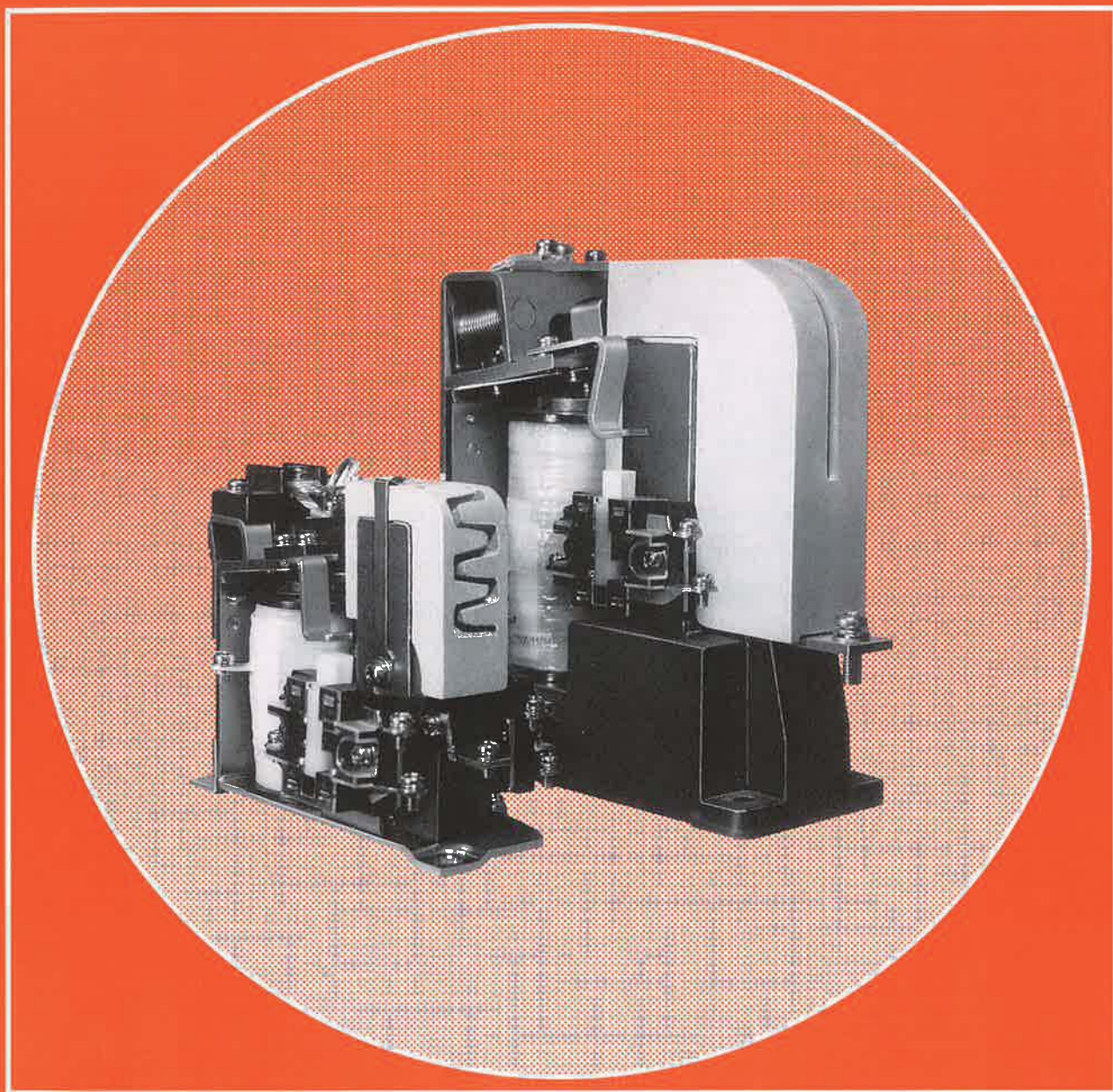


# MDM SERIES DC CONTACTORS

(25A to 400A, Control of DC motors and general DC circuits)





For safe use of your DC contactor, be sure to read the Safety Instructions before starting to use it.

