

Same technology, same offer, simpler names

We're making it easier for you to navigate across the wide range of our world-class digital products and select the offers that are right for you and your needs with confidence.

EcoStruxure Architecture

To enable brand consistency, relevance and impact, we are reinforcing our EcoStruxure™ architecture and digital customer lifecycle tools to help ensure a seamless experience from the CAPEX to OPEX phases of each project, bridging our entire ecosystem of partners, services providers and end users.

EcoStruxure is our IoT-enabled open and interoperable system architecture and platform. EcoStruxure delivers enhanced values around safety, reliability, efficiency, sustainability and connectivity for our customers. EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity technologies to deliver Innovation At Every Level from Connected Products, Edge Control, Apps, and Analytics & Services: our IoT technology Levels.

| Old names | New names |
|--|------------------------------|
| Ecodial | EcoStruxure Power Design |
| Ecoreal | EcoStruxure Power Build |
| Ecoreach | EcoStruxure Power Commission |
| MasterPact MTZ mobile App/Easergy mobile App | EcoStruxure Power Device App |

Set Series

Featuring outstanding medium-voltage (MV) and low-voltage (LV) switchboards, motor control centers and power distribution solutions for high-performance power applications, Schneider Electric's Set Series is best-in-class solutions based on high levels of safety and an optimized footprint. Built on a modular architecture and incorporating smart connected devices for maximum safety, reliability, performance and energy efficiency, the Set Series is delivered to customers directly from our Schneider Electric plants or via a global network of licensed partner panel builders, who are trained and audited to provide quality equipment and support.

| Old names | New names |
|--------------|--------------|
| Premset | PremSet |
| Compact | ComPact |
| Masterpact | MasterPact |
| Transferpact | TransferPact |
| Fupact | FuPact |

General contents

RM6



PM108339

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Safety & Reliability



- **Operator safety:**

With RM6, we are committed to operator safety.

- Designed for internal arc
- Stainless steel tanks & cable boxes are fully internal arc rated
- Visible earthing contacts contribute to operator safety while performing earthing operations
- Voltage indicators (VPIS or VDS) are located on the front fascia of the equipment
- The presence of natural interlocks, as recommended in IEC 62271-200 through simple & easy to understand mimics, contributes to safe switchgear operation

- **Transformer protection with a circuit breaker:**

Provides adjustable tripping curve, overload protection, continuous earth fault protection, while avoiding fuse replacement.

In addition it provides the possibility of reclosing even remotely.

Efficiency



- **Simplified maintenance:**

Intervals of 5 to 10 years

- **Easy to install:** Due to its compact & simple design it's easy to install, maintain & has the capacity for product evolution, e.g.: extensibility, on-site motorization etc.

Connected



- **Guaranteed interoperability**, already connected to 1 product

- **Reduce downtime** with condition-based maintenance enabled by sensors and automation

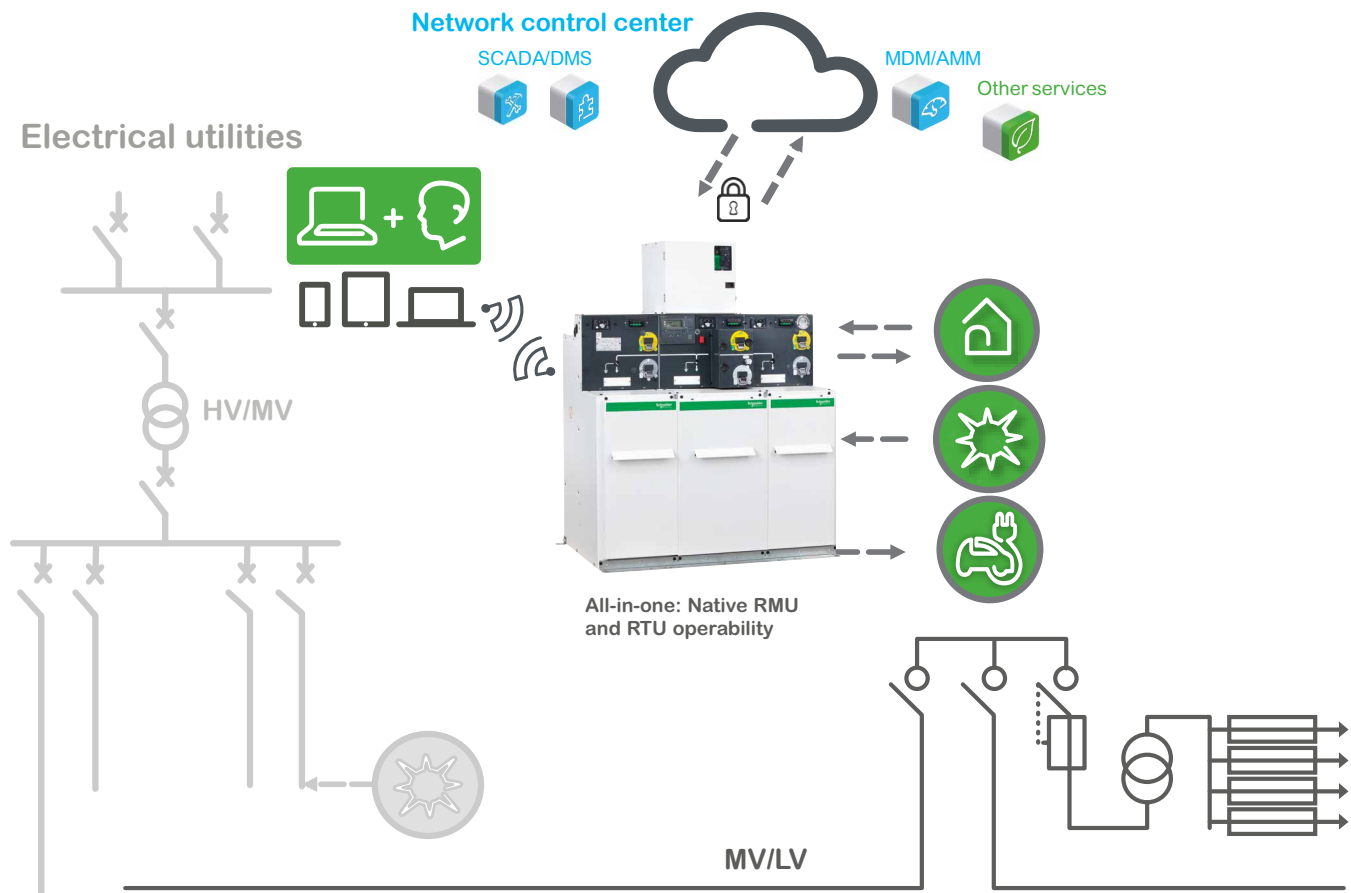
- Compliant with the **latest cyber security standards** and regulations

The RM6 is a **compact** and very **reliable** Gas Insulated ring main unit combining all MV functional Units to enable the connection, supply and protection of transformers or feeders on an open ring or radial network. Together with Easergy T300 RTUs, it is **smarter** and meets the needs of utilities, infrastructure, buildings & industries.

RM6 connected

For efficient grid operations

DM1106384



Efficient asset management

Condition monitoring

- Thermal monitoring of cable connections
- Measurement of humidity & condensation cycles



24/7 connectivity

Remote network management

Power management



Increased Safety & Reliability

Advanced relaying & protection options

Vibration & seismic compliant

A wide range of options are available, please contact us for more details.

Smart ready cubicle

Prewired cubicle for fast&easy connection with Easergy T300

New!



Prewired Cubicle

- Factory fitted measurement class bushing CTs (accuracy class 0.5), wired to the RM6 terminal block
- Prewired RJ45 cable for easy connection with LPVT hub
- Saves time: No need to open the front fascia



Convenient solution for all possible RTU integrations

- Top mounted
- Side mounted
- Wall mounted

Improved Terminal block with clip on connectors for reduced wiring time



Overview

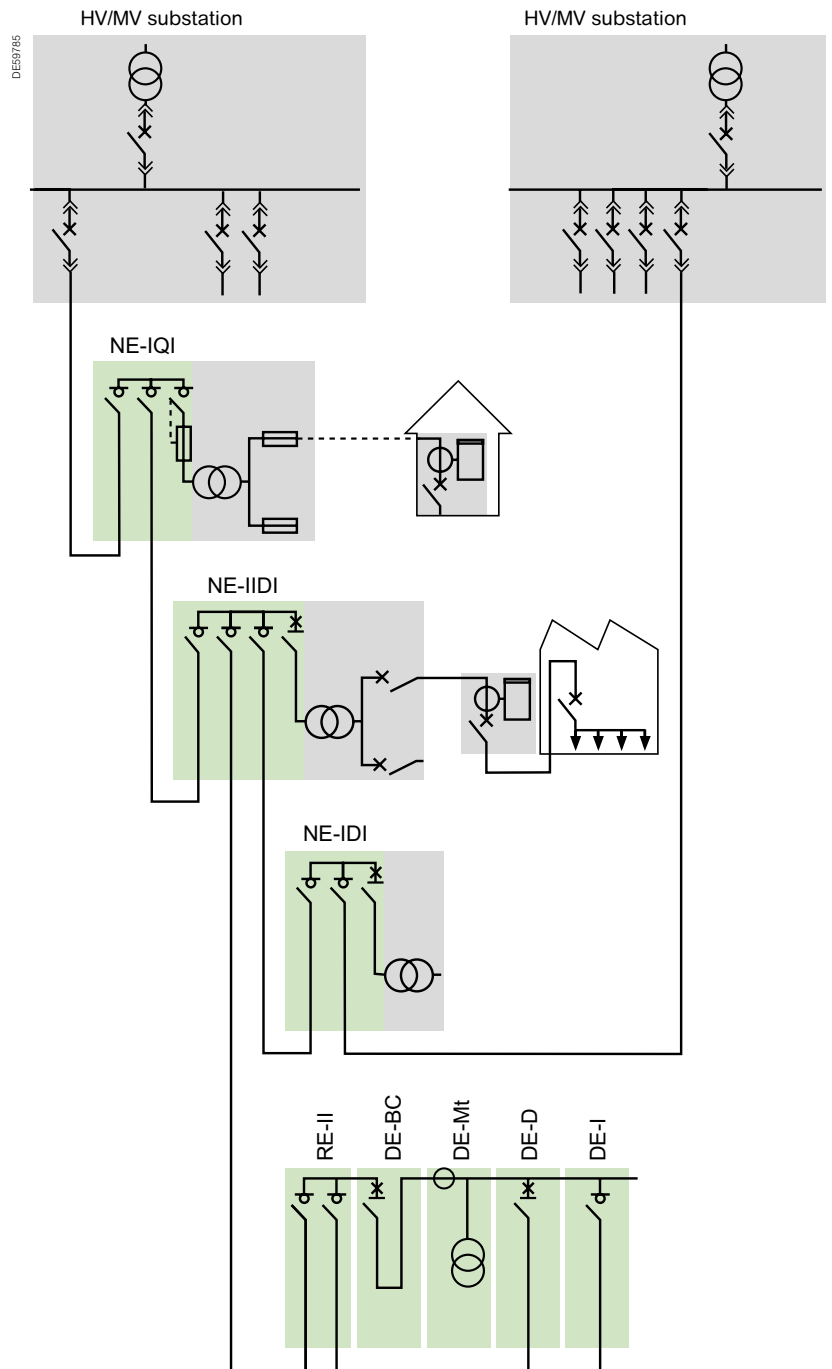
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RM6 meets all medium voltage secondary distribution needs up to 24kV.

RM6 is a gas-insulated switchboard combining all medium voltage functions to enable the connection, supply and protection of transformers for open ring or radial networks.

Transformer protection can be achieved either:

- By a fuse-switch combination for transformers up to 2 000 kVA
- By a circuit breaker with a protection relay for transformers up to 8 000 kVA



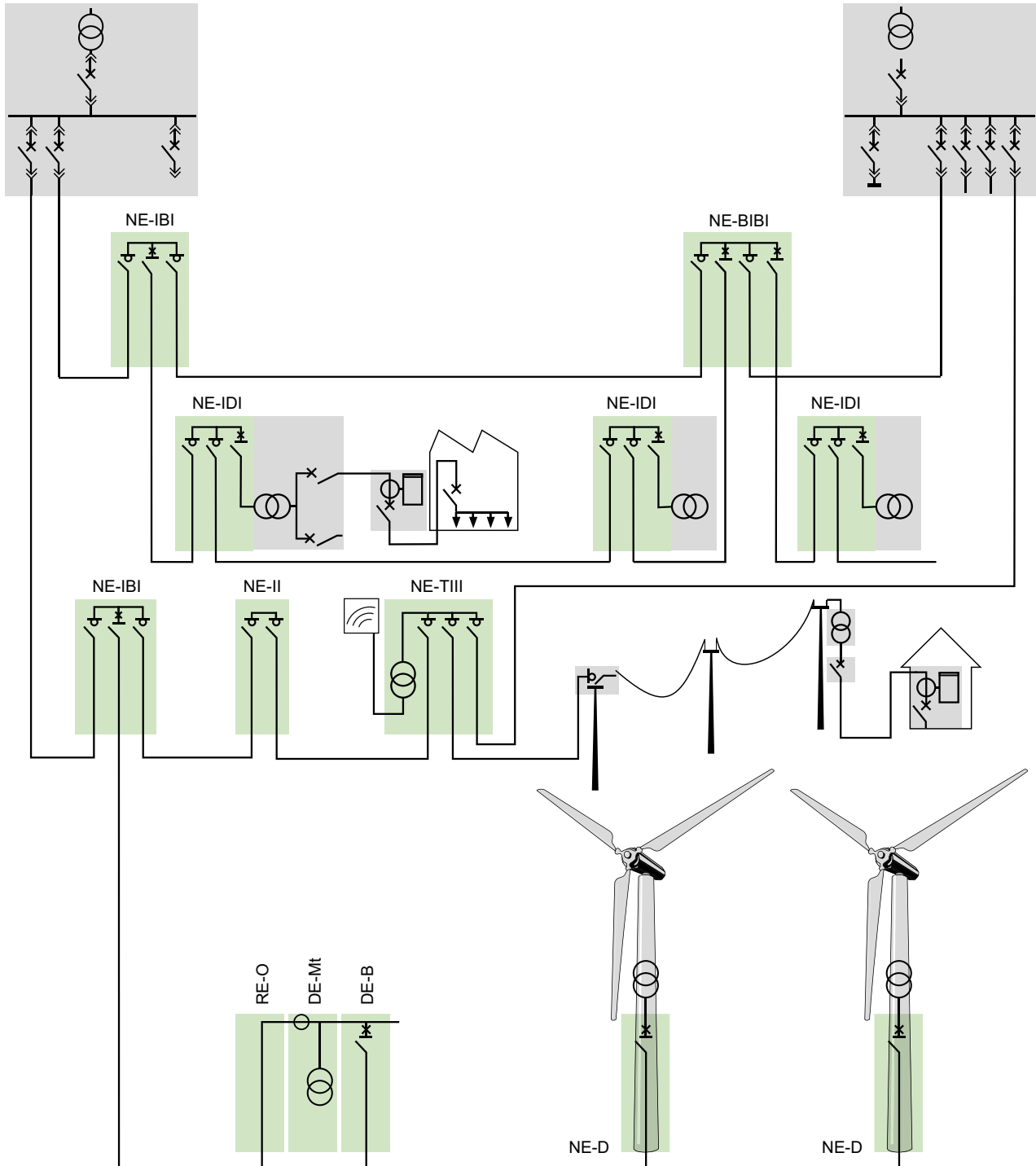
Field of application

RM6 meets all medium voltage secondary distribution needs in more complex network configurations where renewable energy supply sources are involved.

In addition to HV/MV substations, which are used to limit the effects of a fault on the network, operating a distribution network sometimes requires several switching points. RM6 offers solutions for up to five network connections thanks to:

- Line protection with 630A circuit breakers
- Network switching by switch disconnectors
- Integrated power supply remote control devices.

DE95761



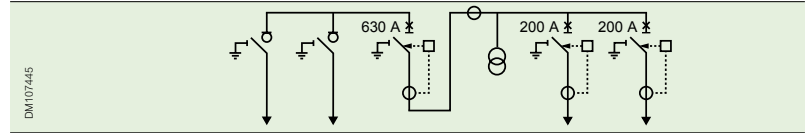
Field of application

Examples of typical applications
(free combination tank)



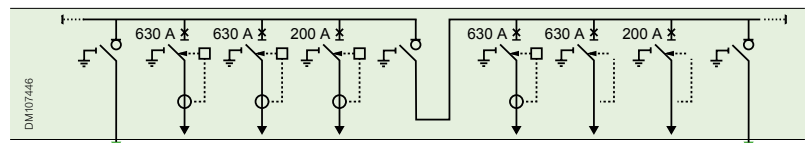
Private metering

Possible configuration with Free Combination: RE-IIBc; DE-Mt; LE-DD



Switching large sites

Possible configuration with Free Combination: RE-QIQI; DE-QQ



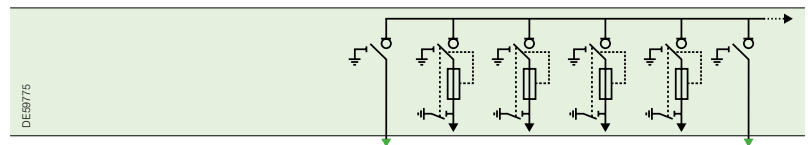
Connection to MV network

Connection to MV network



Large transformer substation

Possible configuration with Free Combination: RE-QIQI; DE-QQ



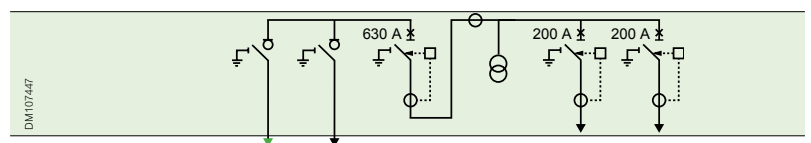
Connection to MV network

Connection to MV network



Separate MV consumer substation

Possible configuration with Free Combination: RE-IIBc; DE-Mt; LE-DD

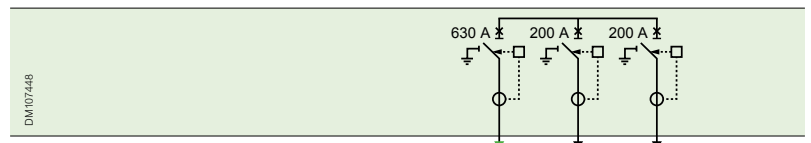


Connection to the open ring



Separate MV consumer substation

Possible configuration with Free Combination: NE-BDD



Cable connection to utility network

Field of application

RM6 for marine applications

RM6 is compliant with IACS standards and DNV and is approved for Marine applications.



Thanks to the RM6 a loop network configuration can be used onboard ships with significant advantages:

- Main medium voltage switchboard is smaller (only two functions to feed a MV loop)
- Length of medium voltage cables is reduced (> 30% typically)
- The maintainability and availability of the network are improved as:
 - a failed cable section on the MV loop can be disconnected
 - an automatic reconfiguration of the MV loop after a fault detection can be achieved



Onboard safety

If a RM6 is equipped with a special LRU (internal arc Reduction Unit) "filter", internal arc classification is AFLR 20 kA 1 s as per IEC 62271-200.

Resistance to vibrations

- Complies with IACS marine standards
- RM6 has a very low centre of gravity
- New vibration withstand performance

Some Marine references

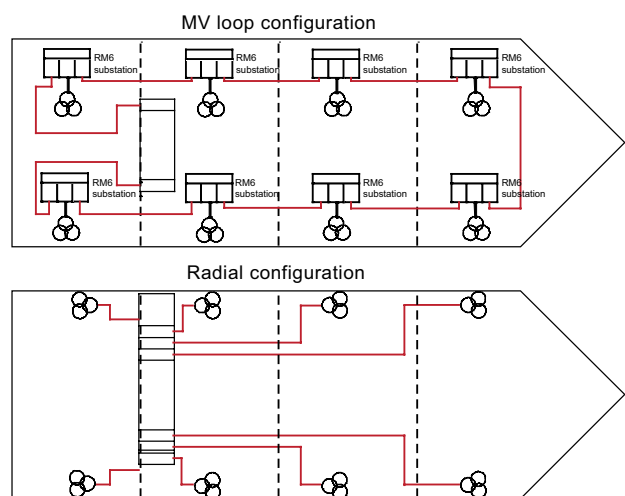
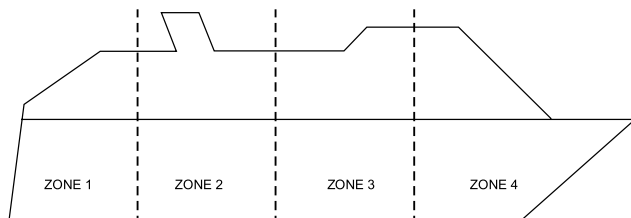
Aker Yards:

- NCL Cruise Liner
- Genesis 1 & 2.

Meyer Werft:

- AIDA ships
- Norwegian Gem
- Norwegian Pearl
- Pride of Hawaii
- Norwegian Jewel
- Jewel of the Seas...

Example of a cruise liner architecture





Robust switchgear design

Switch disconnectors and circuit breakers have similar architecture:

- A moving contact assembly with 3 stable positions (closed, open and earthed) moves vertically (see diagram). Its design makes simultaneous closing of the switch or circuit breaker and the earthing switch impossible
- The earthing switch has a short-circuit making capacity, as required by the respective standards
- The RM6 combines both an isolating and interrupting function
- The earth collector has the appropriate dimensions for the network
- Access to the cable compartment can be interlocked with the earthing switch and/or the switch or circuit breaker

For the switch disconnector, the electric arc extinction is obtained thanks to the SF6 puffer design, whilst for the circuit breaker the electric arc extinction is achieved thanks to a rotating arc technique combined with SF6 auto-expansion, allowing the breaking of all currents up to the short-circuit current.

Easy cable insulation test

In order to test cable insulation or look for faults, RM6 offers a unique way to inject a direct voltage of up to 42 kVdc for 15 minutes through the cables via the RM6, without disconnecting the connected devices.

The operator does not need to access the cable compartment.

The earthing switch is closed and the moving earthing connection is opened in order to inject the voltage via the "earthing covers". This system, a built-in feature of the RM6, requires the use of injection fingers (supplied as an option).

Thanks to transparent covers, the earthing switch moving contacts can be viewed in the closed position.

| Internal Arc Ratings | Type of exhaust |
|----------------------|-----------------|
| 20 kA A-FLR (1sec) | Bottom Exhaust |
| 20 kA A-FL (1 sec) | Bottom Exhaust |
| 16 kA A-FL | Rear Exhaust |



Please note: Bottom & rear exhaust kits to be ordered along with cubicle to achieve the IAC performance level declared above

Internal arc withstand

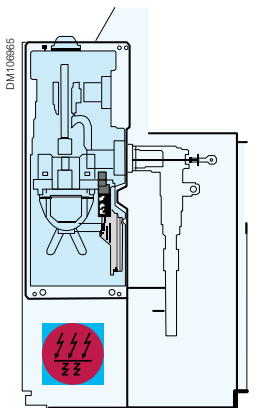
Personal safety is one of the top concerns for Schneider Electric and therefore, RM6 has been designed to withstand the impact of an internal arc supplied by different levels of short-circuit currents (as indicated below) for 1 second, in order to provide maximum operator protection should an internal arc occur.

Accidental overpressure due to an internal arc is limited by opening the safety valve at the bottom of the metal enclosure.

Arc short-circuiting

An arc short-circuiting device is available as an option on the RM6. This "arc killer" device automatically earths the feeders in case of an internal arc and prevents the tank overpressure. Consequently, the release of polluted gases outside the tank is avoided.

This option is only available on switch function (I) and an non-extensible RM6 or not on the side of an extension.

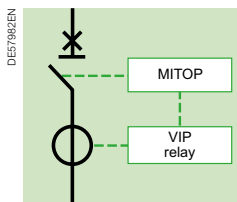




Reliable operating mechanisms

The electrical and mechanical operating mechanisms are located behind a front panel displaying the mimic diagram of the switchgear status (closed, open, earthed):

- **Closing:** the moving contact assembly is manipulated by means of a fast-acting operating mechanism. Outside these operations, no energy is stored. For both the circuit breaker and the fuse switch, the opening mechanism is charged while the contacts are closing.
- **Opening:** opening of the switch is carried out using the same fast-acting mechanism, operated in the opposite direction. For the circuit breaker and fuse-switch combination, opening is actuated:
 - by a pushbutton
 - automatically in the event of abnormal currents
- **Earthing:** a specific operating shaft closes and opens the earthing contacts. The hole providing access to the shaft is blocked by a cover which can be opened if the switch or circuit breaker is open, and remains locked when it is closed.
- **Switchgear status indicators:** are placed directly on the moving contact assembly operating shafts. They give a definite indication of the position of the switchgear (attachment A of IEC standard 62271-102).
- **Operating lever:** this is designed with an antireflex device which prevents any attempt to immediately reopen the switch disconnecter or the earthing switch after closing.
- **Padlocking facilities:** 1 to 3 padlocks can be used to prevent:
 - access to the switch or circuit breaker operating shaft
 - access to the earthing switch operating shaft



RM6 circuit breaker offers enhanced power availability and lower operating costs

The RM6 range offers 200 A and 630 A circuit breakers to protect both transformers and lines. They are associated with autonomous protection relays (VIP4x series) that are self-powered via current sensors or with auxiliary supply protection relays (VIP410 relays).

RM6 circuit breakers provide:

- Enhanced protection for operating staff, and improved continuity of service
 - Improved co-ordination of device protection between the source substation, circuit breaker and LV fuses
 - Rated current is normally high, allowing use of a circuit breaker to provide disconnection
 - The isolating system is fully protected in severe environments
- Simplified switching operations and remote control
 - Reduction of losses thanks to the low value of RI2 (the fuse-switches of a 1000 kVA transformer feeder can dissipate 100 W)
- Reduced maintenance costs with no need for fuse replacement



Sealed Pressure system

RM6 benefits from complete insulation:

- Stainless steel enclosure with IP67 ingress protection containing the live parts of switchgear and busbars



For switch fuse units, the fuse chambers are:

- Sealed to insulate the fuses from dust & humidity
- Metallized to protect the electrical field in solid insulation

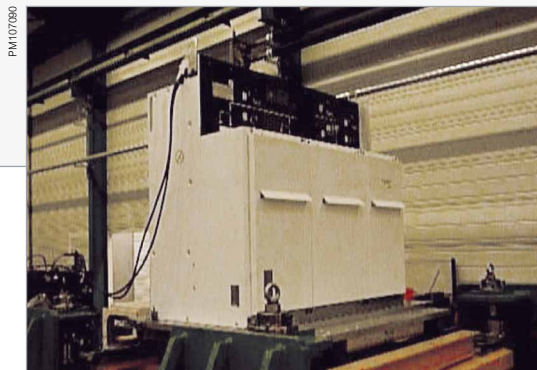
New!

