

Hybrid Gas Insulated Switchgear

THP/TCB

Technical Data

TGOOD
2020-5-21

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Operating environmental conditions

Place of installation	Indoor or outdoor
Ambient temperature	-5°C ~ +40°C (higher or lower temperature optional)
Altitude	1000m (no limitation for specially ordered products)
Air humidity	Daily average ≥95% Monthly average ≥90% [25°C]
Wind speed	≥35m/s (wind pressure ≤700Pa)
Irradiance	≤0.1W/cm ² (wind speed: 0.5m/s)
Earthquake intensity	Horizontal acceleration ≤0.5g, Vertical acceleration ≤0.5g
Ice thickness	≤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.

THP

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 ₆ gas pressure / Min. functional pressure (20°C)	MPa	Circuit breaker gas tank 0.5/0.4, 0.62/0.60, 0.65/0.6
Water content of SF ₆	μL/L	≤150 (during handover)
Partial discharge 1 compartment	pC	≤5

SF6 annual leakage rate	%/y	≤0.1
Level of radio interference	μV	≤500
Seismic test		0.5g acceleration at vertical direction 0.5g acceleration at horizontal direction

Circuit-breaker

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 0-0.3s-CO-60s-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°C)	MPa	0.6		
Actuation mechanism	Spring-actuated mechanism			
Mechanical endurance	Times	10,000 (M2)		
Electrical endurance	E2			
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	220/2.3A	
Dynamic load		N	20,000 (Vertically upwards) 20,000 (Vertically downwards)	

Three-position switch

Rated operation time	s	Opening \nrightarrow 3 Closing \nleftarrow 3
Rated control voltage / power	V/W	(DC/AC)220/360
Rated operation torque	N·m	20

Fast earthing switch

Type	TFES-145	
Standard compliance	IEC 62271-102	
Rated frequency	Hz	50, 60
Making performance	kA	104, E2
Electrostatic coupling rated induced current/voltage	A/kV	2/6
Electromagnetic coupling rated induced current/voltage	A/kV	80/2
Mechanical endurance	times	5000

Bushing

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

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