Panel builders
The widest range of components to meet all your requirements

Catalog 2021
Components for Medium Voltage Switchgear

se.com/mv-panelbuilder
Life Is On
Schneider Electric
In this overview, Schneider Electric presents all the Medium Voltage and Low Voltage components you need to build your Medium Voltage switchgear.
Content

Medium Voltage switching devices 10

Protection, Metering and Feeder Automation 20

Accessories 46

Services 50
How can you make easily your switchgear smarter?

Better connectivity and data analytics bring great benefits

Connectivity combined with IoT, brings more value in power management. More than remote control facilities, digital offers better versatility, especially when it comes to adapt or setup products quickly and to answer your customers specific needs.

Analytics and operational data allow enhanced asset management, and thus optimized operating conditions for end users that can now anticipate maintenance needs.

Digitization benefits don’t end at interoperability, data or predictive maintenance. It permits you to enhance safety, reliability and efficiency of the solution provided.

Adding more connectivity, practicality and analytics will allow you to provide smarter switchgear and get a step ahead in a more competitive world.

Easergy P1 | Easergy P5 | EasyPact EXE

Simplicity
- Easy to order with short delivery time and optimized stock
- Easily configured, intuitive HMI
- Easy to use and intuitive setting tool
- Easy and fast (10 sec) mounting with spring clips
- Easy commissioning, operation and maintenance

Flexibility
- Applicable on LV applications when ANSI functions are required
- Cost and size optimized protection relay for compact switchgears
- Same protection relay for many applications, in green and brown fields
- Model breakdown to allow tailor the product to the application
- Ideal for back-up protection

Efficiency
- One simple product to cover the most common needs in Feeder and Voltage protection
- Low device energy consumption

- Scalable hardware making it easy to customize late or upgrade as you application evolve
- Low Power Instrument Transformers compatible to make your installation lighter
- Excellent connectivity with 8 communication protocols supported

- Easy selection and ordering
- Off-the-shelf availability for fast deliveries
- IOT-connected thermal monitoring available for simple and affordable fire prevention
- Service enabler for Partners (see page 52)
- No impact on existing switchgear structure

- Easier operation with digital tools through the entire product lifecycle
- Intuitive and efficient user interface and configuration tools

- Modular kits for a wide choice of customizations including thermal monitoring
- Ecostruxure ready digital solutions and services

- Built-in arc flash protection with a complete set of protection
- Quicker maintenance thanks to withdrawable design
- Latest cybersecurity features with IEC 62443 standard compliance and Achilles certification

- Designed for greater safety
- Fast delivery, less stock, more productivity
How can digital bring more value at work?

Simplify your life at all steps of your business

Connect Panel Builder Portal

The Schneider Electric™ Panel Builder Portal can help you find what you need to create better, more efficient Low Voltage or Medium Voltage Switchboards, in less time.

- Productivity tools
- Personalized resources
- Collaborative sales support
- Trainings

Get support anytime

- 24/7 self-service, mobile catalog and access to expert help
- Off-line and on-line catalog
- Manage and track your orders
- Advanced support

With Schneider Electric Partner Program,

get more done!

Think big. Partner up!

Visit our page and get more:

Order and check ordering information

A self-service ordering platform to access detailed information:

- Check real-time price and availability information
- Order online
- Check order status and tracking information
- Get financial documentation
Schneider Electric's commitments

High quality components
Based on our expertise in building Medium Voltage cubicles, all the proposed components are designed to be fully consistent with the others. This assures complete interoperability, which has been tested in our own Medium Voltage cubicles equipped with these components.
Moreover, our industrialized processes and quality controls guarantee the highest level of component quality to meet your most demanding expectations.

Easy to integrate
Increase your product knowledge and ensure easy integration with our tools and training package, allowing you to be more efficient in your business.
All necessary information on mounting and assembly is supplied with each component.

Compatible with smart grid applications
Given the demand for an increasing number of energy production sources and the increasingly significant obligations of network adaptability, operators have to know, understand and act appropriately:
• Know the switchboards’ status at all times
• Act with full knowledge of the facts
Medium Voltage switchboards demand more remote measurement and control capabilities.
You will find a whole range of modern monitoring and control devices acting in full complementarity with Medium Voltage switching devices.

Fully type-tested products compliant with the latest international and local standards
More than quality and safest products we provide tools to help your business to:

**Ease and secure your designs:**
- CAD and drawings accessible from our Web and Partner Portal
- Access to product videos of installation

**Share simply with your customers all technical documentations:**
- Technical manuals (user guides, installation manuals, etc.)
- Products catalogs
- Maintenance guides and end-of-life manuals

**Gain more autonomy and productivity using our suite of software EcoStruxure™ Power Build:**
- Configure your projects simply and quickly
- Get a quick quotation
- Set up and share documentation
- Order automatically

True Peace of Mind
Benefit from Schneider Electric brand image and know-how

The experience of a world leader in Medium Voltage

Schneider Electric has been manufacturing MV cubicles for more than 50 years and has an installed base of millions of products and devices. The Schneider Electric brand is known worldwide and recognized.

A long history of innovation for a global offer

Based on this experience as a world leader, Schneider Electric has developed a large and comprehensive range innovative Medium Voltage devices employing field proven and latest breaking technologies. You benefit from a global leader’s experience and know-how in electric distribution, automation and power and control.

All the devices included in this overview have been designed and manufactured to incorporate the benefits of this extensive experience. Schneider Electric devices can easily benefit from advanced functionalities of communication and monitoring enabled by IoT devices to give final switchboard and installation valuable information and enhanced operability of the complete system.

Quality certification: ISO 9001 and ISO 14001

In each of its units, Schneider Electric has an operating organization whose main role is to verify quality and ensure standards compliance. This procedure is:

- Uniform for all departments
- Recognized by numerous customers and official organizations

The quality system for design and manufacturing is certified in compliance with the requirements of the ISO 9001 quality assurance model.
Schneider Electric: A brand you can trust

Schneider Electric’s policy has always been to provide its customers with very close support in their daily activities to enable them to achieve operational excellence.

There are always Schneider Electric experts to support you!

Locally or on demand, our team of experts accompanies you during integration and discovering of our products. We will add value:

- To SPEED UP adoption of our offers
- To SIMPLIFY components integration
- To PROVIDE technical knowledge/solutions

We will help you, by providing:

- Support on integration of Schneider Electric components
- Simulation of Panel Builder’s cubicles into CAE tool by our core experts, before going for extensive type testing
- Support to prepare Panel Builder’s switchgears for type testing
- Training on our products
- And welcome you in our factories!

- **Our common values**
  - Quality
  - Safety
  - Professionalism

- **5% of sales**
  devoted to R&D

- **Local support**
  all over the world

- **160,000 people in more than 100 countries**

- **Over 100 years of protection relay experience**
Medium Voltage switching devices
## Medium Voltage switching devices

<table>
<thead>
<tr>
<th>Components for Medium Voltage Switchgear</th>
<th>P eru</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit-Breakers</td>
<td>12</td>
</tr>
<tr>
<td>Vacuum Circuit-Breakers</td>
<td>12</td>
</tr>
<tr>
<td>SF6 Circuit-Breakers</td>
<td>13</td>
</tr>
<tr>
<td>Specific Applications Circuit-Breakers</td>
<td>14</td>
</tr>
<tr>
<td>Contactors</td>
<td>15</td>
</tr>
<tr>
<td>Vacuum and SF6 contactors</td>
<td>15</td>
</tr>
<tr>
<td>Switches and Disconnectors</td>
<td>16</td>
</tr>
<tr>
<td>SF6 and Air - Indoor load break switch, disconnector and earthing switch</td>
<td>16</td>
</tr>
<tr>
<td>Cradle</td>
<td>17</td>
</tr>
<tr>
<td>Fuses</td>
<td>18</td>
</tr>
</tbody>
</table>
# Circuit-Breakers

Vacuum circuit-breakers

Protection and operation of network

<table>
<thead>
<tr>
<th>EasyPact EXE</th>
<th>HVX - Embedded pole</th>
<th>Evolis 24</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="EasyPact EXE" /></td>
<td><img src="image2" alt="HVX - Embedded pole" /></td>
<td><img src="image3" alt="Evolis 24" /></td>
</tr>
</tbody>
</table>

**New**

<table>
<thead>
<tr>
<th>Rated voltage (kV)</th>
<th>12</th>
<th>17.5</th>
<th>12</th>
<th>17.5</th>
<th>24</th>
<th>36</th>
<th>40.5</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. rated short-circuit current</td>
<td>31.5 kA</td>
<td>50 kA</td>
<td>31.5 kA</td>
<td>50 kA</td>
<td>31.5 kA</td>
<td>31.5 kA</td>
<td>31.5 kA</td>
<td>25 kA</td>
</tr>
<tr>
<td>Max. rated current</td>
<td>2 500 A</td>
<td>3 150 A / 4 000 A (1)</td>
<td>3 150 A / 4 000 A (1)</td>
<td>2 500 A</td>
<td>2 500 A / 3 150 A (1)</td>
<td>1 250 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Versions</td>
<td>• Fixed</td>
<td>• Fixed</td>
<td>• Fixed</td>
<td>• Withdrawable</td>
<td>• Withdrawable</td>
<td>• Fixed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of poles</td>
<td>3p</td>
<td>3p</td>
<td>3p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical switching cycles (ON/OFF)</td>
<td>10 000</td>
<td>10 000</td>
<td>10 000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting</td>
<td>Frontal</td>
<td>Frontal</td>
<td>Lateral</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanism</td>
<td>Conventional spring</td>
<td>Conventional spring</td>
<td>Conventional spring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standards</td>
<td>• IEC</td>
<td>• IEC</td>
<td>• IEC</td>
<td>• GOST (Chinese)</td>
<td>• GOST</td>
<td>• GOST</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Benefits**

- Kit and web ordering
- Attractive price
- Better safety
- Opex optimization (thermal sensors replace infrared thermography)
- Service enabler for Partners ([see page 52](#))
- Embedded pole for better dielectric & environmental pollution withstand
- Compact dimensions
- Reliable spring mechanism for open pole technology

