Ulusoy URING Series

SF_6 gas insulated modular and compact switchgear

Powering Business Worldwide

Contents

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SF_6 gas insulated modular and compact switchgear

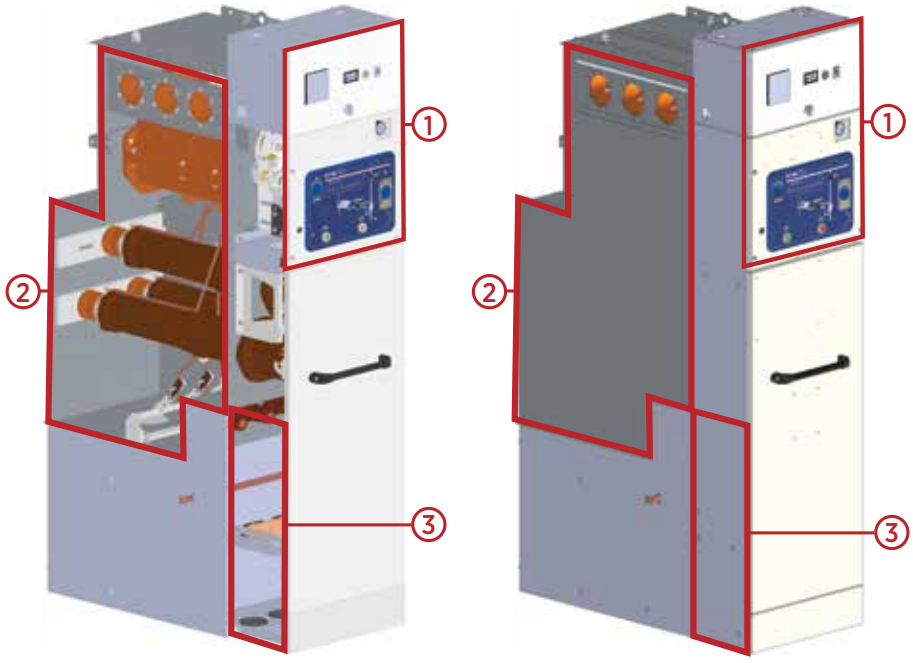
24–36 kV

Description

Ulusoy URING series SF_6 insulated medium voltage modular switchgear (RMU) offers increased functionality and compact dimensions for use in today's advanced MV secondary distribution systems.

Ulusoy URING series RMUs are designed by experienced engineers. All type tests required by the IEC 62271-200 standard are completed in internationally accredited laboratories and documented in compliance with the relevant specifications.

Suitable for use in SCADA systems, the RMUs feature a puffer system (which directs SF_6 gas directly onto the arc) and are manufactured using international mass production methods. The RMUs offer users a unique feature: provided the mechanism has been set up beforehand, a remote on/off control option is available even if there is no motor. Used in MV secondary distribution systems and generally housed in concrete or sheet metal kiosks, the RMUs offer users an advanced solution thanks to their compact dimensions and increased safety features.



Ulusoy URING series RMUs consist of three compartments:

1) Mechanism and LV control panels

2) SF_6 compartment

3) Cable box compartment

Ulusoy URING features

Value ranges

- 24–36 kV, up to 630 A
- Compliant with IEC 62271-200 standards

Increased safety

- Earthing switch moves on an independent shaft and mechanical interlocks reduce user error to zero
- Robust construction prevents user injury under even the most challenging conditions (Successful completion of internal arc test on first attempt).

Flexible design

- Compact and expandable types to meet user requirements.

Superior quality components

- The stainless steel, resin, vacuum tubes and other components used in Ulusoy URING series RMUs are supplied by the world's leading manufacturers and integrated seamlessly into the product.

Advanced technology design and production

- Contactor structure with high separation capacity, which moves vertically and ensures optimal use of the puffer system
- Robustness and impermeability guaranteed with a 3-mm-thick stainless steel body manufactured using robot laser technology.


Renewable energy


Public spaces


Airports


Stadiums

Application areas

Ulusoy URING series SF_6 gas insulated switchgear (RMU) is the perfect solution for medium voltage electricity distribution networks.

Ease of installation, expandable design, and a broad range of product types make it the right choice for a variety of industries. Project-specific solutions can be created through flexible design and manufacturing.

It is commonly used in renewable energy facilities such as wind farms, solar power plants, and hydroelectric power plants.

Thanks to its safety features and maintenance-free design, it is also used extensively in electrical distribution systems in highly populated areas such as shopping malls, airports, hospitals, schools, and large residential buildings/complexes.

Structural Features

Stainless Steel Body

In order to ensure increased operational and operator safety, all active compartments and switching functions on the Ulusoy URING series RMUs are housed in a sealed body made of 3-mm stainless steel and filled with SF_6 gas. Joints on the stainless steel body are welded using robot laser technology. A significant problem with gas-insulated switchgears is leakage and this eliminates the problem by removing human error altogether.

Busbars and Connections

The connection between busbars, which are inside the SF_6 gas compartment, is made at the sides of the panels. The transmission elements designed by Eaton are manufactured using liquid silicone injection technology.

Epoxy resin bushings and insulators used in Ulusoy URING series RMUs are produced in-house and each part undergoes partial discharge tests.

Mechanism

The mechanism operates using a compressed spring. Easy to set up, it makes operation simpler for the user. The mechanism can be set up manually or using a motor and its mechanical life has been tested in accordance with class M1 IEC 62271-103 for switch disconnectors; class M0/IEC 62271-102 for earthing switches; and class M1/IEC 62271-100 for vacuum circuit breakers.

Control and Mimic Panel

Ulusoy URING series RMUs are user friendly thanks to their simple-to-use and easy-to-understand mimic panel. The protection, metering and control elements are ergonomically positioned on the control panel.

Safety and Operation

The user-friendly front panel is designed to make operation simple.

