TGLD Series Automatic Transfer Switch

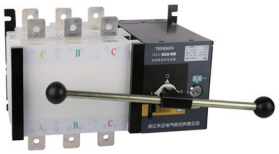
1 Overview

TGLD series automatic transfer switch is suitable for AC 50Hz three-phase four-wire dual-circuit power supply grid with rated working voltage AC400V and rated current up to 1600A to disconnect the load circuit from one power supply and connect it to the other power supply. This transfer switching equipment has automatic action and optional manual operating functions. When any deviation of common power supply is detected, ATSE can transfer the load to the standby power supply from the common power supply automatically. If the common power supply recovers to the normal state, the load can be returned to the common power supply automatically.

2 Type Designation

TG □ – □ / □ □

- Controller code: By default: Basic type;
  A: Economic type (Type A is only available for 100 frame)
- Number of poles: 3P: 3 poles, 4P: 4 poles
- Conventional thermal current (A)
- Sales code: LD
- Enterprise code



3 Technical Parameters

Table 1

Model	TGLD-100	TGLD-160	TGLD-250	TGLD-400	TGLD-630
Current spec. (A)	16, 20, 25, 32, 40, 50, 63, 80, 100	100,125 140,160	160, 180, 200, 225, 250	250, 315 350, 400	400, 500 630
Rated operating voltage (Ue)	AC400V 50Hz				
Rated insulation voltage (Ui)	690V				
Rated impulse withstand voltage (Uimp)	8kV				
Rated short-time withstand voltage ICW (kA)	8/30ms	10/1s			20/1s
Rated short-circuit making capacity Icm (kA)	13.6	17			25.2
Rated short-circuit limit current Iq (kA)	Front fuse				
	50				
Number of poles	3P、4P				
Usage category	AC-33iB				
Electrical level	Level PC				
Electromagnetic compatibility environment	B environment				
Pollution degree	3				
Installation method	Vertical and fixed				
Wiring method	Wiring via screws				
Operation method	Auto / Manual / Electric button on cabinet door				
Screw tightening torque (N·m)	12	20	20		
Screw failure torque (N·m)	15	50			
Mechanical life(times)	9,000（*）			6,000（*）	4,000（*）
Electrical life (times)	3,000（*）			2,000（*）	2,000（*）
Max. number of conductors allowed	1 piece			2 pieces	
Switch position	Common position (I), standby position (II), OFF position (0)				
Pollution degree	Level 3				
Protection grade	IP00				
Contact transfer time (s)	0.95±30%	0.9±30%		0.30±30%	
Operating transfer time (s)	2.9±10% TGLD-100(Economical type): 1.7±10%			1.1±10%	
Return time (s)	2.9±10% TGLD-100(Economical type): 2±10%			1.3±10%	
Power-off time (s)	0.93±30%	0.9±30%		0.3±30%	
Power voltage deviation range	Undervoltage transfer: 160V±10%				
Voltage hysteresis V	Undervoltage fixed value (default: 160V) +20V±10%				
Control feature	Voltage loss, undervoltage, phase loss switching				
Rated control power voltage (Us)	AC230V 50Hz				
Controller installation method	Integrated				
Normal working range	85%Ue ~ 110%Ue				
Return condition	Automatic transfer automatic recover (Automatic transfer and non-automatic recover function can be customized)				
Controller power (W)	≤5	≤10			

Note: (*) maintainable

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Table 1, continued

Model	TGLD-1000	TGLD-1250	TGLD-1600	TGLD-2000	TGLD-2500	TGLD-3200
Current spec. (A)	630,700 800,1000	1250	1600	2000	2500	3200
Rated operating voltage (Ue)	AC400V 50Hz					
Rated insulation voltage (Ui)	1000V					
Rated impulse withstand voltage (Uimp)	12kV					
Rated short-time withstand voltage ICW (kA)	32/60ms			55/60ms		
Rated short-circuit making capacity Icm (kA)	67.2			121		
Rated short-circuit limit current Iq (kA)	Front circuit breaker			/		
	90			/		
Number of poles	3P、4P					
Usage category	AC-33iB					
Electrical level	Level PC					
Electromagnetic compatibility environment t	B environment					
Pollution degree	3					
Installation method	Vertical and fixed					
Wiring method	Wiring via screws					
Operation method	Auto / Manual / Electric button on cabinet door					
Screw tightening torque (Nm)	25					
Screw failure torque (Nm)	50					
Mechanical life(times)	4,000（*）			2,500（*）		
Electrical life (times)	2,000（*）			500（*）		
Max. number of conductors allowed	4 pcs			4 pcs		
Switch position	Common position (I), standby position (II), OFF position (0)					
Protection grade	IP00					
Contact transfer time (s)	0.6±30%			0.75±30%		
Operating transfer time (s)	3±10%			2.9±10%		
Return time (s)	3±10%			2.9±10%		
Power-off time (s)	0.60±30%			0.75±30%		
Supply power deviation range (V)	Undervoltage transfer: 160±10%			Undervoltage transfer: 165±10%; Overvoltage transfer: 270±10%		
Voltage hysteresis V	Undervoltage fixed value (default: 160V) +20V±10%					
Control feature	Voltage loss, undervoltage, phase loss switching					
Rated control power voltage (Us)	AC230V 50Hz					
Controller installation method	Integrated					
Normal working range	85%Ue ~ 110%Ue					
Return condition	Automatic transfer automatic recover (Automatic transfer and non-automatic recover function can be customized)					
Controller power (W)	≤10					

