

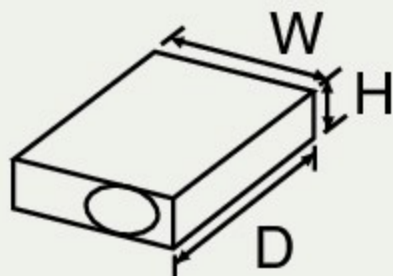


# Thermal Overload Relays Specification


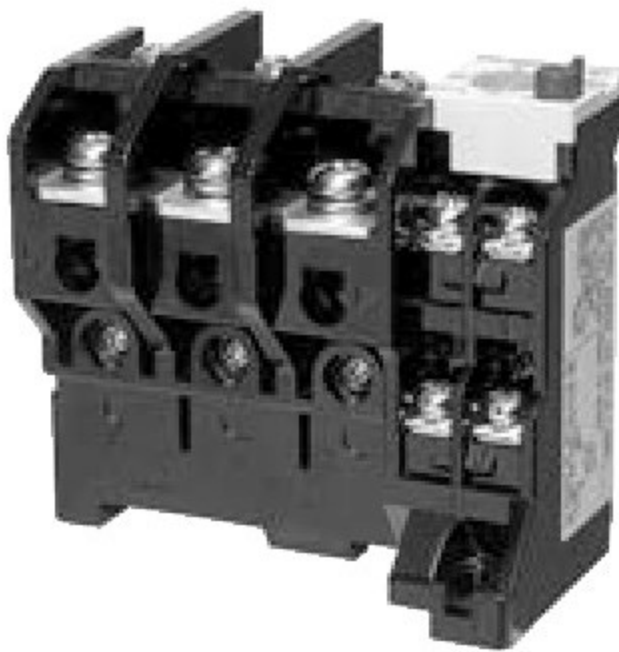
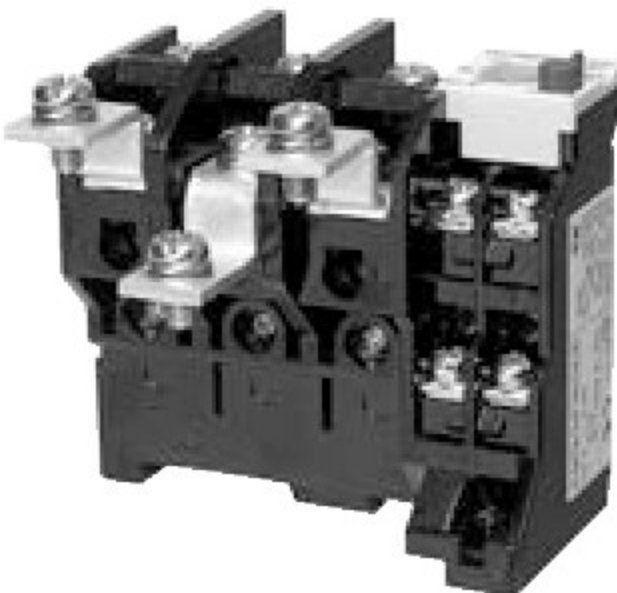
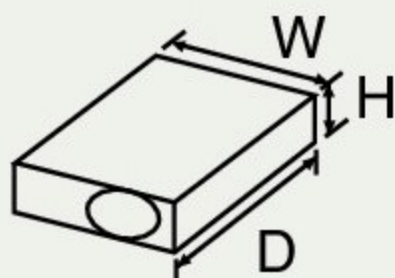
## TH-T series

