Uniswitch Applications

Air-insulated Medium-Voltage Switchgear
12-24 kV
General

Uniswitch is an air-insulated (AIS), metal-enclosed, cubicle design switchgear (LSC2A-P1). Uniswitch is developed through continuous innovation and vision to meet changing market needs. Uniswitch provides long-term technical solutions for various applications. Safety, user-friendliness and environmental concerns have been the driving forces in the development of the switchgear.

Uniswitch switchgear is a compact solution for a fully automated power distribution network. Supported by sensor technology and the latest in protection relays, it meets even the most demanding requirements in different applications.

Uniswitch can be used in various applications in the distribution network.

Uniswitch offers a wide range of panels, making it possible to identify the most cost-efficient solution for all applications by combining the available panel types.

Uniswitch switchgear is a worldwide switchgear development utilizing the global experience of ABB to incorporate the needs of customers from all over the world. Uniswitch switchgear is available from ABB’s worldwide network of companies.

Uniswitch is an LSC2A-P1 design in accordance with loss of service continuity definitions (IEC 62271-200).

Applications

Transformer station feeders  Generator applications  Industry  Light substations
**Safety**
- Integrated voltage indicator
- Interlocking devices
- Gas gauge or pressure indicator
- Inspection windows
- Pressure relief channels

**Smart integration**
- Compact size
- Modular design with components for various applications
- Easy installation
- Easy to extend an existing switchgear
- Part of the ABB solution

**Economy**
- Long lifecycle
- High mechanical endurance
- Low maintenance costs
- Low environmental impact
- Virtually maintenance-free for 30 years

**Reliability**
- Each panel is stringently tested
- Robust construction with AluZink steel sheets
- Extremely durable and reliable operating mechanism
- Local ABB support with global focus on reliability and quality

**Metering applications**
**Transportation**
**Wind power**
Uniswitch can be used for secondary distribution ring networks, residential areas, buildings, small industry, infrastructure and the manufacturing industry.

Its modular and flexible design provides simple and easy installation.

Configuration is easily extendable in case of new transformers needs. Depending on the size of the transformers, the protection is made by fuse disconnectors or breakers (vacuum, SF₆) with protection relays.

The switch fuse combinations offers optional protection against short circuits, while the circuit-breaker with relay option offers better protection against low overcurrents. A circuitbreaker with relay is recommended for larger transformers.

**Recommended relay: Feeder Protection Terminal REF 610**

REF 610 is a versatile multi-function protection relay mainly designed for the protection of incoming and outgoing feeders in MV distribution substations. REF 610 can also be used as back-up protection for motors, transformers and generators, in industrial as well as in utility applications. The large number of integrated protection functions, including three-stage overcurrent protection and a two-stage, non-directional earth-fault makes REF 610 a complete protection against overcurrent and earth faults.

The optional arc protection for detection of arc situations in air-insulated switchgear and the auto-reclose function for automatic clearing of overhead line faults further increase the range of applications.

**Other suitable relays: PR 521, PR 512, SEG.**
Selection of fuses: According to IEC 60420

<table>
<thead>
<tr>
<th>Operating voltage [kV]</th>
<th>Transformer rating [kVA]</th>
<th>Fuse selection (ratings in Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>57</td>
<td>75</td>
<td>100</td>
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<tr>
<td>100</td>
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<td>1600</td>
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<tr>
<td>1600</td>
<td>2000</td>
<td>2500</td>
</tr>
</tbody>
</table>

1) Unique ratings on request

User applications for electricity distribution in the infrastructure & manufacturing industry.

Reference customers:
- Belgium Railways NMBS, Belgium
- Delhaize Supermarket, Belgium
- Depauw Service Group bvba, Belgium
- EDF, France
- Fortum, Finland, Sweden
- Gazprom, Russia
- Haramia, BBF, Slovakia
- Kestelyn, Belgium
- KIA, Slovakia
- Makita, Romania
- Nacka Energi, Sweden
- Paris Metro (RAPT)
- Parliament house, Finland
- Philips Lighting, Belgium
- TESCO, Hungary
- Toyota, France
- Van Alfen, Westland, Essent, Netherlands
- WVEM, Belgium
- YIT, Finland

ABB / Uniswitch Applications
Uniswitch can be used with generators in hospitals, airports, supermarkets, stores, greenhouses, and other locations where energy has to be continuously available.

