

# New Genie<sup>Evo</sup> metalclad MV switchgear 3.3-13.8kV



# GenieEvo - rapid delivery with greater choice



*When the Genie range from Merlin Gerin was first launched, it transformed how medium voltage switchgear was ordered and delivered. Using a modular design and standard components, Genie halved typical product lead times of traditional MV switchgear, which is custom-built for every order.*

*Now, this rapid delivery has been halved yet again. What's more, this staggeringly fast delivery time and the many other benefits of the Genie design are now available for more applications.*

The new GenieEvo, which uses vacuum circuit breaker technology offers a more flexible solution through its design, allowing a wider range of applications to be satisfied.

For example, vacuum-based circuit breakers are certified to 10,000 operations, making them superb for applications that generate frequent load current switching, such as motor starting. Now, even these difficult applications can benefit from the advantages of GenieEvo.

Utilities, process industries, petrochemical plants, chemical engineering companies and a whole range of other industries now have the widest choice of indoor MV switchgear from a single manufacturer.



## Less time

During development of GenieEvo, we have taken the opportunity to streamline the manufacturing process. Now, components can be made simultaneously on parallel production lines, which halves conventional delivery times. Fast delivery is vital for fast-track projects and for sites where installed switchgear has failed and a replacement is needed quickly.

## Lower maintenance

GenieEvo is the first vacuum MV switchgear with virtually maintenance-free operation. Unlike conventional vacuum switchgear, the isolators in GenieEvo are sealed in a cast resin enclosure containing controlled air, which eliminates the need for regular cleaning of the copper contacts throughout the product's entire life.

Keyless interlocking of the switchgear's doors is also an industry first for GenieEvo. Eliminating the need for a separate cable test key or device to open the test access doors removes the risk of the key being lost, thereby causing operational delays.



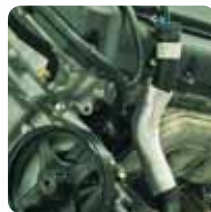
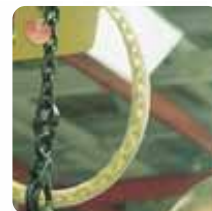
## More options

Like its gas insulated sister range, GenieEvo offers a wide range of "off-the-shelf" protection and control modules. Yet GenieEvo offers even more options.