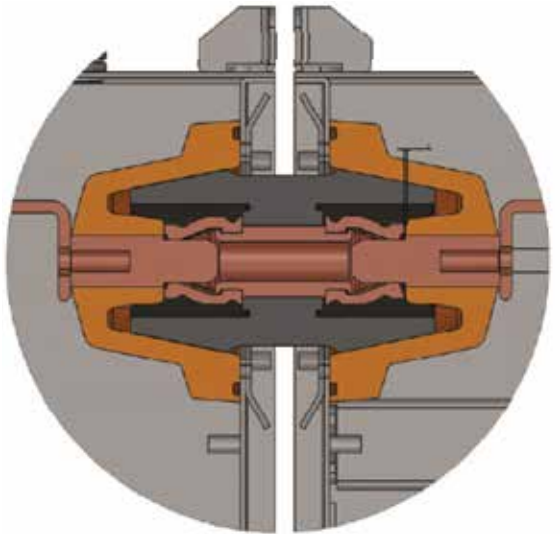
Mechanical and electrical interlocks and warning signs successfully prevent both incorrect operation of the switchgear and access to the energized sections.

The cable connection section cannot be accessed without closing the earthing switch.

In addition, all dynamic and thermal effects that may impact operating personnel during a possible internal arc have been completely eliminated. This is documented by tests conducted by internationally accredited laboratories. Thanks to the easily replaceable fuse holders in the Ulusoy URING F-type fused transformer protection switchgear, fuses can be replaced in seconds.

Busbar Connection Between Panels

All parts used in RMU panels, including epoxy bushings, fuse tubes and silicone caps, are manufactured in-house; therefore, all spare part and service requests can be met on time and within budget.



Side-by-side expansion connection system

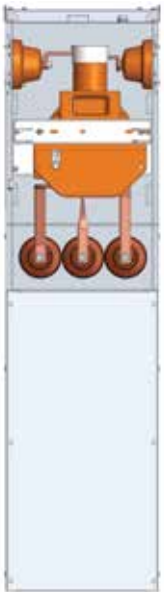
Ulusoy URING product types

24 kV

L MODULE – SF_6 gas insulated incoming-outgoing switchgear with load break switch

Front view

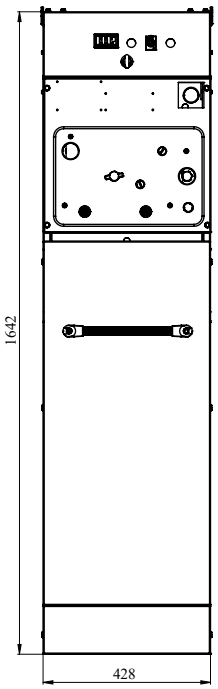
Front view, internal



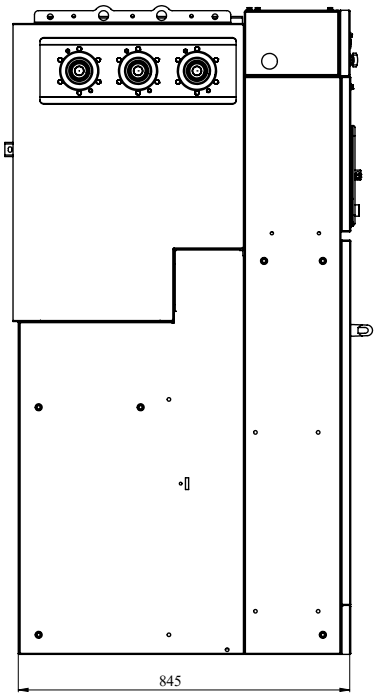
Rear view, internal

Perspective view

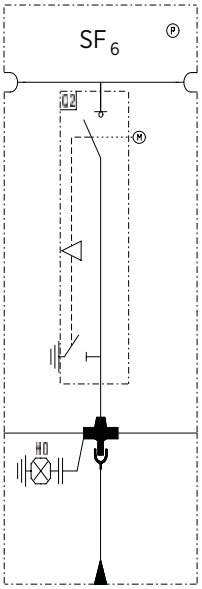
Perspective view, internal



Front view



Side view



Single line diagram

Rated voltage (kV)	Width (mm)	Depth (mm)	Height (mm)
24	428	845	1642

Optional equipment: spring-charging motor
metering devices

F MODULE – SF_6 gas insulated transformer protection switchgear with fuse and disconnector

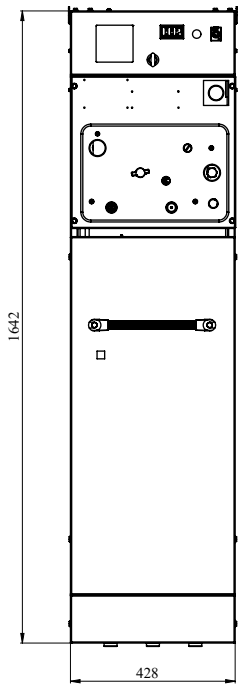
Front view

Front view, internal

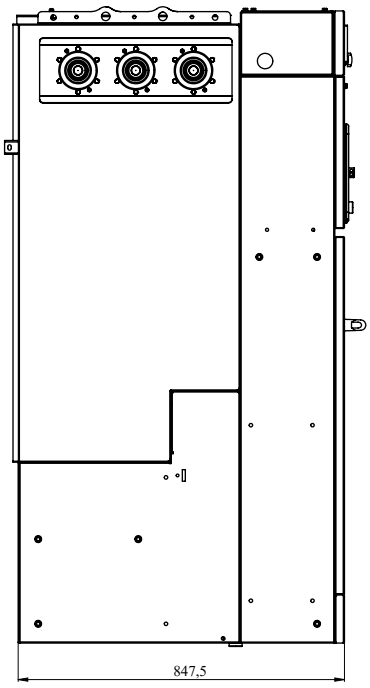
Rear view, internal

Perspective view

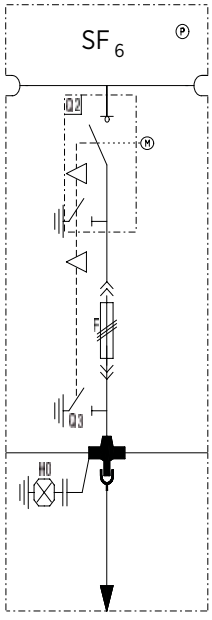
Perspective view, internal



Front view



Side view



Single line diagram

Rated voltage (kV)	Width (mm)	Depth (mm)	Height (mm)
24	428	847.5	1642

Optional equipment: spring-charging motor
metering devices

C MODULE – SF_6 gas insulated incoming-outgoing switchgear with vacuum circuit breaker

