

Mini Contactor MB



- DIN or printed circuit mounting
- AC or DC operation
- Long life
- Fingertouch protection
- Twin bifurcated auxiliary contacts
- International approvals including UL and CSA
- Designed to EN 60947-4-1



Options and ordering codes

	MB	09	S
Mini series relay	MR		
Contactors	MB		
Relay		07	
Contactors		09	
		12	
DIN mounting screw terminal			S
Printed circuit mounting			P
Faston terminal 1 x 6.3mm or 2 x 2.8mm			F

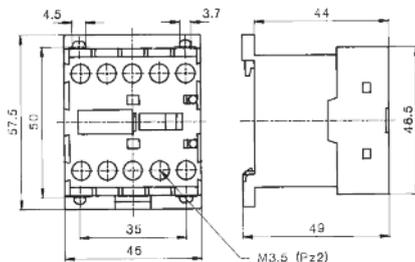
MB09 + MB12	10	Coil Voltage
3 main + 1 make auxiliary	10	
3 main + 1 break auxiliary	01	
MR07		
4 make	40	
3 make 1 break	31	
2 make 2 break	22	
		Standard Coils
24V 50/60Hz 415V 50Hz		
110V 50/60Hz 24V DC		
220-230V 50Hz 110VDC		

Product selection

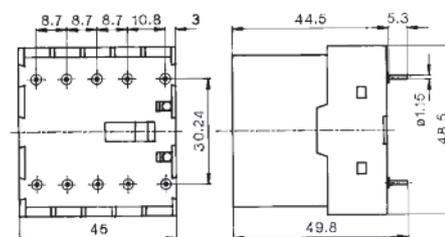
AC operated	DC operated
MR07-S-22	MR07-S-22
MR07-S-31	MR07-S-31
MR07-S-40	MR07-S-40
MB09-S-10	MB09-S-10
MB09-S-01	MB09-S-01
MB09-P-10	MB09-P-10
MB09-P-01	MB09-P-01
MB12-S-10	MB12-S-10
MB12-S-01	MB12-S-01
MB12-P-10	MB12-P-10
MB12-P-01	MB12-P-01

Dimensions (mm)

DIN Mount Screw Terminal



PCB Mount

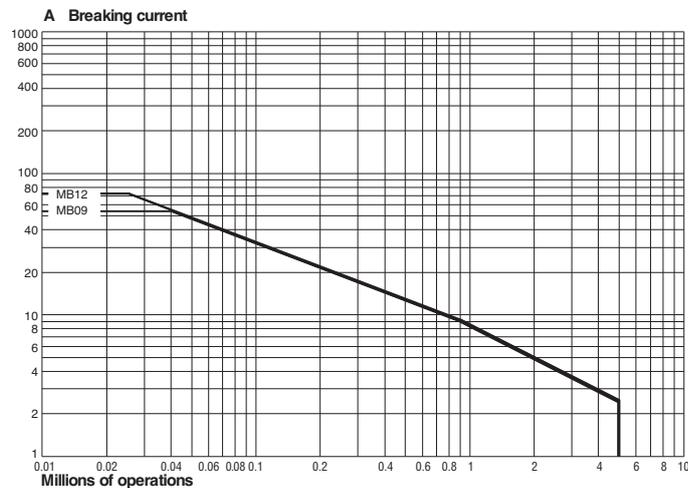
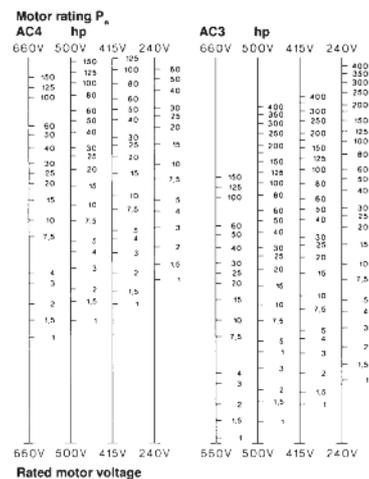


Technical data according to IEC, VDE and BS

Type		MR07-S	MR07-P	MB09-S	MB09-P	MB12-S	MB12-P
Mounting		DIN	Printed Circuit	DIN	Printed Circuit	DIN	Printed Circuit
Main Contacts							
Rated Insulation Volts		690	690	690	690	690	690
Mechanical Life OPS	AC15 OPS/HR	3000		-		-	
	AC3 OPS/HR	-		600		700	
Max. Frequency of Operation	AC1 Amps	16		20	16	20	16
	AC3 Amps 230V	-		11.5		14.5	
Short Circuit Protection	380-400V	-		9		12	
	KW 230V	-		3		4	
	380-400V	-		4		5.5	
	Class gl. Highest Fuse Amps	10		20	16	20	
Auxiliary Contacts	Highest Fuse Amps (without welding)	10		10	10	10	
	AC15 Amps 230V	3		3		3	
Short Circuit Protection	Amps 380-415V	2		2		2	
	Class gl. Highest Fuse Amps	20		20		20	
Coil Operation	AC and DC Range	0.85 - 1.1		0.85 - 1.1		0.85 - 1.1	
	AC Inrush VA	25		25		25	
	AC Sealed VA	5		5		5	
	AC Sealed W	1.2		1.2		1.2	
	DC Inrush and Sealed W	2.5		2.5		2.5	
Cable Cross Section	Solid mm ²	0.75 - 2.5		0.75 - 2.5		0.75 - 2.5	
	Flexible mm ²	0.75 - 2.5		0.75 - 2.5		0.75 - 2.5	
Contacts and Coil	Flexible with Cable End mm ²	0.5 - 2.5		0.5 - 2.5		0.5 - 2.5	
	No. of Conductors	2		2		2	
Maximum Temperature	Normal use °C	-40 to +60		-40 to +60		-40 to +60	
	Storage °C	-50 to +90		-50 to +90		-50 to +90	

