

Gas Insulated Switchgear with
Vacuum Circuit-breaker

TGP-40.5

Technical Data

TGOOD Marketing
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TGOOD



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Operating environmental conditions

Ambient temperature	-25°C ~ +45°C
Altitude	2,000m (>2,000m optional)
Rated pressure at 20°C	0.04MPa
Type of insulating gas	Sulphur hexafluoride (SF6)
IP class of main electrical circuits	IP67
Switchgear	IK10
Application	Indoor

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

Standard compliance

IEC 62271-200	High-voltage switchgear and control gear-Part 200: AC metal-enclosed switchgear and control gear for rated voltages above 1kV and up to and including 52kV
IEC 62271-100	High-voltage switchgear and control gear-Part 100: High-voltage alternating- current circuit-breakers
IEC 62271-102	High voltage switchgear and controlgear-Part 102: Alternating current disconnectors and earthing switches
IEC 62271-103	High-voltage switchgear and controlgear-Part 103: Switches for rated voltages above 1 kV up to and including 52 kV
IEC62271 -1	High-voltage switchgear and control gear-Part 200: Common specifications
IEC 62271-206	High-voltage switchgear and controlgear - Part 206: Voltage presence indicating systems for rated voltages above 1 kV and up to and including 52 kV
IEC 61869-2	Current transformers
IEC 61869-3	Voltage transformers
IEC 60529	Degrees of protection provided by enclosure (IP code)

General parameters of TGP-40.5			
Rated voltage	kV	40.5	
1min power frequency insulation	A	95/118	
Lightning impulse withstand voltage (peak)	kV	185/215	
Rated frequency	Hz	50	
Rated short circuit breaking current (RMS)	kA	25/31.5	
Rated peak withstand current	kA	65/80	
Rated short-circuit breaking current (RMS)	kA	25/31.5	
Duration of rated short-time withstand current	s	4	
DC component		52%	
Rated current of busbar	A	1250, 2500	
Rated current of branch busbar	A	630/1250/1600/2000/2500	
Internal arc classification (cable / busbar / CB compartments)	kA/s	A FLR 25/1; 31.5/1	
Mechanical endurance of VCB	times	20,000	
Mechanical endurance of three-position switch	times	5,000	
Rated gas-filled pressure (SF ₆ , at 20°C)	MPa	0.04	
Minimum gas-filled pressure (SF ₆ , at 20°C)	MPa	0.01	
Alarm pressure (relative)	MPa	0.02	
Design level of gas filled compartment	MPa	0.08	
Type of insulating gas		SF ₆	
SF ₆ moisture content (20°C)	uL/L	≤150	
1min power frequency insulation at zero-gauge pressure	kV	85	
Volume (W*D*H)	mm	600*1500*2450	
	mm	800*1500*2450	
IP class	Gas tank	IP67	
	Enclosure	IP4X	
	Between compartments	IP2X	
IK class		IK10	
Resistance	1250A panel	uΩ	≤100
	2500A panel	uΩ	≤80
Gas tank	Material		S304L
	Thickness	mm	3.0

	Annual leakage rate	%	<0.01
Earthing busbar	ST withstand current	kA/s	27.4 / 2
	Peak withstand current	kA	72
Partial discharge	Silicon parts	pC	≤20
	Epoxy parts	pC	≤10
Electromagnetic compatibility (EMC) test			Passed
Auxiliary and control circuit	Insulation	V/s	2,000/60
	Earthing continuity	V	≤3 (voltage drop)
	Constant current of auxiliary contacts	A	2 (at 1mm ²)
	ST withstand current of auxiliary contacts	A	100
	Breaking capacity of auxiliary contact	A	0.1 (at DC220V)
	Resistance difference		<5%
	Class of auxiliary contact	Class	2
Mechanical interlocking	Between CB and DS		Yes
	Between CB and ES		Yes
Color of appearance			RAL7035

TGP-40.5 vacuum circuit-breaker (VCB)

Type name		3AT-40.5/S
Rated voltage	kV	40.5
Power frequency withstand voltage 1 min	kV	95/118
Lightning impulse withstand voltage (peak)	kV	185/215
Rated frequency	Hz	50
Rated short circuit breaking current (RMS)	kA	25/31.5
Rated peak withstand current	kA	65/80
Rated short-circuit breaking current (RMS)	kA	25/31.5
Duration of rated short-tome withstand current	s	4
100% short-circuit breaking	times	30
Rated single capacitor bank switching current	A	630
Rated cable-charging switching current	A	50 (C2)
CB mechanical endurance	times	20,000 (M2)