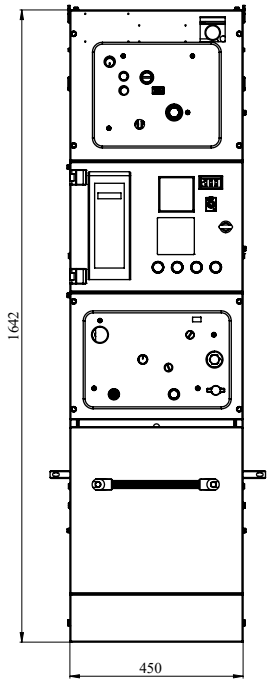
Front view

Front view, internal

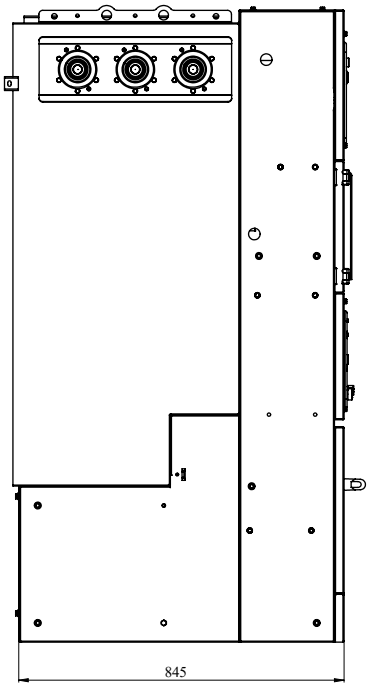
Rear view, internal

Perspective view

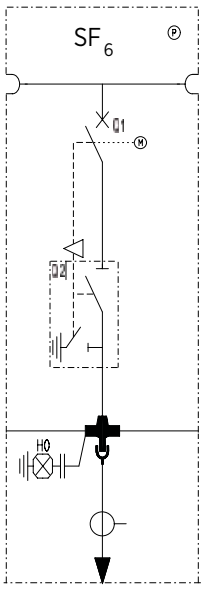
Perspective view, internal



Front view



Side view



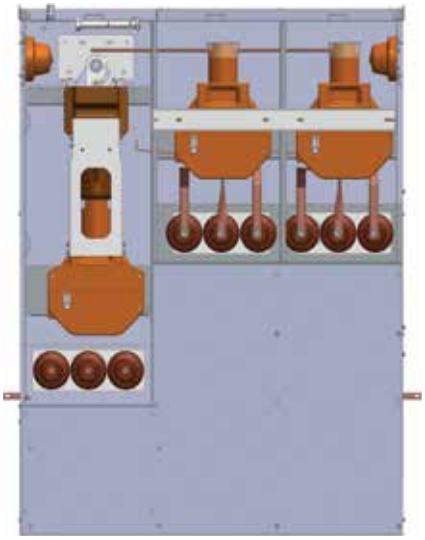
Single line diagram

Rated voltage (kV)	Width (mm)	Depth (mm)	Height (mm)
24	450	845	1642

Optional equipment: spring-charging motor
metering devices

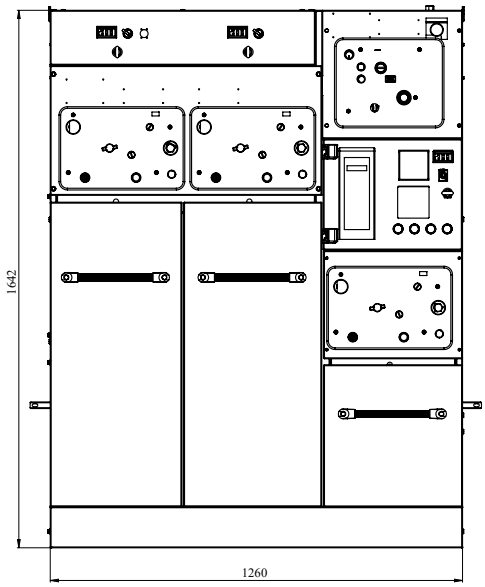
LLC 3 Unit – SF_6 gas insulated compact switchgear with vacuum circuit breaker

