UniSec switchgear features
- Air insulation of all live parts
- SF₆ switch-disconnector
- Removable and withdrawable vacuum and SF₆ circuit-breakers for LSC2A service continuity panel
- Withdrawable vacuum contactor up to 12 kV and vacuum and SF₆ circuit-breaker for LSC2B service continuity panel
- Multi-function apparatus with intregated vacuum circuit-breaker and gas-insulated disconnector
- LSC2A-PM classification for panels with switch-disconnector, LSC2B-PM for panels with withdrawable contactor, circuit-breaker up to 17.5 kV and LSC2B-PI at 24 kV
- Complete range of functional units and accessories
- Wide choice of state-of-the-art protection relays, either integrated on circuit-breakers or mounted separately for protection, control and measurement functions

Available versions
- Arc fault tested in accordance with standard IEC 62271-200 in the IAC AF arc proof version on front side at 12.5 kA and 16 kA, IAC AFL arc proof version on two sides (front and laterals) 12.5 kA and IAC AFLR arc proof version on three sides (front, laterals, rear) 12.5 kA, 16 kA and 21 kA; 25 kA for panels with LSC2B service continuity and at 12 kV for LSC2A units, high 2000 mm and wide 750 mm (further details at pag. 17)
- Seismic withstand version in accordance with standard IEEE 693
- Marine version.

Normal service conditions
- Storage temperature: -5 °C ... +70 °C (*)
- Range of ambient temperature: -5 °C ... +40 °C (*)
- Maximum relative humidity without condensation: 95 %
- Minimum relative humidity without condensation: 5 %
- Altitude: <1000 m above the sea level (*)

Degrees of protection(1)
- For IP 3X enclosure
- For IP 2X partition between compartments
- For IP 3X mechanical operating equipment.
As options:
- For IP 31 enclosure and mechanical operating equipment
- For IP 32 enclosure and mechanical operating equipment

Reference Standards
The switchgear and the main equipment it contains comply with the following standards:
- IEC 62271-1 for the general application
- IEC/EN 62271-200 for the switchgear. With reference to the classifications established by the standards, UniSec switchgear is defined as described below:
  - continuity of service classification: LSC2A and LSC2B
  - classification of the segregations: PM (metallic partition) and PI (insulation partition) for withdrawable circuit-breakers at 24 kV only
- IEC 62271-102 for the earthing switch
- IEC 62271-100 for the circuit-breakers
- IEC 60071-2 for insulation co-ordination
- IEC 62271-106 for the contactors
- IEC 62271-103 for the switch disconnector
- IEC 60529 for the protection classes
- IEEE 693 Seismic qualification testing of the switchgear.
- IEC 62271-304 for severe climatic conditions(2)

Applications
UniSec is suitable, according to maximum ratings and available technical solutions for a lot of applications: substations, utilities, commercial and residential buildings, Smart Grids, grid with distributed generations, light industry, hospital, renewable (solar, wind, small hydropower, etc.), marine, transportation, etc.

(*) Contact ABB for -25 °C operating temperatures and -40 °C storage temperatures.
(1) For higher altitudes, contact ABB.
(1) In case of IP X1 or IP X2 to consider an extra height of 120 mm due to the additional roof on the unit.
(2) Please contact ABB.
(2) Please contact ABB to optimize switchgear configuration.
## Switchgear electrical characteristics

<table>
<thead>
<tr>
<th>Rated voltage (kV)</th>
<th>12</th>
<th>17.5</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test voltage (50-60 Hz x 1 min) kV</td>
<td>28</td>
<td>38</td>
<td>50</td>
</tr>
<tr>
<td>Impulse withstand voltage kV</td>
<td>75</td>
<td>95</td>
<td>125</td>
</tr>
<tr>
<td>Rated frequency Hz</td>
<td>50-60</td>
<td>50-60</td>
<td>50-60</td>
</tr>
<tr>
<td>Rated main busbar current A</td>
<td>630/800/1250</td>
<td>630/800/1250</td>
<td>630/1250</td>
</tr>
</tbody>
</table>

