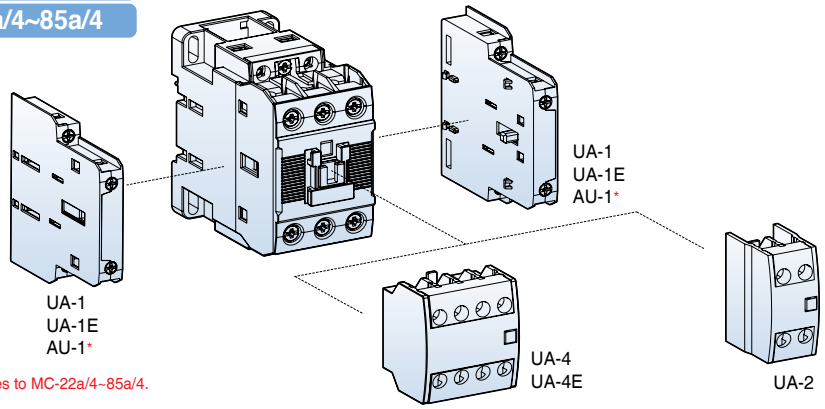
Accessory

Auxiliary contact units

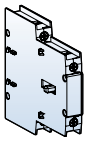
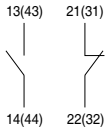
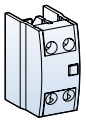
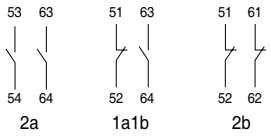
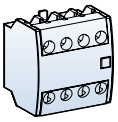
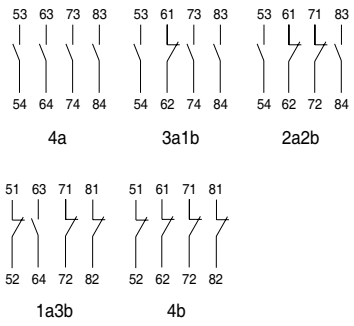
- 2 and 4 pole
- Side and front mountable
- Common use for Metasol contactors from MC-6a to MC-150a, and from MC-6a/4 to 85a/4
- Auxiliary contact meet the requirements for mirror contacts in IEC 60947-4-1. Annex F (A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact)

MC-6a~MC-150a
MC-6a/4~85a/4



* AU-1 only applies to MC-22a/4~85a/4.

Selection

Type	Appearance	Pole	Composition		Contact arrangement	Mount	Weight
			NO	NC			
UA-1 UA-1E AU-1		2	1	1		Side	53g
UA-2		2	2 1 -	- 1 2		Front	28g
UA-4 UA-4E		4	4 3 2 1 -	- 1 2 3 4		Front	50g

