



Tem²Contact

Contactors and Thermal Overload Relays

TC Type Magnetic Contactors



Frame size

Type	screws clamp terminals		
Number of poles			
Rated operational voltage, Ue			
Rated insulation voltage, Ui			
Rated frequency			
Rated impulse withstand voltage, Uimp			
Maximum operating rate in operating cycles per hour(AC3)			
Durability			
	Mechanical		
	Electrical		
Current and power	AC-1, Thermal current	A	
	AC-3	200/240V	kW
			A
		380/440V	kW
			A
		500/550V	kW
			A
		690V	kW
			A
UL rating (50/60Hz)	Continuous current	A	
	Single phase	110~120V	HP
		220~240V	HP
		200~208V	HP
	Three phase	220~240V	HP
		440~480V	HP
		550~600V	HP
	NEMA size		
Size and weight	AC control	Weight	kg
		Size(W × H × D)	mm
	DC control	Weight	kg
		Size(W × H × D)	mm
Auxiliary(standard)			
Auxiliary	Side mount		
	Front mount		

18AF

TC-6a	TC-9a	TC-12a	TC-18a
●	●	●	●
3pole			
690V			
690V			
50/60Hz			
6kV			
1800 operations per hour			
15 mil. operations			
2.5 mil. operations			
25	25	25	32
2.2	2.5	3.5	4.5
9	11	13	18
3	4	5.5	7.5
7	9	12	18
3	4	7.5	7.5
6	7	12	13
3	4	7.5	7.5
4	5	9	9
25	25	25	32
0.5	0.5	0.75	1
1.5	1.5	2	3
2	2	3	5
3	3	5	7.5
5	5	7.5	10
7.5	7.5	10	15
00	00	0	0
0.33			
45 × 73.5 × 82			
0.5			
45 × 83 × 113.7			
1a or 1b			
TSU-01			
TSU-20, 11, 02, 40, 31, 22, 13, 04			

22AF

TC-9b	TC-12b	TC-18b	TC-22b*
●	●	●	●
3pole			
690V			
690V			
50/60Hz			
6kV			
1800 operations per hour			
15 mil. operations			
2.5 mil. operations			
25	25	32	40
2.5	3.5	4.5	5.5
11	13	18	22
4	5.5	7.5	11
9	12	18	22
4	7.5	7.5	15
7	12	13	20
4	7.5	7.5	15
6	9	9	18
25	25	40	40
0.5	0.75	1	2
1.5	2	3	3
2	3	5	7.5
3	5	7.5	10
5	7.5	10	15
7.5	10	15	20
00	00	0	1
0.34			
45 × 73.5 × 86			
0.51			
45 × 73.5 × 117.7			
1a1b			
TSU-01			
TSU-20, 11, 02, 40, 31, 22, 13, 04			

Note) Minimum conduct current of Auxiliary contactor is DC 17V 5mA.

TK Type Thermal Overload Relays



Type	Screws clamp terminals		
Rated operational voltage, Ue			
Rated insulation voltage, Ui			
Rated impulse withstand voltage, Uimp			
Trip class			
Setting range			
Size and weight	Weight	kg	
	Size(W × H × D)	mm	

TK-12a

●
690V
690V
6kV
10A, 20
0.1~18A
0.1
45 × 73.2 × 63.7

TK-32a

●
690V
690V
6kV
10A, 20
0.1~40A
0.17
45 × 75 × 90

The safety cover of magnetic contactor and thermal overload relay is optional.



40AF

TC-32a	TC-40a
●	●
3pole	
690V	
1000V	
50/60Hz	
8kV	
1800 operations per hour	
12 mil. operations	
2 mil. operations	
50	60
7.5	11
32	40
15	18.5
32	40
18.5	22
28	32
18.5	22
20	23
50	60
2	3
5	7.5
7.5	15
10	15
20	30
25	30
1	1
0.55	
69 × 83 × 93	
0.77	
69 × 83 × 120	
2a2b	
TSU-01	
TSU-20, 11, 02, 40, 31, 22, 13, 04	

65AF

TC-50a	TC-65a
●	●
3pole	
690V	
1000V	
50/60Hz	
8kV	
1800 operations per hour	
12 mil. operations	
2 mil. operations	
70	100
15	18.5
55	65
22	30
50	65
30	33
43	60
30	33
28	35
70	100
3	5
10	15
20	25
25	30
40	50
50	60
2	2
1.05	
79 × 106 × 122	
1.3	
79 × 106 × 149	
2a2b	
TSU-01	
TSU-20, 11, 02, 40, 31, 22, 13, 04	

