MAGNETIC CONTACTORS

MAGNETIC SWITCHES

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KEYMAX INDUSTRY Co., Ltd

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As Industrial Solution Partner,
We provide New power grid services with high quality of trust and safety to our customers.

Designated as an Innovative Small-or-Medium Sized Enterprise.

Won an Award for Excellent Businessman of Small-or-Medium-Sized Enterprise granted by prime minister.

Won a Prime Minister's Award at the Contest to Promote Safety Management Held by Korea Electrical Safety Corporation.

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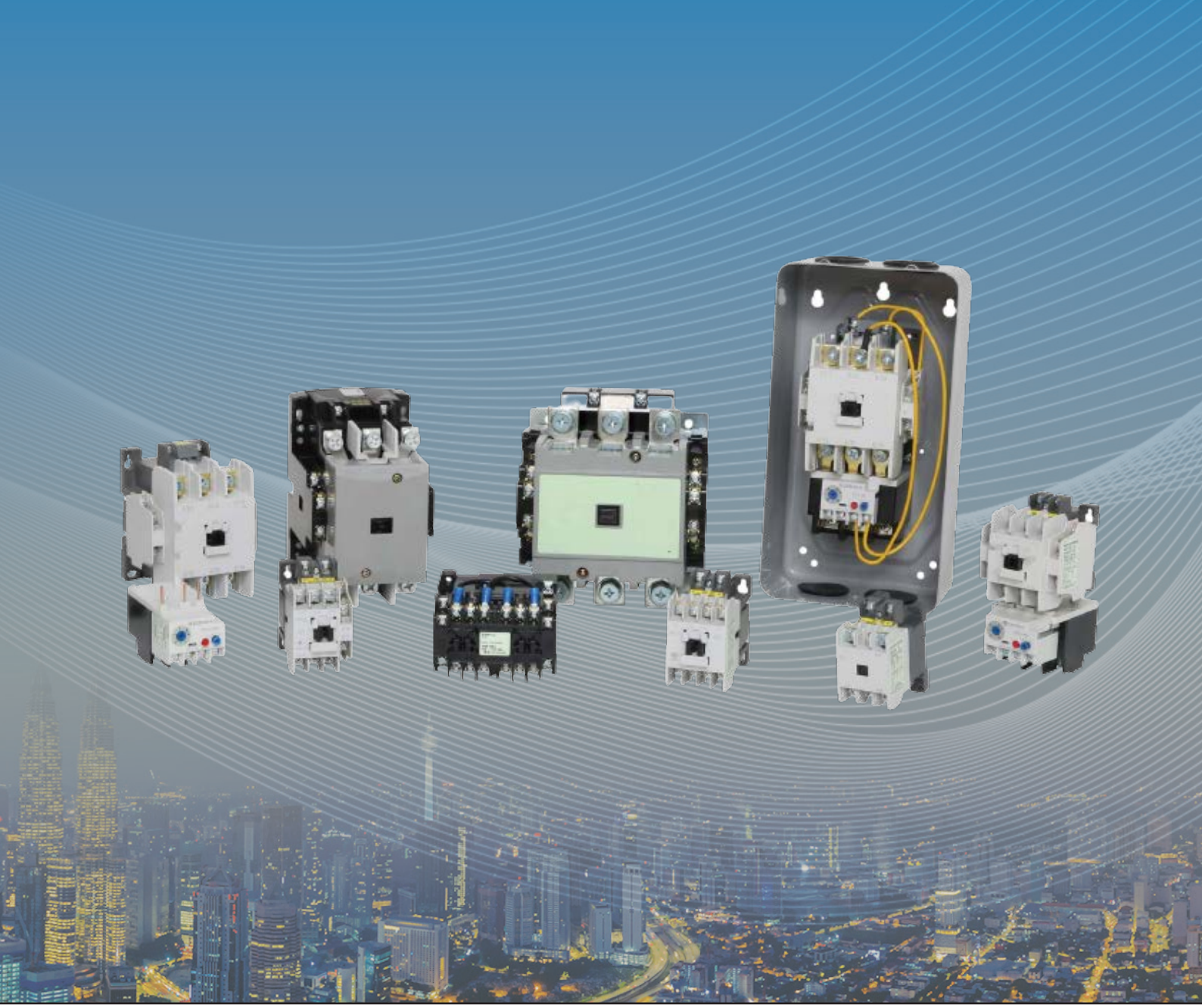

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Magnetic Contactors / Switches

• Table of Specifications

Frame Type				12AF	22AF				48AF		
Model				KMC12	KMC9b	KMC12b	KMC18b	KMC22b	KMC32b	KMC40b	KMC48b
Number of Pole(Pole)				4Pole	3Pole				3Pole		
Rated Current Voltage(Ue)				690V	690V				690V		
Rated Insulation Voltage(Ui)				690V	690V				690V		
Rated Frequency				50/60Hz	50/60Hz				50/60Hz		
Rating	AC 3	operations per hour		1,800	1,800				1,800		
Durability	Mechanical(10,000times)			1,500	1,500				1,200		
	Electrical(10,000times)			250	250				200		
Rated Impulse Voltage(Uimp)				6kV	6kV				6kV		
Continuous Current	AC 1(Ith)	A		25	25	25	40	40	50	60	70
3 Phase Squirrel Cage Motor	AC 3	200/240V	kW	3.5	2.5	3.5	4.5	5.5	7.5	11	11
			A	13	11	13	18	22	32	40	48
		380/440V	kW	5.5	4	5.5	7.5	11	15	18.5	18.5
			A	12	9	12	18	22	32	40	45
		500/550V	kW	7.5	4	7.5	7.5	15	18.5	22	22
			A	12	7	12	13	22	28	32	40
		690V	kW	7.5	4	7.5	7.5	15	18.5	22	22
			A	9	5	9	9	18	20	23	25
	AC 4	200/240V	kW	2.2	1.5	2.2	3.7	3.7	4.5	5.5	7.5
			A	11	8	11	18	18	20	25	30
		380/440V	kW	4	2.2	4	4	5.5	7.5	11	11
			A	9	6	9	9	13	17	24	28
SIngle Phade Motor		110V	kW	0.5	0.4	0.5	0.75	0.9	1.2	1.7	-
			A	13	11	13	18	20	26	35	-
		220V	kW	1	0.8	1	1.5	1.8	-	-	-
			A	13	11	13	18	20	-	-	-
Resistance Load (DC1)	2-Pole Serial	110V	A	10	6	10	13	15	25	25	35
		220V	A	7	3	7	8	12	12	12	15
	3-Pole Serial	110V	A	12	8	12	18	20	25	35	50
		220V	A	12	8	12	18	20	22	30	40
External Dimension (mm)	AC Operation Type			44x78x86.7	44(55)x78x86.7 Auxiliary Contact(2a2b)				66 x 81.5 x 94.5		
	DC Operation Type			44x78x119.2	44(55)x78x119.2 Auxiliary Contact(2a2b)				66 x 81.5 x 127		
Installation Dimension(mm) (Width x Length)				30~35 x 48~59.35 x 60					30~35 x 48~59 , 35 x 60		
Installation Method				For both screw and DIN rail installation					For both screw and DIN rail installation		
External Operation Handle(surface type)				1a or 1b	1a1b				2a2b		
Auxiliary Contact		Side-On		DAU2Sb					-		
		Head-on		DAU2b, DAU4b					DAU2b, DAU4b		
Screw Size(Main Terminal)				M3.5					M5		
Thermal Overload Relay	Standard Type			DTH22b					DTH40		
Rating Current				0.52 ~ 22A					4~50A		
Thermal Overload Relay(WxHxD)mm				43 x 72 x 91					54 x 75.5 x92		
Standard	KS C IEC 60947-4-1			●	●				●		
Certification	Safety Electricity(KC)			●	●				●		
	CE / TUV			●	●				●		
	Korean Registeration(KR)			●	●				●		

85AF				150AF			220AF		
KMC50	KMC65	KMC75	KMC85	KMC100	KMC125	KMC150C	KMC150	KMC180	KMC220
3Pole				3Pole			3Pole		
690V				690V			690V		
690V				690V			690V		
50/60Hz				50/60Hz			50/60Hz		
1,200				1,200			1,200		
1,000				500			500		
150				100			100		
6kV				6kV			6kV		
80	100	110	135	150	150	180	200	230	260
15	18.5	22	25	30	37	45	45	55	75
55	65	75	85	105	125	150	150	180	250
22	30	37	45	55	60	75	75	90	132
50	65	75	85	105	120	150	150	180	250
30	33	37	45	55	60	90	90	110	132
43	60	64	75	85	90	140	140	180	200
30	33	37	45	55	60	90	90	110	132
28	35	42	45	65	70	100	100	120	150
7.5	11	13	15	19	22	30	30	37	45
35	50	55	65	80	93	125	125	150	180
15	22	25	30	37	45	55	55	75	90
32	47	52	62	75	90	110	110	150	180
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
35	35	50	50	80	80	100	100	150	150
15	15	20	20	50	50	100	100	150	150
50	65	70	80	100	100	150	150	180	220
40	50	55	60	80	80	150	150	180	220
94 x 114.5 x 118				102 x 160 x 144.5			154 x 170 x 170		
-				-			-		
70~86 x 75~90				88~90 x 92~125			120 x 120		
For both screw and DIN rail installation				For screw installation			For screw installation		
2a2b				2a2b			2a2b		
-				-			-		
DAU2b, DAU4b				-			-		
M6	M8			M8			M10		
DTH85				HRD150			HRD180	DTH220	
7~85A				34~155A			65~185A	65~240A	
70x 87 x 102.5				124 x 60 x 97			129 x 84 x 97	154x114x180	
●				●			●		
●				●			●		
●				●			●		
●	●	–	●	●			●		

