







Ex9MD3HV



Product Overview

Ex9MD3HV DC Moulded case circuit breaker, suitable for rated voltage DC 1500V, rated current 200A to 630A circuit for connecting, breaking and carrying rated current, and can be in the line and electrical equipment overload, short-circuit conditions. Reliable protection of lines and power-using equipment under the condition. Widely used in new energy, electric power, infrastructure, industry and other occasions.

Reliable Quality Assurance

 	 CB	 CE	 
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Ex9MD3HV



Excellent Performance

- Short-circuit breaking capacity of up to 15kA, effectively reducing the short-circuit current on the line and load hazards.
- The product is equipped with terminal cover as standard, which can realize zero flying arc and reduce the risk of short-circuit between phases caused by arc, so it is safer to use.

Safe and Secure

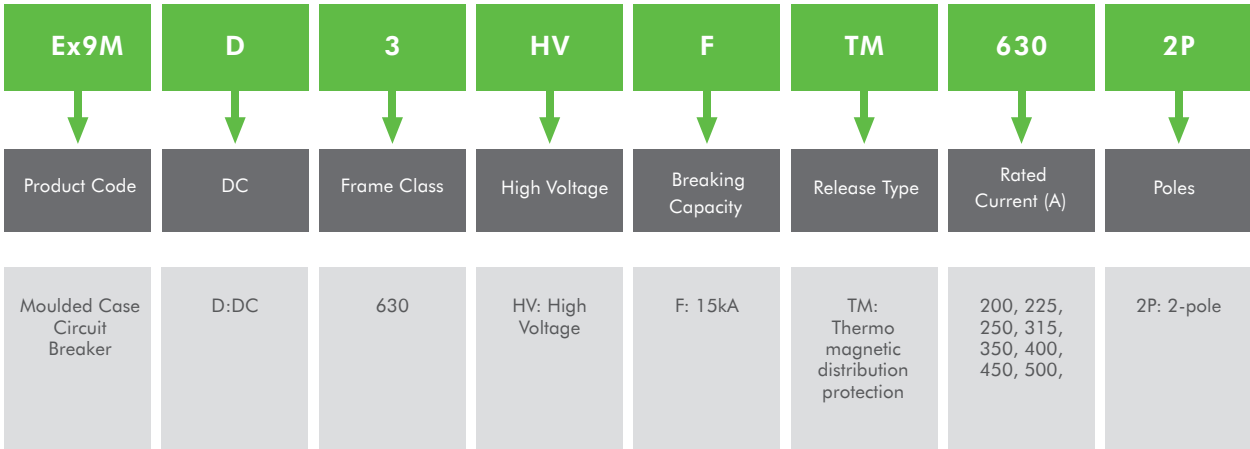
- The product passes the dry cold, dry heat, wet heat and other environmental tests, to ensure the reliable use of the product in harsh environments; the width of the product is only 98mm, compared with the industry products reduced by 50%, to provide users with cost-effective options.

Convenient and Environ Entally Friendly

- Accessory modular installation, the same volume to achieve more protection functions, effectively saving customers stocking types; frame using recyclable thermo-moulded materials, green environmental protection, energy saving and efficiency.

Model Description

DC Moulded Case Circuit Breakers



Selection Examples.

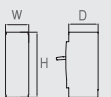
Ex9MD3HVF TM 630 2P

Ex9MD3HVF TM 630 2P means Ex9MD3HV series 630 frame frame, breaking capacity 15kA, thermo-magnetic distribution protection, rated current 630A, two-pole DC Moulded frame circuit breaker.

