GENERAL CATALOGUE

UPS and Critical Power Solutions

2018
2019

socomec
Innovative Power Solutions
## IT applications - Overview of Critical Power

**IT & Networking / Server rooms / IT infrastructure / Data centres**

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<td></td>
<td>ITYS PRO</td>
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</tbody>
</table>

### Desktop / Tower UPS

- **NETYS PE**: 600 - 2000 VA
  - 1/1 - Tower
- **NETYS PR**: 1 - 2 kVA
  - 1/1 - Tower
- **ITYS E**: 1 - 10 kVA
  - 1/1 - Tower
- **ITYS**: 1 - 20 kVA
  - 1/1 & 3/1 - Tower
- **ITYS PRO**: 1 - 30 kVA
  - 1/1 & 3/1 - Tower

### Convertible 19" Rack & Rack/Tower UPS

- **NETYS PR**: 1 - 1.5 kVA
  - 19" Rack
- **NETYS PR**: 1 - 3.3 kVA
  - 1/1
- **NETYS RT**: 1 - 11 kVA
  - Convertible Rack/Tower
- **MODULYS RM GP**: 1 - 1.5 kVA
  - 1/1

### Single unit & 1+1 configuration UPS

- **MASTERYS BC**: 15-40
  - 1/1
- **MASTERYS BC**: 60-80
  - 1/1
- **MASTERYS BC+**: 1 - 1.5 kVA
  - 1/1
- **DELPHYS BC**: 1 - 10 kVA
  - 1/1

### Single & parallel UPS systems

- **MASTERYS MC**: 1 - 1.5 kVA
  - 1/1
- **MASTERYS GP**: 1 - 10 kVA
  - 1/1
- **MASTERYS GP4**: 1 - 10 kVA
  - 1/1
- **DELPHYS GP**: 1 - 10 kVA
  - 1/1
- **DELPHYS MX**: 1 - 10 kVA
  - 1/1

### Modular & scalable UPS systems

- **MODULYS**: 1 - 20 kVA
  - 1/1 & 3/1
- **MODULYS GP**: 1 - 20 kVA
  - 1/1 & 3/1
- **MODULYS RM GP**: 1 - 20 kVA
  - 1/1 & 3/1
- **DELPHYS XTEND GP**: 1 - 20 kVA
  - 1/1 & 3/1

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*General Catalogue 2018-2019*
### Non-IT applications

Overview of Secure Power solutions  

In the table below, the product range for Non-IT applications is categorized by power capacity and solution type. Each category is further divided into 3/1, 3/3 configurations, and Tower or Rack/Tower options. The solutions are listed in ascending order of power capacity:

- **1 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3

### Complementary solutions

Back-up storage, Static Transfer Systems (STS), Communication and connectivity, Power Distribution Unit (PDU)  

The product range for Complementary solutions is listed by power capacity and solution type. The solutions are listed in ascending order of power capacity:

- **1 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
- **100 - 160 kVA**: 3/3
- **200 - 300 kVA**: 3/3
- **500 kVA**: 3/3
- **10 - 20 kVA**: 3/1 & 3/3 - Tower
- **10 - 80 kVA**: 3/1 & 3/3
- **15 - 80 kVA**: 3/1 & 3/3
## Non-IT applications - Overview of Secure Power

Industrial and Manufacturing processes / Transport infrastructures / Medical equipment / Emergency

<table>
<thead>
<tr>
<th>Architecture</th>
<th>Product</th>
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<tr>
<td>Industrial rugged UPS for harsh environment</td>
<td>MASTERS IP+</td>
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<tr>
<td>UPS with transformer for industrial processes</td>
<td>MASTERS IP</td>
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<td>Transformer-based UPS</td>
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<td>DELPHYS GP</td>
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<td></td>
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<td>Solutions for specific environments</td>
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<tr>
<td></td>
<td>ITYS ES</td>
<td>p. 34</td>
</tr>
</tbody>
</table>

24/48/108/120 V, 15 to 200 A
Rectifiers - up to 200 A

1.1 - 3.3 kVA
1/1 - for marine applications

1/1 - for electrical substations
<table>
<thead>
<tr>
<th>Power Range</th>
<th>kW</th>
<th>3/1</th>
<th>3/3</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 40 kVA</td>
<td></td>
<td>3/1</td>
<td></td>
</tr>
<tr>
<td>10 - 80 kVA</td>
<td></td>
<td>3/1</td>
<td></td>
</tr>
<tr>
<td>10 - 600 kVA</td>
<td></td>
<td>3/3</td>
<td></td>
</tr>
<tr>
<td>250 - 900 kVA</td>
<td></td>
<td>3/3</td>
<td>up to 5.4 MVA</td>
</tr>
<tr>
<td>60 - 160 kVA/kW</td>
<td>3/3</td>
<td>up to 960 kW</td>
<td></td>
</tr>
<tr>
<td>25 - 600 kVA/kW</td>
<td>3/3</td>
<td>up to 4 MVA</td>
<td></td>
</tr>
<tr>
<td>up to 4 x 25 kVA/kW</td>
<td>3/3</td>
<td>Fully modular solution</td>
<td></td>
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**Non-IT applications - Overview of Secure Power solutions**

- Industrial and Manufacturing processes
- Transport infrastructures
- Medical equipment
- Emergency systems

**Industrial and Manufacturing processes**

- **MASTERYS IP+**
  - UPS with transformer
  - For industrial processes
- **MASTERYS IP**
  - Transformer-based UPS
- **DELPHYS MP Elite+**
- **DELPHYS MX**
- **SHARYS IP**

**Transformerless UPS systems**

- **MASTERYS MC**
- **MASTERYS GP**
- **MASTERYS GP4**
- **DELPHYS GP**
- **MODULYS GP**
- **MODULYS RM GP**
- **DELPHYS XTEND GP**

**Complementary solutions**

- Back-up storage
- Static Transfer Systems (STS)
- Communication and connectivity
- Power Distribution Unit (PDU)

**IT applications - Overview of Critical Power solutions**

- **ITYS ES**
- **NETYS RT-M**

**General Catalogue 2018-2019**
For the energy performance of your critical installations
The benefit of a specialist

Since its foundation more than 95 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.

1 independent manufacturer

3,500 m² of test platforms

One of the leading independent power testing labs in Europe

10 % of turnover invested in R&D

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

70,000 on-site interventions per year

Nearly 400 experts in commissioning, technical audit, consultancy and maintenance
Your energy, our expertise

Power conversion
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 switching
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.

Power monitoring
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.
Adapted solutions to meet your energy objectives

SMART BUILDINGS
Reducing your energy bills and energy dependency
- DELPHYS MX UPS
- COUNTIS E energy meter and DIREA multifunction meter (PMD)

NAVAL SHIPS
Energy conversion in environments with harsh restrictions
- SHARYS IP rectifier
- NETYS RT-M UPS
- SIRCO load break switches

SHOPPING CENTRES
Assuring your business continuity and visitor safety
- COUNTIS E energy meter and multi-utility pulse concentrator
- ATYS M automatic and remotely operated modular transfer switches
- MASTERYS BC+ UPS
- EMERGENCY CPSIS, secure power supply for emergency systems
- ENERGY MANAGEMENT software packages

PUBLIC DISTRIBUTION AND SMART GRID
Helping you to meet the challenge of energy demand and response
- SUNYS-PCS Power Conversion System and Storage
- TP/control feeder pillar with DRIE multi-function meter
- Auxiliary unit with ATYS transfer switch
- SIRCO and XEDER load break switches
- DRIE Digisaw AC & DC multi-circuit measurement system

RENEWABLE ENERGY
Guaranteeing the performance, security and durability of your photovoltaic facilities
- SUNYS-PCS Power Conversion System and Storage
- INOSYS LBS DC load break switches with tripping function
- DRIE Digisaw DC multi-circuit measurement system

GLOBAL EXPERTISE
- UNDERSTANDING EXPERTISE
- PROXIMITY ADAPTATION
- OPTIMISATION MEASUREMENT AND ANALYSIS
- CONSULTANCY, DEPLOYMENT AND TRAINING
- PREVENTION AND SERVICE OPERATIONS

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Adapted solutions to meet your energy objectives in environments with harsh restrictions.

NAVAL SHIPS

NETYS RT-M UPS

SHARYS IP rectifier

UPS and other customised products

DATA CENTRES

Reducing your energy bills and energy dependency.

SMART BUILDINGS

ENERGY MANAGEMENT software packages

DIRIS Digiware AC & DC multi-circuit measurement system

SUNSYS PCS² Power Conversion System and Storage

ATyS automatic and remotely operated transfer switches

INOSYS LBS DC load break switches with tripping function

GUARANTEEING THE PERFORMANCE, SECURITY AND DURABILITY OF YOUR PHOTOVOLTAIC FACILITIES

RENEWABLE ENERGY

SUNSYS PCS² Power Conversion System and Storage

DIRIS Digiware AC & DC multi-circuit measurement system

HELPING YOU TO MEET THE CHALLENGE OF ENERGY DEMAND AND RESPONSE

PUBLIC DISTRIBUTION AND SMART GRID

SUNSYS PCS² Power Conversion System and Storage

TIPI low-voltage feeder pillar with DIRIS multi-function meter

Auxiliary unit with ATyS transfer switch

SIRCO and SIDER load break switches

DIRECT Digiware AC & DC multi-circuit measurement system

ASSURING YOUR BUSINESS CONTINUITY AND VISITOR SAFETY

SHOPPING CENTRES

ENERGY MANAGEMENT software packages

COUNTIS E energy meter and multi-utility pulse concentrator

ATyS M automatic and remotely operated modular transfer switches

EMERGENCY CPSS, secure power supply for emergency systems

MASTERYS BC+ UPS

MASTERYS GP4 UPS

ATYS automatic and remotely operated transfer switches

INDUSTRY

Meeting the challenge of the availability and performance of your energy.

FUSERBLOC fuse combination switches

Safety enclosures with switch disconnector for standard and explosive environments

MASTERYS GP4 UPS

MASTERYS GP4 UPS

ATYS automatic and remotely operated transfer switches

SIRCO load break switches

MASTERYS IP+ UPS for harsh industrial environments

ADMIRIS IP+ Rail UPS

DIUS A multifunction meter (PMD)

INDUSTRY

Ensuring the competitiveness of your site.

MASTERYs IP+ UPS for harsh industrial environments

ENERGY MANAGEMENT software packages

Components for distribution enclosure with FUSERBLOC fuse-combination switches

MASTERYS IP+ Rail UPS

DIUS A multifunction meter (PMD)

MEETING THE CHALLENGE OF THE AVAILABILITY AND PERFORMANCE OF YOUR ENERGY

DATA CENTRES

Hotel UPS

Modular and scalable UPS system

ATYS automatic and remotely operated transfer switches

DIUS A multifunction meter (PMD)

FUSERBLOC fuse combination switches

Safety enclosures with switch disconnector for standard and explosive environments

DIUS Q800 network analyser

We offer a wide range of value-added services ensuring the reliability of your equipment throughout its design life.

Ask for personalised support -

UNDERSTANDING EXPERTISE

PROXIMITY

ADAPTATION

OPTIMISATION

CONSULTANCY, DEPLOYMENT AND TRAINING

PREVENTION AND SERVICE OPERATIONS
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.

Global presence

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.
Expert Services your partner enabling available, safe and efficient energy
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.

As specialist manufacturers in the field of low voltage electrical facilities for over 90 years, Socomec offers a wide range of value-added services, a major factor in ensuring the reliability of your equipment throughout its design life. Take advantage of personalised support throughout your project and reach your energy objectives with confidence!

To find out more
For more information about our complete offer for Expert Services, download the catalogue.
www.socomec.com/en/services-catalogue

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).
For a high quality power supply
innovative power solutions

Critical equipment requires high quality energy and faultless continuity of the power supply. Our uninterruptible power systems (UPS), static transfer systems (STS), and DC/AC and AC/DC converters (inverters and rectifiers, respectively) comprise the most complete ranges in the world and cover a very wide range of applications for every sector of activity.

- Uninterruptible power supply systems (UPS)
- Static transfer systems (STS)
- Backup storage systems
- Industrial rectifiers
- DC/AC converters (inverters)
- Communication and management software
- Maintenance & Professional Services

High availability
The availability of electrical energy is a strategic factor in industries as varied as telecommunications, data processing centres and industrial processes. It is also vital for certain medical applications. In all these sectors, SOCOMEC offers you all the benefits of its 50 years of experience.

Product solutions that meet requirements
Underspinned by significant R&D resources, our product offer continually evolves as a consequence of our contact with customers. Our products have gained approval from the most demanding users: telecoms operators, naval industry, etc.

Customer-oriented service
Our extensive sales and after-sales network means we are always there for you. Our partner-customers recognise the quality of our products and their availability, as well as our flexibility and commitment to meeting requirements.

A certified organisation

<table>
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<tr>
<th>Products</th>
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<tbody>
<tr>
<td><img src="#" alt="TUV" /></td>
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<th>Local compliance</th>
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<table>
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<th>Industrial sites</th>
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Industrial sites

Local compliance

Products

Environment

Critical equipment requires high quality energy and faultless continuity of the power supply. Our uninterruptible power systems (UPS), static transfer systems (STS), and DC/AC and AC/DC converters (inverters and rectifiers, respectively) comprise the most complete ranges in the world and cover a very wide range of applications for every sector of activity.

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For a high quality power supply

innovative power solutions

High availability

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A certified organisation

ISO 9001

FM 28237

ISO14001

EMS 553476

BUREAU VERITAS

GAMME 008 AA

Gost (Russia)UL (USA) TLC (China)

Customer Service Excellence

2003

2004

2006

2009

2011

2013

2014

2015

2001

1st modular UPS

2003

IGBT rectifiers up to 200 kVA

2004

New battery charging design

2006

Dynamic Energy Storage System (Flywheel)

2008

High efficiency UPS

2010

Most compact 900 kVA UPS

2012

High power 3-level technology

2014

“Forever Young” design for modular UPS

2015

Real hot-scalable high power UPS system Rack-mounted modular UPS system

2017

MASTERYS: 4th generation digital native UPS

Continuous innovation

1968

1st UPS

1987

1st Static Transfer System (STS)

1988

Transistor technology (600 kVA)

1989

IGBT & microprocessor

1990

Distributed parallel architecture

1994

Transformerless technology

1996

IGBT up to 800 kVA

1998

Digital Signal Processor (DSP)

‘Best-in-class’ manufacturer

F R O S T & S U L L I V A N

2003

Customer Service Excellence

2004

Customer Service Excellence

2006

Product Innovation

2009

Energy & Power Systems Product Line Strategy

2011

Product Innovation

2013

Product Differentiation Excellence

2014

European UPS Company of the Year

2015

European UPS Technology Leadership Award

4 performance levers

The vision of a specialist

> Solutions focused on customer applications

> Listening to customers’ requirements

> Experienced personnel

The focus on service

> Project consulting in design phases

> CIM worldwide organisation

> Audits & consulting

The spirit of innovation

> Cutting-edge technologies

> Regular launch of new solutions

> Products and solutions

The know-how of a manufacturer

> A commitment to quality

> LEAN manufacturing

> The largest UPS manufacturing plant in Europe

1968

1st UPS

1987

1st Static Transfer System (STS)

1988

Transistor technology (600 kVA)

1989

IGBT & microprocessor

1990

Distributed parallel architecture

1994

Transformerless technology

1996

IGBT up to 800 kVA

1998

Digital Signal Processor (DSP)

2001

1st modular UPS

2003

IGBT rectifiers up to 200 kVA

2004

New battery charging design

2006

Dynamic Energy Storage System (Flywheel)

2008

High efficiency UPS

2010

Most compact 900 kVA UPS

2012

High power 3-level technology

2014

“Forever Young” design for modular UPS

2015

Real hot-scalable high power UPS system Rack-mounted modular UPS system

2017

MASTERYS: 4th generation digital native UPS
Green solution to reduce energy consumption and environmental impact
Better products for sustainable applications

The EU Code of Conduct for Data Centers provides a platform that brings together European stakeholders to discuss and agree voluntary actions aimed at improving energy efficiency.

It proposes general principles and practical actions to be followed by all parties involved in data centres, operating in the EU aiming for more efficient and economic use of energy, without jeopardizing the reliability and operational continuity of the services provided by data centres.

Socomec as Endorser has committed to help raise user awareness of energy efficiency issues, to introduce or encourage use of high efficiency products and promote the best practices set out in the Code of Conduct. Socomec has also committed to support the Code and Participants through the development of products, information, services, education or other programme. It also uses the Code to develop products and solutions to enable data centre owners and operators to meet the expectations of the Code of Conduct.

The UPS Code of Conduct sets out the basic principles to be followed by all parties involved in Uninterruptible Power Systems, operating in the European Community in respect of energy-efficient equipment. It addresses manufacturers who agree to make all reasonable efforts to improve the efficiency of their UPS equipment.

Socomec is one of the first manufacturers to sign the voluntary agreement. In so doing, Socomec has committed to make significant investment in innovative technologies for designing high efficiency UPS. Today, we are proud to state that all our product ranges exceed the required levels, allowing us to offer our customers the highest levels of performance on the market.

Green Power 2.0 UPS solutions from 10 kVA/kW to 2.4 MVA/MW
Green solution to reduce energy consumption and environmental impact
Better products for sustainable applications

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Founded in Brussels in 2011, EUDCA is the only European-level non-profit association representing all aspects of the industry, from data centre operators to data centre users, suppliers, consultants and manufacturers. It is in EUDCA’s DNA to represent national associations but also to work with and promote them, for the purpose of the Industry’s development.

The EUDCA is the voice and ears of the European data centre industry that works to enhance the EU authorities’ understanding of the importance and status of the industry as well as assisting the industry in improving its best practices.

Socomec signed up as a member of EUDCA in 2011 to play its role in helping to support and drive key objectives which are paramount to the future development and health of the data centre sector.

PEP Eco-passport®, is an international reference programme for environmental declarations of products from electric, electronic and heating & cooling industries. Socomec has been involved for more than 5 years in the PEP Eco-passport association. The company is actively involved in the internationalisation of the PEP Eco-passport programme and also in the European PEF initiative (Product Environmental Footprint) which aims to give a framework to UPS environmental declarations via European harmonised rules.

The Socomec UPS product ranges have a PEP Eco-passport, as is the case for example with our Green Power 2.0 UPS range.

Socomec is a member of the TGG association, a global consortium dedicated to developing and promoting energy efficiency for data centres. The Green Grid works with end-users, technology providers and governments around the world to create standards for more efficient use of energy in data centres. Its members work to improve IT and data centre resource efficiency around the world.

The Green Grid offers the data centre expertise that governments turn to for industry insight and advice, bringing to bear the combined influence of a diverse body of ICT industry leaders. The consortium’s vendor-neutral dynamic creates a rich, collaborative environment of peers, competitors and industry experts that work closely together to advance the organisation’s mission.
Critical Power solutions

IT APPLICATION SOLUTIONS
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Single unit & 1+1 configuration UPS
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Single & parallel UPS systems
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Transformer-based UPS
 DELPHYS MP Elite+ ............................................................................................... p.76
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Industrial modular DC power
 SHARYS IP ............................................................................................................ p.80
**NETYS PE**
Practical and cost-effective protection from 600 to 2000 VA

**Ideal and cost-effective protection for SOHO or POS applications**
- Adapted to protect IT applications in home, office and retail environments.
- A complete range of six models to adapt the power to the equipment’s consumption or to required back-up time.

**Easy to use**
- Control panel with graphical icons
  LCD / LEDs allowing the operating mode to be easily monitored.

**A solution for network power cuts and voltage fluctuations**
- The integrated AVR function (Automatic Voltage Regulation) stabilizes the output voltage and avoids the switching to Battery Mode operation, therefore saving the battery to support critical power cut events.

**Simplified connection**
- Several output sockets (IT standard) simplify the connectivity to computer and IT peripherals.

**Protection for your data line**
- Integrated NTP protection for LAN/ADSL connection against the risk of data line overvoltage.

---

**The solution for**
- CAD, graphic workstations
- Multimedia workstations and peripherals
- LCD screens and monitors
- POS (Points Of Sales)

**Technology**
- VI "line interactive" with AVR, step wave

**Certifications**
- CE, RCM (E2376)
- IS 16242 (Part 1)/AS 62040.2
- IEC/EN 62040-1, AS 62040.1.1, AS 62040.1.2
- Safety
- BIS certification

**Output connections**
- IEC socket 320 (C13)
- Australian standard
- Indian standard (BIS compliant)

---

Some models may not be available in your country – please check with your local sales office.
NETYS PE
Single-phase UPS
600 to 2000 VA

The solution for network power

- Easy to use
- Applications protection for SOHO or POS
- Ideal and cost-effective
- The integrated AVR function (Automatic Voltage Regulation) stabilizes the output voltage and avoids the switching to Battery Mode operation, therefore saving the battery to support critical power cut events.
- Voltage tolerance: 170 - 280 V (IEC and Australian standards), 140 - 300 V (Indian standard)
- Rated frequency: 50/60 Hz ±1%
- Rated voltage: 230 V ±10%
- Wave form: Step wave
- Protection: Overload, significant discharge and short circuit

GAMME 690 A

NETYS PE
600 / 650 / 850 VA
- 1. Alarm
- 2. Operation with battery
- 3. Normal operation
- 4. On / Off
- 5. Load present
- 6. Load level (5 steps)

NETYS PE
1000 / 1500 / 2000 VA
- 7. General Alarm
- 8. Battery fault / Replace the battery
- 9. Overload
- 10. Battery capacity
- 11. Normal mode / Battery mode (flashing)
- 12. Automatic Voltage / Regulation active

1. Alarm
2. Operation with battery
3. Normal operation
4. On / Off
5. Load present
6. Load level (5 steps)
7. General Alarm
8. Battery fault / Replace the battery
9. Overload
10. Battery capacity
11. Normal mode / Battery mode (flashing)
12. Automatic Voltage / Regulation active

Technical data

<table>
<thead>
<tr>
<th>Sn (VA)</th>
<th>600</th>
<th>650</th>
<th>850</th>
<th>1000</th>
<th>1500</th>
<th>2000</th>
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</thead>
<tbody>
<tr>
<td>Pn (W)</td>
<td>300</td>
<td>360</td>
<td>480</td>
<td>600</td>
<td>900</td>
<td>1200</td>
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<td>Input / output</td>
<td>1/1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

INPUT
- Rated voltage (Battery Mode): 230 V
- Voltage tolerance: 170 - 280 V (IEC and Australian standards), 140 - 300 V (Indian standard)
- Rated frequency: 50/60 Hz with automatic selection
- Mains connection: IEC320 socket (IEC and Australian standards), cable with plug (Indian standard)

OUTPUT
- Automatic Voltage Regulation (AVR)
- Rated voltage: 230 V ±10%
- Rated frequency: 50/60 Hz ±1%
- Wave form: Step wave
- Protection: Overload, significant discharge and short circuit

CONNECTIONS
- IEC standard: 4 x IEC 320 (C13)
- Australian standard: 2 sockets
- Indian standard: 3 sockets

BATTERIES
- Type: Sealed lead-acid maintenance free - expected life 3/5 years
- Back-up time (1): 15 min 15 min 20 min 45 min 55 min 60 min

COMMUNICATION
- Interfaces: USB
- Local communication software: Local View
- UPS output sockets: NTP data line suppressor
- UPSCABINET: IECEN 62040-1, AS 62040.1.1, AS 62040.1.2

STANDARD communication features
- LOCAL VIEW: ideal UPS monitoring and shutdown point-to-point solution for Windows®, Linux and Mac OS X® operating systems.

(1) PC + 17” LCD monitor.
**NETYS PR**
Space saving reliable protection from 1000 to 2000 VA - Mini Tower

The solution for
- Professional and IT equipment
- Servers and networking devices
- CAD / graphic workstations with monitors and peripherals
- Control systems

Technology
- VI *line interactive* with AVR, sine wave

Certifications
- RoHS COMPLIANT

Professional line interactive UPS
- Ideal solution for protecting small servers and high performance CAD or graphic workstations.
- Assures service continuity to critical applications.
- Designed for professional applications: the sine wave inverter technology assures full compatibility with any kind of load and power supply.
- Minitower case to easily fit close to the IT load to be supplied and protected.

A solution for network power cuts and voltage fluctuations
- The integrated AVR function (Automatic Voltage Regulation) stabilizes the output voltage and avoids the switching to Battery Mode operation, therefore saving the battery to support critical power cut events.

Easy to use
- Control panel with graphical icons LCD allowing the operating mode to be easily monitored.

Simplified connection
- Several IEC 320 sockets (IT standard) simplify the connectivity to computer and IT peripherals.

Protection for your data line
- Integrated NTP protection for LAN/ADSL connection against the risk of data line overvoltage.

Some models may not be available in your country – please check with your local sales office.
Single-phase UPS

NETYS PR

Space saving reliable protection from 1000 to 2000 VA - Mini Tower

The solution for

Professional and IT equipment

Servers and networking devices

CAD / graphic workstations with monitors and peripherals

Control systems

Technology

VI “line interactive” with AVR, sine wave

GAMME 258 A

NETYS PR

1000 VA

NETYS PR

1500 / 2000 VA

Professional line interactive UPS

• Ideal solution for protecting small servers and high performance CAD or graphic workstations.

• Assures service continuity to critical applications.

• Designed for professional applications: the sine wave inverter technology assures full compatibility with any kind of load and power supply.

• Mini tower case to easily fit close to the IT load to be supplied and protected.

• A solution for network power cuts and voltage fluctuations

• The integrated AVR function (Automatic Voltage Regulation) stabilizes the output voltage and avoids the switching to Battery Mode operation, therefore saving the battery to support critical power cut events.

Easy to use

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Simplified connection

• Several IEC 320 sockets (IT standard) simplify the connectivity to computer and IT peripherals.

Protection for your data line

• Integrated NTP protection for LAN/ADSL connection against the risk of data line overvoltage.

Certifications

RoHS COMPLIANT

Some models may not be available in your country – please check with your local sales office.

Technical data

<table>
<thead>
<tr>
<th>NETYS PR Mini Tower</th>
<th>1000 VA</th>
<th>1500 VA</th>
<th>2000 VA</th>
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<tbody>
<tr>
<td>Sn</td>
<td>1000 VA</td>
<td>1500 VA</td>
<td>2000 VA</td>
</tr>
<tr>
<td>Pn</td>
<td>700 W</td>
<td>1050 W</td>
<td>1400 W</td>
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<td>Input / output</td>
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<tr>
<td>INPUT</td>
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<tr>
<td>Rated voltage</td>
<td>230 V</td>
<td>230 V</td>
<td>230 V</td>
</tr>
<tr>
<td>Voltage tolerance</td>
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<td>170 - 280 V</td>
<td>170 - 280 V</td>
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<tr>
<td>Rated frequency</td>
<td>50/60 Hz with automatic selection</td>
<td>50/60 Hz with automatic selection</td>
<td>50/60 Hz with automatic selection</td>
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<tr>
<td>Mains connection</td>
<td>IEC320 socket</td>
<td>IEC320 socket</td>
<td>IEC320 socket</td>
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<tr>
<td>OUTPUT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automatic Voltage Regulation (AVR)</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>230 V ±10%</td>
<td>230 V ±10%</td>
<td>230 V ±10%</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz ±1%</td>
<td>50/60 Hz ±1%</td>
<td>50/60 Hz ±1%</td>
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<tr>
<td>Wave form</td>
<td>Sine wave</td>
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<td>Sine wave</td>
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<tr>
<td>Protection</td>
<td>Overload, significant discharge and short circuit</td>
<td>Overload, significant discharge and short circuit</td>
<td>Overload, significant discharge and short circuit</td>
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<td>Connections</td>
<td>4 x IEC 320 (C13)</td>
<td>6 x IEC 320 (C13)</td>
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<td>BATTERIES</td>
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<tr>
<td>Type</td>
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<td>Sealed lead-acid maintenance free - expected life 3/5 years</td>
<td>Sealed lead-acid maintenance free - expected life 3/5 years</td>
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<tr>
<td>Back-up time (h)</td>
<td>45 min</td>
<td>55 min</td>
<td>60 min</td>
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<td>COMMUNICATION</td>
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<tr>
<td>Interfaces</td>
<td>USB</td>
<td>USB</td>
<td>USB</td>
</tr>
<tr>
<td>Local communication software</td>
<td>Local View</td>
<td>Local View</td>
<td>Local View</td>
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<tr>
<td>Data Line protection</td>
<td>NTP data line suppressor</td>
<td>NTP data line suppressor</td>
<td>NTP data line suppressor</td>
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<tr>
<td>UPS CABINET</td>
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<tr>
<td>Dimensions W x D x H</td>
<td>145 x 345 x 165 mm</td>
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<td>Weight</td>
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<td>STANDARDS</td>
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<td>Safety</td>
<td>IEC/EN 62040-1, AS 62040.1, AS 62040.1.2</td>
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<td>IEC/EN 62040-1, AS 62040.1, AS 62040.1.2</td>
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<td>IEC/EN 62040-2, AS 62040.2</td>
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<td>Product declaration</td>
<td>CE, RCM (E2376)</td>
<td>CE, RCM (E2376)</td>
<td>CE, RCM (E2376)</td>
</tr>
</tbody>
</table>

Standard communication features

• LOCAL VIEW: ideal UPS monitoring and shutdown point-to-point solution for Windows®, Linux and Mac OS® operating systems.