* UA-1 auxiliary contact can not be attached to the right side of 22AF product

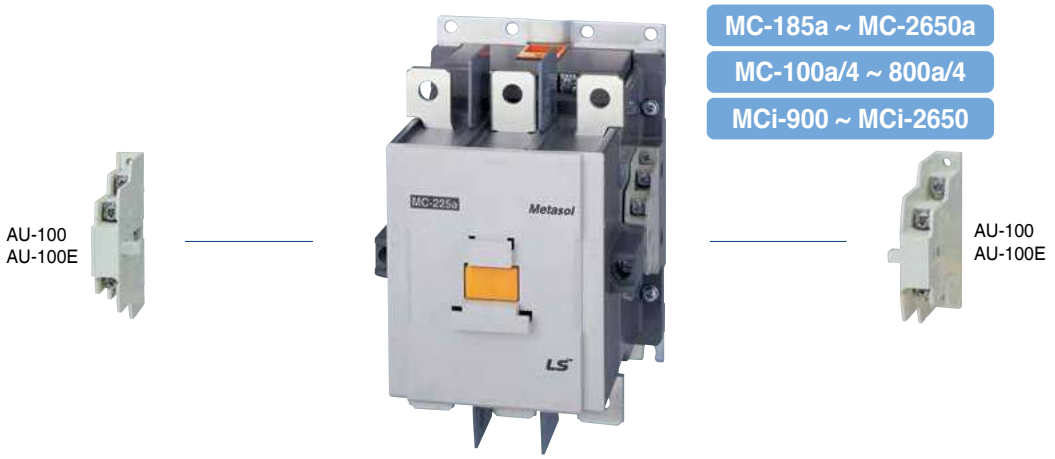
Maximum combination of contact units

MC-6a~18a, 9b~22b (Max. 3a3b)	MC-32a~150a (Max. 4a4b)
UA-4(on front)+UA-1×1EA (1EA on one side)	UA-4(on front)+UA-1×2EA (1EA on both sides)
UA-2(on front)+UA-1×1EA (1EA on one side)	UA-2(on front)+UA-1×2EA (1EA on both sides)
UA-1×2EA (1EA on both sides)	UA-1×4EA (2EA on both sides) *For AC Coil

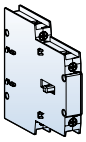
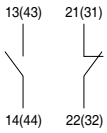
Accessory

Auxiliary contact units

- 2 pole
- Side mountable
- Auxiliary contact meet the requirements for mirror contacts in IEC 60947-4-1. Annex F
  (A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact)



Selection

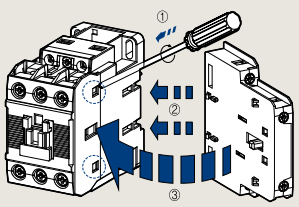
Type	Appearance	Pole	Composition		Contact arrangement	Mount	Weight
			a(NO)	b(NC)			
AU-100 AU-100E		2	1	1		Side	53g

Maximum combination of contact units

MC-185a~2650a (Max. 4a4b)
AU-100 x 4EA (2EA on both sides)
AU-100E x 4EA (2EA on both sides)

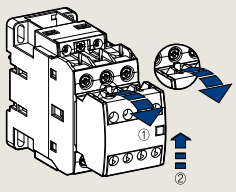
Installation

UA-1



To install side mounting unit remove the indicated part in the circle in the fig. first. And then fit each part as shown. To separate push forward and pull.

UA-2, 4



To install front mounting unit fit it on the upper part of the front of the contactor and push it down. To separate pull the lever of the unit and push the unit upward.

Rating

Type			UA-1	AU-1	UA-2, 4	AU-100
Rated operation voltage (Ue)			600V	600V	600V	600V
Rated insulation voltage (Ui)			1000V	690V	690V	600V
Rated impulse withstand voltage (Uimp)			8kV	8kV	6kV	6kV
Rated frequency			50/60Hz	50/60Hz	50/60Hz	50/60Hz
Contact sensibility	Voltage		DC 24V	DC 24V	DC 24V	DC 24V
	Current		DC 10mA	DC 10mA	DC 10mA	DC 10mA
Rated thermal current (Ith, AC12 duty)			16A	16A	16A	16A
Rated operation current	AC15 duty	120V	6A	6A	6A	6A
		240V	3A	3A	3A	3A
		380V	1.9A	1.9A	1.9A	1.9A
		480V	1.5A	1.5A	1.5A	1.5A
		500V	1.4A	1.4A	1.4A	1.4A
		600V	1.2A	1.2A	1.2A	1.2A
		600V	0.2A	0.2A	0.1A	0.2A
Rated	1s		100A	100A	-	100A
Short-time withstand current	0.5s		125A	125A	-	120A
	0.1s		145A	145A	-	140A
Electrical lifetime (mil. operations)	AC15 duty	220V	0.25	0.25	0.25	0.25
		440V	0.25	0.25	0.25	0.25
Maximum operating cycles per hour			1800	1800	1800	1800
Conductor size (Solid, stranded)		AWG	18~10	18~10	18~10	18~10
(the max. number of conducts : 2)		mm²	1~2.5	1~2.5	1~2.5	1~2.5

