

HDM6E Molded Case Circuit Breaker (Electronic)

Standard: IEC/EN 60947-2



Coding System

Name	Frame	B.C	Rated Current	Pole	Accessory	Voltage of Accessory	Installation Method
HDM6E	250	M	250	3P	10	1	5
	↓	↓	↓	↓	↓	↓	↓
	250:250AF	M:M type	250:250A	3:3P	XX: No Accessory	X:AC400V or No Accessory	F: fix-type in front of the board
				A:4P AType	10: MX		
	400:400AF		400:400A	N phase is not equipped with overcurrent trip component and N phase is always connected. The N phase does not open/ close with the other 3 poles.	20:OF	N:AC400v	
			800:800A		30:MN		
				B:4P BType	60:OF+OF		
	800:800AF			N phase is not equipped with overcurrent trip component, and N phase opens/ closes with other 3 poles. (N phase closes first and then opens)	08:SD	D:DC24V	
					28:OF+SD		

Order Information

Type	Breaking Capacity	Rated Current	Pole	Reference
HDM6E-250	M	250	3	HDM6E250M2503XXXXF
	M	250	A	HDM6E250M2503AXXXF
	M	250	B	HDM6E250M250BXXXXF
HDM6E-400	M	400	3	HDM6E400M4003XXXXF
	M	400	A	HDM6E400M400AXXXF
	M	400	B	HDM6E400M400BXXXXF
HDM6E-800	M	800	3	HDM6E800M8003XXXXF
	M	800	A	HDM6E800M800AXXXF
	M	800	B	HDM6E800M800BXXXXF

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Standard IEC/EN 60947-2



Technical Data

Basic Information (IEC/EN60947-2)			
Frame Size AF	250	400	600
Number of Poles	3P,4P	3P,4P	3P,4P
Breaking Capacity Level	M	M	M
Rated Ultimate Short-circuit Breaking Capacity Icu (kA rms)	50	70	70
Rated Service Short-circuit Breaking Capacity Ics (kA rms)	30	40	40
Mechanical Durability On-off Cycle	7000	4000	2500
Electrical Durability On-off Cycle	1000	1000	500
Tripping Unit			
Rated Current (A) In			800
Accessory			
Indication Accessories			
OF	■	■	■
SD	■	■	■
Control Accessories			
MX (AC400, 230V, DC220V)	■	■	■
MN (AC400, 230V)	■	■	■
Extended Rotary Handle(Round and Square)	■	■	■
AC Motor Mechanism (AC400, 230V)	■	■	■
Mounting & Connection			
Fixed, Rear Connection	■	■	■
Plug-in, Rear Connection	■	■	■
Connection			
Spreader	■	■	■
Protection			
Phase Barrier	■	■	■
Installation Information	See page 95	See page 96	See page 97

"■" with this option



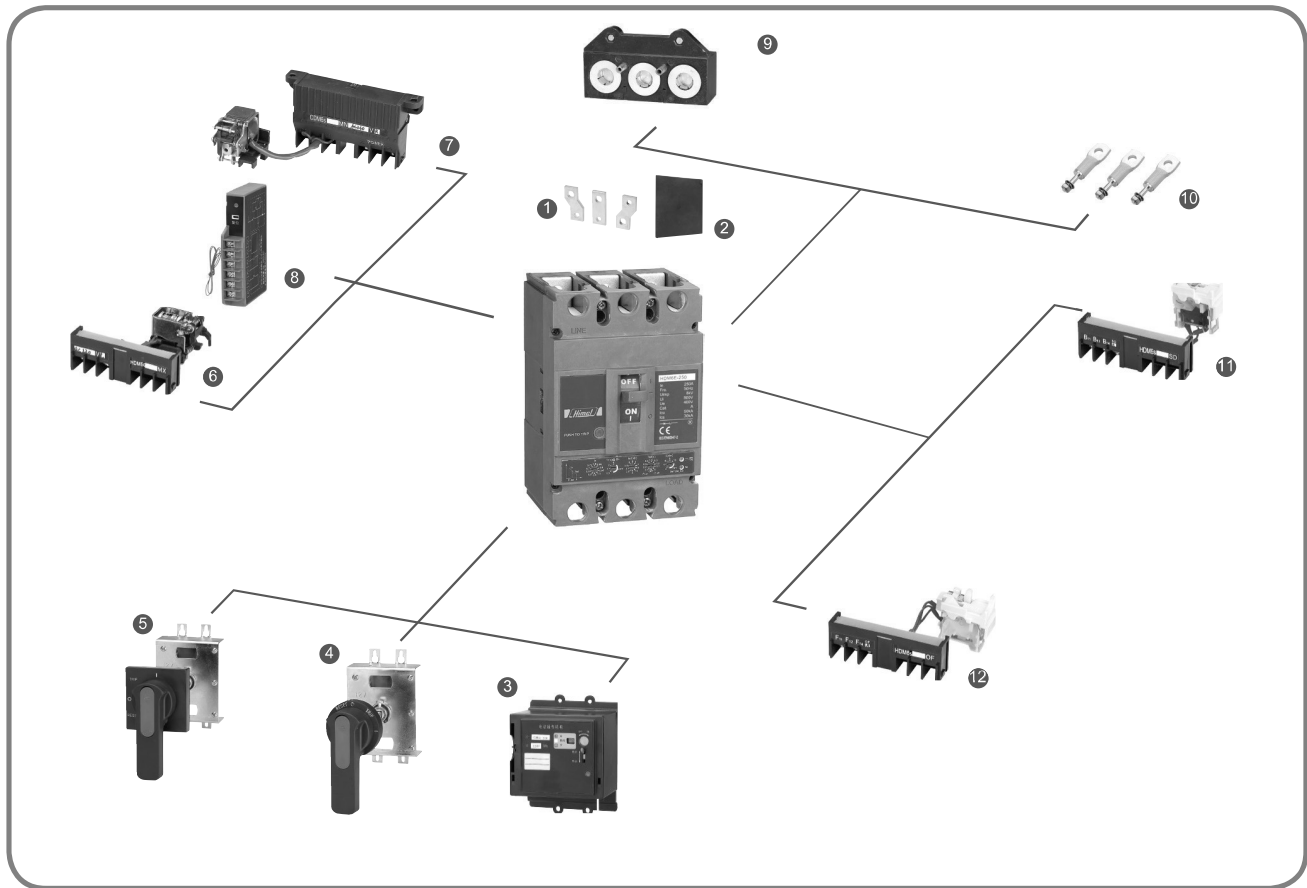
HDM6E Molded Case Circuit Breaker (Electronic)