(1) Need forced cooling
(2) Only 36 kV & 40.5 kV
## Medium Voltage switching devices

### Circuit-Breakers

**SF6 Circuit-Breakers**

Protection and operation of network

### LF SF1 SF2

<table>
<thead>
<tr>
<th></th>
<th>LF</th>
<th>SF1</th>
<th>SF2</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="https://via.placeholder.com/500x500" alt="Image" /></td>
<td><img src="https://via.placeholder.com/500x500" alt="Image" /></td>
<td><img src="https://via.placeholder.com/500x500" alt="Image" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Rated voltage (kV)</strong></th>
<th>12</th>
<th>17.5</th>
<th>12</th>
<th>17.5</th>
<th>24</th>
<th>36</th>
<th>36</th>
<th>40.5</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Max. rated short-circuit current</strong></th>
<th>50 kA</th>
<th>40 kA</th>
<th>25 kA</th>
<th>25 kA</th>
<th>25 kA</th>
<th>25 kA</th>
<th>40 kA</th>
<th>31.5 kA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Max. rated current</strong></td>
<td>3 150 A</td>
<td>1 250 A</td>
<td>3 150 A</td>
<td>2 500 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Versions</strong></th>
<th>• Fixed</th>
<th>• Fixed</th>
<th>• Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of poles</strong></td>
<td>3p</td>
<td>3p</td>
<td>3p</td>
</tr>
<tr>
<td><strong>Mechanical switching cycles (ON/OFF)</strong></td>
<td>10 000</td>
<td>10 000</td>
<td>10 000</td>
</tr>
<tr>
<td><strong>Mounting</strong></td>
<td>Frontal</td>
<td>Frontal and lateral</td>
<td>Frontal</td>
</tr>
<tr>
<td><strong>Mechanism</strong></td>
<td>Conventional spring</td>
<td>Conventional spring</td>
<td>Conventional spring</td>
</tr>
<tr>
<td><strong>Standards</strong></td>
<td>• IEC</td>
<td>• IEC</td>
<td>• IEC</td>
</tr>
<tr>
<td><strong>Benefits</strong></td>
<td>• Referenced product for Nuclear Power plants</td>
<td>• Integrated VIP trip unit (without auxiliary power supply) in SFset up to 24 kV</td>
<td>• Particularly adapted for high voltage ratings and harsh environment</td>
</tr>
<tr>
<td></td>
<td>• Marine solutions certified</td>
<td>• Well suited for capacitor bank and inductive load applications</td>
<td>• Well suited for capacitor bank and inductive load applications</td>
</tr>
<tr>
<td></td>
<td>• Seismic version available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

schneider-electric.com

Components for Medium Voltage Switchgear | 13
# Vacuum Circuit-Breaker

<table>
<thead>
<tr>
<th>Function</th>
<th>VAH</th>
<th>VXC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection for generator in power plants up to 130 MVA</td>
<td>12</td>
<td>36</td>
</tr>
<tr>
<td>Arc furnace</td>
<td>13.8</td>
<td>38</td>
</tr>
<tr>
<td>17.5</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>36</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>38</td>
<td>38</td>
<td>38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rated voltage (kV)</th>
<th>12</th>
<th>13.8</th>
<th>17.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. rated short-circuit current</td>
<td>63 kA</td>
<td>63 kA</td>
<td>63 kA</td>
</tr>
<tr>
<td>Max. rated current</td>
<td>5 000 - 8 000 A*</td>
<td>2 500 A</td>
<td>4 000 A</td>
</tr>
<tr>
<td>Versions</td>
<td>Fixed</td>
<td>Fixed</td>
<td>Withdrawable</td>
</tr>
<tr>
<td>Number of poles</td>
<td>3p</td>
<td>3p</td>
<td></td>
</tr>
<tr>
<td>Mechanical switching cycles (ON/OFF)</td>
<td>10 000</td>
<td>25 000</td>
<td></td>
</tr>
<tr>
<td>Mounting</td>
<td>Frontal</td>
<td>Frontal</td>
<td></td>
</tr>
<tr>
<td>Mechanism</td>
<td>Conventional spring</td>
<td>Conventional spring</td>
<td></td>
</tr>
<tr>
<td>Standards</td>
<td>IEC, ANSI, IEEE C37.013</td>
<td>IEC</td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td>Extremely robust design, Optimized maintenance</td>
<td>Extremely robust and simple construction, Extra high mechanical and electrical switching capacity, Designed for high operating cycles, Minimum maintenance</td>
<td></td>
</tr>
</tbody>
</table>

---

**Medium Voltage switching devices**

**Circuit-Breakers**

Specific Applications Circuit-Breakers

Protection and operation of network
### SF6 Contactor

<table>
<thead>
<tr>
<th>Model</th>
<th>CBX</th>
<th>CVX</th>
<th>Rollarc</th>
</tr>
</thead>
<tbody>
<tr>
<td>rated voltage (kV)</td>
<td>7.2</td>
<td>12</td>
<td>7.2</td>
</tr>
<tr>
<td>max. rated short-circuit current</td>
<td>6 kA</td>
<td>4 kA</td>
<td>6 kA (50 kA in conjunction with fuses)</td>
</tr>
<tr>
<td>max. rated current</td>
<td>400 A (AC4)</td>
<td>315 A (AC4)</td>
<td>400 A (AC4)</td>
</tr>
<tr>
<td>versions</td>
<td>• Fixed</td>
<td>• Fixed</td>
<td>• Withdrawable version equipped with DIN or BS fuses</td>
</tr>
<tr>
<td>number of poles</td>
<td>1p - 3p</td>
<td>3p</td>
<td>3p</td>
</tr>
<tr>
<td>mechanical switching cycles (ON/OFF)</td>
<td>• 300 000 (mechanical latch)</td>
<td>• 300 000 (mechanical latch)</td>
<td>• 100 000 (mechanical latch)</td>
</tr>
<tr>
<td>mechanism</td>
<td>Magnetic holding or mechanical latch</td>
<td>Magnetic holding or mechanical latch</td>
<td>Magnetic holding or mechanical latch</td>
</tr>
<tr>
<td>standards</td>
<td>• IEC</td>
<td>• IEC</td>
<td>• GB</td>
</tr>
<tr>
<td>benefits</td>
<td>• LV supply thanks to optional on board VT</td>
<td>• High short circuit breaking capacity in combination with fuses</td>
<td>• Reference product in SF6 contactor market</td>
</tr>
</tbody>
</table>
# Switches and Disconnectors

**SF6 and Air - Indoor load break switch, disconnector and earthing switch**

<table>
<thead>
<tr>
<th>Function</th>
<th>SF6 switch &amp; disconnector</th>
<th>Earthing switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor load break switch, disconnector and accessories</td>
<td>Earthing switch</td>
<td>Earthing switch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rated voltage (kV)</th>
<th>LBSkit</th>
<th>EISC</th>
<th>Earthing switch 17/24 kV</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td></td>
<td>36</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>36</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Max. rated short-circuit current</th>
<th>25 kA/1 s</th>
<th>25 kA/1s</th>
<th>31.5 kA</th>
<th>31.5 kA</th>
<th>31.5 kA</th>
<th>25 kA</th>
<th>31.5 kA</th>
<th>50 kA</th>
<th>31.5 kA</th>
</tr>
</thead>
<tbody>
<tr>
<td>165</td>
<td>210</td>
<td>165</td>
<td>350</td>
<td>160</td>
<td>200-240</td>
<td>240</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>175</td>
<td>210</td>
<td>370</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>215</td>
<td>215</td>
<td>400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>250</td>
<td>460</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>275</td>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Max. rated current</th>
<th>1 250 A</th>
<th>1 250 A</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Pole center distance</th>
<th>165</th>
<th>210</th>
<th>165</th>
<th>350</th>
<th>160</th>
<th>200-240</th>
<th>240</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>175</td>
<td>210</td>
<td>370</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>215</td>
<td>215</td>
<td>400</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>250</td>
<td>460</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>275</td>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mechanical switching cycles (ON/OFF)</th>
<th>1 000 cycles</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Standards</th>
<th>IEC</th>
<th>IEC 62271-102</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Insensitive to environment</td>
</tr>
<tr>
<td>• Reduced maintenance</td>
</tr>
<tr>
<td>Earthing switch for a wide range of rated voltages</td>
</tr>
<tr>
<td>Simple and robust design easy to adapt with a large choice of options</td>
</tr>
</tbody>
</table>
### Cradle

<table>
<thead>
<tr>
<th>Function</th>
<th>L-Frame Cradle</th>
<th>M1-M2 Cradle</th>
<th>MC Cassette</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration of switching device</td>
<td>Integration of switching device</td>
<td>Integration of switching device</td>
<td>Integration of switching device</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rated voltage (kV)</th>
<th>12</th>
<th>17.5</th>
<th>24</th>
<th>36</th>
<th>40.5</th>
<th>7.2</th>
<th>12</th>
<th>17.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. rated short-circuit current</td>
<td>50 kA</td>
<td>31.5 kA</td>
<td>40 kA</td>
<td>31.5 kA</td>
<td>50 kA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. rated current</td>
<td>3 150 A</td>
<td>2 500 A</td>
<td>2 500 A</td>
<td>1 250 A</td>
<td>3 150 A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended cubicle width</td>
<td>650 - 1 000 mm</td>
<td>800 - 1 000 mm</td>
<td>1 100 mm</td>
<td>570 - 900 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration of switching device</td>
<td>HVX Embedded Pole + EasyPact EXE</td>
<td>SF</td>
<td>LF + EasyPact EXE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Version</td>
<td>With and without earthing switch</td>
<td>Without earthing switch</td>
<td>With earthing switch in option</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td>Fully assembled by Schneider Electric</td>
<td>Two different arrangements for HV connection using the upper and lower bushings</td>
<td>Full type tested solution including internal arc protection with MV door</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Medium Voltage switching devices