Connections

1. USB serial port
2. NTP data line suppressor
3. UPS output sockets
4. Input socket and fuse
5. Fan / air vents

Control panel

1. On / Off
2. Load present
3. Load level (5 steps)
4. General Alarm
5. Battery fault / Replace the battery
6. Overload
7. Battery capacity
8. Normal mode / Battery mode (flashing)
9. Automatic Voltage / Regulation active

(1) PC + 17” LCD monitor.
NETYS PR
High performance protection on rack or tower from 1700 to 3300 VA - Rack/Tower

A secure and professional supply continuity
- Ideal solution for protecting small servers, networking devices and peripherals.
- Assures service continuity to critical applications.
- Designed for professional applications: the sine wave inverter technology assures full compatibility with any kind of load and power supply.

Tailored to IT networking
- The space and time-saving tower/rack conversion option means it can be installed easily either in tower mode or inside standard 19" rack cabinets depending on the user’s needs.

Simple to install
- No configuration needed on first startup.
- Compact footprint (2U/89 mm) for installation in rack cabinets.
- Attractive design for visible installation in offices.
- USB port and HID protocol as standard for direct interfacing with Windows® systems, without the need for additional specialist software.

Protection for your data line
- Integrated NTP protection for LAN/ADSL connection against the risk of data line overvoltage.

Meets practical needs
- Optional battery extension modules (EBM) to meet all back-up time requirements, even after installation.
- Clear and uncluttered LCD interface, with buzzers that immediately indicate the operating status of the UPS, even for less specialist users.
- Simplified maintenance and Battery ‘hot swap’, without closing down other applications.

Tailored to IT networking
- The space and time-saving tower/rack conversion option means it can be installed easily either in tower mode or inside standard 19" rack cabinets depending on the user’s needs.

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- No configuration needed on first startup.
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- Attractive design for visible installation in offices.
- USB port and HID protocol as standard for direct interfacing with Windows® systems, without the need for additional specialist software.

Protection for your data line
- Integrated NTP protection for LAN/ADSL connection against the risk of data line overvoltage.

Easy to use and to integrate
- Wide range of communication protocols available in options (including JBUS, TCP/IP and SNMP) for integration into LAN networks or building management systems (BMS).
- Easy connections to the applications (depending on power) via 8 or 8+1 IEC 320 (IT standard) sockets.
- Load segmentation function to prioritize loads and manage critical situations.
- EPO (Emergency Power Off) emergency stop.
- RS232 advanced connections for the management of the power supply and local/remote shutdown of applications.

Some models may not be available in your country – please check with your local sales office.
NETYS PR
from 1700 to 3300 VA - Rack/Tower

Some models may not be available in your country – please check with your local sales office.

Protection for your data line
Tailored to IT networking
Supply continuity
A secure and professional

Integrated nTP protection for LAn/ADsL
UsB port and HID protocol as standard for

Attractive design for visible installation in

no configuration needed on first startup.

The space and time-saving tower/rack

Designed for professional applications:
Assures service continuity to critical

Ideal solution for protecting small servers,

Single-phase UPS

NETYS PR

from 1700 to 3300 VA - Rack/Tower

High performance protection on rack or tower

NETYS "A"

Meets practical needs

Rs232 advanced connections for the
EPO (Emergency Power Off) emergency

Easy connections to the applications

simplified maintenance and Battery

Optional battery extension modules (EBM)

remote shutdown of applications.

management of the power supply and local/

snMP) for integration into LAn networks

applications.

buzzers that immediately indicate the
operating status of the UPS, even for less

The AVR increases (boost) 1) the output voltage by 14%
when the input voltage drops below 90% of the nominal value.
The AVR decreases (bucks) the output voltage by 12%
when the input voltage rises above 106% of the nominal value.

Automatic Voltage Regulation (AVR)

Rated voltage
230 V

Voltage tolerance
161 V ±4% (selecting wide mode) -276 V ±4%

Rated frequency
50/60 Hz with automatic selection

Mains connection
IEC320-C14 (10 A) 3

OUTPUT

Automatic Voltage Regulation (AVR)
The AVR increases (boost) 1) the output voltage by 14%
when the input voltage drops below 90% of the nominal value.
The AVR decreases (bucks) the output voltage by 12%
when the input voltage rises above 106% of the nominal value.

Rated voltage
230 V ±5%

Rated frequency
50/60 Hz ±0.1 %

Power factor
0.9
@ 1500 VA 0.9
@ 2000 VA
@ 3000 VA

Wave form
Sine wave

Protection
Normal mode: overload (110% for 3 minutes)
Battery mode: overload (110% for 30 seconds), short-circuit protected

Connections
8 (10 A x IEC 320)

BATTERIES

Type
Sealed lead-acid maintenance free - expected life 3/5 years

Back-up time (1)
6 min 8 min 6 min

COMMUNICATION

Interfaces
RS232 - UsB

Ethernet adapter
NET VIsIOn (TCP/IP & snMP) optional card

Local communication software
Local View

Data line protection
nTP data line suppressor: RJ45 10 Base T

UPS CABINET

Dimensions W x D x H
440 x 436 x 87 mm
440 x 608 x 87 mm

Weight
18 kg 28.2 kg 31.5 kg

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 [2376]

Standard communication features

• LOCAL VIEW: ideal UPS monitoring and shutdown point-to-point solution for Windows®, Linux and Mac OS X® operating systems.

• HID: UPS management based on Windows® and Mac OS X® embedded service - UsB interface.

• MODBUS RTU (RS232).

Communication options

• NET VIsIOn: professional WEB/snMP interface for UPS monitoring and shutdown management of several operating systems.

• Dry-contact interface.

• Rails

Battery extensions

NETYS PR
+1 [NPR-B1700-RT] + 2 [NPR-B1700-RT]
1700 VA 22 min 42 min

NETYS PR
+1 [NPR-B2200-RT] + 2 [NPR-B2200-RT]
2200 VA 37 min 72 min

3300 VA 22 min 43 min

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**NETYS PR**

High density, compact power protection on rack
1000 and 1500 VA - Rack 1U

A professional UPS

- Designed for professional environments, protection against power cuts and over voltage is ensured by Line Interactive technology with Automatic Voltage Regulation (AVR).

An installation adapted to the networking environment

- NETYS PR rack provides high power density (1U - 45 mm) which conserves valuable space in the rack for other equipment.
- Can be easily installed in 19" and 23" Rack cabinets, depending on the user's needs. The UPS is provided with rails and mounting accessories.

Adapted connections

- Easy connections to the applications via 4 IEC 320 (IT standard) sockets.

Data line protection

- With RJ45 connector.

Communication with the computer system

- RS232 or USB advanced connections for the management of the power supply and local / remote shutdown of applications.
- Advanced diagnostics and remote control via various protocols and user environments: JBUS, HID, SNMP, TCP/IP,

Some models may not be available in your country – please check with your local sales office.
Single-phase UPS

A professional UPS

- Designed for professional environments, protection against power cuts and overvoltage is ensured by Line Interactive technology with Automatic Voltage Regulation (AVR).

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- With RJ45 connector.

Communication with the computer system

- RS232 or USB advanced connections for the management of the power supply and local / remote shutdown of applications.
- Advanced diagnostics and remote control via various protocols and user environments: JBUS, HID, SNMP, TCP/IP.

NETYS PR

High density, compact power protection on rack 1000 and 1500 VA - Rack 1U

The solution for:

- Professional and IT equipment
- Servers and networking devices
- CAD / graphic workstations with monitors and peripherals
- Control systems

NETYS 090 A

Certifications

- RoHS COMPLIANT

Output connections

- IEC socket 320 (C13)
- Australian standard

Batteries

- Type: sealed lead-acid maintenance free - expected life 3/5 years
- Back-up time: 12 min

COMMUNICATION

- Interfaces: RS232 - USB
- Local communication software: Local View

UPS CABINET

- Dimensions W x D x H: 440 x 578 x 44.5 mm
- Weight: 21 kg / 23 kg

STANDARDS

- Safety: EN 62040-1, AS 62040.1.1, AS 62040.1.2
- EMC: EN 62040-2, AS 62040.2

Battery Hot-swap

- Battery can be hot-swapped without having to shut down the connected equipment.
- Battery can be replaced from the front without removing and disconnecting the UPS.
- Battery check system and replacement indicator.

NETYS 052 A

Control panel

1. Slot for optional communication boards
2. Test / Alarm reset button
3. Power ON
4. Overload
5. Battery mode
6. Service
7. Load segment 2
8. Load segment 1

NETYS 054 A

Included

- Mounting bracket for 19" rack
- Adjustable rails

NETYS 106 A

Standard communication features

- LOCAL VIEW: ideal UPS monitoring and shutdown point-to-point solution for Windows®, Linux and Mac OS® operating systems.
- HID: UPS management based on Windows® and Mac OS® embedded service - USB interface.
- MODBUS RTU (RS232).

NETYS 095 A

Communication options

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

NETYS PR Rack 1U

<table>
<thead>
<tr>
<th>Sn</th>
<th>1000 VA</th>
<th>1500 VA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pn</td>
<td>670 W</td>
<td>1000 W</td>
</tr>
<tr>
<td>Input/output</td>
<td>1/1</td>
<td></td>
</tr>
</tbody>
</table>

INPUT

- Rated voltage: 230 V (default), 220 V, 230 V, 240 V selectable
- Rated frequency: 50/60 Hz auto-sensing

OUTPUT

- Rated voltage: 230 V
- Rated frequency: 50/60 Hz
- Data line protection: NTP data line suppressor: RJ45 10 Base T

CONNECTED

- IEC standard: 4 x IEC 320 [10 A]
- Australian standard: 3 sockets

BATTERIES

- Type: sealed lead-acid maintenance free - expected life 3/5 years
- Back-up time: 12 min

COMMUNICATION

- Interfaces: RS232 - USB
- Local communication software: Local View

UPS CABINET

- Dimensions W x D x H: 440 x 578 x 44.5 mm
- Weight: 21 kg / 23 kg

STANDARDS

- Safety: EN 62040-1, AS 62040.1.1, AS 62040.1.2
- EMC: EN 62040-2, AS 62040.2

Product declaration: CE, RCM (E2376)

(1) PC + 15" LCD monitor.

General Catalogue 2018-2019
NETYS RT
Total protection on rack or tower from 1100 to 11000 VA

The solution for
> Switching
> Storage
> Servers and networking devices
> VoIP communication systems
> Structured cabling systems
> Control systems
> Video surveillance systems

Technology
> VFI “online double conversion”

Certifications
- IEC 60240-1
- RoHS
- CE, RCM (E2376)
- BIS certification

Advantages
- Parallel redundant function
- IP20
--module RACK
- LOCAL VIEW: ideal UPS monitoring and shutdown service - USB interface (1100-3300 VA).
- RT-VISION: professional WEB/SNMP management of several operating systems
- VFD Windows® and Mac OS X®
- Environmental Monitoring Device (EMD).
- Dry-contact interface.
- Communication options: RS232 MODBUS protocol, LCD with menu available in 6 languages, forcing buzzer that immediately indicates the status of the UPS, even for less specialist users.

High protection and availability
- Online double conversion technology with sinusoidal waveform, completely filters out all disturbances from / to the mains power supply and ensures maximum protection of the utility.
- Permanent regulation of output voltage and frequency.
- Wide tolerance of the input voltage reduces switchover times.
- Space and time saving ‘tower-to-rack’ conversion mode.
- Compact footprint (tower mode).
- Compact enclosure saving valuable cabinet rack space.

Easy to use
- Clear and uncluttered LCD interface, with buzzers that immediately indicate the status of the UPS, even for less specialist users.
- Wide range of communication protocols for integration into LAN networks or Building Management Systems (BMS).
- Load segmentation function to prioritize loads and manage critical situations.
- EPO (Emergency Power Off).
- RS232 advanced connection for the management of power supply and local / remote shutdown of the applications.

Simple to install
- No configuration necessary on first startup.
- Space and time saving ‘tower-to-rack’ conversion mode.
- IEC input and output connections (1100-3300 VA) or terminal input and output connections with built-in magnetothermic input switch (5000-11000 VA).
- Compact footprint (tower mode).

Meets practical needs
- Modular battery extension (EBM) to meet all back-up time requirements, even after installation.
- Possibility of 1+1 parallel redundant configuration to maximise the availability of critical utilities, even in the event of a module breakdown (5000-11000 VA).

Some models may not be available in your country – please check with your local sales office.
**Standard electrical features**
- Built-in backfeed protection.
- RJ11 connection for Emergency Power Off (EPO).
- Connection for battery extension modules.
- Port for parallel operation (5000-11000 VA).
- 1+1 parallel module (5000-11000 VA).
- Battery extension modules.
- Manual bypass without interruption (5000-11000 VA).
- Hot-swap manual bypass (1100-3300 VA).
- Portable multiple German standard outlets with cable and IEC 320-C20 plug.

**Electrical options**
- Compact footprint (tower mode).
- IEC input and output connections.
- Wide tolerance of the input voltage reduces the utility.
- Permanent regulation of output voltage and frequency.
- Online double conversion technology with clear and uncluttered LCD interface, with mimetic panel.
- Load segmentation function to prioritize load segmentation function to prioritize.
- Power factor / THDi.
- Efficiency.
- Performance.
- Recharge time.
- Electrical options.

<table>
<thead>
<tr>
<th>Voltage</th>
<th>230 V (1ph) selectable 200 / 208 / 220 / 240 V - 50 or 60 Hz ± 2% (± 0.05 Hz in battery mode)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power factor</td>
<td>0.9 @ 1000 VA 0.9 @ 1500 VA 0.9 @ 2000 VA 0.9 @ 3000 VA 0.9 @ 5000 VA 0.9 @ 6000 VA 0.9 @ 8000 VA 0.9 @ 10000 VA</td>
</tr>
<tr>
<td>Efficiency</td>
<td>up to 93% online mode up to 93% online mode up to 93% online mode up to 93% online mode up to 93% online mode up to 93% online mode up to 93% online mode up to 93% online mode</td>
</tr>
</tbody>
</table>

**Standard communication features**
- LOCAL VIEW: ideal UPS monitoring and shutdown point-to-point solution for Windows®, Linux and Mac OS X® operating systems.
- HID: UPS management based on Windows® and Mac OS X® embedded service - USB interface (1100-3300 VA).
- MODBUS RTU (RS232).
- RT-VISION: professional WEB/SNMP interface for UPS monitoring and shutdown management of several operating systems (5000-11000 VA).

**Technical data**

<table>
<thead>
<tr>
<th>NETYS RT</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sn</td>
<td>1100 VA</td>
<td>1700 VA</td>
</tr>
<tr>
<td>Pn</td>
<td>900 W</td>
<td>1350 W</td>
</tr>
<tr>
<td>Architecture</td>
<td>online double conversion VFI with input PFC and automatic bypass</td>
<td></td>
</tr>
<tr>
<td>Parallel redundant function</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>INPUT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>230 V (1ph) 175÷280 V; up to 120 V @70% load</td>
<td>230 V (1ph) 181÷280 V; up to 100 V @50% load</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz +/-10% (Auto-Selectable)</td>
<td></td>
</tr>
<tr>
<td>Power factor / THDi</td>
<td>&gt;0.99 / &lt;5%</td>
<td></td>
</tr>
<tr>
<td>Input socket</td>
<td>IEC 320-C14 (10 A)</td>
<td>IEC 320-C20 (16 A)</td>
</tr>
<tr>
<td>OUTPUT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>230 V (1ph) selectable 200 / 208 / 220 / 240 V - 50 or 60 Hz ± 2% (± 0.05 Hz in battery mode)</td>
<td></td>
</tr>
<tr>
<td>Power factor</td>
<td>0.9 @ 1000 VA 0.9 @ 1500 VA 0.9 @ 2000 VA 0.9 @ 3000 VA 0.9 @ 5000 VA 0.9 @ 6000 VA 0.9 @ 8000 VA 0.9 @ 10000 VA</td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td>up to 93% online mode up to 93% online mode up to 93% online mode up to 93% online mode up to 93% online mode up to 93% online mode up to 93% online mode up to 93% online mode</td>
<td></td>
</tr>
<tr>
<td>Overload capability</td>
<td>up to 105% continuously; 125% x 3 min; 150% x 30 sec</td>
<td>up to 105% continuously; 125% x 5 min; 150% x 30 sec</td>
</tr>
<tr>
<td>Output connections</td>
<td>6 x IEC 320-C13(T6) 6 x IEC 320-C13 (16 A) 1 x IEC 320-C19 (16 A) terminals</td>
<td></td>
</tr>
<tr>
<td>BATTERY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard autonomy(1)</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Voltage</td>
<td>24 VDC 48 VDC 48 VDC 72 VDC 192 VDC 192 VDC 240 VDC 240 VDC</td>
<td></td>
</tr>
<tr>
<td>Load segmentation function</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Comm slot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPO input (RJ11 port)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STANDARDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td>IEC/EN 62040-1, AS 62040.1.1, AS 62040.1.2</td>
<td></td>
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<tr>
<td>EMC</td>
<td>IEC/EN 62040-2, AS 62040.2</td>
<td></td>
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<tr>
<td>Performance</td>
<td>IEC/EN 62040-3 (efficiency tested by an external independent body)</td>
<td></td>
</tr>
<tr>
<td>Product declaration</td>
<td>CE, RCM (E2376)</td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating ambient temperature</td>
<td>from 5 °C to +40 °C (from 15 °C to 25 °C for best battery life)</td>
<td></td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>from - 15 °C to +50 °C (from 15 °C to 25 °C for best battery life)</td>
<td></td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>5-95% non-condensing</td>
<td></td>
</tr>
<tr>
<td>Noise level (ISO 3746)</td>
<td>&lt;45 dBA</td>
<td>&lt;50 dBA</td>
</tr>
<tr>
<td>UPS CABINET</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UPS size std (W x D x H)</td>
<td>89x33x440 mm</td>
<td>89x43x440 mm</td>
</tr>
<tr>
<td>UPS size RACK</td>
<td>2U</td>
<td>2U</td>
</tr>
<tr>
<td>UPS weight std</td>
<td>13 kg</td>
<td>18 kg</td>
</tr>
<tr>
<td>IP rating</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>EBM module size (W x D x H)</td>
<td>89x34x440 mm</td>
<td>89x34x440 mm</td>
</tr>
<tr>
<td>EBM module weight</td>
<td>16 kg</td>
<td>29 kg</td>
</tr>
</tbody>
</table>

(1) @75% of rated load PF 0.7.
Connections

1. Mains input socket (IEC 320)
2. Fan
3. Output socket (full power)
4. EPO (Emergency Power Off) input
5. RS232 interface (MODBUS protocol)
6. USB port
7. Input protection
8. Output sockets (IEC 320 - 10 A)

9. Connector for external battery extension
10. Slot for optional communication boards
11. Battery extension connector
12. Output terminals
13. Input terminals
14. Input switch
15. RJ45 LAN ethernet connector
16. Parallel port connector

Electrical options

Portable multiple
German standard sockets

Manual bypass (5000-11000 VA)

Hot-swap manual bypass (1100-3300 VA)
NETYS RT 1100-3300 VA - Battery extension

Parallel redundant operation for business continuity

To achieve the highest level of availability and to power critical utilities, NETYS RT UPS modules above 3.3 kVA can be configured for 1:1 redundancy. Redundant operation (1+1) means: the system incorporates one more UPS module than is needed to protect the load; in the event of a breakdown, it guarantees sufficient power supply capacity to the load by maintaining online protection. Parallel technology is based on the principle of load sharing, whereby both units are always kept active.

In a redundant configuration, overall system availability is much higher than a conventional UPS system using similar technology. 1+1 redundant configuration does not require additional circuits and can therefore be set up at a later date, simply by using two UPS modules and a collector / manual bypass module which simplifies cabling and maintenance of the UPS installation.

To further streamline the solution, it is also possible to select between operation with a separate battery or shared battery, which is extremely useful in the case of applications requiring high levels of autonomy.

Control panel

1. Yellow LED lit. Operation in bypass mode
2. Green LED lit. Mains healthy
3. OFF button
4. Green LED lit. Normal operation (inverter in-line)
5. ON/TEST and buzzer override button
6. Navigator button
7. Alphanumeric LCD display
8. Green LED lit. Status of the load
9. Load status
10. Configuration
11. Programmable outlets
12. Battery status
13. Load level (5 steps)
14. Buzzer off
15. Load present
16. Battery fault / Replace the battery
17. General alarm
18. Overload
19. Input value
20. Normal mode / Battery mode (flashing)
NETYS RT-M
Solution for marine applications
from 1100 to 3300 VA

High availability in marine environments

The marine industry calls for reliable equipment which is able to supply applications operating in harsh environments. In such a context, power outages cause extremely serious problems to critical equipment for the navigation system, and communication and engine controls, which leads to costs increasing. In line with the company’s commitment to develop innovative solutions to ensure availability, improve energy efficiency and reduce costs, SOCOMEC has introduced NETYS RT-M, high-performance UPS DNV GL standard certified.

Easy to use

- Easy configurable frequency converter operation (50 Hz, 60 Hz).
- No configuration necessary on first startup.
- Wide range of communication protocols (including TCP/IP and SNMP) for integration into LAN networks or building management systems (BMS).

Meets practical needs

- Online double conversion technology with sinusoidal waveform, to completely filter out all disturbances from/to the mains power supply and to ensure maximum protection of the equipment.
- Optional battery extension modules (EBM) to meet wide back-up time requirements, even after installation.
- Clear and uncluttered LCD interface, with buzzers that immediately indicate the operating status of the UPS, even for less specialist users.

The solution for

- Steering systems
- Bridge systems
- Radar systems
- Control systems
- Video surveillance systems

Certifications

- DNV-GL
- TÜV
- GS
- RoHS Compliant

Some models may not be available in your country – please check with your local sales office.
**Technical data**

<table>
<thead>
<tr>
<th>NETYS RT-M</th>
<th>Sn</th>
<th>1100 VA</th>
<th>1700 VA</th>
<th>2200 VA</th>
<th>3300 VA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Architecture</strong></td>
<td></td>
<td>on-line double conversion VFI with input PFC and automatic bypass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INPUT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td></td>
<td>230 V (1ph)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td></td>
<td>175÷230 V, up to 120 V @70% load</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated frequency</td>
<td></td>
<td>50/60 Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency tolerance</td>
<td></td>
<td>± 10% (Auto-Selectable)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power factor / THDI</td>
<td></td>
<td>&gt; 0.99 / &lt; 5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OUTPUT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td></td>
<td>230 V (1ph)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td></td>
<td>selectable 200/208/220/240 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated frequency</td>
<td></td>
<td>58 or 60 Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency tolerance</td>
<td></td>
<td>± 2% (&lt; 0.05 Hz in battery mode)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power factor</td>
<td></td>
<td>0.9 @ 1000 VA, 0.9 @ 1500 VA, 0.9 @ 2000 VA, 0.9 @ 3000 VA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
<td>up to 93% online mode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overload capability</td>
<td></td>
<td>up to 105% continuously, 125% for 3 min, 150% for 30 s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connections</td>
<td></td>
<td>6 x IEC 320-C13 (10 A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BATTERY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard autonomy</td>
<td></td>
<td>8 min, 12 min, 8 min, 10 min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td></td>
<td>24 VDC, 48 VDC, 72 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recharge time</td>
<td></td>
<td>&lt; 6 hours to recover 90% capacity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**COMMUNICATION**

<table>
<thead>
<tr>
<th>Interface</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet</td>
<td>WEB / SNMP (Ethernet RJ45 port) - option</td>
</tr>
<tr>
<td>RS232 (DB9 port)</td>
<td>MODBUS protocol, USB HID protocol</td>
</tr>
<tr>
<td>Dry contacts card</td>
<td>option</td>
</tr>
<tr>
<td>EPO input</td>
<td>RJ11 port</td>
</tr>
</tbody>
</table>

**ENVIRONMENT**

| Operating ambient temperature | from 0 °C up to +40 °C (from 15 °C to 25 °C for maximum battery life) |
| Relative humidity            | 5-95% non-condensing   |
| Maximum altitude             | 1000 m without derating (max. 3000 m) |
| Noise level (ISO 3746)       | < 45 dBA, < 50 dBA    |

**UPS CABINET**

| Dimensions W x D x H | 89 x 333 x 440 mm |
| Dimensions RACK U   | 2U |
| Weight              | 13 kg, 18 kg, 19 kg, 30 kg |

**Degree of protection**

| EBM - EXTERNAL BATTERY MODULE |
| Dimensions W x D x H | 89 x 333 x 440 mm |
| Dimensions RACK U   | 2U |
| Weight              | 16 kg, 29 kg, 43 kg |

**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 (efficiency tested by an external independent body) |

**Maritime certification**


| Product declaration     | CE, RCM (E2376) |

---

**Control panel**

- Load present
- Buzzer off
- Load level (5 steps)
- Battery status
- Load status
- Overload
- Input value
- Normal mode / Battery mode (flashing)
- Configuration
- Programmable outlets
- OFF button
- ON/TEST and buzzer override button
- Battery fault / Replace the battery
- General alarm
- Navigator button

**Standard electrical features**

- Built-in backfeed protection.
- Protection against atmospheric phenomena (NTP) for telephone/ADSL modems.
- RJ11 connection for Emergency Power Off (EPO).
- Connection for battery extension modules.

**Electrical options**

- Battery extension modules.

**Standard communication features**

- LOCAL VIEW: ideal UPS monitoring and shutdown point-to-point solution for Windows®, Linux and Mac OS X® operating systems.
- HID: UPS management based on Windows® and Mac OS X® embedded service - USB interface.
- MODBUS RTU.

**Communication options**

- RT-VISION: professional WEB/SNMP interface for UPS monitoring and shutdown management of several operating systems.
**ITYS E**

Affordable and reliable protection from 1 to 10 kVA

**Best electrical protection**
- True online double conversion technology (VFI) assures high availability and total load protection.
- Constant output voltage and frequency regulation makes ITYS E compatible with different applications, operating environments and GenSets.
- Automatic bypass supplies the loads in the event of overloads or faults.

**Robust and versatile**
- Compact tower UPS system saves space in the operating environment.
- No particular configuration on first startup.
- Easy connections via sockets or terminals.
- Wide input voltage tolerance limits the switchovers to battery mode prolonging the battery life.
- Manual bypass for periodic or emergency maintenance.

**The solution for**
- Professional workstations
- Industrial automation
- Security systems
- Telecom systems
- Banking ATM systems

**Technology**
- VFI "online double conversion"

**Certifications**
- BIS certification
- RoHS
- CE
- IS 16242 (Part 1)/R-41030651 - COMPLIANT
- EN 62040-1
- EN 62040-2

**Output connections**
- IEC socket 320 (C13)
- Universal socket
- Indian standard (BIS compliant)

---

Some models may not be available in your country – please check with your local sales office.
Best electrical protection
• Automatic bypass supplies the loads in the event of overloads or faults.
• Single-phase UPS (VFI) assures high availability and total load protection.