Accessories Model Cross-reference Table

Accessories Type	Model	Ex9MD3HV
Auxiliary contacts	AX 23-MDHV	AX 23-MDHV
Alarm contacts	AL 23-MDHV	AL 23-MDHV
Auxiliary telegraph contacts	AXL 23-MDHV	AXL 23-MDHV
Shunt release	SHT 23-MDHV	SHT 23-MDHV AC110V
		SHT 23-MDHV AC220-240V
		SHT 23-MDHV AC380-415V
		SHT 23-MDHV DC24V
		SHT 23-MDHV DC110-120V
		SHT 23-MDHV DC220V
The shunt assist is integrated	SHTA 23-MDHV	SHTA 23-MDHV AC110V
		SHTA 23-MDHV AC220-240V
		SHTA 23-MDHV AC380-415V
		SHTA 23-MDHV DC24V
		SHTA 23-MDHV DC110-120V
		SHTA 23-MDHV DC220V
The integration of the incentives and auxiliary reports	SHTB 23-MDHV	SHTB 23-MDHV AC110V
		SHTB 23-MDHV AC220-240V
		SHTB 23-MDHV AC380-415V
		SHTB 23-MDHV DC24V
		SHTB 23-MDHV DC110-120V
		SHTB 23-MDHV DC220V
hand-operated mechanisms	CRH 23-MDHV	CRH 23-MDHV

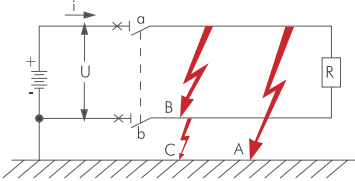
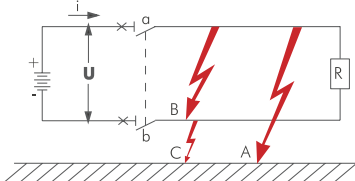
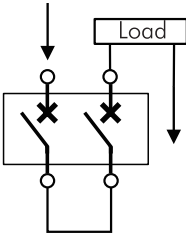
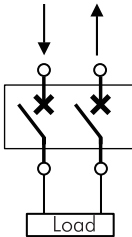
Data Sheet

Product Model Number		Ex9MD3HVF
Product Name		DC Moulded Case Circuit Breakers
Implementing standards		IEC/EN 60947-2
Frame frame rating current $I_{nm}(A)$		630
The number of product poles		2P
Rated insulation voltage $U_i(V)$		1500
Rated impulse voltage $U_{imp}(kV)$		12
Rated operating voltage $U_e(V)$		DC1500
Rated operating current $I_n(A), 40\square$		200, 225, 250, 315, 350, 400, 450, 500, 630
Rated ultimate short-circuit breaking capacity $I_{cu}(kA)$ 2 levels in series		15
Rated operating short-circuit breaking capacity $I_{cs}(kA)$ 2 levels in series		15
Isolation function		have
Selective categories		A
Protection class		IP20
Lifespan	Mechanical life (times)	7000
	Electrical life (times)	1000
The decoupler form		Thermomagnetic (non-adjustable)
Operating ambient temperature		-40°C ~ +70°C
Dimensions: 	Width mm(W)	98
	Height mm(H)	275
	Depth mm(D)	124

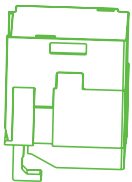
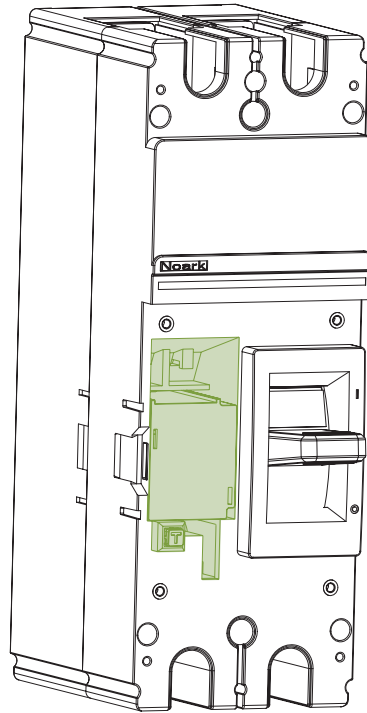
DC Moulded Case Circuit Breakers

Thermal Magnetic Striker	Frame Ratings	Rated Current (A)	Protection Current Setting Mode	Protection Characteristics
Overload Protection	630	200-400	Fixed	I 2 t= constant, 1.05I _n (cold) for 2h, no release, 1.3I _n (hot) for 2h
		200-630		
Short-circuit Protected	630	200-400		5/10I _n , ±20%
		200-630		

