MAGVATECH

FAST PRECISE RELIABLE

magvatech.com

SGF/MVT

MOST COMPACT AND ENDURANT SF6 FREE SWITCHGEAR IN THE WORLD

MAGVATECH SOLUTIONS ENSURE RELIABLE POWER SYSTEM OPERATION WORLDWIDE

17.5 kV
systems
(95 kV BIL)

800 A
continuous
rated current

25 kA
short circuit
breaking current

50 000
CO operations
at full load

100
CO operations at rated
breaking current

- Maintenance free
- Embedded fast arc protection
- Remote control available

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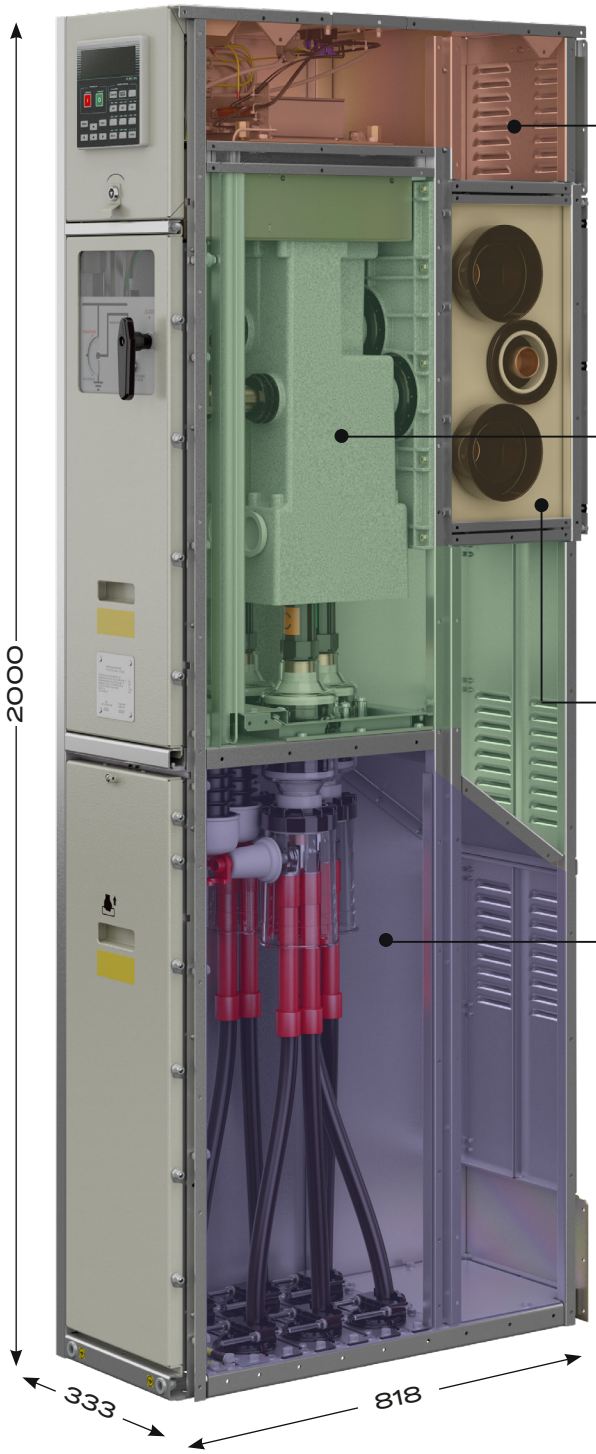
MOST COMPACT SWITCHGEAR PANEL IN THE WORLD

The philosophy behind SGF series panel is to provide the most reliable and endurant switchgear in the most compact dimension completed with the powerful microprocessor based controller for distribution networks.
This is why this panel has embedded fast arc protection and mechanical life up to 50 000 close open cycles. Combining all these functions in one software makes SGF series a truly unique smart switchgear.