Front view

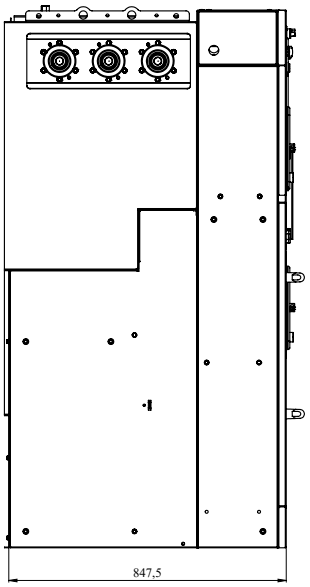


Rear view, internal

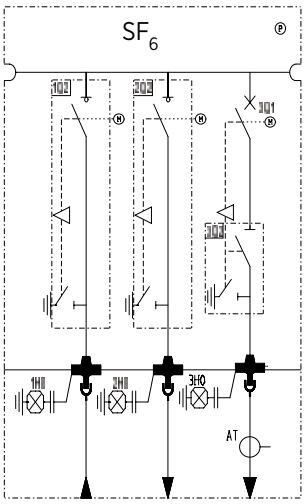
Perspective view



Front view



Side view



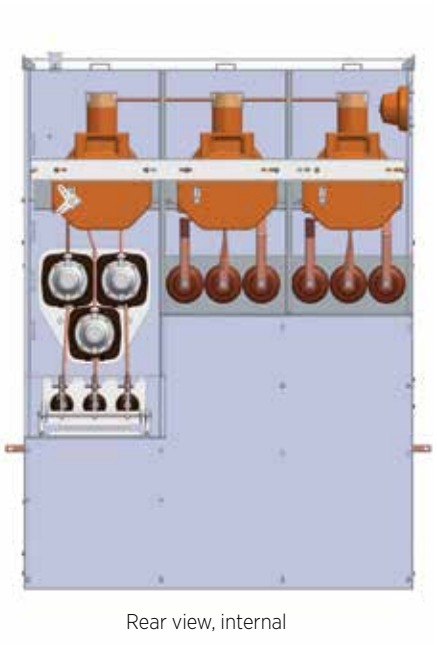
Single line diagram

Rated voltage (kV)	Width (mm)	Depth (mm)	Height (mm)
24	1260	847.5	1642

Optional equipment: spring-charging motor
metering devices

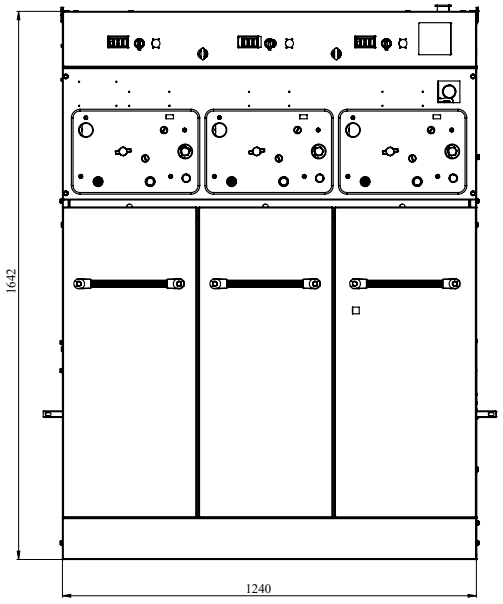
LLF 3 Unit – SF_6 gas insulated compact switchgear with fuse

Front view

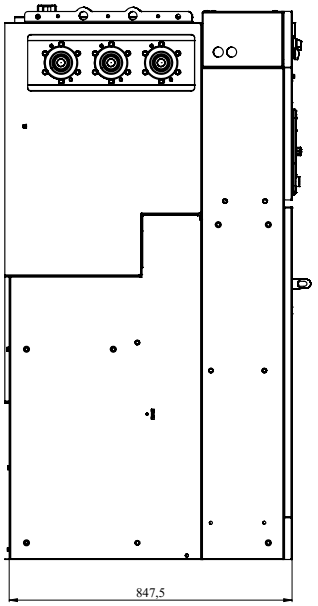


Rear view, internal

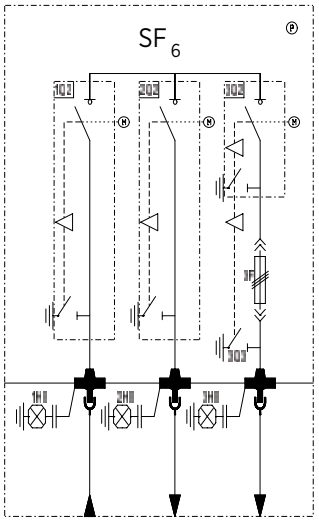
Perspective view



Front view



Side view



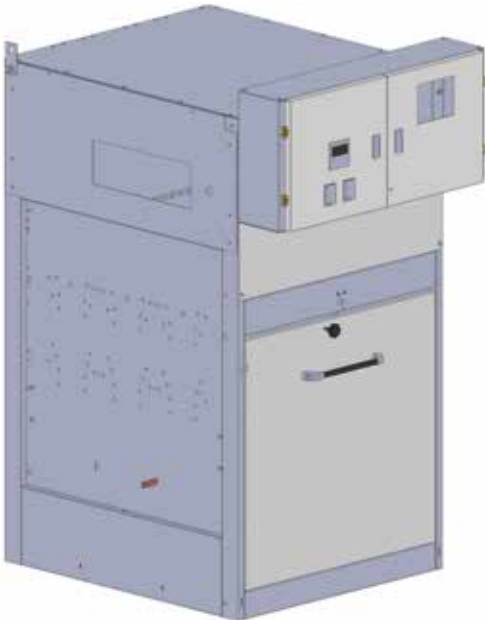
Single line diagram

Rated voltage (kV)	Width (mm)	Depth (mm)	Height (mm)
24	1240	847.5	1642

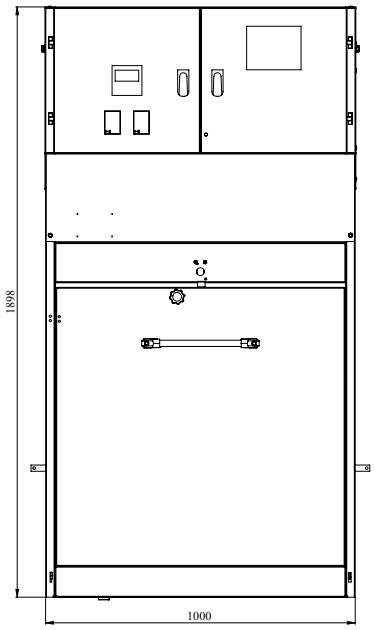
Optional equipment: spring-charging motor
metering devices

M MODULE – Air insulated metering switchgear

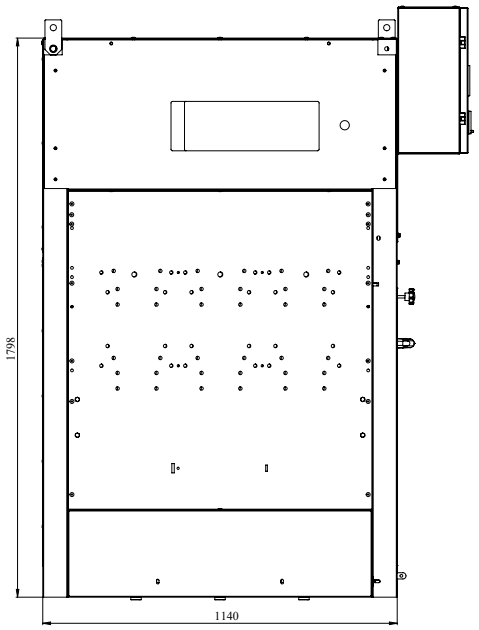
Front view



Perspective view



Front view



Side view

Rated voltage (kV)	Width (mm)	Depth (mm)	Height (mm)
24	1000	1140	1898

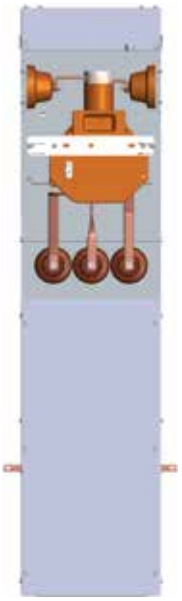
Optional equipment: metering devices
voltage transformer
current transformer
cables and accessories depend on configurations

