

Technical Data

TGP145

Gas insulated switchgear up to 145kV 3150A 40kA

Operating environmental conditions

Place of installation: Indoor or outdoor

Ambient temperature: $-25^{\circ}\text{C} \sim +40^{\circ}\text{C}$

Altitude: 1000m (no limitation for specially ordered products)

Air humidity: Daily average $\geq 95\%$; monthly average $\geq 90\%$ (25°C)

Wind speed: $\geq 35\text{m/s}$ (wind pressure $\leq 700\text{Pa}$)

Irradiance: $\leq 0.1\text{W/cm}^2$ (wind speed: 0.5m/s)

Earthquake intensity: Horizontal acceleration $\leq 0.5g$; vertical acceleration $\leq 0.5g$;

Ice thickness: $\leq 10\text{mm}$

Creepage distance 25mm/kV(pollution level III), 31mm/kV(pollution level IV)

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

TGP145 main technical parameters (table 1)

Main technical parameter of TGP145

SN	Technical requirements		Unit	Data
1	Rated voltage		kV	145
2	Rated frequency		Hz	50/60
3	Rated current		A	2000,2500,3150
4	Rated short time withstand current / time		kA/s	40/3s
5	Rated peak withstand current		kA	104
6	Insulation level	Rated short time power frequency withstand voltage (1 min.)	kV	275 (to earth / interphase)
				315 (across isolating distance)
		Rated lightning impulse withstand voltage (peak value)	kV	650 (to earth / interphase)
				750 (open gap)
7	Rated SF ₆ gas pressure / Min. functional pressure (20°C)		MPa	Circuit breaker gas tank 0.65/0.6
				VT / Surge arrester gas chamber 0.5 / 0.45
				Other gas chambers 0.5 / 0.45
8	Water content of SF ₆		$\mu\text{L/L}$	Circuit breaker chamber ≤ 150 (during handover)
				Other gas chamber ≤ 250 (during handover)
9	Partial discharge		pC	≤ 10
10	SF ₆ annual leakage rate		%/year	≤ 0.1
11	Level of radio interference		μV	≤ 500
12	Compartment width		m	0.8

Main technical parameter of the elements

Circuit breaker (table 2)

Circuit breaker parameter

SN	Technical requirements		Unit	Value	
1	Rated short circuit breaking current		kA	40	
2	Rated short circuit making current		kA	104	
3	Full capacity breaking times		Times	22	
4	Rated circuit charging breaking current		A	50	
5	Rated cable charging breaking current		A	160	
6	Rated out-of-phase breaking current		kA	10	
7	Close-in fault breaking current		kA	36/30	
8	First-pole-to-clear factor			1.5	
9	Rated operation sequence			O-0.3s-CO-180s-CO	
10	Closing time (rated voltage)		ms	85±10	
11	Opening time (rated voltage)		ms	32±5	
12	Total breaking time		ms	≤60	
13	Min.SF6 functional pressure (20℃)		MPa	0.6	
14	Actuation mechanism			Spring-actuated mechanism	
15	Mechanical lifecycle		Times	10000	
16	Closing / opening coil	Voltage (DC)	V	220	110
		Closing coil resistance / current	Ω/A	94/2.3	33/3.3
		Opening coil resistance / current	Ω/A	78/2.8	19/5.8
17	Energy storage motor	Power	W	600	
		Voltage (DC/AC) / Current	V/A	220V/2.3A	
18	Dynamic load		N	20000 (Vertically upwards)	
				20000 (Vertically downwards)	

Three-position switch (Table 3)

Parameter of three-position switch

Rated operation time	Opening ≥3s
	Closing ≥3s
Rated control voltage / power	(DC/AC)220V/240W
Rated operation torque	20N·m
Rated making / breaking bus transfer current / voltage	1600A/30V

Times of rated making / breaking bus current transfer	100 times
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Fast earthing switch (FES) (table 4)

FES parameter

Rated operation time	Opening $\geq 3s$ (including energy storage time)
	Closing $\geq 3s$ (including energy storage time)
Rated controlling voltage / power	(DC/AC)220V/240W
Rated operation torque	50N·m
Rated short circuit making current	104kA
Making / breaking electromagnetic induction current / voltage	100A/6kV
Making / breaking electrostatic induced current / voltage	5A/6kV

Busbar (table 5)

Busbar parameter

Rated current	2000,2500,4000A
Rated short-time power frequency withstand voltage (interphase, to earth)	275kV, 1min
Rated lightning impulse withstand current (interphase, to earth)	650kV (Peak value)

Outgoing line bushing (table 6)

Outgoing line bushing parameter

Rated short time power frequency withstand voltage	275kV, 1min
Rated lightning impulse withstand voltage	650kV (Peak value)
Nominal creepage distance	25mm/kV (Level III), 31mm/kV (Level IV)