

Overload relays

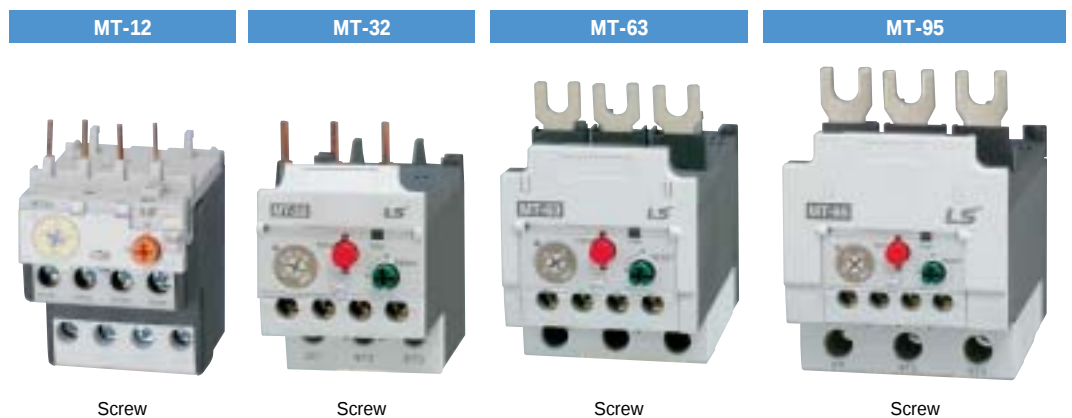
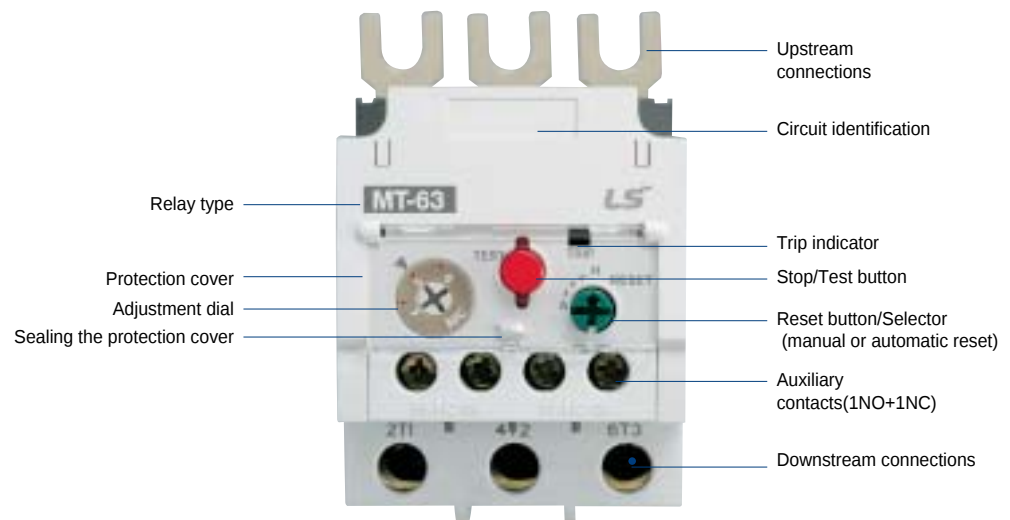
General descriptions

Type MT, bimetal-style, overload relays are designed to protect AC circuits and motors against overloads, phase failure, long starting times and prolonged stalling of the motor.

Four versions are available according to the protection function and trip class as below.