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Basic Technical Data

- Rated Insulation Voltage U_i : AC 800V
- Rated Impulse Withstand Voltage U_{imp} : 8KV
- Rated Working Voltage U_e : AC 400V
- Rated Working Frequency: 50Hz
- Utilization Category: A



Complete Functions and Accessories

1	Spreader	6	MX	11	SD
2	Phase Barrier	7	MN	12	OF
3	AC Motor Mechanism	8	Leakage Module (Can't order separately)		
4	Round Extended Rotary Handle	9	Plug-in Front Connection		
5	Square Extended Rotary Handle	10	Fixed Rear Connection		

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Trip unit function

Flexible setting: offer three section protection function, including long delay, short-time delay, instantaneous protection, realize the action currents and action time adjustable, the user can set the trip module according to the load current requirements

Design patent: current transformer design, it can judge effectively even the current reaches a high value

Instantaneous trip design: trip the large short circuit current, and also improve the action reliability

Load monitoring: electronic tripping device configured load indicator lamp, can indicate the actual load status during operation accurately

Fault indication: when the hardware of electronic trip fault, the indication lit; during the normal operation, the indicator will flicker as a frequency of 50Hz, every 0.5 seconds for 1 bright



Intelligent controller function

Rated Current (A)	In	250	400/800
Overload Protection (long delay)			
Tripping Current(A)	$I_r = I_n \times$	0.4/0.5/0.6/0.7/0.8/ 0.9/0.95/1	0.4/0.5/0.6/0.7/0.75/0.8/0.85/ 0.9/0.95/1
Delay Time(s)	T_r	0.5/1/2/4+OFF	0.5/1/2/4/8/12/16+OFF
Short-Circuit Protection (short delay)			
Tripping Current(A)	$I_{sd} = I_r \times$	2/2.5/3/3.5/4/5/6/7/8/10	2/2.5/3/3.5/4/5/6/7/8/10
Delay Time(s)	T_{sd}	0.1/0.2/0.3/0.4+0/0.1/ 0.2/0.3/0.4+OFF	0.1/0.2/0.3/0.4+0/0.1/ 0.2/0.3/0.4+OFF
Short-Circuit Protection (instantaneous)			
Tripping Current (A)	$I_i = I_n \times$	2/4/6/8/10 I_n +OFF	2/4/6/8/10/12 I_n +OFF
N Phase Current Type		N,N/2,OFF(Unadjustable)	N,N/2,OFF

Basic Parameter Information

The 4-pole products with N phase are divided to four types.

A type: N phase is not equipped with overcurrent trip component and N phase is always connected.

The N phase does not open/close with the other 3 poles

B type: N phase is not equipped with overcurrent trip component, and N phase opens/closes with the other 3 poles (N phase closes first and then opens)

Isolation Function

HDM6E series product has isolation protection function. The operation handle can indicate "OFF" position only when the contact is really opened.