Wiring Methods for DC Applications

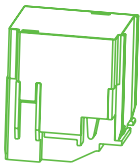
Grounding Type	Single-Stage Grounding Systems		Ungrounded Systems	
Circuit diagram				
the effects of the failure	Fault A	Maximum short-circuit current I_{SC}	Fault A	No effect
	Fault B	Maximum short-circuit current I_{SC}	Fault B	Maximum short-circuit current I_{SC}
	Therefore, C	No effect	Therefore, C	No effect
\leq DC1500V			 <p data-bbox="916 1360 1382 1403">Note: 1. Ensure that the installation is in such a way that secondary ground faults do not occur</p>	

Internal accessories



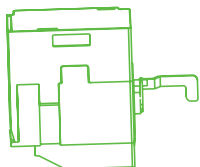
Auxiliary contact (AX)

- Function: The circuit breaker's state (such as open and closed) indicates outputs.
- Type: One is normally open and the other one is normally closed.



Alarm contact (AL)

- Function: Send alarm signals in accordance with circuit breaker's tripping action.
- Type: One is normally open and the other one is normally closed.



Shunt release (SHT)

- Function: Remotely control the circuit breaker to trip.
- Power supply type: AC 380V~415V / AC 220V~240V / AC 110V / DC 220V / DC 110V~120V / DC 24V

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Internal accessories



Auxiliary contact (AX 23-MD HV)

Function

An accessory that remotely indicates the ON or OFF/ free-tripping status of the circuit breaker, connected to the auxiliary circuit of the circuit breaker.

Indicate the ON/OFF status of the circuit breaker

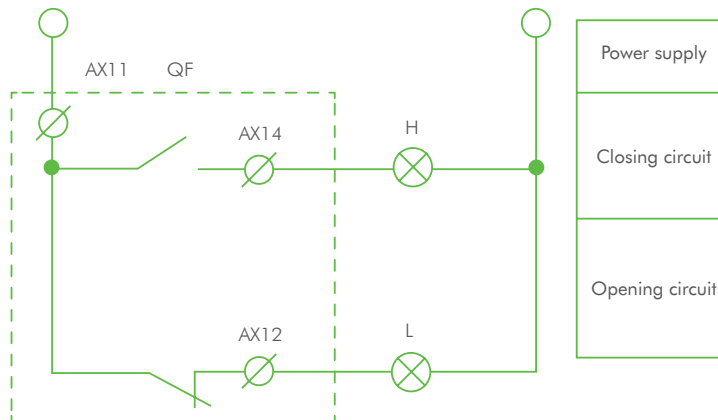
AX 23-MD HV	OFF/ Free-tripping	
	ON	

Electrical characters

Rated operational voltage(V)	AC110	
	AC-15	DC-13
AC110	5	-
AC240	4	-
AC415	2	-
DC110	-	0.25
DC220	-	0.25

Wiring diagram

The auxiliary contact can be combined with the indicator light to form a control circuit. The ON/OFF status of the circuit breaker can be determined through the indicator lights without opening the distribution cabinet.



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Internal accessories



Alarm contact (AL 23-MD HV)

Function

Primarily used for providing signals when a circuit breaker undergoes a fault or a free-tripping action.

The reasons for alarm contacts issuing fault indication signals: overload or short-circuit tripping; manual free-tripping.

Indicate the ON/OFF status of the circuit breaker

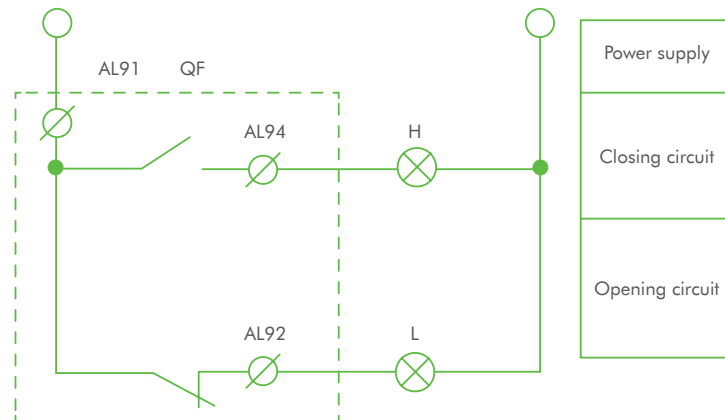
AL23-MD HV	ON/OFF	AL92		AL91
	Free-tripping	AL92		AL91