Fuses
Current limiting fuses

Function
Protection to Medium Voltage distribution devices (from 3.6 to 36 kV) from both the dynamic and thermal effects of short-circuit currents

<table>
<thead>
<tr>
<th>Fusion CF</th>
<th>Solefuse</th>
<th>Tepefuse</th>
<th>MGK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage (kV)</td>
<td>3.6</td>
<td>7.2</td>
<td>12</td>
</tr>
<tr>
<td>Max. rated short-circuit current</td>
<td>Up to 63 kA</td>
<td>Up to 50 kA</td>
<td>Up to 40 kA</td>
</tr>
<tr>
<td>Max. rated current</td>
<td>Up to 250 A</td>
<td>Up to 125 A</td>
<td>Up to 0.3 A</td>
</tr>
<tr>
<td>Applications</td>
<td>• Motors</td>
<td>• Power Transformers</td>
<td>• Power Transformers</td>
</tr>
</tbody>
</table>
| | • Power Transformers | • Capacitors | • Capacitors | }
| Standards | • IEC 60282-1 | • UTE C64200, C64210 | • IEC 60282-1 | • UTE C64200, C64210 |
| | • DIN 43625 | • VDE 0670-402 | • IEC 60282-1 | • IEC 60282-1 |
| Benefits | • High breaking capacity | • High current limitation | • Low 12t values | • Low breaking overvoltage |
| | • Low 12t values | | | • Low dissipated power |
| | • Low breaking overvoltage | | | • For indoor and outdoor applications |
| | • Low dissipated power | | | • With a thermal striker |

For additional information consult our MV fuses catalogue (ref: AC0479EN)
Protection, Metering and Feeder Automation
## Protection, Metering and Feeder Automation

<table>
<thead>
<tr>
<th>Component</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection relays</td>
<td>22</td>
</tr>
<tr>
<td>Arc fault detection and protection</td>
<td>26</td>
</tr>
<tr>
<td>MV-LV substation remote control and monitoring</td>
<td>28</td>
</tr>
<tr>
<td>Substation power supply</td>
<td>30</td>
</tr>
<tr>
<td>Voltage presence relay and Voltage Presence Indicator (VPIS)</td>
<td>31</td>
</tr>
<tr>
<td>Fault Passage Indicators</td>
<td>33</td>
</tr>
<tr>
<td>Medium Voltage instrument transformers</td>
<td>34</td>
</tr>
<tr>
<td>Energy management and control</td>
<td>36</td>
</tr>
<tr>
<td>Low Voltage protection</td>
<td>39</td>
</tr>
<tr>
<td>Low Voltage relays</td>
<td>40</td>
</tr>
<tr>
<td>Low Voltage control and signalling</td>
<td>41</td>
</tr>
</tbody>
</table>
**Protection, Metering & Feeder Automation**

## Protection relays

**Easergy P3 Range**

### Application

<table>
<thead>
<tr>
<th>Feeder</th>
<th>Easergy P3 Standard</th>
<th>Easergy P3 Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3U10</td>
<td>P3U10</td>
<td>P3U30</td>
</tr>
<tr>
<td>P3U20</td>
<td></td>
<td>P3F30 with directional P3L30 line diff. &amp; distance</td>
</tr>
<tr>
<td>P3U30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transformer</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P3T32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Motor</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P3M30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Generator</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P3G30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Characteristics

<table>
<thead>
<tr>
<th>Measuring inputs</th>
<th>Easergy P3 Standard</th>
<th>Easergy P3 Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase current</td>
<td>1/5A CT or LPCT (x3) (5)</td>
<td>1/5A CT (x3) or LPCT (5)</td>
</tr>
<tr>
<td>Residual current</td>
<td>1/5A CT or 0 2/1A CT</td>
<td>(1/5A+0 2/1A) CT</td>
</tr>
<tr>
<td>Voltage</td>
<td>VT (x1) VT (x4) or LPVT (x4) (5)</td>
<td>VT (x4) VT (x4)</td>
</tr>
<tr>
<td>Arc-flash sensor input</td>
<td>-</td>
<td>Loop sensor: 1 Point sensor: 2, 4 or 6 (1)</td>
</tr>
<tr>
<td>Digital Input</td>
<td>2 8/10 14/16</td>
<td>6 to 36 6 to 16</td>
</tr>
<tr>
<td>Digital Output</td>
<td>5 + SF 5/8 + SF 11/8 + SF 10 to 21 + SF 10 to 13 + SF</td>
<td></td>
</tr>
<tr>
<td>Analogue Input</td>
<td>- 0 or 4 (5)</td>
<td>0 or 4 (5)</td>
</tr>
<tr>
<td>Analogue Output</td>
<td>- 0 or 4 (5)</td>
<td>0 or 4 (5)</td>
</tr>
<tr>
<td>Temperature sensor input</td>
<td>- 0 or 8 or 12 (5)</td>
<td>0 or 8 or 12 (5)</td>
</tr>
<tr>
<td>Front port</td>
<td>USB type B</td>
<td>USB type B</td>
</tr>
<tr>
<td>Nominal power supply</td>
<td>24V dc or 24–48V dc or 48–230V ac/dc (5)</td>
<td>24 to 48V dc or 110–240V ac/dc</td>
</tr>
<tr>
<td>Ambient temperature, in service</td>
<td>-40 to 60°C (-40 to 140°F)</td>
<td>-40 to 60°C (-40 to 140°F)</td>
</tr>
</tbody>
</table>

### Communication

<table>
<thead>
<tr>
<th>Rear ports RS232, IRIG/B, RS485, Ethernet</th>
<th>Easergy P3 Standard</th>
<th>Easergy P3 Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC61850 ed1 &amp; ed2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>IEC 60870-5-101 &amp; 103</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DNP3 over Ethernet</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DNP3 serial</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Modbus serial</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Modbus over Ethernet</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ethernet IP (6)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DeviceNet</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Profinet DP</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SPAbus</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Redundancy protocols (RSTP/PRP)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Protocols

<table>
<thead>
<tr>
<th>Protocols</th>
<th>Easergy P3 Standard</th>
<th>Easergy P3 Advanced</th>
</tr>
</thead>
</table>

### Others

<table>
<thead>
<tr>
<th>Control</th>
<th>1 object 1 display</th>
<th>4 objects 4 display</th>
<th>4 objects 8 display</th>
<th>5-6 objects 3-8 display</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logic (Matrix + Logic equation)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Withdrawable CT connector with shorting</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Remote HMI</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

| Hardware dimensions (W/H/D) | 171 x 176 x 214 (3) mm / 6.73 x 6.93 x 8.43 in | 264 x 177 x 208 mm / 10.39 x 6.97 x 8.19 in |
|----------------------------|-------------------------------------------------|

(1) Depends on optional module
(2) P3L30 can have 1 loop or 2 point sensors only
(3) 226 mm (8.90 in) with ring-lug connectors
(4) Check the available power supply range from the device’s serial number label
(5) LPCT for P3U30, P3F30 and P3M30 relays only. Consult us for other models
(6) Consult us for availability
## Easergy P5x20

<table>
<thead>
<tr>
<th>Application</th>
<th>PSV20</th>
<th>-</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeder</td>
<td>-</td>
<td>P5U20</td>
<td>P5F30</td>
</tr>
<tr>
<td>Transformer</td>
<td>-</td>
<td>with directional in LPCT/LPVT version</td>
<td>-</td>
</tr>
<tr>
<td>Motor</td>
<td>-</td>
<td>-</td>
<td>PSM30</td>
</tr>
</tbody>
</table>

## Characteristics

<table>
<thead>
<tr>
<th>Measuring inputs</th>
<th>Phase current</th>
<th>Residual current</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>VT (x4)</td>
</tr>
<tr>
<td></td>
<td>1/5A CT (x3)</td>
<td>1/5A CT &amp; 1A CT</td>
<td>LPVT (x4)</td>
</tr>
<tr>
<td>or LPCT (x3)</td>
<td></td>
<td>or CSH core balance CT</td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Arc-flash sensor inputs</th>
<th>Inputs</th>
<th>Outputs</th>
<th>3 to 8 + Watchdog (WD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 to 16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature sensor input</th>
<th>-</th>
<th>0 to 16 (external modules)</th>
<th>0 to 16 (external modules)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 USB for configuration</td>
<td>1 USB for USB key</td>
<td>1 USB for USB key</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power supply</th>
<th>24-250 VDC ; 100-230 VAC</th>
<th>24-48 VDC or 48-250 VDC ; 100-230 VAC</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature, in service</td>
<td>-40 to 70°C (-40 to 158°F)</td>
<td>-40 to 70°C (-40 to 158°F)</td>
<td>-</td>
</tr>
</tbody>
</table>

## Communication

<table>
<thead>
<tr>
<th>Hardware modules</th>
<th>Extension(2) + Backup memory</th>
<th>Serial</th>
<th>Ethernet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Protocols</th>
<th>IEC 61850 Ed.1 &amp; Ed.2</th>
<th>IEC 60670-5-103 &amp; 101</th>
<th>DNP3 Ethernet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DNP3 serial</td>
<td>Modbus Ethernet</td>
<td>Modbus serial</td>
</tr>
<tr>
<td></td>
<td>EtherNet IP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RSTP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRP / HSR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time synchronization</th>
<th>Pulse, IRIG-B(3)</th>
<th>SNMP, PTP IEEE 1588 v2(4)</th>
<th>-</th>
</tr>
</thead>
</table>

## Others

<table>
<thead>
<tr>
<th>Control</th>
<th>6 controlled + 2 monitored objects Mimic</th>
<th>6 controlled + 2 monitored objects Mimic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logic (Matrix + Logic Equations)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cybersecurity</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Draw-out device (withdrawability)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

| Hardware dimensions (H/W/D) | 102 / 176 / 219 mm | 4.01 / 6.93 / 8.62 in | 152 / 176 / 219 mm | 6.0 / 6.93 / 8.62 in |