HDM6E Molded Case Circuit Breaker (Electronic)

Standard IEC/EN 60947-2



Complete Accessories of HDM6E Series

Indicating Accessories

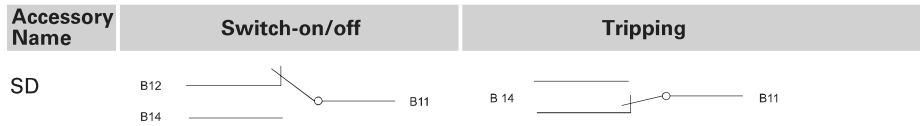
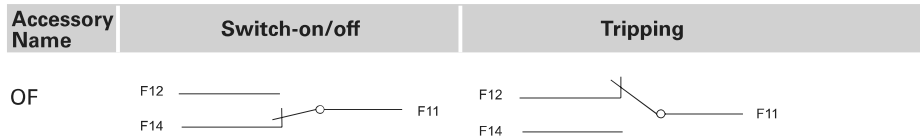
Auxiliary Contact (OF):

Be connected in the auxiliary circuit of switch device and used for the accessories to indicate the position of the circuit breaker contacts.

Alarm Switch (SD):

Be used for the accessories under the state of on and off or trip of the indication circuit breaker for the following reasons:

- Overload or short-circuit fault
- Residual earth-leakage fault
- Artificial cial Testing Release
- Shunt Trip Release
- Line Fault and Under-voltage Release Tripping"



Electrical Parameter of OF & SD

Rated Thermal Current (A)	3A	
Utilization Category	AC15	DC13
Working Current 50Hz/60Hz	AC400V	0.3A
	DC220V	0.15A

Control Accessories

Under-voltage Release (MN)

Tripping threshold between 0.35 and 0.7 times the rated voltage; when it is at 85%-110% of rated working voltage, Under-voltage Release shall ensure the circuit breaker to switch-on; when the rated working voltage is less than 35%, Under-voltage Release shall prevent switch-on of the circuit breaker.

Applicable Type of Circuit Breaker	Power Consumption of Under-voltage Coil(W)	
	AC400V	AC230V
HDM6E250	4.3	3.3
HDM6E400	3.6	2.5
HDM6E800	2	1.6



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Standard IEC/EN 60947-2



Complete Accessories of HDM6 Series

Shunt Release (MX)

When the working voltage is between 70%-110% U_s , the shunt release will reliably trip the circuit breaker.

Applicable Type of Circuit Breaker	Power Consumption of Under-voltage Coil (W)		
	AC400V	AC230V	DC24V
HDM6E250	112	68.6	85.3
HDM6E400	67	62.3	100
HDM6E800	163	153	120

When the rated control supply voltage of the shunt release is DC24V, the maximum length of the copper conductor shall satisfy the following requirements:

Conductor Area Rated	1.5mm ²	2.5mm ²
Control Supply Voltage U_s (DC24V)		
100% U_s	150m	250m
85% U_s	100m	160m

When the requirements above cannot be met, it is recommended to adopt the following chart to design control loop of the shunt release.

Schematic Diagram of Shunt-trip Release in dotted -line box

DC24V

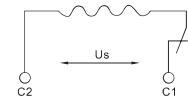
KA
A1 A2

KA: it is DC24V Intermediate Relay, and the current capacity of the electric shock is 1A.

Power Input
The voltage specification of the power input
50Hz AC230V, 400V

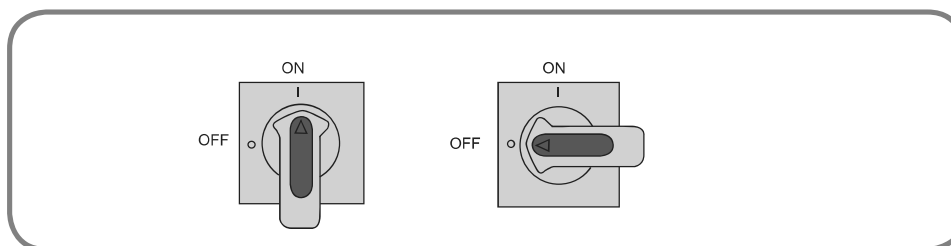


Shunt Release Wiring



Extended Rotary Handle

- Function: indication of the three positions of switch-on, switch-off and trip
- Residual earth-leakage fault. The circuit breaker cannot switch-on when the switch board door is open
- The door cannot be opened if the circuit breaker is ON
- An extension shaft that can be adjusted to the distance between the back of circuit breaker and door, the specific distance refers to the dimensions at the rear and the installation part
- The OFF-Position of the circuit breaker can hang 1-3 locks with the diameter of 5mm



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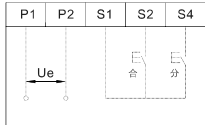
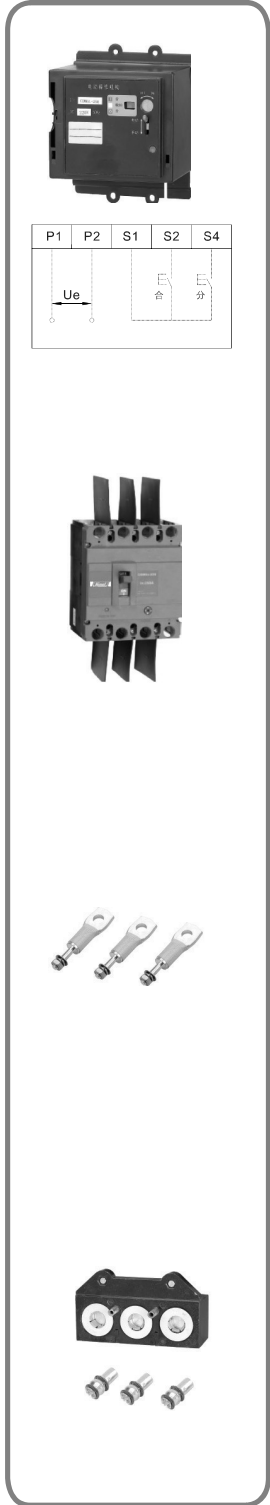
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Complete Accessories of HDM6E Series