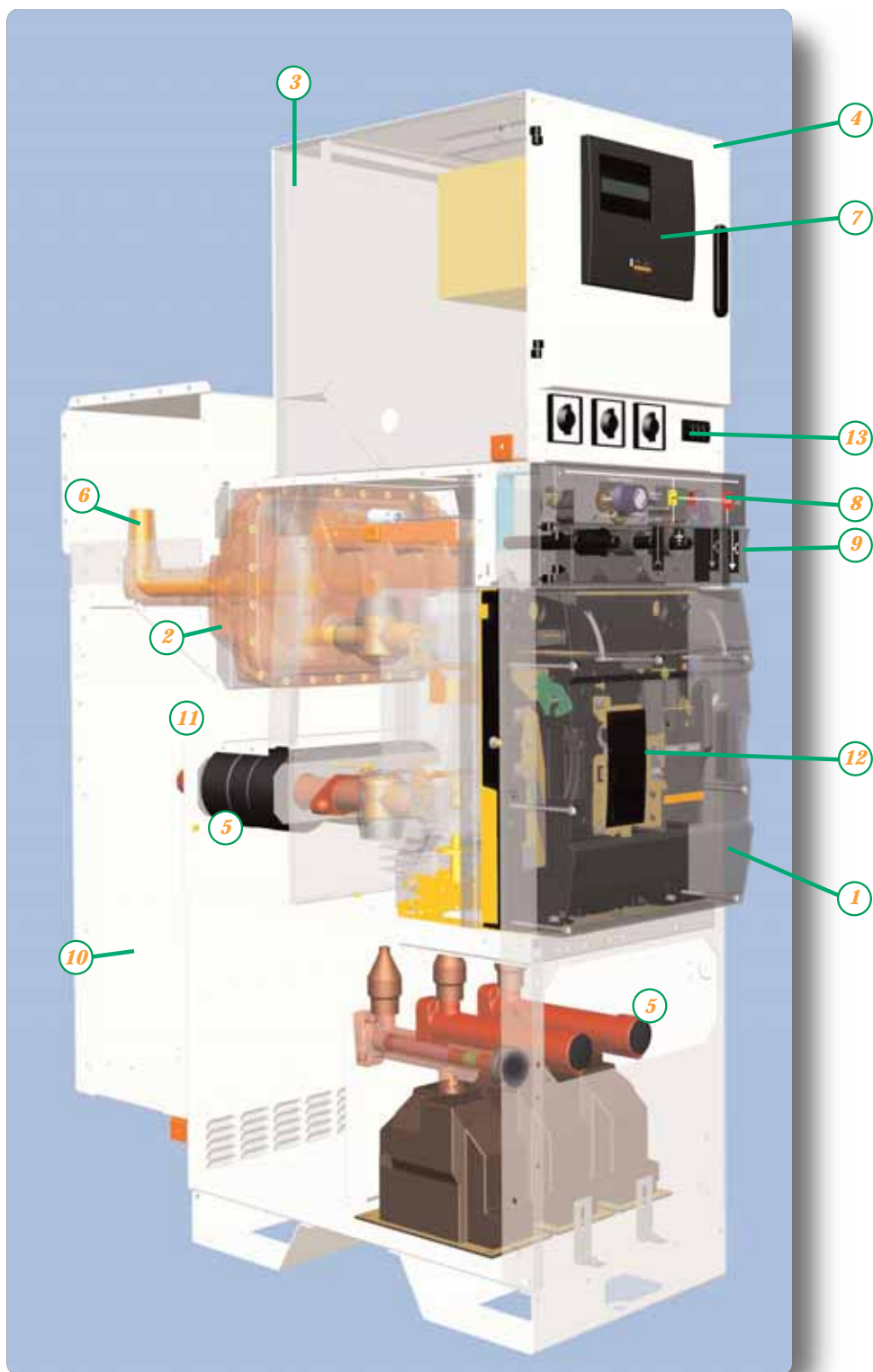
From a list of 6 switchgear options and 18 protection and control modules, a total of 67 panel combinations can be achieved. There is virtually no application that cannot be met.

## Greater safety

GenieEvo complies with the requirements of the Electricity Association's Technical Specification EATS 41-36. Imposing the most stringent safety demands yet, this document requires all medium voltage components such as cable boxes and current and voltage transformer compartments to meet the switchgear's internal arc rating. GenieEvo complies fully.



## *GenieEvo - features at a glance*



*Genie's evolution is a result of valuable customer feedback and incorporates many improved features:*

- 1 Vacuum circuit breaker
- 2 Controlled air disconnecter
- 3 Top entry pilot box
- 4 Internal arc protection
- 5 CT and VT chambers
- 6 Cast resin insulated busbar system with optional earth shielding
- 7 Sepam multi-functional protection and control unit
- 8 Unit fascia with active operating mimic display
- 9 Front access cable and vacuum test facility
- 10 Rear entry MV cable box (inverted option available)
- 11 Internal arc vented via dedicated trunking for complete operator safety
- 12 Mechanical operations counter
- 13 Circuit potential indicator as standard



**The full GenieEvo range also benefits from:**

- Separate selection of switchgear and protection & control modules for complete flexibility to meet the needs of any application
- Standard applications for embedded generation to the G59 standard, allowing the switchboard to be connected directly to the local utility's distribution network
- Designed, manufactured and assembled in compliance with ISO 9001 for the upmost quality and reliability of build
- Environmental production policies to ISO 14001 ensure the product is environmentally friendly
- Meets all necessary international standards: IEC 60044, IEC 60056, IEC 60255, IEC 60265, IEC 60694, BS 5311, EATS 41-36 and EATS 50-18



# Advanced vacuum circuit breaker technology



Evolis vacuum circuit breaker

*GenieEvo switchgear units are fitted with the latest and most advanced range of vacuum circuit breaker technology from Schneider Electric. Evolis is a range of medium voltage vacuum circuit breakers that are compact and help to lower operational costs through reduced maintenance.*

## Lowering costs

With Evolis, no preventative maintenance such as lubrication or calibration is required before 10,000 switching cycles have been reached. The quick to check switching operation counter shows the total number of cycles that have been performed. What's more, monitoring the state of the breaker is simplified by a system that measures contact wear.