Frame			T18	T25			
Appearance							
Model name	with 2-elements	For Magnetic Starters	TH-T18	TH-T25			
		For independent mounting	—				
	with 3-elements	For Magnetic Starters	TH-T18KP	TH-T25KP			
		For independent mounting	—				
	Outside dimensions [mm] W×H×D	For Magnetic Starters	45×55×76.5	63×51×79			
		For independent mounting	—				
	Product weight [kg]	For Magnetic Starters	0.11	0.16			
		For independent mounting	—				
Applicable standard			IEC60947-4-1, EN60947-4-1, JIS C8201-4-1, GB14048.4				
Use condition		Ambient temperature [°C]	-10 to +40 (Standard: 20°C; maximum temperature on the board: 55°C)				
		Frequency [Hz]	0(DC) to 400				
Main circuit specifications	Rated insulation voltage [V]		690				
	Rated impulse withstand voltage [kV]		6				
	Pollution degree		3				
	Heater designation (adjustable range of stabilized current) [A] (Rated operational voltage : 550V maximum)		0.12 (0.1 to 0.16)	2.1 (1.7 to 2.5)	0.24 (0.2 to 0.32)	2.5 (2 to 3)	
			0.17 (0.14 to 0.22)	2.5 (2 to 3)	0.35 (0.28 to 0.42)	3.6 (2.8 to 4.4)	
			0.24 (0.2 to 0.32)	3.6 (2.8 to 4.4)	0.5 (0.4 to 0.6)	5 (4 to 6)	
			0.35 (0.28 to 0.42)	5 (4 to 6)	0.7 (0.55 to 0.85)	6.6 (5.2 to 8)	
			0.5 (0.4 to 0.6)	6.6 (5.2 to 8)	0.9 (0.7 to 1.1)	9 (7 to 11)	
			0.7 (0.55 to 0.85)	9 (7 to 11)	1.3 (1 to 1.6)	11 (9 to 13)	
			0.9 (0.7 to 1.1)	11 (9 to 13)	1.7 (1.4 to 2)	15 (12 to 18)	
			1.3 (1 to 1.6)	15 (12 to 18)	2.1 (1.7 to 2.5)	22 (18 to 26)	
			1.7 (1.4 to 2)				
Power consumption [VA/element] at minimum/maximum stabilization		0.8 / 1.8		1.5 / 3.0			
Terminal screw size		M3.5		M4			
Compatible with terminal	Electric wire size [mm <sup>2</sup> ]	φ1.6, 0.75 to 2.5		φ1.6 to 2.6, 1.25 to 6			
	Crimp lug size	1.25-3.5 to 2-3.5, 5.5-S3		1.25-4 to 5.5-4			
Operation circuit (contact) specifications	Contact arrangement		1a1b		1a1b		
	Conventional free air thermal current Ith [A]		2		5		
	Rating Operational Current [A]	Category AC-15 ( AC operated Magnetic Contactors ) Coil opening and closing a contact/b contact The value in brackets indicates the rating for automatic reset.	24VAC	2(0.5) / 2(0.5)		2(0.5) / 3(0.5)	
			120VAC	2(0.5) / 2(0.5)		2(0.5) / 3(0.5)	
			240VAC	1(0.5) / 1(0.5)		1(0.5) / 2(0.5)	
			550VAC	0.3(0.3) / 0.3(0.3)		0.3(0.3) / 0.3(0.3)	
		Category DC-13 ( DC operated Magnetic Contactors ) Coil opening and closing The value in brackets indicates the rating for automatic reset.	24VDC	0.5(0.3)		1(0.3)	
			110VDC	0.2(0.2)		0.2(0.2)	
			220VDC	0.1(0.1)		0.1(0.1)	
			Minimum applicable load level		20V 5mA		20V 5mA
	Terminal screw size		M3.5		M3.5		
	Compatible with terminal	Electric wire size [mm <sup>2</sup> ]	φ1.6, 0.75 to 2.5		φ1.6, 0.75 to 2.5		
Crimp lug size		1.25-3.5 to 2-3.5		1.25-3.5 to 2-3.5			
Characteristics/Functions	Trip class		10A				
	Operating characteristic curve description page		Page 886				
	Vibration resistance (vibration resistance malfunction performance)		10 to 55 Hz, 19.6 m/s <sup>2</sup>				
	Trip-free		◎		◎		
	Reset method		Manual/Automatic switchable		Manual/Automatic switchable		
	Operation indication (lever indication)		◎		◎		
	Manual trip check		◎		◎		
Applied products	With saturable reactor	TH-□SR	○	○			
	With 3-element (2E) thermal saturable reactor	TH-□KPSR	○	○			
	2-element quick-acting characteristics thermal	TH-□FS	○	○			
	With 3-element (2E) thermal quick-acting characteristics	TH-□FSKP	○	○			

Notes 1: The ambient temperature compensator is mounted on all types.  
2: The ◎ mark indicates standard equipment.






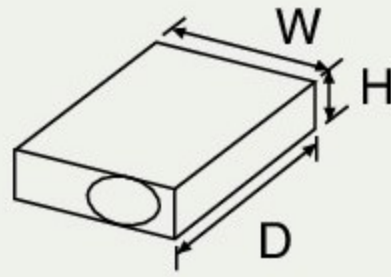
TH-T series

Frame			T50	T65	T100	
Appearance						
Model name	with 2-elements	For Magnetic Starters	TH-T50	TH-T65	TH-T100	
		For independent mounting	—		—	
	with 3-elements	For Magnetic Starters	TH-T50KP	TH-T65KP	TH-T100KP	
		For independent mounting	—		—	
	Outside dimensions [mm] W×H×D	For Magnetic Starters	74.3×72×83.5	89×57×83.5	89×73.5×83.5	
		For independent mounting	—		—	
	Product weight [kg]	For Magnetic Starters	0.2	0.26	0.32	
		For independent mounting	—		—	
Applicable standard			IEC60947-4-1, EN60947-4-1, JIS C8201-4-1, GB14048.4			
Use condition		Ambient temperature [°C]	-10 to +40 (Standard: 20°C; maximum temperature on the board: 55°C)			
		Frequency [Hz]	0(DC) to 400			
Main circuit specifications	Rated insulation voltage [V]		690			
	Rated impulse withstand voltage [kV]		6			
	Pollution degree		3			
	Heater designation (adjustable range of stabilized current) [A] (Rated operational voltage : 550V maximum)		29 (24 to 34) 35 (30 to 40) 42 (34 to 50)	15 (12 to 18) 22 (18 to 26) 29 (24 to 34) 35 (30 to 40) 42 (34 to 50) 54 (43 to 65)	67 (54 to 80) 82 (65 to 100)	
	Power consumption [VA/element] at minimum/maximum stabilization		1.6/3.2	2.4/5.5	2.5/6.0	
	Terminal screw size		M5	M6	M6	
	Compatible with terminal	Electric wire size [mm <sup>2</sup> ]	φ5.5 to 14	—	—	
		Crimp lug size	5.5-5 to 14-5	5.5-6 to 22-6	14-6 to 22-6, 38-S6	
Operation circuit (contact) specifications	Contact arrangement		1a1b	1a1b	1a1b	
	Conventional free air thermal current Ith [A]		5	5	5	
	Rating Operational Current [A]	Category AC-15 ( AC operated Magnetic Contactors ) Coil opening and closing a contact/b contact The value in brackets indicates the rating for automatic reset.	24VAC	2(0.5) / 3(0.5)	2(0.5) / 3(0.5)	2(0.5) / 3(0.5)
			120VAC	2(0.5) / 3(0.5)	2(0.5) / 3(0.5)	2(0.5) / 3(0.5)
			240VAC	1(0.5) / 2(0.5)	1(0.5) / 2(0.5)	1(0.5) / 2(0.5)
			550VAC	0.3(0.3) / 0.3(0.3)	0.5(0.5) / 1(0.5)	0.5(0.5) / 1(0.5)
		Category DC-13 ( DC operated Magnetic Contactors ) Coil opening and closing The value in brackets indicates the rating for automatic reset.	24VDC	1(0.3)	1(0.3)	1(0.3)
			110VDC	0.2(0.2)	0.2(0.2)	0.2(0.2)
			220VDC	0.1(0.1)	0.1(0.1)	0.1(0.1)
			Minimum applicable load level		20V 5mA	20V 5mA
	Terminal screw size		M3.5	M4	M4	
	Compatible with terminal	Electric wire size [mm <sup>2</sup> ]	φ1.6, 1.25 to 2	φ1.6, 1.25 to 2	φ1.6, 1.25 to 2	
Crimp lug size		1.25-3.5 to 2-3.5	1.25-4 to 2-4, 5.5-S4	1.25-4 to 2-4, 5.5-S4		
Characteristics/Functions	Trip class		10A	15 to 42A:10 54A:10A	67A:10 82A:10A	
	Operating characteristic curve description page		Page 886			
	Vibration resistance (vibration resistance malfunction performance)		10 to 55Hz 19.6m/s <sup>2</sup>			
	Trip-free		⊙	⊙	⊙	
	Reset method		Manual/Automatic switchable	Manual/Automatic switchable	Manual/Automatic switchable	
	Operation indication (lever indication)		⊙	⊙	⊙	
	Manual trip check		⊙	⊙	⊙	
Applied products	With saturable reactor	TH-□SR	○ (TH-T50SR)	○ (TH-T65SR)	○ (TH-T100SR)	
	With 3-element (2E) thermal saturable reactor	TH-□KPSR	○ (TH-T50KPSR)	○ (TH-T65KPSR)	○ (TH-T100KPSR)	
	2-element quick-acting characteristics thermal	TH-□FS	△ (TH-T50FS)	△ (TH-T65FS)	△ (TH-T100FS)	
	With 3-element (2E) thermal quick-acting characteristics	TH-□FSKP	△ (TH-T50FSKP)	△ (TH-T65FSKP)	△ (TH-T100FSKP)	

