

Catalogue
2009



Susol
Super Solution

Contactors and
Overload relays

LS Industrial Systems
www.lsis.biz

The Challenges and Growth achieved by LG
will continue with New Will of LS Industrial Systems.

**New Name for LG Industrial Systems,
New Take-off for LS Industrial Systems**

LS Industrial Systems

To advance to the next level,
LG Industrial Systems is reborn as LS Industrial Systems.
LS Industrial Systems will continue to lead the future
of industrial electrics and automation by providing
Total Solution, a core essential
for competition in the 21st century industrial era.





1960'S~
1950'S
1980'S~
1970'S



2000'S



1990'S

A brief company chronology

- Mar. 2005** | Official Declaration of NEW Corporate Identification (LS)
- Feb. 2004** | Signed investment agreement to build electricity/automation equipment factory in Usi City, Jangssu Province, China
- Jan. 2004** | Opening U.A.E branch office
- Dec. 2001** | Established trading company in Shanghai, China
- Jun. 2001** | Unveiled a New Vision including Mid- and Long-Term Strategies
- Sept. 2000** | Completion of Power Testing & Technology Institute

- Dec. 1999** | Transfer of building equipment business to LG-OTIS
- Nov. 1999** | Completion of electricity power plant in Vietnam
- Jun. 1997** | Established joint venture in Vietnam
- Sept. 1995** | LG Industrial Systems Co., Ltd. Goldstar Instrument & Electric Co., Ltd. and Goldstar Electric Machinery Co., Ltd. merged into one company.
- July. 1994** | Completion of Dae-Ryun factory in China

- July. 1984** | LG Industrial Systems Co., Ltd. opened to public

- July. 1974** | Established LG Industrial Systems Co., Ltd.

- 1958** | **LGIS laid foundations for the Electric Power Industry**
- ~ 1973** | After Goldstar Co. was established in 1958, we started to produce WHM (Watt Hour Meter) units for the first time in Korea in 1964. We then proceeded to lay the foundation for the electric power and electronics industries, which were very important bases for industrial development of Korea.

R&D chronology



- 2006** • Developed Susol series Contactors and overload relays
- 2004** • Developed Meta-MEC Manual Motor Starters up to 100A
- 2002** • Developed Meta-MEC 4pole Magnetic Contactor
• Developed the newest Power Equipment Diagnosis System
- 2001** • Developed Meta-MEC series low AF MCCB and obtained CE certificate
• Developed high voltage GIS 362kV, 63kA and 8000A
- 1999** • Developed Meta-MEC series low AF contactors & overload relays and obtained CE certificate according to IEC60947 by KEMA
• Developed Korea's first DPR (Digital Protection Relay)
- 1998** • Developed Meta-MEC series high AF contactors & overload relays and obtained CE certificate according to IEC60947 TUV certificate
• Developed Digital EMPR and obtained EMPR CE certificate
- 1997** • Obtained the CE certificate (IEC 60947, TUV certificate) on MCCB, MS for the first time in Korea
- 1996** • LGIS Cheongju Plant obtained the ISO14001
- 1995** • Developed Demand Controller
- 1993** • Obtained ISO9001
• Obtained ISO9002 for low voltage equipment
• Developed EMPR (Electronic Motor Protection Relay)
• Developed Korea's first GIMAC (Digital Integrated Meter)
- 1992** • Developed IMC (Intelligent Motor Controller)
- 1989** • Developed Korea's first high-performance Hi-MEC MCCB & ELCB
- 1975** • Initiated the switchgear project
- 1973** • Initiated low & high voltage equipment project
- 1964** • Initiated WHM project

Super Solution



GOOD DESIGN
산업자원부선정



2007

■ Design for technical strong point: The Susol Design

SuSol Series MCCB is available for world best breaking capacity up to 150kA, and MS is seal structure for hidden electricity Arc.

SuSol product represents simultaneously simple and complicated design for using cut diamond motive to emphasize on the hardness of industrial product.

And we applied the identity of product image by designing same concept MCCB and MS which is installed to cubicle.

SuSol Series acquire the competitive power through getting the picking up GD product and winning IF Design Award.



For power distribution

- ▶ The highest breaking capacity
- ▶ Optimum coordination technique (Cascading & discrimination)
- ▶ Powerful engineering tools

For protection of motor & its control device

- ▶ Optimal overload protection
- ▶ Guaranteed type-2 coordination between circuit breaker and contactor, relay

For controlling and disconnecting circuits

For extensive applications

- ▶ Wide range of optimized auxiliaries and accessories

Global Leading Products



Magnetic contactors



Thermal overload relays



Combination starters

Overview

Susol

Top-Class Contactor Family



Contactors & Overload Relays

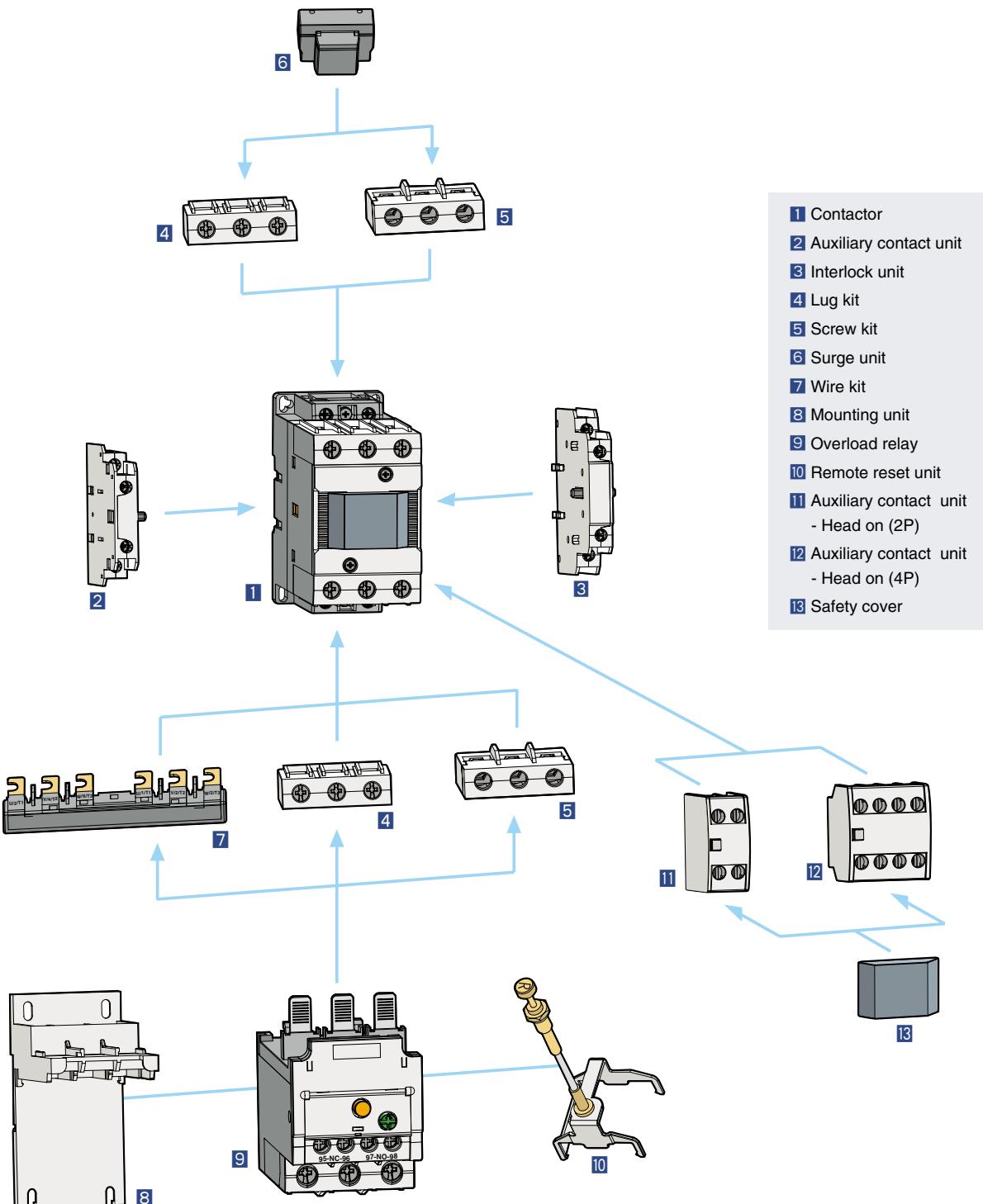
LSIS contactor/overload relay meets IEC, UL, CSA, CCC and CE standards, it is the perfect product solution for applications all over the world. Including non-reversing and reversing contactors and starters as well as overload relays and accessories, contactor/overload relay brings LSIS to a whole new level.

The space saving and easy-to-install MC contactors and starters is the efficient and effective solution for customer applications from 9-95A. Enclosed control options include metallic and non-metallic enclosures.

Only three frame sizes cover contactor ratings up to 95A, making it easier for OEMs to lay out panels. With a broad line of application specific designs, contactor/overload relay allows customers to select the right tool for the job.

Overview

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Overview

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Combination with Manual Motor Starters

The perfect solution to reducing the installation time of panel controls.

- DIN rail mounting adapter
- Easy to combine by using adapter and wiring kit
- Space saving
- Removing contactor easily
- Finger-proof wiring links

MMS-100



MC-95

MMS-63



MC-63

MMS-32



MC-32

Combinations

Manual Motor Starter		Contactor
Type	Setting range	Type
MMS-32	0.1~32A	MC-9
		MC-12
		MC-18
		MC-25
MMS-63	6~63A	MC-32
		MC-35
		MC-40
		MC-50
MMS-100	11~100A	MC-63
		MC-65
		MC-75
		MC-85
		MC-95

Overview

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Combination with Overload relays

The space-saving and easy-to-install contactors and overload relays are the efficient and effective solution for customer applications up to 95A.

Combinations

Overload Relay		Contactor
Type	Setting range	Type
MT-12	0.1~12A	MC-9a MC-12a
MT-32	0.1~32A	MC-9
		MC-12
		MC-18
		MC-25
		MC-32
MT-63	4~65A	MC-35
		MC-40
		MC-50
		MC-63
MT-95	7~95A	MC-65
		MC-75
		MC-85
		MC-95



Contactors

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Specifications



		12AF		32AF				
Type	Model	MC-9a	MC-12a	MC-9	MC-12	MC-18	MC-25	MC-32
	Connection by screws clamp terminals	●	●	●	●	●	●	●
	Connection by lugs	-	-	-	-	-	-	-
Number of poles		3		3				
Rated operational voltage, Ue		690V		690V				
Rated insulation voltage, Ui		1000V		1000V				
	Conforming to IEC947-4-1	1000V		1000V				
	Conforming to UL, CSA	600V		600V				
Rated impulse withstand voltage, Uimp		8kV		8kV				
Degree of pollution (IEC60529)		IP20		IP20				
Rated operational current le ($\theta \leq 55^\circ\text{C}$)		25	25	25	40	40	50	
	AC-1	Ue max 690V [A]						
	AC-3	200/240V [A]	11	13	11	13	25	32
		380/400V [A]	9	12	9	12	25	32
		415V [A]	9	12	9	12	25	32
		440V [A]	9	12	9	12	25	32
		500V [A]	7	12	7	12	22	28
		690V [A]	5	9	5	9	18	20
Rated operational power ($\theta \leq 55^\circ\text{C}$)		2.5	3.5	2.5	3.5	4.5	5.5	7.5
	AC-3	200/240V [kW]	4	5.5	4	5.5	7.5	11
		380/400V [kW]	4	5.5	4	5.5	7.5	15
		415V [kW]	4	5.5	4	5.5	7.5	11
		440V [kW]	4	5.5	4	5.5	7.5	15
		500V [kW]	4	7.5	4	7.5	15	18.5
		690V [kW]	4	7.5	4	7.5	15	18.5
Rated operational current(440V AC-3) [A]		9	12	9	12	18	25	32
According to IEC 947-4-1	Rated making capacity AC-3 (I/Ie) [440V]	90	120	90	120	180	250	320
	Rated breaking capacity AC-3 (Ic/Ie) [440V]	72	96	72	96	144	200	256
Mechanical durability in millions of operating cycles		15	15	15	15	15	15	15
Maximum operating rate In operating cycles per hour		1800	1800	1800	1800	1800	1800	1800
Mechanical durability in millions of operating cycles		8.07	8.07	8.07	8.07	8.07	8.07	8.07
Maximum operating rate In operating cycles per hour		7200	7200	7200	7200	7200	7200	7200
Electrical life for le/AC-3 Max in millions of operating cycles		2.5	2.5	2.5	2.5	2.5	2.5	2.5
Maximum operating rate in operating cycles per hour		1800	1800	1800	1800	1800	1800	1800
AC control coil voltage operated contactors	Weight [kg]	0.26		0.45				
	Basic dimensions (W × H × D) [mm]	45 × 74 × 82		45 × 83 × 93				
DC control coil voltage operated contactors	Weight [kg]	0.47		0.63				
	Basic dimensions (W × H × D) [mm]	45 × 74 × 114		45 × 83 × 118				

Contactors

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63AF

MC-35	MC-40	MC-50	MC-63
•	•	•	•
•	•	•	•
3			
690V			

1000V

600V

8kV

IP20

55	60	70	75
35	40	55	63
35	40	50	63
35	40	50	63
35	40	50	63
30	32	43	45
21	23	28	30
11	11	15	15
18.5	18.5	22	25
18.5	18.5	22	25
18.5	18.5	22	25
22	22	30	30
22	22	30	30
35	40	50	63
350	400	500	630
280	320	400	504
12	12	12	12
1200	1200	1200	1200
5.97	5.97	5.97	5.97
7200	7200	7200	7200
2	2	2	1.3
1200	1200	1200	1200

0.94

55 × 106 × 122

1.2

55 × 106 × 160.5

95AF

MC-65	MC-75	MC-85	MC-95
•	•	•	•
•	•	•	•
3			
690V			

1000V

600V

8kV

IP20

100	110	135	140
65	75	85	95
65	75	85	95
65	75	85	95
65	75	85	95
60	64	75	85
35	42	45	50
18.5	22	25	25
30	37	45	45
30	37	45	45
30	37	45	45
33	37	45	50
33	37	45	45
65	75	85	95
650	750	850	950
520	600	680	760
12	12	12	12
1200	1200	1200	1200
5.97	5.97	5.97	5.97
7200	7200	7200	7200
2	2	2	2
1200	1200	1200	1200

1.82

70 × 140 × 137

2.7

70 × 140 × 172.5

Contactors

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3-pole contactors

for motor control up to 45kW at 440V in category AC-3



MC-95□S



MC-95□L

Connection by screw clamp terminals

AC-3 operational power ratings 3-phase motors ($\theta \leq 55^\circ\text{C}$)							Rated operational current at AC-3	Built-in auxiliary contacts		Type	Weight
200 240V	380 400V	415V	440V	500V	690V	440V		NO	NC	Connection by screw clamp terminals	AC control
kW	kW	kW	kW	kW	kW	A					kg
2.5	4	4	4	4	4	9	1NO or 1NC		MC-9a	0.26	
3.5	5.5	5.5	5.5	7.5	7.5	12	1NO or 1NC		MC-12a	0.26	
2.5	4	4	4	4	4	9	-	-	MC-9	0.45	
3.5	5.5	5.5	5.5	7.5	7.5	12	-	-	MC-12	0.45	
4.5	7.5	7.5	7.5	7.5	7.5	18	-	-	MC-18	0.45	
5.5	11	11	11	15	15	25	-	-	MC-25	0.45	
11	18.5	18.5	18.5	22	22	32	-	-	MC-32	0.45	
7.5	15	15	15	18.5	18.5	35	-	-	MC-35□S	0.94	
11	18.5	18.5	18.5	22	22	40	-	-	MC-40□S	0.94	
15	22	22	22	30	30	50	-	-	MC-50□S	0.94	
15	25	25	25	30	30	63	-	-	MC-63□S	0.94	
18.5	30	30	30	33	33	65	-	-	MC-65□S	1.82	
22	37	37	37	37	37	75	-	-	MC-75□S	1.82	
25	45	45	45	45	45	85	-	-	MC-85□S	1.82	
25	45	45	45	50	45	95	-	-	MC-95□S	1.82	

Connection by lugs

AC-3 operational power ratings 3-phase motors ($\theta \leq 55^\circ\text{C}$)							Rated operational current at AC-3	Built-in auxiliary contacts		Type	Weight
200 240V	380 400V	415V	440V	500V	690V	440V		NO	NC	Connection by lugs terminals	AC control
kW	kW	kW	kW	kW	kW	A					kg
7.5	15	15	15	18.5	18.5	35	-	-	MC-35□L	0.94	
11	18.5	18.5	18.5	22	22	40	-	-	MC-40□L	0.94	
15	22	22	22	30	30	50	-	-	MC-50□L	0.94	
15	25	25	25	30	30	63	-	-	MC-63□L	0.94	
18.5	30	30	30	33	33	65	-	-	MC-65□L	1.82	
22	37	37	37	37	37	75	-	-	MC-75□L	1.82	
25	45	45	45	45	45	85	-	-	MC-85□L	1.82	
25	45	45	45	50	45	95	-	-	MC-95□L	1.82	

Accessories

Auxiliary contact blocks and modules: see pages 27 to 31.