ITYS E
Affordable and reliable protection from 1 to 10 kVA

Connections

Technical data

<table>
<thead>
<tr>
<th>ITYS E</th>
<th>1 kVA</th>
<th>2 kVA</th>
<th>3 kVA</th>
<th>6 - 10 kVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sn (VA)</td>
<td>1000</td>
<td>2000</td>
<td>3000</td>
<td>6000</td>
</tr>
<tr>
<td>Pf (W)</td>
<td>800</td>
<td>1600</td>
<td>2400</td>
<td>4800</td>
</tr>
<tr>
<td>INPUT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>230 V (1ph) 160÷300 V up to 110 V @ 60% load</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power factor</td>
<td>0.99</td>
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<tr>
<td>OUTPUT</td>
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<tr>
<td>Rated voltage</td>
<td>208/220/230/240 V</td>
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<td></td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td>± 1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz (46÷54 Hz / 56÷64 Hz) (in battery mode 50/60 ± 0.1 Hz)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overload</td>
<td>Up to 130% for 1 minute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crest factor</td>
<td>3:1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONNECTIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IEC standard</td>
<td>3 x IEC 320</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universal standard</td>
<td>2 sockets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian standard</td>
<td>3 sockets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BATTERIES</td>
<td>Type</td>
<td>sealed lead-acid maintenance free - expected life 3/5 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back-up time @75% of rated VA load @ 0.9P</td>
<td>8 min</td>
<td>9 min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>36 VDC</td>
<td>96 VDC</td>
<td>192 VDC</td>
<td>240 VDC</td>
</tr>
<tr>
<td>Battery charger(2)</td>
<td>Setting up to 6 A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMUNICATION</td>
<td>Interfaces</td>
<td>RS232 - USB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local communication software</td>
<td>LOCAL VIEW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EFFICIENCY</td>
<td>Online mode</td>
<td>up to 90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENT</td>
<td>Ambient temperature</td>
<td>0 to 40°C (15 to 25 °C for maximum battery life)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative humidity</td>
<td>0 to 95% without condensation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum altitude</td>
<td>1000 m without derating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise level at 1 m</td>
<td>&lt; 55 dBA</td>
<td>&lt; 59 dBA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UPS CABINET</td>
<td>Dimensions(1) (W x D x H) (mm)</td>
<td>145 x 285 x 220</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>145 x 400 x 220</td>
<td>190 x 425 x 320</td>
<td>190 x 370 x 649</td>
<td>190 x 450 x 640</td>
</tr>
<tr>
<td>Weight(1) (kg)</td>
<td>10</td>
<td>17</td>
<td>28</td>
<td>60</td>
</tr>
<tr>
<td>Dimensions(1) (W x D x H) (mm)</td>
<td>145 x 285 x 220</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>145 x 400 x 220</td>
<td>190 x 425 x 320</td>
<td>190 x 370 x 649</td>
<td>190 x 450 x 320</td>
</tr>
<tr>
<td>Weight(1) (kg)</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STANDARDS</td>
<td>Safety</td>
<td>EN 62040-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMC</td>
<td>EN 62040-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product declaration(3)</td>
<td>CE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS certification</td>
<td>R-41030651</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

(1) Models with IEC output sockets.
(2) Models without batteries.
(3) Models with IEC output sockets.

Standard communication features
• LOCAL VIEW: ideal UPS monitoring and shutdown point-to-point solution for Windows®, Linux and Mac OS® X® operating systems.
• HID: UPS management based on Windows® and Mac OS X® embedded service - USB interface.

Communication options
• Dry-contact card for UPS remote diagnostic (ITY-E-OP-REL).


**ITYS**

Reliable and versatile power protection from 1 to 20 kVA

**High protection and availability**
- True online double conversion technology (VFI) assures high availability and total load protection.
- Constant output voltage and frequency regulation makes ITYS compatible with different applications, operating environments and generator sets.
- Automatic bypass supplies the loads in the event of overloads or faults.

**Robust and versatile**
- Compact tower UPS system saves space in the operating environment.
- No particular configuration on first startup.
- Easy connections via IEC 320 sockets or terminals.
- Wide input voltage tolerance limits the switchovers to battery mode prolonging the battery life.
- Manual bypass for periodic or emergency maintenance.

**Wide battery configurability**
- Flexible battery management available for all ITYS models to ensure power supply continuity in the event of an outage.
- Modular battery extension meets a wide variety of power back-up times according to the load to be supplied.
- Modular battery extension enables limitless increases in autonomy, even after installation.
- Powerful battery charger models guarantee constant and reliable operation using external high capacity batteries, therefore providing supply continuity during long outages.

**The solution for**
- Professional workstations
- Server and corporate networks
- Storage systems
- Industrial automation
- Security systems
- Telecom systems

**Technology**
- VFI "online double conversion"

**Certifications**
- RoHS

**Autonomy configurations**
- Flexible autonomy
- Extendable autonomy
- Long autonomy

Some models may not be available in your country – please check with your local sales office.
Some models may not be available in your country – please check with your local sales office.

Robust and versatile
High protection and availability
• Manual bypass for periodic or emergency
• Wide input voltage tolerance limits the
• Easy connections via IEC 320 sockets or
• No particular configuration on first startup.
• Compact tower UPS system saves space in
• Constant output voltage and frequency
• Single-phase UPS

• Powerful battery charger models guarantee
• Modular battery extension enables
• Modular battery extension meets a wide
• Flexible battery management available for
• Long autonomy
• Extendable autonomy
• UPS without internal batteries
• Battery charger

Certifications
- IEC/EN 62040-1, AS 62040.1.1, AS 62040.1.2
- EMC: IEC62040-2, AS 62040.2
- Performance: IEC62040-3 (efficiency tested by an external independent body)
- Product declaration: CE, CMC (6237B)

Technical data

<table>
<thead>
<tr>
<th>Sn</th>
<th>INPUT</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 VA</td>
<td>800 W</td>
<td>208 / 220 / 230 / 240 V (± 2 %)</td>
</tr>
<tr>
<td>2000 VA</td>
<td>1600 W</td>
<td>208 / 220 / 230 / 240 V (± 1 %)</td>
</tr>
<tr>
<td>3000 VA</td>
<td>2400 W</td>
<td>230 V (110÷300 V)</td>
</tr>
<tr>
<td>6000 VA</td>
<td>4800 W</td>
<td>230 V (176÷276 V)</td>
</tr>
<tr>
<td>10000 VA</td>
<td>9600 W</td>
<td>400 V (3/1), 230 V (1/1)</td>
</tr>
<tr>
<td>20000 VA</td>
<td>19200 W</td>
<td>50/60 Hz (± 0.2 Hz in battery mode)</td>
</tr>
</tbody>
</table>

| Power factor | 0.98 | 0.99 |
| Connections | 3 x IEC 320 (C13) | 4 x IEC 320 (C13) + terminals |
| BATTERIES | Type | Sealed lead-acid maintenance free - expected life 3/5 years |
| Voltage | 36 V DC | 96 V DC |
| Back-up time | 10 min | 17 min |
| Battery charger | 8 A | 4 A |
| ENVIRONMENT | Online mode | up to 91 % |
| Ambient service temperature | 0 °C to +40 °C (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 CABINET | Dimensions W x D x H (mm) | 145 x 400 x 220 |
| Weight (models with internal batteries) | 13 kg |
| Weight (models without internal batteries) | 7 kg |
| Degree of protection | IP20 |

Advanced communication
- Wide range of communication protocols available as options (including JBUS, TCP/IP and SNMP) for integration into LAN networks or building management systems (BMS).
- RS232 advanced connection for the management of power supply and local/remote shutdown of the applications with Windows®, Linux and Mac OS X® systems.
- USB port for direct interfacing with Windows® and Mac OS X® systems.
- Clear and uncluttered LCD interface for easy UPS monitoring, even for less specialist users.

Local and IP network management solutions
- LOCAL VIEW: ideal point-to-point software for UPS monitoring and shutdown of Windows®, Linux and MAC OS X® operating systems (standard for all models).
- NET VISION: professional network adapter for monitoring and controlling UPS units from a remote location (option for all models).
MODULYS
Scalable and flexible modular solution from 1.5 to 24 kVA

Range description and features

Upgradable over time

• MODULYS adapts easily to changes and to the growth of your system. Power modules of 1.5, 3, 4.5 and 6 kVA, in tower, rack and system versions are easily combined to ensure the ideal configuration.

Total protection

• MODULYS is a modular UPS. The number of Mod-Power and Mod-Battery units can easily be increased to provide redundant operation, from N + 1 to N + X. In this way, total availability of the system is achieved, even if one or more modules are inoperative.

Continuous protection

• MODULYS has “hot swap” power and back-up modules which can be replaced or inserted while the system is in operation. In this way, true continuity of power supplied to the load is achieved, without any interruption of service.

Organisation of your future needs

• MODULYS modular design allows the number of modules to be increased and therefore, the power and back-up time of your UPS to grow. In this way you can easily cope with future situations which you are not able to predict today.

Working space

• MODULYS is the most compact UPS in its category. Whether in stand-alone version or one of the many system configurations, the installation takes up very little of your working area.

"No Single Point of Failure" solutions

• Each power module has its own integrated controller and an automatic bypass. In the system version, this design provides an additional guarantee since the load will be powered even if one of the modules is not working.

The solution for

• e.business
• Server farms
• Telecommunications
• Medical
• Computer networks

Technology

• VFI *online double conversion*
**Range**

*Mod-RM* expandable from 1.5 to 9 kVA  
*Mod-MC* expandable from 1.5 to 24 kVA  
*Mod-EB* expandable from 9 to 24 kVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sn [VA]</th>
<th>Pn [W]</th>
<th>INPUT</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM 315</td>
<td>1500</td>
<td>1050</td>
<td>1/1</td>
<td>230 V (1ph)</td>
</tr>
<tr>
<td>RM 330</td>
<td>3000</td>
<td>2100</td>
<td>1/1, 3/1</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>MC 415</td>
<td>4500</td>
<td>3150</td>
<td>Up to 30% nominal load</td>
<td>± 10%</td>
</tr>
<tr>
<td>MC 660</td>
<td>6000</td>
<td>4200</td>
<td>0 - 90% without condensation</td>
<td>0 % - 90 %</td>
</tr>
</tbody>
</table>

**Technical data**

<table>
<thead>
<tr>
<th>Module</th>
<th>Mod-Power</th>
<th>Mod-MC</th>
<th>Mod-EB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery pack</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1 x 1500 VA</td>
<td>1 x 3000 VA</td>
<td>1 x 3000 VA</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1 x 4500 VA</td>
<td>2 x 3000 VA</td>
<td>2 x 3000 VA</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1 x 6000 VA</td>
<td>1 x 6000 VA</td>
<td>1 x 6000 VA</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2 x 4500 VA</td>
<td>2 x 4500 VA</td>
<td>2 x 4500 VA</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>2 x 6000 VA</td>
<td>2 x 6000 VA</td>
<td>2 x 6000 VA</td>
</tr>
</tbody>
</table>

**Standard electrical features**

- Separate bypass input.
- 4 dry contacts relay card.

**Electrical options**

- Temperature sensor.

**Communication options**

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

**Mod-RM**

<table>
<thead>
<tr>
<th>UPS</th>
<th>VA</th>
<th>Back-up time (minutes)(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM 1500</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>RM 3000</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>RM 4500</td>
<td>75</td>
<td>150</td>
</tr>
<tr>
<td>RM 6000</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

**Mod-MC**

<table>
<thead>
<tr>
<th>UPS</th>
<th>WA</th>
<th>Back-up time (minutes)(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC 415</td>
<td>1.5</td>
<td>20</td>
</tr>
<tr>
<td>MC 430</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>MC 645</td>
<td>4.5</td>
<td>120</td>
</tr>
<tr>
<td>MC 660</td>
<td>6</td>
<td>180</td>
</tr>
</tbody>
</table>

**Mod-EB**

<table>
<thead>
<tr>
<th>UPS</th>
<th>WA</th>
<th>Back-up time (minutes)(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB 1290</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>EB 1212 ss</td>
<td>12</td>
<td>24</td>
</tr>
</tbody>
</table>

**Communication options**

- 2 slots for communication options.
- MODBUS/JBUS RTU (RS232).

**STANDARDS**

- Safety: EN 62040-1, AS 62040.1.1, AS 62040.1.2
- EMC: EN 62040-2, AS 62040.2
- Performance: EN 62040-3, AS 62040.3
- Product declaration: CE, RCM (E2376)
**ITYS PRO**

Reliable cost-effective power protection from 10 to 20 kVA

**Compact, cost-effective protection**
- Easy to order, install and operate.
- State-of-the-art technology providing high levels of performance in a very compact unit.
- Online double conversion mode with an output power factor of 0.9 providing 12% more active power compared to UPS with a power factor of 0.8.
- Best-in-class online efficiency.
- 1+1 parallel configuration for 10 kVA and 20 kVA type S models with dual input mains.
- Innovative battery management extending battery life (virtually ZERO ripple on batteries).
- Redundant bypass protection reducing the risk of power cuts.

**Tailored to your environment**
- Designed to operate in challenging electrical environments.
- Ideal for protecting sensitive IT and non-IT applications.
- Flexible battery configurability without changing the footprint.
- Up to 3 battery chargers for very long back-up time requirements.
- Models with internal isolation transformer and IP31 degree of protection.
- IP31 degree of protection available on request for transformerless models.
- Low electromagnetic emissions compliant for commercial installations.
- Embedded redundancy on the bypass control and power supply to minimise any risk of interrupting the load.
- A single 25-block battery string simplifies the connection and reduces both the overall cost and the space required.

**The solution for**
- Server rooms
- Service sector
- Infrastructure
- Healthcare sector
- Light industrial applications

**Technology**
- VFI "online double conversion"

**Advantages**

**Different UPS configurations, a single battery cabinet**

**STANDARDS**

**ENVIRONMENT**

**EFFICIENCY**

**COMMUNICATION**

**BYPASS**

**OUTPUT**

**INPUT**

<table>
<thead>
<tr>
<th>Model</th>
<th>Pn [kW]</th>
<th>Power factor / THDI</th>
<th>Rated frequency / tolerance</th>
<th>Rated voltage</th>
<th>Crest factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type M</td>
<td>10</td>
<td>0.99 / &lt;2.5 %</td>
<td>±2 (up to ±5 with generator - selectable)</td>
<td>230 V (configurable: 208(1)/220/230/240)</td>
<td>3:1 (complying with IEC 62040-3)</td>
</tr>
<tr>
<td>Type M</td>
<td>15</td>
<td>0.99 / &lt;2.5 %</td>
<td>±2 (up to ±5 with generator - selectable)</td>
<td>3P+N : 400 V (configurable: 360(1)/380/400/415)</td>
<td>3:1 (complying with IEC 62040-3)</td>
</tr>
</tbody>
</table>

**Rated voltage**

- 3P+N : 400 V (configurable: 360(1)/380/400/415)

**Technical data**

- degree of protection without transformer: IP20 (IP31 on request); with transformer: IP31
- Type T - Dimensions W x D x H 370 x 780 x 1385 mm (IP20), 440 x 932 x 1387 mm (IP31)
- Type M - Weight (without batteries) 75 kg
- Type S - Weight (without batteries) 58 kg
- Maximum altitude 1000 m without derating
- Relative humidity 0 to 95 % without condensation
- Ambient temperature 0 to 40 °C (15 to 25 °C for maximum battery life)
- ECO mode without transformer: up to 98%; with transformer: up to 95%
- Online mode without transformer: up to 95%; with transformer: up to 92%

**Communication options**
- LOCAL VIEW: ideal point-to-point software for remote location (option for all models).
- NET VISION: professional network adapter management solutions
- UPS monitoring and shutdown of Windows®, Linux and MAC OS X® operating systems.
- User-friendly multilingual interface with dry-contact interface.
- Optional cards SNMP card - ADC/RS485 card - MODBUS card
- Interfaces RS232 - Ethernet

Some models may not be available in your country – please check with your local sales office.
**Standard electrical and mechanical features**

- Dual input mains (3/1 models).
- Internal maintenance bypass.
- Backfeed protection: detection circuit.
- EBS (Expert Battery System) for battery management.
- IP31 degree of protection (models with transformer).

**Electrical and mechanical options**

- Dual input mains (3/3 models).
- External battery cabinet.
- Additional battery chargers.
- IP31 degree of protection (models without transformer).

**Standard communication features**

- User-friendly multilingual interface with graphic display.
- Integrated LAN network monitoring via web browser.
- 2 slots for communication options.

**Communication options**

- Dry-contact interface.
- MODBUS interface.

**Local and IP network management solutions**

- LOCAL VIEW: ideal point-to-point software for UPS monitoring and shutdown of Windows®, Linux and MAC OS® operating systems.
- NET VISION: professional network adapter for monitoring and controlling UPS units from a remote location (option for all models).

---

### Technical data

#### UPS with internal batteries

<table>
<thead>
<tr>
<th>Sn [kVA]</th>
<th>Pn [kVA]</th>
<th>INPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>9</td>
<td>•</td>
</tr>
<tr>
<td>15</td>
<td>13.5</td>
<td>•</td>
</tr>
<tr>
<td>20</td>
<td>18</td>
<td>•</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
</tr>
<tr>
<td>Voltage tolerance</td>
</tr>
<tr>
<td>Rated frequency</td>
</tr>
<tr>
<td>Power factor / THD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BYPASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
</tr>
<tr>
<td>Voltage tolerance</td>
</tr>
<tr>
<td>Rated frequency / tolerance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COMMUNICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interfaces</td>
</tr>
<tr>
<td>Optional cards</td>
</tr>
<tr>
<td>Communication software</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EFFICIENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online mode</td>
</tr>
<tr>
<td>ECO mode</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
</tr>
<tr>
<td>Relative humidity</td>
</tr>
<tr>
<td>Maximum altitude</td>
</tr>
<tr>
<td>Noise level at 1 m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UPS CABINET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type S - Dimensions W x D x H</td>
</tr>
<tr>
<td>Type M - Dimensions W x D x H</td>
</tr>
<tr>
<td>Type M - Weight (without batteries)</td>
</tr>
<tr>
<td>Type T - Dimensions W x D x H</td>
</tr>
<tr>
<td>Type T - Weight (without batteries)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STANDARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
</tr>
<tr>
<td>EMC</td>
</tr>
<tr>
<td>Performance</td>
</tr>
<tr>
<td>Product declaration</td>
</tr>
</tbody>
</table>

---

1. Pout = 90 % Pnom.
2. Models without transformer and models with transformer connected to the UPS output.
3. For models with transformer connected to the UPS input, please contact us.
4. 1+1 parallel configuration for 10 kVA and 20 kVA type A models with dual input mains.

---

**General Catalogue 2018-2019**
MASTERYS BC

Reliable, simple and ready-to-use power protection from 15 to 40 kVA

The ideal protection
- Simple and reliable power protection.
- Tailored for medium-sized businesses.
- Advantages of advanced technology.

An excellent size/power/backup time ratio
- Ideal for sensitive professional applications.
- Suitable for protection in IT environments thanks to the internal back-up time and the possibility of installation in 19" rack cabinets.

Tailored to your environment
- Easy to install.
- Unique to the market with its highly compact size.
- Flexible back-up times: different back-up time configurations are available either within the UPS standard cabinet or by using taller UPS cabinets, without changing the floor space (W = 444, D = 795 mm).
- Increased system availability placing two UPS in parallel.
- Fitted with a multilingual LCD display.
- Separate rectifier supply and bypass networks.

The solution for
- Server rooms
- Service sector
- Infrastructure
- Healthcare sector
- Light industrial applications

Technology
- VFI "online double conversion"

Our dedicated Expert Services for UPS
We offer services to ensure your UPS highest availability:
- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
- Maintenance packages
- Training

Some models may not be available in your country – please check with your local sales office.
Single-phase and three-phase UPS
from 15 to 40 kVA

**Standard electrical features**
- Dual input mains (3/1 models).
- Internal manual bypass.
- Backfeed protection: detection circuit.
- EBS (Expert Battery System) for battery management.

**Electrical options**
- Dual input mains (3/3 models).
- External battery cabinet.
- External temperature sensor.
- Additional battery chargers.
- Parallel kit.
- ACS synchronization system.

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

**UPS and internal batteries**

<table>
<thead>
<tr>
<th>UPS</th>
<th>In/Out</th>
<th>Back-up time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBC 115</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>MBC 150</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>MBC 310</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>MBC 330</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>MBC 340</td>
<td>30</td>
<td>40</td>
</tr>
</tbody>
</table>

**Technical data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>MASTERY BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sn [kVA]</td>
<td>15 20 30 40</td>
</tr>
<tr>
<td>Ph [kW]</td>
<td>12 16 24 32</td>
</tr>
<tr>
<td>Input/output</td>
<td>3/1 3/3</td>
</tr>
<tr>
<td>Parallel configuration</td>
<td>up to 2 units</td>
</tr>
</tbody>
</table>

**Standard communication features**
- MODBUS RTU.
- 2 slots for communication options.

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

**Standard electrical features**

- Dual input mains (3/1 models).
- Internal manual bypass.
- Backfeed protection: detection circuit.
- EBS (Expert Battery System) for battery management.

**Electrical options**

- Dual input mains (3/3 models).
- External battery cabinet.
- External temperature sensor.
- Additional battery chargers.
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**Remote monitoring service**

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**UPS and internal batteries**

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**Technical data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>400 V (3ph + N)</td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td>± 20 % (up to -3% at 70 % nominal load)</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz ± 10 %</td>
</tr>
<tr>
<td>Power factor / THDI</td>
<td>0.99 / &lt; 3 %</td>
</tr>
</tbody>
</table>

**Standard communication features**

- MODBUS RTU.
- 2 slots for communication options.

**Communication options**

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

**Standard electrical features**

- Dual input mains (3/1 models).
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- Backfeed protection: detection circuit.
- EBS (Expert Battery System) for battery management.

**Electrical options**

- Dual input mains (3/3 models).
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- External temperature sensor.
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**Remote monitoring service**

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**UPS and internal batteries**

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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>230 V (1ph + N), 400 V (3ph + N)</td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td>± 1 %</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Frequency tolerance</td>
<td>± 2 % (configurable from 1 % to 8 % with generating set)</td>
</tr>
<tr>
<td>Overload</td>
<td>125 % for 10 minutes, 150 % for 1 minute</td>
</tr>
<tr>
<td>Crest factor</td>
<td>3.1 (complying with IEC 62040-3)</td>
</tr>
<tr>
<td>Power factor without derating</td>
<td>up to 0.9 (up to 0.7 for 10 minutes)</td>
</tr>
</tbody>
</table>

**Efficiency**

- Online mode: up to 99%
- Eco Mode: up to 98%

**Environment**

- Operating ambient temperature: from 0 °C up to +40 °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

**UPS cabinet**

| Dimensions type (short) (W x D x H) | 444 x 795 x 800 mm |
| Dimensions type (medium) (W x D x H) | 444 x 795 x 1000 mm |
| Dimensions type (tall) (W x D x H) | 444 x 795 x 1400 mm |
| Weight with standard batteries | 195 kg |
| Degree of protection | IP20 (according to IEC 66529) |
| Colour | RAL 7012, plastic front panels: dark grey |

**Standards**

| Safety | EC/EN 62040-1, EN 60950-1-1, AS 62040.1.1, AS 62040.1.2 |
| EMC | IEC/EN 62040-2, AS 62040.2 |
| Performance | VR-SS-111 - IEC 62040-3, AS 62040.3 |
| Product declaration | CE, RCM (E2376) |

(1) @ Pout = 90 % Pnom.
A complete, cost-effective solution

- Online double conversion mode with an output power factor of 0.9 providing 12% more active power compared to UPS with a power factor of 0.8.
- Dual input mains allows you to manage independent power sources.
- Increased system availability placing two UPS in parallel for 1+1 redundancy.
- Internal manual bypass for easy maintenance without power interruption.
- Internal batteries providing more than 1 hour runtime.
- Multilanguage display.

Tailored to your environment

- Saves space with a reduced footprint and optimized cabinet size.
- Low noise level.
- Flexible battery solutions.
- Compact, lightweight, and easy to install.
- Extended battery life and performance with exclusive EBS battery charging management for increased battery life.

Our dedicated Expert Services for UPS

We offer services to ensure your UPS highest availability:

- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
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- Training

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Three-phase UPS

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The solution for

• Server rooms
• Service sector
• Infrastructure
• Healthcare sector
• Light industrial applications
• Technology

VFI “online double conversion”

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www.socomec.com/services

MASTERYS BC

Reliable, simple and ready-to-use power protection from 60 to 80 kVA

The solution for

• Server rooms
• Service sector
• Infrastructure
• Healthcare sector
• Light industrial applications
• Technology

MASTE 066 A

Technical data

| Sn (kVA) | 60 | 80 |
| Ph (kW) | 54 | 72 |
| Input / output | • | • |
| Parallel configuration | 1+1(1) |
| INPUT | | |
| Rated voltage | 400 V 3ph + N |
| Voltage tolerance | 240 V to 480 V(2) |
| Rated frequency | 50/60 Hz ± 10% |
| Power factor / THDI | 0.99 / < 3% |
| OUTPUT | | |
| Rated voltage | 1ph + N: 230 V (can be configured 220/240 V) 3ph + N: 400 V (can be configured 380/415 V) |
| Voltage tolerance | static load ±1 % dynamic load in accordance with VFI-SS-111 |
| Rated frequency | 50/60 Hz |
| Frequency tolerance | ± 2% (configurable from 1% to 8%) |
| Overload | 125% for 10 minutes, 150% for 1 minute |
| Crest factor | 3:1 |
| BYPASS | | |
| Rated voltage | rated output voltage |
| Voltage tolerance | ± 15% (configurable with from 10% to 20%) |
| Rated frequency | 50/60 Hz |
| Frequency tolerance | ± 2% (configurable for Genset compatibility) |
| EFFICIENCY | | |
| Online mode at 100% of load | up to 94.5% |
| ENVIRONMENT | | |
| Operating ambient temperature | from 0 °C up to +40 °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) | < 62 dBA |
| UPS CABINET | | |
| Dimensions W x D x H | 444 x 795 x 1400 mm |
| Weight(3) | 180 kg | 200 kg |
| Degree of protection | IP20 |
| 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, RCM (E2376) |

(1) The standard model is prepared for a 1+1 redundant system. Upon request, it is possible to have connected up to 6 modules in a parallel system. (2) Conditions apply. (3) Without batteries.

Remote monitoring service

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

Electrical options

• Dual input mains.
• External battery cabinet.
• External temperature sensor.
• Additional battery chargers.
• Galvanic isolation transformer.
• Parallel kit.
• ACS synchronization system.

Standard electrical features

• Internal manual bypass.
• Backfeed protection: detection circuit.
• EBS (Expert Battery System) for battery management.

Communication options

• Dry-contact interface.
• PROFIBUS.
• NET VISION: professional WEB/SNMP interface for UPS monitoring and shutdown management of several operating systems.
MASTERYS BC+
4th generation digital native general purpose UPS
from 100 to 160 kVA

The best protection with a cost-effective approach
- Online double conversion mode with an output power factor of 0.9.
- Best-in-class online efficiency.
- Versatile to operate in different electrical environments.
- Standard design with dual input mains to manage independent power sources.
- Standard design equipped with input, output and auxiliary mains switches.
- Internal manual bypass for easy maintenance with no power interruption.

Extremely reliable, robust and durable
- Completely designed and manufactured in Europe.
- Certified seismic resistance.

Tailor-made - as standard
- Easy configurable for retrofit in existing installations.
- Catalogue base flexibility to meet specific needs.
- Fast delivery time for a fully personalized solution.

Native digital solution
- Ready for integration in LAN and Industry 4.0 ecosystem.
- IoT ready and remote cloud services.
- Multiprocessor intelligent product architecture.
- Product identification and configuration using standard QR codes.

Advantages
- Compact, lightweight and easy to install.
- Low acoustic noise level.
- Modern aesthetics combined with ergonomics.
- User-friendly multilingual interface with a graphic LCD display.

Certifications
- Very robust and durable
- Extremely reliable, robust and durable
- Certified seismic resistance.
- Fully compliant with the RoHS EU directive.
- Seismic compliance on demand, in accordance with the Uniform Building Code UBC-1997 Zone 4.
- Environmental full compliance with the RoHS EU directive.
- Performance IEC/EN 62040-3, AS 62040.3.

A tutoring app for a simplified installation
- Augmented Reality technology
- Guided workflow on your smartphone
- Verification and validation by the Socomec Service Center

The solution for
Commercial buildings
- Security control
- Payment systems
- Emergency services
- IT networking
- Building automation

Smart manufacturing
- Process control systems
- Cloud service access

A three-phase UPS
**System features**
- Dual input mains.
- Internal maintenance bypass switch.
- Input mains switch breaker.
- Output switch breaker.
- Auxiliary mains switch breaker.
- Backfeed protection: detection circuit.
- Power walk-in ramp for excellent compliance with generators.

**Standard communication features**
- Graphical LCD multilingual display.
- 2 slots for communication options.
- USB port to download log file.
- Ethernet port for service purposes.

**Technical data**

<table>
<thead>
<tr>
<th>Sn [kVA]</th>
<th>100</th>
<th>120</th>
<th>160</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pn [kW]</td>
<td>90</td>
<td>108</td>
<td>144</td>
</tr>
<tr>
<td>Input/output</td>
<td>3/3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parallel configuration</td>
<td>up to 6 units</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**INPUT**
- Rated voltage: 400 V 3ph+N (3 wire input also available on demand).
- Voltage tolerance: ± 2% (configurable for GenSet compatibility).
- Rated frequency: 50/60 Hz ± 10%.

**OUTPUT**
- Power factor: 0.9 (according to IEC/EN 62040-3).
- Rated voltage: 3ph+N: 400 V (can be configured 380/415 V).
- Rated frequency: 50/60 Hz.
- Frequency tolerance: ± 2% (configurable for GenSet compatibility).
- Total output voltage distortion: < 1%.
- Overload: 125% for 10 minutes, 150% for 1 minute.
- Crest factor: 3:1.

