



*Tem<sup>2</sup>Contact*

## **Contactors and Thermal Overload Relays**

## TC Type Magnetic Contactors



### Frame size

Type			18AF				22AF				
screws clamp terminals			TC-6a	TC-9a	TC-12a	TC-18a	TC-9b	TC-12b	TC-18b	TC-22b	
Number of poles				3pole				3pole			
Rated operational voltage, Ue				690V				690V			
Rated insulation voltage, Ui				690V				690V			
Rated frequency				50/60Hz				50/60Hz			
Rated impulse withstand voltage, Uimp				6kV				6kV			
Maximum operating rate in operating cycles per hour(AC3)				1800 operations per hour				1800 operations per hour			
Durability	Mechanical		15 mil. operations				15 mil. operations				
	Electrical		2.5 mil. operations				2.5 mil. operations				
Current and power	AC-1, Thermal current	A	25	25	25	32	25	25	32	40	
	AC-3 200/240V	kW	2.2	2.5	3.5	4.5	2.5	3.5	4.5	5.5	
		A	9	11	13	18	11	13	18	22	
	380/440V	kW	3	4	5.5	7.5	4	5.5	7.5	11	
		A	7	9	12	18	9	12	18	22	
	500/550V	kW	3	4	7.5	7.5	4	7.5	7.5	15	
		A	6	7	12	13	7	12	13	20	
	690V	kW	3	4	7.5	7.5	4	7.5	7.5	15	
	A	4	5	9	9	6	9	9	18		
UL rating (50/60Hz)	Continuous current		25	25	25	32	25	25	40	40	
	Single phase	110~120V	HP	0.5	0.5	0.75	1	0.5	0.75	1	2
		220~240V	HP	1.5	1.5	2	3	1.5	2	3	3
	Three phase	200~208V	HP	2	2	3	5	2	3	5	7.5
		220~240V	HP	3	3	5	7.5	3	5	7.5	10
		440~480V	HP	5	5	7.5	10	5	7.5	10	15
	550~600V	HP	7.5	7.5	10	15	7.5	10	15	20	
NEMA size		00	00	0	0	00	00	0	1		
Size and weight	AC control	Weight	0.33				0.34				
		Size(W × H × D)	45 × 73.5 × 82				45 × 73.5 × 86				
	DC control	Weight	0.5				0.51				
		Size(W × H × D)	45 × 73.5 × 113.7				45 × 73.5 × 117.7				
Auxiliary(standard) [optional]			<b>1a or 1b</b>				<b>1a1b</b>				
Auxiliary	Side mount		TSU-01				TSU-01				
	Front mount		TSU-20, 11, 02, 40, 31, 22, 13, 04				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			TK-12a	TK-32a / 32e
Screws clamp terminals			●	●
Rated operational voltage, Ue			690V	690V
Rated insulation voltage, Ui			690V	690V
Rated impulse withstand voltage, Uimp			6kV	6kV
Trip class			10A, 20*	10A, 20*
Setting range			0.1~18A	0.1~40A
Size and weight	Weight	kg	0.1	0.17
	Size(W × H × D)	mm	45 × 73.2 × 63.7	45 × 75 × 90

Class 20 (Type 3D) overload to be ordered separately based on indent.  
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	
<b>2a2b [00]</b>	
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	
<b>2a2b [00]</b>	
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		
<b>2a2b [00]</b>		
TSU-01		
TSU-20, 11, 02, 40, 31, 22, 13, 04		



### TK-32a / 32e

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

### TK-63a / 63e

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

### TK-95a / 95e

●
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	3pole		
Rated operational voltage, Ue	690V		
Rated insulation voltage, Ui	1000V		
Rated frequency	50/60Hz		
Rated impulse withstand voltage, Uimp	8kV		
Maximum operating rate in operating cycles per hour(AC3)	1200 operations per hour		
Durability	Mechanical	5 mil. operations	
	Electrical	1 mil. operations	
Current and power	AC-1, Thermal current	A	
	AC-3	200/240V	kW
		380/440V	kW
		500/550V	kW
		690V	kW
			A
UL rating (50/60Hz)	Continuous current	A	
	Single phase	110~120V	HP
		220~240V	HP
	Three phase	200~208V	HP
		220~240V	HP
		440~480V	HP
	550~600V	HP	
Size and weight	NEMA size		
	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	
<b>2a2b</b>	
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	
<b>2a2b</b>	
TSU-100 (Max.4NO4NC)	
-	