---

(1) In case PSU20 is chosen for cooperation with low power sensors, it contains LPCT (x3) and LPVT (x4) channels
(2) for connection of RTD module and IRIG-B module
(3) IRIG-B module is a separate accessory
(4) PTP IEEE 1588 v2 is available with HSR/PRP communication board
# Protection, Metering & Feeder Automation

## Protection relays
VIP, Easergy & MiCOM ranges

<table>
<thead>
<tr>
<th>Application</th>
<th>Feeder</th>
<th>Voltage</th>
<th>Transformer</th>
<th>Motor</th>
<th>Generator</th>
<th>Busbar</th>
<th>Capacitor bank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Phase and earth-fault</td>
<td>Voltage and frequency</td>
<td>Phase and earth-fault</td>
<td>Phase and earth-fault</td>
<td>Phase and earth-fault</td>
<td>With busbar differential</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>With directional</td>
<td>With transformer differential</td>
<td>With voltage</td>
<td>With directional</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>With line differential</td>
<td></td>
<td>With machine differential</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>With distance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### VIP Relays
VIP40/45
VIP400/410

### Easergy
P1F/P1V

### MiCOM
P111
P115 / P116

### MiCOM (2)

<table>
<thead>
<tr>
<th>VIP Relays VIP40/45 VIP400/410</th>
<th>Easergy P1F/P1V</th>
<th>MiCOM P111</th>
<th>MiCOM P115 / P116</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Image of VIP Relays]</td>
<td>[Image of Easergy]</td>
<td>[Image of MiCOM P111]</td>
<td>[Image of MiCOM P115 / P116]</td>
</tr>
</tbody>
</table>

### Application

<table>
<thead>
<tr>
<th>Field</th>
<th>VIP 40/45: 4 digits display</th>
<th>VIP 400/410: Graphical LCD</th>
<th>Easergy P1F/P1V</th>
<th>MiCOM P111</th>
<th>MiCOM P115 / P116</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>VIP 40/45: 4 digits display</td>
<td>VIP 400/410: Graphical LCD</td>
<td>Graphical LCD</td>
<td>16 characters LCD 2 lines</td>
<td>16 characters LCD 2 lines</td>
</tr>
<tr>
<td>Other characteristics</td>
<td>Self/Dual Powered</td>
<td></td>
<td>Self/Dual Powered</td>
<td>Withdrawable hardware</td>
<td></td>
</tr>
<tr>
<td>Input/Output (up to)</td>
<td>1/3</td>
<td>8/6</td>
<td>8/7</td>
<td>6/6</td>
<td></td>
</tr>
<tr>
<td>I/O terminals</td>
<td>Screw type</td>
<td>Screw type</td>
<td>Screw type</td>
<td>Screw type</td>
<td></td>
</tr>
<tr>
<td>Temp. sensors (up to)</td>
<td>[Modbus RTU- RS485 (plug and play with T300)]</td>
<td>[Modbus RTU IEC 60870-5-103]</td>
<td>[Modbus RTU IEC 60870-5-103]</td>
<td>[Modbus RTU IEC 60870-5-103]</td>
<td>[Modbus RTU IEC 60870-5-103]</td>
</tr>
</tbody>
</table>

### Communication protocol

<table>
<thead>
<tr>
<th>Field</th>
<th>VIP 40/45: 4 digits display</th>
<th>VIP 400/410: Graphical LCD</th>
<th>Easergy P1F/P1V</th>
<th>MiCOM P111</th>
<th>MiCOM P115 / P116</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logic equations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standards</td>
<td></td>
<td></td>
<td>IEC, EAC, UKSA</td>
<td>IEC, EAC</td>
<td>IEC, EAC</td>
</tr>
</tbody>
</table>

---

(1) Available on January 2021
(2) End of life: June 2021
## Protection relays

### Sepam & Easergy MiCOM ranges

<table>
<thead>
<tr>
<th>Sepam series 60</th>
<th>Sepam series 80</th>
<th>Easergy MiCOM P30</th>
<th>Easergy MiCOM P40</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="P105661" alt="Sepam series 60" /></td>
<td><img src="P105662" alt="Sepam series 80" /></td>
<td><img src="P105873" alt="Easergy MiCOM P30" /></td>
<td><img src="8297098" alt="Easergy MiCOM P40" /></td>
</tr>
</tbody>
</table>

- **CT (1 or 5 A) or LPCT**
  - **VT**
- **Standard UMI**
  - **Remote UMI**
  - **Mimic based UMI**
- **Removable SW cartridge**
- **28/16**
- **28/16**
  - **8 to 16**
- **8 to 16**
  - **8 to 16**
- **8 to 16**
- **8 to 16**
- **Modbus RTU**
  - **IEC 60870-5-103**
  - **DNP3**
  - **Modbus TCP/IP**
  - **IEC 61850 with GOOSE**
  - **RSTP**
- **Modbus RTU**
  - **IEC 60870-5-103**
  - **DNP3**
  - **Modbus TCP/IP**
  - **IEC 61850 with GOOSE**
  - **RSTP**
- **Modbus RTU**
  - **IEC 60870-5-103**
  - **DNP3**
  - **IEC 61850 with GOOSE**
  - **RSTP**
  - **PRP / HSR / DUAL-IP**
  - **IEC 6870-5-104**
- **Modbus RTU**
  - **IEC 60870-5-103**
  - **DNP3 serial/DNP3oE**
  - **IEC 61850 with GOOSE**
  - **RSTP/SHP/DHP**
  - **HSR/PRP**
- **Comprehensive logic equations**
- **Control logic by ladder diagram**
- **Comprehensive logic equations**
- **Comprehensive logic equations**

- **Standards**
  - IEC, EAC, UKSA
- **UL, CSA, EAC, ATEX**
- **IEC 61508-SIL2, UL, CSA, EAC, ATEX**
- **Cyber security**
  - IEC, EAC, ATEX
  - Cyber security (IEC 62351)
  - IEC, UL, CSA, EAC, ATEX
Protection, Metering & 
Feeder Automation

Arc fault detection and 
protection
Easergy Arc protection range

**Function**
The arc protection unit detects an arc flash in an installation and trips the feeding breaker. An arc flash protection maximizes personnel safety and minimizes material damage caused by arc faults.

**System features**
- **Easergy Arc V125**
  - Stand-alone arc flash protection light detection for typical configurations:
  - 4 Arc inputs (point sensors)
  - Integrated 24…230Vac/dc power supply
  - High speed trip output (1 to 2 ms operation time)
  - 1 self supervision output
  - D-rail or flush mounting
  - Master trip I/O for simple arc selectivity
  - Direct installation with basic commissioning
  - Front status LEDs

- **Easergy Arc V121**
  - Operation on light only
  - Up to 10 sensors arc or smoke sensors
  - Single trip contact
  - Straight-forward installation
  - Typical operation time 9 ms (including the output relay)
  - Cost efficient solution
  - Self-supervision
  - Binary input for blocking or resetting (programmable) the unit
  - Possibility for double arc channel activation trip criteria
  - BIO light transfer possibility to other Vamp device

**Sensors**

- **Point sensor - Surface**
  - Arc detection from compartments
  - Self-monitored
  - 6 m and 20 m cable lengths available, shielded or not shielded

- **Point sensor - pipe**
  - Self-monitored
  - 6 m and 20 m cable lengths available, shielded or not shielded

- **Portable sensor**
  - Snap-in connection to I/O unit
  - Enhanced work safety

- **Loop sensor (fibre)**
  - Monitors various compartments
  - Small bending radius for easy installation

**Standards**
- IEC, UL, Marine
- IEC

**Benefits**
- Personnel safety
- Reduces production losses
- Extended switchgear life cycle
- Reduced insurance costs
- Low investment costs and fast installation
- Reliable operation
**Arc fault detection and protection**

**Easergy Arc protection range**

### Components for Medium Voltage Switchgear

**Protection, Metering & Feeder Automation**

#### Easergy Arc V221 (+ I/O units)**

- Current and light tripping criteria (possibility of tripping by light only)
- Typical operation time 7 ms (electromechanical contact)
- Accurate location of arc fault utilizing point sensors
- Four selective protection zones per system
- Self-supervision of the entire system
- Up to 160 sensors (with I/O modules)
- Easy interconnect using VX001 cables
- Phase current measuring
- Earth fault current measuring
- Personal portable sensor option
- Panel or rail mount I/O units
- Circuit breaker fail protection (CBFP)

#### Easergy Arc V321 (+ I/O units)**

- Three phase current, zero sequence voltage and current
- Event logs, disturbance recording and real time clock
- Operation on simultaneous current and light or light only
- Informative display LCD (single line diagram)
- Up to four fast trip contacts
- Direct light sensors and fiber optic up
- Support up to 170 arc flash point sensors (with I/O modules)
- One normally open and one change over alarm contact
- Typical operation time: less than 7 ms (including the output relay)
- Optionally 2 ms typical operation time when semi-conductor outputs are used
- Programmable operation zones
- Continuous system self supervision
- PC configurable
- Communication ports supporting a wide range of communication protocols which are intended for a SCADA interface

### Sensors

**Point sensor - Surface**
- Self-monitored
- 6 m and 20 m cable lengths available

**Point sensor - Pipe**
- Self-monitored
- 6 m and 20 m cable lengths available

**Portable sensor**
- Snap-in connection to I/O unit
- Enhanced work safety

**Loop sensor (fiber)**
- Monitors various compartments
- Small bending radius for easy installation

### Standards

- IEC
- UL
- Marine IEC

### Benefits

- Personnel safety
- Reduces production losses
- Large scale installation like substation
- Reduced insurance costs
- Low investment costs and fast installation
- Reliable operation

---

* I/O units: 4 ref available (VAM 3L, VAM 10L/1D, VAM 12L/1D, VAM 4C/CD).
The choice is to be made according to the needs of type and number of sensors. Please contact us.
MV-LV substation remote control & monitoring
Easergy T300

Advanced Supervision and Control of MV-LV Distribution system

Easergy T300: A modular RTU solution for any kind of applications

The Easergy T300 Feeder RTU is compliant with IEC 62351 and IEEE 1686 standards. It offers SCADA communication security and a role-based access control (RBAC) system to help protect your electrical infrastructure from cyber attacks.