**BIYPASS**
- Rated voltage: Rated output voltage.
- Voltage tolerance: ± 15% (configurable with from 10% to 20%).
- Rated frequency: 50/60 Hz.
- Frequency tolerance: ± 2%.

**EFFICIENCY**
- Double conversion mode: up to 98%.
- Always on mode: up to 99%.

**ENVIRONMENT**
- Operating ambient temperature: from 0 °C to +35 °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): < 85 dB.

**UPS CABINET**
- Dimensions: W 600 mm, D 855 mm, H 1400 mm to 1930 mm.
- Weight: 220 kg to 340 kg.
- Degree of protection: IP20.
- Colour: Metallic Grey E150HVR.

**STANDARDS**
- Safety EMC: IEC/EN 62040-1, AS 62040.1.1, AS 62040.1.2.
- Performance: IEC/EN 62040-3, AS 62040.3.
- Environmental: full compliance with the RoHS EU directive.
- Seismic compliance: on demand, in accordance with the Uniform Building Code UBC-1997 Zone 4.
- Product declaration: CE, RCM (E2376).

**System options**
- External battery cabinet with normal or long-life VRLA batteries.
- High capacity battery charger.
- Alternative backup power technologies:
  - NiCd batteries
  - Li-Ion batteries
  - Li-Ion capacitors
- 3-phase input without neutral.
- Internal backfeed isolation device.
- Common mains coupling bars.
- TN-C grounding system.
- ACS synchronisation system.
- IP21 degree of protection.
- Top cabling kit.
- Top ventilation kit.
- Bypass redundant cooling.
- Seismic fixing kit.

**Communication options**
- Dry-contact, RS232/485 interfaces.
- MODBUS RTU.
- MODBUS TCP.
- BACnet/IP interface.
- NET VISION: professional WEB/SNMP, ethernet interface for UPS monitoring and remote automatic shutdown.
- Ethernet gateway for cloud sevices.

**Remote monitoring service**
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**Our dedicated Expert Services for UPS**

We offer services to ensure your UPS highest availability:
- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
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- Training
DELPHYS BC
Reliable, simple and ready-to-use power protection from 200 to 300 kVA

A complete, cost-effective solution
- Online double conversion mode with a power factor of 0.9 providing 12% more active power compared to UPS with a power factor of 0.8.
- Dual input mains allows you to manage independent power sources.
- Increased system availability placing two UPS in parallel for 1+1 redundancy.
- Internal manual bypass for easy maintenance without power interruption (1+1 configuration).
- Multilanguage display.

Tailored to your environment
- Saves space with a reduced footprint and optimized cabinet size.
- Low noise level.
- Compact, lightweight and easy to install.
- No neutral required on rectifier input.
- Two-wire battery connection (only +/-).
- Extended battery life and performance with exclusive EBS battery charging management for increased battery life.

The solution for
- Server rooms
- Service sector
- Infrastructure
- Healthcare sector
- Light industrial applications

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www.socomec.com/services
Three-phase UPS

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The solution for:

Server rooms
Service sector
Infrastructure
Healthcare sector
Light industrial applications

DEFYS 191 B
DEFYS 200 B

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Technical data

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<th>200</th>
<th>300</th>
</tr>
</thead>
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<tr>
<td>Pn [kW]</td>
<td>180</td>
<td>270</td>
</tr>
<tr>
<td>Parallel configuration</td>
<td>up to 6 units</td>
<td></td>
</tr>
</tbody>
</table>

INPUT

| Rated voltage | 400 V 3ph |
| Voltage tolerance | 240 V to 480 V(1) |
| Rated frequency | 50/60 Hz ± 10% |
| Power factor / THDI | 0.99 / < 3% |

OUTPUT

| Rated voltage | 400 V |
| Voltage tolerance | static load ±1% dynamic load in accordance with VFI-SS-111 |
| Rated frequency | 50/60 Hz |
| Frequency tolerance | ± 2% (configurable from 1% to 8%) |
| Crest factor | 3:1 |

BYPASS

| Rated voltage | rated output voltage |
| Voltage tolerance | ±15% (configurable with from 10% to 20%) |
| Rated frequency | 50/60 Hz |
| Frequency tolerance | ±2% (configurable for Genset compatibility) |

EFFICIENCY

| Online mode @ 100% of load | up to 95% |

ENVIRONMENT

| Operating ambient temperature | from 0 °C up to +40°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) | < 68 dBA > 71 dBA |

UPS CABINET

| Dimensions W x D x H | 700 x 800 x 1930 mm | 1000 x 950 x 1930 mm |
| Weight | 500 kg | 839 kg |
| Degree of protection | IP20 |
| Colours | RAL 7012, silver grey frontal door |

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, RCM (E2376) |

Remote monitoring service

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

Electrical options

• External battery cabinet.
• External temperature sensor.
• Additional battery chargers.
• Shared battery.
• Galvanic isolation transformer.
• Parallel kit.
• ACS synchronization system.

Electrical options

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

Communication options

• ADC interface (configurable voltage-free contacts).
• MODBUS TCP.
• MODBUS RTU.
• PROFIBUS.
• NET VISION: professional WEB / SNMP interface for UPS monitoring and shutdown management of several operating systems.

STANDARDS

(1) Conditions apply.
**Energy saving + Full rated power = reduced TCO**

**Energy Saving: high efficiency without compromise**
- Offers the highest efficiency in the market using VFI – Double Conversion Mode, the only UPS working-mode that assures total load protection against all mains quality problems.
- Ultra high efficiency output independently tested and verified by an international certification organization in a wide range of load and voltage operating conditions, to have the value in the real site conditions.
- Ultra high efficiency in VFI mode is provided by an innovative topology (3-Level technology) that has been developed for all the Green Power 2.0 UPS ranges.

**Full-rated power: kW=kVA**
- No power downgrading when supplying the latest generation of servers (leading or unity power factor).
- Real full power, according to IEC 62040: kW=kVA (unity power factor design) means 25% more active power available compared to legacy UPS.
- Suitable also for leading power factor loads down to 0.9 without apparent power derating.

**Significant cost-saving (TCO)**
- Maximum energy saving thanks to 96% efficiency in true double conversion mode: 50% saving on energy losses compared to legacy UPS gives significant savings in energy bill.
- UPS “self-paying” with energy saving.
- Energy Saver mode for global efficiency improvement on parallel systems.
- kW=kVA means maximum power available with the same UPS rating: no overdesign cost and therefore less €/kW.
- Upstream infrastructure cost optimization (sources and distribution), thanks to high performance IGBT rectifier.
- Battery configuration can be optimized, thanks to a very wide DC range.
- Extended battery life and performance:
  - long life battery,
  - very wide input voltage and frequency acceptance, without battery use.
- EBS (Expert Battery System) charging management improves battery service life.
Green Power 2.0 range from 10 to 40 kVA/kW

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

Energy Saving: high efficiency + Energy saving
- Suitable also for leading power factor
- Ultra high efficiency in VfI mode is independently derated.
- 25% more active power available compared to legacy UPS.
- kW=kVA (unity power factor design) means latest generation of servers (leading or unity technology) that has been developed for all provided by an innovative topology (3-Level technology) that has been developed for all
- load and voltage operating conditions, to tested and verified by an international problems.
- load protection against all mains quality issues.
- using VfI – Double Conversion Mode, the improvement on parallel systems.
- Energy Saver mode for global efficiency
- UPS “self-paying” with energy saving.
- Maximum energy saving thanks to 96%
- EBS (Expert Battery System) charging
- range from 10 to 40 kVA/kW
- very wide input voltage and frequency range, thanks to high performance IGBT rectifier.
- TCO = Significant cost-saving (TCO)
- Battery configuration can be optimized,
- warranty on battery (10 years on battery)
- reduced TCO

Technical data

<table>
<thead>
<tr>
<th>Sn [kVA]</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>30</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pn [kW]</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Input / output 3/1</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Input / output 3/3</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Parallel configuration</td>
<td>up to 6 units</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

INPUT
- Rated voltage: 400 V 3ph+N
- Voltage tolerance: 240 V to 480 V
- Rated frequency: 50/60 Hz ± 10%
- Power factor / THDi: > 0.99/< 2.5%

OUTPUT
- Power factor: 1 (according to IEC/EN 62040-3)
- Rated voltage: 1ph + N: 230 V (can be configured 220/240 V)
- 3ph + N: 400 V (can be configured 380/415 V)
- Voltage tolerance: static load ±1 % dynamic load in accordance with VFI-SS-111
- Rated frequency: 50/60 Hz
- Frequency tolerance: ± 2% (configurable for GenSet compatibility)
- Total output voltage distortion - linear load: < 1%
- Total output voltage distortion - non-linear load: < 3%
- Overload: 125% for 10 minutes, 150% for 1 minute(1)
- Crest factor: 3:1

BYPASS
- Rated voltage: rated output voltage
- Voltage tolerance: ± 15% (configurable from 10% to 20%)
- Rated frequency: 50/60 Hz
- Frequency tolerance: ± 2%

EFFICIENCY (TÜV SÜD verified)
- Online mode @ 50% of load: up to 96%
- Online mode @ 75% of load: up to 96%
- Online mode @ 100% of load: up to 96%
- Eco Mode: up to 96%

ENVIRONMENT
- Operating ambient temperature: from 0 °C up to +40 °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

UPS CABINET
- Dimensions: W 444 mm; D 795 mm; H 800 mm, 1000 mm, 1400 mm
- Weight: 190 kg, 195 kg, 315 kg, 320 kg
- Degree of protection: IP20
- 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
- Seismic compliance: On demand according to Uniform Building Code UBC-1997 Zone 4
- Product declaration: CE, RCM (E2379)

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

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

Certifications
- Integrated services
- Commissioning wizard.
- 2 slots for communication options.
- MODBUS TCP.
- MODBUS RTU.
- Embedded LAN interface (web pages, email).

Electrical options
- External maintenance bypass.
- External battery cabinet.
- Additional battery chargers.
- Galvanic isolation transformer.
- Parallel kit.
- ACS synchronization system.
Performance beyond all expectations

- Performance certified by an independent body.
- Designed to manage Lithium backup storage.
- Modern aesthetics combined with ergonomics.
- Large 7” touch screen display facilitates system control and usage.

Energy Saving: high efficiency without compromise

- Offers the highest efficiency on the market using a VFI – Double Conversion Mode, the only UPS working mode to ensure a total load protection from any mains quality issues.
- No overdesign cost thanks to its reduced €/kW ratio.

Full-rated power: kW=kVA

- No power downgrade when supplying the latest generation of servers (leading or unity power factor).
- True full active power, according to IEC 62040
- Full performance up to 40 °C without derating.

Extremely reliable, robust and durable

- Completely designed and manufactured in Europe.
- Best in class and officially attested:
  - MTBF\(_{\text{VFI}}\) = 300,000 hours,
  - MTBF\(_{\text{VIF}}\) = 10,000,000 hours.
- Certified seismic resistance.
- Life extension service program doubles life expectancy.

Tailor-made – as standard

- Easy configurable for retrofit in existing installations.
- Catalogue base flexibility to meet specific needs.
- Fast delivery time for a fully personalized solution.

Native digital solution

- Ready for integration in LAN and Industry 4.0 ecosystem.
- IoT ready and remote cloud services.
- Multiprocessor intelligent product architecture.
- Product identification and configuration using standard QR codes.

Certifications

- Mission Critical
  > Small and medium data centres
  > IT infrastructure
  > E-Medical
  > Medical devices
  > Control rooms
- Smart manufacturing
  > Edge computing
  > IoT systems
  > Cloud service access

Advantages

- Augmented Reality technology
- Guided workflow on your smartphone
- Verification and validation by the Socomec Service Center

A tutoring app for a simplified installation
System features

- Dual input mains.
- Internal maintenance bypass switch.
- Input mains switch breaker.
- Output switch breaker.
- Auxiliary mains switch breaker.
- Backfeed protection: detection circuit.
- Power walk-in ramp for excellent compliance with generators.
- Common or shared battery for N+1 configuration.

Technical data

### MASTERYS GP4

<table>
<thead>
<tr>
<th>Sn [kVA]</th>
<th>60</th>
<th>80</th>
<th>100</th>
<th>120</th>
<th>160</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pn [kVA]</td>
<td>60</td>
<td>80</td>
<td>100</td>
<td>120</td>
<td>160</td>
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<tr>
<td>Input/output 3/3</td>
<td>3/3</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Parallel configuration</td>
<td>up to 6 units</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>INPUT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td>400 V 3ph+N (3 wire input also available on demand)</td>
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<tr>
<td>Voltage tolerance</td>
<td>240 V to 480 V</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz ± 10%</td>
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<td></td>
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<td></td>
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<tr>
<td>OUTPUT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power factor</td>
<td>1 (according to IEC/EN 62040-3)</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Rated voltage</td>
<td>3ph + N: 400 V (can be configured 380/415 V)</td>
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<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency tolerance</td>
<td>± 2% (configurable for GenSet compatibility)</td>
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<tr>
<td>Total output voltage distortion</td>
<td>&lt; 1%</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Overload</td>
<td>125% for 10 minutes, 150% for 1 minute</td>
<td></td>
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</tr>
<tr>
<td>Crest factor</td>
<td>3:1</td>
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<td></td>
</tr>
<tr>
<td>BYPASS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td>rated output voltage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td>± 15% (configurable from 10% to 20%)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
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</tr>
<tr>
<td>Frequency tolerance</td>
<td>± 2%</td>
<td></td>
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<td></td>
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<tr>
<td>EFFICIENCY (TÜV SÜD verified)</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>Double conversion mode</td>
<td>up to 96.5%</td>
<td></td>
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<tr>
<td>Always on mode</td>
<td>up to 99%</td>
<td></td>
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<tr>
<td>ENVIRONMENT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating ambient temperature</td>
<td>from 0 °C to +40 °C (from 15 °C to 25 °C for maximum battery life)</td>
<td></td>
<td></td>
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<tr>
<td>Relative humidity</td>
<td>0% - 95% without condensation</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Maximum altitude</td>
<td>1000 m without derating (max. 3000 m)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acoustic level at 1 m [ISO 3746]</td>
<td>&lt; 55 dBA</td>
<td>&lt; 60 dBA</td>
<td>&lt; 65 dBA</td>
<td></td>
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<tr>
<td>UPS CABINET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions W</td>
<td>600 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>855 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>1400 mm</td>
<td>1930 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>174 kg</td>
<td>186 kg</td>
<td>228 kg</td>
<td>240 kg</td>
<td>350 kg</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP20</td>
<td></td>
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<tr>
<td>Colours</td>
<td>RAL 7016</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**STANDARDS**

- Safety EMC: IEC/EN 62040-1, AS 62040.1, AS 62040.1.2
- Performance: IEC/EN 62040-3, AS 62040.3
- Environmental: full compliance with the RoHS EU directive
- Seismic fixing kit.
- Common mains coupling bars.
- ACS synchronisation system.
- IP21 degree of protection.
- Top cabling kit.
- Top ventilation kit.
- Bypass redundant cooling.
- Seismic fixing kit.

Communication options

- Dry-contact, RS232/485 interfaces.
- MODBUS RTU.
- MODBUS TCP.
- BACnet/IP interface.
- NET VISION: professional WEB/SNMP, ethernet interface for UPS monitoring and remote automatic shutdown.
- Ethernet gateway for cloud services.

Remote monitoring service

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

Our dedicated Expert Services for UPS

We offer services to ensure your UPS highest availability:

- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
- Maintenance packages
- Training

**www.socomec.com/services**

General Catalogue 2018-2019 53
**DELPHYS GP**

High-efficiency protection without compromise

*Green Power 2.0* range from 160 to 1000 kVA/kW

---

**Energy saving + Full rated power = reduced TCO**

**Energy saving: high efficiency without compromise**

- Offers the highest efficiency in the market using VFI – Double Conversion Mode, the only UPS working-mode that assures total load protection against all mains quality problems.
- Ultra high efficiency output independently tested and verified by an international certification organization in a wide range of load and voltage operating condition.
- Ultra high efficiency in VFI mode is provided by an innovative topology (3-Level technology) that has been developed for all the Green Power 2.0 UPS ranges.

**Full rated power: kW=kVA**

- No power downgrading when supplying the latest generation of servers (leading or unity power factor).
- Real full power, according to IEC 62040: kW=kVA (unity power factor design) means 25% more active power available compared to legacy UPS.
- Suitable also for leading power factor loads down to 0.9 without apparent power derating.

**Significant cost-saving (TCO)**

- Maximum energy saving thanks to 96% efficiency in true double conversion mode: 50% saving on energy losses compared to legacy UPS gives significant savings in energy bill.
- Up to 99% efficiency with FAST ECOMODE.
- UPS “self-paying” with energy saving.
- Energy Saver mode for global efficiency improvement on parallel systems.
- kW=kVA means maximum power available with the same UPS rating: no overdesign cost and therefore less €/kW.
- Upstream infrastructure cost optimization (sources and distribution), thanks to high performance IGBT rectifier.
- Extended battery life and performance: - long life battery, - very wide input voltage and frequency acceptance, without battery use.
- EBS (Expert Battery System) charging management improves battery service life.
- BCR (Battery Capacity Re-injection) removes the constraints of using an additional load bank for the battery discharge test: it consists in re-injecting the energy stored in the batteries to other applications.

---

**The solution for**

- Data centres
- Telecommunications
- Healthcare sector
- Service sector
- Infrastructure
- Industrial applications

**Attestations and certifications**

- DELPHYS GP is attested by Bureau Veritas
- DELPHYS GP 160, 200 and 500 kVA/kW are systems certified by Virolab

**Advantages**

- Standard electrical features
- Parallel configuration up to 4 MW
- Modular parallel configurations up to 4 MW
- Twin channel architecture with Static Transfer Systems.
- Distributed or centralized bypass flexibility
- Redundant cooling.
- EBS (Expert Battery System) for battery management improves battery service life.
- Backfeed protection: detection circuit.
- Li-Ion battery ready for Li-Ion battery

**Our dedicated Expert Services for UPS**

We offer services to ensure your UPS highest availability:

- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
- Maintenance packages
- Training

---

**GAMME 305 A**

**Advantages**

- Energy saving + Full rated power = reduced TCO
- Significant cost-saving (TCO)
- The solution for
- Attestations and certifications
- Advantages
- Our dedicated Expert Services for UPS
Parallel systems
To fulfill the most demanding needs for power supply availability, flexibility and the installation to be upgraded.
- Modular parallel configurations up to 4 MW, development without constraint.
- Distributed or centralized bypass flexibility to ensure a perfect compatibility with the electrical infrastructure.
- Twin channel architecture with Static Transfer Systems.
- Distributed or shared battery for energy storage optimization on parallel systems.

Standard electrical features
- Integrated maintenance bypass for single unit (and “1+1” system).
- Backfeed protection: detection circuit.
- EBS (Expert Battery System) for battery management.
- Redundant cooling.
- Battery temperature sensor.

Electrical options
- Separated or common input mains.
- External maintenance bypass.
- Extended battery charger capability.
- Shared battery.
- Compatible with different battery technologies (e.g. Li-ion, Ni-Cd...).
- Galvanic isolation transformer.
- Backfeed isolation device.
- ACS synchronisation system.
- BCR (Battery Capacity Re-injection).
- FAST ECOMODE.

Technical data

<table>
<thead>
<tr>
<th>DELPHYS GP</th>
<th>Sn [kVA]</th>
<th>160</th>
<th>200</th>
<th>250</th>
<th>320</th>
<th>400</th>
<th>500</th>
<th>600</th>
<th>800</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pn [kW]</td>
<td></td>
<td>160</td>
<td>200</td>
<td>250</td>
<td>320</td>
<td>400</td>
<td>500</td>
<td>600</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td>Input/output</td>
<td></td>
<td>3/3</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Parallel configuration</td>
<td>up to 4 MW</td>
<td></td>
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<tr>
<td>INPUT</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td>400 V 3ph</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage tolerance static load</td>
<td>±1 % dynamic load in accordance with VFI-SS-111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Frequency tolerance</td>
<td>± 10 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power factor / THD</td>
<td>&gt; 0.99% / &lt; 2.5%</td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

OUTPUT
- Power factor 1 (according to IEC/EN 62040-3)
- Voltage rating 3ph + N 400 V
- Voltage tolerance static load ±1 % dynamic load in accordance with VFI-SS-111
- Rated frequency 50/60 Hz
- Frequency tolerance ± 2 % (configurable for GenSet compatibility)
- Total output voltage distortion linear load ThdU < 1.5 %
- Total output voltage distortion non-linear load (IEC-62043-3) ThdU < 3 %
- Short-circuit current (2) up to 3.4 x In

BYPASS
- Rated voltage rated output voltage
- Voltage tolerance ± 15 % (configurable from 10% to 20%)
- Rated frequency 50/60 Hz
- Frequency tolerance ± 2 % (configurable for GenSet compatibility)

EFFICIENCY
- Online mode @ 40 % of load up to 98 %
- Online mode @ 75 % of load up to 96 %
- Online mode @ 100 % of load up to 96 %
- Fast EcoMode up to 99 %

ENVIRONMENT
- Operating ambient temperature from 0 °C to +40 °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 < 65 dBA < 67 dBA < 70 dBA < 68 dBA < 70 dBA < 72 dBA < 74 dBA

UPS CABINET
- Dimensions W 1000 mm D 800 mm H 1930 mm
- Weight 470 kg 490 kg 950 kg 950 kg 1500 kg 2300 kg 2860 kg 3850 kg
- Degree of protection IP20 (other IP as option)
- Colours cabinet: RAL 7012, door: silver grey

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, RCM (E2376)

(1) Conditions apply. (2) Worst condition (Auxiliary Mains not available). (3) With input THDv < 1%. (4) 160, 200 and 500 MA/kW models.

Green Power 2.0 range from 160 to 1000 kVA/kW
DELPHYS Xtend GP
Real hot-scalable UPS system
Green Power 2.0 range up to 2.4 MVA/MW

DELPHYS XTEND GP combines all the benefits of the Green Power 2.0 technology and the flexibility of a modular system and provides easy adaptation to evolving requirements, without impacting the surrounding electrical infrastructure. DELPHYS XTEND GP is a real scalable UPS system designed to provide power scalability that can be built up with power blocks to extend the system according to the maximum power requirement.

Real hot-scalable solution
- Reliable power that can be increased when needed.
- Load fully protected in VFI mode during system extensions and maintenance.
- Prewired system providing quick and safe power scalability.

Total system adaptability
- Many disposition possibilities.
- Distributed or centralised static bypass.
- Shared or distributed batteries.
- AC and DC power connections flexibility.

DELPHYS XTEND GP power scalability is provided by Xmodule power blocks docked onto prewired Xbay docks. The installation and the positioning are easy with secured operation both for operators and the application. During system extensions or maintenance, the load is fully protected in online double conversion mode.

Optimized capital employed
- Lower initial and operating costs.
- No modification to the site’s electrical infrastructure during power upgrading.
- Optimized maintenance expenditure.
- BCR (Battery Capacity Re-injection), innovative battery discharge test.

Full set of services
- Preventive maintenance.
- 24 / 7 Hot-Line and remote monitoring.
- Quick response time to site and availability of new modules.
- Cabling & docking.
- OPEX-based costing models.

The solution for
- Large data centers
- Telecommunications
- Healthcare sector
- Service sector
- Infrastructure
- Processes
- Industrial applications

Attestations and certifications

Advantages

Xmodule - designed to save costs

Energy performance
Based on DELPHYS GP 200 kW, the system has all the advantages of the Green Power 2.0:
- Minimised energy consumption and cooling costs in VFI mode,
- Unitary power factor provides the best €/kW ratio,
- Performance attested by Bureau Veritas.
DELPHYS Xtend GP

Three-phase UPS

Green Power 2.0 range up to 2.4 MVA/MW

Flexible UPS architecture
- Scalable power and energy storage capability.
- Distributed or centralised static bypass.
- Common or separated rectifier and bypass mains.
- Can be connected to shared or distributed batteries for energy storage optimisation.
- Compatible with different energy storage technologies.
- Systems parallelisation up to 2.4 MW

Standard electrical features
- Integrated maintenance bypass
- Backfed protection: detection circuit.
- EBS (expert Battery System) for battery management.
- Battery temperature sensor.

Electrical options
- Extended battery charger capability.
- Compatible with different battery technologies (e.g. Li-Ion, Ni-Cd,...).
- ACS synchronisation system.
- BCR (Battery Capacity Re-injection).
- FAST ECOMODE.

Standard communication features
- User-friendly multilingual interface with graphic display.
- 2 slots for communication options.
- Ethernet connection (Web/SNmp/email).
- USB port for event log access.

Communication options
- Advanced server shutdown options for stand-alone and virtual servers.
- ADC interface (configurable voltage-free contacts).
- MODBUS TCP.
- MODBUS RTU.
- BACnet/IP interface.

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

Dimensions

<table>
<thead>
<tr>
<th>Integration(1)</th>
<th>Number of Xbay dock</th>
<th>W (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributed bypass (common or separated input)</td>
<td>4</td>
<td>4340</td>
</tr>
<tr>
<td>5</td>
<td>5850</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>5760</td>
<td></td>
</tr>
</tbody>
</table>

(1) For any other configuration (centralized bypass, “U” shape, “L” shape, etc.), please contact us.

Our dedicated Expert Services for UPS

We offer services to ensure your UPS highest availability:
- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
- Maintenance packages
- Training

www.socomec.com/services

Technical data

DELPHYS Xtend GP

<table>
<thead>
<tr>
<th>SYSTEM CONFIGURATION</th>
<th>Xmodule rated power</th>
<th>200 kW/kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Xbay docks</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Number of Xmodule power blocks (200 kW/kW)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Power (kW/kV)</td>
<td>400</td>
<td>600</td>
</tr>
<tr>
<td>Max. power (systems in parallel)</td>
<td>200</td>
<td>400</td>
</tr>
</tbody>
</table>

RECTIFIER INPUT

| Voltage | 400 V 3ph (200 to 480 V²) |
| Frequency | 50/60 Hz |
| Power factor | > 0.99 |
| Total harmonic distortion (THD) at full load and rated voltage | 2.5%(2) |

INVERTER

| Power factor | 1 (according to IEC/EN 62040-3) |
| Rated output voltage | 400 V 3ph + N (380 / 415 V configurable) |
| Rated output frequency | 50/60 Hz (selectable) |
| Harmonic voltage distortion | ThdU ≤ 1.5 % with rated linear load |

BYPASS

| Rated voltage | nominal output voltage ±15 % (settable) |
| Rated frequency | 50/60 Hz (selectable) |

XMODULE EFFICIENCY

| Online double conversion mode | up to 96% |
| Fast EcoMode | up to 99% |

ENVIRONMENT

| Operating ambient temperature | from 10 °C up to +40 °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) |

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, RCM (E2376) |

(1) KSB7 rectifier. (2) Conditions apply. (3) With input THDV < 1 %.

Attestations and certifications

Based on DELPHYS GP 200 kW,
Xmodule - designed to save
Processes
Infrastructure
Service sector
Healthcare sector
Large data centers

For more information, please contact us.
**An innovative way to provide scalability**

**AC CABINET**
- System input and output:
  - General input(s) and output power connection.
  - Centralised static bypass, if required.
  - System input(s) and output(s) switches.
  - Maintenance manual bypass switch(1).

**DC CABINET**
- Prewired coupling for energy storage:
  - Energy storage power and control cable connections.
  - Connection of up to 6 batteries per system, with dedicated coupling switches.

(1) Please consult us for systems above 1200 kVA/kW (systems in parallel).

**Xbay**
- Easy power block docking:
  - Each Xbay dock is prewired to AC and DC cabinets.
  - Ready for Xmodule power and control cables connection.
  - Includes individual switches for Xmodule AC coupling.
  - Hot-plug parallel bus connection.
  - The number of Xbay docks depends on the final power required (up to 6 per system).

**Xmodule**
- Hot-scalable 200 kVA/kW power block:
  - Power block ensuring load protection and battery management.
  - Up to 6 Xmodule power blocks per system.
  - Easy positioning.
  - Dedicated switches for easy power block servicing.
  - Secured installation both for operators and the application.

**Real hot-scalable solution**
- Quick and safe scalability to meet evolving demands for energy performance.
- Reliable power that can be increased when needed to rapidly meet changing capacity demands.
- Easy adaptation to site evolutions and constraints thanks to movable blocks.
- Prewired system for additional Xmodule connection and coupling within the system.
- Standard tools required to place and connect the power block.
- Online double conversion mode for load protection during system extensions or maintenance.