Pneumatic timer



Air pressure timer



Combination with MC

It is attached to the head-on of the magnetic contactor. It uses the principle of air pressure and it is delayed by the set time after the magnetic contactor is inserted and released and then the auxiliary contact of the Pneumatic timer is reversed

UN – 1 N

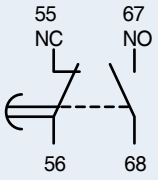
Time delay range	
1	0.1 ~ 3s
2	0.1 ~ 30s
3	10 ~ 180s

Timer Type	
N	ON delay
F	OFF delay

Note) Applicable MC: MC-6a ~ 100a, MC-9b ~ 22b, AC operation voltage

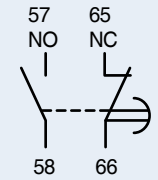
Type		MC-6a~100a / MC-9b~22b					
		UN-1N	UN-2N	UN-3N	UN-1F	UN-2F	UN-3F
Standards		IEC60947-5-1, GB14048.5					
Certification		CCC, CE					
Degree of protection		IP20					
Temperature range	Storage	-25℃ ~ +60℃					
	Operation	-5℃ ~ +40℃					
Altitude		2,000m less					
Poles		1NO + 1NC					
Rated operating voltage		690V					
Rated insulation voltage		690V					
Frequency		50/60Hz					
Rated operation current(Ie)		A600(AC-15), Q600(DC-13)					
Ith(thermal Current)		10A					
Minimum switching current		10mA					
Irms rated making capacity		10 x Ie AC-15 acc. to IEC 60947-5-1					
Non overlap time		1.5ms					
Setting time		0.1~3s	0.1~30s	10~180s	0.1~3s	0.1~30s	10~180s
Operating time tolerance		±50% less					
Mechanical durability		2.5 mil. operations					

On Delay Timer Block(UN-N)



0.1~3s
0.1~30s
10~180s

Off Delay Timer Block(UN-F)



0.1~3s
0.1~30s
10~180s

Accessory

Mechanical latch unit ML, AL



Mechanical latch unit　　Contactor　　Combined



ML-65



Ratings

Applying contactors	Type	Coil voltage of latch unit
MC-6a/L MC-9a/L MC-12a/L MC-18a/L MC-9b/L MC-12b/L MC-18b/L MC-22b/L MC-32a/L MC-40a/L MC-50a/L MC-65a/L	ML-65	
MC-75a/L MC-85a/L MC-100a/L MC-130a/L MC-150a/L	ML-150	
MC-185a/L, 225a/L	AL-225	
MC-265a/L, 330a/L, 400a/L	AL-400	

Ordering voltage	Operation voltage
AC 24V/ DC 24V	AC 24V 50/60Hz, DC 24V
AC 48V/ DC 48V	AC 48V 50/60Hz, DC 48V
AC 100V/DC 100V	AC 100~127V 50/60Hz, DC 100V~125V
AC 200V/DC 200V	AC 200~240V 50/60Hz, DC 200V~220V
AC 400V	AC 380V~440V 50/60Hz

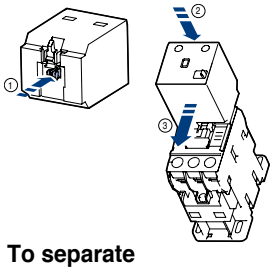
* Coils for 24, 48, 100, 200V are AC / DC common.

Ordering voltage	Operation voltage
AC 100V	AC 100~127V 50/60Hz, DC 100~110V
AC 200V	AC 200~240V 50/60Hz, DC 200~220V

* For using safely the product providing DC control power, Please consider that the maximum switching frequency should be less than 150 times/hour.

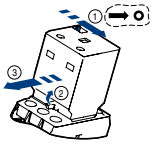
Note) Latch units for upto MC-150 are supplied seperately. From MC-185 the units are assembled at factory.