In many applications generator sets are used to provide backup energy, if electricity distribution has failed from the grid. Uniswitch allows the possibility of reselling electricity to the distribution network.

In many cases the generator sets up to 3-5 MVA have their own control units with differential protection, synchronizing and automatic change-over possibilities. For these types of complete Uniswitch units the information is needed from current and voltage transformers and breakers (switch disconnectors) only.

ABB can provide the following relay for the same functions as well.

**Recommended relay: Machine Protection Terminal REM 543/5**

The REM 543/5 machine terminals are used as the main protection system of generator and generator-transformer units in small- and medium-power diesel, hydroelectric and steam power plants. The protection for large and/or important MV synchronous and asynchronous motors can be used, for example, in pumps, mills and crushers during start-up and normal operations form another application area.

The desired functions can be activated from a wide range of protection, control, measurement, condition monitoring, general and communication functions within the scope of I/O connections, considering the total CPU load.

**Other suitable relays: REX 521.**
Application for greenhouses with resale to grid.

Reference customers

- AZ-VUB Jette Hospital, Belgium
- Bio Power, Belgium
- Bio Power, Germany
- Bio Power, Ireland
- Coca Cola, Hungary
- Depauw Service Group bvba, Belgium
- Energia (Catepillar generators), Belgium
- Greenergy, Hungary
- Micro hydro plants, Romania
- Renogen, Belgium
- Skromma kraftverk, Norway
- Saint-Luc Hospital, Brussels, Belgium
- Steinskvik kraftverk, Norway
- Tungudalur Power station, Iceland
- ULB university, Belgium
- Van Alfen, Netherlands
- Westland Energie, Netherlands
The next common set of requirements from industrial users is a high degree of reliability, maintainability, and safe operation and maintenance of the equipment. This is particularly important for environments where outages and fluctuations in the power supply can result in lost productivity.

In Uniswitch we fulfill all these requirements and meet the latest IEC standards. Arc-resistant switchgear with the latest technology in protection relays gives the safest, most reliable, and highest quality disturbance-free power supplies all day, every day.

The modularity and flexibility of the construction has the advantage of easy configuration of arrangements in buildings. The light weight and medium size of the switchgear makes it suitable for use in the car industry and medium-size chemical production plants as well as in prefabricated product plants.

**Recommended relay: Feeder Terminal REX 521**

The feeder protection relay REX 521 is designed for protection, control, measuring and supervision in medium-voltage networks and for protection of large or medium-size three-phase a.c. motors in circuit-breaker-controlled motor drives. Typical applications include incoming and outgoing feeders, motor feeders as well as substation protection. Further, the relay can, for example, be applied as back-up protection for power transformers and as back-up for high-voltage line-protection relays. The protection relay is provided with energizing inputs for conventional current and voltage transformers. Also a hardware version with inputs for current and voltage sensors is available.

The REX 521 Feeder Protection Relay has been further enriched with additional features to provide your electrical network with even more efficient protection, extended measuring functions, supervision, control functions and connectivity.

**Other suitable relays:** REF 610, REM 610, REU 610, PR 521, PR 512.
Reference customers

- Antenna, Hungary
- Arla Foods, Sweden
- Azipod, Finland
- Depauw Service Group bvba, Belgium
- Electro 80, Belgium
- Electro Goorts, Belgium
- Hyundai, Slovakia
- Kemira, Finland
- KOA, Slovakia
- Metso, Finland
- Nissan, Poland
- Nokia, Finland
- Philips, Netherlands
- Shell, Netherlands
- Toyo Seat, Hungary
- Toyota, France
- Toyota, Russia
- UPM, Finland
- Volvo, Sweden
- Zinkgruvan Mining, Sweden
Light substation installations stabilize the grid, ensure that sufficient power is available and meet the demands of customers/users without long outages.

By replacing (cutting) the long cable feeders with light substations, the power supply comes closer to users, providing the chance to protect, monitor and control the grid and limiting the area in fault situations.

Light substations using Uniswitch can be made up to 24 kV, 1250 A using withdrawable breaker cubicles.

The safety of the personnel while operating and maintaining the equipment has been a key issue when designing the substation.