**Rated current of apparatus:**

- **VD4/R-Sec - HD4/R-Sec - HD4/RE-Sec removable circuit-breaker**
  - A | 630/800 | 630/800 | 630 |
- **VD4/R-Sec - HD4/R-Sec withdrawable circuit-breaker**
  - A | 630 | 630 | 630 |
- **HySec multi-function apparatus**
  - A | 630 | 630 | 630 |
- **GSec gas switch-disconnector**
  - A | 630/800 | 630/800 | 630 |
- **Vmax/Sec withdrawable circuit-breaker**
  - A | 630/1250 | 630/1250 | – |
- **VD4/Sec withdrawable circuit-breaker**
  - A | – | – | 630/1250 |
- **HD4/Sec withdrawable circuit-breaker**
  - A | 630/1250 | 630/1250 | 630/1250 |
- **VSC/P withdrawable vacuum contactor**
  - A | 400 | – | – |

**Rated short time withstand current (kA (3s))**

| A | 16 (4)/20 (3)/25 (2) | 16 (4)/20 (3)/25 (2) | 16 (4)/20 (3) |

**Peak current (kA)**

| 40 (4)/50 (3)/62.5 | 40 (4)/50 (3)/62.5 | 40 (4)/50 (3) |

**Internal arc withstand current (up to IAC AFLR) (kA (1s))**

| 12.5/16 (4)/21 (3) | 12.5/16 (4)/21 (3) | 12.5/16 (4)/21 (3) |

1. Switch-disconnector
2. Fuses
3. Circuit-breaker
4. Busbar compartment
5. Mechanism compartment
6. Circuit-breaker operating mechanism
7. LV compartment for auxiliary circuits
8. Cable compartment
9. Apparatus compartment
10. Metallic shutters for panels up to 17.5 kV and insulating shutters up to 24 kV
11. Multi functional apparatus

---

(1) 25 kA 2s for LSC2A service continuity classification
(2) For LSC2B service continuity classification
(3) Contact ABB for 21 kA/52.5 kAp
(4) For HySec 16 kA/1s/40 kAp
(5) For LSC2A unit with gas duct at 12kV, high 2000 mm and wide 750 mm (further details at pag. 17)
Main components

GSec gas switch-disconnectors

GSec is a 3-position switch-disconnector (Line-Open-Earth). The GSec switch-disconnector actuator has separate lever couplings for the isolation and earthing operations. GSec uses two different types of actuators:
- 1S - Single Spring. This can be operated by lever and by motor
- 2S - Double Spring. This can be operated by motor, by means of pushbuttons or shunt opening and closing releases and undervoltage release.

Circuit-breakers

The UniSec panels can be fitted with circuit-breakers with lateral or front operating mechanism.

VD4/R and HD4/R series of removable circuit-breakers with lateral operating mechanism

The UniSec panels classified LSC2A-PM are fitted with vacuum or gas circuit-breakers with lateral operating mechanism. They can be integrated with protection relays and current sensors and, if fitted with suitable electrical accessories, can be remotely controlled.
Main components

Multi-function apparatus with integrated vacuum circuit-breaker and gas-insulated disconnector HySec
The HBC panel is classified LSC2A-PM and it is fitted with multi-function apparatus HySec integrates both vacuum circuit-breaker and 3-positions gas-insulated disconnector (line-open-earth). The operating mechanisms of the circuit-breaker and disconnector are mechanically interlocked, so that the disconnector can only be operated when the circuit-breaker contacts are in open position. The HySec can be fitted with electrical accessories for remote control.

Vmax and VD4 series of drawable vacuum circuit-breakers
The UniSec panels classified LSC2B-PM/PI can be fitted with drawable vacuum circuit-breakers with front operating mechanism. They differ from the removable circuit-breaker version as they have a compartment containing the circuit-breaker complete with primary circuit segregation shutters. The Vmax series for 12-17.5 kV and VD4 series for 24 kV of circuit-breakers can be fitted with electrical accessories for remote control.
**VSC/P series of withdrawable vacuum contactors**

The UniSec panels classified LSC2B-PM can be fitted with vacuum contactors with front operating mechanism and with protection fuses. The containment compartment is segregated and fitted with shutters. VSC/P vacuum contactors are available with two operating command versions:
- SCO (Single Command Operated) opening and closing operations by means of auxiliary voltage and by simulating the behaviour of electrical latching
- DCO (Double Command Operated) opening and closing operations by impulse and by simulating the behaviour of mechanical latching.