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RELAY COMPARTMENT

- Control module
- RJ45 and RS232/485 communication interfaces
- Software for operation and modelling

2

PRIMARY COMPARTMENT

- Lifetime maintenance free vacuum circuit breaker
- Ultra fast circuit breaker

3

BUSBAR COMPARTMENT

- Easy to connect
- Reinforced compartment walls

4

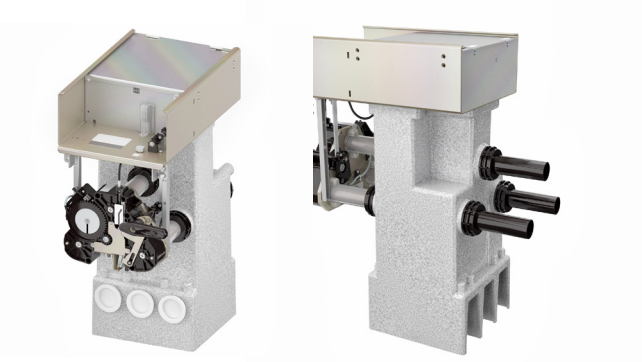
CABLE COMPARTMENT

- Convenient cable compartment access
- Cable compartment interlock for personnel safety

PRIMARY COMPARTMENT

In the heart of the SGF series panel is the Magvatech switching module. The switching module is extremely compact and includes:

- Vacuum circuit breaker;
- Three-position disconnector earthing switch;
- Disconnector operating handle ;
- Main contacts position indicator;
- Disconnector earthing switch position indicator;
- Safety interlocking system.



CABLE COMPARTMENT

CABLE CONNECTION POINT IS LOCATED CLOSE TO THE FRONT OF THE PANEL AT COMFORTABLE HIGHT.

The cable compartment is equipped with safety interlock preventing compartment opening if the cable is not earthed.

Cable compartment provides cable connection point for:

- Simultaneous connection of two three-phase cables or six single-phase cables up to 240 mm² cross-section;
- Connection of one three-phase or three single-phase cables up to 300 mm² cross-section;
- Surge arresters;
- Disconnection of surge arresters using hot-stick;
- Cable test;
- Power frequency withstand voltage test.

FAST ARC PROTECTION

Each panel is equipped with fast arc protection system which detects the arc in 10ms and clears the arc fault in less than 60ms! Sensors are located in each of high voltage compartments:

- Primary compartment;
- Busbar compartment;
- Cable compartment.

RELAY COMPARTMENT

SGF series relay compartment contains protection and automation components. The automation system is designed to provide instant digital network readiness. With just one TELARM software it is possible to:

- operate the circuit breaker (control all the circuit breaker parameters and resources);
- control all the protection settings, including fast arc protection and all the automation;
- configure SCADA system.

COMMUNICATION

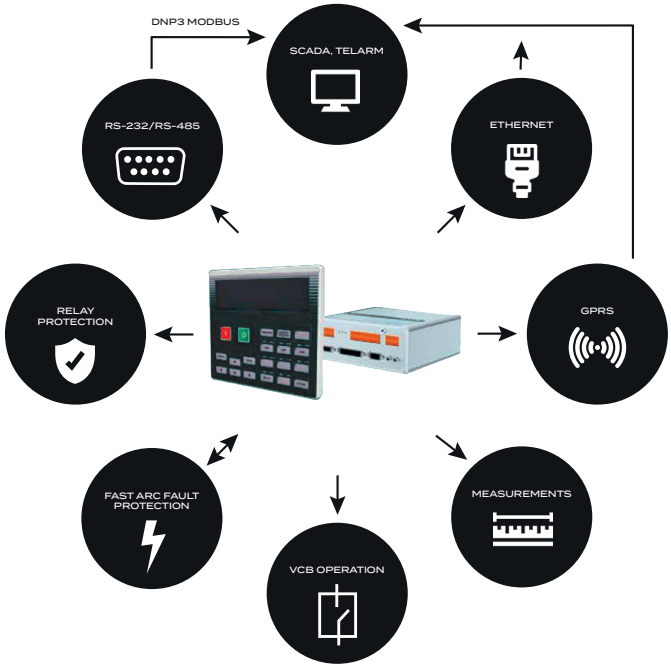
Available physical interfaces are:

- RS-232/RS-485 serial port;
- Ethernet.

Fully configurable SCADA protocol map with the possibility to make configurable logic is available.

Supported SCADA protocols are:

- DNP 3.0 Level 3;
- Modbus.



BINARY INPUT/OUTPUT MODULE

Binary Input/Output module can be used for receiving signals from external devices, sending custom indication signals, and self-automation.

PROTECTIONS

SGF SERIES SWITCHGEAR HAS FOLLOWING PROTECTIONS AVAILABLE:

- Phase-to-phase overcurrent (50, 51)
- Phase-to-ground overcurrent (50N, 51N)
- Autoreclosing (79)
- Sensitive earth fault (51GS)
- Neutral Overvoltage (59N)
- Voltage unbalance (negative sequence voltage) (47)
- Current unbalance (negative sequence current) (46)
- Undervoltage (27)
- Overvoltage (59)
- Underfrequency (81U)
- Loss of supply
- Voltage reclosing control
- Automatic backfeed restoration
- Main and reserve incomers interlock element
- Backfeed supply element

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MEASUREMENTS

The measurements in SGF series are performed by modern combined voltage and current sensors module which is located in between primary compartment and cable compartment.

