TGC3

Series AC Contactor

TGC3 Series AC Contactor

1 Overview

TGC3-09~38 AC contactor (hereinafter referred to as contactor) is used in the AC 50 (or 60 Hz) AC circuit with the rated operating voltage up to 690V (the rated operating voltage 415V under the AC-3 use category) and the rated operating current up to 38A to frequently start and control AC motors, and it can form an electromagnetic starter by combining with appropriate thermal overload relays to protect possible overload circuits.

The contactor is not used to break the short-circuit current, and the appropriate short-circuit protection appliance shall be used when operation.

Standards: GB/T 14048.4, IEC/EN 60947-4-1, GB 21518
GB/T 14048.5, IEC/EN 60947-5-1

Certifications: CCC, CE, TUV

Matching accessories: Top mounted F3, side mounted FC3, air delay head FY3

Recommended applicable industries: equipment with high requirements for overall performance such as consistency + electrical life + dust + noise, and with high-frequency operations, especially in elevators, lifting, machine tools, water pumps, textiles, air compressors and OEM fields.

TGC3 Series AC Contactor

2 Type Designation

TG C 3 - □ □ □

① ② ③ ④ ⑤ ⑥

①	Enterprise code	
②	AC contactor	
③	Design No.	
④	Rated operating current	Rated operating current at 400V/415V under the AC-3 use category (A)
⑤	Type and pairs of built-in aux. contacts	11: 1NO+1NC; 20: 2NO; 02: 2NC
⑥	Function	Default: General; Special function: “N” means reversible contactor

Note: If surge suppression function is required, suffix (R) can be attached after the Material Description.

3. Main Technical Parameters

3.1 The main technical parameters and performance parameters of the contactor refer to Table 1;

3.2 Rated control power supply voltage of TGC3 AC contactor coil, Us (50/60Hz):

3.3 Enclosure protection grade IP20;

3.4 Coordination and cooperation of short circuit protection device (SCPD): Rated limit short circuit current Iq: 50kA; The models of the matched short circuit protection devices (SCPDs) are listed in Table 1; Coordination type (protection type): "2" type;

Table 1

Model & Spec.		TGC3-09	TGC3-12	TGC3-18	TGC3-25	TGC3-32	TGC3-38
Rated operating current Ie (A)	AC-3/AC-3e(≤415V)	9	12	18	25	32	38
	AC-1(≤415V)	25	25	32	40	50	50
	AC-3/AC-3e(660V/690V)	6.6	8.9	12	18	22	22
Number of poles		3					
Rated insulation voltage Ui		690V					
Rated impulse withstand voltage Uimp		6kV					
Conventional free air thermal current Ith (AC-1)		25A	25A	32A	40A	50A	50A
Controllable three-phase squirrel cage motor power (AC-3/AC-3e) kW	220/230/240V	2.2	3	4	5.5	7.5	9
	380/400/415V	4	5.5	7.5	11	15	18.5
	660/690V	5.5	7.5	10	15	18.5	18.5

