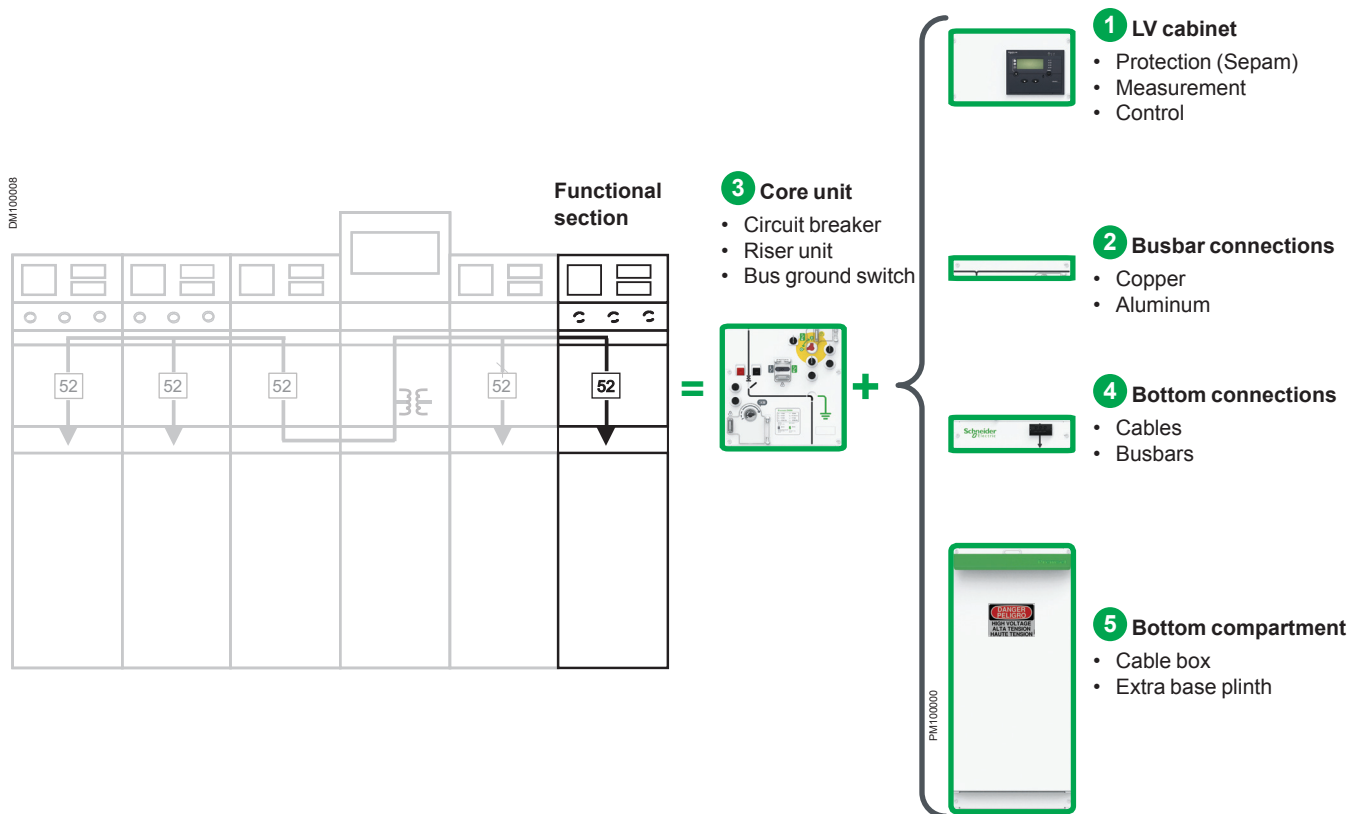
The core units are optimized for each typical application, and the assembly forms a insulated functional unit with reduced sensitivity to the environment.

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.

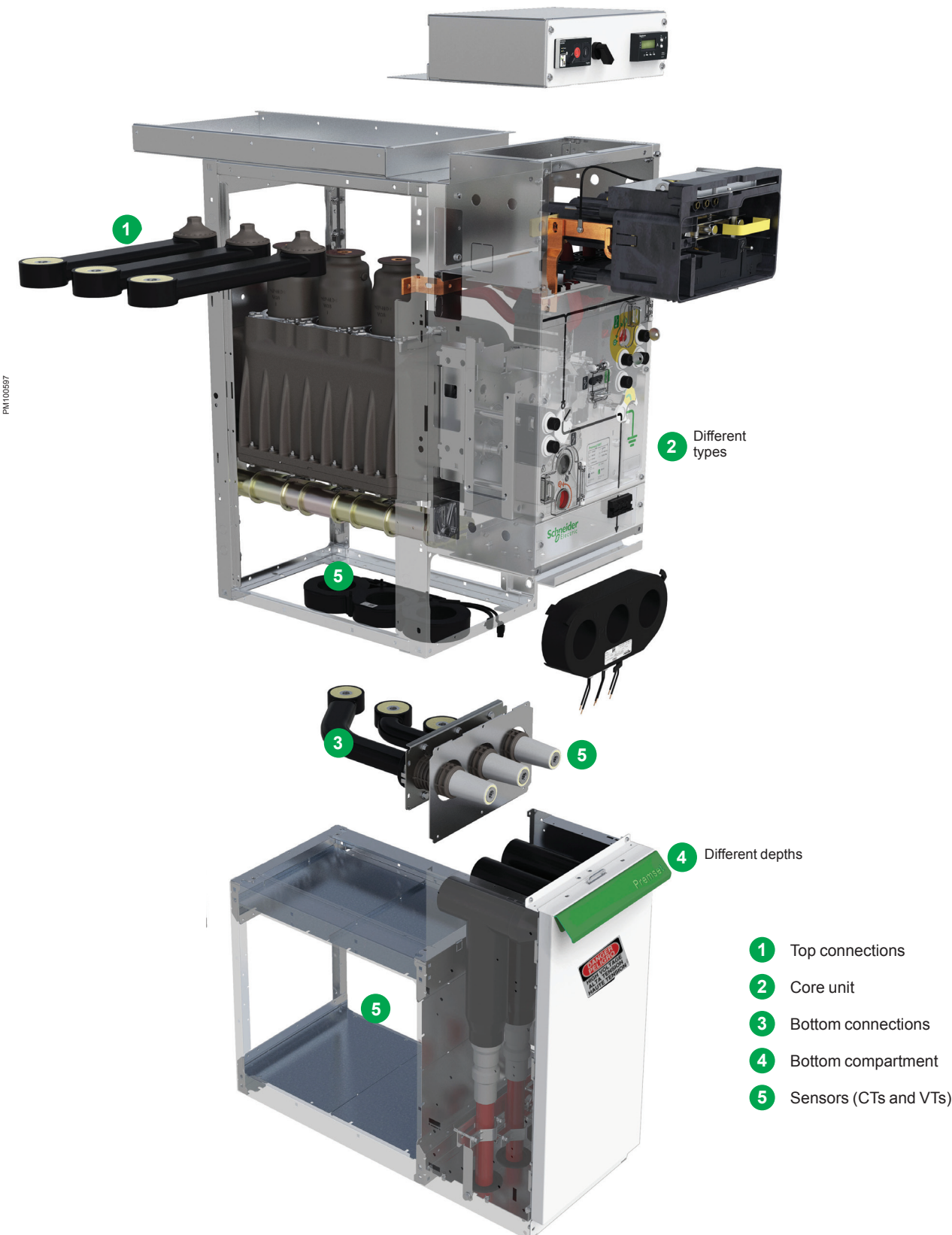
Switchgear

Functional section = An assembly of functional blocks

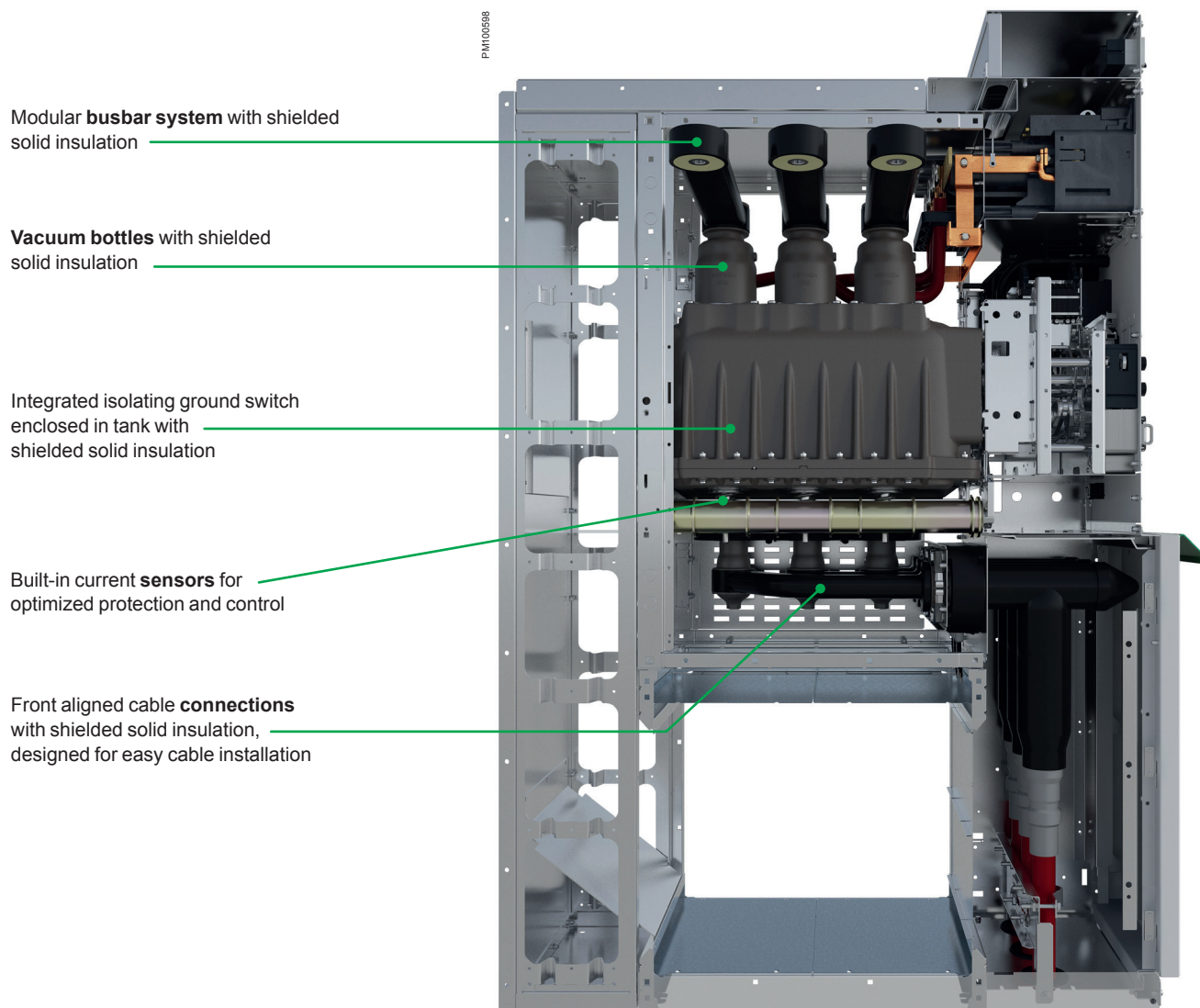


Premset™ Medium Voltage Switchgear
Overview

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



Shielded Solid Insulation System



Premset™ Medium Voltage Switchgear

Overview

Current and voltage transformers integrated in main functions

1

Current transformer or sensors located under the core unit

- Low-power current transformer for Sepam™ relay
- 1 A ring-type current transformer for Sepam and MiCOM protection relays, or any conventional relay (ARU2)S

2

Current transformers located around bushings

- Current transformer for power measurement (ARU1)
- Current transformer for fault passage indication

3

Low-Power Voltage Transformers (LPVT)

- Connected to the medium voltage side by a flexible link.
- Provides a low voltage output signal used for relay protection or power monitoring

