Thermal Overload Relays Specification

TH-T series

	11-1	series	Framo			T4	0	То		
			Frame			T18	0	T2		
Appearance										
			with		For Magnetic Starters	TH-T	18	TH-T25		
	Model name 2-elements For independent mounting with For Magnetic Starters 3-elements For independent mounting					TH-T1	8KP	TH-T2	80032736 	
	3-elements For independent mounting W Outside dimensions [mm] For Magnetic Starters						<76.5	00.51	. 70	
	H W×H×D For independent mounting				For independent mounting			63×51	×79	
[9	D	Product w	- I	For Magnetic Starters	0.1	1	0.1	6	
-		<u>Γ</u> Δr	[kg] pplicable star		For independent mounting		947-4-1 EN60947-4-1	, JIS C8201-4-1, GB140	48.4	
					Ambient temperature [°C]			um temperature on the b		
		Use cond	ulion	ŀ	Frequency [Hz]			to 400		
			lation voltage		[V]	690				
	-	Rated impu Pollution de	ulse withstan	d voltag	e [kV]	6 3				
		Foliution de	egree					5 		
						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)	
suc						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)	
cifications						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)	
	He	ater designatio	•	•	of stabilized current)	0.35 (0.28 to 0.42)	5 (4 to 6)	0.7 (0.55 to 0.85)	6.6 (5.2 to 8)	
spe		(Dated and	[A]			0.5 (0.4 to 0.6)	6.6 (5.2 to 8)	0.9 (0.7 to 1.1)	9 (7 to 11)	
cuit	(Rated operational voltage : 550V maximum) Power consumption [VA/element] at minimum/maximum stabilization					0.7 (0.55 to 0.85)	9 (7 to 11)	1.3 (1 to 1.6)	11 (9 to 13)	
n cir						0.9 (0.7 to 1.1)	11 (9 to 13)	1.7 (1.4 to 2)	15 (12 to 18)	
Mair						1.3 (1 to 1.6) 1.7 (1.4 to 2)	15 (12 to 18)	2.1 (1.7 to 2.5)	22 (18 to 26)	
						0.8 /	1.8	1.5 / 5	3.0	
			Terminal sc	1	0	M3.		M4		
		Compatible with	n terminal		ric wire size [mm ²]	<i>φ</i> 1.6, 0.75 to 2.5 1.25-3.5 to 2-3.5, 5.5-S3		<i>φ</i> 1.6 to 2.6,		
(0)			Contact arra		o lug size	1.25-3.5 to 2- 1a1		1.25-4 to 1a1	95 E	
tions			hal free air the			2		5		
specifications		Category AC-			24VAC	2(0.5) / 2(0.5)		2(0.5) / 3(0.5)		
oeci		AC operated Ma Coil opening and	ignetic Contactors)	120VAC	2(0.5) / 2(0.5)		2(0.5) / 3(0.5)		
	Rating	a contact/b c	ontact	/	240VAC	1(0.5) /		1(0.5) / 2	an Marana a Marana	
(contact)	Operationa Current	The value in brackets inc Category DC-		tomatic reset.	550VAC 24VDC	0.3(0.3) / 0.3(0.3) 0.5(0.3)		0.3(0.3) / 0.3(0.3)		
(co	[A]	/ DC operated Ma	agnetic Contactors		110VDC			1(0.3) 0.2(0.2)		
circuit		Coil opening and The value in brackets inc	-	/ tomatic reset.	220VDC		0.2(0.2) 0.1(0.1)		.1)	
			linimum appl		bad level	20V 5	1	20V 5		
Operation			Terminal sc			M3.		M3.		
ber	0	Compatible with	n terminal		ric wire size [mm ²]	φ1.6, 0.75		φ1.6, 0.75 1.25.2.5 t		
			Trip cla		o lug size	1.25-3.5 t		1.25-3.5 t A	0 2-3.3	
ction		Operating ch			scription page			e 886		
/Fun	Vibra				Ifunction performance)		•	z, 19.6 m/s ²		
Characteristics/Functions			Trip-fr			\bigcirc		Ô		
icteri			Reset me		P	Manual/Automa	tic switchable	Manual/Automa	tic switchable	
hara		Operatio	on indication	`	ndication)	O				
		With satur	Manual trip able reactor	Check	TH-SR					
products	With	3-element (2E) th		e reactor		0		0		
ied pr	<u> </u>	ement quick-acting				0		0		
Applied	<u> </u>	3-element (2E) therma				0		0		
Notes	1. The	ambient temperature	oomponostar is r	nounted or						