TGC3 Series AC Contactor

Table, continued

Model & Spec.			TGC3-09	TGC3-12	TGC3-18	TGC3-25	TGC3-32	TGC3-38
Motor power under intermittent cycle duty system (AC-4) kW		220/230/240V	0.75	1.1	1.5	2.2	3	4
		380/400/415V	4	5.5	7.5	7.5	11	11
		660/690V	1.1	1.5	3	3.7	5.5	6
Electrical life, 10,000 times		AC-3	200		160			140
		AC-4	25					
Mechanical life, 10,000 times			1500					
Operation frequency Times / h	Electrical life	AC-3	1200				1000	
		AC-4	300					
	Mechanical life		3600					
Short time withstand current	1s		215	215	245	380	430	430
	10s		110	110	146	240	260	310
	1min		65	65	85	120	138	150
	10min		32	32	40	50	60	60
Rated making capacity (415V)	Comply with IEC60947 standard		Making current: 10xIe (AC-3) or 12xIe (AC-4)					
Rated breaking capacity (415V)	Comply with IEC60947 standard		Making and breaking current: 8xIe (AC-3) or 10xIe (AC-4)					
Model of the matched fuse of SCPD			RT16-00 20	RT16-00 25	RT16-00 32	RT16-00 40	RT16-00 50	RT16-00 63
Matched thermal overload relay			TGR3-38 (In development)					
Wiring capacity of main circuit, mm^2	Soft wire without terminal blocks	1 pcs	1…4		1.5…6	1.5…10	2.5…10	
		2 pcs	1…4		1.5…6	1.5…6	2.5…10	
	Soft wire with terminal blocks	1 pcs	1…4		1…6	1…6	1…10	
		2 pcs	1…2.5		1…4	1…4	1.5…6	
	Hard wire without terminal blocks	1 pcs	1…4		1.5…6	1.5…6	1.5…10	
		2 pcs	1…4		1.5…6	1.5…6	2.5…10	
	Tightenign torque N.m		1.7			2.5		
Control coil parameters	Power 50/60Hz	Pull-in VA	70					
		Hold VA	9					
	Operation range		θ≤+60oC: Pull-in voltage: 85%~110%Us; 70%~110%Us (Installation angle ≤+5o, Except for 24V) θ≤+70oC: Pull-in voltage: 100%~110%Us; Release voltage: 20%~75%Us					
	Operation time	ON	From coil power-on to main circuit connection: 12~25ms					
		OFF	From coil power-off to main circuit disconnection: 5~26ms					
		Nonoverlap time	Between NO and NC contacts: 3ms					

TGC3 Series AC Contactor

Table 2

Aux. contact parameters				
Min. switching capacity	Umin(V)		17	
	Imin(mA)		5	
Rated control capacity AC-15	Rated operating voltage Ue (V)		220	380
	Rated operating current Ie (A)		1.6	0.95
Rated control capacity DC-13	Rated operating voltage Ue (V)		220	
	Rated operating current Ie (A)		0.15	
Rated insulation voltage Ui		V	690	
Conventional thermal current Ith		A	10	
Rated withstand impulse voltage Uimp		kV	6	
Rated limit short circuit current		Matched SCPD model	RT16-00 10	
Short time withstand current		100ms	140A	
		500ms	120A	
		1s	100A	
Cable connection mm^2	Soft wire without cold-press terminal	1 pcs	1~4	
		2 pcs		
	Soft wire with cold-press terminal	1 pcs	1~4	
		2 pcs	1~2.5	
	Hard wire	1 pcs	1~4	
		2 pcs		
Size of fastening screw			M3.5	
Tightening torque N.m			1.7	

4 Operating Conditions

4.1 Ambient temperature (around the device):

Standard operating temperature: -25°C~+60°C; Limit operating temp.: -40°C~+70°C; Storage temp.: -60°C~+80°C.

4.2 Altitude: Not exceed 3000m;

4.3 When the maximum temperature is +40°C, the relative humidity of the air does not exceed 50%. A higher relative humidity is allowed at lower temperatures, for example, the relative humidity is 90% at +20°C. Special measures should be taken for condensation occasionally occurred due to temperature changes;

4.4 Pollution degree: Level 3;

4.5 Installation category: Class III;

4.6 Installation conditions: Horizontal installation or vertical installation; the inclination angle between the mounting surface and the vertical surface is ≤±30°;