Refer to IMO for UL and CSA ratings

Contact life MB09/12



Auxiliary contacts

- Add-on contacts
- Snap on top of contactor
- Twin bifurcated contacts suitable for low level switching



Contacts	For use with	Product
1 make 1 break	MR07	HK11
2 make 2 break	MR07	HK22
1 make 1 break	MB09/12	HKM11
2 make 2 break	MB09/12	HKM22
1 make 1 break	MB09-R-S-01 (LHS)	HKM11V
1 make 1 break	MB09-R-S-01 (RHS)	HKM11X

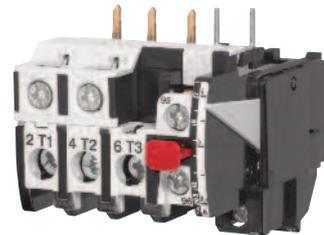
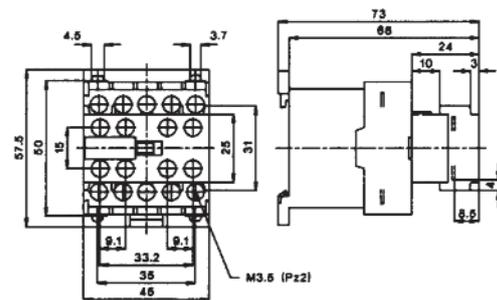
Ratings

AC1 (I _n)	10A	690 V AC
AC15	3A	230 V AC
	2A	400 V AC

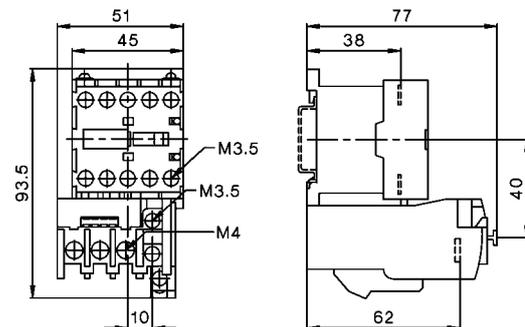
Overload

- Hand reset
- Single phase protection
- Trip and alarm contacts
- Ambient temperature compensation -25 to +40 °C

Dimensions (mm)



Dimensions (mm)



Current Range	Product
0.12–0.18	U1216E 0.18 K1
0.18–0.27	U1216E 0.27 K1
0.27–0.4	U1216E 0.4 K1
0.4–0.6	U1216E 0.6 K1
0.6–0.9	U1216E 0.9 K1
0.8–1.2	U1216E 1.2 K1
1.2–1.8	U1216E 1.8 K1
1.8–2.7	U1216E 2.7 K1
2.7–4	U1216E 4 K1
4–6	U1216E 6 K1
6–9	U1216E 9 K1
8–11	U1216E 11 K1
10–14	U1216E 14 K1

Contactors 3-pole



- Up to 1200A AC3
- Up to 1350A AC1
- DIN-rail mounting up to AC3 74A
- International Approvals
- Data according to IEC 947 / EN 60947



Ratings		10A	14A	18A	22A	24A	32A	40A	50A	62A	74A	90A	115A
AC3 400V	Motor	4kW	5,5kW	7,5kW	11kW	11kW	15kW	18,5kW	22kW	30kW	37kW	45kW	55kW
	380-400V 660-690V	5,5kW	7,5kW	10kW	10kW	15kW	18,5kW	18,5kW	30kW	37kW	45kW	55kW	55kW
AC1	690V at 40°C	25A	25A	32A	32A	50A	65A	80A	110A	120A	130A	160A	200A
Type	MC-	10A10	14A10	18A10	22A10	24A00	32A00	40A00	50A00	62A00	74A00	90A00	115A00
Auxiliary contacts		1NO	1NO	1NO	1NO	-	-	-	-	-	-		
Type	MC-	10A01	14A01	18A01	22A01								
Auxiliary contacts		1NC	1NC	1NC	1NC								
Cable cross-section													
Solid	mm ²		0,75 - 6				1,5 - 25			4 - 50		120+95	
Flexible	mm ²		1 - 4				2,5 - 16			10 - 35		95+70	
Cables per clamp			2				1 + 1			1 + 1		1 + 1	
Auxiliary contact													
I _{th} 40°C	A		16				-			-		-	
AC 15 230V	A		12				-			-		-	
400V	A		4				-			-		-	
Power consumption of coils	Inrush VA hold VA Operation range of coils		33 - 45 7 - 10 0,85 - 1,1				90 - 115 9 - 13 0,85 - 1,1			140 - 165 13 - 18 0,85 - 1,1		280 5 0,85 - 1,1	
Mounting		35mm DIN-rail or base										2x DIN-rail or base	
Additional aux. contact blocks	Front mounting contacts Type	MCA10 1NO f. low level switching	MCA01 1NC f. low level switching	MCAH10 1NO 25A I _{th}	MCAH01 1NC 25A I _{th}	Max 1NC MCAH or MCA		Max. MCAH or MCA					
Overload Relay (thermal)	Single phase protection Temperature compensation Trip and alarm contacts												
Type		MCOR-1					MCOR-2					MCOR-3	MCOR-4
		U12/16E					MCOR-2						
Number of Setting Ranges from		16 0,12 - 30A		16 0,12 - 32A		4 10 - 42A		5 20 - 74A			2 60 - 120A		
Busbar sets		-					-					-	