1. Non-differential : 3pole-2bimetal(heater) and trip class 10A
2. Non-differential : 3pole-3bimetal(heater) and trip class 10A
3. Differential : 3pole-3bimetal(heater) and trip class 10A
4. Differential : 3pole-3bimetal(heater) and trip class 20

Configuration of the front



Contactors directly mountable with overload relays

Overload relay		Contactor
Type	Setting range	Type
MT-12	0.1~18A	MC-6a
		MC-9a
		MC-12a
		MC-18a
MT-32	0.1~40A	MC-9b
		MC-12b
		MC-18b
		MC-22b
		MC-32a
		MC-40a
MT-63	4~65A	MC-50a
		MC-65a
MT-95	7~100A	MC-75a
		MC-85a
		MC-100a



Environment and auxiliary circuit

Environment			
Standards		IEC/EN 60947-1, IEC/EN 60947-4-1	
Certifications		CE, CSA, UL	
Rated operation voltage		Max. 690V	
Rated insulation voltage		690V	
Rated frequency		50/60Hz	
Degree of protection (Conforming to IEC 60 529)		IP 20	
Ambient air temperature	Storage	-55 ~ +80 °C	
Operation		-5 ~ +60 °C	
Mounting position		Vertical plane	
Shock resistance (Conforming to IEC 68-2-7)		15gn - 11ms	
Vibration resistance (Conforming to IEC68-2-6)		6G	
Insulation strength (Conforming to IEC 255-5)		6kV	
Rated impulse withstand voltage (Conforming to IEC 801-5)		6kV	
Auxiliary contacts characteristics			
Composition		1a1b (1NO +1NC)	
Rated thermal current		5A	
Rated operation current		C600, R300	
AC15 duty (C600)	120V	1.5A	
	240V	0.75A	
	380V	0.47A	
	480V	0.375A	
	500V	0.35A	
	600V	0.3A	
DC13 duty (R300)	120V	0.22A	
	240V	0.1A	
Connecting conductor	Size	18AWG /1mm ²	
Connection to screw clamp terminals	Type	65/75 Cu-wire	

Overload relay specifications

MT type Thermal Overload Relays



MT-12/3K □

Frame size		
Trip class		
Type	Non-differential(3P-2 heater)	
	Non-differential(3P-3 heater)	
	Differential type	
Terminal type		
Number of poles		
Rated operational voltage (Ue)		
Rated insulation voltage (Ui)		
Rated impulse voltage (Uimp)		
Degree of protection (IEC 60 529)		
Temperature compensation (°C)		
Functions	Trip indicating	
	Stop	
	Test	
	Manual/Automatic Reset	
Setting range(A)		
Nominal current rating	Wire size	
	mm²	AWG
0.14	1	18
0.21		
0.33		
0.52		
0.82		
1.3		
2.1		
3.3		
5		
6.5		
7.5	1~1.5	18~16
8.5		
11	1.5~2.5	16~14
15	2.5	14~12
19	2.5~4	12~10
21.5		
27	4~6	10
30	4~10	10~8
34	6~10	10~8
42	10	8
54		
65	16~25	6~4
74		
83	25~35	4~3
90		
Applied contactors		
Separate mounting unit		

18AF	
10A	20
MT-12/2H □	
MT-12/3H □	
MT-12/3K □	MT-12/3D □
Screw clamp	
3	
690V	
Up to 690V	
6kV	
IP 20	
-5~+40	
■	
-	
■	
■	
0.1~18A	1~18A
0.1~0.16	
0.16~0.25	
0.25~0.4	
0.4~0.63	
0.63~1	
1~1.6	1~1.6
1.6~2.5	1.6~2.5
2.5~4	2.5~4
4~6	4~6
5~8	5~8
6~9	6~9
7~10	7~10
9~13	9~13
12~18	12~18
MC-6a, 9a, 12a, 18a	
-	



MT-32/3K□

40AF

10A	20
MT-32/2H□	
MT-32/3H□	
MT-32/3K□	MT-32/3D□
Screw clamp	
3	
690V	
Up to 690V	
6kV	
IP 20	
-5~+40	
■	
■	
■	
■	
0.1~40A	1~40A
0.1~0.16	
0.16~0.25	
0.25~0.4	
0.4~0.63	
0.63~1	
1~1.6	1~1.6
1.6~2.5	1.6~2.5
2.5~4	2.5~4
4~6	4~6
5~8	5~8
6~9	6~9
7~10	7~10
9~13	9~13
12~18	12~18
16~22	16~22
18~25	18~25
22~32	22~32
-	-
28~40	28~40
MC-9b, 12b, 18b, 22b, 35a, 40a	
UZ-32	