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

TH-T series

		301103							
			Frame		T50	T65	T100		
			Appearance						
	with			For Magnetic Starters	TH-T50	TH-T65	TH-T100		
	Moc	lel name	2-elements	For independent mounting	-		_		
	Wiec	ion name	with 3-elements	For Magnetic Starters For independent mounting		TH-T65KP	TH-T100KP		
-		< W/		For Magnetic Starters			89×73.5×83.5		
	/	Т.Н	W×H×D	For independent mounting	-	89×57×83.5			
ŕ	\leq		Product weight	For Magnetic Starters			0.32		
<u>ـ</u>	-0	D	[kg]	For independent mounting		0.26			
-		Ar	oplicable standard	r er maepenaent meanting		1, EN60947-4-1, JIS C8201-4-1	L GB14048.4		
				Ambient temperature [°C]		d: 20°C; maximum temperature			
		Use cond	dition	Frequency [Hz]					
		Rated insu	lation voltage	[V]		690			
			ulse withstand voltag			6			
		Pollution de	v			3			
s			0		29 (24 to 34)	15 (12 to 18)	67 (54 to 80)		
specifications					35 (30 to 40)	22 (18 to 26)	82 (65 to 100)		
cat					42 (34 to 50)	29 (24 to 34)			
scifi	He	ater designatio		of stabilized current)		35 (30 to 40)			
spe			[A]			42 (34 to 50)			
.±	(Rated operational voltage : 550V maximum)					54 (43 to 65)			
Main circu									
Σ	Power consumption [VA/element] at minimun		/maximum stabilization	1.6/3.2	2.4/5.5	2.5/6.0			
			Terminal screw size	Э	M5	M6	M6		
		Na mana a tila La susitila	Elect	ric wire size [mm ²]	<i>φ</i> 5.5 to 14	_	_		
		Compatible with	Crim	p lug size	5.5-5 to 14-5	5.5-6 to 22-6	14-6 to 22-6, 38-S6		
SL			Contact arrangemen	nt	1a1b	1a1b	1a1b		
ation		Conventior	nal free air thermal c	urrent Ith [A]	5	5	5		
fica		Category AC-	·15	24VAC	2(0.5) / 3(0.5)	2(0.5) / 3(0.5)	2(0.5) / 3(0.5)		
specifications		(AC operated Ma	agnetic Contactors	120VAC	2(0.5) / 3(0.5)	2(0.5) / 3(0.5)	2(0.5) / 3(0.5)		
	Rating	Coil opening and a contact/b c		240VAC	1(0.5) / 2(0.5)	1(0.5) / 2(0.5)	1(0.5) / 2(0.5)		
(contact)	Operational		dicates the rating for automatic reset	550VAC	0.3(0.3) / 0.3(0.3)	0.5(0.5) / 1(0.5)	0.5(0.5) / 1(0.5)		
uoc	Current	Category DC		24VDC	1(0.3)	1(0.3)	1(0.3)		
uit (c	[A]	Coil opening and	agnetic Contactors	110VDC	0.2(0.2)	0.2(0.2)	0.2(0.2)		
circu		· · · · · · · · · · · · · · · · · · ·	dicates the rating for automatic reset	220VDC	0.1(0.1)	0.1(0.1)	0.1(0.1)		
		M	linimum applicable l		20V 5mA	20V 5mA	20V 5mA		
Operation			Terminal screw size		M3.5	M4	M4		
per	0	compatible with	Elect	ric wire size [mm ²]		φ1.6, 1.25 to 2	φ1.6, 1.25 to 2		
			Crim	p 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		
suo			Trip class		10A	15 to 42A:10 54A:10A	67A:10 82A:10A		
Incti			aracteristic curve de			Page 886			
Characteristics/Functions	Vibra	ation resistance (alfunction performance)		10 to 55Hz 19.6m/s ²			
istic			Trip-free						
cter		-	Reset method		Manual/Automatic switchable	Manual/Automatic switchable	Manual/Automatic switchable		
าลra		Operatio	on indication (lever i	/					
			Manual trip check						
products	14/1-7		able reactor						
		. ,	nermal saturable reacto				○ (TH-T100KPSR)		
pplied			g characteristics thermal		\triangle (TH-T50FS)	\triangle (TH-T65FS)	\triangle (TH-T100FS)		
AF	with 3	-element (2E) therma	al quick-acting characteristics	B TH- FSKP	\triangle (TH-T50FSKP)	△ (TH-T65FSKP)	△ (TH-T100FSKP)		