To install



1. Push the black bar
2. Position the Latch on the top of the contactor
3. Pull in the direction of the arrow until snapping

To separate



1. Pull the black lever in the direction of the arrow.
2. Pull up the yellow lever.
3. Push the latch in the direction of the arrow.

Delayed opening devices, AD





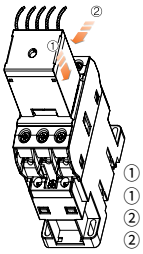
Delayed opening device prevents the inadvertent opening of a contactor in the event of a wide voltage drop or brief supply voltage interruptions of control power for 1 to 7 seconds.

Applying contactors	Type	Rated voltage	MC Rated voltage	Durability		Performance
				Mechanical	Electrical	
MC-6a~18a	AD-9	AC 110V	DC 110V	5 mil operations	1 mil operations	• Making/Breaking capacity at AC3 - Making current : min. 10xIn - Breaking current : min. 8xIn • Max. operating rate : 600 operations/hour • Delaying time : 1~7sec. • Capacitor durability 1) Operation :> 0.1 mil. operations 2) Cumulative charge life at AC 200/220V - 45℃ or less: 80,000 hours - 50℃ or less: 60,000 hours
MC-9b~22b		AC 220V	DC 220V			
MC-32a~40a	AD-32	AC 110V	DC 110V			
		AC 220V	DC 220V			
MC-50a~100a	AD-50	AC 110V	DC 110V			
		AC 220V	DC 220V			
MC-130a~225a	AD-100	AC 100~240V	AC/DC 100~240V		0.5 mil operations	
MC-265a~400a	AD-300	AC 100~240V	AC/DC 100~240V			
MC-500a~800a	AD-600	AC 100~127V	AC/DC 100~127V			
		AC 200~240V	AC/DC 200~240V			

* AD shall ve used for DC type contactor

Electronic timer unit, UT





① Insult to ① way
② Push to ② way and assemble

Applying contactors		Type	Rated voltage	Performance
MC-6a~150a MC-9b~22b MR-4~8	On delay	UT-1N	AC/DC 24~48V	• Mounting: Head on • Contact: 1c • Time delay: 1 Sec~30 Sec On delay, Off delay • Frequency: AC 50/60Hz • Operation: Min. voltage 85%, Max. voltage 110% • Accuracy of setting time: ±20%
		UT-2N	AC 110~220V	
	Off delay	UT-1F	AC/DC 24~48V	
		UT-2F	AC 110~220V	

Terminal cover units for contactors, AP



Applying contactors	Type				Remarks
	Standard		Transparent		
MC-6a,9a,12a,18a (18AF)	AP-18	Included	-	Option	2 pcs required per contactor
MC-9b,12b,18b,22b (22AF)	AP-22		AP/T-9		
MC-32a,40a (40AF)	AP-40		AP/T-32		
MC-50,65a (65AF)	AP-65		AP/T-50		
MC-75a,85a,100a (100AF)	AP-100		AP/T-75		
MC-130a,150a (150AF)	AP-150		AP/T-130		
MC-185a,225a (225AF)	AP-220	Option	AP/T-185		
MC-265a,330a,400a (400AF)	AP-400		AP/T-265		
MC-500a,630a,800 (800AF)	AP-800		AP/T-500		

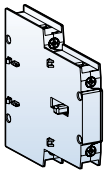
Insulation barrier units, AI



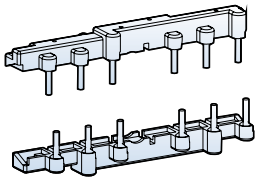
Applying contactors	Type	Remarks
MC-130a, 150a	AI-180	4 pcs required per contactor
MC-185a, 225a		
MC-265a, 330a, 400a		
MC-500a, 630a, 800a, 1260a	AI-800	
MC-1400a, 1700a, 2100a	AI-2100	
MC-2650a, MCi-1700, 2100, 2650	AI-2650	
MCi-900, 1050, 1260	AI-1260	

* The insulation barrier for MC-150a is available on the screw type only.