MT-63/3K□S

65AF

10A	20
MT-63/2H□S	
MT-63/3H□S	
MT-63/3K□S	MT-63/3D□S
Screw clamp	
3	
690V	
Up to 690V	
6kV	
IP 20	
-5~+40	
■	
■	
■	
■	
4~65A	
4~6	4~6
5~8	5~8
6~9	6~9
7~10	7~10
9~13	9~13
12~18	12~18
16~22	16~22
18~25	18~25
-	-
24~36	24~36
28~40	28~40
34~50	34~50
45~65	45~65
MC-50a, 65a	
UZ-63/S	

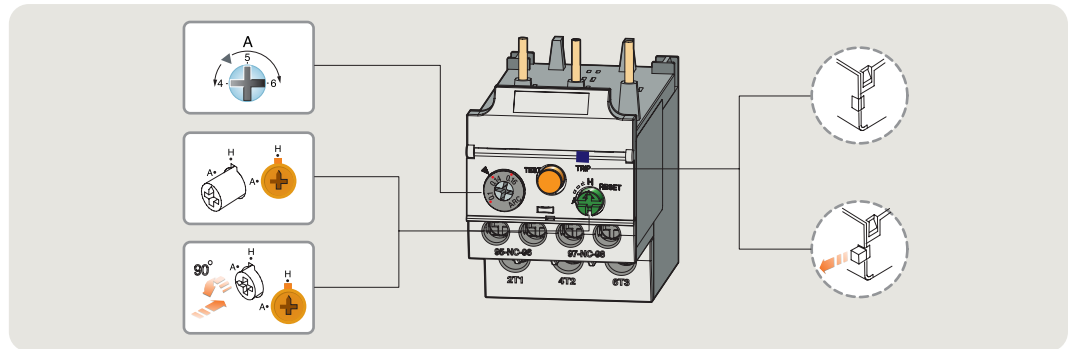
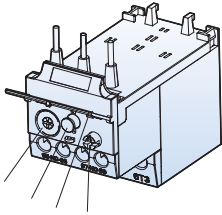


MT-95/3K□S

100AF

10A	20
MT-95/2H□S	
MT-95/3H□S	
MT-95/3K□S	MT-95/3D□S
Screw clamp	
3	
690V	
Up to 690V	
6kV	
IP 20	
-5~+40	
■	
■	
■	
■	
7~100A	
7~10	7~10
9~13	9~13
12~18	12~18
16~22	16~22
18~25	18~25
-	-
24~36	24~36
28~40	28~40
34~50	34~50
45~65	45~65
54~75	54~75
63~85	63~85
70~95	70~95
80~100	80~100
MC-75a, 85a, 100a	
UZ-95/S	

Overload relay operation

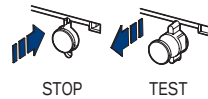


1. Adjustment dial



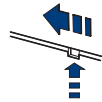
Before adjusting the dial open the protection cover.
Current setting can be done easily by using (+) or (-) driver.
Do not rotate the dial out of the setting range.

2. Stop/Test button



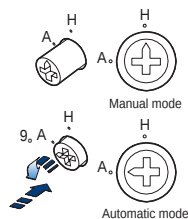
STOP function is executed by pushing the button, which causes the next sequence.
In case of operation test pull this button.

3. Trip indicator



If relay is tripped it comes out.

4. Reset button/Selector



Using a driver the reset mode can be set.
In case of Manual mode(H) push the button to reset the relay.
To change to Automatic mode(A) from Manual mode push the button and rotate as shown in the fig.