Note: (*) maintainable

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4 Operating Conditions

4.1 Ambient air temperature: The upper limit of ambient air temperature is +40℃, and the lower limit is -5℃; the mean temperature within 24h does not exceed +35℃;

4.2 Altitude: The altitude at the installation site does not exceed 2,000 meters;

4.3 Atmospheric conditions: The relative humidity of atmospheric air does not exceed 50% at the highest ambient temperature +40℃, and a lower relative humidity is allowed at a lower temperature, such as up to 90% at +20℃. Special measures are taken for condensation occurred occasionally due to temperature changes;

4.4 Pollution degree: Level 3.

5 Features and Functions

5.1 Dual-row combined contact, embedded mechanism, micromotor energy pre-storage and micro-electronics
5.2 control technology is used with short flashover distance.

5.3 Reliable mechanical interlock and electrical interlock are used, and the actuator uses independent on-load isolating switch for safe and reliably operation.

5.4 With zero-across technology used, forcedly zeroing can be realized in case of an emergency (powers from two circuits are cut off simultaneously) to satisfy fire linkage needs.

5.5 A single motor is used to switch the on-load isolating switch for reliable and smooth switching action and small impact without noise.

5.6 The actuator drive motor is powered on only at moment of switching the on-load isolating switch, and the working current is not required at other times during the steady state operation, significantly saving energy.

5.7 The on-load isolating switch has a mechanical interlock device to ensure that the common and standby power supplies work reliably without interference each other.

5.8 With obvious ON/OFF position indication and padlock functions, realize the isolation between the power supply and the load reliably.

5.9 With good safety performance, high automation, and high reliability.

5.10 The product has zero position.

5.11 With convenient installation, the control circuit adopts the plug-in terminal connection.

5.12 Operation function: Manual operation, automatic control operation. Manual operation is prohibited at the Auto state. If manual operation is required, the auto electric lock must be closed to the manual position.

6 Controller Functions (See Table 2)

Table 2

Type	Economic type	Standard type
Manual and automatic switching mode	■	■
Common power monitoring	Three-phase monitoring	Three-phase monitoring
Standby power monitoring	Single-phase monitoring	Single-phase monitoring
Automatic transfer automatic recover	■	■
Automatic transfer and non-automatic recover	-	Customized
Grid-grid, grid-power generation	Power grid – Power grid	■
Phase loss, volage loss, and undervoltage switching	■	■
Fire linkage	-	Active DC24V
External indication signal	Common power, standby power, common ON, standby ON	Common power, standby power, common ON, standby ON
Cabinet door control	I-O-II	I-O-II

Note: "■": Standard function; "-": No this function

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7 Controller Operation Process (See Fig. 1 and Fig. 2)

Mode 1: Automatic transfer automatic recover (grid-grid)

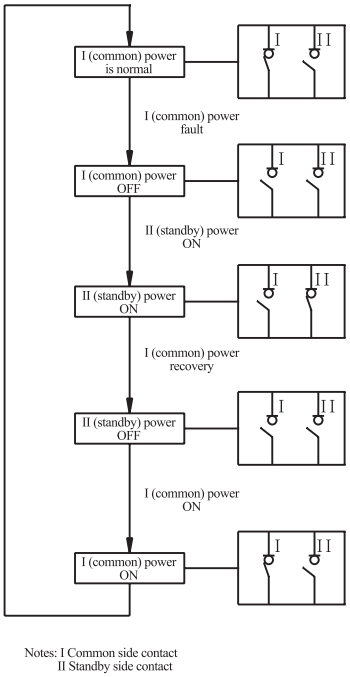


Fig. 1

Mode 2: Automatic transfer automatic recover (grid-power generation)