Mounting

Clip-on mounting on 35 mm \square rail or screw fixing.

MC-65 to MC-95 types are mountable on 70mm DIN rail.

Standard control circuit voltage, Coil voltage

- AC circuit 50/60Hz
 - 50Hz : 24, 32, 36, 42, 48, 80, 100, 110, 220, 230, 240, 380, 400, 415, 440, 500, 550V
 - 60Hz : 24, 48, 100, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V
 - 50/60Hz : 24, 48, 100, 110, 120, 200, 220, 230, 240, 380, 415, 440, 500, 550V
- DC circuit
 - 12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V

Overloads to suit contactors are on page 20

Contactors

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3-pole contactors

for control in utilization category AC-1, 25 to 140 A



MC-32□
MC-63□S
MC-95□S

Connection by screw clamp terminals

AC-1 Non inductive loads maximum current ($\theta \leq 55^\circ\text{C}$)	Number of poles	Built-in auxiliary contacts		Type	Weight
		NO	NC	Connection by screw clamp terminals	AC control
AC-1 (A)					
25	3	1NO or 1NC	-	MC-9a	0.26
25	3	1NO or 1NC	-	MC-12a	0.26
25	3	-	-	MC-9	0.45
25	3	-	-	MC-12	0.45
40	3	-	-	MC-18	0.45
40	3	-	-	MC-25	0.45
50	3	-	-	MC-32	0.45
55	3	-	-	MC-35□S	0.94
60	3	-	-	MC-40□S	0.94
70	3	-	-	MC-50□S	0.94
75	3	-	-	MC-63□S	0.94
100	3	-	-	MC-65□S	1.82
110	3	-	-	MC-75□S	1.82
135	3	-	-	MC-85□S	1.82
140	3	-	-	MC-95□S	1.82

Connection by lugs

AC-1 Non inductive loads maximum current ($\theta \leq 55^\circ\text{C}$)	Number of poles	Built-in auxiliary contacts		Type	Weight
		NO	NC	Connection by lugs terminals	AC control
AC-1 (A)					
55	3	-	-	MC-35□L	0.94
60	3	-	-	MC-40□L	0.94
70	3	-	-	MC-50□L	0.94
75	3	-	-	MC-63□L	0.94
100	3	-	-	MC-65□L	1.82
110	3	-	-	MC-75□L	1.82
135	3	-	-	MC-85□L	1.82
140	3	-	-	MC-95□L	1.82

Accessories

Auxiliary contact blocks and modules: see pages 27 to 31.

Mounting

Clip-on mounting on 35 mm rail or screw fixing.

MC-65 to MC-95 types are mountable on 70mm DIN rail.

Standard control circuit voltage, Coil voltage

- AC circuit 50/60Hz
 - 50Hz : 24, 32, 36, 42, 48, 80, 100, 110, 220, 230, 240, 380, 400, 415, 440, 500, 550V
 - 60Hz : 24, 48, 100, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V
 - 50/60Hz : 24, 48, 100, 110, 120, 200, 220, 230, 240, 380, 415, 440, 500, 550V
- DC circuit
 - 12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V

Overloads to suit contactors are on page 20

Contactors

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Reversing contactors

for motor control up to 45kW at 440V in category AC-3



MC-32/RS



MC-63/RS



MC-95/RS

Connection by screw clamp terminals

AC-3 operational power ratings 3-phase motors ($\theta \leq 55^\circ\text{C}$)							Rated operational current at AC-3	Built-in auxiliary per contactor		Type	Weight
200 240V	380 400V	415V	440V	500V	690V	440V				Connection by screw clamp terminals	AC control
kW	kW	kW	kW	kW	kW	A					kg
2.5	4	4	4	4	4	9	1NO or 1NC		MC-9a/RS	0.57	
3.5	5.5	5.5	5.5	7.5	7.5	12	1NO or 1NC		MC-12a/RS	0.57	
2.5	4	4	4	4	4	9	-	-	MC-9/RS	0.95	
3.5	5.5	5.5	5.5	7.5	7.5	12	-	-	MC-12/RS	0.95	
4.5	7.5	7.5	7.5	7.5	7.5	18	-	-	MC-18/RS	0.95	
5.5	11	11	11	15	15	25	-	-	MC-25/RS	0.95	
11	18.5	18.5	18.5	22	22	32	-	-	MC-32/RS	0.95	
7.5	15	15	15	18.5	18.5	35	-	-	MC-35/RS	1.73	
11	18.5	18.5	18.5	22	22	40	-	-	MC-40/RS	1.73	
15	22	22	22	30	30	50	-	-	MC-50/RS	1.73	
15	25	25	25	30	30	63	-	-	MC-63/RS	1.73	
18.5	30	30	30	33	33	65	-	-	MC-65/RS	3.25	
22	37	37	37	37	37	75	-	-	MC-75/RS	3.25	
25	45	45	45	45	45	85	-	-	MC-85/RS	3.25	
25	45	45	45	50	45	95	-	-	MC-95/RS	3.25	

Connection by lugs

AC-3 operational power ratings 3-phase motors ($\theta \leq 55^\circ\text{C}$)							Rated operational current at AC-3	Built-in auxiliary per contactor		Type	Weight
200 240V	380 400V	415V	440V	500V	690V	440V				Connection by lugs terminals	AC control
kW	kW	kW	kW	kW	kW	A					kg
7.5	15	15	15	18.5	18.5	35	-	-	MC-35/RL	1.73	
11	18.5	18.5	18.5	22	22	40	-	-	MC-40/RL	1.73	
15	22	22	22	30	30	50	-	-	MC-50/RL	1.73	
15	25	25	25	30	30	63	-	-	MC-63/RL	1.73	
18.5	30	30	30	33	33	65	-	-	MC-65/RL	3.25	
22	37	37	37	37	37	75	-	-	MC-75/RL	3.25	
25	45	45	45	45	45	85	-	-	MC-85/RL	3.25	
25	45	45	45	45	45	95	-	-	MC-95/RL	3.25	

Note :

- Pre-wired power connections.
- Mechanical interlock without electrical interlocking.
- Please contact LSIS for reversing contactors with electrical interlocking pre-wired at the factory.

Accessories

Auxiliary contact blocks and modules: see pages 27 to 31.

Mounting

Clip-on mounting on 35 mm \square rail or screw fixing.
MC-65 to MC-95 types are mountable on 70mm DIN rail.

Standard control circuit voltage, Coil voltage

- AC circuit 50/60Hz
 - 50Hz : 24, 32, 36, 42, 48, 80, 100, 110, 220, 230, 240, 380, 400, 415, 440, 500, 550V
 - 60Hz : 24, 48, 100, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V
 - 50/60Hz : 24, 48, 100, 110, 120, 200, 220, 230, 240, 380, 415, 440, 500, 550V
- DC circuit
 - 12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250V

Contactors

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General technical data For utilization categories AC-3

Operational current and power conforming to IEC ($\theta \leq 55^\circ\text{C}$)

Contactor size		MC-9	MC-12	MC-18	MC-25	MC-32	MC-35	MC-40	MC-50	MC-63	MC-65	MC-75	MC-85	MC-95	
Max. operational current in AC-3	$\leq 440\text{V}$	A	9	12	18	25	32	35	40	50	63	65	75	85	95
Rated operational power P (standard motor power ratings)	220/240V	W	2.5	3.5	4.5	5.5	7.5	11	11	15	15	18.5	22	25	25
	380/440V	W	4	5.5	7.5	11	15.8	18.5	18.5	22	25	30	37	45	45
	500/550V	W	4	7.5	7.5	15	18.5	22	22	30	30	33	37	45	50
	690V	W	4	7.5	7.5	15	18.5	22	222	30	30	33	37	45	45
	1000V	W	-	-	-	-	-	-	-	-	-	-	-	-	

Operational current and power conforming to UL,CSA ($\theta \leq 55^\circ\text{C}$)

Contactor size		MC-9	MC-12	MC-18	MC-25	MC-32	MC-35	MC-40	MC-50	MC-63	MC-65	MC-75	MC-85	MC-95	
Max. operational current in AC-3	$\leq 440\text{V (A)}$	9	12	18	25	32	35	40	50	63	65	75	85	95	
Rated operational power P (standard motor power ratings) 50/60Hz	1ph	100~120V	0.5	0.75	1	2	2.2	2	3	3	5	5	5.5	7.5	10
		220~240V	1.5	2	3	3	5	5	7.5	10	10	15	15	15	20
	3ph	200~240V	2	3	5	7.5	7.5	10	15	20	20	25	25	30	30
		220~240V	3	5	7.5	10	10	15	20	25	25	30	30	40	40
		440~480V	5	7.5	10	15	20	25	30	40	40	50	50	60	75
		550~600V	7.5	10	15	20	25	30	40	50	50	60	60	75	100

Maximum operating rate in operating cycles/hour

Contactor size		MC-9	MC-12	MC-18	MC-25	MC-32	MC-35	MC-40	MC-50	MC-63	MC-65	MC-75	MC-85	MC-95
Max. operational current in AC-3	$\leq 440\text{V (A)}$	9	12	18	25	32	35	40	50	63	65	75	85	95
operating cycles	1/Hr	1800	1800	1800	1800	1800	1200	1200	1200	1200	1200	1200	1200	1200

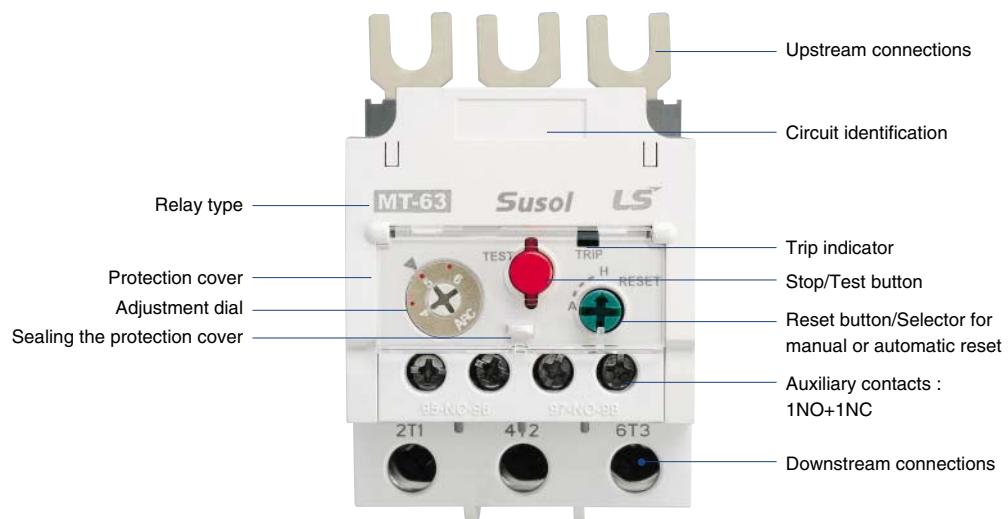
Overload relays

Susol

Specifications

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.

Configuration



Note :

- Relays are supplied with the selector in the manual position.
- Test button allows:
 - checking of control circuit wiring,
 - simulation of relay tripping (actuates both the NO and NC contacts).
 - Push the button(stop function)
 - Pull the button(test function)

	Stop	Test/Trip	Reset
NC 95-96	↓	↓	↑
NO 97-98	↓	↑	↑

MT-12



MT-32



MT-63



MT-95



Overload relays

Susol

Specifications

Combinations

Overload Relay		Contactor
Type	Setting range	Type
MT-12	0.1~12A	MC-9a
		MC-12a
MT-32	0.1~32A	MC-9
		MC-12
		MC-18
		MC-25
		MC-32
MT-63	4~65A	MC-35
		MC-40
		MC-50
		MC-63
MT-95	7~95A	MC-65
		MC-75
		MC-85
		MC-95



Environment

Standards	EN 60947-1, EN 60947-4-1	
Product certifications	CE, CSA, UL	
Degree of protection (IEC 60 529)	IP 20	
Ambient air temperature	Storage	-60 ... +70°C
	Normal operation	-5 ... +55°C
Operating positions	In relation to normal, vertical mounting plane	
Shock resistance (IEC 68-2-7)	15gn - 11ms	
Vibration resistance (IEC 68-2-6)	6gn	
Dielectric strength at 50 Hz (IEC 255-5)	6kV	
Impulse withstand voltage (IEC 801-5)	6kV	
Auxiliary contact characteristics	1NO + 1NC	
Rating	C600, R300	
	Thermal current	
	Connection to screw clamp terminals	
	- Flexible cable with cable end	
	- Solid cable without cable end	
- Tightening torque		2.3N.m

Overload relays

Susol

Specifications

Electrical characteristics of power circuit		MT-12	MT-32
Type	Relay type	12AF	32AF
	Differential type(Phase failure protection)	MT-32/3K□	MT-32/3D□
	Non-differential type	MT-32/3H□	-
	3 heater	MT-32/2H□	-
	2 heater	10A	20
	Tripping class(IEC 60947-4-1)	Screw clamp	Screw clamp
	Terminal type	3	3
	Number of poles	Up to 690V	Up to 690V
	Rated operational voltage (Ue)	690V	690V
	Rated insulation voltage (Ui)	6kV	6kV
	Rated impulse voltage (Uiimp)	0.1~12A	0.1~32A
	Setting range	1~12A	1~32A
	Degree of protection (IEC 60 529)	IP 20	IP 20
	Temperature compensation (°C)	-5 ~ +40	-5 ~ +40
Functions			
Trip indicating		●	●
Stop		●	●
Test		●	●
Manual/Automatic Reset		●	●
Applied contactors		MC-9a, 12a	MC-9, 12, 18, 25, 32

Note) □ is rated current.

Overload relays

Susol

MT-63



63AF			
MT-63/3K□S	MT-63/3D□S	MT-63/3K□L	MT-63/3D□L
MT-63/3H□S	-	MT-63/3H□L	
MT-63/2H□S		MT-63/2H□L	-
10A	20	10A	20
Screw clamp		Lug	
3		3	
Up to 690V		Up to 690V	
690V		690V	
6kV		6kV	
4~65A		4~65A	
IP 20		IP 20	
-5 ~ +40		-5 ~ +40	
•		•	
•		•	
•		•	
•		•	
MC-35, 40, 50, 63			

MT-95



95AF			
MT-95/3K□S	MT-95/3D□S	MT-95/3K□L	MT-95/3D□L
MT-95/3H□S	-	MT-95/3H□L	
MT-95/2H□S		MT-95/2H□L	-
10A	20	10A	20
Screw clamp		Lug	
3		3	
Up to 690V		Up to 690V	
690V		690V	
6kV		6kV	
7~95A		7~95A	
IP 20		IP 20	
-5 ~ +40		-5 ~ +40	
•		•	
•		•	
•		•	
•		•	
MC-65, 75, 85, 95			

63AF	95AF	Current Setting range(A)	Wire				Short circuit "r"		
			Size		Type	Max. number of conductors			
			mm ²	AWG					
10A, 20	10A, 20	0.1~0.16	1	18	65/75°C Cu-wire only	2	-		
		0.16~0.25							
		0.25~0.4							
		0.4~0.63							
		0.63~1							
		1~1.6							
		1.6~2.5							
		2.5~4							
•		4~6					1kA		
•		5~8							
•		6~9	1~1.5	18~16					
•	•	7~10							
•	•	9~13							
•	•	12~18							
•	•	16~22							
•	•	18~25	2.5~4	12~10			3kA		
		22~32							
•	•	24~36							
•	•	28~40							
•	•	34~50							
•	•	45~65	10~16	8~6					
		54~75							
		63~85							
		70~95	25~35	4~3	5kA				

