UniSec
Medium Voltage Air Insulated Switchgear for Secondary Distribution
UniSec
MV Air Insulated Switchgear for Secondary Distribution

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UniSec

Introduction
UniSec
Introduction - Applications

- Renewable
- Residential
- Utilities Distribution
- Industrial
- Hospitals
- Large Buildings
- Shopping Centers
- Generator
- Transportation
Customer Needs

- High reliability and safety
- Designed and Tested according IEC
- Continuity of service and stable supply
- Compact dimensions
- A wide range of functional units easy to extend and upgrade
- Safe and easy for operators in both maintenance and operating conditions
- Optimized life cycle cost – Modular solutions, reduced maintenance and number of spare parts
- Fast delivery time
UniSec Applications
Residential

Energy is distributed by a Transformer Substations

Customer Needs
- Safety
- Continuity of service and stable supply
- Compact dimensions and low environmental impact
Customer Needs

- High reliability and safety
- A wide range of functional units easy to extend and upgrade
- Safe and easy for operators in both maintenance and operating conditions

Stable and non-fluctuating power supply without outages
UniSec Applications
Utilities - Distribution

The distribution network refers to switching stations feeding, protecting, monitoring and controlling residential areas, industrial sites and large buildings.

Customer Needs
- Continuity of service and reliability
- Safe - Designed and Tested according IEC
- Life cycle cost - Standardized and modularized solutions, reduced maintenance requirements and number of spare parts
- Easy integration in existing networks and systems
UniSec Applications
Building & Transportation

- Hospitals
- Datacenter
- Large buildings
- Small scale power generation
- Transports
  - Airports
  - Rails
  - Metros
  - Highway/Tunnel
UniSec Applications
Renewable

Wind generation
Solar plant
Hydro power
Waste to energy

Customer Needs
- Fast delivery time
- Compact dimensions
- Continuity of service and reliability
- Life cycle cost - Standardized and modularized solutions, reduced maintenance requirements and number of spare parts
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Product characteristics
## UniSec

### Product Characteristics - IEC Standards

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<th><strong>Description</strong></th>
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<td>MV AC metal-enclosed switchgear</td>
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<td>IEC 62271-105</td>
<td>Alternating current switch-fuse combinations</td>
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<td>IEEE 693</td>
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<td>IEC 60529</td>
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</table>

<table>
<thead>
<tr>
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<th><strong>Description</strong></th>
</tr>
</thead>
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<td>IEC 62271-102</td>
<td>MV AC current disconnectors and earthing switches</td>
</tr>
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<td>IEC 62271-100</td>
<td>MV AC circuit-breakers</td>
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<td>IEC 60470</td>
<td>MV AC contactors, contactor-based controllers and motor-starters</td>
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<td>IEC 60044-1</td>
<td>Current transformers</td>
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<tr>
<td>IEC 60044-2</td>
<td>Combined transformers</td>
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<td>IEC 60044-7</td>
<td>Electronic voltage transformers</td>
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<td>IEC 60044-8</td>
<td>Electronic current transformers</td>
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<td>IEC 60255-6</td>
<td>Measuring and Protection Electrical relays</td>
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<tr>
<td>IEC 60099-4</td>
<td>MV AC Surge arresters</td>
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<tr>
<td>IEC 60282-1</td>
<td>MV AC Fuses</td>
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<tr>
<td>IEC 60376</td>
<td>Specification of technical grade sulphur hexafluoride (SF6) for use in electrical equipment</td>
</tr>
</tbody>
</table>
UniSec
Product characteristics – IEC definitions

IEC classifications

- Loss of Service Continuity:
  - LSC 1: 1 compartment.
  - LSC2A: 2 compartments, busbars & CB/cables
  - LSC2B: 3 compartments, busbars, CB and cables

- Partitioning class:
  - PM: metallic partition
  - PI: insulated partition

- Internal Arc (IAC A-FL & A-FLR)
  A: Authorized personnel only.  FL: front & lateral
  B: Unrestricted, general access.  FLR: front, lateral & rear
  C: Not accessible
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Product Characteristics – Loss of Service Continuity

- **LSC2A** for Switch Disconnector or Removable Circuit-Breakers units
  
  2 main MV compartments (segregated by GSec):
  
  1. Busbars
  2. Circuit-Breakers and Cables

  Accessibility to CB & Cables compartment with service continuity of Busbars compartment and adjacent panels.