Electrical characters

Rated operational voltage(V)	AC110	
	AC-15	DC-13
AC110	5	-
AC240	4	-
AC415	2	-
DC110	-	0.25
DC220	-	0.25

Wiring diagram

Alarm contacts can be combined with devices such as indicator lights and buzzers, allowing the status of the circuit breaker to be determined without opening the distribution cabinet when the circuit breaker trips freely or due to a fault.



Internal accessories



Auxiliary alarm contact (AXL 23-MDHV)

Function

Auxiliary contact - an accessory that remotely indicates the ON or OFF/ free-tripping state of the circuit breaker, connected to the auxiliary circuit of the circuit breaker.

Alarm contact - mainly used to provide signals when a circuit breaker undergoes a fault or a free-tripping action. The reasons for alarm contacts issuing fault indication signals: overload or short-circuit tripping; manual free-tripping.

Indicate the ON/OFF status of the circuit breaker

AXL23-MDHV	OFF/ Free-tripping	AX12
	ON	AX12
	ON/OFF	AL92
	Free-tripping	AL92

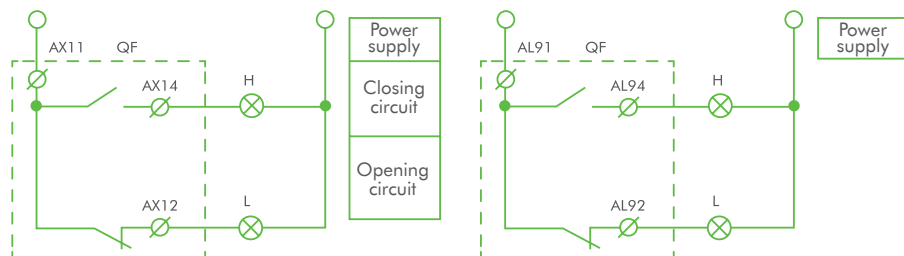
Electrical characters

Rated operational voltage(V)	AC110	
	AC-15	DC-13
AC110	5	-
AC240	4	-
AC415	2	-
DC110	-	0.25
DC220	-	0.25

Wiring diagram

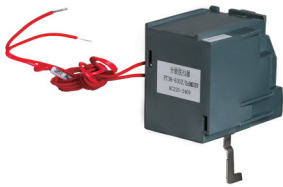
Auxiliary contact - an auxiliary contact can be combined with indicator lights to form a control circuit. Without opening the power distribution cabinet, the ON/OFF status of the circuit breaker can be determined via the indicator lights.

Alarm contact - an alarm contact can be connected to devices such as indicator lights and buzzers, allowing the status of the circuit breaker to be determined without opening the distribution cabinet when the circuit breaker trips freely or due to a fault.



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Internal accessories



Shunt release (SHT 23-MDHV)

The shunt release is an accessory designed for remote break operation. It is capable of reliably functioning when the supply power voltage is within any voltage between 70% and 110% of the rated control supply voltage. Activated by an electrical signal, the shunt release enables remote opening of the circuit breaker.

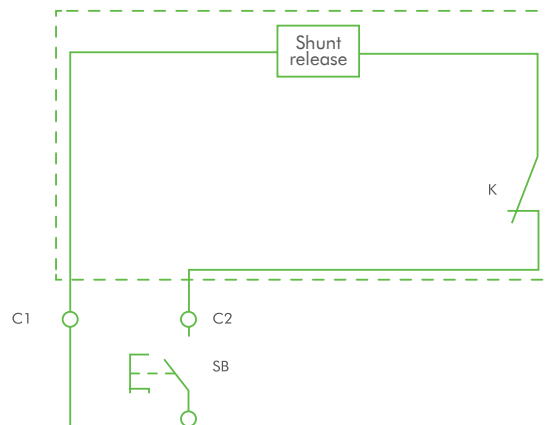
Electrical characters

Power of shunt release(W)					
AC110V	AC220V/230V/240V	AC380V/400V/415V	DC24V	DC110V	DC220V
105	193	640	78	105	56

Action characteristics

Reliable acting voltage		70%~110%×Us
Power-on time (Pulse Type)	Minimum value	10ms
	Maximum value	1s
Response time		30ms
Number of operations		1000

Wiring diagram



Integrated type: shunt release and auxiliary contacts (SHTA 23-MDHV)

SHTA is an integrated accessory that combines the functions of both a shunt release and auxiliary contacts.