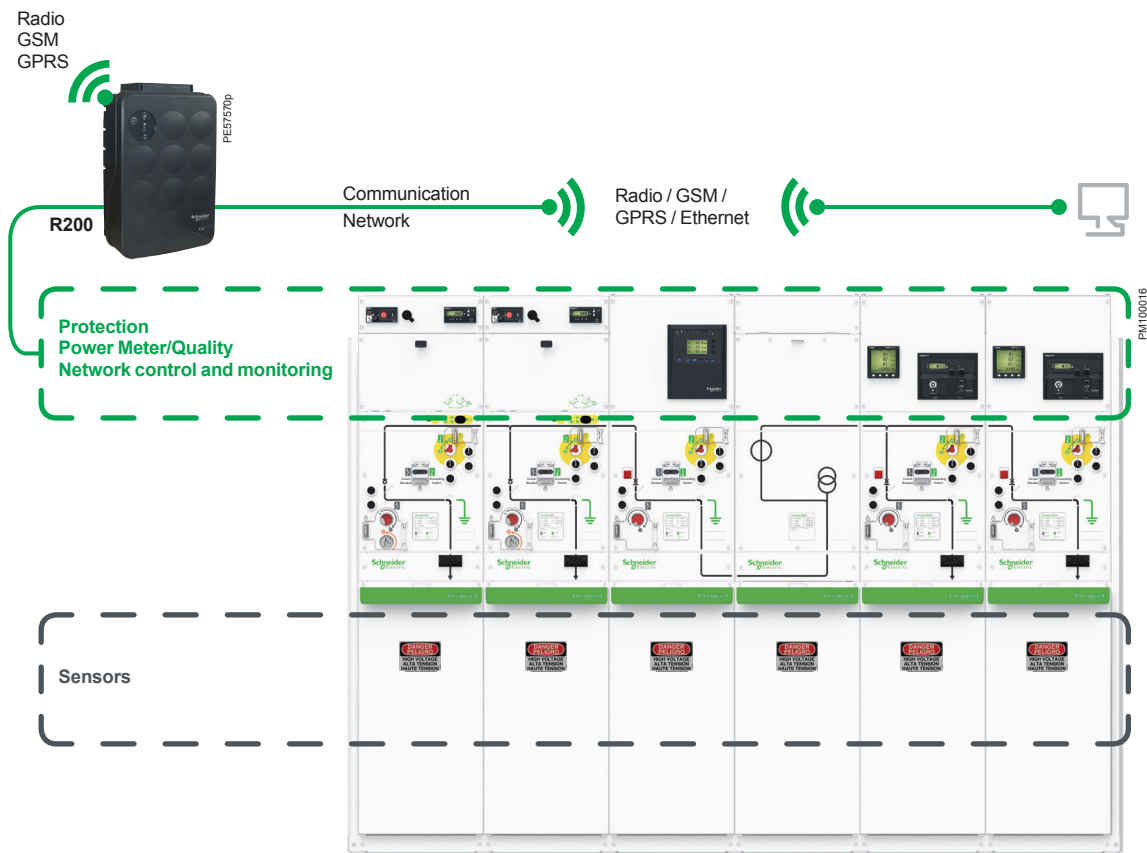


Distributed intelligence

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

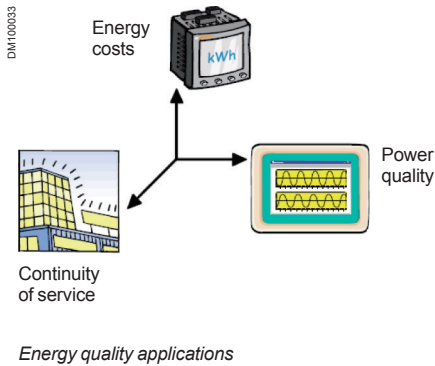
These devices have dedicated locations and cabling and are daisy-chained throughout the various functional units using RJ45 connectors and Modbus protocol. A gateway can be used to connect the monitoring and controls to a supervision system via Ethernet, TCP-IP, and/or radio-frequency communication.

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



Premset™ Medium Voltage Switchgear

Overview



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

1 - Fault detection

- Fault Passage Indicators: Flair 21D/22D, Flair 23DM
- Voltage indicators: VPIS, VDS

2 - Protection

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

3 - Measurement

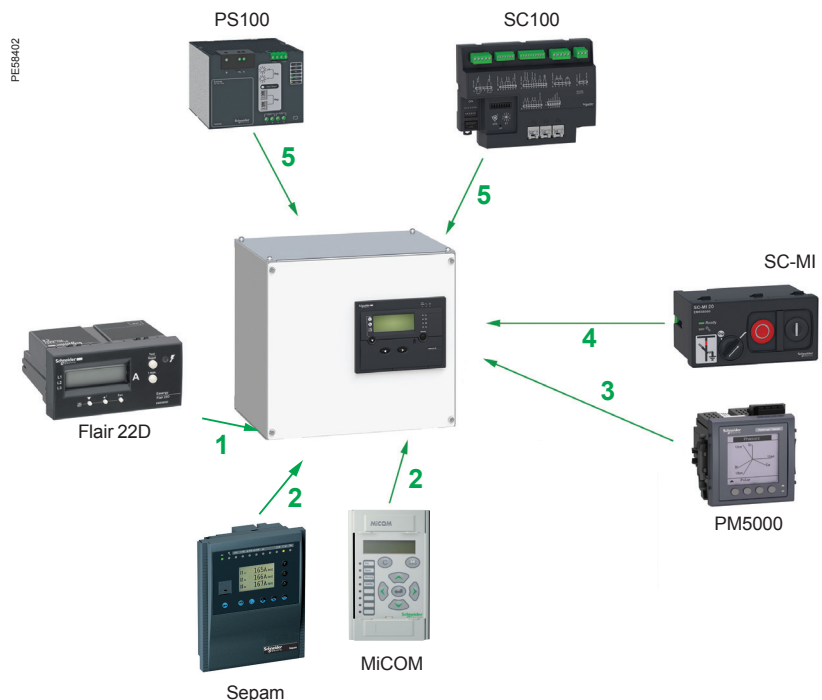
- Power/Quality/Waveform Meter: ION7650
- Power Meter: PM5000
- Power/Quality Meter: PM8000

4 - Local control

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

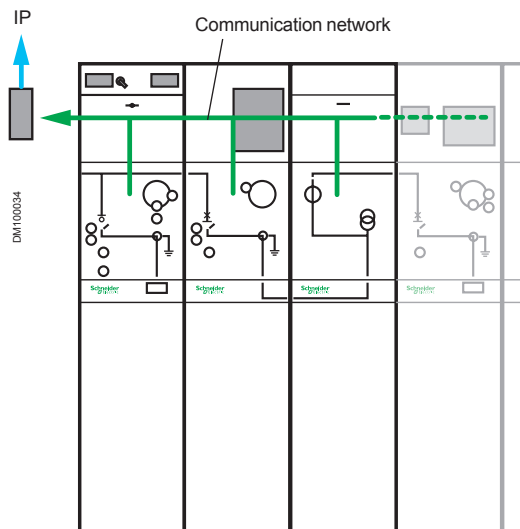
5 - Remote control

- Embedded intelligent devices
- Switch controller for local communication network: SC100
- Switch controller for remote communication network : SC110
- Backup power supply: PS100



Premset™ Medium Voltage Switchgear

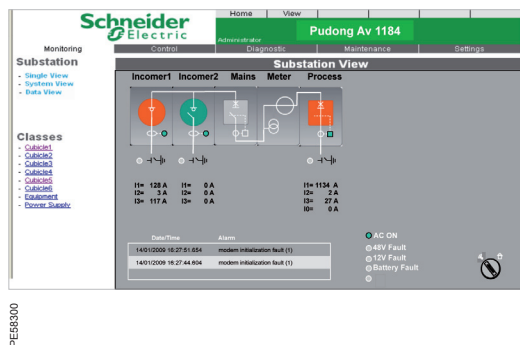
Overview



Distributed architecture for easy installation, operation, and scalability

The protection and automation services used in the Premset system have been 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

Premset™ Medium Voltage Switchgear Overview



Flair FPI



Sepam



MiCOM range



PS100



LPCT

Auto-adapting fault passage indicator with remote communication for higher power network availability

The Flair range offers cost-effective, auto-adapting, fault passage indicators (FPI) that can be fully integrated in the cubicle.

In addition to the Flair 21D /22D self-powered FPIs, the range includes the Flair 23DM, a powerful FPI with a communication port.

- The Flair 23DM is linked to the voltage presence indication system (VPIS) to confirm detected faults by undervoltage instead of current measurement, thereby helping avoid transient detected faults
- The Flair 23DM provides an integrated output voltage relay
- Phase fault and standard ground fault detection are maintained even if the power supply is lost. The auxiliary power supply is only needed for communication and the voltage presence relay
- The communication port provides the current values, records diagnostic information (voltage drops, transient fault indications), and makes it possible to modify settings remotely.

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.

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.

Backup power supply

Backup power supplies (UPSs or batteries) are now common in industrial and commercial applications.

The Premset system includes the PS100, a dedicated solution with a high insulation level designed to provide 24 hours of backup power to electronic devices.

Maintenance is easy with:

- Just one battery to replace
- End-of-life alarm possible via Modbus communication.

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.

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:

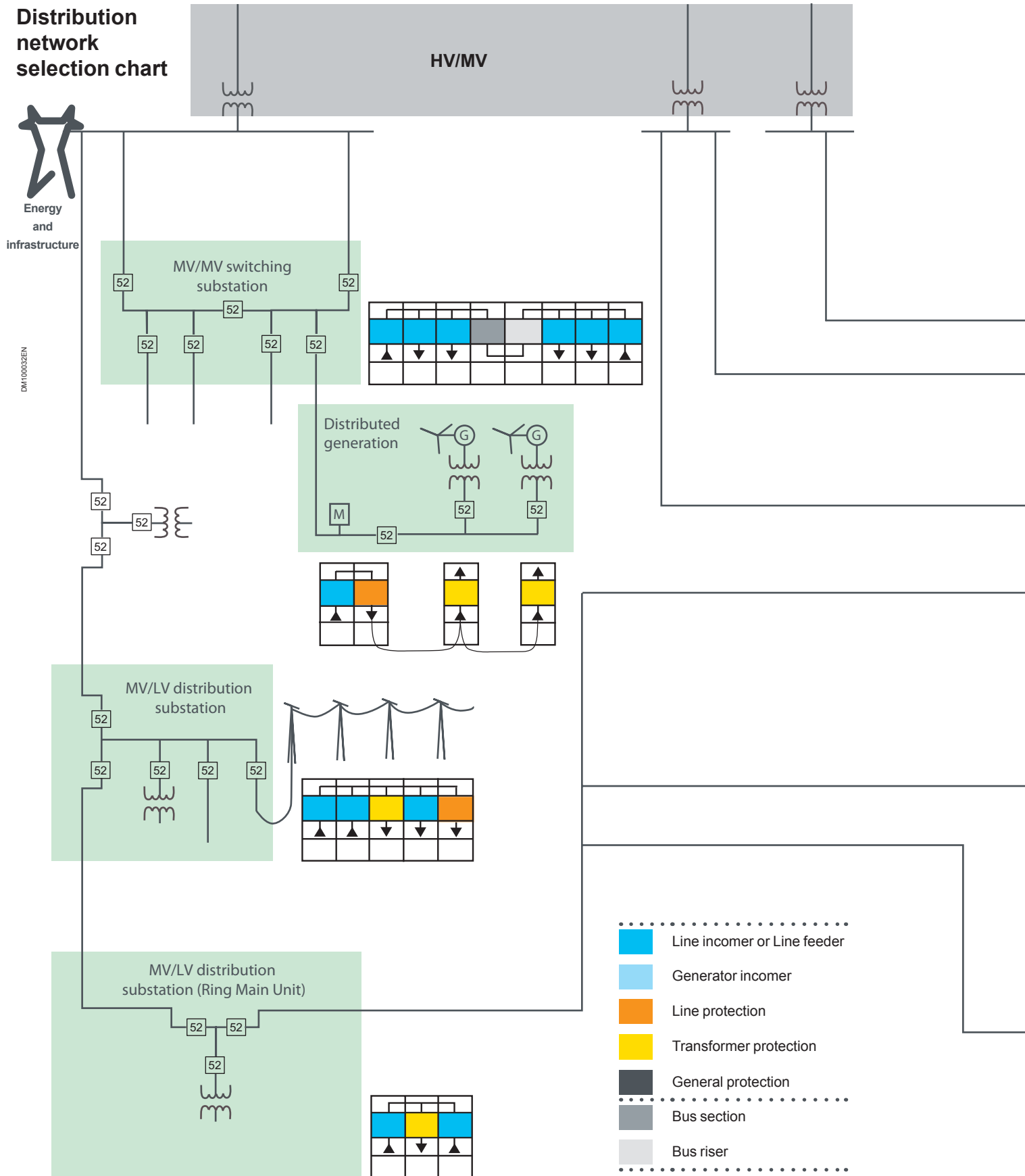
- Local or remote control
- MV automatic transfer system (ATS)
- Building management or electric distribution management systems



