

RAILWAY APPLICATIONS

Your advanced LV power solutions



When **energy** matters

 **socomec**
Innovative Power Solutions

Your challenges

Recognition of the importance of sustainable development is having a positive effect on government investment in rail and other mass transportation infrastructure. At Socomec we understand the unique and rapidly changing demands of rail operating environments; we have engineered the latest power solutions to ensure that your systems deliver optimum performance today - and tomorrow.

→ Enhancing sustainable mobility

The population boom, rapid urbanization and sustainable development are all factors driving the growing demand for rail transport. Such transport will help reduce road, air and urban congestion as well as pollution and accidents.

Key concerns:

- ensuring the safety of passengers and operative personnel,
- meeting requirements of reliability for electrical facilities in order to prevent failures,
- ensuring maximum availability of the power supply.



→ Improving network performance

The continued investment by businesses is necessary to galvanise and optimise the railway infrastructure. The modernisation of networks and the reduction in operating costs will improve traffic capacity and overall network quality.

Key concerns:

- finding the right balance between cost-effective performance and operating continuity,
- innovating with new control systems and increased monitoring of networks.



→ Reducing environmental impacts

Human and industrial activity result in adverse effects on the ecosystem. An eco-friendly company is committed to an environmental policy that protects the health and safety of persons and the environment.

Key concerns:

- reducing pollution and CO₂ emissions,
- optimising energy consumption.



→ Developing connections and interoperability

The development of railway lines, the interoperability of networks and safety reflect the determination to connect up with other territories.

Key concerns:

- linking up with networks outside of the country,
- ensuring the development of rail freight in a competitive market.



Our responses



Safety

Ensuring the safety of persons and the infrastructure

- To protect passengers, operative personnel and facilities.
- To secure the power supply to all critical systems, emergency and control systems, networks, signalling, rolling stock and stations.
- To provide solutions covered by manufacturer warranty that are certified, approved, tried and tested... and durable.



Quality

Ensuring the quality of service and passenger satisfaction

- To ensure the high availability of traction power and on-board equipment.
- To ensure the reliability of communication, monitoring and passenger information systems.



Efficiency

Ensuring high levels of performance to optimise competitiveness

- To combine energy saving and high availability for optimised and lasting facilities.
- To measure and monitor the flow of electricity in real time.
- To meet requirements with innovative and scalable solutions.



Simplicity

Facilitating the operation of your networks

- To provide technical expertise in the design and implementation of custom solutions.
- To offer reliable and robust solutions for harsh operating environments.
- To minimise and simplify maintenance procedures to ensure operational continuity.



Power & Energy Performance for railway applications

Socomec, your best asset



Socomec, a family-owned manufacturer for over 90 years is an industrial group with a workforce of 3,600 employees around the world.

As specialists in providing solutions for power control, safety, performance and availability of low voltage energy, Socomec can fully meet the requirements of the industrial and large-scale service sector.

With nearly 10% of sales revenue ring-fenced for R&D, our company has a key asset: the capacity to offer custom products, solutions and services.

Our adapted solutions to your applications

Ever attentive to your requirements, Socomec offers you services, products and customised solutions, whatever your constraints.

Our expertise in electrical power allows us to offer solutions for key applications in any electrical railway facility.



Discover the entire range
of Socomec solutions
on our website.

Signalling

Solutions for:

- securing the power supply to control and monitoring systems,
- ensuring high quality power,
- protecting operative personnel and facilities,
- keeping maintenance to a minimum,
- monitoring LV equipment in real time and alerts.

Traction power

Solutions for:

- securing the power supply to control and monitoring systems,
- ensuring the high availability of LV power,
- improving the safety of operating personnel and facilities,
- monitoring the LV network in real time and alerts.

Services

Socomec offers a range of services and will provide technical support throughout your project for the enhanced durability of your equipment:

- assessment of your requirement for a personalised solution,
- implementation of the solution and training for operatives,
- prevention, consultancy and efficient technical call-outs,
- optimising the performance of your equipment to help you reach your energy targets with confidence.