Overload relays

Susol

Characteristics class 10A

for direct mounting beneath contactors
with connection by screw clamp terminals



MT-12/3K □



MT-32/3K □



MT-63/3K □S



MT-95/3K □S

Corresponding contactors	Relay setting range	Relay types			Weight
		Differential	Non-differential		
Type	A	3Heaters	3Heaters	2Heaters	kg
MC-9a MC-12a	0.1~0.16	MT-12/3K 0.14	MT-12/3H 0.14	MT-12/2H 0.14	0.1
	0.16~0.25	MT-12/3K 0.21	MT-12/3H 0.21	MT-12/2H 0.21	
	0.25~0.4	MT-12/3K 0.33	MT-12/3H 0.33	MT-12/2H 0.33	
	0.4~0.63	MT-12/3K 0.52	MT-12/3H 0.52	MT-12/2H 0.52	
	0.63~1	MT-12/3K 0.82	MT-12/3H 0.82	MT-12/2H 0.82	
	1~1.6	MT-12/3K 1.3	MT-12/3H 1.3	MT-12/2H 1.3	
	1.6~2.5	MT-12/3K 2.1	MT-12/3H 2.1	MT-12/2H 2.1	
	2.5~4	MT-12/3K 3.3	MT-12/3H 3.3	MT-12/2H 3.3	
	4~6	MT-12/3K 5	MT-12/3H 5	MT-12/2H 5	
	5~8	MT-12/3K 6.5	MT-12/3H 6.5	MT-12/2H 6.5	
	6~9	MT-12/3K 7.5	MT-12/3H 7.5	MT-12/2H 7.5	
	7~10	MT-12/3K 8.5	MT-12/3H 8.5	MT-12/2H 8.5	
	9~13	MT-12/3K 11	MT-12/3H 11	MT-12/2H 11	
MC-9 MC-12 MC-18 MC-25 MC-32	0.1~0.16	MT-32/3K 0.14	MT-32/3H 0.14	MT-32/2H 0.14	0.17
	0.16~0.25	MT-32/3K 0.21	MT-32/3H 0.21	MT-32/2H 0.21	
	0.25~0.4	MT-32/3K 0.33	MT-32/3H 0.33	MT-32/2H 0.33	
	0.4~0.63	MT-32/3K 0.52	MT-32/3H 0.52	MT-32/2H 0.52	
	0.63~1	MT-32/3K 0.82	MT-32/3H 0.82	MT-32/2H 0.82	
	1~1.6	MT-32/3K 1.3	MT-32/3H 1.3	MT-32/2H 1.3	
	1.6~2.5	MT-32/3K 2.1	MT-32/3H 2.1	MT-32/2H 2.1	
	2.5~4	MT-32/3K 3.3	MT-32/3H 3.3	MT-32/2H 3.3	
	4~6	MT-32/3K 5	MT-32/3H 5	MT-32/2H 5	
	5~8	MT-32/3K 6.5	MT-32/3H 6.5	MT-32/2H 6.5	
	6~9	MT-32/3K 7.5	MT-32/3H 7.5	MT-32/2H 7.5	
	7~10	MT-32/3K 8.5	MT-32/3H 8.5	MT-32/2H 8.5	
	9~13	MT-32/3K 11	MT-32/3H 11	MT-32/2H 11	
	12~18	MT-32/3K 15	MT-32/3H 15	MT-32/2H 15	
	16~22	MT-32/3K 19	MT-32/3H 19	MT-32/2H 19	
MC-35 MC-40 MC-50 MC-63	18~25	MT-32/3K 21.5	MT-32/3H 21.5	MT-32/2H 21.5	0.31
	22~32	MT-32/3K 27	MT-32/3H 27	MT-32/2H 27	
	4~6	MT-63/3K 5S	MT-63/3H 5S	MT-63/2H 5S	
	5~8	MT-63/3K 6.5S	MT-63/3H 6.5S	MT-63/2H 6.5S	
	6~9	MT-63/3K 7.5S	MT-63/3H 7.5S	MT-63/2H 7.5S	
	7~10	MT-63/3K 8.5S	MT-63/3H 8.5S	MT-63/2H 8.5S	
	9~13	MT-63/3K 11S	MT-63/3H 11S	MT-63/2H 11S	
	12~18	MT-63/3K 15S	MT-63/3H 15S	MT-63/2H 15S	
	16~22	MT-63/3K 19S	MT-63/3H 19S	MT-63/2H 19S	
	18~25	MT-63/3K 21.5S	MT-63/3H 21.5S	MT-63/2H 21.5S	
	24~36	MT-63/3K 30S	MT-63/3H 30S	MT-63/2H 30S	
	28~40	MT-63/3K 34S	MT-63/3H 34S	MT-63/2H 34S	
	34~50	MT-63/3K 42S	MT-63/3H 42S	MT-63/2H 42S	
	45~65	MT-63/3K 55S	MT-63/3H 55S	MT-63/2H 55S	
MC-65 MC-75 MC-85 MC-95	7~10	MT-95/3K 8.5S	MT-95/3H 8.5S	MT-95/2H 8.5S	0.48
	9~13	MT-95/3K 11S	MT-95/3H 11S	MT-95/2H 11S	
	12~18	MT-95/3K 15S	MT-95/3H 15S	MT-95/2H 15S	
	16~22	MT-95/3K 19S	MT-95/3H 19S	MT-95/2H 19S	
	18~25	MT-95/3K 21.5S	MT-95/3H 21.5S	MT-95/2H 21.5S	
	24~36	MT-95/3K 30S	MT-95/3H 30S	MT-95/2H 30S	
	28~40	MT-95/3K 34S	MT-95/3H 34S	MT-95/2H 34S	
	34~50	MT-95/3K 42S	MT-95/3H 42S	MT-95/2H 42S	
	45~65	MT-95/3K 55S	MT-95/3H 55S	MT-95/2H 55S	
	54~75	MT-95/3K 65S	MT-95/3H 65S	MT-95/2H 65S	
	63~85	MT-95/3K 74S	MT-95/3H 74S	MT-95/2H 74S	
	70~95	MT-95/3K 83S	MT-95/3H 83S	MT-95/2H 83S	

Accessories

Separate mounting adapters and remote reset unit : see pages 31.

Mounting

Direct mounting on to a contactor with screw clamp terminals

Overload relays

Susol

Characteristics class 10A for direct mounting beneath contactors with connection by lug terminals



MT-63/3K □L



MT-95/3K □L

Corresponding contactors	Relay setting range	Relay types			Weight
		Differential	Non-differential		
Type	A	3Heaters	3Heaters	2Heaters	kg
MC-35	4~6	MT-63/3K 5L	MT-63/3H 5L	MT-63/2H 5L	0.33
	5~8	MT-63/3K 6.5L	MT-63/3H 6.5L	MT-63/2H 6.5L	
	6~9	MT-63/3K 7.5L	MT-63/3H 7.5L	MT-63/2H 7.5L	
	7~10	MT-63/3K 8.5L	MT-63/3H 8.5L	MT-63/2H 8.5L	
	9~13	MT-63/3K 11L	MT-63/3H 11L	MT-63/2H 11L	
	12~18	MT-63/3K 15L	MT-63/3H 15L	MT-63/2H 15L	
	16~22	MT-63/3K 19L	MT-63/3H 19L	MT-63/2H 19L	
	18~25	MT-63/3K 21.5L	MT-63/3H 21.5L	MT-63/2H 21.5L	
	24~36	MT-63/3K 30L	MT-63/3H 30L	MT-63/2H 30L	
	28~40	MT-63/3K 34L	MT-63/3H 34L	MT-63/2H 34L	
MC-40	34~50	MT-63/3K 42L	MT-63/3H 42L	MT-63/2H 42L	0.50
	45~65	MT-63/3K 55L	MT-63/3H 55L	MT-63/2H 55L	
	7~10	MT-95/3K 8.5L	MT-95/3H 8.5L	MT-95/2H 8.5L	
	9~13	MT-95/3K 11L	MT-95/3H 11L	MT-95/2H 11L	
	12~18	MT-95/3K 15L	MT-95/3H 15L	MT-95/2H 15L	
	16~22	MT-95/3K 19L	MT-95/3H 19L	MT-95/2H 19L	
	18~25	MT-95/3K 21.5L	MT-95/3H 21.5L	MT-95/2H 21.5L	
	24~36	MT-95/3K 30L	MT-95/3H 30L	MT-95/2H 30L	
	28~40	MT-95/3K 34L	MT-95/3H 34L	MT-95/2H 34L	
	34~50	MT-95/3K 42L	MT-95/3H 42L	MT-95/2H 42L	
MC-50	45~65	MT-95/3K 55L	MT-95/3H 55L	MT-95/2H 55L	0.50
	54~75	MT-95/3K 65L	MT-95/3H 65L	MT-95/2H 65L	
	63~85	MT-95/3K 74L	MT-95/3H 74L	MT-95/2H 74L	
	70~95	MT-95/3K 83L	MT-95/3H 83L	MT-95/2H 83L	

Accessories

Separate mounting adapters and remote reset unit : see pages 31.

Mounting

Direct mounting on to a contactor with lug terminals

Overload relays

Susol

Characteristics class 20

for direct mounting beneath contactors
with connection by screw clamp terminals



MT-12/3D □



MT-32/3D □



MT-63/3D □S



MT-95/3D □S

Corresponding contactors	Relay setting range	Relay types		Weight
		Differential		
	Type	A	3Heaters	kg
MC-9a	1~1.6	MT-12/3D 1.3		
MC-12a	1.6~2.5	MT-12/3D 2.1		
	2.5~4	MT-12/3D 3.3		
	4~6	MT-12/3D 5		
	5~8	MT-12/3D 6.5		0.1
	6~9	MT-12/3D 7.5		
	7~10	MT-12/3D 8.5		
	9~13	MT-12/3D 11		
MC-9	1~1.6	MT-32/3D 1.3		
MC-12	1.6~2.5	MT-32/3D 2.1		
MC-18	2.5~4	MT-32/3D 3.3		
MC-25	4~6	MT-32/3D 5		
MC-32	5~8	MT-32/3D 6.5		
	6~9	MT-32/3D 7.5		
	7~10	MT-32/3D 8.5		
	9~13	MT-32/3D 11		
	12~18	MT-32/3D 15		
	16~22	MT-32/3D 19		
	18~25	MT-32/3D 21.5		
	22~32	MT-32/3D 27		
MC-35	4~6	MT-63/3D 5S		
MC-40	5~8	MT-63/3D 6.5S		
MC-50	6~9	MT-63/3D 7.5S		
MC-63	7~10	MT-63/3D 8.5S		
	9~13	MT-63/3D 11S		
	12~18	MT-63/3D 15S		
	16~22	MT-63/3D 19S		0.31
	18~25	MT-63/3D 21.5S		
	24~36	MT-63/3D 30S		
	28~40	MT-63/3D 34S		
	34~50	MT-63/3D 42S		
	45~65	MT-63/3D 55S		
MC-65	7~10	MT-95/3D 8.5S		
MC-75	9~13	MT-95/3D 11S		
MC-85	12~18	MT-95/3D 15S		
MC-95	16~22	MT-95/3D 19S		
	18~25	MT-95/3D 21.5S		
	24~36	MT-95/3D 30S		
	28~40	MT-95/3D 34S		
	34~50	MT-95/3D 42S		
	45~65	MT-95/3D 55S		
	54~75	MT-95/3D 65S		
	63~85	MT-95/3D 74S		
	70~95	MT-95/3D 83S		0.48

Accessories

Separate mounting adapters and remote reset unit : see pages 31.

Mounting

Direct mounting on to a contactor with screw clamp terminals

Overload relays

Susol

Characteristics class 20 for direct mounting beneath contactors with connection by lug terminals



MT-63/3D □L



MT-95/3D □L

Corresponding contactors	Relay setting range	Relay types		Weight
		Differential		
MC-35	A 4~6	3Heaters	MT-63/3D 5L	kg
MC-40	5~8		MT-63/3D 6.5L	
MC-50	6~9		MT-63/3D 7.5L	
MC-63	7~10 9~13 12~18 16~22 18~25 24~36 28~40 34~50 45~65		MT-63/3D 8.5L MT-63/3D 11L MT-63/3D 15L MT-63/3D 19L MT-63/3D 21.5L MT-63/3D 30L MT-63/3D 34L MT-63/3D 42L MT-63/3D 55L	0.33
MC-65	7~10	MT-95/3D 8.5L		
MC-75	9~13		MT-95/3D 11L	
MC-85	12~18		MT-95/3D 15L	
MC-95	16~22 18~25 24~36 28~40 34~50 45~65 54~75 63~85 70~95		MT-95/3D 19L MT-95/3D 21.5L MT-95/3D 30L MT-95/3D 34L MT-95/3D 42L MT-95/3D 55L MT-95/3D 65L MT-95/3D 74L MT-95/3D 83L	0.50

Accessories

Separate mounting adapters and remote reset unit : see pages 31.

Mounting

Direct mounting on to a contactor with lug terminals

Control circuit characteristics

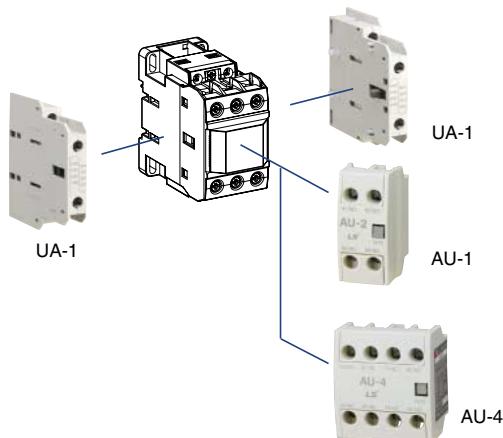
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Type	32AF	63AF	95AF	
Contactor types	MC-9 MC-12 MC-18 MC-25 MC-32	MC-35 MC-40 MC-50 MC-63	MC-65 MC-75 MC-85 MC-95	
AC control circuit characteristics				
Rated control circuit voltage [Uc]	50Hz [V] 60Hz [V] 50/60Hz [V]	24, 32, 36, 42, 48, 80, 100, 110, 220, 230, 240, 380, 400, 415, 440, 500, 550V 24, 48, 100, 110, 120, 200, 208, 220, 230, 240, 277, 380, 440, 480, 600V 24, 48, 100, 110, 120, 200, 220, 230, 240, 380, 415, 440, 500, 550V		
Control voltage limits	Operational Drop-out	0.85 ... 1.1 Uc on 50 Hz 0.85 ... 1.1 Uc on 60 Hz 0.3 ... 0.6 Uc		
Coil consumption at 20°C	Inrush [VA] Holding [VA]	80 9 2.2	120 11 2.2	220 16 5.1
Heat dissipation	[W]			
Operating time	Closing [ms] Opening [ms]	12 ... 22 4 ... 19	12 ... 22 4 ... 19	15 ... 30 15 ... 30
DC control circuit characteristics				
Rated control circuit voltage [Uc]	12, 20, 24, 48, 60, 80, 100, 110, 125, 200, 220, 250			
Control voltage limits	Operational Drop-out	0.7 ... 1.1Uc 0.1 ... 0.3 Uc		
Coil consumption at 20°C	Inrush [W] Holding [W]	7 7 28	9 9 65	18 18 75
Time constant (L/R)	[ms]			
Operating time	Closing [ms] Opening [ms]	12 ... 22 4 ... 19	12 ... 22 4 ... 19	100 ... 120 10 ... 25

Auxiliary contacts/contact blocks characteristics

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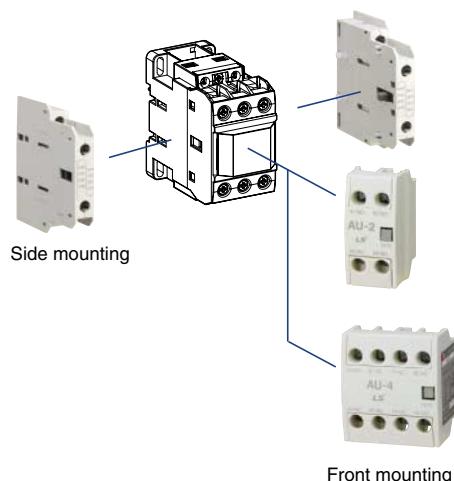
Contactor frame
Contactor types
Number of auxiliary contact
Normally open [EA]
Normally closed [EA]
Auxiliary contact blocks, optional
Type
Number of auxiliary contact
Normally open [EA]
Normally closed [EA]
Characteristics
Rated operational voltage, Ue [V]
Rated insulation voltage, Ui
Conforming to IEC 947-1 [V]
Conforming to UL, CSA [V]
Operating current frequency [Hz]
Short-circuit protection
Minimum switching capacity
U min. DC [V]
I min. [mA]
Thermal current, Ith [A]
Operational current
AC15 duty (A600)
120V [A]
240V [A]
380V [A]
480V [A]
600V [A]
DC13 duty (P600)
125V [A]
250V [A]
440V [A]
500V [A]
600V [A]
Lifetime (mil.operations)
AC15 duty
220V
440V
DC13 duty
220V
440V
Operation cycles per hour

12AF	32AF	63AF	95AF
MC-9a	MC-9	MC-35	MC-65
MC-12a	MC-12	MC-40	MC-75
	MC-18	MC-50	MC-85
	MC-25	MC-63	MC-95
	MC-32		
		-	
		-	
AU-2	AU-4	UA-1	
2 1 0	4 3 2 1 0	1	
0 1 2	0 1 2 3 4	1	
	690		
	600		1000V
	25~400		
	gLgG fuse: 16A (conforming to IEC EN947-5-1)		
	24		17
	10		5
	16		
	6		
	3		
	1.9		
	1.5		
	1.2		
	1.1		
	0.55		
	0.31		
	0.27		
	0.2		
	0.5		
	0.5		
	0.5		
	1800		

Accessories

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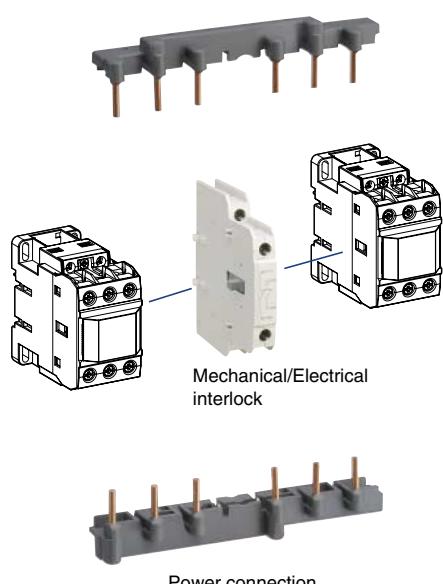
Auxiliary contact blocks for contactors and reversing contactors



Using contactors	Mounting	Number of contacts per block	Composition		Type	Weight g
			NO	NC		
Contactors and reversing contactors MC-9 to 95 MC-9R to 95R	Front	2	1	1	AU-2	28
			2	-		
		4	-	2	AU-4	50
			2	2		
			1	3		
	Side	2	4	-		
			3	1	UA-1	53

Mechanical/Electrical interlocks

for reversing contactors
for motor control
To be assembled by customer



Using contactors with screw clamp terminals	Set of power connections		Mechanical/Electrical interlock	
	Type	Weight g	Type	Weight g
MC-9 MC-12 MC-18 MC-25 MC-32	UW-32	45	UR-02	64
MC-35 MC-40 MC-50 MC-63	UW-63	12.5	UR-02	64
MC-65 MC-75 MC-85 MC-95	UW-95	325		

Note :

- Component parts for assembling by customer
- Mechanical interlock with 2NC contacts for electrical interlocking
- UR-02 provides both mechanical and electrical interlocks

Accessories

Susol

Capacitor units

Description

- MC-□(D), a contactor or special use, is adjusted for switching single-step or multiple-step condenser bank.
- It is standardized by IEC-60947-4941, UL and CSA.