4.7 Installation method: Installed with screws or TH35mm rails;

4.8 Impact resistance 1/2 sine wave = 11ms:

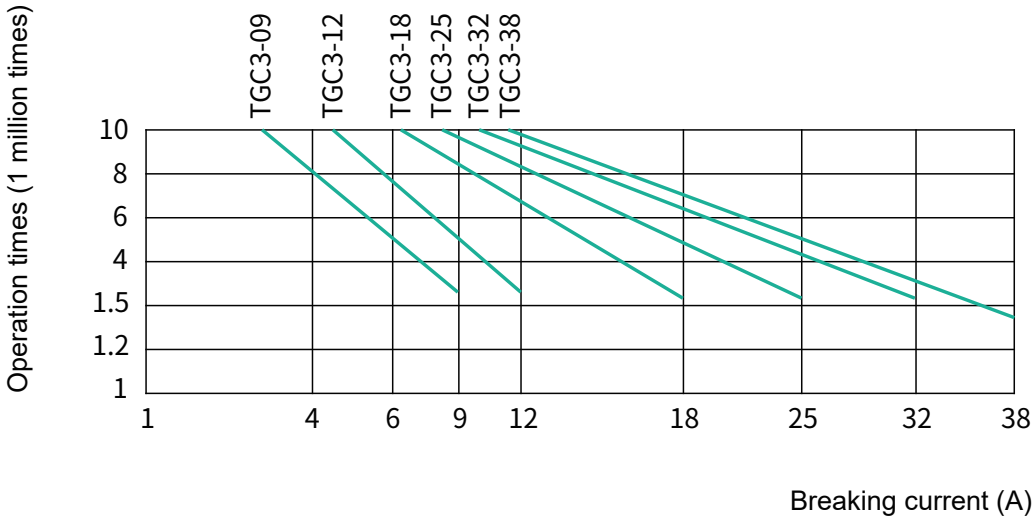
Contactor opened: 09~18A 10gn; 25~38A 8gn; Contactor closed: 09~ 38A 15gn;

4.9 Vibration resistance:5... 300 Hz: Contactor opened: 09~38A 2gn; Contactor closed: 09~38A 4gn.

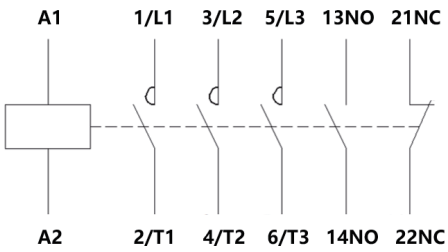
TGC3 Series AC Contactor

5 Contactor Life Curve

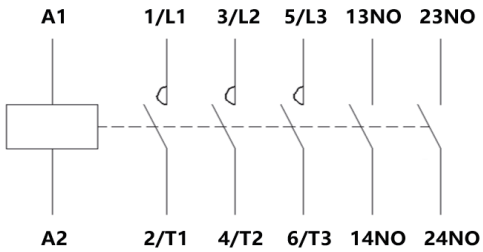
When the AC contactor is used in the AC-3 category (ue < 440V), the electrical life curve of the AC contactor can refer to the figure below:



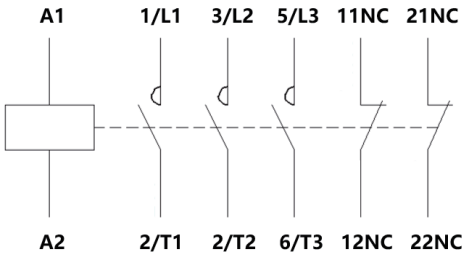
6 Electrical Wiring Diagram



TGC3-0911~3811



TGC3-0920~3820



TGC3-0902~3802

TGC3 Series AC Contactor

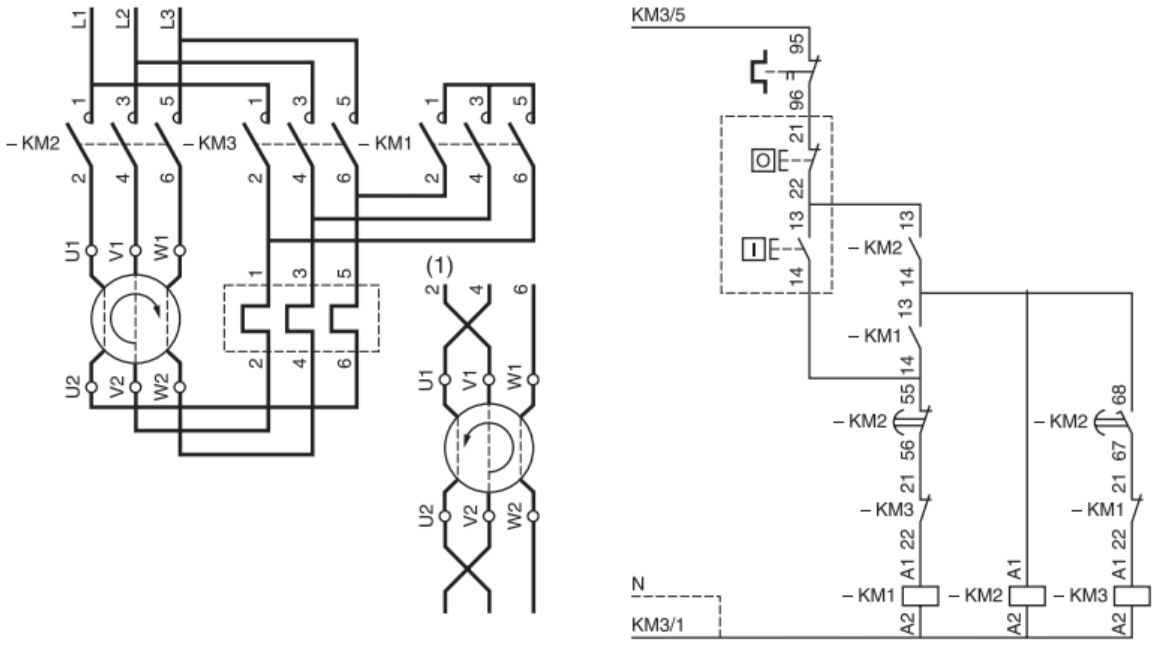
7 Star-Delta Start-Up Scheme

7.1 Star-Delta Start Contactor Options

Table 3

P(kW)	In(A)	IrD(A)	Straight-line wiring method of contactor, KM2	Delta wiring method of contactor, KM3	Star wiring method of contactor, KM1
1.5	3.5	2	TGC3-09	TGC3-09	TGC3-09
2.2	5	3	TGC3-09	TGC3-09	TGC3-09
3	6.6	4	TGC3-09	TGC3-09	TGC3-09
4	8.5	5	TGC3-09	TGC3-09	TGC3-09
5.5	11.5	6	TGC3-09	TGC3-09	TGC3-09
7.5	15.5	9	TGC3-12	TGC3-12	TGC3-09
9	18.5	11	TGC3-18	TGC3-18	TGC3-09
11	22	13	TGC3-18	TGC3-18	TGC3-09
15	30	16	TGC3-25	TGC3-25	TGC3-12
18.5	37	22	TGC3-25	TGC3-25	TGC3-18
22	44	26	TGC3-32	TGC3-32	TGC3-18
30	60	35	TGC3-38	TGC3-38	TGC3-25

