TGC1 Series AC Contactor

1 Overview

The TGC1 series AC contactor (hereinafter referred to as contactors) feature with exquisite appearance and small shape, mainly used in AC 50Hz (or 60Hz) power system with a rated operating voltage up to 690V, with a rated working voltage of 380V under AC-3 use category, and with a rated current up to 95A for remote power-on and power-off of circuit, and can be combined with the appropriate thermal relay to form an electromagnetic starter for protection of circuit that overload may occur. The contactor is suitable for frequent start and control of AC motor.

This product complies with standard IEC 60947-4-1.

2 Type Designation

2.1 Model description

TGC1 - 18 10 N

- **N**: Function code
  - Default: Conventional contactor
  - N: Directional contactor
- **10**: Auxiliary contact type
  - 10: 1NO+0NC(for 06~38A)
  - 01: 0NO+1NC(for 06~38A)
  - 11: 1NO+1NC(for 09~95A)
- **18**: Rated current
  - 06: 06A 09: 09A 12: 12A 18: 18A
  - 25: 25A 32: 32A 38: 38A 40: 40A
  - 50: 50A 65: 65A 80: 80A 95: 95A
- **TGC1**: Contactor model

Notes: The contactor product with 09~38A standard 11 aux. can select 0911x ~ 3811x;
It is planned that the 0911-3811 specification exits the market, and the TGCA-0911~3811 specification is used instead of it.

2.2 AC contactor model table

Motor power Pe (kW AC-3,380V)	Rated current Ie (A)	Auxiliary contact		Item description
		Normal open NO	Normal closed NC	
2.2	6	1	-	TGC1-0610*
		-	1	TGC1-0601*
4	9	1	-	TGC1-0910*
		-	1	TGC1-0901*
		1	1	TGC1-0911*
5.5	12	1	-	TGC1-1210*
		-	1	TGC1-1201*
		1	1	TGC1-1211*
7.5	18	1	-	TGC1-1810*
		-	1	TGC1-1801*
		1	1	TGC1-1811*
11	25	1	-	TGC1-2510*
		-	1	TGC1-2501*
		1	1	TGC1-2511*
15	32	1	-	TGC1-3210*
		-	1	TGC1-3201*
		1	1	TGC1-3211*

TGC1 Series AC Contactor

Continued table

18.5	38	1	-	TGC1-3810*
		-	1	TGC1-3801*
		1	1	TGC1-3811*
18.5	40	1	1	TGC1-4011*
22	50	1	1	TGC1-5011*
30	65	1	1	TGC1-6511*
37	80	1	1	TGC1-8011*
45	95	1	1	TGC1-9511*

Coil voltage specification table									
Coil voltage	V	24	36	48	110	220	380	400	415
Coil voltage code	50Hz	B5	C5	E5	F5	M5	Q5	V5	N5
	50/60Hz	B7	C7	E7	F7	M7	Q7	V7	N7

3 Technical Parameters

3.1 Parameters and technical performance

Model			TGC1 -06	TGC1 -09	TGC1 -12	TGC1 -18	TGC1 -25	TGC1 -32	TGC1 -38	TGC1 -40	TGC1 -50	TGC1 -65	TGC1 -80	TGC1 -95
Main circuit characteristics														
Number of poles			3 Poles											
Rated insulation voltage Ui V			690											
Rated withstand impulse voltage Uimp kV			6										8	
Rated operating voltage Ue V			220/230，380/400，660/690											
Rated making capacity			Power-on current:10×Ie(AC-3)or12×Ie(AC-4)											
Rated breaking capacity			Making and breaking current: 8×Ie(AC-3)or10×Ie(AC-4)											
Rated operating current Ie	380V 400V	AC-3 A	6	9	12	18	25	32	38	40	50	65	80	95
		AC-4 A	2.6	3.5	5	7.7	8.5	12	14	18.5	24	28	37	44
	660V 690V	AC-3 A	3.8	6.6	8.9	12	18	22	22	34	39	42	49	49
		AC-4 A	1	1.5	2	3.8	4.4	7.5	8.9	9	12	14	17.3	21.3
Free air resistive current Ith A			16	20	20	25	32	40	50	50	60	80	110	110
Rated work power Pe	380V 400V	AC-3 kW	2.2	4	5.5	7.5	11	15	18.5	18.5	22	30	37	45
		AC-4 kW	1.1	1.5	2.2	3.3	4	5.4	5.5	7.5	11	15	18.5	22
	660V 690V	AC-3 kW	3	5.5	7.5	10	15	18.5	18.5	30	33	37	45	45
		AC-4 kW	0.75	1.1	1.5	3	3.7	5.5	6	7.5	10	11	15	18.5
Electrical life	AC-3	10,000 times	120					100					80	
	AC-4	10,000 times	25							20			13	
Mechanical life	10,000 times		1600				1000			900			650	
Operating frequency	Electrical life	AC-3times/h	1200					600						
		AC-4times/h	300										120	
	Mechanical life	times/h	3600											