AC Motor Mechanism

Provide on-site and remote distance control circuit breaker to implement switch-on and switch-off



Phase Barriers

The phase barriers are used to reinforce isolation of connection points in installation with busbars whether insulated or not. We can easily install the phase barrier through the phase slot of this product

Both the inlet and outlet line of HDM6s has phase barrier.

Connecting Accessories

Fixed, Rear Connection

Easy to install and connect the products in the Rear Connection

Plug-in Rear Connection

The plug-in connection for the products is easy for maintenance and replacement, but plug-in and plug-out cannot be done with the electricity

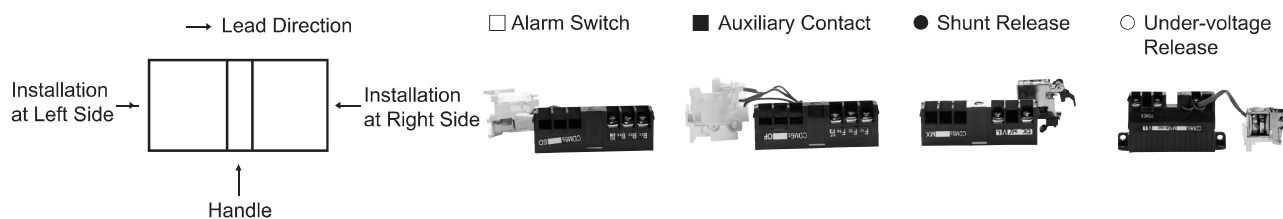
HDM6E Molded Case Circuit Breaker (Electronic)

Standard: IEC/EN 60947-2



Installation Location of Accessories

Installation Method for Tripping Release and Accessories Code



Name of Accessory	Product Type		
	HDM6E250	HDM6E400	HDM6s800
Alarm Switch			
Shunt Release			
Auxiliary Contact			
Undervoltage Release			
Two Group Auxiliary Contact			
Auxiliary Contact Alarm Switch			

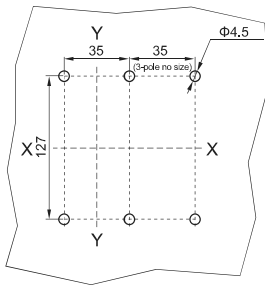
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Standard: IEC/EN 60947-2