Main functions
- MV network remote control of all UG and OH equipment: Fault Location Isolation system and restoration for all neutral system - centralized and decentralized network management
- LV switchboard monitoring
- Voltvar optimisation support
- MV and LV power and quality measurement
- Thermal monitoring and asset management

Main modules
- HU250 - Head unit communication/gateway
- SC150 - MV Switch controller
- LV150 - Transformer and LV monitoring
- PS100/PS50 - Wide range of backup power supply

Protocols
- IEC 60870-5-101/104 slave and master (standard and secure)
- DNP3 serial and TCP slave and master (standard and secure)
- Modbus serial and TCP slave and master
- IEC 61850 slave and master

Transmission system
- Two flexible communication ports accommodated with modem boxes:
  - RS232/RS485 modem box for WAN or LAN communication
  - 2G/3G modem box for WAN communication
  - 3G/4G modem box for WAN communication
- Two Ethernet ports (for WAN and LAN communication)
  - 1 Ethernet port for WAN communication
  - 1 Ethernet port for LAN communication with third party devices
- 1 serial RS232/RS485 for Modbus LAN communication
- Zigbee Modem for communication with thermal sensors
- Secure WiFi for local connection

Standards
- IEC

Benefits
- Easergy T300 addresses the following customer challenges:
  - Evolve with the grid: manage bidirectional and intermittent power flow
  - Increase availability: improve SAIDI and optimise MV networks
  - Maintain power quality
  - Manage the costs: reduce installation, operation and maintenance expenditures
  - Deliver efficiency: optimise network to manage growing consumption
  - Improve Cybersecurity: help defend against malicious software and unauthorised access
- Easergy T300 is a modular FRTU platform, hardware, firmware, and an application building block for Medium Voltage and Low Voltage public distribution network management
- Modular approach ensures T300 will be configurable to your exact needs e.g. packaged solutions, embedded solutions, open solutions
- This open architecture supports different applications, from a single communication gateway to large substation management
- Built-in web server for commissioning and maintenance with local and remote access, compatible with PC, tablet and smartphone devices
- High availability back up power supplies range PS100/50/25 for control and monitoring applications
**MV-LV substation remote control & monitoring**

**Easergy T300**

**Easergy HU250**

Head unit communication - Gateway

**Easergy SC150**

MV Switch controller

**Easergy LV150**

Transformer and LV monitoring

---

**Functions**

- Flexible communication to control centre and other customers’ IT applications
- Open peer-to-peer communication for self-healing applications*
- Open to third-party devices with many protocol capabilities
- Embedded IEC 601131-3 PLC for automation design
- Cyber security management: Compliance to the security standards/regulations (IEC 62351/IEEE 1686)
- Configurable Sequence of Events (SOE) for data logs
- Software integrity with firmware signature on all modules:
  - Secure communication between Easergy T300 and associated webserver tool with local or remote connections using HTTPS, SSH, SFTP
  - User identification and authentication according to IEC 62351-8
  - User access management according to IEC 62351-8
  - Communication authentication according to IEC 62351-5 when using DNP3 and IEC60870-5-104 protocols
  - Port hardening management.
  - IP communication filter
  - Security events log storage and transmission according to Syslog protocol

- Controlling and monitoring of all switchgear type
- Advanced fault Passage Indicator (FPI) algorithms:
  - P-P, P-E, O/C, 50/51, 50/51N
  - Directional P-P, P-E, O/C, 67/67N
- Broken conductor detection 47BC
- MV Network monitoring: Current, Voltage and Power measurements according to IEC61557-12
- Power quality according to IEC 61000-4-30, Class S
- Large voltage and current measurement capabilities: Standard CT, VT, LPVT, VDS, VPIS and capacitor interface for voltage

* Consult us for availability

---

**Functions**

- Current and voltage measurements according to IEC 61557-12
- Broken conductor detection 47BC
- Power quality according to IEC 61000-4-30, Class S
- Transformer temperature monitoring

---

* Consult us for availability
# Substation power supply

## Easergy PS100 and PS50

## Functions

The Easergy PS100/PS50 power supplies, associated with a backup battery, are designed to maintain control and monitoring of the entire MV substation during long power supply interruptions (up to 48 hours). They are designed to supply:

- MV switchgear motor mechanism and circuit-breaker coils
- Transmission equipment (e.g. radio)
- Electronic modules of T300
- All other devices in MV/LV substations (Protection relays, Fault Passage Indicators or others IEDs, low voltage breakers, PLC concentrators, etc.)

## Power supply outputs

<table>
<thead>
<tr>
<th></th>
<th>Easergy PS100</th>
<th>Easergy PS50</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 VDC, 18 W permanent and 100 W/20 s (for modem, radio, RTU, etc.)</td>
<td>12 VDC, 18 W permanent for telecom equipment</td>
<td></td>
</tr>
<tr>
<td>48 VDC or 24 VDC 90 W permanent (for protection relays, electronic devices, etc.) and 300 W/1min. (for switchgear operating mechanism motors)</td>
<td>12 VDC, 36 W permanent for IEDs</td>
<td></td>
</tr>
<tr>
<td>12 VDC, 18 W permanent for telecom equipment</td>
<td>48 VDC or 24 VDC 10 W permanent (for protection relays, electronic devices, etc.) and 300 W/1min (for switchgear operating mechanism motors).</td>
<td></td>
</tr>
</tbody>
</table>

## Protocols

<table>
<thead>
<tr>
<th></th>
<th>Modbus RS485</th>
<th>Modbus RS485</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards</td>
<td>IEC 60255-5 (10 kV level)</td>
<td>IEC 60255-5 (10 kV level)</td>
</tr>
</tbody>
</table>

## Benefits

- High availability due to the separate voltage output for telecom and motor
- High availability due to the separate voltage output for IEDs, telecom and motor
- High efficiency and high energy backup autonomy
- Designed for severe environment with higher insulation (10 kV)
- Easy maintenance with only one battery, 24 Ah or 38 Ah robust life span (> 10 years)
- Modbus communication for battery monitoring to allow optimised maintenance operations
- Battery charging and monitoring for longer battery life
- Battery end-of-life monitoring and anticipated maintenance
- Designed for long outage time
## Voltage presence relay

### Easergy VD23

#### Functions
- Indicates presence or absence of voltage through 1 or 2 relays
- For MV networks from 3 kV to 36 kV
- Associated with VPIS-VO V2 (see next page)

#### Technical specifications
- Self-adapted to network voltage
- Displays the voltage in % of nominal
- Output contacts behaviour configurable according to various combinations of phase and unbalance voltage status
- DIN format
- Allows to address various applications:
  - Automatic transfer systems
  - Alarms on voltage loss
  - Automation on voltage loss
  - Earth locking on voltage presence
  - Alarms on voltage presence

#### Reference numbers
- Voltage presence relay (VD23): ref. EMS58421
- Combined voltage presence relay + Fault Passage Indicator (Flair 23DM): ref. EMS58355

#### Standards
- IEC

#### Benefits
- Fits all MV network neutral systems
- Compact (DIN format)
- Output contact behavior highly configurable according to application needs
Voltage Presence Indicators
Easergy VPIS* Range

Functions
- Self-powered Voltage Presence Indicating System
- Including voltage output version (VPIS-VO) for connection to:
  - Flair 2xD, VD23 voltage presence relay (VPIS V2)
  - T300 (VPIS V3)
- Needs phase concordance unit for phase concordance checking (reference VPI62421)

Technical specifications
- Plugs on the front panel allowing to use a phase concordance unit. A colored removable rubber joint (black for VPIS V2 and green for VPIS V3) closes these plugs to prevent penetration of humidity, salted spray, ...
- Light indication using LEDs
- Made in 2 parts: surge protection part, always connected and voltage presence indication part, replaceable for maintenance
- VPIS V2 voltage sensing to Flair 22D, 23D or 23DM for fault detection on compensated and isolated networks and voltage sensing for VD23 or Flair 23DM Voltage presence relay functions
- VPIS V3 voltage sensing to T300 for voltage presence/absence detection, phase and earth directional fault detection and basic measurement

Reference numbers
- 18 VPIS variants of each VPIS version (9 variants each for VPIS & VPIS-VO):
  - without Voltage Output:
    VPI62401 to VPI62409 for VPIS V2 variants
    VPI62601 to VPI62609 for VPIS V3 variants
  - With Voltage Output:
    VPI62411 to VPI62419 for VPIS V2 variants
    VPI62611 to VPI62619 for VPIS V3 variants
- These are selected based on:
  - Network nominal voltage
  - Value of capacitive sensor used inside the MV cubicle
  - Network frequency

Standards
IEC 62271-206

Benefits
- High reliability thanks to:
  - Harsh environment design
  - LED indication: extended lifetime
- Provides Voltage sensing for basic (Voltage relay) to advanced (directional detection) functions

* VPIS: Voltage Presence Indicator
## Fault Passage Indicators

### Easergy Flair range

| Functions                  | • Provides phase and earth fault local indication on MV-LV underground network  
|                           | • Ammetric FPI, self powered by measurement sensors, integrated in MV switchgear or in wall-mounted box  
| Detection                 | Phase and earth fault  
| Setting                   | By dip switches or menu on LCD display  
| Installation              | Embedded in the switchgear  
| Earthing system           | Direct, impedant, compensated, isolated  
| Supply                    | Self powered by current sensor and 3 backup supply solutions when network is dead:  
|                           | • Super capacitor (Flair 21D)  
|                           | • Li battery (Flair 22D)  
|                           | • External VDC supply (Flair 23D/23DM)  
| Measurement               | • Ammeter  
|                           | • Maxmeter  
| Communication             | • Dry output contact (Flair 21D-22D-23D-23DM)  
|                           | • Modbus RS485 (23DM)  
| Standards                 | IEC  
| Benefits                  | All-In-One device:  
|                           | • Reliability  
|                           | • Single configuration and diagnostic tool  
|                           | Opens the door to the most advanced Smart grid monitoring needs
## Medium Voltage instrument transformers
### Current & voltage transformers