TGC1 Series AC Contactor

Continued table

Fuse used in SCPD																										
Model of fuse used			RT16-00 20		RT16-00 20		RT16-00 20		RT16-00 25		RT16-00 40		RT16-00 50		RT16-00 63		RT16-00 50		RT16-00 63		RT16-00 80		RT16-00 100		RT16-00 125	
Matched thermal relay			TGR1-18								TGR1-38						TGR1-95									
Main circuit terminal wiring capacity																										
Cold-pressed terminal	Qty.		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
	Non-prefabricated terminal flexible cable	mm^2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1.5/6	1.5/6	1.5/6	1.5/6	1.5/6	1.5/6	2.5/25	2.5/16	2.5/25	2.5/16	2.5/25	2.5/16	4/50	4/25	4/50	4/25
	Prefabricated terminal flexible cable		1/4	1/2.5	1/4	1/2.5	1/4	1/2.5	1/4	1/2.5	1/6	1/4	1/6	1/4	1/6	1/4	2.5/25	2.5/10	2.5/25	2.5/10	2.5/25	2.5/10	4/50	4/16	4/50	4/16
	Non-prefabricated terminal hard cable		1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1.5/10	1.5/6	1.5/10	1.5/6	1.5/10	1.5/6	2.5/25	2.5/10	2.5/25	2.5/10	2.5/25	2.5/10	4/50	4/25	4/50	4/25
Coils																										
Coil power	50Hz	Pull-in VA	70								70（100）						200						200			
		Holding VA	7								7（9）						20						26			
		Power W	2~3（1.8~2.7）								2~3（3~4）						6~10						6~10			
Allowable control loop voltage Us	Pull-in	V	Pull-in voltage: 85%Us~110%Us																							
	Release	V	Release voltage: 20%Us~75%Us																							
Auxiliary contact																										
Basic parameters of auxiliary contact	Ith	A	10																							
	Rated control capacity	AC-15 VA	360																							
		DC-13 W	33																							
Certification			CE, CCC																							

Note: 1NO+1NC value is in the TGC1-09~38 specifications ().

3.2 Coil voltage specification table

Coil voltage	V	24	36	48	110	220	380	400	415
Coil voltage code	50Hz	B5	C5	E5	F5	M5	Q5	V5	N5
	50/60Hz	B7	C7	E7	F7	M7	Q7	V7	N7

4 Operating Conditions

4.1 Ambient temperature (around the equipment): Allowable working temperature: -35ºC~+70ºC; normal working temperature: -5ºC~+40ºC; when the working environment temperature is higher than +40ºC, by considering that the allowable limit temperature rise of the product will be reduced, the rated working current must be reduced (the derating coefficient sees table below), and the quantity of the contactors mounted in the standard assembly shall be decreased, otherwise the product may be damaged, the service life may be shortened, and the working reliability may be reduced, and furthermore the product action range may be affected; when the working environment temperature is lower than -5°, considering that the insulation and lubrication grease may be congealed at too low ambient temperature resulting in product action failure, please contact the manufacturer and user for design or use.