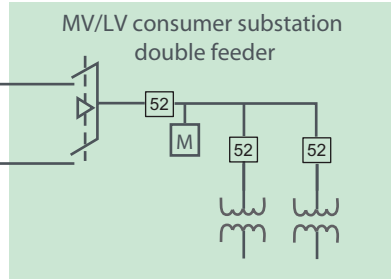
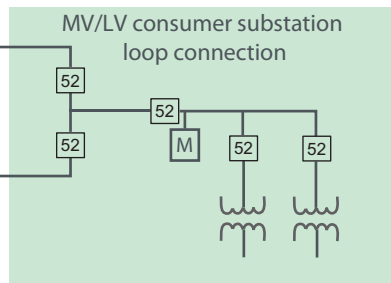
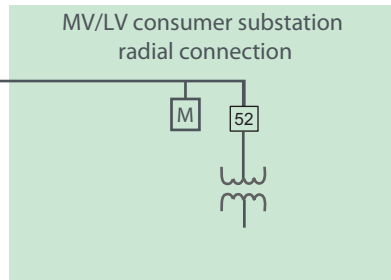
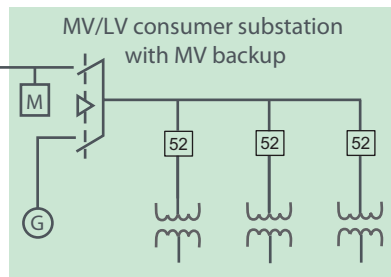
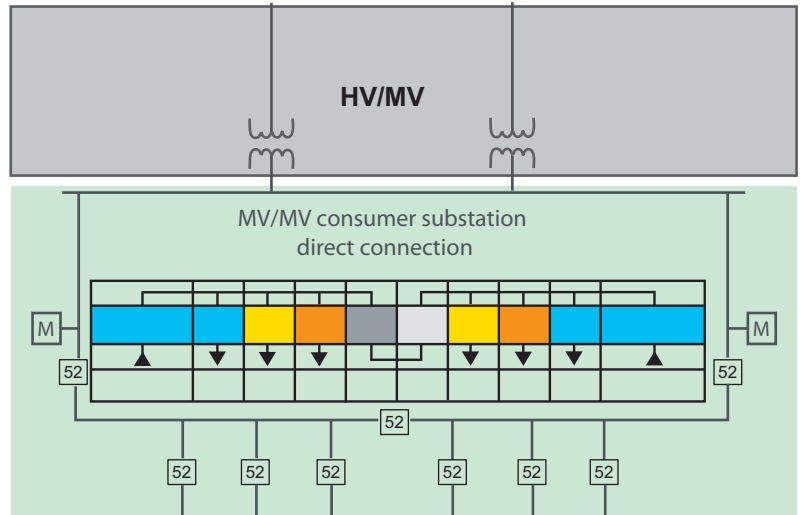
Premset™ Medium Voltage Switchgear

Building Your Solution

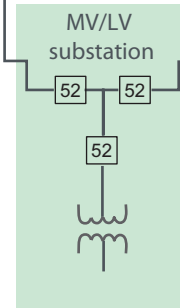
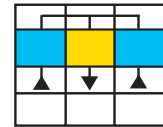
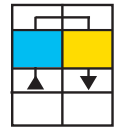
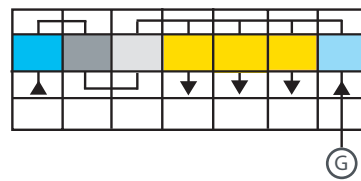
Distribution network selection chart



Buildings and Industry
selection chart



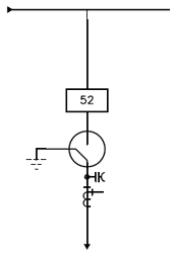
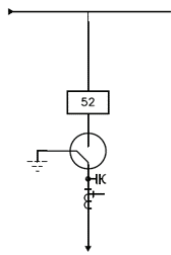
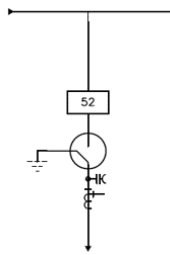
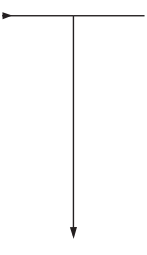
MV private network



Premset™ Medium Voltage Switchgear

Building Your Solution

Incomer and feeder functions

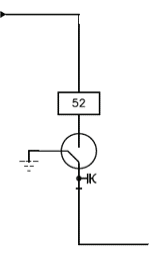
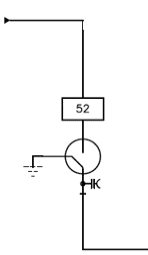
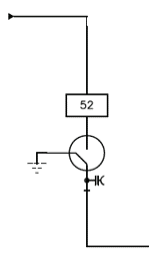
Function			Line main / Line feeder			
Single-line diagram						
Core unit type			D06N	D06H	D12H	G06
Dimension width: in. (mm)			14.75 (374.65)	14.75 (374.65)	29 (736.6)	14.75 (374.65)
Typical application of protection			General protection	Line protection	Line protection	
Core unit			Latching CI1 mechanism 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	29	30	32	33
Grounding switch			■ (1)	■ (1)	■ (1)	
Live cable interlock			52 □	□	□	
Protection (only one option possible)						
Sepam 20	Auxiliary powered	48	□	□	□	□
Sepam 40, 80	Auxiliary powered	48	□	□	□	□
MiCOM	Auxiliary powered	48	□	□	□	□
Fault passage indicator (only one option possible)						
Flair 21/22D/23DM	Fault passage	49				□
Metering (only one option possible)						
PM5000	Power Meter	53	□	□	□	□
PM8000	Power/Quality Meter	54	□	□	□	□
ION7650	Revenue Meter		□	□	□	□
Control						
Electrical operation		29	□	□	□	
Controller and accessories		29	□	□	□	
Additional opening coil (MX or MN)		35	□	□		
Auxiliary contacts		55	□	□	□	
Voltage indication (only one option possible)						
VPIS or VDS	Voltage indication	51	□	□	□	□
LPVT	Low-power voltage transformers	43	□	□	□	
Metering current transformers (only one option possible)						
ARU1	Ring CTs	42	□	□	□	□
ARC6	Ring CTs	42	□	□		□

■ Required □ Optional

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

LIBERTY EXHIBIT 1007, Page 21

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		29	30	32
Grounding switch			■ (1)	■ (1)	■ (1)
Cable testing device	8				
Live cable interlock	52				
Protection (only one option possible)					
Sepam 20	Auxiliary powered	48	☐	☐	☐
Sepam 40, 80	Auxiliary powered	48	☐	☐	☐
MiCOM	Auxiliary powered	48	☐	☐	☐
Fault passage indicator (only one option possible)					
Flair 21/22D/23DM	Fault passage	49			
Metering (only one option possible)					
PM5000	Power Meter	53			
PM8000	Power/Quality Meter	54			
ION7650	Revenue Meter				
Control					
Electrical operation		29	☐	☐	☐
Controller and accessories		29	☐	☐	☐
Additional opening coil (MX or MN)		35	☐	☐	
Auxiliary contacts		55	☐	☐	☐
Voltage indication (only one option possible)					
VPIS or VDS	Voltage indication	51	☐	☐	☐
LPVT	Low-power voltage transformers	43	☐	☐	☐
Metering current transformers (only one option possible)					
ARU1	Ring CTs	42			
ARC6	Ring CTs	42			

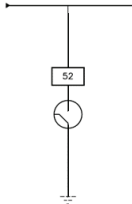
■ Required □ Optional

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

Premset™ Medium Voltage Switchgear

Building Your Solution

Special functions

Function		Special functions	
Single-line diagram			
Core unit type		ES-B	
Dimension	width: in. (mm)	14.75 (374.65)	
Typical application of protection			
Core unit		Dedicated to busbar grounding	
See details ►		Page	34
Grounding switch			
Cable testing device		8	
Live cable interlock		52	
Protection (only one option possible)			
Sepam 20	Auxiliary powered	48	
Sepam 40,80	Auxiliary powered	48	
MiCOM	Auxiliary powered	48	
Fault passage indicator (only one option possible)			
Flair 21/22D/23DM	Fault passage	49	
Metering (only one option possible)			
PM5000	Power Meter	53	
PM8000	Power/Quality Meter	54	
ION7650	Revenue Meter		
Control			
Electrical operation		29	
Controller and accessories		29	
Additional opening coil (MX or MN)		35	
Auxiliary contacts		55	□
Voltage indication (only one option possible)			
VPIS or VDS	Voltage indication	51	
LPVT	Low-power voltage transformers	43	
Metering current transformers (only one option possible)			
ARU1	Ring CTs	42	
ARC6	Ring CTs	42	

■ Required □ Optional

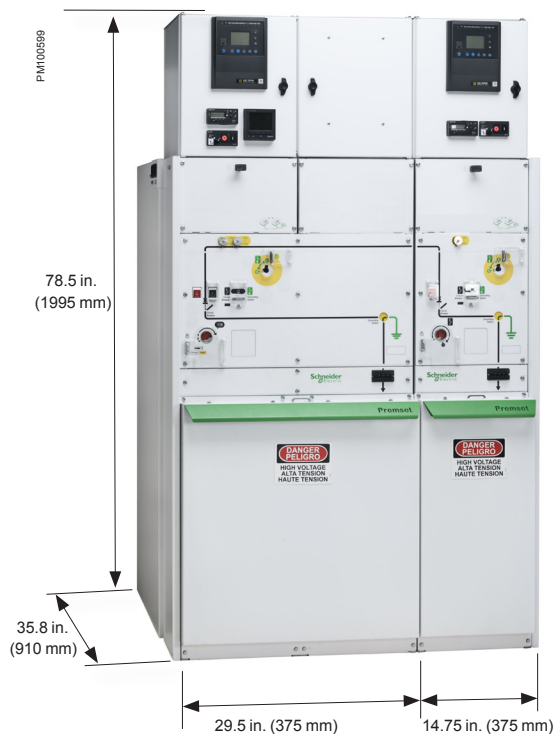
(1)Core units without grounding switch, contact your local Schneider Electric representative for availability.

Characteristics / Standards

Main electrical characteristics

Voltage			
Rated voltage	kV	5	15
Rated frequency	Hz	50/60	
Insulation level			
Rated short-duration power-frequency withstand voltage			
- phase to phase, phase to ground, open contact gap		20	38
Rated lightning impulse withstand voltage (BIL)			
- phase to phase, phase to ground, open contact gap		60	95
Current			
Rated normal current for the busbar	up to A	1200	
Rated short-time withstand current	up to kA	25	
Rated short-circuit breaking current			
Circuit breaker: D01N, D02N, D06N, D06H, D12H	up to kA	25	

Premset™ Medium Voltage Switchgear General Characteristic



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 60)
- 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 60.

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

- Enclosure is NEMA 1 Indoor, Type B (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 -22 °F to +104 °F (-30°C to +40 °C)
Humidity	• <= 95% Relative Humidity

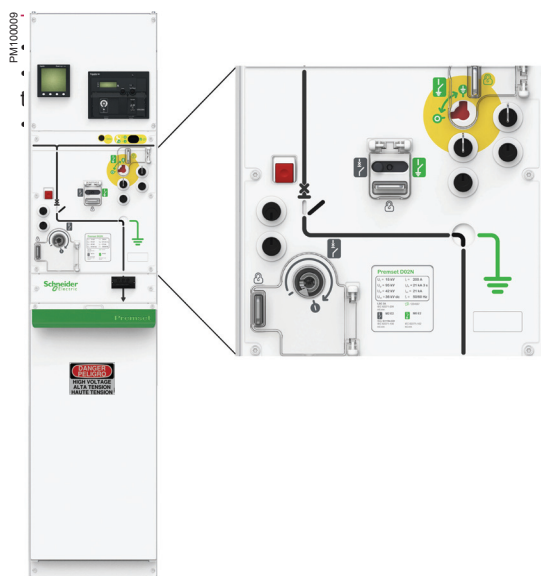
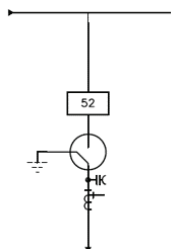
(1) Over 10,000 ft (3000 m), please contact your local Schneider Electric representative.

