

TracFeed[®] TAS Rx

for electric traction power supply systems



Efficient electric traction power supply systems – solid insulation for a sustainable future and maximum output.

The TracFeed® TAS Rx is the first type-tested switchgear assembly with full solid insulation.

It has the environmentally friendliness of modern air-insulated switchgear assemblies and at the same time the compact dimensions and modularity of gas-insulated switchgear assemblies. The benefits of both technologies are combined here.

The switchgear assembly is manufactured with modern production technologies, which ensure a maximum degree of quality and reliability. Both simple and complex supply concepts can be implemented due to a wide range of modules.

The TracFeed® TAS Rx services all 1-pole and 2-pole systems of the long-distance and local rail transport up to 25 kV. This innovative, sustainable switchgear assembly is an asset for operators and the environment.



Areas of application

Traction switchgears supply the power for electric railways as an interface between the power generation and an overhead contact system.

The TracFeed® TAS Rx is designed for the specific requirements of modern one-pole and two-pole 50/60 Hz 25 kV traction power supply systems. This product platform can be used for all feeding types, including AT and booster systems.

Due to the frequent, however usually temporary, short circuits in the overhead contact line, the switchgear assembly plays a significant role in secure, electrical railway operations.

It protects

- people against impermissibly high contact and step voltages.
- It protects the environment against harmful emissions.
- And it protects railway equipment against impermissible loads.

Protection of our environment

Sulphur hexafluoride (SF₆) would be the perfect, space-saving insulator if, at the same time, it were not one of the strongest greenhouse gases. Considered over a period of 100 years, one kilogram of SF₆ is as harmful to the environment as 25 200 kg of carbon dioxide (CO₂)*. It takes approx. 3 200 years for the sun's powerful UV radiation to decompose SF₆ to a point where it has not effect on the atmosphere.

Therefore one of the primary objectives of Rail Power Systems is to protect our environment, in which we are living, produce our products sustainably and go easy on the resources for everyone.

Rail Power Systems have a clean, climate-neutral solution for the future:
the solid-insulated switchgear assembly (SIS) TracFeed® TAS Rx.



*As of end of 2023

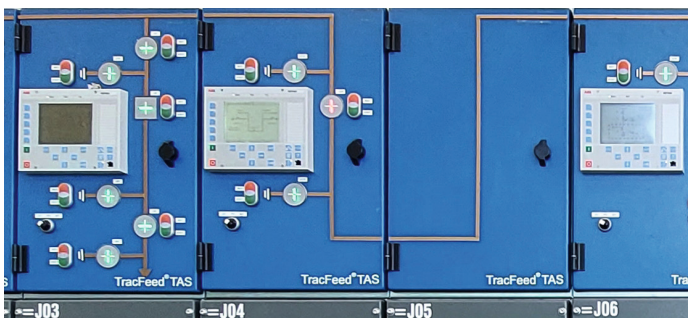
Operating characteristics



- Intuitive operation due to a circuit diagram on the front of the panel
- Circuit breakers and switch disconnectors/earthing switches can be switched on and off electrically or by hand
- Manual operation is possible even in the event of interruption of the auxiliary power supply

Low-voltage compartment

- Flexible expansion of the low-voltage compartment according to project-specific specifications possible
- The protective device, control unit or other controls can be installed directly in the door
- Standard heights of 350 or 650 mm



Sample image

Maintenance

- Type-tested, factory-assembled and routine-tested switchgear panels reduce the time and effort for assembly and commissioning on site
- Reduction of packaging waste, use of recyclable materials
- Individual modules are easy to replace
- Minimum operating and life cycle costs by using galvanised, stainless steel and durable components
- Low maintenance costs

Safety

The switchgear assembly is completely metal-enclosed and can be connected directly to the substation's earthing system. For maximum personal safety and low electromagnetic field strengths, the phases as well as the individual functional compartments are partitioned by metal in a pressure-resistant manner.