100AF

TC-75a	TC-85a	TC-100a
●	●	●
3pole		
690V		
1000V		
50/60Hz		
8kV		
1800 operations per hour		
12 mil. operations		
2 mil. operations		
110	135	160
22	25	30
75	85	105
37	45	55
75	85	105
37	45	55
64	75	85
37	45	45
42	45	65
110	135	160
5	7.5	10
15	15	20
25	30	30
30	40	40
50	60	75
60	75	75
2	3	3
1.93		
94 × 140 × 137		
2.8		
94 × 140 × 174		
2a2b		
TSU-01		
TSU-20, 11, 02, 40, 31, 22, 13, 04		



TK-32a

●
690V
690V
6kV
10A, 20
0.1~40A
0.17
45 × 75 × 90

TK-63a

●
690V
690V
6kV
10A, 20
4~65A
0.31/0.33
55 × 81 × 100

TK-95a

●
690V
690V
6kV
10A, 20
7~100A
0.48/0.5
70 × 97 × 110

TC Type Magnetic Contactors



Frame size

Type	screws clamp terminals		
Number of poles			
Rated operational voltage, Ue			
Rated insulation voltage, Ui			
Rated frequency			
Rated impulse withstand voltage, Uimp			
Maximum operating rate in operating cycles per hour(AC3)			
Durability	Mechanical		
	Electrical		
Current and power	AC-1, Thermal current	A	
	AC-3	200/240V	kW
			A
		380/440V	kW
			A
		500/550V	kW
			A
		690V	kW
UL rating (50/60Hz)	Continuous current		A
	Single phase	110~120V	HP
		220~240V	HP
		200~208V	HP
	Three phase	220~240V	HP
		440~480V	HP
		550~600V	HP
	NEMA size		
Size and weight	AC control	Weight	kg
		Size(W × H × D)	mm
	DC control	Weight	kg
		Size(W × H × D)	mm
Auxiliary(standard)			
Auxiliary		Side mount	
		Front mount	



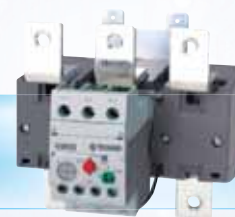
150AF

TC-130a	TC-150a
●	●
3pole	
690V	
1000V	
50/60Hz	
8kV	
1200 operations per hour	
5 mil. operations	
1 mil. operations	
160	210
37	45
130	150
60	75
130	150
60	70
90	100
55	55
60	60
160	210
10	15
20	25
40	40
40	50
75	100
75	75
3	4
2.4	
95 × 158 × 132	
2.3	
95 × 158 × 132	
2a2b	
TSU-01	
TSU-20, 11, 02, 40, 31, 22, 13, 04	

225AF

TC-185a	TC-225a
●	●
3pole	
690V	
1000V	
50/60Hz	
8kV	
1200 operations per hour	
5 mil. operations	
1 mil. operations	
230	275
55	75
185	225
90	132
185	225
110	132
180	200
110	140
120	150
230	275
15	15
30	40
60	60
60	75
125	150
125	150
4	4
5.4	
138 × 203 × 181	
2a2b	
TSU-100 (Max.4NO4NC)	
-	

TK Type Thermal Overload Relays



Type	Screws clamp terminals		
Rated operational voltage, Ue			
Rated insulation voltage, Ui			
Rated impulse withstand voltage, Uimp			
Trip class			
Setting range			
Size and weight		Weight	kg
		Size(W × H × D)	mm

TK-150a

●
690V
690V
6kV
10A, 20
34~150A
0.67
95 × 109 × 113

TK-225a

●
690V
690V
6kV
10A, 20
65~240A
2.5
147 × 141 × 184

* The safety cover of magnetic contactor and thermal overload relay is optional.



400AF

TC-265a	TC-330a	TC-400a
●	●	●
	3pole	
	690V	
	1000V	
	50/60Hz	
	8kV	
	1200 operations per hour	
	5 mil. operations	2.5 mil. operations
	1 mil. operations	0.5 mil. operations
300	350	450
80	90	125
265	330	400
147	160	200
265	330	400
147	160	225
225	280	350
160	200	250
185	225	300
300	350	450
-	-	-
-	-	-
75	100	125
100	125	150
200	250	300
200	250	300
5	5	5

9.2
163 × 243 × 198

2a2b

TSU-100 (Max.4NO4NC)

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800AF

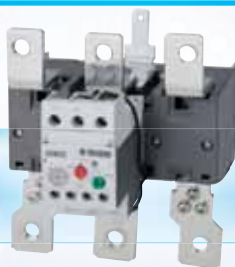
TC-500a	TC-630a	TC-800a
●	●	●
	3pole	
	690V	
	1000V	
	50/60Hz	
	8kV	
	1200 operations per hour	
	2.5 mil. operations	
	0.5 mil. operations	
580	660	900
147	190	220
500	630	800
265	330	440
500	630	800
265	330	500
400	500	720
300	400	500
380	420	630
580	660	900
-	-	-
-	-	-
150	200	200
200	250	300
400	500	600
400	500	600
6	6	7