Premset™ Medium Voltage Switchgear

Core Units

Circuit breaker

D01N, D02N



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 C11 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

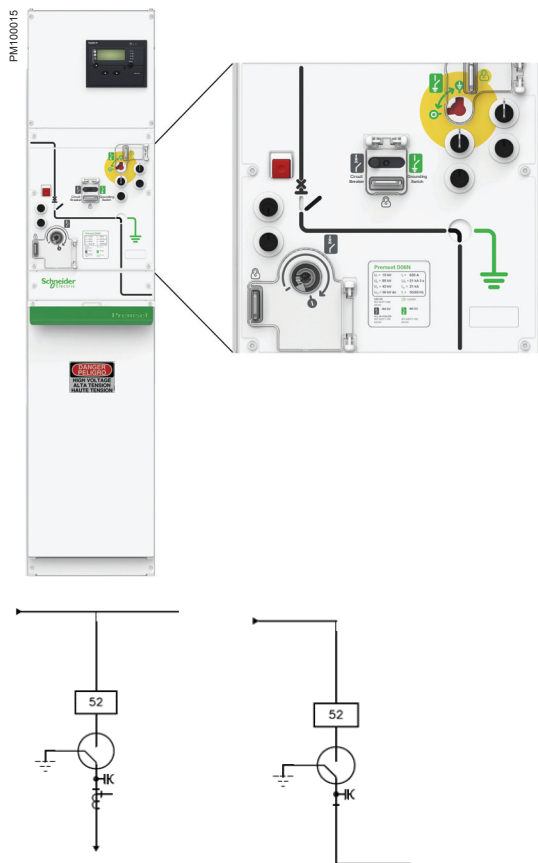
Technical characteristics

Rated voltage (kV)		5	15
Rated current 100 (D01N); 200 (D02N)	A	100 (D01N); 200 (D02N)	
Rated short-time withstand current and duration for switchgear with tk=4s	up to kA	-	25
		20	-
Short-circuit breaking capacity	up to kA	21	25
Rated making capacity of main circuit breaker and grounding switches when fr=50 Hz when fr=60 Hz	kA peak	52	62
	kA peak	54	65
No-load mechanical endurance of main circuit breaker	Number of operation cycles	2000	
Operating sequence		CO-15s-CO	
Maximum number of operations at Isc		5	
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	

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
- voltage present /absent contact
- local/remote control switch
- auxiliary power shut down switch
- operation counter
- additional tripping coil with optional self-power relay
- 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))

Premset™ Medium Voltage Switchgear

Core Units

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		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	2000	
Operating sequence			CO-15s-CO	
Maximum number of operations at Isc			30	
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	

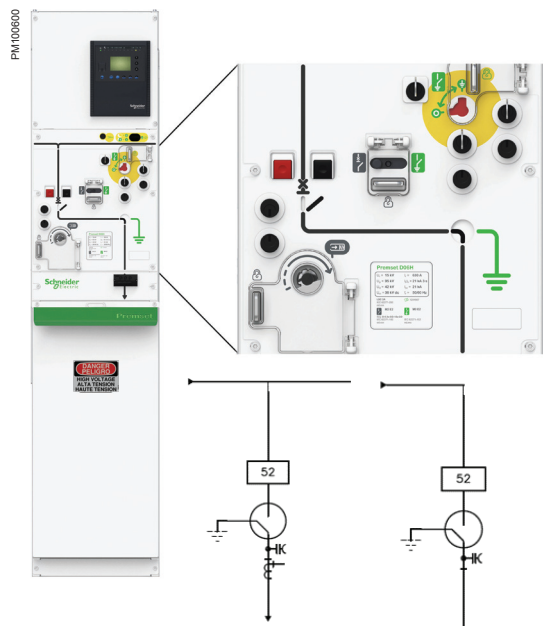
D06H - Heavy-duty line protection

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
- voltage present /absent contact
- local/remote control switch
- auxiliary power shut down switch
- operation counter
- additional tripping coil with optional self-power relay
- 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	

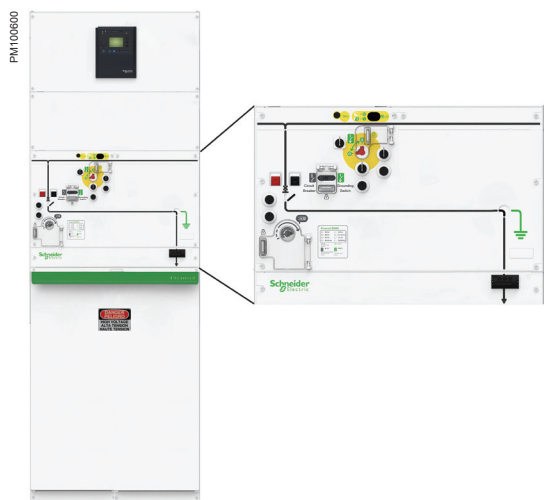
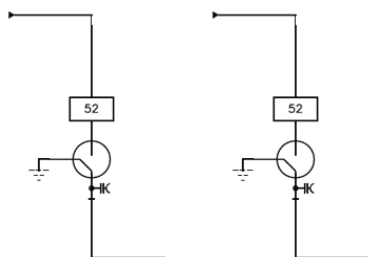
Premset™ Medium Voltage Switchgear

Core Units

D12H - Heavy-duty line protection

The D12H uses vacuum interrupter and 2SIS technology

- 29 in. (750 mm) width
- rated current is 1200 A



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
- voltage present /absent contact
- local/remote control switch
- auxiliary power shut down switch
- operation counter
- additional tripping coil with optional self-power relay
- 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

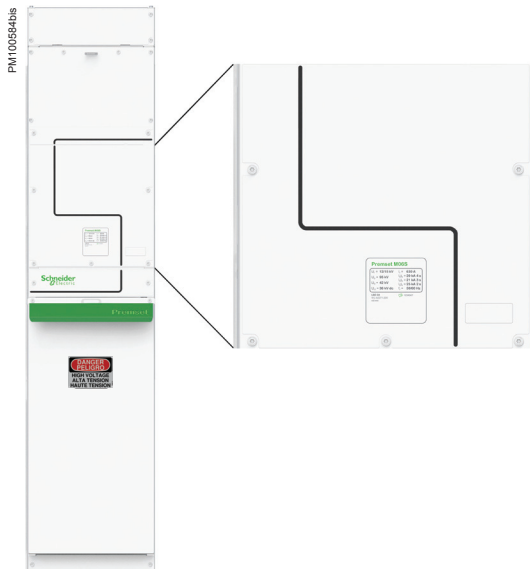
Rated voltage		(kV)	5	15
Rated current		A	1200	
Rated short-time withstand current and duration		up to kA	25	25
Short-circuit breaking capacity		up to kA	25	25
Rated making capacity of main circuit breaker and grounding switches	when fr=50 Hz	kA peak	62	62
	when fr=60 Hz	kA peak	65	65
No-load mechanical 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



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

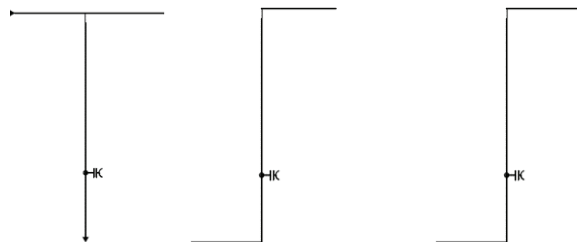
Accessories

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



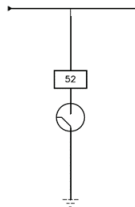
G06

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	(A rms)		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	

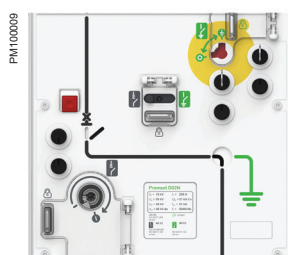
Operating mechanisms

Introduction

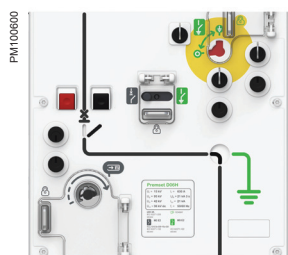
Three operating mechanisms meet all the needs of the various core units of the Premset range. They provide user-friendly operation over the entire life of your switchgear.

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	■		



CI1 mechanism in D02N unit



OCO mechanism in D06H unit

Range of operating mechanisms

Three operating mechanisms have been designed together with the core units to optimize performance and help 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, so they are protected against condensation and dropping water
- motor is encased in a protective aluminium 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

Premset™ Medium Voltage Switchgear

Core Units

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

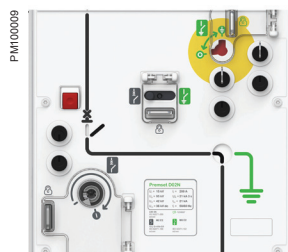
CI1 operating mechanism

- 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

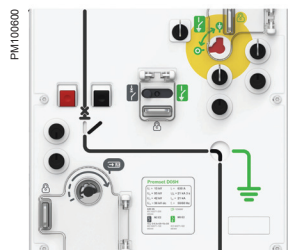
OCO operating mechanism

- 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



CI1 mechanism in D02N unit



OCO mechanism in D06H unit

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	AC (50/60 Hz)
		24-30 VDC, 48-60 VDC 100-130 VDC, 200-250 VDC	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 case of an emergency caused by a voltage drop, loss of auxiliary power, etc. It can be associated with a time delay unit.

Characteristics

Power supply		DC	AC (50/60 Hz)
		24-30 VDC, 48-60 VDC	48-60 VAC, 110-130 VAC
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)

Premset™ Medium Voltage Switchgear

Core Units

“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 ϕ : 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

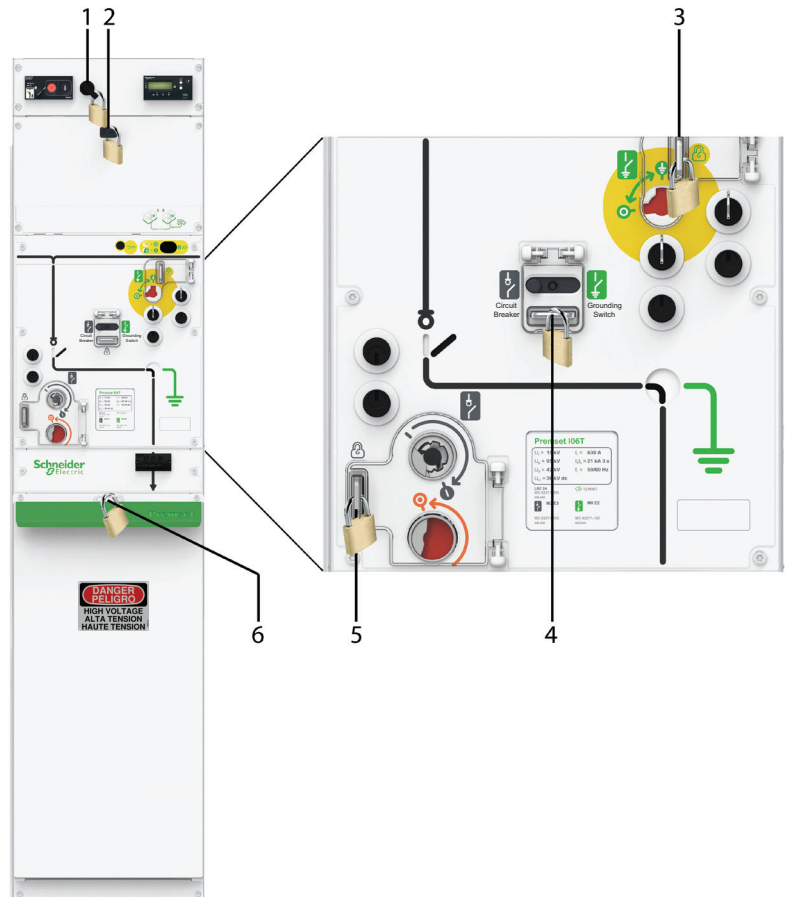
Padlocking and keylocking

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 safety 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.