## 【 Safety Instructions 】

- The MDM series features high arc-extinguishing capacity by the use of a blow-out coil which is activated by load current. Hence, if load current far lower than the rated current for the blow-out coil is used, the reduced blow-out capacity may lead to breaking failure. Therefore, be sure to select your contactor appropriate for the load current.
- Be sure to provide an arc space indicated in the “overall dimensions” section. Presence of any metal object or obstacle within the arc space can cause accidents such as breaking failure.
- Select copper conductor for connection, appropriate for the current capacity used.
- When providing a surge countermeasure, make sure that it does not slow the operation of the DC contactor.
- When touching your contactor, be sure to turn off all the power switches to prevent possible accidents.
- Do not use your DC contactor with the arc-extinguishing chamber removed; otherwise, accidents can occur.
- Make certain that the control power supply voltage does not drop.
- Be sure to tighten up the mounting screws securely.
- Be sure to read the Operating Instructions in the catalog.

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## 【 OUTLINE 】

- The MDM series DC Contactors, which comply with JEM 1038 (Contactors), are roughly classified into the rated insulation voltage types of DC 250 V and DC 750 V.

## 【 FEATURES 】

- A wide variety of models from which you can select one best suited to your application.
- Environment-friendly contacts free of cadmium and the arc chute made of non-asbestos material.
- Contacts of special silver alloy showing high resistance to wear or fusion.
- Blow-out coil arc-extinguishing system (magnetic arc-extinguishing system) employed.
- Auxiliary contacts of 2a2b provided and twin contact structure assuring stable contact.

## 【 MODELS & DESIGNATION 】

Model designation (p: coil voltage)	Insulation voltage		Frame size				Main contact arrangement			Blow-out coil rated current (A)							
	250 V	750 V	25	50	100	200	400	1 A	2 A	1 B	5	10	25	50	100	200	400
MDM 25-A-5-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 25-A-25-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 25-D-5-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 25-D-25-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 25-B-5-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 25-B-25-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 50-A-5-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 50-A-10-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 50-A-25-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 50-A-50-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 50-D-5-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 50-D-10-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 50-D-25-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 50-D-50-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 50-B-5-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 50-B-10-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 50-B-25-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 50-B-50-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 100-A-100-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 100-B-100-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 200-A-200-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 200-B-200-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MDM 400-A-400-□	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Coil voltage	12	24	48	100/110	200/220
Code in p	01	02	04	11	22

例) MDM 50 - A - 25 - 11  
 Coil voltage (DC 100/110 V)  
 Blow-out coil rated current (25 A)  
 Main contact arrangement (1A)  
 Frame size (50 type)  
 Series code (MDM series)

- NOTES : 1. Take great care in selecting the blow-out coil. For instance, select 5 A for the blow-out coil rated current when the coil is used at 4 A. Choice of any other blow-out coil rated current may lead to accidents, such as breaking failure.
2. DC contactors of special environment specifications, such as a hydrogen sulfide gas resistant type or a tropical treated type, are available to your order. Please consult us when you need one.
3. Coil voltage other than the above standard voltages is also available. Please consult us when you need to use such a voltage.

## [ Instructions for Use ]

### 1. Installation

#### 1-1 Environment for installation

- Do not install the DC contactor in an environment of high temperature or high humidity or in an atmosphere containing dust or harmful gases.
- Environmental conditions must be in compliance with JEM 1038 (Contactors) as follows:
  - Altitude : 2000m or below
  - Ambient temperature : -5°C to 40°C (average temperature for a day : 35°C or below)
  - Relative humidity : 45% - 85%RH
  - No abnormal vibration or shocks
  - Atmosphere free from excessive water vapor, oil vapor, smoke, dust, salt, corrosive material, etc.
- The mounting surface must be completely flat.
- The MDM series contactor can be mounted directly on a metallic surface, but it is advised that it is separated from the metal body as far as practicable.
- The position for installation must be such as facilitates maintenance and checks.

#### 1-2 Installation

- Install the DC contactor in the orientation specified in the overall dimensions section. Attach the mounting base on a vertical surface, and install the contactor with the arc-extinguishing part up.
- Tighten up the specified number of screws.

### 2. Main Circuit

#### 2-1 Main circuit connection

- Select copper conductor for connection, appropriate for the current capacity used. The current density of the conductor must be 1.5 A/mm<sup>2</sup> or below.
- Tighten the terminals at torque appropriate for the terminal diameter. Also, take care that stress at the terminals does not work on the contactor.
- Provide a protection, such as an insulating tube, to the terminals.