Operation condition

Operating times	MC-9(D)~32(D)	240 times/h
	MC-35(D)~95(D)	100 times/h
Electrical endurance	MC-9(D)~32(D)	200,000 times/h
	MC-35(D)~95(D)	100,000 times/h

- When the switch is closed condenser must be discharged before recharged. (Maximum residual voltage at terminals $\leq 50V$)
- In working voltage 500V(Ue=500V), 100,000 times for MC-9(D)~32(D) and 80,000 times for MC-35(D)~95(D).
- To prevent short current, gG type fuse must be 1.5~2 times than rated current.
- It must be separated from resistant wire

Rating

Type	Maximum operating power at (kvar)			Rated current (A)	Applied unit
	220~ 240V	400~ 440V	600~ 550V		
MC-9(D)	5	9.7	14	14	AC-9
MC-12(D)	6.7	12.5	18	18	AC-9
MC-18(D)	8.5	16.7	24	24	AC-9
MC-25(D)	10	18	26	26	AC-9
MC-32(D)	15	25	36	36	AC-9
MC-35(D)	18	30	42	42	AC-50
MC-40(D)	20	33.3	48	48	AC-50
MC-50(D)	20	40	58	58	AC-50
MC-63(D)	23	42	60	60	AC-50
MC-65(D)	25	45.7	66	66	AC-50
MC-75(D)	29.7	54	78	78	AC-50
MC-85(D)	35	60	92	92	AC-50
MC-95(D)	37	62	94	94	AC-50

Note) 1. Circumstance Temp. $\theta \leq 55^{\circ}\text{C}$

2. The average temperature over a 24-hour period, in accordance with standards IEC 70 and 831 is 45°C



Mounting unit

Phase-bus devices, Type MU, followed by MMS-32, 63 and 100

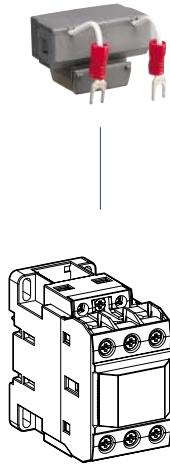
These devices are attached module to connect joined Manual Motor Starter with Contactor.

Type	Model	Description	Applied type
Mounting unit	MU-45	Width 45mm	MMS-32S/H/HI+MC-9-32 or GMC(D)-M
	MU-55	Width 55mm	MMS-63S/H/HI+MC-35-63
	MU-70	Width 70mm	MMS-100S/H/HI+MC-65-95

Accessories

Susol

Surge suppressor units for contactors and reversing contactors



Using contactors	Rating	V	Type	Internal element	Weight g
Contactors and reversing contactors MC-9 to 95	AC	24~48V	US-1	Varistor+RC	20
		100~125V	US-2	Varistor+RC	
		200~240V	US-22	RC	
		380~440V	US-3	Varistor+RC	
	DC	24~48V	US-14	Varistor	
		100~125V	US-4	Varistor+RC	
		200~220V	US-5	Varistor+RC	
	AC/DC common	24~48V	US-6	Varistor+RC	
		100~125V	US-11	Varistor	
		200~240V	US-12	Varistor	
		200~240V	US-13	Varistor	

- Rated insulation voltage (Ui) : AC 1000V
- Rated impulse voltage (Uimp) : 8kV
- Degree of protection (IEC 60 529) : IP20

Direct adapters for connection element to combine a Manual Motor Starter(MMS) with a Contactor



Using contactors	Using manual motor starters		Type	Weight g
	Type	Setting range		
MC-9 with AC coil MC-12 with AC coil MC-18 with AC coil MC-25 with AC coil MC-32 with AC coil	MMS-32S	0.1~32A	DA-32SA	27
	MMS-32H	0.1~32A	DA-32HA	
	MMS-32S	0.1~32A	DA-32SD	
	MMS-32H	0.1~32A	DA-32HD	
	MMS-63	6~63A	DA-63A	56
MC-35 with DC coil MC-40 with DC coil MC-50 with DC coil MC-63 with DC coil	MMS-63	6~63A	DA-63D	69
	MMS-63	6~63A	DA-63D	
	MMS-100	11~100A	DA-95A	
	MMS-100	11~100A	DA-95D	94
MC-65 with AC coil MC-75 with AC coil MC-85 with AC coil MC-95 with AC coil	MMS-100	11~100A	DA-95D	118
	MMS-100	11~100A	DA-95D	
	MMS-100	11~100A	DA-95D	
	MMS-100	11~100A	DA-95D	

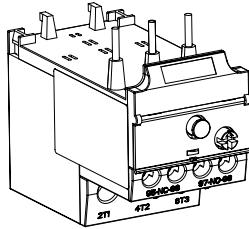
Accessories

Susol

Separate mounting adapters

for 3-pole Thermal overload relays

Separate mounting adapter



Overload relay
MT-32

Corresponding relay	Adapter type	Terminal type	Weight g
MT-32/3K MT-32/3H MT-32/2H MT-32/3D	UZ-32	Screw type	68
MT-63/3K MT-63/3H MT-63/2H MT-63/3D	UZ-63/S	Screw type	134
MT-63/3K MT-63/3H MT-63/2H MT-63/3D	UZ-63/L	Lug type	134
MT-95/3K MT-95/3H MT-95/2H MT-95/3D	UZ-95/S	Screw type	230
MT-95/3K MT-95/3H MT-95/2H MT-95/3D	UZ-95/L	Lug type	230

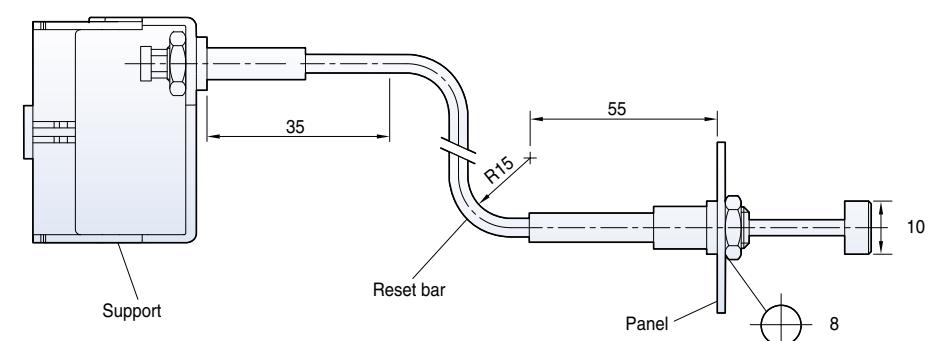
Mounting

Clip-on mounting on 35 mm rail or screw fixing.

Remote reset units for overload relays



Remote reset unit



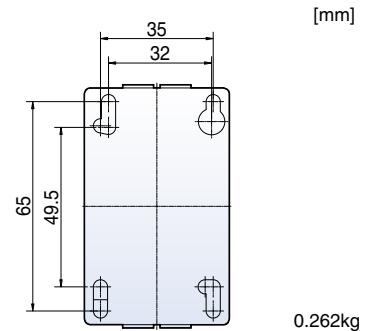
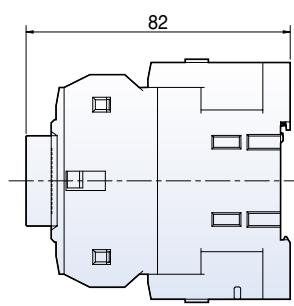
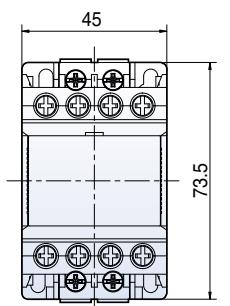
Model	L (mm)
UM-4R	400
UM-5R	500
UM-6R	600

Overall dimensions

Susol

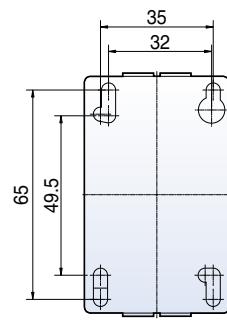
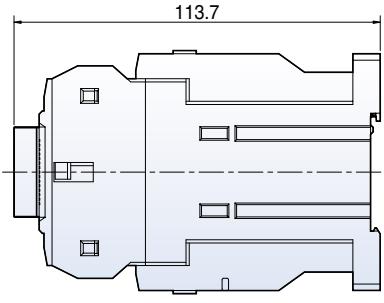
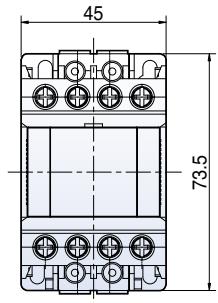
Contactors

MC-9a, 12a AC



0.262kg

MC-9a, 12a DC



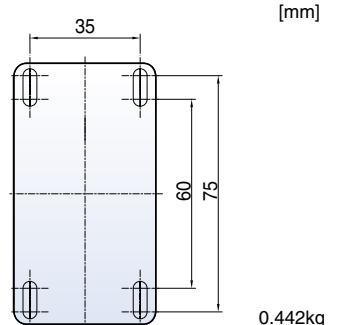
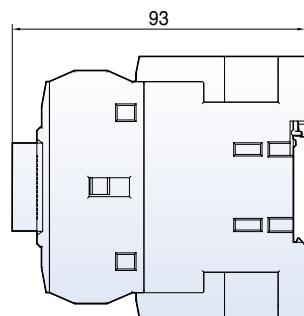
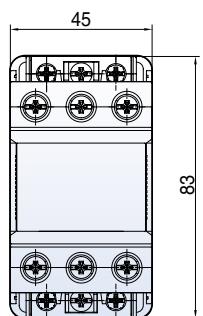
0.468kg

Overall dimensions

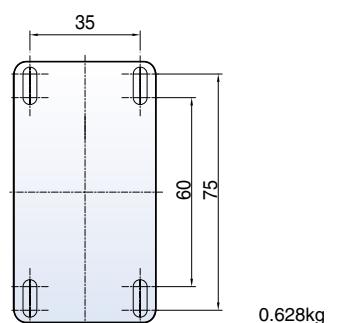
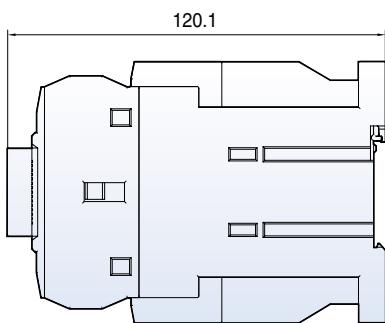
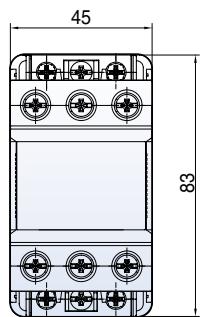
Susol

Contactors

MC-9-32 AC

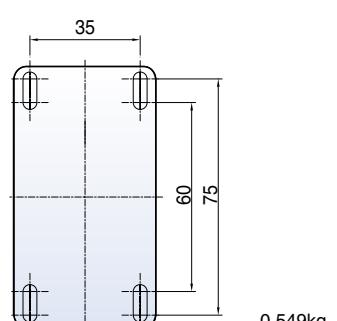
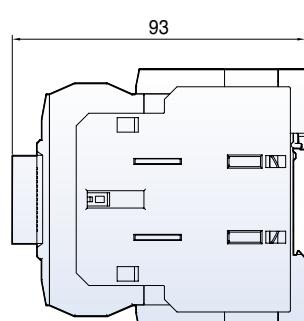
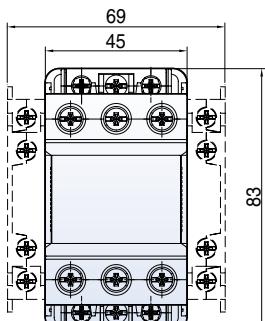


MC-9-32 DC



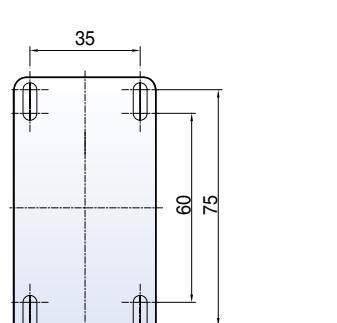
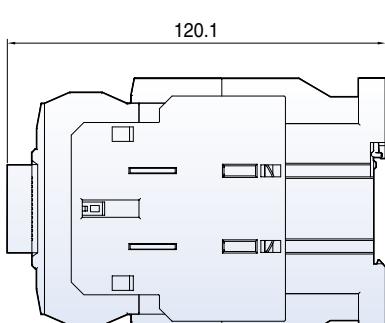
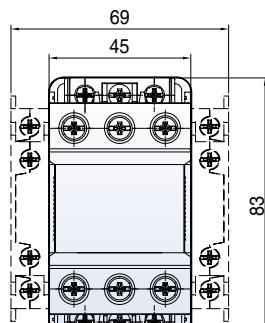
MC-9-32 AC

2a2b



MC-9-32 DC

2a2b

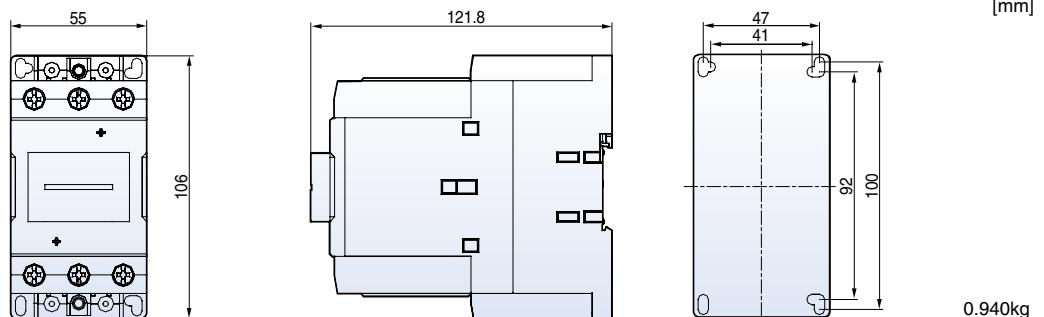


Overall dimensions

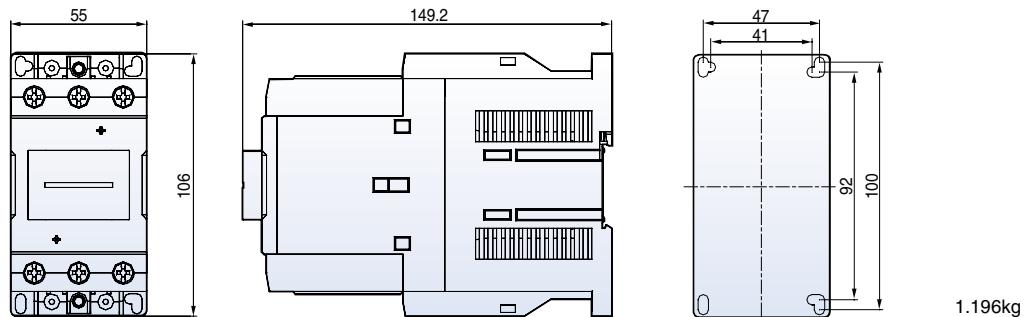
Susol

Contactors

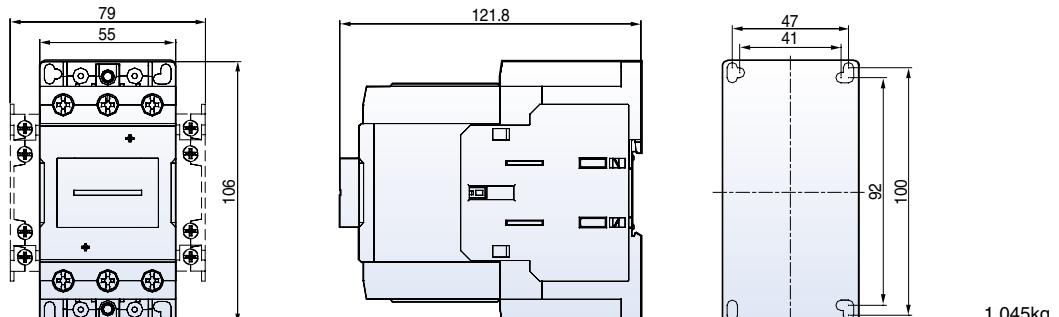
MC-35~63 AC



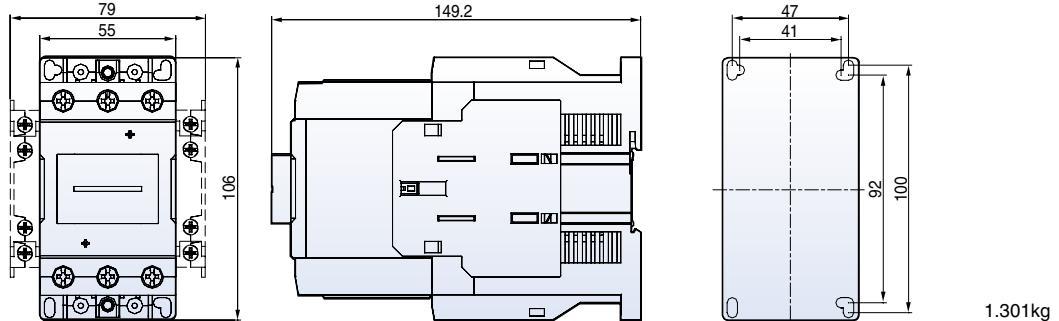
MC-35~63 DC



MC-35~63 AC
2a2b



MC-35~63 DC
2a2b

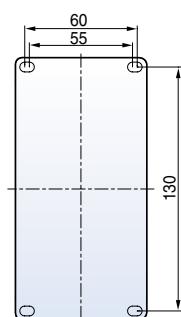
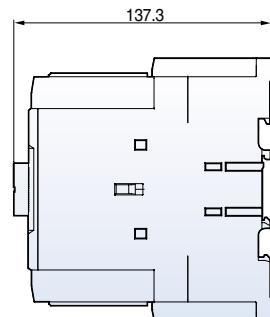
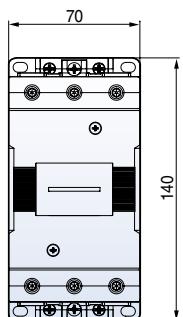