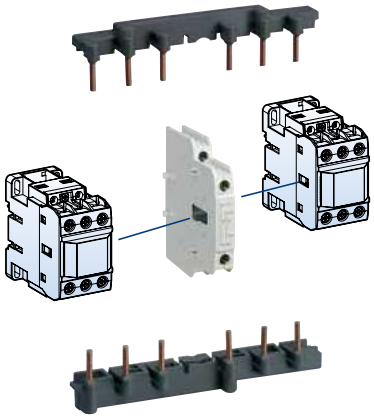
Accessory



Interlock unit



Wire kit



Interlocks

Component parts for assembling by customer

Interlock unit, UR-02 and AR-9 & Wire kit UW

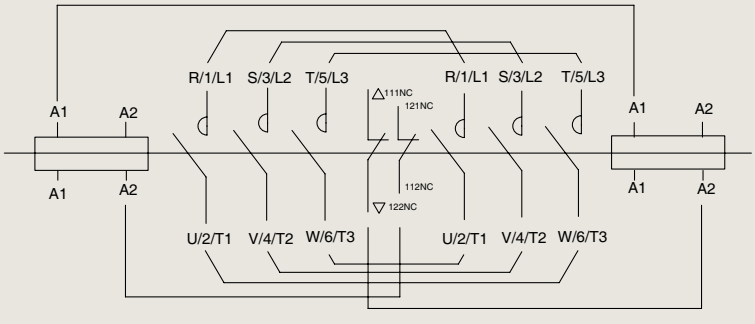
UR-02 is a mechanical interlock unit and provides 2NC contacts for use in electrical interlocking

UW is used for making reversing circuit between two contactors.

Contactor	Pole	Wire kit		Interlock unit		Aux Contact
		Type	Weight	Type	Weight	
MC-6a~18a	3P	UW-18	0.05kg	UR-02	0.06kg	2NC
	4P	-	-			
MC-9b~22b	3P	UW-22	0.04kg			-
MC-32a~40a		UW-32	0.05kg			-
MC-50a, 65a		UW-63	0.12kg			-
MC-75a~100a		UW-95	0.33kg			-
MC-130a~150a		-	-			-
MC-22a~85a	4P	-	-	AR-9	0.05kg	-

Rating of the contacts in the interlocks

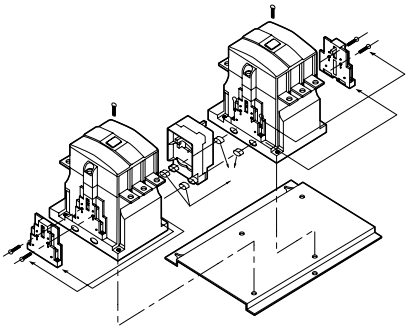
Rated operation voltage		600V
Rated insulation voltage		1000V
Rated frequency		50/60Hz
Rated thermal current		16A
Rated operation current		
AC15 duty	120V	6A
(A600)	240V	3A
	380V	1.9A
	480V	1.5A
	500V	1.4A
	600V	1.2A
DC13 duty	125V	0.55A
(Q300)	250V	0.27A



<MC-6aR ~ MC-150aR typical circuit diagram for reversing contactor>



AR-180





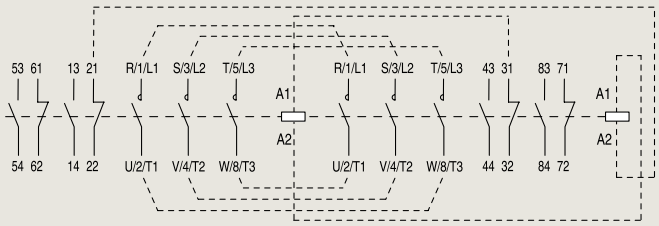
AR-600 & AR-600/V

Interlock unit, AR-180 and AR-600

AR-180 and AR-600 are mechanical interlock units in which electrical contacts for use in electrical interlocking are not included. Please use the auxiliary contacts on the sides of the contactors for that purpose.