Seismic & Vibration Withstand

In order to overcome the hazards originating from earthquakes and the impact of vibrations in typical applications like wind turbines, mining and marine, the RM6 has been tested to withstand:

- Seismic: Severity class 2, acceptance class 2 as per IEC62271-210 (2013)
- Vibrations: In compliance with NF EN60068.2.6.2 (2008) *

* Please contact us for more details



PM107091



Extensibility on site

RM6 can easily be extended on site.

The extension of your RM6 with one or more functional units can be carried out by simply adding modules that are connected to each other via the busbar using dedicated field bushings. This very simple operation can be carried out on site:

- Without handling any gas
- Without any special tooling
- Without any particular preparation of the floor

The only technical limitation to evolving an extensible RM6 switchboard is the rated current that the busbar can support: 630 A at 40 °C.

PM107092



RM6 visible earthing contacts for enhanced peace of mind

Operators can visually check that the earthing switch is in the closed position thanks to the transparent earthing covers located at the top of the RM6 that display the position of the earthing contacts.

EcoStruxure™ ready

What is EcoStruxure™?

450 000

EcoStruxure™ systems deployed since 2007 with the support of our 9000 system integrators.

EcoStruxure™ ready



Efficient asset management
Greater efficiency with **predictive** maintenance helping to reduce downtime.



24/7 connectivity
Real-time data **everywhere anytime** to make better informed decisions.



Increased protection
Proven design and experience combined with **internal arc designs** to enhance people and equipment protection.

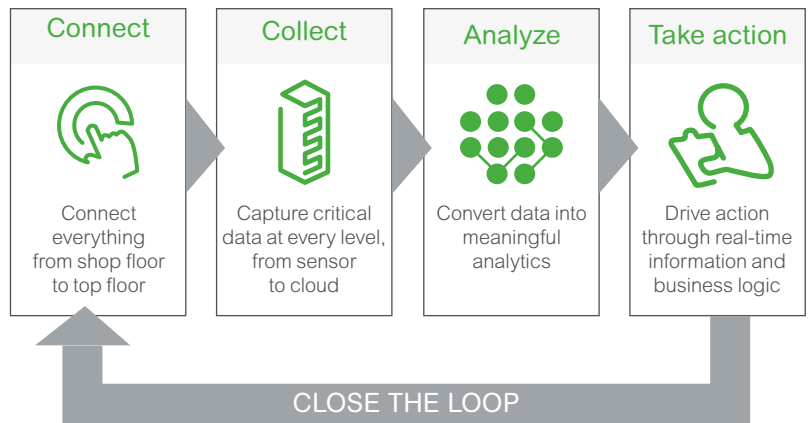
The EcoStruxure™ architecture and interoperable technology platform bring together energy, automation, and software. It provides enhanced value around safety, reliability, efficiency, sustainability and connectivity.

Turn data into action

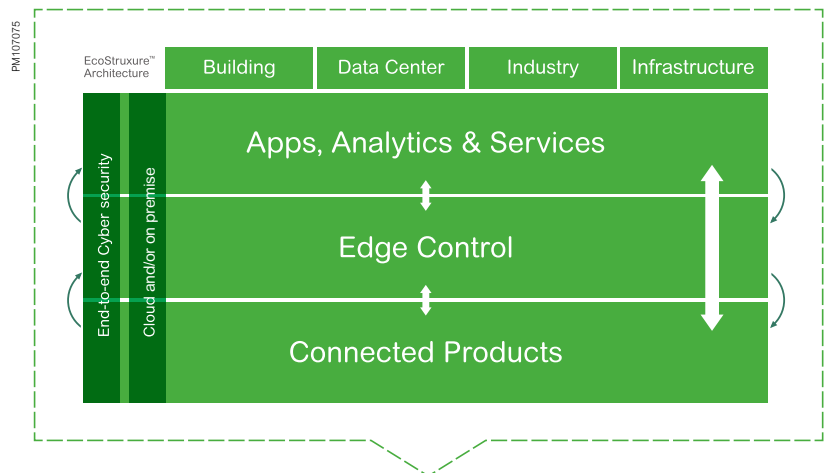
EcoStruxure™ architecture lets customers maximize the value of data.

Specifically, it helps them:

- Translate data into actionable intelligence and better business decisions
- Take informed decisions to secure uptime & operational efficiency thanks to real-time control platforms
- Get visibility of their electrical distribution by measuring, collecting, aggregating and communicating data



EcoStruxure™
Innovation At Every Level



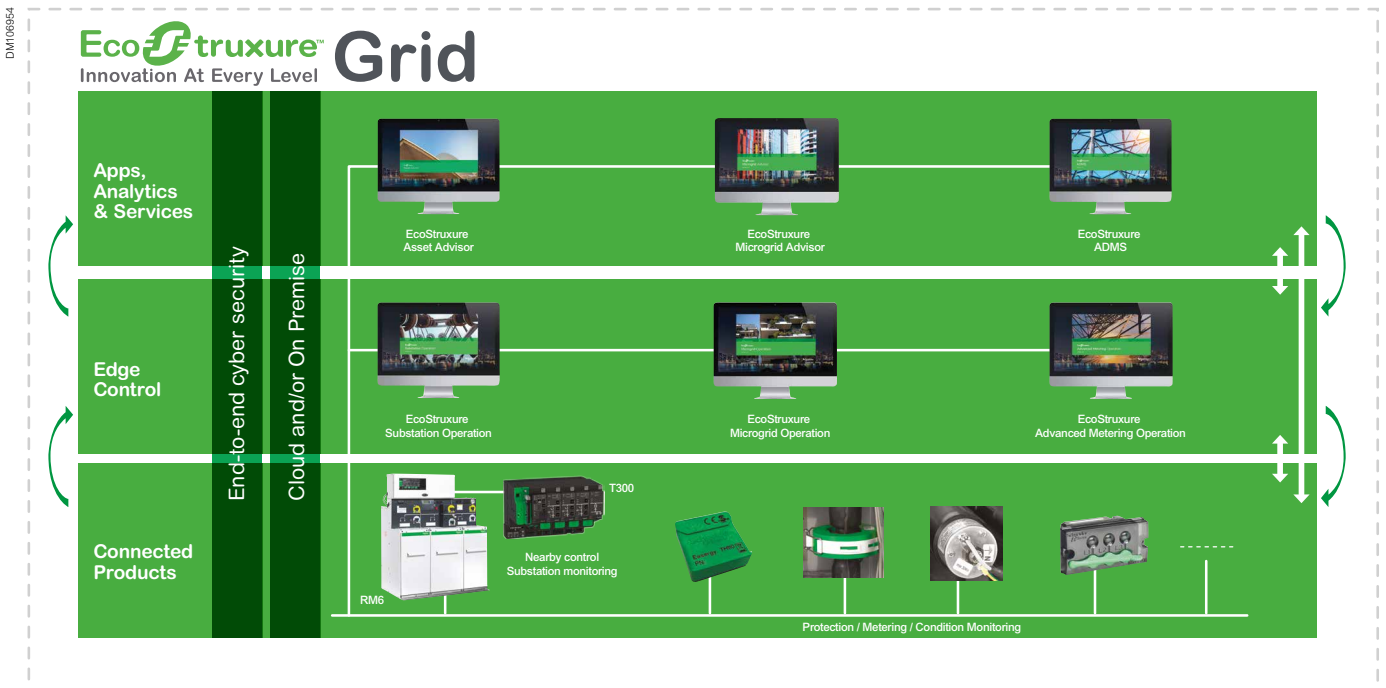
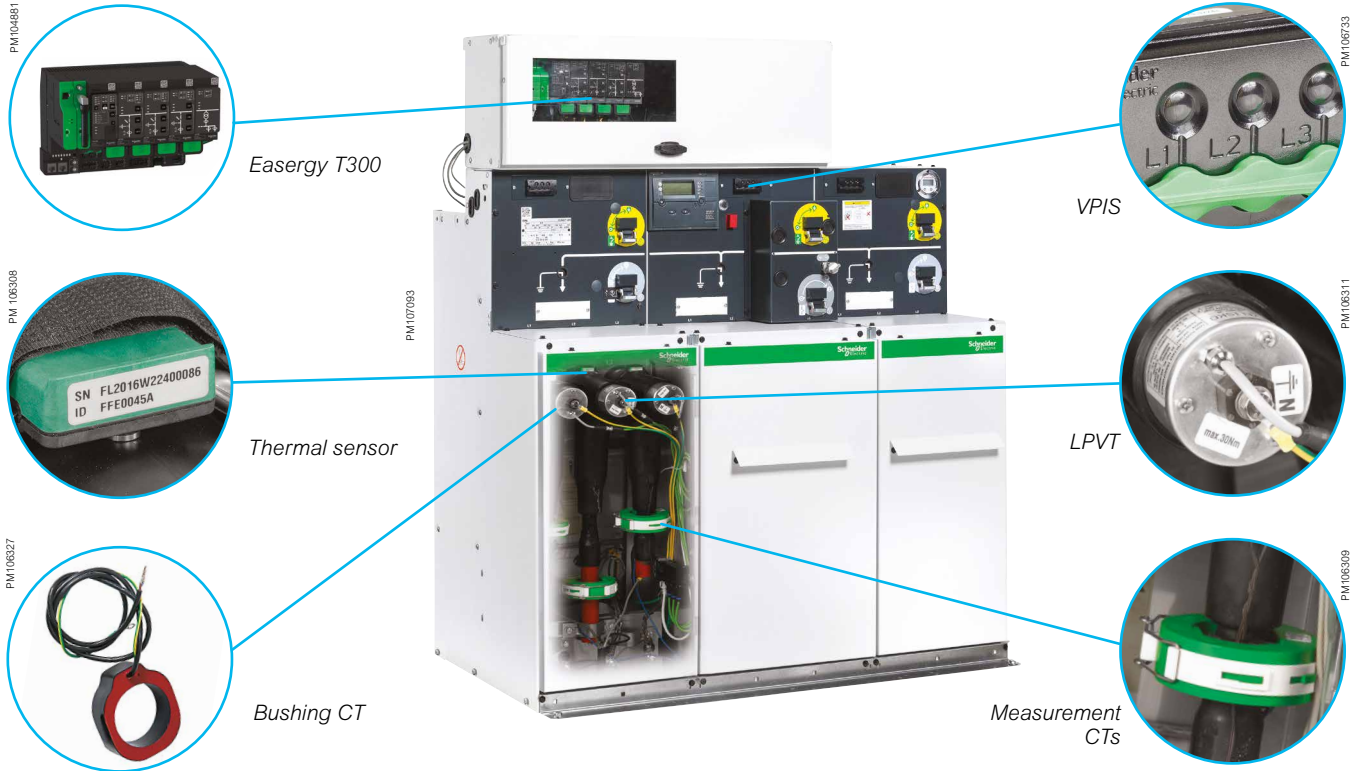
EcoStruxure™ Building | EcoStruxure™ Power | EcoStruxure™ IT | EcoStruxure™ Machine | EcoStruxure™ Plant | EcoStruxure™ Grid

EcoStruxure™ ready

Core technologies for embedded connectivity and intelligence

Enable nearby control, ensure uptime

All the protection, measurement devices and special sensors can be connected through our connected RM6 solution.



EcoStruxure™ ready

IoT connected MV equipment

Offer structures for our connected MV products

Our RM6 connected is bringing new functionalities and therefore new opportunities. In parallel, our customer needs are diverse and raise different expectations. For this reason, we have introduced scalable architectures to better meet your needs: **Enabled**, **Enabled plus** (under development), and **Advanced**.

Scalability for fit for purpose solutions

Enabled

The Enabled solution as an entry level offer.

For customers who prefer an incremental approach, we propose an efficient and cost effective alternative to **cable thermo scanning** using temperature wireless sensors and a smart phone app.



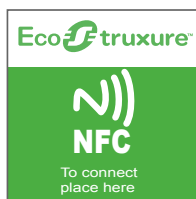
RM6



TH110



Thermal app



Advanced

And finally for customers willing to move full speed, an all in one Box offer.

Based on our latest developments: Easergy T300 is the "one box" solution to perform protection, metering, and condition monitoring functions, all in one.

A fully integrated solution with optimized architecture.



RM6



T300



TH110



CL110



CT



LPVT



VPIS

EcoStruxure™ ready IoT connected MV equipment



RM6 connected **Enabled**: effective asset management

Electrical connections can start to deteriorate due to:

- Physical connections (improper tightening torque, vibrations)
- Surface damage (due to corrosion, excessive pressure or friction)

Deterioration can then be accelerated by:

- Increase of contact electrical resistance that induces an increase in temperature
- The resulting thermal runaway can cause a connection failure. Fires, flashover or explosions can occur, leading to the destruction of the switchgear, or even worse

Therefore, insurance companies consider poor electrical connections to be a major fire or failure hazard (loss of production) and some request annual surveys.

The National Fire Protection Administration recommends an annual thermal survey (standard NFPA 70B).

The answer is simple, regular monitoring of your power system equipment will help it to remain in good condition, with less risk of downtime. Meet the RM6 Connected Enabled.

The **RM6 Connected Enabled** cubicle includes:

- A proven and robust RM6 RMU
- An innovative thermal sensor, TH110, strategically placed on critical connection points
- A dedicated thermal connect app to access temperature information

DM1106989



RM6

Supported by our App to view & share temperature information

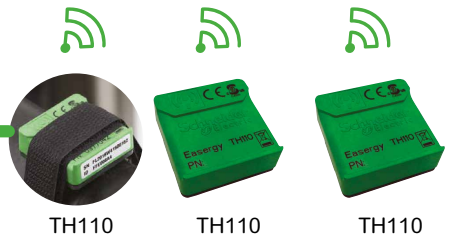


Schneider Electric cloud/customer database

Temperature info acquired through a Zigbee protocol into a Zigbee concentrator



TH110 mounted on cable termination



EcoStruxure™ ready

IoT connected MV equipment

RM6 connected **Enabled**: effective asset management

RM6 Connected Enabled

EcoStruxure Architecture



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EcoStruxure™ ready

IoT connected MV equipment

RM6 connected **Advanced**: suitable for complex and smart grids

Advanced features

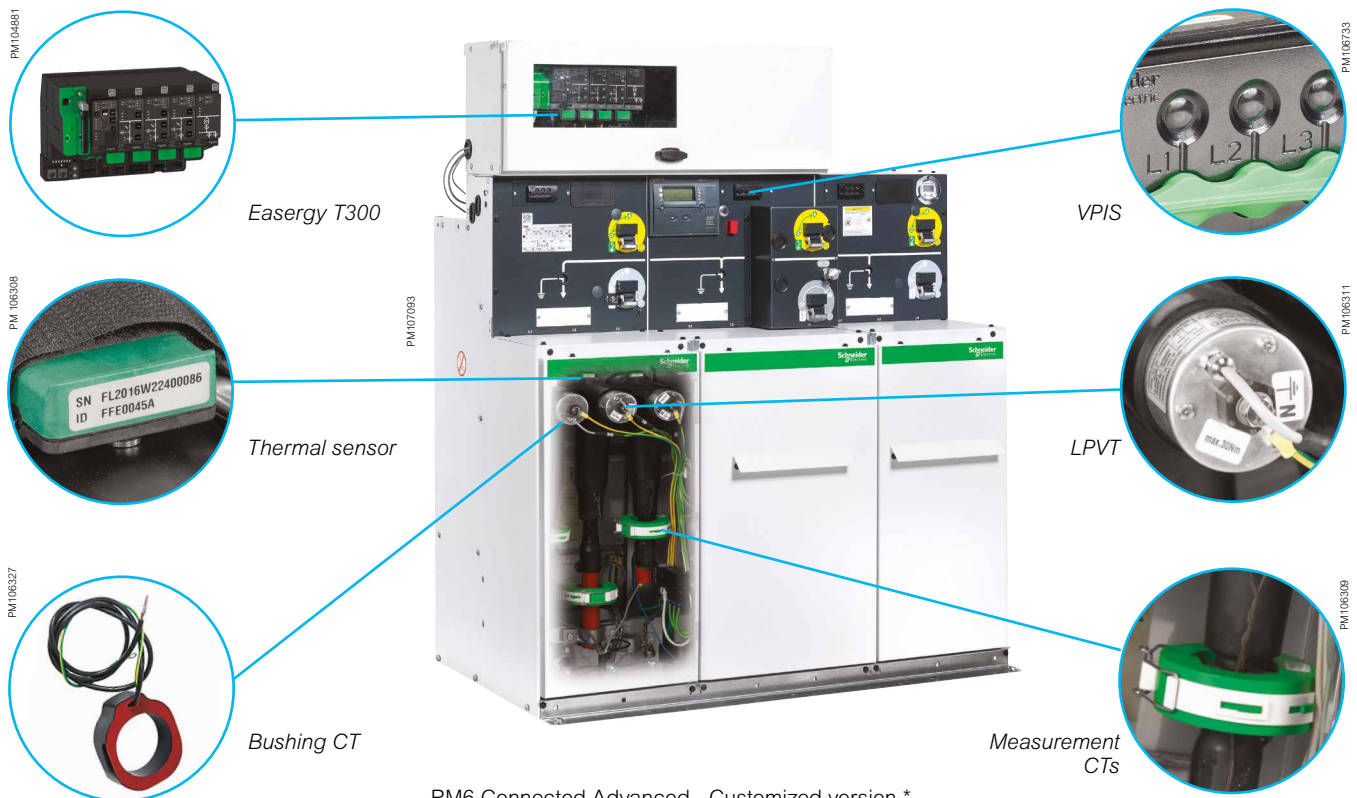
Effective asset management, increased safety, 24/7 connectivity, network management

The **RM6 Connected Advanced** solution is designed to leverage solution benefits, in addition to bringing the best IoT capabilities for reliable and efficient asset management.

The **RM6 Connected Advanced** solution contributes to an open and transparent information solution for smart grid medium voltage distribution networks.

The **RM6 Connected Advanced cubicle** is a complete integrated solution that consists of:

- A proven and robust RM6 RMU with voltage and current sensors
- An RTU (T300) located in an LV cabinet, located on top of the RM6
- A fully tested solution for peace of mind
- Plug and play installation



RM6 Connected Advanced - Customized version *

* Contact us for further details

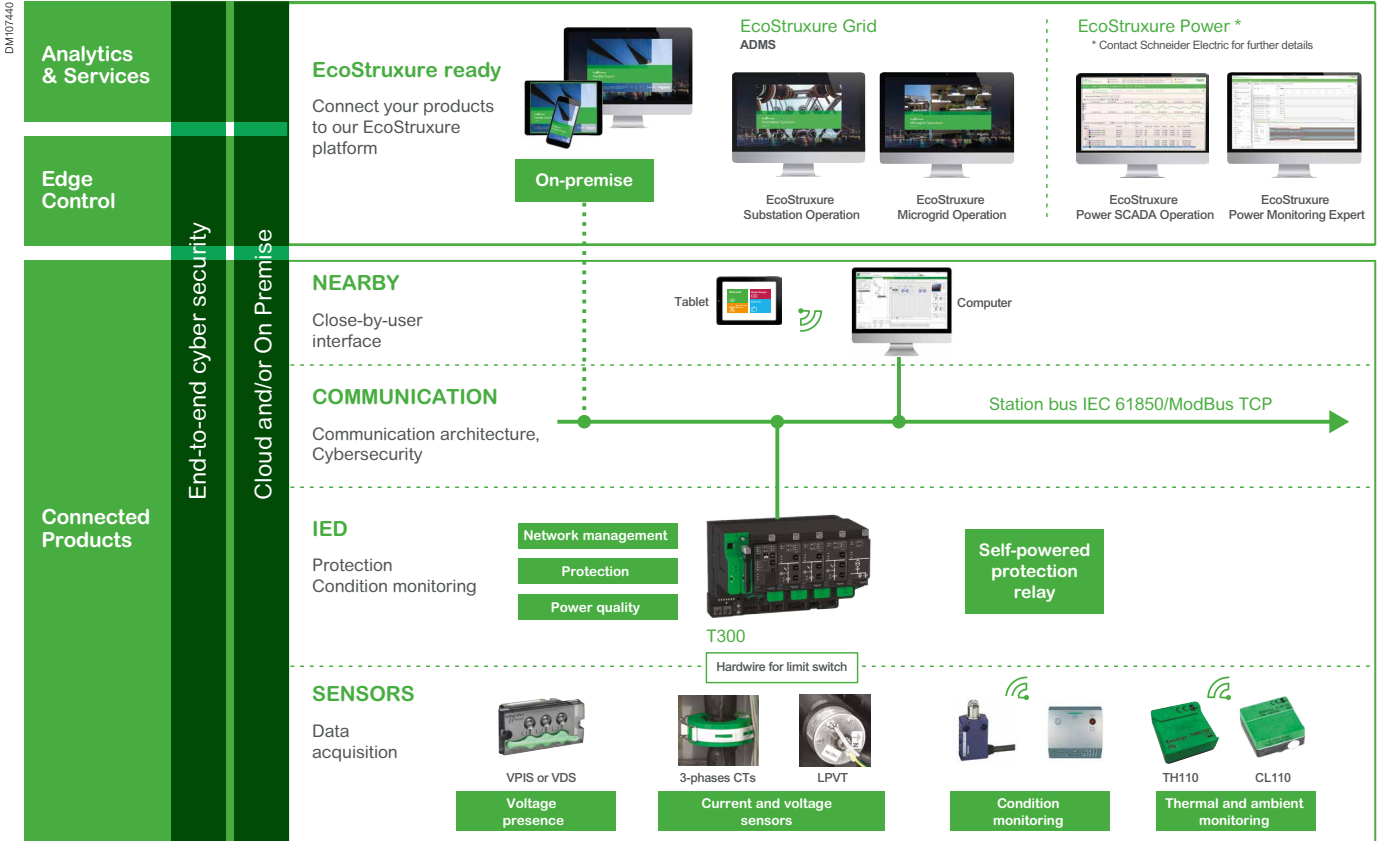
EcoStruxure™ ready

IoT connected MV equipment

RM6 connected **Advanced**: suitable for complex and smart grids

RM6 Connected Advanced

EcoStruxure Architecture



RM6 Connected Advanced Key Features

- Simplify installation and commissioning
- Reduce outage time and network losses
- Cut down maintenance costs
- Optimize investments
- Offer network facilities adapted to smart grid applications
- Make available automatic network reconfiguration capabilities
- Improve fault management
- Improve power quality
- Compliance with latest polices and standards such as cyber security and IEC 61850

Schneider Electric services

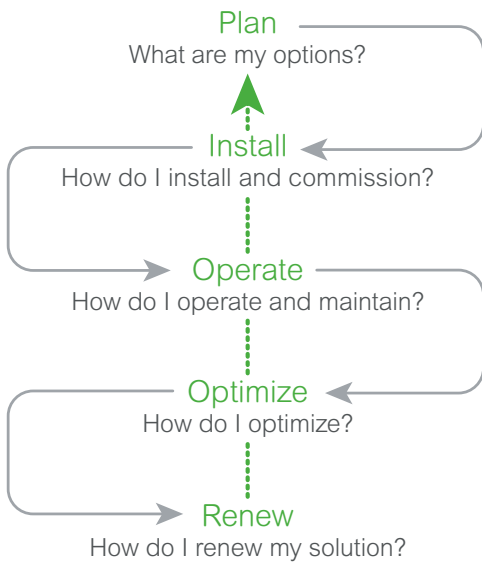
Peace of mind throughout your installation life cycle

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

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

Life Cycle Services

DBP03843



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

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

CONTACT US!

www.schneider-electric.com/b2b/en/services/

Plan

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

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

Install

Schneider Electric will help you to install efficient, reliable and secured solutions based on your plans.

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

Operate

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

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

Optimize

Schneider Electric can make recommendations for improved availability, reliability and quality.

- **MP4 electrical assessment of customer installations:** Define an improvement and risk management program

Renew

Schneider Electric extends the life of your system while providing upgrades.

We offer to take full responsibility for the end of life processing of old electrical equipment.

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



Green Premium™



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

- RoHS compliance
- REACH substance information
- Industry leading # of PEP's*
- Circularity instructions



Discover what we mean by green
Check your products!

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

CO₂ and P&L impact through... Resource Performance

Green Premium brings improved resource efficiency throughout an asset's lifecycle. This includes efficient use of energy and natural resources, along with the minimization of CO₂ emissions.

Cost of ownership optimization through... Circular Performance

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

Peace of mind through... Well-being Performance

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

Improved sales through... Differentiation

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

*PEP: Product Environmental Profile (i.e. Environmental Product Declaration)



....SUSTAINABILITY READY



Boost your operational sustainability with RM6

We are helping our customers and partners to create more sustainable and efficient operations by reducing their carbon footprint and operating costs.

Durability: the RM6's design has been endorsed by accelerated aging and a thorough evaluation of its materials (such as EPDM for gaskets, or stainless steel for the cover). This ensures a long service life under normal operating conditions. In addition, current user feedback indicates a high MTTF (Mean Time To Failure).

Upgradeability: The RM6 can be digitally upgraded with the addition of our EcoStruxure system:

- TH110: Battery free temperature monitoring
- CL110: Ambient condition monitoring
- T300

Lower your environmental impact with RM6



Circular performance



Resource performance



Well-being performance



Achieve LEED™ credits with RM6

- Building Product Disclosure and Optimization
- Advanced Energy Metering



Quality management, a major benefit

Schneider Electric has systematically integrated a functional Quality organization into each of its departments, the main purpose of which being to ensure quality and adherence to standards.

Our Quality management procedures are the same in every department and are recognized by numerous customers and organizations.

The strict application of this functional organization and procedures has been recognized by an independent organization, the French Association for Quality Assurance (Association Française pour l'Assurance Qualité, or (AFAQ)). The RM6 design and production quality systems have been certified as being in conformity with the requirements of the ISO 9001: 2008 quality assurance model.



RM6 test platform

Rigorous and systematic industrial checks

During its manufacturing, the RM6 undergoes systematic routine tests, the aim of which is to check quality and conformity:

- Tightness check
- Filling pressure check
- Opening and closing speed measurement
- Operating torque measurement
- Dielectric check
- Conformity with drawings and diagrams.

For each device, the quality control department records and signs the results obtained on the test certificate.

There is a "zero" SF6 emission during the gas filling and tightness control process.



Environment

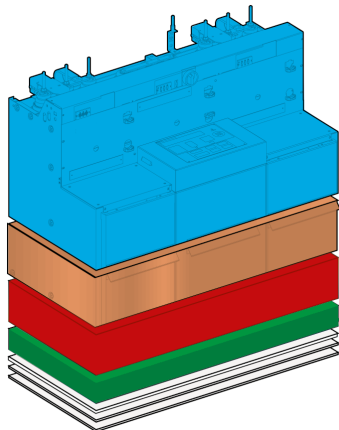
Schneider Electric is committed to a long term environmental approach.

Schneider Electric's recycling procedure for SF6 based products is subject to rigorous management to allow each device to be traced through to end of life.

As part of this, the RM6 range has been designed to be environmentally friendly, notably in terms of the product's recyclability.

