



ENSTO

Ensto Auguste

Load break switch
for MV grids

Better life.
With electricity.

Ensto designs and markets smart electrical solutions to improve the safety, functionality, reliability and efficiency of smart grids.

ensto.com

Standards

An ISO 9001 quality assurance system is applied to the design and production of the devices in the Auguste range.

They meet the international standards and specifications:

- IEC 62271-103
- IEC 62271-102
- IEC 62271-200
- ENA TS 41-36
- GOST 17 777-79
- HN 64-S-46
- HN 64-S-43



Ensto Auguste

Worldwide experience

The devices in the Auguste range are overhead load break disconnect switches designed to enable full-load disconnection up to 630 A of a medium-voltage overhead electric line up to 36 kV.

A solution developed in collaboration with our customers

The switches in the Auguste range are suitable for all types of grids, and in particular those requiring frequent switching in severe weather conditions. They are easy to install under the line on the side of the pole.

They are extremely reliable, and offer very advanced safety features, enabling them to be used in complete peace of mind.

The Auguste devices are designed on the basis of our long experience, in co-operation with the operators of public and private overhead electricity distribution grids.

The equipment addresses many concerns:

- guaranteed high quality of service
- quick and easy to install
- safe operation
- improved grid profitability by reducing sources of operating losses.

A solution that is applicable all over the world

These switches, which are in active service on every continent and are exposed to all types of environmental conditions (salty humidity, sand storms, ice, snow, high altitude, industrial pollution, dense bird populations, densely populated areas, etc.), are appreciated by operators for their ease of installation and operation and their excellent reliability.

They are used in all types of overhead distribution grids, in both rural and urban environments.

The devices in the Auguste range are available with manual controls or with a motor-operated control mechanism. They can also be upgraded. They have also been designed to integrate readily into grids controlled by a remote control system.

Tests

Type tests

The switches in the Auguste range have successfully passed all the type tests specified in international standards.

The main type tests include:

- dielectric resistance tests
- making and breaking tests
- tests of resistance to short circuit currents
- closing tests to short circuit currents
- internal arc tests
- mechanical endurance tests.

The corresponding test reports are available on demand.

Individual tests

As part of the manufacturing process, every switch takes the individual tests specified in the applicable standards, and in particular:

- waterproofing tests
- dielectric tests
- measurement of the resistance of the main circuit
- operating tests.

Test resources

We possess a wealth of resources to perform investigative tests.

Ensto Auguste

Description of the switch and the monitoring and control cabinet

The modular design of the Auguste range of switches enables these products to be adapted to the requirements of existing grids, to different modes of operation and to future upgrades of the grids.

The switch is installed underneath the line at the top of the pole. A wide range of installation accessories, with clamps, straps or bolts, makes installation very easy on all types of poles.

The manually controlled switch, which is operated using connecting rods or a boom, can be upgraded to a motor-operated version, and vice versa. The motor-operated version uses the existing upgradable manual control mechanism. The motor-operated version can be remotely controlled by adding a control unit.

Switches designed for optimal safety

The disconnecting element of the Auguste switch is based on a three-pole switch, installed in a welded stainless steel housing that is sealed for life.

The simple product design and the materials used make for excellent resistance to harsh weather conditions and

vandalism. In addition, the very high stability of the electrical and mechanical performances guarantees outstanding reliability.

For optimal operating safety of both persons and the surrounding property, the switch housing is designed to withstand the consequences of a short circuit or an internal arc fault. In particular, it is equipped with a safety valve, located in the upper part of the housing. A position indicator that is mechanically linked to the switch, is located in the lower part of the device, so that it is visible from the ground. Consequently, work on the line can be performed in complete safety.

A voltage transformer built into the disconnecting element

The voltage transformer supplies the monitoring and control cabinet and the drive motor. Its installation in the tank allows for a more compact solution that

is easier and faster to install and safer in the event of an internal fault.

Control mechanism, more reliable as it is factory controlled

The switch control mechanisms are equipped with a tumbler-type spring system that can be operated independently by the operator. The energy of the operation is stored in the spring and then released in order to open or close the switch, thereby allowing for independent and repeated operations.

The materials of this mechanism do not require any lubrication or maintenance, and boast a very high mechanical endurance of more than 5,000 opening-closing operations (Class M2).