36 kV

L MODULE – SF_6 gas insulated incoming-outgoing switchgear with load break switch

Front view

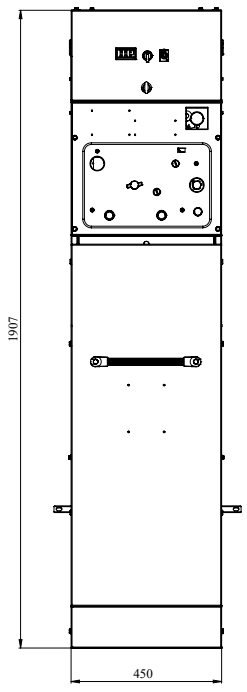
Front view, internal



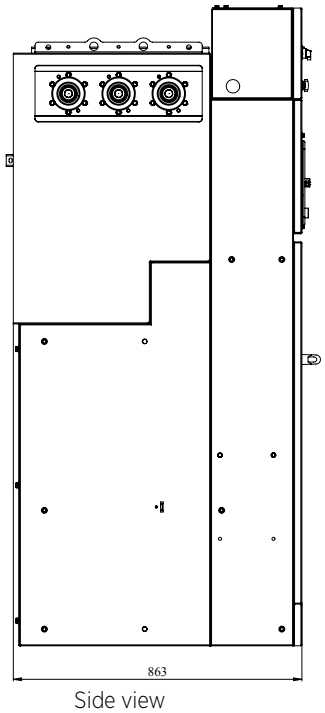
Rear view, internal

Perspective view

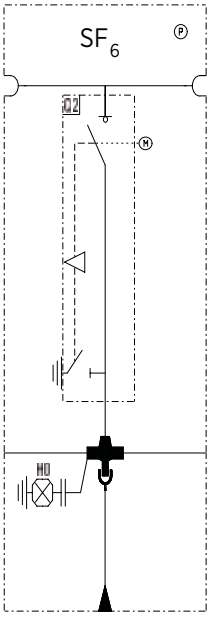
Perspective view, internal



Front view



Side view



Single line diagram

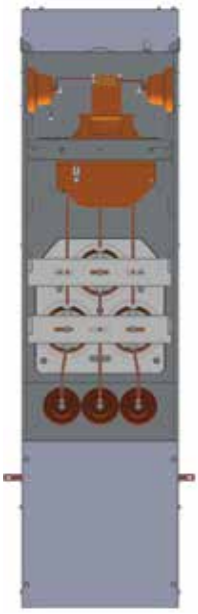
Rated voltage (kV)	Width (mm)	Depth (mm)	Height (mm)
36	450	863	1907

Optional equipment: spring-charging motor
metering devices

F MODULE – SF_6 gas insulated transformer protection switchgear with fuse and disconnector

Front view

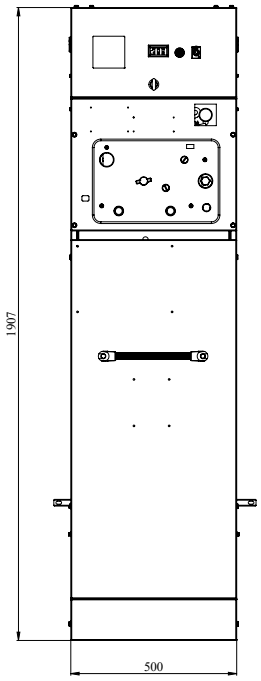
Front view, internal



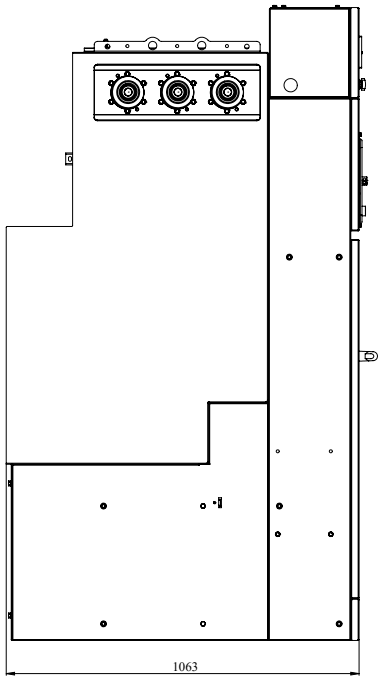
Rear view, internal

Perspective view

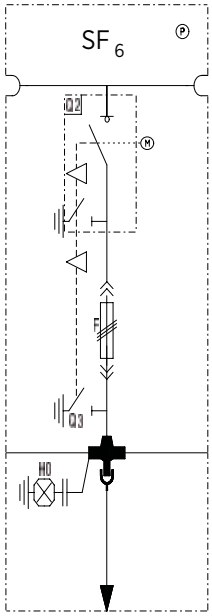
Perspective view, internal



Front view



Side view



Single line diagram

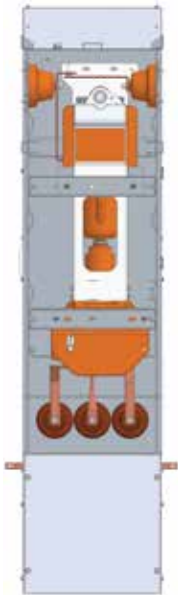
Rated voltage (kV)	Width (mm)	Depth (mm)	Height (mm)
36	500	1063	1907

Optional Equipment: spring-charging motor
metering devices

C MODULE – SF_6 gas insulated incoming-outgoing switchgear with vacuum circuit breaker