<table>
<thead>
<tr>
<th>Function</th>
<th>For protection or metering purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest voltage for equipment (kV)</td>
<td>40.5</td>
</tr>
<tr>
<td>Max. rated short-circuit current</td>
<td>50 kA</td>
</tr>
<tr>
<td>Max. rated Primary current</td>
<td>5 000 A</td>
</tr>
<tr>
<td>Max. rated Primary voltage</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>LV insulation technology for MV applications</td>
</tr>
<tr>
<td>Main characteristics</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulation</td>
<td>Class A (covering and insulation realized by vacuum casting EPOXY resin and APG technology with excellent electrical characteristics, high mechanical strength and high aging resistance)</td>
</tr>
<tr>
<td>Standards</td>
<td>• Specific country standards: IEC, IEEE, NBR, NFC, GOST, ...</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td>• For indoor and outdoor applications</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Medium Voltage instrument transformers

## Low power transformers

### Low Power Current Transformers LPCT

- Allows protection or metering with the same product

<table>
<thead>
<tr>
<th>Function</th>
<th>For protection or metering purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>LV insulation technology for MV applications</td>
</tr>
<tr>
<td>Rated short-circuit current</td>
<td>50 kA</td>
</tr>
<tr>
<td>Rated primary current</td>
<td>5,000 A</td>
</tr>
<tr>
<td>Rated primary voltage</td>
<td>36 kV</td>
</tr>
<tr>
<td>Rated nominal secondary voltage</td>
<td>22.5 mV</td>
</tr>
<tr>
<td>Insulation class</td>
<td>Class A (covering and insulation realized by vacuum casting EPOXY resin and APG technology with excellent electrical characteristics, high mechanical strength and high aging resistance)</td>
</tr>
<tr>
<td>Standards</td>
<td>IEC 60044-8</td>
</tr>
</tbody>
</table>
| Benefits          | Operating safety: no danger in the event of any accidental opening of the secondary circuit  
Can be installed in 24 kV, 36 kV or 40.5 kV networks without any specific MV insulation |

### Low Power Voltage Transformers LPVT

<table>
<thead>
<tr>
<th>Function</th>
<th>Allows protection or metering with the same product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>MV insulation technology for MV applications</td>
</tr>
<tr>
<td>Rated short-circuit current</td>
<td>60 kA</td>
</tr>
<tr>
<td>Rated primary current</td>
<td>2,500 A</td>
</tr>
<tr>
<td>Rated primary voltage</td>
<td>20 kV</td>
</tr>
<tr>
<td>Rated nominal secondary voltage</td>
<td>3,25/√3 V</td>
</tr>
<tr>
<td>Insulation class</td>
<td>Class E (insulation realized by vacuum casting EPOXY resin with MV cone interface Type C)</td>
</tr>
<tr>
<td>Standards</td>
<td>IEC 60044-7</td>
</tr>
</tbody>
</table>
| Benefits          | Operating safety: no danger in the event of any accidental short-circuit of the secondary  
Resistive divider insensible to ferroresonance  
Proper to measure energy in secondary MV loops |

**Components for Medium Voltage Switchgear**
### Energy management and control

#### Basic and advanced meters

<table>
<thead>
<tr>
<th>AMP/VLT</th>
<th>IEM3000 series</th>
<th>PM5100/5300/5500</th>
<th>PM8000</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="PB101118.png" alt="Image" /></td>
<td><img src="PB155444.png" alt="Image" /></td>
<td><img src="PB111176.png" alt="Image" /></td>
<td><img src="PB111163.png" alt="Image" /></td>
</tr>
</tbody>
</table>

#### Function

- **kWh meters**
  - IEC 62053-22 Class 0.5S
  - IEC 62053-21 Class 1
  - IEC 62053-23 Class 2
  - IEC 61557-12
  - EN 50470-1/3

- **Metering and sub-metering**
  - IEC 62053-22 Class 0.5S
  - IEC 62053-22 Class 0.2S (PM55xx)
  - IEC 62053-23 Class 2
  - IEC 61557-12
  - EN 50470-1/3

- **Energy and intermediate power quality meter**
  - IEC 61557-12
  - IEC 62053-22 Class 0.2S
  - IEC 62053-21 Class 1
  - IEC 62053-22 Class 0.5S
  - IEC 62053-22/23 Class 0.2S

#### Applications

- **Panel instrumentation**
  - I/U
  - I, U, F, P, Q, S, PF, E
  - alarm, I/O, energy

- **Energy efficiency and cost**
  - Sub-billing & cost allocation
  - Demand and load management
  - Billing analysis

- **Power availability and reliability**
  - Harmonics
  - Dip/swell, transient
  - Compliance monitoring

- **Revenue metering**
  - I, U, F, Q, S, PF, E

#### Characteristics

- **Measurement accuracy** (active energy)
  - IEC 600-3-2 Class 1.5
  - IEC 600-3-2 Class 0.5S/Class 1
  - IEC 600-3-2 Class 0.2 (PM55xx)
  - IEC 600-3-2 Class 0.5S
  - ANSI C12.20 Class 0.2S

- **Installation**
  - Flush mounted
  - 72 x 72 mm
  - 96 x 96 mm
  - DIN rail
  - 5 or 7 x 18 mm modules
  - 96 x 96 mm
  - Remote display option
  - PM55xx

- **Voltage measurement**
  - VLT: 500 VAC direct or external VT
  - 50 V to 330 V (Ph-N)
  - 80 V to 570 V (Ph-Ph)
  - Up to 1 MVAC (ext VT)
  - 20V L-N/35V L-L to 400V L-N/690V L-L
  - Up to 1 MVAC (ext VT)
  - 57-400 VAC L-N 3P
  - (100-690 VAC L-L)

- **Current measurement**
  - AMP: external CT
  - External CT
  - External CT
  - External CT

- **Communication ports**
  - Modbus serial
  - Modbus TCP/IP
  - Ethernet IP
  - BACnet IP
  - DNP 3.0

- **Inputs/Outputs**
  - 2 I/O
  - 4 I/O, Relay Option
  - 6 I/O (PM55xx)

- **Memory capacity**
  - 256 kB & 1.1 MB (PM55xx)
  - 512 MB
## Energy management and control

**Advanced and utility meters**

<table>
<thead>
<tr>
<th>Advanced meters</th>
<th>Utility meters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ION7400</strong></td>
<td><strong>ION9000</strong></td>
</tr>
</tbody>
</table>

### Energy and basic power quality meter
- IEC 61557-12
- IEC 62053-22 Class 0.1S
- IEC 61000-4-30 Class S
- ANSI C12.20 Class 0.2
- PMD /Sx/K70/0.2

### Energy and advanced quality meter
- IEC 61557-12
- IEC 62053-22 Class 0.1S
- IEC 61000-4-30 Class A
- IEC 62856-1 / IEC 62856-2 - PQI class A
- ANSI C12.20 Class 0.1
- PMD /Sx/K70/0.2

### Energy and power quality meter
- IEC 62052-11
- IEC 62053-22/23 Class 0.2S
- IEC 61000-4-30 Class A
- ANSI C12.20 Class 0.1

### I, U, F, P, Q, S, PF, E
- Demand, min/max values, unbalance, flicker, transient, sag/swell

<table>
<thead>
<tr>
<th>I</th>
<th>U</th>
<th>F</th>
<th>P</th>
<th>Q</th>
<th>S</th>
<th>PF</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>I, U, F, P, Q, S, PF, E</td>
<td>I, U, F, P, Q, S, PF, E</td>
<td>I, U, F, P, Q, S, PF, E</td>
<td>I, U, F, P, Q, S, PF, E</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Class 0.2S

- DIN 43862 rack

<table>
<thead>
<tr>
<th>IEC 62053-22 Class 0.2S</th>
<th>IEC 61053-22 Class 0.1S</th>
<th>IEC 62053-22 Class 0.2S</th>
<th>Class 0.2S</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSI 12.20 Class 0.2S</td>
<td>ANSI 12.20 Class 0.1S</td>
<td>ANSI 12.20 Class 0.1S</td>
<td>DIN 43862 rack</td>
</tr>
</tbody>
</table>

- DIN rail mounted
- DIN rail mounted
- ANSI socket mounting 9S, 35S, 36S, 39S and 76S
- FT21 switchboard case
- 57-400 VAC L-N 3P (100-690 VAC L-L)
- 57-277 V L-N AC (9S, 36S); 100-480 V L-L AC (35S)
- 57-288 V L-N AC or 99-500 V L-L AC

- 96 x 96 mm
- 96 x 96 mm
- 96 x 96 mm
- 96 x 96 mm

- FT21 switchboard case
- 57-400 VAC L-N 3P (100-690 VAC L-L)
- 57-277 V L-N AC (9S, 36S); 100-480 V L-L AC (35S)
- 57-288 V L-N AC or 99-500 V L-L AC

### External CT
- Modbus RTU
- Modbus TCP
- ION
- DNP 3.0
- DLMS
- HTTPS
- SFTP

### Up to 27 DI, 9 DO
- Up to 22 I/O

### Up to 16 AI, 8 AD
- Up to 16 I/O

### 512 MB
- 2 GB
- A: 128 MB
- B: 64 MB
- C: 32 MB
- Up to 10 MB
Energy management and control

Communication

**Link 150**

- The Link 150 serves as an Ethernet gateway for PowerLogic system devices and any other communicating devices utilising the Modbus protocol.
- The Link 150 gateway offers complete access to status and measurement information provided by the connected devices via software.