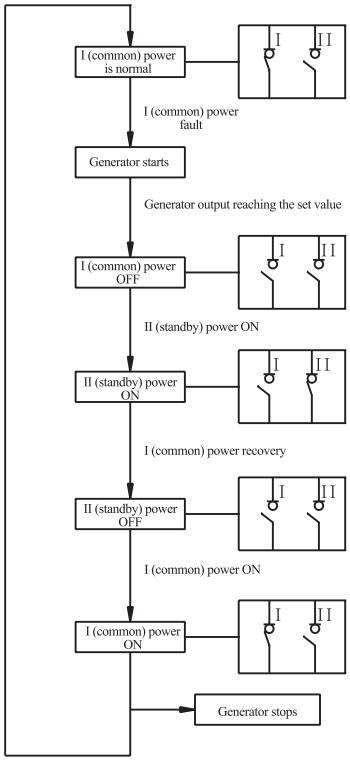
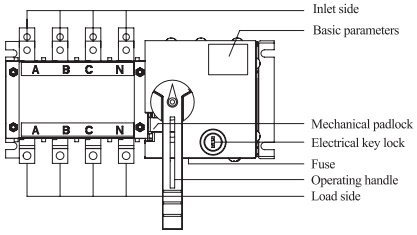
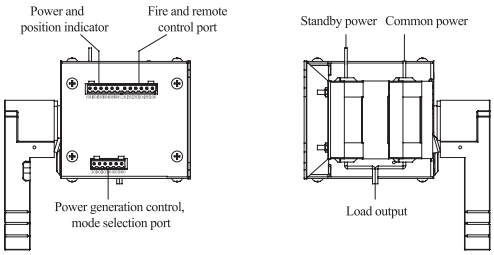


Fig. 2

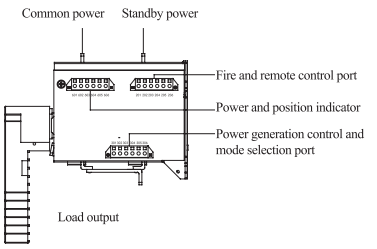
8 Product Structure



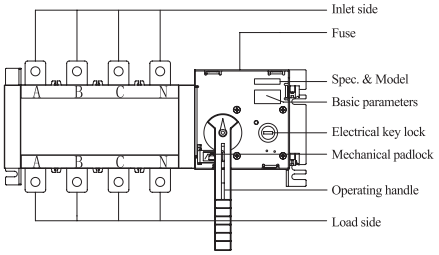
TGLD-100/4 structure diagram



TGLD-100/4 structure diagram



TGLD-160~630/4 Structure Diagram



TGLD-160~630/4 Structure Diagram

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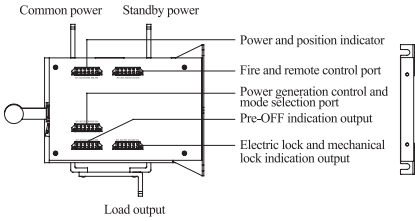
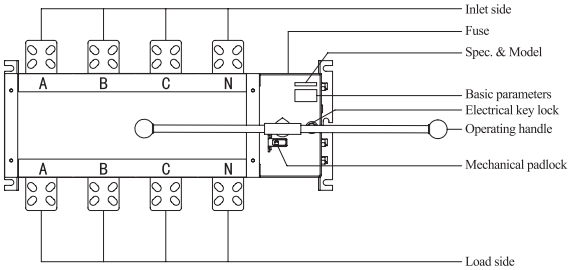
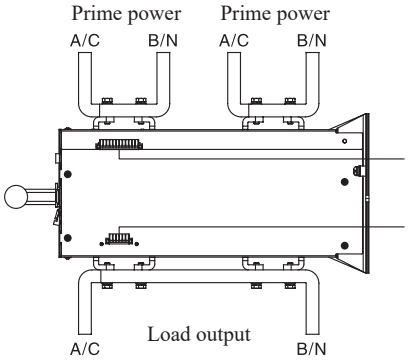


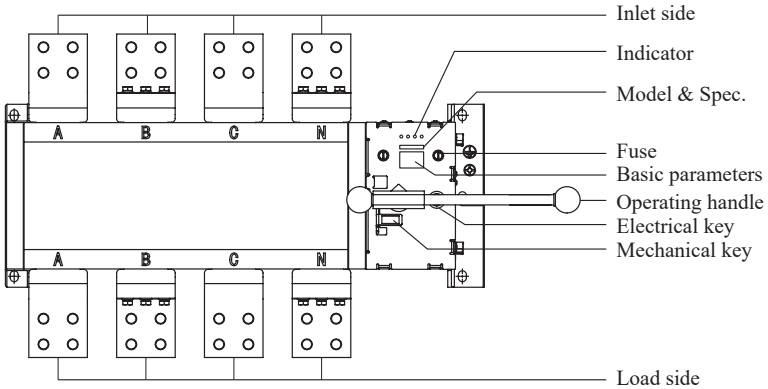
TGLD-1600/4 Structure Diagram



TGLD-1600/4 Structure Diagram



TGLD-3200/4 Structure Diagram



TGLD-3200/4 Structure Diagram

Notes:

a.Electric key lock: To control the control line power inside the switch; turning the electric lock to the “Auto” position realizes the auto and remote control operation of switch; turning the electric lock to the “Manual” position realizes the manual operation of switch.