Evolis circuit breakers use the same mechanism as the Merlin Gerin MasterPact range of low voltage circuit breakers, allowing Evolis to benefit from the quality established through manufacturing over 100,000 mechanisms per annum.

## Raising safety

Of course, safety is a key requirement for any circuit breaker. Evolis provides high levels of operator safety when protecting all types of application. Incorporating Evolis, GenieEvo is fully internal arc rated to 100% of the switchgear's breaking capacity to EATS 41-36.

## Protection ratings

The Evolis range offers a choice of ratings and breaking capacities.

Rated voltages	Rated currents*	Breaking capacity
7.2kV	200A	25kA
	630A	25kA
	1250A	25kA
11kV	200A	25kA
	630A	25kA
	1250A	25kA
13.8kV	200A	25kA
	630A	25kA
	1250A	25kA

\* 2500A to be launched - date to be confirmed.



## Certification and conformance

As you would expect from Schneider Electric, the world's leading electrical distribution equipment manufacturer, Evolis circuit breakers are fully tested and conform to the following standards:

- IEC 60694: common specifications for high voltage switchgear and control gear standards
- IEC 60056: high voltage alternating current circuit breakers
- IEC 60529: protection degree
- IEC 60298: AC metal enclosed switchgear
- ISO/IEC 25 and EN 45011
- EATS 41-36 distribution switchgear up to 36kV



*Evolis conforms to industry standards*

## Options for higher performance

Evolis is available with several options to exactly match the application's needs:

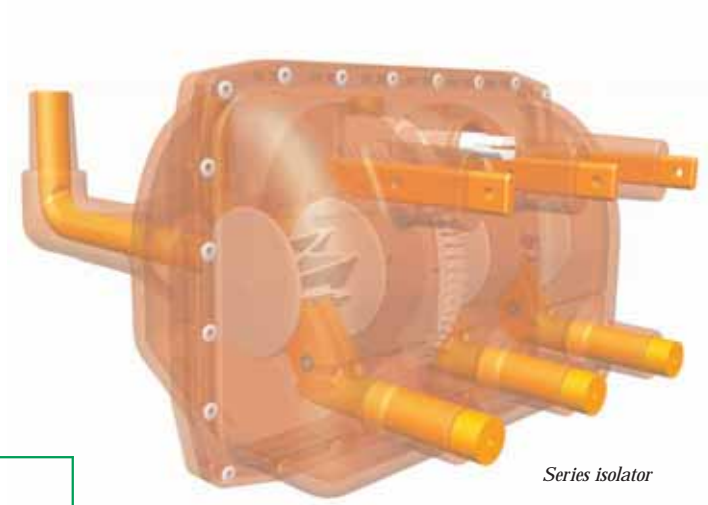
- Undervoltage release: opens the breaker when its voltage supply drops below a preset value
- Time delay for undervoltage release: eliminates spurious tripping during brief voltage sags
- Auxiliary circuit breaker position contacts: indicates the breaker's open or closed position.



# Compact encapsulated isolation

*Series isolator is essential with fixed pattern vacuum switchgear to provide a point of isolation and selection of circuit earth.*

**GenieEvo** utilises a unique design combining a controlled air environment in a fully encapsulated cast resin earth screened envelope.



Series isolator

## Maintenance free

The 'sealed for life' design ensures the series isolator in GenieEvo is totally maintenance free

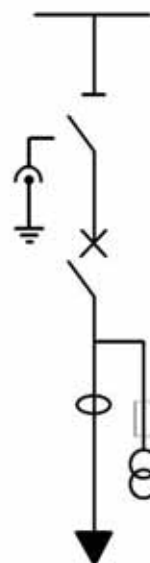


## Operation

The equipment is interlocked to ensure that the disconnecter can only operate with the circuit breaker in the 'off' position.