Other safety characteristics

- Integrated mechanical and electrical interlocks to protect persons and the system against operating errors
- Capacitive voltage indication to safely indicate the correct voltage state
- Metal parts that do not belong to the primary circuit are continuously connected and earthed
- The individual assemblies as well as the entire switchgear panel are designed for maximum personal safety
- To ensure maximum quality and safety, each assembly undergoes extensive testing, both during production and the final routine test of the panels
- Fault arc tested



TracFeed® TAS R1P27
in operation

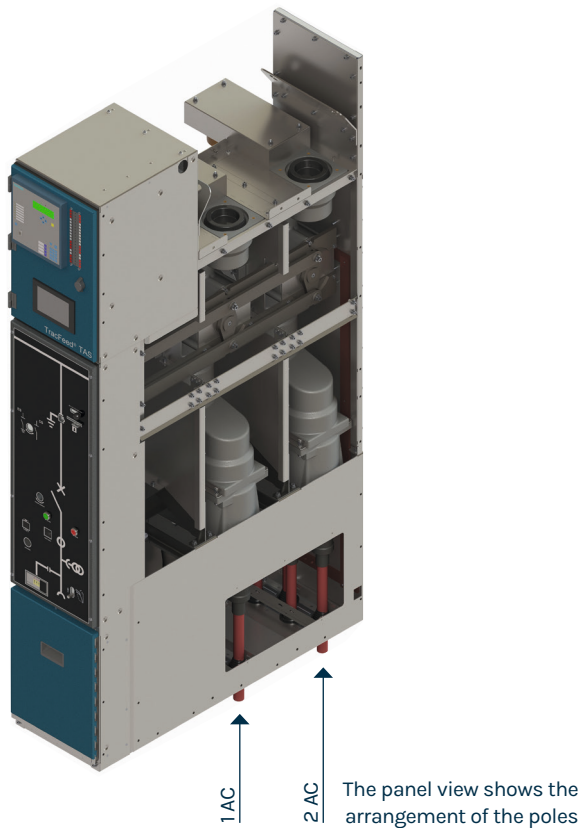
TracFeed® TAS Rx – the innovative switchgear assembly for the future

Rail Power Systems maintain long-term relationships to their customers and suppliers. Due to close networking and collaboration, the switchgear assemblies are subject to continuous improvement and further development in consideration of ecological and economic aspects.

One switchgear assembly for all systems

The TracFeed® TAS Rx can be used for 50/60 Hz traction power systems as

- 1-pole switchgear assembly (TracFeed® TAS R1P27) in conventional 1 x 25 kV systems or booster systems for direct feeding of the contact line.
- 2-pole switchgear assembly (TracFeed® TAS R2P27) in 2 x 25 kV autotransformer systems for direct feeding of the contact line



Special features and benefits

The TracFeed® TAS Rx is a factory-assembled antype-tested switchgear assembly. Each panel is composed of different modules and represents an individual switchgear panel. The installation on site is based on joining the individual switchgear panels to form a complete switchgear assembly. This minimises the installation times.

Fulfilment of railway-specific standards

- Type-tested, metal-partitioned switchgear assembly in accordance with the EN 62271-200 and EN 50152 standards.
- The design and output are coordinated specifically to meet the requirements of the railway industry
- High personal safety because no pressurised partitions are used
- Due to the gas-free style, you can use your own staff for assembly and commissioning. No special training is necessary.

Minimum dimensions

- The compact design and low dimensions (400 mm panel width) enable reduced dimensions of the substation structure (up to 50% possible) and significant cost savings
- Low project-specific energy requirements

Environmental friendliness

- First traction switchgear in Europe with complete epoxy resin insulation (solid insulation) for the railway industry
- Complete omission of damaging greenhouse gases (e. g. SF₆) or gas mixtures
- Clean, sustainable solution for an environmentally friendly future
- TracFeed® TAS Rx meets the demands of the Kyoto protocol