- **PM** Metallic Partition between compartments
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Product Characteristics - Loss of Service Continuity

- **LSC2B** for Withdrawable Circuit-Breakers units
  3 main MV compartments (segregated by shutters):
  1. Busbars
  2. Cables
  3. Circuit-Breakers

Accessibility to CB compartment with service continuity of Busbars and Cables compartments and adjacent panels.

- **PM** Metallic Partition between compartments
  @ 12-17.5kV

- **PI** Insulated Partition between compartments
  @ 24kV
Internal arc classified IAC AFL or AFLR according to the IEC 62271-200 Annex A

UniSec fully complies with all five criteria:
1. The doors of the switchboard must remain closed and no opening of the cover panels must occur.
2. Any part of the switchboard which may be hazardous for personnel must not be ejected.
3. No holes must appear in the external housing of the switchboard in any parts accessible to personnel.
4. The vertically and horizontally arranged fabric indicators placed outside the switchboard must not get burnt.
5. All the switchboard earthing connections must remain effective
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Product Characteristics - Internal Arc Classifications

- **IAC AFL** up to 12.5 kA 1s with arc gas absorbers and pressure relief inside the room [1]
- **IAC AFLR** up to 16 kA 1s with arc gas absorbers and pressure relief inside the room [1] [2]
  up to 25kA 1s for withdrawable CB panels 12-17.5kV
- **IAC AFLR** up to 21 kA 1s with arc gas duct and pressure relief outside the room [3]
  up to 25kA 1s for withdrawable CB panels 12-17.5kV
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Product Characteristics – SWG room layout

IAC A-FL up to 12.5kA 1s - Swb against the wall

Minimum distances to the switchgear room walls with arc gas absorber

Removable CB panels LSC2A
UniSec
Product Characteristics – SWG room layout

IAC A-FL up to 12.5kA 1s

Minimum distances to the switchgear room walls with arc gas absorber

Removable CB panels LSC2A
UniSec
Product Characteristics – SWG room layout

IAC A-FLR up to 16kA 1s

Minimum distances to the switchgear room walls with arc gas absorber

Removable CB panels LSC2A
UniSec
Product Characteristics – SWG room layout

IAC A-FLR up to 21kA 1s

Minimum distances to the switchgear room walls with arc gas ducts

Removable CB panels LSC2A
UniSec
Product Characteristics - Swbroom layout

IAC A-FLR up to 25kA 1s (12-17.5kV) or up to 16kA 1s (24kV)

Minimum distances to the switchgear room walls with arc gas absorber

Withdrawable CB panels LSC2B
UniSec
Product Characteristics - Swbroom layout

IAC A-FLR up to 25kA 1s (12-17.5kV) or up to 21kA 1s (24kV)

Minimum distances to the switchgear room walls with arc gas ducts

Withdrawable CB panels LSC2B
Unisec
Product Characteristics – Marine & Anti-Seismic

Rigorous Vibration Type Test PASSED

- Withdrawable CB 12KV Marine version is available (IP42 available)
- Full UniSec family Anti-Seismic version is available
UniSec