---

**Example of configurations (left to right): linear with 6 Xmodule power blocks, linear with 4 Xmodule power blocks, "U-shape" with 6 Xmodule power blocks.**

**Example of a battery discharge test.**
- The test is performed on the 4th Xmodule power block at 200 kW constant power.
- Reinjected energy:
  - 600 kW, online double conversion mode
  - 600 kW, online double conversion mode
  - 30 minutes later: 800 kW, online double conversion mode
A complete solution

- Simplifies the In / Out switchboard. The system integrates localised coupling capability.
- Fast and cost-effective scalability as there is no need to connect the additional Xmodule power block(s) to any upstream or downstream panel.
- Keeps the critical applications protected in online double conversion mode during power extension.
- Possibility to parallelise systems up to 2400 kVA/kW (12 Xmodules).

Adaptable disposition

The system disposition and physical connection is easily adapted to your plant:
- Many disposition possibilities (Linear, “U” shaped, “L” shaped).
- The number of Xbay docks can be 6 or fewer per system, depending on the rated power of the infrastructure.
- General input/output AC connections available for top or bottom entry.
- Back-up storage DC connection available for top or bottom entry.

Innovative battery discharge test

DELPHYS Xtend GP allows a periodical complete and safe battery discharge test without using a resistive load for the back-up time or availability check. Battery Capacity Re-injection allows significant cost savings and reduces the TCO:
- No need to rent or buy load banks.
- Simplified infrastructure, as there are not any dedicated test bus bars.
- No wasted energy because it is re-used to supply other UPS or applications.
- Less time needed to perform the test as it is easy to programme.

The test is performed at a constant rate of power (full power or partial load). Each individual Xmodule power block is tested separately and feeds back the energy stored in the battery. The energy to be fed back upstream through the rectifier will correspond to the difference between the discharged power and the load consumption.

Example of a battery discharge test.
The test is performed on the 4th Xmodule power block at 200 kW constant power.
**MODULYS GP**

Unique, fully modular and redundant solution

**Green Power 2.0** range from 25 to 600 kVA/kW

---

The solution for

- Computer rooms
- Data centres
- Banks
- Healthcare facilities
- Insurance
- Telecom

Advantages

- Ensures absolute business continuity
- Aligns capacity to business demand
- Optimises costs over the full life cycle

Certifications and attestations

Green Power 2.0 MODULYS GP is certified by TÜV SÜD with regard to product safety (EN 62045-1). Green Power 2.0 MODULYS GP efficiency & performance are tested and verified by TÜV SÜD

MODULYS GP has been tested by CEB in compliance with the standard test procedure for the seismic qualification of electrical cabinets. MODULYS GP has successfully passed severe tests to verify its resistance to withstand Zone 4 seismic events.

---

**Fully modular system**

- Plug-in power module.
- Plug-in battery module.
- Plug-in auxiliary mains bypass module.
- Top or bottom connection.
- Top-air exhaust module.

**‘Forever Young’ concept**

- Exclusive life cycle extension programme.
- Eliminates end-of-life criticality.
- Based on an electronics-free cabinet + a set of plug-in parts.
- Module compatibility guaranteed for 20+ years.
- Allows for the implementation of future module technology.

**Totally redundant design**

- N+1, N+x redundancy level.
- Designed for no single point of failure.
- No centralised parallel control.
- Totally independent power modules.
- Redundant parallel bus connection (ring configuration).

**Enhanced serviceability performance**

- Power module automatic firmware alignment.
- Fast & safe maintenance based on hot-swap parts (power modules, auxiliary mains bypass, electronic boards).
- Battery can be hot-swapped without shutting down the connected equipment.
- Ready for concurrent maintenance.

---

With its flexible modularity providing seamless and risk-free power scalability up to 600 kW, the MODULYS GP range is the ideal solution for unscheduled site upgrades or incremental power evolutions. The installed power can be increased up to 600 kW by adding hot-swap plug-in power modules for incremental steps of 25 kW.

Designed with no single point of failure, the MODULYS GP offers all the advantages of the Green Power 2.0 technology.
Standard electrical features

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

Electrical options

- External battery cabinet.
- High capacity battery charger.
- ACS synchronisation system.
- Internal backfeed isolation device.

Technical data

<table>
<thead>
<tr>
<th>MODULYS GP UPS SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (Sn)</td>
</tr>
<tr>
<td>Power (Pn)</td>
</tr>
<tr>
<td>Number of power modules</td>
</tr>
<tr>
<td>Input / output</td>
</tr>
<tr>
<td>Redundant configuration</td>
</tr>
</tbody>
</table>

Standard communication features

- User-friendly multilingual interface with colour graphic display.
- Commissioning wizard.
- 2 slots for communication options.

Communication options

- Dry-contact, RS232/485 interfaces.
- MODBUS RTU.
- MODBUS TCP.
- BACnet/IP interface.
- NET VISION: professional WEB/SNMP interface for UPS monitoring and shutdown management of several operating systems.

Remote monitoring service

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

Hybrid bypass architecture

- Synchronous bypass.

Best practice award

Frost & Sullivan has has awarded SOCOMEC with its prize for Innovation & Excellence in Developing Scalable, Best-in-Class Products and Solutions.

Our dedicated Expert Services for UPS

We offer services to ensure your UPS highest availability:

- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
- Maintenance packages
- Training

Green Power 2.0 range from 25 to 600 kVA/kW

Scalable, Best-in-Class Excellence in Developing its prize for Innovation & Excellence in Developing Scalable, Best-in-Class Products and Solutions.

SOCOMEC’s vast expertise and technological know-how in modular UPS solutions have enabled it to develop a new modular, three-phase UPS that employs the latest cutting-edge technology combined in a unique design and architecture.
MODULYS GP
Three-phase UPS
Green Power 2.0 range from 25 to 600 kVA/kW

The benefit of a fully modular system

Pay as you need
• No prior expenditure for unpredictable future extensions in power and back-up time.
• Space saving thanks to reduced footprint and front-access.
• Eliminates installation rework costs when new capacity is required from IT physical infrastructure.
• No risk of design oversizing due to project data uncertainty.

Easy to manage
• Totally modular system for power scaling or for quickly adapting to business changes.
• Standardised system and modules covering a wide range of power and back-up times.
• Repeatable and standardised scalable architecture for time-saving design for different configuration & architecture requirements.

Everything front-access
• Connections, switches, manual bypass, auxiliary mains static bypass, power modules and all the electric parts have front-access.
• Total footprint is not increased as rear extra clearance for maintenance is not needed.
• Easy, quick, comfortable, safe and risk-free installation and maintenance.
• More reliable system.

The benefit of a totally redundant design

Total resilience
• Electronics-free (failure-free) cabinet.
• Totally independent and self-sufficient modules.
• Real module selective disconnection (automatic inverter bypass with galvanic separation).
• No centralised control for parallel and load sharing management.
• Totally segregated, fully sized and centralised auxiliary mains bypass.
• Configurable N+1 to N+x redundancy (power & battery).
• No single point of failure.
• Redundant parallel bus connection (ring configuration).

Optimum reliability
• Power module designed for superior robustness proved by an independent body (MTBF > 1,000,000 hr).
• Hybrid bypass architecture with distributed module’s bypass and centralised mains bypass for ultimate reliability and robustness.
• Highly robust auxiliary mains bypass (MTBF > 10,000,000 hr).
• Acid leak-proof modular battery box.

Maximum availability
• Fast recovery of lost redundancy thanks to minimum MTTR (Mean Time To Repair).
• No risk of downtime during power upgrading and maintenance.
• No risk of failure propagation.

Cost-effective redundancy
• No need to duplicate the system hardware to get redundancy.
• Redundancy achievable simply by adding one more power and battery module.
• Redundancy can be easily combined with power scalability.

A flexible modular UPS system

Fully integrated solution
• UPS system cabinets + coupling cabinet + base plates.
• It allows a complete, simple and very reliable installation, with unique IN/OUT and fully sized manual bypass.
• Innovative base plates simplify the installation and allow a tidy and segregated cabling for higher system reliability.

Combinable system
• It allows the creation of a system when:
  - an external coupling cabinet is already present (i.e. in case of replacement of an existing UPS),
  - a coupling cabinet with a special configuration is required and it has to be developed specifically,
  - the UPS system cabinets cannot be installed side-by-side.
Fully integrated solution: easy and safe installation

1. Innovative base plates simplify the installation.
2. Safe, reliable and time-saving cabling management.
3. Cabinets are easy to move (no pallet truck required), position and assemble.
4. Easy cabling for a tidy and reliable solution.
5. Simplified cable positioning and risk-free connections.

Green Power 2.0 range from 25 to 600 kVA/kW
MODULYS GP
Three-phase UPS
Green Power 2.0 range from 25 to 600 kVA/kW

Seamless and risk-free scalability & upgrading
• MODULYS GP protects critical loads in all conditions, including power upgrading and maintenance procedures.
• No risk of human error and downtime.

On-line power scalability
• MODULYS GP allows you to increase power scalability and redundancy while keeping the load protected on inverter mode simply by plugging-in a new power module and waiting for its automatic self-configuration, without any human intervention.

Power module automatic firmware alignment
• Even the power module firmware alignment is totally risk free.
• When a new power module is plugged in, the system checks what firmware version is embedded and if it is different automatically aligns it to one of the other modules. The load is protected at all times while running on inverter mode.

On-line global firmware update
• It is also possible to upgrade the global firmware without switching to bypass to keep the load protected on Inverter mode.
• Automatic procedure for a risk-free firmware upgrade.
Flexible and modular back-up times

MODULYS GP offers modular solutions to meet all your requirements for back-up times (whether a few minutes or several hours) without compromising flexibility and scalability.

Internal hot swap battery
- Designed for short back-up time.
- Long-Life batteries available as standard.
- Compact solution with a small footprint.

Modular hot-swap battery cabinets
- Designed for medium and long back-up times.
- Long-Life batteries available as standard.
- Vertical and horizontal modularity ensuring flexible back-up times.

Modular battery cabinet
- Designed for long back-up times.
- Long-Life batteries available as standard.
- Horizontal modularity ensuring flexible back-up times.

**MODULYS GP "Forever Young" concept**
- MODULYS GP excels not only in efficiency, flexibility, capacity management and sustainability - five aspects that are crucial for optimum performance.
- It employs an exclusive concept called 'Forever Young' which allows the life-cycle extension of MODULYS GP and eliminates the criticality of system end-of-life.
- It also keeps the system open for the implementation of future technology improvements without modifying the infrastructure.

The 'Forever Young' concept:
- Is based on electronics-free (failure-free) cabinets where the components that are subject to ageing are all plug-in and therefore quick and easy to replace.
- Allows life-cycle extension via periodic replacement of power modules before they start ageing.
- Provides an always up-to-date system that uses the latest technology.
- Assures power modules and spare part compatibility and availability for more than 20 years.
**MODULYS RM GP**

Rack-mounted modular UPS system

**Green Power 2.0** range up to 4 x 25 kW

---

**Full rack integration**

- Designed for easy and no-risk integration in 19" standard rack cabinet.
- Total compatibility with any 19" standard rack cabinet.
- High power density.
- Easy to manage, integrate and customise.
- Flexible simplified cabling.

**Overall cost optimisation**

- Time saving integration process.
- No risk of cost and budget overruns.
- Compact solution saving valuable space.
- Simplified logistics.
- Easy integration: avoids costly set-up and reworking.

**Totally redundant design**

- N+1 redundancy level.
- Designed for no single point of failure.
- No centralised parallel control.
- Totally independent power modules.

---

**Enhanced serviceability performance**

- Fast & safe maintenance based on hot-swap parts (power modules, bypass, electronic boards, batteries).
- Ready for concurrent maintenance.
- Battery can be hot-swapped without shutting down the connected equipment.

**‘Forever Young’ concept**

- Exclusive life cycle extension programme.
- Eliminates end-of-life criticality.
- Based on an electronics-free sub-rack enclosure + a set of plug-in parts.
- Module compatibility guaranteed for 20+ years.
- Allows for the implementation of future module technology.

---

**Advantages**

- **Up to 4 x 25 kW**
- Highest rack-mounted UPS power density on the market
- **kW = kVA**
- Unity power factor provides the best kW / kVA ratio
- **96% efficiency**
- High efficiency minimises energy consumption and reduces energy costs
- **Li-ion**
- Ready for Li-ion battery. Ultra-fast recharge function
- **Serma Technologies**
- Green Power 2.0 MODULYS RM GP module MTBF is calculated and verified 1,000,000 hours by SERMA TECHNOLOGIES (IEC 62380).
- **Made in Europe**

---

**The solution for**

- Integration in 19" standard rack cabinets
- Computer rooms
- Data centers
- Banks
- Healthcare facilities
- Insurance
- Telecom

---

**Certifications and attestations**

- Green Power 2.0 MODULYS RM GP module is certified by TUV SUD with regard to product safety (EN 62040-1).
- Green Power 2.0 MODULYS modules efficiency & performance are tested and verified by TUV SUD.

---

**Technical data**

- **Input / output** 3 / 3
- **Power (Pn)** 25 to 50 kW 25 to 75 kW
- **Power (Sn)** 25 to 50 kVA 25 to 75 kVA
- **Configuration** N, N+1 redundant
- **Number of power modules** 1 to 2 x 25 kW 1 to 4(1) x 25 kW
- **Model** 9U 15U
- **Voltage** 380 / 400 / 415 V ±1 % 3ph+N
- **Frequency** 50 / 60 Hz ±2 % (configurable for GenSet compatibility)
- **Voltage distortion** < 1 % (linear load), < 4 % (non-linear load according to IEC 62040-3)
- **Crest factor** 3:1
- **Overload** 125 % for 10 minutes, 150 % for 1 minute
- **Short-circuit current** up to 3 x In
- **Ambient temperature** 0 °C to 40 °C (15 to 25 °C for maximum battery life)
- **Online double conversion mode** up to 96.5 %
- **Protection** Independent protection for each battery string
- **MTBF** Type Hot plug-in / Hot-swappable
- **Weight** 34 kg
- **Height** 3U
- **Dimensions W x D x H** 442 mm x 920 mm x 9 U 442 mm x 920 mm x 15 U
- **Degree of protection** IP20
- **Acoustic level** at 1 m < 53 dBA
- **Relative humidity** 0 to 95 % without condensation
- **Online monitoring** through NET VISION: professional WEB/SNMP MODBUS TCP.
- **EMC** EN 62040-2 Class C2
- **Performance** EN 62040-3 (VFI-SS-111)
- **Frequency** 50 / 60 Hz ±0.1 %
- **Voltage distortion** < 1 % (linear load), < 4 % (non-linear load according to IEC 62040-3)
- **Input / output** 3 / 3
- **Power (Pn)** 25 to 50 kW 25 to 75 kW
- **Power (Sn)** 25 to 50 kVA 25 to 75 kVA
- **Configuration** N, N+1 redundant
- **Number of power modules** 1 to 2 x 25 kW 1 to 4(1) x 25 kW
- **Model** 9U 15U
- **Voltage** 400 V 3ph+N (340 V to 480 V)
- **Frequency** 50 / 60 Hz ±2 % (configurable for GenSet compatibility)
- **Maximum altitude** 1000 m without derating (3000 m max)
- **Degree of protection** IP20
- **Acoustic level** at 1 m < 53 dBA
- **Relative humidity** 0 to 95 % without condensation
- **Online double conversion mode** up to 96.5 %
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---

**Modular UPS system**

- **Three-phase UPS**

---

**Green Power 2.0**

- **Maximum availability**
- **Optimum reliability**
- **Total resilience**

---

**Our dedicated Expert Services**

- **Maintenance packages**
- **24-hour call out and rapid on-site repairs**
- **Preventive maintenance visits**
- **On-site intervention**
- **Training**

---

**Redundant parallel bus connection (ring configuration).**

- **No single point of failure.**
- **Totally segregated, fully sized and sharing management.**
- **No centralised control for parallel and load upgrading and maintenance.**
- **Electronics-free (failure-free) sub-rack configuration.**

---

**Acid leak-proof modular battery box.**

- **Highly robust bypass (MTBF > 10,000,000 hr).**
- **Automatic battery shut down.**
- **Mains voltage monitoring.**
- **Manual battery shut down.**
- **Standby UPS management.**
- **Battery temperature sensor.**
- **Backfeed protection: detection circuit.**
- **Internal maintenance bypass.**
- **Dual input mains.**
- **External battery cabinet.**
- **19" 4U battery rack.**
- **EBS (Expert Battery System) for battery management.**
Standard electrical features

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

Electrical options

- 19" 4U battery rack.
- External battery cabinet.
- High capacity battery charger.

Standard communication features

- User-friendly multilingual interface with color graphic display.
- 2 slots for communication options.

Communication options

- Dry-contact, RS232/485 interfaces.
- MODBUS RTU.
- MODBUS TCP.
- BACnet/IP interface.
- NET VISION: professional WEB/SNMP interface for UPS monitoring and shutdown management of several operating systems.

Technical data

<table>
<thead>
<tr>
<th>MODULYS RM GP</th>
<th>9U</th>
<th>1SU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>MODULYS RM GP</td>
<td>MODULYS RM GP</td>
</tr>
<tr>
<td>Number of power modules</td>
<td>1 to 2 x 25 kW</td>
<td>1 to 4 x 25 kW</td>
</tr>
<tr>
<td>Configuration</td>
<td>N, N+1 redundant</td>
<td></td>
</tr>
<tr>
<td>Power (Sn)</td>
<td>25 to 50 kVA</td>
<td>25 to 75 kVA</td>
</tr>
<tr>
<td>Power (Pn)</td>
<td>25 to 50 kW</td>
<td>25 to 75 kW</td>
</tr>
<tr>
<td>Input/output</td>
<td>3/3</td>
<td></td>
</tr>
</tbody>
</table>

INPUT

- Voltage: 400 V 3ph+N (340 V to 480 V)
- Frequency: 50/60 Hz ±10%
- Power factor / THDI: > 0.99 < 3 %

OUTPUT

- Voltage: 380/400/415 V ±1 % 3ph+N
- Frequency: 50/60 Hz ±0.1 %
- Voltage distortion: < 1 % (linear load), < 4 % (non-linear load according to IEC 62040-3)
- Short-circuit current: up to 3 kA
- Overload: 125 % for 10 minutes, 150 % for 1 minute
- Crest factor: 3.1

HOT-SWAP BYPASS

- Voltage: Rated output voltage ±15 % (configurable from 10 % to 20 %)
- Frequency: 50/60 Hz ±2 % (configurable for GenSet compatibility)
- Weight: 7 kg | 7.5 kg

EFFICIENCY (TÜV SÜD VERIFIED)

- Online double conversion mode: up to 96.5 %
- Low efficiency: up to 96.5 %

ENVIRONMENT

- Ambient temperature: 0 °C to 40 °C (15 to 25 °C for maximum battery life)
- Relative humidity: 0 to 95 % without condensation
- Maximum altitude: 1000 m without derating (3000 m max)

UPS RACK

- Dimensions W x D x H: 442 mm x 920 mm x 9 U | 442 mm x 920 mm x 15 U
- Weight (empty cabinet): 36 kg | 42 kg
- Dimensions W x D x H: 442 mm x 920 mm x 9 U | 442 mm x 920 mm x 15 U
- Weight (empty cabinet): 36 kg | 42 kg
- Degree of protection: IP20

HOT-SWAP POWER MODULE

- Height: 3U
- Weight: 34 kg
- Type: Hot plug-in/Hot-swappable
- MTBF: > 1000000 hours (calculated and verified)

HOT-SWAP BATTERY RACK

- Type: Acid leak-proof - Long Life batteries
- Protection: Independent protection for each battery string
- Dimensions W x D x H: 442 mm x 890 mm x 4 U
- Weight (empty rack): 15 kg
- STANDARDS
  - Safety: EN 62040-1, EN 60950-1
  - EMC: EN 62040-2 Class C2
  - Performance: EN 62040-3 (FR-SE-111)
  - Product certification: CE

(1) 4th module is for redundancy.

Total resilience

- Electronics-free (failure-free) sub-rack enclosure.
- Totally independent and self-sufficient modules.
- Real selective module disconnection with galvanic separation.
- No centralised control for parallel and load sharing management.
- Totally segregated, fully sized and centralised auxiliary mains bypass and distributed inverter bypass.
- Configurable N+1 redundancy (power & battery).
- No single point of failure.
- Redundant parallel bus connection (ring configuration).

Optimum reliability

- Power module designed for superior robustness verified by an independent body (MTBF > 1,000,000 hr).
- Highly robust bypass (MTBF > 10,000,000 hr)
- Acid leak-proof modular battery box.

Maximum availability

- Fast recovery of lost redundancy thanks to minimum MTTR (Mean Time To Repair).
- No risk of downtime during power upgrading and maintenance.
- No risk of failure propagation.

Our dedicated Expert Services for UPS

We offer services to ensure your UPS highest availability:

- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
- Maintenance packages
- Training

www.socomec.com/services
MODULYS RM GP
Three-phase UPS
Green Power 2.0 range up to 4 x 25 kW

The benefit of a system designed for 19” rack integration

**Easy to integrate**
- Specifically designed for integration in 19” standard rack cabinets.
- Adjustable rails and mounting accessories.
- High power density (>6 kW/U).
- Low weight for easy integration.
- Pre-cabled system for simplified connections.
- Flexible cabling management for top, bottom and mixed top/bottom entry cable.
- Integrated cables organiser for tidy connections.
- Low power dissipation (<40 W per supplied kW).

**No-risk integration**
- Assured compatibility with any 19” standard rack cabinet.
- Pre-engineered and lab-tested parts assuring total system reliability.
- Automatic self-configuration power modules.
- No risk of design oversize due to project data uncertainty thanks to power module scalability.

**Easy to customise**
- Complete set of pre-engineered and pre-tested parts to meet any customer need:
  - modular Power Modules,
  - special power modules with extra battery charger for extremely long BUT,
  - plug-in J-BUS communication board for BMS integration,
  - plug-in SNMP board for UPS monitoring and shutdown management,
  - plug-in programmable dry-contact board,
  - environmental sensors,
  - blank panels (covers for empty slots),
  - rack-mounted battery modules,
  - external battery cabinet,
  - isolation transformer,
  - bypass redundant cooling.

**Easy to manage**
- Full documentation package including schematics, integration instructions, technical sheets, etc.
- Factory-set configurations for easy model selection.
- Full set of pre-engineered options for easy product customisation.

**Pre-cabled system for simplified connections**

Example of integration (3x25 kW):
Only 15 U of rack space occupied: space-saving design leaving free space for other rack-mounted devices. One empty slot in the MODULYS RM GP sub-rack remains available for power upgrade or redundancy.

Rear view (before adding rear protective cover). Flexible cabling management for easy connections and tidier cabling.
Overall cost optimisation

- Compact sub-rack enclosure saving valuable cabinet rack space.
- 2 sub-rack enclosure models for optimum sizing.
- Best-in-class €/kW ratio thanks to high power density and PF=1.
- Cost-optimised solution for minimum initial investment.
- Plug & Play and self-configuration power modules for easy and time saving system set up.
- Pre-engineered and lab-tested parts for easy and time saving customisation.
- Repeatable and standardised architecture for time saving design and know-how capitalisation.

Simplified logistics

- Fewer standardised parts for easy ordering.
- Parts always in stock for fast procurement.
- Fewer parts covering a wide range of configurations, power, back-up time and options.
- Once integrated in the 19” rack cabinet, MODULYS RM GP can be safely shipped with the power modules plugged in.

Pre-cabled rack with maintenance bypass

M4-R-075-22B0 15U rack, 4 slots
M4-R-050-22B0 9U rack, 2 slots

Plug-in boards

CP-OP-ADC+SL Programmable IN/OUT dry contact + serial link
CP-OP-MDOTCP MODBUS TCP interface
NET-VISION6CARD NET VISION card, WEB/SNMP interface IPV4/IPV6

Other options

NET-VISION-EMD Environment temp. and humidity sensor + 4 dry contacts
MAS-OP-TEMP External temperature sensor

Blank panel

M4-RI-OP-SSC Cover for empty slot

Power module - 25 kW

M4-RI-25

4U battery rack

M4-BR-009L With 42 x 9Ah batteries, fuse and switch
M4-BR-009L-B Empty, for 42 x 9Ah batteries including interconnections, fuses and switch

Mounting accessories

M4-RI-OP-RAIL Adjustable rails for rack mounting support
**MASTERYS MC**

Complete cost-effective protection from 10 to 80 kVA

---

**A complete, cost-effective solution**

- Designed to protect production processes and IT applications.
- Separate rectifier supply and bypass networks for 3/1 models.
- Internal manual bypass for easy maintenance without power interruption.
- LAN network interface for remote UPS management and supervision.
- Scalable power or increased system availability placing up to 6 units in parallel.
- Redundant batteries based on two independent strings connected in parallel ensuring the back-up time even in the event of failure of one string.
- Flexible battery solutions.

---

**Tailored to your environment**

- Saves space with a reduced footprint and optimized cabinet size.
- Low noise level.
- Compact, lightweight and easy to install.
- Extended battery life and performance with exclusive EBS battery charging management for increased battery life.
- Color graphical display with up to 30 languages embedded, including simplified and traditional Chinese.

---

**The solution for**

- Industrial networks
- Servers
- Telecommunications
- Medical and laboratories

---

**Our dedicated Expert Services for UPS**

We offer services to ensure your UPS highest availability:

- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
- Maintenance packages
- Training

---

**Some models may not be available in your country – please check with your local sales office.**
### Technical data

<table>
<thead>
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<th>Masterys MC</th>
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<td>INPUT</td>
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<td>400 V 3ph + N</td>
<td>400 V 3ph + N</td>
<td>400 V 3ph + N</td>
<td>400 V 3ph + N</td>
<td>400 V 3ph + N</td>
<td>400 V 3ph + N</td>
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<tr>
<td>Voltage tolerance</td>
<td>± 2 % (configurable from 1 % to 8 %)</td>
<td>± 2 % (configurable from 1 % to 8 %)</td>
<td>± 2 % (configurable from 1 % to 8 %)</td>
<td>± 2 % (configurable from 1 % to 8 %)</td>
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<td>± 2 % (configurable from 1 % to 8 %)</td>
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<td>50 / 60 Hz</td>
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<td>± 2 % (configurable from 1 % to 8 %)</td>
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<td>125 % for 10 minutes, 150 % for 1 minute</td>
<td>125 % for 10 minutes, 150 % for 1 minute</td>
<td>125 % for 10 minutes, 150 % for 1 minute</td>
<td>125 % for 10 minutes, 150 % for 1 minute</td>
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</tr>
<tr>
<td>Online mode @ 100 % of load</td>
<td>up to 93 %</td>
<td>up to 93 %</td>
<td>up to 93 %</td>
<td>up to 93 %</td>
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<tr>
<td>BYPASS</td>
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<td>Rated voltage</td>
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<tr>
<td>Voltage tolerance</td>
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<td>± 15 % (configurable from 10 % to 20 %)</td>
<td>± 15 % (configurable from 10 % to 20 %)</td>
<td>± 15 % (configurable from 10 % to 20 %)</td>
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<td>Frequency tolerance</td>
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<td>± 2 % (configurable for Genset compatibility)</td>
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<td>Operating ambient temperature</td>
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<td>from 0 °C to + 40 °C (from 15 °C to 25 °C for maximum battery life)</td>
<td>from 0 °C to + 40 °C (from 15 °C to 25 °C for maximum battery life)</td>
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<td>from 0 °C to + 40 °C (from 15 °C to 25 °C for maximum battery life)</td>
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<td>Relative humidity</td>
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<td>0 % - 95 % without condensation</td>
<td>0 % - 95 % without condensation</td>
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<td>UPS CABINET</td>
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<tr>
<td>Dimensions W x D x H</td>
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<tr>
<td>Weight (without batteries)</td>
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<td>95 kg</td>
<td>105 kg</td>
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</tr>
</tbody>
</table>

### Standard electrical features

- Dual input mains.
- Internal manual bypass.
- Backfeed protection: detection circuit.
- EBS (Expert Battery System) for battery management.
- Multilanguage display including simplified and traditional chinese.

### Electrical options

- External battery cabinet for extended back-up time.
- External temperature sensor.
- Additional battery charger.
- Parallel kit.
- ACS synchronization system (3/3).
- External maintenance bypass.

### Standard communication features

- MODEBUS / JBUS RTU.
- 2 slots for communication options.
- Additional RS232 interface.
- Embedded LAN interface (web pages, email).