#### 2-2 Arcing space

- When installing the DC contactor, be sure to provide arc space as indicated in "Overall Dimensions".
- Presence of any metal object or obstacle in the arc space may cause accidents, such as defective breaking.

### 3. Control Circuit (Coil)

#### 3-1 Pickup voltage

- Make certain that the control power supply does not drop.
- Fluctuations in control power voltage must be within 85 to 110% of the rated coil voltage.
- The pickup voltage of the MDM series when the coil is saturated is as follows:
 

Minimum pickup voltage	85% of rated coil voltage or below
Opening voltage	10% of rated coil voltage or above

#### 3-2 Circuit configuration

- When providing the coil with some measure against surge, make certain that it does not slow contractor operation. Generally, a surge voltage of about 20 times the control voltage occurs when the coil is turned off. You may consider the use of a diode to suppress surge voltage. But the diode slows the contact opening speed considerably, which lowers the breaking performance. To suppress surge voltage, therefore, please use a varistor in the place of a diode.

##### Selection criteria:

**Operating contact withstand voltage > Varistor cut voltage (VC) > Control voltage.**

- When creating a DC power supply using a rectifier, place the control contacts on the DC side. Placing the control contacts on the AC side will slow the contact opening speed.

#### 3-3 Application to AC control circuit

- The DC contactor can not be used in an AC circuit, unless the circuit is turned into a DC power supply by use of a rectifier circuit.
- Rectifying an AC circuit will result in a loss of power supply. Therefore, prepare a DC power supply in consideration of this loss.

### 4. Other Instructions

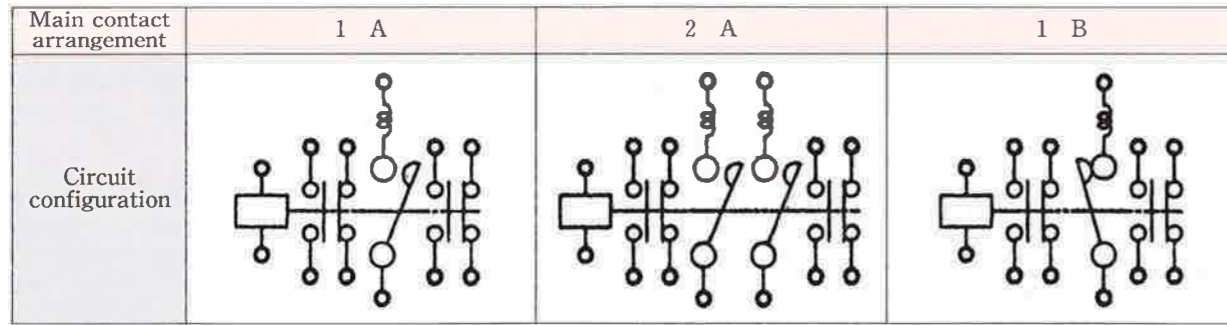
- On completion of installation, check the operation under no load. When doing so, check the parts of the contactor to see that they are all properly in place.
- When touching the DC contactor, be sure to turn off all the power switches to prevent possible accidents.
- Do not use your DC contactor with the arc-extinguishing chamber removed; otherwise, accidents can occur.
- Do not use screws other than those supplied.
- Be sure to tighten up even unused screws before operation.