Integrated type: shunt release and auxiliary alarm contacts (SHTB 23-MDHV)

SHTB is an integrated accessory that combines the functions of both a shunt release and auxiliary alarm contacts.

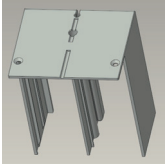


External accessories



Interphase barrier standard configuration

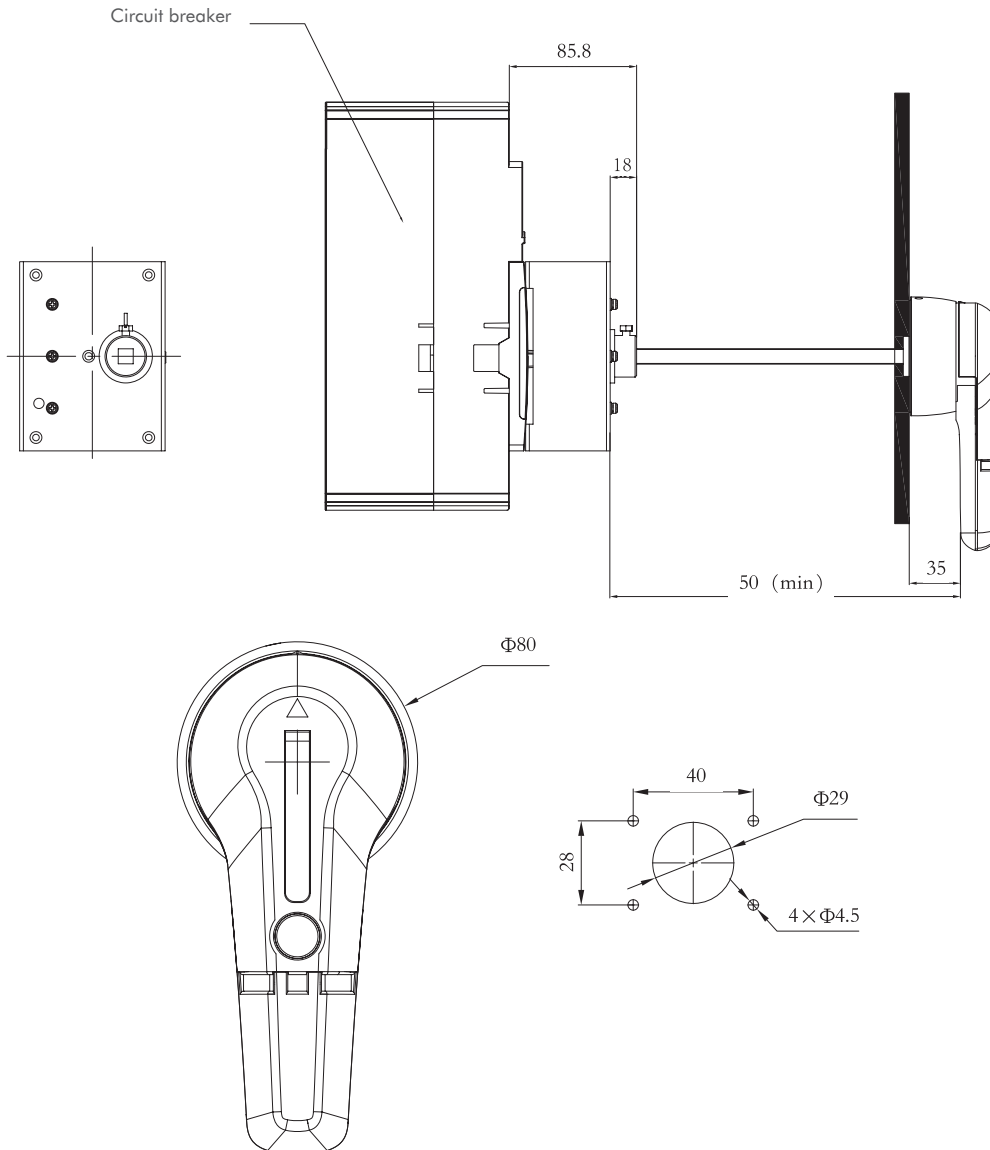
Interphase barrier is a safety accessory used to insulate phases of circuit breakers, ensuring optimal insulation at connection points. It can be easily installed on the circuit breaker body and terminal cover.