The materials used, both conductors and insulators, are identified and easily separable.

At the end of its life, RM6 can be processed, recycled and its materials recovered in conformity with the draft European regulations on the end of life of electronic and electrical products, and in particular without any gas being released into the atmosphere nor any polluting fluids being discharged.



| | IDI | IQI |
|-------------------|-------|-------|
| Ferrous metal | 78.5% | 72.5% |
| Non-ferrous metal | 13.3% | 11.3% |
| Thermohardening | 4.7% | 11.3% |
| Thermoplastics | 2% | 4.1% |
| Fluids | 0.5% | 0.4% |
| Electronic | 0.7% | 0% |
| Other | 0.4% | 0.4% |

Range description

| | |
|---|-----------|
| General characteristics | 28 |
| Connected characteristics | 33 |
| RM6 connected Enabled | 33 |
| RM6 connected Advanced | 35 |
| Operating conditions and standards | 40 |

RM6 is an indoor gas-insulated switchgear up to 24kV for secondary distribution networks.



Electrical characteristics

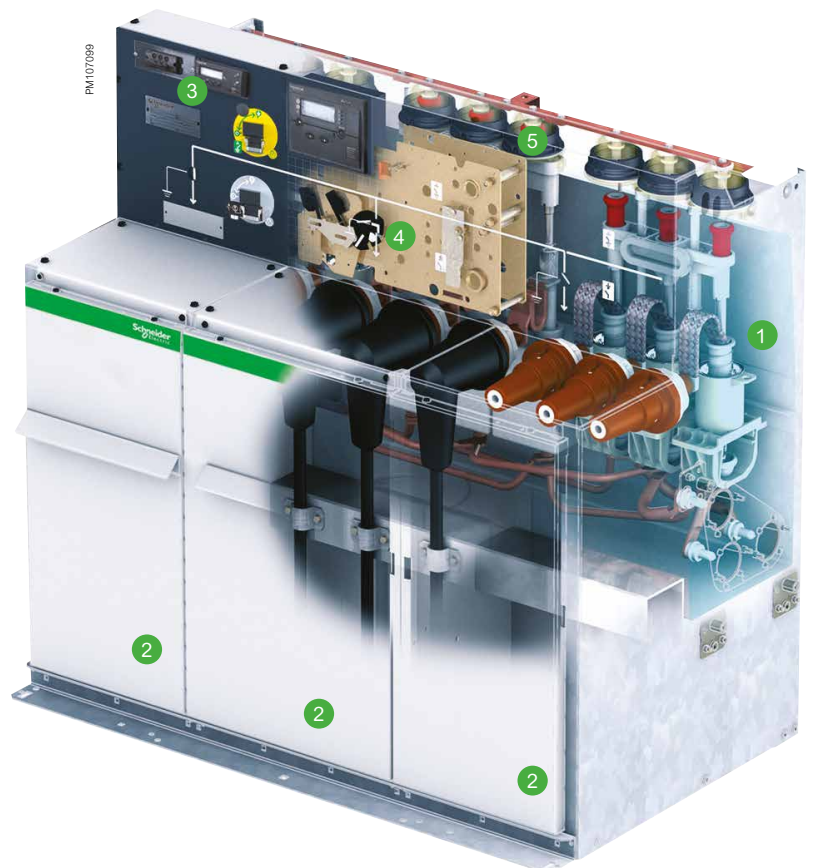
| | | | | |
|-----------------------------|---|----------|------|-----|
| Rated voltage | Ur (kV) | 12 | 17.5 | 24 |
| Frequency | f (Hz) | 50 or 60 | | |
| Insulation level | | | | |
| Industrial frequency | Insulation (1) Ud (kV rms) | 28 | 38 | 50 |
| 50 Hz 1 mn | Isolation (2) Ud (kV rms) | 32 | 45 | 60 |
| Impulse 1.2/50 μs | Insulation (1) Up (kV peak) | 75 | 95 | 125 |
| | Isolation (2) Up (kV peak) | 85 | 110 | 145 |
| Tank internal arc withstand | | 20kA 1s | | |
| Seismic Withstand | Severity class 2, acceptance class 2 as per IEC62271-210 (2013) | | | |
| Vibration Withstand | NF EN60068.2.6.2 (2008) ⁽³⁾ | | | |

- (1) Phase-to-phase, phase-to-earth
 (2) Across the isolating distance
 (3) Please contact Schneider Electric for details

RM6 meets the definition of a "sealed pressure system" as laid out by the IEC standard.

RM6 is made up of the following elements:

1. A stainless steel tank filled with SF6 gas (at 0.23 bar relative pressure), sealed for life and containing the busbar and all live switching components such as the switch disconnecter, the earthing switch, the fuse switch combination or the circuit breaker
2. One to four (five optional) cable compartments with interfaces to connect to the network or the transformer
3. User interface with single line diagram, actuators and LV components
4. Manual or motorized operating mechanism compartments
5. Earthing circuit with visible earthing contacts



Complete board configuration table

| Cubicle | Width (mm) | Depth (mm) | Height (mm) | Weight (kg) |
|-----------------|------------|------------|-------------|---------------|
| NE-I | 472 | 670 | 1142 | 135 |
| NE-B | 572 | 670 | 1142 | 135 |
| NE-D | 572 | 670 | 1142 | 135 |
| DE-I | 532 | 670 | 1142 | 135 |
| DE-B | 632 | 670 | 1142 | 135 |
| DE-D | 632 | 670 | 1142 | 135 |
| DE-Q | 632 | 670 | 1142 | 185 |
| DE-Ic | 632 | 670 | 1142 | 145 |
| DE-Bc | 632 | 670 | 1142 | 145 |
| DE-Mt | 1106 | 840 | 1142 | 420 |
| DE-O | 532 | 670 | 1142 | 135 |
| LE-O | 502 | 670 | 1142 | 135 |
| RE-O | 502 | 670 | 1142 | 135 |
| NE-II | 829 | 670 | 1142 | 155 |
| NE-BI | 829 | 670 | 1142 | 180 |
| NE-DI | 829 | 670 | 1142 | 180 |
| NE-QI | 829 | 670 | 1142 | 180 |
| RE-II | 859 | 670 | 1142 | 155 |
| NE-III | 1186 | 670 | 1142 | 240 |
| NE-IBI | 1186 | 670 | 1142 | 250 |
| NE-IDI | 1186 | 670 | 1142 | 240 |
| NE-IQI | 1186 | 670 | 1142 | 275 |
| RE-III | 1216 | 670 | 1142 | 240 |
| RE-IBI | 1216 | 670 | 1142 | 250 |
| RE-IDI | 1216 | 670 | 1142 | 240 |
| RE-IQI | 1216 | 670 | 1142 | 275 |
| DE-III | 1246 | 670 | 1142 | 240 |
| DE-IBI | 1246 | 670 | 1142 | 250 |
| DE-IDI | 1246 | 670 | 1142 | 240 |
| DE-IQI | 1246 | 670 | 1142 | 275 |
| NE-III | 1619 | 670 | 1142 | 320 |
| NE-IIBI | 1619 | 670 | 1142 | 330 |
| NE-BIBI | 1619 | 670 | 1142 | 340 |
| NE-IIDI | 1619 | 670 | 1142 | 330 |
| NE-DIDI | 1619 | 670 | 1142 | 340 |
| NE-IIQI | 1619 | 670 | 1142 | 355 |
| NE-QIQI | 1619 | 670 | 1142 | 390 |
| RE-III | 1649 | 670 | 1142 | 320 |
| RE-IIBI | 1649 | 670 | 1142 | 330 |
| RE-IIDI | 1649 | 670 | 1142 | 330 |
| RE-BIBI | 1649 | 670 | 1142 | 340 |
| RE-DIDI | 1649 | 670 | 1142 | 340 |
| RE-IIQI | 1649 | 670 | 1142 | 355 |
| RE-QIQI | 1649 | 670 | 1142 | 390 |
| DE-III | 1679 | 670 | 1142 | 320 |
| DE-IIBI | 1679 | 670 | 1142 | 330 |
| DE-IIDI | 1679 | 670 | 1142 | 330 |
| DE-IIQI | 1679 | 670 | 1142 | 355 |
| NE-I_I_I(1) | 2000 | 670 | 1142 | 450 to 530(2) |
| RE-/LE-I_I_I(1) | 2030 | 670 | 1142 | 455 to 535(2) |
| DE-I_I_I(1) | 2060 | 670 | 1142 | 460 to 540(2) |

(1) 5 function tanks

(2) Weight depends on the choice of function

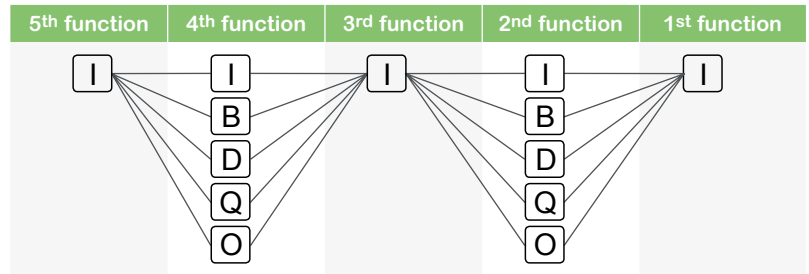
RM6 Flexibility

To further meet your installation requirements, RM6 also provides you with a higher configuration flexibility thanks to its 5 Functions range and its Free Combination range:

- Free choice of functions and options
- Compatible with standard RM6 offer in all extensibility types
- More economical than multiple single extension functions in line

5 Functions range

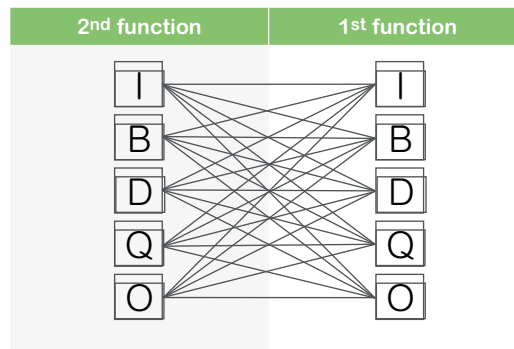
Possible combinations for RM6 five function tanks:



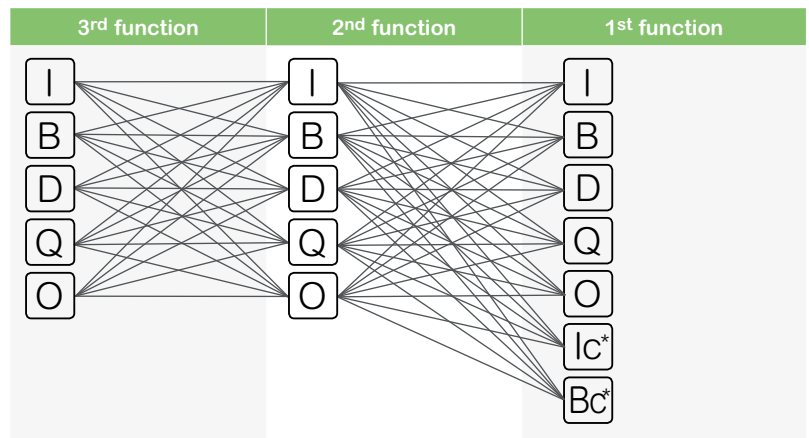
Free Combination range

700 possible combinations for RM6 2 or 3 function tanks.

Possible combinations of RM6 2 functions



Possible combinations of RM6 3 functions

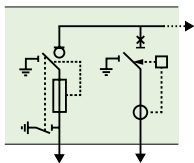


* Only possible when RM6 is RE or DE.

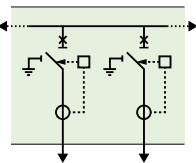
Examples

RM6 2 function combinations

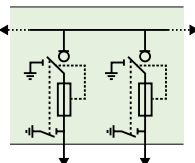
RE-QD



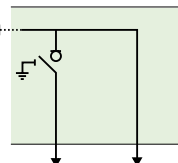
DE-DD



DE-QQ

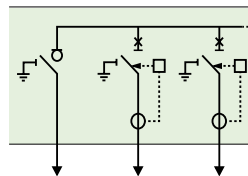


LE-IO

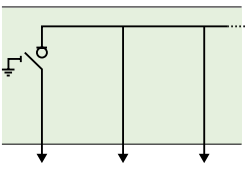


RM6 3 function combinations

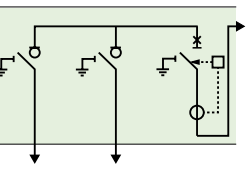
RE-IDD



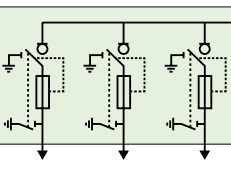
RE-IOO



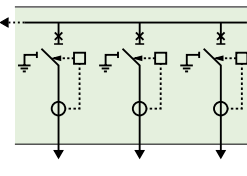
RE-IIBc



RE-QQQ



DE-BBD



General characteristics

Available functions

| Basic unit characteristics | | | | | | | | | | | | | | | | | | | |
|------------------------------|--------------|-----|-----|-----|-----|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|---|
| Rated voltage | (kV) | 12 | 12 | 12 | 12 | 17.5 | 17.5 | 17.5 | 17.5 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | |
| Short-time withstand current | (kA rms) | 21 | 21 | 25 | 25 | 21 | 21 | 21 | 21 | 12.5 | 12.5 | 12.5 | 16 | 16 | 16 | 20 | 20 | 20 | |
| | Duration (s) | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | |
| Rated current | (A) | 200 | 630 | 200 | 630 | 200 | 200 | 630 | 630 | 200 | 400 | 630 | 200 | 400 | 630 | 200 | 200 | 630 | |
| Extensions | Functions | | | | | | | | | | | | | | | | | | |
| NE | I | | | | • | | | • | | • | • | | | • | • | | | • | |
| | D | • | | • | | • | | | | • | | | • | | | • | | | |
| | P | | | | • | | | • | • | | | | | | • | | | • | |
| | QI | | | • | | • | • | | | • | | | • | | | • | | | |
| | DI | | | • | | • | • | | | • | | | • | | | • | | | |
| | PI | | | | • | | | • | • | | | | | | • | | | • | |
| | II | | | | • | | | • | | | • | | | • | • | | | • | |
| | IQI | | • | | • | | | • | • | | • | | | • | • | | | • | • |
| | IIQI | | • | | • | | | • | • | | • | | | • | • | | | • | • |
| | QIQI | | • | | • | | | • | • | | • | | | • | • | | | • | • |
| | IDI | | | | • | | | • | • | | • | • | | • | • | | | • | • |
| | IIDI | | | | • | | | • | • | | • | • | | • | • | | | • | • |
| | DIDI | | | | • | | | • | • | | • | • | | • | • | | | • | • |
| | III | | | | • | | | • | • | | • | | | • | • | | | • | • |
| | IIII | | | | • | | | • | • | | • | | | • | • | | | • | • |
| | IPI | | | | • | | | • | • | | | | | | • | | | • | • |
| | IIPi | | | | • | | | • | • | | | | | | • | | | • | • |
| PIPI | | | | • | | | • | • | | | | | | • | | | • | • | |
| RE | O | | | • | • | | • | | • | | | | • | | • | • | | • | |
| | IQI | | • | | • | | | • | • | | • | | | • | • | | | • | • |
| | IIQI | | • | | • | | | • | • | | • | | | • | • | | | • | • |
| | QIQI | | • | | • | | | • | • | | • | | | • | • | | | • | • |
| | IDI | | | | • | | | • | • | | • | • | | • | • | | | • | • |
| | IIDI | | | | • | | | • | • | | • | • | | • | • | | | • | • |
| | DIDI | | | | • | | | • | • | | • | • | | • | • | | | • | • |
| | II | | | | • | | | • | | | • | | | • | • | | | • | • |
| | III | | | | • | | | • | • | | • | | | • | • | | | • | • |
| | IIII | | | | • | | | • | • | | • | | | • | • | | | • | • |
| | IPI | | | | • | | | • | • | | | | | | • | | | • | • |
| IIPi | | | | • | | | • | • | | | | | | • | | | • | • | |
| PIPI | | | | • | | | • | • | | | | | | • | | | • | • | |
| LE | O | | | • | • | | • | | • | | | | • | | • | • | | • | |
| | I | | | | • | | | • | • | | • | | | • | • | | | • | • |
| | PC | | | | • | | | • | | | | | | • | • | | | • | • |
| | IC | | | | • | | | • | | | | | | • | • | | | • | • |
| | O | | | • | • | | • | | • | | | | • | | • | • | | • | • |
| | Q | • | | • | | • | • | | | • | | | • | | • | • | • | | • |
| | D | | | • | | • | • | | | • | | | • | | • | • | | • | • |
| | P | | | | • | | | • | • | | | | | | • | | | • | • |
| | IQI | | • | | • | | | • | • | | | | | • | • | | | • | • |
| | IIQI | | • | | • | | | • | • | | | | | • | • | | | • | • |
| DE | IDI | | | | • | | | • | • | | | • | | • | • | | | • | • |
| | IIDI | | | | • | | | • | • | | | • | | • | • | | | • | • |
| | III | | | | • | | | • | • | | | | | • | • | | | • | • |
| | IIII | | | | • | | | • | • | | | | | • | • | | | • | • |
| | IPI | | | | • | | | • | • | | | | | | • | | | • | • |
| | IIPi | | | | • | | | • | • | | | | | | • | | | • | • |
| | Mt | | | | • | | | • | | | | | | | • | | | • | • |

N.B.: D and Q functions limited to 200 A
 NE: non-extensible, RE: right-extensible, LE: left-extensible, DE: double-extensible.
 All performances are available for RM6 Free Combination cubicles.

RM6 Connected Enabled switchgear has thermal sensors that are mounted on the cable bushings, which allows you to have a real time, **instantaneous temperature measurement** via a dedicated Thermal Connect application on your smart phone or tablet.

Continuous Thermal Monitoring

The power connections in medium voltage products are one of the most critical points of the substation, especially for the MV cable connections made on site. Poor electrical connections can cause an increase of resistance in localized points that can lead to thermal runaway until the connection fails completely. Preventive maintenance can be complicated by accessibility and visibility in severe cases. Continuous thermal monitoring is the most appropriate way to detect a compromised connection early.

DM107441

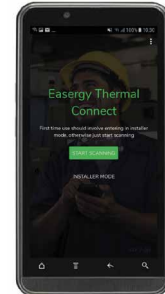


RM6

TH110 sensors mounted on cable connections



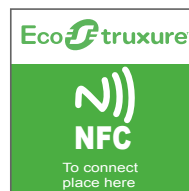
Android device



ZigBee receiver dongle



Dongle connector



NFC tag

Key benefits

- Battery free
- Wireless communication
- Great performance
- In-contact measuring point
- Easy installation
- Compact footprint
- Remote monitoring and alarms

Easergy TH110 Thermal Sensors

The **Easergy TH110** thermal sensor is part of the new generation of wireless smart sensors that enable continuous thermal monitoring of all the critical connections made in the field. The benefits include:

- Preventing unscheduled downtime
- Improved operator and equipment safety
- Maintenance optimization and transition to predictive maintenance

Thanks to its very compact footprint and wireless communication capabilities, the **Easergy TH110** is easy to install in critical locations without affecting the MV switchgear's performance.

By using a Zigbee communication protocol, **Easergy TH110** provides robust communication that can be used to create interoperable solutions for devices in the age of Industrial Internet of Things (IoT).

Easergy TH110 is self powered by the network current. It provides great performance and accurate thermal monitoring because it is in direct contact with the measured point.

Characteristics

| | |
|----------------------------|---|
| Power supply | Self powered Energy harvested from the power circuit |
| Minimum activation current | 5 A |
| Accuracy | +/- 1 °C |
| Range | -25 °C / +115 °C |
| Wireless communication | ZigBee Green Power 2.4 GHZ |
| Dimension weight | 31 x 31 x 13 mm – 15 g |

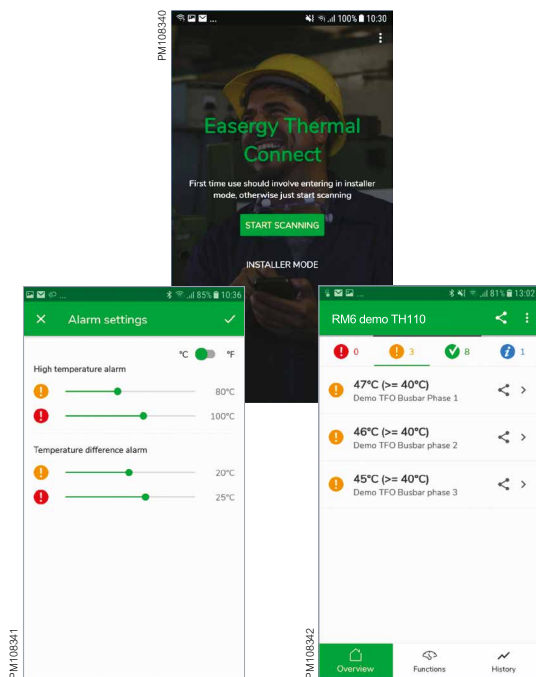
Easergy Thermal Connect app

Thermal monitoring gives you access to the temperatures of the substation's main electrical components.

It replaces thermal camera diagnostics. You no longer need to disconnect the breaker or to install a window on the cubicle to carry out the thermal analysis. Communication is wireless and does not require substation shutdown.

Key benefits

- Nearby stand-alone detection
- Easy temperature access during maintenance
- Data may be stored in a cloud-based safe repository
- Alarms can be configured within the app.



Connected characteristics

RM6 connected **Advanced**

PM103338



RM6 Connected Advanced IDI configuration

The RM6 Connected Advanced cubicle is a complete integrated solution that consists of:

- A proven and robust RM6 RMU with voltage and current sensors
- An RTU (T300) located in a LV cabinet placed on top of the RM6
- Sensors for condition monitoring
- A fully tested solution
- Plug and play installation

Cubicle configuration

Cubicle configuration includes:

- Compact or extensible
- 3 or 4 functions
- Available single extensible function: network switch and transformer feeder functions

| Cubicle | Width (mm) | Depth (mm) | Height (mm) | Weight (kg) |
|-------------|------------|------------|---------------|-------------|
| IQI | 1216 | 670 | 1142/1492 (*) | 275/295 (1) |
| IDI | 1216 | 670 | 1142/1492 (*) | 240/260 (1) |
| DIDI | 1649 | 670 | 1142/1492 (*) | 340/360 (1) |
| DE-I | 532 | 670 | 1142 | 135 |
| DE-D | 632 | 670 | 1142 | 135 |

(*): With LV cabinet

(1): With all optional modules and accessories, without battery

| LV cabinet | Width (mm) | Depth (mm) | Height (mm) | Weight (kg) |
|------------|------------|------------|-------------|-------------|
| | 360.5 | 383 | 348.5 | 20 |

Main characteristics

| RM6 | IQI | IDI | DIDI | DE-I | DE-D |
|------------------------|---|---|---|---|---|
| Voltage | 12 kV/17.5 kV/24 kV | 12 kV/17.5 kV/24 kV | 12 kV/17.5 kV/24 kV | 12 kV/17.5 kV/24 kV | 12 kV/17.5 kV/24 kV |
| Operational voltage | 6.6 kV/13.8 kV/22 kV | 6.6 kV/13.8 kV/22 kV | 6.6 kV/13.8 kV/22 kV | 6.6 kV/13.8 kV/22 kV | 6.6 kV/13.8 kV/22 kV |
| Extensible | Yes/No | Yes/No | Yes/No | Double | Double |
| IAC | AFL or AFLR | AFL or AFLR | AFL or AFLR | AFL or AFLR | AFL or AFLR |
| Cable box | Single/3 cores | Single/3 cores | Single/3 cores | Single/3 cores | Single/3 cores |
| Cable box interlocking | Bolted/Interlock | Bolted/Interlock | Bolted/Interlock | Bolted/Interlock | Bolted/Interlock |
| Gas pressure | Manometer or Densimeter with pressure contact | Manometer or Densimeter with pressure contact | Manometer or Densimeter with pressure contact | Manometer or Densimeter with pressure contact | Manometer or Densimeter with pressure contact |
| Switch motorization | Yes | Yes | Yes | Yes | N/A |
| CB motorization | N/A | Option | Option | N/A | Option |
| Voltage motorization | 24 Vdc or 48 Vdc | 24 Vdc or 48 Vdc | 24 Vdc or 48 Vdc | 24 Vdc or 48 Vdc | 24 Vdc or 48 Vdc |
| Auxiliary contact | Yes | Yes | Yes | Yes | Yes |

 Selectable /  Option

| Components | IQI | IDI | DIDI | DE-I | DE-D |
|-------------------------|-------------|-------------|-------------|-------------|-------------|
| Voltage detection | VPIS or VDS | VPIS or VDS | VPIS or VDS | VPIS or VDS | VPIS or VDS |
| VDS type | Wega 1.2c | Wega 1.2c | Wega 1.2c | Wega 1.2c | Wega 1.2c |
| VPIS type | VPIS V3 VO | VPIS V3 VO | VPIS V3 VO | VPIS V3 VO | VPIS V3 VO |
| Current acquisition | Bushing | Bushing | Bushing | Bushing | Bushing |
| CB Protection relay | N/A | VIP410 | VIP410 | N/A | VIP410 |
| Phase overcurrent 50/51 | N/A | Yes | Yes | N/A | Yes |
| Earth fault 51N | N/A | Yes | Yes | N/A | Yes |
| Thermal overload 49 | N/A | Yes | Yes | N/A | Yes |
| Communication to RTU | N/A | Yes | Yes | N/A | Yes |

 Selectable

RTU communication characteristics

| RTU (T300) | | IQI | IDI | DIDI | DE-I | DE-D |
|------------------------------------|---|-----|-----|------|-----------------------------|-----------------------------|
| HU250 | | | | | | |
| Upstream communication | <ul style="list-style-type: none"> 2 modem interface(s): 2G/3G, 3G/4G, RS232 1 RJ45 ETH for WAN not selectable, 2 Ethernet ports Protocols: IEC 60870-5-101/104, DNP3 serial and IP, Modbus Serial/TCP, IEC61850 | Yes | Yes | Yes | Available from main cubicle | Available from main cubicle |
| Local and downstream communication | <ul style="list-style-type: none"> Local HMI Wi-Fi interface for PC, smart phone, digital tablet | Yes | Yes | Yes | Available from main cubicle | Available from main cubicle |

Selectable

RTU switch controller characteristics

| RTU (T300) | | Function I | Function Q | Function D |
|-----------------------|-----------------|------------|------------|------------|
| SC150 | | | | |
| Protection functions | 50/51 - 50N/51N | Yes | N/A | N/A |
| | 59/59N | Yes | N/A | N/A |
| | 67/67N | Yes | N/A | N/A |
| | 27 | Yes | N/A | N/A |
| | 37 | Yes | N/A | N/A |
| | 47 | Yes | Option | N/A |
| Power measurement | - | Option | N/A | N/A |
| Power quality | - | Option | N/A | N/A |
| LV150 (Option) | | | | |
| LV protection | 59/59N | N/A | Yes | Yes |
| | 47 | N/A | Yes | Yes |
| | 27 | N/A | Yes | Yes |
| | Blown fuse | N/A | Yes | Yes |
| LV power quality | - | N/A | Option | Option |

Option

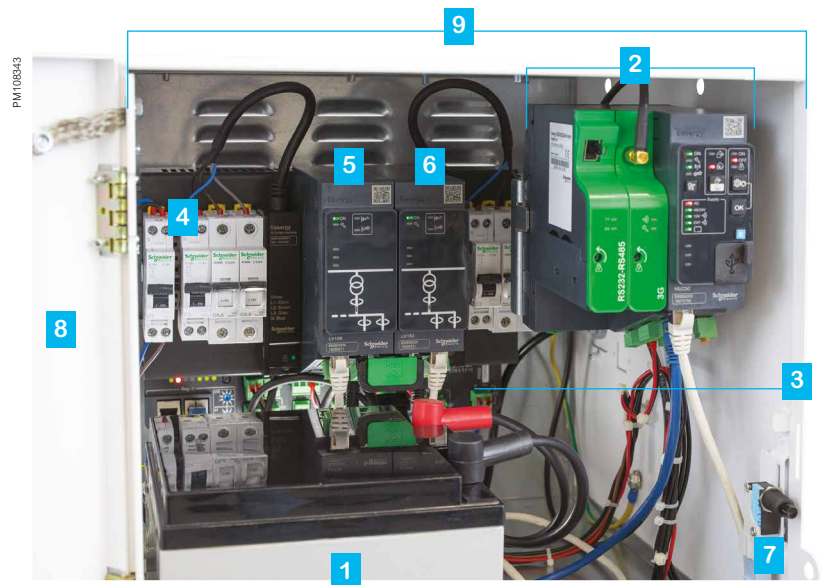
Condition monitoring and IoT characteristics

| Sensors | RM6 status | Substation Status | Description |
|--------------------------|--------------------------|-------------------|----------------------------------|
| Low gas pressure | Tank leakage | - | Tank leakage |
| RTU cabinet opening | RTU access | - | Intrusion |
| TH110 | Temperature monitoring | - | Thermal Monitoring |
| CL110 | Environmental monitoring | | Temperature, Humidity Monitoring |
| Flooding | Anti Flooding monitoring | | Flooding presence |
| Fuse blown(only for IQI) | Fuse Status | | Fuse Blown |

Option

LV cabinet description (all options)

Compact LV cabinet located on top of a Q or D function: IQI or IDI (on the first D function of a four-function cubicle DIDI).