150A	175A	210A	260A	315A	450A	550A	700A	860A	1000A	1200A
75kW 90kW	90kW 110kW	110kW 160kW	132kW 210kW	160kW 250kW	250kW 375kW	300kW 475kW	400kW 630kW	500kW 700kW	580kW 850kW	680kW 1000kW
230A	250A	350A	450A	500A	600A	760A	1000A	1100A	1200A	1350A
151S00	176S00	210S00	260S00	316S00	450S22	550S22	700S22	860S22	1000S12	1200S12
-	-	-	-	-	2NO+2NC	2NO+2NC	2NO+2NC	2NO+2NC	1NO+2NC	1NO+2NC
2 x 16-120 2 x 16-120		busbar 30x6	busbar 30x6	busbar 30x6	busbar 30x5	busbar 40x6	busbar 50x8	busbar 50x8	busbar 50x10	busbar 50x10
-	-	-	-	-			10 3 2		10 3 2	
350 5 0,85 - 1,1	350 5	360 5	360 5 0,85 - 1,1	360 5	800-950 9-11	800-950 9-11	1350-1600 21-25 0,85 - 1,1	1350-1600 21-25	2400 70 0,85-1,1	2400 70

base



MCAT11 MCAT22
1NO+ 1NC 2NO+ 2NC
max. 1 pc.



MCAF22
2NO+ 2NC
max. 1 pc.



MCAB11
1NO+ 1NC
max. 2 pcs.



MCAA11
1NO+1NC
max. 2 pcs.

--

--

--

--

--

--



MCOR-5

1
120 - 180A

BB180

links for
independent use
integrated



MCOR-6

2
144 - 320A

integrated



MCOR-7

4
260 - 800A

BB550

BB860



MCOR-8

2
700 - 1250A

Contactors 3-pole

AC Operated



Ratings		Rated Current	Aux. Contacts		Type	Coil voltage ¹⁾	Pack pcs.	Weight kg/pc.	
AC2, AC3			Built-in	Additional see page 34					
380V						24			
400V	660V	AC1				110			
415V	690V	690V				230			
kW	kW	A	NO	NC	Typ	400			
						▼			
4	4	5,5	25	1	-	max. 4	MC-10S10 ...	1	0,23
4	4	5,5	25	-	1	MCA.. or MCAH..	MC-10S01 ...		
5,5	5,5	7,5	25	1	-		MC-14S10 ...		
5,5	5,5	7,5	25	-	1		MC-14S01 ...		
7,5	7,5	10	32	1	-		MC-18S10 ...		
7,5	7,5	10	32	-	1		MC-18S01 ...		
11	11	10	32	1	-		MC-22S10 ...		
11	11	10	32	-	1		MC-22S01 ...		



11	11	15	50	-	-	max. 4	MC-24S00 ...		0,48
15	15	18,5	65			MCA.. or MCAH..	MC-32S00 ...		
18,5	18,5	18,5	80				MC-40S00 ...		



22	22	30	110			max. 4 (3) ²⁾	MC-50S00 ...		0,85
30	30	37	120			MCA.. or MCAH..	MC-62S00 ...		
37	37	45	130				MC-74S00 ...		



45	45	55	160			max. 7	MC-90S00 ... ³⁾		2,2
55	55	55	200			MCA.. or MCAH..	MC-115S00 ... ³⁾		



75	75	110	230			1 HKT..	MC-151S00 ... ³⁾		4
90	90	132	250			and 2 HKA11	MC-176S00 ... ³⁾		

110	110	160	350				MC-210S00 ... ³⁾		7,2
132	132	210	450				MC-260S00 ... ³⁾		
160	160	250	500				MC-316S00 ... ³⁾		



250	250	375	600	2	2	1 HKF22	MC-450S22 ...		13
300	300	475	760				MC-550S22 ...		13,5

400	400	630	1000				MC-700S22 ...		26,5
500	500	700	1100				MC-860S22 ...		27,6

580	580	850	1200	1	2	2 HKB11	MC-1000S12 ...		49
680	680	1000	1350				MC-1200S12 ...		53

2) max. 3 MCA.. or MCAH.. for DC-operated Contactors
 3) with integrated coil suppressor

Contactors - DC operated

Low power consumption at inrush and sealed operation



- Direct control by PLC
- Integrated suppressor unit
- Accessories as MC series
- 4 coil terminal
- Climate resistant, ambient temperatures -40 to 90°C



Options and ordering codes

	MCD	10	S	10	Coil Voltage
Contactory relay	MCRD				DC coils 24V=, 60V=, 110V=, 220V=
Contactory	MCD				
AC3 rating		10			
Screw terminals			S		
				00	No auxiliaries
				10	1 NO auxiliary
				01	1 NC auxiliary
				11	1 NO & 1 NC auxiliary
				22	2 NO & 2 NC auxiliaries

Dimensions (mm)