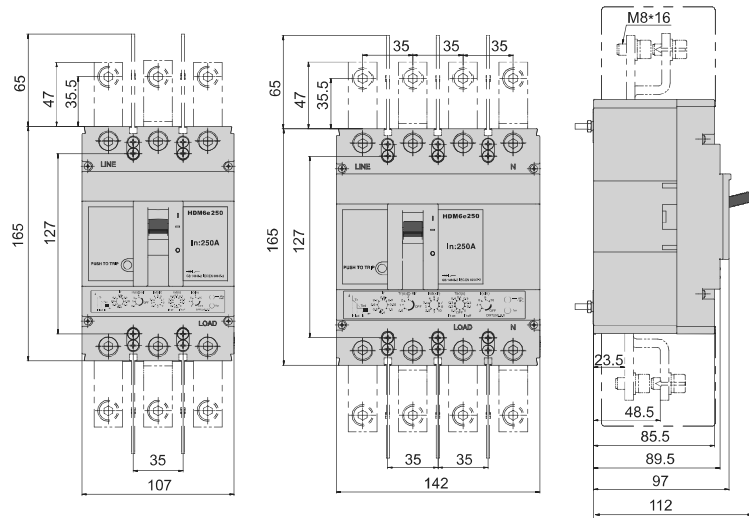
HDM6E 250AF Installation Dimension

● Chart of Fixed Front Connection Installation Hole

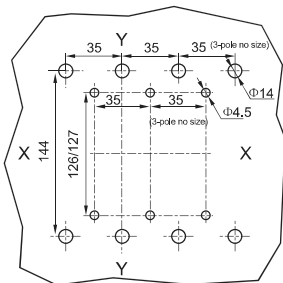


Remark: X-X, Y-Y is the center of 3-pole circuit breaker

● Installation Dimension of Fixed Front Connection

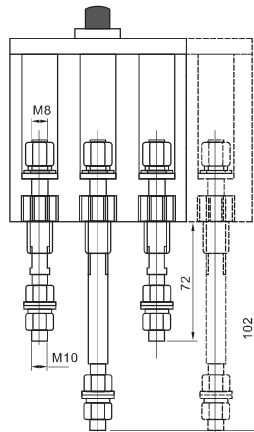


● Chart of Fixed Rear Connection Installation Hole

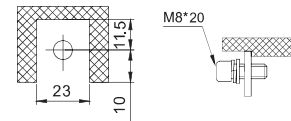


Remark: X-X, Y-Y is the center of 3-pole circuit breaker

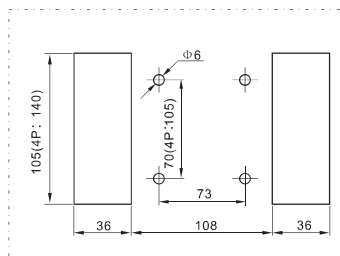
● Fixed Rear Connection Wiring



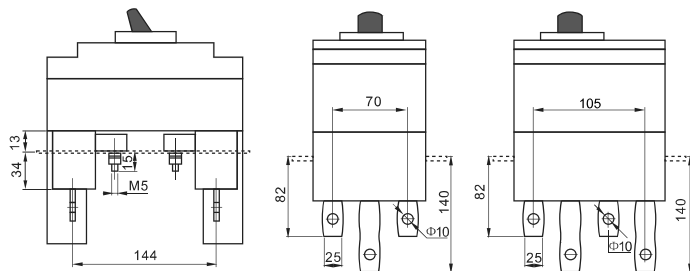
● Chart of Terminal Connection Installation Hole



● Chart of Plug-in Rear Connection Installation Hole



● Plug-in Rear Connection Wiring



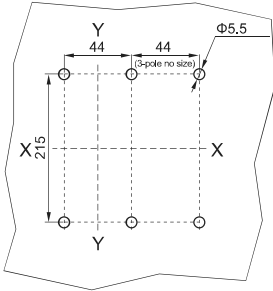
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Standard IEC/EN 60947-2



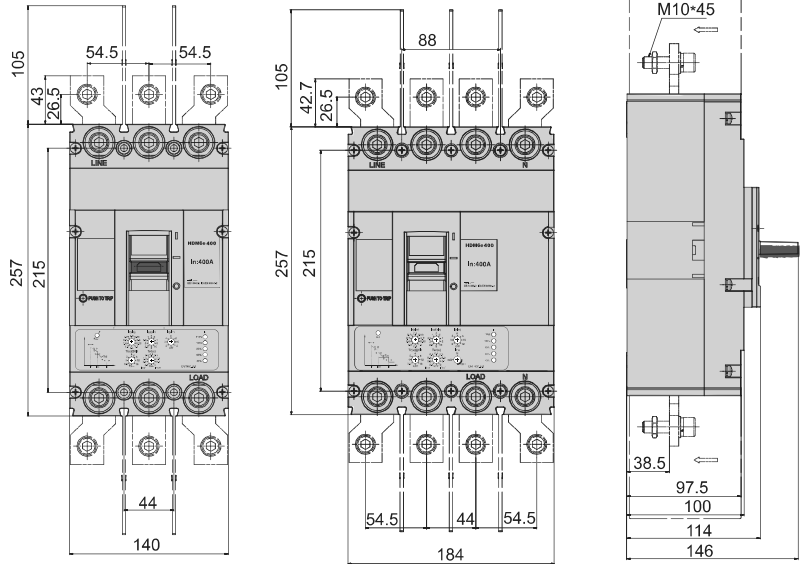
HDM6E 400AF Installation Dimension

● Chart of Fixed Front Connection Installation Hole

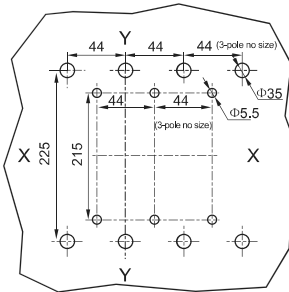


Remark: X-X, Y-Y is the center of 3-pole circuit breaker

● Installation Dimension of Fixed Front Connection

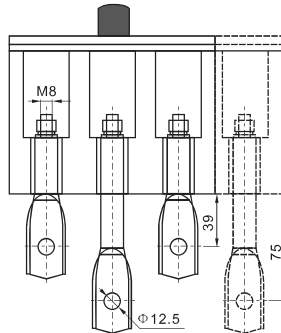


● Chart of Fixed Rear Connection Installation Hole

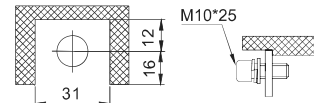


Remark: X-X, Y-Y is the center of 3-pole circuit breaker

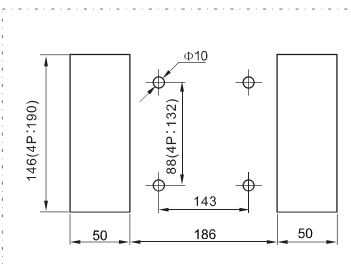
● Fixed Rear Connection Wiring



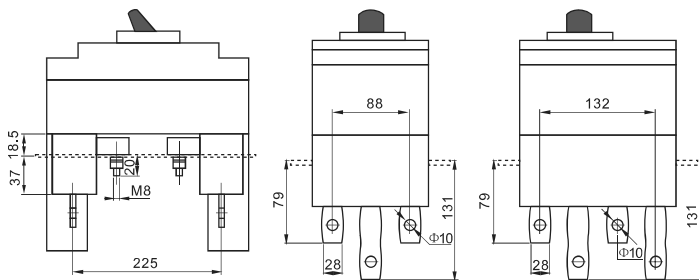
● Chart of Terminal Connection Installation Hole