1. Battery* and battery belt
2. T300 modules (HU250 and communication modules)
3. Power supply PS50
4. Main LV cabinet power switch
5. LV component parts first D function (switches, voltage adaptor, LV150) - option
6. LV component parts second D function (switches, voltage adaptor, LV150) - option
7. LV cabinet switch (door opening)
8. LV cabinet door
9. LV cabinet

* Battery Temperature

- Storage temperature -20 °C to +60 °C
- Charge temperature -15 °C to +50 °C
- Discharge temperature -20 °C to +60 °C

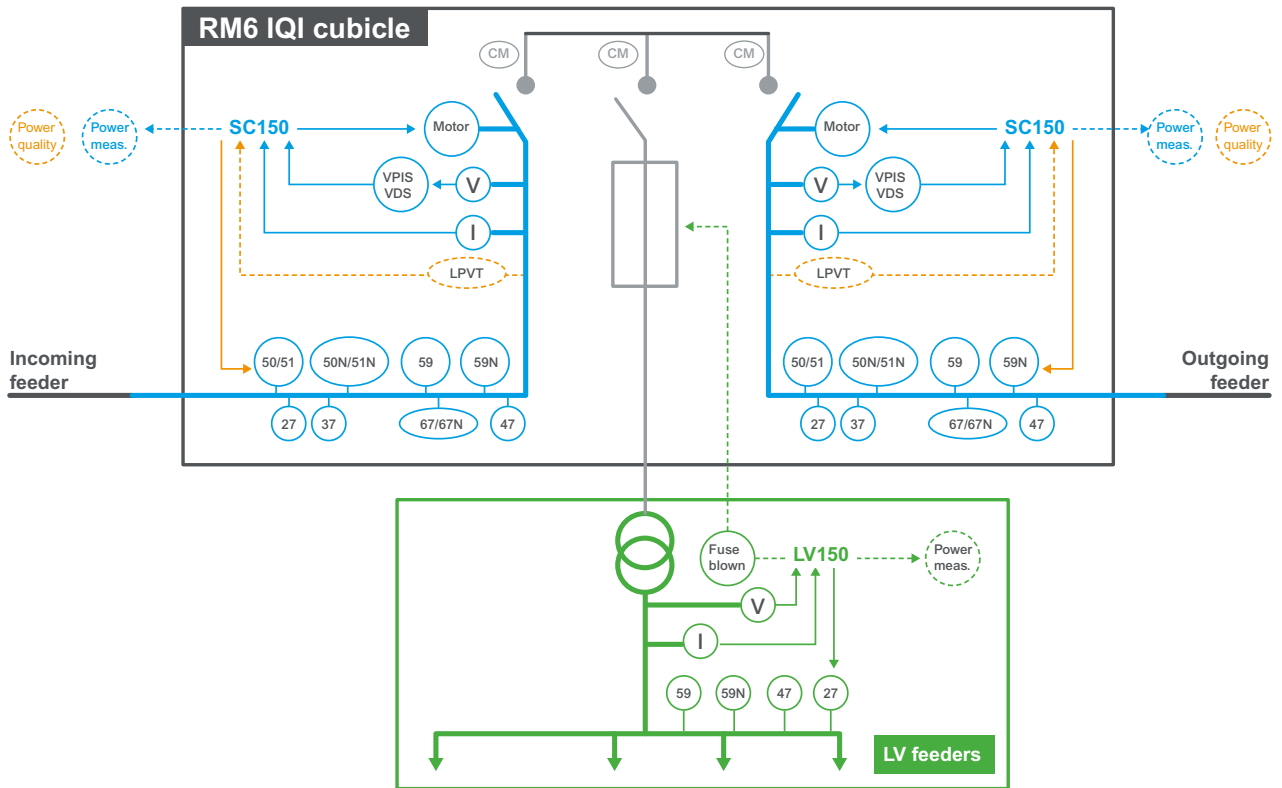
For other temperature ranges, please contact us

Connected characteristics

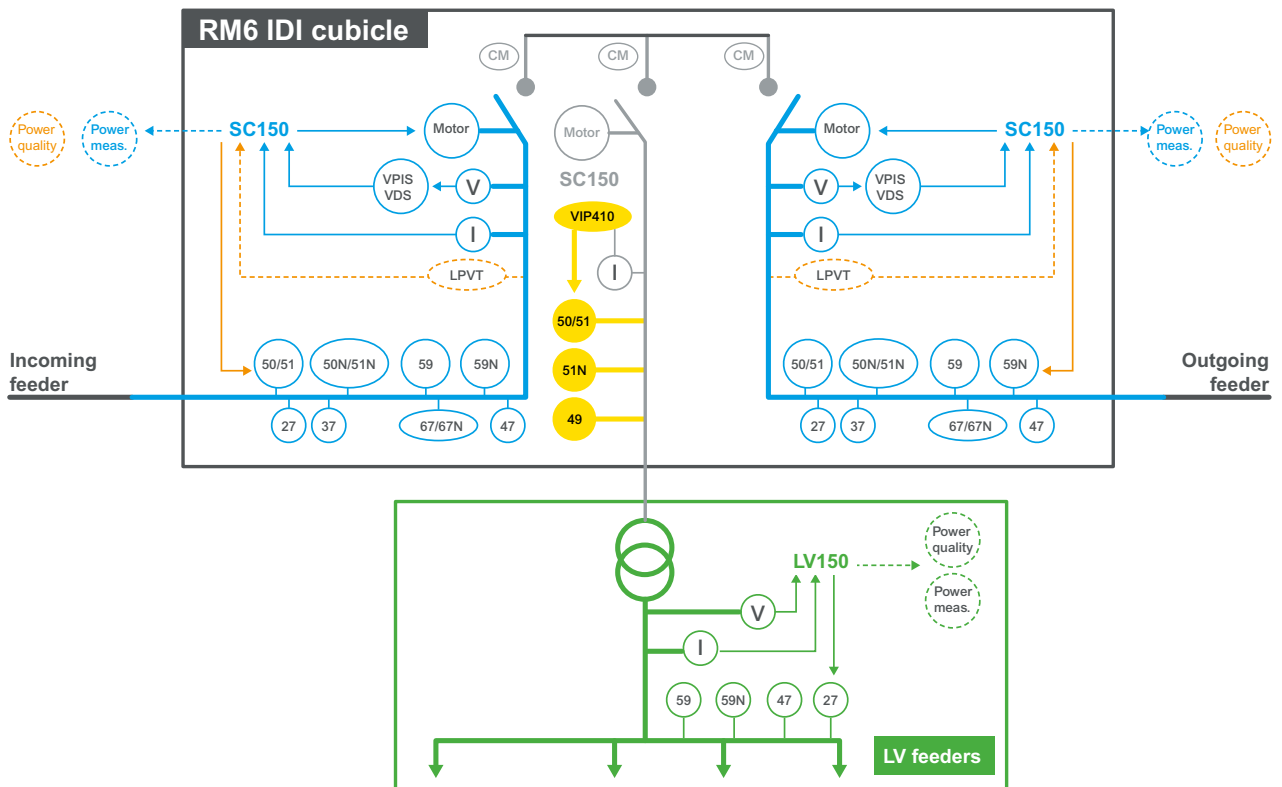
RM6 connected **Advanced**

Application schematics for IQI and IDI cubicles

DM107442



DM107443



Operating conditions and standards



RM6 performance meets the definition of a “sealed pressure system” as laid down in the IEC recommendations.

The RM6 tank is filled with SF6 at 0.23bar relative pressure and sealed for life after filling. Its tightness, which is systematically checked at the factory, gives the switchgear a high life expectancy.

The RM6 is designed in accordance with the following IEC standards used for general operation conditions for indoor switchgear:

IEC 62271-1 (common specifications for high voltage switchgear and controlgear)

Ambient temperature: class –25 °C indoor

- Lower than or equal to 40 °C without derating
- Lower than or equal to 35 °C over 24 hours on average without derating
- Greater than or equal to –25 °C: please contact us for details

Altitude:

- Lower than or equal to 1000 m
- Above 1000 m, and up to 2000 m with direct field connectors
- Greater than 2000 m: please contact us for further details

DE-Mt needs voltage derating after 1000 m.

Please consider altitude and temperature when selecting Q function fuses.

| Current derating in accordance with ambient temperature | | | | | | |
|---|--------|-----|-----|-----|-----|-----|
| | (°C) | 40 | 45 | 50 | 55 | 60 |
| Busbars 630 A | Ir (A) | 630 | 575 | 515 | 460 | 425 |
| Busbars 400 A | Ir (A) | 400 | 400 | 400 | 355 | |
| Functions: I, O, B (with bushing type C) | (A) | 630 | 575 | 515 | 460 | 425 |
| Function D (with bushing type B or C) | (A) | 200 | 200 | 200 | 200 | 200 |
| Function Q | (A) | (3) | (4) | (4) | (4) | (4) |

(3) Depends on fuse selection

(4) Please contact us

Operating conditions and standards



IEC 62271-200

(AC metal enclosed switchgear and controlgear for rated voltage above 1 kV and up to and including 52 kV)

- Switchgear classification: PM class (metallic partitioning)
- Loss of service continuity: LSC2 class
- Internal arc classification up to A-FLR 20kA 1 sec. (Please refer to section referring to internal arc performance for precise values)

Switch disconnectors

IEC 62271-103 (high voltage switches for rated voltage above 1 kV and less than 52 kV)

- Class M1/E3
- 100 CO cycles at rated current and 0.7 p.f.
- 1000 mechanical opening operations.

Circuit breakers: 200 A feeder or 630 A line protection

IEC 62271-100 (high voltage alternating current circuit breakers)

- Class M1/E2
 - 2000 mechanical opening operations,
 - O-3 min.-CO-3 min.-CO cycle at rated short circuit current

Other applicable standards

IEC 62271-100 (high voltage alternating current circuit breakers)

- Switch-fuse combinations: IEC 62271-105: alternating current switch-fuse combination.
- Earthing switch: IEC 62271-102: alternating current disconnectors and earthing switches.
- Electrical relays: IEC 60255.

RM6 Protection Index

- Tank with HV parts: IP67
- Front face + mechanism: IP3X
- Protection against mechanical impact: IK07

Functions/module description

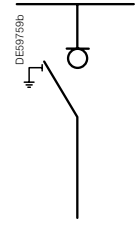
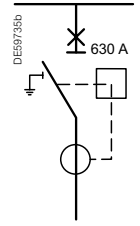
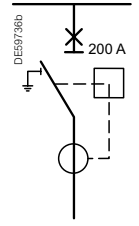
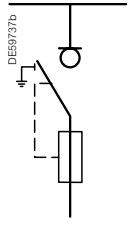
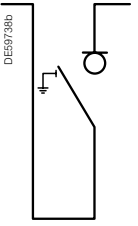
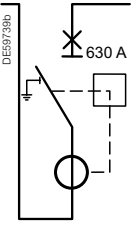
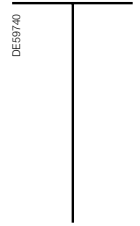
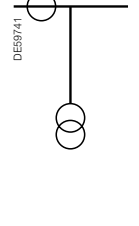
| | |
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| Choice of functional units | 44 |
| I, Ic functions | 45 |
| B, D, BC functions | 46 |
| Q function | 47 |
| O function | 48 |
| DE-Mt function | 49 |

A wide choice of RM6 functions

RM6 benefits from a wide choice of MV functions enabling:

- The connection, power supply and protection of transformers on a radial or open-ring network via 200 A circuit breakers with an independent protection chain, or via combined fuse-switches
- The protection of lines by a 630 A circuit breaker
- MV Metering of private MV/LV substations.

The RM6 functions are described in the table below.

| Function | Network switch | Line feeder | Transformer feeder | | Network coupling | | Cable connection | MV metering |
|----------------------|---|---|---|---|--|---|---|---|
| Functional unit | I | B | D | Q | IC | BC | O | Mt |
| Device | 630 A switch | 630 A circuit breaker | 200 A circuit breaker | Combined fuse-switch | Switch | 630 A circuit breaker | | |
| Single line diagrams |  |  |  |  |  |  |  |  |

PM107081



Scalability of RM6

To support the evolution of your distribution network, RM6 can be extended with a range of functions making it a truly scalable system.

The addition of one or more functional units can be carried out by simply adding modules that are connected to each other via the busbar using dedicated field bushings.

There are different types of extensible RM6:

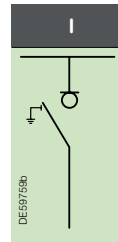
- Right-extensible (-RE type)
- Left-extensible (-LE type)
- Extensible on both sides (-DE type)
- Non-extensible (-NE type)

Functional overview

I, Ic functions

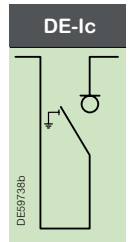
I function

- Network points with switch disconnector



DE-Ic function

- Bus coupler by switch disconnector



| | | | | | | | | | |
|--|-----------------------------------|---------|---|----------|----------|--------|-----|--------|-----|
| Rated voltage | Ur | kV | 12 | 17.5 | 24 | | | | |
| Rated frequency | Fr | Hz | 50 or 60 | 50 or 60 | 50 or 60 | | | | |
| Insulation level | | | | | | | | | |
| Industrial frequency 50Hz/1min | Phase-to-phase, phase-to-earth | Ud | kV rms | 28 | 38 | 50 | | | |
| | Across isolating distance | Ud | kV rms | 32 | 45 | 60 | | | |
| Lightning impulse withstand | Phase-to-phase, phase-to-earth | Up | kV peak | 75 | 95 | 125 | | | |
| | Across isolating distance | Up | kV peak | 85 | 110 | 145 | | | |
| Rated current | Ir | A | 630 | 630 | 400 | 400 | 630 | 630 | |
| Rated current busbars | Ir | A | 630 | 630 | 400 | 400 | 630 | 630 | |
| Rated peak current | Ip | kA | 62.5 | 52.5 | 31.25 | 40 | 40 | 50 | |
| Short-time withstand current | It | kA rms | 25 | 21 | 12.5 | 16 | 16 | 20 | |
| | tk | s | 1 | 1 or 3 | 1 | 1 | 1 | 1 or 3 | |
| Breaking capacity | Active load | Iload | A | 630 | 630 | 400 | 400 | 630 | 630 |
| | Earth fault | Ief1 | A | 320 | 320 | 320 | 320 | 320 | 320 |
| | Cable charging | Icc | A | 110 | 110 | 110 | 110 | 110 | 110 |
| Making capacity of switch and earthing switches | Ima | kA peak | 62.5 | 52.5 | 31.25 | 40 | 40 | 50 | |
| Bushing (1) | | Type | C | C | B or C | B or C | C | C | |
| Mechanical endurance | Switch disconnector | M1 | Number of openings | 1000 | 1000 | 1000 | | | |
| | Earthing switch | M0 | Number of openings | 1000 | 1000 | 1000 | | | |
| Electrical endurance | Switch disconnector | E3 | Number of CO at rated current | 100 | 100 | 100 | | | |
| | | | Number of short-circuit making operations | 5 | 5 | 5 | 5 | 5 | 2 |
| | Earthing switch | E2 | Number of CO at rated current | 100 | 100 | 100 | | | |
| | | | Number of short-circuit making operations | 5 | 5 | 5 | 5 | 5 | 2 |

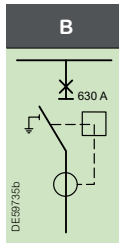
(1) No bushing for IC function

Functional overview

B, D, BC functions

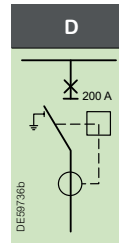
B function

- Network points with 630 A disconnecting circuit breaker (line protection feeder)



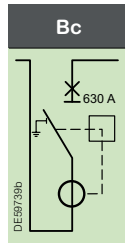
D function

- Transformer feeder 200 A with disconnecting circuit breaker



DE-Bc function

- Bus coupler by 630 A circuit breaker



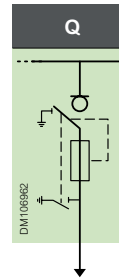
| | | | | | | | | | | | |
|--|-----------------------------------|---------|---|----------|----------|--------|-------|-----|-------|-----|-----|
| Rated voltage | Ur | kV | 12 | 17.5 | 24 | | | | | | |
| Rated frequency | Fr | Hz | 50 or 60 | 50 or 60 | 50 or 60 | | | | | | |
| Insulation level | | | | | | | | | | | |
| Industrial frequency 50Hz/1min | Phase-to-phase, phase-to-earth | Ud | kV rms | 28 | 38 | 50 | | | | | |
| | Across isolating distance Ud | | kV rms | 32 | 45 | 60 | | | | | |
| Lightning impulse withstand | Phase-to-phase, phase-to-earth | Up | kV peak | 75 | 95 | 125 | | | | | |
| | Across isolating distance Up | | kV peak | 85 | 110 | 145 | | | | | |
| Rated current | Ir | A | 200 | 630 | 200 | 630 | 200 | 630 | 200 | 200 | 200 |
| Rated current busbars | Ir | A | 630 | 630 | 630 | 630 | 630 | 400 | 400 | 630 | |
| Short-time withstand current | It | kA rms | 25 | 21(1) | 16 | 20 | 12.5 | 16 | 12.5 | | |
| | tk | s | 1 | 1 or 3 | 1 | 1 or 3 | 1 | 1 | 1 | | |
| No-load transformer breaking capacity | I3 | A | - | 16 | - | 16 | - | 16 | 16 | 16 | 16 |
| Short-circuit breaking capacity | Isc | kA | 25 | 21 | 16 | 20 | 12.5 | 16 | 12.5 | | |
| Making capacity | I _{ma} | kA peak | 62.5 | 52.5 | 40 | 50 | 31.25 | 40 | 31.25 | | |
| Operating sequence | O – 3min- CO – 3min - O | | | | | | | | | | |
| Bushing(2) | Type | C | C | C | C | A | BorC | A | | | |
| Mechanical endurance | Circuit breaker | M1 | Number of openings | 2000 | 2000 | 2000 | | | | | |
| | Earthing switch | M0 | Number of openings | 1000 | 1000 | 1000 | | | | | |
| Electrical endurance | Circuit breaker | E2 | Number of short-circuit breaking operations | 3 | 3 | 3 | | | | | |
| | | | Number of short-circuit making operations | 2 | 2 | 2 | | | | | |
| | Earthing switch | E2 | Number of CO at rated current | 100 | 100 | 100 | | | | | |
| | | | Number of short-circuit making operations | 5 | 5 | 5 | 2 | 5 | 5 | 5 | |

(1) 17.5 kA for DE-Bc

(2) No bushing for DE-Bc function

Q function

- Transformer feeder with fuse-switch protection



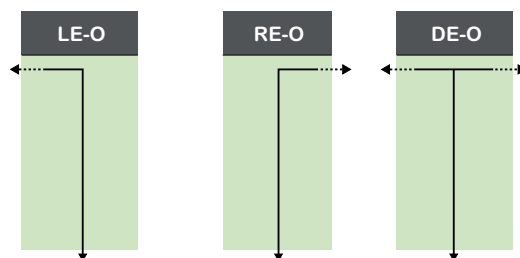
| | | | | | | | | | | |
|--|-----------------------------------|---------------------------|---|----------|----------|-------|--------|-----|-----|-----|
| Rated voltage | Ur | kV | 12 | 17.5 | 24 | | | | | |
| Rated frequency | Fr | Hz | 50 or 60 | 50 or 60 | 50 or 60 | | | | | |
| Insulation level | | | | | | | | | | |
| Industrial frequency 50Hz/1min | Phase-to-phase, phase-to-earth | Ud | kV rms | 28 | 38 | 50 | | | | |
| | | Across isolating distance | Ud | kV rms | 32 | 45 | 60 | | | |
| Lightning impulse withstand | Phase-to-phase, phase-to-earth | Up | kV peak | 75 | 95 | 125 | | | | |
| | | Across isolating distance | Up | kV peak | 85 | 110 | 145 | | | |
| Rated current | Ir | A | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Rated current busbars | Ir | A | 630 | 630 | 630 | 400 | 400 | 630 | 630 | 630 |
| Short-time withstand current | It | kA rms | 21 | 25 | 21 | 12.5 | 16 | 16 | 20 | 20 |
| | | | tk | s | 1 | 1 | 1 or 3 | 1 | 1 | 1 |
| No-load transformer breaking capacity | I3 | A | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Short-circuit breaking capacity | Isc | kA | 21 | 25 | 21 | 12.5 | 16 | 16 | 20 | 20 |
| Making capacity | I _{ma} | kA peak | 52.5 | 62.5 | 52.5 | 31.25 | 40 | 40 | 50 | 50 |
| Bushing | Type | | A | A | A | A | A | A | A | A |
| Mechanical endurance | Switch disconnecter | M1 | Number of openings | 1000 | 1000 | 1000 | | | | |
| | Earthing switch | M0 | Number of openings | 1000 | 1000 | 1000 | | | | |
| Electrical endurance | Switch disconnecter | E2 | Number of CO at rated current | 100 | 100 | 100 | | | | |
| | | | Number of short-circuit making operations | 5 | 5 | 5 | | | 2 | |
| | Earthing switch | E2 | Number of CO at rated current | 100 | 100 | 100 | | | | |
| | | | Number of short-circuit making operations | 5 | 5 | 5 | | | 2 | |

Functional overview

O function

O function

- Cable connection



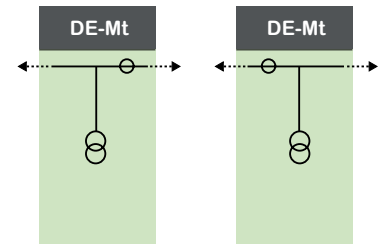
| | | | | | | | | | |
|-------------------------------------|----|--------------|-----|-----|------|------|-----|-----|--------|
| Rated voltage | Ur | kV | 12 | 12 | 17.5 | 17.5 | 24 | 24 | 24 |
| Rated current busbars | Ir | A | 630 | 630 | 630 | 630 | 630 | 630 | 630 |
| Rated current | Ir | A | 200 | 630 | 200 | 630 | 200 | 630 | 630 |
| Short-time withstand current | Ik | kA rms | 25 | 25 | 21 | 21 | 16 | 16 | 20 |
| | tk | Duration (s) | 1 | 1 | 3 | 3 | 1 | 1 | 1 or 3 |
| Bushing | | | C | C | C | C | C | C | C |

Functional overview

DE-Mt function

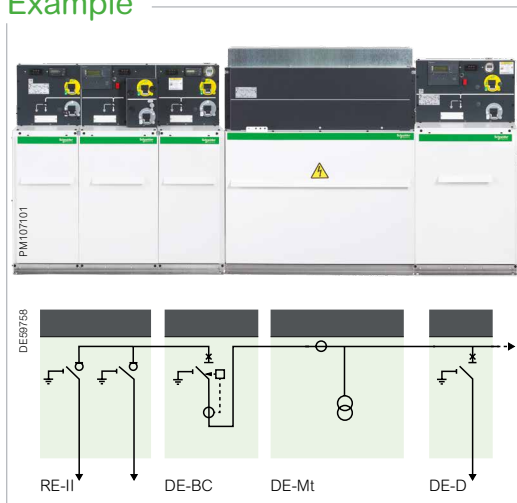
DE-Mt function

- Air-insulating metering panel for MV power billing
- Internal Arc withstand
- Connected by busbar to RM6 functions



| | | | | | |
|---------------------------------------|----|--------------|---------|---------|----------|
| Rated voltage | Ur | kV | 12 | 17.5 | 24 |
| Rated current busbars | Ir | A | 630 | 630 | 630 |
| Rated current | Ir | A | 630 | 630 | 630 |
| Short-time withstand current | Ik | kA rms | 25 | 21 | 16 or 20 |
| | tk | Duration (s) | 1 | 1 or 3 | 1 or 3 |
| Cubicle internal arc withstand | | | 16kA 1s | 16kA 1s | 16kA 1s |

Example



Voltage transformers

Schneider Electric models or DIN 42600 type section 9.
2 phase-phase VT, 2 phase-earth VT, 3 phase-earth VT.
Optional fuse protection.

Current transformers

Schneider Electric models or DIN 42600 type section 8.
2 CT or 3 CT. CTs can be right or left-fitted.

A clear separation between MV and LV

All measures are taken to avoid operating on the MV compartment.
The secondary CT and VTs are cabled to the customer terminal in an LV compartment to enable:

- Connection to a remote power meter (in another room)
- Or connection to the LV cabinet mounted on the LV compartment (option).