VSC/P contactors are suitable for operating users such as motors, transformers and capacitor banks.

**HD4 series of withdrawable gas circuit-breakers**

The UniSec panels classified LSC2B-PM/PI can be also fitted with withdrawable gas circuit-breakers up to 24 kV with front operating mechanism. It differs from the removable circuit-breaker version as it has a compartment containing the circuit-breaker complete with primary circuit segregation shutters. The HD4 series can be fitted with electrical accessories for remote control.
Protection relays

ABB offers a complete series of protection and control products ranging from the simplest protection devices to advanced protection, monitoring and control solutions. The modern protection and control IEDs comply with the requirements of the new international IEC 61850 Standard for substation communication and distribution automation.

REF601

REF601 is a digital feeder protection relay, designed for protection and control of utility and industrial power systems. The relay guarantees basic short-circuit, overcurrent and earth fault protection in networks with the neutral earthed directly, earthed by means of a resistance and in those with isolated neutral. The phase currents are measured by Rogowski coil type current sensors and earth-fault current can be internally calculated or measured with conventional current transformers.

The REF601 relay can be mounted on-board the VD4/R-Sec and HD4/R-Sec circuit-breaker or in the auxiliary contact compartment.

Two types of relay are available:
- REF601 according to the IEC standard
- REF601 according to the CEI 0-16 standard for the Italian market.

Warning!

REF601 cannot be used for protecting systems characterized by the presence of high harmonic currents.
For further information, please contact ABB.

RE- 610 Series

The 610 series includes IEDs for line protection, motor protection and voltage monitoring of systems in general. The plug-in design of the 610 series facilitates switchgear commissioning and allows fast and safe insertion and withdrawal of the IED "plug-in" units.

The 610 series numerical feeder protection IEDs support a wide range of communication protocols, including IEC 61850, IEC 60870-5-103, Modbus and Profibus.

- REF610 is a protection relay mainly designed for protection of incoming and outgoing feeders in MV distribution substations. REF610 can also be used as back-up protection for motors, transformers and generators, in industrial as well as in utility applications. The integrated protection functions, including three-threshold overcurrent protection and a two-threshold non-directional earth-fault, make REF610 relay a valid protection system against overcurrent and earth faults.

- REM610 is an IED for protection, measurement and monitoring of medium-sized and large asynchronous LV motors and small and medium-sized HV asynchronous motors in the manufacturing and process industry. The REM610 is also used for protection of cable feeders and distribution transformers, providing the benefits of thermal overload protection as well as phase overcurrent, earth-fault and phase unbalance protection.

- REU610 is designed for distribution substation busbar overvoltage and undervoltage protection, feeder and power transformer overvoltage protection, motor undervoltage protection, and capacitor bank protection and monitoring. In power systems with isolated neutral, it is also used for non-discriminative earth-fault protection based on residual voltage measurement.
**RE-615 Series**

Fitted with the latest protection technology and complying with the IEC 61850 Standard for substation communication, the ABB 615 series of protection and control IEDs are the ideal choice for the protection and control of distribution substations. Strict implementation of the IEC 61850 substation communication Standard in the 615 series IEDs covers both vertical and horizontal communication, including GOOSE messaging and parameter setting according to the IEC 61850-8-1 Standard.

- **REF615** provides general protection for overhead lines, cable feeders and distribution substation busbar systems. It can be adapted for both isolated neutral networks and networks with the neutral earthed by means of resistance or impedance.
- **REM615** is a dedicated motor protection and control IED, perfectly aligned for protection, control, measurement and monitoring of asynchronous motors in the manufacturing and process industry.
- **RET615** is a dedicated IED for protection and control of transformers designed for power transformers, unit and step-up transformers including power generator-transformer blocks in utility and industrial power distribution systems.
- **RED615** is a line residual current IED which can, in particular, be used for applications requiring highly selective feeder protection (unit protection). RED615 maintains selectivity even in cases where the fault current has a variable magnitude and can be fed from several sources. This usually occurs in closed loop, ring and meshed networks. In addition to protection, all 615 series IEDs offer the functionality needed for local and remote control of a circuit-breaker.