Notes 1: The ambient temperature compensator is mounted on all types.  
2: The ⊙ mark indicates standard equipment, the ○ indicates substandard items.





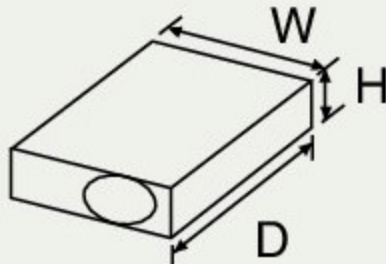
TH-N series

Frame			N120	N120TA	N220	
Appearance						
<div>Model name</div>	with 2-elements	For Magnetic Starters	TH-N120	TH-N120TA	TH-N220RH	
		For independent mounting		TH-N120TAHZ	TH-N220HZ	
	with 3-elements	For Magnetic Starters	TH-N120KP	TH-N120TAKP	TH-N220RHKP	
		For independent mounting		TH-N120TAHZKP	TH-N220HZKP	
	Outside dimensions [mm]	For Magnetic Starters	103×67×105	112×87×105	144×114×179.5	
	W×H×D	For independent mounting		112×103×105	144×104×166.5	
	Product weight [kg]	For Magnetic Starters	0.48	0.75	2.5	
		For independent mounting		1.0	2.5	
Applicable standard			JIS, JEM, IEC, VDE, BS, UL, GB			
Use condition		Ambient temperature [°C]	-10 to +40 (Standard: 20°C; maximum temperature on the board: 55°C)			
		Frequency [Hz]	0 (DC) to 400		50 to 60	
Main circuit specifications	Heater designation (adjustable range of stabilized current) [A]  (The dotted lines (---) on the table to the right show the compatibility with the frames of magnetic contactors) (For heater designations of applied products, refer to the relevant portion of the main document)		42 (34 to 50) 54 (43 to 65) 67 (54 to 80) 82 (65 to 100)	105 (85 to 125) 125 (100 to 150)	82 (65 to 100) 105 (85 to 125) 125 (100 to 150) 150 (120 to 180) 180 (140 to 220)	
	Power consumption [VA/element] at minimum/maximum stabilization		3.0 / 7.1	3.8 / 8.6	1.0 / 2.3 (Note 5)	
	Terminal screw size		M8	M8	M10	
	Compatible with terminal	Electric wire size [mm <sup>2</sup> ]	—	—	—	
		Crimp lug size	8-8 to 38-8	38-8 to 100-8	22-10 to 150-10	
Operation circuit (contact) specifications	Contact arrangement		1a1b	1a1b	1a1b	
	Conventional free air thermal current I <sub>th</sub> [A]		5	5	5	
	Rating Operational Current [A]	Category AC-15 (AC operated Magnetic Contactors) (Coil opening and closing a contact/b contact The value in brackets indicates the rating for automatic reset.	24VAC	2 / 3	2 / 3	2 / 3
			120VAC	2 / 3	2 / 3	2 / 3
			240VAC	1 / 2	1 / 2	1 / 2
			550VAC	0.5 / 1	0.5 / 1	0.5 / 1
		Category DC-13 (DC operated Magnetic Contactors) (Coil opening and closing The value in brackets indicates the rating for automatic reset.)	24VDC	1	1	1
			110VDC	0.2	0.2	0.2
			220VDC	0.1	0.1	0.1
	Minimum applicable load level		20V 5mA	20V 5mA	20V 5mA	
Terminal screw size		M4	M4	M4		
Compatible with terminal	Electric wire size [mm <sup>2</sup> ]	φ 1.6, 1.25 to 2	φ 1.6, 1.25 to 2	φ 1.6, 1.25 to 2		
	Crimp lug size	1.25-4 to 2-4, 5.5-S4	1.25-4 to 2-4, 5.5-S4	1.25-4 to 2-4, 5.5-S4		
Characteristics/Functions	Operating characteristic curve description page		Page 886			
	Vibration resistance (vibration resistance malfunction performance)		10 to 55Hz 19.6m/s2			
	Trip-free		◎	◎	◎	
	Reset method		Manual/Automatic switchable	Manual/Automatic switchable	Manual/Automatic switchable	
	Operation indication (lever indication)		◎	◎	◎	
	Manual trip check		◎	◎	◎	
Frame of magnetic contactor that can be combined with the product			N125, N150	N125, N150 N150	N180, N220 N220	
Applied product	Delayed reaction model	With 2 elements (TH-□SR)	○(TH-N120SR)	○(TH-N120TASR)	○(TH-N220□SR)	
		2E format (TH-□KPSR)	○(TH-N120KPSR)	○(TH-N120TAKPSR)	○(TH-N220□KPSR)	
	Quick response model	With 2 elements (TH-□SR)	—	—	—	
		2E format (TH-□KPSR)	—	—	—	
Option	Charging part protection cover		—	—	—	
	Reset release		◎(UN-RR□6)	◎(UN-RR□6)	◎(UN-RR□6)	
	Operating status display		◎(UN-TL60)	◎(UN-TL60)	◎(UN-TL60)	
	Main unit / IEC35mm rail attachment unit		—	—	—	
	Cover to prevent mistaken operation		◎(UN-CV603)	◎(UN-CV603)	◎(UN-CV603)	