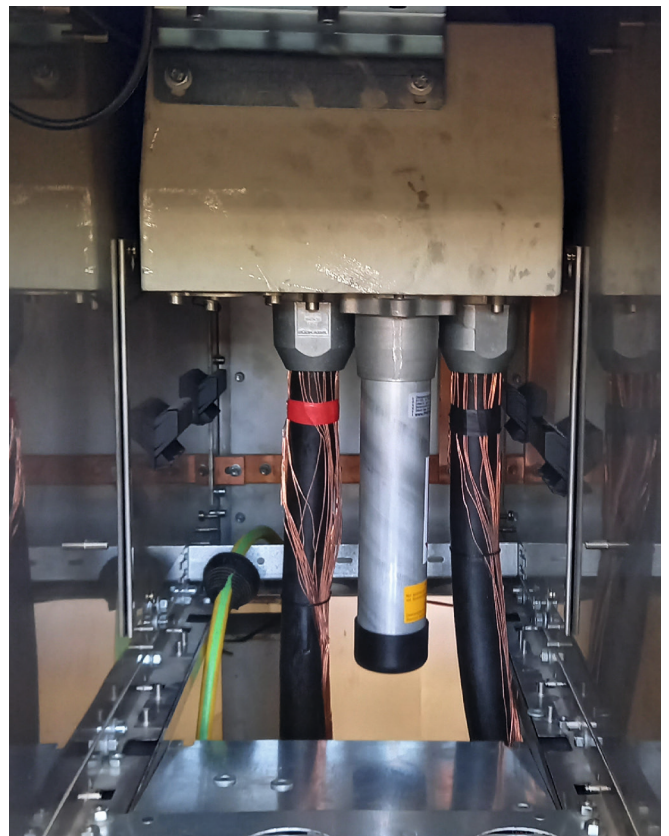
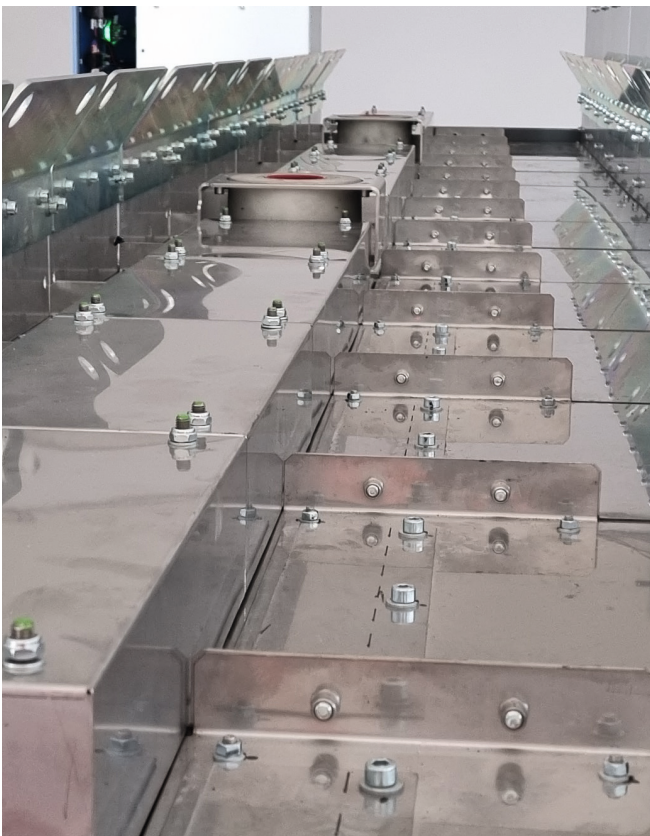
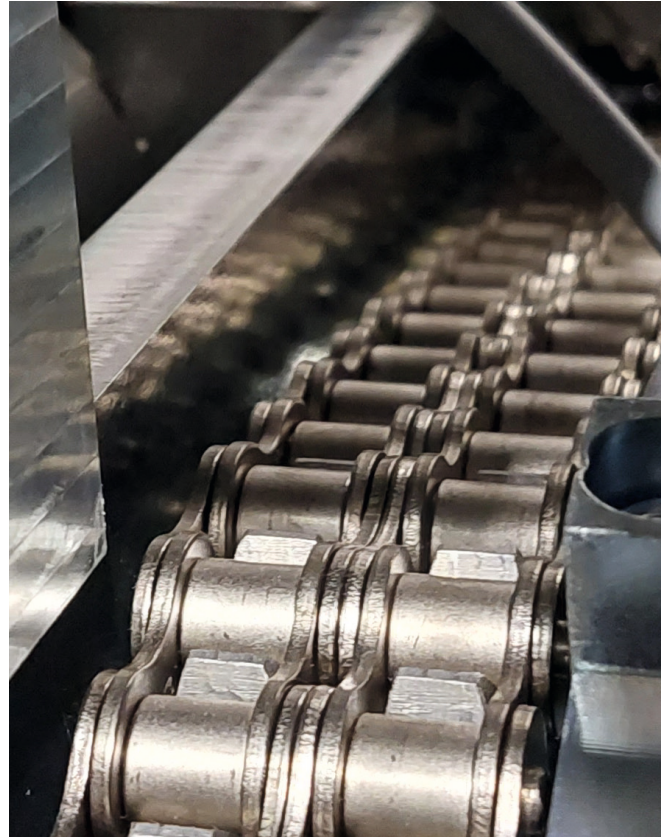
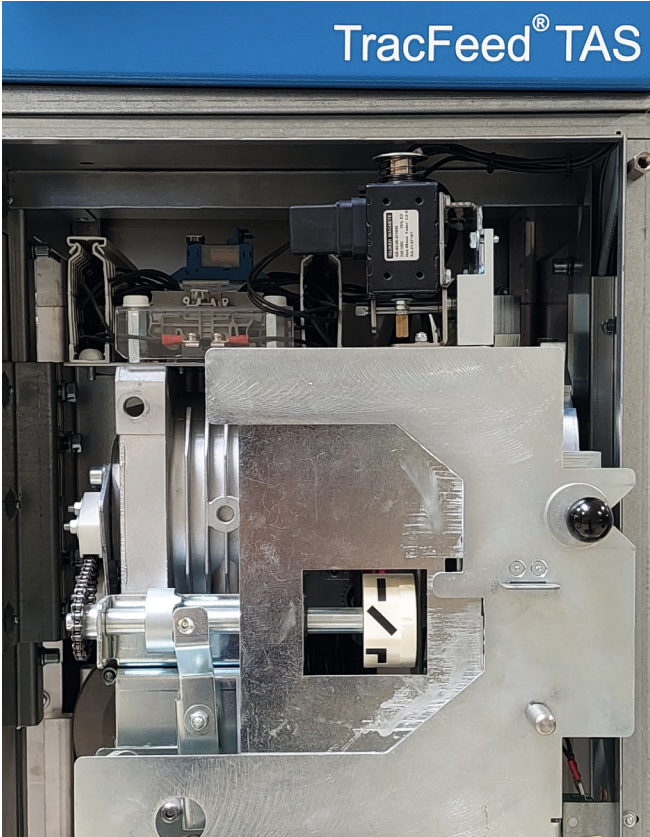
Innovative technology

