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Our adapted responses to your applications

Ever attentive to your requirements, SOCOMEC offers you services, products and customised solutions, whatever your constraints. As a French distribution switchboard manufacturer since 1965, SOCOMEC is a key player in the field of public electricity distribution. SOCOMEC’s TIPI low voltage feeder pillars represent one of the best-selling products in the French market.

Discover all our public distribution solutions on our website.

Delivery substations

Solutions for:

- Reducing non-technical losses via highly accurate HV and LV metering, for new-build or existing installations.
- Precise analysis of your customers’ patterns of consumption.

HV substations

Solutions for:

- Securing LV electrical supply for both control-command systems and substations.
- Improving the safety of installations and operative personnel.

Auxiliary units

Rectifier chargers

SHARYS IP

0.2s Current transformers

Voltage transformers
Energy storage
Solutions for:
- Improving grid stability.
- Deferring grid investment.

Smart MV/LV Distribution substation
Solutions for:
- Protection, distribution, measuring and monitoring of the LV electrical grid.
- Securing the electrical supply and minimising maintenance.

Terminal distribution
Solutions for:
- Protecting the LV network in distribution cabinets.
- Ensuring high-accuracy metering.

Services
Pre-project phase:
- Help with the design and realisation of customised solutions.
- Qualification and certification testing (IEC 61439).

On-site:
- Commissioning
- Equipment maintenance.
- Supervision.

Load break switches
Fuse-combination switch

SUNSYS PCS²

Power Converter Storage solutions

Solutions for:
- Improving grid stability.
- Deferring grid investment.

SIRCO
FUSERBLOC

TIPI with DIRIS

DIRIS Digiware

Energy storage

SUNSYS PCS²

Power Converter Storage solutions

Solutions for:
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- Deferring grid investment.

SIRCO
FUSERBLOC

TIPI with DIRIS

DIRIS Digiware
An independent manufacturer

The benefit of a specialist

3,500 m²
of test platforms

One of the leading independent power testing labs in Europe

65,000
on-site interventions per year

Nearly 400 experts in commissioning, technical audit, consultancy and maintenance

10 %
of turnover invested in R&D

Always at the cutting-edge of technology for innovative, high-quality products

Since its foundation more than 90 years ago, SOCOMEC continues to design and manufacture its core products in Europe. Notably solutions for its primary mission: the availability, control and safety of low voltage electrical networks.

As an independent manufacturer, the Group is committed to constant innovation to improve the energy performance of electrical installations in infrastructures as well as industrial and commercial sites.

Throughout its history, SOCOMEC has constantly anticipated market changes by developing cutting-edge technologies, providing solutions that are adapted to customer requirements and fully in keeping with international standards.

“Optimising the performance of your system throughout its life cycle” - this is the commitment carried out every day by the SOCOMEC teams around the world, wherever your business is located.
Your energy, our expertise

**Critical Power**
*Ensuring the availability and storage of high quality power*

With its wide range of continuously evolving products, solutions and services, Socomec are recognised experts in the cutting-edge technologies used for ensuring the highest availability of the electrical power supply to critical facilities and buildings, including:
- static uninterruptible power supplies (UPS) for high-quality power free of distortions and interruptions occurring on the primary power supply,
- changeover of static, high availability sources for transferring the supply to an operational back-up source,
- permanent monitoring of the electrical facilities to prevent failures and reduce operating losses,
- energy storage for ensuring the proper energy mix of buildings and for stabilisation of the power grid.

**Power Control & Safety**
*Managing power and protecting persons and facilities*

Active in the industrial switching market since its foundation in 1922, Socomec is today an undisputed leader in the field of low voltage switchgear, providing expert solutions that ensure:
- isolation and on load breaking for the most demanding switching applications,
- continuity of the power supply to electrical facilities via manual remotely operated or automatic transfer switching equipment,
- protection of persons and assets via fuse-based and other specialist solutions.

**Energy Efficiency**
*Managing the energy performance of buildings*

Socomec solutions, from current sensors through to a wide choice of innovative scalable software packages are driven by experts in energy performance. They meet the critical requirements of facility managers and operators of commercial, industrial and local authority buildings for:
- measuring energy consumption, identifying sources of excess consumption and raising the awareness of occupants about their impact,
- limiting reactive energy and avoiding the associated tariff penalties,
- using the best available tariffs, checking utility bills and accurately distributing energy billing among consumer entities,
- monitoring and detecting insulation faults.

**Expert Services**
*Enabling available, safe and efficient energy*

Socomec is committed to delivering a wide range of value-added services to ensure the reliability and optimisation of end-users’ equipment:
- prevention and service operations to lower the risks and enhance the efficiency of operations,
- measurement and analysis of a wide range of electrical parameters leading to recommendations for improving the site’s power quality,
- optimisation of the total cost of ownership and support for a safe transition when migrating from an old to a new generation of equipment,
- consultancy, deployment and training from the project engineering stage through to final procurement,
- performance assessment of the electrical installation throughout the life cycle of the products via analysis of data transmitted by connected devices.
Customised solutions
for implementations adapted to suit your needs

To complement our standard offer, SOCOMEC has an organisation dedicated to the design and implementation of made-to-measure solutions.

We are on-hand to offer support through the different phases of your project, from the analysis of specifications to the qualification of your solutions, up to implementation, commissioning and provision of on-site training.

Please contact us for more information.

Multi-field expertise

We offer support throughout your project with our specialist teams of mechanical, electrical and IT engineers to provide you with a complete and professionally-certified solution.

An adapted response

We take account of all of your specific needs and local restrictions when offering you an optimised solution for transparent levels of investment.

Certified and qualified solutions guaranteed by the manufacturer

Our solutions comply with all standards applicable to products, assemblies and to their installation, as well as with custom specifications.

Our fully-accredited Pierre Siat laboratory is equipped to perform any qualification tests that may be required. Please refer to page 10. All the switch panels and assemblies comply with IEC/EN 61439.

Typical applications

LV distribution panels for MV/LV substations with 3-pole fuse headers.
- EN 61439 qualification.
- Panels with 4 or 6 outputs, with additional panels with 4 or 6 outputs.
- SIRCO 1200 A load break switch at panel incomer with adapted connector terminal palm (EST sockets on top and bottom terminals, pins for earth connections, IP2X covers...).
- IP2X protection with transparent protectors.
- Integrated solution with mounted power transformers and auxiliary power units on mounting plate.
- Possible addition of a 50 A control tab for public lighting between the main panel and an additional panel.

See page 67.
SOCOMEC is committed to deliver a wide range of value-added services to ensure the availability of your critical installation, the safety of your site operations and the performance optimisation of your low voltage equipment during its life cycle. The expertise and proximity of our specialists are there to ensure the reliability and durability of your equipment.

Key figures
Nearly 400 Socomec experts supported by 200 engineers and technicians from our distributors, drive the solutions to your specific needs.

Our global presence includes:
- 10 branches in France,
- 12 European subsidiaries,
- 8 Asian subsidiaries,
- representatives in 70+ countries.

On-site service management
- 65,000 service operations per year (mainly preventive visits).
- 98% Service Level Agreement compliance rate.

Technical hotline network
- 20+ languages spoken.
- 3 advanced technical support centres.
- 100,000+ incoming calls handled per year.

Certified expertise
- 5,000 hours of technical training deployed per year (product, methodology and safety).
A cutting-edge laboratory
the backing of an expert

Created in 1965, SOCOMEC’s laboratory brings its expertise to guarantee the reliability and the conformity of our products and solutions. Since 2015, the laboratory renamed Tesla Lab – Power Testing and Certification in 2015, offers its testing and certification services to all its customers.

Proven expertise
Tesla Lab is an independent laboratory specialised in testing of LV switchgear, components and switchgear assemblies. 4 M€ has been invested since 2011 in this 2000 m² laboratory, where 30 experts guarantee the quality of the performed tests, making the Tesla Lab one of the most modern laboratories in Europe.

Vast range of tests
The laboratory has a 100 MVA ($I_{sc} 100$ kA rms 1 s) short-circuit platform, three 10 kA overload platforms and many other test facilities covering 2000 m² for:
- functional tests,
- mechanical tests: endurance,
- dielectric tests,
- environmental tests: vibration,
- Ingress Protection (IP),
- temperature rise tests up to 60 °C ambient.

International partnership
The laboratory is recognised by the major certification bodies worldwide: member of ASEFA and LOVAG, it is accredited by COFRAC, UL (CTDP), CSA (shared certification) and DE*RA (WMT).

The partnership with many international certification bodies guarantees the quality and safety requirements in each country.

Implementation of standard IEC/EN 61439

**Electrical switchgear manufacturers**
IEC/EN 61439 standards define the requirements of “Low voltage switchgear assemblies” as well as the tests necessary to ensure the achievement of the specified levels of performance. The compliance with these standards gives a guarantee of safety and performance to the user of the equipment.

**An original manufacturer according to IEC/EN 61439 standards**
Socomec offers a wide range of original manufacturer solutions complying with IEC 61439 standards.
- FLEXYS and CADRYS cabinet systems designed for distribution panel applications,
- Local switching and equipment cabinets covering requirements in power availability and safety,
- Components for integration.

**Tesla Lab accredited by COFRAC**
With its world-class testing facilities, the Tesla Lab can perform all of the tests required by IEC/EN 61439 standards for switchgear assemblies.

We can therefore help you to:
- define a verification program,
- perform conformity tests,
- issue test reports in order to get certification from third party certification bodies (ASEFA, LOVAG, DE*RA, UL, CSA, COFRAC, ASTA...).
Our test platforms use high performance equipment offering an extremely wide range of test options. All of SOCOMEC’s products and solutions are submitted to the most rigorous tests of reliability and conformity by our in-house experts.

**A complete test system**
- Routine tests performed on every product and on each solution.
- Personalised demonstration and qualification tests.
- Specific tests on request.
- Tests on incoming goods and components

**High-quality test capacities**
- 4 MVA power supply.
- Test capacity up to 8 x 500 kVA.
- Thermal and acoustic test facilities.
- EMI test facilities (Faraday cage).

**High level of activity**
- More than 300 days per year of tests are conducted in the presence of our customers.

---

**SOCOMEC, an original equipment manufacturer of solutions qualified to EN 61439**

**The new IEC or EN 61439 standard in brief:**
- Standard harmonised to EN 61439, mandatory from November 2014.
- New approach to verification of design concepts and performance levels.
- New tests, checks and documentary traceability; very useful for operation and maintenance of the entire assembly.
- Definition of roles and responsibilities for each participant, especially for the OEM and the assembly manufacturer.
- Specific chapter of EN 61439-5: dedicated to public distribution units; it mandates testing as the only acceptable form of verification.

**SOCOMEC, an expert in IEC and EN 61439:**
- A dual role: an OEM and a manufacturer of assemblies.
- Our equipment is tested and qualified in accordance with this standard in our certified Pierre Siat laboratory. This means your system will have the guarantee of optimum performance.

**Examples of qualified solutions:**
- Auxiliary units for HV/MV substations. See page 25.
- Low-voltage distribution panels from MV/LV stations. See page 67.
Webspace at your service
all our solutions can be adapted to your needs

www.socomec.com
Expertise, customised solutions, products and services, downloads… All yours in a couple of clicks!

1 Tap into our expertise
2 Discover our customised solutions
3 Access all our products and services
4 Download photos, documentation, software and CAD files

Follow us on social media!

www.diris-digiware.com
Check out the dedicated site about DIRIS Digiware, our measuring and monitoring system. It gives you all the information you need, including videos, images and documentation on the most revolutionary solution on today’s market.
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LV innovations

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Energy storage
Power Converter Storage solutions for On-Grid applications

**SUNSYS PCS²**
33 kW to 1000 MW
p. 19

Power Converter Storage solutions for On & Off-Grid applications

**SUNSYS PCS² IM**
33 kW to 1000 MW
p. 19

Energy monitoring
Measurement and monitoring system for electrical installations

**DIRIS Digiware**
p. 21

Smart Grid pilot project
SOCOMEC, a partner of the European consortium

**InterFLEX**
An innovative project for tomorrow’s world
For more details see page 22.

Find out more
The complete range of SOCOMEC’s energy management solutions.

www.socomec.com/en/energy-measurement
Why do low voltage grids need to become “intelligent”? Grid operators have to face several new challenges:

- To facilitate the integration of decentralised production of electricity.
- To anticipate operating failures and to secure the power supply.
- To offer the customer a greater choice of services by promoting their participation in optimising the grid.
- To reduce the environmental impact of the electrical system in its entirety.
- To optimise the necessary reinforcements of the grid.

In this new environment, all of the LV grid is only minimally monitored, if at all. Real-time analysis of all the electrical flows in each grid circuit is necessary.

The issue of integrating renewable energy in low voltage grids

- With centralised production, current and cable sections decrease from the point of production towards the final customer.
- With decentralised production, currents are multi-directional depending on demand and production.

- In the event of surplus production, the grid may be insufficiently sized to take these new levels of current.

- Reinforcing the grid, sometimes for a few hours of stress per year.

Innovation: power conversion and storage solutions

The main idea behind energy storage is the charging and discharging of batteries. The essential element of this process is the power converter, commonly called ‘PCS’ (Power Conversion System). SOCOMEC has developed new ranges of power converters: SUNSYS PCS² and SUNSYS PCS² IM. More details on page 18.

These converters have a double conversion function. First, they use AC voltage coming from the main grid, from PV production, from gensets, etc, and convert it to DC voltage to store it in the batteries. On demand, the stored energy can then be converted back into usable AC current and injected into the grid.

These ‘bi-directional’ storage converters operate according to a charging and discharging profile corresponding to the required functions.

The SUNSYS PCS² IM power conversion and storage units and their innovative control systems also enable the microgrid to be disconnected from the main grid, so that it works totally autonomously. More details on page 19.
Low voltage innovations
for smart grids

New solutions to tackle new LV grid constraints

- **Energy storage**
  This helps to shift consumption to improve the local consumption/production balance at district level by:
  - Reducing current in electric cables.
  - Avoiding the need for reinforcement work.
  - Stabilising the voltage and frequency of the grid.
  This also allows the management of a district in “islanding” mode, a mode which is autonomous and isolated from the mains grid with its own means of PV production and storage.

- **Low voltage monitoring**
  This measures and monitors the electrical grid by:
  - Detecting any grid constraints.
  - Sending alerts in real time.
  - Analysing and communicating energy data.

Innovation: energy monitoring systems for smart LV grids

The increase in decentralised renewable energy production, energy storage, the use of electric vehicles and load shedding will disrupt the traditional grid and will create new challenges for those responsible for operating them. As everything becomes connected to the network, there is a need to be more flexible and adaptable and utilities will need to develop a comprehensive understanding of what is happening on the grid.

The main issue is to really understand the LV grid with a precise analysis of all electric flows on each active conductor.

SOCOMEC has developed an innovative plug & play measurement and monitoring system, designed especially for multi-circuit electrical installations: DIRIS Digiware. This system is for new substations but also for existing installations. This integrated and flexible system can monitor the secondary of the transformer, and one or all LV feeders on the LV distribution board.

The complete monitoring solution is detailed on the following pages.

SOCOMEC’s expertise in Smart Grids

For more than forty years, SOCOMEC has been developing UPS and solar inverters. This power conversion expertise has naturally led the company towards developing energy storage solutions.

In addition, SOCOMEC’s long experience in electrical measurement, monitoring and analysis has enabled the launch of the new DIRIS Digiware concept specifically designed for multi-circuit measurements. Online services available on Socomec’s cloud platform complete this offer as an additional LV grid management tool.
Energy storage
for smart grids, microgrids, renewable energies and smart buildings

Main applications
Energy storage is the key solution to meet the challenge of energy transition, using renewable energy and providing energy cost reductions for the following 4 main applications:

- **Smart grids**
  - Improves grid stability
  - Defers grid investment
- **Renewable energy power plants**
  - Manages renewable energy production
- **Autonomous Microgrids**
  - Ensures energy availability
  - Ensures energy quality
- **Smart Buildings**
  - Peak shaving
  - Maximises self-consumption
Energy storage solutions

Socomec offers modular energy storage solutions including all the necessary control and protection devices for all types of applications. One of the key components of the solution is the Power Converter; Socomec proposes two models: SUNSYS PCS² for on-grid applications and SUNSYS PCS² IM that enables off-grid applications.

The main features of the converters are:
- full circular 4-quadrant P/Q capability,
- modular “Hot Swap” scalable system,
- extendible from a few kW up to several MW using units in parallel,
- suitable for either centralised or decentralised electrical installations,
- compatible with different battery technologies (lead-acid, lithium-ion…),
- opened communications for connection with Energy Management Systems,
- easy implementation in existing installations.

Power Converter Storage solutions for On-Grid applications

**SUNSYS PCS² range from 33 to 100 kW**

- Maximum efficiency 96%
- P and Q step response time < 50 ms
- Embedded functionalities:
  - Grid support (F/V)
  - Self-consumption
  - Energy shifting
  - Energy smoothing
  - Peak shaving

Power Converter Storage solutions for On & Off-Grid applications

**SUNSYS PCS² IM range from 33 to 100 kW**

- Maximum efficiency 96%
- P and Q step response time < 500 ms
- On-Grid version functionalities +:
  - Grid forming
  - Scheduled & unforeseen islanding
  - Black start
  - Soft start
  - Power sharing
  - Synchronisation
  - PV production control

Associated products & solutions

For a complete solution, we also propose:
- Control cabinet
- Distribution cabinets
- Paralleling cabinet
- Batteries
- Containers
Energy monitoring
for smart MV/LV substations and LV grids

From a smart LV distribution board to a digital monitoring platform

Benefits
- A complete solution from the LV board to the software application.
- A new grid management tool changing DSO working methods.
- CAPEX optimisation carrying out the right investments.
- Flexible and scalable deployment.
- Ready to integrate new services and grid evolution.
Contact us for more details.

Example of Cloud architecture for online services

Specific Cloud application
- Functions
  - LV grid overview & alarms reporting.
  - Customised curves for data analysis.
  - Real time values of the selected transformer or LV distribution board.

Smart Grid
LV innovations

Monitoring of 3-phase + N transformer (via 4 current sensors)
To monitor the transformer load and detect possible backfeed on the MV network.

Voltage monitoring
A single three-phase voltage tap enables a full analysis to be carried out.

Monitoring of the 3-phase + N feeders (4 current sensors per feeder)
To monitor each live conductor of each feeder, including the neutral, in real time. Phase unbalances are detected, and the events are analysed.

Temperature monitoring
For example, to monitor the transformer temperature (DGPT2 probe), the interior temperature of the substation and the external temperature.
Multi-circuit Power Monitoring devices

**DIRIS Digiware**

Build your system:

- **Flexible**
  - Shared functions
  - Installation of components close to the load
  - Compact design
  - Wide choice of current sensors
- **Multi-circuit**
  - Ability to monitor several circuits via a single current measurement module due to independent current inputs
- **Accurate**
  - Class 0.5 as per standard IEC 61557-12 for the global measurement chain from 2% to 120% of nominal current
- **Plug & Play**
  - RJ12 current sensor connection and RJ45 interconnection of modules (fast, reliable, intelligent)
  - Auto-configuration of parameters
- **Cost effective**
  - Up to 30% saving compared to existing metering technology
  - Implementation in a quarter of the time vs existing technologies

**Associated current sensors with DIRIS Digiware and DIRIS B-30**

Various types of current sensors can be connected:

- **TE** Solid current sensors
  - Suitable for new installations
  - Match the pitch of protective devices
  - 5 to 2000 A
- **TR** Split-core current sensors
  - Suitable for existing installations
  - 25 to 600 A
- **TF** Flexible (Rogowski) current sensors
  - Suitable for existing installations with space restrictions or with high-intensity currents
  - 150 to 6000 A

**Communication gateways with embedded web server**

- **WEBVIEW** embedded web server.
- **Scalable.**
- Optional modules are available:
  - digital inputs/outputs,
  - analogue inputs/outputs,
  - temperature inputs.
- **Plug & Play:**
  - Connected metering and measurement devices are automatically addressed and detected by the gateway.
  - Data exported automatically.

---

Exclusive to Socomec, patented
Smart Grid projects
Interflex, Nice Grid

The Socomec Group, partner of the Interflex demonstrator

Starting in January 2017 and lasting for 3 years, the French InterFlex pilot project will bring together several key players with complementary fields of expertise involved in the transition toward sustainable energy. The city of Nice on the French Côte d’Azur will be associated with the steering committee alongside manufacturers Enedis, Engie, GRDF, GE, EDF and Socomec.

The DEMO1 project is funded by the European Commission for 70% of its total budget of 5 M€ for the French contribution to the European INTERFLEX project within the framework of the EU Horizon 2020 Research and Innovation programme.

In line with the Nice Grid project, Socomec will be taking part in the French InterFlex pilot project which aims at:
- automatic islanding,
- use of centralised storage systems for multiple services,
- local flexibility mechanisms managed by the DSO (Distribution System Operator).

www.socomec.com/energy-storage_en.html

Nice Smart Valley, the French Interflex pilot demonstrator

Nice Smart Valley follows on from the Nice Grid experiment, an international project in the field of smart grids, renewable energies and energy transition. It extends over a wide geographic area, encompassing the western districts of Nice, Nice Airport, the Plaine du Var business parks, the Isola 2000 ski resort and the Lérins Islands in the Mediterranean.
**Smart grid projects**

*Interflex, Nice Grid*

**Storage for integrating renewable energy and islanding, a proven reality**

---

The city of Nice on the Côte d’Azur has put energy control at the heart of its regional planning policies.

In Carros, the NICE GRID project provides various stakeholders with the means to massively integrate renewable energy and ensure optimal energy management.

**The challenges of the project**

- Maximise photovoltaic production on the local grid using all the roof surfaces available.
- Minimise investments in infrastructure.
- Ensure a continuity of service, even if the main grid fails.

Socomec’s smart energy storage management solutions are key to the innovative system implemented in the NICE GRID project. During the day, the surplus photovoltaic production is stored in batteries. The available energy allows you to increase the flexibility of the grid and overcome any interruptions in supply.

Across the district, the Socomec storage converter allows islanding or the creation of a Microgrid.

---

**Nice Grid: some figures**

- Budget: €30 M
- Project duration: 4 years
- 2,500 smart electricity meters
- 2.5 MWc of PV power
- 2 MW storage capacity
- Load shedding capacity: 3 MW
- Location: Carros – Nice, France

---

Easy to use, this 33-kW storage container is installed on the low-voltage network.
How can you ensure the optimum protection of substation auxiliaries? ........................................ p. 26

**AU Auxiliary Units**

- **AU11** switch panel  
  p. 26
- **AUd11** switch panel  
  p. 30

**Enclosures**

- **AR-TR-ZR** Primary enclosures  
  p. 32
- **LVDE** Lockable voltage divider enclosures  
  p. 44
- **DE** Distribution enclosures  
  p. 46
- **BR** Battery enclosures  
  p. 46
- **TT 3TC, J, H** Collecting units  
  p. 38
- **Presence indicator units**  
  p. 50
- **Electrical shunting cabinets**  
  p. 54

**Current short-circuiting device**

- **CCI** Current transformer shorting device  
  p. 52

**Rectifiers**

- **SHARYS IP**  
  p. 56

**UPS Uninterruptible Power supply Systems**

- **MASTERS IP**+ Single and three-phase UPS  
  p. 60
- **DELPHYS MP Elite** Three-phase UPS  
  p. 62

**STS Static Transfer Systems**

- **STATYS** Single and three-phase Static Transfer Systems  
  p. 64

**Services**

- Designing customised solutions: AU, current transformer, etc.
- Tests and qualifications.
- Commissioning and maintenance contracts.

For more information, see page 9.
How can you ensure the optimum protection of substation auxiliaries?

Secure and guaranteed power supply

Auxiliary services ensure the proper functioning of a high voltage substation. They assure the distribution, sometimes even the production but also the protection and service continuity of various types of low voltage AC and DC energy that is required to ensure the functioning of the equipment used in the substation.

The power supply to the auxiliaries must be secured, as an outage could result in the total loss of the substation.

The auxiliaries to be ensured relate to the supply of:

- Circuit breaker motors.
- Oil circulation pumps.
- Heating circuits of external enclosures and cabinets.
- Control and network management equipments (protection and automatic control devices).
- Telecommunications equipment.
- Rectifiers (battery chargers).
- 175 Hz transmitter equipment.
- Handling equipment, bridge crane.
- Lighting circuits.

These auxiliaries are separated into several autonomous or self-contained groups: these are called the Auxiliary Units (AU).

Any particular requirement?

We have made a number of specific developments to meet our customers’ requirements.

Do not hesitate to contact us for more information.

At your service

Our local teams can assist in the design and commissioning of your installation, as well as provide any necessary maintenance work and training.

For more information, see page 9.

A complete range

In the following pages you will find all our auxiliary unit panels and the enclosures you need for various functions:

- Our auxiliary units are available in 250, 400, 630 A and other ratings on request.
- Primary enclosures protect the auxiliary unit’s power supply and air coolers.
- Collecting units protect and regroup circuits to the LV control-command cabinet. These enclosures are equipped with specific padlockable fuse disconnect switches (RMSC).
- The relay building’s battery enclosure and distribution enclosure are linked.
- Presence indicator units, alerting to the presence of operative personnel in the substation.

Other examples of customised enclosures:

- Switch enclosures, for manual distribution on several circuits.
- Remote-locked and voltage stepdown units.
- Condensate pump enclosures or for remote tank.
- Distribution Cabinets (DC), to supply bay equipments from relay buildings.

In addition, the current short-circuiting device is used in measuring and protection circuits.

Compliance with standards

- IEC 61439
- Client specifications
- RTE and ENEDIS agreements

We have a certified and accredited testing laboratory, see page 10.
How can you ensure the optimum protection of substation auxiliaries?

Electrical architecture

Primary protection enclosures:
1. AR enclosure
2. TR’ enclosure
3. TR enclosure
4. ZR enclosure

Secure and guaranteed power supply continuity
For your network monitoring and control systems and IT facilities, discover our complete range of UPS, chargers, rectifiers and static transfer switches for all your applications. See pages 56 to 65.
**AU11 panels**

**Auxiliary units**

![Panel with labels](image)

**Function**

**AU11 panel**, the latest evolution of the AU95, is an AC and DC current distribution panel (control and telecommunications) for HV substations. Allowing:

- The continuity of LV power of the station’s auxiliary equipment by automatic switching between 2 different sources and a genset ("AST1", "AST2", "G").
- The distribution and protection of AC and DC equipment power supply.

It is composed of:

- 2 switchover chassis guaranteeing the safety of the power supply: Main input "A" and backup input "D"
- 1 or more AC outputs chassis
- 1 or more DC outputs chassis

**Advantages**

**Manufacturer warranty**
This panel meets RTE specification and is certified by the CNER (RTE).
As original manufacturer, design, production and tests are IEC 61439 compliant.

**Improved safety**
This panel has an IP2X protection rating and its design makes it easier to lockout switching devices.
The ATYS, SOCOMEC Automatic Transfer Switch, is padlockable in position "1" with three padlocks.

**Optimised use**
Switching is ensured with ATyS automatic transfer switches (see the SOCOMEC general catalogue).
Manual operation is possible in case of emergency.
MTTR (Mean Time To Repair) is reduced thanks to easily removable motor and control parts.