Electrical characteristics & typical units
## UniSec

### Electrical characteristics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Unit</th>
<th>12</th>
<th>17.5</th>
<th>24</th>
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</thead>
<tbody>
<tr>
<td>Rated Voltage</td>
<td>kV</td>
<td>12</td>
<td>17.5</td>
<td>24</td>
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<tr>
<td>Test voltage (50-60 Hz x 1 min)</td>
<td>kV</td>
<td>28</td>
<td>38</td>
<td>50</td>
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<tr>
<td>Impulse withstand voltage</td>
<td>kV</td>
<td>75</td>
<td>95</td>
<td>125</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>Hz</td>
<td>50-60</td>
<td>50-60</td>
<td>50-60</td>
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<tr>
<td>Rated main busbars current</td>
<td>A</td>
<td>630/800/1250(*)</td>
<td>630/800/1250(*)</td>
<td>630/1250(*)</td>
</tr>
<tr>
<td>Rated normal current of apparatus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- VD4-HD4 removable circuit-breaker</td>
<td>A</td>
<td>630/800</td>
<td>630/800</td>
<td>630</td>
</tr>
<tr>
<td>- GSec gas switch-disconnector</td>
<td>A</td>
<td>630/800</td>
<td>630/800</td>
<td>630</td>
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<tr>
<td>- Vmax withdrawable (*)</td>
<td>A</td>
<td>630/1250</td>
<td>630/1250</td>
<td></td>
</tr>
<tr>
<td>- Vmax withdrawable (*)</td>
<td>A</td>
<td></td>
<td></td>
<td>630/1250</td>
</tr>
<tr>
<td>- VD4 withdrawable (*)</td>
<td>A</td>
<td></td>
<td></td>
<td>630/1250</td>
</tr>
<tr>
<td>- VSC withdrawable (*)</td>
<td>A</td>
<td>400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated short time withstand current</td>
<td>kA (3s)</td>
<td>16/21/25(1)(2)</td>
<td>16/21/25(2)</td>
<td>16/21</td>
</tr>
<tr>
<td>Peak current</td>
<td>kA</td>
<td>40/52.5/63</td>
<td>40/52.5/63</td>
<td>40/52.5/63</td>
</tr>
<tr>
<td>Internal arc withstand current (IAC AFL-AFLR)</td>
<td>kA (1s)</td>
<td>12,5/16/21/25(3)</td>
<td>12,5/16/21/25(3)</td>
<td>12,5/16/21</td>
</tr>
</tbody>
</table>

(1) 2 s  
(2) 3 s for withdrawable CB panels (*)  
(3) for 12-17.5kV withdrawable CB panels (*)
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Typical Units Overview – Switch Disconnector units

SDC = Incoming/Outgoing
SDS = Coupler
SDM = Coupler with measure

SDD = Double interlocked Incomer
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Typical Units Overview – Fused and Measure units

SFC = Outgoing

SFS = Coupler

SFV = Measure

DRC = Direct feeder
  Busbars Measuring & Earthing

DRS = Busbars riser

UMP = Universal Metering
UniSec
Typical Units Overview – Circuit Breaker units

SBC = Incoming/Outgoing
SBS = Coupler
WBC = Withdrawable Incoming/Outgoing
WBS = Withdrawable Coupler

SBM = Coupler with measure
RRL – RLC Cables riser
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SDC & SDS – Panel with Switch Disconnector

1. SDC = switch disconnector cable
2. SDS = switch disconnector sectionalizer

Standard accessories
- Voltage indicators

Optional accessories
- Operating motor
- Open & Close pushbuttons
- Opening, closing and undervoltage coils for double spring operating mechanism up to 16kA
- DIN CTs or Ring for 500mm wide panel
- 4+4 auxiliary contacts
- Pressure indications
- Surge arresters

Available width
375 – 500 – 750mm
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SDM – Measure panel with Switch Disconnector

SDM = switch disconnector with measure

Standard accessories
- Voltage indicators

Optional accessories
- Operating motor
- DIN CTs & DIN VTs
- 4+4 auxiliary contacts
- Pressure indications
- Surge arresters

Available width
750mm
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SDD – Double Switch Disconnector panel

Standard accessories
- Voltage indicators
- Open & Close pushbuttons

Optional accessories
- Operating motor
- Opening, closing and undervoltage coils
- 4+4 auxiliary contacts
- Pressure indications
- Surge arresters

Available width
750mm

SDD = switch disconnector double
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UMP – Universal Metering Panel

Standard accessories
- N°6 available configurations with DIN CTs and VTs

Available width
750mm
1. SFC = switch fuse cable
2. SFS = switch fuse sectionalizer
2. SFV = switch fuse voltage measure

Standard accessories
- Voltage indicators
- Open & Close pushbuttons

Optional accessories
- Operating motor
- Opening, closing and undervoltage coils
- 4+4 auxiliary contacts
- Fuses up to 125A@12kV & 80A@24kV
- Pressure indications

Available width
375 - 500mm
UniSec
SBC, SBS – Panels with Removable CB

1. SBC = switch breaker cable
2. SBS = switch breaker sectionalizer

Standard accessories
- Voltage indicators

Optional accessories
- Operating motor
- Wide relays availability
- DIN CTs & DIN VTs (for SBC)
- 4+4 auxiliary contacts
- Pressure indications
- Surge arresters (alternative to VTs)

Available width
750mm
UniSec
SBM – Measure panel with Switch Disconnectors & CB

SBM = switch breaker with measure

Standard accessories

- Voltage indicators

Optional accessories

- Wide relays availability
- DIN CTs & DIN VTs
- 4+4 auxiliary contacts
- Pressure indications