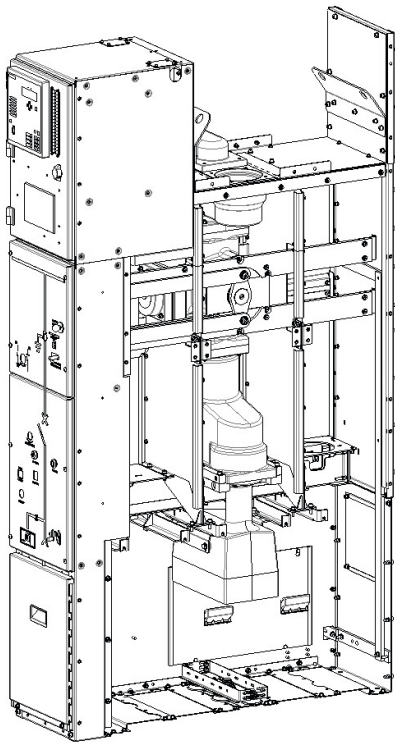
- 1-pole and 2-pole switchgear panels can be positioned next to each other in a switchgear assembly
- The solid insulation of the TracFeed® TAS Rx provides a robust and reliable solution for the specific requirements of the railway industry, while remaining easy to assemble
- Ensures efficient power supply of the rail traffic