• Characteristics of AC Coil

(AC 220V 60H Standard)

Model	Electromagnet Capacity(VA)		Thermal Dissipation(W)	Operating Voltage(V)		Coil Current (mA)	Tripping Time(ms)	
	Inrush	Holding		Pick-up	Drop-out		Coil ON → Main Contact ON	Coil OFF → Main Contact OFF
KMC12, 9b, 12b, 18b, 32b	90	8.5	2	145~160	105~120	38	11~18	7~12
KMC32b, 40b, 48b	90	8.5	2	150~165	110~130	38	12~19	8~13
KMC50, 65, 75, 85	250	22	6.4	145~160	105~120	99	15~20	8~15
KMC100, 125, 150C	450	15	5.6	135~150	100~115	65	30~35	90~120
KMC150, 180, 220	600	18	6	135~150	105~120	80	30~35	90~120

⚠ Data above is on Average rate

• Characteristics of DC Coil

(DC 110V Standard)

Model	Electromagnet Capacity[VA]		Thermal Contact [ms]	Operating Voltage		Coil Current (mA)	Operating Time[ms]	
	Inrus	Holding		Pick-up	Drop-out		Coil ON → Main Contact ON	Coil OFF → Main Contact OFF
KMD9b ~ 22b	8	8	50	60~80	15~35	80	40~50	7~17
KMD32b ~ 48b	8	8	50	60~80	15~35	80	40~50	7~17

⚠ Data above is on average rate
⚠ There are no polarity configuration of coil terminal

• Auxiliary Contact Ratings

Model	Rated Operation Current (A)																Rated Thermal Current Ith (AC1)
	AC15(11) (Inductive Load on AC)				DC13(11) (Inductive Load on DC				AC12(14) (Resistive Load on DC)				DC12(14) (Resistive Load on DC)				
	120V	240V	480V	600V	125V	250V	440V	600V	110V	220V	440V	550V	24V	48V	110V	220V	
KMC9b~85	6	3	1.5	1.2	3	1.5	0.55	0.27	10	8	5	5	5	3	2.5	1	16
KMC100~220	6	5	3	3	6	3	1.2	0.2	10	10	5	5	5	3	1.5	0.25	16

• Contact Arragement

Model	Standard Contacts	Option
KMC(D)9b~22b	1a1b	Note 1) 4a, 3a1b, 2a2b, 1a3b Note 2) 2a, 1a1b Note 3) 1a1b
KMC(D)32b~48b / DMC50~85	2a2b	Note 1) 4a, 3a1b, 2a2b, 1a3b Note 2) 2a, 1a1b
KMC100~220	2a2b	-

Note 1) Options are for the case that auxiliary units are attached(DAU4b)
Note 2) Options are for the case that auxiliary units are attached(DAU2b)
Note 3) Options are for the case that auxiliary units are attached(DAU2Sb)

• Operation

- AC Operation

Designation	Voltage Range	Designation	Voltage Range
AC24V	24V 50Hz 24V 60Hz	AC48V	48V 50Hz 48V 60Hz
AC110V	100V 50Hz 100~110V 60Hz	AC120V	110~120V 50Hz 115~120V 60Hz
AC220V	200V 50Hz 200~220V 60Hz	AC240V	220~240V 50Hz 230~240V 60Hz
AC380V	346~360V 50Hz 380V 60Hz	AC440V	380~400V 50Hz 400~440V 60Hz
AC480V	415~440V 50Hz 460~480V 60Hz		

Designation	Voltage Range
AC110V	100~127V 50Hz 100~127V 60Hz
AC220V	200~240V 50Hz 200~240V 60Hz
AC380V	380~440V 50Hz 380~440V 60Hz

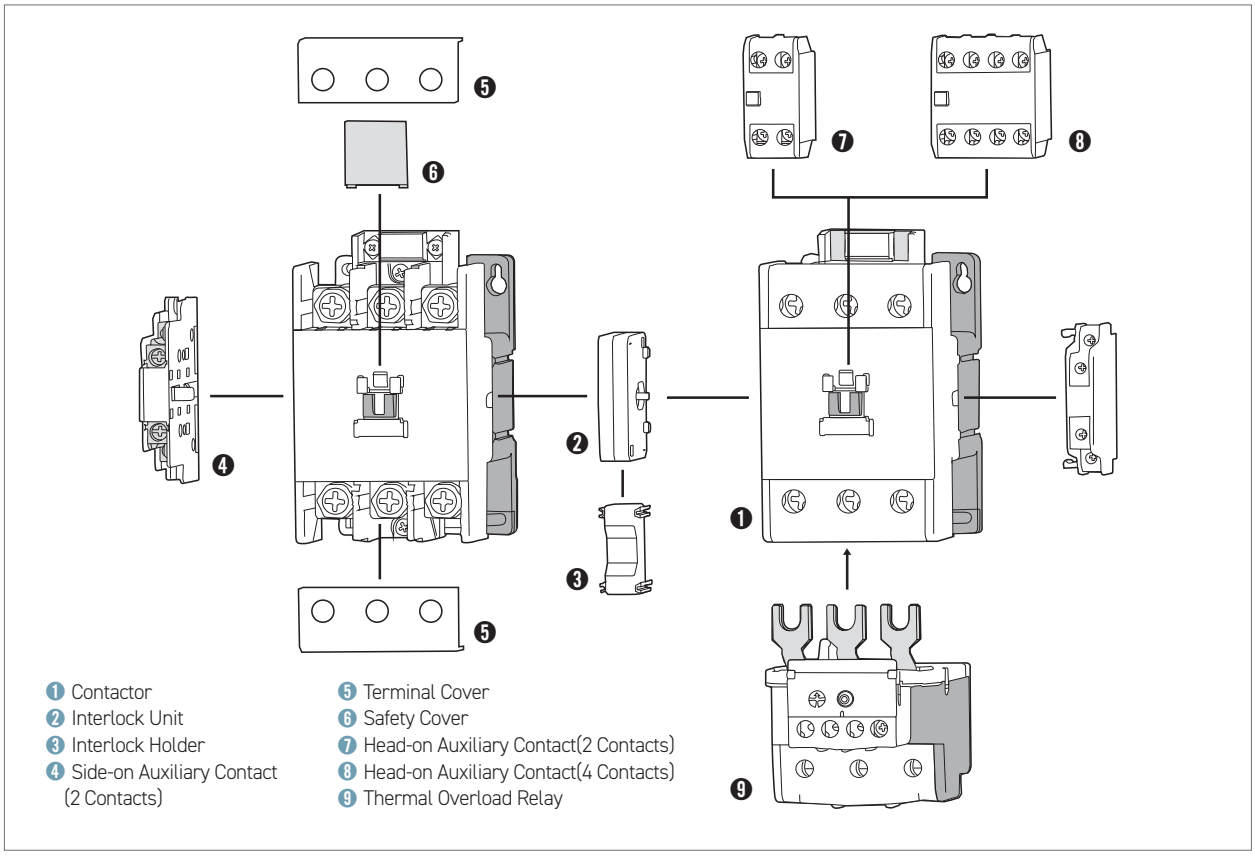
※Applying Contactors : DMC100 ~ 220

⚠ Designation is the symbol for ordering. Please make sure to check the voltage range by designation.
⚠ When the operating coil is in the energized state by applying the coil's rated voltage and frequency at the ambient temperature of 40℃, an operating tolerance between 85~110% of the coil's rated voltage is permitted.
⚠ Operation out with the above may cause deterioration to electrical insulation and mechanical operation.
※Applying Contactors : DMC9b~85, DMH10~20, DMC20A~DMC25C, MUF25~35, DMC20P2~40P2, DAR4b~8b

- DC Operation

(KMD9b~KMD48b)

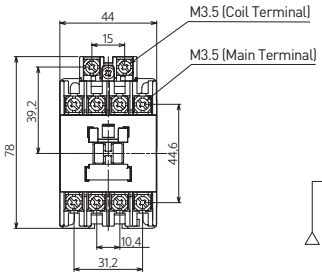
Designation	DC	12V, 24V, 48V, 60V, 110V, 125V, 200V, 220V, 250V

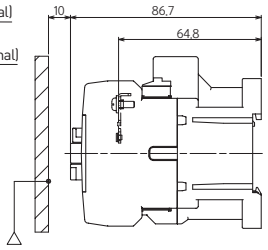


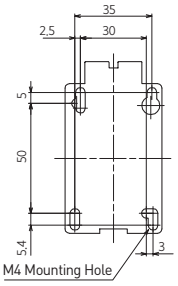
• External Dimensions and Contact Configuration
_ Standard AC Magnetic Contactors