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

# TK Type Thermal Overload Relays



Type	Screws clamp terminals		
Rated operational voltage, Ue	690V		
Rated insulation voltage, Ui	690V		
Rated impulse withstand voltage, Uimp	6kV		
Trip class	10A, 20*		
Setting range	34~150A		
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

Class 20 (Type 30) overload to be ordered separately based on indent.  
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)

### 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)



### 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

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
TKM-75



### 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
<b>AC Coil</b>						
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,
60Hz [V]	24, 48, 100, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V					220, 300,
50/60Hz [V]	24, 48, 100, 110, 120, 200, 220, 230, 240, 380, 415, 440, 500, 550V					400, 500
Voltage Limit [Uc]						
Pick-up	85~110% (50Hz / 60Hz)					
Drop-out	30~60%					
<b>Coil Consumption at 20°C</b>						
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
<b>Operating Time</b>						
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
<b>DC Coil</b>						
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%					
<b>Coil Consumption at 20°C</b>						
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	
<b>Operating Time</b>						
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 NO	NC	Contact Arrangement	Mount
2		TSU-01	1	1	<p>1NO1NC</p>	Side
2		TSU-20	2	-	<p>2NO</p>	Front
		TSU-11	1	1	<p>1NO1NC</p>	
		TSU-02	-	2	<p>2NC</p>	
4		TSU-40	4	-	<p>4NO</p>	Front
		TSU-31	3	1	<p>3NO1NC</p>	
		TSU-22	2	2	<p>2NO2NC</p>	
		TSU-13	1	3	<p>1NO3NC</p>	
		TSU-04	-	4	<p>4NC</p>	



Frame Size	225AF	400AF	800AF
Type	TC-185a, 225a	TC-265a, 330a, 400a,	TC-500a, 630a, 800a
<b>AC/DC Coil</b>			
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%		
<b>Coil Consumption at 20°C</b>			
AC 220Hz Inrush [VA]	380	571	1000
50/60Hz Holding [VA]	11.6	14	29
Heat Dissipation [W]	4.7	5	7.8
<b>Operating Time</b>			
Closing [ms]	70	55	75
Opening [ms]	70	55	75

## Contactors

TC Magnetic Contactors T C 22 R 60Hz AC220V

Type	
C	AC coil
D	DC coil

W Enclosed Starter

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

Type	
TSR-02	Applied with TC9b-150a
TKA-180	Applied with TC185a-400a
TKA-600	Applied with TC500a-630a-800a

## Mechanical Latch Unit

TSL Mechanical Latch Unit TSL 65

Type	
65	Applied with TC9b-65a
150	Applied with TC75a-150a

## Surge Absorber Unit

TSS Surge Absorber Unit TSS 1

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

GR + 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

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

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

Mounting Type	
-	Direct Mounting
H	Separate Mounting

Type	Setting Ranges (A)							
	TK-12a	TK-32a/e	TK-63a/e	TK-95a/e	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...330
	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...630
	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	63...85				
	6...9	6...9	34...50	70...95				
	7...10	7...10	45...65	80...100				
	9...13	9...13						
	12...18	12...18						
		16...22						
		18...25						
		22...32						
	28...40							

## Separate Mounting Unit

TSZ Separate Mounting Unit TSZ 32

Type	
32	Applied with TK-32a
63	Applied with TK-63a
95	Applied with TK-95a
150	Applied with TK-150a



**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

**ELECTRIMEC ASIA PACIFIC PTE LTD**

17 Tuas Street

Singapore 638454

Tel : (65) 6896 2979

Fax : (65) 6896 2925

Email: [elecmecc@singnet.com.sg](mailto:elecmecc@singnet.com.sg)

**TERASAKI CIRCUIT BREAKERS (S) PTE LTD**

17 Tuas Street

Singapore 638454

Tel : (65) 6744 9752

Fax : (65) 6748 7592

Email: [tecs@pacific.net.sg](mailto:tecs@pacific.net.sg)