**Easy installation**
This very compact and modular solution can be configured to suit any setup.
- The IP20 distribution blocks (see the SOCOMEC general catalogue) make it easy to replace or add circuit breakers while keeping the chassis operational.
- Supplied kits enable easily chassis juxtaposition and addition.
- Copper clips and a cable anchoring system simplifies cabling.

**Flexible configuration**
With these scalable solutions, Socomec can adapt the solution to best suit your requirements. Do not hesitate to contact us for more information.

**The solution for**

- High voltage substations

**Strong points**

- Manufacturer’s warranty, RTE agreement
- Improved safety
- Optimised use
- Easy installation
- Flexible configuration

**Compliance with standards**

- SF716
- SF713
- IEC 61439
- IEC 60947-2
- IEC 60947-3
- IEC 60947-6-1
General characteristics

- **Main “A” input chassis**, fitted with:
  - 1 ATyS 4 x 250, 400 or 630 A
  - Data on the availability of sources “AST1” and “AST2” (NC)
  - 3 current transformers
  - 1 digital indicator on the front (active sources, modes, U, I, F…)
  - 1 power socket, protected by a circuit breaker and equipped with a front panel ammeter
  - 2 switches: “operating mode selection” and “priority source selection”
- **Back-up power supply “D” input chassis**, fitted with:
  - 1 ATyS 4 x 125, 160 or 250 A
  - 1 digital indicator on the front (active sources, modes, U, I, F…)
  - 1 protection circuit breaker on the genset (“G”) input
- **Outputs chassis**, configured according to requirements:
  - “General network services” (BA and BB)
  - “Network units” (RA and RB)
  - “General backup services” (SA and SB)
  - “Backup units” (SA and SB)
  - “48-V power unit” (AB1 and AB2)
  - “125-V power unit” (AD)
  - “48-V Telecom power unit” (AT)
  - “48-V Electric Control power unit” (AC)
- **Chassis design**
The chassis are based on the CADRYS format (see the SOCOMEC general catalogue). The frame is made from 17.5/10 mm sheet steel. The sheath is made from 15/10 mm sheet steel, with textured-finish powder-coated polyester, colour RAL 7035. 2 doors, upper and lower, each give access to the busbars and connection terminals. A hinged central door provides access to electrical equipment.

On the output chassis, the door gives access to:
- Left side, to the connections of the circuit breakers inputs and outputs
- Right side, to the connections of the circuit breakers protected by a transparent polycarbonate screen.

With the door closed, circuit breakers controls are accessible via the openings.

Dimensions

### Individual chassis and panel architecture

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main input chassis, 250 A / 400 A*</td>
<td>2250</td>
<td>600</td>
<td>357</td>
</tr>
<tr>
<td>Main input chassis, 630 A</td>
<td>2250</td>
<td>800</td>
<td>507</td>
</tr>
<tr>
<td>Back-up “D” input chassis</td>
<td>2250</td>
<td>500</td>
<td>357</td>
</tr>
<tr>
<td>Output chassis</td>
<td>2250</td>
<td>500</td>
<td>357</td>
</tr>
</tbody>
</table>

(*) Cabling Maxi 2 x 185 mm²/Phase. For larger sections, through-width 800 mm.
**Function**

**AUd11 panel**, the latest evolution of the AU89, is an AC and DC current distribution panel (control and telecommunications) for HV/MV substations. Allowing:
- The continuity of LV power of the station’s auxiliary equipment by automatic switching between 2 different sources (“AST1”, “AST2”).
- The distribution and protection of AC and DC equipment power supply.

It is composed of:
- 1 switchover chassis guaranteeing the safety of the power supply.
- 2 AC outputs chassis, stage 1 and stage 2, which can be regrouped into a single, dual-column chassis.
- 2 DC control outputs chassis, stage 1 and stage 2, which can be regrouped into a single, dual-column chassis.
- 1 DC Telecom output chassis.

**Advantages**

**Manufacturer warranty**
This panel meets ENEDIS specifications and is certified by the CNER (RTE). As original manufacturer, design, production and tests are IEC 61439 compliant.

**Improved safety**
This panel has an IP2X protection rating and its design makes it easier to lockout switching devices.
The ATYS, SOCOMEC Automatic Transfer Switch, is padlockable in position “0” with three padlocks.

**Optimised use**
Switching is ensured with the ATyS automatic transfer switch (see the SOCOMEC general catalogue).
Manual operation is possible in case of emergency.
MTTR (Mean Time To Repair) is reduced thanks to easily removable motor and control parts.

**Easy installation**
This very compact and modular solution can be configured to suit any setup.
- Integrated IP20 distribution blocks (see the SOCOMEC general catalogue) make it easy to replace or add circuit breakers while keeping the chassis operational.
- Supplied kits enable easily chassis juxtaposition and addition.
- Copper clips and a cable anchoring system simplifies cabling.

**Flexible configuration**
With these scalable solutions, Socomec can adapt the solution to best suit your requirements. Do not hesitate to contact us for more information.

**Strong points**
- Manufacturer’s warranty, ENEDIS agreement
- Improved safety
- Optimised use
- Easy installation
- Flexible configuration

**Compliance with standards**
- S736-3
- IEC 61439
- IEC 60947-2
- IEC 60947-3
- IEC 60947-6-1
**General characteristics**

- **“Changeover” chassis**, fitted with:
  - 1 ATYS 4x125, 400 or 630 A
  - Data on the availability of sources “AST1” and “AST2” (NC)
  - 3 current transformers
  - 1 digital indicator on the front to indicate operation (active sources, modes, U, I, F)
  - 1 red fault light for enclosure “TR”
  - 1 output protected by circuit breaker for the 175 Hz remote centralised orders (TCFM)
  - 1 “priority source selection” switch

- **Outputs chassis**, configured according to the customer’s requirements,
  - 400/230 VAC stage 1
  - 400/230 VAC stage 2
  - 48 VDC Telecom
  - 48 VDC control stage 1
  - 48 VDC control stage 2

**Chassis design**

The chassis are based on the CADRYS format. The frame is made from 17.5/10 mm sheet steel. The sheath is made from 15/10 mm sheet steel, structed finish powder-coated polyester, colour RAL 7035. 2 doors, upper and lower, each giving access to the busbars and connection terminals. A hinged central door provides access to electrical equipment.

On the output chassis, the door gives access to:
- Left side, to the connections of the circuit breakers inputs and outputs
- Right side, to the connections of the circuit breakers protected by a transparent polycarbonate screen.

With the door closed, circuit breakers controls are accessible via the openings.

**Dimensions**

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input chassis 250 A / 400 A*</td>
<td>2250</td>
<td>600</td>
<td>357</td>
</tr>
<tr>
<td>Input chassis 630 A</td>
<td>2250</td>
<td>800</td>
<td>507</td>
</tr>
<tr>
<td>Output chassis</td>
<td>2250</td>
<td>500</td>
<td>357</td>
</tr>
</tbody>
</table>

(*): Cabling Maxi 2 x 185 mm²/Phase. For larger sections, through-width 800 mm.
Primary enclosures
Range of enclosures for auxiliary units

Function
Our enclosures, installed at the output of auxiliary services transformers, are designed to:
- Protect the AC power supply to an auxiliary unit panel (TR enclosures).
- Protect the power supply to coolers from a transformer or auto-transformer of related power (TR’ enclosures).
- Protect and switch to a second source of these coolers (AR or AR’ enclosures).
- Protect the occasional power supply of coolers via an auxiliary source (ZR enclosures).

Advantages

Easy wiring
The careful design of this range of primary enclosures provides a functional connection of cables on the different terminals and devices. Connecting the input and output cables at the base of the enclosures is made easier with the removable polyester aluminium plates.

Weather conditions
The enclosures are MINIPOL and MAXIPOL (see the SOCOMEC general catalogue), with excellent resistance to weather conditions and UV.

Turnkey enclosures
The enclosures are delivered assembled and pre-wired. They are ready to be installed on delivery.

Flexible configuration
With these scalable solutions, Socomec can adapt the solution to best suit your requirements. Do not hesitate to contact us for more information.

Strong points
- Easy wiring
- Weather conditions
- Turnkey enclosure
- Flexible configuration
- RTE and ENEDIS agreements

Compliance with standards
- SF705
- SF720
- HN 46-R-01
- IEC 61439
- IEC 60947-2
- IEC 60947-3
- IEC 60947-6,-1

The solution for
- High voltage substation
**TR primary enclosures**

**Composition**

TR enclosures, designed to protect the connection between the AST (Auxiliary Services Transformer) and the auxiliary unit panel, are equipped with:
- IP43 aerator on each side of the enclosure.
- Condensate outlet device on the base section.
- Busbar and crossover grounding stud.
- 4 wall mounting brackets (supplied, not mounted).
- A power terminal block.
- Removable closing plate on the base, on request with grommet or cable gland.
- Triple-locking device on the door.
- Nameplate.

This enclosure is mounted, assembled and pre-wired.

**Characteristics**

<table>
<thead>
<tr>
<th>Enclosure material</th>
<th>Fibreglass reinforced polyester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>RAL 7035</td>
</tr>
<tr>
<td>IP</td>
<td>IP55 enclosure, IP43 aerator</td>
</tr>
<tr>
<td>Power supplies</td>
<td>400 VAC, 1, 400A or 250 A</td>
</tr>
<tr>
<td>Control in 48 or 127 VDC</td>
<td></td>
</tr>
<tr>
<td>Max. connection cross-section</td>
<td>400 A: 2 x 185 mm²</td>
</tr>
<tr>
<td></td>
<td>250 A: 2 x 95 mm²</td>
</tr>
<tr>
<td></td>
<td>Option to connect 3 or 4 cables</td>
</tr>
<tr>
<td></td>
<td>Control connection: 4 mm²</td>
</tr>
</tbody>
</table>

**References**

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR 95 400 A enclosure – control 127 VDC</td>
<td>1 x 400 A load break switch with visible breaking + contact NO/NC</td>
<td>7P69 0001</td>
</tr>
<tr>
<td></td>
<td>1 x 400 A circuit breaker with 127 VDC tripping coil + fault signalling contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 heating resistor protected by fuse disconnect switch</td>
<td></td>
</tr>
<tr>
<td>TR 95 400 A enclosure – control 48 VDC</td>
<td>1 x 400 A load break switch with visible breaking + contact NO/NC</td>
<td>7P69 0002</td>
</tr>
<tr>
<td></td>
<td>1 x 400 A circuit breaker with 48 VDC tripping coil + fault signalling contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 heating resistor protected by fuse disconnect switch</td>
<td></td>
</tr>
<tr>
<td>TR 95 250 A enclosure – control 48 VDC</td>
<td>1 x 250 A load break switch with visible breaking + contact NO/NC</td>
<td>7P69 0003</td>
</tr>
<tr>
<td></td>
<td>1 x 250 A circuit breaker with 48 VDC tripping coil + fault signalling contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 heating resistor protected by fuse disconnect switch</td>
<td></td>
</tr>
<tr>
<td>TR 89 250 A enclosure</td>
<td>1 x 250 A load break switch with visible breaking + contact NO/NC</td>
<td>7P69 0007</td>
</tr>
<tr>
<td></td>
<td>1 x 250 A circuit breaker + fault signalling contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 heating resistor protected by fuse disconnect switch</td>
<td></td>
</tr>
<tr>
<td>TR 89 400 A enclosure</td>
<td>1 x 400 A load break switch with visible breaking + contact NO/NC</td>
<td>7P69 0008</td>
</tr>
<tr>
<td></td>
<td>1 x 400 A circuit breaker + fault signalling contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 heating resistor protected by fuse disconnect switch</td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR 95 400 A enclosure – control 127 VDC</td>
<td>1000</td>
<td>1000</td>
<td>312</td>
<td>-</td>
<td>-</td>
<td>MAXIPOL</td>
</tr>
<tr>
<td>TR 95 400 A enclosure – control 48 VDC</td>
<td>800</td>
<td>600</td>
<td>300</td>
<td>400</td>
<td>600</td>
<td>MINIPOL</td>
</tr>
<tr>
<td>TR 95 250 A enclosure</td>
<td>1000</td>
<td>1000</td>
<td>312</td>
<td>-</td>
<td>-</td>
<td>MAXIPOL</td>
</tr>
</tbody>
</table>

**MAXIPOL**

**MINIPOL**
Primary enclosures
Range of enclosures for auxiliary units

**TR' primary enclosures**

**Composition**

TR' enclosures, designed to protect the connection between the AST and the coolers, are equipped as standard with:

- IP43 aerator mounted on each side of the enclosure.
- Condensate outlet device on the base section.
- 4 wall mounting brackets (supplied, not mounted).
- Busbar and crossover grounding stud.
- Removable closing plate on the base, on request with grommet or cable gland.
- Triple-locking device on the door.
- Enclosure nameplate on the door.

This enclosure is mounted, assembled and pre-wired.

**Characteristics**

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR' 100 A enclosure</td>
<td>1 x 160 A plug-in circuit breaker + fault signalling contact</td>
<td>7P60 0009</td>
</tr>
<tr>
<td></td>
<td>1 heating resistor protected by fuse disconnect switch</td>
<td></td>
</tr>
</tbody>
</table>

**Enclosure material**
Fibreglass-reinforced polyester

**Colour**
RAL 7035

**IP**
IP55 enclosure, IP43 aerator

**Power supplies**
400 VAC, I, 100 A

**Max. connection cross-section**
1 x 95 mm²

**References**

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR' 100 A enclosure</td>
<td>1 x 160 A plug-in circuit breaker + fault signalling contact</td>
<td>7P60 0009</td>
</tr>
<tr>
<td></td>
<td>1 heating resistor protected by fuse disconnect switch</td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR' 100 A enclosure</td>
<td>800</td>
<td>600</td>
<td>300</td>
<td>400</td>
<td>600</td>
<td>MINIPOL</td>
</tr>
</tbody>
</table>

**MINIPOL**
**AR primary enclosures**

**Composition**

With these enclosures you can switch the air coolers power supply to a second source, either manually or automatically. They also ensure the protection of the power supply where they are installed near to (assuming the second source to be protected from elsewhere), and contain a changeover switch and a circuit breaker for this purpose.

Enclosures are equipped as standard with:
- IP43 aerator mounted on each side of the enclosure.
- Condensate outlet device on the base section.
- 4 wall mounting brackets (supplied, not mounted).
- Busbar and crossover grounding stud.
- A power terminal block.

**Characteristics**

<table>
<thead>
<tr>
<th>Enclosure material</th>
<th>Fibreglass-reinforced polyester</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP</td>
<td>IP55 enclosure, IP43 aerator</td>
</tr>
<tr>
<td>Power supplies</td>
<td>400 VAC</td>
</tr>
<tr>
<td>Max. connection gauge</td>
<td>1 cable 1 x 50 mm² per phase and 1 cable 1 x 25 mm² for neutral</td>
</tr>
</tbody>
</table>

- Removable closing plate on the base with grommet by cable entry or cable gland.
- Triple-locking device on the door.
- Enclosure nameplate on the door.

The enclosures are mounted, assembled and pre-wired.

**References**

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure AR automatic</td>
<td>1 x 125 A load break switch with visible breaking, direct front operation</td>
<td>7P60 0013</td>
</tr>
<tr>
<td></td>
<td>1 circuit breaker with 2 fault signalling contacts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 AT/6 4 x 125 A automatic transfer switch with bottom bridging point and 2 In / 2 Out module</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 function selection switch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 heating resistor protected by fuse disconnect switch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 labelled terminal blocks</td>
<td></td>
</tr>
<tr>
<td>AR 125 A enclosure</td>
<td>1 x 160 A plug-in circuit breaker + fault signalling contact</td>
<td>7P60 0016</td>
</tr>
<tr>
<td></td>
<td>1 SIRCOVER® 125 A manual changeover switch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 heating resistor protected by fuse disconnect switch</td>
<td></td>
</tr>
<tr>
<td>AR 32A enclosure</td>
<td>1 x 100 A load break switch with visible breaking + contact NO/NC</td>
<td>7P60 0015</td>
</tr>
<tr>
<td></td>
<td>1 x 32 A circuit breaker with 127 VDC tripping coil + fault signalling contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 heating resistor protected by fuse disconnect switch</td>
<td></td>
</tr>
</tbody>
</table>

*see the SOCOMEC general catalogue.

Others ratings (25, 40, 63 A...) on request.

**Dimensions**

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR automatic enclosure</td>
<td>1000</td>
<td>750</td>
<td>420</td>
<td>-</td>
<td>MAXIPOL</td>
</tr>
<tr>
<td>AR 125 A enclosure</td>
<td>800</td>
<td>600</td>
<td>300</td>
<td>-</td>
<td>MINIPOL</td>
</tr>
</tbody>
</table>

**MAXIPOL**

![Diagram of MAXIPOL enclosure](image_url)
Primary enclosures

Range of enclosures for auxiliary units

**AR-TR** primary enclosures

### Composition

AR-TR enclosures, a combination of AR and TR enclosures, are designed to protect the connection between the AST and the auxiliary unit panel and coolers, are equipped as standard with:

- IP43 aerator mounted on each side of the enclosure.
- Condensate outlet device on the base section
- Busbar and crossover grounding stud
- 4 wall mounting brackets (supplied, not mounted)
- A power terminal block
- Removable closing plate on the base with grommet or cable gland
- Triple-locking device on the door
- Enclosure nameplate on the door

The enclosures are mounted, assembled and pre-wired.

### Characteristics

<table>
<thead>
<tr>
<th>Enclosure material</th>
<th>Fibreglass-reinforced polyester; Colour RAL 7035</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP</td>
<td>IP55 enclosure, IP43 aerator</td>
</tr>
<tr>
<td>Power supplies</td>
<td>400 VAC</td>
</tr>
<tr>
<td>Max. connection cross-section</td>
<td>TR 400 A: 2 x 185 mm²</td>
</tr>
<tr>
<td></td>
<td>250 A: 2 x 95 mm²</td>
</tr>
<tr>
<td></td>
<td>Option to connect 3 or 4 cables</td>
</tr>
<tr>
<td></td>
<td>AR connection: 35 mm²</td>
</tr>
<tr>
<td></td>
<td>Control connection: 4 mm²</td>
</tr>
</tbody>
</table>

### References

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR-TR 89 250 A enclosure</td>
<td>1 x 250 A load break switch with visible breaking + fault signalling contact</td>
<td>7P60 0017</td>
</tr>
<tr>
<td></td>
<td>1 x 250 A circuit breaker with NO/NC and fault signalling contacts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 x 100 A load break switch with visible breaking + fault signalling contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 circuit breaker + contact fault signalling</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 COMO C 40A* manual changeover switch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 heating resistor protected by fuse disconnect switch</td>
<td></td>
</tr>
<tr>
<td>AR-TR 89 250 A enclosure with power outlets</td>
<td>Equipment identical to 7P600017, plus: 1 x 25 A 300 mA RCD 1 plug 2P+E P17 16 A</td>
<td>7P60 0018</td>
</tr>
<tr>
<td>AR-TR 95 400 A enclosure</td>
<td>1 x 400 A load break switch with visible breaking + fault signalling contact</td>
<td>7P60 0019</td>
</tr>
<tr>
<td></td>
<td>1 x 400 A circuit breaker with NO/NC and fault signalling contacts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 x 100 A load break switch with visible breaking + fault signalling contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 circuit breaker + contact fault signalling</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 COMO C 40A* manual changeover switch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 heating resistor protected by fuse disconnect switch</td>
<td></td>
</tr>
<tr>
<td>AR-TR 95 400 A enclosure with power outlets</td>
<td>Equipment identical to 7P600019, plus: 1 x 25 A 300 mA RCD 1 plug 3P+N+E P17 32 A</td>
<td>7P60 0020</td>
</tr>
</tbody>
</table>

*see the SOCOMEC general catalogue.

### Dimensions

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR-TR 250 A enclosures</td>
<td>800</td>
<td>600</td>
<td>300</td>
<td>400</td>
<td>600</td>
<td>MINIPOL</td>
</tr>
<tr>
<td>AR-TR 400 A enclosures</td>
<td>1000</td>
<td>750</td>
<td>312</td>
<td>-</td>
<td>-</td>
<td>MAXIPOL</td>
</tr>
</tbody>
</table>

**MAXIPOL**

**MINIPOL**
**ZR primary enclosures**

**Composition**

ZR enclosures, designed to protect the occasional power supply of coolers via an auxiliary power source, are equipped as standard with:

- IP43 aerator mounted on each side of the enclosure.
- Condensate outlet device on the base section.
- 4 wall mounting brackets.
- Busbar and crossover grounding stud.
- 2 power terminals blocks.
- Removable closing plate on the base with grommet or cable gland.
- Triple-locking device on the door
- Enclosure nameplate on the door

The enclosures are mounted, assembled and pre-wired.

**Characteristics**

<table>
<thead>
<tr>
<th>Enclosure material</th>
<th>Fibreglass-reinforced polyester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>RAL 7035</td>
</tr>
<tr>
<td>IP</td>
<td>IP55 enclosure, IP43 aerator</td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZR 63 A enclosure</td>
<td>800</td>
<td>600</td>
<td>300</td>
<td>400</td>
<td>600</td>
<td>MINIPOL</td>
</tr>
<tr>
<td>ZR 125 A enclosure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test enclosure</td>
<td>400</td>
<td>300</td>
<td>200</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*see the SOCOMEC general catalogue

**References**

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZR 63 A enclosure</td>
<td>1 x 63 A SIRCO* load break switch, 1 heating resistor protected by fuse disconnect switch</td>
<td>7P60 0030</td>
</tr>
<tr>
<td>ZR 125 A enclosure</td>
<td>1 x 125 A SIRCO* load break switch, 1 heating resistor protected by fuse disconnect switch</td>
<td>7P60 0031</td>
</tr>
<tr>
<td>Test enclosure</td>
<td>4 test terminals cross-section = 70 mm², width = 31 mm</td>
<td>7P60 0032</td>
</tr>
</tbody>
</table>
Collecting units
Range of enclosures for HV substations

Function
These enclosures are designed to regroup the intermediary connections between:
- The voltage and current measurement transformers or the tapchanger terminals of the transformer and the LV control cabinet.

Advantages

**Easy wiring**
The careful design of these enclosures provides a functional connection of the cables on the different terminals and devices. Connecting the input and output cables at the base of the enclosures is made easier with a removable plate, or, on request, grommet or glands.

**Weather conditions**
The enclosures are MINIPOL boxes (see the SOCOMEC general catalogue), with excellent resistance to weather conditions and UV.

**Turnkey enclosures**
The enclosures are delivered assembled and pre-wired. They are ready to be installed on delivery.

**Flexible configuration**
With these scalable solutions, SOCOMEC can adapt the solution to best suit your needs. Do not hesitate to contact us for more information.

The solution for
- HV/HV and HV/MV substations

Strong points
- Easy wiring
- Weather conditions
- Turnkey enclosure
- Flexible configuration

Compliance with standards
- SF705
- IEC 61439
- IEC 60269
- IEC 60947-3
TT collecting units

Composition

TT enclosures, designed to regroup and protect the circuits between the voltage transformers and the LV control cabinet, are equipped with:
- IP43 aerator mounted on each side of the enclosure.
- A condensate outlet device is mounted on the base section.
- Busbar and crossover grounding stud.
- Removable closing plate on the base.
- Enclosure nameplate on the door.
This enclosure is mounted, assembled and pre-wired.

Characteristics

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TT enclosure</td>
<td>1 RMSC fuse disconnect switch 1 P+N equipped with 10 A gl fuses 8 M6/8 voltage cable terminals</td>
<td>7P70 0001</td>
</tr>
<tr>
<td>2TT enclosure</td>
<td>2 RMSC fuse disconnect switches 1 P+N equipped with 10 A gl fuses 10 M6/8 voltage cable terminals</td>
<td>7P70 0002</td>
</tr>
<tr>
<td>3TT enclosure</td>
<td>1 fuse disconnect switch 3 P+N equipped with 10 A gl fuses 8 M6/8 voltage cable terminals</td>
<td>7P70 0003</td>
</tr>
</tbody>
</table>

References

Dimensions

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TT enclosure</td>
<td>400</td>
<td>400</td>
<td>200</td>
</tr>
<tr>
<td>2TT enclosure</td>
<td>400</td>
<td>400</td>
<td>200</td>
</tr>
<tr>
<td>3TT enclosure</td>
<td>400</td>
<td>400</td>
<td>200</td>
</tr>
</tbody>
</table>
Collecting units
Range of enclosures for HV substations

3TC collecting units

Composition

The 3TC enclosure, designed to regroup the connections between the current transformers and the LV control cabinet, is equipped as standard with:

- IP43 aerator mounted on each side of the enclosure.
- A condensate outlet device is mounted on the base section.
- Busbar and crossover grounding stud
- Removable closing plate on the base
- Enclosure nameplate on the door

This enclosure is mounted, assembled and pre-wired.

Characteristics

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TC enclosure</td>
<td>14 current connection terminals with a 10 mm² rod, 16 mm pitch.</td>
<td>7771 0004</td>
</tr>
</tbody>
</table>

Dimensions

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TC enclosure</td>
<td>400</td>
<td>400</td>
<td>200</td>
</tr>
</tbody>
</table>
**3TT-3TC** collecting units

**Composition**

The 3TT-3TC enclosure, designed to regroup and protect the circuits between the voltage and current transformers and the LV control cabinet, is equipped with:

- IP43 aerator mounted on each side of the enclosure.
- A condensate outlet device is mounted on the base section.
- Busbar and crossover grounding stud
- Removable closing plate on the base
- Enclosure nameplate on the door

This enclosure is mounted, assembled and pre-wired.

**Characteristics**

<table>
<thead>
<tr>
<th>Enclosure material</th>
<th>Fiberglass-reinforced polyester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>RAL 7035</td>
</tr>
</tbody>
</table>

**Connecting cables**

- 1 x 6 mm² for voltage terminals,
- 1 x 10 mm² for current terminals and
- 1 x 25 mm² for fuse disconnect switches

**References**

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TT-3TC enclosure</td>
<td>1 fuse disconnect switch 3P+N equipped with 10 A gl fuses</td>
<td>7721 0005</td>
</tr>
<tr>
<td></td>
<td>8 M6/8 voltage cable terminals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14 current connection terminals with a 10 mm² rod, pitch of 16 mm.</td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TT-3TC enclosure</td>
<td>800</td>
<td>600</td>
<td>300</td>
</tr>
</tbody>
</table>
Fuse disconnect switches on **TT** and **3TC** enclosures

### Composition

The RMSC is a 3-padlock modular fuse disconnect switch equipped with additional security devices:

- A safety mechanism prevents any of the grippers from unintentional opening. The user must pass under the cradle to open the disconnector, making this action absolutely voluntary.
- A system allows the cradle lock to be padlocked when closed, making it impossible to open the gripper in the event of the cradle coming away by accident.

The switch is equipped with an auxiliary contact, which can send a signal (fuse blown, fuse presence) or have an early shut-off function.

