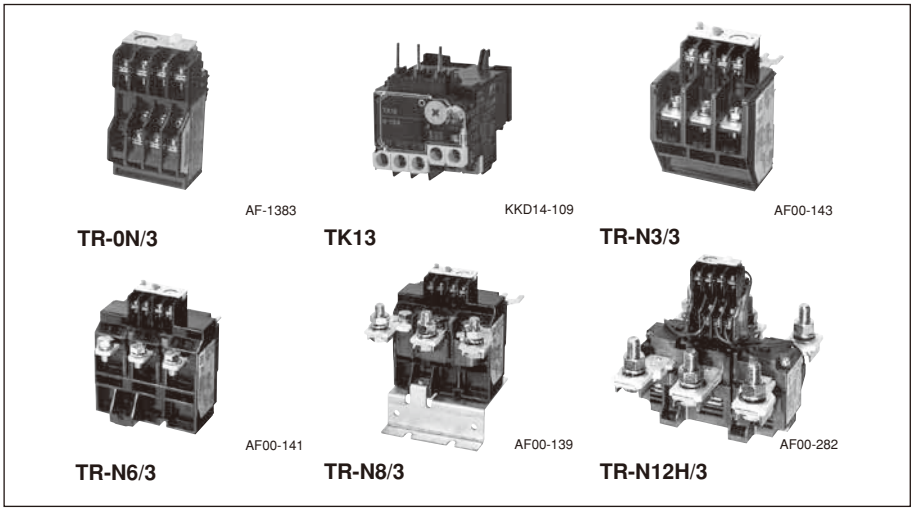
Standard type thermal overload relays

■ Description

• Highly reliable thermal overload relays
FUJI thermal overload relays are designed to provide overload protection to meet the thermal characteristics of low voltage induction motors.
Adjustable thermal overload relays give motors positive overcurrent protection. The starter contacts cannot be held closing under overload conditions. However, once the bimetal element has cooled, the reset button can be depressed and the motor can be restarted in the normal manner.
Ordinarily this reset is carried out manually but the starter can be changed over to 'automatic reset' by means of a screw-driver.
• FUJI thermal overload relay is subjected to stringent testing in the factory to check performance and actual values are calibrated with the markings on the adjustable dial. Consequently, they provide a positive protection.
• Relays are also provided with ambient temperature compensators, so that their performance will be maintained in spite of temperature changes. The ambient temperature is regulated for 20°C.
• The heater elements are available for either 2- or 3-pole use.

Long time operating type
In the case of loads having large inertia moments such as blowers, winders or centrifuges the starting time is extended. This will cause the standard-type thermal overload relay to operate during starting so isolating the motor.
If necessary FUJI will supply thermal relays with saturable reactors. (Time-delay type).

Quick operating type overload relays
The windings of submersible pump and compressor motors normally have a smaller overload capacity than those of standard motors, since they are generally cooled by the water and other medium being pumped. Q type overload relays will operate more quickly than the standard type in the face of a locked rotor current.



■ Features

- Isolated NO and NC contacts can be used with different potentials.
- Gold-flashed silver contact assures high contact reliability (TR-0N/3 to N14/3).
- Stable operating characteristics protect motors from burnout due to overload or locked rotor currents.
- Easy setting of current value with a calibrated dial.
- Both manual and auto reset available. A manual trip button is provided to facilitate sequence testing.
- Mechanical trip indication
- Trip-free mechanism is provided.
- Reset release button and trip indicator are optional accessories.

■ Warning

All FUJI thermal overload relays have been tested and calibrated at the factory. They should not be tampered with or stripped down at the job site since this would affect their accuracy. A special feature of the FUJI starter series is the ease by which the relay current ratings can be varied to match the requirements of the load.
The changeover is effected by simply turning a dial to the new value required. The range of adjustment is approximately 100%–125%–150% and details are given overleaf.

■ Ordering information

Specify the following:
1. Ordering code
2. Setting range code
See page A1-88.

■ Type number nomenclature

[TR/TK-0N to N14]

TR–0N□H/3A

Basic type
TR: Standard type
TK: With phase-loss protective device

Frame size
0N to N14

Operation
Blank: Standard operation
L: Long time operation
Q: Quick operation

Reset
Blank: Manual reset
A: Auto reset

No. of heater elements
Blank: 2-element (TR)
3-element (TK, TR-Q)
3: 3-element (TR)

Mounting
Blank: On-contactor mounting
H: Separate mounting

[TK13, TK26]

TK 13 Q H A

Basic type
TK: 2E Thermal ralay with phase-loss protective device

Frame size
13, 26

Operation
Blank: Standard operation
L: Long time operation
Q: Quick operation
※ Slow operation type only manufactured for single installation

Reset
Blank: Manual reset
A: Auto reset

Mounting
Blank: On-contactor mounting
H: Separate mounting

Thermal Overload Relays
TR series

■ Ordering code system

T R 20 B N W — T A
① ② ③④ ⑤ ⑥ ⑦ ⑧ ⑨

① Product category

Description	Code
Thermal overload relay	T

② Series category

Description	Code
TR-N□ series	R

③④ Frame size

Frame size	Code ③	Code ④
0N	1	3
5-1N	2	0
N2	3	5
N3	6	5
N5	9	3
N6	1	C
N7	1	F
N8	1	J
N10	2	C
N12	4	A
N14	6	A

⑤ Index

Type	Code
TR-0N, 5-1N	Blank
TR-N2 to N14	B

⑥ Version

Description	No. of element	Code
Standard	2	N
	3	D
Long time operation	2	L
	3	F
Quick operation	3	S
With phase-loss	3	E

⑦ Mounting

Description	Code
On-contactor mounting	W
Separate mounting	H

⑨ Reset

Description	Code
Manual reset	Blank
Auto reaet	A

⑧ Thermal overload relay ampere setting range

Ampere setting range (A)	Code	Ampere setting range (A)	Code
0.1 — 0.15	A	9 — 13	W
0.13 — 0.2	B	12 — 18	X
0.15 — 0.24	C	16 — 22	Q
0.2 — 0.3	D	18 — 26	B
0.24 — 0.36	E	24 — 36	E
0.3 — 0.45	F	28 — 40	F
0.36 — 0.54	G	32 — 42	I
0.48 — 0.72	H	34 — 50	G
0.64 — 0.96	J		
0.8 — 1.2	K	45 — 65	J
		48 — 68	O
0.95 — 1.45	L	53 — 80	L
1.4 — 2.2	M	65 — 95	M
1.7 — 2.6	N	85 — 105	I
2.2 — 3.4	P	85 — 125	N
2.8 — 4.2	R	110 — 160	P
4 — 6	S	125 — 185	R
5 — 8	T	160 — 240	S
6 — 9	U	200 — 300	T
7 — 11	V	240 — 360	U
		300 — 450	V
		400 — 600	W

TK 13 Q H A — 009
① ② ③ ④ ⑤ ⑥

① Product category

Description	Code
2E Thermal ralay with phase-loss protective device	TK

② Frame size

Description	Code
13	13
26	26

③ Operation

Description	Code
Standard operation	Blank
Long time operation	L
Quick operation	Q

※ Slow operation type only manufactured for single installation

④ Mounting

Description	Code
On-contactor mounting	Blank
Separate mounting	H

⑤ Reset

Description	Code
Manual reset	Blank
Auto reaet	A

⑧ Thermal overload relay ampere setting range

Ampere setting range (A)	Code	Ampere setting range (A)	Code
0.1 — 0.15A	P10	2.2 — 3.4A	2P2
0.13 — 0.2A	P13	2.8 — 4.2A	2P8
0.18 — 0.27A	P18	4 — 6A	004
0.24 — 0.36A	P24	5 — 7.5A	005
0.34 — 0.52A	P34	6 — 9A	006
0.48 — 0.72A	P48	7 — 10.5A	007
0.64 — 0.96A	P64	9 — 13A	009
0.8 — 1.2A	P80	12 — 18A	012
0.95 — 1.45A	P95	16 — 22A	016
1.1 — 1.65A	1P1	20 — 26A	020
1.4 — 2.1A	1P4		
1.7 — 2.6A	1P7		

Ordering example

① Thermal overload relay	T
① TR-□N series	R
③④ Frame size: 5-1N	20
⑤ Index	Blank
⑥ Standard type, 3-element	D
⑦ On-contactor mounting	W
—	
⑧ Ampere setting range 4-6A	S
⑨ Auto reset	A

TR20DW-SA

① Thermal overload relay	T
① TR-N□ series	R
③④ Frame size: N3	65
⑤ Index	B
⑥ With phase-loss protection	E
⑦ On-contactor mounting	W
—	
⑧ Ampere setting range 24-36A	E
⑨ Manual reset	Blank

TR65BEW-E

Information subject to change without notice

■ Features

● Manual trip

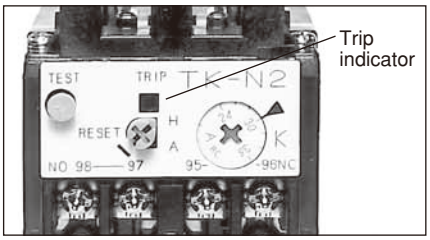
These relays can be manually tripped for sequence inspection by pressing manual trip bar (TR-0N/3, TR-5-1N/3).
A sequence inspection will be performed when the test button is pulled out. When the test button is pressed in, only the NC contact will turn OFF. The original status will be restored when the test button is then released.(TR-N2/3 to N8/3)

● Trip-free mechanism

Even if the reset button is carelessly pressed, this relay trips without trouble (Trip-free mechanism).