Front view

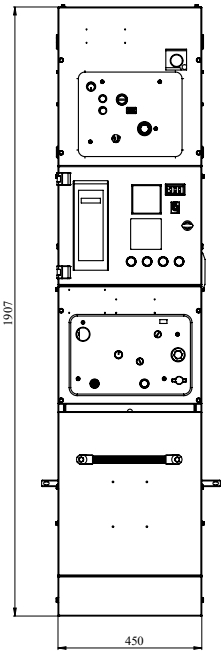
Front view, internal



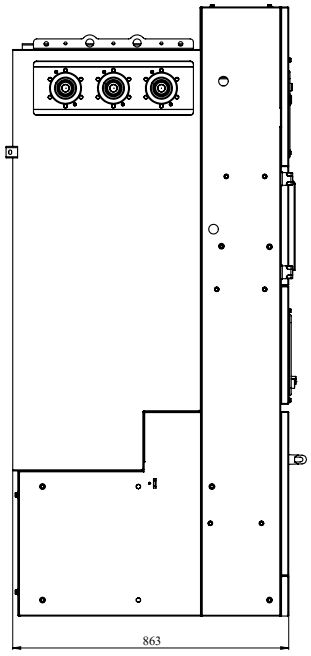
Rear view, internal

Perspective view

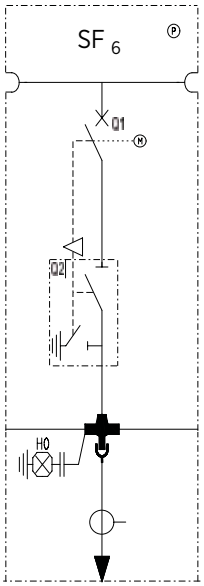
Perspective view, internal



Front view



Side view



Single line diagram

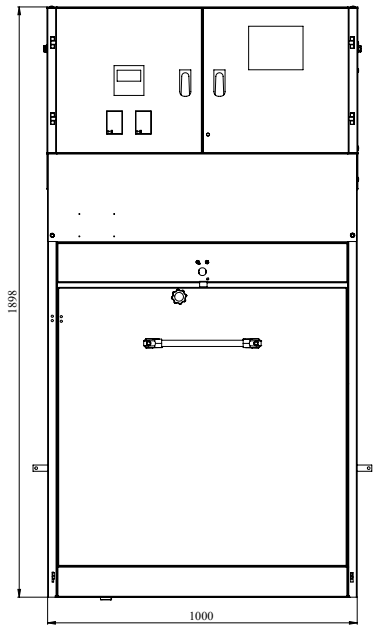
Rated voltage (kV)	Width (mm)	Depth (mm)	Height (mm)
36	450	863	1907

Optional Equipment: spring-charging motor
metering devices
protection relay

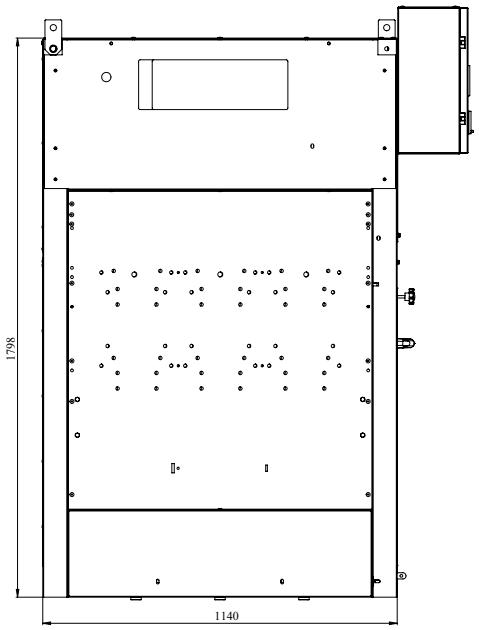
M MODULE – Air insulated metering switchgear

Front view

Perspective view



Front view

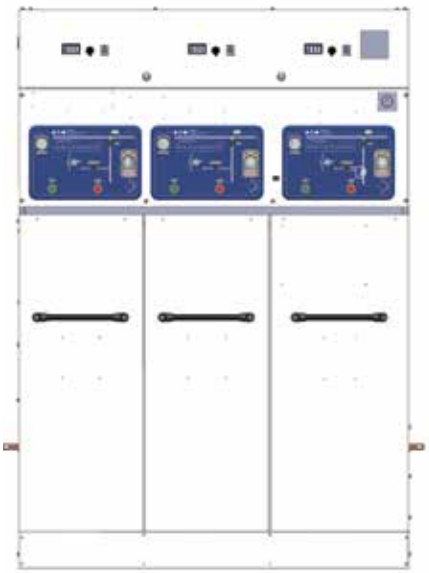


Side view

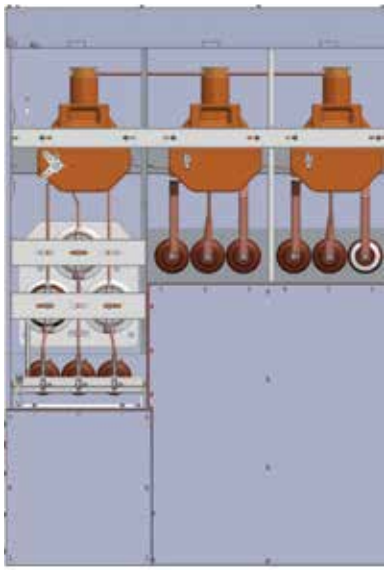
Rated voltage (kV)	Width (mm)	Depth (mm)	Height (mm)
36	1000	1140	1898

Optional Equipment: metering devices
voltage transformer
current transformer
cables and accessories depend on configurations