7.2 Electrical Wiring Diagram for Star-Delta Scheme



Note: Mechanical interlock between KM3 and KM1

TGC3 Series AC Contactor

8 Outline and Installation Dimensions

8.1 TGC3-09~38 Outline and Installation Dimensions

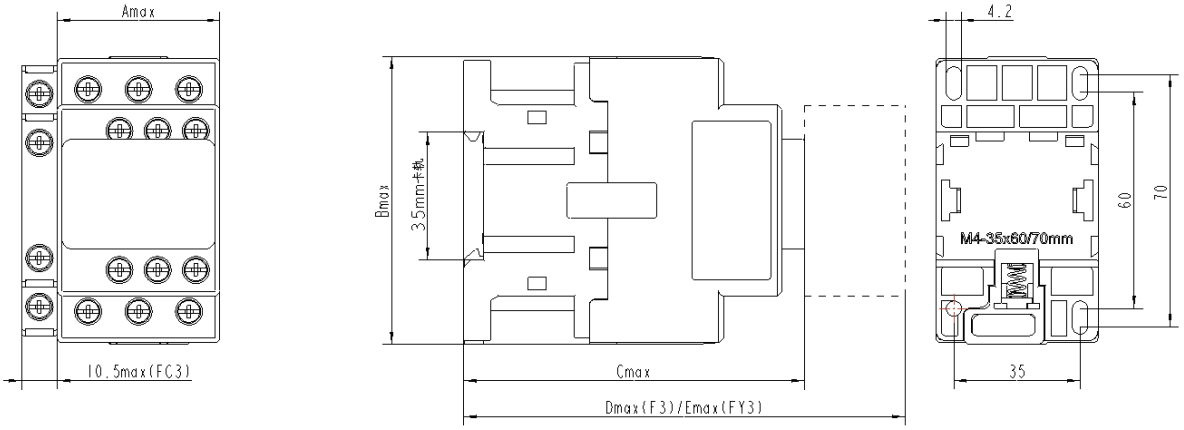


Table 4

Model & Spec.	Amax	Bmax	Cmax	Dmax	Emax
TGC3-09~18	45.5	80	95.5	126.5	147
TGC3-25~38	45.5	86	99	130.5	151

8.2 TGC3-09N~38N Outline and Installation Dimensions

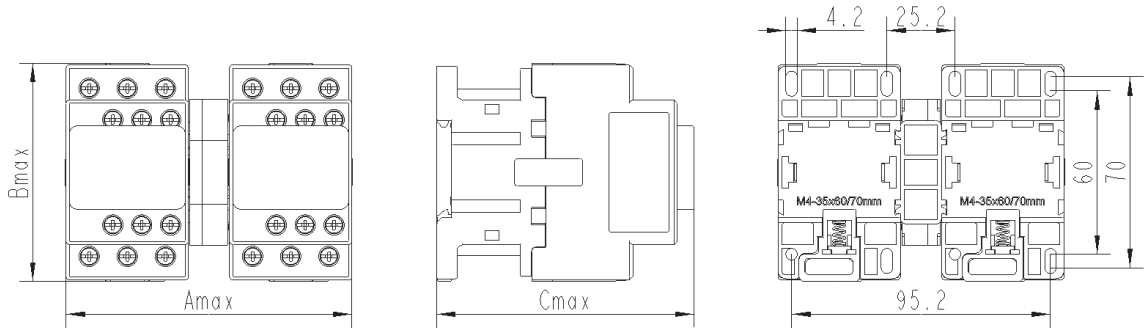


Table 5

Model & Spec.	Amax	Bmax	Cmax
TGC3-09~18N	106	80	95.5
TGC3-25~38N	106	86	99

TGC3 Series AC Contactor

9 Accessory Installation Method

9.1 The installation and disassembly methods of the dust cover see Fig. 1 and Fig. 2:

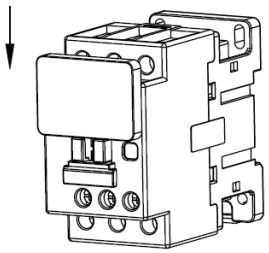


Fig. 1 Dust cover installation method

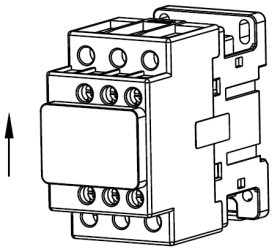


Fig. 2 Dust cover disassembly method

9.2 The installation and disassembly methods of the top mounted accessories (F3 top-hung aux., FY3 air delay head) see Fig. 3 and Fig. 4:

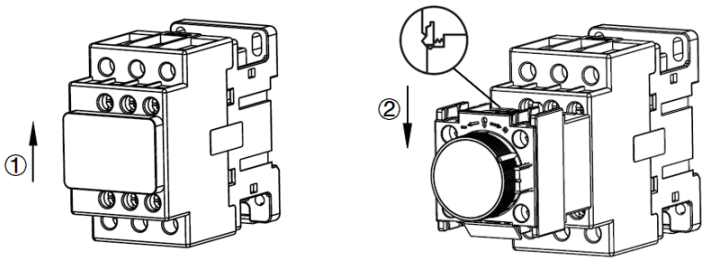


Fig. 3 Installation method of F3 top-hung aux., FY3 air delay head

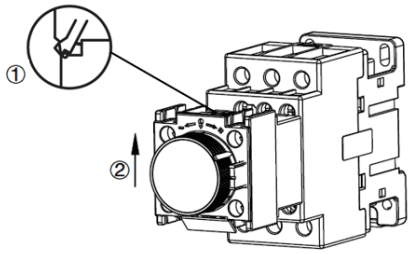


Fig. 4 Disassembly method of F3 top-hung aux., FY3 air delay head

9.3 The installation and disassembly methods of the side mounted accessories FC3 side-hung aux. contact see Fig. 5 and Fig. 6:

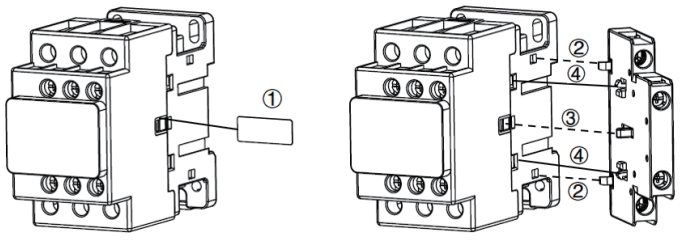


Fig. 5 Installation method of FC3 side-hung aux. contact

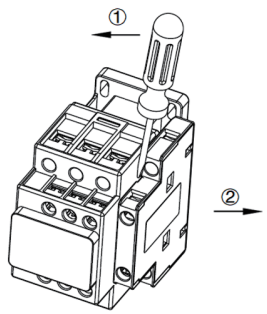


Fig. 6 Disassembly method of FC3 side-hung aux. contact

9.4 The installation methods of the mechanical interlock FJ3 and mechanical electrical interlock FJ3e see Fig. 7:

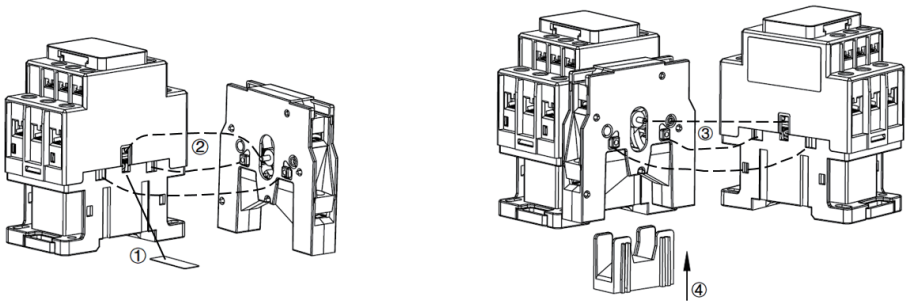


Fig. 7 Installation method of mechanical interlock FJ3 and mechanical electrical interlock FJ3e