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

TH-N series

		61169						
Frame						N120	N120TA	N220
	Appearance							
			with	For Magnetic Starters			TH-N120TA	TH-N220RH
	Model name 2-ele		2-elemer	nts	For independent mounting	TH-N120	TH-N120TAHZ	TH-N220HZ
	Model	Iname	with		For Magnetic Starters		TH-N120TAKP	TH-N220RHKP
			3-elemer	nts	For independent mounting	TH-N120KP	TH-N120TAHZKP	TH-N220HZKP
	A	W	Outside dimension		For Magnetic Starters		112×87×105	144×114×179.5
		Н	W×H×D	C	For independent mounting	103×67×105	112×103×105	144×104×166.5
É			Product we	eight	For Magnetic Starters		0.75	2.5
		D	[kg]		For independent mounting	0.48	1.0	2.5
			Applicable stand	dard			JIS, JEM, IEC, VDE, BS, UL, GB	
					Ambient temperature [°C]	-10 to +40 (Stand	lard: 20°C; maximum temperature or	the board: 55°C)
		Use conc	dition		Frequency [Hz]		to 400	50 to 60
						42 (34 to 50)	105 (85 to 125)	82 (65 to 100)
ain circu	with the frames of magnetic contactors)				show the compatibility	54 (43 to 65) 67 (54 to 80) 82 (65 to 100)	125 (100 to 150)	105 (85 to 125) 125 (100 to 150) 150 (120 to 180) 180 (140 to 220)
-	Power consumption [VA/element] at minimum/maximum stabilization Terminal screw size			maximum stabilization	3.0 / 7.1 M8	3.8 / 8.6 M8	1.0 / 2.3 ^(Note 5) M10	
	a Ulas				tric wire size [mm ²]	—	_	
	Co	ompatible with	terminal		Crimp lug size	8-8 to 38-8	38-8 to 100-8	22-10 to 150-10
	Contact arrangement				1a1b	1a1b	1a1b	
su		Conventio	nal free air ther	-	ent Ith [A]	5	5	5
specifications	A C	ategory AC-15			24VAC	2/3	2/3	2/3
cific	(AC operated N	Magnetic Conta	ictors)	120VAC	2/3	2/3	2/3
spee		Coil opening a contact/b con)	240VAC	1/2	1/2	1/2
	1997-1997 (Province)		dicates the rating for au	tomatic reset		0.5 / 1	0.5 / 1	0.5 / 1
(contact)		Category DC-13			24VDC	1	1	1
00)	ber	DC operated N	Magnetic Contactors		110VDC	0.2	0.2	0.2
circuit		Coil opening a				0.2	0.2	0.2
_	Rating					20V 5mA	20V 5mA	20V 5mA
tion	ш		Minimum appli			M4	M4	ZUV SINA M4
peration			Terminal so					
g	С	ompatible with	terminal		ctric wire size [mm ²]	φ1.6, 1.25 to 2	φ1.6, 1.25 to 2	φ1.6, 1.25 to 2
(0)					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
tions	\ <i>I</i> !!		naracteristic cur				Page 886	
Func	Vibratio	n resistance (v			unction performance)	0	10 to 55Hz 19.6m/s2	0
tics/			Trip-free					
Characteristics/Functions			Reset met			Manual/Automatic switchable	Manual/Automatic switchable	Manual/Automatic switchable
hara		Operati	on indication (le		cation)	Ø	Ø	0
Ö			Manual trip o	check		Ô	O	0
	me of m	agnetic contac	tor that can be	combine	ed with the product	N125, N150	N125, N150 N150	N180, N220 N220
product		Delayed reactio	n model	With 2	elements (TH-□SR)	(TH-N120SR)	O(TH-N120TASR)	(TH-N220□SR)
pro			model	2E forr	nat (TH-⊡KPSR)	(TH-N120KPSR)	O(TH-N120TAKPSR)	(TH-N220□KPSR)
Applied		Outok	model	With 2	elements (TH-DSR)	—		_
App	(Quick response	e model		mat (TH-□KPSR)	-	_	_
		Ch	arging part pro			—	_	-
_			Reset rele			©(UN-RR□6)	© (UN-RR□6)	© (UN-RR□6)
Option			Operating state		y	©(UN-TL60)	© (UN-TL60)	© (UN-TL60)
õ			nit / IEC35mm ra			_	_	_
-			r to prevent mis			©(UN-CV603)	© (UN-CV603)	© (UN-CV603)
	. The oml		compensator is m					