### Characteristics

<table>
<thead>
<tr>
<th>Reference standards</th>
<th>Electrical features according to IEC 60947-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal current Ith (20 °C)</td>
<td>50</td>
</tr>
<tr>
<td>Rated insulation voltage Ui (V AC)</td>
<td>690</td>
</tr>
<tr>
<td>Prospective short-circuit current (kA eff)</td>
<td>100</td>
</tr>
<tr>
<td>Rated impulse withstand voltage Uimp (kV)</td>
<td>8</td>
</tr>
</tbody>
</table>

### Dimensions

**1 P + N**

- 66
- 96
- 117

**3 P + N**

- 53
- 118.25
- 96
- 117
- 106

---

**References**

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMSC 1P+N A</td>
<td>50 A, single-pole + neutral fuse disconnect switches with lock cradle and auxiliary contact, for 14 x 51 cylindrical fuses</td>
<td>?P?1 0006</td>
</tr>
<tr>
<td>RMSC 3P+N A</td>
<td>50 A, 3-pole + neutral fuse disconnect switches with lock cradle and auxiliary contact, for 14 x 51 cylindrical fuses</td>
<td>?P?1 0007</td>
</tr>
</tbody>
</table>

**Fuse rating (A)**

<table>
<thead>
<tr>
<th>Fuse rating (A)</th>
<th>Copper wiring recommended (mm²)</th>
<th>Max. torque (Nm)</th>
<th>Available current adjustment depending on the temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 ... 20</td>
<td>2.5</td>
<td>3</td>
<td>Temperature (°C) K x Iₙ</td>
</tr>
<tr>
<td>25</td>
<td>4</td>
<td></td>
<td>20 1</td>
</tr>
<tr>
<td>32</td>
<td>6</td>
<td></td>
<td>30 0.95</td>
</tr>
<tr>
<td>40</td>
<td>8</td>
<td></td>
<td>40 0.9</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td></td>
<td>50 0.8</td>
</tr>
</tbody>
</table>

- Voltage and current (rated values) 0.1 ... 10 A / 250 VAC
- Voltage and current (min operating values) 1 mA / 4 VDC
- Temperature -20 ... +125 °C
Collecting units \( J \) and \( H \)

**Composition**

\( J \) and \( H \) enclosures, designed to regroup the intermediate connection between the power transformer (\( J \)) or the auto-transformer (\( H \)) and the LV control cabinet, are equipped as standard with:

- IP43 aerator mounted on each side of the enclosure.
- A condensate outlet device is mounted on the base section.
- Busbar and crossover grounding stud
- Removable closing plate on the base
- Enclosure nameplate on the door

This enclosure is mounted, assembled and pre-wired.

**Characteristics**

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure ( J )</td>
<td>60 M6/8 voltage cable terminals</td>
<td>7P70 0006</td>
</tr>
<tr>
<td></td>
<td>6 current connection terminals with a 10 mm² rod, pitch of 16 mm</td>
<td></td>
</tr>
<tr>
<td>Enclosure ( H )</td>
<td>15 M6/8 voltage cable terminals</td>
<td>7P70 0007</td>
</tr>
<tr>
<td></td>
<td>11 current connection terminals with a 10 mm² rod, pitch of 16 mm</td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Type</th>
<th>( H ) (mm)</th>
<th>( W ) (mm)</th>
<th>( D ) (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure type ( J )</td>
<td>800</td>
<td>600</td>
<td>300</td>
</tr>
<tr>
<td>Enclosure type ( H )</td>
<td>400</td>
<td>400</td>
<td>200</td>
</tr>
</tbody>
</table>

**MINIPOL**

```
MINIPOL

H: 50
W: 70
D: 70
P: 25
```

**References**

- Fiberglass-reinforced polyester
- Colour RAL 7035
- IP55 enclosure, IP43 aerator
- 1 x 6 mm² for voltage terminals and 1 x 10 mm² for current terminals
LVDE enclosures
Lockable voltage divider enclosures

Function
The LVDE enclosures allow the breaking of measurement circuits downstream of the voltage reducers installed on the HV feeders.
The breaking function is ensured by a closing contactor, the purpose of which is to:
- cut-off the 3 line conductors downstream of the S1 terminals of the voltage dividers,
- bridge the 3 conductors downstream of the S2 terminals at their entry to the enclosure.

Advantages
Easy wiring
The careful design of these enclosures provides a functional connection of the cables on the different terminals. Connecting the input and output cables at the base of the enclosures is made easier with the removable stainless steel plates.

Improved safety
The enclosures are equipped with a manual locking and unlocking system with a pushbutton switch. IP2X protection ensures that no contact with bare live parts is possible inside the enclosure.

Weather conditions
SOCOMEC voltage divider enclosures are made of 2 mm thick stainless steel with excellent resistance both to harsh weather conditions and to UV rays.

Turnkey enclosures
The enclosures are delivered assembled and pre-wired. They are ready to be installed on delivery.

The solution for
- High voltage substation

Strong points
- Easy wiring
- Improved safety
- Weather conditions
- Turnkey enclosures
- RTE agreements

Compliance with standards
- SF705
- SF725
- IEC 61439
- IEC 60947-4
LVDE enclosures
Lockable voltage divider enclosures

Composition

LVDE enclosures are equipped as standard with:
- Opaque hinge-mounted door
- Butterfly latch, keyless
- 4 wall mounting brackets, factory-fitted
- A contactor locking and unlocking system with pushbutton switch.
- IP43 ventilator mounted on each side of the enclosure.
- A heating resistor fitted at the base and a thermostat.
- A connecting terminal board with sufficient space for the cables entering from below.
- A through-hole earth connection on the outside of the enclosure and a perforated earth bar.
- A triple door-locking system.
- Enclosure nameplate on the door

Characteristics

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 V DC LVDE enclosure</td>
<td>1 coil closing contactor 125 V DC</td>
<td>7P70 0203</td>
</tr>
<tr>
<td></td>
<td>1 time relay 125 V DC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Locking/Unlocking pushbuttons</td>
<td></td>
</tr>
<tr>
<td>48 V DC LVDE enclosure</td>
<td>1 coil closing contactor 48 V DC</td>
<td>7P70 0213</td>
</tr>
<tr>
<td></td>
<td>1 time relay 48 V DC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Locking/Unlocking pushbuttons</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 heating resistor</td>
<td></td>
</tr>
</tbody>
</table>

References

*see the SOCOMEC general catalogue

Dimensions

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 V DC LVDE enclosure</td>
<td>500</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>48 V DC LVDE enclosure</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Function**

The **RB** battery enclosure is placed between the battery and the distribution enclosure of the **RB**s. With it, you can disconnect the battery and connect a back-up battery. It is usually installed in the **RB** relay building. This enclosure allows power to be supplied to the bottom distribution cabinet:

- Either from the permanent battery through a two-pole fully visualised breaking switch.
- Or from a provisional battery or "buffer battery", protected by two crossed bushings.

**Advantages**

**IP2X enclosure**

The **RB** battery enclosure avoids any contact with live bare conducting parts and eliminates risk of short-circuits between the +/- polarities inside the enclosure. Transparent isolating screens isolate the barrel of each bushing and the switch is equipped with terminal shrouds both top and bottom.

**Easy wiring**

The internal connection is done on a specific terminal. Buffer (back-up) batteries are connected externally by 2 quick-fit plugs under a pivoting cover.

**Weather conditions**

This enclosure is a MINIPOL box (see the SOCOMEC general catalogue), with excellent resistance to weather conditions and UV.

**Turnkey enclosure**

The enclosures are delivered assembled and pre-wired. They are ready to be installed on delivery.

---

**The solution for**

- High voltage substation

**Strong points**

- IP2X enclosure
- Easy wiring
- Weather conditions
- Turnkey enclosure

**Compliance with standards**

- SF705
- SF728
- IEC 61439
- IEC 60947-2
Battery enclosure for relay buildings (RB)

Composition

Enclosures are equipped as standard with:
- Opaque hinge-mounted door.
- Butterfly latch, keyless.
- 4 wall mounting brackets (supplied, not mounted).
- Terminal rods with caps for connecting 35 mm² cables.
- 2 x 10mm diameter plugs with outer protective cover with hinge springs.
- 4 Iso PVC cable glands, 20mm-diameter (5 if auxiliary contacts).
- Enclosure nameplate on the door.
This enclosure is mounted, assembled and pre-wired.

Characteristics

<table>
<thead>
<tr>
<th>Description</th>
<th>Material</th>
<th>Colour</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery enclosure with 2 switches</td>
<td>Fibreglass-reinforced polyester</td>
<td>RAL 7035</td>
<td>7P60 0042</td>
</tr>
<tr>
<td>Option: 2 auxiliary contacts, type NC</td>
<td></td>
<td></td>
<td>7P60 0041</td>
</tr>
</tbody>
</table>

Power supplies
- DC control circuits, 48 V rated voltage
- Maximum conditions of service:
  - steady-state current: 18 A
  - peak current: 72 A / 1 s

External wiring
- 1-pole cable, 25mm²

References

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery enclosure with 2 switches</td>
<td>2 SIRCO M* 3 x 80 A load break switches with terminal shroud, direct padlockable handle</td>
<td>7P60 0042</td>
</tr>
<tr>
<td>Option: 2 auxiliary contacts, type NC</td>
<td>2 NC aux. contacts on switch on 4 terminals</td>
<td>7P60 0041</td>
</tr>
</tbody>
</table>

*see the SOCOMEC general catalogue.

Dimensions

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery enclosure with 2 SIRCO M* 3 x 80 A switches</td>
<td>400</td>
<td>300</td>
<td>200</td>
<td>400</td>
<td>600</td>
</tr>
</tbody>
</table>

*see the SOCOMEC general catalogue.

MINIPOL
DE enclosures
Distribution enclosures

Function
The DE enclosures allow the distribution of DC voltage for auxiliary supply of the control equipment installed in substation relay buildings (RB).
The distribution busbar is supplied either by a Rectifier source or by a Battery source.

Advantages

Easy wiring
The careful design of these enclosures provides a functional connection of the cables on the different terminals. Connecting the input and output cables at the base of the enclosures is made easier with the pre-perforated rubber cable glands.

Improved safety
Connecting the power supplies to the terminal boards is done without security restrictions (live working at low voltages). The distribution of the polarities to the circuit breakers is protected against short circuits. The degree of protection IP2X ensures that no contact with the bare live parts is possible inside the enclosure.

Turnkey enclosures
The enclosures are delivered assembled and pre-wired. They are ready to be installed on delivery.

The solution for
- High voltage substation

Strong points
- Easy wiring
- Improved safety
- Turnkey enclosures
- RTE agreements

Compliance with standards
- SF714
- IEC 61439
- IEC 60947-2
DE enclosures are equipped as standard with:

- An opaque front plate, not hinge-mounted.
- 4 wall mounting brackets, factory-fitted.
- Earthing stud.
- Distribution comb 2 x 100 A and its fitting.
- A connecting terminal board with sufficient space for the cables entering from above.
- Some circuit breaker outputs fitted on a resistor polarity to limit the effects of short-circuit currents (according to RTE).
- Enclosure nameplate on the door

**Composition**

**DE enclosures**

**Characteristics**

<table>
<thead>
<tr>
<th>Enclosure material</th>
<th>Sheet metal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>RAL 7035</td>
</tr>
<tr>
<td>IP</td>
<td>IP 2x</td>
</tr>
<tr>
<td>Power supply</td>
<td>48 V DC</td>
</tr>
</tbody>
</table>

**References**

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure DE2 D</td>
<td>1 input circuit breaker (2 poles) 32 A curve B + SD contact 6 output circuit breakers 6 A curve C 3 output circuit breakers 10 A curve B 2 output circuit breakers 3 A curve Z</td>
<td>Please ask us for information</td>
</tr>
<tr>
<td>Enclosure DE4 D</td>
<td>1 input circuit breaker (2 poles) 32 A curve B + SD contact 9 output circuit breakers 6 A curve C 2 output circuit breakers 10 A curve B 2 output circuit breakers 3 A curve Z 2 output circuit breakers 6 A curve B</td>
<td>Please ask us for information</td>
</tr>
<tr>
<td>Enclosure DE2 E</td>
<td>1 input circuit breaker (2 poles) 32 A curve B + SD contact 9 output circuit breakers 6 A curve C 6 output circuit breakers 10 A curve B 2 output circuit breakers 3 A curve Z</td>
<td>Please ask us for information</td>
</tr>
<tr>
<td>Enclosure DE4 E</td>
<td>1 input circuit breaker (2 poles) 32 A curve B + SD contact 13 output circuit breakers 6 A curve C 4 output circuit breakers 10 A curve B 2 output circuit breakers 3 A curve Z 2 output circuit breakers 6 A curve B</td>
<td>Please ask us for information</td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure DE2 D</td>
<td>900</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>Enclosure DE4 D</td>
<td>948</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>Enclosure DE2 E</td>
<td>978</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>Enclosure DE4 E</td>
<td>907</td>
<td>500</td>
<td>200</td>
</tr>
</tbody>
</table>

![Diagram of DE enclosures]
**Presence indicator units**

**Enclosures for HV substations**

---

**Function**

The **presence indicator unit** alerts operators and technical staff to the presence of operative personnel carrying out work inside a substation.

Its other functions are:

- Flashing orange light indicating the start-up of the presence station.
- The lighting control for station access.
- Connection for emergency stop “warning” alarm.
- Telephone equipment.
- Indicator/controls for a second operative.

**Advantages**

**Easy to install**

This enclosure has the benefit of two mounting options. The wall mount is supplied as standard but there is an optional stainless steel base.

**Weather conditions**

The presence indicator enclosure is MINIPOL-type enclosure (see the SOCOMEC general catalogue).

This enclosure has excellent resistance to weather conditions and UV.

**Turnkey enclosure**

The enclosures are delivered assembled and pre-wired. They are ready to be installed on delivery.

**Flexible configuration**

SOCOMEC can adapt the solution to best suit your requirements.

Do not hesitate to contact us for more information.

---

**The solution for**

- High voltage substation

**Strong points**

- Easy to install
- Weather conditions
- Turnkey enclosure
- Flexible configuration
- ENEDIS & RTE agreement

**Compliance with standards**

- SF705
- DTP 871.2
- CEI 61439
- CEI 60947-3
Composition

Enclosures are equipped as standard with:
- Transparent hinge-mounted door.
- Butterfly latch, keyless.
- IP43 aerator mounted on each side of the enclosure.
- A condensate outlet device is mounted on the base section.
- 4 wall mounting brackets, mounted.
- Busbar and crossover grounding stud.
- Removable aluminium closing plate on the base (if wall-mounted).
- A name plate for the enclosure.

This enclosure is mounted, assembled and pre-wired.

Characteristics

- **Enclosure material:** Fibreglass-reinforced polyester
- **Colour:** RAL 7035
- **IP:** IP65 and IP43 for aerator
- **IK:** IK10

Enclosures are equipped as standard with:
- Transparent hinge-mounted door.
- Butterfly latch, keyless.
- IP43 aerator mounted on each side of the enclosure.
- A condensate outlet device is mounted on the base section.
- 4 wall mounting brackets, mounted.
- Busbar and crossover grounding stud.
- Removable aluminium closing plate on the base (if wall-mounted).
- A name plate for the enclosure.

This enclosure is mounted, assembled and pre-wired.

References

<table>
<thead>
<tr>
<th>Description</th>
<th>Internal devices</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyester presence indicator unit</td>
<td>Inside steel door equipped with auxiliaries such as push-button “access lighting”, presence indication switch, telephone handset or any other auxiliary equipment; 1 internal lighting operated by door contact; 1 flash lamp mounted on the roof; 1 connection terminal block; Heating resistor; Telephone jack</td>
<td>7P60 0060</td>
</tr>
<tr>
<td>Stainless steel with emergency stop and earthing clamp</td>
<td></td>
<td>7P60 0062</td>
</tr>
</tbody>
</table>

Dimensions

<table>
<thead>
<tr>
<th>Type</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyester proximity and presence indicator enclosure</td>
<td>500</td>
<td>400</td>
<td>200</td>
</tr>
<tr>
<td>Stainless steel with emergency stop and earthing clamp</td>
<td>1250 mm in height</td>
<td>200</td>
<td>500</td>
</tr>
</tbody>
</table>
Current transformer shorting device

Function
This device ensures:
- The protection of persons working within the HV measuring circuits
- The protection of the HV systems

Within the measuring circuits, this device provides the short-circuiting of CT secondary circuits, thus ensuring the protection of operative personnel. This operation is required before any servicing work or opening of circuits if the primaries are live.

In protection circuits, the short-circuiting device protects HV installations by preventing potential increases in voltage from induction by fixing the common point to the earth potential.

Advantages

Improved safety
The short-circuiting device is made from a 4-pole SIDER visible load break switch (see the SOCOMEC general catalogue), mounted in an isolating housing with a transparent cover. The operator can see the device’s operating status before any servicing work or during preventive checks. The positions “SHORT-CIRCUIT CURRENT” (position 1, switch off) and “NO SHORT-CIRCUIT CURRENT” (position 0, switch on) are marked on the external side-operation plate. An auxiliary NO+NC contact can signal the switch’s position, used for a control circuit.

Easy wiring
The connection is carried out by integrated bolts (intended for one or multiple 6 mm² cables with lugs), and by 6.35 mm Faston connectors for the auxiliary contact. A clear, to-scale diagram is screen-printed on the transparent cap, to make it easy to identify terminals and positions.

Turnkey solution
The short-circuiting devices are delivered assembled. They are ready to be installed on delivery.

Easy to install
The CT short-circuiting device is easy to install with its threaded rods, included on the plate. It can be mounted onto the plate itself, in a panel or on a chassis.

The solution for
- High voltage substation

Strong points
- Improved safety
- Easy to install
- Easy wiring
- Turnkey solution

Compliance with standards
- EDF-CERT D6100-06-76-86/23a
- HN 46-R-01
- IEC 60947-3
**Current transformer shorting device**

### References

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 A</td>
<td>2035 0001</td>
</tr>
</tbody>
</table>

### Characteristics

- **Nominal current**: 80 A
- **Rated short-time withstand current** (kA peak): 12
- **Rated short-time withstand current** 1s Icw (kA rms): 2.5
- **Rated short circuit making capacity** (kA peak): 4.5
- **Number of electrical operations**: 2500 power factor = 0.7 / 200 power factor = 0.35
- **Number of mechanical operations**: 20000
- **Aux. contacts' breaking capacity**: 16 A – 250 VAC – power factor = 0.4
- **Global resistance of one pole (± 10%)**: 3.75.10^-4
- **Pole discrepancy (snap opening and closing)**: T < 2.5 ms

### Electrical diagram

![Electrical diagram](image)

### Dimensions

![Dimensions](image)

---

**Catalogue 2018-2019** 53
Electrical shunting cabinets
High voltage substation cabinets

Function
The electrical shunting cabinets allow each circuit to be individually insulated, as part of an injection of a 175Hz audio frequency ripple control current on several circuits. This operation can be achieved thanks to fuse holders and neutral links.

Advantages

Easy wiring
The careful design of these cabinets provides a functional connection of the cables on the different palms and on the busbar. Connecting the input and output cables at the base of the cabinet is made easier via access to the socket outlet. Wall or floor mounting.

Improved safety
All the appliances are accessible without disassembly and have IP2X protection thanks to the use of transparent polycarbonate screens.

Turnkey enclosures
The enclosures are delivered assembled and pre-wired. They are ready to be installed on delivery.

The solution for
> HV/MV substations

Strong points
> Easy wiring
> Improved safety
> Weather conditions

Compliance with standards
> IEC 61439
> IEC 60947-2
> IEC 60947-3
Electrical shunting cabinets
High voltage substation cabinets

**Composition**

The electrical shunting cabinets are equipped as standard with:
- 2 opaque hinge-mounted doors at front and rear.
- A system for stopping and closing the doors.
- Three-pole main busbar.
- Single row of 3 fuse holders per feeder (1 per phase).
- Second row (or double row) for the earthing of each phase.
- Neutral links mounted on fuse holders.
- A heating resistor fitted at the base.
- ISO PVC 40 cable glands.
- Enclosure nameplate on the door

**Characteristics**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure material</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Colour</td>
<td>RAL 7035</td>
</tr>
<tr>
<td>IP</td>
<td>IP 54</td>
</tr>
<tr>
<td>Impact resistance</td>
<td>IK10</td>
</tr>
<tr>
<td>Power supply</td>
<td>1000 V CA</td>
</tr>
<tr>
<td>Connection</td>
<td>max 2 x 300 mm² for inputs and outputs</td>
</tr>
</tbody>
</table>

**References**

<table>
<thead>
<tr>
<th>Row of fuse holders</th>
<th>N° of feeders</th>
<th>N° of fuse holders</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>2</td>
<td>6</td>
<td>Please ask us for information</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>9</td>
<td>Please ask us for information</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>12</td>
<td>Please ask us for information</td>
</tr>
<tr>
<td>Double (feeders can be earthed)</td>
<td>2</td>
<td>12</td>
<td>Please ask us for information</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>18</td>
<td>Please ask us for information</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>24</td>
<td>Please ask us for information</td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Type</th>
<th>N° of feeders</th>
<th>H (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>2</td>
<td>1800</td>
<td>1000</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double</td>
<td>2</td>
<td>1900</td>
<td>1400</td>
<td>450</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>1400</td>
<td>450</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The SHARYS IP series have been designed with the objective of reliable DC supply. Ideally suited for industrial applications, SHARYS IP combines telecom features like modularity, hot swap module replacements, redundancy N+1 and scalability along with a robustly designed frame creating an innovative mix. Flexible design and a wide range of customization possibilities complete the package and enable the use of SHARYS IP in a wide range of situations.

Upgradeability
- Expandable according to future requirements by adding additional rectifier modules.

Reliability and robustness
- Robust steel frame.
- Degree of protection IP30*
- PCB tropicalisation as standard.
- Microprocessor control.
- Intelligent rectifier cooling.
- Battery safe thanks to the end of discharge protection (option).
- Limited thermal stress and longer life of the components.

Total Costs of Ownership (TCO)
- High efficiency up to 93%: low energy consumption, low heat dissipation.
- Sinusoidal current absorption with power factor close to one: low conductor heat dissipation and no plant oversize.
- Easy to install.
- Reduced maintenance costs.
- Process continuity with hot-swap capabilities (replacement of modules without any power interruption).

Easy, user-friendly operation
- Front mimic panel with clear working status indication.
- Digital control and monitoring of the rectifier modules.
- Adapted to be used with different types of battery technologies.
- Wide choice of communication interfaces: Dry contact, MODBUS RTU, SNMP (with NET VISION option).

Certifications
All SHARYS IP (SH-IP) series rectifiers are certified by TÜV SÜD with regard to product safety (EN 61204-7 and EN 60950-1).

(1) Contact us for power extension or customization needs.
Technical data

<table>
<thead>
<tr>
<th>SHARYS IP - Rectifier Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>24 V 50 A</td>
</tr>
<tr>
<td>INPUT</td>
</tr>
<tr>
<td>Rated voltage</td>
</tr>
<tr>
<td>Voltage tolerance</td>
</tr>
<tr>
<td>Frequency</td>
</tr>
<tr>
<td>Power factor</td>
</tr>
<tr>
<td>Absorbed current distortion</td>
</tr>
<tr>
<td>Inrush current on insertion</td>
</tr>
<tr>
<td>OUTPUT</td>
</tr>
<tr>
<td>Rated voltage</td>
</tr>
<tr>
<td>Voltage regulation(1)</td>
</tr>
<tr>
<td>Static behaviour V&lt;sub&gt;S&lt;/sub&gt;</td>
</tr>
<tr>
<td>Rated current</td>
</tr>
<tr>
<td>Permanent current overload with constant power</td>
</tr>
<tr>
<td>Residual ripple (with I&lt;sub&gt;r&lt;/sub&gt; ≥ 10%)</td>
</tr>
<tr>
<td>Current imbalance in parallel operation</td>
</tr>
<tr>
<td>Dynamic behaviour on load variation (ΔI&lt;sub&gt;1&lt;/sub&gt; = 50% I&lt;sub&gt;1&lt;/sub&gt; in the range 10-90% I&lt;sub&gt;1&lt;/sub&gt;)</td>
</tr>
<tr>
<td>EFFICIENCY</td>
</tr>
<tr>
<td>Typical</td>
</tr>
</tbody>
</table>

ISOLATION

Input/output dielectric rigidity | 3 kV (50 Hz for 60 s) |

ENVIRONMENT

Operating ambient temperature | -5 … 45 °C without derating, up to 55 °C with power derating |

Relative humidity | 10% to 90% |

Cooling | Forced with intelligent fan speed control |

CONNECTIONS

Connections | Plug in + locking screw |

RECTIFIER ENCLOSURE

Degree of protection | IP20 |

Colours | RAL 7012 |

STANDARDS

Safety | IEC/EN 61204-7 |

EMC | EN 61204-3, EN 61000-6-4, EN 61000-6-2 |

Performance | IEC/EN 61204 |

Resistance to vibrations | ASTM D999 |

Resistance to falls | ASTM D5276 |

SHARYS IP - Enclosures and Systems

<table>
<thead>
<tr>
<th>Model</th>
<th>ENCLOSURE ED</th>
<th>ENCLOSURE EX</th>
<th>SYSTEM IS</th>
<th>SYSTEM IX</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td>230 V 1 ph + N</td>
<td>400 V 2 ph</td>
<td>230 V 1 ph + N, 400 V 3 ph + N</td>
<td>400 V 3 ph</td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td>± 20% @ 100% P&lt;sub&gt;S&lt;/sub&gt; up to ±50% @ 40% P&lt;sub&gt;S&lt;/sub&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>from 47.5 to 63 Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input transformer</td>
<td>-</td>
<td>included in standard</td>
<td>-</td>
<td>included in standard</td>
</tr>
<tr>
<td>OUTPUT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage (V)</td>
<td>24</td>
<td>48</td>
<td>108</td>
<td>120</td>
</tr>
<tr>
<td>Rated current (A)</td>
<td>100</td>
<td>30</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Maximum power (kW)</td>
<td>2.4</td>
<td>1.4</td>
<td>2.9</td>
<td>4.8</td>
</tr>
<tr>
<td>Max number of rectifier</td>
<td>2 modules</td>
<td>2 modules</td>
<td>4 modules</td>
<td>3 modules</td>
</tr>
<tr>
<td>Voltage regulation(V)</td>
<td>21-29</td>
<td>42-58</td>
<td>95-131</td>
<td>105-145</td>
</tr>
<tr>
<td>Voltage ripple</td>
<td>50 mVrms, 100 mVpp</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RECTIFIER CABINET

Dimensions W x D x H (mm) | 600 x 535 x (894 to 1254) | 600 x 600 x 1925 |

Weight (kg) | 60 to 75 | 245 | 305 |

Degree of protection | IP30 |

Colours | RAL 7012 |

(1) Output voltage variation depends on the recharging voltage and on the end of the discharging voltage settings (typically 1.13 Vn with mains present and battery charged, 0.90 Vn when batteries are completely discharged). - (2) Height depends on accessories and backup time. - (3) Without batteries.

Standard electrical features

- Polarity insulated or grounded.
- Internal battery protection.
- Fitting for output DC distribution.
- Battery temperature sensor.
- PCB tropicalization.
- IP30 steel cabinet.
- Pallet truck friendly base.

Electrical options

- BLVD battery low voltage disconnector.
- Output distribution.
- Double AC power supply.
- Double string battery protection.
- Emergency Power Off (EPO).
- Power Share.
- Coupling kit.
- Earth leakage control.
- Input surge suppressors.
- Battery cabinet.
- Enhanced protection degree.