Buildings

Solutions for:

- securing the power supply to all critical systems,
- ensuring the high availability and quality of power in IT rooms and datacentres,
- protecting persons and facilities,
- optimising energy performance.

Energy efficiency

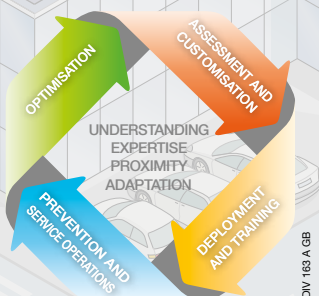
Solutions for:

- optimising the facilities energy performance,
- reducing operating costs,
- reducing environmental impacts.

Rolling stock

Solutions for:

- ensuring high availability of the power supply to on-board equipment,
- protecting on-board systems,
- controlling the power supply electronics for electric motors.



Our LV solutions for railway infrastructure...



Solutions for traction power

For power supply networks for catenary systems and overhead contact lines (OCL), including substations.

For securing the power supply to control and monitoring systems and ensuring high availability of the LV energy, we offer Uninterruptible Power Supplies (UPS or inverters) and DC rectifiers.

Our switchgear and protection solutions integrated in AC or DC protective enclosures are approved by the French rail network.

For main lines, for example, they ensure protection of the batteries or auxiliary power supplies. For urban transport systems, we offer cable terminal disconnect switches (CTD), line isolation disconnect switches (LID), cleaning channel isolation disconnect switches (CCID), and emergency storage siding switches (ESS).

Our energy measurement systems monitor the LV network parameters in real time, with communication gateways, data loggers and embedded web server.

These solutions can meet special requirements such as applications for outdoor use in severe weather conditions or with special fire-resistance features specifically for underground rail networks. Do not hesitate to contact us for more information.

Remote Control Isolation Switch Enclosure (ISE)



COFF 382 A

A solution that integrates a SIRCO MOT motorised load break switch.

Installed along tram lines, this enclosure assures the isolation of part of the 750 VDC line under temporary services in case of an operating incident.

For solutions > 750 VDC, please contact us.



Solutions for signalling

For signal boxes, track beacons, lights, signalling substations and safety systems.

The LV power supply and quality of energy are assured by UPS equipment (with or without transformer), associated distribution cabinets, DC rectifiers and energy converters.

Our switching, protection and source transfer solutions are available in enclosures or can be integrated in power supply cabinets on main lines (such as ARAL, ARMATAN and ALIZET on the French network), or in switching enclosures. Our solutions have also been approved for use in the London Underground.

The automatic source transfer switch with integrated bypass is used for track signalling (e.g. normal/emergency/rescue).

Depending on the type of installation, insulation monitoring devices (IMD) will also be necessary.

To monitor LV equipment in real time and to send alerts, energy measurement and monitoring systems are installed, together with communication gateways, data loggers and embedded web server.

MASTERYS IP+ Rail Uninterruptible Power Supply (UPS), from 10 to 80 kVA

Network Rail
Certificate of acceptance
PA 05/05998



MASTE 076 A

Having high quality energy available at any given moment is vital for all the railway signalling equipment. Installed in signalling stations, this solution assures the supply and protection of the main critical signalling applications.



Solutions for buildings

For specific systems in main line and urban stations: telecommunications and passenger information, safety, tickets.

For all service and critical buildings: IT rooms, datacentres, emergency lighting, PV production.

Critical applications are protected by UPS equipment, DC/AC converters, Static Transfer Systems (STS) and rectifiers.

LV installations are protected by switching, isolation and automatic transfer equipment, as well as fuse-based protection, insulation control and electronic protection devices.

For optimising energy performance in buildings, we offer a complete range of products, from measurement devices through to energy management software packages.