TGC1 Series AC Contactor

Ambient temperature ℃	40	50	55	60	65	70
Correction factor	1	0.98	0.95	0.93	0.875	0.75

4.2 Installation conditions: The inclination between the mounting surface and the vertical surface is not more than ±22.5ºC, and the installation category is Class III;

4.3 Pollution degree: 3

4.4 Altitude: Not more than 2,000 meters

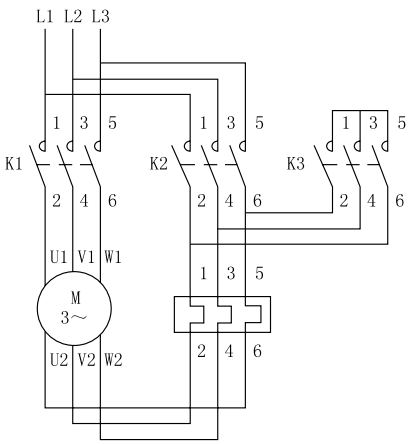
4.5 Atmospheric conditions: When the maximum temperature is +70ºC, the relative humidity of the air does not exceed 50%. Higher relative humidity is allowed at lower temperatures, for example, up to 90% at 20ºC. Special measures should be taken for condensation occurred occasionally due to temperature changes;

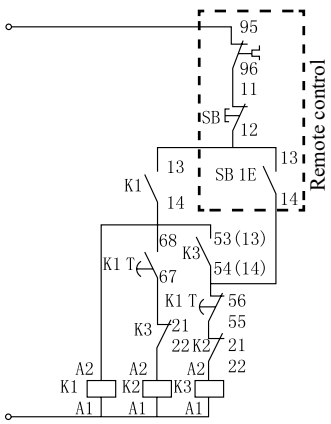
4.6 The product should be installed and used in a place where there is no obvious shaking, impact and vibration.

5 Select Bulk Parts to Assemble Star-Delta Starter

The start-delta reduced-voltage starter consists of three common AC contactors to realize reduced-volage start by changing the motor winding connection. As the motor starting current is in direct proportion to the power voltage, this starting current is only 1/3 of the full volage starting current, and the starting moment is only 1/3 of the full voltage starting moment. Therefore, this start method is only suitable for non-load start or low load torque, requiring that the load torque is increased gradually.

5.1 Start-delta starting wiring diagram





TGC1 Series AC Contactor

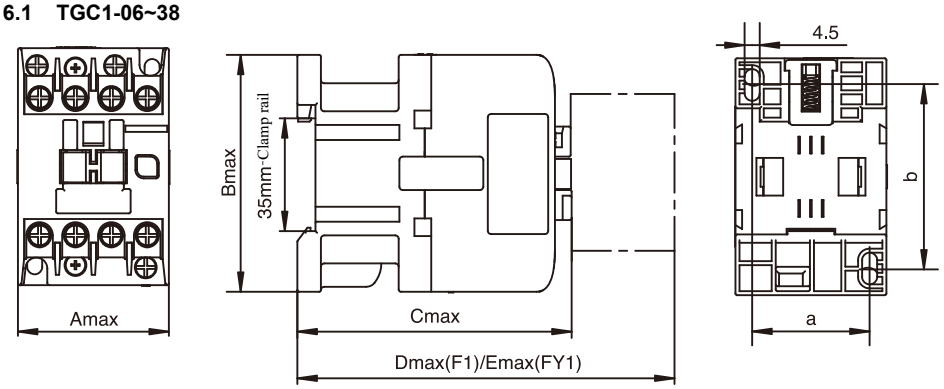
5.2 Selection table for start-delta starting microcomponent contactor