Terminal cover standard configuration

Reducing front arcing, improving insulation performance, and preventing interphase short-circuit. To accommodate various cable and front connections of terminal plates, there're knocking-off holes on the top of terminal cover. Protection level: IP40

Operating mechanism (CRH 23-MDHV)



Appendix

Temperature compensation coefficient

Rated current	-40°C	-30°C	-20°C	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C	70°C
200A	1.4In	1.35In	1.3In	1.25In	1.2In	1.15In	1.1In	1.05In	1In	0.95In	0.9In	0.85In
225A	1.4In	1.35In	1.3In	1.25In	1.2In	1.15In	1.1In	1.05In	1In	0.95In	0.9In	0.85In
250A	1.4In	1.35In	1.3In	1.25In	1.2In	1.15In	1.1In	1.05In	1In	0.95In	0.9In	0.85In
315A	1.4In	1.35In	1.3In	1.25In	1.2In	1.15In	1.1In	1.05In	1In	0.95In	0.9In	0.86In
350A	1.4In	1.35In	1.3In	1.25In	1.2In	1.15In	1.1In	1.05In	1In	0.95In	0.84In	0.79In
400A	1.4In	1.35In	1.3In	1.25In	1.2In	1.15In	1.1In	1.05In	1In	0.98In	0.93In	0.8In
450A	1.4In	1.35In	1.3In	1.25In	1.2In	1.15In	1.1In	1.05In	1In	0.98In	0.92In	0.8In
500A	1.4In	1.35In	1.3In	1.25In	1.2In	1.15In	1.1In	1.05In	1In	0.98In	0.92In	0.8In
630A	1.4In	1.35In	1.3In	1.25In	1.2In	1.15In	1.1In	1.05In	1In	0.92In	0.84In	0.78In

Altitude derating table

Altitude(m)	2000m	3000m	4000m
Rated current $I_n(A)$	$1 \times I_n$	$0.97 \times I_n$	$0.93 \times I_n$
Rated voltage $U_e(V)DC$	$1 \times U_e$	$0.9 \times U_e$	$0.8 \times U_e$
Rated impulse withstand voltage $U_{imp}(kV)$	12	10	8
Dielectric properties $(V)DC$	3820	3500	3100

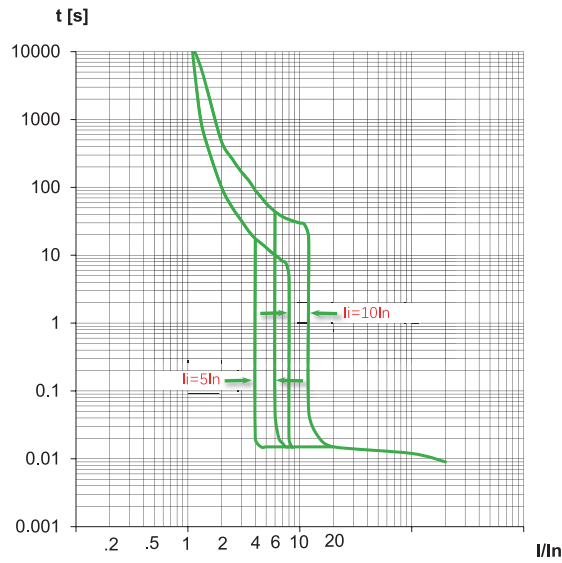
Power loss table

Rated current (A)	Fixed unipolar resistor ($m\Omega$)	Power consumption per pole (W)
200	0.4	16
225	0.35	17.7
250	0.35	21.9
315	0.25	24.8
350	0.25	30.6
400	0.2	32.0
450	0.2	40.5
500	0.15	37.5
630	0.12	47.6