5. Auxiliary contact operation

Terminal no.	Normal	STOP	TEST/TRIP	RESET
NC 95-96				
NO 97-98				

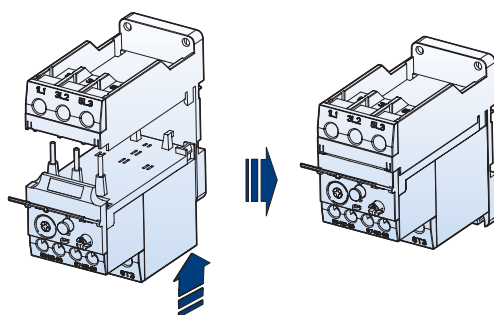
Accessories for overload relay

Separate mounting units

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



Relay	Unit	
	Type	Weight
MT-12/2H□ MT-12/3H□ MT-12/3K□ MT-12/3D□	AZ-12MH	20g
MT-32/2H□ MT-32/3H□ MT-32/3K□ MT-32/3D□	UZ-32	23g
MT-63/2H□S MT-63/3H□S MT-63/3K□S MT-63/3D□S	UZ-63/S	68g
MT-95/2H□S MT-95/3H□S MT-95/3K□S MT-95/3D□S	UZ-95/S	134g



Accessories for overload relay

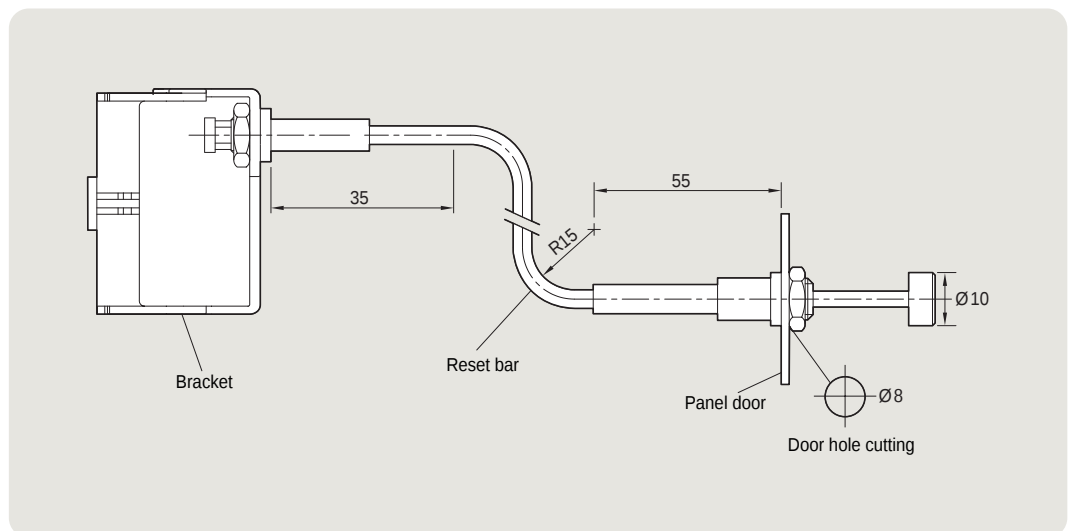
Remote reset units

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



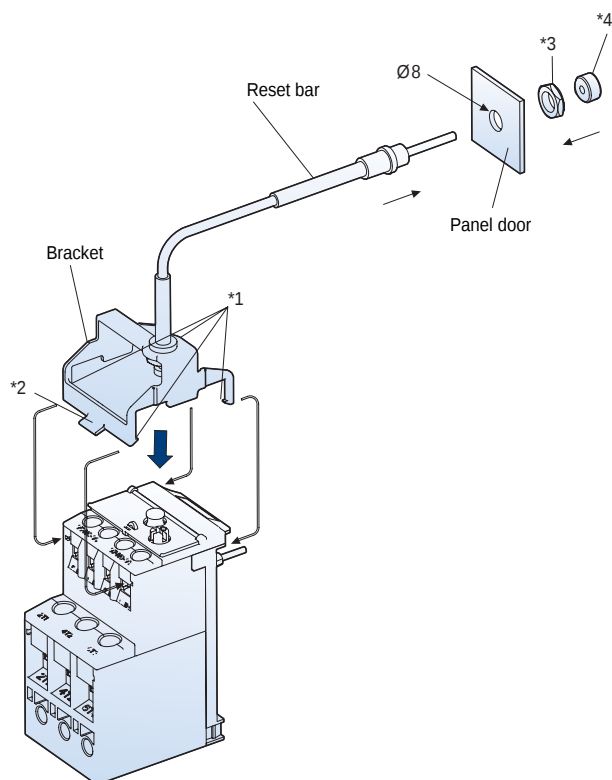
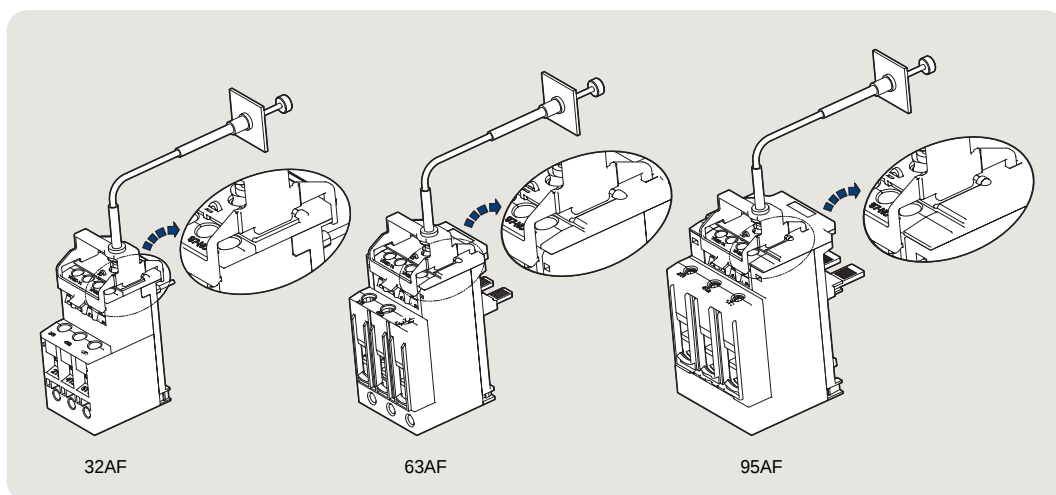
Type	Cable length (L)
UM-4R	400 mm
UM-5R	500 mm
UM-6R	600 mm

1. Make the reset bar straight at least 55mm from the panel door and 35mm from the bracket.
2. The bending radius of the flexible reset bar should not be less than 15mm.



Installation

1. Fit the bracket with the relay as indicated(*1) below.
2. Separate Nut(*3) and Head cap(*4) from the reset bar first.