Notes 1: The ambient temperature compensator is mounted on all types.

2: The \bigcirc mark indicates a standard model (standard equipment), the \bigcirc indicates substandard models, the \triangle 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

Model name W O O O O O O O O O O O O O O O O O O	(adjustable range of [A] n the table to the right netic contactors) ns of applied products ument) Velement] at minimum Terminal screw size	For independent mounting For Magnetic Starters For independent mounting Ambient temperature [°C] Frequency [Hz] fstabilized current) t show the compatibility s, refer to the relevant	TH-N400RHKP TH-N400HZKP 144×160×193.5 144×173×166.5 2.7 2.7 JIS, JEM, IEC, V -10 to +40 (Standard: 20°C; maxim 50 105 (85 to 125) 125 (100 to 150) 150 (120 to 180) 180 (140 to 220) 250 (200 to 300) 330 (260 to 400) * The thermal relay parts of heater designations of 180A and below are same with the N220 frame. 1.0 / 2.3 (Note 5)	Image: TH-N600 (Note 4) TH-N600KP (Note 4) TH-N600KP (Note 4) 63×42×83.5 0.14 'DE, BS, UL, GB Im temperature on the board: 55°C) to 60 250 (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) 1.0 / 2.3 (Note 5)
W H Or App Or App Use condition Use condition Index of the signation (at the signation of the main docur (The dotted lines () on with the frames of magner (For heater designations portion of the main docur Power consumption [VA/e T Compatible with ter Conventiona VI Use conduction VI Compatible with ter Conventiona VI Use consumption [VA/e T Compatible with ter Coll opening and a contact/b contact The value in brackets indicat O O T Category DC-13 (DC operated Magner) O O T Category DC-13 (DC operated Magner) O O T Mir	2-elements with 3-elements Outside dimensions [mm W×H×D Product weight [kg] pplicable standard tion (adjustable range of [A] n the table to the right netic contactors) as of applied products ument) Velement] at minimum Terminal screw size erminal Contact arrangement	For independent mounting For Magnetic Starters For independent mounting Tor Magnetic Starters For independent mounting For Magnetic Starters For independent mounting For independent mounting For independent mounting For independent mounting Frequency [Hz]	TH-N400HZ TH-N400RHKP TH-N400HZKP 144×160×193.5 144×173×166.5 2.7 2.7 JIS, JEM, IEC, N -10 to +40 (Standard: 20°C; maxim 50 105 (85 to 125) 125 (100 to 150) 150 (120 to 180) 180 (140 to 220) 250 (200 to 300) 330 (260 to 400)	TH-N600KP ^(Note 4) 63×42×83.5 0.14 /DE, BS, UL, GB um temperature on the board: 55°C) to 60 250 (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)
W H Or App Or App Use condition Use condition Index of the signation (at the signation of the main docur (The dotted lines () on with the frames of magner (For heater designations portion of the main docur Power consumption [VA/e T Compatible with ter Conventiona VI Use conduction VI Compatible with ter Conventiona VI Use consumption [VA/e T Compatible with ter Coll opening and a contact/b contact The value in brackets indicat O O T Category DC-13 (DC operated Magner) O O T Category DC-13 (DC operated Magner) O O T Mir	with <u>3-elements</u> Outside dimensions [mm <u>W×H×D</u> Product weight [kg] pplicable standard tion (adjustable range of [A] n the table to the right netic contactors) as of applied products ument) Velement] at minimum Terminal screw size erminal Ele	For Magnetic Starters For independent mounting For Magnetic Starters For independent mounting For Magnetic Starters For independent mounting Ambient temperature [°C] Frequency [Hz] stabilized current) t show the compatibility s, refer to the relevant	TH-N400RHKP TH-N400HZKP 144×160×193.5 144×173×166.5 2.7 2.7 JIS, JEM, IEC, V -10 to +40 (Standard: 20°C; maxim 50 105 (85 to 125) 125 (100 to 150) 150 (120 to 180) 180 (140 to 220) 250 (200 to 300) 330 (260 to 400) * The thermal relay parts of heater designations of 180A and below are same with the N220 frame. 1.0 / 2.3 (Note 5)	63×42×83.5 0.14 (DE, BS, UL, GB um temperature on the board: 55°C) to 60 250 (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)