Model	External Dimensions	Installation Dimensions

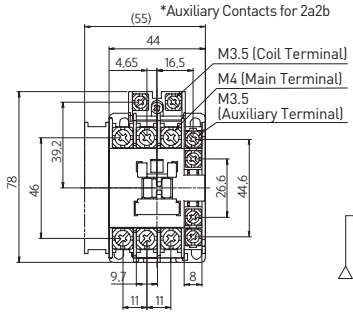
KMC12

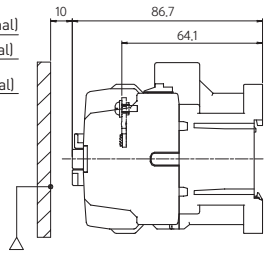


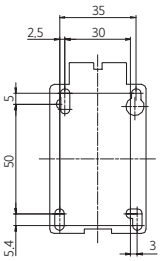




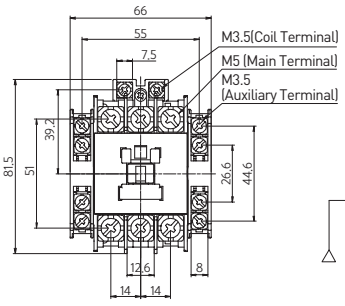
KMC9b
KMC12b
KMC18b
KMC22b

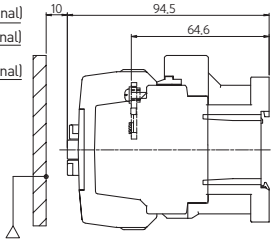


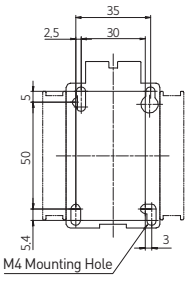




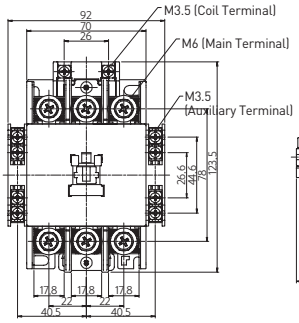
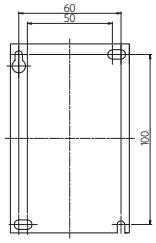
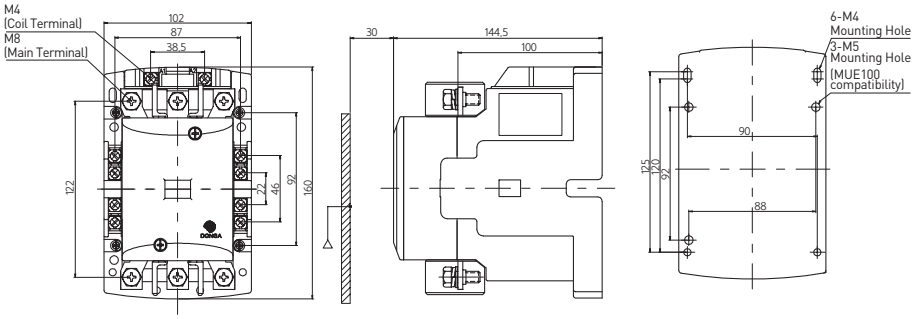
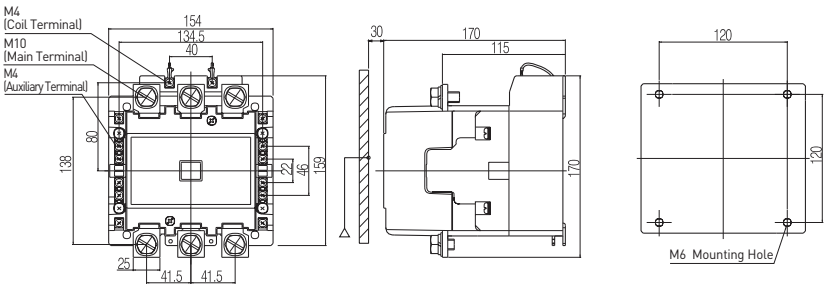
KMC32b
KMC40b
KMC48b

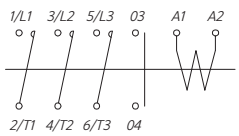
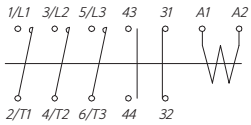
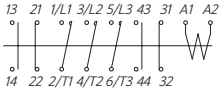
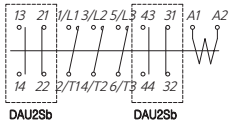
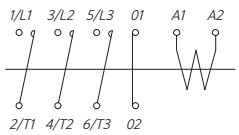






• External Dimensions and Contact Configurations
_ Standard AC Magnetic Contactors

Model		External Dimensions	Installation Dimensions
KMC50 KMC65 KMC75 KMC85			
KMC100 KMC125 KMC150C			
KMC150 KMC180 KMC220			

Type	KMC12		KMC9b ~ 22b	KMC32b ~ 48b	KMC50 ~ KMC220
Contact Configu -ration	1a (Standard)				
	1b (Option)				

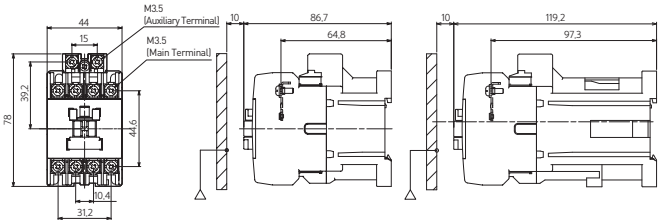
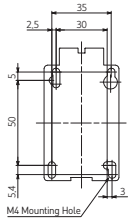
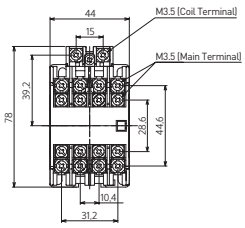
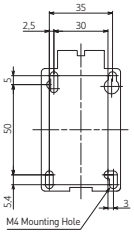
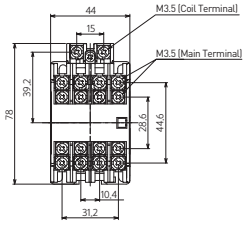
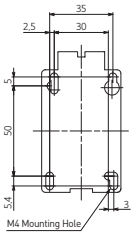
Contactor Relays Specfication

- Increased contact reliability by use of pure silver contact exclusively.
- Mechanical endurance is more than 10 mil. times and for electrical, it guarantees more than 0.5 to 1 mil. times according to the rated currents.
- 35mm DIN-Rail mounting is available for all types.

• Rating

Model			KAR(D)4b	KAR(D)6b	KAR(D)8b
Contact Configuration			4a, 3a1b, 2a2b, 1a3b, 4b	6a, 5a1b, 4a2b, 3a3b, 2a4b	8a, 7a1b, 6a2b, 5a3b, 4a4b
Rated Insulation Voltage(Ui)			690v		
Rated Thermal Current(AC1) Ith(A)			16A		
AC	Category		AC15(11)(Inductive load)		AC12(13)(Resistive load)
	Rated Current(A)	AC100V	6		10
		AC220V	3		8
		AC440V	1.5		5
		AC550V	1.2		5
	Making Breaking Current(A)	AC100V	66		66
		AC220V	33		33
		AC440V	16.5		16.5
		AC550V	13.2		13.2
DC	Category	AC220V	DC13(11)(Inductive load)		DC12(14))(Resistive load)
	Rated Current (A)	DC24V	3		5
		DC48V	1.5		3
		DC110V	1.1		2.5
		DC220V	0.55		1
	Making Breaking Current (A)	DC24V	3.7		-
		DC48V	1.8		-
		DC110V	1.4		-
		DC220V	0.7		-

• External Dimension and Contact Configuration
_ Contactor Relays

Model	External Dimensions	Installation Dimensions
KAR4b KARD4b		
KAR6b KAR8b		
KARD6b KARD8b		

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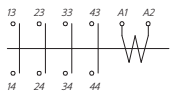
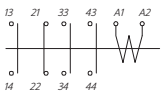
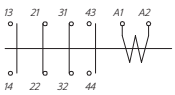
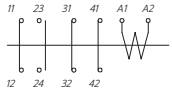
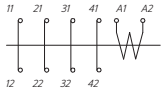
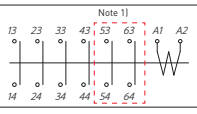
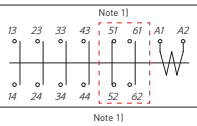
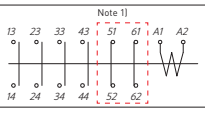
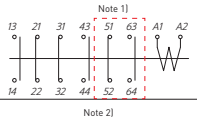
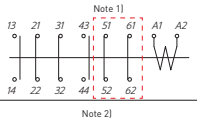
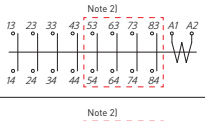
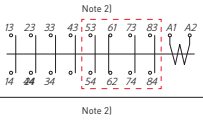
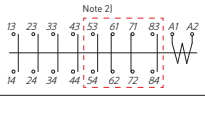
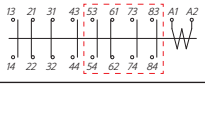
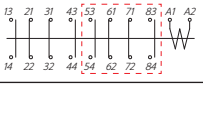
KAR(D)4b	4a		3a1b		2a2b	
	1a3b		4b			
KARD)6b	6a		5a1b		4a2b	
	3a3b		2a4b			
KAR(D)8b	8a		7a1b		6a2b	
	5a3b		4a4b			

Magnetic Contactors for Devices

3 Phase Magnetic Contactors

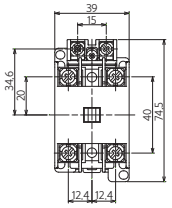
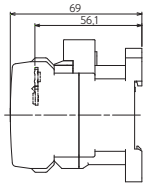
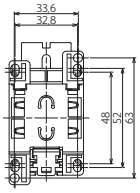
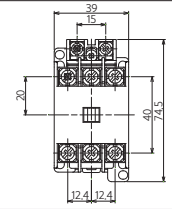
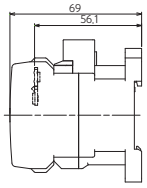
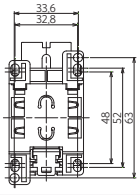
· The 3 Phase Magnetic Contactor is a compact, lightweight, economical magnetic contactor that is used in closed use of motor control and lighting equipment such as air conditioners, freezers, showcases, vacuum cleaners, electric water heaters, dryers, air conditioners, pumps, compressors, etc.