## [ Rated Specifications ]

Frame size	25 type					50 type					100 type		200 type		400 type			
Rated voltage	Insulation	DC250V					DC750V											
	Operation	DC220V					DC440V											
Main contact arrangement	1A, 2A		1B			1A, 2A			1B		1A	1B	1A	1B	1A			
Blow-out coil rated current (capacity)	Continuous	5A	25A	5A	25A	5A	10A	25A	50A	5A	10A	25A	50A	100A	100A	200	200	400
	1H	6A	30A	6A	30A	6A	12A	30A	60A	6A	12A	30A	60A	120A	120A	240	240	480
Make/Break current capacity (L/R=)	15ms	20A	100A	—	—	20A	40A	100A	200A	—	—	—	—	400A	—	800	—	1600
	1ms	—	—	5A	25A	—	—	—	—	5A	10A	25A	50A	—	100A	—	200	—
Model designation (p: coil voltage)	MDM 25-A-□□□□□□□□□□					MDM 50-A-□□□□□□□□□□					MDM 100-A-□□□□□□□□□□		MDM 200-A-□□□□□□□□□□		MDM 400-A-□□□□□□□□□□			
Coil resistance	MDM 25-A-110-□	672					605					484		345		378		
MDM (initial state)	MDM 25-A-200-□	2222					2000					1600		1143		1250		
	MDM 25-D-220-□	2688					2420					1936		1382		1512		
	MDM 25-B-25-□	18W					20W					25W		35W		32W		
Weight (kg)	MDM 25-B-5-1A-□	1.2					2.5					3.3		7.0		12.0		
	MDM 50-A-25-□	1.4					3.3					—		—		—		
MDM 50-A-5-1B-□	1.3					2.6					3.5		7.2		—			
	MDM 50-A-10-□	Standard JEM1038																
Performance	MDM 50-A-25-□	Switching No. 1 (1200 times/hour)																
	MDM 50-A-5-□	Mechanical Class 1 (5 million times)																
	MDM 50-B-5-□	Electrical Class 2 (250,000 times)																
Insulation resistance	MDM 50-A-25-□	5 MΩ or above (DC500V megger)					5 MΩ or above (DC1000V megger)											
	MDM 50-A-5-□	AC2000V					AC3000V											
Withstand voltage (1 min. 50/60Hz)	MDM 50-A-25-□	Main Circuit					AC1500V											
	MDM 50-A-5-□	Control Circuit					AC1500V											
Auxiliary contacts	MDM 50-A-25-□	Contact arrangement: 1a1b, one unit																
	MDM 50-B-25-□	L/R=50ms DC110V1.0A DC220V0.5A																

- MDM 50-B-50-□
- NOTES: 1. Tolerance on coil resistance is ±10%.  
 MDM 100-A-100-□  
 2. Coil power consumption above represents the case when the coil is in the initial state.  
 MDM 100-B-100-□  
 3. The conditions for electrical life are as follows:  
 MDM 200-A-200-□ Contact arrangement: 1A, 2A-DC5 class (Closing at 2.5 times blow-out coil rated current, Rated breaking L/R = 7.5 ms)  
 MDM 200-B-200-□ Contact arrangement: 1B-DC1 class (Rated closing at blow-out coil rated current, Rated breaking L/R = 1 ms)  
 MDM 400-A-400-□

## 【 Circuit Configurator 】

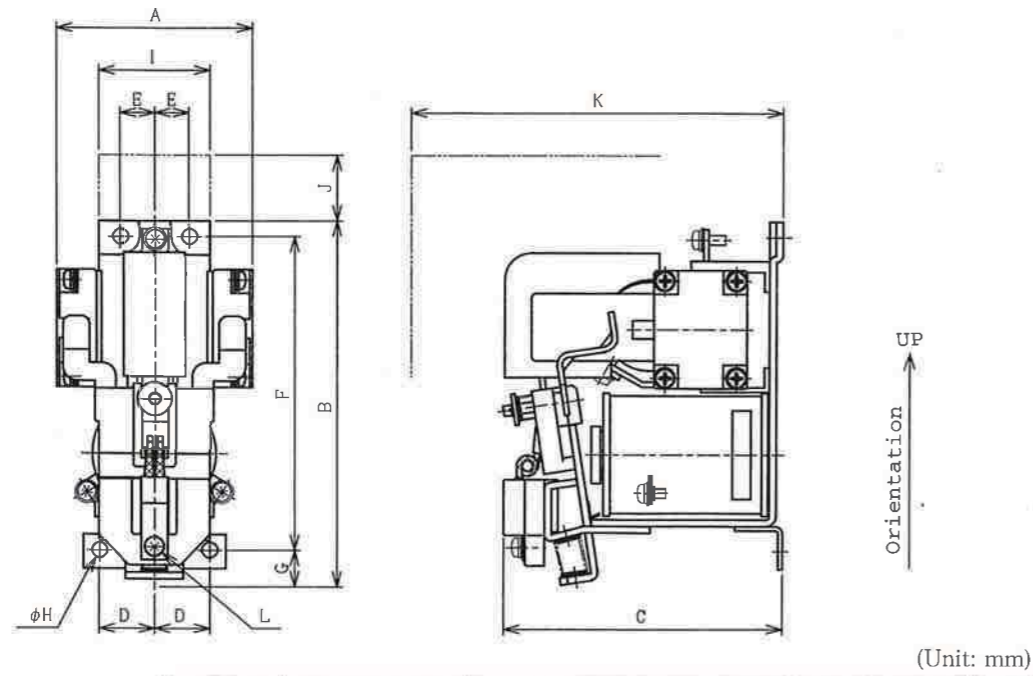


NOTE: The main circuit and coil have no polarity.