Standard communication features

- NET VISION for DC systems: professional WEB/SNMP interface for DC system monitoring and shutdown management of several operating systems (1).

Communication options

- 2 slots for communication options(1).
Rectifier module

SHARYS RECTIFIER modules use double conversion switching technology. The combination of SMD technology, of digital microprocessor control and of IGBT components result in a highly reliable and efficient rectifier.

- Plug-in "hot-swap".
- Microprocessor control with CAN-BUS protocol communication.
- Parallel connection with active load sharing and selective disconnection of a faulty module.
- PCB conformal coating (tropicalization) as standard.

<table>
<thead>
<tr>
<th>Voltage</th>
<th>24 V DC</th>
<th>48 V DC</th>
<th>108 V DC</th>
<th>120 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 A</td>
<td>-</td>
<td>SH-IP-048015</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>20 A</td>
<td>-</td>
<td>-</td>
<td>SH-IP-108020</td>
<td>SH-IP-120020</td>
</tr>
<tr>
<td>30 A</td>
<td>-</td>
<td>SH-IP-048030</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>50 A</td>
<td>SH-IP-024050</td>
<td>SH-IP-048050</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Enclosure

Flexible modular design DC power supply system. Can include 2 rectifier modules max, suitable for full power application or redundant solution.

ED - Max 2 rectifier modules, redundancy 1+1 or full power

<table>
<thead>
<tr>
<th>Voltage</th>
<th>24 V DC</th>
<th>48 V DC</th>
<th>108 V DC</th>
<th>120 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 A</td>
<td>-</td>
<td>ED048I030</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>40 A</td>
<td>-</td>
<td>-</td>
<td>ED108I040</td>
<td>ED120I040</td>
</tr>
<tr>
<td>60 A</td>
<td>-</td>
<td>ED048I060</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>100 A</td>
<td>ED024I100</td>
<td>ED048I100</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

EX - Max 2 rectifier modules, redundancy 1+1 or full power, integrated input transformer

<table>
<thead>
<tr>
<th>Voltage</th>
<th>24 V DC</th>
<th>48 V DC</th>
<th>108 V DC</th>
<th>120 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 A</td>
<td>-</td>
<td>EX048I030</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>40 A</td>
<td>-</td>
<td>-</td>
<td>EX108I040</td>
<td>EX120I040</td>
</tr>
<tr>
<td>60 A</td>
<td>-</td>
<td>EX048I060</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>100 A</td>
<td>EX024I100</td>
<td>EX048I100</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Typical configurations

- Single
- Redundant N+1
- Full redundant 1+1
- Extended full redundant

System

Complete DC power supply system

This can include up to 4 rectifier modules(1), suitable for N+1 redundant solution. Useful in medium power applications such as automatic control equipment (PLC, relays, etc.) and process supply.

IS - Max 4 rectifier modules, redundancy N+1

<table>
<thead>
<tr>
<th>Voltage</th>
<th>24 V DC</th>
<th>48 V DC</th>
<th>108 V DC</th>
<th>120 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 A</td>
<td>-</td>
<td>-</td>
<td>IS108I080</td>
<td>IS120I080</td>
</tr>
<tr>
<td>200 A</td>
<td>IS024I020</td>
<td>IS048I020</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

IX - Max 3 rectifier modules, redundancy N+1, integrated input transformer

<table>
<thead>
<tr>
<th>Voltage</th>
<th>24 V DC</th>
<th>48 V DC</th>
<th>108 V DC</th>
<th>120 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 A</td>
<td>-</td>
<td>-</td>
<td>IX108I060</td>
<td>IX120I060</td>
</tr>
<tr>
<td>150 A</td>
<td>IX024I150</td>
<td>IX048I150</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

SHARYS PLUS control module(1)

The SHARYS PLUS advanced control and monitoring module is included as standard on all SHARYS IP SYSTEMS. A 32-digit LCD display provides easy and fast access to all information parameter settings.

- Microprocessor control with CAN-BUS protocol communication and RS232/485 port for external communication.
- Additional easy frontal LEDs indications.
- Plug-in "hot-swap" solution, easy to replace.

(1) System only.
Full battery compatibility

SHARYS IP design is compatible with different battery technologies such as:
- Valve Regulated Lead Acid (VRLA),
- Open Vented Lead Acid,
- Nichel Cadmium.

(1) Please check the compatibility with load supply voltages.

Mimic panel

1. Fault alarm
2. Display
3. Status LED
4. Selection button
5. Battery discharge status
6. Power flow indication

Product highlights

- Double conversion IGBT based topology
- Unitary input power factor (PF > 0.99) and low input THDI
- Hot swappable wireless modules with selective disconnection
- Wide Input Voltage and frequency range. Protection against permanent input overvoltages (up to +40%) and against surges
- PCB tropicalization
- Built-in input output galvanic isolation
- Digital microprocessor control and regulation SMD technology
- Constant output power
- Wide temperature and environment range up to +55 °C ambient temperature
- Speed controlled forced air cooling (temperature-load)
- Active load sharing among modules
- Can bus communication between modules
- Automatic self-test fan failure detection
- Optimized efficiency design point
- Full battery compatibility

SHARYS IP design is compatible with different battery technologies such as:
- Valve Regulated Lead Acid (VRLA),
- Open Vented Lead Acid,
- Nichel Cadmium.

(1) Please check the compatibility with load supply voltages.
Designed for the most demanding applications

- Designed to protect industrial processes.
- A compact solution with isolation transformer and integrated batteries.
- Robust enclosure (2 mm thick heavy steel structure).
- Floor anchoring (to prevent tilting).
- Standard IP31 protection degree.
- Dust and water splash resistant enclosure (IP52) with easy replaceable dust filters (option).
- Operation at temperature up to 50 °C.
- Wide input voltage tolerance from -40 % up to +20 % of nominal voltage.
- Double EMC immunity compared to UPS international standard IEC 62040-2.
- Double overvoltage protection.

Process continuity

- Frontal access for input/output cabling, spares replacement and preventative maintenance.
- Scalable power and high availability (using redundancy), with the facility to parallel up to 6 units.

Easy integration into industrial networks

- Input power factor > 0.99 and input current harmonic distortion < 3% thanks to IGBT rectifier.
- Compatible with Open Vented Lead Acid, Valve Regulated Lead Acid (VRLA) and Nickel Cadmium batteries.
- User-friendly multilingual interface with graphic display.
- Flexible communication boards for every industrial communication need: dry contacts, MODBUS, PROFIBUS, etc.
- Fully compatible with generator sets.
- K-rated galvanic isolation transformer embedded.
- Adaptation to typical industrial voltages (input and output).
For industrial loads

- 100 % non-linear loads.
- 100 % unbalanced loads.
- 100 % "6-pulse" loads (motor speed drivers, welding equipment, power supplies...).
- Motors, lamps, capacitive loads.

Standard electrical features

- Dual input mains.
- Internal maintenance bypass.
- Backfeed protection: detection circuit.
- EBS (Expert Battery System) for battery management.

Energy storage option: ultracapacitor

Ultracapacitor could be a suitable battery replacement in special situations where a long back-up time is not required. This solution is targeted specifically to ride-through frequent voltage dips and short power outages, or simply bridge the startup of a generator, or where ambient temperatures could compromise battery lifetime. This would result in a highly reliable energy storage system that would require no maintenance.

Advantages

- Extremely long lifetime: 15 years with virtually unlimited cycling.
- High-reliability – No maintenance.
- Wide temperature range up to 45 °C.
- Ultra rapid charging.
- Battery-free, lead-free and environment-friendly.

Technical data

<table>
<thead>
<tr>
<th>MASTERYS IP+ 10-80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sn [kVA] 10 15 20 30 40 60 80</td>
</tr>
<tr>
<td>Pn [kW] 9 13.5 18 27 30 48</td>
</tr>
<tr>
<td>Pn [kW] 9 13.5 18 27 36 48 64</td>
</tr>
<tr>
<td>Parallel configuration (1) up to 6 units</td>
</tr>
</tbody>
</table>

INPUT

- Rated voltage: 400 V
- Voltage tolerance: ± 20% (up to -40% @ 50% of rated power)
- Rated frequency: 50/60 Hz
- Frequency tolerance: ± 10%
- Power factor / THDI (3)

OUTPUT

- Rated voltage: 1ph + N: 230 V, 3ph + N: 400 V
- Voltage tolerance: ± 1% (configurable from 10% to 20% with generating set)
- Rated frequency: 50/60 Hz
- Frequency tolerance: ± 2% (configurable from 1% to 8% with generating set)
- Total output voltage distortion - linear load: < 1%
- Total output voltage distortion - non-linear load: < 5%
- Overload: 125% for 10 minutes, 150% for 1 minute (3)
- Crest factor: 3.1 (complying with IEC 62040-3)

BYPASS

- Rated voltage: 1ph + N: 230 V, 3ph + N: 400 V
- Voltage tolerance: ± 15% (configurable from 10% to 20% with generating set)
- Rated frequency: 50/60 Hz
- Frequency tolerance: ± 2% (configurable from 1% to 8% with generating set)

ENVIRONMENT

- Operating ambient temperature: from 0 °C up to +50 °C (from 15 °C to 25 °C for maximum battery life)
- Relative humidity: 0% - 95% without condensation
- Maximum altitude: 1000 m without derating (max. 3000 m)
- Acoustic level at 1 m (ISO 3746): < 52 dBA, < 55 dBA, < 65 dBA

UPS CABINET

- Dimensions (3/1) W x D x H: 600 x 800 x 1400 mm
- Dimensions (3/3) W x D x H: 600 x 800 x 1400 mm
- Weight (3/1): 230 kg, 250 kg, 270 kg, 330 kg, 490 kg, 540 kg
- Weight (3/3): 230 kg, 250 kg, 270 kg, 320 kg, 370 kg, 509 kg, 550 kg
- Degree of protection (according to IEC 600929): IP31 and IP52
- Colours: RAL 7012

STANDARDS

- Safety: IEC/EN 62040-1, AS 62040.1.1, AS 62040.1.2
- EMC: IEC/EN 62040-2, AS 62040.2
- Performance: IEC/EN 62040-3, AS 62040.3
- Product declaration: CE, CEM (CISPR 24)
**DELPHYS MP Elite+**

Resilient transformer-based power protection from 80 to 200 kVA

![New icon]

**Advantages**

- **The solution for**
  - Industry
  - Processes
  - Infrastructure
  - Healthcare
  - Service sector
  - Telecommunications

### High quality power supply

- Permanent operation in VFI mode (online double conversion).
- Output voltage precision under all load conditions.
- High overload capability to withstand abnormal load conditions.
- A very high short-circuit current capacity which facilitates the selection of protective devices for selectivity in the downstream distribution.
- An isolation transformer installed on the inverter output to ensure complete galvanic isolation between DC circuit and load output. This insulation also provides a separation between the two inputs when they are supplied by different sources.
- Sinusoidal ThdU output voltage < 2 % with linear loads and < 4 % with non-linear loads.

### Cost-effective equipment

- The "clean" IGBT rectifier allows:
  - a high efficiency,
  - a high and constant input power factor,
  - a low THDI.
- These characteristics help to limit the dimensions of upstream network infrastructure.
- Possibility to create new neutral system without additional losses (extra transformer required on by-pass line only).
- High short-circuit capability simplifies downstream protective devices.
- High power density: its small footprint saves space on your premises.
- Mains connection of the rectifier requires only 3 cables (no neutral).
- Battery connection to UPS requires only 2 cables.

### High availability

- Field-proven technology.
- Fault-tolerant architecture with redundancy of basic functions, such as the ventilation system.
- Easy maintainability reduces MTTR thanks to pull-out sub-assemblies and front access all components.
- Accurate diagnostics guarantee power supply to the load.
- Cascade failure prevention for parallel systems.
- Mechanical & electrical robustness for industrial environments.
- Soft start capability (ramp up) of the IGBT inverter allows a good operation even with a genset.
- Specifically designed to be adapted to different industrial environment: high IP protection options, high peak current capability, long back up time...

### User-friendly operation

- A control panel with graphic display for more ergonomic operation.
- An array of "com-slot" plug-in communication interfaces, for upgrading your operating requirements evolution.

### Simplified maintenance

- An advanced diagnostic system.
- A remote access device connected to the remote maintenance centre.
- Easy access to subassemblies and components, facilitating tests and reducing maintenance time (MTTR)
Parallel systems
- Distributed or centralized bypass for parallel architecture up to 6 units.
- Redundant systems ("1+1" and "n+1").
- "2n" architecture with Static Transfer Systems.

Standard electrical features
- Slots for 3 communication cards.
- Backfed protection: detection circuit.
- Standard interface:
  - 3 inputs (emergency stop, generating set, battery protection).
  - 4 outputs (general alarm, back-up, bypass, preventative maintenance needs).

Electrical options
- EBS (Expert Battery System)(1).
- FLYWHEEL compatible.
- ACS synchronisation system for 2n architecture.
- Redundant electronic power supplies.
- Hot plug option (increase the power keeping the load supplied in double conversion).
- Long back up time rectifier.

Mechanical options
- Reinforced IP protection degree.
- Dust filters.
- Fan redundancy with failure detection.
- Top entry connection.
- Reinforced IP protection up to IP52.

Communication options
- GTS (Graphic Touch Screen).
- ADC interface (configurable voltage-free contacts).
- MODEBUS RTU.
- MODEBUS TCP.
- PROFIBUS / PROFINET.
- NET VISION: professional WEB/SNMP interface for UPS monitoring and shutdown management of several operating systems.
- 3 extra slots for communication cards.

Remote monitoring service
- LINK-UPS, remote monitoring service that connects your UPS to your Critical Power specialist 24/7.

Technical data

<table>
<thead>
<tr>
<th>DELPHYS MP Elite+</th>
<th>80</th>
<th>100</th>
<th>120</th>
<th>160</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sn [kVA]</td>
<td>80</td>
<td>100</td>
<td>120</td>
<td>160</td>
<td>200</td>
</tr>
<tr>
<td>Pn [kW]</td>
<td>72</td>
<td>90</td>
<td>108</td>
<td>144</td>
<td>180</td>
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<tr>
<td>Input / output</td>
<td>3/3</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parallel configuration</td>
<td>up to 6 units (distributed or centralised bypass)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**INPUT**
- Rated voltage: 380V - 400V - 415V(1)
- Voltage tolerance: ± 2% (static load), ± 4% in 5 min (dynamic load conditions from 0 to 100%)
- Frequency tolerance: ± 0.2%
- Total output voltage distortion - linear load: THD < 2%
- Total output voltage distortion - non-linear load: THD < 4%
- Short-circuit current on inverter (100ms): Up to 3.5 In
- Overload: Up to 150% for 1 minute, 125% for 10 minutes(2)
- Crest factor: 3:1

**OUTPUT**
- Rated voltage: 380V - 400V - 415V (configurable)(1)
- Voltage tolerance: ± 10% (selectable)
- Frequency tolerance: ± 2% (configurable for GenSet compatibility)
- Short-circuit current on by-pass (20ms): Up to 24 In

**EFFICIENCY**
- Online mode: 93.5%
- Eco Mode: 98%

**ENVIRONMENT**
- Operating ambient temperature: from 0 °C up to +40 °C(3) (from 15 °C to 25 °C for maximum battery life)
- Relative humidity: 0% - 95% without condensation
- Maximum altitude: 1000 m without derating (max. 3000 m)
- Acoustic level at 1 m (ISO 3746): 65 dBA (67 dBA)

**UPS CABINET**
- Dimensions W x D x H: 1000 x 800 x 1930 mm
- Weight: 740 kg (860 kg - 1020 kg)
- Degree of protection: IP20 (other IP as option)
- Colours: RAL 9006

**STANDARDS**
- Safety: IEC/EN 62040-1, IEC/EN 62040-1.1, IEC/EN 62040-1.2
STATYS provides

- High reliability - internal redundant design to ensure service continuity.
- Flexibility and adaptability to various types of applications.
- Compact design: saves up to 40% of valuable space.
- Easy and secured maintenance.
- Operational security and ease of use: Remote data access in real time and from any location.
- Full support and service.

Static Transfer Switch: user benefits

Supplied by two independent alternate sources, STATYS increases the overall electrical infrastructure availability during abnormal events and programmed maintenance.

- Provides redundant power supply to mission critical loads to increase global uptime of the supplied system.
- Increases the power supply availability by choosing the best power supply quality.
- Provides plant segmentation and prevents fault propagation.
- Allows easy extension and easy infrastructure design, ensuring high availability of the power supply to critical applications.
- Facilitates and secures the maintenance or the modifications of the overall electrical installation (source, distribution, switchboard) while the load is kept supplied.

STATYS also provides protection against:

- Main power source outage.
- Failures in the upstream power distribution system.
- Failures caused by faulty equipment supplied by the same source.
- Operator errors.

Flexibility

STATYS offers a wide range of three-phase systems that suits all types of applications and power supply systems.

Dual or single cord servers, linear or non-linear loads, IT or electromechanics are just some of the load types that STATYS can supply. Wherever a smart power source is needed, whether for existing or new electrical plants, STATYS can be easily installed and efficiently supply the load.

It is available in:

- 2 wires and 2 poles switching, to be connected between phase/neutral or phase/phase.
- 3 wires arrangement without neutral,
  - for reduced cable costs,
  - for local zoning of the applications by using insulating transformers,
- 4 wires three-phase arrangement with neutral, with or without neutral pole switching.

STATYS offers:

- Flexible digital control capacity that can adapt to any operational or electrical environment conditions,
- Capability to manage synchronised and non-synchronised sources according to load specificity,
- Advanced Transformer Switching Management (ATSM). If the upstream network has no distributed neutral cable, two upstream transformers or one downstream transformer can be added to create a neutral reference point at the output. For the downstream solution, STATYS, thanks to ATSM, correctly manages the switching to limit inrush current and avoid the risk of spurious breakers.
STATYS

Single-phase and three-phase STS
from 32 to 1800 A

High reliability - Internal redundant design
Main features:
- Redundant control system using double microprocessor control boards.
- Dual redundant power supplies for control boards.
- Individual control board with redundant power supply for each SCR path.
- Redundant cooling with fan failure monitoring.
- Real-time SCR fault sensing.
- Separation of main functions to prevent internal fault propagation.
- Robust internal field communication bus.
- Internal monitoring of sensors to ensure maximum system reliability.

Compact design
- Small footprint and compact units.
- Adjacent or back to back mounting.
- Integrable chassis version for optimal implementation into switchboards.
- Front access for easy maintenance.
- Compact Hot Swap 19” rack system.

Standard features
- Smart commutation system configurable according to the load.
- Synchronised and non-synchronised sources compatibility (configurable synchronisation tolerance and switching management).
- Fuse-free or fuse-protected design.
- Output fault current sensing.
- Internal CAN Bus.
- Double maintenance bypass.
- Neutral oversizing for non-linear loads compatibility.
- Embedded inputs, output and maintenance bypass switches (cabinet version).

Standard communication features
- Ethernet network connection (WEB/SNMP/eMail/MODBUS TCP).
- Dry-contact interface.
- Flexible Com Slots.
- LCD or Graphic Mimic Panel.
- Full digital configuration and setting.

Options
- Additional dry contacts interface board.
- MODBUS RTU.
- PROFIBUS interface.
- Automatic maintenance bypass interlock.
- Voltage adaptation.

Remote monitoring
- 24/7 real-time remote data access.
- Wide choice of communication protocols for remote monitoring and easy integration in your BMS / SCADA systems.
- LINK-UPS, remote monitoring service that connects your STS to your Critical Power specialist 24/7.

Technical data

<table>
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<tr>
<th>STATYS 19” rack - hot swap</th>
<th>Cabinet - integrable chassis (OEM)</th>
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<td>Rating [A]</td>
<td>32</td>
</tr>
<tr>
<td>ELECTRICAL SPECIFICATIONS</td>
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<tr>
<td>Rated voltage</td>
<td>120-127/220</td>
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<tr>
<td>Voltage tolerance</td>
<td>± 10% (configurable)</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 Hz or 60 Hz (± 5 Hz (configurable))</td>
</tr>
<tr>
<td>Number of phases</td>
<td>ph+N or ph- (PE)</td>
</tr>
<tr>
<td>Number of poles switching</td>
<td>2-pole switching</td>
</tr>
<tr>
<td>Maintenance bypass (cabinet version)</td>
<td>interlocked and secured</td>
</tr>
<tr>
<td>Overload</td>
<td>150% for 2 minutes - 110% for 60 minutes</td>
</tr>
<tr>
<td>Admissible power factor</td>
<td>99%</td>
</tr>
<tr>
<td>ENVIRONMENT</td>
<td>0-40 °C</td>
</tr>
<tr>
<td>Operating ambient temperature</td>
<td>95%</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>95%</td>
</tr>
<tr>
<td>Maximum altitude</td>
<td>1000 m a.s.l. without derating</td>
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<tr>
<td>Acoustic level at 1 m (ISO 3746)</td>
<td>&lt;45 dBA</td>
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<td>STANDARDS</td>
<td>IEC 62310, IEC 60529, AS 62310, AS 60529</td>
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<tr>
<td>Safety</td>
<td>C2 category (IEC 62310-2, AS 62310.2)</td>
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<tr>
<td>EMC</td>
<td>CE, RCM (E2378)</td>
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Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>19” Rack</th>
<th>Width (mm)</th>
<th>Depth (mm)</th>
<th>Height (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 phase</td>
<td>32 - 63</td>
<td>483 (19”)</td>
<td>747</td>
<td>89 (2U)</td>
</tr>
<tr>
<td></td>
<td>63 - 100</td>
<td>483 (19”)</td>
<td>648</td>
<td>400 (6U)</td>
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<td></td>
<td>200</td>
<td>400</td>
<td>596</td>
<td>765</td>
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<td>300 - 400</td>
<td>600</td>
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<td>765</td>
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<td>500</td>
<td>596</td>
<td>765</td>
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<td>800 - 1000</td>
<td>1000</td>
<td>950(1)</td>
<td>1930</td>
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<td>1250 - 1800</td>
<td>910</td>
<td>815</td>
<td>1955</td>
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<td></td>
<td>200</td>
<td>500</td>
<td>600(1)</td>
<td>1930</td>
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<td>300 - 400</td>
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<td>600(1)</td>
<td>1930</td>
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<td>800 - 1000</td>
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<td>1250 - 1600</td>
<td>2010</td>
<td>815</td>
<td>1955</td>
</tr>
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<table>
<thead>
<tr>
<th>3 phases</th>
<th>Integrable Chassis (OEM)</th>
<th>Width (mm)</th>
<th>Depth (mm)</th>
<th>Height (mm)</th>
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<tr>
<td></td>
<td>200</td>
<td>400</td>
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<td>300 - 400</td>
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<td></td>
<td>800 - 1000</td>
<td>1000</td>
<td>950(1)</td>
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<td></td>
<td>1250 - 1600</td>
<td>2010</td>
<td>815</td>
<td>1955</td>
</tr>
</tbody>
</table>

(1) Depth does not include handles (+40 mm)
MV/LV distribution substations

Selection guide for load break switches ........................................ p. 78

TIP1 - IP2X LV feeder pillars

TLPI feeder pillars
p. 68

LV protection panels

BT-300
p. 72

Reduced size LV feeder pillars

TRS
p. 74

Load break switches

SIRCO
Load break switches for power distribution
p. 80

SIDER
Load break switches with visible breaking
p. 96

SIDERMAT
Remote-trip load break switches
p. 96

Fuses for public distribution

gG fuses
p. 102

Services

> Customised solutions: low voltage distribution panels.
> Tests and qualifications.
> Commissioning and maintenance services.
> For more information, please see page 9.

Find out more

> Smart Grid innovations for intelligent MV/LV substations.
- Energy storage,
- Grid measurement and monitoring.
> For more information, please see page 18.
**TIPI**

Low voltage feeder pillars for public distribution networks

**Function**

TIPI low voltage feeder pillars are installed bottom of the transformers in MV/LV public distribution substations. At the level of the LV network’s incomers, they assure general on-load breaking or making and the distribution on 4 to 8 feeders protected by fuse disconnect switches.

Additional functions provide new advantages for:

- Better awareness of the requirements for power supply continuity and the safety of property and persons.
- Preparing the ‘increased intelligence’ of substations; a measurement unit can be installed directly on the panel, for example for monitoring transformer data.

**Advantages**

**Improved safety**

- The IP2X total insulation of the pillar protects operators who may be in proximity to the pillar or performing maintenance procedures.
- The top short-circuiting device assures the short-circuiting and earthing of the transformer LV input.
- The top and bottom voltage sockets enable operators to carry out EST (electrical safety testing) procedures quickly and safely.
- Temperature rises are limited to 65°C as specified by EDF; these are stricter values than those stipulated in the IEC standard (70°C).

**Simple optimised operation**

- A provisional feeder is provided for temporary installations such as building sites, fun fairs, etc.
- The power supply for internal circuits and lighting is provided directly by the pillar.

**Design & robustness**

- With its sleek design and smooth front, the appearance of the TIPI feeder pillar improves safety with large thermoset insulating fittings. Thanks to its rigidity, this excellent insulation material provides much greater robustness.

**Manufacturer warranty**

The pillar fully complies with HN 63-S-61 specifications, 2nd edition, and is ERDF approved. Our quality assurance procedures ensure reliability: individual tests for each pillar, traceability, comprehensive sampling tests, etc.
1. Incoming unit

The TIPI feeder pillars are equipped with SIRCO® 4-pole AC22B load break switches with fully visible breaking. As per IEC 60947-3, they provide on-load breaking and making, i.e. electrical isolating. A grounding neutral lug inside the device earths the installation’s neutral when the switch is opened.

For standard models, top cable lugs are designed to take 240 mm² rigid cables (neutral possible for 150 mm² cables): 500 A with 1 cable, 1200 A with 3 cables, 1800 A with 4 cables. Other connections on request.

*a*Please see the SOCOMEC general catalogue

6. Relay for power supply of internal circuits

The relay is fitted with:

- 1 outgoing unit for 10 A lighting of the substation.
- 1 16 A socket.
- 1 neutral terminal.
- Optional connection cables chute and outgoing units for power supply:
  - a LV power-line communication (PLC) concentrator device (2 A),
  - an I.T.I. enclosure or a MV fault detection device (2 A).