4-11kW	74h x 45w x 94d
11-18kW	74h x 45w x 109d

Contactory relays

	AC15 (230V) [A]	Rated current I _{th} [A]	Contacts		Max 4 pieces aux. contacts mountable	Type Coil DC 24V=, 60V=, 110V=, 220V=	Coil-power inrush/sealed [W]	Pieces per pack
			NO	NC				
for high power ratings	12	20	4	-	MCA.. or MCAH..	MCRD07-S-40....	3 / 3	1
	12	20	3	1	MCA.. or MCAH..	MCRD07-S-31....	3 / 3	1
	12	20	2	2	MCA.. or MCAH..	MCRD07-S-22....	3 / 3	1
	12	20	-	4	MCA.. or MCAH..	MCRD07-S-04....	3 / 3	1
suitable for electronic circuits	4	10	4	-	MCA.. or MCAH..	MCRD07-S-40....	3 / 3	1
	4	10	3	1	MCA.. or MCAH..	MCRD07-S-31....	3 / 3	1
	4	10	2	2	MCA.. or MCAH..	MCRD07-S-22....	3 / 3	1
	4	10	-	4	MCA.. or MCAH..	MCRD07-S-04....	3 / 3	1

Contactors

	Motor AC3 (400V) [kW]	Rated current I _{th} [A]	Aux. contacts built in		Max 4 pieces aux. contacts mountable	Type Coil DC 24V=, 60V=, 110V=, 220V=	Coil-power inrush/sealed [W]	Pieces per pack
			NO	NC				
3 pole	4	25	1	-	MCA.. or MCAH..	MCD10-S-10....	3 / 3	1
	4	25	-	1	MCA.. or MCAH..	MCD10-S-01....	3 / 3	1
	5.5	25	1	-	MCA.. or MCAH..	MCD14-S-10....	3 / 3	1
	5.5	25	-	1	MCA.. or MCAH..	MCD14-S-01....	3 / 3	1
	7.5	32	1	-	MCA.. or MCAH..	MCD18-S-10....	3 / 3	1
	7.5	32	-	1	MCA.. or MCAH..	MCD18-S-01....	3 / 3	1
	11	32	1	-	MCA.. or MCAH..	MCD22-S-10....	3 / 3	1
	11	32	-	1	MCA.. or MCAH..	MCD22-S-01....	3 / 3	1
	11	50	-	-	MCA.. or MCAH..	MCD24-S-00....	4 / 4	1
	15	65	-	-	MCA.. or MCAH..	MCD32-S-00....	4 / 4	1
	18.5	80	-	-	MCA.. or MCAH..	MCD40-S-00....	4 / 4	1
4 pole	4	25	-	-	MCA.. or MCAH..	MCD10-S-00-40....	3 / 3	1
	5.5	25	-	-	MCA.. or MCAH..	MCD14-S-00-40....	3 / 3	1
	7.5	32	-	-	MCA.. or MCAH..	MCD22-S-00-40....	3 / 3	1
	11	32	-	-	MCA.. or MCAH..	MCD22-S-00-40....	3 / 3	1

Capacitor Switching Contactors MC-K



- 12.5kVar up to 75kVar
- For use with reactive or non-reactive capacitor banks
- DIN rail mounting to 75kVar
- Early make contacts and damping resistors used to reduce the value of make current $<70 \times I_e$
- Designed to EN60947-4-1, EN60947-5-1 VDE0660
- Compact design for panel space saving, only 45mm wide up to 25kVar, 60mm up to 75kVar



Options and ordering codes

Rated operational power at 50/60Hz @ 50 °C

380/400V	415/440V	660/690V	Aux contacts Built in		Additional	Part No
			NO	NC		
kVar	kVar	kVar			pcs.	
12.5	13	20	1	–	1 ¹⁾	MC18-K-10...
12.5	13	20	–	1	1 ¹⁾	MC18-K-01...
20	22	33	–	–	3 ³⁾	MC24-K-00...
25	27	41	–	–	3 ³⁾	MC32-K-00...
33.3	36	55	–	–	3 ³⁾	MC50-K-00...
50	53	82	–	–	3 ³⁾	MC62-K-00...
75 ³⁾	75 ³⁾	120 ³⁾	–	–	3 ³⁾	MC74-K-00...

¹⁾ 1 MCA.. or MCAH.. Snap-on

²⁾ 2 MCAS11 on the left or right hand side and 1 MCA.. or MCAH.. Snap-on

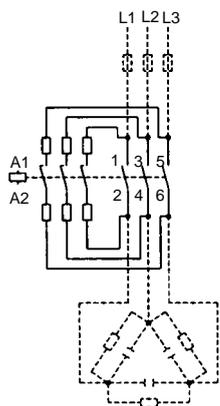
³⁾ Consider the maximum thermal current of the contactor MC74-s: Ith 130A

Contactors MC..K are suitable for switching low-inductive and low loss capacitors in capacitor banks (IEC70 and 831, VDE 0560) without and with reactors.

Capacitor switching contactors are fitted with early make contacts and damping resistors, to reduce the value of make capacity $<70 \times I_e$.

Operating conditions: Capacitor switching contactors are protected against contact welding for a prospective making current of $200 \times I_e$. Fuse rating approximately $1,6$ to $2,5 \times I_e$, type gL (gG).

