

MV Gas Insulated Switchgear

**TGS**

**Technical Data**

TG00D  
2019-5-29

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#### Operating environmental conditions

Place of installation	Indoor
Ambient temperature	-5°C (-25°C optional) ~ +40°C (+55°C optional)
Altitude	1000m (no limitation for specially ordered products)
Average value over 24 hours (max.)	+35°C
Air humidity	Daily average $\geq$ 95%; Monthly average $\geq$ 90% [25°C]
Type of insulating gas	Sulphur hexafluoride (SF <sub>6</sub> )
Rated pressure at +20°C	0.14 MPa

This product shall be placed in a site without risk of fire hazard, explosion, chemical corrosion and sharp vibration.

#### Standard compliance

Switchboard	IEC 62271-200, IEC 62271-1
Behavior in the event of internal faults	IEC 62271-200
Earthing switch (in C, F, V, De, I)	IEC 62271-102
Disconnecter (in V, I)	IEC 62271-102
General use switch (in C)	IEC 62271-103
Switch-disconnector fuse combination (in F)	IEC 62271-105
Circuit-breaker (in V, I)	IEC 62271-100
Current transformer	IEC 61869-2
Voltage transformer	IEC 61869-3
Voltage presence indicators	IEC 62271-206
Voltage detection systems	IEC 61243-5
IP class	IEC 60529

TGS		
Accessibility type	A (F, L, R)	AFLR (IEC 62271-200)
Arc test current	kA	20
Arc test current duration	s	1
Arc pressure release duct		Optional
Insulation medium		SF6 Gas
Rated filling level for insulation	Pa	40,000
Alarm level for insulation	Pa	30,000
Minimum functional level for insulation	Pa	10,000
Insulating fluid and mass	kg	5 (CCF)
Degree of protection – compartment	IP	3X
Thickness of gas tank material	mm	3, stainless steel
Design pressure	Bar	1.4
Rated filling pressure	Bar	1.4
Minimum functional pressure	Bar	1.3
Busbar material		Red copper / T2Y
Busbar cross section	mm	40 × 8
Width of major functions (incomer/feeder/CB/fuse)	mm	368 / 368 / 368 / 368
Cable connection height (incomer/feeder/CB/fuse)	mm	595 / 595 / 595 / 595
Busbar insulation medium		SF6 gas
Support insulator material		Epoxy resin
Support insulator creepage distance	mm	135
Earth bar material		Red copper / T2Y
Earth bar cross section	mm	25 x 8
Limit of temperature rise - main circuits	°C / K	75
Limit of temperature rise - contacts	°C / K	65
Limit of temperature rise – connections	°C / K	75
Limit of temperature rise – terminals	°C / K	75
Limit of temperature rise - accessible parts	°C / K	30
Switchgear overall surface finish and color		RAL7035
Typical panel dimensions (W x D x H)	mm	CCV: 1048*800*1500

Typical panel weight	kg	CCV: 360
Padlock		Optional
Position indication		Yes
VPIS		DXN2-T
Low voltage control box		Optional
Gas pressure manometer		Yes, without auxiliary contacts
LV cable and wiring		IEC 60227 compliance
Panel extension		No / single side / both sides

#### General electrical characteristics

No. of phases		3
Rated voltage	kV	12/24
Rated frequency	Hz	50/60
Type of neutral earthing		Effectively earthed
Rated lightning impulse withstand voltage to earth	kV	95/125
Rated lightning impulse withstand voltage across isolation	kV	110/145
Rated power frequency withstand voltage to earth	kV	28/50
Rated power frequency withstand voltage across isolation	kV	32/60
Rated busbar normal current	A	630
Rated short-time withstand current	kA	25 / 1s, 20 / 3 s
Rated peak withstand current	kA	65
Rated duration of short circuit	s	3/1
Mainly active load breaking current	A	630
Closed-circuit breaking current	A	630
Earth fault breaking current	A	30/200
Rated auxiliary voltage for operation	V	24-220 DC 110-220 AC
Rated auxiliary voltage frequency	Hz	50
Partial discharge guarantee @ 1.1 Ur	pC	10