We also offer specific products designed for PV installations, comprising inverters, DC and AC protective devices as well as energy storage solutions.

MODULYS GP high output Uninterruptible Power Supply (UPS), from 25 to 600 kW

MODULYS GP is the new generation



of modular UPS designed to meet the needs of the rail infrastructure for maximum power availability, cost optimisation and adaptability to unpredictable power demand. It ensures absolute operational continuity while providing your infrastructure with the flexibility to deal with short-term capacity and long-term growth, with rapid implementation and excellent cost control.

... and for rolling stock



Solutions for on-board systems

Our specific on-board switching and protection offering fully complies with rolling stock standards, especially in terms of resistance to fire, shock and vibrations.

Adapted source transfer switches are used in order to ensure the high availability of on-board power.

LV installations are protected by our switching and protection solutions.

Measurement devices enable the monitoring of the main electrical parameters.

High voltage pulse transformers with high voltage withstand are used, for example, to control the thyristors used in supplying power to electric motors.

High frequency transformers are used for controlling the IGBTs.

ATYS S, from 40 to 125 A Remotely operated Transfer Switch



For trams, this changeover switch can transfer to the battery source in case of fault or loss of traction power.

This specially designed on-board equipment is light and has a small footprint.

A complete offer to meet your requirements

→ Power quality and availability

Socomec is on hand with its expertise in high availability power supplies and offers you a wide range of UPS equipment from 600 VA to 5400 kVA (with or without integrated transformer), as well as a range specially designed for railway applications.

Uninterruptible power supplies (UPS)



MASTERYS GP
DELPHYS GP
MODULYS GP



MASTERYS IP+
MASTERYS IP+ RAIL



DELPHYS MP Elite
DELPHYS MX

AC/DC rectifiers and DC/AC converters



SHARYS IP

→ Protection, switching and source transfer

Active in the electrical switchgear market since 1922, Socomec is both a global leader and an undisputed benchmark reference. Our ranges of AC and DC load break switches from 125 to 5000 A and transfer switches from 40 to 6300 A are today the biggest on the market.

Switching and isolation



SIRCO



SIDER



FUSERBLOC



FUSOMAT

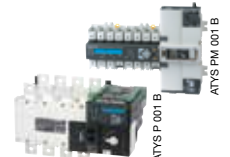


gG and AM
Industrial fuses

Changeover switches



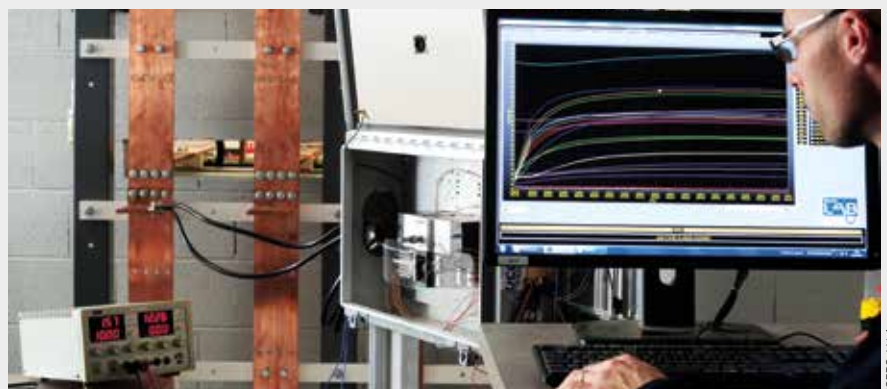
SIRCOVER



ATYS

One of the most modern power testing laboratories in Europe

Tesla Lab - Power Testing and Certification has guaranteed the reliability and compliance of Socomec products since 1965. Accredited by COFRAC, UL (CTDP), CSA and DEKRA (WMT), it also works in partnership with certification organisations such as ASEFA and LOVAG to ensure that the safety and quality requirements in specific countries are addressed fully.