## Operational safety

Fully internal arc rated to EATS 41-36 for the maximum panel rating





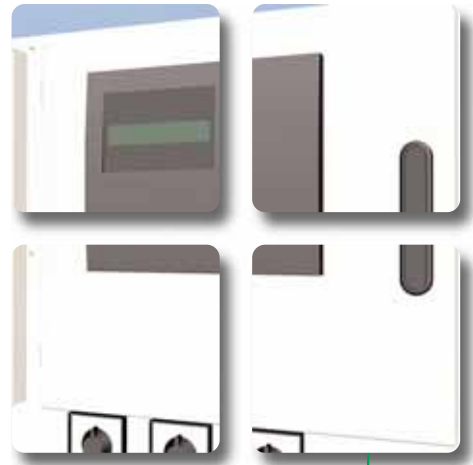
# Integrated protection, control and monitoring

**GenieEvo** switchgear integrates Schneider Electric's proven Sepam system for advanced protection, control and monitoring. Sepam offers comprehensive protection schemes and advanced control functions for even the most demanding application. For more basic applications such as cable and transformer feeders, the range also includes a lower specification device offering communications and fault recording capabilities coupled with overcurrent and earth fault protection.

Full integration achieves the highest level of system protection at a substantially reduced overall cost.

Sepam is a self-contained unit and brings many advanced features. Each Sepam 1000+ unit contains:

- Protection, metering, control, monitoring and annunciation functions
- Trip circuit supervision, logic selectivity, circuit breaker fail protection, inter-tripping and circuit breaker lockout
- Local indication of phase currents, maximum demand, line voltages, power factor, active and reactive power
- High level of electromagnetic compatibility
- High reliability from advanced self supervision systems
- Indication of phase and earth fault values at the time of tripping aids fault analysis
- Simple to set and no routine maintenance help cut costs



GenieEvo incorporating Sepam device

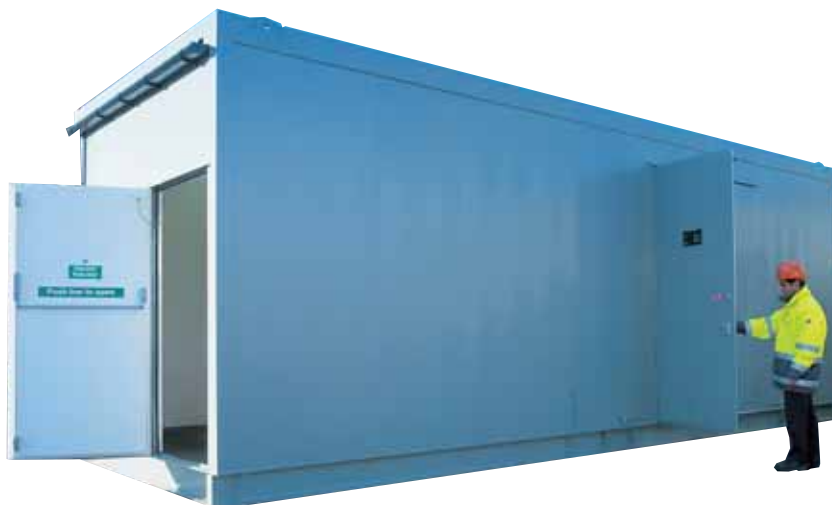
## The Sepam range

**Sepam 100LA** provides self-powered back up DT overcurrent and earth fault protection on transformer incomer

**Sepam 1000+ series 20** is a numerical overcurrent and earth fault protection relay used for applications not needing complex protection and control schemes

**Sepam 1600+ series 80** is a numerical multi-function unit that provides all the functions generally found in a MV control cabinet

# **GenieEvo** - complete switchroom delivered to site



*Specifiers, contractors, consultants and everyone else involved in specifying and installing electrical switchgear systems face increasing pressure to complete projects ever faster. Whether new build or refurbishment projects, getting equipment up and running in the shortest possible time is vital.*

*To meet this demand, **GenieEvo** can be incorporated into a Compact intelligent Distribution Substation (CiDS). CiDS is a complete factory-built medium voltage substation housed in a single enclosure that is supremely fast and simple to install.*

## ***Cuts time, cuts costs***

A CiDS package is simply placed onto prepared foundations, connected to the electrical network and commissioned. It takes days, not months, cutting the time spent on site by up to 80%.

## ***Reduces procurement costs***

One order to a single supplier and one shipment of all components is all it takes.

## ***Simple commissioning saves time***

Every CiDS is factory tested and pre-commissioned before delivery so that only basic commissioning and network connections are needed on site.