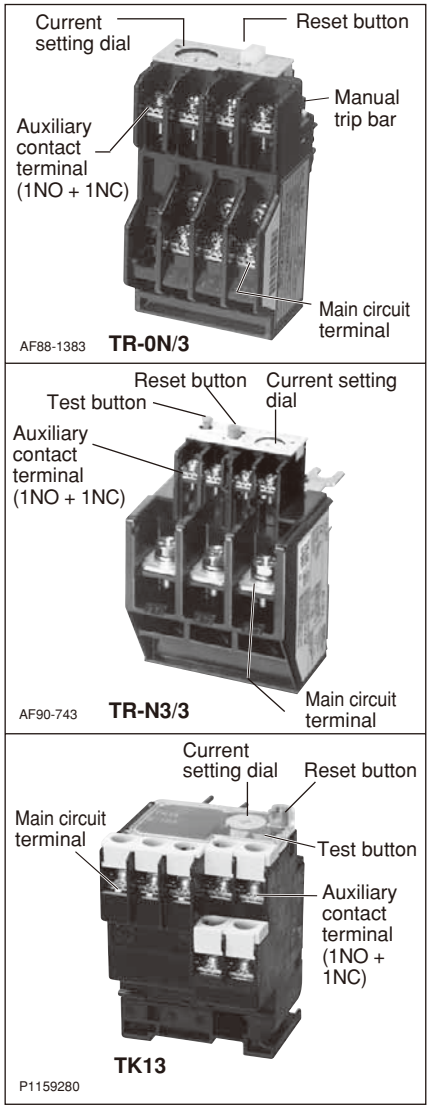
● Easy visual checking of operating status

Trip indicator and manual trip bar permit visual check of tripping status.



● Dial ampere setting

The setting dial uses a RC (Rated Current) marking which is set to the motor full load current.



■ Versatile optional accessories

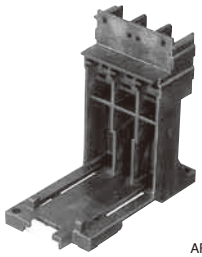
Trip indicator



Reset release



Base unit for separate mounting



■ Optional accessories

Description		Type	Ordering code	Used with thermal overload relay
Reset release You can reset these relays remotely on the front panels of switchboards.	Lead length 300 mm 500 mm 700 mm	**SZ-R1** **SZ-R2** **SZ-R3**	TZ1R1 TZ1R2 TZ1R3	TR-0N/3, TR-5-1N/3, TK-0N, TK-5-1N TK13, TK26 TR-N10 to N14, TK-N10 to N14
	Lead length 300 mm 500 mm 700 mm	**SZ-R4** **SZ-R5** **SZ-R6**	TZ2R4 TZ2R5 TZ2R6	TR-N2/3 to N8/3, TK-N2 to N8
Trip indicator	100–110V AC 50/60Hz 200–220V AC 50/60Hz	**SZ-L100** **SZ-L200**	TZ1L100 TZ1L200	TR-0N/3, TR-5-1N/3, TK-0N, TK-5-1N TR-N10 to N14, TK-N10 to N14
Easier checking of trip status	100–110V AC 50/60Hz 200–220V AC 50/60Hz	**SZ-L100N2** **SZ-L200N2**	TZ2L100N2 TZ2L200N2	TR-N2/3 to N8/3, TK-N2 to N8
Dial cover For protection against the current setting being changed in error		**SZ-DA**	SZ1DA	TR-0N/3, TR-5-1N/3, TK-0N, TK-5-1N TR-N2/3 to N14/3, TK-N2 to N14
Base unit for separate mounting The unit can be screw-mounted and rail-mounted.		**SZ-HB**	TZ1HB	TR-0N/3, TK-0N
		SZ-HC	TZ1HC	TR-5-1N/3, TK-5-1N
		SZ-HD	TZ2HD	TR-N2/3, TK-N2
		SZ-HE	TZ2HE	TR-N3/3, TK-N3
		TZ1H13N	TZ1H13N	TK13
		TZ1H26N	TZ1H26N	TK26
Terminal cover		**SZ-T10**	SZ1T10	Base unit for separate mounting SZ-HB
		SZ-T11	SZ1T11	Base unit for separate mounting SZ-HC
		SZ-T14	SZ2T14	For separate mounting TR-N2H/3, TK-N2H
		SZ-T15	SZ2T15	For separate mounting TR-N3H/3, TK-N3H
		SZ-RN6T	SZ2RN6T	For separate mounting TR-N6H/3, TK-N6H
		SZ-T12	TZ1T12	TR-0N/3, TK-0N
		SZ-T13	TZ1T13	TR-5-1N/3, TK-5-1N
		SZ-T16	SZ2T16	TR-N2/3, TK-N2
		SZ-T17	SZ2T17	TR-N3/3, TK-N2

A1

■ Selection guide/Standard type

On-contactor mounting	3-element	**TR-0N/3** (TR13DW)		**TK13** (TK13)		**TR-5-1N/3** (TR20DW)		**TK26** (TK26)		**TR-N2/3** (TR35BDW)		**TR-N3/3** (TR65BDW)	
	2-element	**TR-0N** (TR13NW)		–		**TR-5-1N** (TR20NW)		–		**TR-N2** (TR35BNW)		**TR-N3** (TR65BNW)	
Separate mounting	3-element	**TR-0NH/3** (TR13DH)		**TK13H** (TK13H)		**TR-5-1NH/3** (TR20DH)		**TK26H** (TK26H)		**TR-N2H/3** (TR35BDH)		**TR-N3H/3** (TR65BDW)	
	2-element	**TR-0NH** (TR13NH)		–		**TR-5-1NH** (TR20NH)		–		**TR-N2H** (TR35BNH)		**TR-N3H** (TR65BNW)	
Contactor to be combined		SC-03	SC-0 SC-05	SC-03	SC-0 SC-05	SC-4-0	SC-4-1 SC-5-1	SC-4-0	SC-4-1 SC-5-1	SC-N1	SC-N2	SC-N2S	SC-N3
Ampere setting range (A)		0.1 – 0.15 : A	0.1 – 0.15 : A	0.1 – 0.15 : P10		0.1 – 0.15 : A	0.1 – 0.15 : A	0.1 – 0.15 : P10					
		0.13 – 0.2 : B	0.13 – 0.2 : B	0.13 – 0.2 : P13		0.13 – 0.2 : B	0.13 – 0.2 : B	0.13 – 0.2 : P13					
		0.15 – 0.24 : C	0.15 – 0.24 : C			0.15 – 0.24 : C	0.15 – 0.24 : C						
		0.2 – 0.3 : D	0.2 – 0.3 : D	0.18 – 0.27 : P18		0.2 – 0.3 : D	0.2 – 0.3 : D	0.18 – 0.27 : P18					
		0.24 – 0.36 : E	0.24 – 0.36 : E	0.24 – 0.36 : P24		0.24 – 0.36 : E	0.24 – 0.36 : E	0.24 – 0.36 : P24					
		0.3 – 0.45 : F	0.3 – 0.45 : F	0.34 – 0.52 : P34		0.3 – 0.45 : F	0.3 – 0.45 : F	0.34 – 0.52 : P34					
		0.36 – 0.54 : G	0.36 – 0.54 : G	0.48 – 0.72 : P48		0.36 – 0.54 : G	0.36 – 0.54 : G	0.48 – 0.72 : P48					
		0.48 – 0.72 : H	0.48 – 0.72 : H	0.64 – 0.96 : P64		0.48 – 0.72 : H	0.48 – 0.72 : H	0.64 – 0.96 : P64					
		0.64 – 0.96 : J	0.64 – 0.96 : J	0.8 – 1.2 : P80		0.64 – 0.96 : J	0.64 – 0.96 : J	0.8 – 1.2 : P80					
		0.8 – 1.2 : K	0.8 – 1.2 : K	0.95 – 1.45 : P95		0.8 – 1.2 : K	0.8 – 1.2 : K	0.95 – 1.45 : P95					
		0.95 – 1.45 : L	0.95 – 1.45 : L	1.1 – 1.65 : 1P1		0.95 – 1.45 : L	0.95 – 1.45 : L	1.1 – 1.65 : 1P1					
Specify the setting range code when ordering.		1.4 – 2.2 : M	1.4 – 2.2 : M	1.4 – 2.1 : 1P4		1.4 – 2.2 : M	1.4 – 2.2 : M	1.4 – 2.1 : 1P4					
		1.7 – 2.6 : N	1.7 – 2.6 : N	1.7 – 2.6 : 1P7		1.7 – 2.6 : N	1.7 – 2.6 : N	1.7 – 2.6 : 1P7					
		2.2 – 3.4 : P	2.2 – 3.4 : P	2.2 – 3.4 : 2P2		2.2 – 3.4 : P	2.2 – 3.4 : P	2.2 – 3.4 : 2P2					
		2.8 – 4.2 : R	2.8 – 4.2 : R	2.8 – 4.2 : 2P8		2.8 – 4.2 : R	2.8 – 4.2 : R	2.8 – 4.2 : 2P8					
		4 – 6 : S	4 – 6 : S	4 – 6 : 004		4 – 6 : S	4 – 6 : S	4 – 6 : 004		4 – 6 : S	4 – 6 : S		
		5 – 8 : T	5 – 8 : T	5 – 7.5 : 005		5 – 8 : T	5 – 8 : T	5 – 7.5 : 005		5 – 8 : T	5 – 8 : T		
		6 – 9 : U	6 – 9 : U	6 – 9 : 006		6 – 9 : U	6 – 9 : U	6 – 9 : 006		6 – 9 : U	6 – 9 : U		
		7 – 11 : V	7 – 11 : V	7 – 10.5 : 007		7 – 11 : V	7 – 11 : V	7 – 10.5 : 007		7 – 11 : V	7 – 11 : V	7 – 11 : V	7 – 11 : V
			9 – 13 : W	9 – 13 : 009		9 – 13 : W	9 – 13 : W	9 – 13 : 009		9 – 13 : W	9 – 13 : W	9 – 13 : W	9 – 13 : W
						12 – 18 : X	12 – 18 : X	12 – 18 : 012		12 – 18 : X	12 – 18 : X	12 – 18 : X	12 – 18 : X
							16 – 22 : Q	16 – 22 : 016					
										18 – 26 : B	18 – 26 : B	18 – 26 : B	18 – 26 : B
										24 – 36 : E	24 – 36 : E	24 – 36 : E	24 – 36 : E
												28 – 40 : F	28 – 40 : F
											32 – 42 : I		
												34 – 50 : G	34 – 50 : G
												45 – 65 : J	45 – 65 : J
													65 – 95* : M
													85 – 105*: I