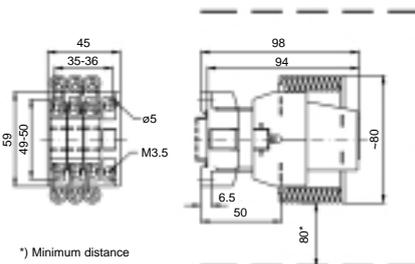
Circuit Diagrams



Mounting instructions:
Minimum distance between resistor windings to other parts: 80mm

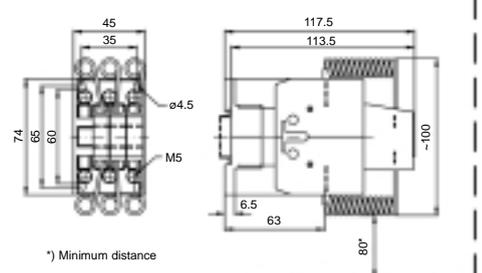
Dimensions (mm) AC operated

MC18-K



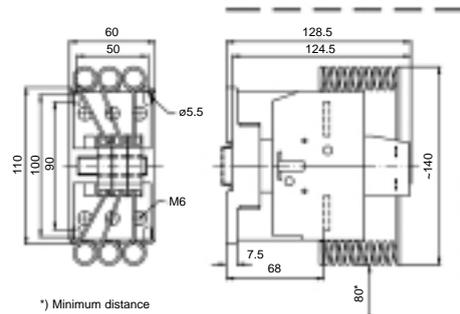
*) Minimum distance

MC24-K-00 / MC32-K-00



*) Minimum distance

MC50-K-00 / MC62-K-00 / MC74-K-00



*) Minimum distance

Modular Contactors Type HC



- Single and 3 Phase applications
- Suitable for control of lamps, heating, air conditioning and motor control
- Suitable for panel or DIN rail mounting
- Available in 2 and 4 pole versions
- AC1 rating of 20-63 amps



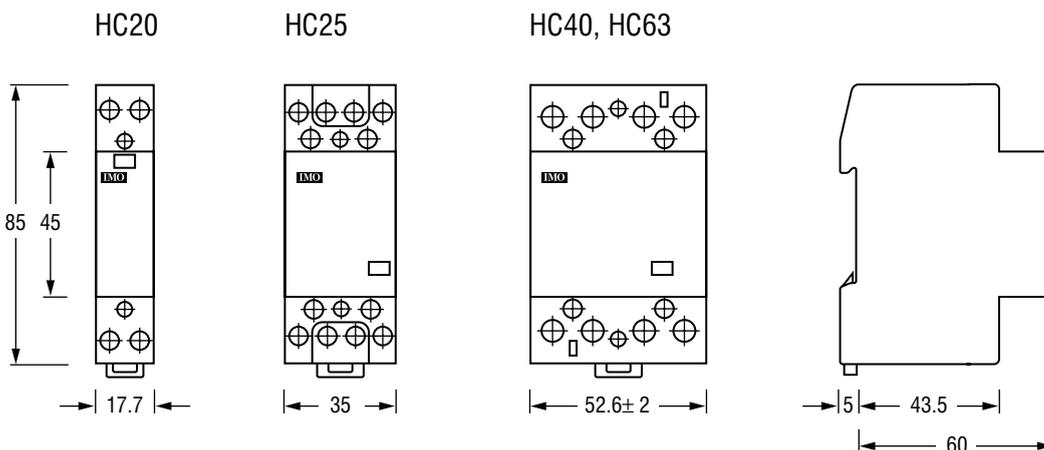
Options and ordering codes

HC	20	-	20	230
Modular contractor				
AC1 20 amp rated	20			
AC1 25 amp rated	25			
AC1 40 amp rated	40			
AC1 63 amp rated	63			
2 pole N/O contacts			20	
1 N/O, 1 N/C contacts			11	
2 pole N/C contacts			02	
4 pole N/O contacts			40	
3 N/O 1 N/C contacts			31	
1 N/O 3 N/C contacts			13	
2 N/O 2 N/C contacts			22	
4 pole N/C contacts			04	
230 AC supply voltage				230
24 AC supply voltage				24

Specification

Type	HC20	HC25	HC40	HC63
Main Contacts				
Rated Insulation Voltage	440	440	440	440
Frequency of operation I/h	300	300	300	300
Mechanical Life s x 10000000	1	1	1	1
Utilization Category AC1				
Rated current at 60 degrees C	20	25	40	63
Contact life s x 10000000	0.1	0.1	0.1	0.1
Minimum Switch voltage V/mA	24/100	24/100	24/100	24/100
Power Loss	2	2	3	7
Utilization Category AC3				
Switching of three phase motors				
Rated Current A	-	9	27	30
Rated optional power				
220V KW	-	2.2	7.5	8
230-240V KW	1.1	2.5	8	8.5
380-415V KW	-	4	12.5	15
Contact Life s x 10000000	-	0.15	0.15	0.15
Power Consumption of Coils				
AC operated	Inrush VA	7-9	14-18	33-45
	Sealed VA	2.2-4.2	4.4-8.4	7
	W	0.8-1.6	1.6-3.2	2.6