● Chart of Plug-in Rear Connection Installation Hole



● Plug-in Rear Connection Wiring



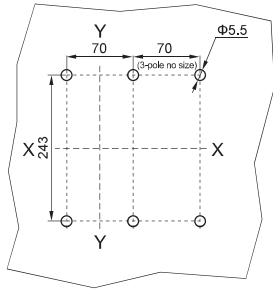
HDM6E Molded Case Circuit Breaker (Electronic)

Standard IEC/EN 60947-2

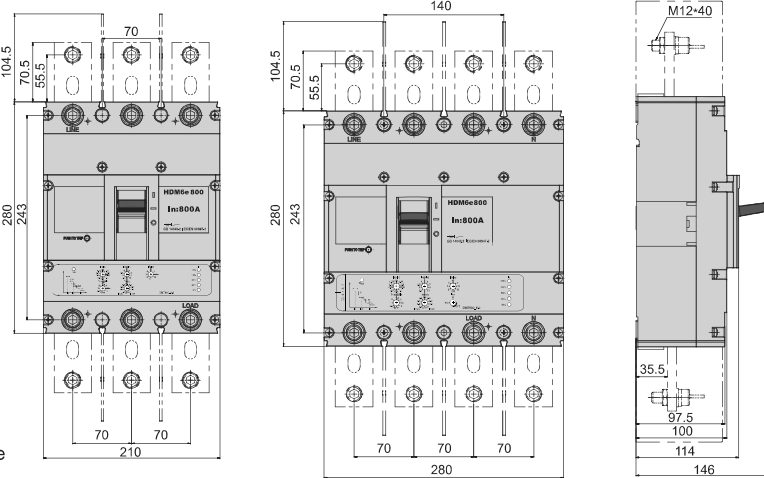


HDM6E 800AF Installation Dimension

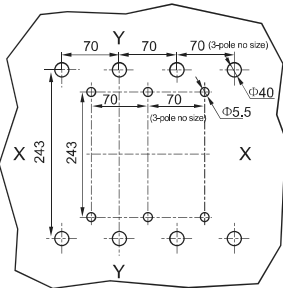
- Chart of Fixed Front Connection Installation Hole
- Installation Dimension of Fixed Front Connection



Remark: X-X, Y-Y is the center of 3-pole circuit breaker

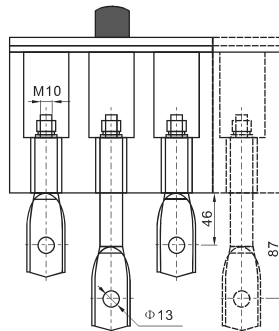


- Chart of Fixed Rear Connection Installation Hole

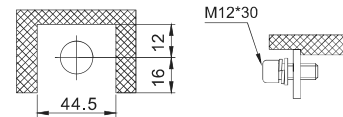


Remark: X-X, Y-Y is the center of 3-pole circuit breaker

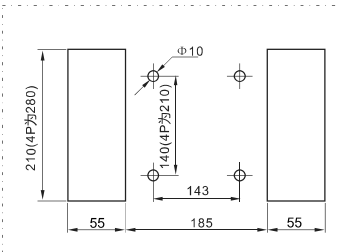
- Fixed Rear Connection Wiring



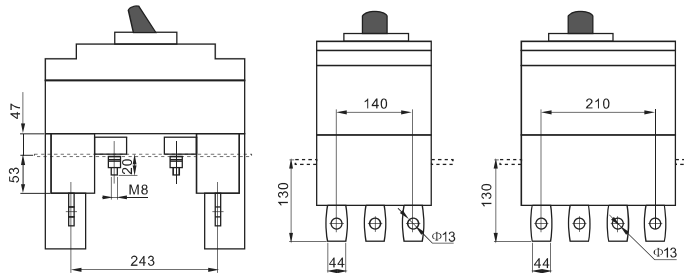
- Chart of Terminal Connection Installation Hole