Composition

1. Incoming unit
   a. Top short-circuiting device
   b. Load break switch
   c. Top EST (electrical safety testing) sockets
   d. Bottom EST (electrical safety testing) sockets
2. Monobloc fuse feeder
3. Temporary feeder, identified by colour label
4. Rapid connection supply device, providing a secure connection from an external power source for emergency or maintenance procedures
5. ACG 60 A relay for public lighting supply
6. 32 A power supply for internal circuits

References

<table>
<thead>
<tr>
<th>TIPI</th>
<th>Type</th>
<th>Max. number of feeders</th>
<th>MV/LV transformers</th>
<th>Type of substation</th>
<th>ERDF N°</th>
<th>Reference</th>
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</thead>
<tbody>
<tr>
<td>TIPI 4-500</td>
<td>500</td>
<td>4 + 1(1)</td>
<td>Up to 250 kVA</td>
<td>PSS(1)</td>
<td>69 82 150</td>
<td>857 0001</td>
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<tr>
<td>TIPI 8-1200</td>
<td>1200</td>
<td>8 + 1(1)</td>
<td>630 kVA</td>
<td>PAC(2)</td>
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</tr>
<tr>
<td>TIPI 8-1800</td>
<td>1800</td>
<td>8 + 1(1)</td>
<td>1000 kVA</td>
<td>PAC(2)</td>
<td>69 82 158</td>
<td>857 0004</td>
</tr>
<tr>
<td>TIPI 8-1200 (lowered)</td>
<td>1200</td>
<td>8 1(1)</td>
<td>630 kVA</td>
<td>PUIE(2)</td>
<td>-</td>
<td>On request</td>
</tr>
</tbody>
</table>

(1) +1 ‘provisional’ feeder reserved for connecting temporary installations (building sites, fun fairs, etc.)
(2) PSS (simplified substation on floor), PAC (substation with gangway), PUIE (urban substation integrated in the environment).

Please contact us for any requests concerning TIPI incoming units (load break switch and shorting kit).
TIPI
Low voltage feeder pillars
for public distribution networks

Accessories

Type 1 feeder unit - 400 A

Use
From the main busbars of the pillar, these feeders provide the power supply and electrical protection of the low voltage distribution network (underground or a combination of overhead & underground). They are intended to be connected to the pillar permanently.

These ergonomic feeders are easy to manoeuvre thanks to the fuse support handles. The transparent handles make for easy reading of the ratings on the fuses that have been installed.

To ensure the IP2X level of protection, it is recommended to use Size 2 HN fuses and insulated neutral wiring bars, see page 102.

The terminal lugs are fitted with self-snapping fuse screws, which ensures the tightening torque without using a special tool.

The terminals are designed to take rigid aluminium multicore cables insulated with cross-linked polyethylene (PEX):

- 3 x 240 mm² + 1 x 95 mm².
- 3 x 150 mm² + 1 x 150 mm².
- 3 x 150 mm² + 1 x 70 mm².
- 3 x 95 mm² + 1 x 50 mm².

Type 1 provisional feeder unit - 400 A

Use
The provisional feeder is used for temporary installations such as building sites, fun fairs, etc. Similar to the standard feeder unit, it also allows the connection of overhead twisted cables.

Insulated operating key

Use
Live tightening or unscrewing of feeder fastening screws. One key per pillar is recommended. Compliant with IEC 60900.

<table>
<thead>
<tr>
<th>Type</th>
<th>Packaging</th>
<th>ERDF N°</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulated operating key</td>
<td>1</td>
<td>69 82 820</td>
<td>8061 0009</td>
</tr>
</tbody>
</table>

Fastenings to pillar base

<table>
<thead>
<tr>
<th>Type</th>
<th>Packaging</th>
<th>ERDF N°</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fastening to 4-feeder pillar base</td>
<td>1</td>
<td>69 82 250</td>
<td>8061 0007</td>
</tr>
<tr>
<td>Fastening to 8-feeder pillar base</td>
<td>1</td>
<td>69 82 252</td>
<td>8061 0008</td>
</tr>
</tbody>
</table>

Accessories

Type Packaging ERDF N° Reference

Type 1 feeder unit - 400 A

- 69 82 200
  - 8061 0001

Provisional type 1 feeder unit - 400 A

- 69 82 202
  - 8061 0002

Fastenings to pillar base

<table>
<thead>
<tr>
<th>Type</th>
<th>Packaging</th>
<th>ERDF N°</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fastening to 4-feeder pillar base</td>
<td>1</td>
<td>69 82 250</td>
<td>8061 0007</td>
</tr>
<tr>
<td>Fastening to 8-feeder pillar base</td>
<td>1</td>
<td>69 82 252</td>
<td>8061 0008</td>
</tr>
</tbody>
</table>

Insulated operating key

<table>
<thead>
<tr>
<th>Type</th>
<th>Packaging</th>
<th>ERDF N°</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulated operating key</td>
<td>1</td>
<td>69 82 820</td>
<td>8061 0009</td>
</tr>
</tbody>
</table>
## Characteristics

<table>
<thead>
<tr>
<th></th>
<th>TIPI 4-500</th>
<th>TIPI 8-1200</th>
<th>TIPI 8-1800</th>
<th>Type 1 feeder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operational voltage (V)</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Rated voltage at 50 Hz/1 min (earthed) (kV)</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Rated voltage at 50 Hz/1 min between poles (kV)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Rated impulse withstand earthing voltage (kV)</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Rated impulse withstand voltage between poles (kV)</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Incoming unit and busbar rated current (A)</td>
<td>500</td>
<td>1200</td>
<td>1800</td>
<td>400</td>
</tr>
<tr>
<td>Short-time withstand current 0.5 s (kA)</td>
<td>10</td>
<td>25</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Peak short-time withstand current (kA)</td>
<td>17</td>
<td>52, 5</td>
<td>67, 2</td>
<td>67, 2</td>
</tr>
</tbody>
</table>

## Dimensions

**TIPI 4-500**: 1400 x 750 x 400 mm  
**TIPI 8-1200 / 8-1800**: 1800 x 1000 x 400 mm
**BT 300**

300 A protection panels

low voltage protection panels for rural public distribution networks

---

**Function**

**BT 300** low voltage panels are installed bottom of the transformers in MV/LV rural public distribution substations. At the level of the low voltage network’s incomers, they ensure distribution on 1 or 2 feeders protected by fuse disconnect switches.

---

**Advantages**

**Improved safety**

- The IP2X level of insulation of the panel ensures operator safety when close to the panel or performing maintenance operations.
- The top and bottom voltage sockets enable EST (electrical safety testing) to be done quickly and safely.
- Temperature rises are limited to 65°C as per the EDF specification. These values are stricter than those stipulated in the IEC standard (70°C).

**Design & robustness**

With its sleek design and mimic display panel, the appearance of the BT 300 improves safety with an insulating support on a single post.

**Manufacturer warranty**

The panel complies with HN 64-S-57 specifications and is certified by ERDF. Our quality assurance procedures ensure reliability: individual tests for each panel, traceability, comprehensive sampling tests, etc.

**Simple optimised operation**

Special terminals enable the secure connection of an external power supply for emergency or maintenance purposes.

---

**The solution for**

- Rural electrification
- SCRS: Simplified compact rural substations (max. 160 kVA)

---

**Strong points**

- Improved safety
- Simple optimised operation
- Design & robustness
- Manufacturer warranty

---

**Compliance with standards**

- HN 64-S-57: 2011

---

**SOCOMEC, partner of**

---

[Image of BT 300 power supply on the right]
300 A protection panels
low voltage protection panels for rural public distribution networks

Composition

1: Incoming unit for U1000 R2V 35-240 mm² cables, to the left or the right of the panel
2: Top electrical safety testing (EST) sockets
3: Top short-circuit, earthing and gen-set supply sockets
4: PLC (Power-line communication) support
5: Auxiliary circuit, 4-pole outgoing unit, PLC
6: Neutral earthing stud.
7: Outgoing unit N° 1
8: Outgoing unit N° 2
9: 35 - 150 mm² cable clamp connector with break-off screw
10: Top fuse electrical safety testing sockets
11: Top short-circuiting, earthing and gen-set supply fuse sockets
12: Support frame
13: Earthing collector

References

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Max. number of feeders</th>
<th>MV/LV transformer (kVA)</th>
<th>Maximum resupply capacity</th>
<th>Position of the power supply</th>
<th>Weight (kg)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>1</td>
<td>50</td>
<td>200 A</td>
<td>right or left</td>
<td>25</td>
<td>contact us*</td>
</tr>
<tr>
<td>250</td>
<td>2</td>
<td>100 - 160</td>
<td>200 A</td>
<td>right or left</td>
<td>30</td>
<td>contact us*</td>
</tr>
</tbody>
</table>

*Depending on the quote

Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating voltage $U_n$</td>
<td>400 V</td>
</tr>
<tr>
<td>Rated power frequency voltage $U_{p}$ at 50 Hz/1 min (earthing)</td>
<td>10 kV</td>
</tr>
<tr>
<td>Rated power frequency voltage $U_{p}$ at 50 Hz/1 min between poles</td>
<td>2 kV</td>
</tr>
<tr>
<td>Rated impulse withstand voltage $U_{imp}$ (earthing)</td>
<td>20 kV</td>
</tr>
<tr>
<td>Rated impulse withstand voltage $U_{imp}$ (between poles)</td>
<td>6 kV</td>
</tr>
<tr>
<td>Rated current for the incoming unit and busbars</td>
<td>250 A</td>
</tr>
<tr>
<td>Rated short-time withstand current $I_{ckt}$ 0.5 s</td>
<td>10 kA</td>
</tr>
<tr>
<td>Rated short-time withstand current $I_{ckt}$ for phases</td>
<td>17 kA</td>
</tr>
<tr>
<td>Rated short-time withstand current $I_{ckt}$ for the neutral</td>
<td>13.6 kA</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP2X, IK 07</td>
</tr>
</tbody>
</table>

Dimensions

<table>
<thead>
<tr>
<th>Type</th>
<th>W (mm)</th>
<th>H (mm)</th>
<th>D (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT 300</td>
<td>Length to be adapted depending on the size of the prefabricated substation</td>
<td>553.5</td>
<td>262.5</td>
</tr>
</tbody>
</table>
**TRS**

Reduced size urban panels
Low voltage panels for public distribution networks

Function

TRS, or reduced size panels, are installed bottom of transformers in MV/LV public distribution substations. At the level of the LV network’s incomers, they provide general on load breaking or making on 4 or 8 feeders protected by fuse disconnect switches.

Advantages

Guaranteed safety
The design of the panel ensures secure isolation and high dielectric withstand. Safety is further enhanced by an automatic earthing of the neutral when the load break switch is opened. Through the use of SIDER load break switches, the TRS panel offers technical characteristics that go beyond certain requirements, such as the short-circuit withstand current and power supply capacity. A horizontal protective screen above the monoblock provides protection of exposed live parts.

Proven reliability
In addition to their certification of origin, thousands of panels currently in service have shown their reliable operation in low voltage networks.

Easy installation and operation
The compact panel is easily installed via its removable mounting brackets and easy connection of cables top of the switch. Operating continuity is optimised by the possibility of installing fuses and fuse feeders while the panel is active.

Extensive range
In addition to the panels, a wide range of accessories enhance its operation in full safety: 400 A feeder unit, fuse holder protector, reserve panel, locking and test panel, and insulated operating key.

---

The solution for
- MV/LV public distribution substations

Strong points
- Guaranteed safety
- Proven reliability
- Easy installation and operation
- Wide range

Compliance with standards
- HN 63-S-61 ed02 : 1979
- IEC 60947-3
Composition

1. 60 A ACG relay for public lighting power supply.
2. Fuse holder protector (3 per feeder).
3. Fuse feeder unit.
4. Feeder cable terminals.
5. Incoming unit with SIDER load break switch with visible breaking.
6. Horizontal protective screen above feeders.
7. Reserve panel.
8. Locking, short-circuiting and testing panel.
9. Plated aluminium 4-pole busbar fastened by insulators on a metallic frame.

References

**TRS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Rating (A)</th>
<th>Max. number of feeders</th>
<th>MV/LV transformer rated power</th>
<th>Public lighting relay</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRS 4-800</td>
<td>800</td>
<td>4</td>
<td>≤ 400 kVA</td>
<td>Without</td>
<td>8051 0002</td>
</tr>
<tr>
<td>TRS 4-1200</td>
<td>1200</td>
<td>8</td>
<td>630 kVA</td>
<td>With</td>
<td>8051 0032</td>
</tr>
<tr>
<td>TRS 8-1800</td>
<td>1800</td>
<td>8</td>
<td>1000 kVA</td>
<td>Without</td>
<td>8053 0002</td>
</tr>
</tbody>
</table>

Accessories

**400 A feeder unit**

<table>
<thead>
<tr>
<th>Type</th>
<th>Packaging</th>
<th>ERDF Nº</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 A feeder unit</td>
<td>1</td>
<td>69 82 777</td>
<td>8066 0004</td>
</tr>
<tr>
<td>400 A feeder unit</td>
<td>40</td>
<td>69 82 777</td>
<td>8066 0004</td>
</tr>
</tbody>
</table>

*Please see the SOCOMEC general catalogue or page 90.

Customised solutions available on request. Please ask us for further details.

**Incoming unit**

The TRS is fitted with 4-pole SIDER* load break switches with visible breaking. As per IEC 60947-3, they assure on load breaking and making, and electrical isolation. A grounding neutral lug inside the device earths the installation’s neutral when the switch is opened. For standard models, top cable lugs are designed to take 240 mm² rigid cables.

<table>
<thead>
<tr>
<th>Type</th>
<th>Rating (A)</th>
<th>No. of poles</th>
<th>Panel</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>800 A SIDER* load break switch with grounding lug and mounting plate</td>
<td>800</td>
<td>4</td>
<td>TRS 4-800</td>
<td>8056 MA31</td>
</tr>
<tr>
<td>1200 A SIDER* load break switch with grounding lug and mounting plate</td>
<td>1200</td>
<td>4</td>
<td>TRS 8-1200</td>
<td>8056 MA32</td>
</tr>
<tr>
<td>1800 A SIDER* load break switch with grounding lug and mounting plate</td>
<td>1800</td>
<td>4</td>
<td>TRS 8-1800</td>
<td>8056 MA33</td>
</tr>
</tbody>
</table>

*Please see the SOCOMEC general catalogue or page 90.
**TRS**

**Reduced size urban panels**

Low voltage panels for public distribution networks

---

**Accessories (continued)**

**Fuse holder protector**

**Use**
The fuse holder allows the installation and removal of fuses whilst active and on load. Mounted on each fuse feeder, it prevents access to live parts.

3 fuse holders per feeder should be used.

<table>
<thead>
<tr>
<th>Type</th>
<th>Packaging</th>
<th>ERDF N°</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuse holder protector</td>
<td>1</td>
<td>69 82 873</td>
<td>8056 0008</td>
</tr>
</tbody>
</table>

---

**Reserve panel**

**Use**
The reserve panel attaches to an available feeder slot. It ensures the protection against direct contact with exposed/open-mounted live busbars.

<table>
<thead>
<tr>
<th>Type</th>
<th>Packaging</th>
<th>ERDF N°</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserve panel</td>
<td>1</td>
<td>69 82 833</td>
<td>8056 0003</td>
</tr>
</tbody>
</table>

---

**Locking panel**

**Use**
The locking panel allows the locking of a feeder and the short-circuiting and earthing of the four conductors. Cable testing should only be done with an appropriate device. Attaching the panel is done by fixing it to the feeder, after removing the fuses.

<table>
<thead>
<tr>
<th>Type</th>
<th>Packaging</th>
<th>ERDF N°</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locking panel</td>
<td>1</td>
<td>69 82 830</td>
<td>8056 0005</td>
</tr>
</tbody>
</table>

---

**Insulated operation key**

**Use**
Tightening or loosening of feeder fastening bolts when circuit is live. One key per panel is recommended. Compliant with IEC 60900.

<table>
<thead>
<tr>
<th>Type</th>
<th>Packaging</th>
<th>ERDF N°</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulated operation key</td>
<td>1</td>
<td>69 82 814</td>
<td>8056 0002</td>
</tr>
</tbody>
</table>

---

**Characteristics**

<table>
<thead>
<tr>
<th>Type</th>
<th>TRS 4-800</th>
<th>TRS 8-1200</th>
<th>TRS 8-1800</th>
<th>Feeder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating voltage</td>
<td>1 V</td>
<td>400 V</td>
<td>400 V</td>
<td>400 V</td>
</tr>
<tr>
<td>Rated voltage at 50 Hz/1 min (earthing)</td>
<td>10 kV</td>
<td>10 kV</td>
<td>10 kV</td>
<td>10 kV</td>
</tr>
<tr>
<td>Rated voltage at 50 Hz/1 min between poles</td>
<td>4 kV</td>
<td>4 kV</td>
<td>4 kV</td>
<td>4 kV</td>
</tr>
<tr>
<td>Rated earthing impulse withstand voltage</td>
<td>20 kV</td>
<td>20 kV</td>
<td>20 kV</td>
<td>20 kV</td>
</tr>
<tr>
<td>Incoming unit and busbar rated current</td>
<td>800 A</td>
<td>1200 A</td>
<td>1800 A</td>
<td>400 A</td>
</tr>
<tr>
<td>Short-time withstand current 0.5 s</td>
<td>16 kA</td>
<td>25 kA</td>
<td>32 kA</td>
<td>-</td>
</tr>
<tr>
<td>Peak short-time withstand current</td>
<td>32 kA</td>
<td>52 kA</td>
<td>72 kA</td>
<td>-</td>
</tr>
</tbody>
</table>
Dimensions

TRS 4-800 A

TRS 4-1200 - TRS 8-1800 A
Why choose a load break switch for the feeders on a LV public distribution panel?

In public distribution substations, the load break switch is the most widely used and is recommended worldwide for low voltage panels. Between the MV/LV transformer and LV distribution switchboard with fuse-based feeders, the load break switch ensures safe operation by assuring the protection of property and persons. Our load break switches are fully compliant with IEC 60947-3. They benefit from snap closing and tripping independent of the operator, a double-break per phase, and high levels of performance in terms of on-load breaking and making (AC22-23). Their high short-circuit making capacity ensures total safety for the operator, even in case of accidental closing on a bottom fault. In case of an electrical arc, this is confined inside the casing of the switch.

Special requirements

SOCOMEC manufactures custom products that meet your requirements. We will help you find the best solution for your application.

Load break switches:
- Specially for LV HN public distribution panels
- With over rated neutral
- High short-circuit withstand
- Multi-pole
- Earthing
- For 1000 V networks
- Special motorised models

Do not hesitate to contact us for more information.
Active in the electrical switchgear market since 1922, SOCOMEC is both a global leader and an undisputed benchmark reference. Our range of load break switches is one of the widest on the market today.

**Selection guide**

**Load break switches**

for low voltage public distribution panels

---

Which function?

What sort of breaking?

What kind of command?

---

<table>
<thead>
<tr>
<th>Function</th>
<th>SIRCO 125 to 5000 A</th>
<th>SIRCO AC 200 to 4000 A</th>
<th>SIDER 125 to 3150 A</th>
<th>SIDERMAT 250 to 1800 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4-pole load break switch</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>6/8-pole load break switch</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

**Characteristics**

**Breaking**

- Fully visible: •
- Visible: •

**Command**

- Rotary handle operation: •
- By lever (toggles): •
- Via tripping: •

**Direct control handle**

- Front: •
- Side: •

**External operation handle**

- Front: •
- Right side: •
SIRCO
Load break switches for power distribution from 125 to 5000 A

Function
SIRCO are manually operated or motorised multipolar load break switches. They make and break under load conditions and provide safety isolation. SIRCO are designed for 415 VAC and DC low voltage electrical circuits.

General characteristics
- Double positive break indication given through a position indication window, located directly on the product, and by the operating handle.
- Severe utilisation categories (AC-22 and AC-23).
- High resistance to damp heat (supplied "tropicalised").

In public distribution, the most widely used disconnect switch at the level of LV panel incomers is the SIRCO with direct front operation (e.g. CD SIRCO 1250 A).

Advantages
Reliability and performance
The double breaking per pole, achieved through its sliding bar contact system, is a proven design that offers very high durability and short-circuit withstand.

Safety of property and persons
The position indicator is located directly on the sliding bar contact mechanism, ensuring it can be seen in all circumstances.
The use of glass fibre reinforced polyester gives the SIRCO both high mechanical and thermal resistance.

Simplicity
The standardisation of the SIRCO range and its wide choice of common accessories enable:
- Simple mounting.
- Reduced stock management and storage costs.

Easy to install
The dimensions and design of outdoor connection palms allow easy implementation via:
- A good centre-to-centre distance (up to 120 mm).
- Connection up to 6 x 185 mm².
- Connection accessories which facilitate both flat and edgewise connections.

Strong points
- LV panels in MV/LV substations
- Reliability
- Safety of property and persons
- Simplicity
- Easy to install

Compliance with standards
- IEC 60947-3

Find out more
The full range of SIRCO load break switches

80 Catalogue 2018-2019
### References

**Standard applications - Front operation - 3 & 4-pole**

<table>
<thead>
<tr>
<th>Rating (A) / Frame size</th>
<th>No. of poles</th>
<th>Switch body</th>
<th>Direct handle</th>
<th>External handle</th>
<th>Shaft for external handle</th>
<th>Auxiliary contact</th>
<th>Terminal cover</th>
<th>Terminal screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 A / B3</td>
<td>3 P</td>
<td>2600 3014</td>
<td>B1 type Black</td>
<td>2699 5042(3)</td>
<td>2699 5043</td>
<td></td>
<td>3 P</td>
<td>2694 3014(3)</td>
</tr>
<tr>
<td></td>
<td>4 P</td>
<td>2600 4014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2694 4014(3)</td>
</tr>
<tr>
<td>160 A / B3</td>
<td>3 P</td>
<td>2600 3017</td>
<td>B1 type Black</td>
<td>2699 5042(3)</td>
<td>2699 5043</td>
<td></td>
<td>3 P</td>
<td>2694 3014(3)</td>
</tr>
<tr>
<td></td>
<td>4 P</td>
<td>2600 4017</td>
<td></td>
<td></td>
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<td>2600 3032</td>
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<td>2600 3051</td>
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<td>4 P</td>
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<tr>
<td>1250 A / B7</td>
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<td>2600 3121</td>
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<td>4 P</td>
<td>2600 4121</td>
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<td>2694 4051(3)</td>
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<td>1600 A / B7</td>
<td>3 P</td>
<td>2600 3161</td>
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<td>3 P</td>
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<td>4 P</td>
<td>2600 4161</td>
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<td>1800 A / B8</td>
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<td>2600 3181</td>
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<td>2694 3051(3)</td>
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<td>4 P</td>
<td>2600 4181</td>
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<td>2694 4051(3)</td>
</tr>
<tr>
<td>2000 A / B8</td>
<td>3 P</td>
<td>2600 3200</td>
<td></td>
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<td>3 P</td>
<td>2694 3051(3)</td>
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<td></td>
<td>4 P</td>
<td>2600 4200</td>
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<td>2694 4051(3)</td>
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<td>2500 A / B8</td>
<td>3 P</td>
<td>2600 3250</td>
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<td>3 P</td>
<td>2694 3051(3)</td>
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<td>4 P</td>
<td>2600 4250</td>
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<td>2694 4051(3)</td>
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<td>3200 A / B8</td>
<td>3 P</td>
<td>2600 3320</td>
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<td>3 P</td>
<td>2694 3200(4)</td>
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<tr>
<td></td>
<td>4 P</td>
<td>2600 4320</td>
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<td>2694 4200(4)</td>
</tr>
<tr>
<td>4000 A / B9</td>
<td>3 P</td>
<td>2600 4401</td>
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<td>3 P</td>
<td>2694 3200(4)</td>
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<td></td>
<td>4 P</td>
<td>2600 4500</td>
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<td></td>
<td>2694 4200(4)</td>
</tr>
<tr>
<td>5000 A / B9</td>
<td>3 P</td>
<td>2600 3500</td>
<td></td>
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<td></td>
<td>3 P</td>
<td>2694 3200(4)</td>
</tr>
<tr>
<td></td>
<td>4 P</td>
<td>2600 4600</td>
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<td>2694 4200(4)</td>
</tr>
</tbody>
</table>

(1) Device available in enclosure.
(2) Standard.
(3) Top or bottom.

### Accessories

**Direct operation handle**

<table>
<thead>
<tr>
<th>Rating (A) / Frame size</th>
<th>No. of poles</th>
<th>Handle type</th>
<th>Handle colour</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 ... 160 / B3</td>
<td>3/4 P</td>
<td>B1</td>
<td>Black</td>
<td>2699 5042(3)</td>
</tr>
<tr>
<td>125 ... 160 / B3</td>
<td>3/4 P</td>
<td>B1</td>
<td>Red</td>
<td>2699 5043</td>
</tr>
<tr>
<td>125 ... 160 / B3</td>
<td>3/4 P</td>
<td>B3</td>
<td>Black</td>
<td>4199 5012(3)</td>
</tr>
<tr>
<td>200 ... 630 / B4 ... B5</td>
<td>3/4 P</td>
<td>B2</td>
<td>Black</td>
<td>2699 5052(3)</td>
</tr>
<tr>
<td>200 ... 630 / B4 ... B5</td>
<td>3/4 P</td>
<td>B2</td>
<td>Red</td>
<td>2699 5053</td>
</tr>
<tr>
<td>250 ... 630 / B4 ... B5</td>
<td>3/4 P</td>
<td>C1</td>
<td>Black</td>
<td>2799 7052(3)</td>
</tr>
<tr>
<td>250 ... 630 / B4 ... B5</td>
<td>3/4 P</td>
<td>C1</td>
<td>Red</td>
<td>2799 7053</td>
</tr>
<tr>
<td>800 ... 3200 / B6 ... B8</td>
<td>3/4 P</td>
<td>C2</td>
<td>Black</td>
<td>2799 7012(3)</td>
</tr>
<tr>
<td>800 ... 3200 / B6 ... B8</td>
<td>3/4 P</td>
<td>C2</td>
<td>Red</td>
<td>2799 7013</td>
</tr>
<tr>
<td>800 ... 1600 / B6 ... B7</td>
<td>3/4 P</td>
<td>C2</td>
<td>Black</td>
<td>2799 7012(3)</td>
</tr>
<tr>
<td>800 ... 1600 / B6 ... B7</td>
<td>3/4 P</td>
<td>C2</td>
<td>Red</td>
<td>2799 7013</td>
</tr>
<tr>
<td>4000 ... 5000 / B9</td>
<td>3/4 P</td>
<td>V0</td>
<td>Black</td>
<td>2799 7072(3)</td>
</tr>
</tbody>
</table>

(1) Standard.
Other types of handles: please consult the SOCOMEC general catalogue.
Inter-phase barrier

**Use**
Safety isolation between the terminals, essential for use at 690 VAC or in a polluted or dusty atmosphere.

<table>
<thead>
<tr>
<th>Rating (A) / Frame size</th>
<th>No. of poles</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 … 160 / B3</td>
<td>3 P</td>
<td>2998 0033</td>
</tr>
<tr>
<td>125 … 160 / B3</td>
<td>4 P</td>
<td>2998 0034</td>
</tr>
<tr>
<td>200 … 250 / B4</td>
<td>3 P</td>
<td>2998 0023</td>
</tr>
<tr>
<td>200 … 250 / B4</td>
<td>4 P</td>
<td>2998 0024</td>
</tr>
<tr>
<td>315 … 630 / B5</td>
<td>3 P</td>
<td>2998 0013</td>
</tr>
<tr>
<td>315 … 630 / B5</td>
<td>4 P</td>
<td>2998 0014</td>
</tr>
<tr>
<td>800 … 5000 / B6 … B9</td>
<td>3 P</td>
<td>included</td>
</tr>
<tr>
<td>800 … 5000 / B6 … B9</td>
<td>4 P</td>
<td>included</td>
</tr>
</tbody>
</table>

**Terminal shrouds**

**Use**
Top or bottom protection against direct contact with terminals or connection parts.

**Advantage**
Perforations allow remote thermographic inspection without the need to remove the shrouds. The terminal shrouds also provide phase separation for SIRCO switches from 125 to 630 A.