22.4
285 × 312 × 242

2a2b

TSU-100 (Max.4NO4NC)

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TK-400a

●
690V
690V
6kV
10A, 20
85~400A
2.6
151 × 171 × 198

TK-800a

●
690V
690V
6kV
10A, 20
200~800A
11.5
360 × 530 × 212

Contactor

TC	Magnetic Contactors	T	C		22	R	60Hz AC220V
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Type	
C	AC coil
D	DC coil

W	Enclosed Starter
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Ampere Frame			
6	40	130	400
9	50	150	500
12	65	185	630
18	75	225	800
22	85	265	
32	100	330	

Application	
-	General / Standard
R	Reversing

Enclosed type Magnetic Switches (Metal)	
-	Without push button
B	With push button

Enclosed type Magnetic Switches (Mould)	
M	Without push button
MB	With push button

• Low AF

Type	Ac coil		Dc coil
	50Hz	60Hz	DC
TC 6a~100a	24	24	12
	42	-	24V
	48	48	48
	100	100	60
	110	110	80
	120	120	100
	200	200	110
	220	220	125
	230	230	200
	240	240	220
	380	380	250
	415	415	
	440	440	
	500	500	
	550	550	

• High AF

Type	Nominal Voltage	Ac/Dc common coil	
		AC 50Hz/60Hz	DC
TC 130a~150a	24V Note1	24~25V	24V
	48V Note1	48~50V	48V
	100~200V	100~240V	100~220V
	110 Note2	110	110
	220 Note2	220	220
TC 185a~400a	300V	265~347V	-
	400V	380~450V	-
	500V	440~575V	-
TC 630a~800a	100V	100~127V	100~110V
	200V	200~240V	200~220V
	300V	265~347V	-
	400V	380~450V	-
	500V	440~575V	-

Note: 1. Available in TC 185a~225a only
Note: 2. TC-130a~150a coil must be ordered separately for AC and DC voltage

Mechanical Interlock Unit

	Mechanical Interlock Unit	TSR	02
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Type	
TSR-02	Applied with TC9b-150a
TKA-180	Applied with TC180a-400a
TKA-600	Applied with TC500a-630a-800a

Mechanical Latch Unit

TSL	Mechanical Latch Unit	TSL	65
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Type	
65	Applied with TC9b-65a
150	Applied with TC75a-150a

Surge Absorber Unit

TSS	Surge Absorber Unit	TSS	1
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Varistor TC9b-100a	
11	Operational Voltage 24...48 VAC/DC
12	Operational Voltage 100...125 VAC/DC
13	Operational Voltage 200...240 VAC/DC
14	Operational Voltage 380...440 VAC/DC

CR + Varistor TC9b-100a	
1	Operational Voltage 24...48 VAC
2	Operational Voltage 100...125 VAC
3	Operational Voltage 200...240 VAC
4	Operational Voltage 24...48 VDC
5	Operational Voltage 100...125 VDC
6	Operational Voltage 200...220 VDC

Insulation Barrier Unit

TKI	Insulation Barrier Unit	TKI	100
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Type TC	
100	Applied with TC-100a, 130a, 150a
180	Applied with TC-185a, 225a, 265a, 330a, 400a
600	Applied with TC-500a, 630a, 800a

Thermal Overload Relays (Differential)

TK	Differential	TK	32a	-	12...18
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Type		
Type	AC coil	Setting Range
12	TC-6a, 9a, 12a, 18a	0.1...18A
32	TC-9b, 12b, 18b, 22b, 32a, 40a	0.1...40A
63	TC-50a, 65a	4...65A
95	TC-75a, 85a, 100a	7...100A
150	TC-130a, 150a	34...150A
225	TC-185a, 225a	65...240A
400	TC-265a, 330a, 400a	85...400A
800	TC-500a, 630a, 800a	200...800A

Mounting Type	
-	Direct Mounting
H	Separate Mounting

Setting Ranges (A)								
Type	TK-12a	TK-32a	TK-63a	TK-95a	TK-150a	TK-225a	TK-400a	TK-800a
Setting Ranges (A)	0.1...0.16	0.1...0.16	4...6	7...10	34...50	65...100	85...125	200...300
	0.16...0.25	0.16...0.25	5...8	9...13	45...65	85...125	100...160	260...400
	0.25...0.4	0.25...0.4	6...9	12...18	54...75	100...160	120...185	400...600
	0.4...0.63	0.4...0.63	7...10	16...22	63...85	120...185	160...240	520...800
	0.63...1	0.63...1	9...13	18...25	80...105	160...240	200...330	
	1...1.6	1...1.6	12...18	24...36	95...130		260...400	
	1.6...2.5	1.6...2.5	16...22	28...40	110...150			
	2.5...4	2.5...4	18...25	34...50				
	4...6	4...6	24...36	45...65				
	5...8	5...8	28...40	54...75				
	6...9	6...9	34...50	63...85				
	7...10	7...10	45...65	70...95				
	9...13	9...13		80...100				
	12...18	12...18						
		16...22						
		18...25						
		22...32						
		28...40						