- Chart of Plug-in Rear Connection Installation Hole



- Plug-in Rear Connection Wiring



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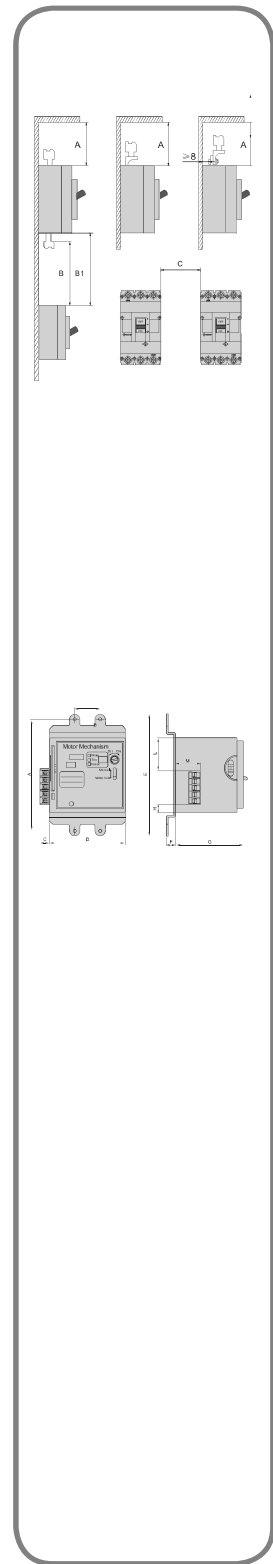
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Safety Distance

Type of Circuit Breaker	A(mm)	B(mm)	B1(mm)	C(mm)
HDM6E250	60	60	Legnth of Exposed Conductor +B	30
HDM6E400	110	110		70
HDM6E800	110	110		70

Remark: no matter whether the products have the accessories, the distance between the products must meet the requirements of C distance.



Installation Dimension

Motor Mechanism

Type of Circuit Breaker	A	B	C	D	E	F	G	H	L	M
HDM6E250AF	127	35	11	104	138	16	80	8.5	38.5	28.5
HDM6E400AF	215	44	11	140	232	22	112	12	97.5	28.5
HDM6E800AF	243	70	11	150	260	16	112	12	97.5	28.5

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Standard IEC/EN 60947-2

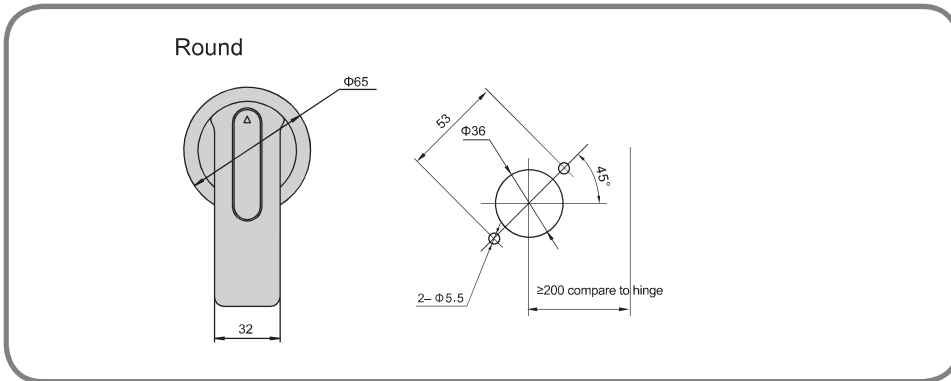


HDM6E Extension Rotary Handle Base Dimension

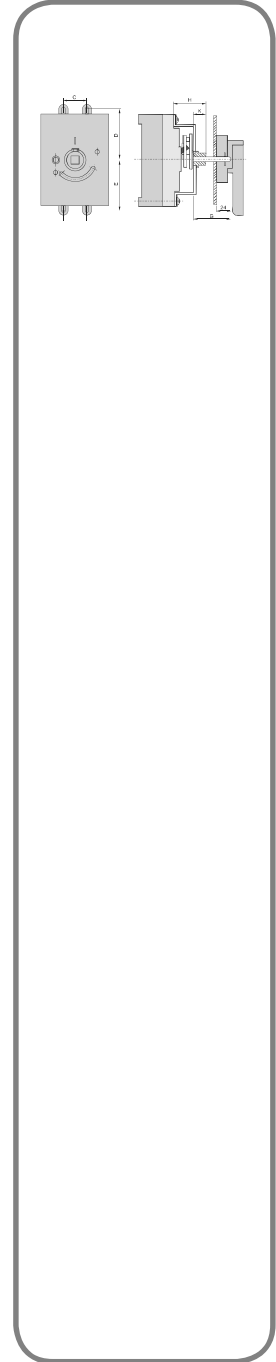
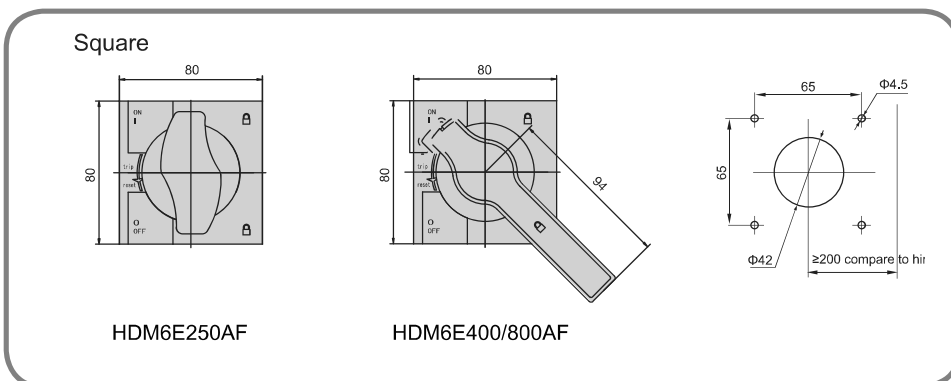
Type of Circuit Breaker	C	D	E	H	K
HDM6E250	35	71.5	71.5	56	20
HDM6E400	44	107.5	107.5	76	20
HDM6E800	70	121.5	121.5	76	20