Dimensions mm

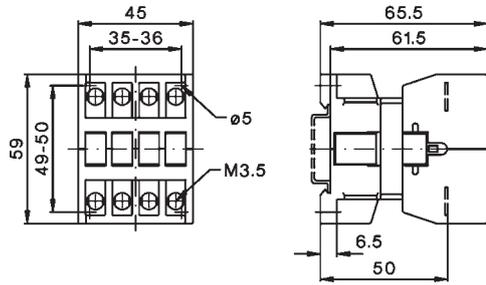


Contactors

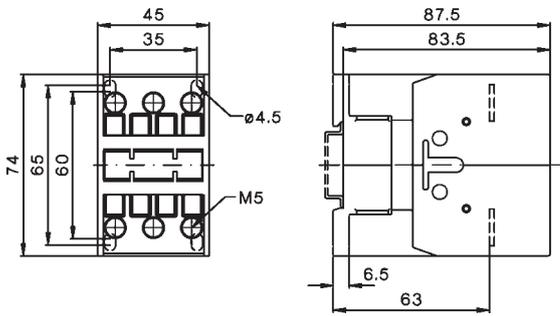
Dimensions

AC operated

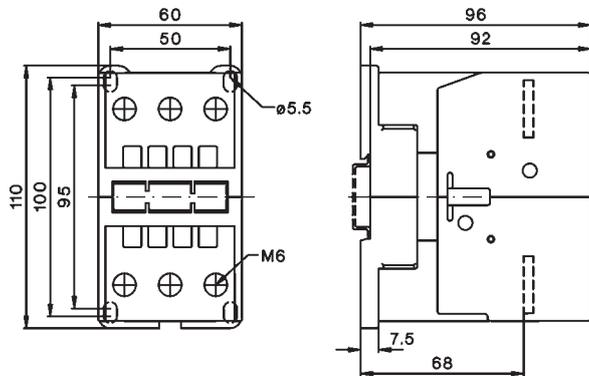
MC/10..
MC/14..
MC/18..
MC/22..



MC/24..
MC/32..
MC/40..

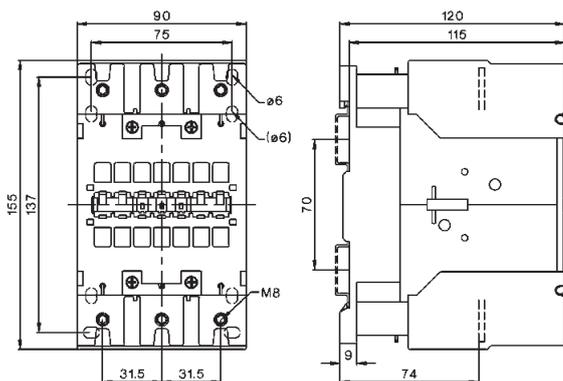


MC/50..
MC/62..
MC/74..



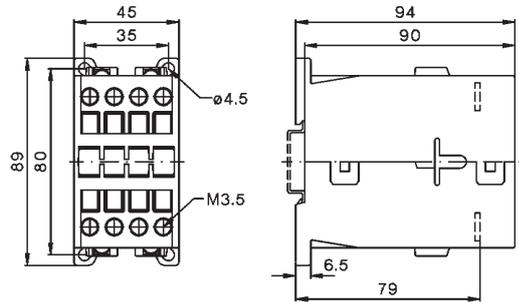
AC and DC operated

MC/90..
MC/115..

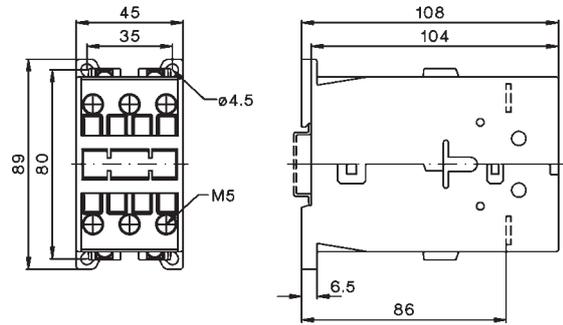


DC operated

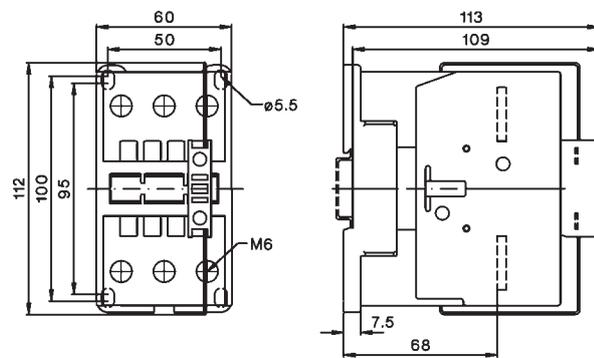
MCD/10..
MCD/14..
MCD/18..
MCD/22..



MCD/24..
MCD/32..
MCD/40..



MCD/50..
MCD/62..
MCD/74..



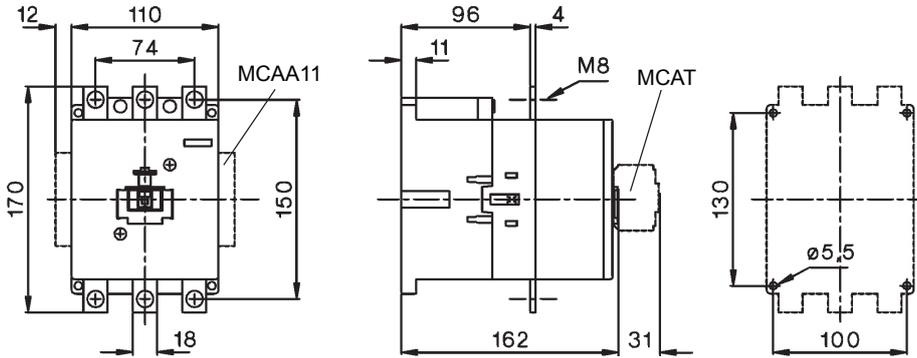
Contactors

Dimensions

AC operated, DC operated

MC/151..