Heater designation (a Heater designation (a (The dotted lines () on with the frames of magne (For heater designations portion of the main docur Power consumption [VA/e T Compatible with ter Conventiona V Lue Category AC-15 (AC operated Mag Coil opening and a contact/b contact The value in brackets indicat (DC operated Mag Coil opening and a contact/b contact The value in brackets indicat (DC operated Mag Coil opening and The value in brackets indicat	Outside dimensions [mm W×H×D Product weight [kg] pplicable standard tion (adjustable range of [A] n the table to the right netic contactors) as of applied products ument) Velement] at minimum Terminal screw size erminal	Image: For Magnetic Starters For independent mounting For Magnetic Starters For independent mounting Ambient temperature [°C] Frequency [Hz] Stabilized current) t show the compatibility s, refer to the relevant m/maximum stabilization	144×160×193.5 144×173×166.5 2.7 2.7 JIS, JEM, IEC, V -10 to +40 (Standard: 20°C; maxim 50 105 (85 to 125) 125 (100 to 150) 150 (120 to 180) 180 (140 to 220) 250 (200 to 300) 330 (260 to 400) * The thermal relay parts of heater designations of 180A and below are same with the N220 frame. 1.0 / 2.3 ^(Note 5)	0.14 (DE, BS, UL, GB um temperature on the board: 55°C) to 60 250 (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)
Use condition Heater designation (a (The dotted lines () on with the frames of magne (For heater designations portion of the main docur Power consumption [VA/e Power consumption [VA/e Compatible with ter Compatible with ter Conventiona (AC operated May Coil opening and a contact/b contact The value in brackets indicat (DC operated May Coil opening and a contact/b contact The value in brackets indicat (DC operated May Coil opening and a contact/b contact The value in brackets indicat (DC operated May Coil opening and The value in brackets indicat	Product weight [kg] pplicable standard tion (adjustable range of [A] n the table to the right hetic contactors) as of applied products ument) Velement] at minimum Terminal screw size erminal Contact arrangement	For Magnetic Starters For independent mounting Ambient temperature [°C] Frequency [Hz] stabilized current) t show the compatibility s, refer to the relevant	2.7 2.7 JIS, JEM, IEC, V -10 to +40 (Standard: 20°C; maxim 50 105 (85 to 125) 125 (100 to 150) 150 (120 to 180) 180 (140 to 220) 250 (200 to 300) 330 (260 to 400) * The thermal relay parts of heater designations of 180A and below are same with the N220 frame. 1.0 / 2.3 ^(Note 5)	/DE, BS, UL, GB um temperature on the board: 55°C) to 60 250 (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)
Use condition Heater designation (a (The dotted lines () on with the frames of magne (For heater designations portion of the main docur Power consumption [VA/e Power consumption [VA/e Compatible with ter Compatible with ter Conventiona (AC operated May Coil opening and a contact/b contact The value in brackets indicat (DC operated May Coil opening and a contact/b contact The value in brackets indicat (DC operated May Coil opening and a contact/b contact The value in brackets indicat (DC operated May Coil opening and The value in brackets indicat	pplicable standard tion (adjustable range of [A] n the table to the right netic contactors) as of applied products ument) Velement] at minimum Terminal screw size erminal	Ambient temperature [°C] Frequency [Hz]	JIS, JEM, IEC, N -10 to +40 (Standard: 20°C; maxim 50 105 (85 to 125) 125 (100 to 150) 150 (120 to 180) 180 (140 to 220) 250 (200 to 300) 330 (260 to 400) * The thermal relay parts of heater designations of 180A and below are same with the N220 frame. 1.0 / 2.3 ^(Note 5)	um temperature on the board: 55°C) to 60 250 (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)
Use condition Heater designation (a (The dotted lines () on with the frames of magne (For heater designations portion of the main docur Power consumption [VA/e T Compatible with ter Conventiona V Conventiona V Conventiona Category AC-15 (AC operated May Coil opening and a contact/b contact The value in brackets indicat (DC operated May Coil opening and a contact/b contact The value in brackets indicat Category DC-13 (DC operated May Coil opening and The value in brackets indicat Mir T	tion (adjustable range of [A] n the table to the right netic contactors) as of applied products ument) Velement] at minimum Terminal screw size erminal Contact arrangement	Frequency [Hz] stabilized current) t show the compatibility s, refer to the relevant	-10 to +40 (Standard: 20°C; maxim 50 105 (85 to 125) 125 (100 to 150) 150 (120 to 180) 180 (140 to 220) 250 (200 to 300) 330 (260 to 400) * The thermal relay parts of heater designations of 180A and below are same with the N220 frame. 1.0 / 2.3 ^(Note 5)	um temperature on the board: 55°C) to 60 250 (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)