Remark: the shortest distance of G connecting rod is 50mm and ex-factory standard configuration is 150mm, please contact the factory if the special customization is required

HDM6E Extension Rotary Handle



HDM6E250 is 65 or 95 for option, the default value is 65.
 HDM6E400, HDM6E800 is 95 or 125 for option, the default value is 95.



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Standard IEC/EN 60947-2



Impact of Altitude on Tripping Release Performance

No impact on the performance of the circuit breaker when the height is below 2000m.

When it is over 2000m, please refer to following factors of air insulation properties and cooling capability. The correction factors in the table below are applicable for the conditions of the height of installation over 2000m, the breaking capacity of the circuit breaker remains unchanged.

Altitude(m)	2000	3000	4000	5000
Max. Working Voltage(V)	415	350	310	270
30°C Thermal Rated Value(A)	I_n	$0.96I_n$	$0.93I_n$	$0.96I_n$
Average Isolation Voltage(V)	800	700	600	500
Dielectric Strength(V)	3000	2500	2100	1800

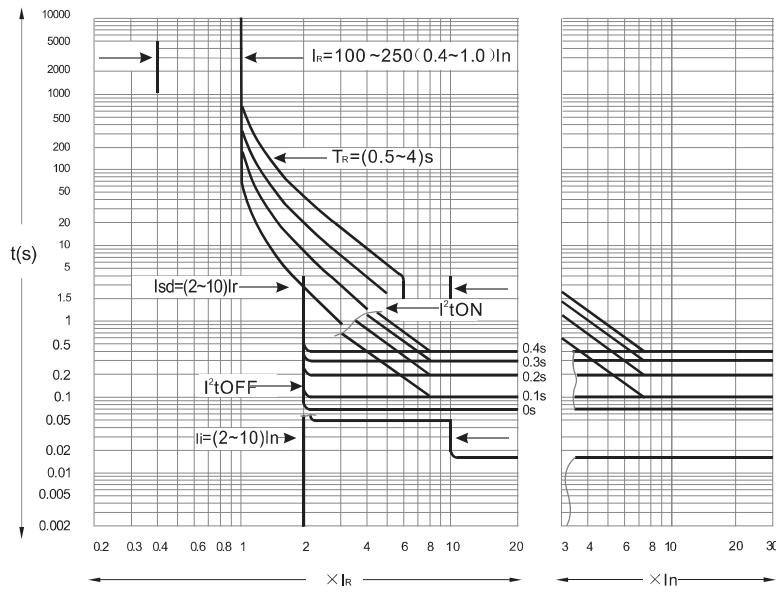
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Standard IEC/EN 60947-2

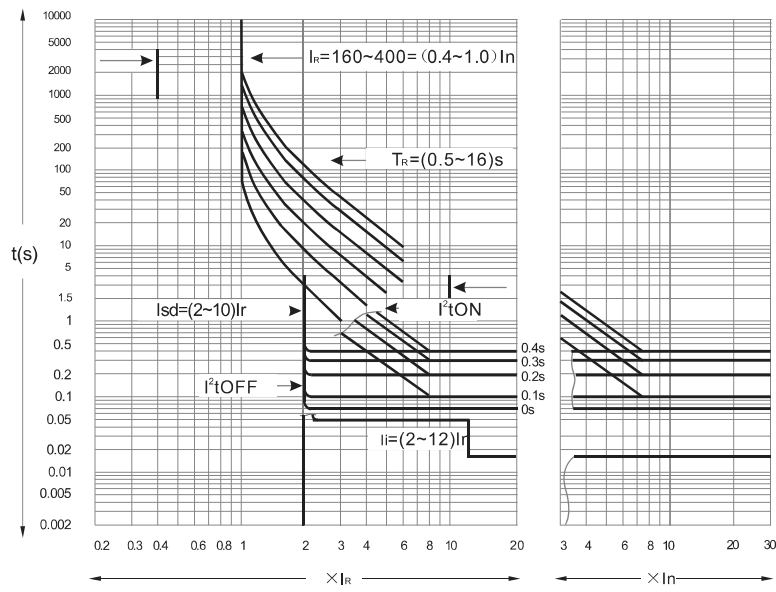


Tripping Release Curve

HDM6E 250AF



HDM6E 400AF



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Standard IEC/EN 60947-2



Tripping Release Curve

HDM6E 800AF