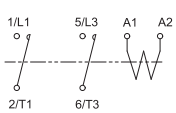
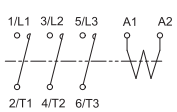
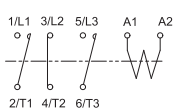
· Minimized mounting space due to smaller design
· Diversification of products with various contact configuration

• Rating

Model		KMC20A	KMC25A	KMC32A	KMC20C	KMC25C	KMC32C
Number of Poles		2	2	2	3	3	3
Rating Thermal Current(AC1) Ith(A)		30	40	50	30	40	50
Rating Current(AC3)	AC220V	20	25	30	20	25	30
	AC440V	17	21	26	17	21	26
Full Load Current Motor	1ø110V	0.9	1.2	2.2	0.9	1.2	2.2
	1ø220V	1.8	2.2	5.5	1.8	2.2	5.5
	3ø220V	4	5.5	9.5	4	5.5	9.5
Rated Voltage(V)		24~440V			24~440V		
Contact Configuration		2A			3A, 2A1b		
Weight(kg)		0.23			0.25		

• External Dimension and Contact Configuration

Model	External Dimensions	Installation Dimensions
KMC20A KMC25A KMC32A	 	
KMC20C KMC25C KMC32C	 	

Contact Configuration	2a		3a		2a1b	

Single Phase Magnetic Contactors

· The Single Phase Magnetic Contactor is a compact, lightweight and economical that is widely used for motor control of air conditioners, refrigerators, showcases, industrial vacuum cleaners, electric water heaters, dryers, air conditioners, pumps, compressors, etc. and opening and closing of heaters and lighting equipment.

· Minimized mounting space due to compact and lightweight
· Expanding the scope of application by diversifying models with the same size
· Noise improvement compared to existing products with sealed structure
· Rated current: 10, 20, 25, 35, 40A (based on AC 220V)

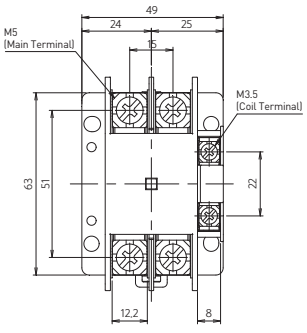
• Rating

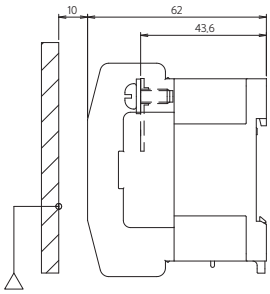
Model		KMC-10P2	KMC-20P2	KMC-25P2	KMC-30P2	KMC-35P2	KMC-40P2
		10A	20A	25A	30A	35A	40A
Number of Poles		2	2	2	2	2	2
Rated Thermal Current(AC1) Ith(A)		20	30	35	40	45	50
Rated Current AC3	200~220V	10	20	25	30	35	40
	380~440V	8	17	21	23	26	32
	500~550V	6	14	17	21	23	26
Rated Voltage (V)	AC	690					
	DC	250					
Contact Configuration		2a	2a	2a	2a	2a	2a
Dimension		74x49x62					
Weight(kg)		0.19					

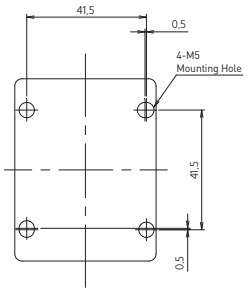
• External Dimension and Contact Configuration

Model	External Dimensions	Installation Dimensions

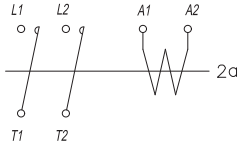
KMC10p2
KMC20p2
KMC25p2
KMC30p2
KMC35p2
KMC40p2







Contact Configuration	



Magnetic Contactors for Devices

Definite Purpose Contactor

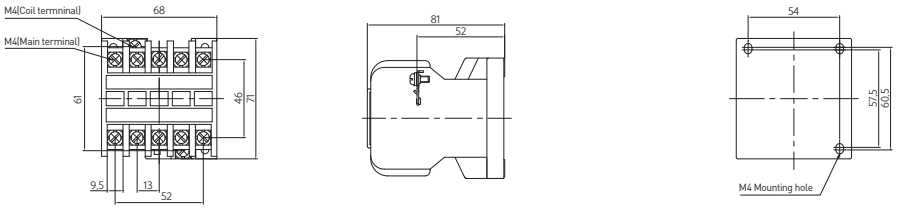
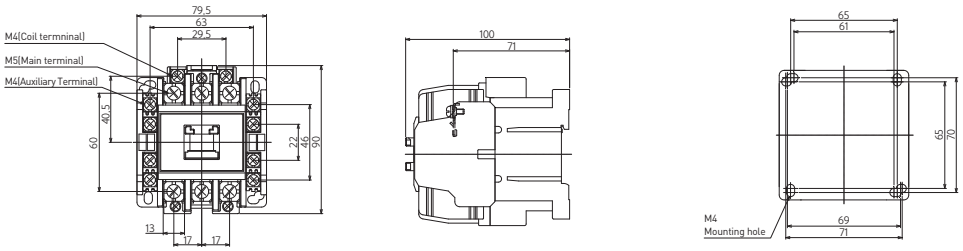
· Definite Purpose Contactor is a small and light weight magnetic contactor which can be widely used for motor control such as air conditioner, electric water heater, refrigerator, dryer, heater, showcase, industrial cleaner, pump, compressor, etc. and switching on/off heater and lighting equipment.

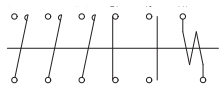
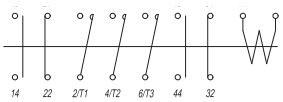
· A dedicated pure silver contact is adopted to ensure contact reliability and longer durability.
· More convenience for both screw attachment and 35mm DIN-RAIL installation. (MUF25, MUF35)

• Rating

Model		KMC20	MUF25	MUF35
Rated Thermal Current(AC1) ith(A)		30	45	60
Rated Current AC3	200 ~ 220V	4kW 20A	5.5kW 26A	7.5kW 35A
	380 ~ 440V	7.5kW 17A	11kW 25A	15kW 32A
	500 ~ 550V	7.5kW 17A	11kW 20A	15kW 26A
Rated Voltage(V)		220	220	220
Contact Configuration		1a1b, 2a, 2b	2a2b	2a2b
Weight(kg)		0.5	0.65	0.65

• External Dimension and Contact Configuration

Model	External Dimensions	Installation Dimensions
KMC20		
MUF 25 MUF 35		

Contact Configuration	1a1b		2a2b	
				

Reversing Magnetic Contactor / Switch Specification

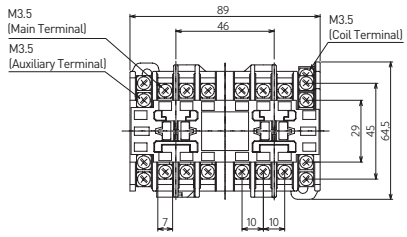
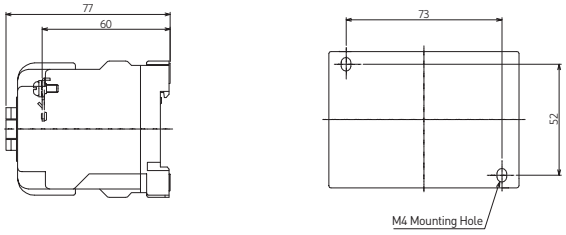
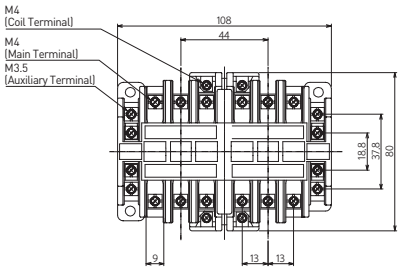
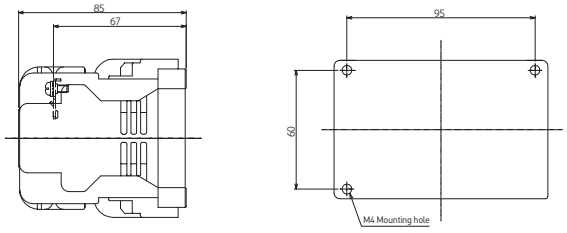
The first development of Dong-A Electric's Single Body Type Reversing Magnetic Contactor

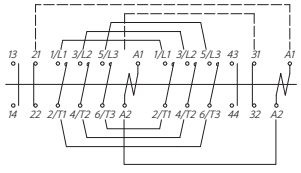
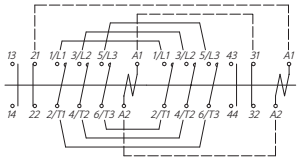
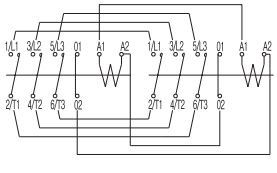
· The reversible magnetic contactor is a combination of two standard magnetic contactors using a highly reliable mechanical unit.