Operation

The manual control mechanism is actuated by the operator using a control lever and a rod assembly, or using a pole control.

The motor-operated control mechanism is operated from the control unit. It also allows for manual operations, as described above.



The monitoring and control cabinet that is sold with the Auguste solution is used to remotely or locally monitor and control the Auguste switch, according to the customer's requirements.



Operating the cabinet

Remote control mode

The monitoring and control cabinet includes all the transmission functions required to exchange messages with the remote control PC: remote controls, remote measurements, remote indicators, log of dated maintenance events, resetting the clock, etc.

Local control

- A general display is used for viewing purposes and local control.
- The main settings are viewed on an alphanumeric display.
- The parameters are checked and programmed using a computer with an Ethernet connection and commercially available web browser such as IE, Chrome or Mozilla.

Transmission characteristics

By GSM, GPRS, digital radio, IP router

- Protocols: IEC101, IEC104, Modbus, DNP3, DNP3 IP.

By analogue radio

- HNZ66S13 simplified master-master procedure, variable or short frame, without INIT.
- Speed: 200 baud recommendation R38 A - channel C3 (1560Hz) or C5 (2520Hz), 600/1200 baud - recommendation V23.

Fault current detection and measurements

The monitoring and control cabinet contain a current acquisition module as standard and an optional voltage acquisition module. Fault detectors can be configured for amperometric or directional fault detection on-site using a PC.

Amperometric detection

- Ground fault thresholds can be set at 0.5 to 80 A, depending on the selected toroids.
- Polyphase fault thresholds can be set at 60 to 615 A.
- Double fault thresholds can be set at 60 to 615 A.

Directional detection

- Two single-phase fault thresholds: set 1 and set 2.
- One multi-phase fault threshold: 500 A.
- One double fault threshold: 250 A.

Remote measurements

The medium-voltage line current measurement functions, and the internal settings (12 V voltage, temperatures, etc.) can be viewed locally on the display or configuration PC or by remote operation.

Logging of dated maintenance events

This event logging function can be viewed locally or sent to the PC used to control events occurring in the cabinet or on the grid (logging of up to 10,000 events, depending on the version).

Opening function in zero voltage

This opening in a voltage dip function is included in the standard cabinet software, regardless of the selected neutral system.

Opening in a voltage dip is possible in the first or second reclosing cycle.

Configuration

The cabinet is configured with a computer equipped with an Ethernet connection and a web browser such as IE, Chrome or Mozilla.

The embedded software on the CPU board enables:

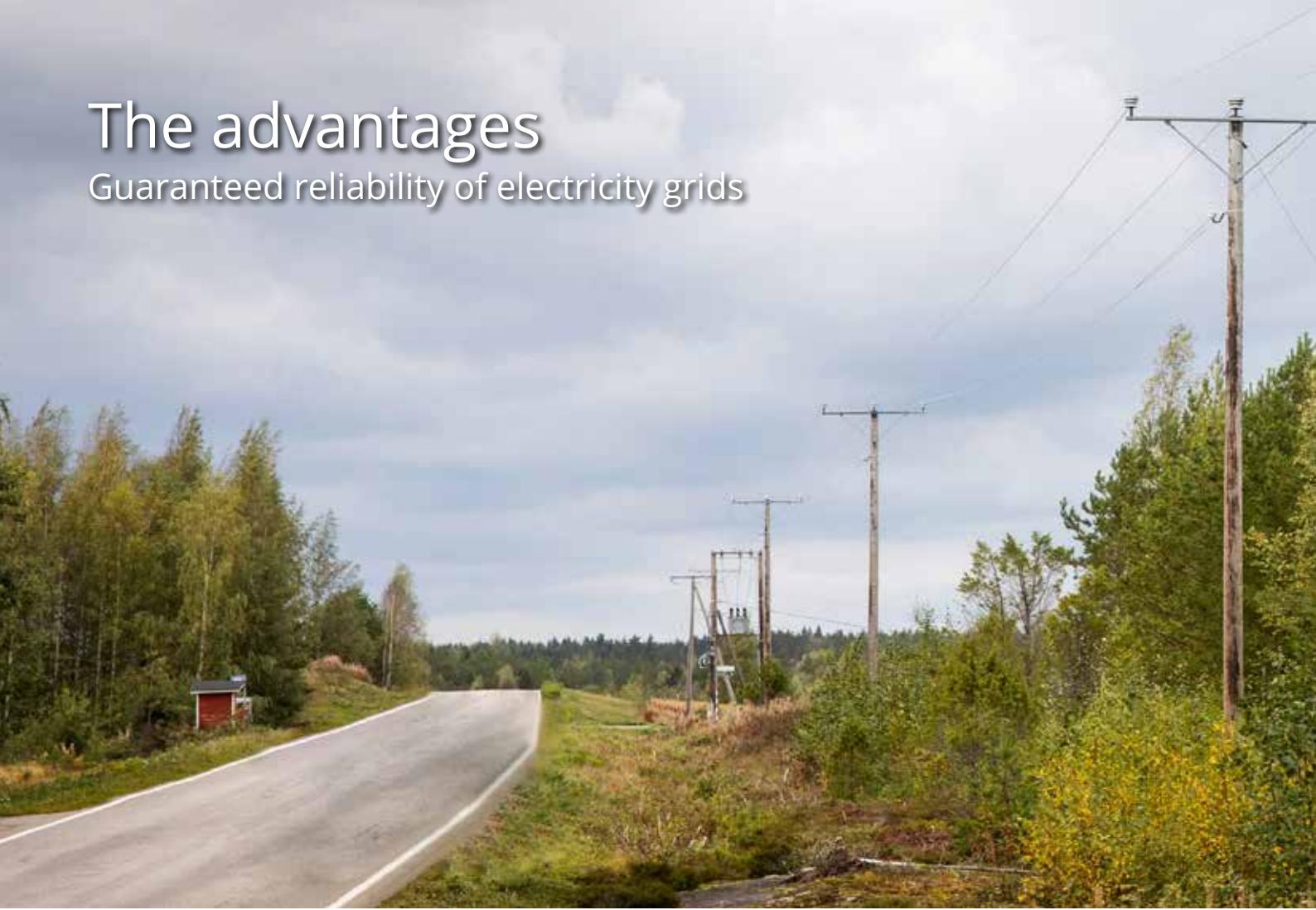
- the configuration of the transmission settings by RS232 serial connection or IP, etc.

Electrical characteristics

- Auxiliary power supply of 100 Vac to 250 Vac.
- 12 Vdc outputs (24 Vdc and 48 Vdc as options).
- A single maintenance-free sealed lead battery.
- Periodic battery status check with local signalling and/or remote alarm.

The advantages

Guaranteed reliability of electricity grids



Reliability

Ensto has gained more than 20 years of experience with the Auguste overhead disconnect switches, since their launch onto the market in 1999. This solution has been tried and tested by well-known and renowned customers for years, and more than 20,000 of these devices have been installed worldwide. The Auguste range is made in France and meets the applicable international standards.

Their reliability is improved thanks to the technological choices and continual improvement:

- a stainless steel housing, sealed for life
- ever more efficient measurement sensors
- SF6 monitoring for high-precision control.

Adaptability

The modular design of the Auguste switches allows for a multitude of options and configurations according to the customer's requirements or future developments (e.g., the type of pole mounting, SF6 monitoring, measurement sensors, type of control mechanism, etc.).



Higher reliability thanks to the technological choices made by Ensto

The Auguste switch can be adapted to all types of overhead distribution grids, in rural or suburban environments.

Durability

Ensto has designed a long-lasting solution (30-year lifespan), with outstanding mechanical and electrical endurance. Thanks to the top-quality materials, the Auguste switch stays strong over time, with the corrosion-resistant

grade 304 and 316L stainless steel, and it is vandal-proof (padlockable control and cabinet, possibility to install the cabinet at height).

In addition, Ensto can provide services to further extend the lifespan, by reconditioning or supplying spare parts for the switch and the cabinet.

Safety

For Ensto, the safety of persons and equipment is vitally important.

For optimal safety, the sealed housing of the switch is equipped with a safety valve that prevents any risk of explosion. In the event of an internal arc, the valve allows the gases to escape upwards, thereby avoiding the projection of any elements that are hazardous or likely to cause a fire.

An indicator that is mechanically linked to the contact operating shaft provides a reliable indication of the position of the switch. This indicator is visible from the foot of the pole.