Supporting you in your approach to sustainable development

Reducing the impact on the environment is a key concern of railway systems.

Responsible businesses operating in the rail sector play a vital role in the energy transition. They are able to implement energy efficiency policies, including critical facilities, and even become a producer of renewable energy.

→ Encouraging an energy efficiency approach

As recognised specialists in energy efficiency for over 20 years, Socomec offers a complete range of solutions and provides technical support in this approach for:

- reducing your energy bills,
- affirming your green credentials,
- improving and maintaining the energy efficiency of your facilities,
- enhancing the value of your property assets.

Metering, measurement, power quality, single and multi-circuit analysis



COUNTIS E



DIRIS A



DIRIS Digiware

Metering and measurement for datacentres



DIRIS BCMS 720

Webserver



WEBVIEW

Software and cloud hosting



HYPERVIEW

DIRIS Digiware, the multi-circuit plug & play measurement and monitoring system



The DIRIS Digiware system is a hub of technological innovations that has revolutionised the world of electrical measurement, bringing a high degree of flexibility to installations combined with quick and easy connection and configuration.

- A single voltage measuring point.
- Current modules with 3, 4 or 6 inputs.
- RJ45 current sensors.
- High measuring accuracy.

For more information, please visit:
www.diris-digiware.com

→ Integrating renewable energy production

Using available space and surfaces such as car park sun shelters, roofs or platforms to become a producer of renewable energy.

Producing all or part of the energy consumed by buildings makes the idea of self-consumption a reality.

New energy storage systems can be installed in order to manage the intermittent nature of PV energy production, as well as to offset the gap between peak demand and production.

Socomec offers a complete range of connection options, from the switch panel through to connection to the private or public grid*:

- AC and DC protection, DC and AC load break switches, fully-equipped enclosures, fuses,
- PV energy conversion systems,
- complete energy storage systems.

* Please contact us

SUNSYS PCS² Energy conversion and energy storage system



The bidirectional power converter is the key element of the energy storage system. It ensures that the batteries are charged and discharged according to the required functions.

The Nice Grid pilot project:
www.nicegrid.fr
www.socomec.fr/nice-grid_fr.html

Custom solutions for products or systems adapted to your requirements

In addition to our standard offering, Socomec has a flexible manufacturing platform that can design and produce custom solutions.

We offer support throughout the various phases of your project, from specification analysis, qualification of your solution through to production, commissioning and on-site training of operatives.



Multi-skill expertise

We offer technical support throughout your project with our specialist mechanical, electrical, electronic and IT personnel to offer you a complete qualified solution.



An adapted response

We take your specific requirements into account as well as your local constraints in order to offer you an optimised solution in line with your budget.



Remotely controlled

Our solutions fully comply with all product, assembly and installation standards currently in force, as well as respecting your specific requirements. Our fully independent and accredited Pierre Siat test laboratory can handle any necessary qualification tests. All our switch panels and assemblies comply with IEC/EN 61439.