• Single Body Type Reversing Magnetic Contactors Rating

Magnetic Contactor	Rating(kW) (3 phase squirrel cage motor AC3)			Rating(A) (3 phase squirrel cage motor)			Rated Thermal Current Ith(A)	Aux. Thermal Overload Relay	
	220~220V	380~440V	550~550V	220~220V	380~440V	550~550V		Type	Range(A)
DMH10	2.7	4	5.5	13	9	9	20	DTH12	01.~11
DMH20	4	7.5	7.5	20	20	17	25	DTH22b	01.~22

• External Dimension and Contact Configuration _ Reversing Magnetic Contactors

Model	External Dimensions	Installation Dimensions
KMH 10		
KMH 20		

Model	DMH10	DMH20	DMC(D)12-R
Contact Configuration			

Auxiliary Contact UNIT

- For 2-Pole and 4-Pole
- Seperation into side and front attachment of contactor

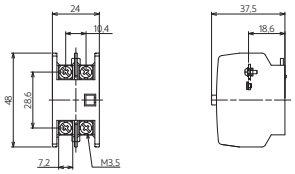
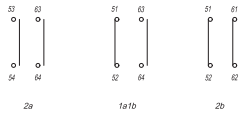
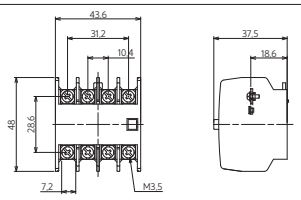
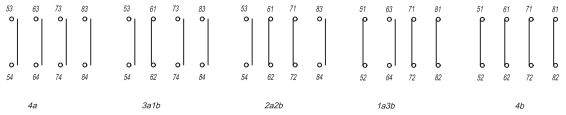
• Rating

Auxiliary Contact ratings

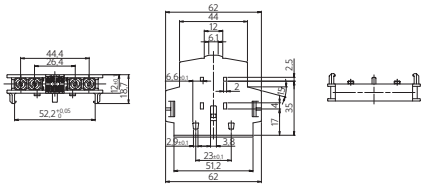
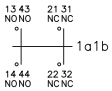
Type		Rated Operation Current(A)																Rated Thermal Current Ith (AC1)
		AC15(11)(Inductive Load on AC)				DC13(11)(Inductive Load on DC)				AC12(13)(Resistive Load on AC)				DC12(14)(Resistive Load on DC)				
		110V	220V	440V	550V	24V	48V	110V	220V	110V	220V	440V	550V	24V	48V	110V	220V	
Head -on	KAU2b	6	3	1.5	1.2	3	1.5	11	0.55	10	8	5	5	5	3	2.5	1	16
	KAU4b	6	3	1.5	1.2	3	1.5	11	0.55	10	8	5	5	5	3	2.5	1	16
Side -on	KAU2Sb	6	3	1.5	1.2	3	1.5	11	0.55	10	8	5	5	5	3	2.5	1	16

• External Dimension and Contact Configuration_ Auxiliary Contact UNIT

Aux. Contact(Head-on)

Model	Dimension	Contact Configuration
KAU2b		
KAU4b		

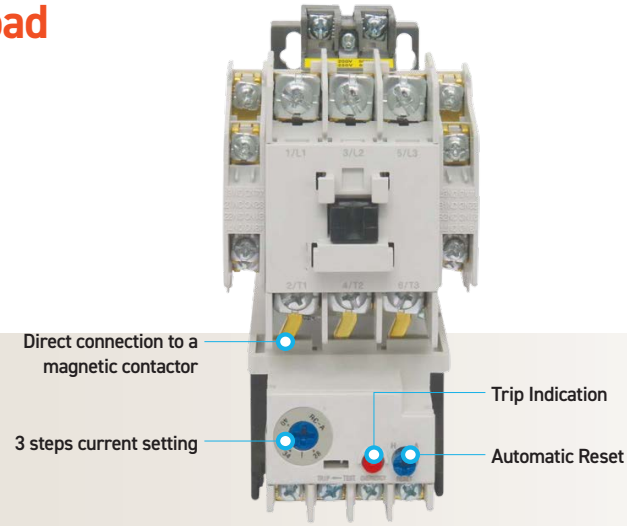
Aux. Contact(Side-on)

Model	Dimension	Contact Configuration
KAU2Sb		

Specification of Thermal Overload Relays(KTH22b~85)

· Thermal overload relay safely protects the motor from overload, restraint and burnout caused by phase loss operation.

· Secure space for convenient wiring
· Option - Seperate Mounting Unit & Terminal cover



• Direct connection to a magnetic contactor

Our thermal overload relays are conveniently connected to a magnetic contactor without any wire (Applying Relays : DTH 22b, 40, 85)

• Easy operation

- Seperate Mounting Unit
When installing the thermal overload relay alone, it is possible to install the panel with DIN rail or screws simply by attaching it to the unit. (Applying Relays DTH22b, 40)

- Current Setting
The rated current can be set with a philips or flat head screw driver.

- Easy in setting Manual-Auto Reset
For the increased convenience of the user, you can select manual reset or automatic reset at your choice.

- Manual Reset
As shown on the right, turn the reset screw so that the arrow mark points to "H" and allow the screw to lift up.

- Automatic Reset
Push down the reset screw and turn it so that the arrow mark points to "A".

- Manual inspection possible by external trip.
In order to increase the user's convenience, manual trip is possible from the outside, and the indication lever moves in the direction of trip during trip, making it easy to identify overcurrent.

- Emergency Stop
Press the emergency stop button in an emergency, the current cut off and the current will energized as soon as the button gets released.

• Combination with a Magnetic Contactor

Magnetic Contactor	KMC9b, KMC12, KMC12b, KMC18b, KMC22b	KMC32b, KMC40b, KMC48b	KMC50, 65, 75, 85
Overload Relay	KTH22b	KTH40	KTH85
Magnetic Contactor	KMC100, 125, 150C	KMC150, 180	KMC220
Overload Relay	HRD150	HRD180	KTH220

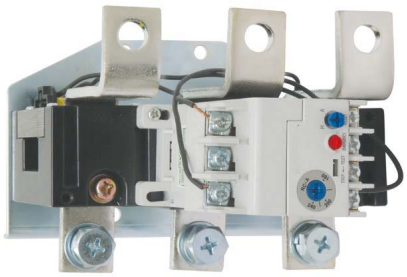
• Rating of Auxiliary Contact

Type	Rated Operating Current				
	AC15(11) (AC coil load)			DC13(11) (DC coil load)	
	110V	220V	550V	110V	220V
KTH22b, 40, 85 / KTH220	1.6	0.8	0.3	0.28	0.14
HRD150, 180	2	1	0.5	0.28	0.14

Thermal Overload Relays

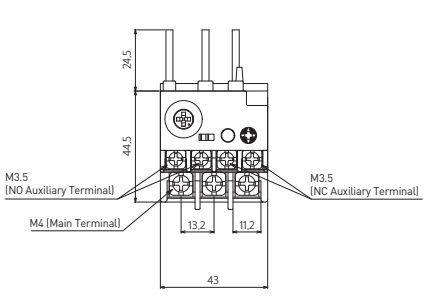
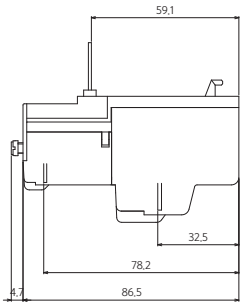
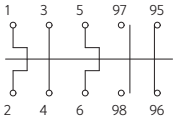
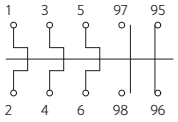
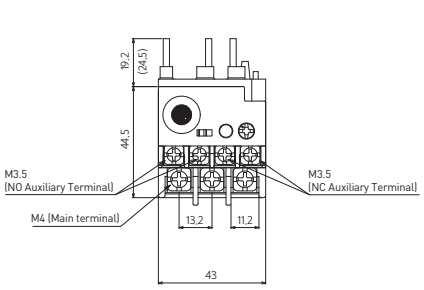
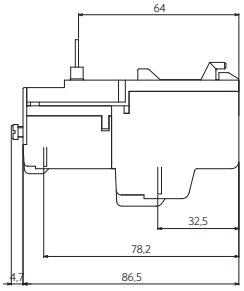
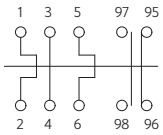
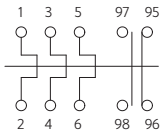
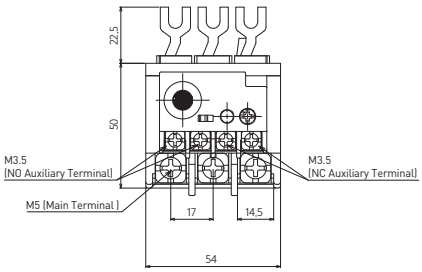
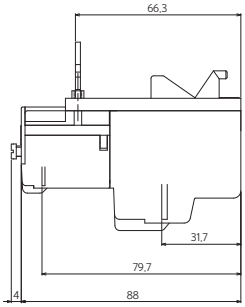
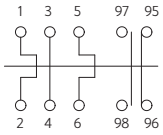
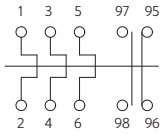
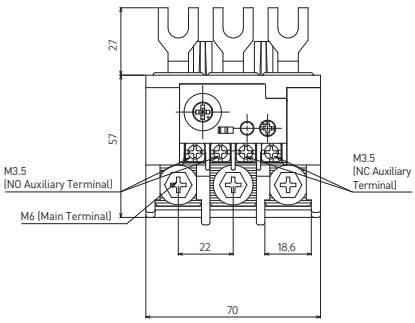
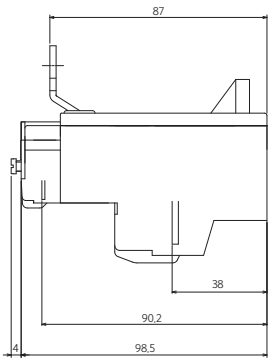
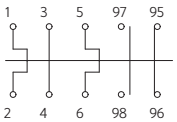
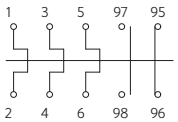
• Table of Specifications