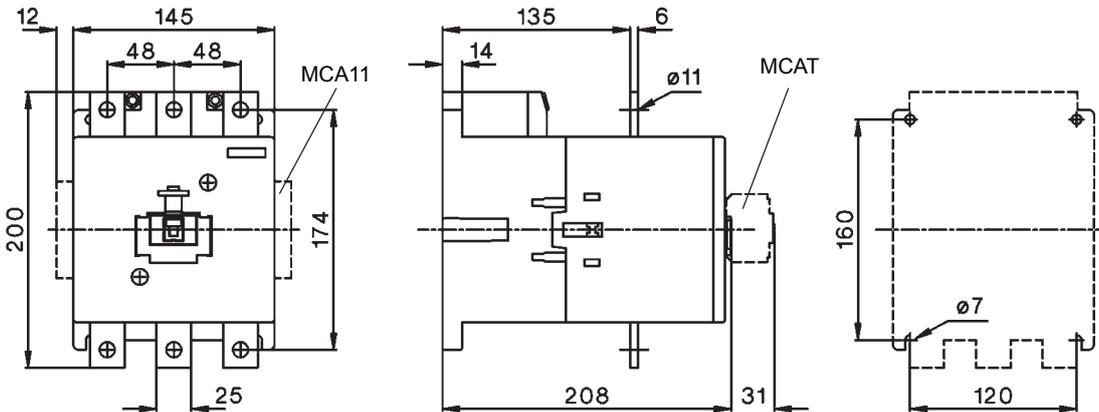
MC/176..



MC/210..

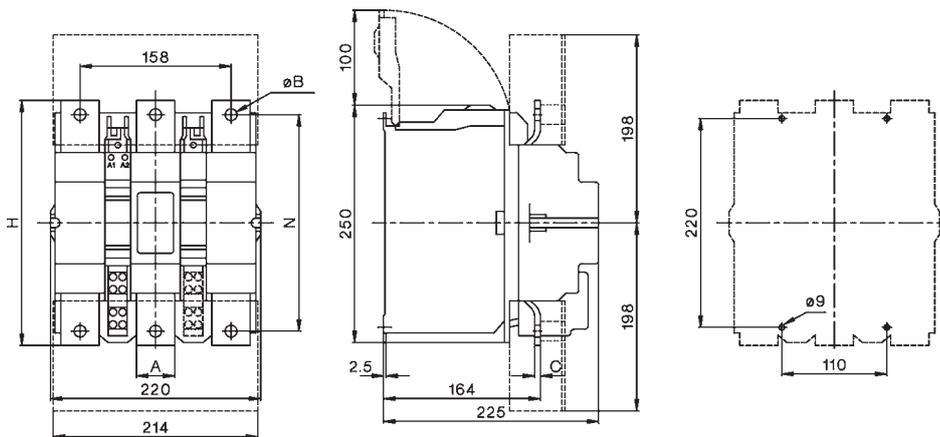
MC/260..

MC/316..



MC/450..

MC/550..



Typ	A	B	C	H	N
MC-450	40	10,5	4	233	206
MC-550	40	12,5	6	258	228

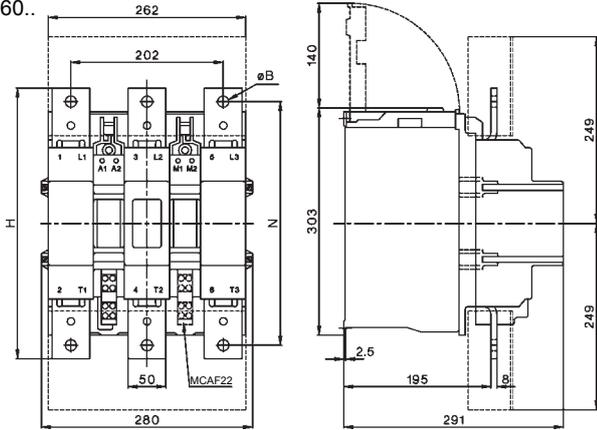
Contactors

Dimensions

AC and DC operated

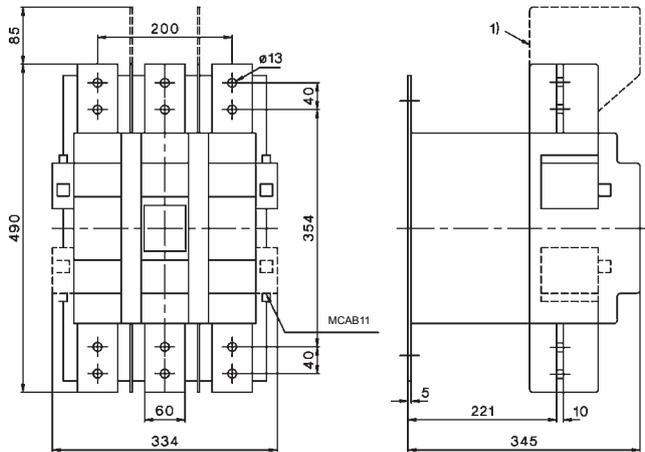


MC/700..
MC/860..

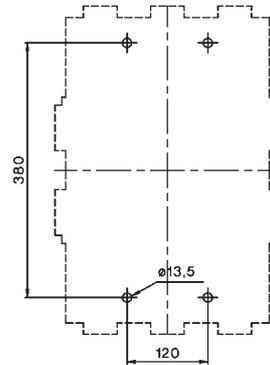


Typ	B	H	N
MC-700	13	310	277
MC-860	15	361	325

MC/1000..
MC/1200..