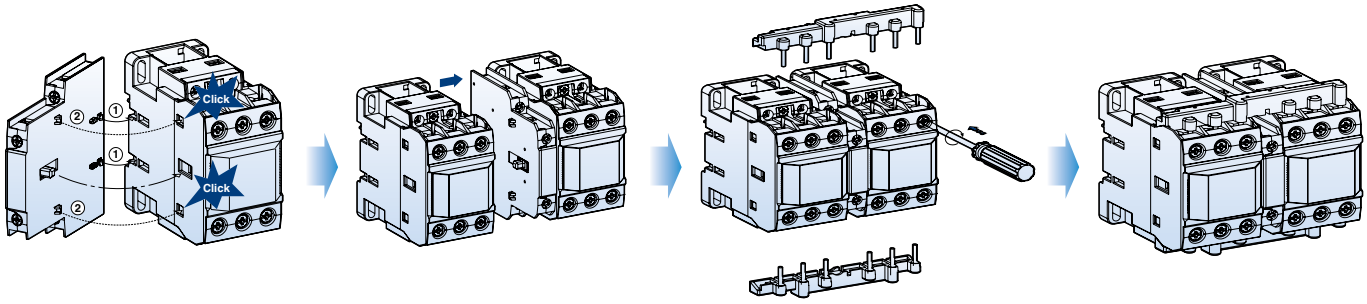
Contactor	Pole	Interlock unit	
		Type	Weight
MC-100a	4P	AR-180	0.09kg
MC-130a			
MC-150a			
MC-185a	3,4P		
MC-225a			
MC-265a			
MC-330a			
MC-400a			
MC-500a	3,4P	AR-600 AR-600/V	15.2kg
MC-630a			
MC-800a			

*AR-600 3pole product is different fro, AR-600 4pole product in size.
*The AR-600 / V is a vertical interlock unit.



<MC-180aR ~ MC-800aR typical circuit diagram for reversing contactor>

Installation of Interlock and Wire kits



Install the interlock unit on the side of a contactor first. Fit each part as indicated in the fig.

And then install the other contactor on the other side of the interlock unit as shown.

After installing interlock unit wiring kit can be assembled.
Wiring kit contains two molded wires - one for line side and the other for load side.
- In case of assembling Reversing contactor, please check the R, S, T/U, V, Wmark on the contactor and Wire kit.

Accessory

Surge unit



US Type



AS Type

It absorbs the surge arisen out of the coil of the contactor.
It can be installed simply to the contactor.
- Rated operation voltage (Ue): AC 24 ~ 440V / DC 24 ~ 125V
- Rated insulation voltage (Ui): 1000V
- Rated impulse withstand voltage (Uimp): 8kV
- Degree of protection: IP20
- Combination with 3Pole 6a/3~150a/3, 4Pole 32a/4~85a/4

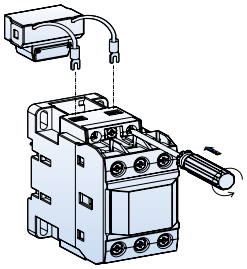
US Type

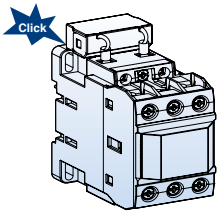
Surge unit		Rated voltage		Internal elements spec.			Contactor
Type	Composition			V	R	C	
US-1	Varistor+RC	AC	24~48V	120V	100Ω	0.1μF	3Pole MC 6a~150a 9b~22b 4Pole MC 6a/4~18a/4
US-2	Varistor+RC		100~125V	270V	100Ω	0.1μF	
US-3	Varistor+RC		200~240V	470V	100Ω	0.1μF	
US-4	Varistor+RC	DC	24~48V	120V	100Ω	0.47μF	
US-5	Varistor+RC		100~125V	270V	100Ω	0.47μF	
US-6	Varistor+RC		200~220V	470V	100Ω	0.47μF	
US-11	Varistor	AC/DC common	24~48V	120V	-	-	
US-12	Varistor		100~125V	270V	-	-	
US-13	Varistor		200~240V	470V	-	-	
US-14	Varistor		380~440V	1000V	-	-	
US-22	RC	AC	100~125V	-	56Ω	1μF	