Available width

750mm
UniSec
DRC, DRS – Direct Incoming and Riser panels

1. DRC = direct riser cable
2. DRS = direct riser sectionalizer

Standard accessories
- Voltage indicators

Optional accessories
- DIN CTs & DIN VTs (DRS 500mm wide)
- DIN CTs or Toroidal (DRC 500mm wide)
- DIN VTs (DRC 500mm wide)
- Earthing Switch (DRC 500mm wide)
- Surge arresters

Available width
375-500mm
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RRL, RLC – Right & Left Cables riser

1. RLC = riser left cable
2. RRC = riser right cable

Dimensions

A 190 mm
B 1700 mm
C 1070 mm
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WBC, WBS – Panels with Withdrawable CB

High electrical characteristics

- Rated current up to 1250A
- Short Circuit Current up to 25kA 3sec
- Internal Arc Current up to 25kA 1s @ 12-17.5kV
  up to 21kA 1s @ 24kV
- Panel width 600mm @ 12-17.5kV
  750mm @ 24kV
- Possibility to connect withdrawable CB panels to other units
UniSec
WBC – Feeder with Withdrawable CB

Standard accessories
- Voltage indicators cables side

Optional accessories
- Voltage indicators busbars side
- Wide relays availability
- DIN CTs or Ring (@ 12-17.5kV)
- DIN VTs fixed with or without fuses
- Cables connections:
  - Height: 600mm
  - n° 2 cables each phase up to 400mm²
  - n° 1 cable each phase up to 630mm²
    @ 12-17.5kV
- Earthing Switch with making capacity
- Internal lighting
- Anticondensation heathers
- Surge arresters

Available width
600mm @ 12-17KV
750mm @ 24KV
UniSec
WBC – Detailed configuration cable compartment

- DIN CTs
- Fused DIN VTs
- Surge Arresters
- Cables connections height 600mm
  \( n° \) 2 cables/phase up to 400mm\(^2\)
  \( n° \) 1 cable/phase up to 630mm\(^2\) @ 12-17.5kV
**UniSec**

**WBS – Coupler with Withdrawable CB**

- **Standard accessories**
  - Voltage indicators lower busbars side

- **Optional accessories**
  - Voltage indicators upper busbars side
  - Wide relays availability
  - DIN CTs or Ring (@ 12-17.5kV)
  - Earthing Switch with making capacity
  - Internal lighting
  - Anticondensation heathers

---

**Available width**
600mm @ 12-17KV
750mm @ 24KV

---

WBS = withdrawable breaker sectionalizer
## UniSec
**Typical Units – Cables connections and Section**

<table>
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<tr>
<th>Typical unit</th>
<th>Width</th>
<th>N. Max of cables each phase</th>
<th>Max section (mm²)</th>
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<tr>
<td>SDC</td>
<td>375</td>
<td>1</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>2</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>750</td>
<td>2</td>
<td>300</td>
</tr>
<tr>
<td>SFC</td>
<td>375</td>
<td>1</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>1</td>
<td>95</td>
</tr>
<tr>
<td>SBC</td>
<td>750</td>
<td>2</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>630</td>
<td></td>
</tr>
<tr>
<td>SBR</td>
<td>750</td>
<td>1</td>
<td>300</td>
</tr>
<tr>
<td>DRC</td>
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<td>300</td>
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<td></td>
<td>500</td>
<td>2</td>
<td>300</td>
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<td></td>
<td>500</td>
<td>1</td>
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<tr>
<td>WBC</td>
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<td>400</td>
</tr>
<tr>
<td></td>
<td>750</td>
<td>1</td>
<td>630</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>400</td>
</tr>
</tbody>
</table>
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Typical Units – Surge Arresters

Solution available for:
- SBC
- SDC (375,500,750mm)
- DRC (375, 500mm)
- SDM
- WBC

Surge arrestor ABB MWD type according to IEC 60099-4
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Interlocks
UniSec
Interlocks – Switch Disconnector panels

Standard safety interlocks

- Prevent cable door opening in case Switch Disconnector is not Earthing position
- Prevent the working motor when the lever is in the line of Switch-Disconnector seat (by means of microswitch)
- Mechanical interlock between switch disconnector and earthing switch downstream fuses and circuit breaker
UniSec Interlocks – Switch Disconnector panels