**Com’X 200/210**

- Auto discovery of Modbus devices
- Data Logger - Push to Cloud
- Remote data push to a hosted platform
- Software as a service support

**Com’X 510**

- Auto discovery of Modbus devices
- Data Logger - Push to Cloud
- Remote data push to a hosted platform
- Software as a service support
- Modbus gateway
- Entry-Level Energy Management in a Box (embedded)
- View web pages and dashboards using only your web browser
- Site server for Schneider Electric Smart Panels™

### Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Link 150</th>
<th>Com’X 200/210</th>
<th>Com’X 510</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Components</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Link 150</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Link 150 gateway</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Auto discovery of Modbus devices</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data Logger - Push to Cloud</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Remote data push to a hosted platform</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Software as a service support</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Modbus gateway</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Entry-Level Energy Management in a Box (embedded)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Site server for Schneider Electric Smart Panels™</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Auto discovery of Modbus devices</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data Logger - Push to Cloud</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Remote data push to a hosted platform</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Software as a service support</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Modbus gateway</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Entry-Level Energy Management in a Box (embedded)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Site server for Schneider Electric Smart Panels™</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Function

- The Link 150 serves as an Ethernet gateway for PowerLogic system devices and any other communicating devices utilising the Modbus protocol.
- The Link 150 gateway offers complete access to status and measurement information provided by the connected devices via software.

### Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Link 150</th>
<th>Com’X 200/210</th>
<th>Com’X 510</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Storage temperature</strong></td>
<td>-40°C to +85°C</td>
<td>-40°C to +85°C (-40°F to 185°F)</td>
<td></td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>-25°C to +70°C</td>
<td>-25°C to +60°C (-13°F to +140°F) Com’X200</td>
<td>-25°C to +70°C (-13°F to +158°F) Com’X210/510</td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>5% to 95% @ +55°C</td>
<td>5% to 95% relative humidity (without condensation) @ +55°C</td>
<td></td>
</tr>
<tr>
<td><strong>Pollution degree</strong></td>
<td>Class 2</td>
<td>Class III</td>
<td></td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td></td>
<td>GPRS dongle operating temperature: -20°C to +60°C (-4°F to +140°F)</td>
<td>GPRS dongle storage temperature: -40°C to +85°C (-40°F to +185°F)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WiFi dongle operating temperature: 0°C to +50°C (32°F to +122°F)</td>
<td>WiFi dongle storage temperature: -20°C to +80°C (-4°F to +176°F)</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Connect isolated sites via GPRS (3G available in 2016)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• WiFi/Zigbee connectivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Dual Ethernet Ports - RJ45</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Power Over Ethernet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Modbus Serial - RS485</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 6 Digital Inputs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 2 Analog Inputs</td>
<td></td>
</tr>
<tr>
<td><strong>Standards</strong></td>
<td></td>
<td>Safety standards/regulations:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• International (CB scheme): IEC 60950</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• USA: UL 508</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• USA: UL 60950 (Com’X 210 - Com’X 510 only)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Canada: cUL 60950 (Com’X 210 - Com’X 510 only)/cULus 508</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Europe: EN 60950</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quality brands: CE, UL</td>
<td></td>
</tr>
<tr>
<td><strong>Benefits</strong></td>
<td></td>
<td>Easy to install - Easy to setup - Easy to maintain</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Easy to install - Easy to configure</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Compatible with Schneider Electric PowerLogic software (PowerSCADA Expert, Power Monitoring Expert, etc.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reliable Modbus to Ethernet protocol conversion</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Easy to install - Easy to configure</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Compatible with Schneider Electric Software &amp; Hosted Cloud Platforms</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cost effective solution to log data to the cloud (hosted platform)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Easy to install - Easy to configure</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Embedded Entry-Level Power Monitoring Software and Dashboards - No software to install</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Compatible with Schneider Electric Software &amp; Hosted Cloud Platforms</td>
<td></td>
</tr>
</tbody>
</table>
## Low Voltage protection

### Acti9 range

#### Electrical auxiliaries

<table>
<thead>
<tr>
<th>Acti9 iC60N</th>
<th>Acti9 C60H-DC</th>
<th>OF</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Acti9 iC60N" /></td>
<td><img src="image2" alt="Acti9 C60H-DC" /></td>
<td><img src="image3" alt="OF" /></td>
<td><img src="image4" alt="SD" /></td>
</tr>
</tbody>
</table>

#### Function
- DIN rail miniature circuit-breakers. Circuit-breaker used in auxiliary power supply circuits providing overload and short-circuit protection.
- DIN rail miniature circuit-breakers. Circuit-breaker used in auxiliary power supply circuits providing overload and short-circuit protection.
- Open/closed contact
- Fault signalisation contact

#### Rated voltage
- 1P/1P+N: 12 to 240 VAC
- 2P/3P/4P: 12 to 440 VAC
- 1P: 24 to 250 VDC
- 2P: 24 to 500 VDC
- 24 to 415 VAC
- 24 to 30 VDC

#### Number of poles
- 1, 1P+N, 2, 3, 4
- 1 or 2

#### Nominal current
- 0.5 to 63 A
- 0.5 to 63 A

#### Connection
- Screw
- Screw
- Screw

#### Standard
- IEC/EN 60947-2
- IEC/EN 60947-2
- IEC/EN 60947-5-1

#### Type of loads

##### Tripping curves
- Standard: C (8 In ± 20 %)
- C (8.5 In ± 20 %)

##### Inrush current
- D (12 In ± 20 %)

##### Electronics or high cable length
- B (4 In ± 20 %)

#### Benefits

The Acti9 circuit-breaker is recognised in over 100 countries for its quality and the breadth of its range, making it an indispensable component for your Low Voltage cabinet with complete peace of mind.
Low Voltage relays
Zelio relays

**Function**
Designed for the adaptation, amplification, multiplication and processing of information in automated systems

### Miniature relays RXM
- **Switching voltage**: 12/240 VAC/DC
- **Number of contacts**: 2, 3 or 4 CO
- **Current**: 3 - 6 - 10 - 12 A
- **Mounting**: Plugs into socket (DIN rail)
- **Standards**: IEC61810-1
- **Benefits**:
  - Wide choice of number of contacts (up to 4)
  - Simplicity of installation and maintenance
  - Push-in wiring
  - Standardization of relay pin arrangement on its socket
  - Lockable test button to close manually the contacts and test the application during commissioning or debugging phase
  - Clear indication of the contact status by mechanical flag, and power on coil by LED

### Universal relays RUM
- **Switching voltage**: 12/230 VAC/DC
- **Number of contacts**: 2 or 3 CO
- **Current**: 10 A
- **Mounting**: Plugs into socket (DIN rail)
- **Standards**: IEC61810-1
## Low Voltage control and signalling

### Pushbuttons & Switches

<table>
<thead>
<tr>
<th>Function: Enables operation of the Low Voltage circuits of the Medium Voltage cubicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>XB7</td>
</tr>
<tr>
<td>PM105576</td>
</tr>
<tr>
<td>PM105578</td>
</tr>
<tr>
<td>PM105581</td>
</tr>
<tr>
<td>PM105585</td>
</tr>
<tr>
<td>PM105589</td>
</tr>
<tr>
<td>PM105593</td>
</tr>
</tbody>
</table>

### Illuminated version: Pushbuttons/Pilot lights/Switches

<table>
<thead>
<tr>
<th>Function: Provides status information and enables control of Low Voltage circuits</th>
</tr>
</thead>
<tbody>
<tr>
<td>XB7</td>
</tr>
<tr>
<td>PF569141</td>
</tr>
<tr>
<td>PF569145</td>
</tr>
<tr>
<td>PF569149</td>
</tr>
<tr>
<td>PF569153</td>
</tr>
</tbody>
</table>

### Specifications

- **Mounting hole**: 22, 22/30, 22/30, 16/22
- **Material**: Plastic, Plastic, Metallic, Plastic or metallic
- **Head shape**: Unibody, Modular, Modular, Modular
- **Composition type**: Unibody, Modular, Modular, Modular
- **Panel fixing**: Plastic nut, Plastic nut, 3 points metal, Plastic nut or 4 screws
- **Degree of protection**: IP 65, IP66, IP67, IP69, IP69K, IP 40/IP 65
- **Rated insulation voltage**: 250 V, 600 V, 600 V, 690 V
- **Standards**
  - Standard versions: UL/CSA, IEC, CCC, UAC
  - Illuminated versions: UL/CSA, IEC, CCC, EAC
  - Marine: BV, LROS, DNV, GL

### Benefits

**Standard version**
- Easy to select and install
- A wide choice of functions
- Robustness and mechanical durability
- High protection degree
- Excellent aesthetics and ergonomics

**Illuminated version**
- Long life resistance (LED technology)
- True colors and excellent brightness
- A wide choice of voltages
- High protection degree
- Easy mounting

---

**Components for Medium Voltage Switchgear** | 41
### Low Voltage control and signalling

**Selector switches**

<table>
<thead>
<tr>
<th>Function</th>
<th>CMA uses a single ammeter (by means of Current Transformers) for successive measurement of the currents of a three-phase circuit</th>
<th>CMV uses a single voltmeter for successive measurement of voltages (phase-to-phase and phase-to-neutral) of a three-phase circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical switching cycles</td>
<td>2 000 000</td>
<td>2 000 000</td>
</tr>
<tr>
<td>Electrical switching cycles</td>
<td>100 000</td>
<td>100 000</td>
</tr>
<tr>
<td>Max. rated voltage</td>
<td>500 V</td>
<td>500 V</td>
</tr>
<tr>
<td>Max. rated current</td>
<td>20 A</td>
<td>20 A</td>
</tr>
<tr>
<td>Mounting</td>
<td>48 x 48 Flush mounted</td>
<td>48 x 48 Flush mounted</td>
</tr>
<tr>
<td>Standards</td>
<td>IEC 60947-3</td>
<td>IEC 60947-3</td>
</tr>
</tbody>
</table>

**Benefits**

- AgNi contact ensures mechanical durability
- IP 65 on front face

---

**Discover more products on www.se.com**

Legend:

- **3 phase pilot lights**
- **Diam 12/10/8 pilot lights**
- **New signaletic pilot lights from XA2 (Not UL certified)**
- **Harmony Hub + Temperature sensors & current monitoring**
#  Linergy TR - Terminal blocks

## Function
- Ensures connection of Low Voltage cables or wires
- Ensures connection of Low Voltage cables or wires
- Ensures connection of Low Voltage cables or wires