### Communication options

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

### Remote monitoring service

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

(7) Conditions apply.
**MASTERYS IP+**

Robust, highly reliable protection for harsh environments from 10 to 80 kVA

### 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.

### 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).

### 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.

### The solution for
- Industrial processes
- Services
- Medical

### Certifications

![Certified by TÜV SÜD with regard to product safety (EN 62040-1).](Image)

### Advantages

### Our dedicated Expert Services for UPS

We offer services to ensure your UPS highest availability:
- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
- Maintenance packages
- Training

**www.socomec.com/services**
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.

Technical data

<table>
<thead>
<tr>
<th>MASTERYS IP+ 10-80</th>
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<tbody>
<tr>
<td>Sn [kVA]</td>
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<tr>
<td>Pn [kW]</td>
</tr>
<tr>
<td>Pn [kW]</td>
</tr>
<tr>
<td>Parallel configuration(1)</td>
</tr>
</tbody>
</table>

INPUT

Rated voltage | 400 V |
Voltage tolerance | ± 20%(2) (up to -40% @ 50% of rated power) |
Rated frequency | 50/60 Hz |
Frequency tolerance | ± 10% |
Power factor / THD(3) | 0.99 / < 3% |

OUTPUT

Rated voltage | 1p + N: 230 V (can be configured 220/240 V) 3p + N: 400 V (230/415 V configurable) |
Voltage tolerance | ± 1% |
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(2) |
Crest factor | 3:1 (complying with IEC 62040-3) |

BYPASS

Rated voltage | 1p + N: 230 V, 3p + 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(2) (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 |

UPS CABINET

Dimensions (3/1) W x D x H | 600 x 800 x 1400 mm | 1000 x 835 x 1400 mm |
Dimensions (3/3) W x D x H | 600 x 800 x 1400 mm | 1000 x 835 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 500 kg 550 kg |
Degree of protection (according to IEC 60529) | IP31 and IP52 |

Colours |

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, RCM (62376) |

Electrical options

• Long-life batteries.
• External battery cabinet (degree of protection up to IP32).
• External temperature sensor.
• Additional battery chargers.
• Additional transformer.
• Parallel kit.
• Cold start.
• ACS synchronization system.
• Neutral creation kit for mains without neutral.
• Tropicalization and anti-corrosion protection for electrical boards.

Standard communication features

• Multilanguage graphic display.
• Dry contact interface.
• MODBUS RTU.
• Embedded LAN interface (web pages, email).
• 2 slots for communication options.

Communication options

• PROFIBUS.
• MODBUS TCP.
• NET VISION: professional WEB/SNMP interface for UPS monitoring and shutdown management of several operating systems.

Remote monitoring service

• LINK-UPS, remote monitoring service that connects your UPS to your Critical Power specialist 24/7.
**MASTERYS IP**

Reliable protection for industrial processes from 10 to 40 kVA

**Designed for demanding environments**
- Designed to protect industrial processes.
- A compact solution with isolation transformer integrated into the UPS cabinet.
- Full metallic enclosure (IP21 cabinet).

**Tailored to your needs**
- Easy to install and to handle (fitted with castors).
- Fitted with dry contact remote signalling interface.
- Protection against backfeed on the upstream network (internal or external backfeed).
- Separate rectifier and bypass mains.

**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.
- Color graphical display with up to 30 languages embedded, including simplified and traditional Chinese.
- Flexible communication boards for every industrial communication need: dry contacts, MODBUS, PROFINBUS, etc.
- Fully compatible with generator sets.

The solution for
- Industrial processes
- Transportation
- Infrastructure
- Service sector
- Hospitals

Our dedicated Expert Services for UPS

We offer services to ensure your UPS highest availability:
- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
- Maintenance packages
- Training

Some models may not be available in your country – please check with your local sales office.
Standard electrical features
- Dual input mains.
- Internal manual bypass.
- Backfeed protection: detection circuit.

Electrical options
- External maintenance bypass.
- External battery cabinet.
- Parallel kit.
- ACS synchronization system.
- Permanent isolation controller (CPI).
- Power share.

Standard communication features
- Multilanguage display including simplified and traditional Chinese.
- MODBUS/IBUS RTU.
- 2 slots for communication options.
- Dry contact interface.
- Embedded LAN interface (web pages, email).

Communication options
- Remote mimic panel.
- NET VISION: professional WEB/SNMP interface for UPS monitoring and shutdown management of several operating systems.

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

Internal architecture

Technical data

<table>
<thead>
<tr>
<th>MASTERYS IP</th>
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<td>Input / output 3/3</td>
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<tr>
<td>Parallel configuration(1)</td>
<td>up to 6 units</td>
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</tr>
</tbody>
</table>

INPUT
- Rated voltage: 400 V(2)
- Voltage tolerance: ±20% (up to -5% @ 70% of rated power)
- Rated frequency: 50/60 Hz ± 10%
- Power factor / THDI(3): 0.99 < 3%

OUTPUT
- Rated voltage: 1ph + N: 230 V (can be configured 220/240 V)
- Voltage tolerance: ±1.0%
- Rated frequency: 50/60 Hz
- Frequency tolerance: ±2% (configurable from 1% to 8%)
- Overload: 125% for 10 minutes, 150% for 1 minute
- 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)

EFFICIENCY
- Online mode @ 100% of load: up to 93%

ENVIRONMENT
- Operating ambient temperature: from 0°C to 40°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): < 55 dB

UPS CABINET
- Dimensions W x D x H: 444 x 795 x 1400 mm
- Weight: 200/205 kg; 210/215 kg; 235/285 kg; - / 385 kg; - / 340 kg
- Degree of protection: IP21

STANDARDS
- Safety: IEC/EN 62040-1-1, 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, RCM (E2376)

(1) With transformer on input/bypass side.
(2) Three-phase 220 - 230 - 240 V from 15 to 30 kVA on demand.
(3) For source THDV < 2% and normal load.
(4) Three-phase 220-230-240 V from 15 to 40 kVA.
DELPHYS MP Elite+
Resilient transformer-based power protection from 60 to 200 kVA

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.

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...

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.

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)

Advantages
- Fault-tolerant architecture with redundancy of basic functions.
- 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.
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The solution for
- Industry
- Processes
- Infrastructure
- Healthcare
- Service sector
- Telecommunications

Advantages
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- 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.
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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)
High quality power supply
Specifically designed to be adapted to
• Soft start capability (ramp up)
• Mechanical & electrical robustness for cascade failure prevention for parallel systems.
• Accurate diagnostics guarantee power
• Field-proven technology.

Sinusoidal ThdU output voltage < 2 % with
• An isolation transformer installed on the inverter output to ensure complete galvanic distribution.
• A very high short-circuit current capacity
• High overload capability to withstand abnormal load conditions.
• High short-circuit capability simplifies downstream protective devices.

Three-phase UPS capability, long back up time…
24-hour call out and rapid on-site repairs
Remote monitoring service
LINK-UPS, remote monitoring service that connects your UPS to your Critical Power specialist 24/7.

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.
• Backfeed 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)\(^{(1)}\).
• 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).
• MODBUS RTU.
• MODBUS TCP.
• PROFIBUS / PROFINET.
• BACnet/IP interface.
• 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

Technical data

<table>
<thead>
<tr>
<th>DELPHYS MP Elite+</th>
<th>60</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>60</td>
<td>80</td>
<td>100</td>
<td>120</td>
<td>160</td>
<td>200</td>
</tr>
<tr>
<td>Pn [kW]</td>
<td>54</td>
<td>72</td>
<td>90</td>
<td>108</td>
<td>144</td>
<td>180</td>
</tr>
<tr>
<td>Input / output</td>
<td>3/3</td>
<td></td>
<td></td>
<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>
<td></td>
</tr>
</tbody>
</table>

**INPUT**
- Rated voltage: 380V - 400V - 415V\(^{(1)}\)
- Voltage tolerance: ± 10% (selectable)
- Rated frequency: 50/60 Hz
- Total output voltage distortion - linear load: ThdU < 2%
- 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

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

**ENVIRONMENT**
- Operating ambient temperature: from 0 °C up to +40 °C\(^{(1)}\) (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 600 x 1930 mm
- Weight: 740 kg, 880 kg, 1020 kg
- Degree of protection: IP20 (other IP as option)
- Colours: RAL 9006

**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)

\(^{(1)}\) Others on demand. \(^{(2)}\) Conditions apply.
**DELPHYS MX**

Flexible transformer-based solution for resilient architectures from 250 to 900 kVA

---

**Optimum load protection**
- Permanent operation in VFI mode (online double conversion).
- The inverter isolation transformer provides galvanic separation both between the DC current and the load and between the two sources.
- Output voltage precision under all load conditions.
- High overload capacity to withstand abnormal load conditions.
- Easy maintainability reduces MTTR thanks to pull-out sub-assemblies and front access to all components.
- Fault-tolerant architecture with built-in redundant components.

---

**Minimised Total Cost of Ownership**
- High efficiency in VFI mode, including the transformer.
- High power density: its small footprint saves space on your premises.
- The high and constant input power factor helps limit the dimensions of your upstream network infrastructure.
- Mains connection of the rectifier requires only 3 cables (no neutral).
- High short-circuit capacity simplifies downstream protective devices.

---

**Flexible and easily upgradable**
- Robust and reliable paralleling mode.
- Distributed or centralised bypass ensures perfect compatibility with any electrical infrastructure.
- Hot-plug capability simplifies extension or redundancy while keeping high quality power.
- The transformer based topology is adapted to all kinds of electrical installations.

---

**The solution for**
- Industry
- Processes
- Infrastructure
- IT applications
- Healthcare

---

**Attestations and certifications**

---

**Advantages**

---

**Our dedicated Expert Services for UPS**

We offer services to ensure your UPS highest availability:
- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
- Maintenance packages
- Training

---

www.socomec.com/services
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.
- Backfeed 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)(2).
- ACS synchronisation system for 2n architecture.
- Redundant electronic power supplies.
- Hot plug option (increase the power keeping the load supplied in double conversion).

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

Communication options
- GTS (Graphic Touch Screen).
- ADC interface (configurable voltage-free contact).
- MODBUS RTU.
- MODBUS TCP.
- PROFIBUS / PROFINET.
- BACnet/IP interface.
- 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>Sn [kVA]</th>
<th>DELPHYS MX</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>300 300 400 500 800 900 900</td>
</tr>
<tr>
<td>Pn <a href="1">kW</a></td>
<td>360 360 360 360 360 360 360</td>
</tr>
<tr>
<td>225 270 360 450 720 810</td>
<td></td>
</tr>
<tr>
<td>Input/output</td>
<td>Parallel configuration up to 6 units</td>
</tr>
<tr>
<td>INPUT</td>
<td>Rated voltage</td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td>340 to 460 V</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Frequency tolerance</td>
<td>± 5 Hz</td>
</tr>
<tr>
<td>Power factor / THDI</td>
<td>0.93 / &lt; 4.5%</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>Rated voltage</td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td>&lt; 1 % (static load), ± 2 % in 5 ms (dynamic load conditions from 0 to 100 %)</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Frequency tolerance</td>
<td>± 0.2%</td>
</tr>
<tr>
<td>Total output voltage distortion - linear load</td>
<td>ThdU &lt; 2%</td>
</tr>
<tr>
<td>Total output voltage distortion - non-linear load</td>
<td>ThdU &lt; 2.5%</td>
</tr>
<tr>
<td>Short-circuit current</td>
<td>Up to 4.4 In</td>
</tr>
<tr>
<td>Overload</td>
<td>150% for 1 minute, 125% for 10 minutes</td>
</tr>
<tr>
<td>Crest factor</td>
<td>3:1</td>
</tr>
<tr>
<td>Admissible power factor without derating</td>
<td>inductive up to 0.9 leading</td>
</tr>
<tr>
<td>BYPASS</td>
<td>Rated voltage</td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td>± 10%</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Frequency tolerance</td>
<td>± 2% (configurable for GenSet compatibility)</td>
</tr>
<tr>
<td>EFFICIENCY</td>
<td>Online mode</td>
</tr>
<tr>
<td>Eco Mode</td>
<td>99%</td>
</tr>
<tr>
<td>ENVIRONMENT</td>
<td>Operating ambient temperature</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>0 % - 95 % without condensation</td>
</tr>
<tr>
<td>Maximum altitude</td>
<td>1000 m without derating (max. 3000 m)</td>
</tr>
<tr>
<td>Acoustic level at 1 m (ISO 3746)(3)</td>
<td>≤ 70 dBA</td>
</tr>
<tr>
<td>UPS CABINET</td>
<td>Dimensions W x D x H</td>
</tr>
<tr>
<td>Weight</td>
<td>2500 kg</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP20</td>
</tr>
<tr>
<td>Colours</td>
<td>RAL 9006</td>
</tr>
<tr>
<td>STANDARDS</td>
<td>Safety</td>
</tr>
<tr>
<td>EMC</td>
<td>IEC/EN 62040-2, AS 62040.2</td>
</tr>
<tr>
<td>Performance</td>
<td>IEC/EN 62040-3, AS 62040.3</td>
</tr>
<tr>
<td>Product declaration</td>
<td>CE, RCM (E2376)</td>
</tr>
</tbody>
</table>

(1) Conditions apply. (2) DELPHYS MX 250-500: others on demand. (3) As per power range.
The SHARYS IP series have been designed with the objective of reliable DC supply. Ideally suited for industrial applications, SHARYS IP combines telecommunication 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 (1).
- 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). (1) Contact us for power extension or customization needs.

---

(1) Contact us for power extension or customization needs
Intelligent rectifier cooling.

PCB tropicalisation as standard.

Upgradeability and customization possibilities complete the innovative mix.

A robustly designed frame creating an N+1 redundancy and scalability along with modularity, hot swap module replacements.

SHARYS IP combines telecom features like ideally suited for industrial applications,

with the objective of reliable DC supply.

The SHARYS IP series have been designed expandable according to future requirements by adding additional rectifier components.

SHARYS IP - Rectifier Module

Technical data

<table>
<thead>
<tr>
<th>Model</th>
<th>24 V 50 A</th>
<th>48 V 15 A</th>
<th>48 V 30 A</th>
<th>48 V 50 A</th>
<th>108 V 20 A</th>
<th>120 V 20 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td>230 V 1ph + N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td>±20% @ 100% IL up to -50% @ 40% IL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>47.5 ... 63 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power factor</td>
<td>≥ 0.99</td>
<td>≥ 0.98</td>
<td>≥ 0.99</td>
<td>≥ 0.99</td>
<td>≥ 0.99</td>
<td>≥ 0.99</td>
</tr>
<tr>
<td>Absorbed current distortion</td>
<td>complies with standard EN 61000-3-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inrush current on insertion</td>
<td>limited by precharge circuit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OUTPUT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td>24 V</td>
<td>48 V</td>
<td>108 V</td>
<td>120 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage regulation</td>
<td>21-29 V</td>
<td>42-58 V</td>
<td>95-131 V</td>
<td>105-145 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Static behaviour IL</td>
<td>≤ 1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated current</td>
<td>50 A</td>
<td>15 A</td>
<td>30 A</td>
<td>50 A</td>
<td>20 A</td>
<td>20 A</td>
</tr>
<tr>
<td>Permanent current overload with constant power</td>
<td>105% of rated current</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual ripple (with IL ≥ 10%)</td>
<td>AC &lt; 50 mV, PP &lt; 100 mV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current imbalance in parallel operation</td>
<td>≤ 0.05 IL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic behaviour on load variation (Δ IL = 50% IL in the range 10-100%)</td>
<td>Δ VIL ≤ 4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EFFICIENCY</td>
<td>Typical</td>
<td>90%</td>
<td>90%</td>
<td>91%</td>
<td>92%</td>
<td>93%</td>
</tr>
</tbody>
</table>

SHARYS IP - Rectifier Module

General Catalogue 2018-2019
**Rectifier module**

SHARYS RECTIFIER modules use double conversion switching technology. The combination of SMD technology, 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>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>SH-IP-048015</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>20 A</td>
<td>-</td>
<td>SH-IP-108020</td>
<td>SH-IP-120020</td>
</tr>
<tr>
<td>30 A</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>
</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>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>ED048030</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>40 A</td>
<td>-</td>
<td>ED108040</td>
<td>ED120040</td>
</tr>
<tr>
<td>60 A</td>
<td>-</td>
<td>ED048060</td>
<td>-</td>
</tr>
<tr>
<td>100 A</td>
<td>ED024100</td>
<td>ED048100</td>
<td>-</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<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>EX048030</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>40 A</td>
<td>-</td>
<td>EX108040</td>
<td>EX120040</td>
</tr>
<tr>
<td>60 A</td>
<td>-</td>
<td>EX048060</td>
<td>-</td>
</tr>
<tr>
<td>100 A</td>
<td>EX024100</td>
<td>EX048100</td>
<td>-</td>
</tr>
</tbody>
</table>

**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>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>IS024020</td>
<td>IS048020</td>
<td>-</td>
</tr>
<tr>
<td>200 A</td>
<td>IS024080</td>
<td>IS048080</td>
<td>-</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<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>IX048030</td>
<td>IX108060</td>
<td>IX120060</td>
</tr>
<tr>
<td>150 A</td>
<td>IX024150</td>
<td>IX048150</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 front panel design indications.
- Plug-in "hot-swap" solution, easy to replace.

(1) System only.
**Full battery compatibility**

SHARYS IP design is compatible with different battery technologies\(^{(1)}\) 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
- Unity 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

**Wide temperature and environment range up to +55 °C ambient temperature**

**Constant output power**

**Can bus communication between modules**

**Active load sharing among modules**

**Speed controled forced air cooling (temperature-load)**  
**Automatic self-test fan failure detection**

**Optimized efficiency design point**

---

\(24/48/108/120\) V from 15 to 200 A

General Catalogue 2018-2019
Complementary solutions

Back-up storage
Back-up energy and power ................................................................. p. 86
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Battery cabinets ............................................................................. p. 88
W-BMS ............................................................................................ p. 90
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Power Distribution Unit (PDU)
RACK PDU ......................................................................................... p. 104
Back-up energy and power

Why have back-up energy?
The energy storage stage within a UPS system is a key element, as its purpose is to provide the load with immediate power when the main power supply is unavailable. The choice and sizing of the energy storage systems is based on various factors such as load characteristics, quality of the power supply network, the electrical infrastructure where the UPS is installed, and the environmental characteristics of the technical room.

In UPS applications energy storage is used for two main reasons:

- **Power quality**: to support the UPS system when the mains network values fall outside the maximum acceptable UPS values, while the mains network is unavailable or until the load is switched off in a controlled manner.
- **Power bridging**: to give the system upstream of the UPS time to switch between the mains network and the back-up power system, this being in most cases a generator.

Power and energy
When the main power supply is unavailable the storage system provides the UPS with the necessary energy. This can take place in two ways depending on the specific application:

- ‘Power’ type applications - the UPS is provided with a large quantity of power for a limited period of time e.g. power bridging applications or where the main supply is affected by micro interruptions. Back-up storage systems optimised for power-type applications can be discharged with high power, recharged very quickly, and generally perform well under cyclic operating conditions (frequent charging/discharging).
- ‘Energy’ type applications - the UPS is provided with power for an extended period of time e.g. when the main supply is unavailable for longer than one minute.

Sizing and Total Cost of Ownership
Various factors must be taken into account when choosing an energy storage system in order to optimise the total cost of ownership and achieve the best technical solution. The differentiating factors to consider with back-up storage technologies include:

- Purchasing costs vs budget.
- Dimensions and weight.
- Expected equipment lifetime and number of charge/discharge cycles.
- Environmental conditions.
- Characteristics of the power supply network (frequency/duration of unavailability etc.).
- Safety to be guaranteed in the technical room.
- Maintenance requirements.
In UPS applications energy storage is used for two main reasons:

- ‘Energy’ type applications - the UPS is necessary energy. This can take place in two ways depending on the specific application:
  - When the main power supply is unavailable for longer than one minute.
  - Periodic charging/discharge cycles (frequency/duration of unavailability etc.).
- Power and energy bridging applications or where the main supply is affected by micro interruptions.

The choice and sizing of the energy storage system is based on various factors such as expected equipment lifetime and number of charge/discharge cycles.

### BACKUP STORAGE

When the UPS is installed, and the environmental characteristics of the technical room.

Batteries can be installed within the UPS (normally for small UPS systems) or assembled in external cabinets or on shelving. The batteries available for use with UPS systems include:

- Normal/long life VRLA batteries with flame-retardant containers.
- Long life open-vented lead batteries with flame-retardant containers.
- Long life nickel-cadmium (NiCd) batteries for special applications.
- Lithium-ion (Li-ion) batteries with integrated monitoring and equalisation system.

### Nickel-Cadmium batteries

NiCd technology uses alkaline liquid electrolyte and is especially robust and reliable. These batteries are designed to operate in difficult environmental conditions and support demanding work cycles (frequent charging/discharging), and are usually installed in dedicated rooms on shelving that enables the electrolyte to be topped up. As Cadmium is toxic the use of this type of battery is limited. Furthermore, the requirement for regular complete discharge cycles restricts the number of possible applications with UPS systems.

### VRLA batteries

VRLA (Valve Regulated Lead Acid) batteries are lead batteries with a sealed safety valve container for releasing excess gas in the event of internal overpressure. They have an expected lifetime of 15-20 years and statistically are very reliable until at least halfway through their lifetime. Subsequently, a cell short circuit may occur, causing a slight reduction in the runtime but this does not cause a critical situation. Using a liquid electrolyte has some disadvantages, such as shelf installation instead of cabinets to enable electrolyte top-ups and regular inspections, and requires a suitably ventilated dedicated room for reasons of safety.

### Lithium-ion batteries

Recently introduced to batteries for UPS applications, lithium-ion technology clearly differs from conventional lead and nickel-cadmium batteries. The most significant features include the considerable reduction in weight and floor space for the same runtime, the possibility of recharging them quickly, and their long cyclic and calendar lifetime.

However, their relatively brief history in high-power applications, and the need to introduce monitoring and equalisation electronics into batteries (which increases the initial cost), are still inhibiting on their widespread use.
Battery cabinets
The value of your back-up time from 10 to 900 kVA

Total protection during downtime
- Designed to satisfy and respect safety protection standards (EN 50272-2 and EN 62040-1).
- The right size of protection device tailored to your power rating.
- Robust cabinet.
- Normal and long-life batteries.
- Chemical safety means shelves protected against corrosion of H₂SO₄ that can cause risks of electric shock and short circuit (fire).
- Designed according to the specific UPS model for easy connections, correct recharge current and appropriate discharge rating to optimize battery life.
- Modular hot-swap battery cabinets with string protection and individual string disconnection.

Easy installation and maintenance
- Frontal switch/breaker protection.
- Frontal input output connections.
- Easy battery replacement.
- Suitable for rigid cables and cable-glands.
- Suitable for tripping coil contact (on request).
- Height aligned with UPS.

Electrical protection coordination for your safety
Battery protection is essential for safety. We perform tests in our laboratories under abnormal conditions (i.e. short-circuit) to guarantee the maximum safety for the installation.

As batteries can cause fire if the protection is not adequate, we test all battery protections in real operating conditions.
- Switch/Breaker with fuse.
- Magnetothermal MCCB.

The protective devices are sized according to the UPS and to the battery short-circuit current.

Technical data

<table>
<thead>
<tr>
<th>Standard degree of protection</th>
<th>IP20 (according to IEC 60529)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional degree of protection</td>
<td>IP32</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0÷+40 °C (+15 ÷ +25 °C recommended for long battery life*)</td>
</tr>
<tr>
<td>Ambient storage and transport temperature</td>
<td>-5 °C ÷ +40 °C (max recommended: 25 °C)</td>
</tr>
<tr>
<td>Relative humidity (condensation-free)</td>
<td>up to 95%</td>
</tr>
<tr>
<td>Conforms to standards</td>
<td>EN 50272-2, EN 62040-1</td>
</tr>
<tr>
<td>Product declaration</td>
<td>CE</td>
</tr>
</tbody>
</table>

(*) Versions with a higher degree of protection and versions with a wider operating temperature range are available on request. Please contact SOCOMEC for specific battery brands and custom solutions.
Battery cabinets
The value of your back-up time
from 10 to 900 kVA

Dimensions (1)

Small Masterys battery cabinet
Masterys and Delphys battery cabinet
Modular hot-swap battery cabinet - small capacity

Modular hot-swap battery cabinet - medium capacity
Modular battery cabinet - large capacity
Battery Rack

(1) The dimensions specified refer to standard battery cabinets. Custom solutions are available on request. Please check with your local sales office.
The battery is a key component in the operation of a UPS

W-BMS, the SOCOMEC Battery Monitoring System, is an effective battery monitoring solution which maximizes the availability of the supply in applications where power continuity is vital.

Because 75% of uninterruptible power supply (back-up power supply) system breakdowns are down to batteries, the reliability of these components is a key feature of your electrical system. Therefore, accurate, detailed monitoring of their operating condition is vital. This actually guarantees maximum continuity of the supply to the system’s critical loads, loads which cannot tolerate even a brief interruption let alone a prolonged power cut.

Anticipate malfunctions

W-BMS is a vital tool in the continuous supply of critical systems and performs preventative battery monitoring. This solution provides the opportunity to eliminate any unscheduled power cut due to battery failure.

Make cost savings

W-BMS enables you to make operating savings by:
- Improving UPS uptime.
- Reducing maintenance operations by 75%.
- Maximizing battery return on investment.
- Anticipating battery malfunctions.
- Guaranteeing the safety of maintenance personnel.

Ensure the continuity and safety of the supply to critical loads

It is vital to always know the operating status of the lead acid batteries supplying critical applications. W-BMS ensures that these are in good condition and will work when you need them. Unlike other battery monitoring systems, W-BMS has been specifically designed to monitor the impedance of the different battery monoblocs every day. By avoiding the time-consuming and potentially dangerous manual method of testing individual batteries, W-BMS increases the likelihood of identifying a power failure and greatly increases the safety of maintenance personnel.

The three W-BMS components

- CU (Control Unit):
  - Collects and stores the DAM and IDAM data.
  - Manages the communication with the PC.
  - Sends SMS/E-Mail notifications.
- DAM (Data Acquisition Module):
  - Measures the voltage, the temperature and the internal resistance of each battery.
  - Stores the most significant data.
- IDAM (Current Acquisition Module):
  - Measures the current of either a battery or a string of batteries.
  - Stores the most significant data.

Technology

- Radio frequency

Technical advantages

- Easy to use
- Easy to set up
- Trend analysis to guard against breakdowns
- Remote monitoring
- Remote alarm notification
- Data acquisition
- Analysis software

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  - Sends SMS/E-Mail notifications.
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  - Stores the most significant data.
- IDAM (Current Acquisition Module):
  - Measures the current of either a battery or a string of batteries.
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Close battery monitoring

Most battery monitoring systems perform an impedance test once a week or once a month. However, a battery can fail in as little as two days. It is therefore vital that your system monitors your batteries much more frequently. W-BMS has been designed to monitor the impedance of each of the battery packs or cells 24/7.

Modular design and central monitoring

W-BMS is the only battery monitoring system that can monitor different voltage monoblocs or different types of batteries (for example generator batteries) centrally. W-BMS is the easiest battery monitoring system to install and maintain.

Scalable and simple

Whether you want to add a battery branch, a part of a building, the W-BMS system offers you a vital modular system to future-proof your system.

With only three main components, expanding your system is easy. No rewiring is required and the components can even be moved to cope with your new architecture. Similarly, you can extend your system to cover your auxiliary batteries (for generator batteries, for example).

W-BMS can be adjusted to cope with any changes and is a flexible, permanent solution. Your return on investment is thus guaranteed.

W-BMS INTERACTIVE option, to optimize battery lifetime

Including all the features of the standard W-BMS, W-BMS INTERACTIVE operates directly with the UPS battery recharging system (EBS). It optimizes battery capacity and maximizes battery life and return on investment.

- **Increase charger precision**: the UPS charger is able to adapt the recharge parameters according to all the information collected by W-BMS INTERACTIVE. Such corrective actions aim to standardize cell behavior to improve battery lifetime and availability.

- **Automatic battery testing**: when required, W-BMS INTERACTIVE and the UPS perform an automatic battery test. The UPS calibrates slow, safe discharge while W-BMS INTERACTIVE collects data and analyses cell blocks.

- **Proactive measures**: when a block starts to weaken, W-BMS INTERACTIVE and the UPS perform an automatic procedure to recover the block before it is totally unusable, and to enhance global battery capacity.