Made in Germany

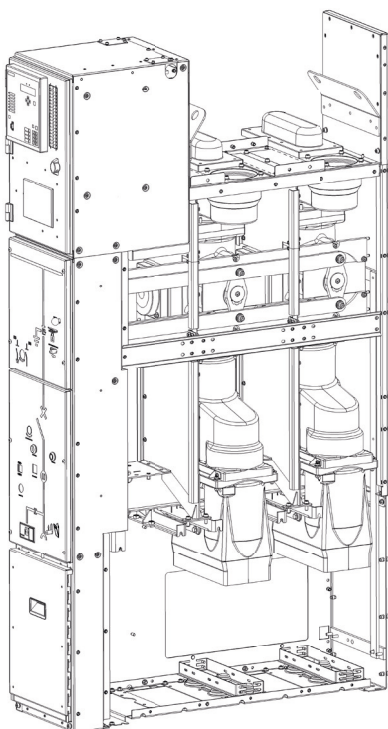
- Development and production in Germany
- The origin ensures precision and quality in processing and reliability in operation

TracFeed® TAS





1-pole TracFeed®TAS RIP27 for contact line systems



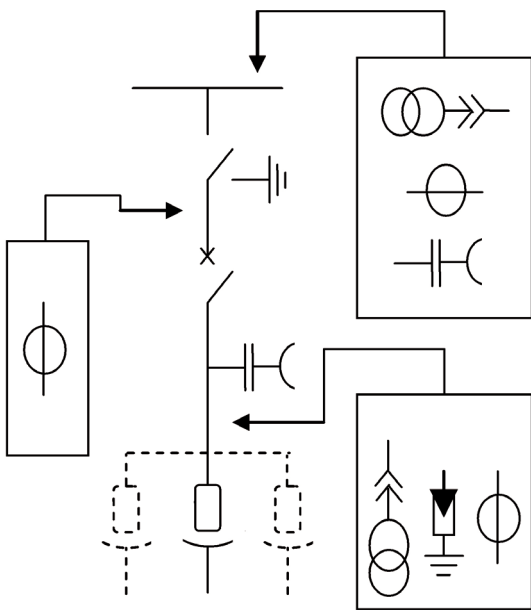
2-pole TracFeed®TAS R2P27 for autotransformer (AT) systems

Main technical data of the TracFeed® TAS Rx	
Insulation system	Solid and SF ₆ free
Rated frequency	50/60 Hz
Nominal voltage (U _n), 1 and 2 poles	25 kV
Rated voltage (U _{Ne}), 1 and 2 poles	27,5 kV
Rated lightning impulse voltage to earth and between poles over isolating distance	200 kV 220 kV
Rated power frequency withstand voltage to earth and between the poles over the isolating distance	95 kV 110 kV
Rated current Rated continuous current (I _c) (EN IEC 62271-200:2021), alternative marking (CLC/TS 50152-4:2021) • Load class IB: Base current IB / overload current	1 250 A 910 A / 2 000 A (for 5 min / 1 h)
Rated short-time current (I _k)	Up to 25 kA / 3 s
Rated peak current (I _p)	Up to 63 kA
Installation	Indoors
Installation elevation	Up to 1 000 m above sea level
Ambient temperature	-5 °C to +40 °C
Humidity	< 95 %
Housing protection type, general	IP3xD
Control compartment, open door Control compartment, closed door	IP3xD IP4x
Height	2 320 mm
Depth	1 250 mm
Width	400 mm
Weight	Approx. 900 kg

Standards	
Switchgear assembly, general	EN 62271-1, EN 62271-200, CLC/TS 50152-4 EN 50124, EN 50163
Vacuum circuit breaker	EN 62271-100, EN 50152-1
Switch disconnecter / earthing switch	EN 62271-102 EN 50152-2
Voltage transformer	EN 61869-2 (EN 60044-1), EN 50152-3-2
Current transformer	EN 61869-3 (EN 60044-2), EN 50152-3-3