Notes 1: The ambient temperature compensator is mounted on all types.  
2: The ◎ mark indicates a standard model (standard equipment), the ○ indicates substandard models, the △ indicates a special product, the — indicates that this item cannot be manufactured.  
3: In the case of a single unit attachment to the model with CAN terminal, the model name will be TH-N20CXHZ or TH-N20CXHZKP.  
4: The TH-N600 (KP) model should be used in combination with a transformer made for measuring instruments (Rated secondary load of 15VA and above). Recommended models for use with the 250, 330 and 500A are the CW-15LM or the CW-15L. In case of 660A is the CW-40LM. The current transformation ratio is listed in the heater designation column of the table.  
5: The power consumption shown includes only the power consumed by the heating element. (The power consumed by the transformer in N220 - N600 frames is not included)  
6: TH-N18DM (KP) meets the specification to use in combination with SD-Q19. The structure of the TH-N18 (KP) is different, but the other points (specifications, properties, functionality) are same.



TH-N series

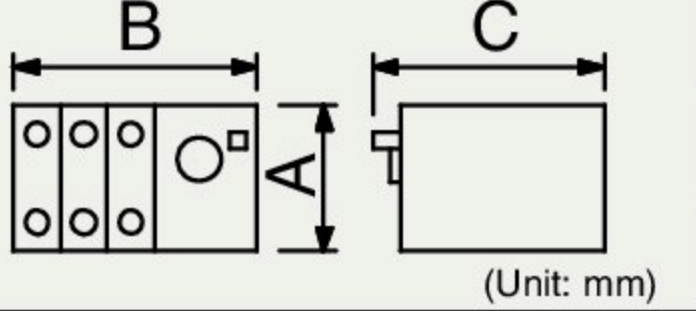
Frame			N400	N600		
Appearance						
Model name	with 2-elements	For Magnetic Starters	TH-N400RH	TH-N600 <small>(Note 4)</small>		
		For independent mounting	TH-N400HZ			
	with 3-elements	For Magnetic Starters	TH-N400RHKP	TH-N600KP <small>(Note 4)</small>		
		For independent mounting	TH-N400HZKP			
	Outside dimensions [mm]	For Magnetic Starters	144×160×193.5	63×42×83.5		
	W×H×D	For independent mounting	144×173×166.5			
	Product weight [kg]	For Magnetic Starters	2.7	0.14		
		For independent mounting	2.7			
Applicable standard			JIS, JEM, IEC, VDE, BS, UL, GB			
Use condition		Ambient temperature [°C]	-10 to +40 (Standard: 20°C; maximum temperature on the board: 55°C)			
		Frequency [Hz]	50 to 60			
Main circuit specifications	Heater designation (adjustable range of stabilized current) [A]  (The dotted lines (---) on the table to the right show the compatibility with the frames of magnetic contactors) (For heater designations of applied products, refer to the relevant portion of the main document)		105 (85 to 125) 125 (100 to 150) 150 (120 to 180) 180 (140 to 220) 250 (200 to 300) 330 (260 to 400)	250 (200 to 300) (Current transformation ratio: 400/5A) 330 (260 to 400) (Current transformation ratio: 500/5A) 500 (400 to 600) (Current transformation ratio: 750/5A) 660 (520 to 800) (Current transformation ratio: 1000/5A)		
			* The thermal relay parts of heater designations of 180A and below are same with the N220 frame.			
			Power consumption [VA/element] at minimum/maximum stabilization		1.0 / 2.3 <small>(Note 5)</small>	1.0 / 2.3 <small>(Note 5)</small>
			Terminal screw size		M12	—
			Compatible with terminal	Electric wire size [mm <sup>2</sup> ]	—	—
Crimp lug size	22-12 to 200-12	—				
Operation circuit (contact) specifications	Contact arrangement		1a1b	1a1b		
	Conventional free air thermal current Ith [A]		5	5		
	Rating Operational Current [A]	Category AC-15 (AC operated Magnetic Contactors) Coil opening and closing a contact/b contact The value in brackets indicates the rating for automatic reset.	24VAC	2 / 3	2 / 3	
			120VAC	2 / 3	2 / 3	
			240VAC	1 / 2	1 / 2	
			550VAC	0.5 / 1	0.5 / 1	
		Category DC-13 (DC operated Magnetic Contactors) Coil opening and closing The value in brackets indicates the rating for automatic reset.	24VDC	1	1	
			110VDC	0.2	0.2	
			220VDC	0.1	0.1	
	Minimum applicable load level		20V 5mA	20V 5mA		
	Terminal screw size		M4	M4		
	Compatible with terminal	Electric wire size [mm <sup>2</sup> ]	φ 1.6, 1.25 to 2	φ 1.6, 1.25 to 2		
Crimp lug size		1.25-4 to 2-4, 5.5-S4	1.25-4 to 2-4, 5.5-S4			
Characteristics/Functions	Operating characteristic curve description page		Page 886			
	Vibration resistance (vibration resistance malfunction performance)		10 to 55Hz 19.6m/s2			
	Trip-free		◎	◎		
	Reset method		Manual/Automatic switchable			
	Operation indication (lever indication)		◎	◎		
	Manual trip check		◎	◎		
Frame of magnetic contactor that can be combined with the product			N300, N400 ----- N400	N600, N800		
Applied product	Delayed reaction model	With 2 elements (TH-□SR)	○(TH-N400□SR)	○(TH-N600SR)		
		2E format (TH-□KPSR)	○(TH-N400□KPSR)	○(TH-N600KPSR)		
	Quick response model	With 2 elements (TH-□SR)	—	—		
		2E format (TH-□KPSR)	—	—		
Option	Charging part protection cover		—	—		
	Reset release		◎(UN-RR□6)	◎(UN-RR□6)		
	Operating status display		◎(UN-TL60)	◎(UN-TL60)		
	Main unit / IEC35mm rail attachment unit		—	—		
	Cover to prevent mistaken operation		◎(UN-CV603)	◎(UN-CV603)		