## ***Solves the skills gap***

Increased end user focus on their core business means that fewer experienced electrical engineers are available to implement MV/MV substations.

### *Fast delivery*

Assembled from standard components means a CiDS solution can be delivered with very short lead times.

### *Reduces delivery costs and hassle*

Not only is just one delivery needed, but each CiDS is so compact that it can be transported on a conventional haulage vehicle.

### *Saves costly site space*

CiDS has a far smaller footprint than a conventional brick built substation.

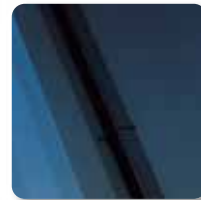
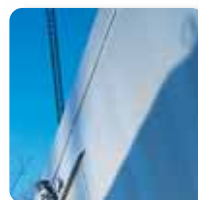
### *Less downtime during refurbishment*

CiDS can often be installed alongside the old substation that it is replacing. The site's supply can be rapidly transferred from the existing to the new substation, minimising downtime.

### *Eliminates the risk of incompatible components*

CiDS is designed, manufactured and tested at one site for total reliability.

Depending on its configuration, each CiDS is fitted with equipment from the four major brands in Schneider Electric's portfolio: Merlin Gerin, Modicon, Square D and Telemecanique, each a market leader in its own sector. With this strong pedigree behind it, every CiDS solution provides the quality you'd expect from Schneider Electric.



# Efficient monitoring and control

*Schneider Electric PowerLogic is an advanced Electrical Network Management System (ENMS) with all the elements needed to monitor and control power in any installation. The system includes monitoring devices, interfaces, software, web solutions, support and consultancy.*

*PowerLogic integrates all the intelligent components of an electrical distribution system to enable users to reduce downtime, cut energy costs and help maintain power quality.*

*Using standard communications and powerful software, PowerLogic provides:*

- *Monitoring of power meters and analysers*
- *Real time monitoring*
- *Control of LV and MV circuit breakers and relays*
- *Monitoring of PLCs and other devices.*



## Low cost of installation

- PowerLogic uses a building's existing LAN (Local Area Network) infrastructure for data communications, avoiding the cost of new communication cables.
- Networks can be monitored via standard web browser software such as Microsoft Internet Explorer or Netscape Navigator. This typically halves implementation costs by eliminating the need for PCs to be configured with bespoke client software.
- Networks can be monitored and controlled from anywhere via the Internet. Users can stay in control from remote sites and even obtain text messages from the system on their mobile phone.

## Powerful monitoring & reporting

- Users can quickly analyse data through a wide variety of standard and user-defined colour graphics and reports for power quality analysis. These include tables, bar charts, trend plots, graphs, visual alarms and meters. Single line diagrams, site plans and equipment drawings can also be incorporated.
- Comprehensive historical data enables condition-based maintenance programmes to be implemented to minimise downtime.

## *The benefits of network management*

*With a complete picture of the status of the power network, the user can manage and reduce energy consumption and quickly detect power quality problems.*

### *Save energy*

- Internal cost allocation
- Implement awareness programmes
- Analyse usage patterns

### *Reduce energy costs*

- Manage peak usage
- Optimise utility contract
- Improve power factor
- Automatic load-shedding

### *Ensure power quality*

- Detect problems early
- Diagnose harmonics problems
- Monitor neutral currents

### *Improve operation and maintenance*

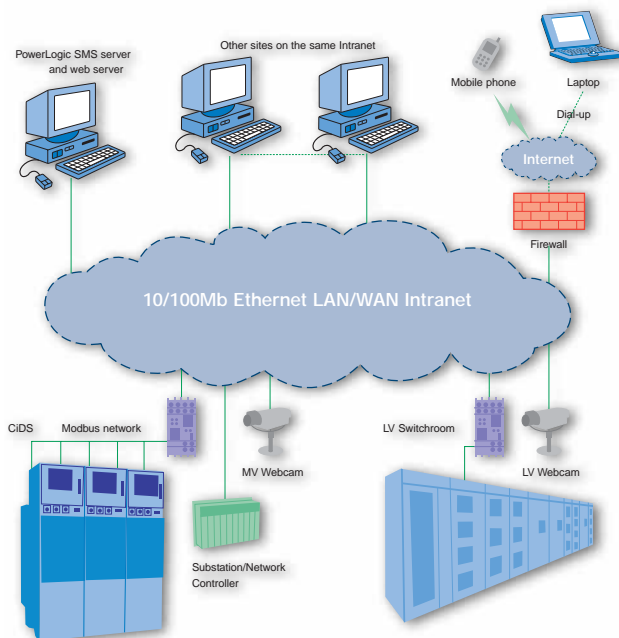
- Identify spare capacity
- Real-time network status
- Preventative maintenance
- Detailed reports and documentation