## Technology
- Screw clamp technology
- Spring clamp technology
- Push-in technology

## Connection functions
- Passthrough (2.5 - 150 mm²)
- Passthrough (2.5 - 35 mm²)
- Passthrough (2.5 - 4 mm²)
- Protective earth
- Disconnect type (blade or fuse)
- Double deck, multi-pole
- Double deck, multi-pole
- Double deck, multi-pole

## Conductor nominal c.s.a. (cross section area)
- 2.5 mm² to 150 mm²
- 2.5 mm² to 35 mm²
- 2.5 mm² and 4 mm²

## Number of poles
- 1 - 1 x 1/1 - 2 x 2
- 1 - 1 x 1/1 - 1 x 2/1 - 2 x 2
- 1 - 1 x 1/1 - 1 x 2/1 - 2 x 2

## Clip-on mounting on rail type
- 2
- 2
- 2

## Certifications
- UL, CSA, VDE, ATEX, LR, GL, DNV, EAC
- UL, CSA, VDE, ATEX, LR, GL, DNV, EAC
- UL, CSA, VDE, ATEX, LR, GL, DNV, EAC

## Benefits
- Rugged and reliable
  - This technology not only provides quality, safety and availability of equipment but optimizes installation setup and operation with their simple integrated functions

- Cost effective
  - (quick and reliable)
  - Spring technology is a maintenance-free connection method assuring separation of mechanical and electrical functions. It also eliminates the need for regular re-tightening

- Quick and innovative
  - Solid conductors or conductors with cable-ends can be directly inserted into the terminal block without tools.
  - The actuation lever can be operated with any tool for releasing conductors
### Low Voltage control and signalling

**Linergy TR - Terminal blocks**

<table>
<thead>
<tr>
<th><strong>Cable ends</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Image" /></td>
</tr>
</tbody>
</table>

| **Function** | • Facilitates the insertion of wires into the terminals and assures the insulation between adjacent connection  
• Allows the identification of the wires |
| **Technology** | Insulated cable ends |
| **Connection functions** | Four available versions:  
• Single conductor cable ends  
• Single conductor markable cable ends  
• Uninsulated cable ends  
• Twin conductor cable ends |
| **Conductor nominal c.s.a. (cross section area)** | 0.25 mm² to 50 mm² |
| **Certifications** | UL, CSA |
| **Benefits** | Fast and reliable wiring  
Use the AZ5 and DZ5 ranges of cable ends to simplify wiring and provide optimum electrical continuity between wire and terminal block. |
Accessories
## Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulating holder with or without capacitive divider</td>
<td>48</td>
</tr>
<tr>
<td>Anti-condensation heating element</td>
<td>48</td>
</tr>
<tr>
<td>Insulation busbar cover</td>
<td>48</td>
</tr>
<tr>
<td>High resistance plastic window</td>
<td>49</td>
</tr>
<tr>
<td>Cubicle compartment handle</td>
<td>49</td>
</tr>
</tbody>
</table>
## Accessories

### Characteristics and references

### Insulating holder with or without capacitive divider

**Function**

- **Without capacitive divider**: Provides mechanical support and insulation through their rigid fin arrangement; used to support busbars and cable ends.
- **With capacitive divider**: Provides mechanical support and insulation. The embedded capacitors in this insulating holder provide voltage output to indicate the voltage presence, up to 24 kV.

**Technical specifications**

- Height: 175 mm
- Capacitive divider: ISO 35 pf

**Reference numbers**

- **3 insulating holders**: 17.5 kV ref. 59431, 24 kV ref. AAA10075
- **3 insulating holders with capacitive divider**: 17.5 kV ref. 59430, 24 kV ref. AAA10074

**Standards**

- IEC

**Benefits**

- Dielectric withstand
- Mechanical robustness

### Anti-condensation heating element

**Function**

Heating the inside of the cubicle when the ambient temperature is too low.

**Technical specifications**

- 220 VAC
- 150 W
- Length: 432 mm
- Supplied with its support without thermostat

**Reference numbers**

- 59280

**Benefits**

- Avoid condensation in the cubicle

### Insulation busbar cover

**Function**

Set of three insulating covers which enables improved dielectric withstand at the busbars connections in the cubicle.

**Technical specifications**

For 1 to 4 busbars (100 mm x 800 mm each)

**Reference numbers**

- 59420

**Benefits**

- Can be adjusted according to number of busbars
### Accessories

**Characteristics and references**

<table>
<thead>
<tr>
<th><strong>High resistance plastic window</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
</tr>
</tbody>
</table>
| **Technical specifications** | • 3 mm thick transparent polycarbonate window  
                                  • Dimensions: 138 mm x 85 mm |
| **Reference numbers** | 59105 |
| **Benefits** | Internal arc withstand up to 31.5 kA |

<table>
<thead>
<tr>
<th><strong>Cubicle compartment handle</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
</tr>
</tbody>
</table>
| **Technical specifications** | • Material: Zamak  
                               • A version with key is available |
| **Reference numbers** | • 59270 (handle)  
                         • 59271 (handle with key) |
| **Benefits** | Robustness |
Services
## Services

<table>
<thead>
<tr>
<th>Schneider Electric Services</th>
<th>52</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labs Volta</td>
<td>54</td>
</tr>
</tbody>
</table>
Services

Schneider Electric Services
For Panel Builders

Be identified as a trusted partner all along life cycle of your product

Don’t be considered as simple product supplier! Your product will last for a long time of service, and your Customer will need to have trust in your Expertise including your capability in providing services.

All along the asset’s life cycle, Services help improve your customer’s safety, reliability, efficiency and reduce downtime.

Take the opportunity to be a trusted advisor for your customer and help him through the full life cycle of the panel with services offers:

Maintenance contract
• For panel you are delivering
• For existing installed base panels

Schneider Electric can help you to offer:
• On-demand and routine maintenance
• Preventive manufacturer maintenance
• Service Plans for preventive maintenance including diagnosis and corrective maintenance with agreed response time
• Remotely diagnose through Remote Expertise

Spare Parts
• For panel you are delivering
• For existing installed base panels

An easier way to upgrade the installation:
• Spare parts kit - also available for new equipment to reduce time of installation and avoid long shutdowns

Product Life Cycle Services

Modernization plan
• For existing installed base panels
• For panel you are delivering from now on

Modernize up to digital services:
• Upgrade equipment with sensors and connectivity to perform thermal monitoring and asset management services.
• Asset Connect helps you to upgrade your installation with smart sensors, transforming non-communicating equipment into connected assets.

Audits
• For existing installed base panels

Schneider Electric can help you assessing your customer’s installed base:
• After MPS Walkthrough audit performed by Schneider Electric, you can provide recommendations to your customer on how to maintain, modernize and repair their equipment to expand life span of your customer installation.

Prices and deadlines

**Start of commercialisation**
Products commercialisation

**Stop of commercialisation**
Spare parts supply guaranteed

**Expiration**
Spare parts supply not guaranteed

**Final cancelation**
No spare part available

Time

2 to 12 years

Renew
Services

Become the trusted advisor of your customer all along life cycle of the equipment you delivered.

Providing Services to your customer you:

- Keep equipment up to date and extend lifespan
- Reduce risk of unexpected downtime
- Keep a strong relationship with your customer

CONTACT US!
https://www.schneider-electric.com/en/work/services/

Renew

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

We 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

Frequency of maintenance intervention

Schneider Electric recommends implementing a schedule for maintenance activities to extend electrical distribution equipment performance over time.

Frequencies under normal/healthy operation (minor equipment criticality and optimal environmental conditions) can be generally defined as described in the table below:

<table>
<thead>
<tr>
<th>Maintenance</th>
<th>Min. freq.(1)</th>
<th>Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusive</td>
<td>every 5 years</td>
<td></td>
</tr>
<tr>
<td>Advanced</td>
<td>every 2 years</td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>every 1 year</td>
<td></td>
</tr>
</tbody>
</table>

(1) Recommended under normal operating conditions (minor equipment criticality and optimal environmental conditions). However, this recommended frequency should be increased according to:

a) the level of criticality (low, major, critical)
b) the severity of environment conditions (i.e. corrosive, naval, offshore) following recommendations of Manufacturer’s services
Labs Volta

A full range of testing and auditing services

- 80 years of technical LV & MV expertise
- 7,000 m² of product testing and validation facilities
- St-ct up to 400kA / Temp-rise up to 10kA at 55°C
- Located in Grenoble, France

We leverage 80 years of experience in the testing and certification of electrical equipment to deliver a full range of services:

- Product and equipment testing and validation according to the standards covered by our accreditations and customer specifications
- End-to-end management of your certification projects in line with the most demanding industry standards (IEC/EN 61439, IEC/TR 61641, IEC 61921, IEC/EN 62271)
- And, as needed, support from a technical expert to maximize your chances of obtaining validation and certification.

We provide our services in accordance with quality procedures that meet ISO/IEC 17025 standards ensuring our independence, as well as ISO 9001 and ISO 14001 standards.

Power and functional tests

- Short-Circuit making and breaking
- Internal arc
- Short-time current withstand
- Overload/endurance
- Dielectric power frequency
- HV impulse
- Temperature-rise (inside climatic chambers)
- Glow wire

Environmental tests

- Climatic
- Corrosion
- Vibration and shock
- Mechanical
- Acoustic
- International Protection Marking: IP/IK
- EMC

Consult us for more information
Learn more on our Medium Voltage products and technology?

Helping you design MV products according to IEC standards
- Our talented electrical distribution experts share their industry-leading knowledge of technological developments and evolving medium-voltage standards.

Schneider Electric Partner Program,

Helping protect people and systems from arc flash in medium voltage equipment
- Easy to understand approach on arc flash systems installed in MV switchgear

Stay up to date!

and get more resources by connecting us!

Improving your business with digital self-service
- Digital self-service helps your business improve flexibility and productivity, allowing you to quickly adapt to customer needs in changing times.
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!

*PEP: Product Environmental Profile (i.e. Environmental Product Declaration)
Green Premium™ ecolabel product - Sustainable performance, by design