Overall dimensions

Susol

Contactors

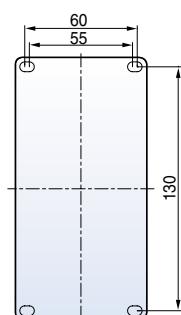
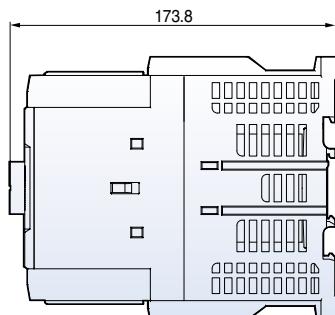
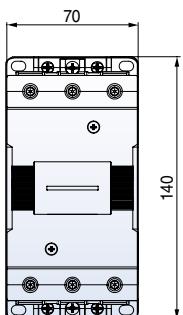
MC-65~95 AC



[mm]

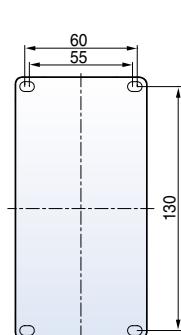
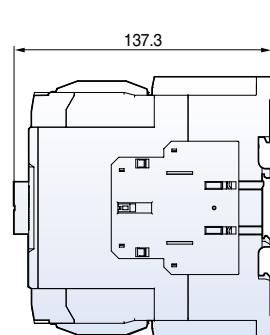
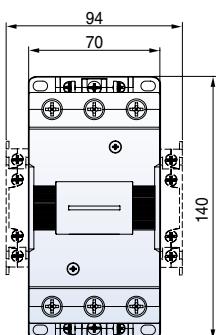
1.820kg

MC-65~95 DC



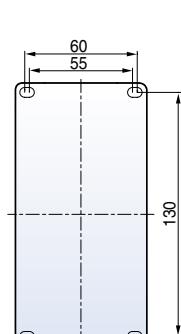
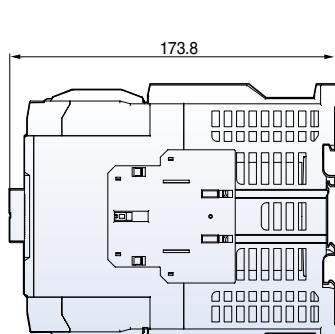
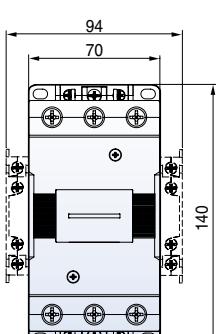
2.700kg

MC-65~95 AC
2a2b



1.925kg

MC-65~95 DC
2a2b



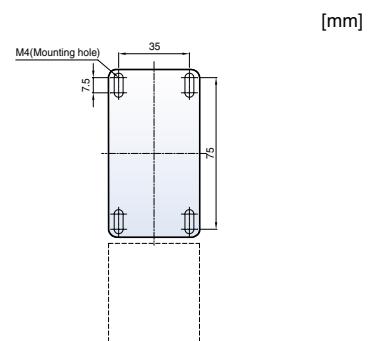
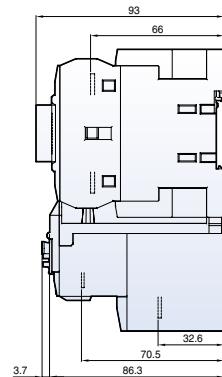
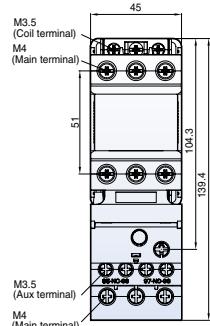
2.805kg

Overall dimensions

Susol

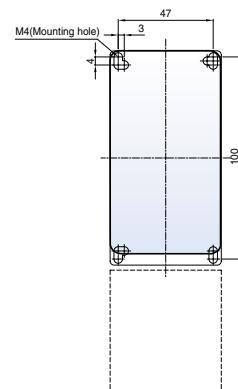
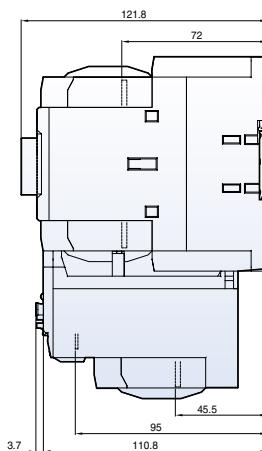
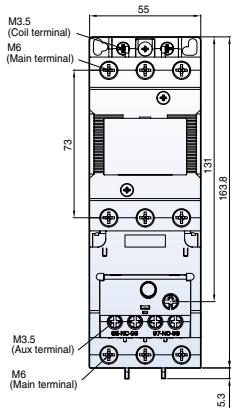
Motor starters (Screw type)

MS-9
MS-12
MS-18
MS-25
MS-32



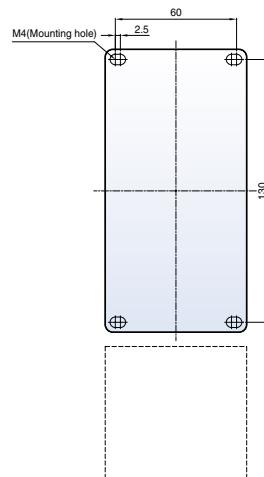
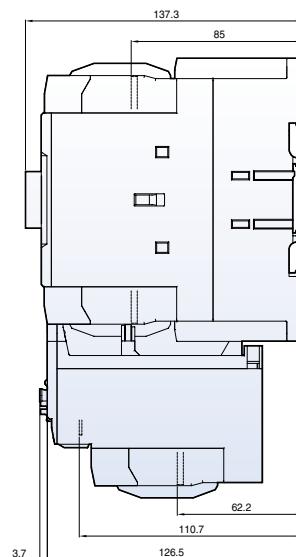
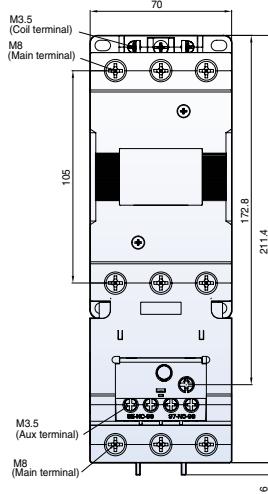
0.61kg

MS-35
MS-40
MS-50
MS-63



1.14kg

MS-65
MS-75
MS-85
MS-95



2.19kg

Overall dimensions

Susol

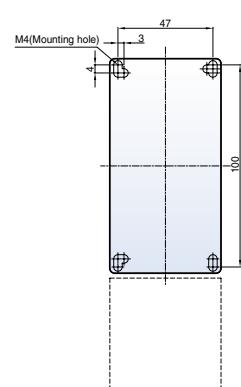
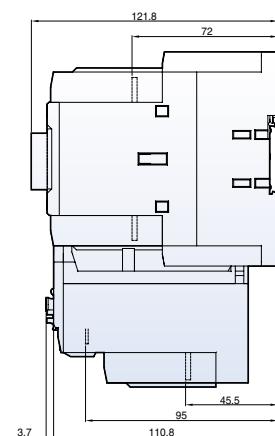
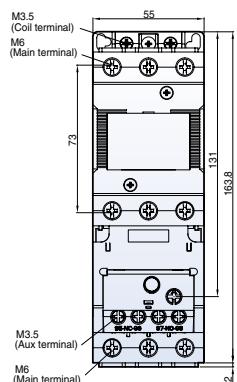
Motor starters (Lug type)

MS-35

MS-40

MS-50

MS-63



[mm]

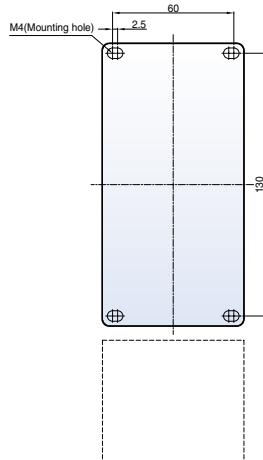
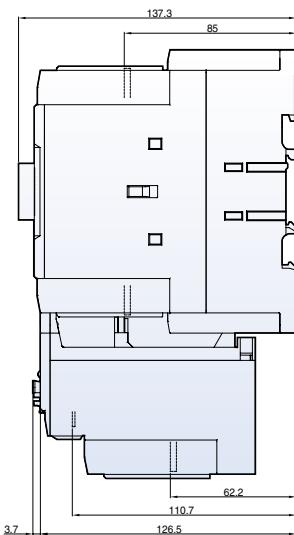
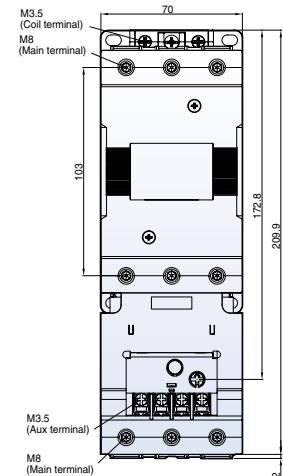
1.14kg

MS-65

MS-75

MS-85

MS-95



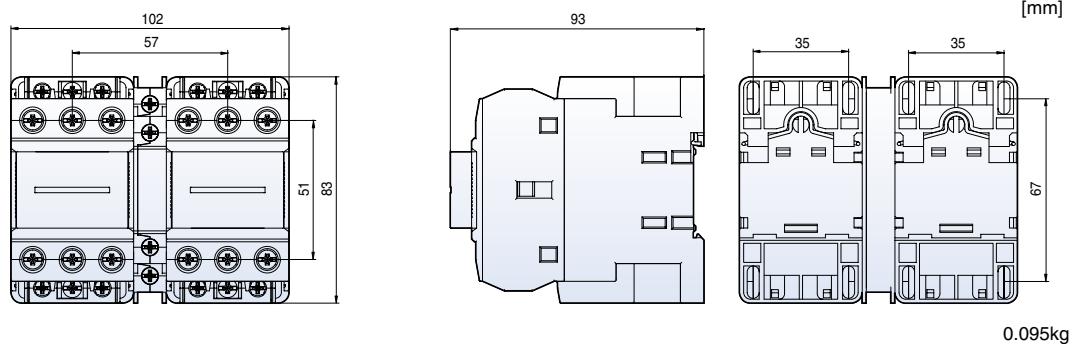
2.19kg

Overall dimensions

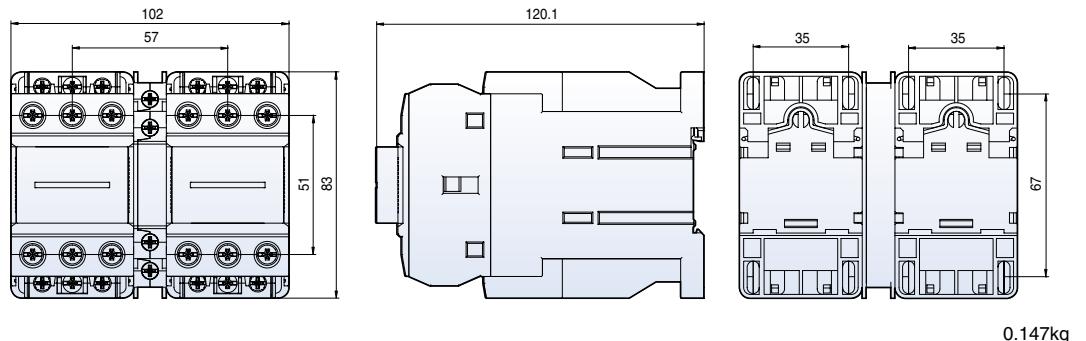
Susol

Reversing contactors and starters

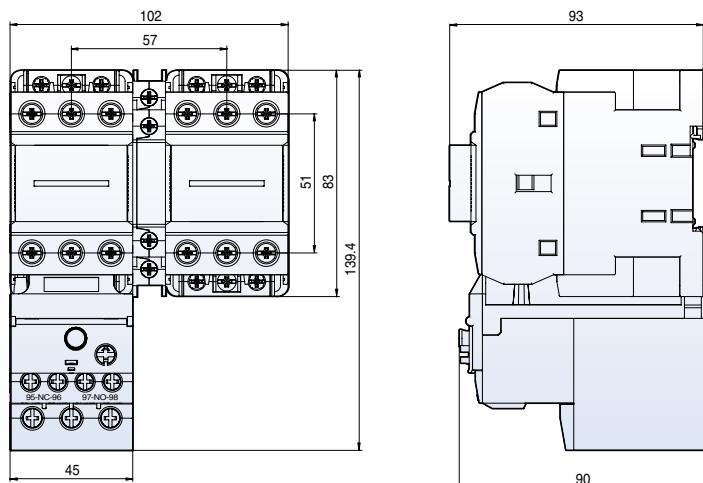
MC-9R~32R AC



MC-9R~32R DC



MS-9R~32R AC

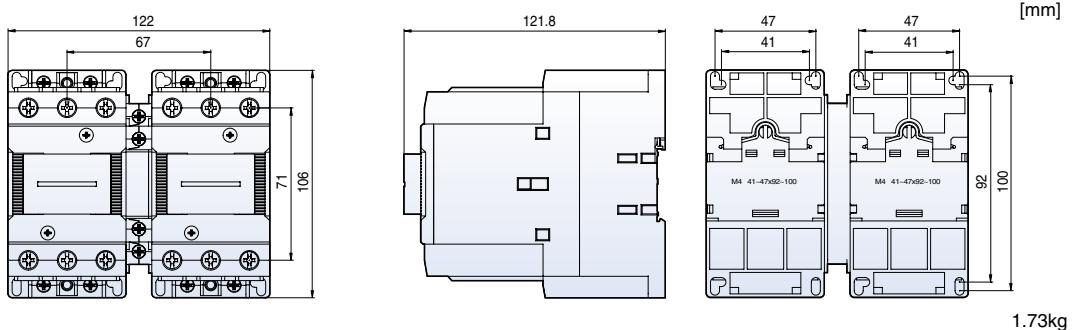


Overall dimensions

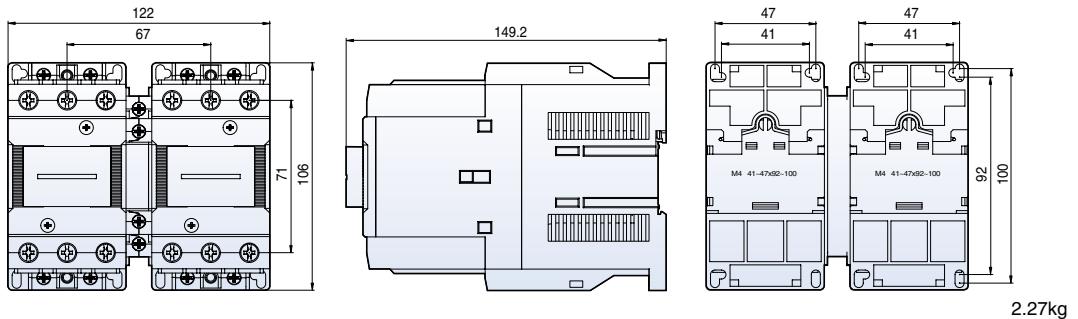
Susol

Reversing contactors and starters

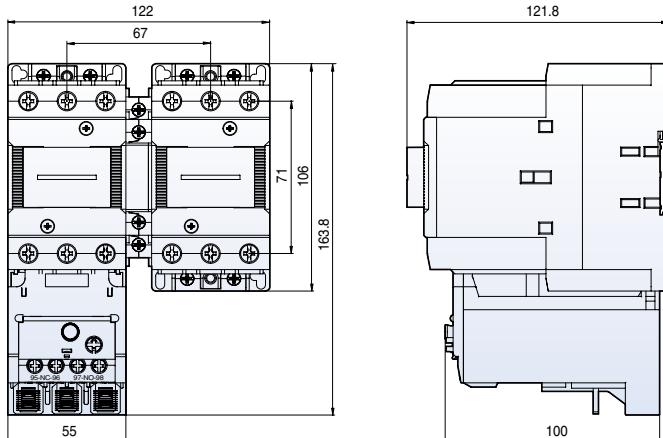
MC-35R~65R AC



MC-35R~65R DC



MS-35R~65R AC

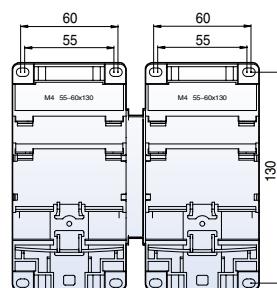
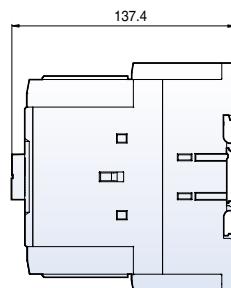
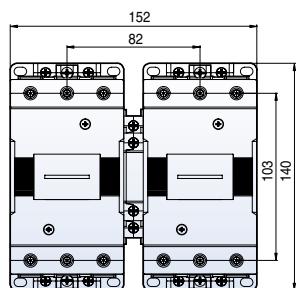