9.5 The installation and disassembly methods of the standard rail see Fig. 8 and Fig. 9:

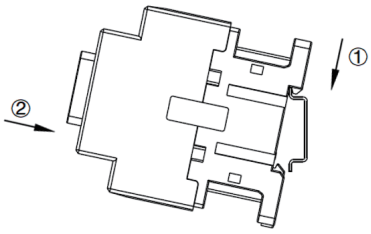


Fig. 8 Installation method

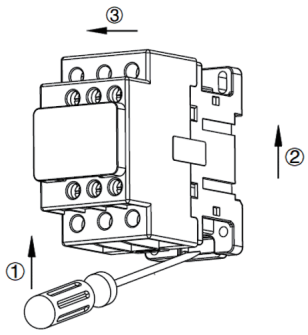
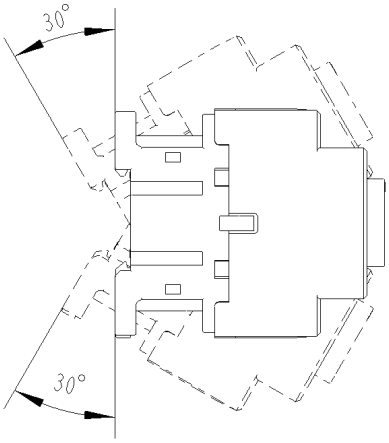
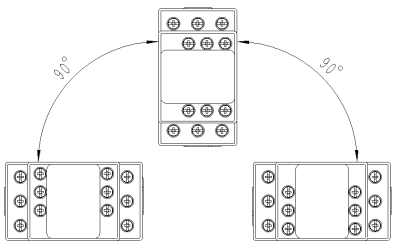


Fig. 9 Disassembly method

10 Working Position



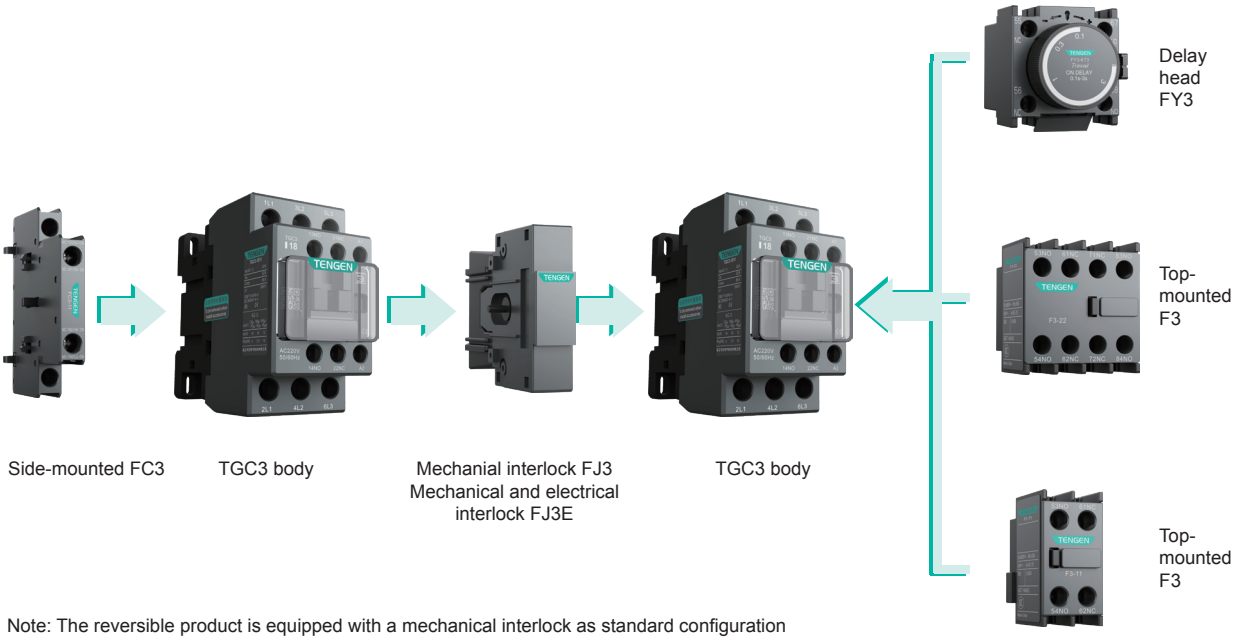
Installation angle: ≤±30°



Installation method: Horizontal or vertical

TGC3 Series AC Contactor

11 Accessory Installation Diagram



Note: The reversible product is equipped with a mechanical interlock as standard configuration