<table>
<thead>
<tr>
<th>Rating (A) / Frame size</th>
<th>No. of poles</th>
<th>Position</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 … 160 / B3</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2694 3014(1)</td>
</tr>
<tr>
<td>125 … 160 / B3</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2694 4014(1)</td>
</tr>
<tr>
<td>200 … 250 / B4</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2694 3021(1)</td>
</tr>
<tr>
<td>200 … 250 / B4</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2694 4021(1)</td>
</tr>
<tr>
<td>315 … 630 / B5</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2694 3051(1)</td>
</tr>
<tr>
<td>315 … 630 / B5</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2694 4051(1)</td>
</tr>
<tr>
<td>800 … 1250 / B6</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2698 3080</td>
</tr>
<tr>
<td>800 … 1250 / B6</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2698 4080</td>
</tr>
<tr>
<td>1250 … 1800 / B7</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2698 3120</td>
</tr>
<tr>
<td>1250 … 1800 / B7</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2698 4120</td>
</tr>
<tr>
<td>2000 … 3200 / B8</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2698 3200</td>
</tr>
<tr>
<td>2000 … 3200 / B8</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2698 4200</td>
</tr>
<tr>
<td>4000 … 5000 / B9</td>
<td>3/4 P</td>
<td>Top or bottom</td>
<td>1509 4200</td>
</tr>
</tbody>
</table>

(1) Reference includes 3 parts for top or bottom protection.
(2) Reference includes 4 parts for top or bottom protection.

**Terminal screen**

**Use**
Top or bottom protection against direct contact with terminals or connection parts.

<table>
<thead>
<tr>
<th>Rating (A) / Frame size</th>
<th>No. of poles</th>
<th>Position</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 … 160 / B3</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2698 3012</td>
</tr>
<tr>
<td>125 … 160 / B3</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2698 4012</td>
</tr>
<tr>
<td>200 … 250 / B4</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2698 3020</td>
</tr>
<tr>
<td>200 … 250 / B4</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2698 4020</td>
</tr>
<tr>
<td>315 … 630 / B5</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2698 3050</td>
</tr>
<tr>
<td>315 … 630 / B5</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2698 4050</td>
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<tr>
<td>800 … 1250 / B6</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2698 3080</td>
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<tr>
<td>800 … 1250 / B6</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2698 4080</td>
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<tr>
<td>1250 … 1800 / B7</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2698 3120</td>
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<tr>
<td>1250 … 1800 / B7</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2698 4120</td>
</tr>
<tr>
<td>2000 … 3200 / B8</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2698 3200</td>
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<tr>
<td>2000 … 3200 / B8</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2698 4200</td>
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<tr>
<td>4000 … 5000 / B9</td>
<td>3/4 P</td>
<td>Top or bottom</td>
<td>1509 4200</td>
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</table>
Load break switches for power distribution from 125 to 5000 A

Characteristics according to IEC 60947-3

125 to 800 A

<table>
<thead>
<tr>
<th>Thermal current $I_{th}$ at 40 °C</th>
<th>125 A</th>
<th>160 A</th>
<th>200 A</th>
<th>250 A</th>
<th>315 A</th>
<th>400 A</th>
<th>500 A</th>
<th>630 A</th>
<th>800 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame size B3</td>
<td>B3</td>
<td>B3</td>
<td>B4</td>
<td>B4</td>
<td>B5</td>
<td>B5</td>
<td>B5</td>
<td>B5</td>
<td>B6</td>
</tr>
<tr>
<td>Rated insulation voltage $U_i$ (V)</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>1000</td>
<td>1000</td>
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<td>1000</td>
</tr>
<tr>
<td>Rated impulse withstand voltage $U_{imp}$ (kV)</td>
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<td>8</td>
<td>8</td>
<td>12</td>
<td>12</td>
<td>12</td>
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</table>

**Rated operational currents $I_e$ (A)**

<table>
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<th>Rated voltage</th>
<th>Utilisation category A/B</th>
<th>A/B</th>
<th>A/B</th>
<th>A/B</th>
<th>A/B</th>
<th>A/B</th>
<th>A/B</th>
<th>A/B</th>
<th>A/B</th>
</tr>
</thead>
<tbody>
<tr>
<td>415 VAC</td>
<td>AC-20 A / AC-20 B</td>
<td>125</td>
<td>160</td>
<td>200</td>
<td>250</td>
<td>315</td>
<td>400</td>
<td>500</td>
<td>630</td>
</tr>
<tr>
<td>500 VDC</td>
<td>AC-20 A / AC-20 B</td>
<td>125</td>
<td>160</td>
<td>200</td>
<td>250</td>
<td>315</td>
<td>400</td>
<td>500</td>
<td>630</td>
</tr>
</tbody>
</table>

**Operational power in AC-23 (kW)**

| At 415 VAC without pre-break AC(1) | 63/63 | 80/80 | 100/100 | 132/132 | 160/160 | 220/220 | 280/280 | 280/280 | 450/450 |

**Reactive power (kvar)**

At 400 VAC (kvar)(5) | 55 | 75 | 90 | 115 | 145 | 185 | 230 | 290 | 365 |

**Rated fused (gG DIN) short-circuit conditional current (kA rms)**

Prospective short-circuit current $I_{scc}$ | 100 | 100 | 80 | 50 | 100 | 100 | 70 | 50 |

**Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s**

Admissible rated short-time current $I_{cw}$ 0.3s (kA rms.) | 15 | 15 | 17 | 17 | 25 | 25 | 25 | 25 | 50 |

**Short-circuit operation (switch only)**

Admissible rated short-time current $I_{cw}$ 1s (kA rms.) | 7 | 7 | 9 | 9 | 13 | 13 | 13 | 13 | 35 |

**Connection**

Minimum Cu cable cross-section (mm²) | 35 | 50 | 70 | 95 | 150 | 185 | 240 | 2 x 150 | 2 x 185 |

Minimum Cu busbar cross-section (mm²) | - | - | - | - | - | - | - | 2 x 30 | 2 x 45 |

Maximum Cu cable cross-section (mm²) | 50 | 95 | 95 | 150 | 240 | 240 | 2 x 300 | 2 x 300 |

Maximum Cu busbar width (mm) | 25 | 25 | 32 | 32 | 40 | 40 | 40 | 50 | 63 |

Tightening torque min/max (Nm) | 9/- | 9/- | 20/- | 20/- | 20/- | 20/- | 20/- | 20/- | 20/- |

**Mechanical specifications**

Dexterity (number of operating cycles) | 10 000 | 10 000 | 10 000 | 10 000 | 10 000 | 10 000 | 10 000 | 10 000 | 3000 |

Operating effort (Nm) | 6.5 | 6.5 | 10 | 10 | 10 | 10 | 14.5 | 14.5 | 37 |

Weight of a 3-pole device (kg) | 1 | 1.5 | 2 | 2 | 3.5 | 3.5 | 3.5 | 3.5 | 8 |

Weight of a 4-pole device (kg) | 1 | 1.5 | 2 | 2 | 4 | 4 | 4 | 4 | 4.5 |

---

(1) Category with index A = frequent operation - Category with index B = infrequent operation.
(2) With terminal shrouds or phase barrier.
(3) 3-pole device with 2 poles in series for the ‘+’ and 1 pole for the ‘-’.
(4) 4-pole device with 2 poles in series per polarity.
(5) The power value is given for information only, the current values vary from one manufacturer to another.
(6) For a rated operational voltage $U_i = 415$ VAC.
(7) Coordination tables with circuit breaker: please contact us.
## Characteristics according to IEC 60947-3-1 (continued)

### 1000 to 5000 A

<table>
<thead>
<tr>
<th>Frame size</th>
<th>1000 A</th>
<th>CD 1250 A</th>
<th>1250 A</th>
<th>1600 A</th>
<th>1800 A</th>
<th>2000 A</th>
<th>2500 A</th>
<th>3200 A</th>
<th>4000 A</th>
<th>5000 A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rated insulation voltage Ui (V)</strong></td>
<td>B6</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
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</tr>
<tr>
<td><strong>Rated impulse withstand voltage Uimp (kV)</strong></td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

### Rated operational currents Ie (A)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>500 VDC DC-20 A / DC-20 B</td>
<td>1000/1000</td>
<td>1250/1250</td>
<td>1250/1250</td>
<td>1600/1600</td>
<td>1800/1800</td>
<td>2000/2000</td>
<td>2500/2500</td>
<td>3200/3200</td>
<td>4000/4000</td>
<td>5000/5000</td>
<td></td>
</tr>
<tr>
<td>500 VDC DC-21 A / DC-21 B</td>
<td>1000/1000</td>
<td>1250/1250</td>
<td>1250/1250</td>
<td>1600/1600</td>
<td>1800/1800</td>
<td>2000/2000</td>
<td>2500/2500</td>
<td>3250/3250</td>
<td>4000/4000</td>
<td>5000/5000</td>
<td></td>
</tr>
<tr>
<td>500 VDC DC-22 A / DC-22 B</td>
<td>1000/1000</td>
<td>1250/1250</td>
<td>1250/1250</td>
<td>1600/1600</td>
<td>1800/1800</td>
<td>2000/2000</td>
<td>2500/2500</td>
<td>3250/3250</td>
<td>4000/4000</td>
<td>5000/5000</td>
<td></td>
</tr>
</tbody>
</table>

### Operational power in AC-23 A (kW) (1)/(5)

| At 415 VAC without AC pre-break(5) | 560/560 | 710/710 | 710/710 | 710/710 | 710/710 | 710/710 | 710/710 | 710/710 | 710/710 | 710/710 |

### Reactive power (kvar)

| At 400 VAC (kvar)(5) | 460 | - | - | - | - | - | - | - | - | - |

### Fuse protected short-circuit withstand (kA rms prospective)(6)

| Prospective short-circuit current (kA rms) | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | - | - |
| Associated fuse rating (A) | 1000 | 1250 | 1250 | 2 x 800 | 2 x 800 | 2 x 1000 | 2 x 1250 | - | - | - |

### Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s

| Rated short-time withstand current 0.3s, Icw (kA rms) | 65 | 65 | 100 | 100 | 100 | 100 | 100 | - | - |
| Rated peak withstand current (kA peak)(7) | 80 | 80 | 110 | 110 | 110 | 110 | 120 | 165 | 165 |

### Short-circuit operation (switch only)

| Minimum Cu cable cross-section (mm²) | 2 x 240 | - | - | - | - | - | - | - | - |
| Minimum Cu busbar cross-section (mm²) | 2 x 50 x 5 | 2 x 60 x 5 | 2 x 60 x 5 | 2 x 80 x 5 | 3 x 100 x 5 | 3 x 100 x 5 | 4 x 100 x 5 | 4 x 100 x 5 | 2 x 100 x 10 | 2 x 100 x 10 |
| Maximum Cu cable cross-section (mm²) | 4 x 185 | 4 x 185 | 4 x 185 | 6 x 185 | 6 x 185 | - | - | - | - | - |
| Maximum Cu busbar width (mm) | 63 | 63 | 100 | 100 | 100 | 100 | 100 | 100 | - | - |
| Tightening torque min/max (Nm) | 40/45 | 40/45 | 40/45 | 40/45 | 40/45 | 40/5 | 40/4 | 40/- | 40/- | 40/- |

### Mechanical specifications

| Durability (number of operating cycles) | 3000 | 3000 | 4000 | 4000 | 4000 | 3000 | 3000 | 3000 | 2000 | 2000 |
| Operating effort (Nm) | 37 | 37 | 56 | 56 | 56 | 75 | 75 | 75 | 105 | 105 |
| Weight of a 3-pole device (kg) | 8 | 8 | 12 | 12 | 12 | 22 | 22 | 22 | 45 | 45 |
| Weight of a 4-pole device (kg) | 10 | 10 | 15 | 15 | 15 | 25 | 25 | 25 | 50 | 50 |

---

(1) Category with index A = frequent operation - Category with index B = infrequent operation.
(2) With terminal shrouds or phase barrier.
(3) 3-pole device with 2 poles in series for the ‘+’ and 1 pole for the ‘-’.
(4) 4-pole device with 2 poles in series per polarity.
(5) The power value is given for information only, as the current values vary from one manufacturer to another.
(6) Coordination tables with circuit breaker: please contact us.
(7) For a rated operational voltage Ui = 415 VAC.

---

SIRCO
Load break switches for power distribution from 125 to 5000 A
Dimensions - Front operation

125 to 630 A / B3 to B5

800 to 1800 A / B6 - B7

2000 to 3200 A / B8

4000 to 5000 A / B9
SIRCO
Load break switches for power distribution
from 125 to 5000 A

Dimensions - Side operation

125 to 630 A / B3 to B5

External right side operation

<table>
<thead>
<tr>
<th>Rating (A) / Frame size</th>
<th>Switch body</th>
<th>Switch mounting</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 … 160 / B3</td>
<td>140</td>
<td>170</td>
<td>93</td>
</tr>
<tr>
<td>200 … 250 / B4</td>
<td>180</td>
<td>230</td>
<td>108</td>
</tr>
<tr>
<td>315 ... 400 / B5</td>
<td>230</td>
<td>290</td>
<td>170</td>
</tr>
<tr>
<td>500 / B5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>630 / B5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

800 to 1800 A / B6 to B7

External right side operation

<table>
<thead>
<tr>
<th>Rating (A) / Frame size</th>
<th>Switch body</th>
<th>Switch mounting</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>800 / B6</td>
<td>280</td>
<td>360</td>
<td>211</td>
</tr>
<tr>
<td>CD 1 250 / B6</td>
<td>372</td>
<td>492</td>
<td></td>
</tr>
<tr>
<td>1800/B7</td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

Catalogue 2018-2019
## Dimensions for external handles

### B3 to B5

<table>
<thead>
<tr>
<th>Handle type</th>
<th>Front operation</th>
<th>Door drilling</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S2 type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø78</td>
<td>±0°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>±40°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>±28°</td>
<td></td>
</tr>
<tr>
<td>Ø37</td>
<td>±4 Ø 7</td>
<td></td>
</tr>
<tr>
<td>Ø26</td>
<td>±4 Ø 7</td>
<td></td>
</tr>
<tr>
<td>Ø28</td>
<td>±4 Ø 5.5</td>
<td></td>
</tr>
<tr>
<td>Ø40</td>
<td>±4 Ø 7</td>
<td></td>
</tr>
<tr>
<td>Ø73.5</td>
<td>±26</td>
<td></td>
</tr>
<tr>
<td>Ø24</td>
<td>±24</td>
<td></td>
</tr>
<tr>
<td>Ø45°3.5</td>
<td>±28</td>
<td></td>
</tr>
<tr>
<td>Ø1414</td>
<td>±28</td>
<td></td>
</tr>
</tbody>
</table>

### With lock

<table>
<thead>
<tr>
<th>RONIS EL11AP</th>
</tr>
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</table>

### B6 - B7

<table>
<thead>
<tr>
<th>Handle type</th>
<th>Front operation</th>
<th>Door drilling</th>
</tr>
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<tbody>
<tr>
<td><strong>S4 type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø78</td>
<td>±0°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>±40°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>±28°</td>
<td></td>
</tr>
<tr>
<td>Ø37</td>
<td>±4 Ø 7</td>
<td></td>
</tr>
<tr>
<td>Ø26</td>
<td>±4 Ø 7</td>
<td></td>
</tr>
<tr>
<td>Ø28</td>
<td>±4 Ø 5.5</td>
<td></td>
</tr>
<tr>
<td>Ø40</td>
<td>±4 Ø 7</td>
<td></td>
</tr>
<tr>
<td>Ø73.5</td>
<td>±26</td>
<td></td>
</tr>
<tr>
<td>Ø24</td>
<td>±24</td>
<td></td>
</tr>
<tr>
<td>Ø45°3.5</td>
<td>±28</td>
<td></td>
</tr>
<tr>
<td>Ø1414</td>
<td>±28</td>
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### With lock

<table>
<thead>
<tr>
<th>RONIS EL11AP</th>
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</table>

### S3 type

<table>
<thead>
<tr>
<th>Handle type</th>
<th>Front operation</th>
<th>Door drilling</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S3 type</strong></td>
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<tr>
<td>Ø78</td>
<td>±0°</td>
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<tr>
<td></td>
<td>±40°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>±28°</td>
<td></td>
</tr>
<tr>
<td>Ø37</td>
<td>±4 Ø 7</td>
<td></td>
</tr>
<tr>
<td>Ø26</td>
<td>±4 Ø 7</td>
<td></td>
</tr>
<tr>
<td>Ø28</td>
<td>±4 Ø 5.5</td>
<td></td>
</tr>
<tr>
<td>Ø40</td>
<td>±4 Ø 7</td>
<td></td>
</tr>
<tr>
<td>Ø73.5</td>
<td>±26</td>
<td></td>
</tr>
<tr>
<td>Ø24</td>
<td>±24</td>
<td></td>
</tr>
<tr>
<td>Ø45°3.5</td>
<td>±28</td>
<td></td>
</tr>
<tr>
<td>Ø1414</td>
<td>±28</td>
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### With lock

<table>
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<tr>
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</table>
**Dimensions for external handles (continued)**

### B7 - B8

<table>
<thead>
<tr>
<th>Handle type</th>
<th>Front operation</th>
<th>Door drilling</th>
</tr>
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<tbody>
<tr>
<td><strong>V2 Type</strong></td>
<td><img src="poign_020_a_1_gb_cat" alt="Diagram" /></td>
<td><img src="poign_055_a_1_gb_cat" alt="Diagram" /></td>
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</tbody>
</table>

### S5 type with V Escutcheon

<table>
<thead>
<tr>
<th>Handle type</th>
<th>Front operation</th>
<th>Door drilling</th>
</tr>
</thead>
</table>

### B9

<table>
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<tr>
<th>Handle type</th>
<th>Front operation</th>
<th>Door drilling</th>
</tr>
</thead>
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<td><strong>V0 type</strong></td>
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**Connection terminal**

**125 to 630 A**

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>U</th>
<th>V</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 … 160</td>
<td>20</td>
<td>25</td>
<td>9</td>
</tr>
<tr>
<td>200 … 250</td>
<td>25</td>
<td>21.5</td>
<td>11</td>
</tr>
<tr>
<td>315 … 400</td>
<td>32</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>500</td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>630</td>
<td>45</td>
<td>41.5</td>
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**630 to 1000 A**

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>U</th>
<th>V</th>
<th>W1</th>
<th>W2</th>
<th>X1</th>
<th>X2</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 … 1000</td>
<td>50</td>
<td>60.5</td>
<td>9</td>
<td>16</td>
<td>28.5</td>
<td>11</td>
<td>33</td>
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</table>

**CD 1250 A**

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>U</th>
<th>V1</th>
<th>V2</th>
<th>W</th>
<th>X1</th>
<th>X2</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD 1250 A</td>
<td>60</td>
<td>65</td>
<td>28.5</td>
<td>16</td>
<td>28.5</td>
<td>11</td>
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</table>

**1250 to 3200 A**

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>U</th>
<th>V1</th>
<th>V2</th>
<th>W</th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1250 … 3200</td>
<td>90</td>
<td>35.8</td>
<td>15</td>
<td>12.5</td>
<td>25</td>
<td>30</td>
<td>45</td>
<td>12.5</td>
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</table>

**4000 to 5000 A**

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>U</th>
<th>W</th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X1</th>
<th>X2</th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>4000 … 5000</td>
<td>286</td>
<td>13</td>
<td>48</td>
<td>26</td>
<td>30</td>
<td>86</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**SIDER**

Load break switches for power distribution with visible breaking from 630 to 3150 A

**Function**

SIDER are manually operated 3 or 4-pole load break switches. They assure on-load making and breaking and provide safety isolation for any LV circuit. They can be installed at the level of section incomers in low voltage distribution cabinets. In public distribution, SIDER load break switches are frequently used at the level of section incomers in LV substations (reduced size urban switchboards, etc).

**Advantages**

- **Safety thanks to visible breaking**
  Visible breaking and positive break indication ensure safe switching. The user can assess the condition of the device either during a preventive check or before an operation.

- **Wide range**
  The SIDER range is very extensive, covering ratings from 630 up to 3150 A, in 3 and 4-pole versions (4-pole only up to 1600 A).

**The solution for**

- LV panels in MV/LV distribution substations

**Strong points**

- Safety thanks to visible breaking
- Wide range

**Compliance with standards**

- IEC 60947-3
- UKR (Ukraine)
- GOST (Russia)
## References

### Front operation

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>No. of poles</th>
<th>Switch body</th>
<th>Direct handle</th>
<th>External handle</th>
<th>Shaft for external handle</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 A</td>
<td>3 P</td>
<td>2900 3063</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 P</td>
<td>2900 4063</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>800 A</td>
<td>3 P</td>
<td>2900 3080</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 P</td>
<td>2900 4080</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1250 A</td>
<td>3 P</td>
<td>2900 3120</td>
<td></td>
<td>S4 type</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 P</td>
<td>2900 4120</td>
<td></td>
<td>Black 2799 7012</td>
<td></td>
</tr>
<tr>
<td>1600 A</td>
<td>3 P</td>
<td>2900 3160</td>
<td></td>
<td>Red 2799 7013</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 P</td>
<td>2900 4160</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1800 A</td>
<td>3 P</td>
<td>2901 3180</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000 A</td>
<td>3 P</td>
<td>2901 3200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2500 A</td>
<td>3 P</td>
<td>2901 3250</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3150 A</td>
<td>3 P</td>
<td>2901 3310</td>
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</tbody>
</table>

(1) Standard.

### Accessories

#### Direct operation handle

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Handle colour</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 ... 3150</td>
<td>Black</td>
<td>2799 7012(1)</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>2799 7013</td>
</tr>
</tbody>
</table>

(1) Standard.

#### External operation handle

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Handle colour</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 ... 3150</td>
<td>Black</td>
<td>1443 3111(1)</td>
</tr>
<tr>
<td></td>
<td>Red/Yellow IP65</td>
<td>1444 3111</td>
</tr>
</tbody>
</table>

(1) Standard.
SIDER
Load break switches for power distribution,
with visible breaking from 630 to 3150 A

Accessories (continued)

Shaft for external operation

Use
Standard lengths:
- 200 mm.
- 300 mm.
- 400 mm.
Other widths available - please ask us.

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Length (mm)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 … 3150</td>
<td>200</td>
<td>1401 1520</td>
</tr>
<tr>
<td></td>
<td>320</td>
<td>1401 1532</td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>1401 1540</td>
</tr>
</tbody>
</table>

Terminal screen

Use
Top or bottom protection against direct contact with terminals or connection parts.

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>No. of poles</th>
<th>Position</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 … 1800</td>
<td>3 P</td>
<td>Top or bottom</td>
<td>2998 3120</td>
</tr>
<tr>
<td>630 … 1600</td>
<td>4 P</td>
<td>Top or bottom</td>
<td>2998 4120</td>
</tr>
</tbody>
</table>

Inter-phase barrier

Use
Safety isolation between the terminals, essential for use at 690 VAC or in a polluted or dusty atmosphere.

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>No. of poles</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 … 1800</td>
<td>3 P</td>
<td>2998 0003</td>
</tr>
<tr>
<td>630 … 1600</td>
<td>4 P</td>
<td>2998 0004</td>
</tr>
</tbody>
</table>

Key handle interlocking system

Use
Locking in position 0 of the front operation handle:
- Using a RONIS EL11AP lock in direct front operation (Fig. 1).
- Using a RONIS EL11AP or CASTELL K-type lock in external front operation (Fig. 2).

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Command</th>
<th>Figure</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 … 1800</td>
<td>front direct</td>
<td>1</td>
<td>2790 7007</td>
</tr>
<tr>
<td>630 … 3150</td>
<td>external front</td>
<td>2</td>
<td>1401 7701</td>
</tr>
</tbody>
</table>
Electrical characteristics

Characteristics according to IEC 60947-3

<table>
<thead>
<tr>
<th>Thermal current $I_{th}$ at 40°C</th>
<th>630</th>
<th>800</th>
<th>1250</th>
<th>1600</th>
<th>1800</th>
<th>2000</th>
<th>2500</th>
<th>3150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated insulation voltage $U_i$ (V)</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Rated impulse withstand voltage $U_{imp}$ (kV)</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Rated operational currents $I_e$ (A)

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>Load duty category</th>
<th>A/B(1)</th>
<th>A/B(1)</th>
<th>A/B(1)</th>
<th>A/B(1)</th>
<th>A/B(1)</th>
<th>A/B(1)</th>
<th>A/B(1)</th>
<th>A/B(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>415 VAC</td>
<td>AC-20 A / AC-20 B</td>
<td>630/630</td>
<td>800/800</td>
<td>1250/1250</td>
<td>1600/1600</td>
<td>1800/1800</td>
<td>2000/2000</td>
<td>2500/2500</td>
<td>3150/3150</td>
</tr>
<tr>
<td>415 VAC</td>
<td>AC-22 A / AC-22 B</td>
<td>630/630</td>
<td>800/800</td>
<td>1250/1250</td>
<td>1250/1250</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>415 VAC</td>
<td>AC-23 A / AC-23 B</td>
<td>630/630</td>
<td>800/800</td>
<td>1000/1000</td>
<td>1000/1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Short-circuit operation (switch only)

<table>
<thead>
<tr>
<th>Rated admissible short-time withstand current 1s. low (kA rms)</th>
<th>26</th>
<th>26</th>
<th>50</th>
<th>50</th>
<th>50</th>
<th>50</th>
<th>50</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated short-circuit making capacity without fuses $I_{sc}$ (kA assumed peak)</td>
<td>50</td>
<td>50</td>
<td>70</td>
<td>70</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>

Connection

<table>
<thead>
<tr>
<th>Minimum Cu cable cross-section (mm²)</th>
<th>2 x 150</th>
<th>2 x 185</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Cu cable cross-section (mm²)</td>
<td>2 x 30 x 5</td>
<td>2 x 40 x 5</td>
<td>2 x 60 x 5</td>
<td>2 x 80 x 5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Minimum Cu cable cross-section (mm²)</td>
<td>2 x 300</td>
<td>2 x 300</td>
<td>4 x 185</td>
<td>6 x 240</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Maximum Cu busbar width (mm)</td>
<td>63</td>
<td>63</td>
<td>100</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tightening torque min/max (Nm)</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>40</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

(1) Category with index A = frequent operation - Category with index B = infrequent operation.
SIDER
Load break switches for power distribution, with visible breaking from 630 to 3150 A

Dimensions

630 to 1800 A

Direct front operation

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Overall dimensions</th>
<th>Switch body</th>
<th>Switch mounting</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>630</td>
<td>463</td>
<td>358 438</td>
<td>255 335</td>
<td>T 80 U 40 V 50 W 13 X1 42.5 X2 65 Z 106 AA 300 BA 260 AC 20</td>
</tr>
<tr>
<td>800</td>
<td>543</td>
<td>358 438</td>
<td>255 335</td>
<td>T 80 U 50 V 60 W 9 X1 47.5 X2 65 Z 106 AA 320 BA - AC -</td>
</tr>
<tr>
<td>1250</td>
<td>555 675</td>
<td>430 550</td>
<td>347 467</td>
<td>T 120 U 63 V 65 W 16 X1 46.5 X2 60 Z 107 AA 330 BA - AC -</td>
</tr>
<tr>
<td>1600</td>
<td>555 675</td>
<td>430 550</td>
<td>347 467</td>
<td>T 120 U 80 V 80 W 13 X1 46.5 X2 60 Z 111 AA 360 BA - AC -</td>
</tr>
<tr>
<td>1800</td>
<td>479</td>
<td>417 -</td>
<td>345 -</td>
<td>T 120 U 100 V 80 W - X1 46.5 X2 60 Z 112 AA 630 BA 250 AC -</td>
</tr>
</tbody>
</table>

External front operation

2000 to 2500 A

Direct front operation

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Overall dimensions</th>
<th>Switch body</th>
<th>Switch mounting</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>463</td>
<td>358 438</td>
<td>255 335</td>
<td>T 80 U 60</td>
</tr>
<tr>
<td>2500</td>
<td>543</td>
<td>358 438</td>
<td>255 335</td>
<td>T 80 U 60</td>
</tr>
</tbody>
</table>

External front operation

3150 A

Direct front operation

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Overall dimensions</th>
<th>Switch body</th>
<th>Switch mounting</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>3150</td>
<td>555</td>
<td>430 550</td>
<td>347 467</td>
<td>T 120 U 80</td>
</tr>
</tbody>
</table>

External front operation

Catalogue 2018-2019
Dimensions for external handles

<table>
<thead>
<tr>
<th>Handle type</th>
<th>Direction of operation</th>
<th>Door drilling</th>
</tr>
</thead>
<tbody>
<tr>
<td>S4 type</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Connection terminal

<table>
<thead>
<tr>
<th>Connection terminal</th>
<th>800 A</th>
<th>1250 - 2000 - 2500 A</th>
<th>1800 A</th>
<th>1600 - 3150 A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ø 9</td>
<td>16 x 11</td>
<td>Ø 13</td>
<td>Ø 13</td>
</tr>
<tr>
<td></td>
<td>8.5</td>
<td></td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td></td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>8.5</td>
<td></td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td></td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td></td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td></td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td></td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>63</td>
<td></td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>80</td>
<td></td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>
**SIDERMAT**

Remote-trip load break switches for power distribution remotely trippable switch from 250 to 1800 A

---

**Function**

**SIDERMAT** are manually operated 3 or 4-pole load break switches with visible breaking and a remote tripping function. They make and break under load conditions and provide safety isolation for any low voltage circuit.