Subject	Model	KTH12			KTH22b(KTH20)			KTH40			KTH85		
	Nominal	Current Range			Current Range			Current Range			Current Range		
		Min	Mid	Max	Min	Mid	Max	Min	Mid	Max	Min	Mid	Max
Rated Current (A)	0.52	0.4	0.52	0.63	0.4	0.52	0.63						
	0.82	0.63	0.82	1	0.63	0.82	1						
	1.3	1	1.3	1.6	1	1.3	1.6						
	2.1	1.6	2.1	2.5	1.6	2.1	2.5						
	3.3	2.5	3.3	4	2.5	3.3	4						
	5	4	5	6	4	5	6	4	5	6			
	6.5	5	6.5	8	5	6.5	8	5	6.5	8			
	7.5	6	7.5	9	6	7.5	9	6	7.5	9			
	8.5	7	8.5	10	7	8.5	10	7	8.5	10	7	8.5	10
	11	9	11	13	9	11	13	9	11	13	9	11	13
	15				12	15	18	12	15	18	12	15	18
	19				16	19	22	16	19	22	16	19	22
	22							18	22	26	18	22	26
	30							24	30	36	24	30	36
	34							28	34	40	28	34	40
	42							34	42	50	34	42	50
	55										45	55	65
	56												
	65										54	65	75
	67												
	74										63	74	85
	80												
	110												
	130												
	155												
	200												
2 Element		Standard			Standard			Standard			Standard		
Aux. Contact		1a1b			1a1b			1a1b			1a1b		
Reset Method		Manual/Auto			Manual/Auto			Manual/Auto			Manual/Auto		
Power Loss		1.8VA/Pole			1.8VA/Pole			2.0VA/Pole			3.5VA/Pole		
Dimension		43x72x90.5			43x72x90.5			54x75.5x92			70x87x102.5		
Magnetic Contactor		KMH10			DMC9b, 12, 12b, 18b, 22b			KMC32b, 40b, 48b			KMC50, 65, 75, 85		
Magnetic Switch		-			KMS9b, 12, 12b, 18b, 22b			KMS32b, 40b, 48b			KMS50, 65, 75, 85		



HRD150			HRD180			KTH220		
Current Range			Current Range			Current Range		
Min	Mid	Max	Min	Mid	Max	Min	Mid	Max
34	42	50						
45	56	67						
54	67	80						
65	80	95	65	80	95	65	80	100
90	110	130	90	110	130	85	107	125
105	130	155	105	130	155	100	130	160
			125	155	185	120	150	180
						160	200	240
Standard			Standard			Standard		
1c			1c			1a1b		
Manual			Manual			Manual/Auto		
2.3VA/Pole			2.3VA/Pole			2.3VA/Pole		
124x60x97			129x84x97			154x114x180		
KMC100, 125, 150C			KMC150, 180			KMC220		
KMS100, 125, 150C			KMS150, 180			KMS220		

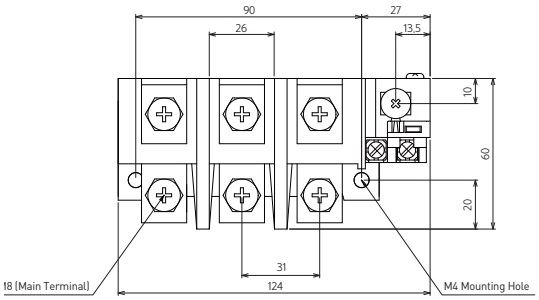
• External Dimension and Contact Configuration

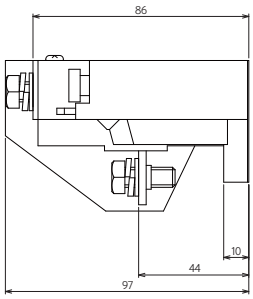
Model	External Dimensions	Contact Configuration
KTH12	 	 2 Elements(standard)  3 Elements(Option)
KTH22b (KTH20)	 	 2 Elements  3 Elements (Semi-Standard)
KTH40	 	 2 Elements  3 Elements(Option)
KTH85	 	 2 Elements(Standard)  3 Elements(Option)

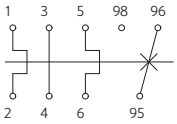
• External Dimension and Contact Configuration

Model	External Dimensions	Contact Configuration

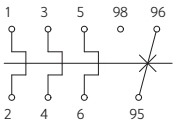
HRD150





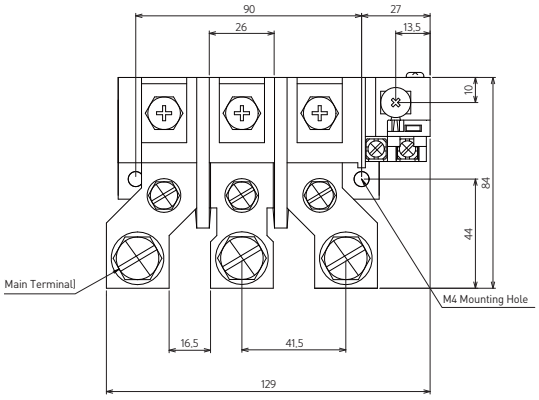


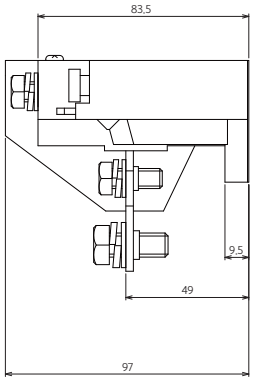
2 Elements (standard)

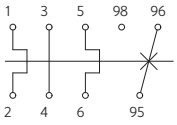


3 Elements (Option)

HRD180







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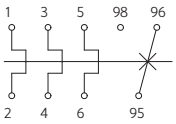
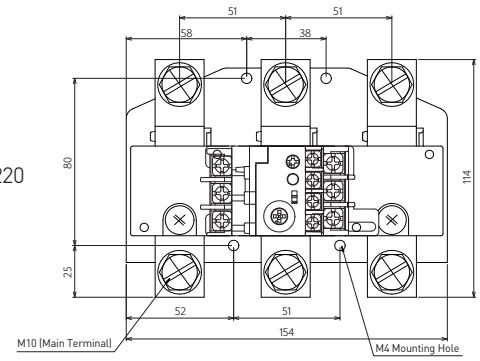
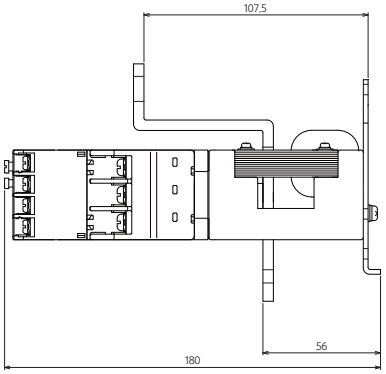
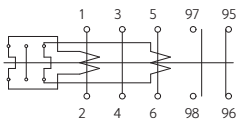


3 Elements (Option)

KTH220







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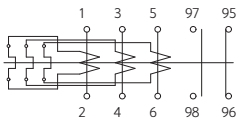


3 Elements (Option)

Electronic Over Current Relays

• Table of Specifications

Type		Contactor Mounting		Contactor Mounting			Contactor Mounting	Terminal			
Over Current(AC) Relay		SP 10/30		EP 01/06/30			EP 50	ES 01/06/30/50			
Characteristic		Contactor Mounting						Stand-Alone			
Magnectic Contactor	DTH Series	12 ~ 22b		12 ~ 22b			32, 40, 48s	ĐĐ ĐĐ ĐĐ			
	DMC Series	9b ~ 22b		9b ~ 22b			32, 40, 48s				
Current Setting Range(A)		10	30	01	06	30	40	01	06	30	50
		0.5~10	3~30	0.1~1.4	0.5~6.5	3~30	32b ~ 48	0.1~1.4	0.5~6.5	3~30	5~50
Operation Characteristic		Definite Curve		Definite Curve (ĐInverse Curve)							
Motor Application (kW)	230~240V	1.5	3.7	~0.05	0.12~0.75	0.55~3.7	1.5~7.5	All common products			
	380~460V	3.7	7.5	~0.15	0.25~1.5	1.5~7.5	3.7~11	06 : with CT (infinite capacity			
Protection	Over Current	○									
	Locked Rotor	○									
	Phase Loss	△									
	Phase Reverse	-									
Time setting (sec.)	Operation	0.2~12		0.2~30				0.2~30, 0.2~12, 0.2~30			
	Reset	Manual (Instantaneous) Reset (ĐAuto Reset 180 sec)									
Control Power	Voltage	180~260V AC		90~260V AC (Đ380V, 440V AC/DC)							
	Frequency	50/60Đ									
Output Relay	Contact	1C									
	Operation	ĐĐĐĐĐ(COM/95-NC/96-NO/98) / B Type(1a 97,98 / 1b 95,96)									
	Capacity	5A/250V Resistive Load									
Insulation Resistance		Min 50Đ at 500V DC									
Surge Endurance		2kV(6 times/min.)									
Ambient Temp	Operation	-25Đ~70Đ									
	Storage	-30Đ~80Đ									
Humidity		45-85%RH									
Operation Indication		Red LED (O.L) : Over Current Trip		Green LED (P.L) : Power on Red LED (O.L) : Over Current Trip							
Installation		Direct Contactor mounting type						Screw and DIN-Rail(35mm)			