b.Operating handle: Close the electric lock when operating the operating handle.

c.Mechanical padlock: Before inspection, operate the operating handle to turn the switch to the O position, and pull up and lock the padlock (pulling up the mechanical padlock will cut off the control power inside the switch, so that the switch cannot be turned on and the handle cannot be operated).

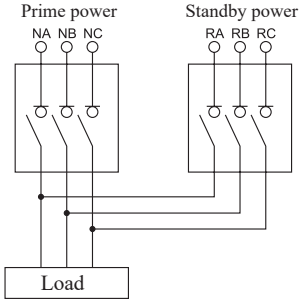
d.The operating handle is usually removed and stored. It can be used only when the load is disconnected for emergency operation.

TGLD Series Automatic Transfer Switch

9 Electrical Wiring Diagram

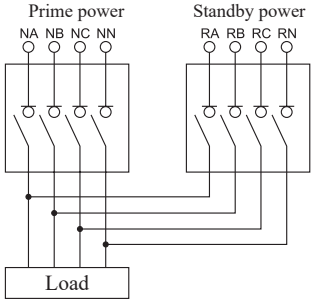
9.1 Main circuit wiring

3-pole main circuit wiring



Note: The zero line of 3-pole product is connected to the side terminals 603 and 606; 2000~3200A is connected to 301 and 306 for prime operation

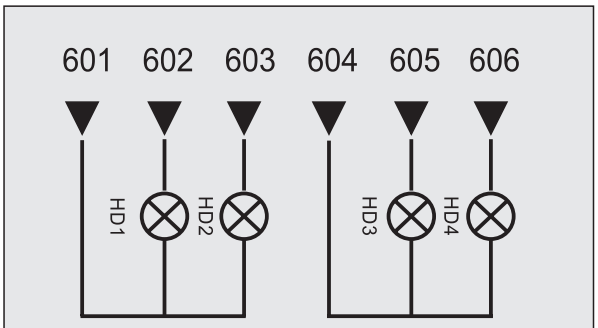
4-pole main circuit wiring



Note: To connect main circuit of product, the upper ports of prime power and standby power shall be connected (SCPD) by user for electrical protection to prevent short-circuit of load, and burns to product and line.

9.2 Auxiliary and control circuit wiring

9.2.1 TGLD-100 Economic type



Note: HD1 is the common power indicator, HD2 is the ON indicator, HD3 is the standby power indicator, and HD4 is the ON indicator. For a 3-pole product, please connect the common zero line to 601, and the standby zero line to 64 to ensure the normal operation of the product.

a. Common position indicator:
601 and 602 are the common power indicators, and the common working zero line is input from 601 for 3-pole product;
601 and 603 are common power ON indicators, and the signal outputs are AC220V active output.

b. Standby position indicator:
604 and 605 are standby power indicators, and the standby working zero line is input from 604 for 3-pole product;
601 and 603 are common power ON indicators, and the signal outputs are AC220V active output.

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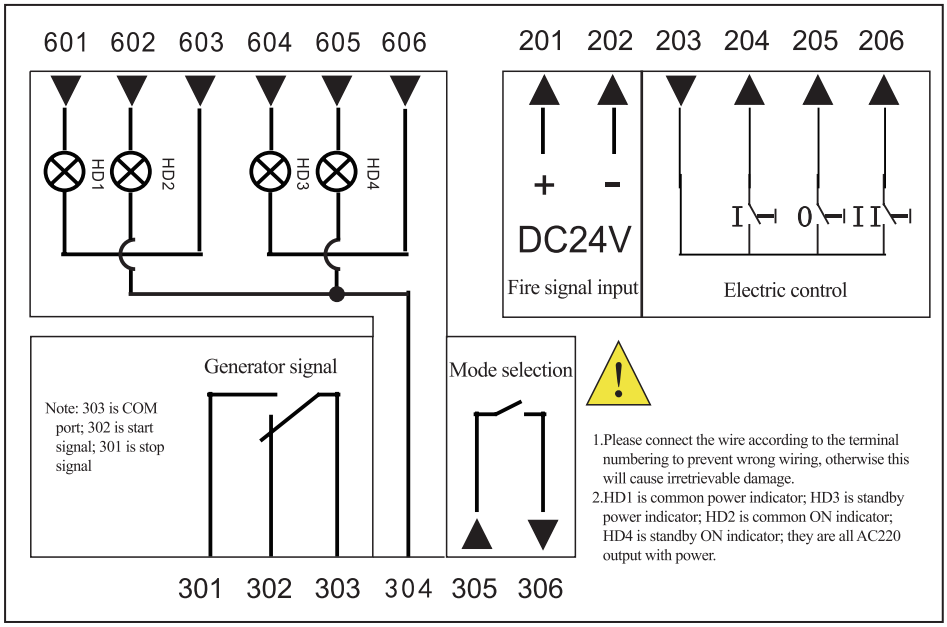
9.2.2 TGLD-100~630 type