Key & Padlock interlocks (on request)

- N° 1 or 2 keys on both Line or Earth operating mechanism insertion hole (Standard, Ronis or Profalux)

- Blocking magnet on switch diconnector positon both Line and Earth

- N° 3 Padlocks on both Line and Earth operating mechanism insertion hole
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Interlocks – Withdrawable circuit breaker panels

- Standard safety interlocks
- Key interlocks (on request)
- Padlocks (on request)
- Blocking magnet (on request)
- Fail Safe on shutters (on request)
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Typical units dimensions
UniSec Dimensions – Width

375mm  500mm  500mm  600mm  750mm  750mm
UniSec Dimensions – LSC2A panels

No IAC
A-FL12.5kA 1s against the wall

A-FL 12.5kA 1s with filter

(*) if unit with circuit breaker
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Dimensions – LSC2A panels

A-FLR 16kA 1s with filter

A-FLR 21kA 1s with gas duct

(*) if unit with circuit breaker
UniSec
Dimensions – LSC2A panels, LV compartments

Standard

Wide

Big
UniSec
Dimensions – LSC2B panels

A-FLR 25(21)kA 1s
with filter

A-FLR 25(16)kA 1s
with gas duct
UniSec
Dimensions – LSC2B panels, LV compartments

Standard

Big
UniSec
Coupling LSC2B panels with LSC2A in same Swb

Adaptor panels

- SDC
- SFC
- SFV
- (SBC)
- (DRC)

Only Filter solution available due different panel height
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Main components
UniSec
Main Component – GSec Switch Disconnector

- Three-position: Line – Open – Earth
- Separate operating seats for isolation and earthing operations
- Load Breaking switch (always)
- Housing made of two materials:
  - top part in epoxy resin
  - bottom part in stainless steel
- Can be used in combination with fuses
- Front access to the actuator
- Easy installation and replacement of accessories
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Main Component – GSec Switch Disconnector

- PM: bottom part in stainless steel increasing personnel safety
- Mechanical indication directly from the main shaft of the Switch-Disconnector
- Spring charging contact for remote control
- Rated current up to 800A @ 12-17.5kV or up to 630A @ 24kV
- Switch Disconnector with motor for remote use
- High electric and mechanical life performance:
  - Line: M2 (5000 operations) SD E3 (5 makings) M1 (1000 operations) DD
  - Earth: M0 (1000 operations) E2 (5 makings)
- Min. Temperature of -25°C for single spring
- Altitude up to 3000m applying insulation de-rating (IEC)
- 3 padlocks
- Keys interlocking
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Main Component – GSec Switch Disconnector

- **Single Spring Actuator - Type 1 (SS)**
  Closing and Opening operations with Single Spring Actuator, Manually (lever) and Motor (remote) operated

- **Double Spring Actuator - Type 2 (DS)**
  Closing and Opening operations with Double Spring Actuator, Spring charging Manual (lever) and Motorized (remote):
  - Closing by pushbuttons or coils
  - Opening by pushbuttons, coils or fuses in case of fault

<table>
<thead>
<tr>
<th>Typical Units</th>
<th>Actuator</th>
</tr>
</thead>
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<tr>
<td>Type 1 (SS)</td>
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<tr>
<td>Type 2 (DS)</td>
<td></td>
</tr>
<tr>
<td>SDC, SDS</td>
<td>X</td>
</tr>
<tr>
<td>SFC,SFS</td>
<td>--</td>
</tr>
<tr>
<td>SFV</td>
<td>--</td>
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<tr>
<td>SDD</td>
<td>--</td>
</tr>
<tr>
<td>SDM</td>
<td>X</td>
</tr>
<tr>
<td>SBC, SBS</td>
<td>X</td>
</tr>
<tr>
<td>SBM</td>
<td>X</td>
</tr>
</tbody>
</table>
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Main Component – GSec Switch Disconnector

Auxiliary contacts (4 line + 4 earth)
Opening coil
Closing coil
Undervoltage coil
Motor device

Voltage presence indication
Fuse blown signalling contact
Digital manometer selfpowered with contact for remote indication
Analogic manometer with contact for remote indication
key locks padlocks in closed/open position

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Slide 61
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Main Component – CEF fuses for transformer protection