Overall dimensions

Susol

Reversing contactors and starters

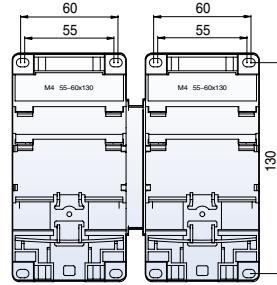
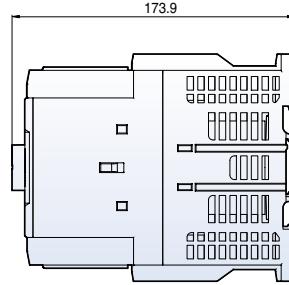
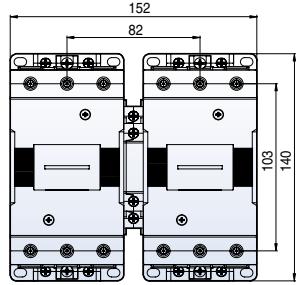
MC-65R~95R AC



[mm]

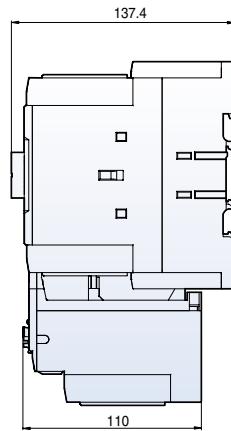
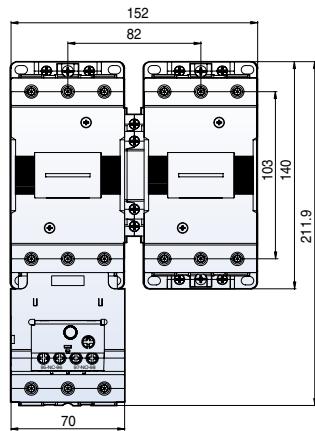
3.25kg

MC-65R~95R DC



5.27kg

MS-65R~95R AC



Overall dimensions

Susol

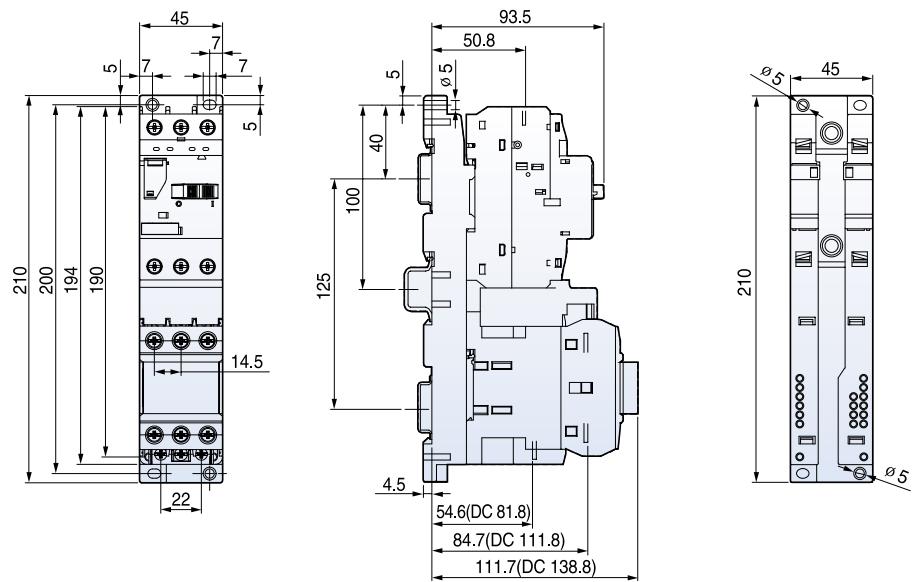
Combination Manual motor starters and contactors

[mm]

MMS-32S

+

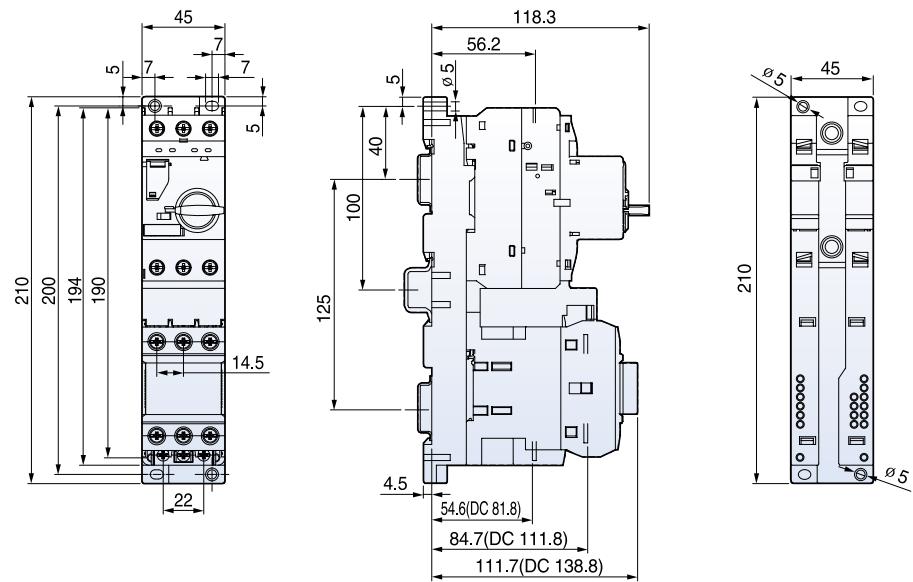
MC-32AF



MMS-32H

+

MC-32AF



Overall dimensions

Susol

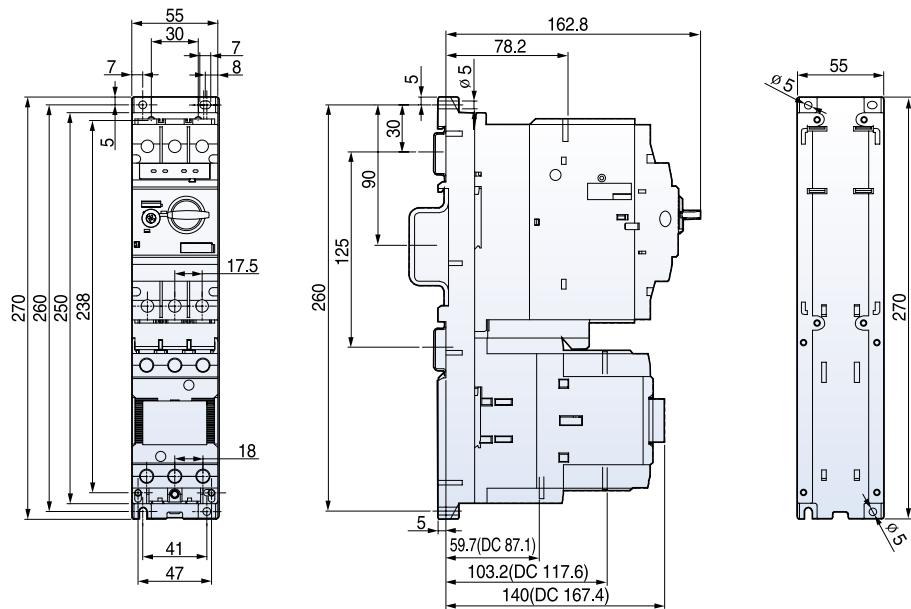
Combination Manual motor starters and contactors

[mm]

MMS-63H

+

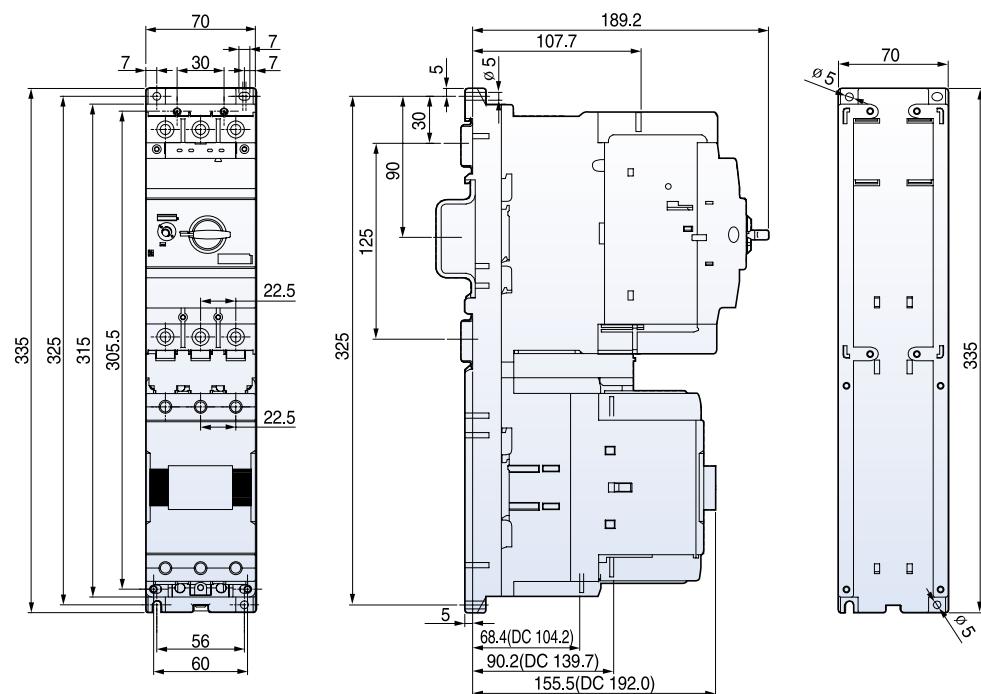
MC-63AF



MMS-100H

+

MC-95AF

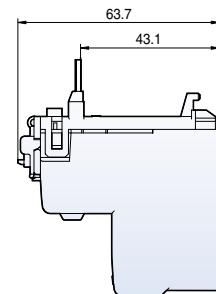
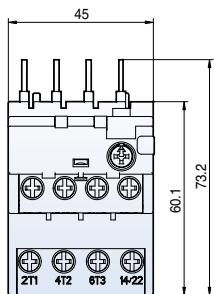


Overall dimensions

Susol

Overload relays (Screw type)

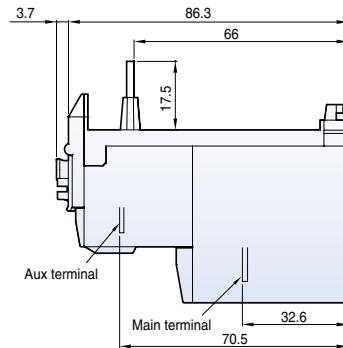
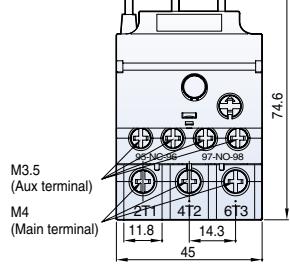
MT-12



[mm]

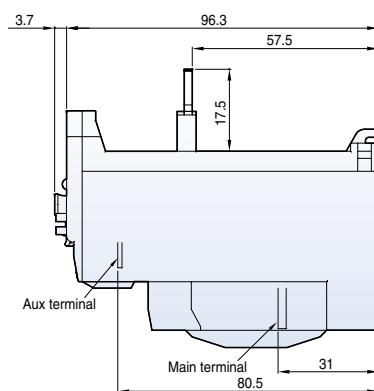
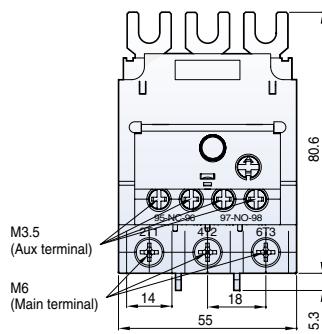
0.1kg

MT-32



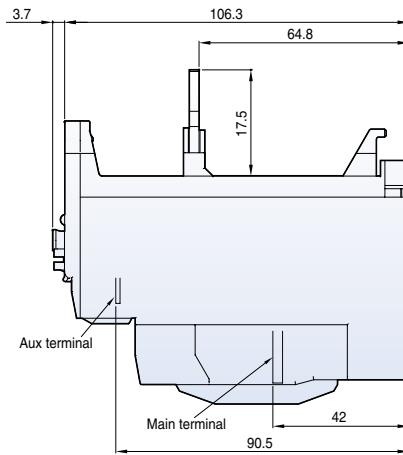
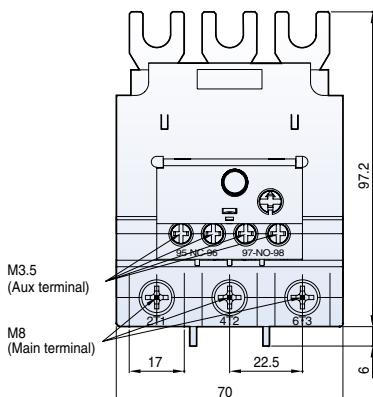
0.167kg

MT-63



0.303kg

MT-95



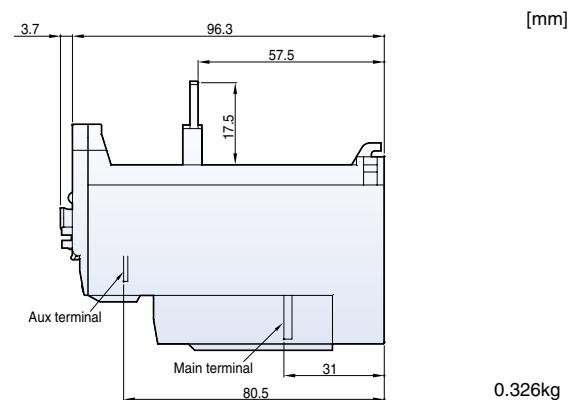
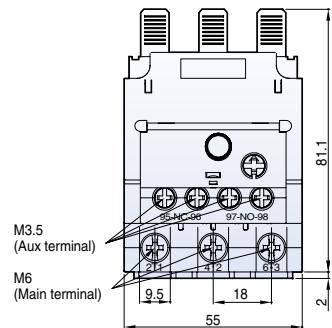
0.474kg

Overall dimensions

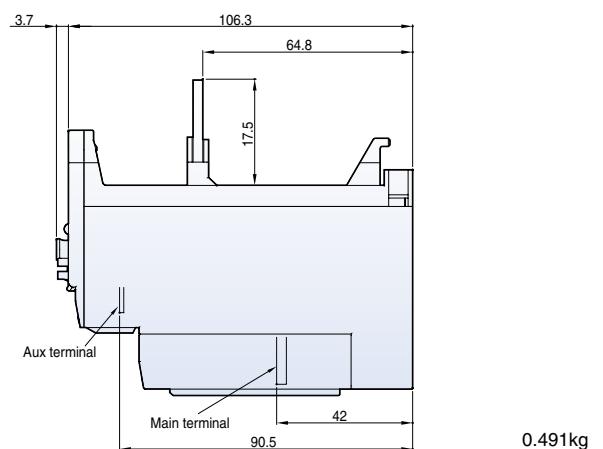
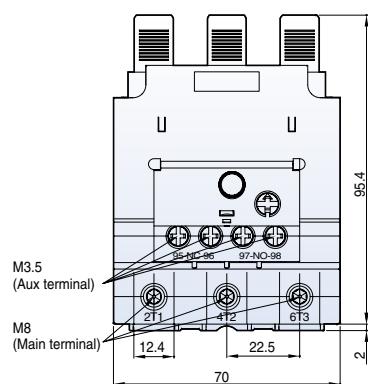
Susol