Option: an LV cabinet

- Placed on top of the LV compartment
- Allows installation of active or reactive power meters, of all auxiliaries to monitor current, voltage and consumed power
- Cabinet door key locks available (Type R7)

Components and accessories

| | |
|----------------------------------|----|
| Components list | 52 |
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| Operating handles | 55 |
| Key locking | 56 |
| Cable compartment | 57 |
| Protection relays | 58 |
| Fuses | 65 |
| Fault passage indicators | 66 |
| Voltage indicators and relays | 70 |
| Other components | 72 |
| Easergy Remote Terminal Units | 73 |
| Automatic transfer system | 76 |

| Function type | | I | B | D | Q | O | Ic | Bc | DE-Mt |
|---|--|---|---|---|---|---|----|----|-------|
| Motorization for remote operation | Motorization including auxiliary contacts (LSBw 2 NO-2 NC and ESw 1 O/C) | • | | | | | • | | (2) |
| | Motorization including shunt trip coil and auxiliary contacts circuit breaker (CB 2 NO – 2 NC and ESw 1 O/C) | | • | • | | | | • | (2) |
| | Motorization including auxiliary contact fuse-switch combinations (LBSw 2 NO – 2 NC) | | | | • | | | | (1) |
| Auxiliary contacts alone (this option is included in remote operation option) | For main switch position indication, LSBw 2 NO – 2 NC and ESw 1 O/C | • | | | | | • | | (1) |
| | For circuit breaker position indication, CB 2 NO – 2 NC and ESw 1 O/C | | • | • | | | | • | (1) |
| | For fuse-switch combinations position indication, LBSw 2 NO – 2 NC | | | | • | | | | (1) |
| Front door of cable connection compartment | Bolted - Removable with ESw interlocking - Removable with ESw interlocking and LSBw interlocking | • | • | • | | | • | • | (1) |
| Self-powered fault passage and load current indicators | Flair 21D - Flair 22D - Flair 23D - Flair 23DM - Amp 21D | • | | | | | | | (1) |
| Key locking devices | Type R1 - Type R2 | • | • | | | | • | | (1) |
| | Type R6 - Type R7 - Type R8 | | | • | • | | | • | (1) |
| Shunt trip coil for external tripping | 24 VDC - 48/60 VDC - 120 VAC - 110/125 VDC – 220 VAC - 220 VDC/380 VAC | | • | • | • | | | • | (1) |
| Undervoltage coil | 24 VDC - 48 VDC - 125 VDC - 110-230 VAC | | • | • | • | | | • | (1) |
| Protection relay for CB transformer protection | VIP 40 | | | • | | | | | (1) |
| | VIP 45 | | | • | | | | | (1) |
| | VIP 400 | | • | • | | | | • | (1) |
| | VIP 410 | | • | • | | | | • | (1) |
| Voltage detection | VPIS | • | • | • | • | • | • | • | (1) |
| | VDS | • | • | • | • | • | • | • | (1) |
| Forbidden closing under fault 1NC | | | • | • | | | | • | (1) |
| Auxiliary contact D or B tripping | | | • | • | | | | • | (1) |
| Auxiliary contact for fuse blown | | | | | • | | | | (1) |
| With or without earthing switch | | | | | | | • | • | (1) |
| Arc Killer: RM6 arc short-circuiting device ⁽²⁾ | | • | | | | | | | (1) |
| Screened Voltage Transformers (phase-to-phase or phase-to-earth) | | • | | | | | | | (1) |

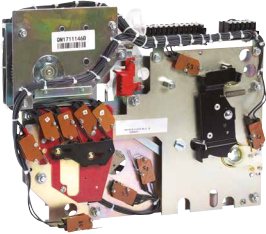
(1) See specific page for DE-Mt

(2) Available for non extensible cubicles

Motorization

Switch, circuit breaker and fuse-switch combination

PM107102



PM107103



Motor mechanism

Switch operating mechanism

- The switch operating mechanism includes a space that is reserved for the installation of a geared motor. This can be installed at the factory, but it can also be installed on site, by the customer, without de-energizing the unit, and without dismantling the operating mechanism
- An electrical interlocking assembly prohibits any false operations

Once motorized, the RM6 integrates perfectly into a telecontrol system.

Circuit breaker and fuse-switch combination operating mechanism

- The circuit breaker or fuse protection functions can be motorized. The motorization can be installed at the factory, but it can also be installed on site, by the customer, without de-energizing the unit, and without dismantling the operating mechanism
- Electrical locking prohibits any false operations. This functionality is an option for circuit breakers and is default for fuse-switch function. Once motorized, the RM6 integrates perfectly into a telecontrol system. This option becomes particularly useful for protecting a secondary ring, with supervision from a telecontrol system

Unit applications

| Operating mechanism types | CIT | | C1 | | C1 | |
|---------------------------|------------|------------|-----------------|-------------|-------------------------|-------------|
| | Switch | | Circuit breaker | | Fuse switch combination | |
| Main circuit switch | Closing | Opening | Closing | Opening | Closing | Opening |
| Manual operating mode | Hand lever | Hand lever | Hand lever | Push button | Hand lever | Push button |
| Remote control option | Motor | Motor | Motor | Coil | Motor | Coil |
| Operating time | 1 to 2 s | 1 to 2 s | max. 13 s | 45 to 75 ms | 11 to 13 s | 60 to 85 ms |
| Earthing switch | Closing | Opening | Closing | Opening | Closing | Opening |
| Manual operating mode | Hand lever | Hand lever | Hand lever | Hand lever | Hand lever | Hand lever |

Motor option for switch-units and circuit breakers

The operating mechanism I, D, B and Q functions may be motorized.

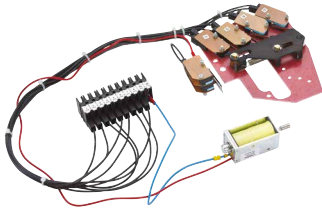
| | | DCw | | | | | AC (50 Hz) * | | |
|-----------------|-------|-----|----|----|-----|-----|--------------|-----|-----|
| Un power supply | (V)** | 24 | 48 | 60 | 110 | 125 | 220 | 120 | 230 |
| Power | (W) | 240 | | | | | | | |
| | (VA) | | | | | | 280 | | |

(*) Please contact us for other frequencies

(**) A minimum 20 A power supply is required when starting the motor

Tripping and position indication

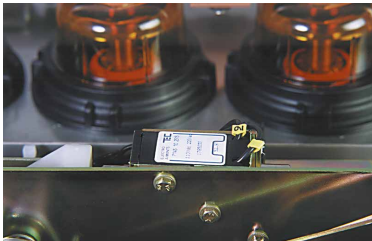
PM107104



Auxiliary contacts

- Each switch or circuit breaker can be fitted with 4 auxiliary contacts with the following positions: 2 NO and 2 NC
- The earthing switch (except the fuse-switch combination) can be fitted with 1 auxiliary contact with the following position: (opening/closing)
- Each circuit breaker can receive 1 auxiliary contact for tripping indication (protection by VIP)
- Each fuse-switch combination can be fitted with 1 blown fuse indication auxiliary contact

PM107105



Opening release

Each circuit breaker or fuse-switch combination can be fitted with a switch-on opening release (shunt trip).

Opening release option for each circuit breaker or fuse-switch combination

| | DC | | | | | | AC (50 Hz)* | |
|---------------------|-----|-----|-----|-----|-----|-----|----------------|-----|
| Un power supply (V) | 24 | 48 | 60 | 110 | 125 | 220 | 120 | 230 |
| Power (W) | 200 | 250 | 250 | 300 | 300 | 300 | | |
| | | | | | | | 400 | 750 |
| Response time (ms) | 35 | | | | | | 35 | |

(*) Please contact us for other frequencies

PM107106



Undervoltage coil

Available for the circuit breaker function and the combined fuse-switch, this trip unit causes opening when its supply voltage drops below a value that is less than 35% of its rated voltage.

The time delay can be equipped with an undervoltage coil with a 0.5 to 3 s setting.

| | DC | | | | | | AC (50 Hz)* | |
|----------------------|---------------------|----|----|-----|-----|-----|----------------|-----|
| Un power supply (V) | 24 | 48 | 60 | 110 | 125 | 220 | 120 | 230 |
| Power | | | | | | | | |
| Excitation (W or VA) | 200 (during 200 ms) | | | | | | 200 | |
| Latched (W or VA) | 4.5 | | | | | | 4.5 | |
| Threshold | | | | | | | | |
| Opening | 0.35 to 0.7 Un | | | | | | 0.35 to 0.7 | |
| Closing | 0.85 Un | | | | | | 0.85 | |

(*) Please contact us for other frequencies

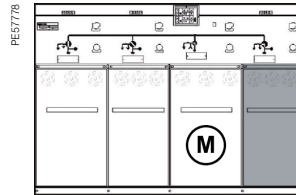
There are 3 types of operating handle for each RM6 cubicle combination:

- Standard
- Long
- Super long



The long operating handle is required:

- For RM6 2, 3, 4 or 5 functions, when the circuit breaker is motorized and is on the left side of a switch function



(M): The circuit breaker function is motorized

- For the extensible RM6 1 function, when the circuit breaker is motorized and is on the left side of a fuse-switch function



(M): The circuit breaker function is motorized

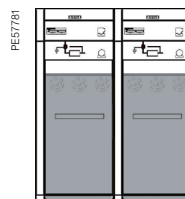
The super long operating handle is required:

- For the extensible RM6 1 function, when the circuit breaker is manual and is on the left side of a fuse-switch function



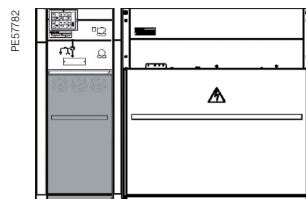
Functional unit marked in orange needs a long or super long handle to be operated.

- For the extensible RM6 1 function, when two fuse-switch functions are connected



Functional unit marked in orange needs a long or super long handle to be operated.

- For DE-Q, DE-D, DE-B, DE-Bc, when the metering cubicle DE-Mt is on its right side



Functional unit marked in orange needs a long or super long handle to be operated.

For all other possible cubicle combinations, the standard operating handle is enough to operate the RM6 switchgears.

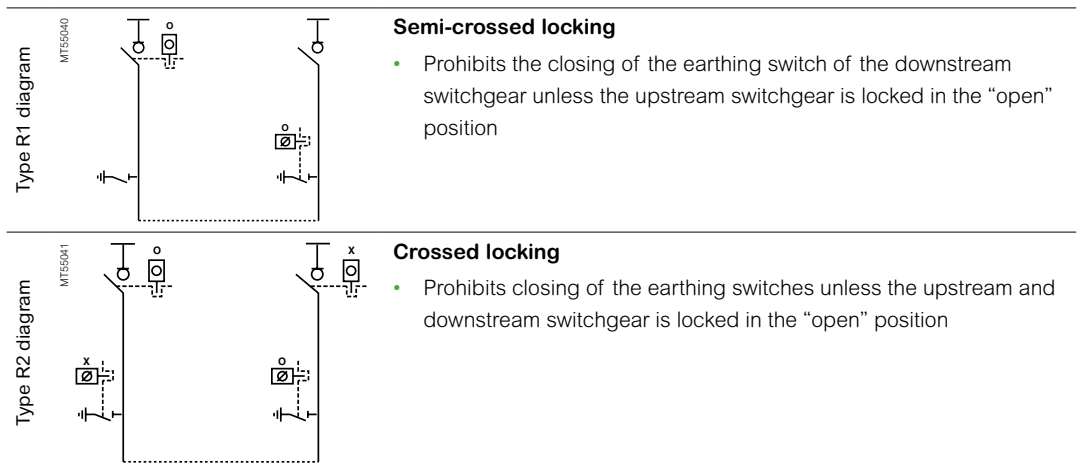
Key locking

RM107108

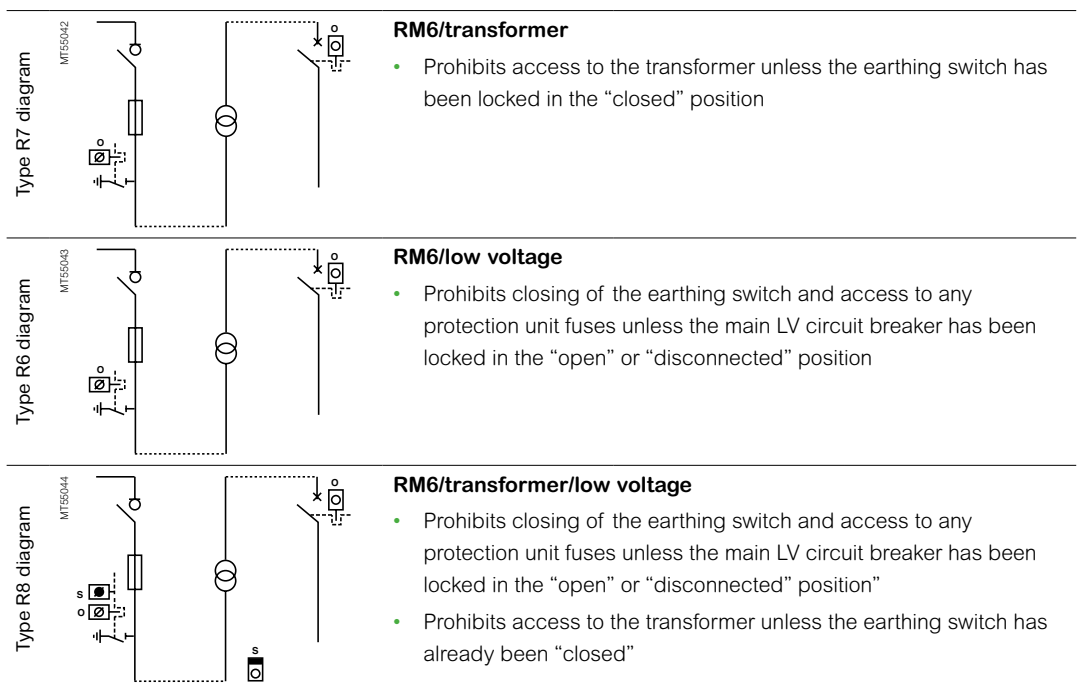


As an additional safety feature, the RM6 can be fitted with keys to lock operations. For instance the RM6 remote control can be disabled when the switchgear is locked in the "open" position. Keys and locks are engraved with specific markings (O, S and X) to help understand the diagrams.

On network switches or a 630 A circuit breaker feeder



On transformer feeders



: no key
 : free key
 : captive key



Options for cable compartment

Standard equipment:

- A closing panel
- Cable binding
- Earthing cable connection

Optional equipment:

- Internal arc rated cable compartment (20 kA AFLR)
- ESw interlocking to prohibit access to the connection compartment when the earthing switch is open
- LBSw or CB interlocking to prohibit closing the switch or circuit breaker when the connection compartment panel is open
- Deeper cable compartments to accommodate a lightning arrester *
- Cable compartment doors with window *

** Deeper cable compartments & cable compartments with windows are not rated for Internal arc*

Protection relays

VIP 40, 45, 400, 410 selection guide



VIP series

Integrated self-powered protection optimized for RM6.

Transformer protection:

- VIP 40
- VIP 45

General protection:

- VIP 400
- VIP 410

| | | VIP | | | | |
|--|---|-----------|-------|-------|---------|----------------|
| | | ANSI code | 40 | 45 | 400 | 410 |
| Protection functions | | | | | | |
| Phase overcurrent | | 50-51 | ● | ● | ● | ● |
| Earth fault phase | Standard (sum of current method) | 51N | | ● | ● | ● |
| | High sensitivity (earth fault CTs) | | | | | ● |
| Thermal overload | | 49 | | | ● | ● |
| Cold load pick-up | | | | | | ● |
| Control and monitoring functions | | | | | | |
| CB tripping | | | Mitop | Mitop | Mitop | Mitop |
| Trip circuit supervision | | 74TC | ● | ● | ● | ● |
| Time-tagged events | Local on display (5 last trips) | | | | ● | ● |
| External tripping input | | | | | | ● |
| Cumulative breaking current, number of trip orders | | | | | | ● |
| Overcurrent and breaking profile | Number of phase and earth trips (2) | | | | ● | ● |
| Serial communication port | Modbus RS485 | | | | | ● |
| Logic relay inputs (except TCS) used for: | | | | | | 1 |
| | External tripping | | | | | 1 |
| Logic relay outputs used for: | | | | | | 3 |
| | Watchdog | | | | | By modbus |
| | Customized output via setting | | | | | 3 |
| Measurement functions | | | | | | |
| Phase current | | | ● | ● | ● | ● |
| Earth current | | | | ● | ● | ● |
| Phase peak demand current | | | ● | ● | ● | ● |
| Phase peak demand current | | | | | | ● |
| Power supply | | | | | | |
| Type of supply | Self-powered or auxiliary | | Self | Self | Self | DUAL Power (1) |
| | Minimum 3 phase load currents to activate the VIP | | 4 A | 4 A | 7 A (3) | |

(1) The protection is self-powered. Auxiliary power is only used for communication and very sensitive earth fault protection.

(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: < 630 A, < 10 kA, < 20 kA, > 20 kA.

(3) 14 A with 630 A CBs

● Function available

Protection relays

VIP 40, VIP 45

Schneider Electric recommends circuit breakers for transformer protection instead of fuses. They offer the following advantages:

- Easy to set
- Better discrimination with other MV and LV protection devices
- Improved protection performance for inrush currents, overloads, low magnitude phase faults and earth faults
- Greater harsh climate withstand
- Reduced maintenance and spare parts
- Availability of additional functions such as measurement, diagnostics and remote monitoring
- And with the recent development of low cost circuit breakers and self-powered relays, life time costs are now equivalent to those of traditional MV switch fuse solutions

Applications

- Entry level MV/LV transformer protection
- Dependent-time phase overcurrent tripping curve dedicated to MV/LV transformer protection
- Definite-time earth fault protection
- Phase current and peak demand current measurement

Main features

Self-powered operation

- Energized by the CTs: no auxiliary power needed

Complete pre-tested protection system

- Functional block ready to be integrated

Phase overcurrent protection

- Tripping curve optimized for MV/LV transformer protection
- Protection against overloads and secondary and primary short-circuits
- Second harmonic restraint filtering
- Only one setting ($I >$)
- Discrimination with LV circuit breakers or LV fuses
- Compliant with TFL (Time Fuse Link) operating criteria

Earth fault protection

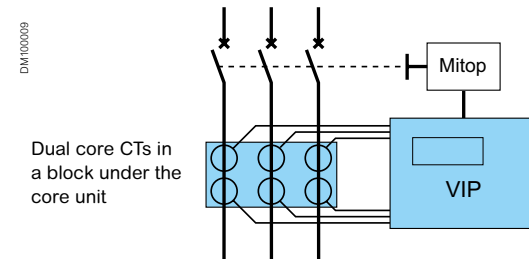
- Definite-time tripping curve
- Settings: $I_0 >$ (phase current sum method) and $I_0 >$
- Second harmonic restraint element

Measurement

- Load current on each phase
- Peak demand current

Front panel and settings

- Current measurements displayed on a 3-digit LCD
- Settings with 3 dials ($I >$, $I_0 >$, $I_0 >$) protected by a lead-sealable cover
- Trip indication powered by a dedicated integrated battery with pushbutton or automatic reset



Dual core CTs: for power and for measurement

Protection relays

VIP 40, VIP 45

Other features

- Complete pre-tested solution that eliminates complicated CT selection
- Complies with MV protection relay standard IEC 60255
- No PC or specific tool required for setting or commissioning
- Maximum setting possibilities consistent with circuit breaker features
- Self-powered by dual core CTs: CUa
- Environment: -40 °C/+70 °C

Rated protection current setting selection by VIP 40 and VIP 45

| Operating voltage (kV) | Transformer rating (kVA) | | | | | | | | | | | | | | | | | | | | |
|------------------------|--------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|
| | 50 | 75 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | 630 | 800 | 1000 | 1250 | 1600 | 2000 | 2500 | 3150 | 4000 | 5000 | 6300 |
| 3 | 10 | 15 | 20 | 25 | 36 | 45 | 55 | 68 | 80 | 115 | 140 | 170 | 200 | | | | | | | | |
| 3.3 | 10 | 15 | 18 | 22 | 28 | 36 | 45 | 56 | 70 | 90 | 115 | 140 | 200 | | | | | | | | |
| 4.2 | 8 | 12 | 15 | 18 | 22 | 28 | 36 | 45 | 55 | 70 | 90 | 115 | 140 | 200 | | | | | | | |
| 5.5 | 6 | 8 | 12 | 15 | 18 | 22 | 28 | 36 | 45 | 55 | 68 | 90 | 115 | 140 | 170 | | | | | | |
| 6 | 5 | 8 | 10 | 12 | 18 | 20 | 25 | 36 | 45 | 55 | 68 | 80 | 115 | 140 | 170 | 200 | | | | | |
| 6.6 | 5 | 8 | 10 | 12 | 15 | 18 | 22 | 28 | 36 | 45 | 56 | 70 | 90 | 115 | 140 | 200 | | | | | |
| 10 | 5* | 5 | 8 | 8 | 10 | 12 | 15 | 20 | 25 | 30 | 37 | 55 | 68 | 80 | 115 | 140 | 170 | 200 | | | |
| 11 | 5* | 5* | 6 | 8 | 10 | 12 | 15 | 18 | 22 | 28 | 36 | 45 | 55 | 68 | 90 | 115 | 140 | 170 | | | |
| 13.8 | 5* | 5* | 5 | 6 | 8 | 10 | 12 | 15 | 18 | 22 | 28 | 36 | 45 | 55 | 68 | 90 | 115 | 140 | 170 | | |
| 15 | 5* | 5* | 5 | 6 | 8 | 8 | 10 | 15 | 18 | 20 | 25 | 36 | 45 | 55 | 68 | 80 | 115 | 140 | 170 | 200 | |
| 20 | 5* | 5* | 5* | 5* | 6 | 6 | 8 | 10 | 12 | 15 | 20 | 25 | 30 | 37 | 55 | 68 | 80 | 115 | 140 | 170 | 200 |
| 22 | 5* | 5* | 5* | 5* | 5 | 6 | 8 | 10 | 12 | 15 | 18 | 22 | 28 | 36 | 45 | 55 | 68 | 90 | 115 | 140 | 170 |

* Short-circuit protection, no over-load protection

Please contact us for the protection required for low earth faults

Protection relays

VIP 400, VIP410

VIP 400 is a self-powered relay energized by the CTs; it does not require an auxiliary power supply to operate.

VIP 410 is a dual powered relay offering self-powered functions and additional functions powered by an AC or DC auxiliary supply.

Applications

- MV distribution substation incomer or feeder protection relay
- MV/LV transformer protection.

Main features

VIP 400: Self-powered protection relay

This version is energized by the current transformers (CTs). It does not require an auxiliary power supply to operate.

- Overcurrent and earth fault protection
- Thermal overload protection
- Current measurement functions

Other features

- Designed for RM6 circuit breakers
- Complete pre-tested solution that eliminates complicated CT selection
- Complies with MV protection relay standard IEC 60255
- No PC or specific tool required for setting or commissioning
- Self-powered by dual core CTs
- Environment: -40 °C/+70 °C

VIP 410: Dual powered protection relay

- Offers the same self-powered functions as the VIP 400
- In addition, the VIP 410 has an AC or DC auxiliary supply to power certain additional functions that cannot be self-powered:
 - sensitive earth fault protection
 - external tripping input
 - cold load pick-up
 - communication (Modbus RS485 port)
 - signaling
- If the auxiliary power fails during an MV short-circuit, the protection functions are maintained.

Ready for smart grids

Dual supply for communication with:

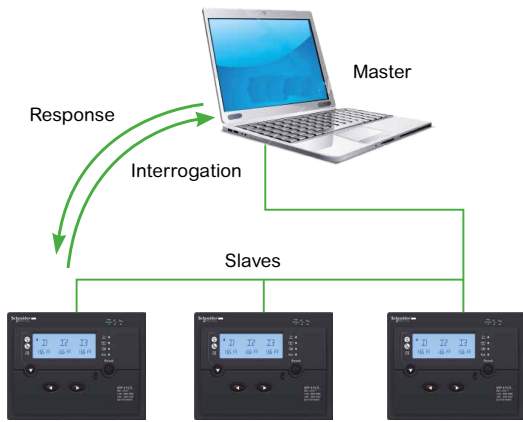
- DMS and RTUs
- Remote alarms
- Time stamped events
- Measurements of current, load history, overcurrent and breaking profile



Protection relays

VIP 400, VIP410

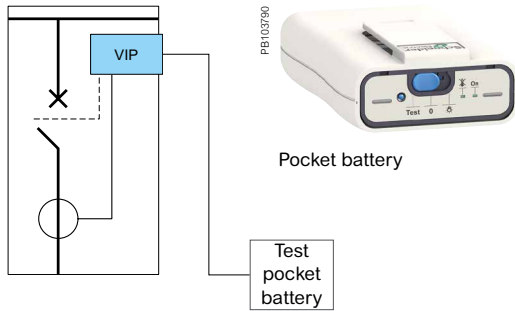
DM10655



Dedicated to intelligent MV loops with automation

- Remote configuration
- Setting selectable groups according to the configuration of the MV loop
- Remote asset management
- Plug and play system with Easergy RTUs (R200) to integrate all IEC 60870-104, DNP3, IEC 61850 protocols, and remote web pages.

DM10040EN



Pocket battery for VIP4x range

This unit is used to power the VIP 40, VIP 45, VIP 400 and VIP 410 units, making it possible to operate and test the protection system. It can also be used to power Schneider Electric LV circuit breakers.

Protection relays

Transformer protection by circuit breaker VIP integrated system

The VIP series is an integrated protection system:

- Dedicated sensors located under the core unit provide protection and measurement outputs
- Optional additional earth fault sensors are available
- Actuators are low power tripping coils (Mitop)

High sensitivity sensors

VIP integrated protection system

The VIP integrated protection system is composed of sensors, a processing unit and an actuator, designed together to provide the highest level of reliability and sensitivity from 0.2 A to 20 In for VIP 400, VIP 410 and 5 A to 20 In for VIP 40 and VIP 45.