a.Common position indicator: 603 and 601 are common power indicators; for 3-pole product, the common working zero line is connected from 603; 602 and 304 are common power ON indicators, and signal outputs are all AC220V output with power.

b.Standby position indicator: 606 and 604 are standby power indicators; for 3-pole product, the standby working zero line is connected from 606; 605 and 304 are standby power ON indicators, and signal outputs are all AC220V output with power.

c.Fire zeroing: 201 is DC24V positive, and 202 is DC24V zero (DC24V is provided by the Fire Center).

d.Electric control (cabinet door control): 203 is common port; 204 is position I; 205 is position 0; 206 is position II.

e.Generator start/stop control: 303 is common port; 302 is start signal; 301 is stop signal.

f.Mode selection: When 305 and 306 are disconnected: if 204, 205, and 206 input button signals are loose, ATSE will return automatically; when 305 and 306 are short-connected: 204, 205, and 206 input button signals are inching-controlled, and ATSE will not return automatically once the button is release.

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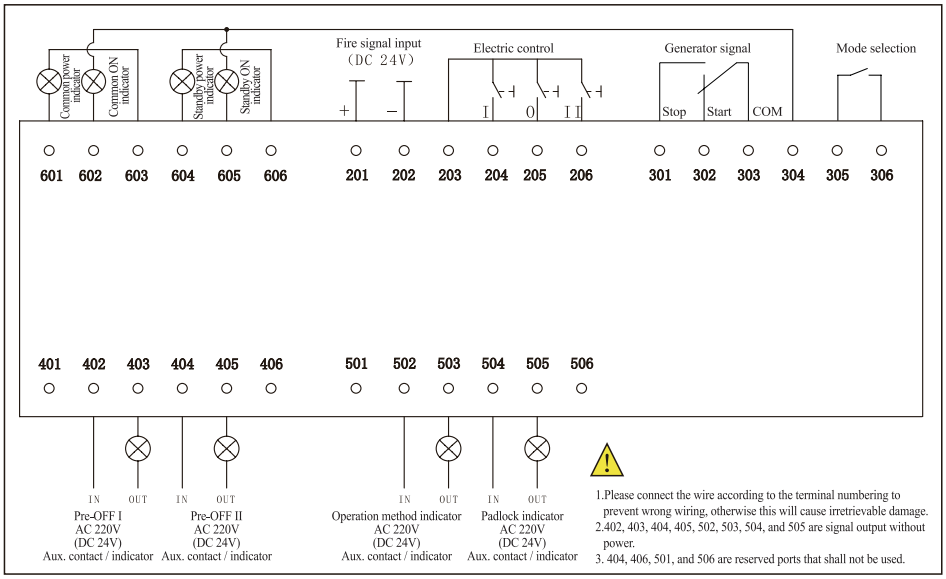
9.2.2 TGLD-1000~1600 type



a.Common position indicator: 603 and 601 are common power indicators; for 3-pole product, the common working zero line is connected from 603; 602 and 304 are common power ON indicators, and signal outputs are all AC220V output with power.

b.Standby position indicator: 606 and 604 are standby power indicators; for 3-pole product, the standby working zero line is connected from 606; 605 and 304 are standby power ON indicators, and signal outputs are all AC220V output with power.

c.Fire zeroing: 201 is DC24V positive, and 202 is DC24V zero (DC24V is provided by the Fire Center).

d.Electric control (cabinet door control): 203 is common port; 204 is position I; 205 is position 0; 206 is position II.