### *Improve reliability*

- Detect voltage disturbances
- Automatic source transfer
- Load preservation schemes
- Network reconfiguration

### *Minimise downtime*

- Fault diagnostics
- Troubleshooting help
- Manage the network remotely



# Protection & control options & panel combinations

**GenieEvo's** pre-engineered panel types are designed to allow you to select your circuit breaker module according to the circuit loading and the protection scheme in accordance with your network requirements.

Please refer to the **GenieEvo** Selection Guide for more detailed information.

Switchgear options	
VC2	Circuit breaker - 200 Amp
VC6	Circuit breaker - 630 Amp
VC12	Circuit breaker - 1250 Amp
VB6	Bus section - 630 Amp
VB12	Bus section - 1250 Amp
BBVT	Busbar metering panel

Protection and control module options					
Ref.	Description	Transformer	Cable	Generation	Misc.
P1	General purpose incomer/feeder	■	■		
P2	Transformer feeder	■			
P3	Cable feeder with advanced monitoring and control		■		
P4	Unit protected cable feeder		■		
P5	Unit protected cable feeder with back up overcurrent		■		
P6	Unit protected cable feeder with back up overcurrent and power measurement		■		
P7	Single transformer incomer	■			
P8	Cable feeder or incomer with full measurement (suitable for automatic changeover)		■		
P9	Parallel cable feeder or incomer with directional overcurrent and earth fault		■		
P10	Parallel dual transformer incomer	■			
P11	Control logic for 2 out of 3 changeover scheme (fitted bus section)				■
P12	Interconnection breaker (G59 power export)			■	
P13	Interconnection breaker (G59 no power export)			■	
P14	REC metering for embedded generation			■	
P15	Transformer incomer for LV generation			■	
P16	MV generator incomer			■	
P17	Basic circuit breaker control - no protection				■
P18	Control logic for 1 out of 2 changeover scheme (fitted to incomer)		■		

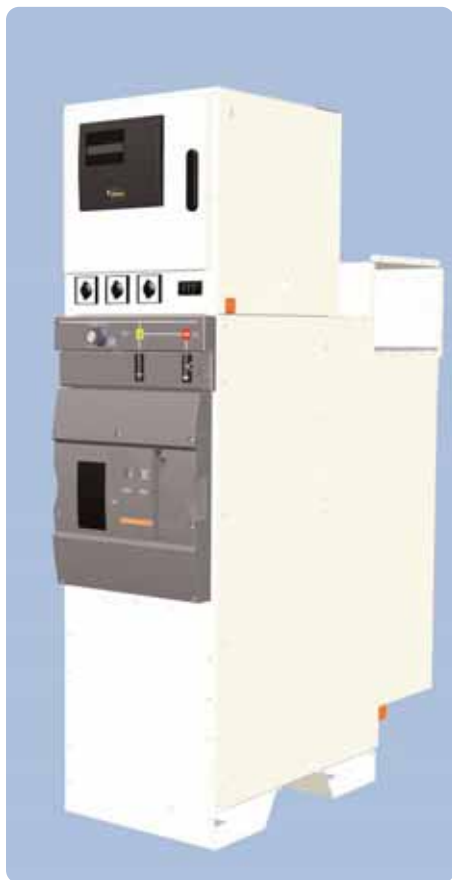


Panel combinations																			
Ref.	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	STD
VC2	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	
VC6	■	■	■	■	■	■	■	■	■	■		■	■	■		■	■	■	
VC12	■		■	■	■	■	■	■	■	■		■	■	■		■	■	■	
VB6	■		■					■	■		■	■	■	■			■		
VB12	■		■					■	■		■	■	■	■			■		
BBVT																			■

**Note:**

The above shows the protection and control modules designed to fit with specific circuit breaker modules.