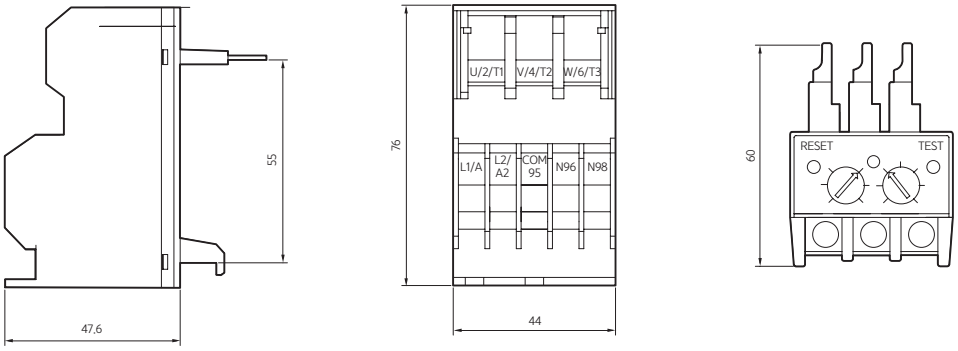
Pass-through (3 holes)		Pass-through (2 holes)		Pass-through (2 holes)		Terminal (Under Current)	
3ESS 06/30/60/120	SS3 06/30/60/120	SS 06/30/60/120		ES2		UCR 30/50	
Voltage detection type, Phase Reversal protection	Phase Reversal, Over Current protection	Wider Pass-through		Wider Pass-through		Stand-alone, Phase Loss detection	
All common products							
All common products							
06	30	60	120	06	30	60	120	06	30	60	120	30	50
0.5~6.5	3~30	5~60	10~120	0.5~6.5	3~30	5~60	10~120	0.5~6.5	3~30	5~60	10~120	3~30	5~50
Definite Curve (ĐInverse Curve)													
All common products								All common products (Up to 600A with external CT) -				-	
06 : with CT (infinite capacity)												-	
○												Under Current	
○												-	
○								△(2CT)				○	
○				–									
D-TIME 0.2~60 / O-TIME 0.2~12								0.2~30					
Manual (Instantaneous) Reset (ĐAuto Reset 180 sec)													
90~260V AC (Đ380V, 440V AC/DC)													
50/60Đ													
1C													
Normally Open				Normally Closed(COM/95-NC/96-NO/98)									
5A/250V Resistive Load													
Min 50Đ at 500V DC													
2kV(6 times/min.)													
-25Đ~70Đ													
-30Đ~80Đ													
45-85%RH													
Green LED (P.L) : Power on Red LED (O.L) : Over Current Trip Yellow LED (PMR) : Phase Reversal Trip				Green LED (P.L) : Power on Red LED (O.L) : Over Current Trip									
Screw and DIN-Rail (35mm)													

Electronic Over Current Relays

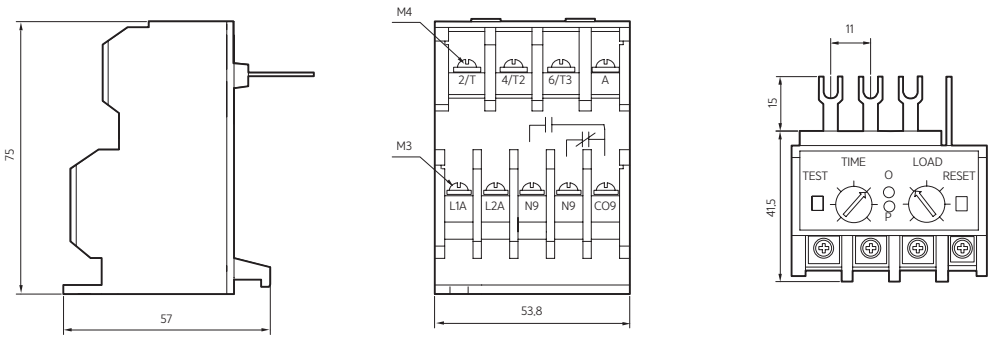
• External Dimension

Model	External Dimensions	Installation Dimensions

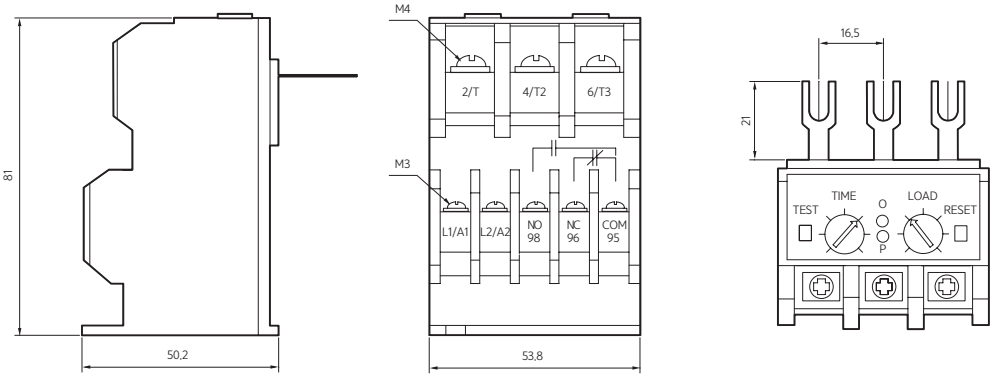
OPR SP
10/30



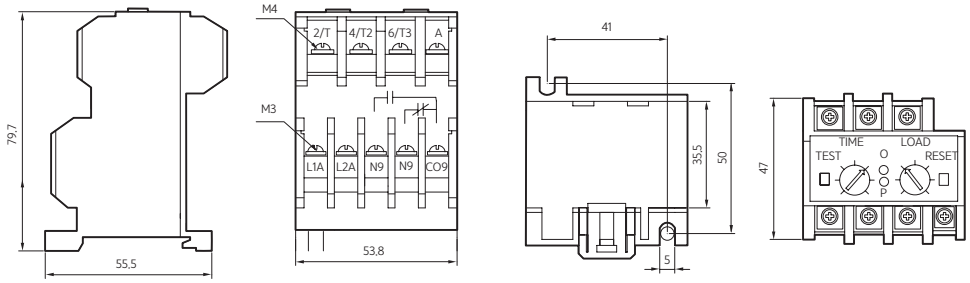
OPR EP
01/06/30



OPR EP 50



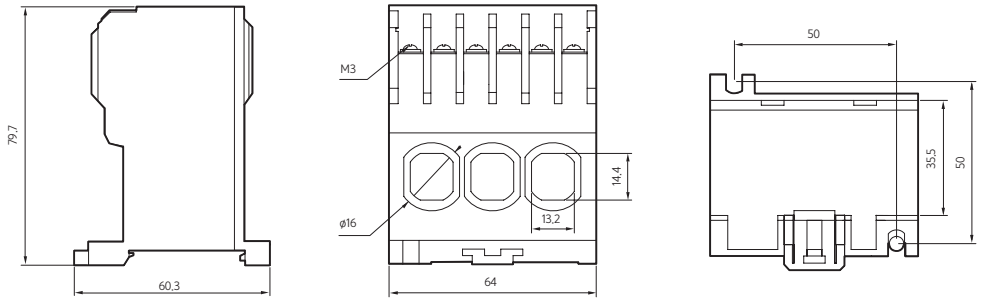
OPR ES
01/06/30/50



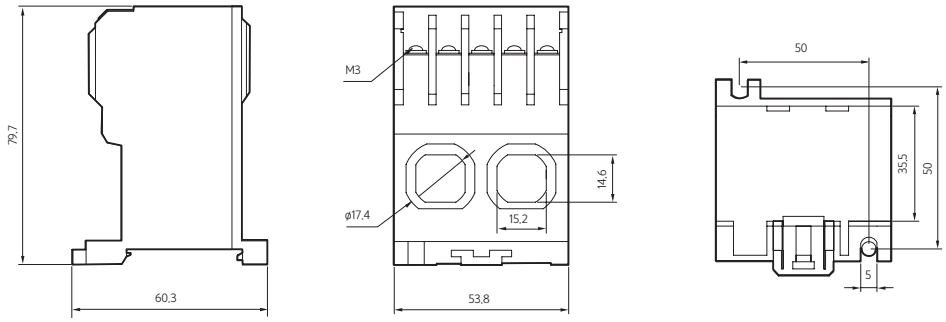
• External Dimension

Model	External Dimensions	Installation Dimensions

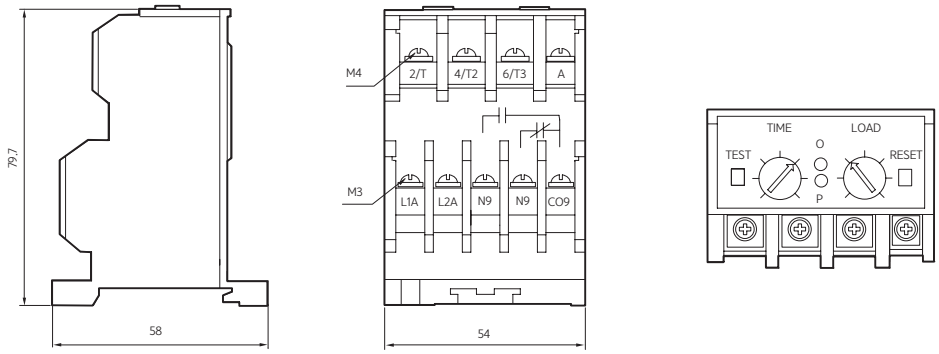
OPR 3ESS
SS3 3ESSG
UCRG(SS3)
UCR(SS3)