- Electrical interlocks between the different parts of switchgear
- Arc protection relays and systems
- Arc-gas channels
- Thermographic survey possibilities
- Remote control readiness

Recommended relay: Feeder Protection Terminal REF 541

The REF 541 feeder terminals are designed to be used for protection, control, measurement and supervision of medium-voltage networks. The protection functions also support different types of networks such as isolated neutral networks, resonant-earthed networks and partially earthed networks. The application area also covers medium-sized three-phase asynchronous motors as well as protection and control of shunt capacitor banks used for reactive power compensation. In addition to protection, measurement, control, condition monitoring and general functions, the feeder terminals are provided with a large amount of PLC functions allowing the several automation and sequence logic functions needed for substation automation to be integrated into one unit.

Other suitable relays: REF 610, REX 521, REM 610, REU 610.
Järvi-Suomen Säbkö, light substation using Uniswitch.

Reference customers

- EON, Sweden
- Eandis, Belgium
- Electricité de France EDF, France
- Essent, Netherlands
- Fortum, Finland
- Fortum, Sweden
- JSS utility, Finland
- Netmanagent, Belgium
- Orkubu vestfjaróa, Iceland
- Oulu utility, Finland
- PBE, Belgium
- Sibelga, Belgium
- Vaasa utility, Finland
- Vattenfall, Finland
- Vattenfall, Sweden
An important part of power distribution is reliable and accurate measuring. Due to the deregulation and liberalization of the electricity market, Uniswitch has as standard solutions different kinds of designs for the medium-voltage side of revenue metering. Instrument transformers can be purchased in the factory or premade for customer transformers.

Customer transformers can even be assembled and tested in the Uniswitch factory. Reliable and cost-effective power distribution with flexible measuring panels.

**Recommended relay: PR512/521 and SEG**

PR512, PR521 and SEG are self-powered relays and ensure complete protection of the installation without an auxiliary power supply. They are used as switchboard protection units and provide protection of the medium-voltage ABB circuit-breakers. The protection system consists of a relay and current transformers. The relay is powered by the measuring current. The trip of the circuit breaker takes place by means of a low-energy tripping coil which must be an internal component of the circuit breaker actuator.

- PR512/P (50-51 protections)
- PR512/P (50-51-50N-51N protections)
- PR512/PD (50-51-50N-51N protections with dialogue)
- Also with 24 VDC aux. power

- PR521 (50-51) protections
- PR521 50-51-51N
- Only self-powered

**SEG WIC1 The self-powered relay**

- 50/51 protections
- 50N/51N protections

**Other suitable relays:** REF 610, REX 521.
Metering application in Belgium.

Reference customers
- BBF, Slovakia
- Cegelec, France
- Cora, Romania
- Depauw Service Group bvba, Belgium
- EDF, France
- EON Hungaria Zrt, Hungary
- Gent University, Belgium
- Haramia, Slovakia
- Justice Palace, Romania
- Makita, Romania
- Prisma Supermarket, Finland
- Sener, France
- Techinter, France
- TESCO, Poland
- Tietoenator, Finland
- Vesoul Hospital, France
- YIT, Finland
Due to increasing logistics needs and global travel, there is a growing demand for guaranteed power supply in transportation. Uniswitch can be used for airports, railways, metros, harbors, and other large-scale transportation hubs and systems.

Uniswitch uses quality materials and components, solid and simplified AluZink construction, and removable or withdrawable circuit breakers with vacuum or SF₆ technology, qualities which make it suitable for various transportation applications in the distribution network.

Virtually maintenance-free, the possibility of remote operation, and its flexible, modular design, create advantages while designing the switchgear for different transportation applications.

Many of the applications contain auxiliary voltage transformers up to 2000 VA (4000 VA), securing the auxiliary power for the switchgear. This transformer can be used inside the Uniswitch cubicle and can be protected by a primary fuse.

### Recommended relay: Feeder Terminal REX 521

The feeder protection relay REX 521 is designed for protection, control, measuring and supervision in medium-voltage networks and for protection of large or medium-size three-phase a.c. motors in circuit-breaker-controlled motor drives. Typical applications include incoming and outgoing feeders, motor feeders as well as substation protection. Further, the relay can, for example, be applied as back-up protection of power transformers and back up for high-voltage line-protection relays. The protection relay is provided with energizing inputs for conventional current and voltage transformers. Also a hardware version with inputs for current and voltage sensors is available.