On-contactor mounting	3-element	**TR-N5/3** (TR80BDW)		**TR-N6/3** (TR1CBDW)	**TR-N7/3** (TR1FBDW)	**TR-N8/3** (TR1JBDW)	**TR-N10/3** (TR2CBDW)	**TR-N12/3** (TR4ABDW)		**TR-N14/3** (TR8ABDW)
	2-element	**TR-N5** (TR80BNW)		**TR-N6** (TR1CBNW)	**TR-N7** (TR1FBNW)	**TR-N8** (TR1JBNW)	**TR-N10** (TR2CBNW)	**TR-N12** (TR4ABNW)		**TR-N14** (TR8ABNW)
Separate mounting	3-element	–		**TR-N6H/3** (TR1CBDW)	–	–	**TR-N10H/3** (TR2CBDH)	**TR-N12H/3** (TR4ABDH)		**TR-N14H/3** (TR8ABDH)
	2-element	–		**TR-N6H** (TR1CBNW)	–	–	**TR-N10H** (TR2CBNH)	**TR-N12H** (TR4ABNH)		**TR-N14H** (TR8ABNH)
Contactor to be combined		SC-N4	SC-N5A	SC-N6	SC-N7	SC-N8	SC-N10	SC-N11	SC-N12	SC-N14
Ampere setting range (A)	**Code B**	18 – 26	18 – 26							
	E	24 – 36	24 – 36							
	F	28 – 40	28 – 40							
	G	34 – 50	34 – 50							
	J	45 – 65	45 – 65	45 – 65	45 – 65					
	L	53 – 80	53 – 80	53 – 80	53 – 80					
	M		65 – 95	65 – 95	65 – 95	65 – 95				
	I		85 – 105							
	N			85 – 125	85 – 125	85 – 125	85 – 125			
	P			110 – 160*	110 – 160	110 – 160	110 – 160	110 – 160	110 – 160	
	R					125 – 185	125 – 185	125 – 185	125 – 185	
	S						160 – 240	160 – 240	160 – 240	
	T							200 – 300	200 – 300	
	U								240 – 360	240 – 360
	V								300 – 450	300 – 450
	W									400 – 600

Notes: • TR-N10/3 to N14/3 types are provided with CTs.
• Max. setting ranges of these starters are as shown in the table on the right.
• When ordering the thermal overload relays for starter use, select the applicable setting range.

( ): Basic ordering code (When ordering phase-loss protective type, enter the version code E instead of D)

* : Separate mounting only

Motor starter	Maximum applicable heater range (A) 200–240V	380–440V
SW-03/3H	7–11 (7-10.5)	6–9
SW-4-0/3H	12–18	12–18
SW-N1/3H	24–36	24–36
SW-N2S/3H	34–50	34–50
SW-N4/3H	53–80	53–80
SW-N6/3H	85–125	85–125

( ): in case of TK13 type

Fuji Electric FA Components & Systems Co., Ltd.
Information subject to change without notice

■ Selection guide/Long time operating type

On-contactor mounting	3-element	–				–				–				–				**TR-N2L/3** (TR35BFW) **TR-N2L** (TR35BLW)				**TR-N3L/3** (TR65BFW) **TR-N3L** (TR65BLW)	
	2-element	–				–				–				–									
Separate mounting	3-element	**TR-0NLH/3** (TR13FH) **TR-0NLH** (TR13LH)				**TK13LH** (TK13LH) –				**TR-5-1NLH/3** (TR20FH) **TR-5-1NLH** (TR20LH)				**TK26LH** (TK26LH) –				**TR-N2LH/3** (TR35BFH) **TR-N2LH** (TR35BLH)				**TR-N3LH/3** (TR65BFH) **TR-N3LH** (TR65BLH)	
	2-element																						
Contactor to be combined		SC-03		SC-0 SC-05		SC-03		SC-0 SC-05		SC-4-0		SC-4-1 SC-5-1		SC-4-0		SC-4-1 SC-5-1		SC-N1		SC-N2		SC-N2S	SC-N3
Ampere setting range (A)						0.24 – 0.36	: P24							0.24 – 0.36	: P24								
						0.34 – 0.52	: P34							0.34 – 0.52	: P34								
						0.48 – 0.72	: P48							0.48 – 0.72	: P48								
						0.64 – 0.96	: P64							0.64 – 0.96	: P64								
						0.8 – 1.2	: P80							0.8 – 1.2	: P80								
		0.95 – 1.45	: L	0.95 – 1.45	: L	0.95 – 1.45	: P95			0.95 – 1.45	: L	0.95 – 1.45	: L	0.95 – 1.45	: P95								
						1.1 – 1.65	: P1							1.1 – 1.65	: P1								
		1.4 – 2.2	: M	1.4 – 2.2	: M	1.4 – 2.1	: P1			1.4 – 2.2	: M	1.4 – 2.2	: M	1.4 – 2.1	: P1								
		1.7 – 2.6	: N	1.7 – 2.6	: N	1.7 – 2.6	: P1			1.7 – 2.6	: N	1.7 – 2.6	: N	1.7 – 2.6	: P1								
		2.2 – 3.4	: P	2.2 – 3.4	: P	2.2 – 3.4	: P2			2.2 – 3.4	: P	2.2 – 3.4	: P	2.2 – 3.4	: P2								
		2.8 – 4.2	: R	2.8 – 4.2	: R	2.8 – 4.2	: P2			2.8 – 4.2	: R	2.8 – 4.2	: R	2.8 – 4.2	: P2								
		4 – 6	: S	4 – 6	: S	4 – 6	: 004			4 – 6	: S	4 – 6	: S	4 – 6	: 004	4 – 6	: S	4 – 6	: S				
		5 – 8	: T	5 – 8	: T	5 – 7.5	: 005			5 – 8	: T	5 – 8	: T	5 – 7.5	: 005	5 – 8	: T	5 – 8	: T				
		6 – 9	: U	6 – 9	: U	6 – 9	: 006			6 – 9	: U	6 – 9	: U	6 – 9	: 006	6 – 9	: U	6 – 9	: U				
		7 – 11	: V	7 – 11	: V	7 – 10.5	: 007			7 – 11	: V	7 – 11	: V	7 – 10.5	: 007	7 – 11	: V	7 – 11	: V	7 – 11	: V	7 – 11	: V
				9 – 13	: W	9 – 13	: 009			9 – 13	: W	9 – 13	: W	9 – 13	: 009	9 – 13	: W	9 – 13	: W	9 – 13	: W	9 – 13	: W
										12 – 18	: X	12 – 18	: X	12 – 18	: 012	12 – 18	: X	12 – 18	: X	12 – 18	: X	12 – 18	: X
																18 – 26	: B	18 – 26	: B	18 – 26	: B	18 – 26	: B
																		24 – 36	: E	24 – 36	: E	24 – 36	: E
																				28 – 40	: F	28 – 40	: F
																				34 – 50	: G	34 – 50	: G
																						45 – 65	: J
																						53 – 80*	: L
																						65 – 95*	: M

On-contactor mounting	3-element	**TR-N5L/3** (TR80BFW) **TR-N5L** (TR80BLW)		**TR-N6L/3** (TR1CBFW) **TR-N6L** (TR1CBLW)	**TR-N7L/3** (TR1FBFW) **TR-N7L** (TR1FBLW)	**TR-N10L/3** (TR2CBFW) **TR-N10L** (TR2CBLW)		**TR-N12L/3** (TR4ABFW) **TR-N12L** (TR4ABLW)		**TR-N14L/3** (TR8ABFW) **TR-N14L** (TR8ABLW)
	2-element									
Separate mounting	3-element	–		**TR-N6LH/3** (TR1CBFH) **TR-N6LH** (TR1CBLH)	–	**TR-N10LH/3** (TR2CBFH) **TR-N10LH** (TR2CBLH)		**TR-N12LH/3** (TR4ABFH) **TR-N12LH** (TR4ABLH)		**TR-N14LH/3** (TR8ABFH) **TR-N14LH** (TR8ABLH)
	2-element	–			–					
Contactor to be combined		SC-N4	SC-N5A	SC-N6	SC-N7	SC-N8	SC-N10	SC-N11	SC-N12	SC-N14
Ampere setting range (A)	**Code B**	18 – 26	18 – 26							
	E	24 – 36	24 – 36							
	F	28 – 40	28 – 40							
	G	34 – 50	34 – 50							
	J	45 – 65	45 – 65	45 – 65	45 – 65					
	L	53 – 80	53 – 80	53 – 80	53 – 80					
Specify the setting range code when ordering.	**M**		65 – 95	65 – 95	65 – 95					
	N			85 – 125	85 – 125	85 – 125	85 – 125			
	P			110 – 160*	110 – 160	110 – 160	110 – 160	110 – 160	110 – 160	
	R					125 – 185	125 – 185	125 – 185	125 – 185	
	S						160 – 240	160 – 240	160 – 240	
	T							200 – 300	200 – 300	
	U								240 – 360	240 – 360
	V								300 – 450	300 – 450
	W									400 – 600
	W									400 – 600

Notes: Maximum setting ranges of the these starters are as shown in the table below.
Select the applicable setting range when ordering the thermal overload relays for starter use.