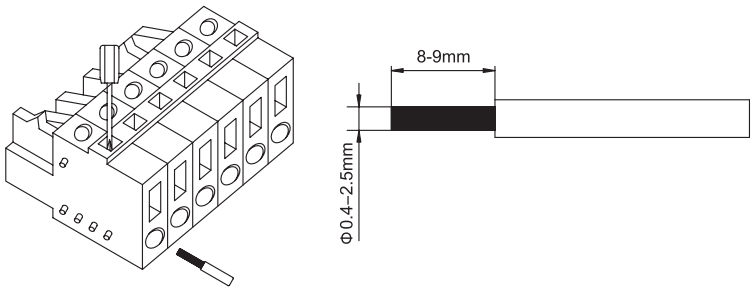
e.Generator start/stop control: 303 is common port; 302 is start signal; 301 is stop signal.

f. Mode selection: When 305 and 306 are disconnected: if 204, 205, and 206 input button signals are loose, ATSE will return automatically; when 305 and 306 are short-connected: 204, 205, and 206 input button signals are inching-controlled, and ATSE will not return automatically once the button is release.

h.402 and 403 are common pre-OFF indicators; 404 and 405 are standby pre-OFF indicator; signal output without power.

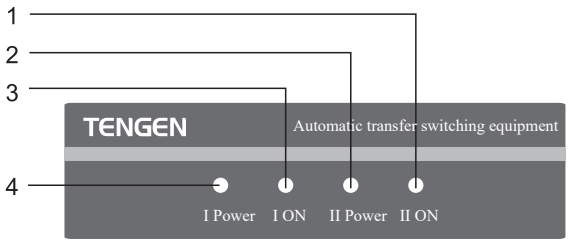
i. 502 and 503 are padlock indicators; 504 and 505 are mechanical lock indicators; they are all signal outputs without power.

9.3 TGLD-160~1600 wiring terminal wiring operation



Forcedly press the wire downwards with a small slotted screwdriver for installation, as shown in figure.

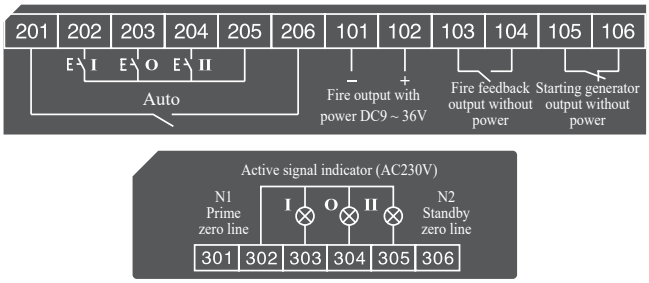
9.4 TGLD-2000~3200 panel indicator and auxiliary and control circuit wiring



1. Standby ON indicator;
2. Standby power indicator;
3. Prime ON indicator;
4. Prime power indicator.

TGLD-2000-3200

9.5 TGLD-2000~3200 Secondary circuit wiring



a. Ports 201 and 206 are short connected for remote control with wires (cabinet door control transfer), and can be powered off automatically;

b. Port 205 is a remote control COM port;

c. When ports 205 and 202 detect a closed signal, source “I” power supply works prime and ATSE is transferred to source “I”;

d. When ports 205 and 204 detect a closed signal, source “II” power supply works prime and ATSE is transferred to source “II”;

e. When ports 205 and 203 detect a closed signal, one-source or two-source of source “I” power supply or source “II” power supply is prime and ATSE is transferred to the “O” position;

f. Ports 101 and 102 are fire power supply DC24V (9~36V, 101 is a negative pole and 102 is a positive pole; do not connect them reversely) input, and ATSE executes the fire control linkage function;

g. Ports 103 and 104 are output feedback signals after ATSE executes the fire control linkage function, and one set of passive signal dry contacts;

h. Ports 105 and 106 are generator start signals. Connection them to the generator controller can realize the automatic start/stop of generator controller.

i. Working zero line input for three-pole: 301 is a prime zero line, and 306 is a standby zero line;

j. 302 is a COM port of position indicator signal;

k. 303 is an indicator signal of “I” position, with active 220V;

l. 304 is an indicator signal of “O” position, with active 220V;

m. 305 is an indicator signal of “II” position, with active 220V;