TracFeed® TAS Rx modules

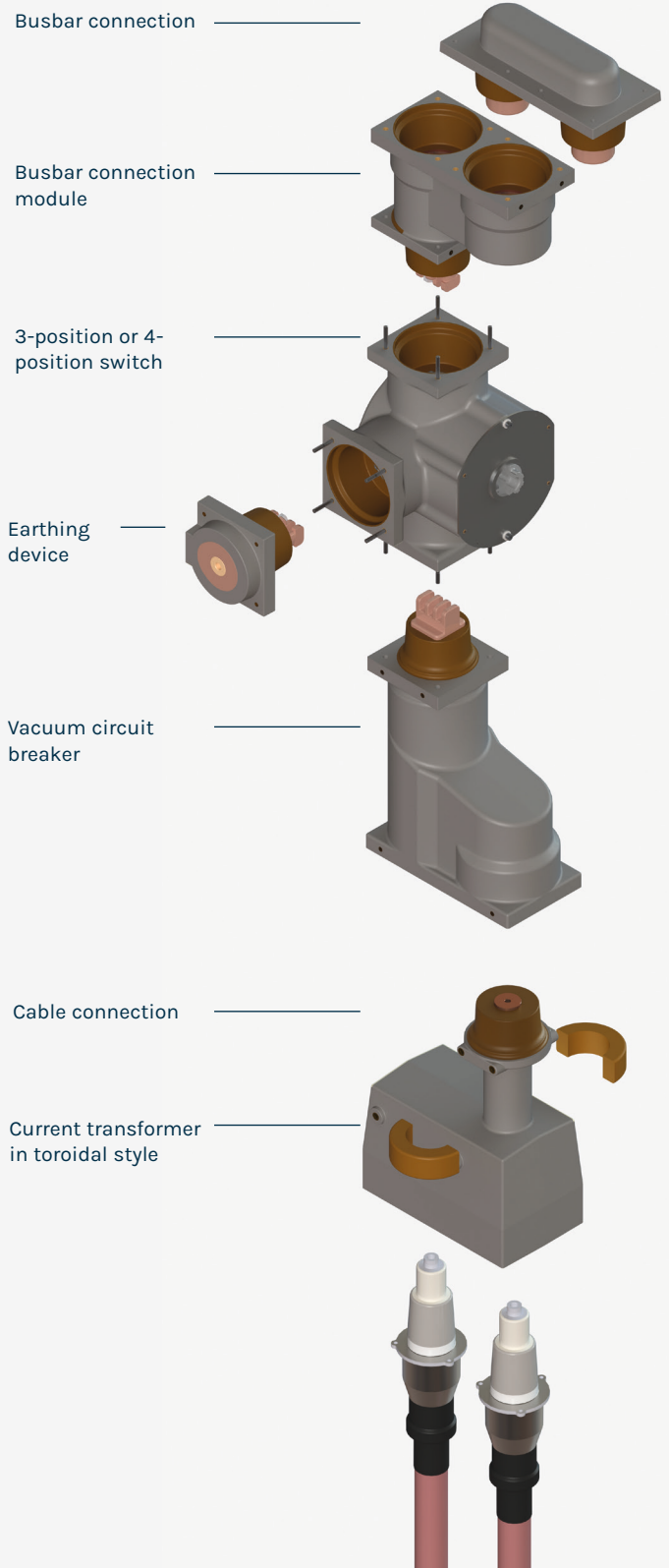
The TracFeed® TAS Rx is based on a modular system. All modules have epoxy resin insulation with a metallised, earthed surface. Completely different system concepts can be implemented efficiently and economically due to the modularity. A circuit diagram on the front of the panel shows the respective configuration of the switchgear panel.