Insert the reset bar into the panel hole and then fix it with the Nut and Head.
3. To separate the bracket from the relay lift the *2 part as shown in the fig.



Overload relay ordering types

Trip class 10A

Direct mounting type



MT-12/□

Setting range (A)	Ordering type			Contactor	Separate mounting unit
	Non-differential (3P-2 heater)	Non-differential (3P-3 heater)	Differential		
0.1~0.16	MT-12/2H0.14	MT-12/3H0.14	MT-12/3K0.14	MC-6a MC-9a MC-12a MC-18a	AZ-12MH
0.16~0.25	MT-12/2H0.21	MT-12/3H0.21	MT-12/3K0.21		
0.25~0.4	MT-12/2H0.33	MT-12/3H0.33	MT-12/3K0.33		
0.4~0.63	MT-12/2H0.52	MT-12/3H0.52	MT-12/3K0.52		
0.63~1	MT-12/2H0.82	MT-12/3H0.82	MT-12/3K0.82		
1~1.6	MT-12/2H1.3	MT-12/3H1.3	MT-12/3K1.3		
1.6~2.5	MT-12/2H2.1	MT-12/3H2.1	MT-12/3K2.1		
2.5~4	MT-12/2H3.3	MT-12/3H3.3	MT-12/3K3.3		
4~6	MT-12/2H5	MT-12/3H5	MT-12/3K5		
5~8	MT-12/2H6.5	MT-12/3H6.5	MT-12/3K6.5		
6~9	MT-12/2H7.5	MT-12/3H7.5	MT-12/3K7.5		
7~10	MT-12/2H8.5	MT-12/3H8.5	MT-12/3K8.5		
9~13	MT-12/2H11	MT-12/3H11	MT-12/3K11		
12~18	MT-12/2H15	MT-12/3H15	MT-12/3K15		