OPR SS
ES2
UCR(ES2)



OPR UCR
GR OVR
UVR NPR
SDDR



• Classification by breaking capacity and switching capacity

It is classified as follows according to breaking capacity and switching capacity based on domestic standards (KS) and overseas standards (IEC, BS, VDE, UL).

Rating Classification

Level	Purpose	Closing						Break					
		KS,JEM,JIS			IEC,BS,VDE			KS,JEM,JIS			IEC,BS,VDE		
		Current	Voltage	Power Factor	Current	Voltage	Power Factor	Current	Voltage	Power Factor	Current	Voltage	Power Factor
AC1	Rain and enlosing resistance load	1.5Ie	1.1Ee	0.95	1.5Ie	1.05Ue	0.8	1.5Ie	1.1Ee	0.95	1.5Ie	1.05Ue	0.8
AC2B	Starting and Aborting of induction motor	4Ie	1.1Ee	0.65	-	-	-	-	1.1Ee	0.65	-	-	-
AC2	Reversing of induction mortor	4Ie	1.1Ee	0.65	4Ie	0.05Ue	0.65	4Ie	1.1Ee	0.65	4Ie	1.05Ue	0.65
AC3	Start and Abort of squirrel cage induction motor	10Ie	1.1Ee	0.35	10Ie	1.05Ue	0.45 (≤100A)	8Ie	1.1Ee	0.35	8Ie	1.05Ue	0.45 (≤100A)
AC4	Reversal of squirrel cage induction	12Ie	1.1Ee	0.35	12Ie	1.05Ue	0.35 (≤100A)	10Ie	1.1Ee	0.35	12Ie	1.05Ue	0.35 (≤100A)
NO. of Movements		100times			50times			25times			50times		

Operation Test

Level	Purpose	Closing						Break			Reference
		KS,JEM,JIS			IEC,BS,VDE			KS,JEM,JIS			
		Current	Voltage	Power Factor	Current	Voltage	Power Factor	Current	Voltage	Power Factor	
AC1	Rain and enlosing resistance load	Ie	Ee	0.95	Ie	Ee	0.95	Ie	1.05Ue	0.8	IEC947-4 standard · On time 0.05 6,000 times per second Hum
AC2	Reversing of induction mortor	2.5Ie	Ee	0.65	2.5Ie	Ee	0.65	2Ie	1.05Ue	0.65	
AC3	Start and Abort of squirrel cage induction motor	6Ie	Ee	0.35	Ie	0.17Ee	0.35	2Ie	1.05Ue	0.45 (≤100A)	
AC4	Reversal of squirrel cage induction	6Ie	Ee	0.35	6Ie	Ee	0.35	6Ie	1.05Ue	0.35 (≤100A)	

• IEC 60947 International Standard Size

Main Contact Rating

Type		Rating(IEC947-4-1)																
Magnetic Contactor	Magnetic Switch	3-Phase Squirrel Cage Motor(AC3)						3-Phase Winding Motor(AC2B)						3				Rated Carrying Current (AC)
		200~240V		380~440V		500~550V		200~240V		380~440V		500~550V		200~240V		380~440V		
		kW	A	kW	A	kW	A	kW	A	kW	A	kW	A	kW	A	kW	A	A
KMC12	KMS12	3.5	13	5.5	12	7.5	12	7.5	9	5.5	12	7.5	12	2.2	11	4	9	25
KMC9b	KMS9b	2.5	11	4	9	4	7	4	5	4	9	4	7	1.5	8	2.2	6	25
KMC12b	KMS12b	3.5	13	5.5	12	7.5	12	7.5	9	5.5	12	7.5	12	2.2	11	4	9	25
KMC18b	KMS18b	4.5	18	7.5	18	7.5	13	7.5	9	7.5	18	7.5	13	3.7	18	4	9	40
KMC22b	KMS22b	5.5	22	11	22	15	22	15	18	11	22	15	22	3.7	18	5.5	13	40
KMC32b	KMS32b	7.5	32	15	32	18.5	28	10.5	21	15	32	18.5	28	4.5	20	7.5	17	50
KMC40b	KMS40b	11	40	18.5	40	22	32	22	25	18.5	40	22	32	5.5	25	11	24	60
KMC50	KMS50	15	55	22	50	30	43	30	33	22	50	30	43	7.5	35	15	32	80
KMC65	KMS65	18.5	65	30	65	33	60	37	42	30	65	37	60	11	50	22	47	100
KMC75	KMS75	22	75	37	75	37	64	45	47	37	75	45	64	13	55	25	52	110
KMC85	KMS85	22	85	45	85	45	75	45	52	45	85	45	75	15	65	30	62	135
KMC100	KMS100	25	100	50	100	55	80	19	80	37	80	37	80	19	80	37	75	150
KMC125	KMS125	30	125	60	120	60	90	22	93	45	90	55	90	22	93	45	90	150
KMC150C	KMS150C	37	150	75	150	90	140	30	125	55	110	55	90	30	125	55	110	180
KMC150	KMS150	37	150	75	150	90	140	30	125	55	110	55	90	30	125	55	110	200
KMC180	KMS180	45	180	90	180	110	180	37	150	75	120	75	120	37	150	75	150	230
KMC220	KMS220	55	220	110	220	132	200	45	180	90	180	110	180	45	180	90	180	260

Auxiliary Contact Rating

Type	Rated Current(A)								Rated Conducting Current(ith)	Reference
	UL A600				UL P600					
	AC15(AC coil load)				DC13(DC coil load)					
	120V	240V	480V	600V	120V	240V	480V	600V		
KMC9b~220	6	3	1.5	1.2	1.1	0.55	0.31	0.2	16	Minimum operating voltage, current is 24V 10mA

• Order of selection of electronic switchgear

Magnetic contactor Main contact capacity	Type of load	Motor	·Standard application of three-phase squirrel cage motor and single-phase motor
		Resistance load	·Standard application of resistive load ·Single-phase resistive load
		DC load	·Direct current load by contact serial connection method
		Condenser load	·Application of single-phase, three-phase capacitor circuit
		Transformers	·Single-phase, three-phase transformer
		Light Load	·Application of incandescent bulbs, fluorescent lamps, water temperature lamps
	Operation	Direct start	·Standard application of three-phase squirrel cage motor and single-phase motor
		Star-delta start	·Application by star delta starting ·Automatic Starter
		Inching, plugging applied	·Inching (10%, 50%, 100%) plugging applied
		Forward, reverse operation	·Reversible electromagnetic switch / contactor
	Durability	Electrical switching durability	·Response to voltage fluctuations ·Application of drop-in start considering electrical life
		Mechanical opening and closing durability	·Performance
Operation voltage of magnetic contactor	Power voltage	Coil voltage	·Table of coil operation
		Power voltage	·Considering voltage fluctuations (region, location)
	Power voltage	Auxiliary contact configuration	·Table of specification

Usage environment, installation conditions	With or Without case cover	Case, Cover	·Commercial Electronic Contactor ·Push button type magnetic contactor ·Dustproof, waterproof magnetic contactor
	Response to special environments	Cold and tropical region	·Cold and tropical region
		Special environmental equipment	·Protection against dust corrosion resistance GAS
	Domestic Standard	KS, safety certification	
	Oversaea Standard	IEC(CE), VDE, UL, CSA Etc	
	Determined by motor rating	Motor full load current	·Motor full load current
		Motor capacity	·Standard application of overload relay by motor capacity
	Application by starting time	Motor with short starting time (Submersible pump, compressor, etc.)	·Electronic switchgear with overload relay
		Motor application with long starting time	·Phase loss protection
	Purpose of protection	Overload restraint protection	·Standard electronic switchgear
		Phase loss protection	·Opening/closing durability (life curve) ·Direct start application considering electrical life
	Oversea CE, UL certification		

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Safety Instruction

- For your safety, please read user's manual before operating.
- Contact the nearest authorized service facility for exmaination, repair, or adjustment.
- Please contact qualified service technician when you need maintenenance. Do not disassemble or repair by yorself.
- Any maintenance and inspection shall be performed by the personnel ahving expertise concerned.

2020. 09

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