- **REU615** is an IED available in two predefined configurations called A and B, destined for two of the most common applications. Configuration A is preset for protections based on voltage and frequency for applications in industrial and utility power systems, including distributed power generation networks. Configuration B is preset for automatic voltage adjustment functions for transformers fitted with an on load tap changer. Configurations A and B also allow circuit-breaker control with measurement and supervision functions.

Apart from protection, all the 615 series of IEDs offer the functionality required for local and remote circuit-breaker control.

**COM600 for high-end secondary distribution applications**

COM600, the substation automation system, includes a communication gateway, an automation platform and a user interface for distribution substations at industrial and utility level. The gateway functionality guarantees seamless IEC 61850 connectivity between the substation IEDs and the control and management systems at network level. The automation platform with logic processor makes COM600 a flexible implementation platform for substation-level automation tasks. As a user interface, COM600 incorporates web technology based functionalities, ensuring access to the substation devices and processes via a human machine interface (HMI) based on the web browser. COM600 is only available on request.
Conventional instrument transformers

Conventional instrument transformer technology is well-known and extensively used in various applications. The design is appropriate for providing protection of metering systems against overcurrents, overvoltages or any other fault conditions in the network that need to be analyzed and processed. The current and voltage transformers for UniSec comply with the IEC 61869-2 and IEC 61869-3 standards. The dimensions are in accordance with the DIN 42600 standard.

Current and voltage sensors

The functionality of sensors is similar to that of conventional instrument transformers, but based on a higher level of standardization. The use of sensor technology can reduce environmental impact as well as optimising the safety and reliability of the application. Numerous sensor applications allowing combinations with different protection relays are available.

Ring-type transformers with low voltage insulation

Ring-type transformers with low voltage insulation are a possible alternative to conventional transformers, especially in applications with purely functional requirements.

Combined current and voltage sensors

Combisensors combine a current sensor (Rogowski coil) and a voltage sensor (resistive divider). Their characteristics and dimensions comply with the IEC and DIN Standards.
Typical units

SDC
Unit with switch-disconnector

Width
375 - 500 - 750 mm

Electrical characteristics

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>630/800</td>
<td>12.5/16 (1)/20 (2)/25 (3)</td>
</tr>
<tr>
<td>17.5</td>
<td>630/800</td>
<td>12.5/16 (1)/20 (2)</td>
</tr>
<tr>
<td>24</td>
<td>630</td>
<td>12.5/16 (1)/20 (2)</td>
</tr>
</tbody>
</table>

(1) 630 A, 16 kA 3s for double spring operating mechanism
(2) Contact ABB for 21 kA
(3) 25 kA (2s)

SDS
Unit with switch-disconnector – isolation

Width
375 - 500 mm

Electrical characteristics

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>630/800</td>
<td>12.5/16 (1)/20 (2)/25 (3)</td>
</tr>
<tr>
<td>17.5</td>
<td>630/800</td>
<td>12.5/16 (1)</td>
</tr>
<tr>
<td>24</td>
<td>630</td>
<td>12.5/16 (1)</td>
</tr>
</tbody>
</table>

(1) Contact ABB for 21 kA
(2) 25 kA (2s)

SDM
Isolating unit with measurement with switch-disconnector

Width
750 mm

Electrical characteristics

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>630/800</td>
<td>12.5/16/20 (1)</td>
</tr>
<tr>
<td>17.5</td>
<td>630/800</td>
<td>12.5/16 (2)</td>
</tr>
<tr>
<td>24</td>
<td>630</td>
<td>12.5/16 (2)</td>
</tr>
</tbody>
</table>

(1) Contact ABB for 21 kA
(2) 25 kA (2s)
Typical units

**SDD**
Unit with double switch-disconnector

**Width**
750 mm

**Electrical characteristics**

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>630</td>
<td>12.5/16 (3s)</td>
</tr>
<tr>
<td>17.5</td>
<td>630</td>
<td>12.5/16 (3s)</td>
</tr>
<tr>
<td>24</td>
<td>630</td>
<td>12.5/16 (3s)</td>
</tr>
</tbody>
</table>

(1) Contact ABB for 21 kA

---

**UMP**
Universal Metering Unit

**Width**
750 mm

**Electrical characteristics**

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>630/800</td>
<td>12.5/16/20 (1) (25) (3s)</td>
</tr>
<tr>
<td>17.5</td>
<td>630/800</td>
<td>12.5/16/20 (1) (3s)</td>
</tr>
<tr>
<td>24</td>
<td>630</td>
<td>12.5/16/20 (1) (3s)</td>
</tr>
</tbody>
</table>