The Auguste range of switches meets your needs by offering high performance and reliability of the electricity grid and safe, durable operation.

The operator can secure the grid by padlocking the switch in the different positions (open, closed or motor-operated). In addition, the new cybersecurity options of the monitoring and control cabinet protect the grid data.

Economical

Guaranteed continuity of service thanks to the Auguste solution improves the SAIDI and SAIFI availability indexes of the electricity supply. As a consequence, the profitability of electricity grid operators is improved.

The reliability and durability of the devices in the Auguste range help to minimize operating costs.

By extending the lifespan of the Auguste devices thanks to reconditioning, operators can also make savings on the purchase of a new solution.

Simplicity

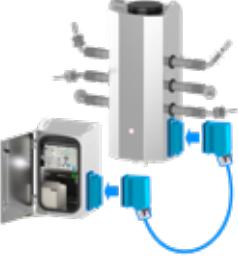
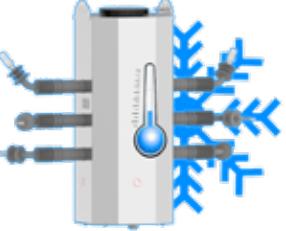
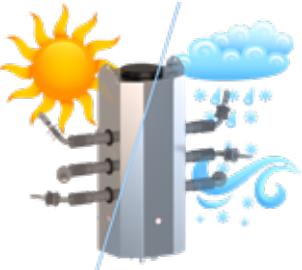
This product range is designed to simplify the installation and operation of the devices.

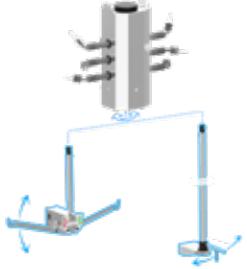
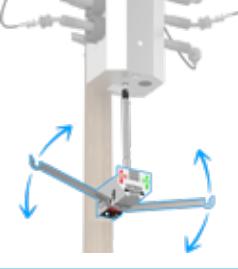
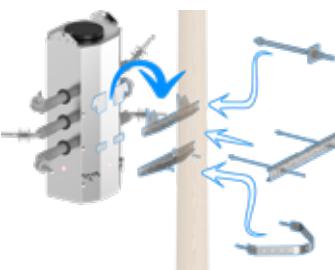
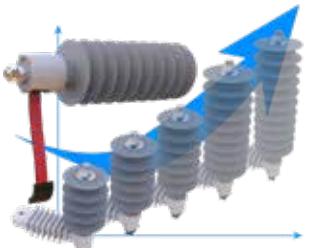
- A one-piece device with several built-in functions, such as the MV/LVtransformer. Consequently, installation is quicker and easier.
- The indication and marking of the functionality on the source station side or the connecting cable of the monitoring and control cabinet also make for easier installation.
- Solutions supplied with simple and intuitive manuals.



Ensto Auguste

Options and accessories

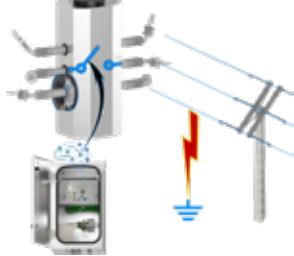
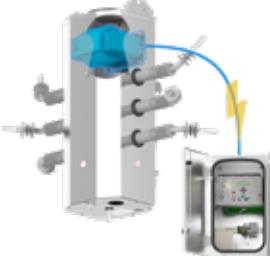
| Functions | Diagrams |
|---|---|
| <p>Equipotential platform option: Five versions are available: - Fixed - Adaptable - Folding - Adjustable - Pivoting and folding</p> |  |
| <p>Line connection option (NEMA): Kit of 2 holes lugs for connecting on aluminium network. Available in two cross-sections: 93 mm² and 117 mm²</p> |  |
| <p>Quick-connection option for the switch and cabinet: connection by a pluggable, multi-point industrial connector offering IP66 protection.</p> |  |
| <p>Cold weather option (-25°C to -40°C): - Densistat - Insulated housing - Reinforced drive motor for low temperatures</p> |  |
| <p>Environmental option (by the sea or on sites exposed to severe industrial pollution): - IP66 protection - 316L stainless steel</p> |  |
| <p>The manual version of the Auguste does not require an energy source or means of communication</p> |  |