If none of the above configurations suit your application, please contact Schneider Electric - Merlin Gerin Medium Voltage division.



GenieEvo  
VC2, VC6, VC12



GenieEvo  
VB6, VB12

# Product data



Dimensions (mm)			
Type	Width	Height	Depth
Standard	500	1900	1200
Bus-section	1000	1900	1200

Panel weights (kg)	
Type	
Standard	450 max
Bus-section	500 max

## Related standards International - IEC

60044, 62271-102, 62271-100, 66298, 61000, 61958, 60186, 60694, 60255

## Related standards National - BS

5311

## Related standards National - BS EN

60265-2, 60044-1, 60044-2

## Degree of protection

IP3X(standard)

## Related standards Industry - EATS

41-36, 50-18; 12-11

### Electrical characteristics - all equipment

Rated system voltage	13.8kV
Rated insulation level	
impulse voltage withstand (1.2/50µs)	95kV peak
power frequency voltage withstand (1 min)	38kV
Rated short time current (symm)	25kA rms
Rated short time duration	3 seconds
Rated frequency	50/60Hz
Busbar type	Copper single, cast resin insulated
Busbar ratings	630A/1250A
Internal arc rating	Up to 25kA for 1 second

### Electrical characteristics - circuit breaker

Technology	Vacuum
Rated breaking current (symm)	25kA
Rated peak making current	67.5kA
Rated normal current	200A, 630A, 1250A
Rated cable charging breaking current	25A
Rated small inductive breaking current	10A
Rated operating sequence	O - 0.3s - CO - 15s - CO
Mechanism charging time	< 5 seconds

#### Mechanism type

Type XE manual charge, stored energy, manual and electrical release

Type XEM motor and manual charge, stored energy, manual and electrical release

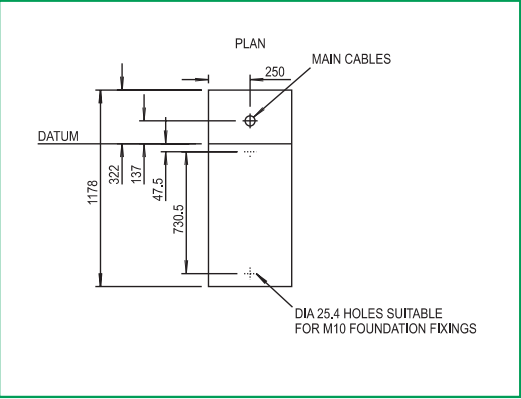
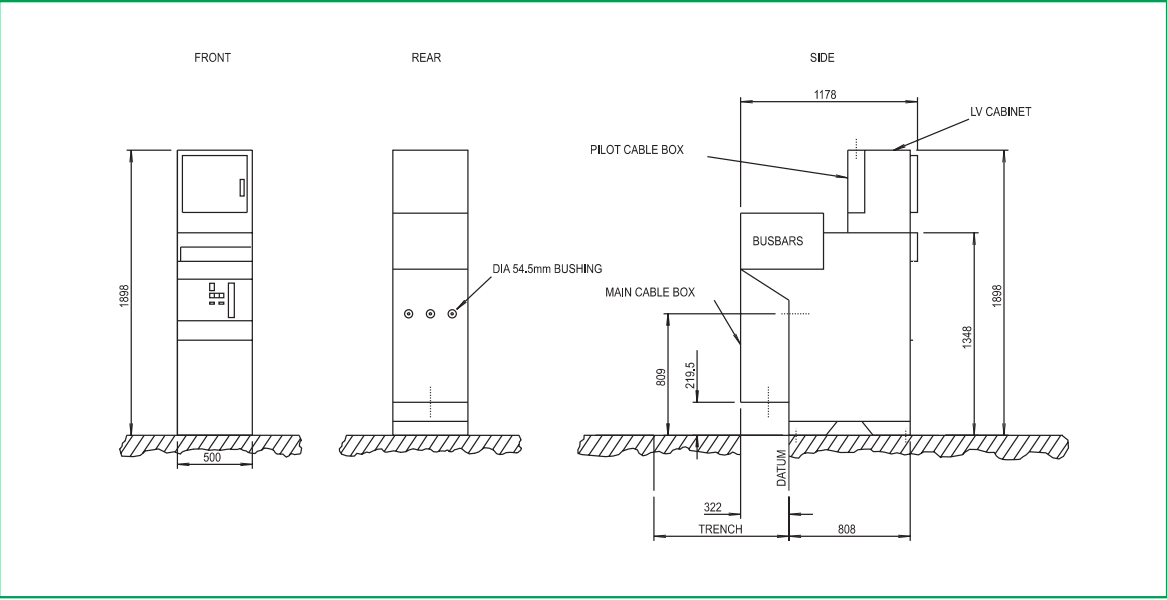
### Electrical characteristics - series isolator