## 【 Overall Dimensions 】

- NOTES: 1. Install the DC contactor as indicated below. (Attach the mounting base on a vertical surface, and install the contactor with the arc-extinguishing part up.)  
 2. The MDM series contactor can be mounted directly on a metallic surface, but it is advised that it is separated from the metallic body as far as practicable.  
 3. Be sure to provide sufficient arc space.  
 4. Coil terminals and auxiliary contact terminals are all M4.  
 5. Tighten up the specified number of screws.

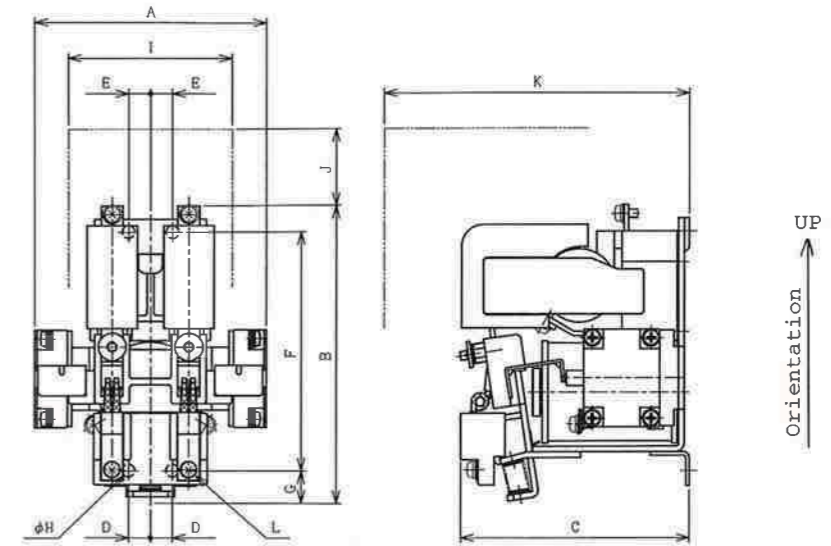
### • Main Contact Arrangement 1A



(Unit: mm)

Model	Overall			Mounting					Arc space			Terminal diam.
	A	B	C	D	E	F	G	H	I	J	K	
MDM25-A	74	140	105	21	13	120	14	6	42	25	140	M 4
MDM50-A	90	194	180	42	22	150	15	7	64	81	270	M 6
MDM100-A	90	200	190	42	22	150	22	7	64	175	340	M 8
MDM200-A	125	270	220	25	38	200	12	9	100	180	365	M 10
MDM400-A	135	320	235	50	50	200	13	9	125	180	420	M 12