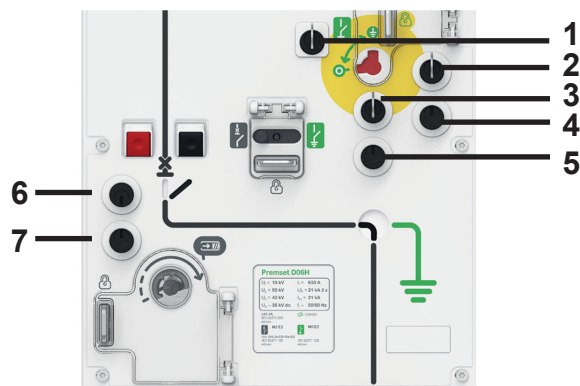


Keylocking (optional)

Up to 7 key lockings are available as options 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.



Premset™ Medium Voltage Switchgear
Core Units

2SIS Current and voltage

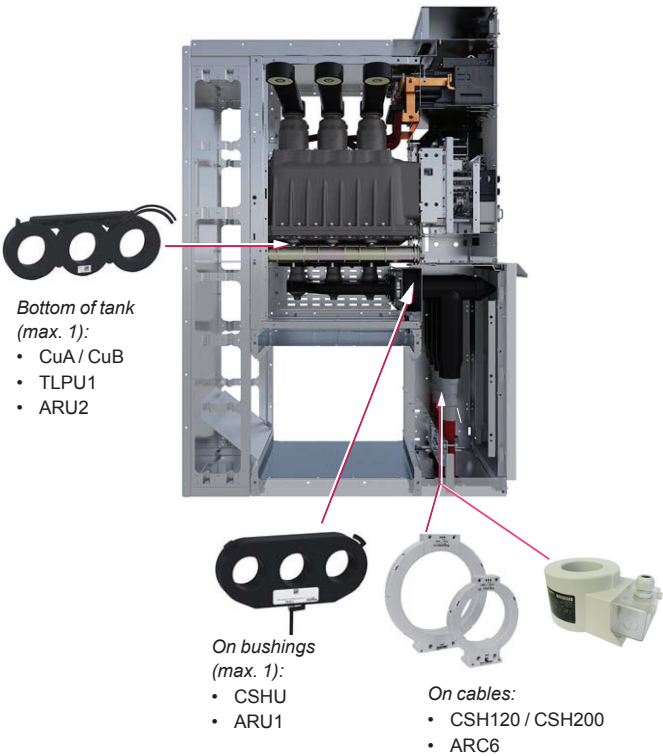
Instrument Transformers and Sensors for Premset
Switchgear

Current Transformers and Sensors by Unit

Unit type	Current sensors						
	Protection sensors			Zero sequence		Metering CT	
	Under core unit			Bushing	Cable	Bushing	Cable
	CuACuB	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

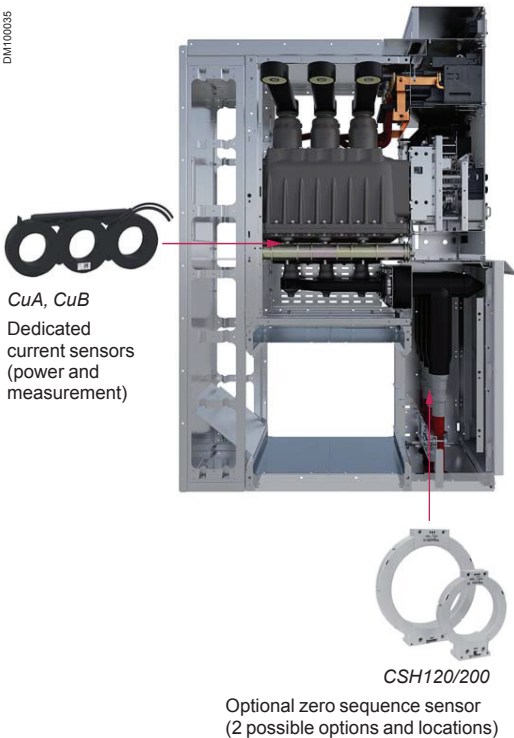


Bottom of tank
(max. 1):
• CuA / CuB
• TLPU1
• ARU2

On bushings
(max. 1):
• CSHU
• ARU1

On cables:
• CSH120 / CSH200
• ARC6

DM100035



CuA, CuB
Dedicated
current sensors
(power and
measurement)

CSH120/200
Optional zero sequence sensor
(2 possible options and locations)

CuA, CuB

The sensors are part of the dedicated design for the Premset self-power protection system, including sensors and an actuator.

The sensors are made up of one block of three CTs which provides protection and measurement functions, as well as power for an actuator.

The sensors are located under the core unit:

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

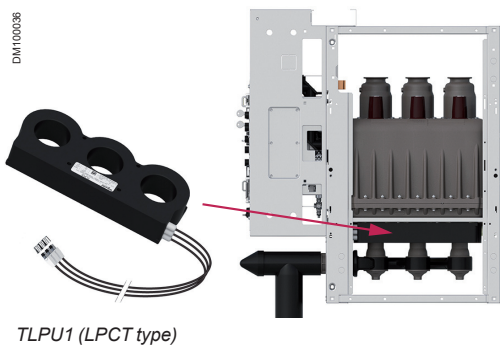
Rated voltage	0.72 kV
Insulation voltage	3 kV - 1 min
Rated short-time withstand current	25 kA
Withstand time	3 sec
Rated primary current	CuA: 0-200 A, CuB: 0- 600 A
Secondary voltage	22.5 mV at 100 A
Rated burden	> 2kΩ
Measurement accuracy class	Cl 1.0
Protection	5P30

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

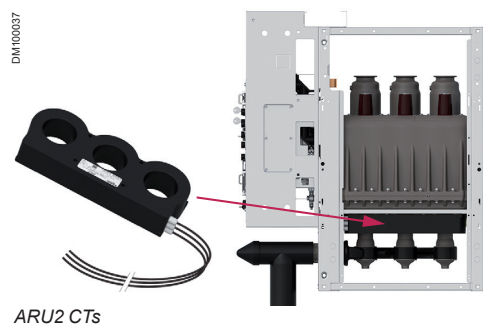


TLPU1 (LPCT)

A standard Low Power Current Transformer (LPCT) of the TLPU1 type can be located under the core unit. LPCTs provide a precise and stable 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	Cl 0.5
Protection	5P250



ARU2 (Protection)

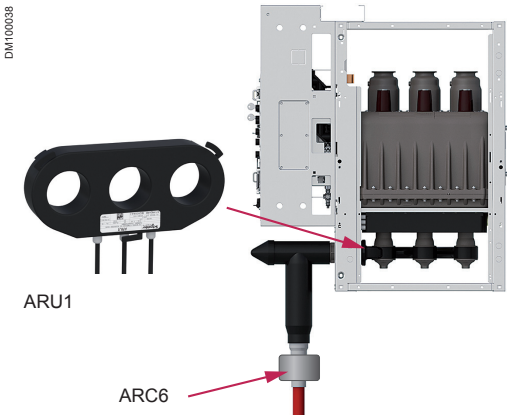
A standard ring type current transformer of the ARU2 type (1A, 5P20 class) can be located under the core unit.

- 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					

Premset™ Medium Voltage Switchgear

Core Units



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	CI 0.5 s Fs≤5				CI 0.2 s Fs≤5				



ARC6 (Metering)

The ARC6 is a ring-type current transformer.

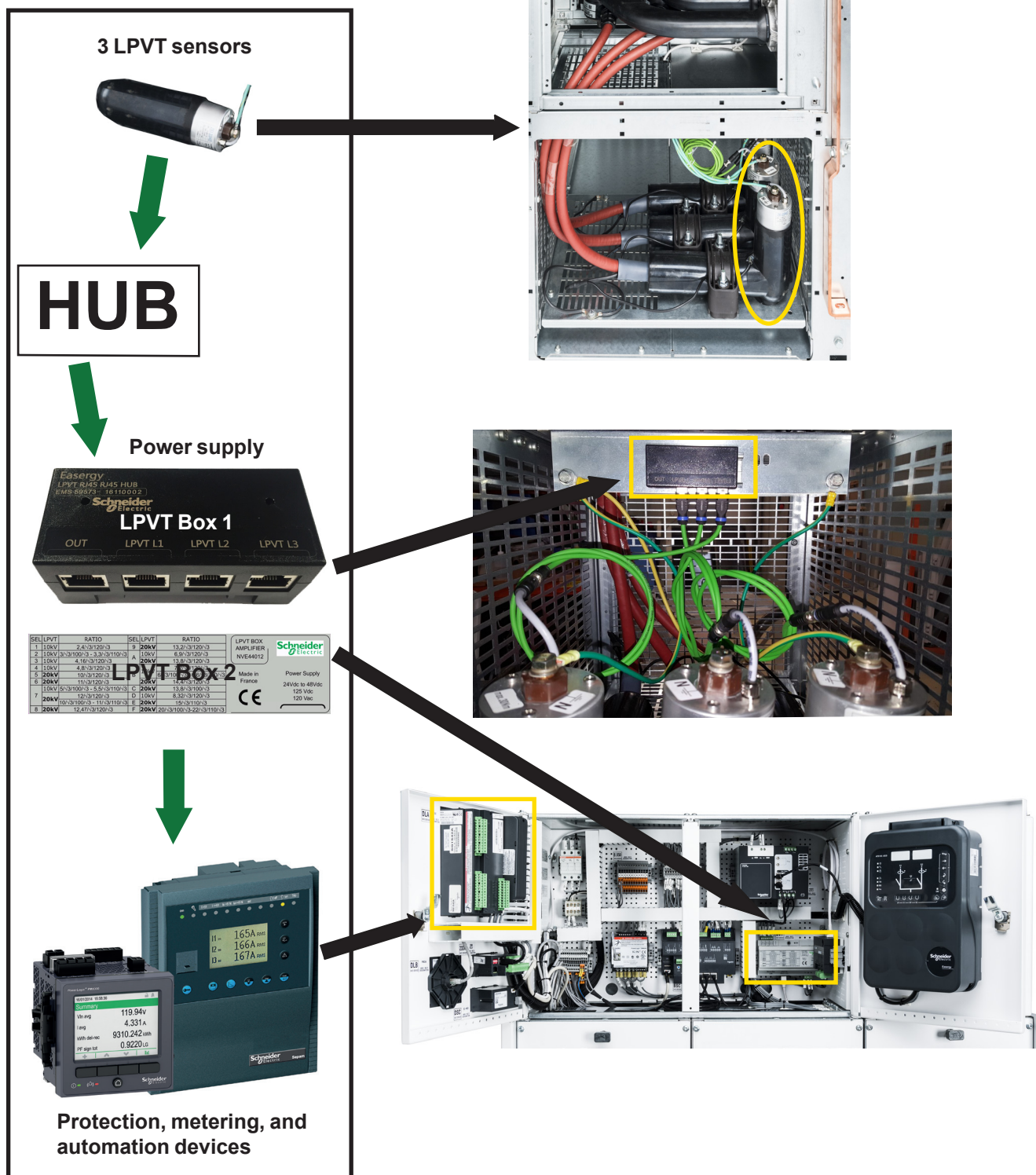
- Located around cable for all switchgear units: D01N, D02N, D06N and D06H
- Offers higher accuracy than ARU1 when primary current is less than 600 A
- Only installed on single-core screened cable with a deeper cable compartment door in single cable per phase applications

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 connected to the MV side by flexible links 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.