(1) Contact ABB for 21 kA
(2) 25 kA (2s)
### Electrical characteristics

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>lk / kA</th>
<th>ikAp / kAp(*)</th>
<th>Fuses / A</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>12.5/16/20 (1) (3s)</td>
<td>5</td>
<td>125</td>
</tr>
<tr>
<td>17.5</td>
<td>12.5/16/20 (1) (3s)</td>
<td>5</td>
<td>80</td>
</tr>
<tr>
<td>24</td>
<td>12.5/16/20 (1) (3s)</td>
<td>5</td>
<td>80</td>
</tr>
</tbody>
</table>

(1) Making capacity of the earthing switch downstream EF 230 (lk = 2 kA)
(2) Contact ABB for 21 kA
(3) 25 kA (2s)

### Width
- 375 - 500 - 750 mm

---

### Electrical characteristics

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>lr / A</th>
<th>lk / kA</th>
<th>ikAp / kAp(*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>630/800</td>
<td>12.5/16/20 (1) (3s)</td>
<td>31.5/40/50 (1)</td>
</tr>
<tr>
<td>17.5</td>
<td>630/800</td>
<td>12.5/16/20 (1) (3s)</td>
<td>31.5/40/50 (1)</td>
</tr>
<tr>
<td>24</td>
<td>630</td>
<td>12.5/16/20 (1) (3s)</td>
<td>31.5/40/50 (1)</td>
</tr>
</tbody>
</table>

(1) Making capacity of the earthing switch downstream EF 230
(2) Contact ABB for 21 kA
(3) 25 kA (2s)
**Typical units**

### SBM
**Isolating unit with measurements, circuit-breaker and double switch-disconnector**

**Width**
750 mm

#### Electrical characteristics

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
<th>IkAp / kAp(*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>630</td>
<td>12.5/16/20 (1)/25 (2) (3s)</td>
<td>31.5/40/50 (3)/63</td>
</tr>
<tr>
<td>17.5</td>
<td>630</td>
<td>12.5/16/20 (1)/25 (3s)</td>
<td>31.5/40/50 (3)</td>
</tr>
<tr>
<td>24</td>
<td>630</td>
<td>12.5/16/20 (1)/25 (3s)</td>
<td>31.5/40/50 (3)</td>
</tr>
</tbody>
</table>

(*) Making capacity of the earthing switch downstream EF 230
(1) Contact ABB for 21 kA
(2) 25 kA (2s)

### SBC-W
**Circuit-breaker- Withdrawable with switch-disconnector**

**Width**
750 mm

#### Electrical characteristics

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
<th>IkAp / kAp(*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>630</td>
<td>12.5/16/20 (1)/25 (2) (3s)</td>
<td>31.5/40/50 (3)/63</td>
</tr>
<tr>
<td>17.5</td>
<td>630</td>
<td>12.5/16/20 (1) (3s)</td>
<td>31.5/40/50 (3)</td>
</tr>
<tr>
<td>24</td>
<td>630</td>
<td>12.5/16/20 (1) (3s)</td>
<td>31.5/40/50 (3)</td>
</tr>
</tbody>
</table>

(*) Making capacity of the earthing switch downstream EF 230
(1) Contact ABB for 21 kA
(2) 25 kA (2s)

### SBS-W
**Circuit-breaker- Withdrawable with switch-disconnector – isolation**

**Width**
750 mm

#### Electrical characteristics

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
<th>IkAp / kAp(*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>630</td>
<td>12.5/16/20 (1)/25 (2) (3s)</td>
<td>31.5/40/50 (3)/63</td>
</tr>
<tr>
<td>17.5</td>
<td>630</td>
<td>12.5/16/20 (1) (3s)</td>
<td>31.5/40/50 (3)</td>
</tr>
<tr>
<td>24</td>
<td>630</td>
<td>12.5/16/20 (1) (3s)</td>
<td>31.5/40/50 (3)</td>
</tr>
</tbody>
</table>

(*) Making capacity of the earthing switch downstream EF 230
(1) Contact ABB for 21 kA
(2) 25 kA (2s)