LLF 3 Unit – SF_6 gas insulated compact switchgear with fuse

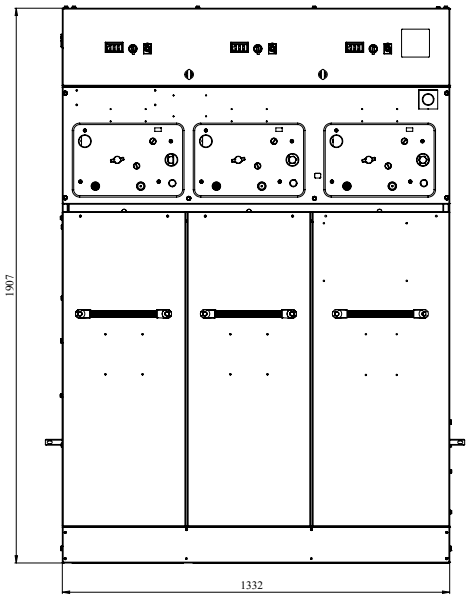


Front view

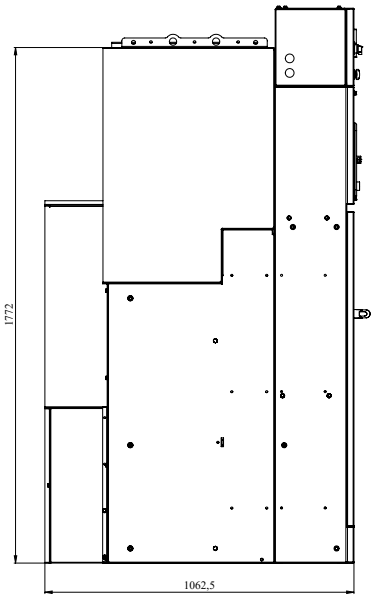


Rear view, internal

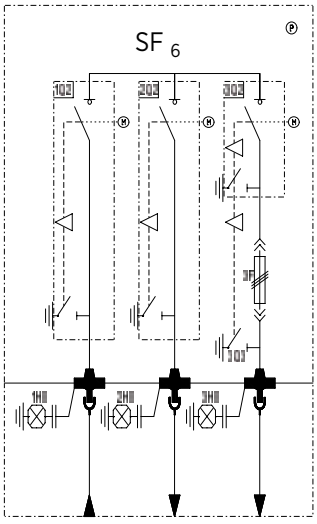
Perspective view



Front view



Side view



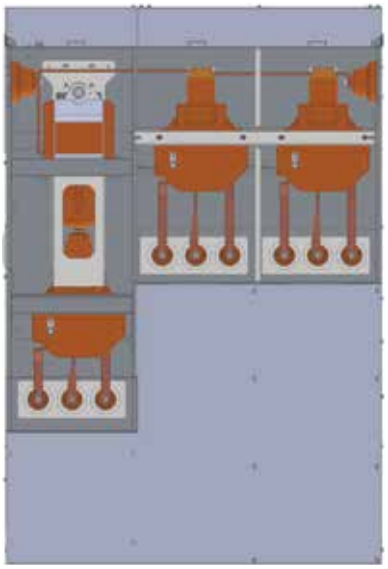
Single line diagram

Rated voltage (kV)	Width (mm)	Depth (mm)	Height (mm)
36	1332	1062.5	1907

Optional Equipment: spring-charging motor
metering devices

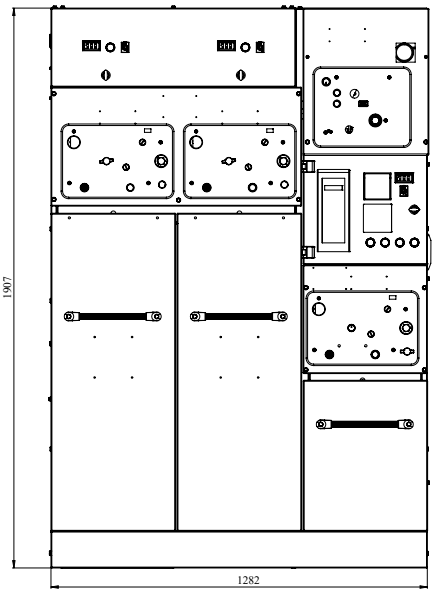
LLC 3 Unit – SF_6 gas insulated compact switchgear with vacuum circuit breaker