Notes 1: The ambient temperature compensator is mounted on all types.  
2: The ◎ mark indicates a standard model (standard equipment), the ○ indicates substandard models, the △ indicates a special product, the — indicates that this item cannot be manufactured.  
3: In the case of a single unit attachment to the model with CAN terminal, the model name will be TH-N20CXHZ or TH-N20CXHZKP.  
4: The TH-N600 (KP) model should be used in combination with a transformer made for measuring instruments (Rated secondary load of 15VA and above). Recommended models for use with the 250, 330 and 500A are the CW-15LM or the CW-15L. In case of 660A is the CW-40LM. The current transformation ratio is listed in the heater designation column of the table.  
5: The power consumption shown includes only the power consumed by the heating element. (The power consumed by the transformer in N220 - N600 frames is not included)  
6: TH-N18DM (KP) meets the specification to use in combination with SD-Q19. The structure of the TH-N18 (KP) is different, but the other points (specifications, properties, functionality) are same.



Thermal Overload Relays (Product Introductions)

TH-T series

Model name	TH-T18		TH-T25		TH-T50		TH-T65		TH-T100	
Application	MSO-T10	MSOD-T12	MSO-T21	MSOD-T21	MSO-T35	MSOD-T35	MSO-T65	MSOD-T65	MSO-T80	MSOD-T80
	-T12	-T20	-T25	-T35	-T50	-T50	-T80	-T80	-T100	-T100
	-T20		-T35	-T50			-T100	-T100		
Standard heater rating (designation) (A)		0.12, 0.17, 0.24, 0.35, 0.5, 0.7, 0.9,1.3, 1.7, 2.1, 2.5, 3.6, 5, 6.6, 9, 11, 15	0.24, 0.35, 0.5, 0.7, 0.9, 1.3, 1.7, 2.1, 2.5, 3.6, 5, 6.6, 9, 11, 15, 22		29, 35, 42		15, 22, 29 35, 42, 54		67, 82	
Contact arrangement		1a1b	1a1b		1a1b		1a1b		1a1b	
	A	55	53		74		57		73.5	
	B	45	63		74.3		89		89	
	C	76.5	80		88		83.5		83.5	