( ): Basic ordering code
*: Separate mounting only

Motor starter	Maximum applicable heater range (A) 200–240V	380–440V
SW-03/2L, 3L	7–11 (7-10.5)	6–9
SW-N2S/2L, 3L	34–50	34–50
SW-N4/2L, 3L	53–80	53–80
SW-N6/2L, 3L	85–125	85–125

( ): in case of TK13 type

Thermal Overload Relays
TR series Quick operating type

■ Selection guide/Quick operating type

On-contactor mounting	3-element	**TR-0NQ** (TR13SW)		**TK13Q** (TK13Q)		**TR-5-1NQ** (TR20SW)		**TK26Q** (TK26Q)		**TR-N2Q** (TR35BSW)	
Separate mounting	3-element	–		**TK13QH** (TK13QH)		–		**TK26QH** (TK26QH)		–	
Contactor to be combined		SC-03	SC-0 SC-05	SC-03	SC-0 SC-05	SC-4-0	SC-4-1 SC-5-1	SC-4-0	SC-4-1 SC-5-1	SC-N2S	SC-N3
Rated operational current (A)	200–240V	11	13	11	13	18	22	18	22	27	39
	380–440V	9	12	9	12	16	22	16	22	30	37
Ampere setting range (A)		1.4 – 2.2 : M	1.4 – 2.2 : M	1.4 – 2.1 : 1P4		1.4 – 2.2 : M	1.4 – 2.2 : M	1.1 – 1.65: 1P1			
		1.7 – 2.6 : N	1.7 – 2.6 : N	1.7 – 2.6 : 1P7		1.7 – 2.6 : N	1.7 – 2.6 : N	1.4 – 2.1 : 1P4			
		2.2 – 3.4 : P	2.2 – 3.4 : P	2.2 – 3.4 : 2P2		2.2 – 3.4 : P	2.2 – 3.4 : P	1.7 – 2.6 : 1P7			
		2.8 – 4.2 : R	2.8 – 4.2 : R	2.8 – 4.2 : 2P8		2.8 – 4.2 : R	2.8 – 4.2 : R	2.2 – 3.4 : 2P2			
		4 – 6 : S	4 – 6 : S	4 – 6 : 004		4 – 6 : S	4 – 6 : S	2.8 – 4.2 : 2P8			
		5 – 8 : T	5 – 8 : T	5 – 7.5 : 005		5 – 8 : T	5 – 8 : T	4 – 6 : 004			
		6 – 9 : U	6 – 9 : U	6 – 9 : 006		6 – 9 : U	6 – 9 : U	5 – 7.5 : 005			
Specify the setting range code when ordering.		7 – 11 *1 : V	7 – 11 *1 : V	7 – 10.5: 007		7 – 11 *1 : V	7 – 11 *1 : V	6 – 9 : 006			
			9 – 13 *1 : W	9 – 13 : 009		9 – 13 *1 : W	9 – 13 *1 : W	7 – 10.5: 007			
						12 – 18 *1 : X	12 – 18 *1 : X	9 – 13 : 009		12 – 18 : X	12 – 18 : X
								12 – 18 : 012		18 – 26 : B	18 – 26 : B
											24 – 36 : E

On-contactor mounting	3-element	**TR-N3Q** (TR65BSW)		**TR-N5Q** (TR80SW)	
Separate mounting	3-element	**TR-N3Q** (TR65BSW)		–	
Contactor to be combined		SC-N2S	SC-N3	SC-N4	SC-N5A
Rated operational current (A)	200–240V	52	52	52	105
	380–440V	48	48	48	105
Ampere setting range (A) **Code**	**B**	18–26	18–26	18–26	18–26
	E	24–36	24–36	24–36	24–36
	F	28–40	28–40	28–40	28–40
	G	34–50	34–50	34–50	34–50
Specify the setting range code when ordering.	**J**		45–65	45–65	45–65
	L		53–80*2	53–80	53–80
	M		65–95*2		65–95

Notes: *1 Thermal overload relay with phase-loss protection is available with *1 marked setting ranges of TR-0NQ, TR-5-1NQ and all setting ranges of TR-N2Q to N5Q.
Type numbers are TK-0NQ, TK-5-1NQ, TK-N2Q to N5Q. The setting ranges of these TK-□Q type relays are as same as those of the above setting ranges.
*2 Separate mounting only.
( ) Basic ordering code

■ Ratings of auxiliary contact

Type	Rated thermal current (A)	Rated voltage (V)	Rated AC operational current (A)	Rated DC operational current (A)
TR-0N, 5-1N TR-0N/3, 5-1N/3 TK-0N, 5-1N TR-0NQ, 5-1NQ	3	24 100-120 200-240 380-440 500-600	3 (0.3)* 2.5 (0.3)* 2 (0.3)* 1 (0.3)* 0.6 (0.3)*	1.1 (0.3)* 0.28 0.14 – –
TR-N2 to N8 TR-N2/3 to N8/3 TK-N2 to N8 TR-N2Q to N5Q TK13, TK26 TK13Q, TK26Q	5	24 100-120 200-240 380-440 500-600	3 (0.5)* 2.5 (0.5)* 2 (0.5)* 1 (0.5)* 0.6 (0.5)*	1.1(0.3)* 0.28 0.14 – –
TR-N10 to N14 TR-N10/3 to N14/3 TK-N10 to N14	5	24 100-120 200-240 380-440 500-600	3 (0.3)* 2.5 (0.3)* 2 (0.3)* 1 (0.3)* 0.6 (0.3)*	1.1(0.3)* 0.28 0.14 – –

Notes: Conforming to Class AC-15, DC-13, IEC, JIS, and JEM.
( )* NO contact of auto reset type.

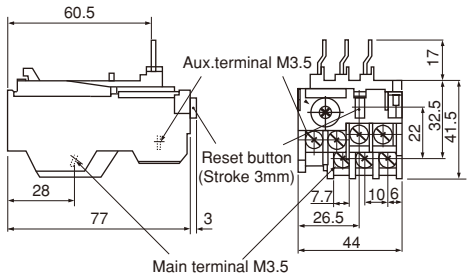
Information subject to change without notice