DM100035



VIP4x Current Transformer

Sensors

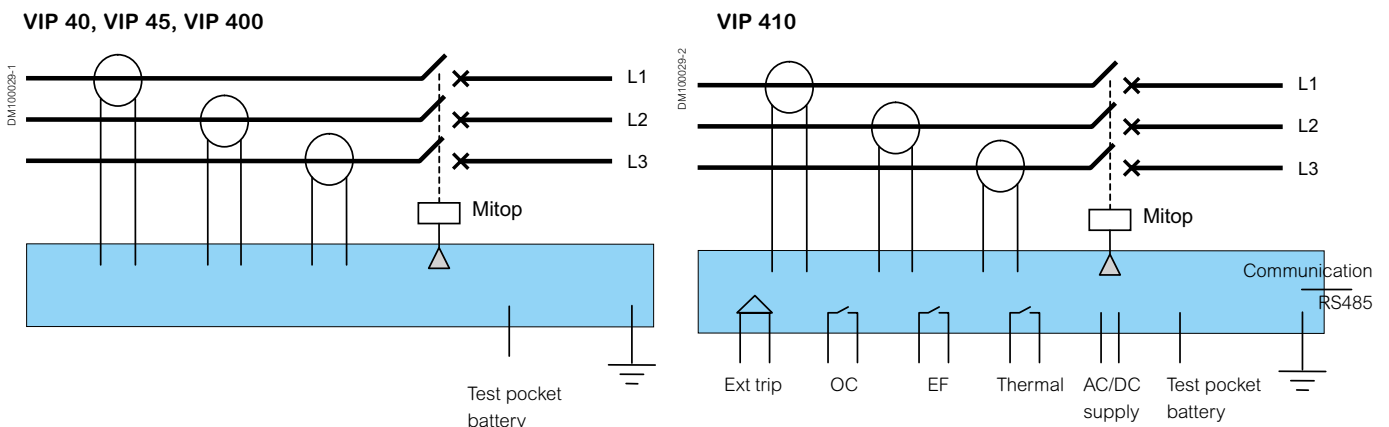
The sensors are made up of one block of three CTs with rated and insulation voltages of 0.72 kV/3 kV - 1 min, providing both measurement and power outputs.

- The measurement sensor is based on Low Power Current Transformer (LPCT) technology as defined by standard IEC 60044-8, ensuring excellent accuracy:
 - 5P30 for protection
 - class 1 for measurement.
- The power supply winding ensures calibrated self-powering of the relay even for currents of just a few Amperes
 - e.g. 7 A is sufficient to operate the VIP 400 with a 200 A circuit breaker, up to its saturation level
 - e.g. 4 A is used to operate the VIP 40 up to its saturation level.
- Optionally, the VIP 410 can be connected to an earth fault current transformer (a single zero-sequence CT) dedicated to sensitive earth fault protection with a low threshold down to 0.2A.

Actuators

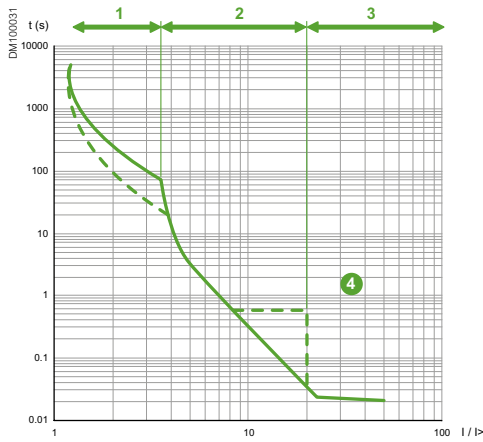
- The actuator is a dedicated low power tripping coil (Mitop) specifically designed to operate with the sensors and the processing unit with minimum energy.
- The integrity of the Mitop circuit is continuously supervised (Trip Circuit Supervision function).

Connection diagrams



Protection relays

VIP40, VIP45, VIP400 and VIP410 tripping curves

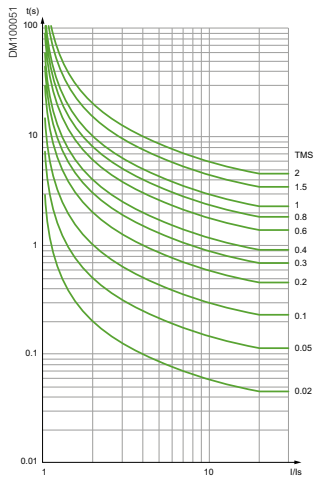


VIP40, VIP45

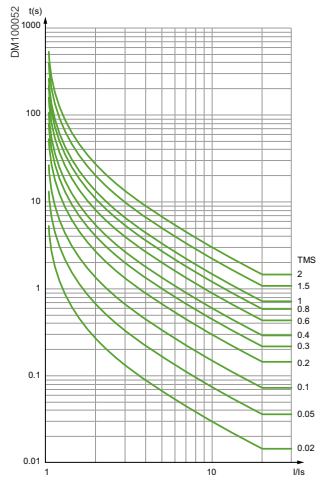
Phase overcurrent protection (ANSI 50-51).

1. Overload
2. Secondary short-circuit
3. Primary short-circuit
4. Activation of discrimination with a Low Voltage circuit breaker

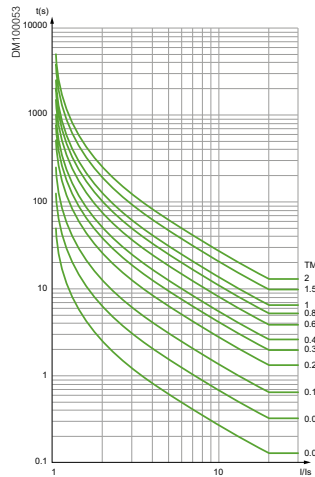
VIP400, VIP410



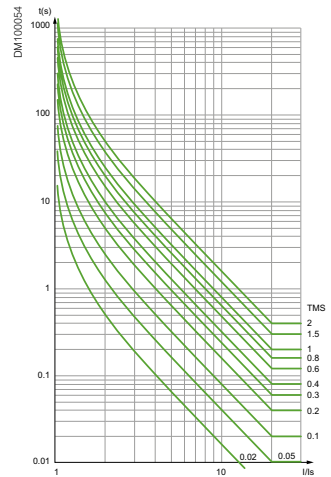
IEC Standard Inverse Time Curve (IEC/SIT or IEC/A)



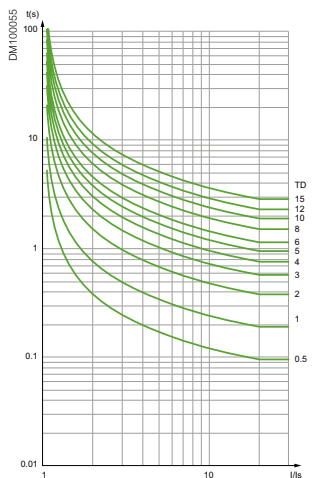
IEC Very Inverse Time Curve (IEC/VIT or IEC/B)



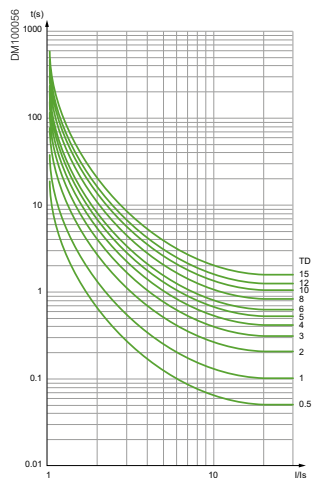
IEC Long Time Inverse Curve (IEC/LTI)



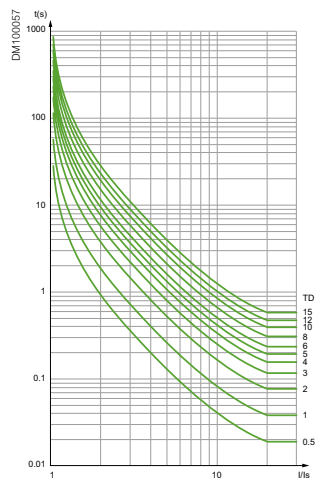
IEC Extremely Inverse Time Curve (IEC/EIT or IEC/C)



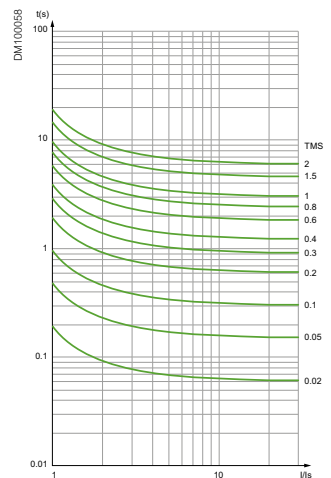
IEEE Moderately Inverse Curve (IEEE/MI or IEC/D)



IEEE Very Inverse Curve (IEEE/VI or IEC/E)



IEEE Extremely Inverse Curve (IEEE/EI or IEC/F)



RI Curve

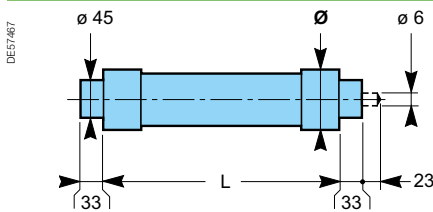
Note: Please contact us for the required protection low earth faults

Fuse replacement

IEC recommendations stipulate that when a fuse has blown, all three fuses must be replaced.

Fuses dimensions

Fusarc CF



| Ur (kV) | Ir (A) | L (mm) | Ø (mm) | Mass (kg) |
|---------|------------|--------|--------|-----------|
| 12 | 10 to 25 | 292 | 50.5 | 1.2 |
| | 31.5 to 40 | 292 | 55 | 1.8 |
| | 50 to 100 | 292 | 76 | 3.2 |
| | 125 | 442 | 86 | 5 |
| 24 | 10 to 25 | 442 | 50.5 | 1.7 |
| | 31.5 to 40 | 442 | 55 | 2.6 |
| | 50 to 80 | 442 | 76 | 4.5 |
| | 100 | 442 | 86 | 5.7 |

Characteristics

Ratings for fuses for transformer protection depend, among other things, on the following criteria:

- service voltage
- transformer rating
- thermal dissipation of the fuses
- fuse technology (manufacturer).

Type of fuse that may be installed:

- Fusarc CF type: in accordance with the IEC 60282-1 dimensional standard, with or without striker.

For example, using the selection table below, for the protection of a 400 kVA transformer at 10 kV, Fusarc CF fuses with a rating of 50 A are used.

Correct operation of the RM6 is not guaranteed when using fuses from other manufacturers.

Selection table

(Rating in A, no overload, – 25 °C < q < 40 °C)

Fuse type Fusarc CF and SIBA (1)

(Typical example, IEC 60282-1 standard, IEC 62271-105 (to replace IEC 60420) and DIN 43625 standard)

| Operating voltage (kV) | Transformer rating (kVA) | | | | | | | | | | | | | | | | Rated voltage (kV) |
|------------------------|--------------------------|------|-----|-----|------|-----|------|------|---------|-------------|-------------|-------------|-------------|-------------|---------|---------|--------------------|
| | 50 | 75 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | 630 | 800 | 1000 | 1250 | 1600 | 2000 | |
| 3 | 20 | 31.5 | 40 | 50 | 50 | 63 | 80 | 100 | 125 (2) | 160 (1) (2) | | | | | | | 12 |
| 3.3 | 20 | 25 | 40 | 40 | 40 | 63 | 80 | 80 | 125 (2) | 125 (2) | 160 (1) (2) | | | | | | |
| 4.2 | 20 | 25 | 25 | 40 | 50 | 50 | 63.5 | 80 | 80 | 100 | 125 (2) | 160 (1) (2) | | | | | |
| 5.5 | 16 | 20 | 25 | 25 | 40 | 40 | 50 | 63 | 80 | 80 | 100 | 125 (2) | 160 (1) (2) | | | | |
| 6 | 16 | 20 | 25 | 25 | 31.5 | 40 | 50 | 50 | 63 | 80 | 100 | 125 (2) | 160 (1) (2) | | | | |
| 6.6 | 10 | 20 | 25 | 25 | 31.5 | 40 | 50 | 50 | 63 | 63 | 80 | 100 | 125 (2) | 160 (1) (2) | | | |
| 10 | 10 | 10 | 16 | 20 | 25 | 25 | 31.5 | 40 | 50 | 50 | 63 | 80 | 100 | 125 (2) | | | |
| 11 | 10 | 10 | 16 | 20 | 20 | 25 | 25 | 40 | 40 | 50 | 50 | 63 | 80 | 100 | 125 (2) | | |
| 13.8 | 10 | 10 | 10 | 16 | 16 | 20 | 25 | 31.5 | 40 | 40 | 50 | 50 | 63 | 100 (2) | | | |
| 15 | 10 | 10 | 10 | 10 | 16 | 20 | 25 | 31.5 | 31.5 | 40 | 50 | 50 | 63 | 80 | 100 (2) | | |
| 20 | 10 | 10 | 10 | 10 | 16 | 16 | 20 | 25 | 25 | 31.5 | 40 | 40 | 63 | 63 | 80 | 100 (2) | 24 |
| 22 | 10 | 10 | 10 | 10 | 10 | 16 | 16 | 20 | 25 | 31.5 | 40 | 40 | 50 | 63 | 80 | 100 (2) | |

(1) SIBA type fuses at 160 A/12 kV reference 30-020-13.

(2) For an external trip system (e.g. an overcurrent relay)

A calculation must be carried out to guarantee coordination of fuse-switches – please contact us.

For any values not included in the table, please contact us.

For an overload beyond 40 °C, please contact us.

Fault passage indicators

Fault and load current with voltage detection combination

Enhance the power availability of your network thanks to the Easergy Flair range of advanced Fault Passage Indicators.



Flair 21D



Flair 22D



Flair 23D



Flair 23DM



Amp21D

Fault current indicators

The Easergy Flair (21D - 22D - 23D - 23DM) range of fault passage indicators has been improved to provide indicators in DIN format that are efficient, self-powered and self-adapting to the network to provide hassle-free installation. Flair indicators work with all types of neutral networks and benefit from LCDs that act as an information display. Optional outdoor light indicator.

Functions

- Indication of phase-phase and phase-earth faults
- Display of parameters & settings
- Display of the faulty phase
- Display of load current, maximum current for each phase, frequency and direction of energy flow
- Fault passage indication with voltage detection & Modbus communication (Flair 23DM)

Easy to use and reliable

- Installs automatically on site
- Fault indication by LED, LCD and outdoor light indicator (optional)
- 15 year battery life (Flair 22D)
- Accurate Fault detection by validation of fault with voltage loss using VPIS-VO (except Flair 21D)
- Preamsembled in the factory or to be installed on site
- Using split-type current sensors helps on-site adjustment as this avoids disconnecting the MV cables.



RM6 can also be supplied with Alpha M or Alpha E (Horstmann) type short-circuit indicators.

Fault passage indicators

Fault and load current with voltage detection combination

Voltage detection relay

Smart grid ready

Flair 23DM is a fault passage indicator with modbus communication and integrated voltage detection relay for all types of neutral networks.

- Combination fault passage indicator and voltage detector
- Ideal for use with an Automatic Transfer of Source System
- Needs a stabilized external DC power supply
- Requires the VPIS-VO option to acquire the information of the mains voltage

Load current indicator

The Easergy range ammeter Amp21D is dedicated to Medium Voltage network load monitoring.

Functions

- 3 phase current display: I1, I2, I3
- Maximum current display: I1, I2, I3

Easy to use and reliable

- Installs automatically on site
- Installed onto the RM6 in the factory or on site
- Using split-type current sensors helps on-site adjustment as this avoids disconnecting the MV cables

Fault passage indicators

Fault and load current with voltage
detection combination

Characteristics

| | | Flair 21D | Flair 22D & 23D | Flair 23DM |
|---|--|--|--|---|
| Frequency (auto-detection) | | 50 Hz and 60 Hz | 50 Hz and 60 Hz | 50 Hz and 60 Hz |
| Operating voltage | | Un: 3 to 36 kV - Vn: 1.7 to 24 kV | Un: 3 to 36 kV - Vn: 1.7 to 24 kV | Un: 3 to 36 kV - Vn: 1.7 to 24 kV |
| Neutral | Phase-to-phase fault | All systems | All systems | All systems |
| | Phase-to-earth fault | Impedance-earthed, directly earthed | Impedance-earthed, directly compensated, isolated Flair 22D: (type B), Flair 23D, type (B,C) ⁽³⁾ | |
| Measurements | | | | |
| Load | Minimum current | > 2 A | > 2 A | > 2 A |
| Current (A) (resolution 1 A) | For each phase Accuracy: ± (2% + 2 digits) | Ammeter Maximeter | Ammeter Maximeter | OFF or AUTO or 100 to 800 A (50A increments) |
| Voltage (% of rated voltage) | With VPIS-VO option Accuracy: ±1% | | | Phase-to-neutral or phase-to-phase voltage |
| Fault detection | | | | |
| Threshold configuration | | Via microswitches | Via front panel buttons | Via front panel buttons |
| Overcurrent fault Accuracy ±10% | Auto-calibration | Yes | Yes | Yes |
| | Thresholds | AUTO or 200, 400, 600, 800 A | OFF or AUTO or 100 to 800 A (50 A increments) | OFF or AUTO or 100 to 800 A (50 A increments) |
| Earth fault With 3 phase CTs Accuracy ±10% | Auto-calibration | Yes | Yes | Yes |
| | Algorithm Thresholds | $\Sigma 3I + di/dt$ OFF or AUTO or 40, 60, 80, 100, 120, 160 A | $\Sigma 3I + di/dt$ OFF or 5 ⁽²⁾ to 30 A (5 A increments) and 30 to 200 A (10 A increments) | $\Sigma 3I + di/dt$ |
| Earth fault With zero sequence CT Accuracy ±10% or ±1 A | Auto-calibration | - | No | No |
| | Thresholds | - | OFF or AUTO ⁽⁴⁾ or 5 to 30 A (5 A increments) and from 30 to 200 A (10 A increments) ⁽¹⁾ | |
| Fault acknowledge time delay | | 60 ms | | |
| Fault confirmation time delay | | 70 s | 3 s, 70 s or OFF | |
| Inrush | Time delay | | 3 s, 70 s or OFF | |
| Reset | Automatic | Upon current return 2 A (70 s or OFF) | Upon current return 2 A (3 s, 70 s or OFF) | |
| | Manual via front panel | Yes | Yes | Yes |
| | External contact | Yes | Yes | Yes |
| | Deferred | 4 h | 1, 2, 3, 4, 8, 12, 16, 20, 24 h. Factory setting = 4 h | |
| Indications | LED | Yes | Yes | Yes |
| | External contact | Yes | Yes | Yes |
| | External indicator lamp | Yes (with battery) | Yes (without battery) | Yes (without battery) |
| | Phase indication | Yes | Yes | Yes |
| Communication | | | | |
| RS485 2-wire, connector with LEDs | | No | No | Yes |

Speed: auto-detection 9600, 19200, 38400 bits/s - Class A05

- Accessible data: phase and earth faults; fault passage counters including transient faults
- Current measurements (I1, I2, I3, I0), max. current, voltage (U, V, residual)
- Fault indication, counters and max. values reset
- Fault and voltage presence/absence detection parameters
- Communication parameters
- Time synchronisation and time-tagged events

Fault passage indicators

Fault and load current with voltage detection combination

| | Flair 21D | Flair 22D & 23D | Flair 23DM |
|----------------------------------|--|--|---------------------------------|
| Power supply | | | |
| Self-powering On measuring CTs | Yes (I load > 3 A) | Yes | Yes |
| Battery (Service life: 15 years) | No | Lithium (Flair 22D), No (Flair 23D) | No |
| External power supply | No | No (Flair22D), 24 to 48 Vdc (Conso mac: 50 mA) (Flair 23D) | 24 to 48 Vdc (conso mac: 50 mA) |
| Display | | | |
| Display | 4-digits LCD | 4-digits LCD | 4-digits LCD |
| Fault | Red LED | Red LED | Red LED |
| Phase at fault | Yes | Yes | Yes |
| Setting | Yes (CT type) | Yes | Yes |
| Sensors | | | |
| Phase CT | 3 phase CTs | 2 or 3 phase CTs | 2 or 3 phase CTs |
| Zero sequence CT | No | Diameter: 170 mm | Diameter: 170 mm |
| Test mode | | | |
| By button on front panel | Product name - Software version - Network frequency - Residual current - Digits test | Product name - Software version - Network frequency - Residual current - VPIS presence - Direction of energy - Digits test | |

(1) The minimum threshold 5 A can only be reached with earth CT ref CTRH2200.

(2) 20 A minimum for resistive neutral type,
5A minimum for isolated or compensated neutral type

(3) Type C mounting is not available on compensated neutral

(4) Only with isolated and compensated neutral

Voltage indicators and relays

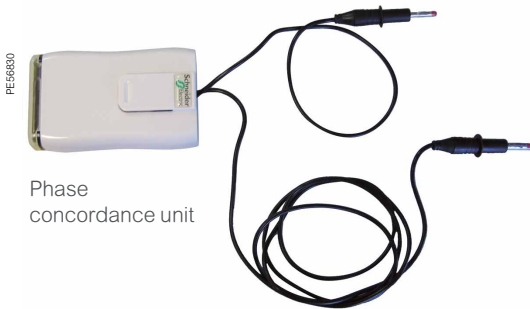
VPIS and VDS



VPIS V3



VPIS V2



Phase
concordance unit



VD23

Voltage presence indicators

A voltage presence indicating device can be integrated in all the functional units, either on the cable or busbar side. It can be used to check whether or not a voltage is present across the cables.

Two devices are available:

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

Voltage sensors

A voltage sensor is integrated in all the functional units. 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 secure the busbar or cable connections. The voltage can be detected either on the cable side or the busbar side.

Phase concordance unit

This unit is used to check phase concordance.

VD23 voltage detection relay

VD23 is a compact voltage detection relay for MV networks for voltages from 3 kV to 36 kV, 50/60 Hz, efficient and self-adapted.

- VD23 detects a presence and absence of voltage, and activates 2 relays:
 - R1 = Presence of voltage
 - R2 = Absence of voltage.
- The 2 functions operate simultaneously
 - Both relay outputs are separate and can therefore work independently (e.g. voltage absence for automatic transfer function, voltage presence indication for interlocking on earthing switch, etc).
 - Combining functions creates specific applications.

VD23 is fitted to a VPIS-VO adapted for voltage measurement. The VPIS-VO is linked to the capacitor connected to the MV busbar, and delivers a voltage signal on a specific connector.

PM108344



New LPVT options

The RM6 can be specified with compact high accuracy Low Power Voltage Transformers (LPVT). These innovative sensors are ideal for the new generation of electronic protection devices and are the only way to measure energy in secondary MV loops.

- Up to Class 0.5 accuracy levels for metering
- Linear wide spectrum voltage range with no ferroresonance characteristics
- Low power consumption and reduced size - ideal for new or retrofit solutions
- Excellent harmonic performance for Power Quality monitoring
- Easy to install, operate and test - no need to disconnect for cable testing 42 kV/15 min
- Complies with international standard: IEC 60044-7

Metering Components

The VRT4 is a phase-to-earth screened voltage transformer, placed behind the cables.

Fully protected in harsh environments, it does not require any fuse protection. A flexible connection to the front T-type cable plugs can be easily disconnected for commissioning tests.

PE91030



VRT4 screened voltage transformer

| Standard | IEC 61869-3 | | | | | | | | | |
|--|---------------|--------|---------------|--------|--------------|--------|--------------|--------|----------------|--|
| Voltage (kV) | 7.2 - 20 - 60 | | 7.2 - 32 - 60 | | 12 - 28 - 75 | | 12 - 42 - 75 | | 17.5 - 38 - 95 | |
| Primary (kV) | 6/√3 | 6.6/√3 | 6/√3 | 10/√3 | 11/√3 | 10/√3 | 13.8/√3 | 15/√3 | | |
| 1st secondary (V) | 100/√3 | 110/√3 | 100/√3 | 100/√3 | 110/√3 | 100/√3 | 110/√3 | 100/√3 | | |
| Rated output and accuracy class | 10 VA cl 0.2 | | | | | | | | | |
| 2nd secondary (V) | 100/3 | 110/3 | 100/3 | 100/3 | 110/3 | 100/3 | 110/3 | 100/3 | | |
| Rated output and accuracy class | 30 VA 3P | | | | | | | | | |

PE91031



ARC5 ring current transformer

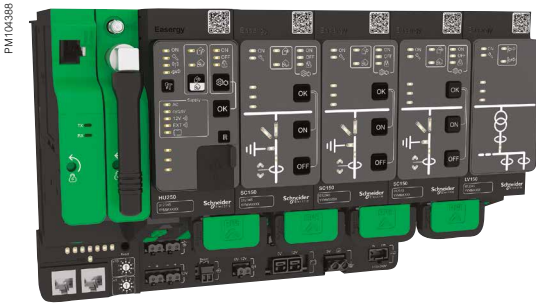
The ARC5 is a ring-type current transformer used in a core unit

- Compact dimensions for easy installation.
- Cost-effective compared to standard MV block CTs.

| | | | | |
|---|-------------|-------|-------|-------|
| Rated & Insulation voltage (kV) | 0.72/3 | | | |
| Thermal withstand | 25 kA x 2 s | | | |
| Transformation ratio | 100/5 | 200/5 | 400/5 | 600/5 |
| Rated output with class 0.2S Fs ≤ 5 (VA) | 5 | | | |

Easergy Remote Terminal Units

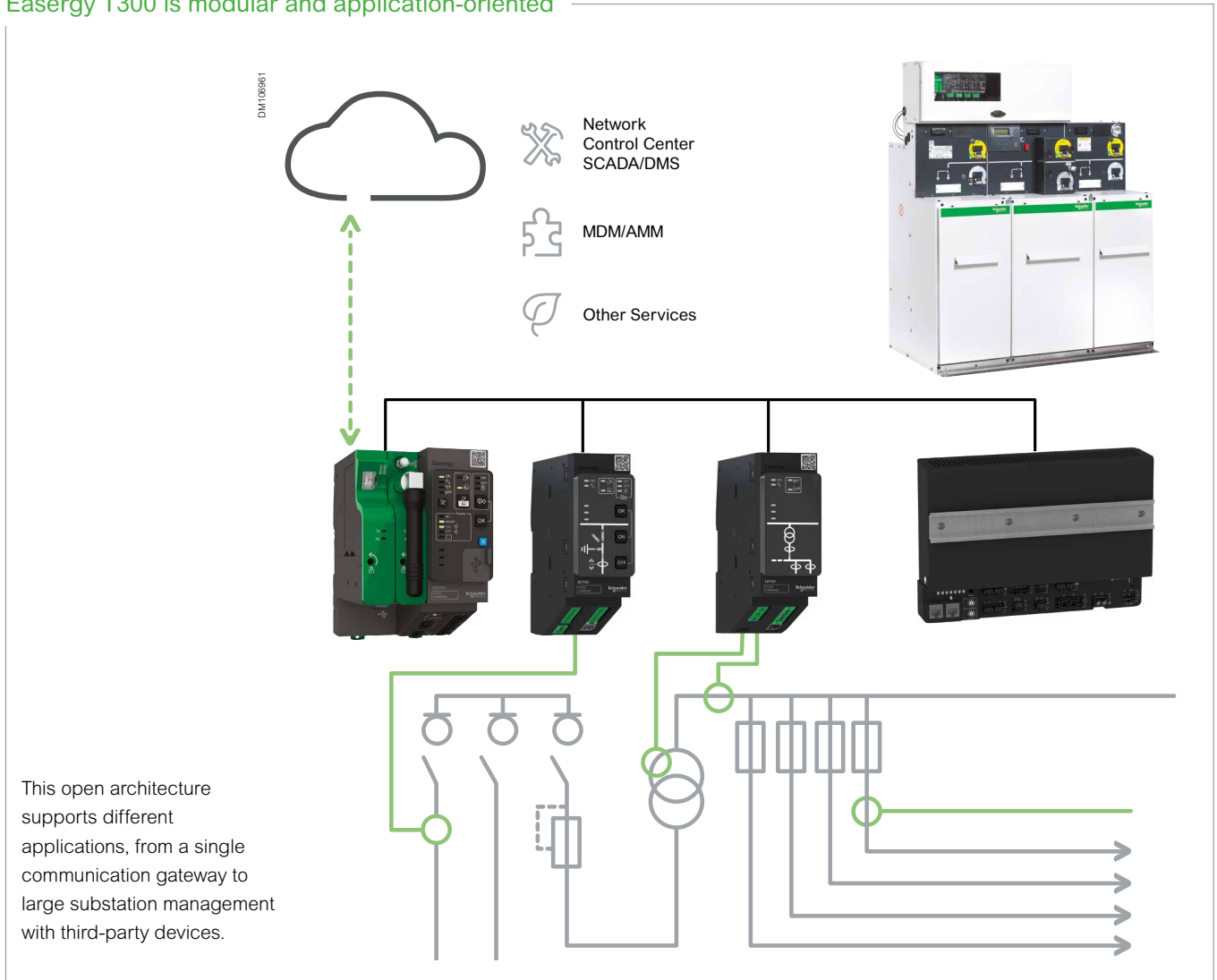
Easergy T300



Easergy T300: the newest generation of remote terminal unit

- Modular architecture with a very small footprint, a power supply back-up, up to 24 RM6 functions and 3 transformer management.
- Powerful communication with standard and secure protocol, open P2P communication for decentralized automation, easy to upgrade on site.
- Advanced MV and LV network control with directional fault detection for distributed generation networks, MV & LV power measurement (IEC 61557-12), power quality measurement (IEC 61000-4-30 Class S), MV voltage monitoring (VPIS, VDS, LPVT, VT), PLC framework IEC61131-3 for automation design, MV broken conductor detection, etc.
- Cyber Security inside with compliancy with the latest cyber regulations (IEEE P1686, IEC62351), secure communication protocol and secure local WiFi access.
- Latest user interface technology with web server compatibility with PC, smartphone and digital tablet.