MT-32/□

Setting range (A)	Ordering type			Contactor	Separate mounting unit
	Non-differential (3P-2 heater)	Non-differential (3P-3 heater)	Differential		
0.1~0.16	MT-32/2H0.14	MT-32/3H0.14	MT-32/3K0.14	MC-9b MC-12b MC-18b MC-22b MC-32a MC-40a	UZ-32
0.16~0.25	MT-32/2H0.21	MT-32/3H0.21	MT-32/3K0.21		
0.25~0.4	MT-32/2H0.33	MT-32/3H0.33	MT-32/3K0.33		
0.4~0.63	MT-32/2H0.52	MT-32/3H0.52	MT-32/3K0.52		
0.63~1	MT-32/2H0.82	MT-32/3H0.82	MT-32/3K0.82		
1~1.6	MT-32/2H1.3	MT-32/3H1.3	MT-32/3K1.3		
1.6~2.5	MT-32/2H2.1	MT-32/3H2.1	MT-32/3K2.1		
2.5~4	MT-32/2H3.3	MT-32/3H3.3	MT-32/3K3.3		
4~6	MT-32/2H5	MT-32/3H5	MT-32/3K5		
5~8	MT-32/2H6.5	MT-32/3H6.5	MT-32/3K6.5		
6~9	MT-32/2H7.5	MT-32/3H7.5	MT-32/3K7.5		
7~10	MT-32/2H8.5	MT-32/3H8.5	MT-32/3K8.5		
9~13	MT-32/2H11	MT-32/3H11	MT-32/3K11		
12~18	MT-32/2H15	MT-32/3H15	MT-32/3K15		
16~22	MT-32/2H19	MT-32/3H19	MT-32/3K19		
18~25	MT-32/2H21.5	MT-32/3H21.5	MT-32/3K21.5		
22~32	MT-32/2H27	MT-32/3H27	MT-32/3K27		
28~40	MT-32/2H34	MT-32/3H34	MT-32/3K34		
					UZ-32(34A)

Trip class 10A

Direct mounting type



MT-63/10A

Setting range (A)	Ordering type			Contactor	Separate mounting unit
	Non-differential (3P-2 heater)	Non-differential (3P-3 heater)	Differential		
4~6	MT-63/2H5S	MT-63/3H5S	MT-63/3K5S	MC-50a MC-65a	UZ-63/S
5~8	MT-63/2H6.5S	MT-63/3H6.5S	MT-63/3K6.5S		
6~9	MT-63/2H7.5S	MT-63/3H7.5S	MT-63/3K7.5S		
7~10	MT-63/2H8.5S	MT-63/3H8.5S	MT-63/3K8.5S		
9~13	MT-63/2H11S	MT-63/3H11S	MT-63/3K11S		
12~18	MT-63/2H15S	MT-63/3H15S	MT-63/3K15S		
16~22	MT-63/2H19S	MT-63/3H19S	MT-63/3K19S		
18~25	MT-63/2H21.5S	MT-63/3H21.5S	MT-63/3K21.5S		
24~36	MT-63/2H30S	MT-63/3H30S	MT-63/3K30S		
28~40	MT-63/2H34S	MT-63/3H34S	MT-63/3K34S		
34~50	MT-63/2H42S	MT-63/3H42S	MT-63/3K42S		
45~65	MT-63/2H55S	MT-63/3H55S	MT-63/3K55S		