The tripping function is used to provide the following functions:

- Personal protection against insulation faults when utilised in combination with toroids and differential relays.
- Protection against overloads when utilised in combination with CTs and thermal relays.
- Fuse-based protection against short circuits.

The **SIDERMAT** load break switch is used in certain low voltage public distribution switchboards that require a tripping function.

**Advantages**

**Remote tripping**

Remote opening via a push-button voltage release device for disconnecting the installation.

**Safety thanks to visible double breaking**

**SIDERMAT** switches are double breaking devices with visible contacts (quadruple breaking up to 800 A) for a clear and secure display of the contacts’ position.

**Utilisation in harsh operating conditions**

By lowering the current via a limiting resistor, a **SIDERMAT** fitted with an undervoltage coil may be used in continuous processes or exposed to high ambient temperatures.

---

**The solution for**

- LV panels in MV/LV distribution substations

**Strong points**

- Remote tripping
- Safety thanks to visible double breaking
- Utilisation in harsh operating conditions

**Compliance with standards**

- IEC 60947-3
- UKR (Ukraine)
- GOST (Russia)
- SGS (Saudi Arabia)

**Find out more**

The complete range of **SIDERMAT** load break switches

Remote-trip load break switches for power distribution
remotely trippable switch from 250 to 1800 A

References

Front operation
Switch body with a 230 VAC shunt trip coil

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>No. of poles</th>
<th>Switch body</th>
<th>Direct handle</th>
<th>External handle</th>
<th>Shaft for handle</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 A</td>
<td>3 P</td>
<td>3500 3064</td>
<td></td>
<td>Black 3999 6203(^\text{R})</td>
<td>200 mm 1401 1520</td>
</tr>
<tr>
<td></td>
<td>4 P</td>
<td>3500 4064</td>
<td></td>
<td></td>
<td>320 mm 1401 1532(^\text{R})</td>
</tr>
<tr>
<td>800 A</td>
<td>3 P</td>
<td>3500 3081</td>
<td></td>
<td>S3 type 1431 3511(^\text{R})</td>
<td>200 mm 1401 1520</td>
</tr>
<tr>
<td></td>
<td>4 P</td>
<td>3500 4081</td>
<td></td>
<td>Red/Yellow IP65 1432 3511</td>
<td>320 mm 1401 1532(^\text{R})</td>
</tr>
<tr>
<td>1250 A</td>
<td>3 P</td>
<td>3500 3121</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 P</td>
<td>3500 4121</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1600 A</td>
<td>3 P</td>
<td>3500 3161</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 P</td>
<td>3500 4161</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1800 A</td>
<td>3 P</td>
<td>3500 3180</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 P</td>
<td>3500 4180</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Ratings < 630 A : please refer to the SOCOMEC general catalogue.
(2) Standard.

Accessories

Direct operation handle

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Handle colour</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 ... 1800</td>
<td>Black</td>
<td>3999 6203(^\text{R})</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>contact us</td>
</tr>
</tbody>
</table>

(1) Standard.

External operation handle

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Handle colour</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 ... 1800</td>
<td>Black</td>
<td>1431 3511(^\text{R})</td>
</tr>
<tr>
<td></td>
<td>Red/Yellow IP65</td>
<td>1432 3511</td>
</tr>
</tbody>
</table>

(1) Standard.

Shaft for external operation

Use
Standard lengths:
- 200 mm.
- 320 mm.
Other lengths available - please ask us.

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Length (mm)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 ... 1800</td>
<td>200</td>
<td>1401 1520</td>
</tr>
<tr>
<td></td>
<td>320</td>
<td>1401 1532</td>
</tr>
</tbody>
</table>

(1) Standard.
**SIDERMAT**

Remote-trip load break switches for power distribution
remotely trippable switch from 250 to 1800 A

### Accessories (continued)

#### Terminal screen

**Use**
Top or bottom protection against direct contact with terminals or connection parts.

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Position</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1250 ... 1800</td>
<td>Top or bottom</td>
<td>2998 3120</td>
</tr>
</tbody>
</table>

#### Inter-phase barrier

**Use**
Safety isolation between the terminals, essential for use at 690 VAC or in a polluted or dusty atmosphere.

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1250 ... 1600</td>
<td>2998 0003</td>
</tr>
<tr>
<td>1800</td>
<td>Included</td>
</tr>
</tbody>
</table>

#### Handle key interlocking system

**Use**
Locking in position 0 of the front operation handle:
- Using a padlock (not supplied) and factory integrated into the handle. Padlocking, in external front operation, locks the door.
- Using RONIS 1104 A lock (key BC 3318) to be mounted directly on the padlockable handle.
- Locking using RONIS EL11AP lock (not supplied).

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Operation</th>
<th>Type</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 ... 1800</td>
<td>Front direct</td>
<td>RONIS 1104 A (included)</td>
<td>3999 8104</td>
</tr>
<tr>
<td>630</td>
<td>Front direct</td>
<td>RONIS EL11AP lock (not supplied)</td>
<td>3999 8107</td>
</tr>
<tr>
<td>800 ... 1800</td>
<td>Front direct</td>
<td>RONIS EL11AP lock (not supplied)</td>
<td>3999 7007</td>
</tr>
<tr>
<td>630 ... 1800</td>
<td>External front</td>
<td>RONIS EL11AP lock (not supplied)</td>
<td>1499 7701</td>
</tr>
</tbody>
</table>
Tripping coil

Use
Omnipolar breaking remotely controlled by shunt trip or undervoltage release coil.
Note: the shunt trip coil must not be supplied for more than 5s.
A 230 VAC shunt trip coil is fitted as standard to the switch body. To have an alternative coil, one of the references below must be added to the switch reference.

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Shunt trip coil</th>
<th>Undervoltage trip coil</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 VAC</td>
<td>3991 1024</td>
<td>3991 3024</td>
</tr>
<tr>
<td>48 VAC</td>
<td>3991 1048</td>
<td>3991 3048</td>
</tr>
<tr>
<td>110 VAC</td>
<td>3991 1110</td>
<td>3991 3110</td>
</tr>
<tr>
<td>230 VAC</td>
<td>Included</td>
<td>3991 3220</td>
</tr>
<tr>
<td>400 VAC</td>
<td>3991 1280</td>
<td>3991 3380</td>
</tr>
<tr>
<td>12 VDC</td>
<td>3991 2012</td>
<td>3991 4012</td>
</tr>
<tr>
<td>24 VDC</td>
<td>3991 2024</td>
<td>3991 4024</td>
</tr>
<tr>
<td>48 VDC</td>
<td>3991 2048</td>
<td>3991 4048</td>
</tr>
<tr>
<td>110 VDC</td>
<td>3991 2220</td>
<td>3991 4110</td>
</tr>
<tr>
<td>220 VDC</td>
<td>3991 2220</td>
<td>3991 4220</td>
</tr>
</tbody>
</table>

Electrical characteristics

Characteristics according to IEC 60947-3

<table>
<thead>
<tr>
<th>Thermal current $I^*$ at 40°C</th>
<th>630 A</th>
<th>800 A</th>
<th>1250 A</th>
<th>1600 A</th>
<th>1800 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated insulation voltage $U_i$ (V)</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Rated impulse withstand voltage $U_{imp}$ (kV)</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Rated operational currents $I_e$ (A)

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>Load duty category</th>
<th>A/B(1)</th>
<th>A/B(2)</th>
<th>A/B(3)</th>
<th>A/B(4)</th>
<th>A/B(5)</th>
<th>A/B(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 VAC</td>
<td>AC-22 A / AC-22 B</td>
<td>630/630</td>
<td>800/800</td>
<td>1250/1250</td>
<td>1600/1600</td>
<td>1800/1800</td>
<td></td>
</tr>
<tr>
<td>400 VAC</td>
<td>AC-23 A / AC-23 B</td>
<td>630/630</td>
<td>630/630</td>
<td>1250/1250</td>
<td>1600/1600</td>
<td>1800/1800</td>
<td></td>
</tr>
</tbody>
</table>

Short-circuit operation (switch only)

| Rated short-time withstand current 0.3 s. $I_{sw}$ (kA rms.) | 50 | 65 | 65 | 80 | 80 |
| Rated peak withstand current in $I_{sw}$ (kA peak)(2) | 55 | 80 | 100 | 120 | 120 |

(1) Category with index $A$ = frequent operation - Category with index $B$ = infrequent operation.
(2) For a rated operational voltage $U_e = 440$ VAC.
**SIDERMAT**

Remote-trip load break switches for power distribution remotely trippable switch from 250 to 1800 A

### Dimensions

#### 630 to 800 A

Direct front operation

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Overall dimensions</th>
<th>Terminal shrouds</th>
<th>Switch body</th>
<th>Switch mounting</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>630</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>800</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

External front operation

1. Terminal shroud
2. 70° reset

---

#### 1250 to 1800 A

Direct front operation

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Overall dimensions</th>
<th>Terminal shrouds</th>
<th>Switch body</th>
<th>Switch mounting</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1250</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1800</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

External front operation

1. 70° reset
2. Terminal screen

---

Catalogue 2018-2019
Dimensions for external handles

630 to 1800 A

<table>
<thead>
<tr>
<th>Handle type</th>
<th>Front operation</th>
<th>Side operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S3 type</strong></td>
<td>Direction of operation</td>
<td>Door drilling</td>
</tr>
<tr>
<td>Ø78</td>
<td>Ø37</td>
<td>4 Ø7</td>
</tr>
</tbody>
</table>

Connection terminal

<table>
<thead>
<tr>
<th>Connection terminal</th>
<th>800 A</th>
<th>1250 A</th>
<th>1600 A</th>
<th>1800 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø19 x 11</td>
<td>16 x 11</td>
<td>Ø 13</td>
<td>Ø 13</td>
<td></td>
</tr>
<tr>
<td>Ø15</td>
<td>19 x 11</td>
<td>20 x 80</td>
<td>20 x 20</td>
<td></td>
</tr>
</tbody>
</table>
Fuses for public distribution
Special size 2 gG fuses
from 63 to 400 A

Function
SOCOMEC fuses provide protection for low voltage distribution wiring systems. They are intended for section feeders on low voltage switchboards, high power circuits, and with network boxes and connection enclosures.

There are 2 versions of fuses:
- 115 mm bar with flexible clamp.
- 160 mm bar with secure clamp.

In addition to the fuses, a neutral link should be fitted to the neutral pole of the circuit breakers.

Advantages

In addition to the benefits of standard gG fuses (high breaking capacity, simple and reliable discrimination, guaranteed protection over time, arc containment inside the fuse during fault elimination, etc.), these fuses have extra benefits.

**Improved mechanical withstand**
SOCOMEC fuses can withstand a drop of one metre on any angle without breaking or bending out of shape. The impact resistance is 3 joules, as per standard HN 63-S-20. For this, the fuses have patented insulating gripping lugs and an insulating polyester casing.

**IP2XC**
Its IP2X protection index considerably enhances operator safety. Apart from the blades that project on either side of the fuse casing, the entire fuse is made of insulating material, including the gripping lugs. Once in place, this type of fuse ensures the IP2XC protection level for equipment, for example the TIPi low voltage feeder pillar.

**Optimum quality**
Product quality and traceability are ensured by an individual test and quality-control marking at the end of production.

**Adapted protection**
With a slightly different curve compared to a gG fuse, a HN fuse provides better protection for low overcurrents that occur especially in case of short circuit impedance (e.g. a fault on a long section of cable). See the characteristics below.

**Certified low watt loss**
Consumption for each rating is limited by standard HN 63-S-20, thus reducing operating costs.

The solution for
- Low voltage switch panels in MV/LV distribution substations
- Distribution cabinet
- Metering and connection enclosure

Strong points
- Improved mechanical withstand
- IP2XC
- Optimum quality
- Adapted protection
- Certified low watt loss

Compliance with standards
- HN 63-S-20
- IEC 60269-1-2
## References

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Blade (mm)</th>
<th>ERDF N°*</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>63&quot;</td>
<td>115</td>
<td>-</td>
<td>8115 0063</td>
</tr>
<tr>
<td></td>
<td>160</td>
<td>-</td>
<td>8160 0063</td>
</tr>
<tr>
<td>125</td>
<td>115</td>
<td>69 42 007</td>
<td>8115 0125</td>
</tr>
<tr>
<td></td>
<td>160</td>
<td>69 43 408</td>
<td>8160 0125</td>
</tr>
<tr>
<td>160&quot;</td>
<td>115</td>
<td>-</td>
<td>8115 0160</td>
</tr>
<tr>
<td></td>
<td>160</td>
<td>-</td>
<td>8160 0160</td>
</tr>
<tr>
<td>200</td>
<td>115</td>
<td>69 43 009</td>
<td>8115 0200</td>
</tr>
<tr>
<td></td>
<td>160</td>
<td>69 43 413</td>
<td>8160 0200</td>
</tr>
<tr>
<td>250</td>
<td>115</td>
<td>69 43 013</td>
<td>8115 0250</td>
</tr>
<tr>
<td></td>
<td>160</td>
<td>69 43 417</td>
<td>8160 0250</td>
</tr>
<tr>
<td>315&quot;</td>
<td>115</td>
<td>-</td>
<td>8115 0315</td>
</tr>
<tr>
<td></td>
<td>160</td>
<td>-</td>
<td>8160 0315</td>
</tr>
<tr>
<td>400</td>
<td>115</td>
<td>69 43 016</td>
<td>8115 0400</td>
</tr>
<tr>
<td></td>
<td>160</td>
<td>69 43 424</td>
<td>8160 0400</td>
</tr>
</tbody>
</table>

* Extended fuse rating to HN standard scope. Fuses designed according to HN 63-3-20 (insulating gripping lugs...) with a melting element according to IEC EN 60269 63 A fuse gG curve.

## Accessories

<table>
<thead>
<tr>
<th>Type</th>
<th>Blade (mm)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral link with insulating brackets</td>
<td>115</td>
<td>9059 0015</td>
</tr>
<tr>
<td></td>
<td>160</td>
<td>9059 0010</td>
</tr>
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</table>

## Electrical characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal current (A)</td>
<td>63, 125, 160, 200, 250, 315, 400</td>
</tr>
<tr>
<td>Rated voltage (V)</td>
<td>440</td>
</tr>
<tr>
<td>Breaking capacity (kA rms)</td>
<td>50</td>
</tr>
</tbody>
</table>
Fuses for public distribution
Special size 2 gG fuses
from 63 to 400 A

Typical HN fuse curves

<table>
<thead>
<tr>
<th>Rated current Iₐ (A)</th>
<th>2.5 Iₐ</th>
<th>≤ 4 Iₐ</th>
<th>6 Iₐ</th>
<th>≤ 20 Iₐ</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 - 200 - 250</td>
<td>1.5 A / 70 s</td>
<td>0.2 A / 5.5 s</td>
<td>0.05 A / 1.0 s</td>
<td>2 to 24 ms</td>
</tr>
<tr>
<td>400</td>
<td>7 A / 110 s</td>
<td>0.8 A / 10.0 s</td>
<td>0.2 A / 1.8 s</td>
<td>3 to 50 ms</td>
</tr>
</tbody>
</table>

HN fuse melting times are very similar to gG fuses for high overcurrents (20 Iₐ and over), but slightly quicker for overcurrents from 2.5 to 6 Iₐ.
Fuses for public distribution
Special size 2 gG fuses
from 63 to 400 A

Dimensions

115 mm blade

0.5 160 mm
## Delivery substations

Why use high-precision measurement sensors? ................................................................. p. 108
How do you guarantee the high accuracy of measurement sensors? ............................. p. 109

<table>
<thead>
<tr>
<th>Current transformers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 40 Transformer</td>
</tr>
<tr>
<td>0.5 and 0.2s class</td>
</tr>
<tr>
<td>p. 110</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Voltage transformers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage transformers</td>
</tr>
<tr>
<td>Indoor version</td>
</tr>
<tr>
<td>p. 112</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Voltage transformers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor version</td>
</tr>
<tr>
<td>p. 112</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITYS ES</td>
</tr>
<tr>
<td>1000 to 3000 VA</td>
</tr>
<tr>
<td>p. 114</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designing customised solutions: AU, current transformer, etc.</td>
</tr>
<tr>
<td>Tests and qualifications</td>
</tr>
<tr>
<td>Commissioning and maintenance contracts</td>
</tr>
<tr>
<td>For more information, See page 9.</td>
</tr>
</tbody>
</table>

For more information, See page 9.

---

**Why use high-precision measurement sensors?**

- p. 108

**How do you guarantee the high accuracy of measurement sensors?**

- p. 109
Why use high-precision measurement sensors?

Delivery substations
Above 50 kVA, commercial and industrial businesses are supplied directly with medium voltage (MV) power. The supply to the electrical installation is done via an MV/LV substation that is in close proximity to subscriber power components. The subscriber to MV electricity has cheaper prices.

The MV/LV substation belongs to the subscriber and is called a “delivery substation”. The metering equipment in this substation belongs to the utility operator.

Why use a 0.2s current transformer?
Current transformers are the first link in the metering chain and play a decisive role in ensuring overall measurement accuracy.
A high 0.2s measurement accuracy is recommended for metering functions in delivery substations because they enable metering of all energy consumption, even for low loads. For 80% of the year, the subscriber’s consumption is less than the contracted level of power rating on which the prices are based.
These high precision sensors also enable a precise analysis of subscriber consumption and facilitate fraud detection (reduction of non-technical losses).
Tomorrow, with the development of Smart Grids and Smart Cities, they will be the ideal complement to new smart meters that require greater accuracy.

0.2s accuracy class
The 0.2s accuracy class means that the measurement has an error rate of 0.2% over a range of 20 to 120% of the nominal rating (In) and a specific accuracy above 1% in (IEC 61869-2).
How do you guarantee the high accuracy of measurement sensors?

Technological expertise in cores and current transformers
The core comprises the basic element of a current transformer. The core may be iron-nickel, iron-silicon, iron-cobalt or nano-crystalline. Expertise in these different technologies means the manufacturer has control over the choice of materials depending on the required rating and footprint while ensuring high-level precision that goes even further than the 0.2s classification stipulated by IEC 61869-2. Full control over the manufacture of the core and transformer ensures the product’s technical features and quality.

Tested and qualified solutions
All our solutions are checked in our testing laboratories. Each transformer is individually tested on the production line to check and ensure the stated levels of performance. On request, these products can be delivered with individual certificates of conformity.

Customised solutions
We can meet your requirements for the following:
- Current and voltage transformers.
- High-precision AC measurement transformers, LV or MV voltage metering.
- Differential protection, differential current sensors, fault current detection and location.
- Extensive ranges of transformers:
  - split or closed,
  - multi or single ratings,
  - standard or custom ratings.

Strong points
- Technological expertise in cores and current transformers
- Tested and qualified solutions
- Customised solutions on request
Do not hesitate to contact us for more information.

Compliance with standards
- IEC 61869-2
- Customer specifications (ERDF, etc.)

Measuring and monitoring an electrical installation
For monitoring all energy flows from a substation or grid, check out our new range of measurement and monitoring equipment based on an innovative ‘Plug & Play’ concept for new and retro-fit installations; see page 21.
Current transformers
High accuracy measurement sensors from 100 to 2000 A

Function
SOCOMEC current transformers deliver a standard current to the secondary that is proportional to the primary current and adapted to the rating of the associated energy meter.

Advantages

High measuring accuracy
The very high 0.2s accuracy class guarantees maximum metering, even with low loads. An 0.2s accuracy class means that the measurement has an error rate of 0.2% over a range of 20 to 120% of the nominal current (I_n) and at a specific accuracy above 1% of I_n.

Wide dimensions choice
Three models to allow through any primary conductor, cables or bar. Please refer to the connection capacities on next page.

Multi-ratings
Multi-rating transformers offer great flexibility on installation. You can adapt the CT to the subscribed power without changing equipment. They improve the continuity of the power supply by limiting network interruptions and outages.

Easy to install
3 types of fastenings for any type of mounting:
- On back-plate or section.
- On DIN rail.
- On busbars with isolated centring system.

Easy to connect and secure
- Connection of a secondary circuit by cage terminal for 6 mm² cables.
- Double connection to adapt to the cable input direction and to short-circuit the secondary after rating change.
- Sealing cover to prevent access to the rating settings.

Other products
- Ø 40 Transformer
  0.5 and 0.2s class
- Ø 90 Transformer
  0.2s class
- 42 x 105 mm Transformer
  0.2s class

Compliance with standards
- IEC 61869-2
- Enedis-NOI-CPT_01E V5
  Technical documentation on metering

Strong points
- Enedis approved
- High measurement accuracy
- Wide dimensions choice
- Multi-ratings
- Easy to install
- Easy to connect and secure

The solution for
- Current measurement and energy metering in HV/LV substations

Other products
- SOCOMEC can also offer the following customised solutions:
  - Metering
  - Other LV ratings
  - Other dimensions
  Please ask us for further details.
Current transformers
High accuracy measurement sensors
from 100 to 2000 A

References

<table>
<thead>
<tr>
<th>Primary ratings</th>
<th>Secondary</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>100, 200, 500 A</td>
<td>5 A</td>
<td>TRAMES141</td>
</tr>
<tr>
<td>200, 500 A</td>
<td>5 A</td>
<td>TRAMES142</td>
</tr>
<tr>
<td>200, 500 A</td>
<td>5 A</td>
<td>TRAMES143</td>
</tr>
<tr>
<td>500, 1000, 2000 A</td>
<td>5 A</td>
<td>TRAMES144</td>
</tr>
<tr>
<td>500, 1000, 2000 A</td>
<td>5 A</td>
<td>TRAMES145</td>
</tr>
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</table>

Characteristics

<table>
<thead>
<tr>
<th>TRAMES141</th>
<th>TRAMES142</th>
<th>TRAMES143</th>
<th>TRAMES144</th>
<th>TRAMES145</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winding ratio</td>
<td>100-200-500/5 A</td>
<td>200-500/5 A</td>
<td>200-500/5 A</td>
<td>500-1000-2000/5 A</td>
</tr>
<tr>
<td>Connection</td>
<td>S2 - S1: 500/5 A</td>
<td>S2 - S3: 200/5 A</td>
<td>S2 - S3: 200/5 A</td>
<td>S2 - S3: 2000/5 A</td>
</tr>
<tr>
<td>Output power (VA)</td>
<td>3.75</td>
<td>7.5</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. primary voltage</td>
<td>( U_{\text{max}} = 0.72 \text{ kV} )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withstand voltage rated to industrial-level frequency</td>
<td>( U_i = 3 \text{ kV} )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy class</td>
<td>0.5</td>
<td>0.2s</td>
<td>0.2s</td>
<td>0.2s</td>
</tr>
<tr>
<td>Operating conditions</td>
<td>-25 to +70°C ; &lt;100% HR</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Connection

<table>
<thead>
<tr>
<th>TRAMES141 - TRAMES142</th>
<th>TRAMES143 - TRAMES144</th>
<th>TRAMES145</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary circuit conductor</td>
<td>one Ø 40 mm cable or two 50 x 5 mm busbars</td>
<td>one Ø 90 mm cable or three 100 x 5 mm busbars</td>
</tr>
</tbody>
</table>

Dimensions

<table>
<thead>
<tr>
<th>TRAMES141 - TRAMES142</th>
<th>TRAMES143 - TRAMES144</th>
<th>TRAMES145</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (mm)</td>
<td>118</td>
<td>169</td>
</tr>
<tr>
<td>B (mm)</td>
<td>40</td>
<td>90</td>
</tr>
<tr>
<td>C (mm)</td>
<td>55</td>
<td>56</td>
</tr>
<tr>
<td>D (mm)</td>
<td>149</td>
<td>216</td>
</tr>
<tr>
<td>E (mm)</td>
<td>118</td>
<td>169</td>
</tr>
</tbody>
</table>

TRAMES141 to TRAMES144

TRAMES145

Catalogue 2018-2019
Voltage transformers
Three phase voltage transformers
outdoor and indoor version

Function
SOCOMEC-TCT designs, manufactures and sells tailor-made or standard voltage transformers type 400 V/100 V or 220 V/400 V, class 0.5 for the equipment of industrial metering systems for HVA delivery stations.

The voltage transformers are available in indoor and outdoor versions for the low voltage metering with a primary rated voltage of 230 V or 127 V and a secondary rated voltage of 57.7 V or 220 V.

Those transformers are mainly used by energy producers and energy transport companies.

Advantages

Compact and robust design
The voltage transformers have a compact and robust design. It can be used inside and outside.

Metal fasteners
The indoor version of the voltage transformer has metal fixations with handgrip system to allow a quick and easy installation. The adjustable metal fixation fits all installations.

Outside version IP66
The outdoor version of the voltage transformer is integrated into a sealed box. It is designed to withstand a humidity rate of 95 %, thanks to the IP66 design. The boxes are delivered ready to install for a greater reactivity.