Heater designation (a (The dotted lines () on with the frames of magne (For heater designations portion of the main docur Power consumption [VA/a T Compatible with ter Conventiona (C) Conventiona (C) Conventiona (C) Conventiona (C) Conventiona (C) Conventiona (C) Conventiona (C) (C) Conventiona (C) (C) (C) (C) (C) (C) (C) (C)	(adjustable range of [A] n the table to the right netic contactors) ns of applied products ument) Velement] at minimum Terminal screw size erminal	stabilized current) t show the compatibility s, refer to the relevant	105 (85 to 125) 125 (100 to 150) 150 (120 to 180) 180 (140 to 220) 250 (200 to 300) 330 (260 to 400) * The thermal relay parts of heater designations of 180A and below are same with the N220 frame. 1.0 / 2.3 (Note 5)	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)
Compatible with ter Compatible with ter Conventional Conventional Conventional Conventional Conventional Conventional Conventional Coil opening and a contact/b contact The value in brackets indicat Coil opening and Coil opening and Coil opening and Coil opening and Coil opening and Coil opening and Coil opening and The value in brackets indicat Mir	Terminal screw size erminal Contact arrangement			1 0 / 2 3 (Note 5)
Compatible with ter Conventional Conventional Conventional Conventional Conventional Conventional Coll operated May Coil opening and a contact/b contact The value in brackets indicat Category DC-13 (DC operated May Coil opening and The value in brackets indicat Coil opening and The value in brackets indicat Mir	erminal Ele Contact arrangement	2		1.0 / 2.0
Conventional Conventional Conventional Category AC-15 (AC operated Mat Coil opening and a contact/b contact The value in brackets indicat Category DC-13 (DC operated Mat Coil opening and The value in brackets indicat Mir	Contact arrangement	atula mulua alma [mama4]	M12	—
Conventional Category AC-15 (AC operated Mag Coil opening and a contact/b contact The value in brackets indicat Category DC-13 (DC operated Mag Coil opening and Coil opening and The value in brackets indicat Min T		ectric wire size [mm ²] Crimp lug size	- 22-12 to 200-12	_
The value in brackets indicate The value in brackets indicate Category DC-13 (DC operated Ma Coil opening and The value in brackets indicate Mir	al free air thormal ou		1a1b	1a1b
The value in brackets indicated of the value of the value in brackets indicated of the value of th	a nee al thermal cu	Irrent Ith [A]	5	5
The value in brackets indicated of the value of the value in brackets indicated of the value of th		24VAC	2/3	2/3
The value in brackets indicated of the value of the value in brackets indicated of the value of the value of the value in brackets indicated of the value of the va	nd closing /	120VAC	2/3	2/3
Coil opening and Coil opening and The value in brackets indicat Mir T		240VAC set. 550VAC	1/2	1/2
Coil opening and Difference of the value in brackets indicated The value in brackets indicated Mir			0.5 / 1	0.5 / 1
The value in brackets indicat	lagnetic Contactors \	24VDC 110VDC	0.2	0.2
Т	· · · · · · · · · · · · · · · · · · ·		0.2	0.2
Т	linimum applicable lo		20V 5mA	20V 5mA
	Terminal screw size		M4	M4
Compatible with te		ectric wire size [mm ²]	φ1.6, 1.25 to 2	φ1.6, 1.25 to 2
	terminal	Crimp lug size	1.25-4 to 2-4, 5.5-S4	1.25-4 to 2-4, 5.5-S4
Operating char	aracteristic curve des			886
Vibration resistance (vibr				19.6m/s2
	Trip-free		O	\bigcirc
	Reset method		Manual/Automatic switchable	Manual/Automatic switchable
Operation	on indication (lever ind	dication)	Ô	\bigcirc
	Manual trip check		O	\bigcirc
rame of magnetic contactor	or that can be combin	ned with the product	N300, N400 N400	N600, N800
Deleverterret				
Delayed reaction r	With	2 elements (TH-⊡SR)	(TH-N400□SR)	(TH-N600SR)
	n model			<pre>O(TH-N600SR) O(TH-N600KPSR)</pre>
Quick response m	1 model 2E fo With	ormat (TH-□KPSR)		
	model 2E fo With	ormat (TH-□KPSR) 2 elements (TH-□SR)		O(TH-N600KPSR)
	model 2E fo With 2E fo	ormat (TH-□KPSR) 2 elements (TH-□SR) ormat (TH-□KPSR)		O(TH-N600KPSR)
	model 2E fo With 2E fo 2E fo 2E fo arging part protection	ormat (TH-□KPSR) 2 elements (TH-□SR) ormat (TH-□KPSR)	(TH-N400□KPSR) - - -	(TH-N600KPSR)
0	model 2E fo With 2E fo 2E fo 2E fo arging part protection Reset release	ormat (TH-□KPSR) 2 elements (TH-□SR) ormat (TH-□KPSR) i cover	(TH-N400□KPSR) - - © (UN-RR□6)	(TH-N600KPSR) ©(UN-RR□6)
· · · · · ·	model 2E fo With 2E fo 2E fo 2E fo arging part protection	ormat (TH-□KPSR) 2 elements (TH-□SR) ormat (TH-□KPSR) 1 cover	(TH-N400□KPSR) - - -	(TH-N600KPSR)