12 Accessory Parameters and Model

112.1 Aux. contact F3/FC3

12.1.1 Aux. contact model

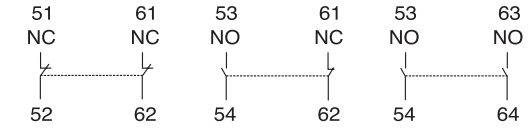
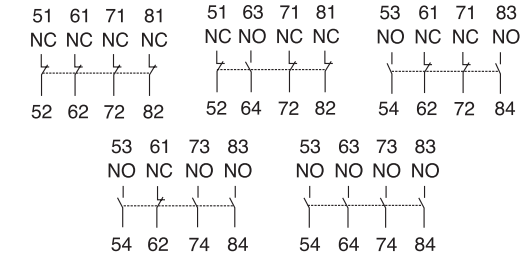
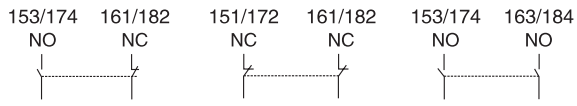
F C 3 – 22

F	Accessory code	
C	Aux. contact	Default: Top aux. C: Side aux.
3	Design No.	
22	Contact type	2 sets: 11, 20, 02 4 sets: 22, 40, 04, 31, 13 (Only for top aux.)

TGC3 Series AC Contactor

12.1.2 Aux. contact parameters

Table 6

Installation location	Number of poles	Contact layout	Contact type	Available product	Material description
Top	2		0NO+2NC	TGC3-09~38	F3-02
			1NO+1NC		F3-11
			2NO+0NC		F3-20
	4		0NO+4NC		F3-04
			1NO+3NC		F3-13
			2NO+2NC		F3-22
			3NO+1NC		F3-31
			4NO+0NC		F3-40
Side	2		1NO+1NC		FC3-11
			0NO+2NC		FC3-02
			2NO+0NC		FC3-20

12.1.3 Matchable contact module

Table 7

Contactor	Instantaneous aux. contact module		
Model	Top-mounted		Side-mounted
TGC3-09~38	2 poles	4 poles	2 poles

12.2 Air delay head FY3

12.2.1 Air delay head model

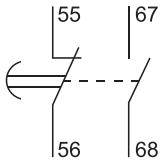
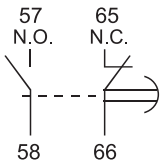
F Y 3 - K T 3

F	Accessory code	
Y	Delay module	
3	Design No.	
K	Air delay head	
T	Delay type	T: Power-on delay D: Power-off delay
3	Delay range	3: 0.1~3s 30: 0.1~30s 180: 10~180s

TGC3 Series AC Contactor

12.2.2 Air delay head parameter FY3

Table 8

Installation location	Delay type	Number of contacts	Wiring diagram	Delay range	Available product	Material description
Top	Power-on delay	1NO+1NC		0.1~3s	TGC3-09~38	FY3-KT3
				0.1~30s		FY3-KT30
				10~180s		FY3-KT180
	Power-off delay	1NO+1NC		0.1~3s		FY3-KD3
				0.1~30s		FY3-KD30
				10~180s		FY3-KD180

The waiting time between the N/C contact opening and the N/O contact closing is 40ms ± 15ms.

12.3 Built-in Surge

Product features:

- Effective protection of circuits that are sensitive to "high-frequency" interference. Used for sinusoidal voltage waveforms, i.e., when the total harmonic distortion is less than 5%;
- High energy absorption, reducing transient voltage peaks, and effectively reducing high-frequency waves

Table 9

Contactor coil voltage	Max. peak voltage	Opening time	Material description
AC 24-48V	150V	≤30ms	Example: TGC3-0911 24V 50/60Hz(R)
AC 110-127V	3Us		
AC 220-240V			
AC 380-440V			