380V three-phase squirrel cage motor rated current Ie		Power (kW)	AC contactor model & Spec.		
Power (kW)	Rated current Ie (A)	0.58 rated current Ie (A)	Direct connection of one unit K1	Delta connection of one unit K2	Start connection of one unit K3
5.5	11.5	6	TGC1-0910	TGC1-0901	TGC1-0901
7.5	15.5	9	TGC1-1210	TGC1-1201	TGC1-0901
9	18.5	11	TGC1-1810	TGC1-1801	TGC1-0901
10	20	11.6	TGC1-1810	TGC1-1801	TGC1-0901
11	22	13	TGC1-1810	TGC1-1801	TGC1-0901
15	30	16	TGC1-2510	TGC1-2501	TGC1-1201
18.5	37	22	TGC1-2510	TGC1-2501	TGC1-1801
22	44	26	TGC1-3210	TGC1-3201	TGC1-1801
25	50	29	TGC1-3210	TGC1-3201	TGC1-2501
30	60	35	TGC1-4011	TGC1-4011	TGC1-2501
33	68	39.5	TGC1-4011	TGC1-4011	TGC1-3201
37	72	40	TGC1-5011	TGC1-5011	TGC1-3201
40	79	46	TGC1-5011	TGC1-5011	TGC1-4011
45	85	47	TGC1-6511	TGC1-6511	TGC1-4011
51	98	56	TGC1-6511	TGC1-6511	TGC1-4011
55	105	58	TGC1-6511	TGC1-6511	TGC1-4011
59	112	65	TGC1-8011	TGC1-8011	TGC1-5011
63	117	67.9	TGC1-8011	TGC1-8011	TGC1-5011
75	138	78	TGC1-9511	TGC1-9511	TGC1-6511

TGC1 Series AC Contactor

6 Outline and Installation Dimensions

6.1 TGC1-06~38

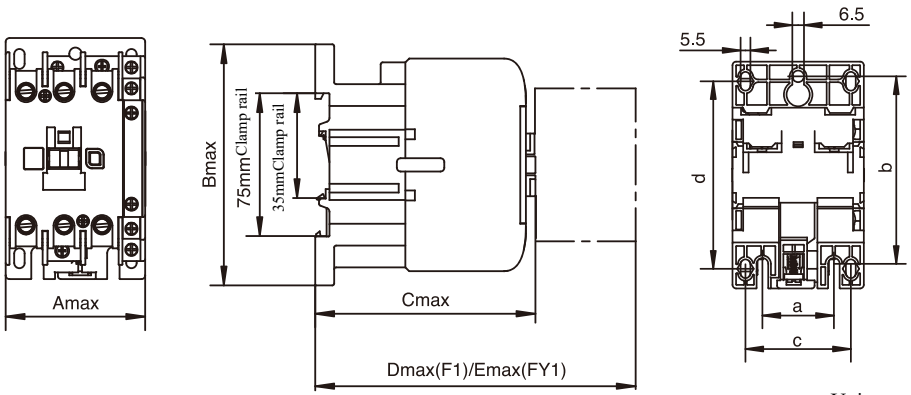


Unit: mm

Spec. & Model	Amax	Bmax	Cmax	Dmax	Emax	a	b	c	d
TGC1-06	45	74	73	111	131	35	50/60	-	-
TGC1-09~18	45	71(73)	82(87)	120(120.5)	140	35	50/60	-	-
TGC1-25~38	56	82.5	96(98)	134	154	40	50/60	-	-

Note: 1NO+1NC value is in the TGC1-09~38 specifications ().