### Control Unit (CU)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>4.5 – 5.5 VDC (external power supply or USB port)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>500 mA max</td>
</tr>
<tr>
<td>Digital input</td>
<td>2x (opto-isolated)</td>
</tr>
<tr>
<td>Digital output</td>
<td>2x (dry-contact)</td>
</tr>
<tr>
<td>Data storage</td>
<td>microSD card</td>
</tr>
<tr>
<td>Number of battery blocks</td>
<td>up to 1024 (full version), up to 50 (light version)</td>
</tr>
<tr>
<td>Connectivity</td>
<td>Ethernet, Modbus/TCP, USB, GSM (SIM-card not included)</td>
</tr>
</tbody>
</table>

### Data Acquisition Module (DAM)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>L type, H type</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>2 VDC, 12 VDC</td>
</tr>
<tr>
<td>Voltage range</td>
<td>1.5 – 5.5 VDC, 5 – 18 VDC</td>
</tr>
<tr>
<td>Acoustic level at 1 m (ISO 3746)</td>
<td>80 mA @ 2 VDC, 30 mA @ 12 VDC</td>
</tr>
<tr>
<td>Measurements</td>
<td>voltage, impedance, temperature</td>
</tr>
<tr>
<td>Battery connection</td>
<td>Blade connector (fasten), ring or alligator clip</td>
</tr>
</tbody>
</table>

### Current Acquisition Module (IDAM)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>type 1, type 2</td>
</tr>
<tr>
<td>Rated current</td>
<td>300 A, 600 A</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>9 – 18 VDC (external power supply or battery)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>50 mA</td>
</tr>
<tr>
<td>Current range</td>
<td>up to 300 A, up to 600 A</td>
</tr>
</tbody>
</table>
Li-Ion Battery UPS
Compact innovative power protection solution

The solution for
- Data centres
- IT infrastructures
- Applications requiring a back-up time up to 15 minutes

UPS interaction
The ultimate solution for fuller control over system availability.
The Socomec Li-ION BATTERY UPS solution includes an interactive control system to check and manage all the Li-ion cells’ parameters (i.e. temperature, voltage, current, charging status, etc.) and to dynamically adapt how the UPS operates depending on the status of the Li-ion battery.
The UPS interaction guarantees the most reliable performance and improves the system’s availability by:
- Ensuring a proper control of the Li-ion battery
- Preventing any irreversible overcharge failure
- Performing automatic corrective actions in case of any critical conditions that can affect battery performance.

Maximum availability
- Very fast UPS battery recharge.
- Ensured scalability for power upgrades or redundancy.
- Reduced maintenance of battery components.

Cost-effective solution
- High power density in a reduced footprint.
- 15+ years’ expected service life.
- Higher cycling capacity: 10 times more than VLRA Battery UPS.
- Fewer cooling requirements.

Extreme reliability
- Optimum performance in all critical operating conditions.
- Interactive UPS battery control.
- Embedded cell-to-cell monitoring.
- Wide operating temperature range (0 °C to +40 °C).

High sustainability
Socomec is committed to developing solutions that reduce the environmental impact from the design stage and throughout their entire life cycle.
The Li-Ion Battery UPS energy system is the latest solution designed for helping environmental sustainability:
- No toxic materials
- REACH / RoHS compliant materials
- No gas emissions
- No risk of acid leakage.

Maximum availability

Cost-effective solution

Extreme reliability

High sustainability
LI-ION BATTERY UPS: footprint comparison with VRLA batteries

Back-up storage solution with VRLA batteries

Back-up storage solution with LI-ION BATTERY UPS

More valuable space saved thanks to reduced footprint

LI-ION BATTERY UPS: footprint comparison vs. Lead-Acid batteries

<table>
<thead>
<tr>
<th>LI-ION BATTERY UPS</th>
<th>FOOTPRINT</th>
<th>VRLA BATTERY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Power: 200 kVA Back-up time: 8 min</td>
<td>Footprint: 0.95 m²</td>
</tr>
<tr>
<td></td>
<td>Power: 500 kVA Back-up time: 9 min</td>
<td>Footprint: 2.69 m²</td>
</tr>
<tr>
<td></td>
<td>Power: 1.2 MVA Back-up time: 8 min</td>
<td>Footprint: 7.87 m²</td>
</tr>
</tbody>
</table>

Space saving +51.6%  +37.8%  +43.6%

(1) Other configurations: please contact us.
Power outages lasting a few seconds to several minutes may cause damage, loss in production and cost increases to applications and processes sensitive to short duration downtime.

To ensure the optimum availability and a long-life cycle for batteries, the power supply has to be protected by a powerful UPS back-up storage solution with:

- Very short recharging time.
- Low maintenance.
- Constant monitoring.

LI-ION CAPACITOR UPS is the innovative UPS back-up storage solution specifically designed to protect:

- Applications requiring back-up times of a few seconds to several minutes.
- Processes sensitive to frequent micro interruptions.
- Applications working in critical environments where hazardous substances are not allowed.
- Applications with severe ambient conditions.

**Attestations**

LI-ION CAPACITOR UPS is designed and developed in Europe by Socomec in partnership with JSR, Japanese leader in materials innovation.

**Lithium-ion capacitors: operating principle**

- The activated carbon is a capacitor cathode
- The Li-doped carbon anode is a battery anode, undergoing Li doping during charge and de-doping during discharge
- Hybrid construction creates a capacitor which yields the best performance features of batteries and capacitors

**High sustainability**

Socomec is committed to developing solutions that reduce the environmental impact from the design stage and throughout their entire life cycle.

LI-ION CAPACITOR UPS is the latest solution designed for helping environmental sustainability:

- Safe, low-toxic materials
- REACH/RoHS compliant materials
- No gas emission
- No risk of acid leakage.
Li-Ion Capacitor UPS
Powerful and reliable solution for applications requiring short back-up times

Maximum availability
- Ultra-fast recharge.
- Ensured scalability for capacity or redundancy.
- Fire-safe construction.

Extreme reliability
- Optimum performance in all critical operating conditions.
- Ageing-free in any frequent process micro interruption.
- Wide operating temperature range.
- Embedded cell-to-cell monitoring.

Cost-effective solution
- Ultra-high power density in a reduced footprint.
- 15+ years’ service life.
- Easy and extremely low maintenance.

High modularity and granularity

1. Lithium-ion capacitor cells
2. Control and communication board
3. RJ45 interface for battery blocks communication
4. RS485 interface for battery strings communication

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STATYS

Redundant design for power availability and site maintainability from 32 to 1800 A

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.

The solution for

> Finance, banking and insurance
> Healthcare sector
> Telecom & Broadcasting
> Industry
> Power generation plants
> Transport

Our dedicated Expert Services for STS

We offer services to ensure your STS highest availability:

> Commissioning
> On-site intervention
> Preventive maintenance visits
> 24-hour call out and rapid on-site repairs
> Maintenance packages
> Training

www.socomec.com/services
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 oversized 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.
- UNIK-UPS, remote monitoring service that connects your STS to your Critical Power specialist 24/7.

Technical data

### STATYS

<table>
<thead>
<tr>
<th>Current [A]</th>
<th>32</th>
<th>63</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
<th>600</th>
<th>800</th>
<th>1000</th>
<th>1250</th>
<th>1400</th>
<th>1600</th>
<th>1800</th>
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<tbody>
<tr>
<td><strong>ELECTRICAL SPECIFICATIONS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td>120-127/220</td>
<td>208-220/380-415/440 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td>± 10% (configurable)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>50 Hz or 60 Hz (± 5 Hz configurable)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of phases</td>
<td>ph+N or ph- ph (+ PE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Number of poles switching</td>
<td>2-pole switching</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance bypass (cabinet version)</td>
<td>interlocked and secured</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Overload Efficiency</td>
<td>150% for 2 minutes - 110% for 60 minutes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Admissible power factor</td>
<td>99 %</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ENVIRONMENT**

- Operating ambient temperature: 0-40 °C
- Relative humidity: 95%
- Maximum altitude: 1000 m a.s.l. without derating
- Acoustic level at 1 m (ISO 3746): <45 dBA |

**STANDARDS**

- Safety: IEC 62310, IEC 60529, AS 62310, AS 60529
- EMC: C2 category (IEC 62310-2, AS 62310.2)
- Product declaration: CE, RCM (E2376)

### Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>19” Rack</th>
<th>Integrable Chassis (OEM)</th>
<th>Cabinet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Width (mm)</td>
<td>Depth (mm)</td>
</tr>
<tr>
<td>1 phase</td>
<td>63 - 100</td>
<td>483 (19”)</td>
<td>648</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>400</td>
<td>586</td>
</tr>
<tr>
<td></td>
<td>300 - 400</td>
<td>600</td>
<td>586</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>800</td>
<td>596</td>
</tr>
<tr>
<td></td>
<td>600 - 1000</td>
<td>1000</td>
<td>596</td>
</tr>
<tr>
<td></td>
<td>1250 - 1800</td>
<td>910</td>
<td>815</td>
</tr>
<tr>
<td>3 phases</td>
<td>200</td>
<td>500</td>
<td>600 (C)</td>
</tr>
<tr>
<td></td>
<td>300 - 400</td>
<td>700</td>
<td>600 (C)</td>
</tr>
<tr>
<td></td>
<td>600</td>
<td>900</td>
<td>600 (C)</td>
</tr>
<tr>
<td></td>
<td>800 - 1000</td>
<td>1400</td>
<td>950 (C)</td>
</tr>
<tr>
<td></td>
<td>1250 - 1600</td>
<td>2010</td>
<td>815</td>
</tr>
</tbody>
</table>

(1) Depth does not include handles (+40 mm)
**STATYS XS**

Reliable transfer system for redundant power supply
16 and 32 A - Rack mounted

---

**Ensured power continuity**
- Provides redundant power supply to single-corded IT equipment.
- Powered by two independent sources.
- A competitive alternative to redundant power supply (dual-corded) in the equipment cabinet in terms of price and features.
- Fast transfer time without source overlapping (ITI curve compliant).
- Maintenance-free equipment.

**Easy rack integration**
- Easy installation in 19” rack cabinets.
- Compact enclosure saving valuable cabinet rack space.
- Plug and Play devices pre-configured according to Socomec’s STS field experience.
- Easy and quick connection of the loads via multiple IEC 320 outlets.
- Integrated backfeed protection device for even easier electrical integration.

---

**Agility and ease of use**
- Front panel with LCD display for intuitive control and easy management.
- Source selection from the front panel without modifying the cabling.
- Automatic and manual transfer.
- Synchronised and non-synchronised sources management.
- LCD display of all input and output values.
- Configuration tool for easy customisation of rated voltage, monitoring parameters/tolerances, functionalities and operation.

---

**Flexible remote management**
- Remote management via LAN networks (SNMP).
- Real-time monitoring (RS485).
- Configurable dry contacts communication port via local setup connection port.

---

**Advantages**
- Rack servers
- IT networking
- Hubs & routers

---

**Certifications**
- RoHS Compliant
STATYS XS
Automatic Transfer System
16 and 32 A - Rack mounted

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The solution for
Rack servers
IT networking
Hubs & routers

Advantages

Front view

Connections

Technical data

<table>
<thead>
<tr>
<th>STATYS XS</th>
<th>STATYS XS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>16 A</td>
</tr>
<tr>
<td>INPUT / OUTPUT</td>
<td>16 A (configurable 10 A to 16 A)</td>
</tr>
<tr>
<td>Rated current</td>
<td>16 A (configurable 10 A to 16 A)</td>
</tr>
<tr>
<td>Voltage tolerance</td>
<td>± 10% (configurable)</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Frequency tolerance</td>
<td>± 10% (configurable)</td>
</tr>
<tr>
<td>Transfer time</td>
<td>ITIC curve compliant</td>
</tr>
<tr>
<td>Admitted overload</td>
<td>125% for 1 minute, 150% for 30 seconds</td>
</tr>
<tr>
<td>CONNECTIONS</td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td>2x IEC C20 (16 A)</td>
</tr>
<tr>
<td>Output</td>
<td>1x IEC C19 (16 A), 8x IEC C13 (10 A)</td>
</tr>
<tr>
<td>COMMUNICATION AND USER INTERFACES</td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>LCD display</td>
</tr>
<tr>
<td>Standard communication features</td>
<td>slot for optional communication board, 5 dry contacts (voltage-free, configurable), setup connection port for configuration tool</td>
</tr>
<tr>
<td>Communication options</td>
<td>SNMP card, RS485 card</td>
</tr>
<tr>
<td>ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>Operating ambient temperature</td>
<td>up to +40 °C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>5% to 90% without condensation</td>
</tr>
<tr>
<td>Acoustic level at 1 m (ISO 3746)</td>
<td>&lt; 25 dBA</td>
</tr>
<tr>
<td>MECHANICAL SPECIFICATIONS</td>
<td></td>
</tr>
<tr>
<td>Dimensions W x D x H</td>
<td>440 (19&quot;) x 285 x 44 mm (1U)</td>
</tr>
<tr>
<td>Weight</td>
<td>4 kg</td>
</tr>
<tr>
<td>STANDARDS</td>
<td></td>
</tr>
<tr>
<td>Directives</td>
<td>2014/35/UE, 2014/30/UE</td>
</tr>
<tr>
<td>Standards</td>
<td>IEC60950-1, CEIEN 02310-2</td>
</tr>
<tr>
<td>Environmental</td>
<td>WEEE, ROHS</td>
</tr>
<tr>
<td>Product declaration</td>
<td>CE</td>
</tr>
</tbody>
</table>
**IT SWITCH**

Seamless power transfer for reliable architectures from 16 to 20 A single-phase

---

**Continuity of service for critical applications**
- Located as close as possible to the application, the IT SWITCH allows a highly accessible architecture.
- It protects against:
  - main power source outage,
  - spurious tripping of upstream protection,
  - the result of mutual interference caused by faults in the applications (e.g.: short-circuit) being supplied from the same source.

**A secure power supply adapted to your equipment**
- IT SWITCH has been designed to be easily installed near sensitive applications, to fit into 19” racks.
- Different versions: fixed or swappable to meet all your power availability requirements.

**Easy site operation**
- Easy changing of the preferred supply path without modifying the cabling.
- Switching from one path to another, carried out by the operator and secured by the IT SWITCH automatic controls and protections.
- Easily adapts to match site specificity via standard or customised operating settings.

**User-friendly operation**
- IT SWITCH is fitted with a control panel that is easy to operate and guarantees safe operation.
- The communication software allows easy operation of the different equipment on-site.

**Operating principle**
IT SWITCH is an automatic transfer system between two sources. It is digitally controlled by microcontrollers to transfer the loads instantly, without disruption and without overlapping the sources.

**Automatic transfer**
The detection of a failure in the preferred source triggers the automatic and instantaneous transfer to the alternate source without disturbing the supply to the load. The "break before make" transfer is carried out without overlapping in order to prevent interference between the sources.

**Manual control**
The IT SWITCH manual control allows the operator to transfer the loads securely to one of the sources in order to carry out maintenance operations.

**Choosing the preferred source**
The operator chooses a preferred source for each IT SWITCH.
The parameters of each source and of the supply to the loads are permanently monitored.

**Separating loads**
The system inhibits the transfer in the event of a fault in the equipment supplied downstream. This discrimination avoids the faulty current being transferred onto the other source so as not to disturb other users.

"Hot Swap" power units
The extractable version of the IT SWITCH HA increases system availability. The hot swappable plug-in unit means the control and power unit can be taken out without interrupting the supply to the applications. The fixed chassis is equipped with a double maintenance bypass, which guarantees simple and totally secure operation.

---

**The solution for**
- Data centres
- Processes
- Telecommunications
- Air traffic control

**Our dedicated Expert Services for STS**
We offer services to ensure your STS highest availability:
- Commissioning
- On-site intervention
- Preventive maintenance visits
- 24-hour call out and rapid on-site repairs
- Maintenance packages
- Training

---

**Technical data**
- **IT 030 C**
  - Weight: 8.5 kg 14 kg
  - Dimensions: W x D x H: 446(2) x 310 x 131 mm 449(2) x 400 x 133 mm
  - Operating ambient temperature: 0 to +40°C
  - Input and output on terminal blocks - Input voltage tolerance adjustable (factory setting ±15 %)
  - Output voltage nominal ±5 % (degraded mode ±10 %)
  - Frequency tolerance: ±0.5% (rated mode) ±1% (degraded mode)
  - Crest factor: up to 4
  - Input and output on terminal blocks - Switching: Contact (phase/neutral) - Changeover switch bipolar (phase/neutral)
  - Nominal voltage single-phase: 100 / 120 / 220 / 230 / 240 V
  - Rated current: 16 A 16 A 20 A
  - Insulation level: Class 1
  - Line isolation: 500 V
  - Frequency: 50 or 60 Hz
  - Insulation test: 500 V
  - Protection system: Double insulation
  - Interference filters: Class A
  - Equipment factor: 1.6 - 1.8
  - Mainframe: 1U or 2U

**Environmental data**
- **IT 030 C**
  - Weight: 8.5 kg 14 kg
  - Dimensions: W x D x H: 446(2) x 310 x 131 mm 449(2) x 400 x 133 mm
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  - Mainframe: 1U or 2U

---

**Connections**
- **IT 030 C**
  - **CTE-030**
  - **CTE-031**
  - **CTE-032**
  - **CTE-033**
  - **CTE-034**
  - **CTE-035**
  - **CTE-036**
  - **CTE-037**

---

**ELECTRICAL SPECIFICATIONS**
- **Rated voltage single-phase**: 100 / 120 / 220 / 230 / 240 V
- **Rated current**: 16 A 16 A 20 A
- **Input voltage tolerance**: adjustable (factory setting ±15 %)
- **Output voltage nominal**: ±5 % (degraded mode ±10 %)
- **Frequency tolerance**: ±0.5% (rated mode) ±1% (degraded mode)
- **Crest factor**: up to 4
- **Frequency**: 50 or 60 Hz
- **Insulation level**: Class 1
- **Line isolation**: 500 V
- **Protection system**: Double insulation
- **Interference filters**: Class A
- **Equipment factor**: 1.6 - 1.8
- **Mainframe**: 1U or 2U

---

**Installation and operation**
- **IT-SWITCH HA**
  - Mainframe: 1U or 2U
  - Dimensions: W x D x H: 446(2) x 310 x 131 mm 449(2) x 400 x 133 mm
  - Operating ambient temperature: 0 to +40°C
  - Input and output on terminal blocks - Input voltage tolerance adjustable (factory setting ±15 %)
  - Output voltage nominal ±5 % (degraded mode ±10 %)
  - Frequency tolerance: ±0.5% (rated mode) ±1% (degraded mode)
  - Crest factor: up to 4
  - Input and output on terminal blocks - Switching: Contact (phase/neutral) - Changeover switch bipolar (phase/neutral)
  - Nominal voltage single-phase: 100 / 120 / 220 / 230 / 240 V
  - Rated current: 16 A 16 A 20 A
  - Insulation level: Class 1
  - Line isolation: 500 V
  - Frequency: 50 or 60 Hz
  - Insulation test: 500 V
  - Protection system: Double insulation
  - Interference filters: Class A
  - Equipment factor: 1.6 - 1.8
  - Mainframe: 1U or 2U

---

**Key features**
- **Synchronized and non-synchronized source separation without overlapping the sources.**
- **Separating loads.**
- **Transfer lock on downstream fault.**
- **Automatic transfer.**
- **Preferred source selection.**
- **Changeover without source overlap.**
- **Configurable synchronisation tolerance.**
- **Transfer lock on repetitive transfers automatic.**
- **Maintenance Bypass (model HA-E).**
- "Hot swap" pull out module (model HA-E).
- MODBUS RTU (only RS485 serial port).
- Dry-contact interface.
- Command and control mimic panel.

---

**Our dedicated Expert Services for STS**
- We offer services to ensure your STS highest availability:
  - Commissioning
  - On-site intervention
  - Preventive maintenance visits
  - 24-hour call out and rapid on-site repairs
  - Maintenance packages
  - Training

---

**Alarm reset & preferred source selection**
- Manual transfer to source 2
- Maintenance bypass on (hot swap version)
- Imminent stop
- Transfer blocked
- Transfer not possible
- Load on source 1 or 2
- Input voltage source 1 or 2 within tolerances
- Preferred source (1 or 2)

---

**Mainframe**
- IT-SWITCH
- Rack 19”

---

**Maintenance**
- **Rack**
  - IT-SWITCH
  - IT-SWITCH RACK 19”

---

**Commissioning**
- **Mainframe**
  - IT-SWITCH
  - IT-SWITCH RACK 19”

---

**Preventive maintenance visits**
- **Rack**
  - IT-SWITCH
  - IT-SWITCH RACK 19”

---

**On-site intervention**
- **Mainframe**
  - IT-SWITCH
  - IT-SWITCH RACK 19”

---

**Commissioning**
- **Mainframe**
  - IT-SWITCH
  - IT-SWITCH RACK 19”

---

**Air traffic control**
- **Telecommunications**
  - **Rack**
    - IT-SWITCH
    - IT-SWITCH RACK 19”

---

**Telecommunications**
- **Rack**
  - IT-SWITCH
  - IT-SWITCH RACK 19”

---

**Standard mechanical features**
- **Rack**
  - IT-SWITCH
  - IT-SWITCH RACK 19”

---

**Standard transfer features**
- **Rack**
  - IT-SWITCH
  - IT-SWITCH RACK 19”

---

**Alarm reset & preferred source selection**
- Manual transfer to source 2
- Maintenance bypass on (hot swap version)
- Imminent stop
- Transfer blocked
- Transfer not possible
- Load on source 1 or 2
- Input voltage source 1 or 2 within tolerances
- Preferred source (1 or 2)

---

**Alarm reset & preferred source selection**
- Manual transfer to source 2
- Maintenance bypass on (hot swap version)
- Imminent stop
- Transfer blocked
- Transfer not possible
- Load on source 1 or 2
- Input voltage source 1 or 2 within tolerances
- Preferred source (1 or 2)
Installation and operation

IT SWITCH HA (High Availability) is especially suited to sensitive applications thanks to its advanced transfer parameter controls: source synchronisation, power quality adaptation, operating modes and downstream fault current.

Distributed redundancy

IT-SWITCH HA-E swappable version (High Availability) offers an additional "hot swap" function which enables users to perform maintenance procedures without shutting down the loads.

Command and control mimic panel

1. Preferred source (1 or 2)
2. Input voltage source 1 or 2 within tolerances
3. Load on source 1 or 2
4. Transfer not possible
5. Transfer blocked
6. Imminent stop
7. Maintenance bypass on (hot swap version)
8. Manual transfer to source 2
9. Alarm reset & preferred source selection
10. Manual transfer to source 1
11. General alarm

Technical data

<table>
<thead>
<tr>
<th>IT SWITCH</th>
<th>HA 19&quot; rack</th>
<th>HA-E 19&quot; extractable rack</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ELECTRICAL SPECIFICATIONS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated current</td>
<td>16 A</td>
<td>16 A</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>single-phase 100 / 120 / 220 / 230 / 240 V</td>
<td></td>
</tr>
<tr>
<td>Input voltage tolerance</td>
<td>adjustable (factory setting ±15 %)</td>
<td></td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50 or 60 Hz</td>
<td></td>
</tr>
<tr>
<td>Frequency tolerance</td>
<td>±10% adjustable</td>
<td></td>
</tr>
<tr>
<td>Short-circuit current</td>
<td>20 / 15 kA(1)</td>
<td></td>
</tr>
<tr>
<td>Crest factor</td>
<td>up to 4</td>
<td></td>
</tr>
<tr>
<td><strong>MAINTENANCE BYPASS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changeover switch</td>
<td>bipolar (phase/neutral)</td>
<td></td>
</tr>
<tr>
<td>Transfer mode</td>
<td>synchronous/ asynchronous &quot;break before make&quot;</td>
<td></td>
</tr>
<tr>
<td><strong>CONNECTIONS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input and output on terminal blocks</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Input and output on IEC 16 A sockets</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td><strong>ENVIRONMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating ambient temperature</td>
<td>0 to 40 °C</td>
<td></td>
</tr>
<tr>
<td>Cooling</td>
<td>Natural</td>
<td></td>
</tr>
<tr>
<td><strong>MECHANICAL SPECIFICATIONS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions W x D x H</td>
<td>449(2) x 310 x 131 mm</td>
<td>449(2) x 400 x 133 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>8.5 kg</td>
<td>14 kg</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP21</td>
<td></td>
</tr>
</tbody>
</table>

(1) Depending on model. - (2) 484 mm with front fixing squares (19" rack integrable)

Standard transfer features

- Preferred source selection.
- Automatic transfer.
- Manual transfer.
- Changeover without source overlap.
- Synchronized and non-synchronized source management (fully adaptable modes).
- Transfer lock on downstream fault.
- Configurable synchronisation tolerance.
- Lock on repetitive transfers automatic restart setting.
- Automatic restart configurability.

Standard mechanical features

- 19" rack.

Standard communication features

- Command and control mimic panel.
- Dry-contact interface.
- MODBUS RTU (only RS485 serial port).

Maintenance

- "Hot swap" pull out module (model HA-E).
- Maintenance Bypass (model HA-E).
<table>
<thead>
<tr>
<th>Your application</th>
<th>Your need</th>
<th>Our Communication solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OFFICE</strong></td>
<td></td>
<td><strong>LOCAL VIEW</strong></td>
</tr>
<tr>
<td>Local UPS monitoring</td>
<td>Local PC shutdown management</td>
<td>• Local UPS monitoring software.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• USB or RS-232 serial port.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Clear, immediate and detailed information on the status of the UPS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Automatic system shutdown in the event of a prolonged power cut.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Protection from data loss and system damage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For Microsoft Windows, Linux and MacOS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Free download from <a href="http://www.socomec.com">www.socomec.com</a></td>
</tr>
</tbody>
</table>

| **IT & NETWORKING** |               | **NET VISION**              |
| Remote server, hosts and virtual machine shutdown management | Ethernet interface for remote UPS monitoring and server-based workstations shutdown management via web browser. | • Specifically designed for business networks. |
|                   |               | • Direct interface between the UPS and Ethernet network with no dependence on the server. |
|                   |               | • Compatible with all networks and most operating systems. |
|                   |               | **JNC**                     |
|                   |               | • Software for controlled network server shutdown. |
|                   |               | • Shutdown Client installed on the remote server:  |
|                   |               | - warns user during shutdown procedure,  |
|                   |               | - can execute specific script before shutting down the Operating System,  |
|                   |               | - performs Operating System shutdown. |
|                   |               | • For Microsoft Windows, Linux and MacOS operating systems. |
|                   |               | • Free download from www.socomec.com |

| **BUILDING**      |               | **REMOTE VIEW PRO**         |
| UPS and STS supervision |                | • Supervision software dedicated to UPS or STS provided with Ethernet connection and SNMP protocol. |
|                   |               | • Remote UPS and STS monitoring from any computer connected on the same network, LAN or WAN architecture via web browser. |
|                   |               | • Compliant with all SOCOMEC UPS and STS and with almost all UPS manufacturers using RFC1628 MIB file. |
|                   |               | • Compliant with Windows server with Internet Information Service. |

| **INDUSTRY**     |               | **COMMUNICATION INTERFACES** |
| Communication capability in various environments | Compatible with industrial PROFIBUS and PROFINET systems. |
|                   |               | • Compatible with BACNET BMS monitoring. |
|                   |               | • MODBUS TCP compliancy for SCADA system. |
Communication and connectivity

The ideal solution for integrated system management and data integrity

Main features
- Automatic UPS recognition.
- UPS, battery and load monitoring.
- Alarms notification on local screen.
- Battery test control.
- Local PC shutdown + test procedure.
- Measurements and UPS event logs.
- Email notification.
- Automatic updates via Internet.

VITAL JNC
- Software for controlled virtual machines and Hosts shutdown.
- Shutdown Client installed on a Windows Virtual Machine:
  - warns user during shutdown procedure,
  - stops Virtual Machines in specific order or time delay,
  - performs Host shutdown.
- For Microsoft Hyper-V, VMware and XenServer.
- Free download from www.socomec.com

MODBUS TCP and BACnet
Ethernet interface to communicate with BMS systems.
All UPS information can be remotely accessed.

PROFIBUS / RS485 MODBUS RTU
Communicate with PLC or automation systems.
All UPS information can be remotely accessed.

MODBUS range compatibility
- NETYS PL
- NETYS PE
- NETYS PR
- NETYS RT
- ITYS
- ITYS PRO
- MODULYS
- MODULYS RM GP

Main features
- Secure network connection.
- Multi-user login.
- Email notification.
- SNMP agent TRAP notification.
- WakeOnLan to restart server.
- Control access protected by firewall.
- NTP to synchronise UPS clock.
- JNC protocol for servers shutdown, in addition to JNC or VIRTUAL-JNC shutdown software.

VIRTUAL JNC
- Software for controlled virtual machines and Hosts shutdown.
- Shutdown Client installed on a Windows Virtual Machine:
  - warns user during shutdown procedure,
  - stops Virtual Machines in specific order or time delay,
  - performs Host shutdown.
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- For Microsoft Hyper-V, VMware and XenServer.
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- Alarms notification on local screen.
- Automatic UPS recognition.
- Email notification.
- Multi-user login.
- Secure network connection.
- WakeOnLan to restart server.
- Email notification.
- Multi-user and Multi-site access.
- Secure network connection.
- Secure network connection.
- Secure network connection.
- Secure network connection.

General Catalogue 2018-2019
**RACK PDU**

Compact and reliable power distribution unit monitored and managed rack PDU

Ensuring efficient load development and power supply flexibility in server rooms is becoming increasingly important, which is why SOCOMEC offers a variety of PDUs for rack applications. SOCOMEC PDUs in 0U configuration (single-phase or three-phase) with metered or monitored technology, and PDUs in 1U configuration (still single-phase but with single or dual power supply) with managed technology, allow IT managers to find the configuration best suited to their requirements.