MT-95/10A

Setting range (A)	Ordering type			Contactor	Separate mounting unit
	Non-differential (3P-2 heater)	Non-differential (3P-3 heater)	Differential		
7~10	MT-95/2H8.5S	MT-95/3H8.5S	MT-95/3K8.5S	MC-75a MC-85a MC-100a	UZ-95/S
9~13	MT-95/2H11S	MT-95/3H11S	MT-95/3K11S		
12~18	MT-95/2H15S	MT-95/3H15S	MT-95/3K15S		
16~22	MT-95/2H19S	MT-95/3H19S	MT-95/3K19S		
18~25	MT-95/2H21.5S	MT-95/3H21.5S	MT-95/3K21.5S		
24~36	MT-95/2H30S	MT-95/3H30S	MT-95/3K30S		
28~40	MT-95/2H34S	MT-95/3H34S	MT-95/3K34S		
34~50	MT-95/2H42S	MT-95/3H42S	MT-95/3K42S		
45~65	MT-95/2H55S	MT-95/3H55S	MT-95/3K55S		
54~75	MT-95/2H65S	MT-95/3H65S	MT-95/3K65S		
63~85	MT-95/2H74S	MT-95/3H74S	MT-95/3K74S		
70~95	MT-95/2H83S	MT-95/3H83S	MT-95/3K83S		
80~100	MT-95/2H90S	MT-95/3H90S	MT-95/3K90S		

Overload relay ordering types

Trip class 20

Direct mounting type



MT-12/3K □

Setting range (A)	Ordering type	Contactor	Separate mounting unit
	Differential		
1~1.6	MT-12/3D1.3	MC-6a MC-9a MC-12a MC-18a	AZ-12MH
1.6~2.5	MT-12/3D2.1		
2.5~4	MT-12/3D3.3		
4~6	MT-12/3D5		
5~8	MT-12/3D6.5		
6~9	MT-12/3D7.5		
7~10	MT-12/3D8.5		
9~13	MT-12/3D11		
12~18	MT-12/3D15		



MT-32/3D ^{FE}

Setting range (A)	Ordering type	Contactor	Separate mounting unit
	Differential		
1~1.6	MT-32/3D1.3	MC-9b MC-12b MC-18b MC-22b MC-32a MC-40a	UZ-32
1.6~2.5	MT-32/3D2.1		
2.5~4	MT-32/3D3.3		
4~6	MT-32/3D5		
5~8	MT-32/3D6.5		
6~9	MT-32/3D7.5		
7~10	MT-32/3D8.5		
9~13	MT-32/3D11		
12~18	MT-32/3D15		
16~22	MT-32/3D19		
18~25	MT-32/3D21.5		
22~32	MT-32/3D27		
28~40	MT-32/3D34		
			UZ-32(34A)

Trip class 20

Direct mounting type



MT-63/3D^{PS}

Setting range (A)	Ordering type	Contactor	Separate mounting unit
	Differential		
4~6	MT-63/3D5S	MC-50a MC-65a	UZ-63/S
5~8	MT-63/3D6.5S		
6~9	MT-63/3D7.5S		
7~10	MT-63/3D8.5S		
9~13	MT-63/3D11S		
12~18	MT-63/3D15S		
16~22	MT-63/3D19S		
18~25	MT-63/3D21.5S		
24~36	MT-63/3D30S		
28~40	MT-63/3D34S		
34~50	MT-63/3D42S		
45~65	MT-63/3D55S		



MT-95/3D^{PS}

Setting range (A)	Ordering type	Contactor	Separate mounting unit
	Differential		
7~10	MT-95/3D8.5S	MC-75a MC-85a MC-100a	UZ-95/S
9~13	MT-95/3D11S		
12~18	MT-95/3DK15S		
16~22	MT-95/3D19S		
18~25	MT-95/3D21.5S		
24~36	MT-95/3D30S		
28~40	MT-95/3D34S		
34~50	MT-95/3D42S		
45~65	MT-95/3D55S		
54~75	MT-95/3D65S		
63~85	MT-95/3D74S		
70~95	MT-95/3D83S		
80~100	MT-95/3D90S		