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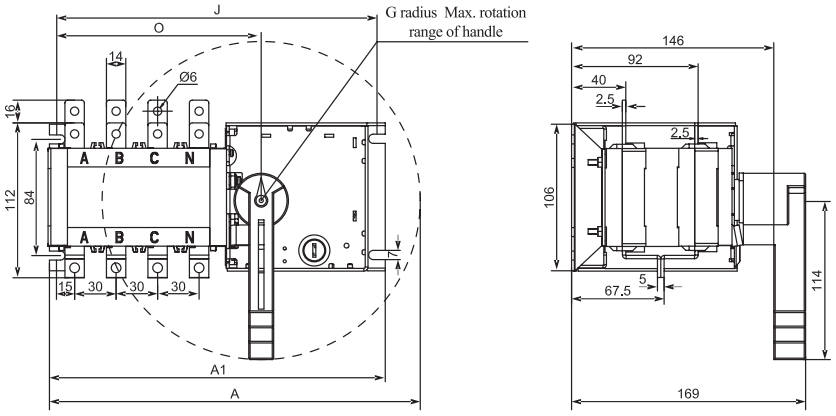
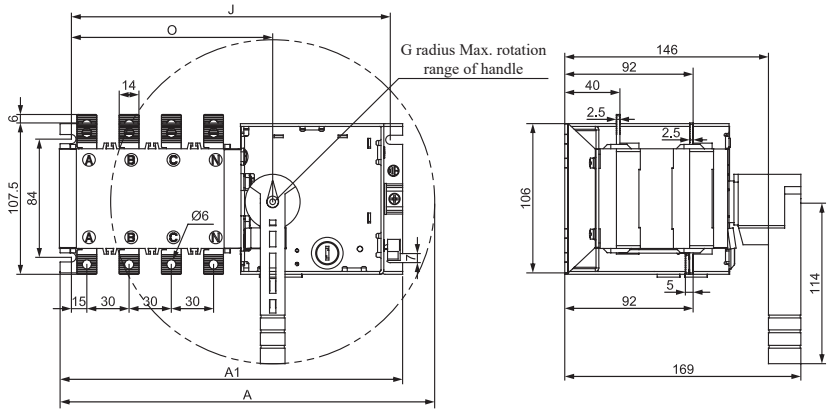
10 Outline and Installation Dimensions

10.1 TGLD-100 outline and installation dimensions (Standard type)



Current	Outline and installation dimensions				
	A	A1	J	O	G
100/3	258	232	222	113	114
100/4	268	244	230	143	114

10.2 TGLD-100 Outline and Installation Dimensions (Economic type)



Current	Outline and installation dimensions				
	A	A1	J	O	G
100/3	258	232	222	113	114
100/4	268	244	234	143	114

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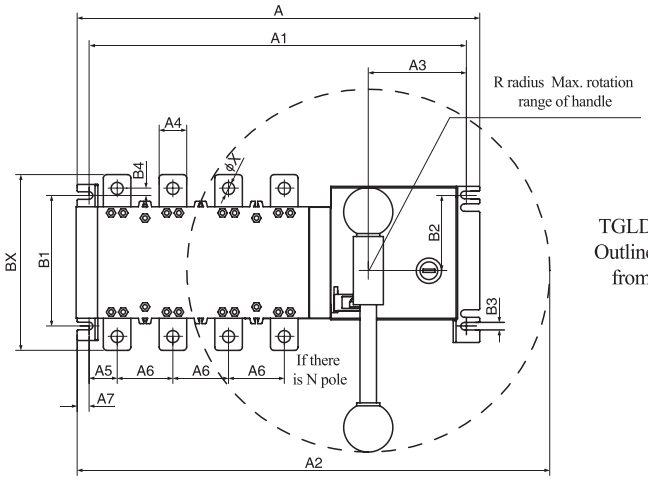
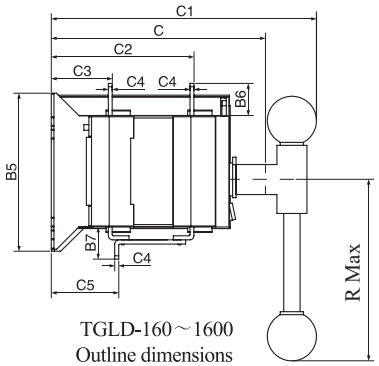
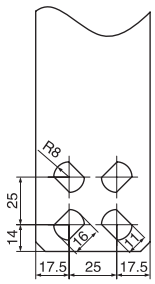
10.3 TGLD-160~1600 outline and installation dimensions



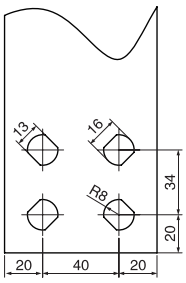
TGLD-160～1600
Outline dimensions
from front view