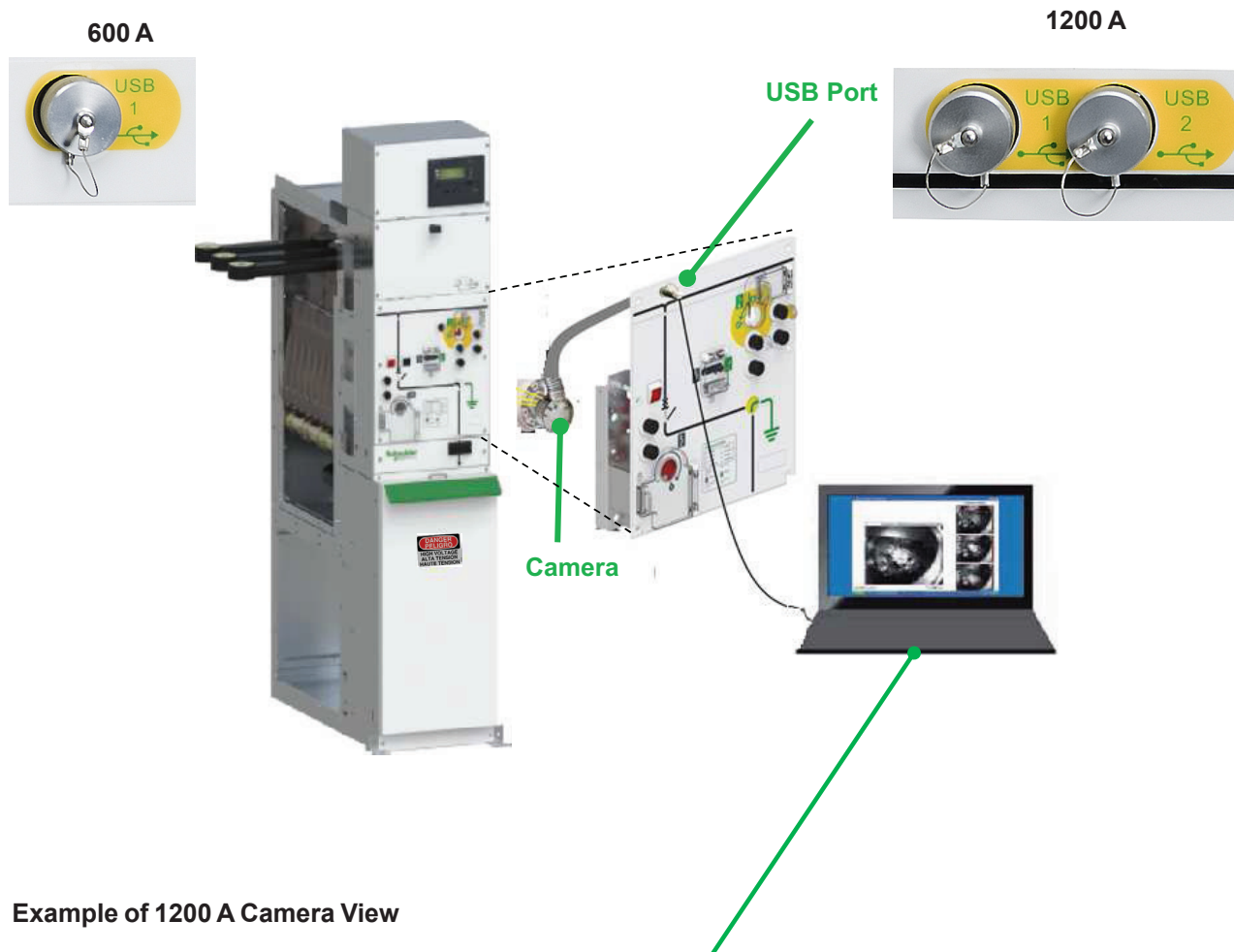


Premset™ Medium Voltage Switchgear Protection, Monitoring, and Control

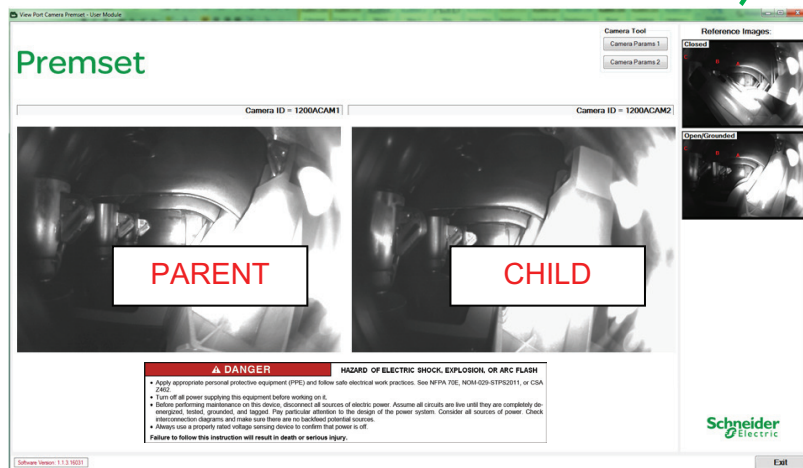
Monitoring Camera System for the Disconnect Switch

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.



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.

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 40)

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.



Sepam range



MiCOM range

Premset™ Medium Voltage Switchgear

Protection, Monitoring, and Control

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
<div>PE90511</div> 	<div>PE90511</div> 	<div>PE90366</div> 	<div>PE90512</div> 	<div>PE90437</div> 
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:				
<div><div>• Effective protection of life and property</div><div>• Accurate measurements and detailed diagnosis</div><div>• Integral equipment control</div><div>• Local or remote indications and operation</div></div>				
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 5A) 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...)

Premset™ Medium Voltage Switchgear Protection, Monitoring, and Control

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 signalling 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

Fault passage indicators

Flair 21D, 22D, and 23DM

Flair 21D, 22D, and 23DM is a family of DIN format fault passage indicators. They are small, self-powered, and adapt automatically to the network.

These devices use cutting edge technology to detect ground faults and overcurrent faults. They are applicable to isolated, resistor grounded, and solidly grounded systems.

- Self-powered: the fault current passage detection and indication system operates continuously
- Adjustment-free, they are immediately operational (numerous manual adjustments are still possible)
- Compact, their DIN format easily fits in low-voltage compartments
- Smart, they offer an ammeter/digital maximeter function
- Comprehensive, the Flair 23DM version incorporates a highly sophisticated voltage presence/absence relay function with Ethernet Modbus communication.



Flair 21D



Flair 22D



- Ground fault sensitivity as low as 5 A
- Display of settings and detected faulty phase
- Automatic reset

Applications and main features

The Flair range increases your power availability by providing indicators suitable for locating detected faults and MV network load management.

- Indication of phase-phase and phase-ground faults
- Display of settings
- Indication of the detected faulty phase
- Display of the load current including peak demand and frequency
- Fault passage indication and voltage detection combination (Flair 23DM)
- Ethernet communication (Flair 23DM).

These fault passage indicators are easy to use.

- Automatic setting on the site
- Fault indication with LED or outdoor lamp
- 15-year battery life (Flair 22D)
- More accurate fault detection if Flair 22D or 23DM is connected to voltage presence indication system (VPIS) voltage output
- Can be factory-mounted in Premset cubicles or added onsite
- Easy on-site addition without removing MV cables using split-type current sensor

Fault detection functions

Overcurrent detection

- Automatic mode for adjustment-free calibration of detection thresholds
- Manual mode for special override settings:
 - Flair 21D: 4 detection thresholds from 200 A to 800 A, in 200 A increments, selectable via microswitches
 - Flair 22D and Flair 23DM: 8 detection thresholds from 100 A to 800 A, in 50 A increments, configurable via the front panel keypad.
- Fault acknowledge time:
 - Flair 21D: 60 ms
 - Flair 22D and Flair 23DM (configurable via the front panel keypad)
 - from 40 to 100 ms in 20 ms increments
 - from 100 to 300 ms in 50 ms increments.

Ground fault detection

The detector checks the 3 phases for current variations (di/dt).

A time delay of 70 s is applied for fault confirmation by the upstream protective device.

- Automatic mode for adjustment-free calibration of detection thresholds
- Manual mode for special override settings:
 - Flair 21D: 6 detection thresholds from 40 to 160 A, via microswitches
 - Flair 22D and Flair 23DM (configurable via the front panel keypad):
- Type A from 20 to 200 A, in 10 A increments
- Type B from 5 to 30 A in 5 A increments and 30 to 200 A in 10 A
- Inrush function: helps prevent unnecessary detection in the event of load switch-on
- Incorporates a 3 s time delay for fault filtering at network power up
- The Inrush function can be disabled via configuration on Flair 22D and 23DM

Fault indication function

Signalling

As soon as a fault is confirmed, the indication device is activated.

- Fault indication via a red LED on the front panel
- Indication of the detected faulty phase (ground fault) on LCD display
- Optional remoting of indication to external flashing lamp
- Activation of a contact for re-transmission to the SCADA system.

Premset™ Medium Voltage Switchgear Protection, Monitoring, and Control



Flair 23DM

Clear, comprehensive display

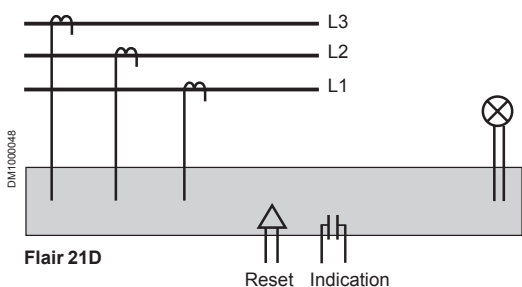


Sensors

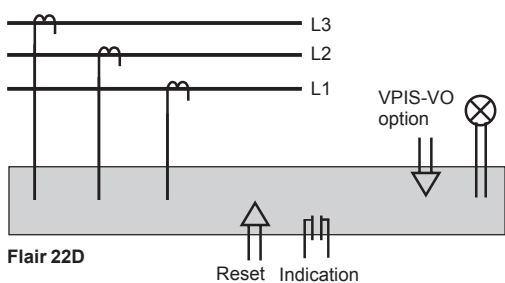
The Flair 21D, 22D, 23DM range uses an integrated detection system composed of indicators and dedicated CTs.

Integrated sensors are normally placed around the bushings. Split CTs can be placed around cables for retrofit purposes.

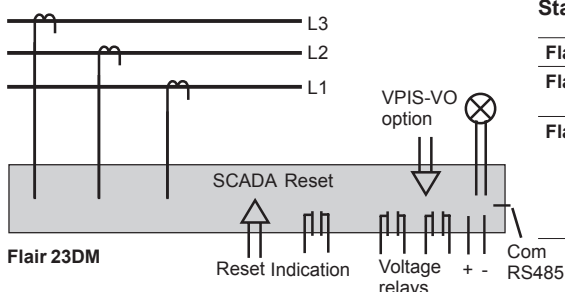
Connection diagrams



Flair 21D



Flair 22D



Flair 23DM

Indication reset

- Automatic resetting upon load current recovery or on voltage return if VPIS-VO option present (configurable time on Flair 22D, Flair 23DM)
- Manual reset via front panel button
- Reset via external Reset input
- Reset by time delay: fixed (4 hr) for Flair 21D and adjustable using front panel keypad; (1 hr to 24 hr) for Flair 22D and Flair 23DM
- Reset via the communication function (Flair 23DM)

Display characteristics

- The load current is displayed continuously
- When a fault is detected, the faulty phase is indicated
- Use the buttons on the front panel to scroll through settings and measurements.

Selection table

		Flair		
		Flair 21D	Flair 22D	Flair 23DM
Power supply	Self-powered	■	■	■
	Dual-powered		■ (1)	■
Detection	Overcurrent	■	■	■
	Ground-fault	■	■	■
Display (4 digit LCD)	Ammeter	■	■	■
	Maximeter	■	■	■
Options	SCADA interface (relay)	■	■	■
	External lamp	■	■	■
	External reset		■	■
	Extended setting (keypad)		■	■
Communication	2-voltage output relays			■
	Serial communication port			■

(1) By lithium battery

Characteristics per product

Model	Description
Fault passage indicator with single power supply (self-powered)	
Flair 21D	Detector with autonomous power supply External indicator lamp output powered by battery (BVP)
Fault passage indicator with dual power supply	
Flair 22D	Detector with autonomous power supply and lithium battery External indicator lamp output powered by the Flair unit (BVE) Interface with VPIS-VO possible to confirm the fault by voltage absence Service life: 15 years
Fault passage indicator with dual power supply and voltage presence/absence	
Flair 23DM	Detector with 24-48 Vdc external and autonomous power supply External indicator lamp output powered by the Flair unit (BVE) Voltage presence and absence detector Interface with VPIS-VO needed for the voltage presence Communication on an RS485 serial link with Modbus protocol with access to states and measurements and remote parameter-setting

Standard applications

Flair 21D	Maintenance-free, adjustment-free fault detector
Flair 22D	Fault detector for networks with very low load current (< 2 A) with possibility of manual adjustments.
Flair 23DM	Adapted to switchgear automation. Forwarding of current measurement, fault passage indication, and voltage outage information to the SCADA via a serial communication port. Combination fault passage indicator and voltage detector, ideal for use with an Automatic Transfer System.