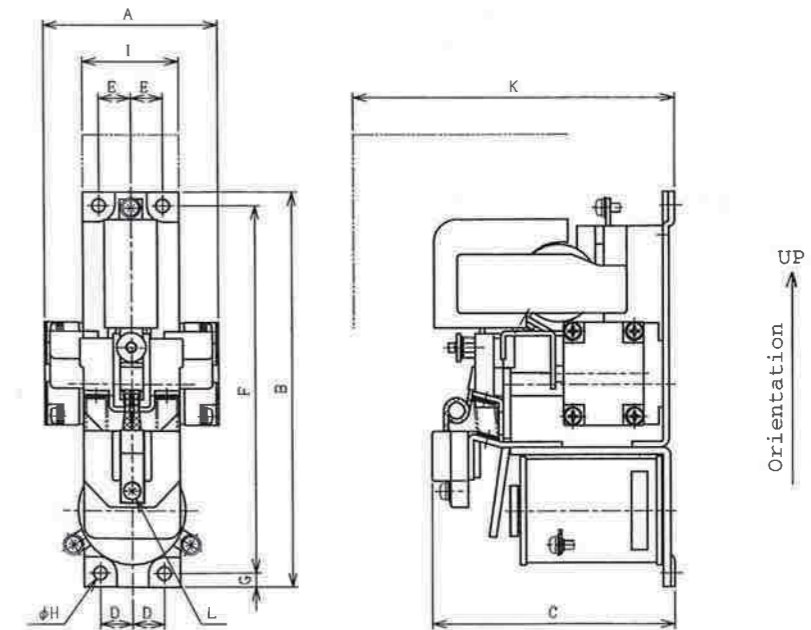
### • Main Contact Arrangement 2A



(Unit: mm)

Model	Overall			Mounting					Arc space			Terminal diam.
	A	B	C	D	E	F	G	H	I	J	K	
MDM25-D	106	138	105	10	0	110	16	6	75	35	140	M 4
MDM50-D	145	189	180	42	22	150	10	7	145	81	270	M 6

### • Main Contact Arrangement 1B



(Unit: mm)

Model	Overall			Mounting					Arc space			Terminal diam.
	A	B	C	D	E	F	G	H	I	J	K	
MDM25-B	76	172	106	14	14	160	6	6	42	25	140	M 4
MDM50-B	95	200	180	42	22	150	15	7	64	81	270	M 6
MDM100-B	95	210	190	42	22	150	32	7	64	175	340	M 8
MDM200-B	125	318	220	25	38	250	12	9	100	180	365	M 10

# KYORITSU'S DC CONTACTORS

[For details, please refer to the separate catalog.]

Series	Type	Rated voltage	Rated current	Contact arrangement	Remarks
CM	CM2-	DC48V	20A	1A	Permanent magnet arc-extinguishing system
	CM4-	DC48V	40A	1C	Permanent magnet arc-extinguishing system
	CM8-	DC48V	80A	1A, 1C, 1C×2	Permanent magnet arc-extinguishing system
	CM16-	DC72V	160A	1A, 1C, 1C×2	Permanent magnet arc-extinguishing system
GN	GN03-	DC48V	30A	1A, 1C, 2A, 2C	
	GN05-	DC48V	50A	1A, 1C, 2A, 2C	
	GN08-	DC48V	80A	1A, 1C	
	GN10-	DC48V	100A	1A, 1C	
	GN15-	DC48V	150A	1A, 1C	
	GN20-	DC48V	200A	1A	
	GN25-	DC48V	250A	1A	
CF	CF3-TX	DC24V	30A	1C	Waterproof type (cased)
PT	PT2-	DC24V	20A	2A2B	
	PT3-	DC48V	30A	1A1B, 2A2B	Mechanical interlock type, AC control type available
P	PA-8	DC48V	80A	1A	
	PA-8(A)	DC48V	80A	1A1B(×2)	
	PA-12	DC48V	120A	1A	
	PA-12(A)	DC48V	120A	1A1B(×2)	
	PA-15	DC48V	150A	1A	
	PA-15(A)	DC48V	150A	1A1B(×2)	
	PA-30	DC48V	300A	1A	
PN	PN8-TC(W)	DC48V	80A	1A1B(×2)	
	PN12-A	DC48V	120A	1A	
	PN12-TC(W)	DC48V	120A	1A1B(×2)	
	PN18-A	DC48V	180A	1A	
	PN20-TC(W)	DC48V	200A	1A1B(×2)	
	PA30-A	DC48V	300A	1A	
HD	HD2T-50	DC250V	50A	1A	Permanent magnet arc-extinguishing system with reclosing prevention relay
	HD2T-75	DC250V	75A	1A	Permanent magnet arc-extinguishing system with reclosing prevention relay
	HD2T-100	DC250V	100A	1A	Permanent magnet arc-extinguishing system with reclosing prevention relay
	HD3T-50	DC250V	50A	1A	Permanent magnet arc-extinguishing system
	HD3T-75	DC250V	75A	1A	Permanent magnet arc-extinguishing system
	HD3T-100	DC250V	100A	1A	Permanent magnet arc-extinguishing system
GB	GB-20	DC250V	200A	1A	Blow-out coil arc-extinguishing system
	GB-30	DC250V	300A	1A	Blow-out coil arc-extinguishing system

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