Circuit-breaker		
Type		TGS-V
Standard compliance		IEC 62271-200
Circuit-breaker interrupting medium		Vacuum
Type of circuit-breaker		Fixed
Reset method of trip		Manual / automatic
Rated current	A	630
Rated short-circuit breaking current	kA	20 / 25
Rated duration of short-circuit	s	3/1
DC component of rated short-circuit breaking current	%	53
Rated out of phase recovery voltage	kV	13.8/27.6
Rated line charging breaking current	A	10
Rated cable charging breaking current	A	25/31.5
Rated filling pressure for operation	MPa	0.04
Rated filling pressure for interruption	MPa	0.03
Rated operating sequence		0-0.3s-CO-180-CO
Maximum opening time	ms	50
Maximum closing time	ms	60
Electrical endurance class		2000 operating cycles at rated current, 50 times at rated short-circuit breaking current, Class E2
Capacitive restrike probability class		Class C2
Mechanical endurance class		10000 operating cycles, Class M2
Switching class		S1
Circuit-breaker operating mechanism		Spring
Drive motor operating voltage	V	24-220 DC 110-220 AC
Drive motor power consumption	W	120
Spring motor charging time	s	15
Method of tripping		Shunt trip
Low energy tripping		Available
Number of trip coil		1-2

Trip coil operating voltage	V	24-220 DC 110-220 AC
Trip coil current at rated voltage	A	15.6
Trip coil power consumption	W	374
Method of closing		Shunt closing
Number of close coil		One
Close coil operating voltage	V	24-220 DC 110-220 AC
Close coil power consumption	W	374
No. of NO/NC auxiliary contact		Up to 4NO 4NC
Two covers mechanical interlocking		Optional
Protection relay category		Self-powered/power supply
Operating counter		Available

### Load switch

Type		TGS-C
Standard compliance		IEC 62271-102
Rated current	A	630
Rated short-time withstand current	kA	20/25
Peak withstand current	kA	65
Rated duration of short-circuit	s	3/1
Electrical endurance		E3 for disconnecter, E2 for earthing switch
Mechanical endurance		5000 operating cycles, Class M2
Capacitive switching		C2
Minimum isolating distance (live parts to earth)	mm	60
Minimum isolating distance (clearance between open contacts)	mm	60
Motor operation availability		Optional
No. of NO/NC auxiliary contact		Up to 2NO 2NC

### Earthing switch

Type		TGS-E
Standard compliance		IEC 62271-102
Rated short-time withstand current	kA	20/25
Rated duration of short-circuit	s	3/1
Short-circuit making capability		E2
Mechanical endurance		2000 operating cycles, Class M1
Minimum isolating distance (live parts to earth)	mm	60
Motor operation availability		Optional
No. of NO/NC auxiliary contact		2NO 2NC

### Disconnecter

Type		TGS-D
Standard compliance		IEC62271-102
Rated current	A	630
Rated short-time withstand current	kA	20/25
Rated duration of short-circuit	s	3 / 1
Mechanical endurance		2000 operating cycles, Class M1
Minimum isolating distance (live parts to earth)	mm	60
Minimum isolating distance (clearance between open contacts)	mm	60
No. of NO/NC auxiliary contact		Up to 2NO 2NC

### Switch-fuse combination

Type		TGS-F
Applicable standard		IEC62271-105
Rated current	A	630
Max. fuse current	A	125
Rated short-time withstand current	kA	20 / 25
Rated duration of short-circuit	s	3 / 1
Short-circuit making current	kA	52
Short-circuit breaking current	kA	20
Rated transfer current	A	1300
Prospective current at the maximum breaking energy	kA	20
Mechanical endurance		2000 operating cycles, Class M1
Minimum isolating distance (live parts to earth)	mm	60
Minimum isolating distance (clearance between open contacts)	mm	60
Motor operation availability		Optional
No. of NO/NC auxiliary contact		2NO 2NC

### Voltage transformer

Standard compliance		IEC61869-3
Type		3 phase dry type
Primary and secondary ratios		Specified by project
Secondary winding classes		Specified by project
VT type and location		Specified by project



MV cable compartment

Cable compartment accessibility		Front
Cable box insulation		Air
Tool-free cable testing facility		Optional
Maximum cable size per phase	mm <sup>2</sup>	300
Maximum cable quantity per phase		2
Cable connector rating	A	250 / 630
Surge arrestor		Optional
Cable clamp		Yes
Cable bushing		Optional

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