The REX 521 Feeder Protection Relay has been further enriched with additional features to provide your electrical network with even more efficient protection, extended measuring functions, supervision, control functions and connectivity.

Other suitable relays: REF 610, REM 610, REU 610, PR 521, PR 512.
Application for airports.

Reference customers
- Aeroport Int. de Tunis-Carthage, Tunis
- BIAC, Brussels International Airport, Belgium
- Brussels Central Station, Belgium
- Depauw Service Group bvba, Belgium
- Dublin Airport, Ireland
- Fabricom GTI, Belgium
- Malmö Central, Banverket, Sweden
- NMBS Berchem, Belgium
- RAPT Paris, Metro, France
- Turku Harbour, Finland
- Vuosaari Harbour, Finland
- Västeraspby, Banverket, Sweden
Wind Power

Today, the increasing demand for energy and the need for clean power generation leads to the concept of renewable energy sources, wind power, onshore and offshore.

Uniswitch can be used in windmills, and secondary distribution networks. Application types can be divided according to the type of substation it is used with.

1. Switching substation with step-up transformers 20/110 kV
2. Collecting stations
3. Transformer stations inside the tower or outside the tower, for example 690 V to 20 kV

The small size and modularity of Uniswitch makes for easy access even through the tower door.

Depending on the size of the turbines, transformers, and type of the substation, different kinds of relay protection are needed, for example, voltage and frequency relay protection. A wide range of accessories and secondary devices are available as well.

**Recommended relay: Feeder Terminal REX 521**

The feeder protection relay REX 521 is designed for protection, control, measuring and supervision in medium-voltage networks and for protection of large or medium-size three-phase a.c. motors in circuit-breaker-controlled motor drives. Typical applications include incoming and outgoing feeders, motor feeders as well as substation protection. Further, the relay can, for example, be applied as back-up protection of power transformers and back up for high-voltage line-protection relays. The protection relay is provided with energizing inputs for conventional current and voltage transformers. Also a hardware version with inputs for current and voltage sensors is available.

The REX 521 Feeder Protection Relay has been further enriched with additional features to provide your electrical network with even more efficient protection, extended measuring functions, supervision, control functions and connectivity.

**Other suitable relays:** SPAA 341, REF 54_, RE_ 610.
Single line diagram of Uniswitch used in collecting station application for wind power.

Reference customers:
- Asparvi Windmills
- Egemin ariake, Belgium
- Etu-Aapua, Pahajärvi, Sweden
- Hanssen Transmission, Belgium
- Kerkrade, Netherlands
- Movar Windpark, Netherlands
- Pori, Finland
- PVO, Finland

General distribution of energy created by wind mills.
Automatic Transfer Systems

Automatic transfer systems are used to ensure maximum service continuity, supplying the users with power without interruption. All this is possible using various systems based on different kinds of techniques.

The most common of these are given below, with the relevant average transfer times:

- Delayed – Disconnectors with motor: 4-5 s
- Depending on the residual voltage: 400-1200 ms
- Synchronized with breakers: 200-500 ms
- High speed (HSTS): 30-120 ms

The first two systems are the simplest and can also be made with conventional logics and instruments. They guarantee average transfer times and can therefore be used in installations where gaps are not particularly critical.

On the other hand, the other two systems – Automatic Transfer System (ATS) and High Speed Transfer System (HSTS) – require a microprocessor-based apparatus with high technological content. They guarantee fast transfer times and their application is in plants where the process is particularly critical.

Transfers which are not extremely fast would cause serious malfunctions or stoppage of the process itself. ABB is able to offer all the transfer systems, from the simplest to the most complex.

The REF542plus unit can be used in medium voltage switchgear to manage automatic and manual transfer between two different incoming feeders.

The time needed for automatic transfer carried out by means of the REF542plus unit is between 200-300 ms (including the circuit-breaker operating times). This time can vary within the range indicated in relation to the complexity of the software transfer logics.

Switchgear equipped with REF542plus, suitably programmed, are complete and efficient systems able to manage transfer between one power supply system and an alternative one, or to reconfigure the network, passing from double radial distribution to a simple system in a fully automatic way.