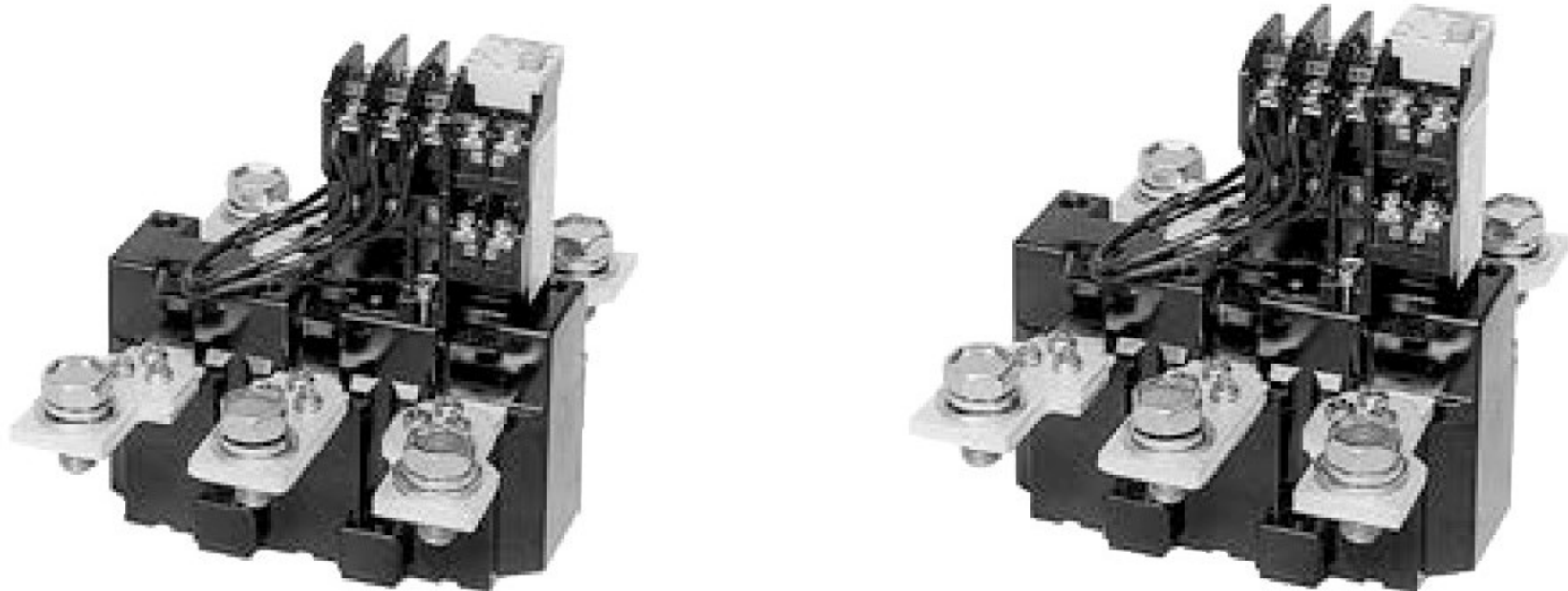
Heater types

Heater types of TH type Thermal Overload Relays

Model	For Magnetic Starters		For single mounting		Heater designation (adjustable range of stabilized current) (A)
	2-element	3-element (2E)	2-element	3-element (2E)	
Standard	T18	T18KP	— (Note 1)	— (Note 1)	0.12(0.1 to 0.16) 0.17(0.14 to 0.22) 0.24(0.2 to 0.32) 0.35(0.28 to 0.42) 0.5(0.4 to 0.6) 0.7(0.55 to 0.85) 0.9(0.7 to 1.1) 1.3(1 to 1.6) 1.7(1.4 to 2) 2.1(1.7 to 2.5) 2.5(2 to 3) 3.6(2.8 to 4.4) 5(4 to 6) 6.6(5.2 to 8) 9(7 to 11) 11(9 to 13) 15(12 to 18)
	T25	T25KP	T25 (Note 1)	T25KP (Note 1)	0.24(0.2 to 0.32) 0.35(0.28 to 0.42) 0.5(0.4 to 0.6) 0.7(0.55 to 0.85) 0.9(0.7 to 1.1) 1.3(1 to 1.6) 1.7(1.4 to 2) 2.1(1.7 to 2.5) 2.5(2 to 3) 3.6(2.8 to 4.4) 5(4 to 6) 6.6(5.2 to 8) 9(7 to 11) 11(9 to 13) 15(12 to 18) 22(18 to 26)
	T50	T50KP	—	—	29(24 to 34) 35(30 to 40) 42(34 to 50)
	T65	T65KP	T65	T65KP	15(12 to 18) 22(18 to 26) 29(24 to 34) 35(30 to 40) 42(34 to 50) 54(43 to 65)
	T100	T100KP	—	—	67(54 to 80) 82(65 to 100)
Quick trip type	—	T18FSKP	— (Note 1)	— (Note 1)	2.1(1.7 to 2.5) 3.6(2.8 to 4.4) 5(4 to 6) 6.6(5.2 to 8) 9(7 to 11) 11(9 to 13) 15(12 to 18)
	T25FS	T25FSKP	T25FS	T25FSKP	2.1(1.7 to 2.5) 3.6(2.8 to 4.4) 5(4 to 6) 6.6(5.2 to 8) 9(7 to 11) 11(9 to 13) 15(12 to 18) 22(18 to 26)
	T50FS	T50FSKP	—	—	29(24 to 34) 35(30 to 40) 42(34 to 50)
	T65FS	T65FSKP	T65FS	T65FSKP	42(34 to 50) 54(43 to 65)
	T100FS	T100FSKP	—	—	67(54 to 80) 82(65 to 93)
Delay trip type	T18SR	—	— (Note 1)	—	0.24(0.2 to 0.32) 0.35(0.28 to 0.42) 0.5(0.4 to 0.6) 0.7(0.55 to 0.85) 0.9(0.7 to 1.1) 1.3(1 to 1.6) 1.7(1.4 to 2) 2.1(1.7 to 2.5) 2.5(2 to 3) 3.6(2.8 to 4.4) 5(4 to 6) 6.6(5.2 to 8) 9(7 to 11) 11(9 to 13) 15(12 to 18)
	T25SR	T25KPSR	T25SR (Note 1)	T25KPSR (Note 1)	0.24(0.2 to 0.32) 0.35(0.28 to 0.42) 0.5(0.4 to 0.6) 0.7(0.55 to 0.85) 0.9(0.7 to 1.1) 1.3(1 to 1.6) 1.7(1.4 to 2) 2.1(1.7 to 2.5) 2.5(2 to 3) 3.6(2.8 to 4.4) 5(4 to 6) 6.6(5.2 to 8) 9(7 to 11) 11(9 to 13) 15(12 to 18) 22(18 to 26)
	T50SR	T50KPSR	—	—	29(24 to 34) 35(30 to 40) 42(34 to 50)
	T65SR	T65KPSR	T65SR	T65KPSR	15(12 to 18) 22(18 to 26) 29(24 to 34) 35(30 to 40) 42(34 to 50) 54(43 to 65)
	T100SR	T100KPSR	—	—	67(54 to 80) 82(65 to 100)