■ Dimensions, mm

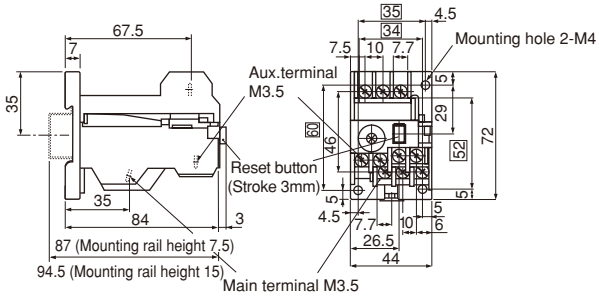
Standard and quick operating types

TR-0N/3, TR-0NQ

On-contactor mounting

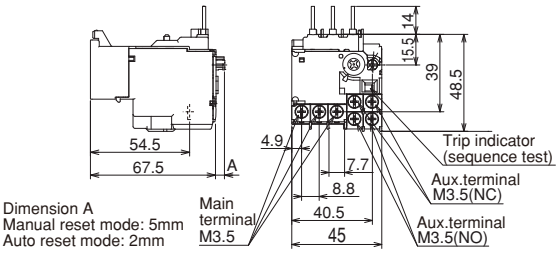


TR-0NH/3

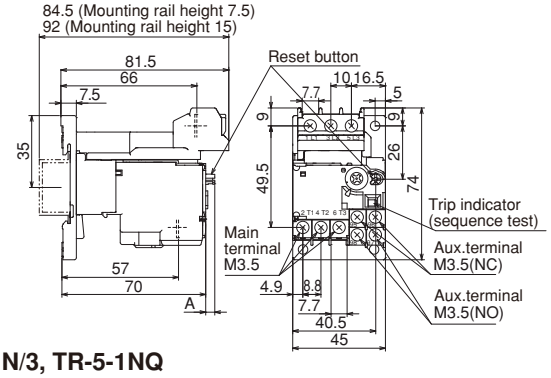


TK13, TK13Q

On-contactor mounting

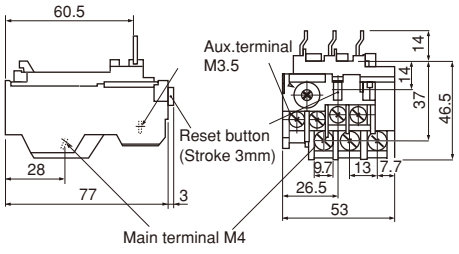


TK13H, TK13HQ



TR-5-1N/3, TR-5-1NQ

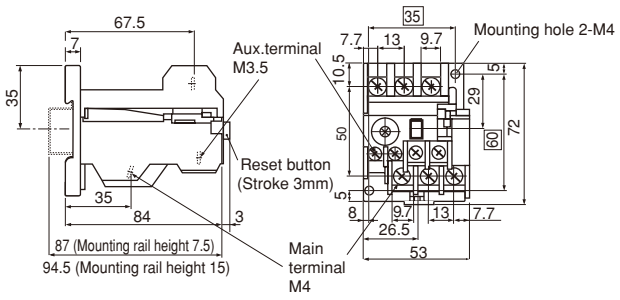
On-contactor mounting



☐ : Mounting pitch

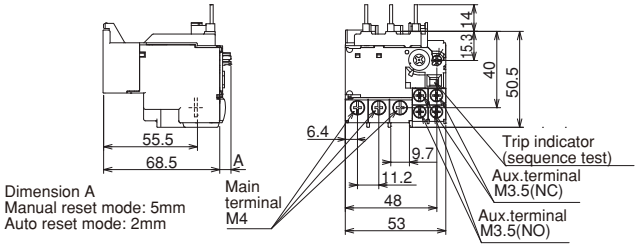
Mass: *See page A1-96.*

TR-5-1NH/3

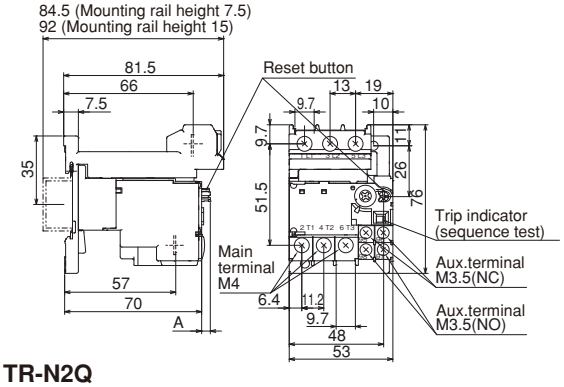


TK26, TK26Q

On-contactor mounting

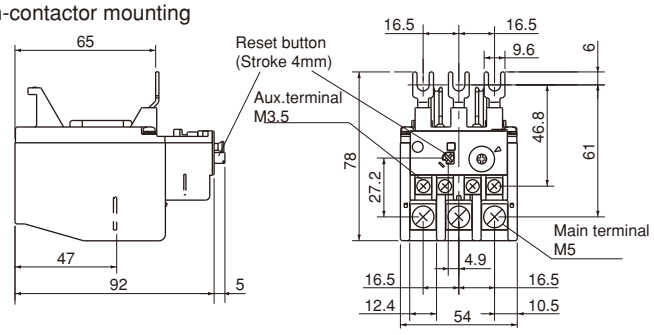


TK26H, TK26HQ

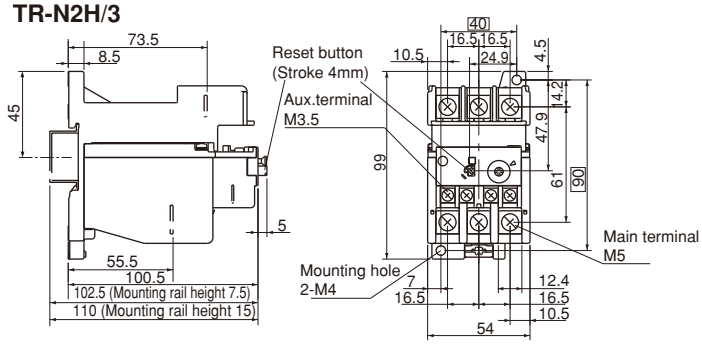


TR-N2/3, TR-N2Q

On-contactor mounting



TR-N2H/3

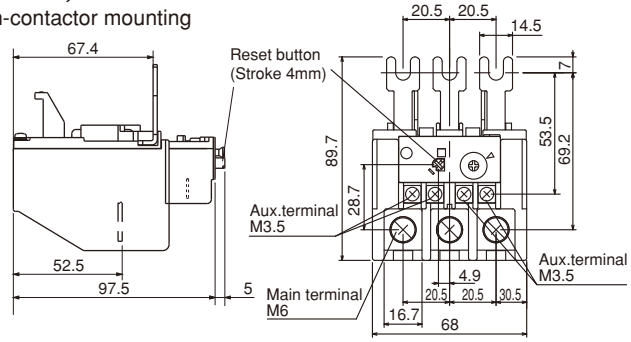


A1

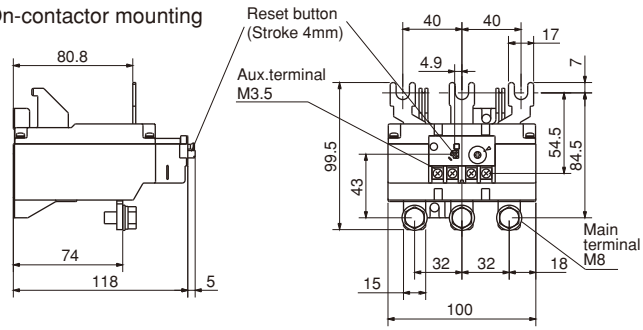
■ Dimensions, mm

Standard and quick operating types

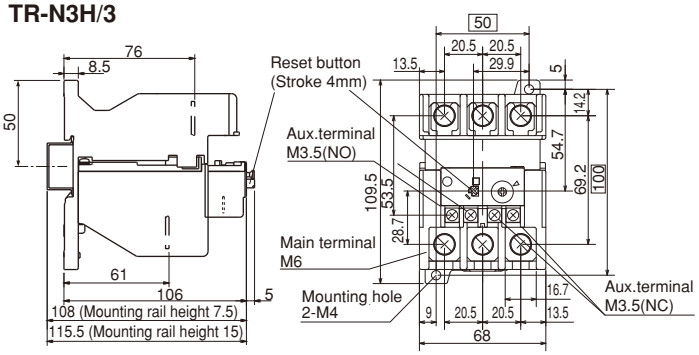
TR-N3/3, TR-N3Q
On-contactor mounting



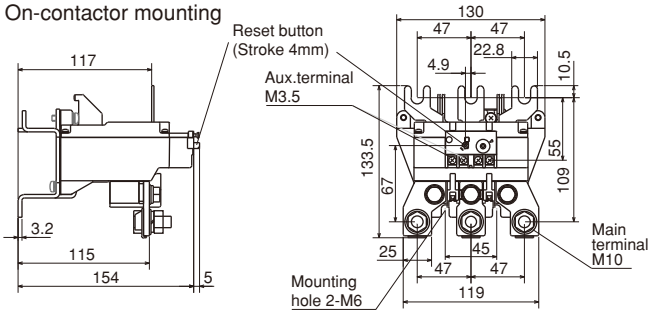
TR-N7/3
On-contactor mounting



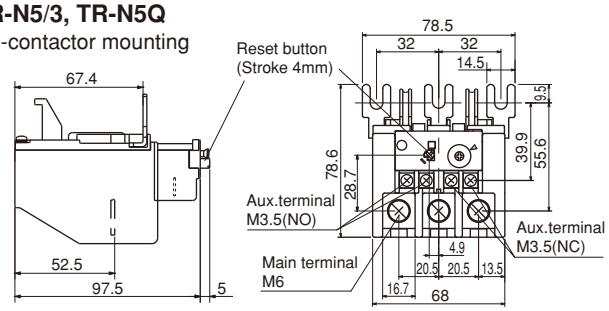
TR-N3H/3



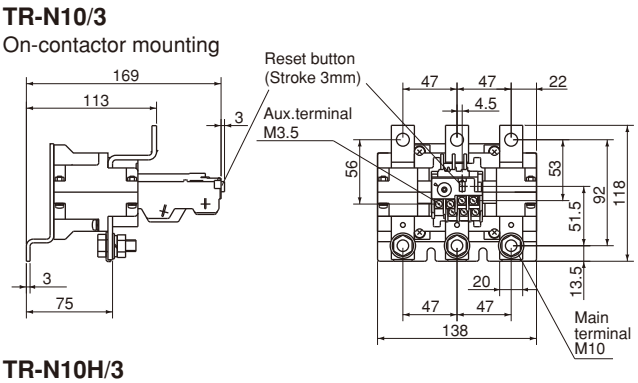
TR-N8/3
On-contactor mounting



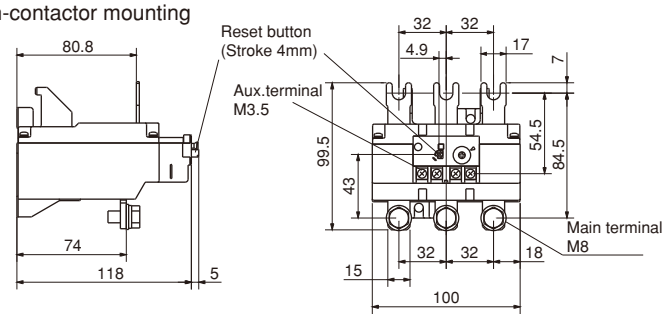
TR-N5/3, TR-N5Q
On-contactor mounting



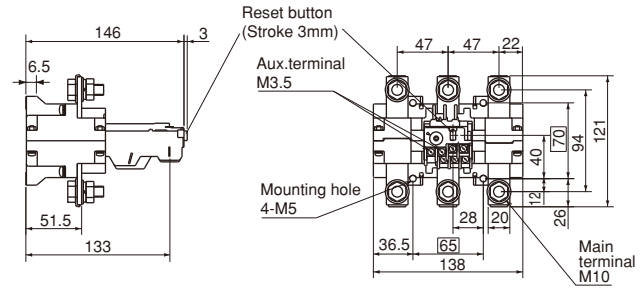
TR-N10/3
On-contactor mounting



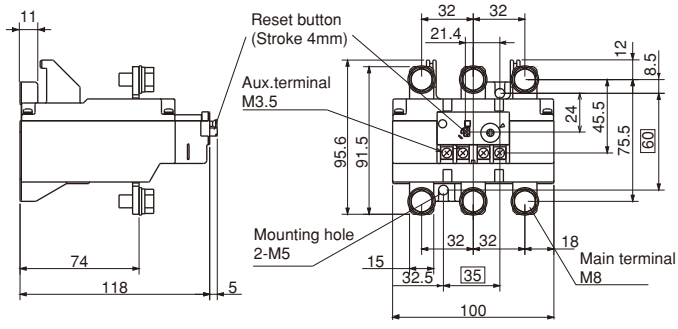
TR-6N/3
On-contactor mounting



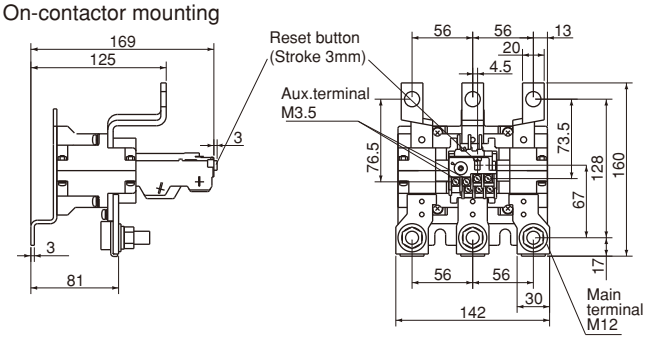
TR-N10H/3



TR-N6H/3



TR-N12/3
On-contactor mounting

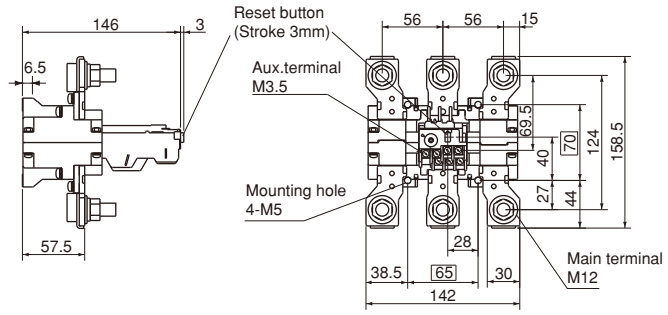


Mass: *See page A1-96.*

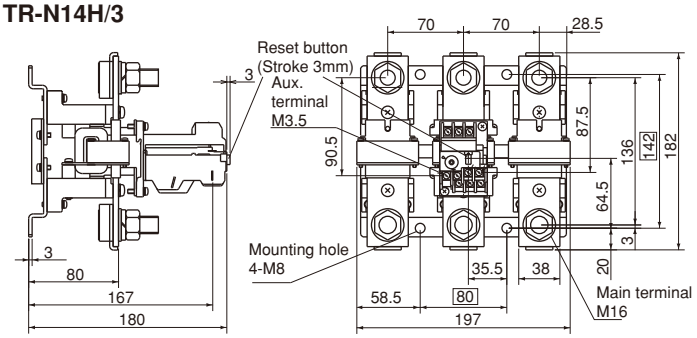
■ Dimensions, mm

Standard and quick operating types

TR-N12H/3

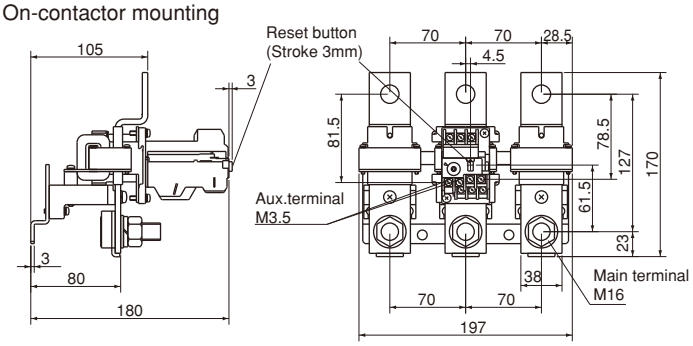


TR-N14H/3



TR-N14/3

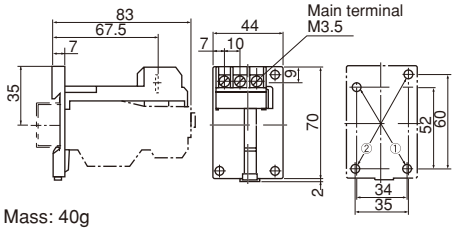
On-contactor mounting



■ Dimensions, mm

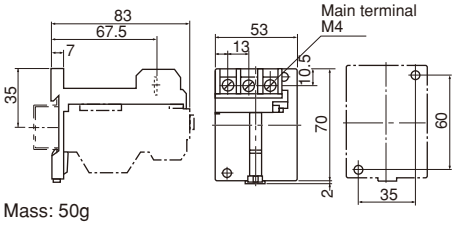
Base unit for separate mounting

SZ-HB



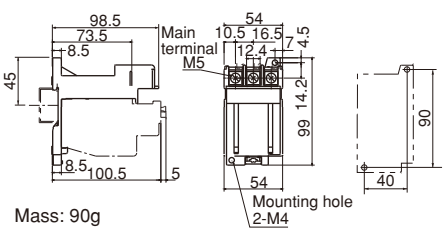