TGLD-160～1600
Outline dimensions
from side view



1000A
Connection terminal

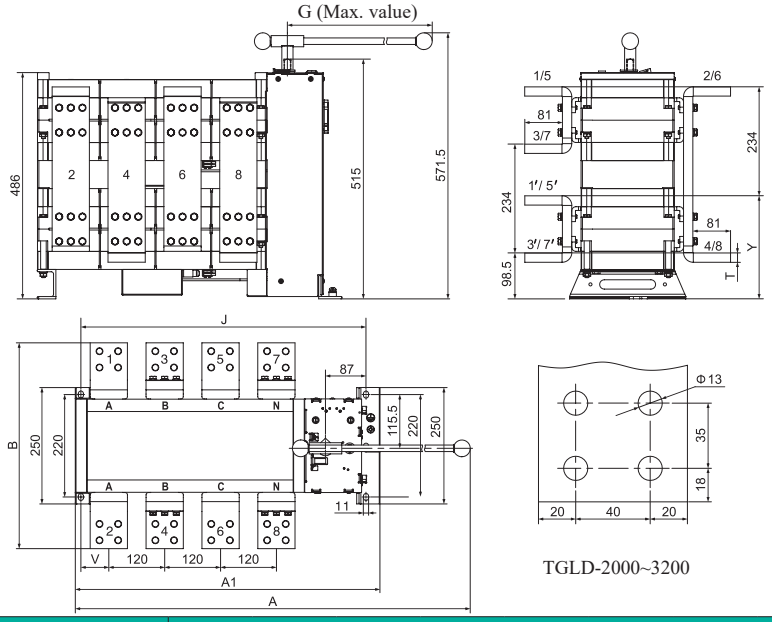


1250A～1600A
Connection terminal

	Outline and installation dimensions table																						
Current	A	A1	A2	A3	A4	A5	A6	A7	BX	B1	B2	B3	B4	B5	B6	B7	C	C1	C2	C3	C4	C5	ΦX	R
160/3	270	252	325	95	20	20	36	7	143	103	52	6.4	4	141	25	33	194	230	126	56	3.5	59	8.5	153
160/4	308	288	352	98	20	22	36	7	143	101	52	6.4	4	141	25	33	194	230	129	59	3.5	62	8.5	153
250/3	315	300	366	93	25	28	50	7	184	107	52	6.4	16	141	30	44	209	247	146	64	3.5	67	10.7	153
250/4	369	350	413	97	25	28	50	7	184	108	52	6.4	16	141	30	44	211	249	145	63	3.5	67	10.7	153
400/3	374	358	608	92	32	39	65	7	262	179	95	8.7	17	218	40	62	273	313	196	84	5	84	11	335
400/4	433	416	663	95	32	39	65	7	262	179	97	8.7	17	218	40	62	273	313	197	84	5	84	11	335
630/3	374	358	608	92	40	39	65	7	269	179	95	8.7	17	218	48	61	273	313	196	84	5	84	12	335
630/4	433	416	663	95	40	39	65	7	269	179	97	8.7	17	218	48	61	273	313	197	84	5	84	12	335
1000/3	520	500	867	85	60	65	120	9	343	220	112	11	-	250	53	90	330	385	253	110	8	110	-	440
1000/4	633	613	980	85	60	65	120	9	343	220	112	11	-	250	53	90	330	385	253	110	8	110	-	440
1250/3	520	500	867	85	80	65	120	9	367	220	112	11	-	250	69	98	330	385	253	110	8	110	-	440
1250/4	633	613	980	85	80	65	120	9	367	220	112	11	-	250	69	98	330	385	253	110	8	110	-	440
1600/3	520	500	867	85	80	65	120	9	372	220	112	11	-	250	69	102	330	385	254	111	10	111	-	440
1600/4	633	613	980	85	80	65	120	9	372	220	112	11	-	250	69	102	330	385	254	111	10	111	-	440
Note: BX, B7, and C5 are dimensions of load																								

TGLD Series Automatic Transfer Switch

10.4 TGLD-2000~3200 Outline and Installation Dimensions (Two-inlet and one-outlet)



TGLD-2000~3200

Current	Outline and installation dimensions							
	A	A1	B	G	A	A1	B	G
TGLD-2000/3P	785	541	422	360	499	10	56	212
TGLD-2000/4P	1080	655	422	540	613	10	60	212
TGLD-2500/3P	785	541	432	360	499	15	56	217
TGLD-2500/4P	1080	655	432	540	613	15	60	217
TGLD-3200/3P	785	541	442	360	499	20	56	222
TGLD-3200/4P	1080	655	442	540	613	20	60	222

Note: The shell operating handle is removed normally for all series, and will be used for emergency operation or manual operation.

11 Ordering Notice

Please specify the following items when ordering:

11.1 Please specify the product model, current specification, and number of poles when ordering.

11.2 For any special installation conditions or special working site, the corresponding technical information shall be provided by user or contact our company for this.

Example: To order TGLD-100 type, rated current 100A, 4-pole, 1 piece; please specify: TGLD-100/4P 100A 1 piece.