### SBR
**Reversed circuit-breaker unit**

**Width**
750 mm

#### Electrical characteristics

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
<th>IkAp / kAp(*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>630</td>
<td>12.5/16/20 (1s)</td>
<td>31.5/40 5</td>
</tr>
<tr>
<td>17.5</td>
<td>630</td>
<td>12.5/16/20 (1s)</td>
<td>31.5/40 5</td>
</tr>
<tr>
<td>24</td>
<td>630</td>
<td>12.5/16/20 (1s)</td>
<td>31.5/40 5</td>
</tr>
</tbody>
</table>

(*) Making capacity of the earthing switch upstream ESBR230-U
(1) Making capacity of the earthing switch downstream ESBR230-L
(2) 25 kA (2s)
**HBC**  
Unit with integrated circuit-breaker and disconnector

**Width**  
500 mm

**Electrical characteristics**

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
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<td>630</td>
<td>12.5/16 (1s)</td>
</tr>
<tr>
<td>24</td>
<td>630</td>
<td>12.5/16 (1s)</td>
</tr>
</tbody>
</table>

(1) Contact ABB for 21 kA  
(2) 25 kA (2s)

**SFV**  
Switch-disconnector with fuses – measurement

**Width**  
500 mm

**Electrical characteristics**

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ik / kA</th>
<th>Fuses / A</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>12.5/16/20 (1)/25 (3) (3s)</td>
<td>2 to 6</td>
</tr>
<tr>
<td>17.5</td>
<td>12.5/16/20 (3)</td>
<td>2 to 6</td>
</tr>
<tr>
<td>24</td>
<td>12.5/16/20 (3)</td>
<td>2 to 6</td>
</tr>
</tbody>
</table>

(1) Contact ABB for 21 kA  
(2) 25 kA (2s)

**DRC**  
Direct incoming unit with measurement and busbar earthing

**Width**  
375 - 500 mm

**Electrical characteristics**

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
<th>IkAp / kAp (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>630/800/1250</td>
<td>12.5/16/20 (1)/25 (3) (3s)</td>
<td>31/40/50/63</td>
</tr>
<tr>
<td>17.5</td>
<td>630/800/1250</td>
<td>12.5/16/20 (3)</td>
<td>31/40/50</td>
</tr>
<tr>
<td>24</td>
<td>630/1250 (2)</td>
<td>12.5/16/20 (3)</td>
<td>31/40/50</td>
</tr>
</tbody>
</table>

(1) Making capacity ES-230 N  
(2) Contact ABB for 21 kA  
(3) 25 kA (2s)  
(4) Only for H = 2000 mm

**DRS**  
Riser unit – measurement

**Width**  
375 - 500 mm

**Electrical characteristics**

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
</tr>
</thead>
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<tr>
<td>12</td>
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<tr>
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</tr>
<tr>
<td>24</td>
<td>630/1250 (2)</td>
<td>12.5/16/20 (3)</td>
</tr>
</tbody>
</table>

(1) Only for H = 2000 mm  
(2) Contact ABB for 21 kA  
(3) 25 kA (2s)  
(4) 25 kA, 3s DRS coupled to WBC/WBS
Typical units

**RLC/RRC**
Lateral, left and right-hand cable riser

- **Width**: 190 mm

**WBC**
Withdrawable frontal breaker unit

- **Width**: 600 - 750 mm

**Electrical characteristics**

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
<th>IkAp / kAp (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>630</td>
<td>12/16 (1s)</td>
<td></td>
</tr>
<tr>
<td>17.5</td>
<td>630</td>
<td>12/16 (1s)</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>630</td>
<td>12/16 (1s)</td>
<td></td>
</tr>
</tbody>
</table>

(*) Making capacity ESWB-150

(1) Contact ABB for 21 kA

**WBS**
Withdrawable frontal breaker unit

- **Width**: 600 - 750 mm

**Electrical characteristics**

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
<th>IkAp / kAp (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>400/1250</td>
<td>16/20 (3s)</td>
<td>40/50/63</td>
</tr>
<tr>
<td>17.5</td>
<td>630/1250</td>
<td>16/20 (3s)</td>
<td>40/50/63</td>
</tr>
<tr>
<td>24</td>
<td>630/1250</td>
<td>16/20 (3)</td>
<td>40/50/63</td>
</tr>
</tbody>
</table>