Notes 1: The ambient temperature compensator is mounted on all types.

2: The \bigcirc mark indicates a standard model (standard equipment), the \bigcirc indicates substandard models, the \triangle 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		тн	-T18	Tł	H-T25	T⊢	I-T50	тн	-T65	тн-	T100
		MSO-T10	MSOD-T12	MSO-T21	MSOD-T21	MSO-T35	MSOD-T35	MSO-T65	MSOD-T65	MSO-T80	MSOD-T80
Analianting		-T12	-T20	-T25	-T35	-T50	-T50	-Т80	-T80	-T100	-T100
Application		-T20		-T35	-T50			-T100	-T100		
				-T50				0			
Standard heater rating (designation)		0.12, 0.17, 0	.24, 0.35, 0.5,	0.24, 0.35, 0	0.5, 0.7, 0.9,	29, 35, 42		15, 22, 29		67, 82	
		0.7, 0.9,1.3,	1.7, 2.1, 2.5,	1.3, 1.7, 2.1	, 2.5, 3.6, 5,			35, 42, 54			
(A)		3.6, 5, 6.6, 9	, 11, 15	6.6, 9, 11, 1	5, 22						
Contact arrangement		1:	a1b	1	la1b	1	a1b	1:	a1b	18	a1b
	А		55		53		74		57	73	3.5
	В		45		63	7	74.3		39	8	39
000 (Unit: mm)	С	7	6.5		80		88	8	3.5	8	3.5