Technology	Controlled air, cast resin encapsulated
Rated normal current	630A, 1250A

Mechanism type (EATS 41-36)  
dependent manual



# Product dimensions



## Standard panels

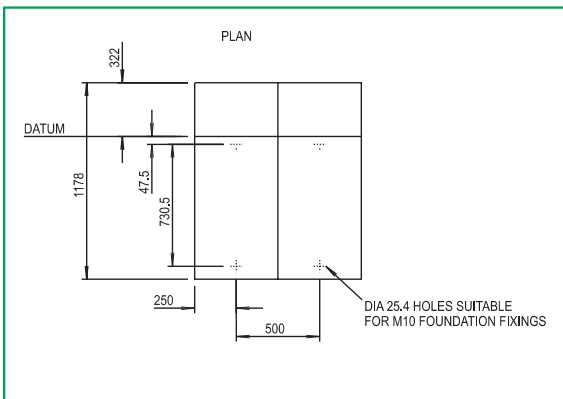
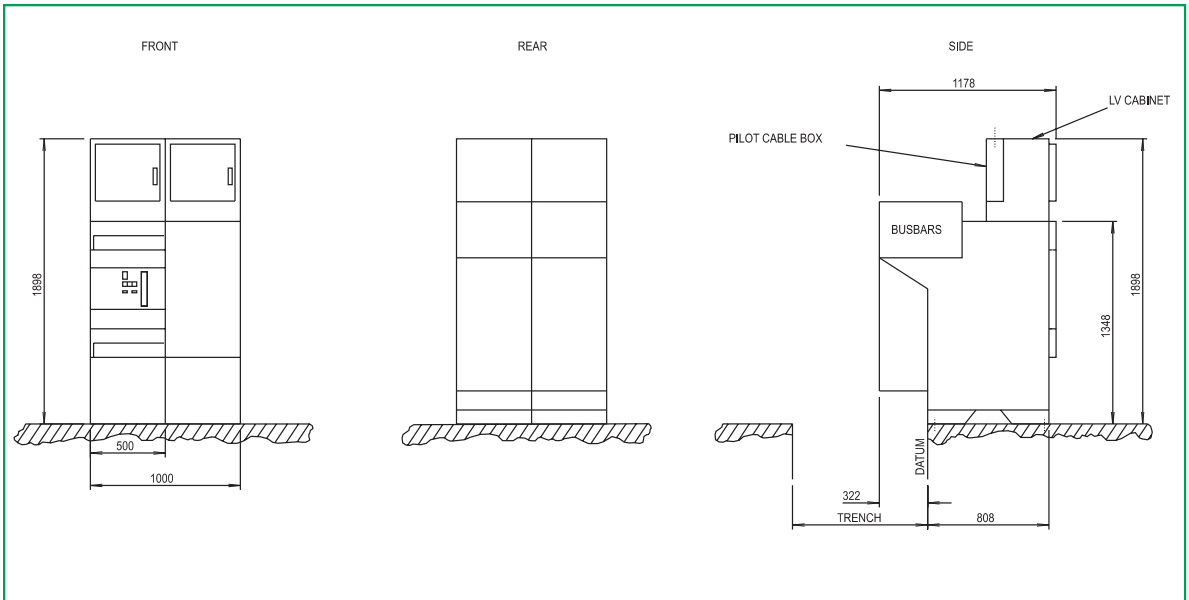
This arrangement relates to the following circuit breaker module options.

VC2

VC6

VC12

BBVT



### Bus section panels

This arrangement relates to the following bus section options

VB6

VB12