(*) Making capacity ESWB-150

(1) Solution with VSC/P contactor

(2) Contact ABB for 21 kA

**BME**
Busbar measuring and earthing unit

- **Width**: 600 mm

**Electrical characteristics**

<table>
<thead>
<tr>
<th>Un / kV</th>
<th>Ir / A</th>
<th>Ik / kA</th>
<th>IkAp / kAp (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>16/20/25 (3s)</td>
<td>40/50/63</td>
<td></td>
</tr>
<tr>
<td>17.5</td>
<td>16/20/25 (3s)</td>
<td>40/50/63</td>
<td></td>
</tr>
</tbody>
</table>

(*) Making capacity ESWB-150

(1) Contact ABB for 21 kA
Coupling to panels with withdrawable frontal breaker unit and switch-disconnector (GSec)

The different design of the panels WBC/WBS/BME and the different height of busbars not allowed direct coupling with the panels with switch-disconnector and/or removable circuit breaker both $H = 1700$ mm and $H = 2000$ mm. Adapter panels have been created for this type of compartment so as to allow the busbars to be connected.

The height of the adapter panel is 2000 mm.

The adapter panel keeps all the characteristics of a standard panel and can therefore be used as an incoming/outgoing unit.

The available adapter panels are:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Width (mm)</th>
<th>Weight (*) (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDC</td>
<td>500</td>
<td>220</td>
</tr>
<tr>
<td>SFC</td>
<td>500</td>
<td>225</td>
</tr>
<tr>
<td>SFV</td>
<td>500</td>
<td>225</td>
</tr>
<tr>
<td>SBC(1)</td>
<td>750</td>
<td>380</td>
</tr>
<tr>
<td>DRC</td>
<td>500</td>
<td>145</td>
</tr>
<tr>
<td>DRS</td>
<td>500</td>
<td>150</td>
</tr>
<tr>
<td>SDS</td>
<td>500</td>
<td>185</td>
</tr>
</tbody>
</table>

(*) Estimated weight, considering the base unit with 630 A busbars, without TA, TV and fuses
(1) Can be coupled only on the left side of WBC/WBS/BME units with withdrawable circuit-breakers
Dimensional drawings

Side view IAC A-F 16 kA Base solution and IAC A-FL 12.5 kA
(solution completely against the wall)

Side view IAC A-FL 12.5 kA, with filters

Side view IAC A-FLR 16 kA, with filters

Side view IAC A-FL 21 kA, with filters

(*) For panels with removable circuit-breakers
(**) Not available for panels SBR and UMP

(*) For panels with removable circuit-breakers
(**) Not available for panels SBR and UMP
Side view IAC A-FLR 21 and 25\(^{(1)}\) kA, with duct

![Side view IAC A-FLR 21 and 25 kA, with duct](image1)

\(^{(*)}\) For panels with removable circuit-breakers
\(^{(**)}\) Not available for panels SBR and UMP

\(^{(1)}\) Only for LSC2A units at 12 kV, high 2000 mm and wide 750 mm (except SBC-W, SBS-W, SDD, UMP and SBR unit)

Side view IAC A-FLR 21 kA, with downward gas duct

![Side view IAC A-FLR 21 kA, with downward gas duct](image2)

\(^{(*)}\) For panels with removable and withdrawable circuit-breakers
\(^{(**)}\) Not available for panels SBR and UMP

Side view for panels with withdrawable circuit-breakers, IAC A-FLR 25 kA, 1 sec up to 17.5 kV and IAC A-FLR 16 kA, 1s at 24 kV with filters

![Side view for panels with withdrawable circuit-breakers](image3)

\(^{(*)}\) Only 12-17.5 kV

Side view for panels with withdrawable circuit-breakers, IAC A-FLR 25 kA, 1 sec with duct up to 17.5 kV and IAC A-FLR 21 kA, 1s at 24 kV with duct

![Side view for panels with withdrawable circuit-breakers](image4)

\(^{(*)}\) Only 12-17.5 kV
Low voltage compartments available

Solutions for panels with GSec

Solutions for panels with withdrawable circuit-breakers
The data and illustrations are not binding. We reserve the right to make changes in the course of technical development of the product.

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