Standard IEC 60282-1 / DIN 43625

<table>
<thead>
<tr>
<th>Transformer rated voltage [kV]</th>
<th>25</th>
<th>50</th>
<th>75</th>
<th>100</th>
<th>125</th>
<th>160</th>
<th>200</th>
<th>250</th>
<th>315</th>
<th>400</th>
<th>500</th>
<th>630</th>
<th>800</th>
<th>1000</th>
<th>1250</th>
<th>1600</th>
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<tbody>
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<td>CEF Fuse In [A]</td>
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<tr>
<td>Transformer power [kVA]</td>
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</tr>
<tr>
<td>Fuse rated voltage [kV]</td>
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</table>
UniSec
Main Component – Removable circuit breaker
UniSec
Main Component - Withdrawable apparatus

Vmax/Sec
@ 12-17,5kV

VD4/Sec
@ 24kV

Contactor
VSC7/P
VSC12/P
UniSec
Main Component – Instrument Transformers

TRADITIONAL
- DIN CTs
- Ring CTs
- DIN VTs

SENSORS
- DIN Current
- Ring Current KECA
- Combined Current and Voltage
UniSec
Main Component – Protection Relays

REF 601

REF 610

REF 615

REF 542plus

REF 630
UniSec
Regional Factory in Argentina
UniSec
Concepts & benefits

Regional Focused Feeder Factory
UniSec
Concepts & benefits

Work Stations

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<tr>
<th>WS</th>
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<tr>
<td>S1</td>
<td>Metal frame assembly - Future UniMix &amp; UniSec</td>
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<td>S1’</td>
<td>Metal frame assembly - UniMix</td>
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<td>S2</td>
<td>Switch Insertion</td>
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<td>S3</td>
<td>Actuator assembly</td>
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<td>S4</td>
<td>CB Insertion</td>
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<td>S5</td>
<td>Cooper assembly</td>
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<td>S6</td>
<td>LVC and door assembly</td>
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<td>S7</td>
<td>LV testing</td>
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<td>S8</td>
<td>MV testing</td>
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<td>S9</td>
<td>FAT &amp; finishing &amp; packing</td>
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<td>SP1</td>
<td>CTs and VTs preassembly</td>
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<tr>
<td>SP2</td>
<td>Switch &amp; roof &amp; floor preassembly - UniMix</td>
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<td>SP4</td>
<td>Mechanical box preassembly</td>
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<td>SP5</td>
<td>LVC Preassembly &amp; Wiring</td>
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</tbody>
</table>
UniSec
Concepts & benefits

AIS Secondary Switchgear Factory:

• Productive area: 1400 m²

• Production capacity: 120 panels / month

• More than 70% of the production is destined to Export Market.
UniSec
Concepts & Benefits
UniSec
Concepts & benefits

Global solutions

- Argentina Regional Focus Feeder Factory
  - 1400m² productive area
  - 120 panels per month
- America customized panels
- FAT with customer (on request)
- Regional support to customer with commissioning, maintenance and training
- Regional Service
Wide range of solutions

- A wide range of functional units easy to upgrade
- New functional units: SDD, SBM, SDM...
- Market adaptations are implemented to match local requirements
- Modular solution for Switch Disconnector accessories
- Standard Removable Circuit-breaker (< 2h for replacing)
- Surge arresters for 375mm wide panels
- Both DIN CTs and VTs in Removable CB panel
- Installation altitude up to 3000m
Safety and reliability

- IEC 62271-200 Native
- Designed and tested to have a min life of 30 years according IEC 62271-1
- Anti-Seismic version according to IEEE 693
- GOST homologation available soon (-25°C and -40°C for storage)
- Available in Marine version (Vibration & IP42)
- Safe: IAC AFLR, PM/PI, LSC2A/2B, Interlocks
Contact information

If you have further questions, please contact me at:

<table>
<thead>
<tr>
<th>PRESENTER</th>
<th>Roberto L. Costanzo</th>
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</thead>
<tbody>
<tr>
<td>COMPANY</td>
<td>ABB S.A.</td>
</tr>
<tr>
<td>CONTACT PHONE</td>
<td>(+5411) 4229-5422</td>
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<tr>
<td>CONTACT E-MAIL</td>
<td><a href="mailto:roberto.costanzo@ar.abb.com">roberto.costanzo@ar.abb.com</a></td>
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