Current sensing is performed by Rogowski coil sensors. Current sensors provide measurement of both phase and residual currents. Voltage sensing is performed by capacitive sensors.

Magvatech sensor module with Rogowski coil delivers a lot of benefits compared to conventional iron-cored CTs:

- Linearity over operating range;
- No high current saturation problem;
- High accuracy.

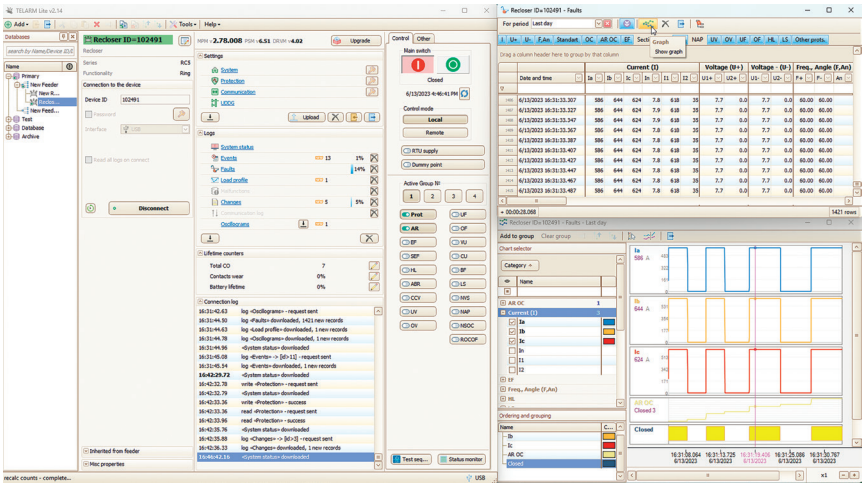
THE SENSOR MODULE MEASURES THE FOLLOWING VALUES:

- Phase currents
- Residual current (3xI0)
- Positive and negative sequence current
- Positive and negative sequence voltage
- Frequency
- Single-phase and three-phase power factor
- Phase-to-earth voltage
- Phase-to-phase voltage
- Single-phase and Three-phase active power
- Single-phase and Three-phase reactive power
- Single-phase and three-phase active energy
- Single-phase and three-phase reactive energy

TELARM SOFTWARE

TELARM® user software allows local and remote device control and configuration, downloading loads, fault and load profiles and oscillogram.

TELARM® is the first switchgear software that allows automatic protection settings coordination, various failure modes simulation, devices configuration and remote control in single package.



RATINGS

TYPE OF PANEL	SGF_1	SGF_2
Rated maximum voltage (Ur), kV	17.5	
Rated power frequency withstand voltage (Ud), 1 min, kV	38	
Rated lightning impulse withstand voltage (peak) (Up), kV	95	
Rated continuous current (Ir), A	800	1250
Rated short-circuit breaking current (Isc), kA	25	31.5
Rated short-time withstand current (Ik), kA	25	31.5
Rated duration of short-circuit (tk), main circuit, s	1	
Rated duration of short-circuit (tk), earthing circuit, s	1	
Rated frequency (fr), Hz	50/60	
Mechanical endurance of circuit breaker, CO-cycles	50 000	30 000
Electrical endurance at rated load current, CO-cycles	50 000	30 000
Electrical endurance at rated SC breaking current, CO-cycles	100	25
Mechanical endurance of disconnector switch, Earthed-Isolated-Engaged cycles	2 000	
Closing time, ms	< 41	< 31
Opening time, ms	< 22	
Opening time from arc protection, ms	< 60	
Rated operating sequence	O – 0.3s – CO – 10s – CO	
Environmental protection	IP 4X	
Internal arc classification	AFL 25 kA, 0.2 s	AFL 31.5 kA, 0.2 s
Altitude, m	2.000[1]	
Humidity, %	95	
Temperature range	-45°C...+40°C	
Type of driving mechanism	Monostable magnetic actuator	
Net weight, kg	240	310
Rated range of supply voltage, V AC/DC	85–265	

[1]Derating according to ANSI C37.60 applied above 1000 m.

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