It is also possible to carry out the same operation manually from a remote control station, or from the front of the switchgear with supervision of the user personnel.

Automatic Changeover System

Simple ACOS with voltage signal from capacitive voltage relay and control by selector switches, timer- and auxiliary relays.

Function:
Automatic switching between two incomer SDC (or CBC) cubicles. When voltage disappears from the cable side of main incomer, the system switches from main incomer feed to reserve incomer feed. Time delay can be adjusted before switching. When the voltage to the main incomer returns, a second adjustable timer starts and the system switches back from reserve incomer feed. Switching time for motor-controlled switch disconnector cubicles is about 4-5 seconds.

Selections:
Automatic/Manual switch:
ACOS on or off; when in Automatic position, no local or remote control is possible.

Source 1/Source 2 switch:
Selection of source 1 or source 2 as main incoming feeder, the other will act as reserve incomer.

Normal/Test switch:
When in test position, the signal from voltage relay is bypassed to simulate voltage on the cable side.
Single-line diagram of Uniswitch switchgear with REF542plus architecture applied, suitable for carrying out automatic and manual transfer, as well as the switchgear protection, control and measurements.

Single-line diagram of Uniswitch switchgear with switch disconnector and motors, suitable for carrying out automatic and manual transfer.
An electric arc short-circuit in a switchgear installation is normally caused by a foreign object entering the unit or a component failure. The arc causes an explosion-like heat-and-pressure effect that usually causes significant damage to the switchgear and the operation personnel.

An adequate arc protection system protects the substation against arc faults by minimizing the burning time of the arc, thus preventing excessive heat and damage. It minimizes material damage and allows power distribution to be smoothly and safely restored. The system can also bring cost benefits even before an arc fault occurs.

As older switchgear is more prone to arc faults, an arc protection system will effectively extend the life of the switchgear and make more of investments. But what is even more important, this technology can help save lives.

Sources of arcing may be insulation faults, malfunctioning devices, defective bus or cable joints, overvoltage, corrosion, pollution, moisture, ferroresonance (instrument transformers) and even ageing due to electrical stress. Most of these arc fault sources could be prevented by sufficient maintenance.

However, in spite of the precautions taken, human errors can lead to arc faults. Time is critical when it comes to detecting and minimizing the effects of an electric arc.

An arc fault lasting 500 ms may cause severe damage to the installation. If the burning time of the arc is less than 100 ms the damage is often smaller, but if the arc is extinguished in less than 35 ms, its effect is almost negligible. Generally, protection releases applied are not fast enough to ensure safe fault clearance times at arc faults. The operation time of the overcurrent release controlling the incoming circuit-breaker may, for instance, have to be delayed by hundreds of milliseconds for selectivity reasons. This delay can be avoided by installing an arc protection system. The total fault clearance time can be reduced to a max of 2.5 ms plus the circuit breaker contact technology can help save lives.

Uniswitch has been tested according to the new IEC standard.

- Classification IAC AFL
- Internal arc 20 kA 1 s

Recommended products: REA and TVOC

### REA

The REA 101 arc protection system with its REA 103, REA 105 and REA 107 extension units, are designed to be used for protection of medium- and low-voltage air-insulated switchgear. The REA 101 central unit type operates independently or together with other REA 101 units. REA is the fastest arc protection system on the market, providing tripping times down to 2.5 ms. REA is equipped with a fast integrated overcurrent-sensing element and therefore works independently of other feeder protection units. The REF 610 feeder protection release includes an optional arc protection function for the feeder compartment.

### TVOC

This system consists of an electronic monitoring device located in the auxiliary compartment which the optic sensors are subject to. These are distributed in the various power compartments and are connected to the device by means of optic fibers. When a certain established light level is exceeded, the device opens the circuit-breakers. To prevent the system from intervening due to light occasionally generated by external phenomena (the flash of a camera, reflections of external lights, etc.), current transformers can also be connected. The protection module only sends the opening command to the circuit-breaker if it receives the light and short-circuit current signal simultaneously.
## Selection table for relays in different applications