Overload relays (Lug type)

MT-63



MT-95

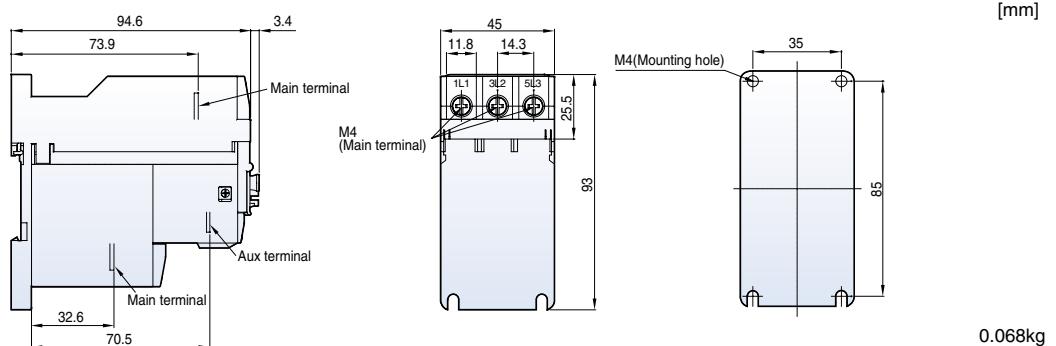


Overall dimensions

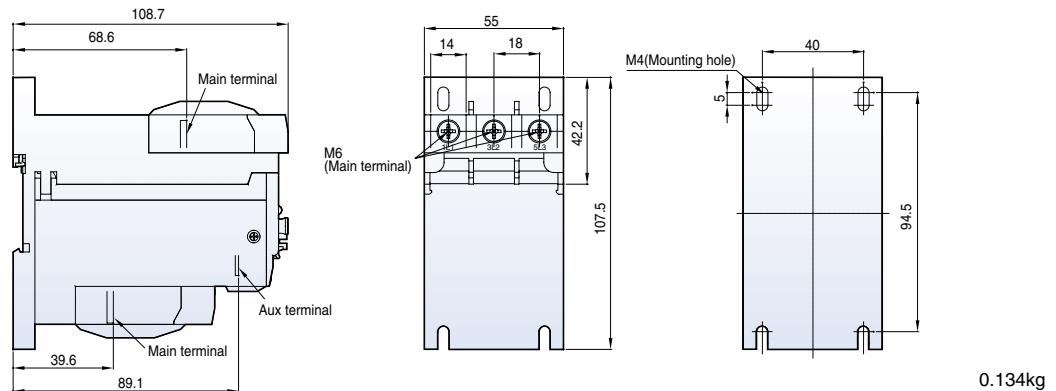
Susol

Separate mounting units for overload relays (Screw type)

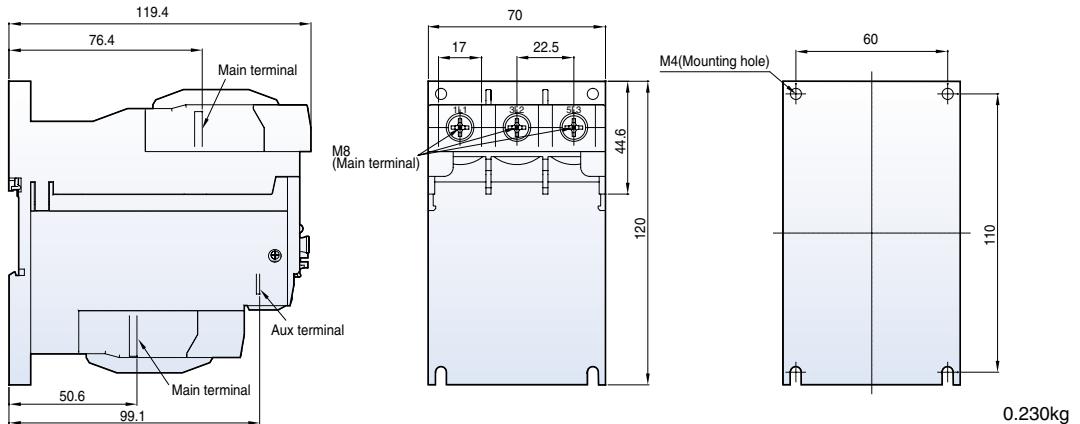
UZ-32



UZ-63/S



UZ-95/S

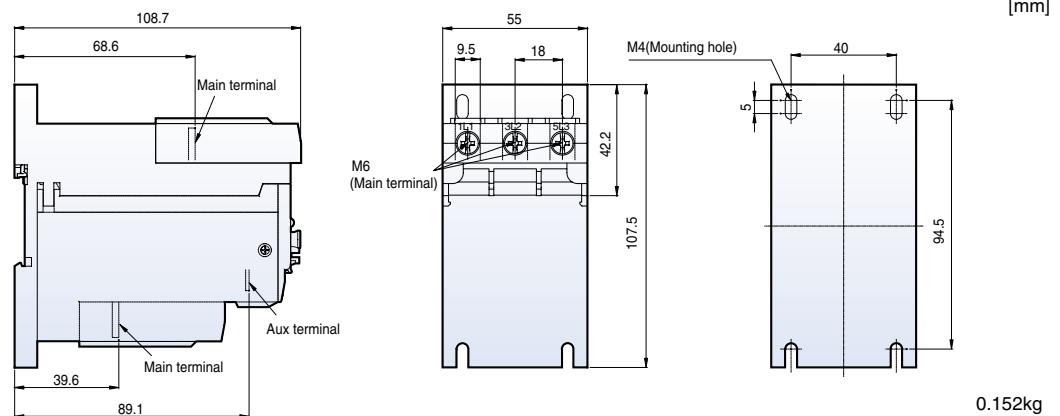


Overall dimensions

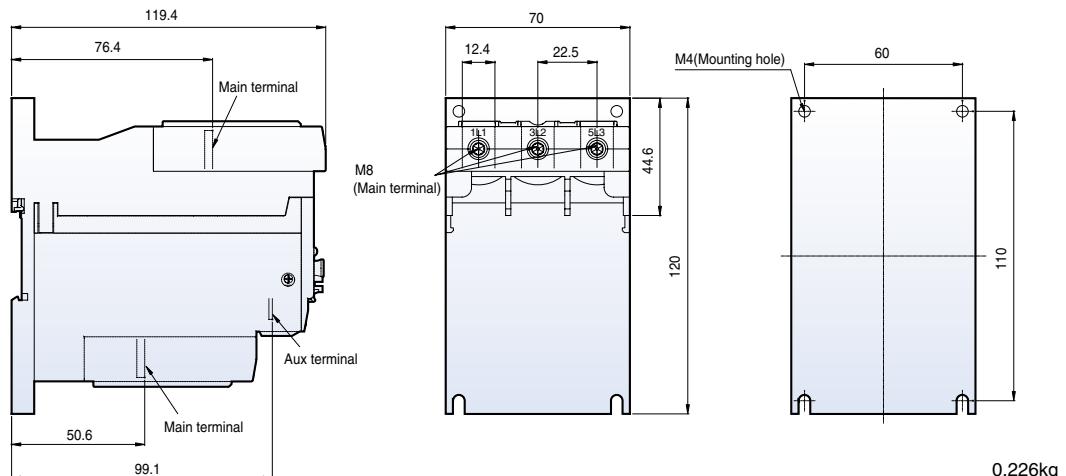
Susol

Separate mounting units for overload relays (Lug type)