Switchgear panel configuration example

Current and voltage transformer module

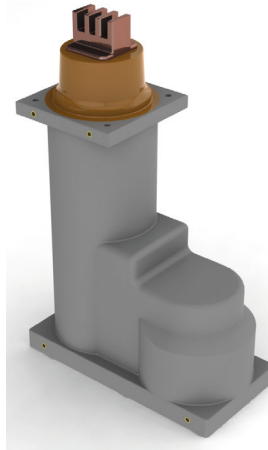
- Positioning at the outlet or on the busbar
- The transmission ratio, accuracy class and rated power are defined project specifically
- Transducer available for measuring, counting and protection purposes
- Current transformer in toroidal style
- Voltage transformer as plug-in system with metallised surface



Overview of epoxy resin modules TracFeed® TAS Rx

Circuit breaker module

- Circuit breakers meet the requirements of the railway standard EN 62271-100 and EN 50152-1
- Circuit breaker with vacuum bottle, epoxy resin insulation and metallised surface
- Spring-operating mechanism installed on the front of the panel
- Low number of movable parts ensures a long service life and high number of switching cycles
- Operation locally or by means of remote control; manual emergency operation is always possible
- Mechanical position indicators on the front of the panel
- Mechanical interlocks against 3-position switch



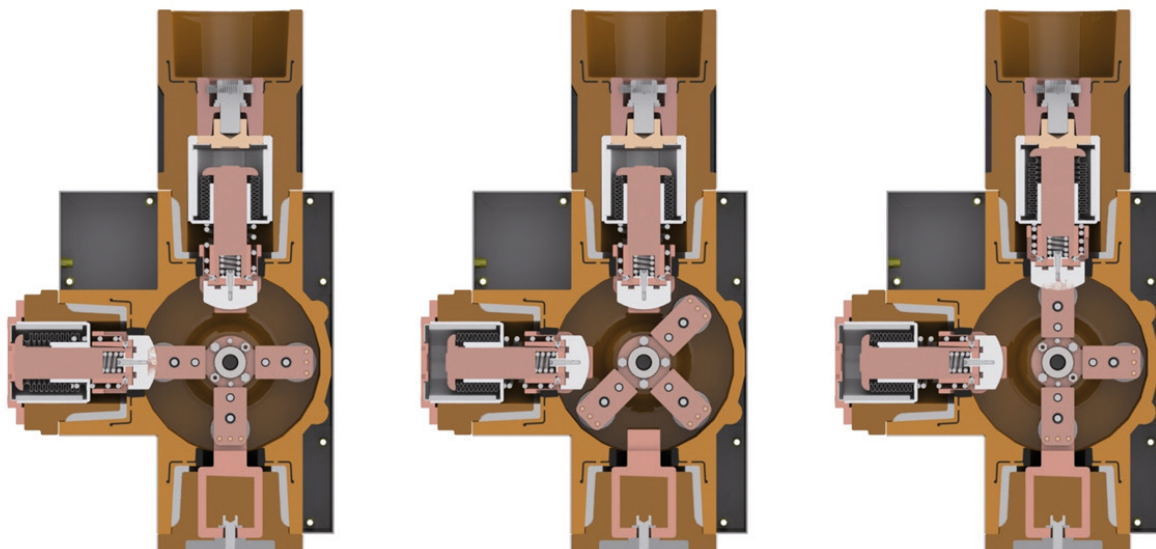
View of the circuit breaker module

3-position switch module

- Combined earthing switch and switch disconnecter
- Motorised or manually operated operating drive
- Short circuit-proof earthing of the cable connection by means of closed circuit breaker
- 3-position switch extendable to up to 4 positions
- Direct earthing of the busbar is possible with a 4-position switch

Other modules and options

- Cable connection module with cable plug sockets, size 2, 2 XL or size 3, 3 XL (according to EN 50181)
- Busbar connections for fast assembly and extension of the switchgear assembly
- Surge arrester for primary circuit and cable shields
- Capacitive voltage indicators
- Control units and protective devices can be integrated
- Cable entry from below or the rear
- Painted front doors and side walls



3-position switch in different positions:
Left - cable outlet earthed, centre - general disconnected position. Right - outlet connected to busbar



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The specifications set out in this document apply to conventional applications. They do not represent performance limits.

This means that divergent specifications may be attained in specific applications. The contractually agreed specifications alone shall apply. We reserve the right to effect technical modifications.

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