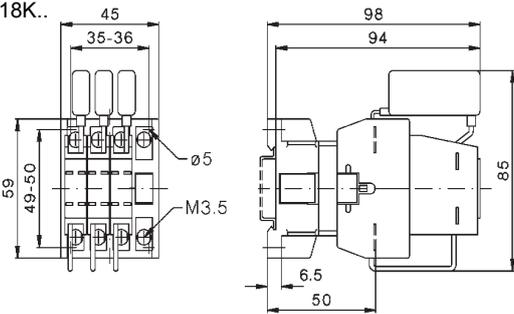


1) for MC-1200 in UL conformity application only

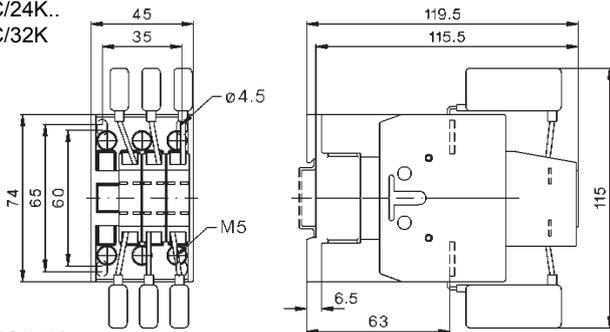


Capacitor switching contactors, AC operated

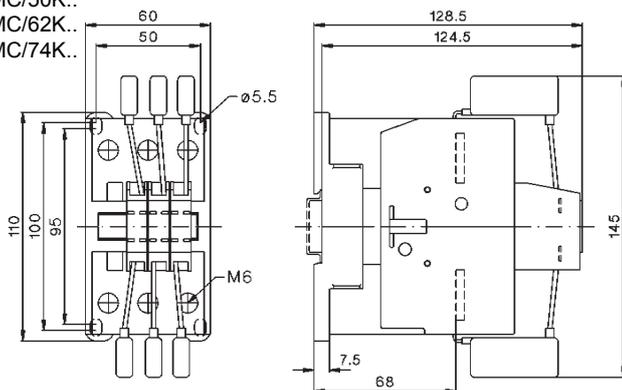
MC/18K..



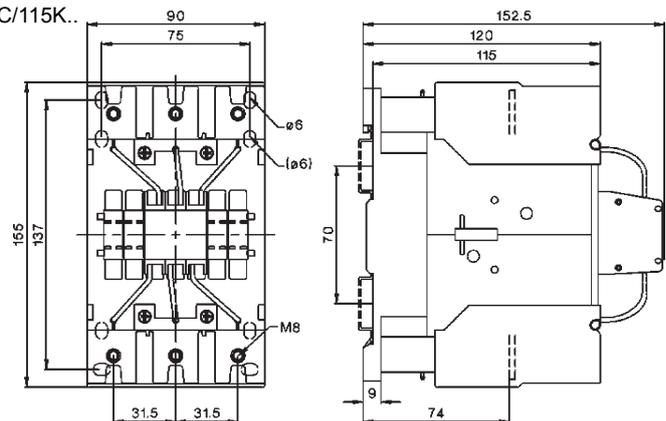
MC/24K..
MC/32K



MC/50K..
MC/62K..
MC/74K..



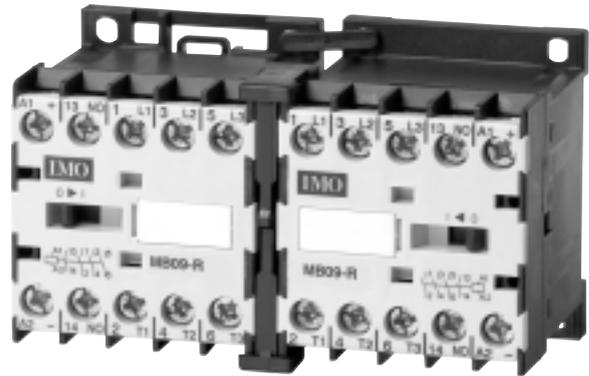
MC/90K..
MC/115K..



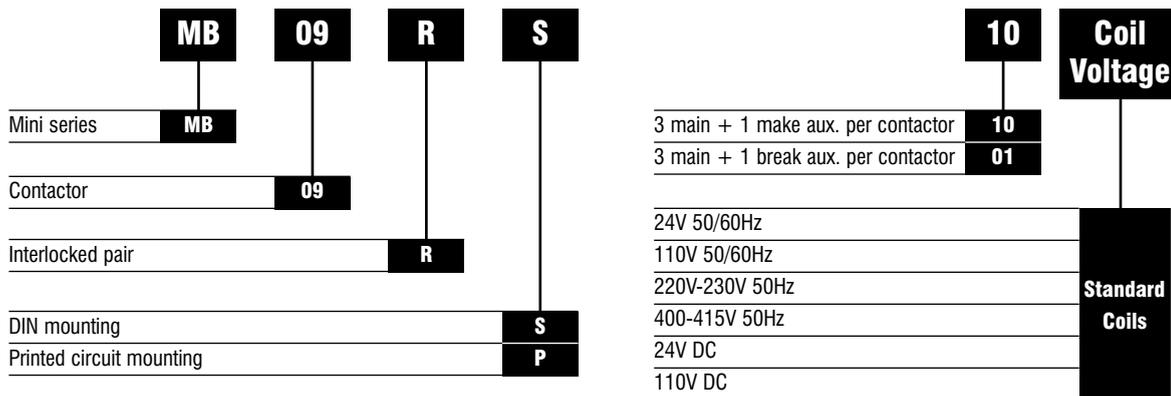
Reversing Contactor MB09-R



- DIN or Printed Circuit Mounting
- AC or DC Operation
- Fingertouch protection
- Twin bifurcated auxiliary contacts
- Mechanical interlock
- International approvals including UL and CSA
- Designed to EN 60947-4-1



Options and ordering codes



Dimensions (mm)