UZ-63/L



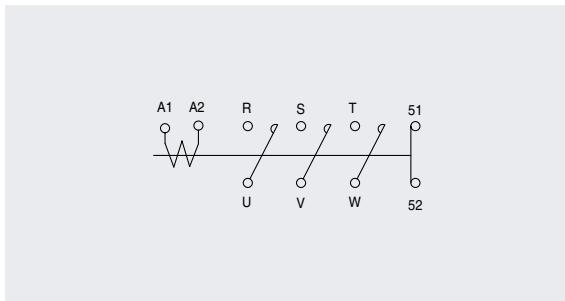
UZ-95/L



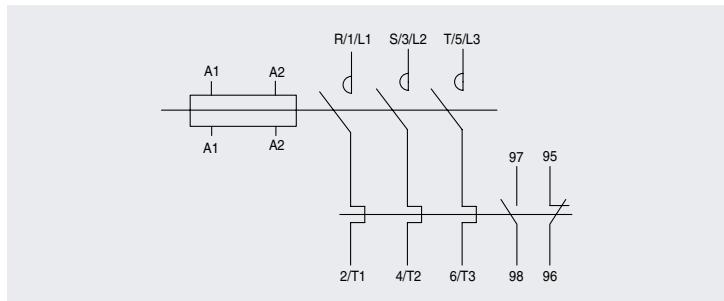
Circuit diagram

Susol

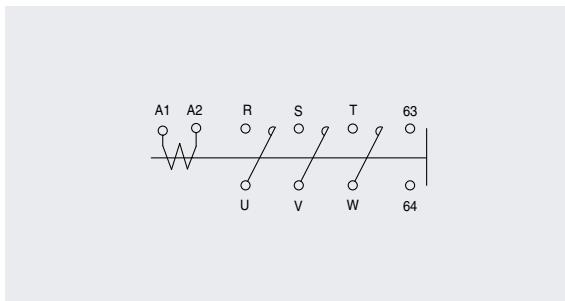
MC-9a, 12a 1NC



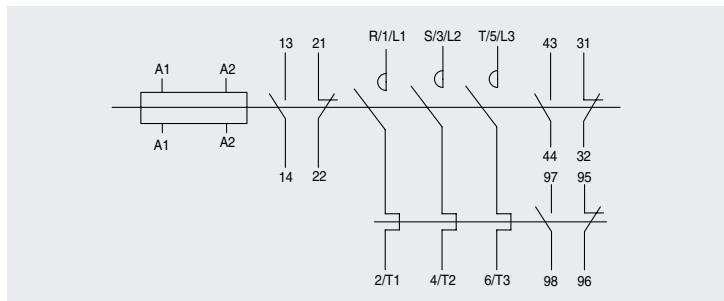
MS-9~95



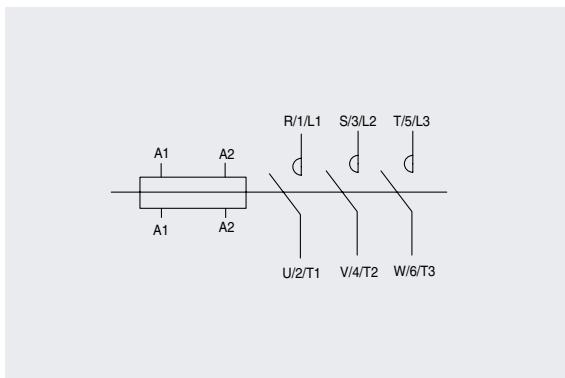
MC-9a, 12a 1NO



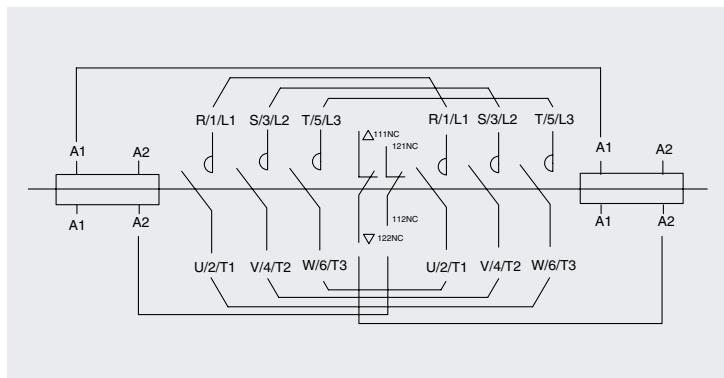
MS-9~95 2NO2NC



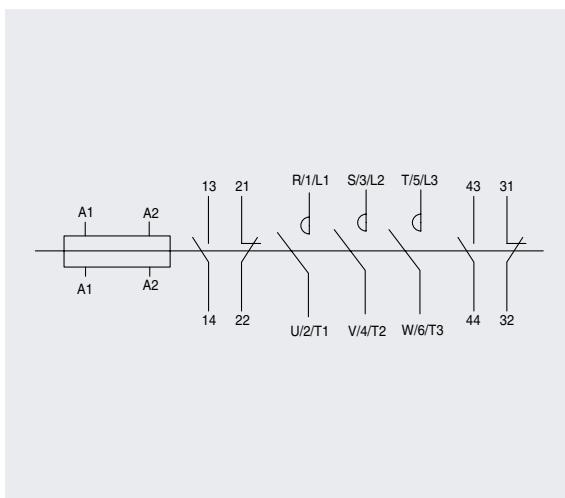
MC-9~95



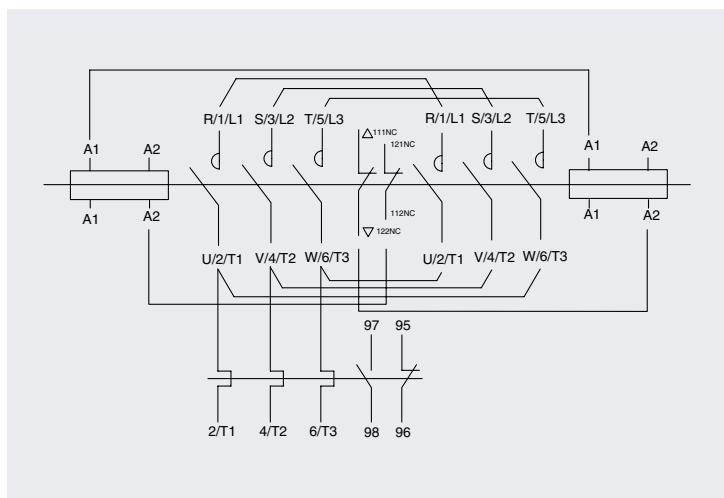
MC-9/R~95/R



MC-9~95 2NO2NC



MS-9/R~95/R

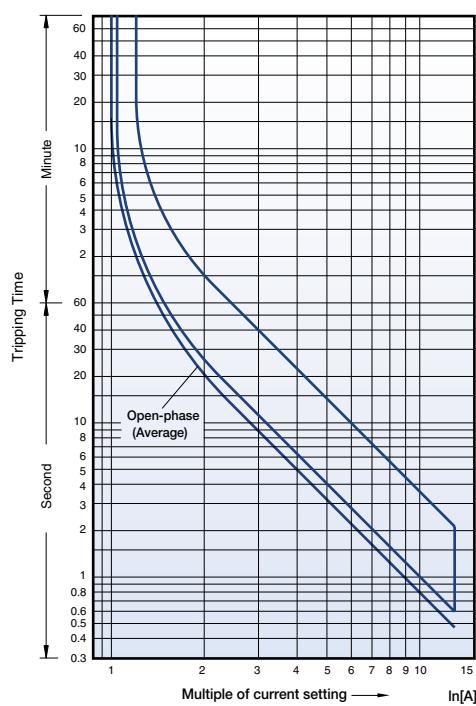


Tripping characteristics

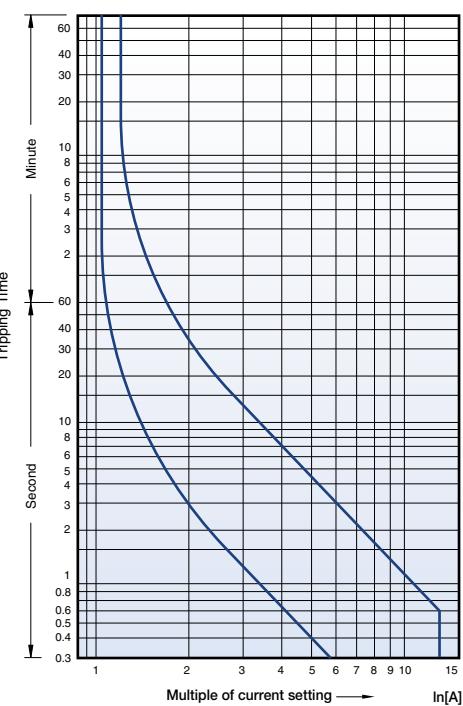
Susol

Cold starting

MT-12/2H
MT-12/3H
MT-12/3K
MT-12/3D

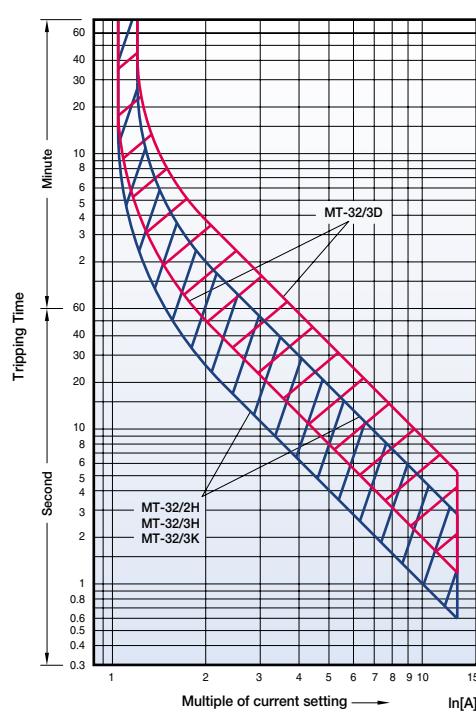


Hot starting

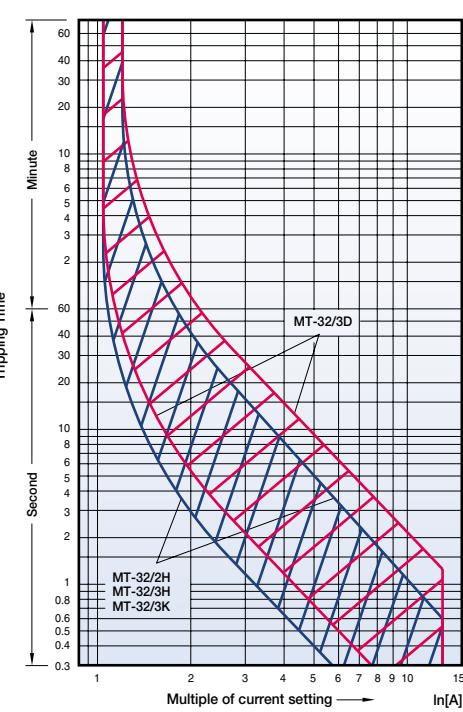


Cold starting

MT-32/2H
MT-32/3H
MT-32/3K
MT-32/3D



Hot starting

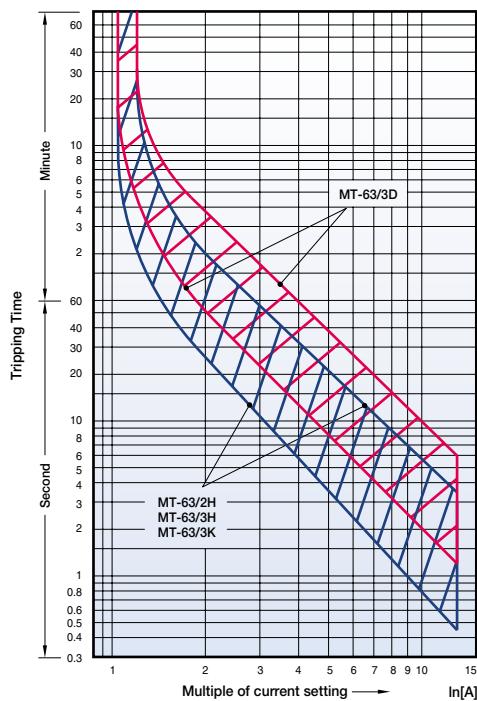


Tripping characteristics

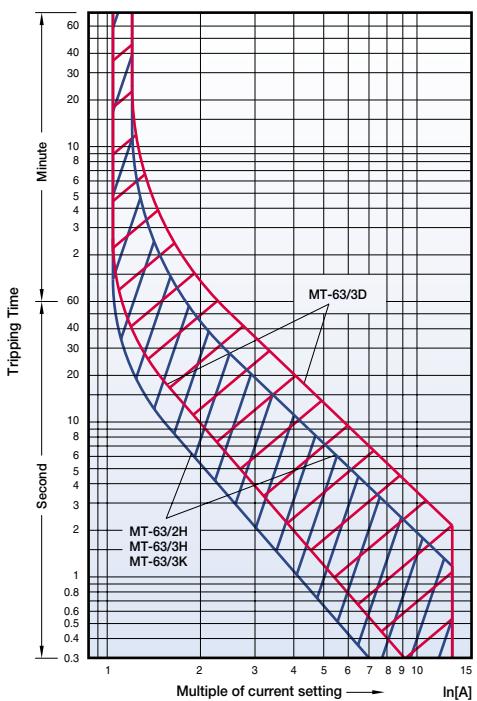
Susol

MT-63/2H
MT-63/3H
MT-63/3K
MT-63/3D

Cold starting

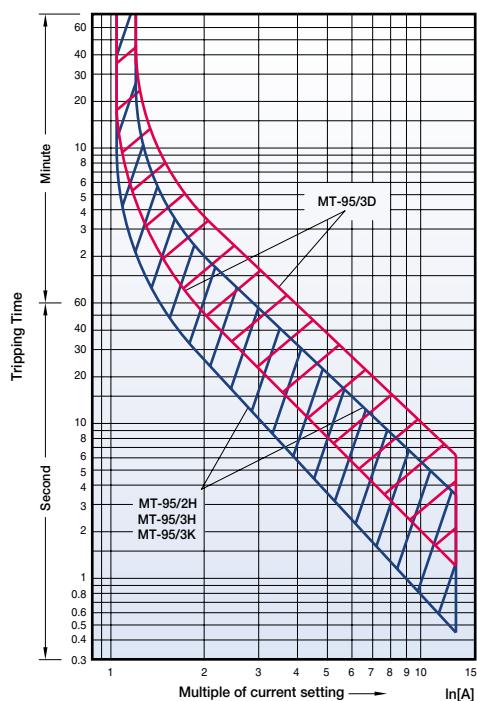


Hot starting

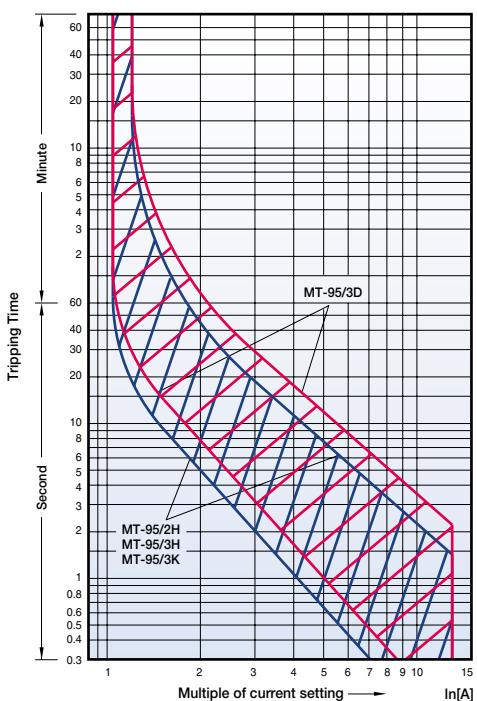


MT-95/2H
MT-95/3H
MT-95/3K
MT-95/3D

Cold starting



Hot starting



Environment

Susol



Environment		
Standards	EN 60947-1, EN 60947-4-1	
Product certifications	CE, CCC, UL	
Degree of protection (IEC 60 529)	Power terminals IP20	
	Coil terminals IP20	
Ambient air temperature	Storage	-55 ... +80°C
	Normal operation	-5 ... +60°C
Operating altitude	Maximum 3000m	
Operating positions (without derating)	$\pm 30^\circ$ possible, in relation to normal vertical mounting plane	
Shock resistance (IEC 68-2-7) (1/2 sine wave = 11ms)	Contactor open	8 gn
	Contactor closed	10 gn
Vibration resistance (IEC 68-2-6) (5...300 Hz)	Contactor open	2 gn
	Contactor closed	4 gn
Flame resistance	Conforming to UL 94	VO
	Conforming to IEC 695-2-1	960°C

Electronic catalogue

Susol



This electronic catalogue enables the customer to search a product by function, range or product type. It contains all catalogues for Susol series circuit breakers, contactors, overload relays. KEMA CB certification and full type test reports are also available.

LSIS Super Solution - Susol - Microsoft Internet Explorer

Low voltage circuit breakers

PDF CATALOG
Low voltage circuit breakers

CERTIFICATE
KEMA CB NL-9937

KEMA FULL TYPE TEST REPORTS
Circuit breakers equipped with thermal magnetic unit
TD100/TD160 TS100/160/250
TS400/630 TS800

Circuit breakers equipped with electronic trip unit
TS100 / TS160 / TS250 TS400 / TS630
TS800

Real World-Class Circuit Breakers Family TD/TS
For 100% (Icu : 50, 63, 85, 100, 150kA at 415VAC / 24 modules in 6 frames)

Susol Super Solution

Susol LV circuit breakers | **Susol Contactors & Overload relays** | **Home**

LSIS Super Solution - Susol - Microsoft Internet Explorer

Contactors & Overload Relays

PDF CATALOG
Contactors & Overload Relays

CERTIFICATE
KEMA CB NL-9848

KEMA FULL TYPE TEST REPORTS
Magnetic Contactors
MC-9 to 32 MC-35 to 63 MC-65 to 95
Thermal Overload Relays
MT-32 MT-63 MT-95
Auxiliary Switch Interlock Unit
UA-1 UR-2

Susol Contactor and Overload Relay
For protection of the environment, LS used recyclable material for Susol products.
and protection facilities are not polluting environment in compliance with ISO9001.

Susol Super Solution

Susol LV circuit breakers | **Susol Contactors & Overload relays** | **Home**

To obtain the electronic catalogue, please ask our authorized distributor in your country.
Or it is available on the Internet (www.lsibiz.biz).



Should you require further information, please visit our English website (www.lsibiz.biz). You will find everything you need to know about products, systems and services.

Ordering information

Susol

Contactor

MC	9	R	AC220	6	11	S
Rated current	9 9A	Applied model	Coil voltage	Frequency	Aux. contact	Terminal type
	- Standard	R Reversing	AC220 AC220V	5 50Hz	- None	S Screw
			DC24 DC24V	6 60Hz	11 1a1b	L Lug
				7 50/60Hz	22 2a2b	
					33 3a3b	
					44 4a4b	
	95 95A					

Overload relays

MT	32	3H	0.13	S
Frame		Applied model	Setting current	Terminal type
32 32AF	2H Standard (2 Heaters)	0.13 0.1~0.16A	S Screw	
63 63AF	3H Standard (3 Heaters)	...	L Lug	
95 95AF	3K Diferencial (3 Heaters)	...		
	3D Class 20 (3 Heaters)	83 70~95A		

Certifications and approvals

Susol

Type	Type of device	Approvals				Certificates	Certification of ship classification societies					
	Abbreviation	IEC	UL & CSA		GB		IEC	KR	LR	BV	NK	ABS
	Approved in	CE CE	UL UL	UL & CSA	Tilva	KEMA KEMA						
MC	Area	Europe	U.S.A	Canada	China	Nether lands	Korea	U.K	France	Japan	U.S.A	Norway
	MC-9	●	●	●	○	●	○	○	○	○	▲	▲
	MC-12	●	●	●	○	●	○	○	○	○	▲	▲
	MC-18	●	●	●	○	●	○	○	○	○	▲	▲
	MC-25	●	●	●	○	●	○	○	○	○	▲	▲
	MC-32	●	●	●	○	●	○	○	○	○	▲	▲
	MC-35	●	●	●	○	●	○	○	○	○	▲	▲
	MC-40	●	●	●	○	●	○	○	○	○	▲	▲
	MC-50	●	●	●	○	●	○	○	○	○	▲	▲
	MC-65	●	●	●	○	●	○	○	○	○	▲	▲
	MC-75	●	●	●	○	●	○	○	○	○	▲	▲
	MC-85	●	●	●	○	●	○	○	○	○	▲	▲
	MC-95	●	●	●	○	●	○	○	○	○	▲	▲
MT	MT-32H	●	●	●	○	●	○	○	○	○	▲	▲
	MT-63H	●	●	●	○	●	○	○	○	○	▲	▲
	MT-95H	●	●	●	○	●	○	○	○	○	▲	▲
	MT-32L	●	●	●	○	●	○	○	○	○	▲	▲
	MT-63L	●	●	●	○	●	○	○	○	○	▲	▲
	MT-95L	●	●	●	○	●	○	○	○	○	▲	▲
	MT-32D	●	●	●	○	●	○	○	○	○	▲	▲
	MT-63D	●	●	●	○	●	○	○	○	○	▲	▲
	MT-95D	●	●	●	○	●	○	○	○	○	▲	▲

● Approved in 2005

○ Approved in 2006

▲ Approved in 2007

Certifications and approvals

Susol

Type	Type of device	Approvals				Certificates	Certification of ship classification societies						
	Abbreviation	IEC	UL & CSA		GB		IEC	KR	LR	BV	NK	ABS	DNV
	Approved in	CE CE	UL UL	UL & CSA	Tilva CCC	KEMA KEMA							
MS	Area	Europe	U.S.A	Canada	China	Nether lands	Korea	U.K	France	Japan	U.S.A	Norway	
	MS-9	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-12	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-18	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-25	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-32	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-35	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-40	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-50	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-65	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-75	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-85	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-95	●	●	●	○	●	○	○	○	○	▲	▲	
Reversing - MC	MC-9R	●	●	●	○	●	○	○	○	○	▲	▲	
	MC-12R	●	●	●	○	●	○	○	○	○	▲	▲	
	MC-18R	●	●	●	○	●	○	○	○	○	▲	▲	
	MC-25R	●	●	●	○	●	○	○	○	○	▲	▲	
	MC-32R	●	●	●	○	●	○	○	○	○	▲	▲	
	MC-35R	●	●	●	○	●	○	○	○	○	▲	▲	
	MC-40R	●	●	●	○	●	○	○	○	○	▲	▲	
	MC-50R	●	●	●	○	●	○	○	○	○	▲	▲	
	MC-63R												
	MC-65R	●	●	●	○	●	○	○	○	○	▲	▲	
	MC-75R												
	MC-85R												
	MC-95R												
Reversing - MS	MS-9R	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-12R	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-18R	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-25R	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-32R	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-35R	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-40R	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-50R	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-63R	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-65R	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-75R	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-85R	●	●	●	○	●	○	○	○	○	▲	▲	
	MS-95R	●	●	●	○	●	○	○	○	○	▲	▲	

● Approved in 2005

○ Approved in 2006

▲ Approved in 2007

Research & Development

Susol

Test certifying organizations

Introduction

Power Testing & Technology Institute (PT & T)



PT&T is operating high-power laboratory, high-voltage laboratory reliability testing laboratory and calibration laboratory to aid technical development in product performance and reliability through its sound technical background and impartial operation in testing and evaluation process. PT&T, as a KOLAS-accredited testing and calibration laboratory, would continue its contribution to promote technical development and competence of electrical industry.

Standard recognition

Type of Test Reports

- KS Korea industrial standards
- IEC International Electrotechnical Commission
- ES, PS Korea Electric Power Corporation (Provisional) Standards
- KEMC Korea Electric Manufacturers Cooperative Standards
- ANSI American National Standard Institute
- Others Other standards as dictated by the clients

Laboratory Recognition

- KOLAS accredited testing and calibration laboratory (Korea Laboratory Accreditation Scheme per ISO 17025). Other Certification Bodies KEMA, CESI, UL etc. are in close cooperative relation. Registered testing laboratory for electrical appliances safety certification

Production sites

Susol



Cheongju Plant (Korea)



Dalian Plant (China)



Hanoi Plant (Vietnam)



Wuxi Plant (China)

Electric Power Industry Electric Equipment & Systems

The electric equipment and systems of LS Industrial Systems, ranging from low to high voltage products, have not only acquired ISO 9001 and 14001 certification for their efficient design and excellent quality, but many other certificates, including KEMA, TÜV, CESI, ASTA, and KERI. The outstanding quality of the products that we are manufacturing conforms to international standards such as IEC, UL, ANSI, CCC, JIS, and KS.

We also provide Total Solutions that encompass customized designs and more advanced technology, as well as efficient production and installation, and highly accurate testing and analysis of power equipment.



Chonan Plant (Korea)



Wuxi Plant (China)

Automation Industry Automation Equipment, Industrial IT & RFID

LS Industrial Systems, a leading pioneer of the domestic automation business, developed the first ever PLC, Inverter (AC Drive), and DCS in Korean automation history. We now provide Total Solutions through the diverse application of our own products, ranging from controllers to control systems that are based on sophisticated technology and proven experience, to bring innovative change to distribution systems and logistics.



Janghang Plant (Korea)

Industrial Equipment Industry Metal Processing

In addition to supplying basic industrial material, such as copper tubes and STS pipes to the electronics and chemical industries, LS Industrial Systems also manufactures and supplies electric power tools that have been recognized for their excellent performance capabilities in over 38 countries.

Memo

Susol

Global Networks



LS Industrial System's global network provides the highest quality of products and services

Tokyo, Japan

LS Industrial Systems Tokyo Office

Dalian, China

Dalian LS Industrial Systems Co.,Ltd

Beijing, China

LS Industrial Systems Beijing Office

Qingdao, China

LS Industrial Systems Qingdao Office

Dubai, U.A.E.

LS Industrial Systems Dubai Rep. Office

Chengdu, China

LS Industrial Systems Chengdu Office

Hanoi, Vietnam

LS-VINA Industrial Systems Co.,Ltd

LS Industrial Systems Hanoi Office

LS Industrial Systems (Middle East) FZE >> Dubai, U.A.E.

Address: P.O.Box-114216, API World Tower, 303B, Sheikhe Zayed Road, Dubai, U.A.E.

Tel: 971-4-332-8289 Fax: 971-4-332-9444 e-mail: hwyim@isis.biz

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