AS Type

Surge unit		Rated voltage		Internal elements spec.			Contactor
Type	Composition			V	R	C	
AS-1	Varistor+RC	AC	24~48V	120V	100Ω	0.1μF	3Pole MC 185a~800a 4Pole MC 22a/4~800a/4
AS-2	Varistor+RC		100~125V	270V	100Ω	0.1μF	
AS-3	Varistor+RC		200~240V	470V	100Ω	0.1μF	
AS-4	Varistor+RC	DC	24~48V	120V	100Ω	0.47μF	
AS-5	Varistor+RC		100~125V	270V	100Ω	0.47μF	
AS-6	Varistor+RC		200~220V	470V	100Ω	0.47μF	
AS-11	Varistor	AC/DC common	24~48V	120V	-	-	
AS-12	Varistor		100~125V	270V	-	-	
AS-13	Varistor		200~240V	470V	-	-	
AS-14	Varistor	AC	380~440V	1000V	-	-	

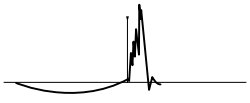
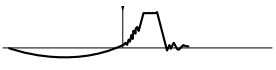
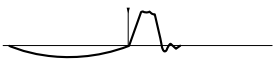
Installation (US Type)





Connect the lead wires to the coil terminals of the contactor first. And then insert the body into the space of the contactor as shown above.

Specitication of surge unit

Without surge unit	① With Varistor unit	② With CR+Varistor unit
Surge voltage, arise when the coil is off, may provoke mis-operation and damage in the circuit. 	Varistor has an effect to cut down the peak voltage 	Varistor has an effect to cut down the peak voltage and high frequency wave 

Capacitor unit



Capacitor unit is connected to the terminals of the contactor to reduce the high inrush current.
IEC 60947-5-1

Type (AUX Contact 1b)				AC-9 (1b)	AC-50 (1b)	AC-75 (1b)
Rating thermal current (Ith)				16A	16A	16A
Current	AC-15	Rated Operational Current (A)	120V	6	6	6
			240V	3	3	3
			380V	1.9	1.9	1.9
			480V	1.5	1.5	1.5
			500V	1.4	1.4	1.4
			600V	1.2	1.2	1.2
	DC-13	Rated Operational Current (A)	125V	0.55	0.55	0.55
			250V	0.27	0.27	0.27
			400V	0.15	0.15	0.15
			500V	0.13	0.13	0.13
			600V	0.1	0.1	0.1

Features of capacitor unit (Pre-loading resistor)

- Damping resister that can limit the inrush current upto 60×In is connected to the mechanism that closed earlier than the main contact of the contactor
- No heat loss by the serial resistor
- Eliminate the switching surge
- Improving the performance of the capacitor system