Mass: 40g

SZ-HC



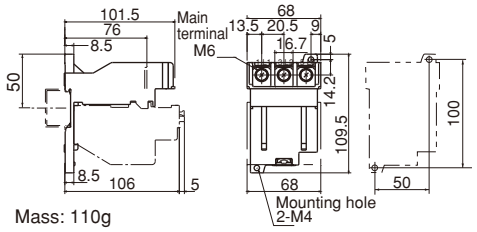
Mass: 50g

SZ-HD



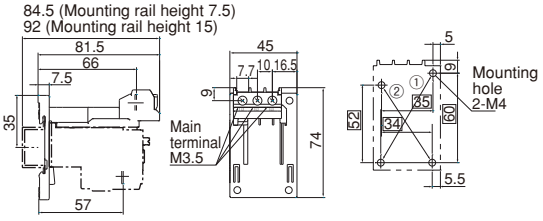
Mass: 90g

SZ-HE



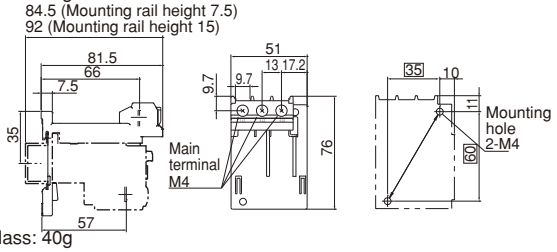
Mass: 110g

TZ1H13N



Mass: 30g

TZ1H26N



Mass: 40g

Mass: *See page A1-96.*

A1

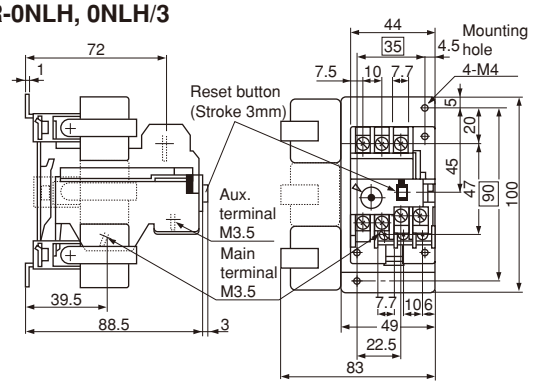
■ Mass/Standard and quick operating types

On-contactor mounting		Separate mounting		On-contactor mounting		Separate mounting	
Type	Mass	Type	Mass	Type	Mass	Type	Mass
TR-0N	0.09kg	**TR-0NH**	0.13kg	**TR-N7**	0.61kg	–	
TR-0N/3	0.10kg	**TR-0NH/3**	0.14kg	**TR-N7/3**	0.61kg		
TR-0NQ	0.10kg						
TK13	0.11kg	**TK13H**	0.13kg				
TK13Q	0.11kg	**TK13QH**	0.13kg				
TR-5-1N	0.11kg	**TR-5-1NH**	0.16kg	**TR-N8**	1.2kg	–	
TR-5-1N/3	0.12kg	**TR-5-1NH/3**	0.17kg	**TR-N8/3**	1.2kg		
TR-5-1NQ	0.12kg						
TK26	0.11kg	**TK26H**	0.15kg				
TK26Q	0.11kg	**TK26QH**	0.15kg				
TR-N2, N2/3	0.2kg	**TR-N2H**	0.29kg	**TR-N10**	1.85kg	**TR-10NH**	1.5kg
TR-N2Q	0.2kg	**TR-N2H/3**	0.29kg	**TR-N10/3**	1.85kg	**TR-10NH/3**	1.5kg
TR-N3, N3/3	0.27kg	**TR-N3H, N3H/3**	0.38kg	**TR-N12, N12/3**	2.3kg	**TR-12NH, 12NH/3**	2.25kg
TR-N3Q	0.27kg						
TR-N5, N5/3	0.27kg	–		**TR-N14, N14/3**	3.5kg	**TR-14NH, 14NH/3**	4kg
TR-N5Q	0.27kg						
TR-N6, N6/3	0.61kg	**TR-N6H, N6H/3**	0.67kg	–		–	

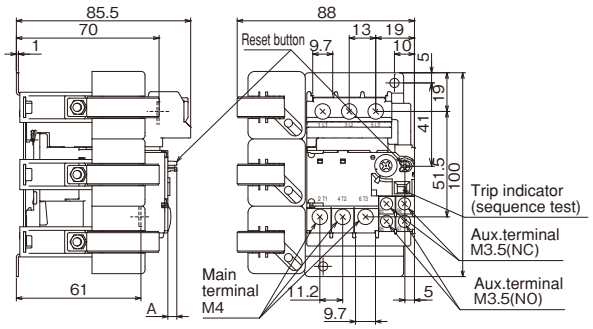
■ Dimensions, mm

Long time operating type

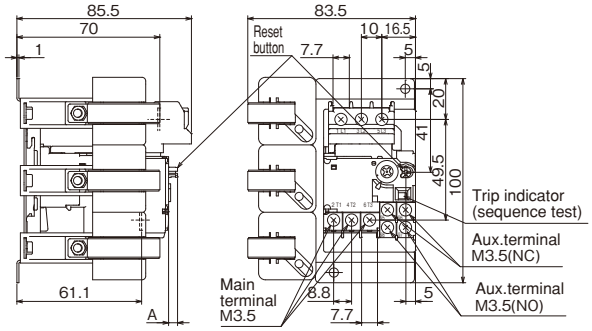
TR-0NLH, 0NLH/3



TK26LH

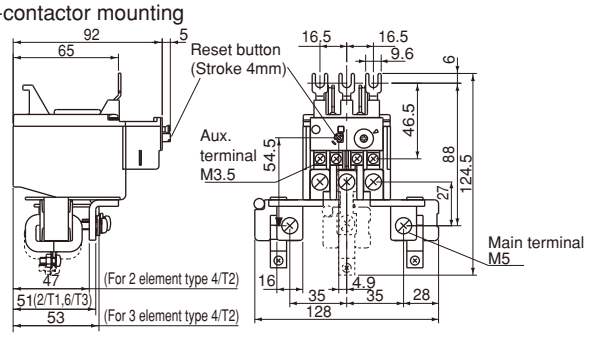


TK13LH

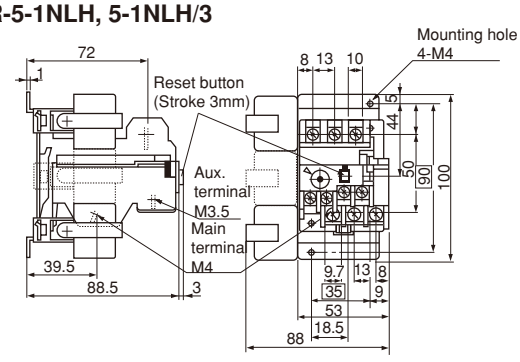


TR-N2L, N2L/3

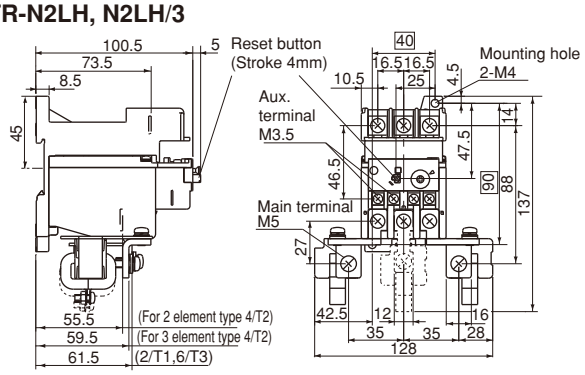
On-contactor mounting



TR-5-1NLH, 5-1NLH/3



TR-N2LH, N2LH/3

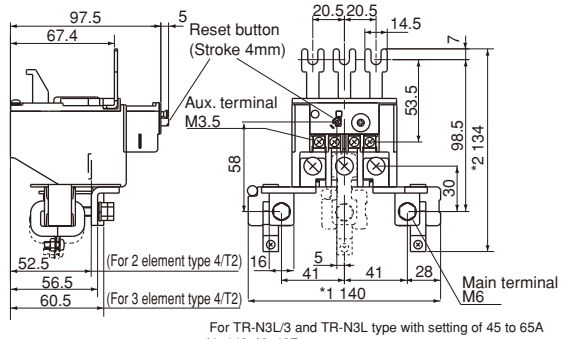


☐ : Mounting pitch

Mass: *See page A1-97.*

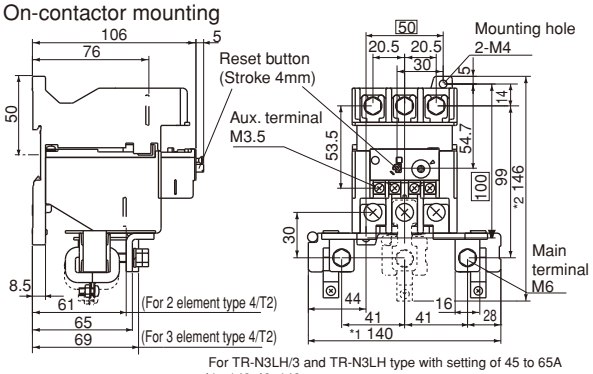
■ Dimensions, mm

Long time operating type
TR-N3L, N3L/3



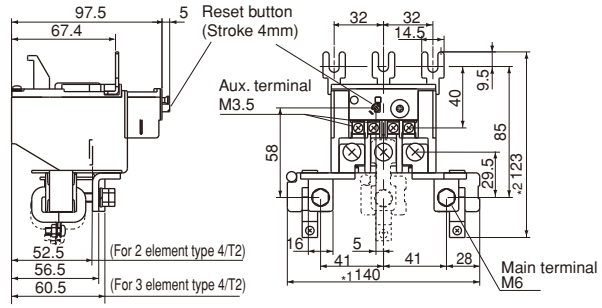
For TR-N3L/3 and TR-N3L type with setting of 45 to 65A
*1: 149, *2: 137