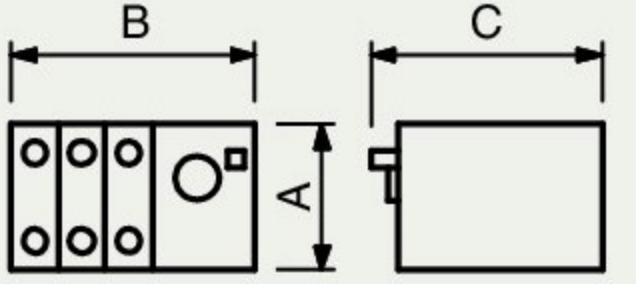
Note 1: Combining UT-HZ18 allows the T18 frame to be used singly (screw mounting or IEC 35 mm rail mounting).  
Combining UN-RM20 allows the T25 frame for single mounting to have the IEC 35mm rail mounted.

TH-N series



TH-N120TA

TH-N400HZKP

Model name		TH-N120	TH-N120TA	TH-N120TAHZ	TH-N220RH	TH-N220HZ	TH-N400RH	TH-N400HZ	TH-N600	
Application		MSO-N125 -N150	MSO-N125 -N150	For single mounting	MSO-N180 -N220	For single mounting	MSO-N300 -N400	For single mounting	This should be used in combination with a transformer for use with measuring instruments (15VA).	
		Single attachment possible								
Standard heater rating (designation) (A)		42, 54 67, 82	105, 125		82, 105, 125 150, 180		105, 125, 150 180, 250, 330		250 (transformer 400/5A) 330 (transformer 500/5A) 500 (transformer 750/5A) 660 (transformer 1000/5A)	
Contact arrangement (rated)		1a1b (a contact 110VAC2A, 220VAC1A, b contact 110VAC 3A, 220VAC2A)								
		A	67	87	103	114	104	160	173	42
		B	103	112	112	144	144	144	144	63
		C	105	105	105	178	167	194	167	83.5
		Product weight [kg]	0.46	0.57	1.0	2.5	2.5	2.7	2.7	0.14
Standard item with 2 elements		TH-□			●					●
Special Specifications	Quick response model (with 2E)	TH-□FS	—	—	—	—	—	—	—	—
	Saturated reactor attached	TH-□SR	○	○	—	○	○	●	●	●
	Corrosion resistant model	TH-□YS	●	●	●	●	●	●	●	●

Notes 1: For single attachment models, it is possible to attach only the thermal relays with wiring.  
2: "CX" of the model name refers to the CAN terminal attachments.



