

Hybrid Gas Insulated Switchgear

**THP/TCB**

**Technical Data**

TGOOD  
2017.1

**TGOOD**



## Technical conditions and parameter

### Operating environmental conditions

- Place of installation: Indoor or outdoor
- Ambient temperature: -25℃ ~ +40℃ (higher or lower temperature optional)
- Altitude: 1000m (no limitation for specially ordered products)
- Air humidity: Daily average  $\geq$ 95%; monthly average  $\geq$ 90%(25℃)
- Wind speed:  $\geq$ 35m/s(wind pressure  $\leq$ 700Pa)
- Irradiance:  $\leq$ 0.1W/cm<sup>2</sup> (wind speed: 0.5m/s)
- Earthquake intensity: Horizontal acceleration  $\leq$ 0.5g; vertical acceleration  $\leq$ 0.5g;
- Ice thickness:  $\leq$ 10mm
- 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.

## Main technical parameter of TGP/TCB

### Main technical parameter of THP

Description		Unit	Data
Standard compliance			IEC 62271-205 (2008)
Rated voltage		kV	40.5/72.5/145
Rated frequency		Hz	50/60
Rated current		A	2000/2500/2500
Rated short time withstand current / time		kA/s	40/3s
Rated peak withstand current		kA	80/104/104
Insulation level	Rated short time power frequency withstand voltage (1 min.)	kV	95/140/275 (to earth / interphase) 118/160/315 (across isolating distance)
	Rated lightning impulse withstand voltage (peak value)	kV	180/325/650 (to earth / interphase) 215/375/750 (across isolating distance)
Rated SF <sub>6</sub> gas pressure / Min. functional pressure (20℃)		MPa	Circuit breaker gas tank 0.5/0.4, 0.62/0.60, 0.65/0.6
Water content of SF <sub>6</sub>		μL/L	$\leq$ 150 (during handover)
Partial discharge 1 compartment		pC	$\leq$ 5

## THP & TCB Technical Data

SF6 annual leakage rate	%/y	≤0.1
Level of radio interference	μV	≤500

### Main technical parameter of the elements

#### Circuit breaker

Description		Unit	Value	
Type			TCB 145-40-31	
Standard compliance			IEC 62271-100 (2012)	
Rated voltage		kV	40.5/72.5/145	
Rated frequency		Hz	50/60	
Rated current		A	3150A	
Rated short circuit breaking current		kA	31.5/40	
Rated short circuit making current		kA	80/104	
Full capacity breaking times		Times	20	
Rated circuit charging breaking current		A	50	
Rated cable charging breaking current		A	160	
Rated out-of-phase breaking current		kA	10	
Close-in fault braking current		kA	36/30	
First-pole-to-clear factor			1.5	
Rated operation sequence			0-0.3s-CO-180s-CO	
Closing time (rated voltage)		ms	70±10/80±10	
Opening time (rated voltage)		ms	50±5/30±5	
Total breaking time		ms	≤60	
Min.SF6 functional pressure (20℃)		MPa	0.6	
Actuation mechanism			Spring-actuated mechanism	
Mechanical lifecycle		Times	10,000	
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
Energy storage motor	Power	W	600	
	Voltage (DC/AC) / Current	V/A	220V/2.3A	
Dynamic load		N	20,000 (Vertically upwards)	
			20,000 (Vertically downwards)	

### Three-position switch

Rated operation time	Opening $\nless 3s$
	Closing $\nless 3s$
Rated control voltage / power	(DC/AC)220V/240W
Rated operation torque	20N·m

### Fast earthing switch

Type	TFES-145
Standard compliance	IEC 62271-102
Rated frequency	50Hz, 60Hz
Making performance	104kA (peak current), E2
Electrostatic coupling rated induced current/voltage	2A/6kV
Electromagnetic coupling rated induced current/voltage	80A/2kV
Mechanical endurance	5,000 times

### Outgoing line bushing

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)

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