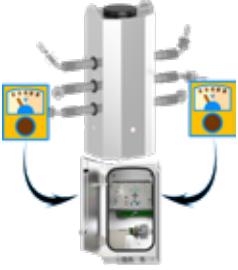
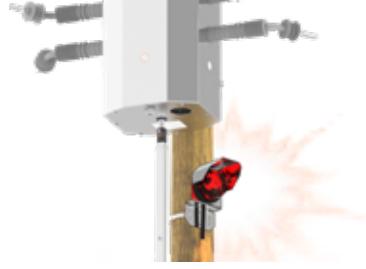
| Functions | Diagrams |
|--|--|
| <p>Three positions manual backup control:</p> <ul style="list-style-type: none"> - Device open - Device closed - Operation in electric mode <p>This manual control can be padlocked in the three positions to prevent any unwanted operations.</p> |  |
| <p>Extension for the manual control:</p> <p>For use with switches installed on poles at a height of 12 to 16 metres.</p> |  |
| <p>Three-position boom control option:</p> <ul style="list-style-type: none"> - Device open - Device closed - Operation in electric mode <p>This control is equipped with a locking device to prevent any unwanted operations.</p> |  |
| <p>Avifauna protection:</p> <p>For installation on HVA grids with insulated conductors.</p> |  |
| <p>Auguste attachment options:</p> <p>The Auguste, its cabinet and the various parts can be attached using three methods: clamping, strapping or bolting, which can be adapted to most existing poles (wood, steel, concrete).</p> |  |
| <p>Surge arresters: a range of VARISIL surge arresters from 5 to 36 kV, equipped with disconnectors or end-of-life indicators and a insulated mounting bracket.</p> |  |



Ensto Auguste

Options and accessories

| Functions | Diagrams |
|---|---|
| <p>MV separable connectors option 10-36 kV Up to 630 A Section of cable 150-240 mm² Length of cable 2150 mm</p> |  |
| <p>Mechanical operations counter option</p> |  |
| <p>Opening in a zero voltage sequence: ASF: Autosectionalizing function</p> |  |
| <p>Communication: IP, GSM, GPRS, radio, digital radio - Cybersecurity option - Communication redundancy option</p> |  |
| <p>Voltage transformer (11-36 kV / 110-240 Vac / 100-500 VA): - Internal - External (option)</p> |  |
| <p>Fault detection: The monitoring and control cabinet contain a current acquisition module as standard and an optional voltage acquisition module. Fault detectors can be configured for amperometric or directional fault detection on-site using a PC.</p> |  |

| Functions | Diagrams |
|--|--|
| Upstream and downstream voltage measurement options |  |
| Pole-mounted fault indicator option: To view a fault current without having to open the cabinet. Visible from 25 m. Flashing red and/or red/green (depending on the type of detection used) configured to stay on till reset. |  |
| SF6 monitoring options: <ul style="list-style-type: none"> - Pressure gauge - Pressure switch (SF6 ok / low) - Disabling of operations in the event of insufficient SF6 pressure to guarantee the proper operation of the device |  |

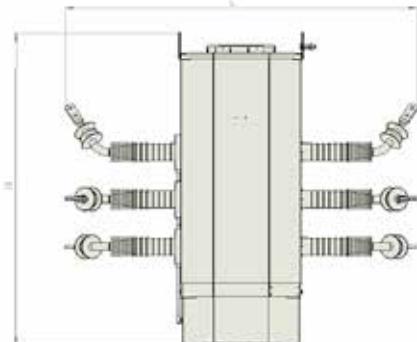
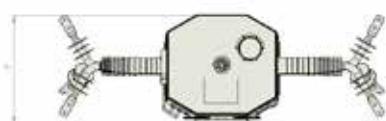
Ensto Auguste