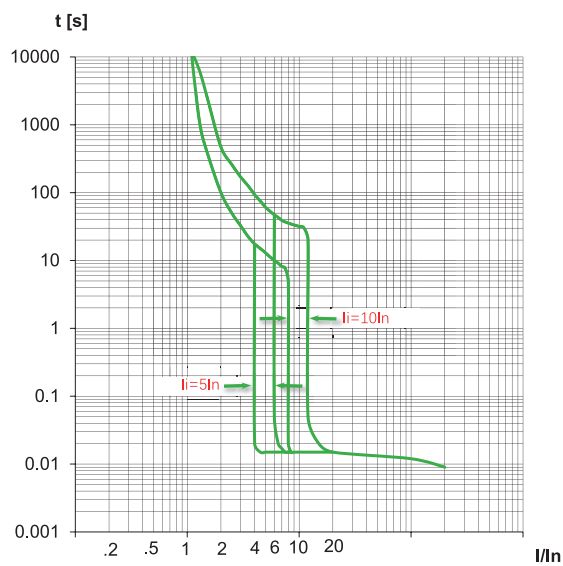
Appendix

Ex9MD3HV

Ex9MD3HV(200A-400A) Trip characteristic curve



Ex9MD3HV(450A-630A) Trip characteristic curve



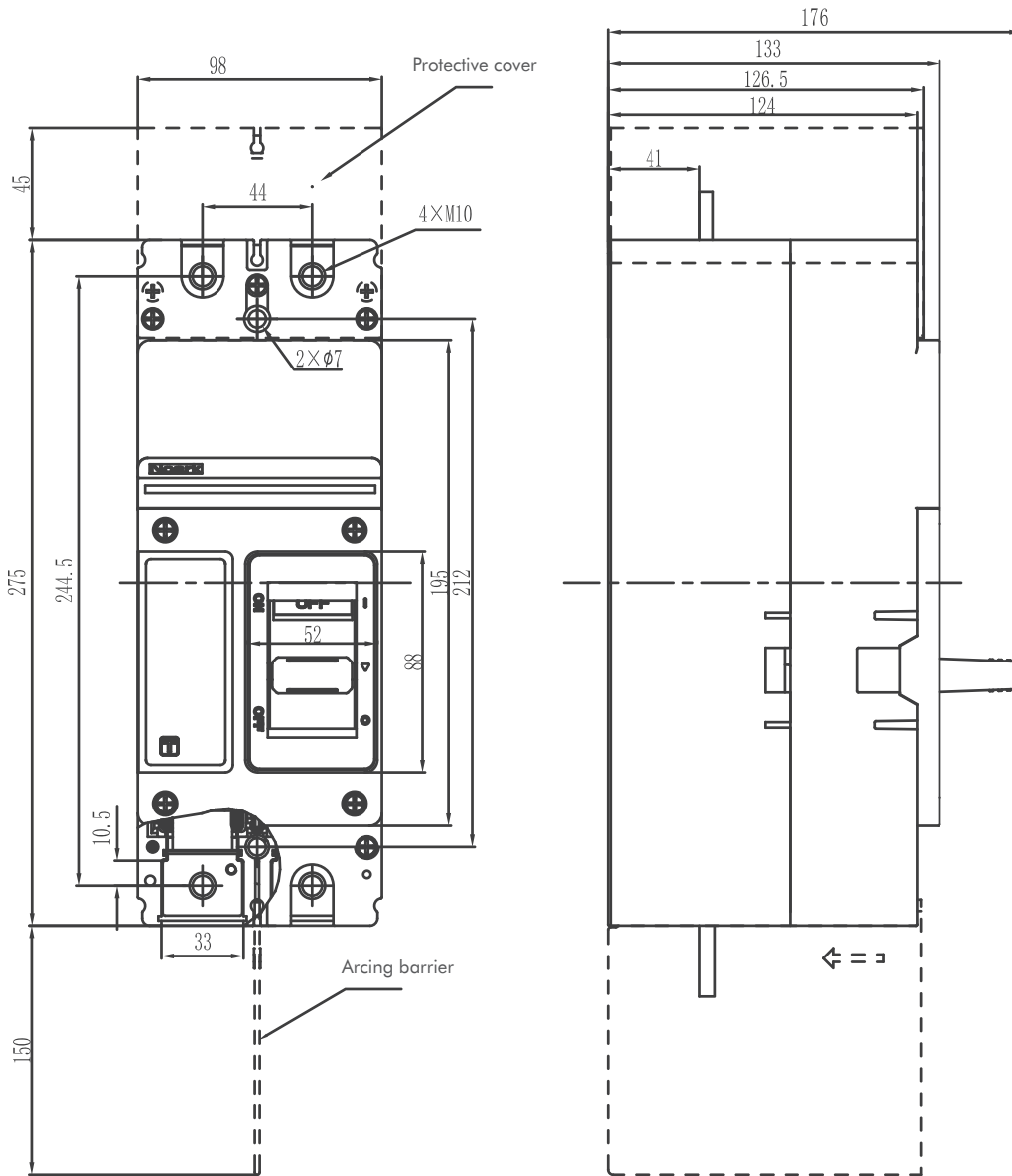
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External and installation dimensions