TR-N3LH, N3LH/3
On-contactor mounting



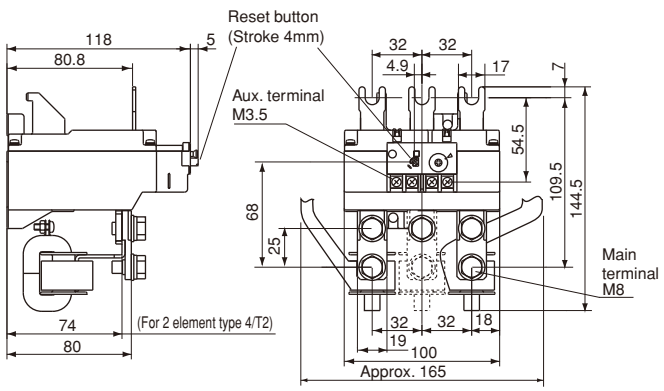
For TR-N3LH/3 and TR-N3LH type with setting of 45 to 65A
*1: :149, *2: 149

TR-N5L, N5LH/3
On-contactor mounting

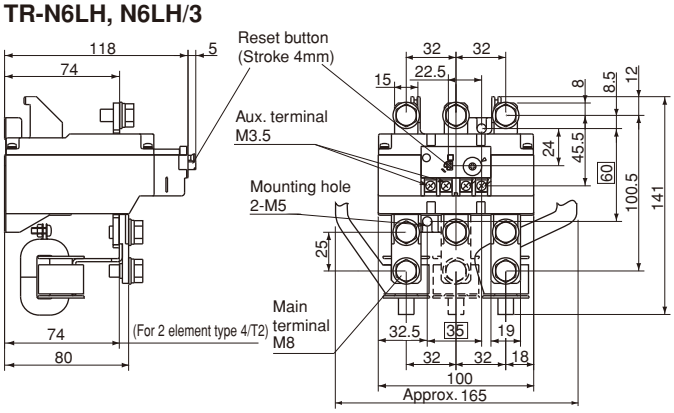


For TR-N3LH/3 and TR-N3LH type with setting of 45 to 65A
*1: 149, *2: 126

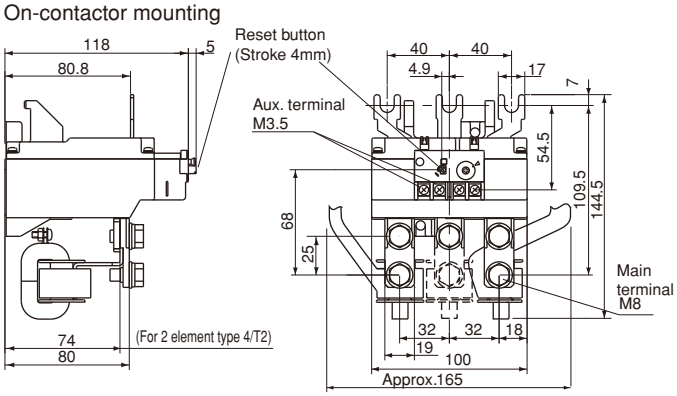
TR-N6L, N6L/3
On-contactor mounting



TR-N6LH, N6LH/3



TR-N7L, N7L/3
On-contactor mounting



Note: TR-N10L, N10LH, N12NL, N12LH, N14L and N14LH types have the same dimensions as standard types. *See pages A1-94, 95.*

■ Mass/Standard and quick operating types

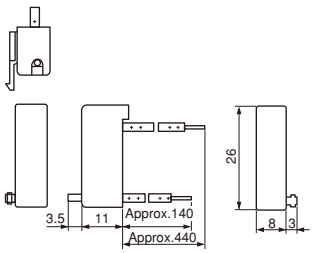
On-contactor mounting		Separate mounting		On-contactor mounting		Separate mounting	
Type	Mass	Type	Mass	Type	Mass	Type	Mass
–		**TR-0NLH**	0.4kg	**TR-N6L**	1.54kg	**TR-N6LH**	1.6kg
		TR-0NLH/3	0.5kg	**TR-N6L/3**	1.85kg	**TR-N6LH/3**	1.91kg
		TK13LH	0.42kg				
–		**TR-5-1NLH**	0.42kg	**TR-N7L**	1.54kg	–	
		TR-5-1NLH/3	0.52kg	**TR-N7L/3**	1.85kg		
		TK26LH	0.45kg				
TR-N2L	0.56kg	**TR-N2LH**	0.65kg	**TR-N7L**	1.85kg	**TR-N10LH**	1.5kg
TR-N2L/3	0.68kg	**TR-N2LH/3**	0.77kg	**TR-N7L/3**	1.85kg	**TR-N10LH/3**	1.5kg
TR-N3L	0.63kg	**TR-N3LH**	0.74kg	**TR-N12L**	2.3kg	**TR-N12LH**	2.25kg
TR-N3L/3	0.77kg	**TR-N3LH/3**	0.74kg	**TR-N12L/3**	2.3kg	**TR-N12LH/3**	1.5kg
TR-N5L	0.63kg	–		**TR-N14L**	3.5kg	**TR-N14LH**	4kg
TR-N5L/3	0.63kg			**TR-N14L/3**	3.5kg	**TR-N14LH/3**	4kg

A1

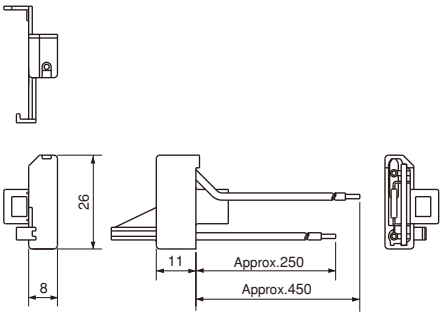
■ Dimensions, mm

Optional accessories
Trip indicator

SZ-L100
SZ-L200

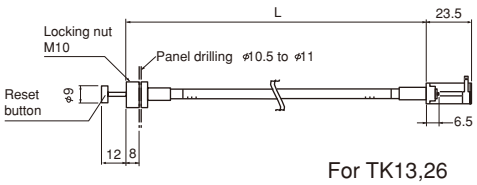


SZ-L100N2
SZ-L200N2

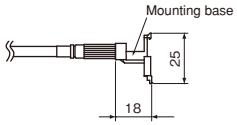


Reset release button

SZ-R1
SZ-R2
SZ-R3

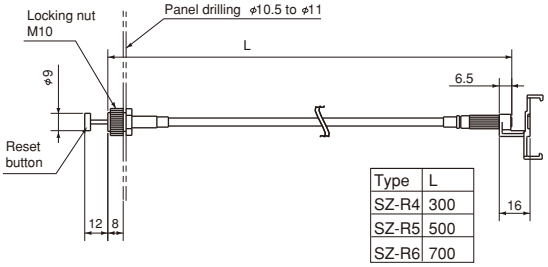


For TK13,26



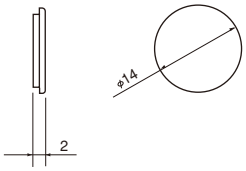
Type	L
SZ-R1	300
SZ-R1	500
SZ-R1	700

SZ-R4
SZ-R5
SZ-R6



Type	L
SZ-R4	300
SZ-R5	500
SZ-R6	700

Dial cover
SZ-DA



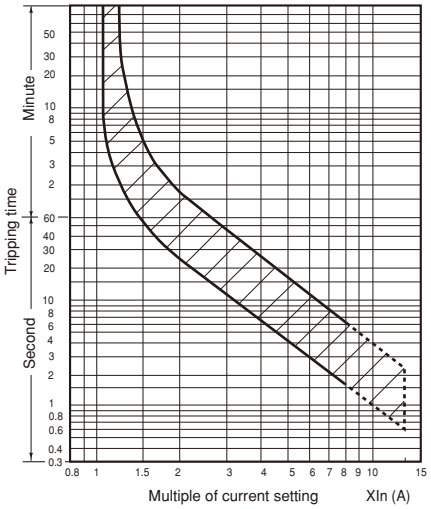
■ Characteristic curves

These curves show cold starting characteristics.