Staying on track with Socomec - An example of one of our realisations

Solution for a secure signalling bay

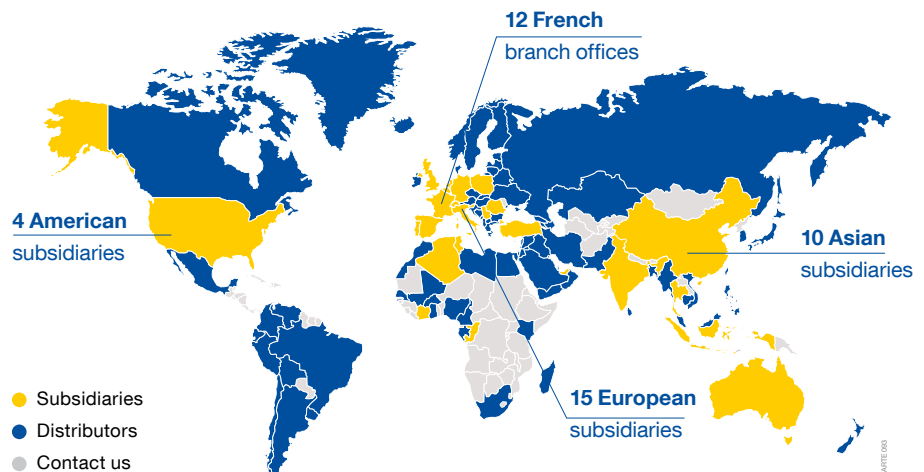
- Cabinets installed every 20 km along the track.
- Certified for outdoor use: operating temperature from -40 °C to +35 °C, IP55 protection index, resistant to humidity, thermal shock, pollution and vibrations.
- Very high power-availability owing to smart decentralised control.
- Various AC and DC voltage outputs for all control systems:
 - 400/230 VAC for points and level crossings,
 - 120/60/48/24 VDC for axle counters, monitoring of points and level crossings, rail traffic lights, communication routers. All circuit feeders are protected by breakers or fuses.
- Insulation monitoring devices for points.
- 2-hour back-up in emergency mode with 9 kW batteries.
- Monitoring of energy consumption via network measurement units with communication protocols.
- Transmission of alarms and parameters via PLC (BacNet protocol) to monitoring workstation.
- Composition of the solution: rectifier modules, UPS, hot-swap power converter, manual bypass, batteries, measurement units, PLC, etc.
- Compliant with standards IEC 61439, IEC 60068-2-14 and IEC 50121.



TABLO 040 A

Our benchmark references

To meet corporate requirements and comply with each country's standards and regulations, Socomec is able to provide solutions that are innovative, highly energy efficient and reliable. Satisfaction is further enhanced by maintaining close proximity to our customers and anticipating their evolving needs.



Projects completed around the world with our solutions

Solutions for main lines

- **Rail networks, high-speed trains (HST), regional train networks, train stations**
Belgium, Denmark, France, India, Italy, Netherlands, Portugal, Romania, UK, Russia.



Solutions for urban transport networks

- **Tramways**
Large French cities (Strasbourg, Nantes), Algiers, Bergamo, Constantine, Rabat.
- **Metro/Underground**
Amsterdam, Barcelona, Bucharest, Cairo, Hyderabad, London, Manchester, Moscow, Naples, Paris, Porto, Rome, Santiago, Shanghai, Shenyang, Suzhou.



Solutions for buildings

- **Spain**
Barcelona's city transport datacentre
- **France**
Power supplies for safety lighting and fire safety systems on regional Paris train network.
- **UK**
Power supplies for emergency lighting and communication systems for Kings Cross Station (London).



Socomec: our innovations supporting your energy performance

1 independent manufacturer

3,600 employees
worldwide

10 % of sales revenue
dedicated to R&D

400 experts
dedicated to service provision

Your power management expert



POWER
SWITCHING



POWER
MONITORING



POWER
CONVERSION



ENERGY
STORAGE



EXPERT
SERVICES

The specialist for critical applications

- Control, command of LV facilities
- Safety of persons and assets
- Measurement of electrical parameters
- Energy management
- Energy quality
- Energy availability
- Energy storage
- Prevention and repairs
- Measurement and analysis
- Optimisation
- Consultancy, commissioning and training

A worldwide presence

12 production sites

- France (x3)
- Italy (x2)
- Tunisia
- India
- China (x2)
- USA (x3)

28 subsidiaries and commercial locations

- Algeria • Australia • Belgium • China • Canada
- Dubai (United Arab Emirates) • France • Germany
- India • Indonesia • Italy • Ivory Coast • Netherlands
- Poland • Portugal • Romania • Serbia • Singapore
- Slovenia • South Africa • Spain • Switzerland
- Thailand • Tunisia • Turkey • UK • USA

80 countries

where our brand is distributed

HEAD OFFICE

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