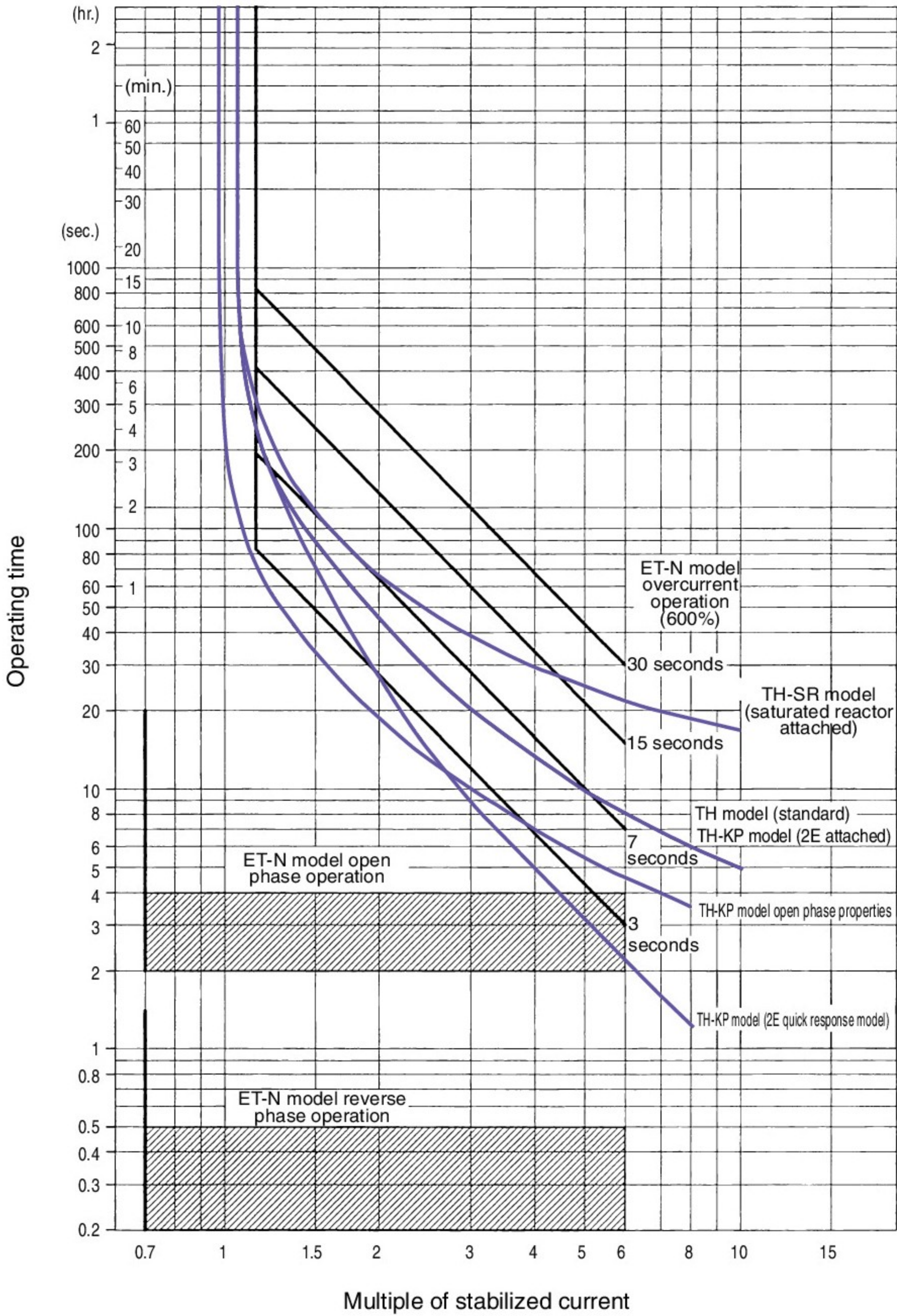
● Heater types

Types of heaters in TH model thermal relays

For Magnetic Starters		For single mounting		Heater designation (adjustable range of stabilized current) (A)
2-element	(2E)3-element	2-element	(2E)3-element	
N120	N120KP	N120	N120KP	42(34 to 50) 54(43 to 65) 67(54 to 80) 82(65 to 100)
N120TA	N120TAKP	N120TAHZ	N120TAHZKP	105(85 to 125) 125(100 to 150)
N220RH	N220RHKP	N220HZ	N220HZKP	82(65 to 100) 105(85 to 125) 125(100 to 150) 150(120 to 180) 180(140 to 220)
N400RH	N400RHKP	N400HZ	N400HZKP	105(85 to 125) 125(100 to 150) 150(120 to 180) 180(140 to 220) 250(200 to 300) 330(260 to 400)
N600	N600KP	—	—	250(200 to 300) 330(260 to 400) 500(400 to 600) 660(520 to 800) * When combined with a transformer (see notes)

Notes 1: The TH-N600 (KP) model should be used in combination with a transformer for measuring instruments (Rated load of 15VA and current transformation ratio as follows; 250A: 400/5A, 330A: 500/5A, 500A: 750/5A, 660A: 1000/5A).  
2: "CX" of the model name refers to the CAN terminal attachments.

● Comparison of operating properties of various motor protection relays



TH model standard (2 elements attached) thermal relay

General overloading/locking protection for the motor.

TH-KP model thermal relay with 2E (can also be used with 3 elements)

General overloading/locking/phase failure protection for the motor.

Overloading/locking/phase failure protection for motors with a 3-phase 4-wire system of power distribution.

TH-SR model thermal relay with saturated reactor

Overloading/locking protection for motors with a long startup time or for motors that are frequently used for inching or intermittent operation.

TH-KF model thermal relay with quick response properties (also used with 2E)

Protection for motors with a short allowable time for locking such as underwater motors, etc.

TH-FS model thermal relay with quick response properties and 2 elements

Locking protection for refrigerator compressor motors etc.

ET-N model electronic motor protection relay

Protection from overloading and locking of motors, as well as a wide range of phase failure and phase reversals, etc.



Contactor Relays Specification

SR-T series

Model name				SR-T5	SR-T9
Number of poles				5	9
Contact arrangement				5a	9a
				4a1b	7a2b
				3a2b	5a4b
Rated insulation voltage [V]				690	
Applicable standard				IEC60947-5-1, EN60947-5-1, JIS C8201-5-1	
Rated impulse withstand voltage [kV]				6	
Rated frequency [Hz]				50/60	
Pollution degree				3	
Contact rating (Note 1)	AC rated operational current [A]	Category AC-15 (Coil load)	120VAC	6	
			240VAC	3	
			440VAC	1.5	
			550VAC	1.2	
	AC rated operational current [A]	Category AC-12 (resistive load)	120VAC	10	
			240VAC	8	
			440VAC	5	
			550VAC	5	
	DC rated operational current [A]	Category DC-13 (large coil load)	24VDC	3	
			48VDC	1.5	
110VDC			0.6(2)		
220VDC			0.3(0.8)		
DC rated operational current [A]	Category DC-12 (resistive loads)	24VDC	10		
		48VDC	8		
		110VDC	5(8)		
		220VDC	1(3)		
Minimum applicable load level			20V 3mA		
Performance	Mechanical durability [ten thousand times]			1,000	
	Electrical durability [ten thousand times]			50	
	Switching frequency [time/hour]			1,800	
Characteristic	Coil consumption (Note 3)	Inrush [VA]	45		
		Sealed [VA]	7		
	Power consumption (Note 3) [W]			2.2	
Optional unit (Note 2)	Surge absorber unit			○	○
	Additional auxiliary contact block			○	×
IEC 35mm rail mounting				○	○

Notes 1: The value in brackets indicates the current when switching the load with two poles installed in series.  
2: In the optional unit field, ○ and × indicate mountable and non-mountable, respectively.  
3: Coil consumption are average values in case of applying 220V60Hz to AC200V coil.