Characteristics

| | UNIT | Auguste 24 | Auguste 36 |
|---|---------|--|------------|
| Rated voltage (Ur) | kV | 24 | 36 |
| Rated current (Ir) | A | 400-630 | 400-630 |
| Frequency (f) | Hz | 50-60 | 50-60 |
| Breaking capacity (A) | | | |
| - Active load | A | 400-630 | 400-630 |
| - In closed loop | A | 400-630 | 400-630 |
| - Transformer off-load | A | 25 | 25 |
| - Line off-load | A | 40 | 40 |
| - Cable off-load | A | 40 | 40 |
| Electrical endurance | Class | E3 (300 cycles at full load) | |
| Dielectric resistance (1.2/50 µs wave) | | | |
| - Phase-ground and between phases | kV | 125 | 170 |
| - Over the disconnection distance | kV | 145 | 195 |
| Dielectric resistance at industrial frequency, 1 minute | | | |
| - Phase-ground and between phases | kV | 50 | 70 |
| - Over the disconnection distance | kV | 60 | 80 |
| Permissible short-term current | | | |
| - Duration 3 s | kA | 20 | 20 |
| - Dynamic | peak kA | 50 | 50 |
| Closing due to short circuit | peak kA | 31.5 | 31.5 |
| Resistance to internal arcs according to IEC 60298 | kA | 12.5 | 12.5 |
| Mechanical endurance | Class | M2 5,000 opening/closing cycles | |
| Protection rating | | | |
| - Sealed tank | IP | IP 68 | |
| - Mechanism | | IP 66 on request | |
| - Monitoring and control cabinet | | IP 65 | |
| Temperature | °C | -25°C + 55°C (-50°C + 55°C version available on demand) | |
| Operation with ice coverage | mm | 20 mm | |
| Humidity | % at °C | 95% at 40°C | |

- Hermetically sealed tank containing pressurized SF6 gas
- Pressure = 1.3 bar (Auguste -25°C) and 1.55 bar (Auguste -50°C)
- Tested leak rate <0.1% / year

| Total quantity of SF6 - kg | CO2 Equivalent - Tonnes | Type of device |
|----------------------------|-------------------------|----------------|
| 1.57 | 35.8 | Export -25°C |
| 1.71 | 39 | Export -50°C |



Dimensions and weight of the sub-assemblies

| Auguste 24 - 36 kV | H (mm) | L (mm) | D (mm) | Weight (kg) |
|---|----------|--------|--------|-------------|
| Switch assembly without VT, with a manual control mechanism | 1,150 | 1,490 | 511 | 105 |
| Switch assembly with VT, with a manual control mechanism | 1,150 | 1,490 | 511 | 140 (*) |
| Monitoring and control cabinet | 640 (**) | 330 | 370 | 15 |
| Retractable lever and rod assembly | | | | 13 |

(*): 155 kg for the 36 kV versions

(**): also exists in a long version

Ensto Auguste

To order

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * | * | * | * | * | * | * | * | * | * | * | * |
| <p>Rated voltage 24: Grids up to 24 kV 36: Grids up to 36 kV</p> | | | | | | | | | | | |
| <p>Rated current 400: Nominal current up to 400 A 630: Nominal current up to 630 A</p> | | | | | | | | | | | |
| <p>Control mechanism CTM: Manual tumbler control CTE12: 12 V electric tumbler control CTE24: 24 V electric tumbler control CTE48: 48 V electric tumbler control</p> | | | | | | | | | | | |
| <p>Cold weather option GF: Cold weather -25°C to -50°C /: Without cold weather option</p> | | | | | | | | | | | |
| <p>Connection TR: NEMA bushes + lugs PF: Fixed connectors + pluggable cables</p> | | | | | | | | | | | |
| <p>Power supply TT: Built-in voltage transformer /: No voltage transformer</p> | | | | | | | | | | | |
| <p>Gas pressure drop detection SM: Monitoring by pressure gauge SP: Monitoring by pressure switch SD: Monitoring by Densistat SPM: Monitoring by pressure switch + pressure gauge SDM: Monitoring by Densistat + pressure gauge /: No pressure drop detection</p> | | | | | | | | | | | |
| <p>Current sensors 2I: Two current sensors + one homopolar toroid 3I: Three current sensors /: No current sensor</p> | | | | | | | | | | | |
| <p>Voltage sensors 2U: One upstream voltage sensor + one downstream voltage sensor 3U: Three upstream voltage sensors 6U: Three upstream voltage sensors + three downstream voltage sensors /: No voltage sensor</p> | | | | | | | | | | | |
| <p>Operation of the switch CPT: Control by rod assembly CPP: Pole-operated control</p> | | | | | | | | | | | |
| <p>Fixing system BRI: By clamping CER: By banding BOU: By bolting</p> | | | | | | | | | | | |