**Metered or monitored Zero-U vertical PDU**

With only one single-phase or three-phase input, these PDUs guarantee reliable power distribution for equipment with small and medium-scale energy requirements integrated into rack cabinets. The PDU does not require the installation of “U space” due to its vertical position on the rear of the rack cabinet, and simplifies the electrical connection of many devices, saving time during fitting procedures and offering easy power supply configuration adjustment. The numerous output sockets and their positioning help this PDU fit perfectly into high density network solutions.

Using two PDUs in the same rack cabinet allows the development of a redundant architecture typical of critical applications which use dual cord electronic devices.

**Monitoring and supervision**

The two-digit LED display allows an easy reading and monitoring of the current consumption.

The reverse display function allows the cable input both from above and below, ensuring a proper reading in every installing position.

The ADD-IN SNMP module (available as an option), allows the remote control and monitoring of the PDUs via LAN network.
Zero-U PDU

Connections

1. ON-OFF switch segment #1
2. ON-OFF switch segment #2
3. ON-OFF switch segment #3
4. Output connectors segment #1
5. Front panel
6. Output connectors segment #2
7. Output connectors segment #3

Communication options

PDU VISION, WEB/SNMP manager interface for the connection to the LAN network. The device - suitable for remote monitoring – can be integrated into the PDU.

Technical data

<table>
<thead>
<tr>
<th>Zero-U PDU</th>
<th>1/1</th>
<th>NRT-OP-PDU1-28</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item code</td>
<td>3/1</td>
<td>NRT-OP-PDU1-39</td>
</tr>
<tr>
<td>Input/output</td>
<td>200-240 V (1ph)</td>
<td>346-415 V (3ph, Y+N)</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>50/60 Hz</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>32 A (1ph)</td>
<td>16 A (3ph)</td>
</tr>
<tr>
<td>Rated current</td>
<td>IEC309-32 A</td>
<td>IEC309-16 A</td>
</tr>
<tr>
<td>Connector</td>
<td>IEC320-C13, (4) IEC320-C19</td>
<td>(3) IEC320-C13, (5) IEC320-C19</td>
</tr>
<tr>
<td>Connectors</td>
<td>RS232 - (WEB/SNMP optional)</td>
<td>ENVIRONMENT</td>
</tr>
<tr>
<td>Interfaces</td>
<td>0 to 45 °C</td>
<td>5% to 95% without condensation</td>
</tr>
<tr>
<td>Operating ambient temperature</td>
<td>Operating: up to 2000 m</td>
<td>Maximum altitude</td>
</tr>
<tr>
<td>Relative humidity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum altitude</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions W x D x H</td>
<td>48 x 1250 x 50 mm</td>
<td>48 x 1580 x 50 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>5.4 kg</td>
<td>6.0 kg</td>
</tr>
</tbody>
</table>
Technology

Power protection vs. UPS topology ................................................................. p.108
Solutions to meet availability and flexibility performance ......................... p.110
Solutions to meet availability and energy saving performance ...................... p.112
UPS technologies ......................................................................................... p.114
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Backup storage .............................................................................................. p.117
Different backup storage for UPS systems .................................................... p.118
Power protection vs. UPS topology

Power quality (PQ) is a significant challenge to those responsible for the management of electrical networks and Data Centre facilities. The widespread use of and increasing dependence upon electronic equipment - such as information technology equipment, power electronics including programmable logic controllers (PLC) and energy-efficient lighting - have led to a complete transformation in the nature of electrical loads. These loads are both the major root causes of - and the major casualties of – power quality problems. Due to their non-linearity, all these loads cause disturbances in the voltage waveform.

Along with advances in technology, the organisation of the worldwide economy has evolved towards globalisation and the profit margins of many activities have seen a tendency to decrease.

The increased sensitivity of the vast majority of processes (industrial, services and even residential) to PQ problems means that the availability of high quality electric power is a crucial factor in terms of developing competitive advantage across every market sector. It’s widely understood that mission-critical facilities must run continuously, and, of course, that any power interruption, even for a short time, can disrupt business operations and result in significant financial losses.

Although today’s Data Centres are all designed with a high level of inherent redundancy in order to minimise downtime, just as important as the mission-critical applications themselves, however, is the quality of the supplied power.

In order to achieve the delivery of consistent, high quality power, it is vital to understand the nature of PQ disturbances and their causes.

What affects the power quality?

The most common disturbances that adversely affect the power quality are:

- power sags or outages due to network faults,
- short voltage variations due to the connection of heavy loads or the presence of faults in the network,
- distortion of currents and voltages due to non-linear loads present in the system or in the systems of other utilities, etc.
- flicker due to large intermittent loads,
- asymmetry in the supply voltage system.

How to ensure the power quality: the UPS

Modern technology offers various solutions to ensure the power quality; static UPS systems are undoubtedly the most versatile and widely used and can be adopted for a very broad range of power ratings.

In response to the need to classify the various types of static UPS systems currently available on the market, the standard EN 62040-3 was developed. It distinguishes between three major topologies, according to the internal schemes adopted:

- VFD *offline*
  Voltage and Frequency Dependent - Utilities are normally powered by the mains supply. In the event of power loss the load is automatically switched over to a built-in battery to keep it supplied without interruptions.

- VI "line interactive"
  Voltage Independent - The load is supplied by the mains power supply and protected against under and over voltages by an AVR (Automatic Voltage Regulator) voltage stabilizer. If the mains power is lost, the load is instantaneously powered by the battery.

- VFI "online double conversion"
  Voltage and Frequency Independent - This is the only UPS working-mode that assures total load protection against all possible mains quality problems. The power is converted twice (AC to DC through a rectifier then DC to AC through an inverter) to provide high quality voltage, stable frequency and protection against power grid disturbances. If the mains power is lost, the load is powered exclusively by the battery. The internal bypass supplies the utilities in case of inverter output voltage anomalies.
Power protection vs. UPS topology

<table>
<thead>
<tr>
<th>Disturbance type</th>
<th>Wave form</th>
<th>Possible causes</th>
<th>Consequence</th>
<th>UPS topology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage interruption</td>
<td><img src="image1.png" alt="Waveform" /></td>
<td>Mainly due to opening and automatic re-closure of protection devices to decommission a faulty network section. The main fault causes are insulation failure, lightning and insulator flashover.</td>
<td>Tripping of protection devices, loss of information and malfunction of data processing equipment.</td>
<td>• • •</td>
</tr>
<tr>
<td>Voltage sag/dip</td>
<td><img src="image2.png" alt="Waveform" /></td>
<td>Faults on the transmission, in distribution network, or in consumer’s installation. Start-up loads.</td>
<td>Malfunction of IT equipment, safety systems, or lighting. Loss of data. System shutdown.</td>
<td>• • •</td>
</tr>
<tr>
<td>Voltage fluctuation</td>
<td><img src="image3.png" alt="Waveform" /></td>
<td>Transmitters (radio), faulty equipment, ineffective grounding, proximity to EM/RFI source.</td>
<td>Most consequences are common to under-voltages. System halts, data loss. The visible consequence is the flickering of lighting and screens.</td>
<td>• • •</td>
</tr>
<tr>
<td>Under voltage</td>
<td><img src="image4.png" alt="Waveform" /></td>
<td>Increase of consumption, voltage reduction to lower the consumption.</td>
<td>System halts, data loss, stop of sensitive equipment</td>
<td>- • •</td>
</tr>
<tr>
<td>Voltage surge</td>
<td><img src="image5.png" alt="Waveform" /></td>
<td>Atmospheric, surges are due to lightning; Transient, surges are due to insulation faults between phase and earth or rupture of neutral conductor; Switching, surges are due to opening of protection devices, generated by energizing capacitor banks or caused by variations in inductive current.</td>
<td>Data loss, flickering of lighting and screens, stop or damage of sensitive equipment.</td>
<td>- • •</td>
</tr>
<tr>
<td>Voltage spike/transient</td>
<td><img src="image6.png" alt="Waveform" /></td>
<td>Lightning, ESD, switching of lines or power factor correction capacitors, utility fault clearing.</td>
<td>Destruction of electronic components, data processing errors or data loss.</td>
<td>- - •</td>
</tr>
<tr>
<td>Harmonic distortion</td>
<td><img src="image7.png" alt="Waveform" /></td>
<td>Modern sources like all non-linear loads such as power electronics equipment including ASDs, switched mode power supplies, data processing equipment, high efficiency lighting.</td>
<td>Increased probability in occurrence of resonance, neutral overload in 3-phase systems, overheating of all cables and equipment, loss of efficiency in electric machines, electromagnetic interference with communication systems, errors in measures when using average reading meters, nuisance tripping of thermal protections.</td>
<td>- - •</td>
</tr>
<tr>
<td>Noise</td>
<td><img src="image8.png" alt="Waveform" /></td>
<td>Transmitters (radio), faulty equipment, ineffective grounding, proximity to EM/RFI source.</td>
<td>Disturbances on sensitive electronic equipment, usually not destructive. May cause data loss and data processing errors.</td>
<td>- - •</td>
</tr>
<tr>
<td>Frequency variation</td>
<td><img src="image9.png" alt="Waveform" /></td>
<td>Unstable operating of the generator, unstable frequency of the utility power system.</td>
<td>System halts, data loss.</td>
<td>- - •</td>
</tr>
<tr>
<td>Notching</td>
<td><img src="image10.png" alt="Waveform" /></td>
<td>Fast switching of power components (diodes, SCR, etc.), rapid variation in the load current (welding machines, motors, lasers, capacitor banks, etc.).</td>
<td>System halts, data loss.</td>
<td>- - •</td>
</tr>
</tbody>
</table>
Solution to meet availability and flexible performance

Different configurations make it possible to create architectures to meet the most stringent requirements for availability, flexibility and energy saving and to allow the following:

**Easy operation**
Given the criticality of applications supplied downstream from the UPS units, maintenance shutdowns are less and less feasible. Various different configurations have been studied specifically to deal with this operational constraint.

**Power increases**
The upgrading over time of the applications supplied often requires the possibility of increasing UPS power. The configurations offered allow for this requirement so that your initial investment is saved.

**Increases in availability**
To increase availability, the addition of a unit in parallel that is surplus to the power requirements of the applications (redundant) will ensure a continuous power supply if an inverter shuts down, without resorting to a bypass.

**Stand-alone UPS unit**

**An upgradeable solution**
This architecture is secured by an integrated automatic bypass, which constitutes a first level of redundancy guaranteed by the network. The maintenance bypass function allows maintenance to be carried out without shutting down applications. It can be the first stage of your investment, with the possibility to upgrade, as your requirements change, to a modular parallel architecture to increase power or availability (redundancy).

**Parallel UPS systems**

**Development without constraint**
This is the simplest solution to ensure power supply availability and flexibility in case of unscheduled installation upgrades by means of the parallel configuration of the UPS units, each one incorporating its own bypass. This configuration enables power output to be increased and is suitable for N+1 redundancy. Upgrades can also be performed keeping the load supplied by the system.
For higher agility, parallel UPS systems are also available with a centralised bypass on the auxiliary power source: in this configuration, the static bypass is in parallel of the UPS modules and can be sized according to particular site constrains (short-circuit withstand, selectivity, etc.).
Vertical and horizontal modular system

Flexible and completely modular
This is a new, innovative UPS concept that can adapt to all types of growth. Power can be increased by successively adding modules. The increasing of availability (redundancy) is simply carried out by adding a module to the number required to meet the power requirements for the applications. All the modules are connectible (plug-in). Removal or adding of modules can be carried out with the system running (hot swap) without affecting the general operation of the installation.

Scalable configuration

Scalable redundant configuration
Solution to meet availability and energy saving performance

Green Power 2.0

Energy Saving: high efficiency without compromise.

- Offers the highest efficiency in the market using VFI – Double Conversion Mode, the only UPS working-mode that assures total load protection against all mains quality problems.
- Ultra high efficiency output independently tested and verified by an international certification organization.
- Ultra high efficiency output tested and verified in a wide range of load and voltage operating conditions to have the value in the real site conditions.
- Ultra high efficiency in VFI mode is provided by an innovative topology (3-Level technology) that has been developed for all the Green Power 2.0 UPS ranges.

Full-rated power: kW=kVA

- No power downgrading when supplying the latest generation of servers (leading or unity power factor).
- Real full power, according to IEC 62040: kW=kVA (unity power factor design) means 25% more active power available compared to legacy UPS.
- Suitable also for leading power factor loads down to 0.9 without apparent power derating.

Significant cost-saving (TCO)

- Maximum energy saving thanks to 96% efficiency in true double conversion mode: 50% saving on energy losses compared to legacy UPS resulting in cheaper energy bills.
- UPS "self-paying" with energy saving.
- Energy Saver mode for global efficiency improvement on parallel systems.
- kWs=kVA means maximum power available with the same UPS rating: no overdesign costs and therefore less €/kW.
- Upstream infrastructure cost optimization (sources and distribution), thanks to high performance IGBT rectifier.

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Fast EcoMode

Available as an optional feature for the DELPHYS GP series, FAST EcoMode is an automatic operating mode that optimizes the efficiency depending on the quality of the input voltage (voltage, frequency, harmonic distortion). When the input voltage is within tolerances (value is settable), the load is supplied by the bypass (VFD mode) and the efficiency achieved is 99%. If the voltage becomes out of tolerances, the system instantaneously transfers the load to On-line mode until normal condition recovery.

Batteries are permanently maintained under floating charging, maximizing battery lifetime and avoiding periodic restarts of the rectifier.

Energy Saver

- This function optimizes the efficiency ($\eta$) of your UPS in parallel when operating with a partial load.
- Only the UPS needed to supply the energy required by the applications are in operation.
- Redundancy can be ensured by maintaining an additional unit in operation.
- When the power consumed by the applications increases, the UPS units needed to meet the increased power requirements restart instantly.
- This type of operation is perfectly suited to applications subject to frequent variations in power.
- Energy Saver enables the increased efficiency of the whole system to be maintained.
UPS technologies

Transformer-based and transformerless technologies

The two main UPS technologies available on the market are:
• transformer-based, useful when primary and secondary sources come from different mains with different neutral systems,
• transformerless, which offers the advantages of high efficiencies combined with a low footprint.

Both of these technologies have their advantages and drawbacks. The challenge is to make the right compromise, taking into account site conditions with design constraints such as the footprint, neutral system, efficiency, short-circuit currents and so on. SOCOMEC can provide customers with either technology, depending on the requirement.

A "clean" IGBT rectifier
This eliminates any disturbance on the upstream network (power source and distribution).
• This rectifier technology guarantees the supply of current with an exceptionally low rate of harmonic distortion: THDI < 2.5 %.

A consistent rectifier
• The performance of the IGBT rectifier is independent of frequency variations that could be produced by the generator set.
• The power factor and THDI at the rectifier input are constant whatever the battery charge status (continuous voltage level) and the load rate of the UPS.

An economical IGBT rectifier
• The power factor upstream of the rectifier is 0.99, reducing by 30% the used kVA compared with conventional technology. The reduction in input current results in a saving in terms of the size of sources, cables and protective devices.
• Rectifier capabilities:
  - low upstream THDI,
  - gradual, timed restarting,
  - possibility of suspending battery recharge when operating with a generator set.
• This allows the impact caused when the generator set is engaged to be reduced, as well as the energy used and the footprint.

DELPHYS MX guarantees optimal compatibility with your low voltage electrical power supply system and, in particular, with your generator sets:
• sinusoidal current at rectifier THDI input: < 4.5 % without filter,
• increased power factor upstream of the rectifier: 0.93 without filter, reducing the current consumed, and therefore the size of cables and protective devices,
• gradual, sequential start-up of the rectifiers in parallel, facilitating take up by the generating set,
• delayed battery recharge when running on generating set to reduce power consumption.

SVM, digital Space Vector Modulation

The SVM (digital Space Vector Modulation), along with the isolation transformer installed on the inverter output, provide:
• perfectly sinusoidal output voltage THDV < 2 % with linear loads and < 3 % with non-linear loads,
• output voltage precision even when the load is completely unbalanced between phases,
• an immediate response to major variations in the load, without deviating the output voltage (± 2% in less than 5 ms),
• a very high short-circuit capacity up to 4 ln (Ph / N) allows selectivity,
• a complete galvanic isolation between DC circuit and load output.

SVM, the latest high performance components and IGBT power bridges enable the supply of:
• non-linear loads with high crest factor up to 3,
• active power without derating, for loads with a lagging power factor and up to 0.9 leading.
Static Transfer Systems (STS) for high availability architecture

Static Transfer Systems (STS)

Static Transfer Systems (STS) are intelligent units that transfer the load to an alternative source when the primary source is out of tolerance. This ensures "high availability" of the power supply for sensitive or critical installations.

The purpose of STS devices is to:

- ensure the redundancy of the power supply to critical installations by means of two independent power sources,
- increase power supply reliability for sensitive installations,
- facilitate the design and expansion of installations that guarantee a high-availability power supply,
- increase the overall site flexibility, allowing easy and safe maintenance or source replacement.

STS systems incorporate reliable and proven solid-state switching technologies (SCR), enabling them to perform fast, totally safe automatic or manual switching without interrupting power to the supplied systems. The use of high-quality components, fault-tolerant architecture, the ability to determine the location of the fault, management of faults and loads with high inrush currents: these are just some of the characteristics that make STS systems the ideal solution for achieving maximum power availability.

STS can also protect against:

- main power source failure,
- spurious tripping of upstream protective devices,
- mutual disturbances caused by faulty equipment (short-circuit) supplied by the same power source,
- operating errors (circuit opening) occurring in the supply chain.

Static Transfer Systems: some examples of usage

Normally, STS provide redundancy between 2 independent UPS systems. Each STS is sized according to the load (or set of loads) it protects. It is advisable to install the STS device as close as possible to the load, so as to ensure redundancy of the upstream distribution and to keep the single fault point (the conductor between STS and load) as short as possible. The use of several STS also provide electrical load segregation.

![Diagram of Static Transfer Systems (STS)]
Static Transfer Systems (STS)

Static Transfer Systems ensure high business availability and provides site maintenance agility. The '2N + STS' architecture ensures the load is always supplied by high power quality on each input, even if one power distribution is down due to critical fault or for long term maintenance (e.g., source replacement or failure of the electrical infrastructure).

The combination of a multi-source architecture and STS connecting the load to two independent sources ensures they are always supplied even if one of them is down. The critical facility therefore benefits from very high fault tolerance.

In both example, the STS can be centralised (one high STS rating for each power distribution switchboard) or distributed (close to each server room, row, rack, etc.). The choice of either solution depends on the installation to be protected and on the expected availability or the requested level of maintainability.

Static Transfer Systems: some examples of usage

Technology

Expert Battery System (EBS) technology is a system which manages the battery charger. It responds to the working temperature to preserve battery life and reduce operating costs by:

- charging according to an algorithm which adapts to the environment and the condition of the battery,
- eliminating overloading effects due to permanent floating voltage, which accelerates the corrosion of the positive plates and causes the separators to dry out,
- isolating the DC battery bus, (independent charger function).

Premature ageing, caused by residual ripple from the inverter bridge is eliminated.

Tests carried out by SOCOMEC on several brands of batteries, together with years of experience, show that battery life can be enhanced by up to 30% with the use of EBS compared to a traditional battery management system.

Available with distributed batteries, DELPHYS GP allows you to optimise battery size thanks to shared battery operation. This reduces the overall system footprint, the weight of the required batteries, the battery monitoring system, the amount of wiring needed and amount of lead.

Associated with an appropriate connection design (fuses and coupling switches), this solution also allows you to increase the availability of the battery set and UPS units in case of internal fault.

Shared battery: optimisation of battery size for parallel systems
Expert Battery System: protecting your battery investment

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Different back-up storage for UPS systems

The battery is an electrochemical energy storage system able to generate a difference in potential that can make an electric current circulate in a circuit until the energy is exhausted. Batteries can be divided into two categories:

- Primary: batteries which, once exhausted, cannot be recharged and returned to their initial state of charge (non-rechargeable batteries).
- Secondary: these batteries, also known as accumulators, can be recharged and returned to their initial state of charge. They are recharged with a battery charger which should have suitable characteristics to charge the specific battery technology.

Battery parameters and definitions

- Capacity (C): the mean current expressed in Ah which the battery supplies in a complete discharge carried out over a precise period of time. For example, C indicates the current supplied by the battery in case of discharge in 1 hour, C/5 the current in case of discharge in 5 hours, C/10 in case of discharge in 10 hours, etc.
- The rated capacity depends on the battery technology: for example, the rated capacity for lead-acid batteries is C/10, while for NiCd batteries is C/5.
- Energy density: the amount of energy stored per unit of volume or weight expressed in Ah/kg or Wh/kg.
- Depth of Discharge (DoD): the fraction of the capacity (or of energy) taken from the battery during the discharge phase. Expressed as a % of the capacity, it is calculated using the following formula:
  \[ \text{DoD} = \frac{\text{Discharged capacity}}{\text{Rated capacity}} \]
- State of Charge (SoC): the fraction of the capacity (or of energy) remaining in a battery. Expressed as a % of the capacity, it is calculated using the following formula:
  \[ \text{SoC} = \frac{\text{Remaining capacity}}{\text{Rated capacity}} = 1 - \text{DoD} \]
  \[ \text{DoD} + \text{SoC} = 100\% \]
- Calendar Life: the time after which the battery, regularly charged and kept at a controlled temperature, reduces its initial rated capacity to 80%. Normally, battery manufacturers talk about the "expected life", as this is an estimate obtained from laboratory tests. Battery service life is an important parameter for comparing various battery technologies.
- Cycle Life: the number of charge and discharge cycles at controlled temperature that the battery can withstand before the rated capacity is reduced to 80% of the initial value. The cycle life is very sensitive to temperature and to the depth of charge, to the extent that it is declared at a specific DoD value.
- Actual life: the battery service life in real conditions of use. This depends on the Calendar life, the Cycle life, the ambient temperature and the type of charge and discharge.
- Self-discharge: the percentage of charge capacity lost by the battery when not used (e.g. during storage in the warehouse). The parameter is linked to the type of battery and also depends highly on temperature (when the temperature increases, the self-discharge percentage increases).
- Internal impedance: this is composed of an inductive, a capacitive and a resistive part. It impedes the passage of current, increasing heat generation in the discharge phase. The most important part of the impedance to be monitored is the resistive part, as it indicates the state of health of the battery and on possible deterioration in progress. The internal resistance is influenced by various factors, the most important of which is temperature. The typical impedance values change according to the battery technology and capacity.

![Lead battery calendar life floating at 20 °C](image1)

![Lead battery calendar life vs. temperature (Eurobat)](image2)

Moderate climate, Cycle Life comparison

- Lithium 75%
- Lead AGM 80%
- Lead AGM 50%
- Lead AGM 30%
Lead acid battery (LA)

Lead acid batteries are the most used battery type for stationary applications. Expected life for this kind of batteries is from 3 to 12 years according to Eurobat classification. Cycle life is usually poor even if certain of these batteries have good levels of performance in cycling applications. Lead acid batteries offer a mature and well-researched technology at low cost. There are many types of lead acid batteries available, e.g. vented and sealed housing versions (called valve-regulated lead acid batteries, VRLA, requiring less maintenance). VRLA batteries can be AGM (absorbed glass material, where the electrolyte is absorbed in a fiber glass) or GEL type (where the electrolyte is a gel used in higher temperature environments and in specific applications). One disadvantage of lead acid batteries is usable capacity decrease when high power is discharged. For example, if a battery is discharged in one hour, only about 50% to 70% of the rated capacity is available. Other drawbacks are lower energy density (lead has heavy specific weight) and the use of lead, a hazardous material prohibited or restricted in specific environments and applications. Advantages are a favorable cost/ performance ratio, easy recyclability and a simple charging technology.

Nickel cadmium battery (NiCd)

Compared to lead acid batteries, NiCd batteries have a higher power density, a slightly greater energy density and the number of cycles is higher. NiCd batteries are relatively rugged, are the only batteries capable of performing well even at low temperatures in the range from -20 °C to -40 °C, and their life expectancy is still good even at high temperature, so they are used in warm countries and in applications where high temperature is a constraint. Large battery systems using vented NiCd batteries operate on a scale similar to lead acid batteries. NiCd are normally vented so they need be stacked vertically with good ventilation, and they cannot be transported in a charging condition (electrolyte is shipped separately).

Lithium-ion battery (Li-ion)

Li-ion batteries have high gravimetric energy density, meaning that a Li-ion battery solution is lighter and needs less floor space compared to LA or NiCd batteries. For Li-ion batteries the calendar life (over 10 years) and cycle life (thousands of cycles) are very good even at high temperatures. Give that the round-trip efficiency is high and with no oversized for short back-up time (typical for UPS applications), it can be seen that Li-ion technology has several technical advantages. Most of the metal oxide electrodes are thermally unstable and can decompose at elevated temperatures, releasing oxygen which can lead to a thermal runaway. To minimize this risk, Li-ion batteries connected in series to obtain a voltage compatible to the UPS range are equipped with a monitoring unit to avoid over-charging and over-discharging. A voltage balance circuit is also installed to monitor the voltage level of each individual cell and prevent voltage deviations among them.

Super capacitors / Ultracapacitors

There are a number of different technologies that fall under the name ‘super capacitors’ or ‘ultracapacitors’. The two main technologies are:

- Symmetric Electrical Double Layer Capacitors (Symmetric EDLC), where activated carbon is used for both electrodes. The charge mechanism is purely electrostatic: no charge moves across the electrode/electrolyte interface.
- Asymmetric Electrical Double Layer Capacitors (Asymmetric EDLC) where a battery electrode is used for one of the electrodes. The battery electrode has a large capacity in comparison to the carbon electrode, so that its voltage does not change significantly with charge. This allows a higher overall cell voltage.

Super capacitors deliver quick bursts of energy during peak power demands, then quickly store energy, their extremely low internal resistance enables a very fast discharge and recharge with unbeatable round-trip efficiency. In addition, they usually do not use hazardous materials, and they have very low self-discharging so use little current when in floating mode (which means less energy consumption for the UPS) and can go for long periods without being recharged.

Lithium-ion capacitors (LIC)

The capacitor is a hybrid between a battery and a capacitor (asymmetric EDLC). The Li-ion capacitor comprises an activated carbon cathode (hence no safety risks due to thermal runaway), an anode of Li-doped carbon and electrolyte containing a Li salt, as in a battery. This hybrid construction creates a capacitor which yields the best performance features of batteries and capacitors. The hybrid battery construction offers many advantages. These include high energy density and high voltage, the benefit being when connected in series, up to a 1/3 fewer LIC cells are needed compared to a conventional EDLC capacitor. Another advantage is the very low level of self-discharging; the LIC can hold 95% of its charge for 3 months. As it takes so little current when in floating mode, the UPS requires less energy consumption and the LIC can go for longer periods without being recharged.

LIC technology also has the added benefits of higher safety levels (no risk of thermal runaway), a high power density and quick charging and discharging. It is also more reliable, with high cycling (its estimated life is 1 million charge/discharge cycles) and resistance to a wide temperature range (±20 °C to 70 °C) that makes it ideal for use in difficult operating environments.

Flywheel

Flywheels store energy in the form of momentum in a spinning mass. An electric motor spins the rotor to a high velocity to charge the flywheel. During discharge, the motor acts as a generator, converting the rotational energy into electricity. The energy stored in a flywheel depends on the mass and on the velocity according to the following equation:

$$ E = \frac{1}{2} J \omega^2 $$

Where J is the moment of inertia and \( \omega \) is the angular velocity. Since the energy has quadratic proportion with angular velocity it is very important that the flywheel runs at very high velocity (over 30,000 rpm), for these reasons modern flywheels use magnetic levitation to avoid friction losses and spins under a sealed vacuum. The flywheel does not suffer restrictions due to high temperature (no calendar life reduction), does not have any hydrogen emission during recharging (as in the case of lead-acid batteries), can be recharged in a very short time, has a high-cycling range without reducing its expected life, does not use any use of hazardous materials, and can be installed where space for installation is limited. Flywheels have an output power measured in hundreds of kW and so are ideal for use in high power UPS systems.

Compressed air energy storage (CAES)

In compressed air energy storage, electrical power is used to compress air and store it in a dedicated structure. When power is required, the compressed air is immediately converted to electricity by driving it through a scroll expander, in turn driving an electrical generator. The typical application is for power bridging (to switch mains power to genset power) but not in case of frequent micro interruptions. CAES systems can be parallelized to increase back-up time or to add redundancy. CAES can also be used in harsh environments and their long calendar life is not affected by temperature. When the system is fully charged it does not require any significant energy consumption, increasing the overall efficiency of a traditional battery-based UPS system.

(1) Thermal runaway: a situation under abnormal operating conditions where a battery generates heat at a higher rate than it can dissipate. Thermal runaway can melt the plastic components of the batteries, releasing gas, smoke and acid that can damage adjacent equipment.
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