Separate Mounting Unit

TSZ	Separate Mounting Unit	TSZ	32
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Type	
32	Applied with TK-32a
63	Applied with TK-63a
95	Applied with TK-95a
150	Applied with TK-150a

Type
TSZ-32
TSZ-63
TSZ-95
TSZ-150/S



Separate Mounting Units

These accessories are used to mount the relays separately from contactors. If a relay is combined with a unit, it can be mounted on DIN rail or panel by fixing screws.

Type
TSM-4R
TSM-5R
TSM-6R



Remote Reset Units

These accessories are used to reset the relays on the panel door.

Type
TKM-9
TKM-50



Capacitor Unit

Capacitor unit is connected to the terminals of the contactor to reduce the high inrush current.



Frame Size	18AF	22AF	40AF	65AF	100AF	150AF	
Type	TC-6a, 9a, 12a, 18a	TC-9b, 12b, 18b, 22b	TC-32a, 40a	TC-50a, 65a	TC-75a, 85a, 100a	TC-130a, 150a	
AC Coil							
Control Voltage	[Uc]						
50Hz	[V]	24, 32, 36, 42, 48, 80, 100, 110, 220, 230, 240, 380, 400, 415, 440, 500, 550V				24, 48, 110, 220, 300, 400, 500	
60Hz	[V]	24, 48, 100, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V					
50/60Hz	[V]	24, 48, 100, 110, 120, 200, 220, 230, 240, 380, 415, 440, 500, 550V					
Voltage Limit	[Uc]						
Pick-up		85~110% (50Hz / 60Hz)					
Drop-out		30~60%					
Coil Consumption at 20°C							
AC 220Hz Inrush	[VA]	58/56	58/56	53/50	110/104	229/216	108/104
50/60Hz Holding	[VA]	9.0/6.0	9.0/6.0	12.0/9.0	13.0/10.0	17.0/13.0	18.0/21.0
Heat Dissipation	[W]	2.1/1.5	2.1/1.5	2.7/2.2	2.8/2.4	5.4/4.7	2.7/3.6
Operating Time							
Closing	[ms]	12 ... 22	12 ... 22	12 ... 22	12 ... 22	15 ... 30	20 ... 40
Opening	[ms]	4 ... 19	4 ... 19	4 ... 19	4 ... 19	10 ... 30	60 ... 70
DC Coil							
Control Voltage	[Uc]	12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250					24, 48, 110, 220
Voltage Limit	[Uc]						
Pick-up		70~110%					
Drop-out		10~30%					
Coil Consumption at 20°C							
DC 110V Inrush	[W]	9	9	7	9	18	213
Holding	[W]	9	9	7	9	18	7.5
Time Constant (L/R)	[ms]	28	28	28	65	75	
Operating Time							
Closing	[ms]	35 ... 50	35 ... 50	50 ... 65	50 ... 65	100 ... 120	70 ... 80
Opening	[ms]	4 ... 19	4 ... 19	4 ... 19	4 ... 19	10 ... 25	60 ... 70

Pole	Appearance	Type	Composition		Contact Arrangement	Mount
			NO	NC		
2		TSU-01	1	1		Side
2		TSU-20	2	-		Front
		TSU-11	1	1		
		TSU-02	-	2		
4		TSU-40	4	-		Front
		TSU-31	3	1		
		TSU-22	2	2		
		TSU-13	1	3		
		TSU-04	-	4		



Frame Size	225AF	400AF	800AF
Type	TC-185a, 225a	TC-265a, 330a, 400a,	TC-500a, 630a, 800a
AC/DC Coil			
Control Voltage	[Uc]		
AC/DC	24/24	-	-
AC/DC	48/48	-	100/100
AC/DC	100~240 / 100~220	100~240 / 100~220	200/200
AC	300, 400, 500	300, 400, 500	300, 400, 500
Voltage Limit	[Uc]		
Pick-up	86~110%		
Drop-out	30~60%		
Coil Consumption at 20°C			
AC 220Hz Inrush	[VA] 380	571	1000
50/60Hz Holding	[VA] 11.6	14	29
Heat Dissipation	[W] 4.7	5	7.8
Operating Time			
Closing	[ms] 70	55	75
Opening	[ms] 70	55	75



Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact a qualified service technician when you need maintenance.
Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.

Authorised Dealer

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