CB electrical endurance	times	30 (E2)
Closing time	ms	35~100
Opening time	ms	20~60
Closing bounce time	ms	≤2
Three-phase opening synchronization	ms	≤2
Rebound amplitude of opening contact	mm	≤3
Cumulative allowable wear thickness of contacts	mm	≤3
Closing speed average (6~0mm)	m/s	1.1±0.3
Opening speed average (0~12mm)	m/s	1.7±0.3
Contact opening distance	mm	18±1
Contact pressure when closing	N	3100±200
Over travel	mm	4±1
Phase distance	mm	160±2 (1250A CB)
	mm	210±2 (2500A CB)
Phase resistance	uΩ	≤40 (1250A)
	uΩ	≤30 (2500A)
Annual leakage rate	%	<0.1
Rated operating sequence		0-0.3s-CO-180s-CO
Type of vacuum interrupter(VI)		TD-40.5/1600-31.5C
Vacuum degree in VI		≤1.33×10 ⁻³
Type of embedded pole (EP)		HYD-40.5/1250-31.5CQ
Manufacture of VI & EP		Chendu Xuguang
Circuit-breaker mechanism		
Type		Spring
Charging voltage (rated/high/low)	V	220/242/187
Closing voltage (rated/high/low)	V	220/242/187
Opening voltage (rated/high/low)	V	220/242/143
Energy storing time	s	10
Manufacturer		Qingdao TGOOD Electric Co.Ltd
Charging motor		DC220V, 120W, ≤10s
Opening coil		DC220V, 0.96A
Closing coil		DC220V, 0.89A

Circuit resistance of CB	$\mu\Omega$	≤ 40
Auxiliary contact		8NO8NC

TGP-40.5 Three position switch (TPS)

Type name	TGN02-40.5/S, GN02-40.5/S	
Rated voltage	kV	40.5
1min power frequency insulation	kV	95/118
Lightning impulse withstand voltage (peak)	kV	185/215
Rated frequency	Hz	50
Rated short circuit breaking current (RMS)	kA	25/31.5
Rated peak withstand current	kA	65/80
Rated short-circuit breaking current (RMS)	kA	25/31.5
Duration of rated short-tome withstand current	s	4
Main circuit resistance	$\mu\Omega$	≤ 15
Disconnecter		
Type	Integrated within TPS	
Rated operation voltage	V	DC220
Distance of contact	mm	1250A : 102 ± 3 / 2500A : 87 ± 3
Closing asynchronicity	ms	≤ 200
Opening asynchronicity	ms	≤ 200
Manual closing force	Nm	≤ 200
Manual opening force	Nm	≤ 200
Mechanical endurance	time	5,000 (M2)
Auxiliary contacts	8NO8NC (class 2)	
Manufacturer	Qingdao TGOOD Electric Co. Ltd	
Earthing switch		
Type	Integrated within TPS	
Rated operation voltage	V	DC220
Distance of contact	mm	1250A : 102 ± 3 / 2500A : 87 ± 3
Closing asynchronicity	ms	≤ 200

Opening asynchronicity	ms	≤200
Manual closing force	Nm	≤200
Manual opening force	Nm	≤200
Mechanical endurance	time	5,000 (M2)
Auxiliary contact		8NO8NC (class 2)
Manufacturer		Qingdao TGOOD Electric Co. Ltd
Motorization		DC220V, 120W, ≤20s

Current instrumental transformer (CT)

Type	Epoxy casting ring or block type	
Rated voltage	kV	0.66 or 40.5
1min power frequency insulation	kV	95/118
Lightning impulse withstand voltage (peak)	kV	185/215
Rated frequency	Hz	50
Rated short circuit withstand current	kA	25/31.5
Ratio		50-2500 / 5(1)
Accuracy		0.5; 3P
Output	VA	2.5~7.5

Voltage instrumental transformer (VT)

Type name	Epoxy casting electromagnetic	
Rated voltage	kV	40.5
1min power frequency insulation	kV	95/118
Lightning impulse withstand voltage (peak)	kV	185/215
Rated frequency	Hz	50
Primary voltage	kV	40.5/√3
Secondary voltage	kV	0.1/√3 (or 100)
Accuracy		0.5; 3P
Output	VA	30, 50
Connection		Y/Y/Y

Surge arrester (SA)

Type		ZnO
Rated voltage	kV	40.5
Voltage of surge arrester	kV	51
Constant operating voltage	kV	40.8
Residue voltage at impulse lightning current	kV	≤ 134 (8/20 μ s, 5kA)

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