Example: Auguste 24-630-CTE12-/TR-TT-SPM-3I-3U-CPT-BRI

- Switch for a 24 kV grid
- With a rated current of 630 A
- With a 12 V electric tumbler control
- Without the cold weather option
- With NEMA bushes and lugs
- With a built-in voltage transformer
- With monitoring by pressure switch + pressure gauge
- With three current sensors
- With three upstream voltage sensors
- With control by rod assembly
- With fixing by clamping

Please contact us for other options



Services provided

Tailored support that meets your needs

Ensto, historically known as "Soulé", is the French manufacturer of Auguste switches. Ensto has been an expert in the developments in this range of products, since they were first launched onto the market.

Ensto offers a selection of services, ranging from installation assistance to the recycling of your waste.

Become an expert in the field

To achieve this aim, Ensto guides you through a high-quality process, and develops a wide range of services for you. Installing a product is not enough, you also need to master all of its capabilities, know how to carry out maintenance, whether preventive or corrective, and conduct pre-troubleshooting. In this regard, Ensto guides you throughout these processes: pre- and after-sales expert analysis, commissioning support for optimized installation time, training based on your needs and a dedicated hotline. We are on hand to help you.

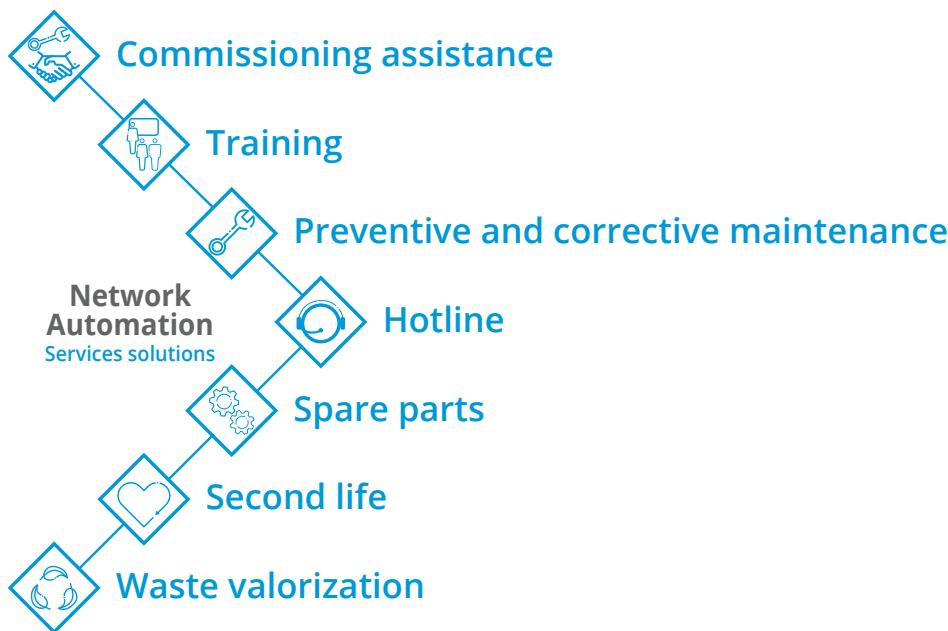
Ensto — service provider

Ensto's service offering also contributes to the achievement of our aim to lower environmental costs. By helping you to master the product better, we reduce your environmental impact.

- On-site repairs, replacement parts, reconditioning of Auguste switches.
- Second-life services for Auguste switches and recycling of waste.
- Recovery and treatment of the SF6 gas.
- Expert analyses, repair and updates of all Auguste cabinets.

Specific services for the Auguste range

- Practical training in the installation and start-up of an Auguste SF6 switch and the corresponding cabinet.
- Theoretical training in the operation and maintenance of an Auguste SF6 switch and the corresponding cabinet.



By developing these service solutions dedicated to the Auguste range, Ensto is seeking to supplement its range of activities to provide the optimal solution to your needs, by offering a comprehensive package, ranging from equipment sales to recycling.



ENSTO

Ensto Novexia SAS

210, rue Léon Jouhaux - BP 10446
FR - 69656 Villefranche-sur-Saône cedex
Tel.: +33 (0)4 74 65 61 61
Fax: +33 (0)4 74 62 96 57
Email: infos.novexia@ensto.com



ensto.com