Voltage indicator and relay

VPIS and VDS



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 or not voltage is present across the cables.

Two devices are available:

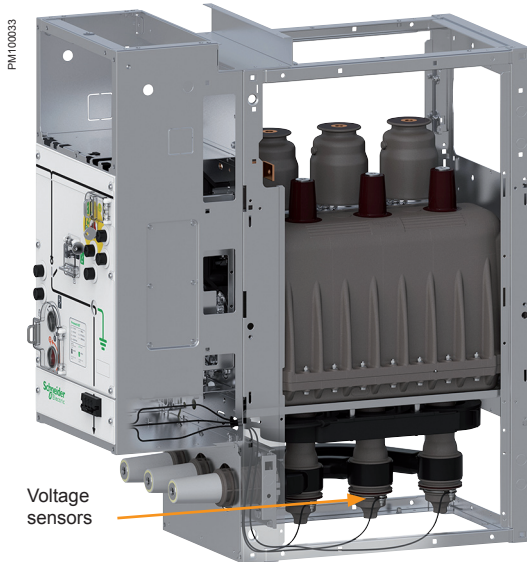
- VPIS: Voltage Presence Indicator System, as defined by standard IEC 62271-206
- VDS: Voltage Detecting System, as defined by standard IEC 61243-5.

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.

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.



Voltage sensors

Voltage sensors on busbars or cables



Phase concordance unit

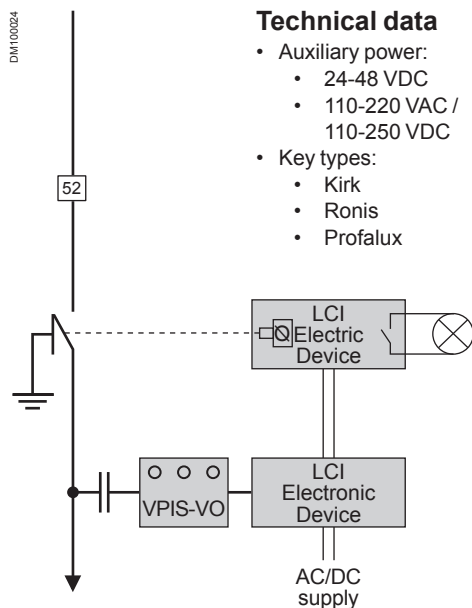
Phase concordance unit (VPI62421)

This unit is used to check phase concordance.



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 37)
- 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

Premset™ Medium Voltage Switchgear Protection, Monitoring, and Control

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 safe operating tolerances, avoiding the risk of overloads, unbalances, or high-peak demand



PM8000 Series Power Quality Meter

Applications and main features

The PowerLogic PM8000 series meter is a highly accurate, extremely reliable 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 that guarantee their 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

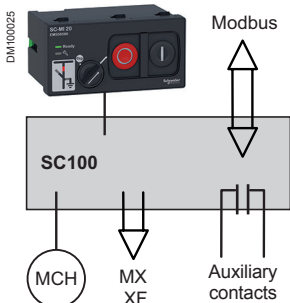
Control

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



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.

Premset™ Medium Voltage Switchgear

Protection, Monitoring, and Control

Architecture of switchgear automation

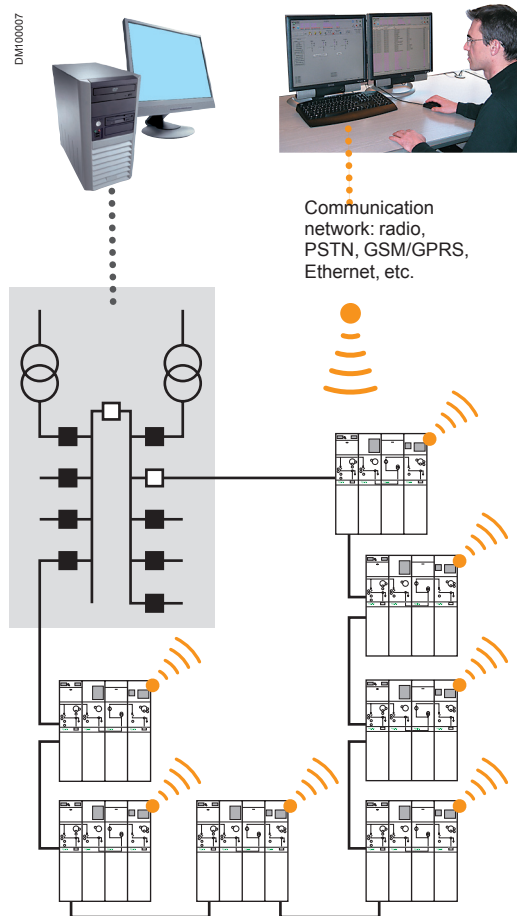
Continuity of service supervised by an overall telecontrol solution

Schneider Electric offers you a complete solution, including:

- Premset switchgear that can be easily adapted for telecontrol
- The SCADA and DMS system.

Substation automation

Switchgear automation



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

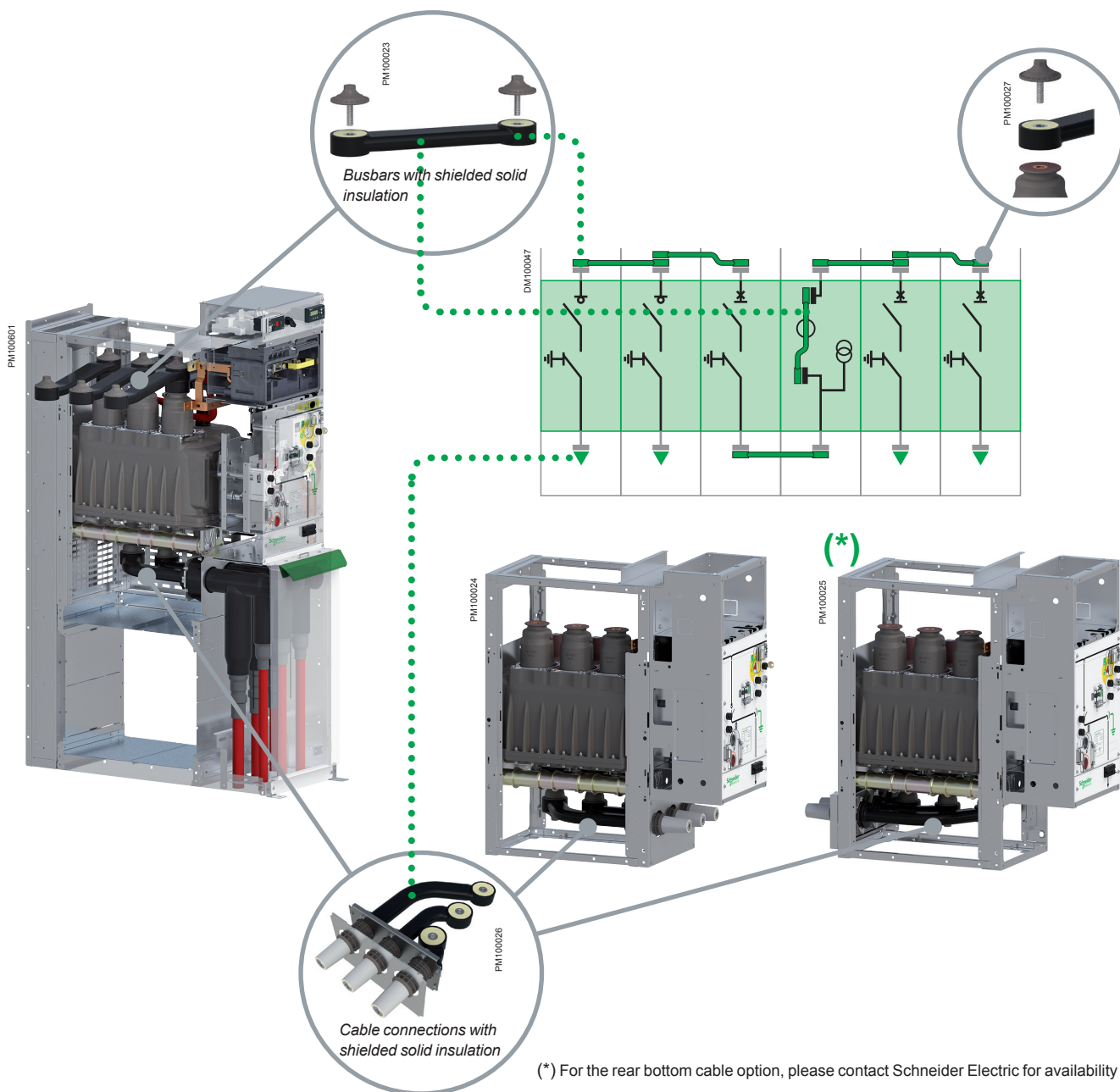
- 2SIS connections with shielded solid insulation. Periodic checkup of the mechanism can be done to help ensure the performance depending on the environmental conditions.
- Flat and smooth interface between connections, allowing flexibility: easier floor installation.
- Only one cable connection set,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

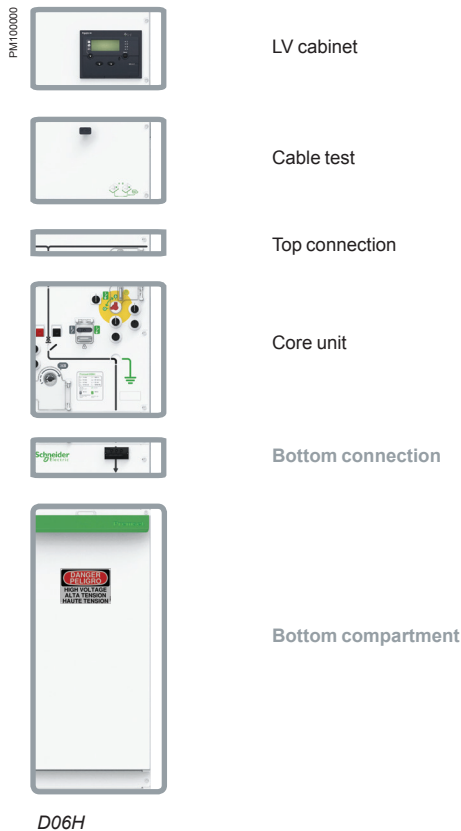


Premset™ Medium Voltage Switchgear

Connections

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.



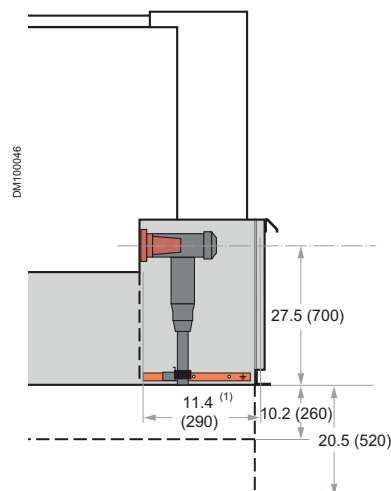
Bottom compartment

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.

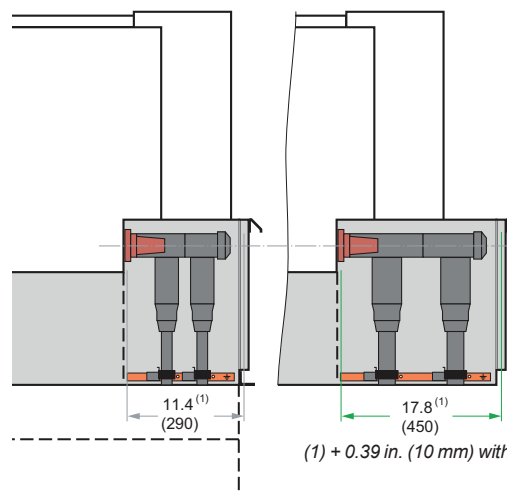
- Standard height, for cable connections at a height of 27.5 in. (700 mm).
- For higher installations, raising plinths can be fitted as accessories, with two different heights available.

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 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 60).



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



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.

Supplier	Performance	Reference	1 cable/ phase	1 cable/ phase + Surge Arres.	2 cables / phase (¹)	Cross section AWG or kcmil (mm ²)	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.