6.2 TGC1-40~95

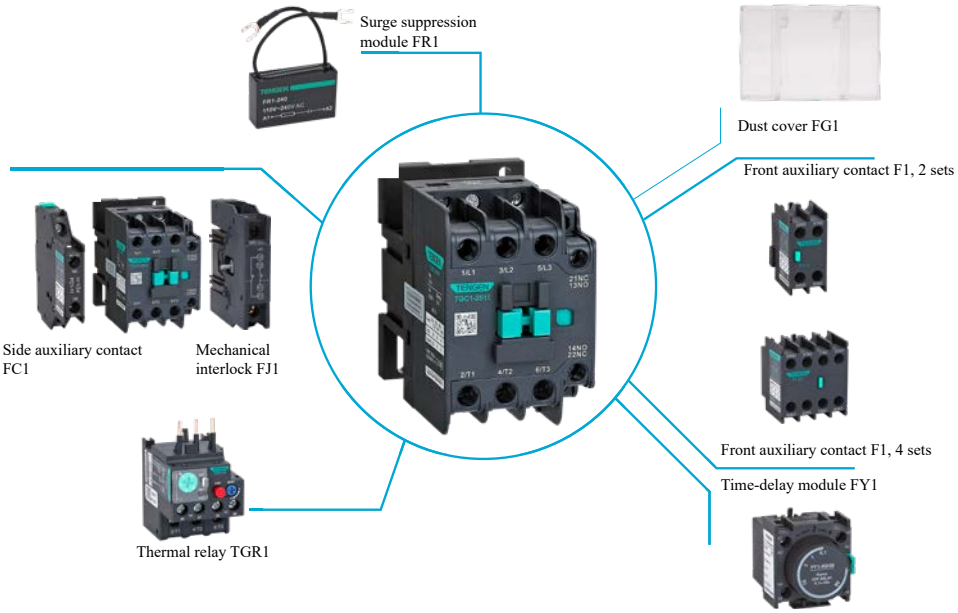


Unit: mm

Spec. & Model	Amax	Bmax	Cmax	Dmax	Emax	a	b	c	d
TGC1-40~65	73.5	127	116	154	174	40	100/100	59	100/110
TGC1-80~95	84.5	126.5	123	161	181	40	100/100	64	102/111

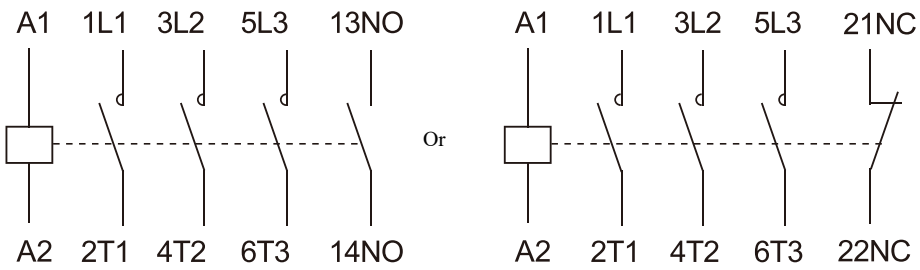
TGC1 Series AC Contactor

7 Accessory Installation Diagram

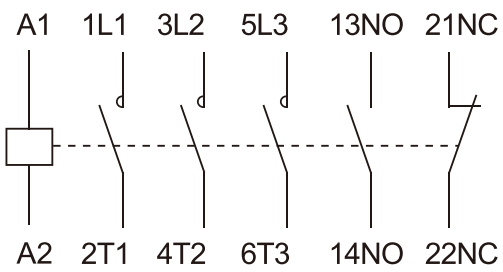


Note: Only one type of top mounting accessory can be required.
One set can be installed on the left and right side auxiliary sides, respectively; when a mechanical interlock is provided, only one set is installed.

TGC1-06~38 Wiring Diagram



TGC1-09~95 Wiring Diagram



TGC1 Series AC Contactor

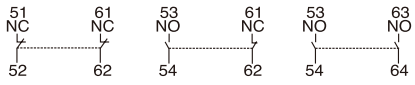
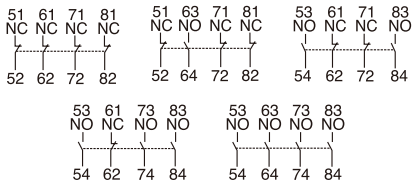
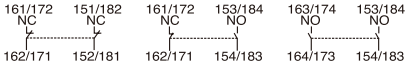
8 Accessories Model

8.1 Auxiliary contact F1/FC1

F C 1 - 22

- Contact type
  - 2 sets: 11, 20, 02
  - 4 sets: 22,40,04,31,13(only suitable for Front auxiliary)
- Design code.
- Auxiliary contact
  - Default: Front auxiliary c: Side auxiliary
- F: Accessory code

8.1.1 Used in normal environment

Mounting location	Number of poles	Contact layout	Contact type	Available product	Item description
Front	2		1NO+1NC	TGC1-06~95	F1-11
			2NO+0NC		F1-20
			0NO+2NC		F1-02
	4		2NO+2NC		F1-22
			4NO+0NC		F1-40
			0NO+4NC		F1-04
			3NO+1NC		F1-31
			1NO+3NC		F1-13
Side	2		1NO+1NC	TGC1-09~95	FC1-11
			2NO+0NC		FC1-20
			0NO+2NC		FC1-02

8.1.2 The maximum number of auxiliary contacts that can be matched

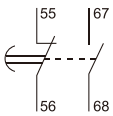
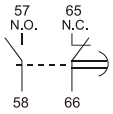
Contactor	Momentary auxiliary contact module		
Model	Front installed		Side installed
	2 poles	4 poles	2 poles
TGC1-06	1	Or 1	/
TGC1-09~95	1	Or 1	2