Operation sequence

Capacitor unit: OFF
Contactor: OFF

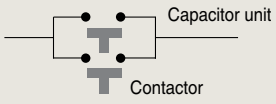


Fig.1

Capacitor unit: ON
Contactor: OFF

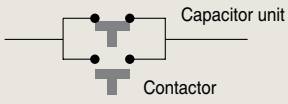


Fig.2

Capacitor unit: OFF
Contactor: ON

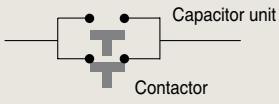


Fig.3

Note) Closing sequence: Fig.1 => Fig.2 => Fig.3
Opening sequence: Fig.3 => Fig.1

Accessory

Replacement coils







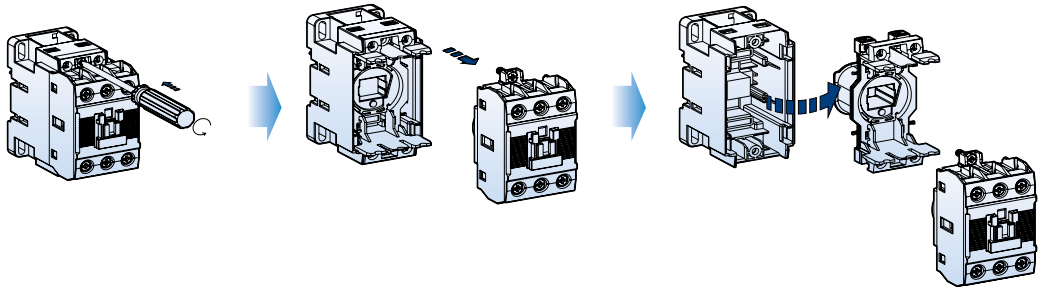




To replace the existing coil to change voltage or repair.

Contactor	Coil voltage							
	AC coil						DC coil	
	AC 60Hz (V)		AC 50Hz (V)		AC 50/60Hz (V)		DC (V)	
MC-6a MC-9a MC-12a MC-18a MR-4, 6, 8	24 48 100 110 120 200 208 220	230 240 277 380 440 480 600	24 36 42 48 80 100 110 220	230 240 380 400 415 440 500 550	24 48 100 110 120 200 220 230	240 380 415 440 500 550	-	
MC-9b MC-12b MC-18b MC-22b	24 48 100 110 120 200 208 220	230 240 277 380 440 480 600	24 36 42 48 80 100 110 220	230 240 380 400 415 440 500 550	24 48 100 110 120 200 220 230	240 380 415 440 500 550	-	
MC-32a MC-40a	24 48 100 110 120 200 208 220	230 240 277 380 440 480 600	24 36 42 48 80 100 110 220	230 240 380 400 415 440 500 550	24 48 100 110 120 200 220 230	240 380 415 440 500 550	12 20 24 48 60 80 100	110 125 200 220 250
MC-50a MC-65a	24 48 100 110 120 200 208 220	230 240 277 380 440 480 600	24 36 42 48 80 100 110 220	230 240 380 400 415 440 500 550	24 48 100 110 120 200 220 230	240 380 415 440 500 550	12 20 24 48 60 80 100	110 125 200 220 250
MC-75a MC-85a MC-100a	24 48 100 110 120 200 208 220	230 240 277 380 440 480 600	24 36 42 48 80 100 110 220	230 240 380 400 415 440 500 550	24 48 100 110 120 200 220 230	240 380 415 440 500 550	12 20 24 48 60 80 100	110 125 200 220 250
MC-130a MC-150a	-		-		24 48 24~48 100~240 110~120	220~240 300 380~440 500	24 48 24~48 70~110 100~220	110 220

Replacement process





To replace the existing coil to change voltage or repair.

Contactor	Coil voltage	
	AC/DC common coil (V)	AC coil (V)
MC-185a MC-225a	24 48 100~240/100~220	300 400 500
MC-265a MC-300a MC-400a	DC 24 100~240/100~220	300 400 500
MC-500a MC-630a MC-800a MCi-900 MCi-1050	100/100 200/200	300 400 500
MC-1260 MCi-1260	100~240/100~220	-
MC-1400a MC-1700a MC-2100a MC-2650a MCi-1700 MCi-2100 MCi-2650	100~240/100~220	-

Safety cover (Option)

To prevent arc from coming out from the contactor
To protect from unintended manual operation
To prevent dust from entering into the inside of the contactor

Type	Contactor
AP-9	MC-6a~150a
AP-185	MC-185a~800a