Easergy T300 is modular and application-oriented



Easergy Remote Terminal Units

Easergy T300 modules

These modules, with their supported applications, are:

Easergy HU250 – Head Unit communication gateway

- Flexible communication gateway to control centers and other customer IT applications:
 - Standard and security-focused protocols: IEC 101/104, DNP3, IEC 61850, Modbus
 - Open peer-to-peer communication to self-healing applications
 - Flexible communication media (Ethernet, USB, GPRS, 2G, 3G, 4G)
- Flexible local communication (Ethernet, Wi-Fi, ZigBee, RS232)
- Cybersecurity management in accordance with IEC 62351
- Open to third-party devices with many protocol capabilities
- Built-in webserver for commissioning and maintenance with local and remote access, compatible with PC, tablet and smartphone devices
- Embedded IEC 601131-3 PLC for automation design
- Auto-Transfer-Switch Automation between two switch control modules
- Thermal and environment condition monitoring, with integrated wireless sensor communication



Easergy SC150 – Switch controller

- Control and monitoring of all switchgear types
- Advanced Fault Passage Indicator (FPI) algorithms:
 - Phase-phase and phase-ground detection ANSI 50/51, 50N/51N
 - Directional phase-phase and phase-ground detection ANSI 67/67N
 - Broken conductor detection (one phase lost) ANSI 47
- MV Voltage monitoring ANSI 27, 59, 59N
- MV Current monitoring ANSI 37
- Large current and voltage measurement capabilities: standard CT, LPVT, VT from the capacitor divider and a voltage presence indicator (VDS, VPIS) for voltage
- Power measurement in accordance with IEC 61557-12
- Power quality in accordance with IEC 61000-4-30 class S:
- Specific application automation: sectionalizer
- Disturbance recording

Easergy Remote Terminal Units

Easergy T300 modules



Easergy LV150 – Transformer and Low Voltage monitoring

- Transformer temperature measurement and monitoring
- Power measurement in accordance with IEC 61557-12
- Broken conductor detection (one phase lost MV or LV) ANSI 47
- LV Voltage monitoring ANSI 27, 59, 59N
- Power quality in accordance with IEC 61000-4-30 class S



Easergy PS25 and Easergy PS50 – Power Supply for control and monitoring solutions

- PS25 monitoring solution with only one voltage output (12 Vdc or 24 Vdc)
- PS50 is a harsh environment power supply for MVLV substation control with power supply for:
 - Switch control: 48 Vdc or 24 Vdc
 - Telecom devices: 12 Vdc
 - Easergy T300: 12 Vdc

Automatic transfer system

Because a MV power supply interruption is unacceptable especially in critical applications, an automatic system is required for MV source transfer.

For your peace of mind, the RM6 provides automatic control and management of power sources in your Medium Voltage secondary distribution network with a short transfer time (less than 10 seconds), making your installation extremely reliable.

Automatic control is performed by Easergy T200 I/T300*.

This T200 I device can also be used for remote control with a wide range of modems and protocols.

By default, T200 I is provided with the RS232 modem and the Modbus/IP protocol.

* Contact us for more details



An ATS solution consists of:

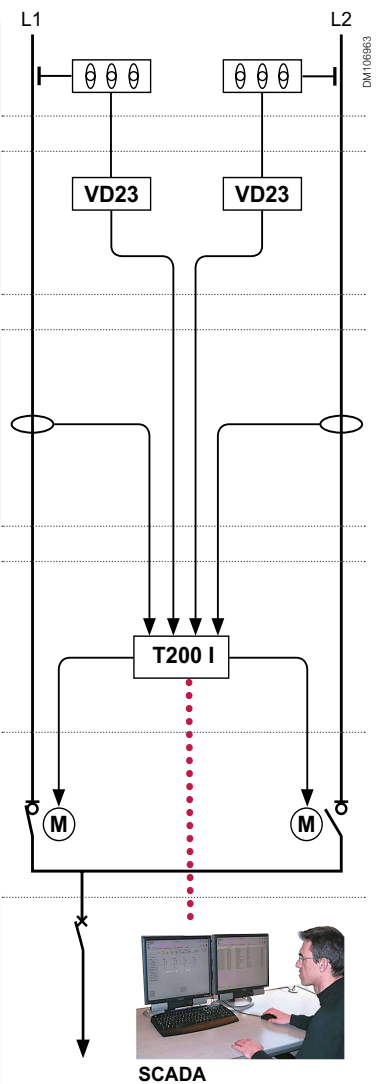
2 VPIS-VO Voltage sensor: dedicated version of VPIS with voltage output signal.

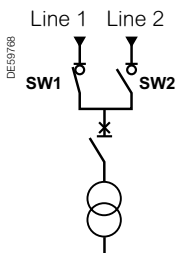
2 VD23 Voltage detector: a relay is activated when a loss of voltage is detected from the VPIS voltage output signal.

2 CTs for FPI Fault Passage Indicator (included in T200 I): if a fault current is detected, the Automatic Transfer System is locked in order to avoid closing the healthy line on the fault.

1 T200 I + switch function motorized From the VD23 digital input and the FPI information, T200 I makes the decision to switch from one line to the other.

- Communication to SCADA: optionally, communication facilities may be added.
- Modems: PSTN, Radio, GSM/GPRS/3G, Ethernet, etc.
- Protocols: Modbus, Modbus IP, IEC 870-5-101 and 104, DNP3, DNP3 IP, etc.
- Functions: dual port, remote configuration, etc.





Changeover between 2 MV network sources

3 operating modes (selected from the T200 I Web server)

1. Auto SW1 or Auto SW2 mode

In the event of a voltage loss on the distribution line in service (SW1), the ATS changes over to the backup line (SW2) after a configurable time delay (T1).
[opening of SW1, closing of SW2]

As soon as voltage returns on the main line (SW1), the ATS changes back to the main line after a time delay (T2).

[opening of SW2, closing of SW1 if the paralleling option is not activated]
[closing of SW1, opening of SW2 if the paralleling option is activated]

2. Semi-Auto SW1XVSW2

In the event of a voltage loss on the distribution line in service (SW1), the ATS changes over to the backup line (SW2) after a configurable time delay (T1).
[opening of SW1, closing of SW2]

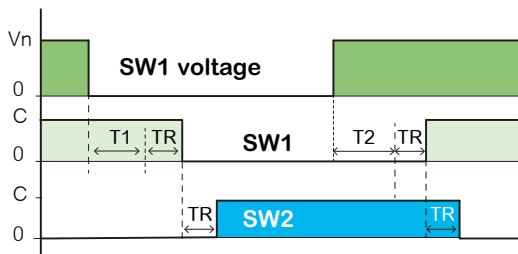
The ATS does not change back to the main line, except in the event of a voltage loss on the backup line [opening of SW2, closing of SW1]

3. Semi-Auto SW1VSW2 or Semi-Auto SW2VSW1

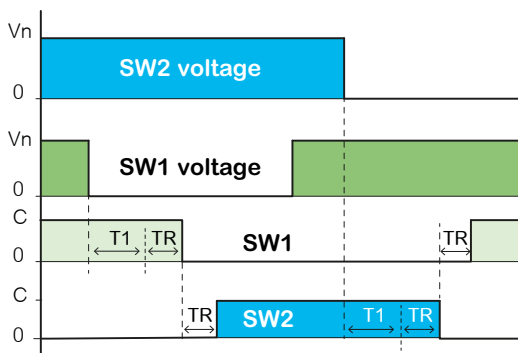
In the event of a voltage loss on the distribution line in service (SW1), the ATS changes over to the backup line (SW2) after an adjustable time delay (T1).
[opening of SW1, closing of SW2]

The ATS maintains the backup line in service (SW2) irrespective of the voltage on the two lines.

DM1108951
Network ATS: Auto mode SW1
(with paralleling upon automatic return)



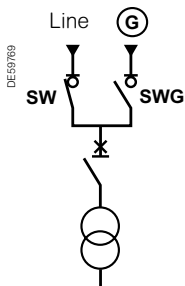
Network ATS: Semi-auto mode
(without paralleling upon automatic return)



Characteristics

TR: switch response time (< 2 s)

- Time delay before changeover (T1)
Configurable from 0 s to 200 s in increments of 100 ms (factory setting = 1 s).
This time delay is also used to delay return to the initial channel in Semi-Auto mode SW1XVSW2
- Time delay before return to the initial channel (T2) (Auto mode only)
Configurable from 0 s to 30 min. in increments of 5 s (factory setting = 15 s)



Changeover between a distribution system line and a generator

3 operating modes (selected from the T200 I Web server)

1. Auto SW mode

In the event of a voltage loss on the distribution line in service (SW), after a time delay T1, the ATS sends the opening command to SW and the Generator start-up order at the same time.

- Case 1 "Generator channel closing after Generator power on": the Generator channel closing order is sent only when Generator voltage is detected.
- Case 2 "Generator channel closing after Generator start-up order": immediately after sending the Generator start-up order, the closing order is given to the Generator channel, without waiting until the Generator is actually started.

[opening of SW, closing of SWG]

The remaining operation of the changeover sequence depends on the configuration of the "Generator channel closing" option:

As soon as voltage returns on the main line (SW), after a time delay T2, the ATS changes back to the main line and the generator stoppage order is activated.

[opening of SWG, closing of SW if the paralleling option is not activated]
[closing of SW, opening of SWG if the paralleling option is activated]

2. Semi-Auto SWXVSWG

The ATS does not change back to the main line, except in the event of a voltage loss on the generator due to generator stoppage or the opening of a switch upstream of the SWG channel.

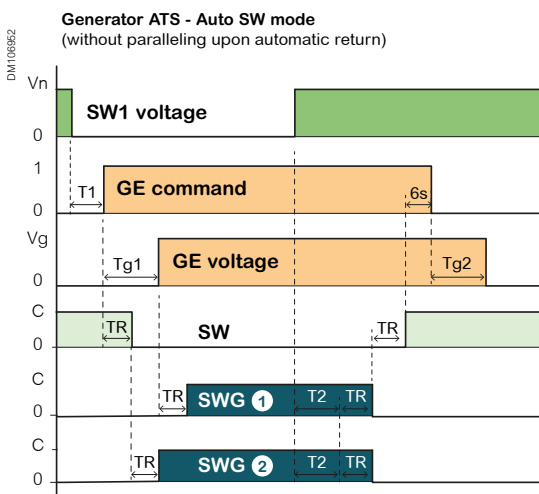
3. Semi-Auto SWVSWG

In the event of a voltage loss on the distribution line in service (SW), after a time delay T1, the ATS sends the opening command to SW and the Generator start-up order at the same time.

- Case 1 "Generator channel closing after Generator power on"
 - Case 2 "Generator channel closing after Generator start-up order"
- [opening of SW, closing of SWG]

The remaining operation of the changeover sequence depends on the configuration of the "Generator channel closing" option:

The ATS maintains the backup line in service (SWG) and there is no automatic return.



Case ①: Generator channel closing after Generator power on (configurable option)

Case ②: Generator channel closing after Generator startup command (configurable option)

Characteristics

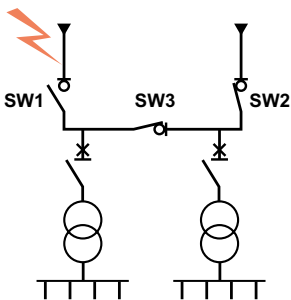
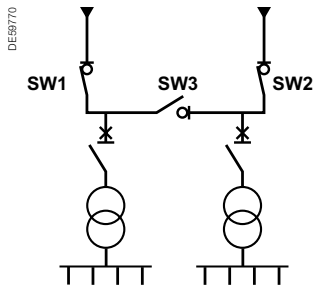
TR: switch response time

- Time delay before changeover (T1): configurable from 0 s to 200 s in increments of 100 ms (factory setting = 1 s).
This time delay is also used to delay return to the initial channel in Semi-Auto mode SWXVSWG
- Time delay before return to the initial channel (T2)
- (Auto mode only). Configurable from 0 s to 30 min. in increments of 5 s (factory setting = 15 s).
- Tg1: Generator start-up, depending on the generator type, not configurable (max. waiting time: 60 s). If Tg1 is greater than 60 s, changeover is suspended.
- Tg2: Generator stoppage, depending on the generator type, not configurable (max. waiting time: 30 s).

Note: the generator stoppage command is sent 6 s after the end of changeover.

Automatic transfer system

Bus tie coupling (2/3)



Source changeover between 2 incoming lines (SW1 and SW2) and a busbar coupling switch (SW3)

2 operating modes (selected from the Easergy T200 I configurator)

1. Standard mode

In the event of a voltage loss on the distribution line in service (SW1), the ATS changes over to the backup line (SW2) after a configurable time delay (T1).
[opening of SW1, closing of SW3]

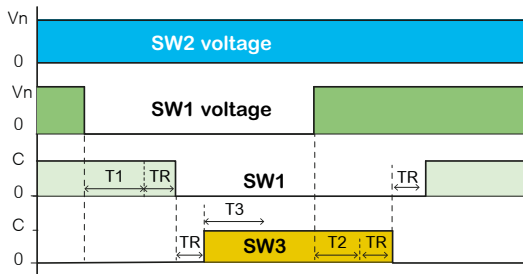
As soon as voltage returns on the main line (SW1), the ATS changes back to the main line after a time delay (T2).
[opening of SW3, closing of SW1 if the paralleling option is not activated]
[closing of SW1, opening of SW3 if the paralleling option is activated]

2. Mode with locking upon voltage loss after changeover

In the event of a voltage loss on the distribution line in service (SW1), the ATS changes over to the backup line (SW2) after an adjustable time delay (T1).
[opening of SW1, closing of SW3].

Voltage presence is monitored during a configurable period T3. If the voltage disappears during this period, coupling switch SW3 is opened and the automatic transfer system is locked.

DM106953
BTA - Standard mode
(without paralleling upon automatic return)



Characteristics

TR: switch response time (< 2 s).

- Time delay before changeover (T1)
Configurable from 100 ms to 60 s in increments of 100 ms (factory setting = 5 s).
- Time delay before return to the initial channel (T2)
Configurable from 5 s to 300 s in increments of 1 s (factory setting = 10 s)
- Monitoring time (T3)
Configurable from 100 ms to 3 s in increments of 100 ms (factory setting = 1 s)

Changeover conditions

- Validation of the ATS (from the configurator)
- The ATS is in operation (local control panel or remote control)
- The external closing digital input is OFF
- The switch for the main line is closed and the backup line switch is open
- No fault detected on the line in service
- The earthing switch is open on both switches

Automatic transfer system

Bus tie coupling (2/3)

Other functions

ATS in ON/OFF mode

The ATS system can be switched on or off from the local control panel (T200 I) or remotely (Scada system).

When the ATS is OFF, the RM6 switches can be electrically actuated by local or remote control (operation in parallel mode is therefore possible).

ATS in parallel mode upon Auto return

Activating this option enables paralleling of the channels by the automatic transfer system, during the phase of automatic return to the priority channel.

To be used when the ATS is in "Auto" mode.

Application: synchronization of the voltages of the main power supply line and the backup line allows return to the main line without any interruption.

Generator ON override command

Activation of the ATS and Generator transfer can be activated via an order: remotely or through a dedicated digital input.

Applications:

- Periodic maintenance tests of the ATS/Generator system
- Switch on the Generator when the Network is overloaded.

During peak hours, and if the network is overloaded, the Utility can send a remote order that will activate the Generator. With this facility, private customers can negotiate a better electricity price.

Installation and connection

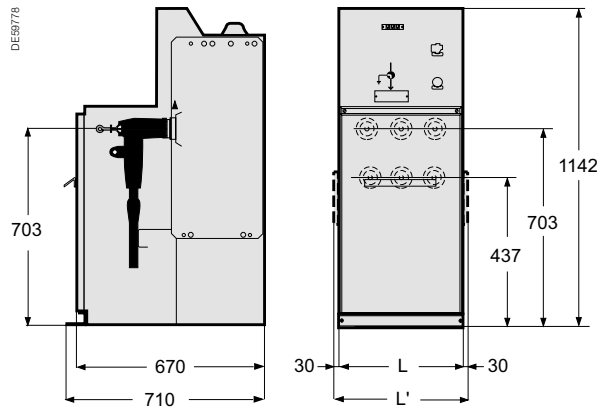
| | |
|--|-----------|
| Installation | 80 |
| Dimensions and installation conditions | 80 |
| Civil works | 85 |

| | |
|---------------------------------------|-----------|
| Cable connection | 86 |
| Selecting bushings and connectors | 86 |
| Compatible cable connections | 87 |
| Other types of compatible connections | 89 |

Dimensions and installation conditions

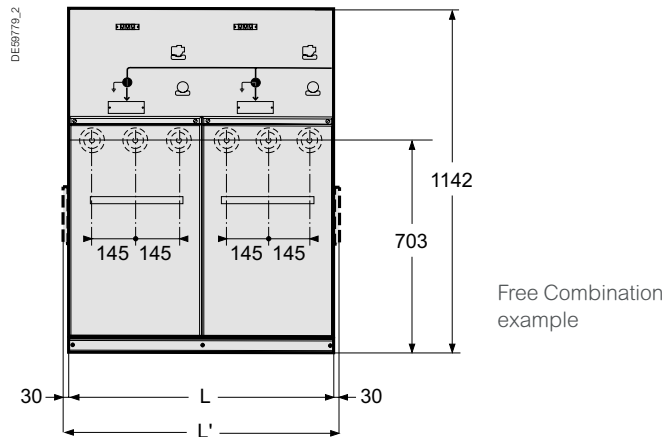
1 function module

| | Function | Weight (kg) | Length (mm) |
|--------------------|----------|-------------|--------------------------|
| Regular RM6 | | | |
| NE | I | 135 | L = 572 |
| | D | | L = 572 |
| | B | | L = 572 |
| DE | I | 135 | L' = 472 + 30 + 30 = 532 |
| | D | | L' = 572 + 30 + 30 = 632 |
| | B | | L' = 572 + 30 + 30 = 632 |
| | Q | | L' = 472 + 30 + 30 = 532 |
| RE | | 185 | L' = 472 + 30 = 502 |
| LE | O | 135 | L' = 472 + 30 = 502 |
| DE | | | L' = 472 + 30 + 30 = 532 |
| DE | Ic | 145 | L' = 572 + 30 + 30 = 632 |
| | Bc | | L' = 572 + 30 + 30 = 632 |



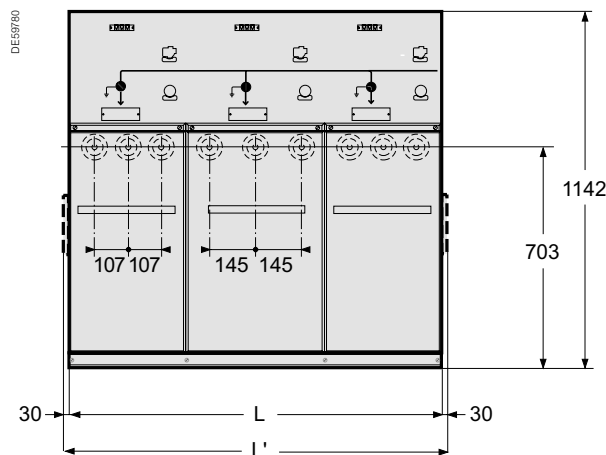
2 function modules

| | Function | Weight (kg) | Length (mm) |
|-----------------------------|----------|-------------|----------------------------|
| Regular RM6 | | | |
| NE | QI | 180 | L = 829 |
| | DI, BI | | L = 829 |
| | II | | L = 829 |
| RE | II | 155 | L' = 829 + 30 = 859 |
| RM6 Free Combination | | | |
| NE | | | L = 1052 |
| LE | | | L' = 1052 + 30 = 1082 |
| RE | | | L' = 1052 + 30 = 1082 |
| DE | | | L' = 1052 + 30 + 30 = 1112 |



3 function modules

| | Function | Weight (kg) | Length (mm) |
|--|----------|-------------|----------------------------|
| Regular RM6 | | | |
| NE | IQI | 275 | L = 1186 |
| | III | | L = 1186 |
| | IDI | | L = 1186 |
| RE | IBI | 250 | L = 1186 |
| | IQI | | L' = 1186 + 30 = 1216 |
| | III | | L' = 1186 + 30 = 1216 |
| DE | IDI | 240 | L' = 1186 + 30 = 1216 |
| | IBI | | L' = 1186 + 30 = 1216 |
| | IQI | | L' = 1186 + 30 + 30 = 1246 |
| DE | III | 240 | L' = 1186 + 30 + 30 = 1246 |
| | IDI | | L' = 1186 + 30 + 30 = 1246 |
| | IBI | | L' = 1186 + 30 + 30 = 1246 |
| RM6 Free Combination | | | |
| NE | | | L = 1532 |
| LE | | | L' = 1532 + 30 = 1562 |
| RE | | | L' = 1532 + 30 = 1562 |
| DE | | | L' = 1532 + 30 + 30 = 1592 |
| RM6 Free Combination with bus coupler | | | |
| RE | | | L' = 1532 + 30 = 1562 |
| DE | | | L' = 1532 + 30 + 30 = 1592 |

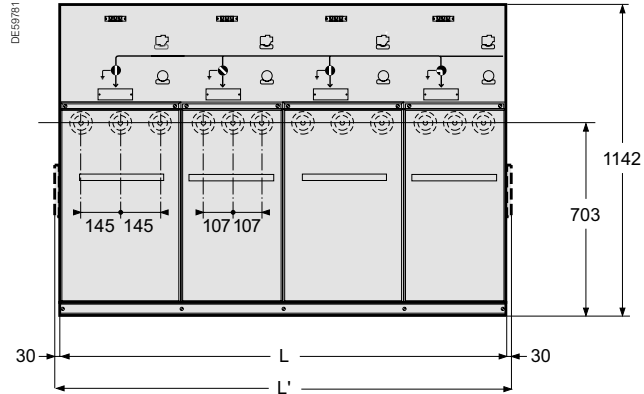


Type of tank

NE: non-extensible LE: left-extensible
RE: right-extensible DE: left- and right-extensible

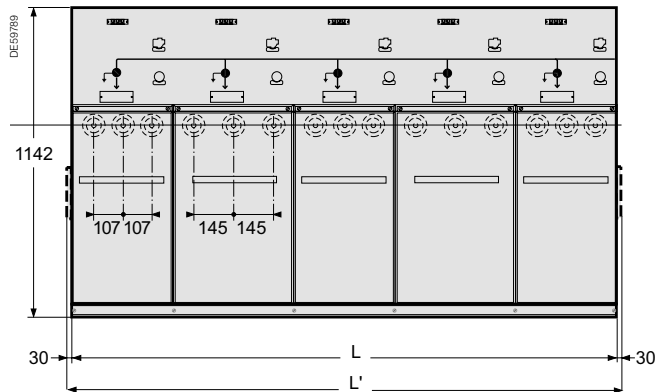
4 function modules

| | Function | Weight (kg) | Length (mm) |
|--------------------|----------|-------------|----------------------------|
| Regular RM6 | | | |
| NE | IIQI | 355 | L = 1619 |
| | IIII | 320 | L = 1619 |
| | IIDI | 330 | L = 1619 |
| | IIBI | 330 | L = 1619 |
| | QIQI | 390 | L = 1619 |
| | BIBI | 340 | L = 1619 |
| RE | IIQI | 355 | L' = 1619 + 30 = 1649 |
| | IIII | 320 | L' = 1619 + 30 = 1649 |
| | IIDI | 330 | L' = 1619 + 30 = 1649 |
| | IIBI | 330 | L' = 1619 + 30 = 1649 |
| | QIQI | 390 | L' = 1619 + 30 = 1649 |
| | DIDI | 340 | L' = 1619 + 30 = 1649 |
| DE | IIQI | 355 | L' = 1619 + 30 + 30 = 1679 |
| | IIII | 320 | L' = 1619 + 30 + 30 = 1679 |
| | IIDI | 330 | L' = 1619 + 30 + 30 = 1679 |
| | IIBI | 330 | L' = 1619 + 30 + 30 = 1679 |



5 function modules

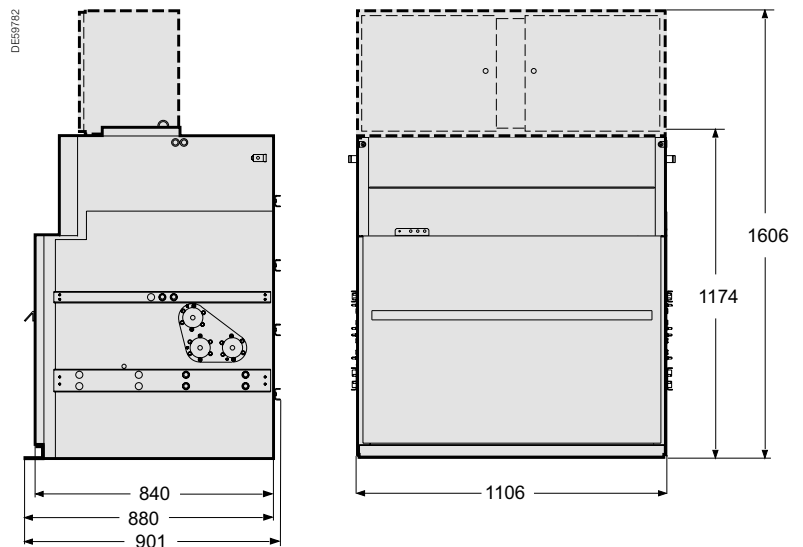
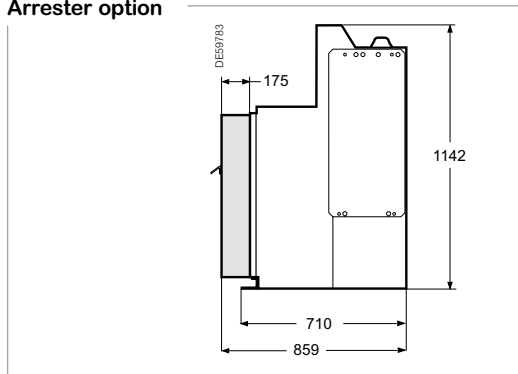
| | Function | Weight (kg) | Length (mm) |
|--------------------|----------|-------------|----------------------------|
| Regular RM6 | | | |
| NE | IDIDI | 470 | L = 2000 |
| | IQIQI | 520 | L = 2000 |
| | IBIQI | 495 | L = 2000 |
| RE | IDIDI | 475 | L' = 2000 + 30 = 2030 |
| | IIII | 455 | L' = 2000 + 30 = 2030 |
| DE | IDIDI | 480 | L' = 2000 + 30 + 30 = 2060 |
| | IIIQI | 495 | L' = 2000 + 30 + 30 = 2060 |



Metering cubicle

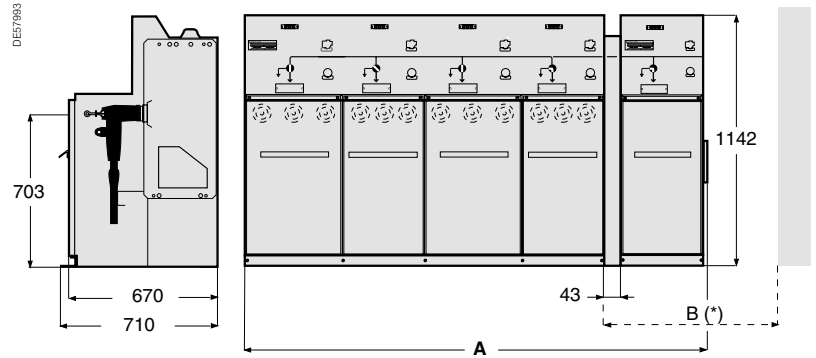
| | Function | Weight (kg) | Length (mm) |
|--|----------|-------------|-------------|
| RM6 metering cubicle with LV compartment | | | |
| DE | DE-Mt | 420 | L = 1106 |
| RM6 metering cubicle without LV compartment | | | |
| DE | DE-Mt | 400 | L = 1106 |

Arrester option



Dimensions and installation conditions

Dimensions of RM6 REs with an extension module



(*) B = 900 for 1 DE function
 B = 1600 for 3 DE functions
 B = 2000 for 4 DE functions

These dimensions can be reduced under special conditions, contact us.