<table>
<thead>
<tr>
<th>Application</th>
<th>REF 610</th>
<th>REU 610</th>
<th>REM 610</th>
<th>REX521</th>
<th>REF 54_</th>
<th>REM 54_</th>
<th>PR, SEG</th>
<th>REA, TVOK</th>
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<tbody>
<tr>
<td>Feeder application</td>
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<td>High-requirement motor protection</td>
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<tr>
<td>Generator &amp; synchronous motor</td>
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<tr>
<td>Arc protection system</td>
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<tr>
<td>Arc protection for feeder cubicle</td>
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</tbody>
</table>

### Communication Protocols

- IEC 60870-5-103
- IEC 61850
- DNP 3.0
- SPA
- LON
- Modbus
- Profibus

### Additional functionality

- Fault locator
- CAN interface
- Web interface
- Withdrawable release mechanics
- Disturbance recording
- Condition monitoring
- Local Control (Human Machine Interface)
- Communication
- Remote control (communication)

*With interface adapter*
UniswitchPro4 is designed using a new platform. This platform enables updating over the Internet and connection to CCP (Common Configurator Platform). It has been developed to be a tender and switchgear design tool. It helps design offices to design and plan projects. Designer version is also available. Please contact your local ABB representative.

- Projects are stored on a site, enables statistics and follow-up.
- Online site for projects, feedback, news, installation files, etc.
- New selections and properties have been added.
- Built-in price discount factor. The program uses the correct discount factor for the market/seller.
- Developed for Windows 2000. Windows 95, 98, ME, NT and XP are also supported. Also requires Internet Explorer 5.01 or later version.
- On ABB administrator access for PC is required for installation. Installation can also be done with assistance from Local Helpdesk (approx. 30 minutes). The installation files can be found on the Internet.
- An old project can be recreated in one to two hours.
- One to two days are required for getting familiar with all new options and features.
### Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
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<tr>
<td>BIL</td>
<td>kV 75</td>
<td>95</td>
<td>125</td>
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<tr>
<td>- common value</td>
<td>kV 85</td>
<td>110</td>
<td>145</td>
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<tr>
<td>- across the isolating distance</td>
<td>kV 85</td>
<td>110</td>
<td>145</td>
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<tr>
<td>AC withstand voltage</td>
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<td>38 1)</td>
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<tr>
<td>- common value</td>
<td>kV 32 1)</td>
<td>45 1)</td>
<td>60</td>
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<tr>
<td>- across the isolating distance</td>
<td>kV 32 1)</td>
<td>45 1)</td>
<td>60</td>
<td></td>
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<tr>
<td>Rated frequency</td>
<td>Hz 50/60</td>
<td>50/60</td>
<td>50/60</td>
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<tr>
<td>Rated current</td>
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<td>630/800/1250 4)</td>
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<td>630/1250 4)</td>
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<td>- busbar</td>
<td>A 630/1250</td>
<td>630/800/1250 4)</td>
<td>630/1250</td>
<td>630/1250 4)</td>
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<tr>
<td>- feeder</td>
<td>A 630/1250</td>
<td>630/800/1250 4)</td>
<td>630/1250</td>
<td>630/1250 4)</td>
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<td>Rated short-time withstand current</td>
<td>kA 25</td>
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<td>- main circuit</td>
<td>kA 25</td>
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<td>- earthing circuit</td>
<td>kA 25</td>
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<td>Rated peak withstand current</td>
<td>kA 65</td>
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<td>1</td>
<td></td>
</tr>
<tr>
<td>Arc-fault current, 1s</td>
<td>kA 20</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Degree of protection, enclosure</td>
<td>IP2XC</td>
<td>IP2XC</td>
<td>IP2XC</td>
<td></td>
</tr>
<tr>
<td>Degree of protection, partitions</td>
<td>IP2X</td>
<td>IP2X</td>
<td>IP2X</td>
<td></td>
</tr>
<tr>
<td>- maximum value</td>
<td>+40</td>
<td>+40</td>
<td>+40</td>
<td></td>
</tr>
<tr>
<td>Altitude above sea level</td>
<td>[m] &lt;1000 2)</td>
<td>&lt;1000 2)</td>
<td>&lt;1000</td>
<td></td>
</tr>
</tbody>
</table>

1) Higher values in accordance with national standards on request.
2) Higher altitudes on request.
3) Lower ambient temperature on request.
4) 1 250 A = CBW, SBW, BRC, DBC