Premset™ Medium Voltage Switchgear

Technical Data

Dimensions

Dimensions and Weights

Unit Type	Connection	Width in. (mm)	Depth in. (mm)		Height in. (mm) ¹						Approximate Weight ² lb (kg)
					Cmax LV Box ³			C LV Box ³			
			Standard Door	Additional Depth Door	No Base Plinth	Base Plinth 10.25 (260)	Base Plinth 20.50 (520)	No Base Plinth	Base Plinth 10.25 (260)	Base Plinth 20.50 (520)	
D01, D02, D06, ESB	Front	14.75 (374.65)	35.83 (910)	44.49 (1130)	86.5 (2198)	96.75 (2458)	107 (2718)	78.5 (1994)	88.75 (2254)	99 (2514)	441 (200)
	Rear	14.75 (374.65)	51.4 (1305.5)	59.7 (1516)							606 (275)
D12	Front	29 (736.6)	35.83 (910)	42.1 (1069)							1102 (500)
	Rear	29 (736.6)	51.4 (1305.5)	57.7 (1465.5)							1268 (575)
G06, G12	Front	14.75 (374.65)	35.83 (910)	44.49 (1130)							220 (100)
	Rear	14.75 (374.65)	51.4 (1305.5)	59.7 (1516)							386 (175)

¹Add 2.4 in. (61 mm) if top control cable duct is used.

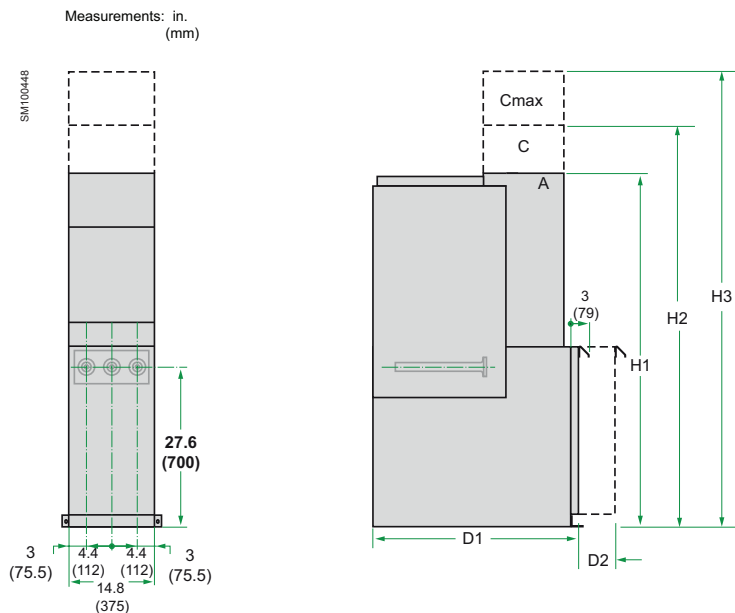
²Add 88 lb (40 kg) for cable base plinth.

³Height of LV box only.

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.

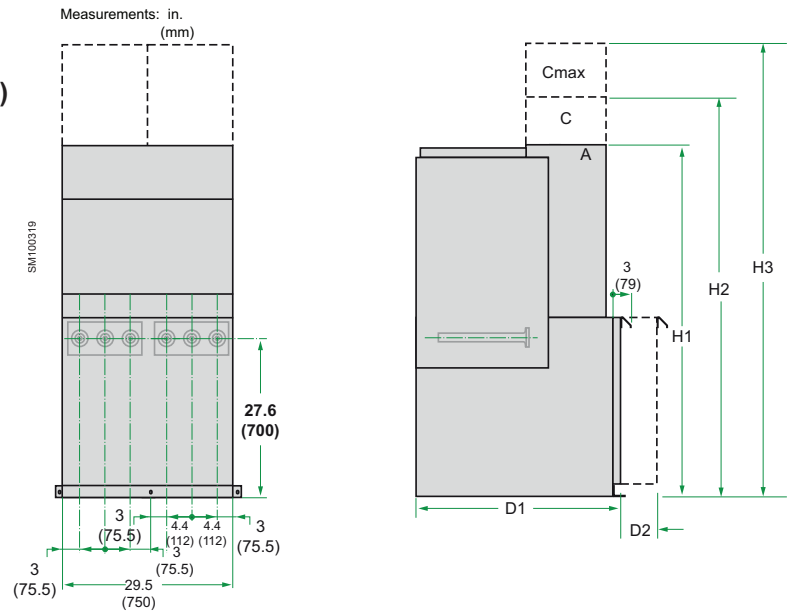
Premset™ Medium Voltage Switchgear

Technical Data

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)

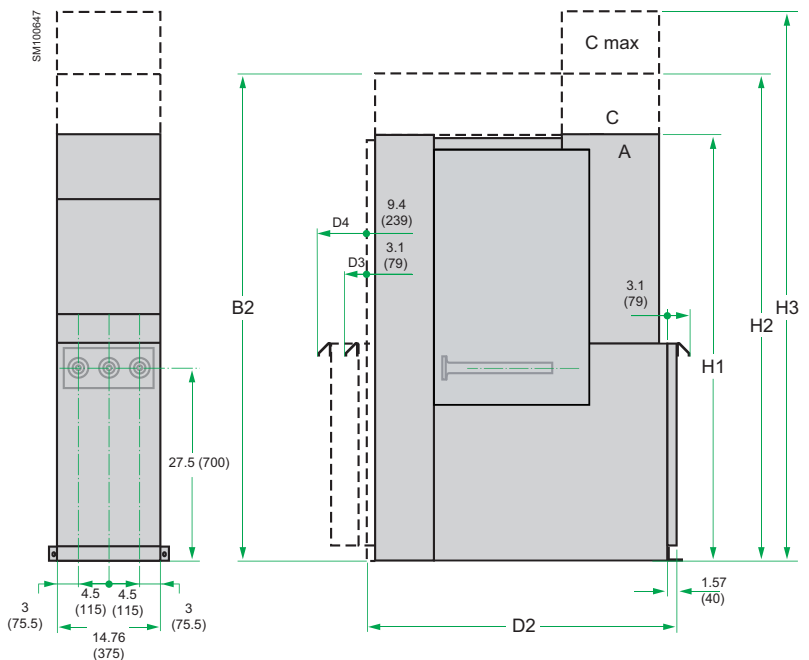
NOTE: Dimensions are the same for bar-connected cubicles.

Rear Connection:

14.75 in. (375 mm) Wide Cubicle, 600 A

Cable termination height: 27.5 in. (700 mm)

Measurements: in. (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)
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)

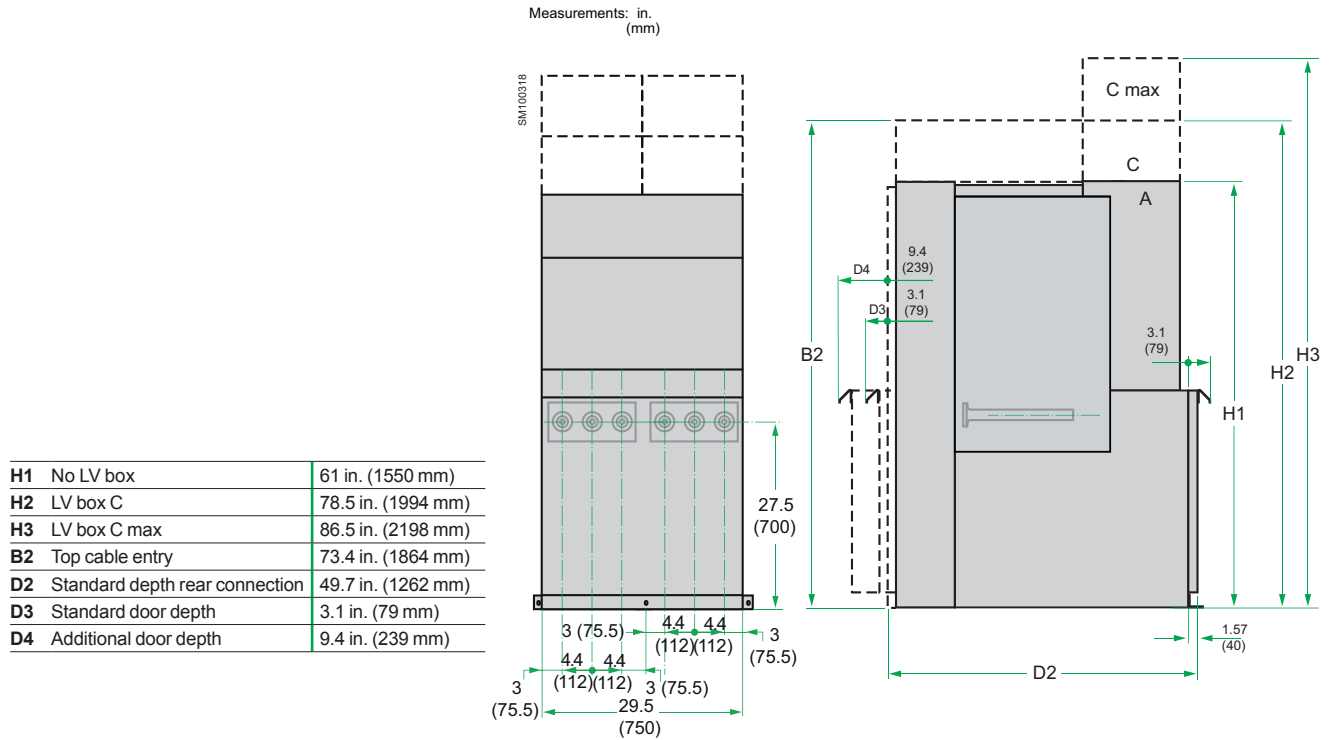
Premset™ Medium Voltage Switchgear

Technical Data

Rear Connection:

29.5 in. (750 mm) Wide Cubicle, 1200 A

Cable termination height: 27.5 in. (700 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.

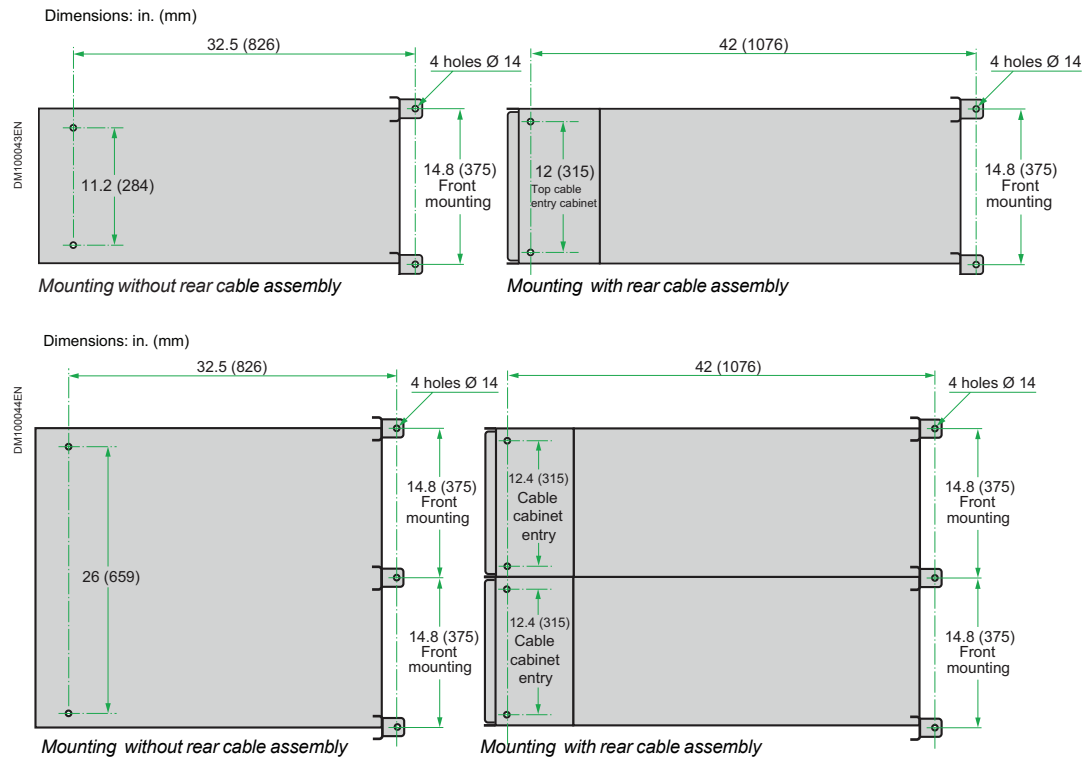
Mounting units

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.