Front view

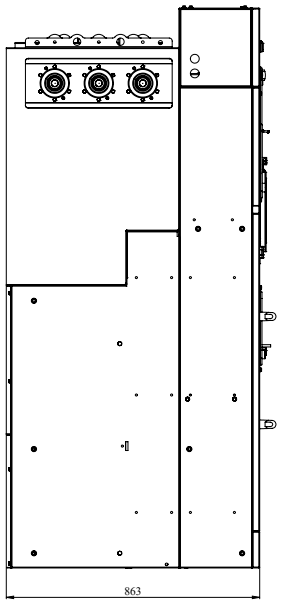


Rear view, internal

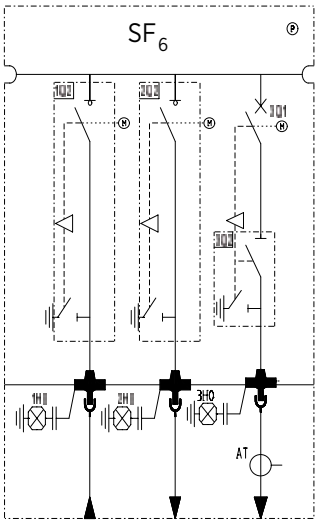
Perspective view



Front view



Side view



Single line diagram

Rated voltage (kV)	Width (mm)	Depth (mm)	Height (mm)
36	1282	863	1907

Optional Equipment: spring-charging motor
metering devices
protection relay

Technical specifications

Types		L Module	F Module	C Module	M Module	LLF – 3 Unit		LLC – 3 Unit	
Rated operational voltage		24 kV – 36 kV	24 kV – 36 kV	24 kV – 36 kV	24 kV – 36 kV	24 kV – 36 kV		24 kV – 36 kV	
Rated current		630 A	200 A	630 A	630 A (ATR unit)	200/630 A		630 A	
Rated short-term withstand current*	24 kV	21 kA/3 sec	-	21 kA/3 sec	16 kA/1 sec	21 kA/3 sec		21 kA/3 sec	
	36 kV	16 kA/1–3 sec	-	16 kA/1–3 sec	16 kA/1 sec	16 kA/1–3 sec		16 kA/1–3 sec	
Short-circuit breaking current (rms)*	24 kV	-	20 kA	21 kA	-	**L**	**F**	**L**	**C**
						-	20 kA	-	21 kA
	36 kV	-	16 kA	16 kA	-	16 kA		16 kA	
Short-circuit making current (kA/peak)*	24 kV	52.5 kA	50 kA	52.5 kA	-	**L**	**F**	**L**	**C**
						52.5 kA	50 kA	52.5 kA	52.5 kA
	36 kV	40 kA	40 kA	40 kA	-	**L**	**F**	**L**	**C**
						40 kA	40 kA	40 kA	40 kA
Internal arc resistance*	24 kV	20 kA/1 sec AFL	20 kA/1 sec AFL	20 kA/1 sec AFL	20 kA/1 sec AFL	20 kA/1 sec AFL		20 kA/1 sec AFL	
	36 kV	16 kA/1 sec AFL	16 kA/1 sec AFL	16 kA/1 sec AFL	16 kA/1 sec AFL	16 kA/1 sec AFL		16 kA/1 sec AFL	
Power frequency withstand voltage (1 min/rms)	24 kV	50–60 kV							
	36 kV	70–80 kV							
Lightning impulse voltage (kV/peak)	24 kV	125–145 kV							
	36 kV	170–195 kV							
Degree of protection	Enclosure	IP 3X	IP 3X	IP 3X	IP 3X	IP 3X		IP 3X	
	SF_6 tank	IP67	IP67	IP67		IP67		IP67	

* Please contact the technical department.

Current and voltage transformers

1- Cast resin current transformer (M module – air insulated metering switchgear)

Cast resin current transformers are dry type transformers in which the internal windings and coils are coated with epoxy resin for insulation. These are widely used in switchgear assemblies around the world installed at engineering, construction and energy enterprises where the transformer's primary function is to reduce high currents. Our cast resin current transformers are manufactured in accordance with the IEC 61869-2 standard.

2- Cast resin voltage transformer (M module – air insulated metering switchgear)

Cast resin voltage transformers are dry type transformers in which the internal windings and coils are coated with epoxy resin for insulation. These are widely used around the world in switchgear assemblies at engineering, construction and energy companies where the transformer's primary function is to reduce high voltages. Our cast resin voltage transformers are manufactured in accordance with the IEC 61869-3 standard.

3- Toroidal current transformer

Toroidal current transformers are dry type transformers in which the internal windings and coils are coated with epoxy resin for insulation. Our toroidal current transformers are manufactured in accordance with the IEC 61869-1 and IEC 61869-2 standards.

Components (optional)

Fault notification block with signal indicator

Indicates and directs all potential malfunctions in the protection switchgear in electrical networks. It is a microprocessor-based device.

It provides high levels of convenience in signaling processing ***(e.g. Buchholz notification – Buchholz on – Thermometer notification – Thermometer on – Overcurrent notification – Overcurrent on)***for modular switchgear cubicles and protection panels.

Voltage indicator

This device measures the voltage on the main busbar.

Voltage detection system

The voltage indicator is used together with capacitive voltage insulators. It shows whether there is energy in the phases. There is a separate indicator for each phase. The plug-in connection design makes installation and wiring easy.

Fault indicator assembly

This device indicates phase and earth faults. It can be mounted on the control panel or inside the concrete kiosk and is optionally available with the switchgear. It detects phase and ground faults using the current information received from three current transformers(separate for each phase) connected to underground grid cables. The assembly displays error status information via the indicators on the main unit and the external signal lamp.

Metering devices

Depending on system requirements, these devices measure parameters such as energy, power, current, voltage, harmonic, and power factor. This category includes voltmeters, ampmeters, energy devices, etc.

Remote control

The remote control included as standard with the URING series switchgear enables the switchgear to be controlled from a distance of up to 10 meters.

Protection relays

A variety of protection and metering and control relays are used in the URING series switchgear. Which relay is used depends on the customer's needs and project requirements. Relays are shipped with the desired settings.

MV fuses

Used in external and internal switchgears at voltages between 12 kV and 36 kV. Fuses are filled with quartz sand. When exposed to short-circuit current or overcurrent, the granules extinguish the arc and disperse heat. The fuse also incorporates a mechanical indicator system.

When the melting element melts in the event of overcurrent, the pin moves out to a specified position.

Cable accessories and connections

Cable accessories and connections up to 36 kV can be supplied upon request.

Standards

The switchgear system and the main equipment included with it comply with the following standards:

CEI EN/IEC standards	Description
IEC EN 60529	Degree of protection provided by enclosures (IP code)
IEC 61869-1	Instrument transformers **Part 1:** General requirements
IEC 61869-2	Instrument transformers **Part 2:** Additional requirements for current transformers
IEC 61869-3	Instrument transformers **Part 3:** Additional requirements for inductive voltage transformers
IEC 62271-1	High-voltage switchgear and controlgear **Part 1:** Common specifications
IEC 62271-100	High-voltage switchgear and controlgear **Part 100:** Alternating current circuit breakers
IEC 62271-102	High-voltage switchgear and controlgear **Part 102:** Alternating current disconnectors and earthing switches
IEC 62271-103	High-voltage switchgear and controlgear **Part 103:** Switches and switch disconnectors for rated voltages above 1 kV up to and including 52 kV
IEC 62271-105	High-voltage switchgear and controlgear **Part 105:** Switch-fuse combinations for rated voltages above 1 kV up to and including 52 kV
IEC 62271-200	High-voltage switchgear and controlgear **Part 200:** Metal-enclosed factory-built switchgear and controlgear for rated voltages above 1 kV up to and including 52 kV
IEC 62271-202	High-voltage switchgear and controlgear **Part 202:** Factory-built high voltage/low voltage substations
IEC 62271-206	High-voltage switchgear and controlgear **Part 206:** Voltage presence indicating systems for rated voltages above 1 kV up to and including 52 kV

* The products and systems featured in this catalog are manufactured and sold in accordance with the ISO 9001, ISO 14001 and BS OHSAS 18001 quality management systems.

Notes

Notes

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