Specific realisations
SOCOMEC-TCT realises as well tailor-made voltage transformers and adapt the mechanical presentation and fasteners matching your environment and special needs.

For any question, please contact us.

The solution for

- Inside use
- Outside use
- Industrial metering system for HVA delivery stations

Strong points

- Compact and robust design
- Metal fasteners
- Outside version IP66

Homologations and certifications

- Enedis certification

Conformity to standards

- EN 60439-1
- EN 60529
- EN 62262
- EN 61869-1
- EN 61869-3

Indoor version
Outdoor version

Inside use
Outside use
Industrial metering system for HVA delivery stations

Conformity to standards

- EN 60439-1
- EN 60529
- EN 62262
- EN 61869-1
- EN 61869-3

Specific realisations
SOCOMEC-TCT realises as well tailor-made voltage transformers and adapt the mechanical presentation and fasteners matching your environment and special needs.

For any question, please contact us.
Voltage transformers
Three phase voltage transformers
outdoor and indoor version

Technical characteristics

<table>
<thead>
<tr>
<th></th>
<th>Indoor</th>
<th>Outdoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>three-phase</td>
<td>three-phase</td>
</tr>
<tr>
<td>Three-phase operating voltage</td>
<td>400 V between phases</td>
<td>200 V between phases</td>
</tr>
<tr>
<td>Single-phase operating voltage</td>
<td>230 V between phase and neutral</td>
<td>127 V between phase and neutral</td>
</tr>
<tr>
<td>Max. isolation voltage</td>
<td>0.72 kV</td>
<td>0.72 kV</td>
</tr>
<tr>
<td>Primary voltage</td>
<td>400 V/√3 V between phase and neutral, i.e. 230 Vrms</td>
<td>220 V/√3 V between phase and neutral, i.e. 127 Vrms</td>
</tr>
<tr>
<td>Secondary voltage</td>
<td>100 V/√3 V between phase and neutral, i.e. 57.7 Vrms</td>
<td>400 V/√3 V between phase and neutral, i.e. 220 Vrms</td>
</tr>
<tr>
<td>Precision class</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Precision power</td>
<td>15 VA</td>
<td>7.5 VA</td>
</tr>
<tr>
<td>Power in thermal held</td>
<td>≥ 100 VA</td>
<td>≥ 100 VA</td>
</tr>
<tr>
<td>Heating voltage</td>
<td>1.2 Un</td>
<td>1.2 Un</td>
</tr>
<tr>
<td>Isolation class</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 Hz</td>
<td>50 Hz</td>
</tr>
<tr>
<td>Working temperature</td>
<td>-25 ... +40 °C</td>
<td>-25 ... +40 °C</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>level 3</td>
<td>level 3</td>
</tr>
<tr>
<td>Weight – indoor version</td>
<td>11.5 kg (TRAMES160)</td>
<td>12.5 kg (TRAMES160)</td>
</tr>
<tr>
<td>Weight – outdoor version</td>
<td>12.5 kg (TRAMES183)</td>
<td>12.5 kg (TRAMES197)</td>
</tr>
</tbody>
</table>

Dimensions (mm)

Indoor version

Outdoor version

References

<table>
<thead>
<tr>
<th>Model</th>
<th>Version</th>
<th>Reference</th>
</tr>
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<tbody>
<tr>
<td>Voltage transformer</td>
<td>indoor</td>
<td>TRAMES160</td>
</tr>
<tr>
<td>Voltage transformer</td>
<td>outdoor</td>
<td>TRAMES183</td>
</tr>
<tr>
<td>Voltage transformer</td>
<td>outdoor</td>
<td>TRAMES197</td>
</tr>
</tbody>
</table>
High protection and high availability

- The ITYS ES series is a range of compact UPS systems available in 1000, 2000 and 3000 VA models with on-line double conversion technology (VFI) with sinusoidal absorption.
- ITYS ES guarantees permanent regulation of the output voltage and frequency. This technology is compatible with all IT and industrial applications and operating environments, installations with generator sets included.
- Wide tolerance on input voltage ensures that switchovers to battery mode are infrequent, significantly prolonging battery lifetime.
- The automatic bypass device switches over in zero time in the event of overload or failure, guaranteeing uninterrupted services.

Operating efficiency and versatility

- The versatility of these models makes them suitable for protecting critical devices in the industrial field.
- The standard equipment and communication accessories have been specially designed to satisfy the typical needs of installation or use in transformer cabins (i.e. tropicalized boards).
- In situations where automatic power management procedures are required, the communication software can be used to programme scheduled start-up and shutdown times.
- Restarting the UPS from the battery to power the DG before closing the main isolator.

Straightforward to install and easy to use

- The UPS is shipped ready for connection with internal batteries connected and charged.
- ITYS ES, with the manual bypass option is easy to install without any special plant engineering preparation, as it is equipped with built-in thermal protection.
- The LCD monitoring/control panel and a buzzer make the equipment extremely easy and intuitive to use. The graphic indicating the power distribution path shows at a glance whether or not the system is working as it should.
- Battery efficiency can be tested via the control panel or using dedicated software.

The solution for

- Control devices
- Electric lines

Technology

- VFI "online double conversion"

Certifications

- RoHS COMPLIANT

Tech info

The Italian CEI 016 STANDARD for auxiliary cabin equipment requires an uninterrupted power supply to the control circuits for the General Protection and Medium Voltage Switch.

The control circuits for the General Protection, Medium Voltage Switch and coil must be powered by the same auxiliary voltage when there is no power. The power supply must be guaranteed for a back-up time of 1 hour, either by the UPS or by buffer batteries.

The Medium Voltage Switch must be powered up by skilled personnel if out of service for a long time due to maintenance or failure. It is necessary to power the General Protection before closing the Medium Voltage Switch.

The required protection comprises:
- Mains power cuts due to poor maintenance of the user’s system.
- Inappropriate tripping of the Medium Voltage Switch because of faults in the trip circuit.
- Alert signalling if the Medium Voltage Switch trips due to a power failure (system with regular maintenance).
UPS - Technical data

<table>
<thead>
<tr>
<th>Sn [VA]</th>
<th>ITYS ES</th>
<th>Pn [W]</th>
<th>INPUT</th>
</tr>
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<tbody>
<tr>
<td>1000</td>
<td>2000</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>1600</td>
<td>2400</td>
<td></td>
</tr>
</tbody>
</table>

Input/output: 1/1

**OUTPUT**

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>230 V (110÷300 V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Power factor</td>
<td>0.98</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>208 / 220 / 230 / 240 V (± 2 %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated frequency</td>
<td>50 / 60 Hz (45÷55 Hz / 54÷66 Hz)</td>
</tr>
<tr>
<td>Overload</td>
<td>up to 150 % for 10 seconds</td>
</tr>
<tr>
<td>Crest factor</td>
<td>3:1</td>
</tr>
<tr>
<td>Wiring</td>
<td>3 x IEC 320 (C13) 6 x IEC 320 (C13) 4 x IEC 320 (C13) + terminals</td>
</tr>
</tbody>
</table>

**BATTERIES**

- Type: sealed lead-acid maintenance free - expected lifetime 3-5 years
- Back-up time at 75% of the rated load(1): 10 minutes 17 minutes 9 minutes
- Sized for a back-up time of: 115 minutes @ 50 W 154 minutes @ 100 W 216 minutes @ 150 W
- Back-up time(2) + switching back on: 60 minutes @ 50 W 60 minutes @ 100 W 60 minutes @ 150 W
- Battery test: •

**COMMUNICATION**

- Interfaces: RS232 - USB
- Ethernet adapter: NET VISION (TCP / IP & SNMP) optional card
- Local communication software: Local View

**EFFICIENCY**

- Online mode: up to 92%

**ENVIRONMENT**

- Ambient service temperature: from 0 °C up to +40 °C (from 15 °C to 25 °C for maximum battery lifetime)
- Relative humidity: < 95 % non-condensing
- Maximum altitude: 1000 m without de-rating
- Noise level at 1 m: < 50 dBA

**UPS**

- Dimensions W x D x H: 145 x 400 x 220 mm 192 x 460 x 347 mm
- Weight: 13 kg 31 kg 60 kg
- Degree of protection: IP20

**COMPLIANCE WITH STANDARDS**

- Safety: IEC/EN 62040-1, AS 62040.1.1, AS 62040.1.2
- EMC: IEC/EN 62040-2, AS 62040.2
- Product declaration: CE, RCM (E2376)

**UPS - Manual bypass**

<table>
<thead>
<tr>
<th>Sn [VA]</th>
<th>ITYS ES</th>
<th>Pn [W]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>2000</td>
<td>3000</td>
</tr>
</tbody>
</table>

**INPUT**

- Type of terminals: CBD6
- Wire size: 6 mm² max

**BYPASS**

- Switching positions: 1: UPS - 2: MAINS
- Switching time: 6 ms max

**LOAD OUTPUT**

- Type of terminals: CBD6
- Wire size: 6 mm² max

**UPS SUPPLY OUTPUT**

- Type of socket: IEC 320 10 A IEC 320 16 A

**SURGE ARRESTORS** (on request)

- Type: "L" in compliance with CEI EN 61643-11
- L/N pulse current: 40 kA (8/20) max
- VAC N/GND: 255 V max
- VAC L/N: 320 V max

---

(1) @ 25 °C with charged battery.
(2) Factory setting: back-up time limited to 60 minutes to permit subsequent restarting with battery.
(3) Upon request.

**Standard communication features**

- LOCAL VIEW: ideal UPS monitoring and shutdown point-to-point solution for Windows®, Linux and Mac OS X® operating systems.
- MODBUS/JBUS RTU (RS 232).

**Communication options**

- NET VISION: professional WEB/SNMP interface for UPS monitoring and shutdown management of several operating systems.
- Dry contact interface.

**Manual bypass (option)**

- Specially designed for ITYS ES, the manual bypass option enables:
  - simplified installation: connection to the system is made with industrial grade terminals, while connection to the UPS is via the pre-wired plug and socket supplied.
  - easy maintenance and uninterrupted operation: thanks to the manual bypass isolator it is possible to service or replace the UPS while maintaining the power supply to the devices downstream in complete safety for the operator. This operation has been specially devised to be simple to carry out, even in an emergency.
  - increased level of equipment immunity to surge voltages, typical for this type of application, thanks to suitable surge arrestors included in addition to standard UPS protection.
Terminal distribution

Load break switches

*Sirco VM*
Load break switches with visible breaking

Current transformers

High accuracy measurement sensors

Enclosures

Reinforced urban cabinets

Services

- Designing customised solutions: AU, current transformer, etc.
- Tests and qualifications.
- Commissioning and maintenance contracts.
- For more information, see page 9.

Find out more

Discover our certified products for power-monitored enclosures (ex-yellow tariff):

- 100 and 200 A Load break switches, see page 120.
- 0.2s current transformers, see page 124.
### Selection guide

**Switching and protection ranges for power distribution**

Active in the electrical switchgear market since 1922, SOCOMEC is both a global leader and an undisputed benchmark reference. Our range of load break switches is one of the widest on the market today.

### Load break switches

<table>
<thead>
<tr>
<th>Function</th>
<th>SIRCO M 16 to 125 A</th>
<th>SIRCO 125 to 5000 A</th>
<th>SIRCO AC 200 to 4000 A</th>
<th>SIRCO VM 63 to 250 A</th>
<th>SIDER 125 to 1600 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4-pole load break switch</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>6/8-pole load break switch</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Fuse disconnect switch</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>SIRCO M 16 to 125 A</th>
<th>SIRCO 125 to 5000 A</th>
<th>SIRCO AC 200 to 4000 A</th>
<th>SIRCO VM 63 to 250 A</th>
<th>SIDER 125 to 1600 A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breaking</strong></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Fully visible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Rotary handle operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By lever (bogge)</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Via tripping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motorised</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Direct control handle</strong></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Front</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Side</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Via a panel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>External operation handle</strong></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Front</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right side</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left side</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### For monitored power connection enclosures (ex-yellow tariff)

Discover our certified load break switches for these connection enclosures:
- 200 A Enclosure: SIRCO VM2 200 A 4-pole (ref. 25TJ4020)
- 100 A Enclosure: SIRCO M 100 A 4-pole (ref. 22TJ4010)

These 4-pole devices are supplied complete with handle and terminal shrouds.
SOCOMEC has always promoted the benefits of fuse-based protection for both personal and equipment safety. Particularly suitable for public distribution networks, fuse-based protection offers real advantages over the circuit breaker.

### What kind of operation?

<table>
<thead>
<tr>
<th>Fuse protection</th>
<th>SIDERMAT 250 to 1800 A</th>
<th>FUSERBLOC 20 to 1250 A</th>
<th>FUSOMAT/SIDERMAT fuse-combination switches 250 to 1800 A</th>
<th>RM - RMS 32 to 100 A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SIDERMAT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>FUSERBLOC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>FUSOMAT/SIDERMAT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>RM - RMS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### The solution for

- Distribution cabinets, road-side cabinets
- Subscriber enclosures

### Strong points

- Reliability
- Safety of property and persons
- Wide range of standard and custom load break switches, complete accessory sets
- Easy to install and implement devices

### Compliance with standards

- IEC 60947-3, EN 60947-3
- IEC 60269-1-2
- EN 60269-1-2

### To find out more

- Discover the complete range of SOCOMEC switchgear

---

**Effective protection for your electrical networks**

Discover the range of fuses for public energy distribution that fully conform to specification HN 63-S-20. See page 102.
**SIRCO VM**

Load break switches with visible breaking from 63 to 250 A

---

**Function**

SIRCO VM are manually operated modular multipolar load break switches. They assure on-load making and breaking and provide safety isolation for any LV circuit.

**Advantages**

**Reliability and performance**

The double breaking per pole, achieved through its sliding bar contact system, is a proven design that offers very high durability and short-circuit withstand. The quick opening and rapid closure of the SIRCO’s contacts, combined with specifically designed arcing chambers, provides the SIRCO AC with improved breaking performance.

**Improved safety**

Thanks to the double visible breaking, the operator can visually check the status of the device during preventive checks before working on the installation.

**Extensive range**

The SIRCO VM range is very extensive; from 63 A to 250 A, 3 and 4 poles, with many accessories.

**General characteristics**

- Positive break indication
- Visible double break per phase
- DIN-rail mounting, panel or modular panel with 46 mm front cut out
- Device and IP20 accessories.
- Severe load duty categories (AC-22 and AC-23).

---

**Reinforced protection in connection enclosures**

SIRCO VM units with visible breaking are particularly suitable for connection enclosures. They allow the operator to safely isolate the top network system from the reserved bottom system. The visible breaking enables additional visual checks before intervening.

200 A Enclosure: SIRCO VM2 200 A 4-pole, ref. 25TJ4020.

---

**The solution for**

- Distribution cabinet
- Subscriber enclosures

**Strong points**

- Reliability
- Increased safety with visible breaking
- Wide range

**Compliance with standards**

- IEC 60947-3, EN 60947-3
- VDE 0660-107 (1992)

**Certifications.**

- GOST (Russia)
- BBJ (Poland)
- Lloyd’s Register of Shipping
- CEEBEC (Belgium)
- LOVAG/ASEFA
- KEMA
- CCA
- PSA E03.15.605.G
- RENAULT EB03.15.613
Load break switches with visible breaking
from 63 to 250 A

References

Front operation(1)

<table>
<thead>
<tr>
<th>Switch body</th>
<th>N° of poles(2)</th>
<th>Switch body for front operation</th>
<th>Direct operation handle</th>
<th>External operation handle</th>
<th>Shaft for external operation</th>
<th>Auxiliary contact</th>
<th>Terminal shrouds(3)</th>
<th>Cage terminals with cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM1 63 A</td>
<td>3 P</td>
<td>2500 3006</td>
<td>Black 2599 5012(2)</td>
<td>Type S1 1411 2111</td>
<td>200 mm 1402 0820(2)</td>
<td>1st contact NO/NC Type A 2999 0001(2)</td>
<td>built-in</td>
<td>built-in</td>
</tr>
<tr>
<td>VM1 80 A</td>
<td>4 P</td>
<td>2500 4006</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM1 100 A</td>
<td>3 P</td>
<td>2500 3008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM1 125 A</td>
<td>4 P</td>
<td>2500 4008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM1 160 A</td>
<td>3 P</td>
<td>2500 3010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM1 200 A</td>
<td>4 P</td>
<td>2500 4010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM1 250 A</td>
<td>3 P</td>
<td>2500 3011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM1 315 A</td>
<td>4 P</td>
<td>2500 4011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM2 160 A</td>
<td>3 P</td>
<td>2500 3016</td>
<td>Black 2599 5022(2)</td>
<td>Type S1 1413 2111</td>
<td>320 mm 1402 0832</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM2 200 A</td>
<td>4 P</td>
<td>2500 4016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM2 250 A</td>
<td>3 P</td>
<td>2500 3020</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM2 315 A</td>
<td>4 P</td>
<td>2500 4020</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM2 400 A</td>
<td>3 P</td>
<td>2500 3025</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM2 500 A</td>
<td>4 P</td>
<td>2500 4025</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM2 630 A</td>
<td>3 P</td>
<td>2500 3030</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM2 800 A</td>
<td>4 P</td>
<td>2500 4030</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM2 1000 A</td>
<td>3 P</td>
<td>2500 3035</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VM2 1250 A</td>
<td>4 P</td>
<td>2500 4035</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Side operation: please ask us.
(2) Standard.
(3) 6 or 8-pole modules: please ask us.
(4) For 2 aux. contacts, order reference 2599 0001 twice.
(5) Top/bottom

Accessories

Direct operation handle

Rating (A) | Handle colour(3) | Reference |
-----------|------------------|-----------|
VM1 63 A ... VM1 125 | Black | 2599 5012 |
VM2 160 A ... VM2 250 | Black | 2599 5022 |

(1) Red handle: please ask us.

External operation handle

Use

The door’s interlocked external operation handle includes a padlockable handle and plate, and must be used with an extension shaft.

External front operation

Rating (A) | Handle colour | Reference |
-----------|---------------|-----------|
63 ... 250 | Black         | 1411 2111(3) |

(1) Standard.
Load break switches with visible breaking
from 63 to 250 A

Accessories (continued)

Shaft extension for external front operation

Use
Standard width for external operation:
- 200 mm.
- 320 mm.
- 400 mm.
Other widths available - please ask us.

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Side X (mm)</th>
<th>Real length (mm)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>63 … 250</td>
<td>96 … 260</td>
<td>200</td>
<td>1402 0820</td>
</tr>
<tr>
<td>63 … 250</td>
<td>96 … 380</td>
<td>320</td>
<td>1402 0832</td>
</tr>
</tbody>
</table>

Top/bottom terminal shrouds

Use
Top or bottom protection against direct contact with terminals or connection parts.

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>Position</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>160 … 250</td>
<td>top/bottom</td>
<td>2594 4020</td>
</tr>
</tbody>
</table>

Cage terminals with cover

Use
Direct connection of cables without terminal lugs, as well as top and bottom protection against direct contact with terminals or connection parts.

Characteristics
- Size capacity from 10 to 95 mm² for rigid cables or 70 mm² for flexible cables.
- Top or bottom mounting terminations.

<table>
<thead>
<tr>
<th>Rating (A)</th>
<th>N° of poles</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>160 … 250</td>
<td>3 P</td>
<td>2593 3020</td>
</tr>
<tr>
<td>160 … 250</td>
<td>4 P</td>
<td>2593 4020</td>
</tr>
</tbody>
</table>
Characteristics according to IEC 60947-3

<table>
<thead>
<tr>
<th>Thermal insulation $I_{th}$ (40°C)</th>
<th>VM1 63 A</th>
<th>VM1 80 A</th>
<th>VM1 100 A</th>
<th>VM1 125 A</th>
<th>VM2 160 A</th>
<th>VM2 200 A</th>
<th>VM2 250 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated impulse withstand voltage $U_{imp}$ (kV)</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Rated operational currents $I_s$ (A)

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>Operating category</th>
<th>A/B(1)</th>
<th>A/B(1)</th>
<th>A/B(1)</th>
<th>A/B(1)</th>
<th>A/B(1)</th>
<th>A/B(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 VAC</td>
<td>AC-21 A / AC-21 B</td>
<td>63/63</td>
<td>80/80</td>
<td>100/100</td>
<td>125/125</td>
<td>160/160</td>
<td>200/200</td>
</tr>
<tr>
<td>400 VAC</td>
<td>AC-22 A / AC-22 B</td>
<td>63/63</td>
<td>80/80</td>
<td>100/100</td>
<td>125/125</td>
<td>160/160</td>
<td>200/200</td>
</tr>
<tr>
<td>400 VAC</td>
<td>AC-23 A / AC-23 B</td>
<td>63/63</td>
<td>63/63</td>
<td>63/63</td>
<td>160/160</td>
<td>200/200</td>
<td>200/200</td>
</tr>
</tbody>
</table>

Conditional rated short-circuit current with gG DIN fuse

| Prospective short-circuit (kA rms)(5) | 100 | 100 | 100 | 50  | 50  | 50  | 50  |
| Associated fuse rating (A)(5)       | 63  | 80  | 100 | 125 | 160 | 160 | 160 |

Short-circuit capacity

| Rated short-time withstand current 1 s. $I_{sw}$ (kA rms) | 2.5  | 2.5  | 2.5  | 2.5  | 4   | 4   | 4   |
| Rated short-circuit making capacity (kA peak)(5)       | 12   | 12   | 12   | 12   | 16  | 16  | 16  |

Connection

| Minimum Cu cable cross-section | 4    | 4    | 4    | 4    | 10  | 10  | 10  |
| Maximum Cu rigid cable cross-section (mm²) | 50   | 50   | 50   | 50   | 95  | 95  | 95  |
| Tightening torque min (Nm)       | 6    | 6    | 6    | 6    | 9   | 9   | 9   |
| Maximum Cu busbar width (mm)     | -    | 20   | 20   | 20   | 20  | 20  | 20  |

Mechanical specifications

| Durability (number of operating cycles) | 20,000 | 20,000 | 20,000 | 20,000 | 10,000 | 10,000 | 10,000 |
| Weight of a 3-pole device (kg)         | 0.6/0.8| 0.6/0.8| 0.7/0.9| 0.7/0.9| 0.9/1.1| 0.9/1.1| 0.9   |
| Weight of a 4-pole device (kg)         | 0.7/0.9| 0.7/0.9| 0.8/1  | 0.8/1  | 1/1.2  | 1/1.2  | 1     |

Dimensions

**SIRCO VM1 from 63 to 80 A**

Direct front operation - 3 and 4-pole

External front operation

1. 12 x 17.5 mm modules.

**SIRCO VM2 200 to 250 A**

Direct front operation

External front operation

1. Terminal cage (accessories).
2. Terminal covers (accessories).
Current transformers
150/5 A measurement sensors of 0.2s accuracy class

Function
This high-accuracy, HV current transformer is used in the low-voltage, metering cabinets (36 to 100 kVA). SOCOMEC current transformers deliver a standard current to the secondary that is proportional to the primary current and adapted to the rating of the associated energy meter.

Advantages

High measuring accuracy
The very high 0.2s accuracy class guarantees maximum metering, even with low loads. A 0.2s accuracy class means that the measurement has an error rate of 0.2% over a range of 20 to 120% of the nominal rating (In) and at a specific accuracy above 1% of In (IEC 61869-2). For more information, see page 108.

Safe to install
This transformer is integrated on a plate designed especially for this application. A foolproof coding device prohibits any directional error from the primary conductor.

The solution for
- ENEDIS LV metering cabinets (36 to 100 kVA)

Strong points
- High measurement accuracy
- Safe mounting
- Fast safe connection

Compliance with standards
- IEC 61869-2
- ENEDIS-NOI-CPT_01E V5
- Technical documentation on metering

Other products
- SOCOMEC also offers the following customised solutions:
  - Other LV ratings
  - Other dimensions
Please ask us for further details.
Current transformers
150/5 A measurement sensors of 0.2s accuracy class

References

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<th>Description</th>
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Characteristics

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<tr>
<td>Winding ratio</td>
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<tr>
<td>Output power (VA)</td>
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<tr>
<td>3.75</td>
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<td>Frequency</td>
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<td>50 – 60 Hz</td>
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<tr>
<td>Max. primary voltage</td>
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<td>Umax = 0.72 kV</td>
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<tr>
<td>Withstand voltage rated to industrial-level frequency</td>
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<td>Ui = 3 kV</td>
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<td>0.2s according to IEC 60044-1</td>
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<td>Safety factor</td>
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<td>3</td>
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<td>Operating conditions</td>
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<td>-25 to +70°C ; &lt;100% HR</td>
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Dimensions

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Catalogue 2018-2019
Reinforced urban cabinets
Suitable for urban environments

Function
With over 40 years of experience in the design of enclosures and cabinets, SOCOMEC has developed a complete range of enclosures to protect outdoor equipment against vandalism.

Advantages

Anti-vandal
Made from painted stainless sheet steel, these cabinets offer maximum resistance to first-level mechanical abuse, with door reinforcements and adapted locks and latches.
Treated with special varnish, they are graffiti and sticker-proof.

Patented closure system
An 8-point door latch system prevents the risk of intrusion (Fig. 1).
The lock is a 2-key lock (Fig. 2):
- 1 x ½ cylinder key, DIN 18252, key number to be confirmed for locking/unlocking
- 1 x 8-mm spanner key to operate the closing mechanism
This is camouflaged by an anti-burglar cover with fingerprint lock.

Uninterrupted power
The chassis design means you can install and uninstall the enclosure without having to shut off the power to the equipment.

Flexible configuration
With these scalable solutions, Socomec can adapt the solution to best suit your requirements. Do not hesitate to contact us for more information.

The solution for
- Anti-vandal, urban distribution cabinet
- Public signalling and lighting cabinet

Strong points
- Anti-vandal
- Patented closure system
- Uninterrupted power
- Flexible configuration

Compliance with standards
- IEC 62208
Reinforced urban cabinets

Suitable for urban environments

Technical characteristics

Enclosure
- Single-unit stainless steel enclosure with a wall thickness of 2 mm, sloped roof to ensure excellent resistance to extreme weather conditions (corrosion, UV, frost, rain, etc.).
- Varnished, anti-graffiti and anti-sticker finish.
- Polyester textured paint, standard colour RAL 7035.
- IP43 with louvering on the rear upper part, IK10.
- Centre post can be removed without tools.
- Stainless steel document door.

Chassis
- Steel EZ chassis, thickness 2.5 mm, colour RAL 7035.
- 4 ‘C’ rails; 2 welded and 2 removable.
- 4 fixing points on the base.
- 4 fixing points on the jacket.

Base
- Stainless steel base, 2-mm thick, colour RAL 7035 (except feet).
- Side legs to raise/lower, height-adjustable (400 mm), to embed in concrete.

Optional
- Wiring arrangement defined by the customer.
- Other colours.
- Other dimensions.
- Lifting parts of the enclosure.
- Enclosure without upper louvering (IP44).

Dimensions and references

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<th>N° of doors</th>
<th>Fixing spacers (mm)</th>
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<td>Type 1 400 A provisional feeder unit</td>
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<td>Floor anchoring for 4-feeder panel</td>
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Other article references: please consult us.
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<td><strong>Critical Power / Power Control &amp; Safety</strong></td>
<td><strong>Energy Efficiency</strong></td>
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