Heater types

Heater types of TH type Thermal Overload Relays

Madal	For Magnetic Sta		etic Starters For single mou		Heater designation (adjustable range of stabilized surrent) (A)
Model	2-element	3-element (2E)	2-element	3-element (2E)	Heater designation (adjustable range of stabilized current) (A)
	T10		_	-	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)
	T18	T18KP	(Note 1)	(Note 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)
ard	T25	T25KP	T25	T25KP	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)
Standard	125	125KF	(Note 1)	(Note 1)	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)
Sta	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)
D)	-	T18FSKP	-	—	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)
Quick trip type			(Note 1)	(Note 1)	
rip T	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)
sk t	T50FS	T50FSKP		-	29(24 to 34) 35(30 to 40) 42(34 to 50)
Qui	T65FS	T65FSKP	T65FS	T65FSKP	42(34 to 50) 54(43 to 65)
	T100FS	T100FSKP	-	_	67(54 to 80) 82(65 to 93)
	T18SR		_	-	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)
be	11000	-	(Note 1)		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)
trip type	TOFOD	TOFKDOD	T25SR	T25KPSR	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)
	T25SR	T25KPSR	(Note 1)	(Note 1)	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)
Delay	T50SR	T50KPSR	_	_	29(24 to 34) 35(30 to 40) 42(34 to 50)
Ď	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-N120TA	TH-N120TAHZ	TH-N220RH	TH-N220HZ	TH-N400RH	TH-N400HZ	TH-N600
	Application	MSO-N125 -N150 Single attachment possible	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).	
St	andard heater rating (de (A)	42, 54 67, 82 105, 125 150, 180						250 (transformer 400/5A) 330 (transformer 500/5A) 500 (transformer 750/5A) 660 (transformer 1000/5A)		
	Contact arrangement	t (rated)		1a1b (a cont	act 110VAC2A, 2	20VAC1A, b cor	ntact 110VAC 3A	, 220VAC2A)		
	в С	A	67	87	103	114	104	160	173	42
		В	103	112	112	144	144	144	144	63
		С	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			•					•	
alions	Quick response model (with 2E)	TH-□FS	-	-	-	-	-	-	—	-
Special Specifications	Saturated reactor attached	TH-⊟SR	0	0	_	0	0	•	•	•
Spec	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					
2-element	(2E)3-element	2-element	(2E)3-element	Heater designation (adjustable range of stabilized current) (A)			
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 na	ame		SR-T5	SR-T9		
Num	ber of	poles			5	9		
					5a	9a		
Cont	act arra	angement			4a1b 7a2b			
					3a2b 5a4b			
Rate	d insul	ation voltage		[V]	69	90		
Applicable standard					IEC60947-5-1, EN609	47-5-1, JIS C8201-5-1		
Rated impulse withstand voltage [kV]					E	6		
Rate	d frequ	iency		[Hz]	50/	/60		
Pollution degree					3	3		
				120VAC	e	6		
	onal	Category AC	2-15	240VAC	3	3		
	eratic [A]	(Coil load)	440VAC		.5		
	operatic ent [A]			550VAC		2		
	rated curre			120VAC	10			
1)		Category AC-12 240VAC			8			
(Note	AC	(resistive loa	ad)	440VAC	5			
l) ይເ				550VAC		5		
rating				24VDC	3			
act	tion	Category DC		48VDC		.5		
Contact	operational ent [A]	(large coil lo	ad)	110VDC	0.6(2) 0.3(0.8)			
0	d op			220VDC				
	rated curr			24VDC		10 R		
	DC	Category DC-12 48VDC			8			
		(resistive loa	(resistive loads) 110VDC		5(8) 1(3)			
	Minim	um appliachta laad l	o. (a)	220VDC	1(3)			
e		num applicable load le anical durability		thousand times]	20V 3mA			
man		rical durability	-	thousand times]	1,000 50			
Performance		hing frequency	lien	[time/hour]		800		
		ing nequency	Inrush	[VA]	4			
cteris	Coil c	consumption (Note 3)	Sealed	[VA]		7		
Characteristic	Powe	r consumption (Note 3		[W]	2.2			
unit (e absorber unit		[]	0	0		
Optional (Note 2	Additi	ional auxiliary contac	t block		0	×		
	35mm	rail mounting			0	0		
		3				0		

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, \bigcirc and \times indicate mountable and non-mountable, respectively. 3: Coil consumption are average values in case of applying 220V60Hz to AC200V coil.