As a reminder, there is only one standard range installation restriction. For the standard range, as a rule, installation is carried out from left to right, starting with the heaviest unit.

| No. of RE units | DE single unit type | A Length (mm) |
|--|---------------------|---------------|
| RM6 standard functional units | | |
| 2 units | Type 1 | 1374 |
| | Type 2 | 1474 |
| 3 units | Type 1 | 1731 |
| | Type 2 | 1831 |
| 4 units | Type 1 | 2164 |
| | Type 2 | 2264 |
| RM6 Free Combination functional units | | |
| 2 units | Type 1 | 1597 |
| | Type 2 | 1697 |
| 3 units | Type 1 | 2077 |
| | Type 2 | 2177 |

Type 1: DE-I, DE-Q, DE-O
 Type 2: DE-B, DE-D, DE-IC, DE-BC

Dimensions and installation conditions

Layout

Floor mounting

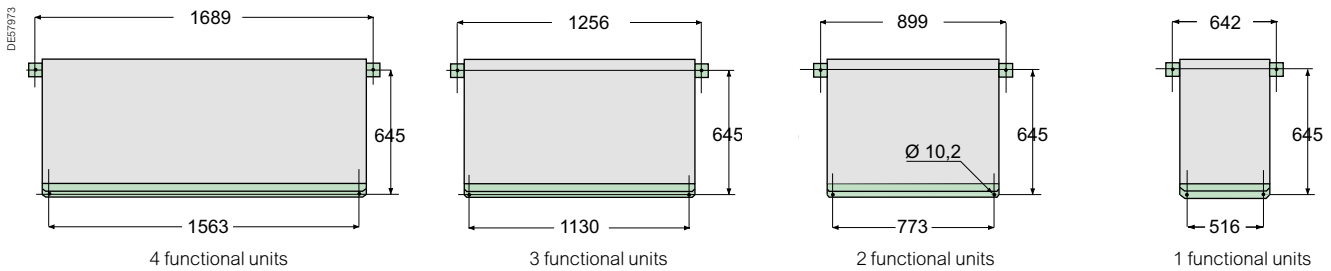
The RM6 is supported by 2 metal feet with holes for mounting:

- on a flat floor fitted with trenches, passages or ducts
- on concrete footing
- on studs

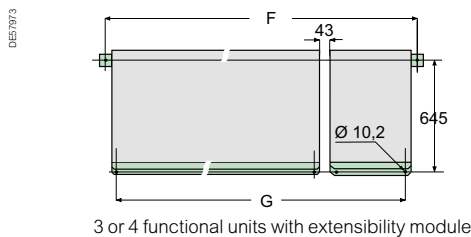
| Options for adding a cubicle | 1st position | 2nd position | 3rd position | Last position |
|------------------------------|--------------|--------------|--------------|---------------|
| ∅ | RE-x | DE-x | DE-x | LE-x |
| RE-x* | DE-x | DE-x | LE-x | ∅ |

* It is not possible to add RE-x to a DE station where the switchboard is in first position

Standard non-extensible RM6 (top view)

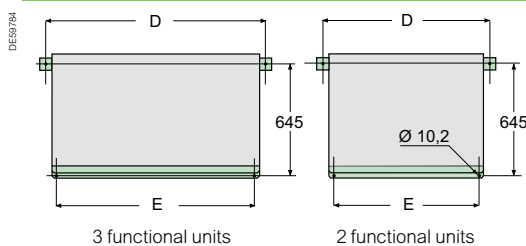


Extensible RM6 (top view)



| No. of RE units | DE single unit type | Length (mm) | |
|--|---------------------|-------------|------|
| | | F | G |
| RM6 standard functional units | | | |
| 2 units | Type 1 | 1414 | 1288 |
| | Type 2 | 1514 | 1388 |
| 3 units | Type 1 | 1771 | 1645 |
| | Type 2 | 1871 | 1745 |
| 4 units | Type 1 | 2204 | 2078 |
| | Type 2 | 2304 | 2178 |
| RM6 Free Combination functional units | | | |
| 2 units | Type 1 | 1637 | 1511 |
| | Type 2 | 1737 | 1611 |
| 3 units | Type 1 | 2117 | 1991 |
| | Type 2 | 2217 | 2091 |

RM6 Free Combination (top view)

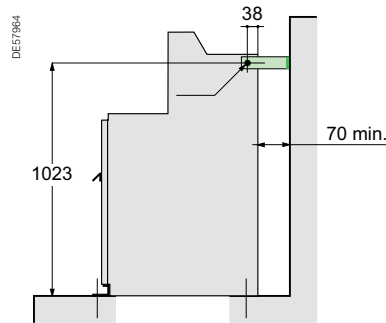


| No. of units | Length (mm) | |
|--|-------------|------|
| | D | E |
| RM6 Free Combination functional units | | |
| 2 units | 1122 | 996 |
| 3 units | 1602 | 1476 |

Dimensions and installation conditions

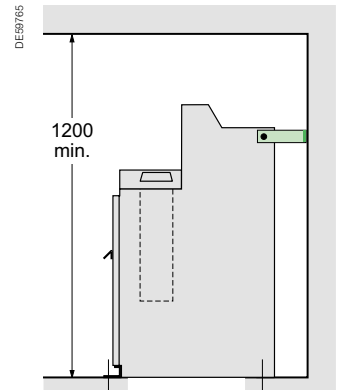
Wall mounting

There are two holes to attach the unit to the wall and on the floor.



Ceiling clearance

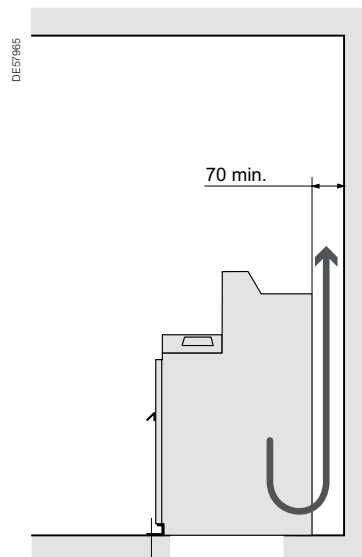
For substations with fuse-holders, provide a minimum ceiling clearance of 1200 mm.



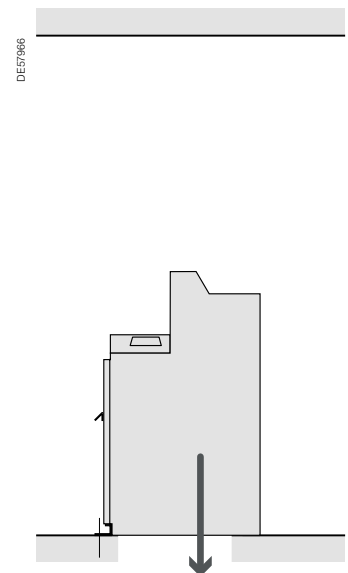
Installing the substation for internal arc withstand

When there is a requirement for installations to have protection against internal arc faults, refer to the following diagrams.

Gas removal to the rear



Gas removal to the bottom



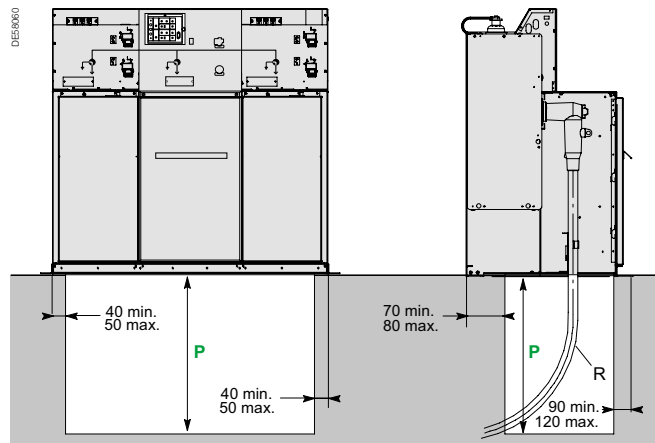
N.B.: parts for guiding the gases to vent openings and cooling walls are not part of the switchgear supply. These must be adapted to each specific case.

For connection to a “network” or “transformer” via a circuit breaker

| Cable insulation | Cable | Cross-section (mm ²) | Bending radius | Cable entry through a trench | | Cable entry through a duct | |
|-------------------------------------|--------|----------------------------------|----------------|------------------------------|--------------------|----------------------------|--------------------|
| | | | | P (plug-in) | P (disconnectable) | P (plug-in) | P (disconnectable) |
| Dry insulation | Single | ≤ 150 | 500 | 400 | | 400 | |
| | | 185 to 300 | 600 | 520 | | 520 | |
| | Three | ≤ 150 | 550 | 660 | | 660 | |
| | | 185 | 650 | 770 | | 770 | |
| Paper impregnated non-draining type | Single | ≤ 150 | 500 | | 580 | | 580 |
| | | 185 to 300 | 675 | | 800 | | 800 |
| | Three | ≤ 95 | 635 | | 750 | | 750 |
| | | 150 to 300 | 835 | | 970 | | 970 |

The “network” cables can be run either:

- Through trenches, passages, ducts
- Through the left or right side



Trench depth P or RM6 without plinth

Note: trench depths can be reduced and sometimes eliminated by adding a plinth.

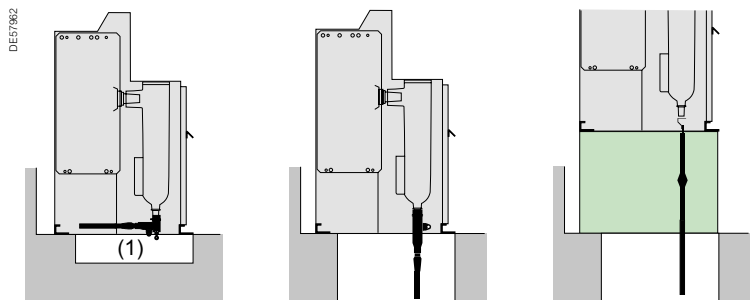
For “transformer” connection via a fuse-switch

| Cable insulation | Cable | Cross-section (mm ²) | Bending radius | Plug-in Elbow connector | Plug-in Straight connector | Disconnectable (2) |
|------------------|--------|----------------------------------|----------------|-------------------------|----------------------------|--------------------|
| | | | | | | P |
| Dry insulation | Single | 16 to 35 | 335 | 100 | 520 | 335 |
| | | 50 to 70 | 400 | 100 | 520 | 440 |
| | | 95 to 120 | 440 | 100 | 550 | 440 |
| | Three | 35 | 435 | | 520 | 725 |
| | | 50 to 70 | 500 | | 520 | 800 |
| | | 95 | 545 | | 550 | 860 |

(1) Leave a clearance of 100 mm

(2) 520 mm plinth must be used

- The cross-sections of “transformer” cables are generally smaller than those of the “network” cables. All the cables are then run through the same space
- When straight MV connectors are used, the depth P indicated below can be greater than that of the “network” cables



- The profiles, contacts and dimensions of the RM6 connection interfaces are defined by the IEC 60137 standard.
- 100% of the epoxy resin interfaces undergo dielectric testing at power frequency and partial discharge tests.
- An insulated connector must be used in order to guarantee the dielectric performance over time. Schneider Electric recommends using nkt connectors.

Appropriateness for use

The bushings carry the electrical current from the outside to the inside of the enclosure, which is filled with SF6 gas, ensuring insulation between the live conductors and the frame.

There are 3 types of bushing, which are defined by their short-time withstand current:

- Type A: 200 A: 12.5 kA 1 s and 31.5 kA peak (plug-in)
- Type B: 400 A: 16 kA 1 s and 40 kA peak (plug-in)
- Type C: 630 A: 25 kA 1 s, 21 kA 3 s and 62.5 kA peak (disconnectable M16)

How to define the connection interface

The connection interfaces depend on specific criteria, such as:

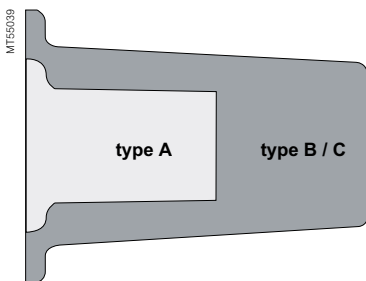
Installation

- Current rating of the connected equipment: 200, 400, 630 A
- Short-time withstand current for 12.5 kA, 16 kA, 25 kA switch and circuit breaker functions
- For the fuse-switch combination function, as the short-circuit current is limited by the fuse, the connection interface will be of type A (200 A)
- Minimum phase expansion length
- Connection type:
 - plug-in: multicontact ring
 - disconnectable: bolted
- Output position: straight, elbow.

Cable

- Specified voltage:
 - of the cable
 - of the network
- Type of conductor:
 - aluminium
 - copper
- Cross section in mm²
- Insulation diameter
- Cable composition:
 - single-core
 - 3-core
- Insulation type:
 - dry
 - paper impregnated (non-draining type)
- Type of screen
- Armature

This information must be provided to give a full explanation of the connection interfaces.



Types of connection interface

Cable connections

Compatible cable connections

- Directed field plug-in connector
- Dry single-core cable

Type A bushing

| Performance | Connection | Supplier | Reference | Cross section | Remarks |
|--|------------|-----------------|---------------|---------------|---------------------------|
| 7.2 to 10 kV 200 A -95 kV impulse | Plug-in | Elastimold | 158LR | 16 to 120 | T-shaped elbow |
| | | Elastimold | 151SR | 16 to 120 | Straight, Q function only |
| | | Prysmian | FMCE 250 | 16 to 95 | |
| 7.2 to 17.5 kV 200 A -95 kV impulse | Plug-in | nkt cables GmbH | EASW 12/250 A | 25 to 95 | Shaped elbow |
| | | nkt cables GmbH | EASG 12/250 A | 25 to 95 | Straight |
| | | Tycoelectronics | RSES-52xx | 25 to 120 | Shaped elbow |
| | | Tycoelectronics | RSSS-52xx | 25 to 95 | Straight connection |
| 7.2 to 24 kV 200 A -125 kV impulse | Plug-in | Elastimold | K158LR | 16 to 95 | T-shaped elbow |
| 24 kV 200 A -125 kV impulse | Plug-in | nkt cables GmbH | EASW 20/250 A | 25 to 95 | Shaped elbow |
| | | nkt cables GmbH | EASG 20/250 A | 25 to 95 | Straight |
| | | Tycoelectronics | RSES-52xx | 25 to 120 | Shaped elbow |
| | | Tycoelectronics | RSSS-52xx | 25 to 95 | Straight connection |

- Non-directed field disconnectable connector (*)
- Dry single and 3-core cable

Type A/M8 bushing

| Performance | Connection | Supplier | Reference | Cross section | Remarks |
|--|------------------|-----------------|--------------------|---------------|---------|
| 7.2 to 17.5 kV 200 A -95 kV impulse | Heat shrinkable | Tycoelectronics | EPKT + EAKT + RSRB | 16 to 150 | |
| | Insulating boots | Kabeldon | KAP70 | 70 max. | |

(*) 520 mm plinth must be used

- Directed field plug-in connector
- Dry single-core cable

Type B bushing

| Performance | Connection | Supplier | Reference | Cross section | Remarks |
|---------------------------------------|------------|-----------------|-----------|---------------|-----------------------|
| 7.2 to 10 kV 400 A-95 kV impulse | Plug-in | Elastimold | 400 LR | 70 to 240 | Limited to Us = 10 kV |
| 7.2 to 17.5 kV 400 A-95 kV impulse | Plug-in | nkt cables GmbH | CE 12-400 | 25 to 300 | |
| | | Tycoelectronics | RSES-54xx | 25 to 300 | Shaped elbow |
| 24 kV 400 A-125 kV impulse | Plug-in | Prysmian | FMCE 400 | 70 to 300 | |
| | | Elastimold | K400LR | 35 to 240 | |
| | | Kabeldon | SOC 630 | 50 to 300 | |
| | | nkt cables GmbH | CE 24-400 | 25 to 300 | |
| | | Tycoelectronics | RSES-54xx | 25 to 300 | Shaped elbow |

For cross section > 300 mm², please contact us.

- Directed field disconnectable connector
- Dry single-core cable

Type C bushing

| Performance | Connection | Supplier | Reference | Cross section | Remarks |
|---------------------------------------|----------------|-----------------|-----------|---------------|----------------------|
| 7.2 to 10 kV 630 A-95 kV impulse | Disconnectable | Elastimold | 440 TB | 70 to 240 | |
| 7.2 to 17.5 kV 630 A-95 kV impulse | Disconnectable | nkt cables GmbH | CB 12-630 | 25 to 300 | |
| | | Tycoelectronics | RSTI-58xx | 25 to 300 | "T"-shaped connector |
| 7.2 to 24 kV 630 A-125 kV impulse | Disconnectable | Prysmian | FMCTs 400 | 70 to 300 | |
| | | Elastimold | K400TB | 35 to 240 | |
| | | Kabeldon | SOC 630 | 50 to 300 | |
| 24 kV 630 A-125 kV impulse | Disconnectable | nkt cables GmbH | CB 24-630 | 25 to 300 | |
| | | Tycoelectronics | RSTI-58xx | 25 to 300 | "T"-shaped connector |

- Non-directed field disconnectable connector
- Dry single and three-core cable

| Performance | Connection | Supplier | Reference | Cross section | Remarks |
|--------------------------------------|---------------------------|-----------------|--------------------|-----------------------|--|
| 7.2 to 10 kV 630 A -95 kV impulse | Heat shrinkable | Tycoelectronics | EPKT + EAKT + RSRB | 16 to 300 | |
| | | Sigmaform | Q-CAP | 16 to 300 | |
| | Insulating boots | Kabeldon | SOC 630 | 50 to 300 | Completed by a kit for three core-pole cable |
| | Simplified disconnectable | Tycoelectronics | RICS + EPKT | 25 to 300 | |
| Euromold | | 15TS-NSS | 50 to 300 | Limited to Us = 20 kV | |
| 24 kV 630 A -125 kV impulse | Disconnectable | nkt cables GmbH | AB 12-630 | 25 to 300 (+ATS) | For 3-core cable |
| | Simplified disconnectable | Tycoelectronics | RICS + EPKT | 25 to 300 | |

- Non-directed field disconnectable connector
- Single-core cable, paper impregnated, non-draining type

| Performance | Connection | Supplier | Reference | Cross section | Remarks |
|---------------------------------------|---------------------------|-----------------|----------------|---------------|---------|
| 7.2 to 17.5 kV 630 A-95 kV impulse | Insulating boots | Kabeldon | SOC | 25 to 300 | |
| | Simplified disconnectable | Tycoelectronics | RICS - EPKT | 25 to 300 | |
| | Heat shrinkable | Tycoelectronics | EPKT+EAKT+RSRB | 95 to 300 | |
| 24 kV 630 A-125 kV impulse | Simplified disconnectable | Tycoelectronics | RICS - EPKT | 25 to 300 | |

- Non-directed field disconnectable connector
- Three-core cable, paper impregnated, non-draining type

| Performance | Connection | Supplier | Reference | Cross section | Remarks |
|---------------------------------------|---------------------------|-----------------|----------------|---------------|---------|
| 7.2 to 17.5 kV 630 A-95 kV impulse | Insulating boots | Kabeldon | SOC 630 | 25 to 300 | |
| | Simplified disconnectable | Tycoelectronics | RICS - EPKT | 25 to 300 | |
| | Heat shrinkable | Tycoelectronics | EPKT+EAKT+RSRB | 16 to 300 | |
| 24 kV 630 A-125 kV impulse | Simplified disconnectable | Tycoelectronics | RICS - EPKT | 25 to 300 | |

For cross section > 300 mm², please contact us.

- Disconnectable connector
- Single-core dry cable and lightning arrester

Connectors with lightning arrestors

| Performance | Connection | Supplier | Reference | Cross section | Remarks |
|---------------------------------------|----------------|-----------------|------------------------------------|---------------|----------------------------------|
| 7.2 to 17.5 kV 630 A-95 kV impulse | Disconnectable | nkt cables GmbH | AB 12-630 + ASA12 (5 or 10 kA) | 25 to 300 | Non-directed field |
| | | | CB 24-630 + CSA 24 (5 or 10 kA) | 25 to 300 | Directed field |
| 24 kV 630 A-125 kV impulse | Disconnectable | nkt cables GmbH | AB 12-630 + ASA12 (5 or 10 kA) | 25 to 300 | Non-directed field |
| | | | CB 24-630 + CSA 24 (5 or 10 kA) | 25 to 300 | Directed field |
| 7.2 to 17.5 kV 630 A-95 kV impulse | Disconnectable | Tycoelectronics | RICS+EPKT RDA 12 or 18 | 25 to 300 | |
| | | Elastimold | K400TB + K400RTPA + K156SA | 35 to 300 | Enlarged cable box |
| 24 kV 630 A-125 kV impulse | Disconnectable | Tycoelectronics | RICS + EPKT RDA 24 | 25 to 300 | Enlarged cable box |
| | | Elastimold | K440TB + K400RTPA + K156SA | 35 to 300 | Enlarged cable box |
| | | Tycoelectronics | RSTI-58 + RSTI-CC-58SAxx05 | 25 to 300 | Directed field 5 kA arrester |
| | | Tycoelectronics | RSTI-58 + RSTI-CC- 66SAxx10M16 | 25 to 300 | Directed field 10 kA arrester |

For cross section > 300 mm², please contact us.



TOOLS

schneider-electric.com

The international website allows you to access the smart RMU solution and Schneider Electric product information.

Smart RMU landing page:

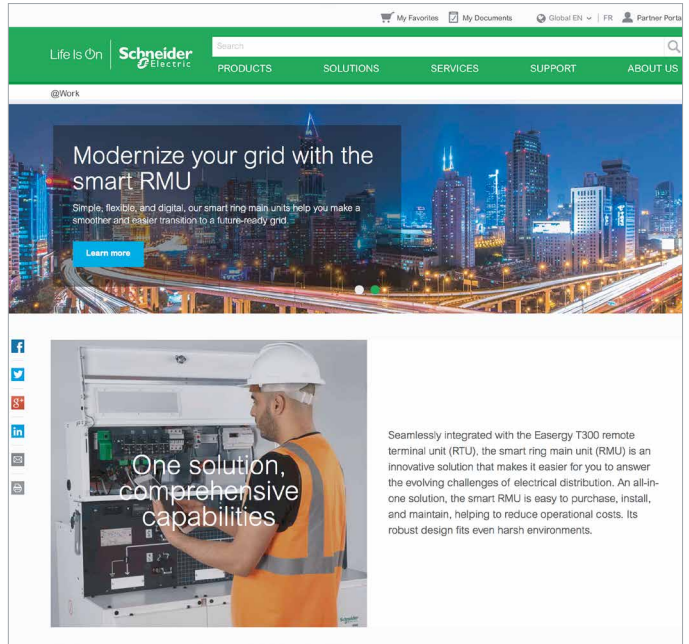
<https://www.schneider-electric.com/en/work/products/product-launch/smart-ring-main-unit/>



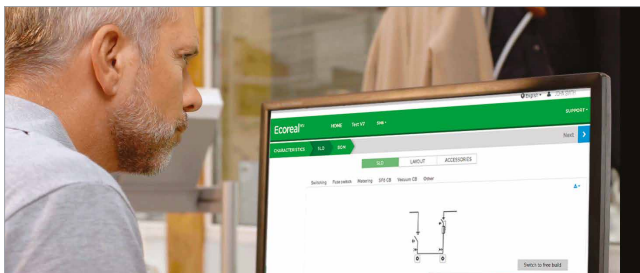
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Notes

Notes

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