TGC1 Series AC Contactor

8.2 Air time-delay auxiliary contact FY1

F Y 1 - K T 3

- Time-delay range
  3:01~3s 30:01~30s
  180:10~180s
- Time-delay type
  T: Power-on delay
  D: Power-off delay
- K: Air time-delay auxiliary contact
- Design code.
- Y: Time-delay module
- F: Accessory code

Installation location	Delay type	Number of contacts	Wiring diagram	Delay range	Available product	Item description
Front	Power-on delay	1NO+1NC		0.1~3s	TGC1-06~95	FY1-KT3
				0.1~30s		FY1-KT30
				10~180s		FY1-KT180
	Power-off delay	1NO+1NC		0.1~3s		FY1-KD3
				0.1~30s		FY1-KD30
				10~180s		FY1-KD180

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

8.3 Mechanical and electrical interlock FJ1

F J 1 - 06 E

- Specification
  L: Mechanical interlock
  E: Mechanical and electrical interlock
- Frame current:
  6:6A 38:38A
  95:95A
- Design code.
- J: Mechanical interlock
- F: Accessory code

Installation location	Interlocking method	Applicable Products	Item Description	Aux. specification of applicable product
Side	Mechanical interlock	TGC1-06	FJ1-06L	
		TGC1-09 ~ 38	FJ1-38L	1NO+1NC
		TGC1-40 ~ 95	FJ1-95L	
	Mechanical + electrical interlock	TGC1-09 ~ 38	FJ1-38E	1NO or 1NC
		TGC1-40 ~ 95	FJ1-95E	

TGC1 Series AC Contactor

8.4 Dust cover FG1

F G 1 - 38

- 38: Frame current:
  - 18: For 06-18A
  - 38: For 25-38A
  - 65: For 40-65A
  - 95: For 80-95A
- 1: Design code.
- G: Transparent cover
- F: Accessory code

Installation location	Applicable Products	Item Description
Front	TGC1-06~18A	FG1-18
	TGC1-25~38A	FG1-38
	TGC1-40~65A	FG1-65
	TGC1-80~95A	FG1-95

8.5 Surge suppression module (resistance-capacitive type) FR1

F R 1 - 48

- 48: Protection voltage range:
  - 48: 24…48V
  - 127: 50…127V
  - 240: 110…240V
  - 415: 380…415V
- 1: Design code.
- R: Surge suppression module
- F: Accessory code

Product Features:

8.5.1 Effectively protect circuits that are more sensitive to "high-frequency" interference. Used for sinusoidal voltage waveforms, that is, when the total harmonic distortion is less than 5%.

8.5.2 The maximum voltage is limited to 3Uc, and the maximum oscillation frequency is limited to 400Hz.

8.5.3 The breaking time is slightly increased (1.2 to 2 times the normal time).

Installation location	Voltage protection range		Applicable Products	Item Description
	AC symbol	DC symbol		
Front	~	—	TGC1-06~95	FR1-48
	~	—		FR1-127
	~	—		FR1-240
	~	—		FR1-415

TGC1 Series AC Contactor

9 Main Parameters And Technical Performance Indicators Of Accessories

Item			Main technical parameters	
Rated working voltage V			Up to 380	
Rated insulation voltage V			690	
Free air resistive current A			10	
Rated making capacity			Making current 10Ie (AC-15) or (DC-13)	
Short circuit protection			gG wire: 10A	
Control capacity	Auxiliary contact	AC-15	380V	0.95A
		DC-13	220V	0.15A
	FY1 air time-delay auxiliary contact	AC-15	380V	0.95A
		DC-13	220V	0.15A
Standard			GB/T 14048.5;IEC 60947-5-1	
Product certification			CCC	
Housing protection grade			IP20	
Cable connection mm^2	Flexible cable without cold-pressed terminal		1~4	
			1~4	
	Flexible cable with cold-pressed terminal		1~4	
			1~2.5	
	Hard wire		1~4	
			1~4	
Screw size			M3.5	
Tightening torque N·M			0.8	