Ex9MD3HV

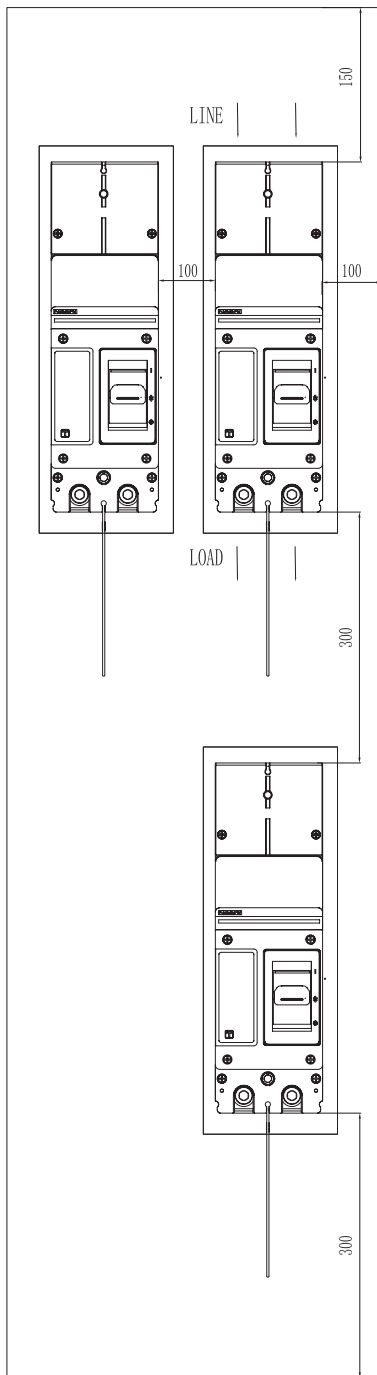
External and installation dimensions

Unit: mm



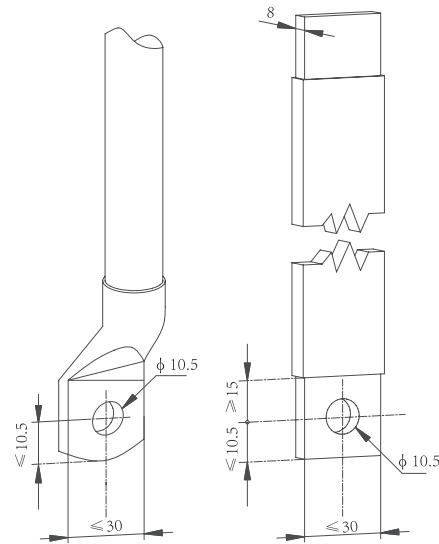
External and installation dimensions

Safe distance



Conductor

Unit: mm



Conductor dimensions

Unit: mm