● Standard type

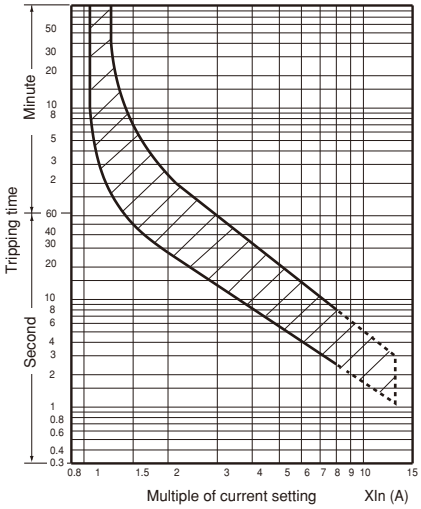
**TR-0N, 5-1N,
TR-0N/3, 5-1N/3,
TR-0NH, 5-1NH,
TR-0NH/3, 5-1NH/3**

(Trip Class 10)



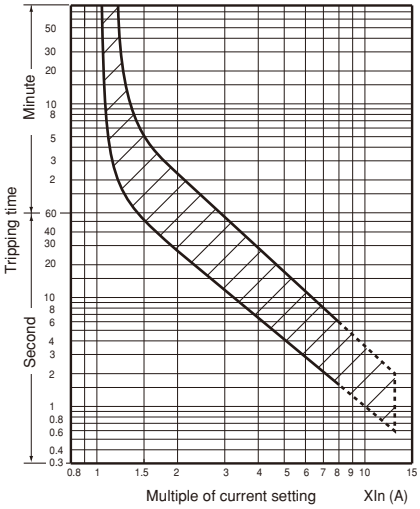
**TK13
TK26**

(Trip Class 10)



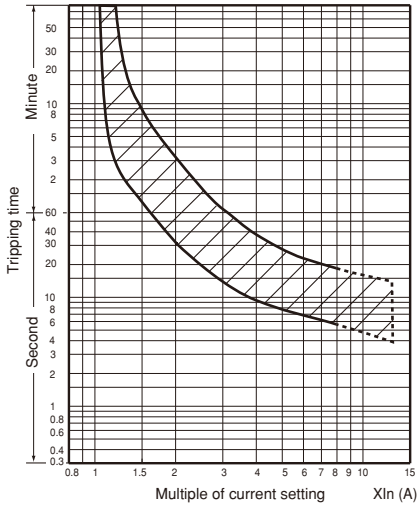
**TR-N2 to N8
TR-N2/3 to N8/3
TR-N2H, N3H, N6H
TR-N2H/3, N3H/3, N6H/3**

(Trip Class 10)



**TR-N10 to N14,
TR-N10/3 to N14/3,
TR-N10H to N14H
TR-N10H/3 to N14H/3**

(Trip Class 20)

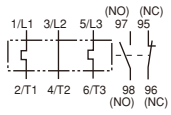


■ Wiring diagrams

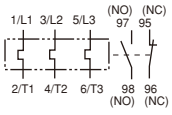
● Standard type

**TR-0N to N8
TR-0N/3 to N8/3
TR-0NH, 5-1NH, N2H, N3H, N6H
TR-0NH/3, 5-1NH/3, N2H/3, N3H/3, N6H/3
TK13, TK26, TK13H, TK26H**

2-element

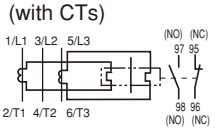


3-element

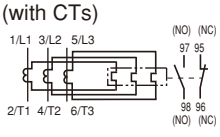


**TR-N10 to N14
TR-N10/3 to N14/3
TR-N10H to N14H
TR-N10H/3 to N14H/3**

2-element (with CTs)



3-element (with CTs)



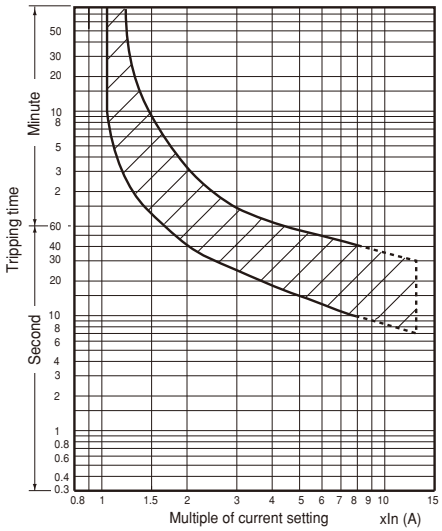
A1

■ Characteristic curves
These curves show cold starting characteristics.

● **Long time operating type** (When setting at the center dial current)

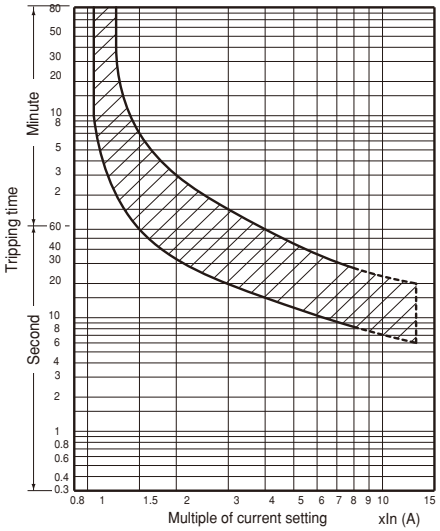
TR-0NL, 5-1NL
TR-0NL/3, 5-1NL/3
TR-0NLH, 5-1NLH
TR-0NLH/3, 5-1NLH/3

(Trip Class 30)



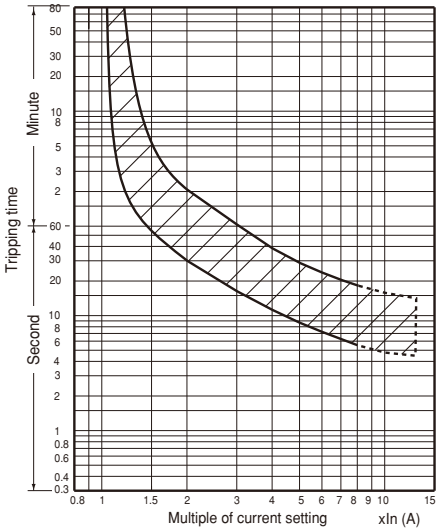
TK13LH
TK26LH

(Trip Class 30)



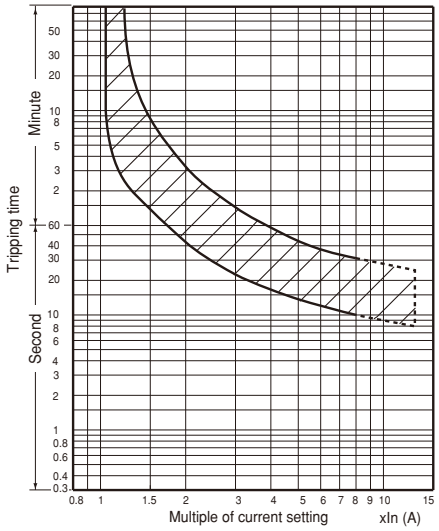
TR-N2L to N7L
TR-N2L/3 to N7L/3
TR-N2LH, N3LH, N6LH
TR-N2LH/3, N3LH/3, N6LH/3

(Trip Class 20)



TR-N10L to N14L
TR-N10L/3 to N14L/3
TR-N10LH to N14LH
TR-N10LH/3 to N14LH/3

(Trip Class 30)

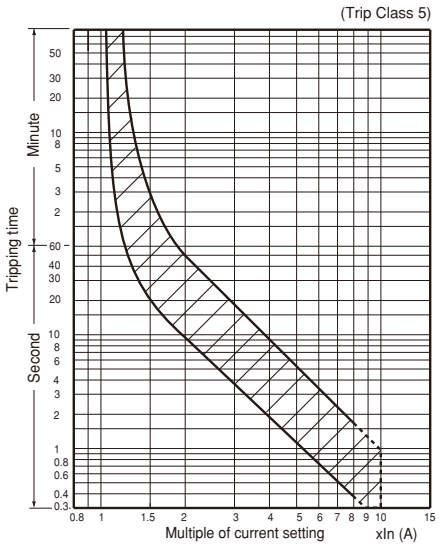


■ Characteristic curves

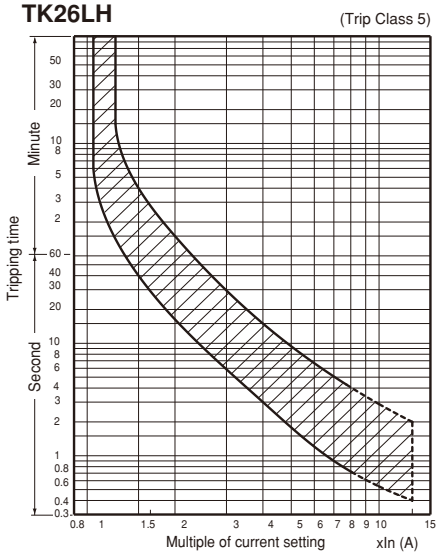
These curves show cold starting characteristics.

● **Quick operating type**

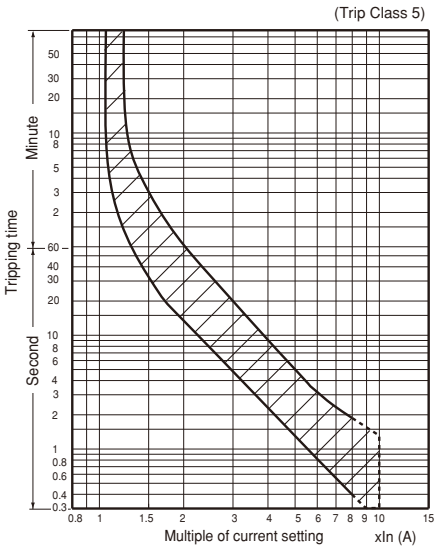
TR-0NQ, 5-1NQ



TK13LH
TK26LH



TR-N2Q, N3Q, N5Q

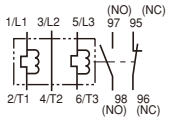


■ Wiring diagrams

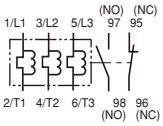
● **Long time operating type**

TR-0NL to N7L
TR-0NL/3 to N7L/3
TR-0NLH, 5-1NLH, N2LH, N3LH, N6LH
TR-0NLH/3, 5-1NLH/3, N2LH/3, N3LH/3, N6LH/3
TK13HL, TK26HL

2-element

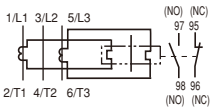


3-element

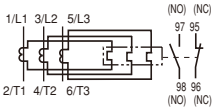


TR-N10L to N14L
TR-N10L/3 to N14L/3
TR-N10LH to N14LH
TR-N10LH/3 to N14LH/3

2-element (with CTs)



3-element (with CTs)



● **Quick operating type**

TR-0NQ, 5-1NQ
TR-N2Q, N3Q, N5Q
TK13Q, TK26Q

3-element

