HCB2D-80 UL DC miniature circuit breaker

1 Ratings:

The HCB2D-80 DC circuit breaker (hereinafter referred to as the "MCB") is suitable for DC working environments. Its rated working voltage can reach up to DC 1000V, and it is used as overload protection and instantaneous protection in circuits with a rated current of up to 80A. The circuit breaker has overload and short-circuit protection functions, which can protect the lines and power equipment from damage. The product design complies with standards: IEC/EN 60947-2, and UL489.

2 Approvals/Standards:

LISTED
E550386

- ◇ UL
- ◇ TUV
- ◇ REACH/RoHS

3 Features&Benefits:

Overload and the short circuit protection function Non-polarity and Polarity both available

Designed for PV, energy storage and other DC applications

Product Model

	HC	B2	D	- 80	C	80 /	2	Accessory
HIITIO Code								
B2 :	2 Series Circuit breaker							
D :	DC							
Frame Current :	80							
Tripping Curve	B: Type B C: Type C							
Rated Current	16:16A 20:20A 25:25A 32: 32A 40:40A 50:50A 63:63A 80:80A							
Pole	1: 1Pole (No UL) 2: 2Poles(500V) 3: 3Poles(750V) 4: 4Poles(1000V)							
Accessory	Default: No attachments. MX+OF DC 12-24V Passive, MX+OF DC 48-60V Passive, MX+OF DC 24-48V Active,			MX+OF DC 24-48V Passive, MX+OF DC 48-60V Active				

5 Characteristic Parameter

Pole	1P	2P	3P	4P
Rated Oporational Voltage	250VDC	500 VDC	750 VDC	1000 VDC
Frame Current	80A			
Rated Current	16，20，25，32，40，50，63，80			
Rated Insulation Voltage	1000V			
Rated Impulse Withstand Voltage	6kV			
Tripping Characteristics	B(4In±20%)，C(8In±20%)			
TrippingType	Thermal Magnetic			
Rated Utimate Short-Circuit Breaking Capacity	10kA			
Rated Service Short-Circuit Breaking Capacity	6kA			
Electrical Life	1500 Cycles			
Mechanical Life	10000 Cycles			
Overvoltage Category	III			
Pollution Degree	3			
Protection Degree	IP20			
Resistance to Humidity and Heat	Class 2			
Relative Humidity	≤ 95%			
Vibration	IEC 60068-2-6			
Shocks	IEC 60068-2-27			
Terminal Capacity	AWG14~4/1.5~25mm^2			
Fastening Torque of Terminal	3.5N·m			
Ambient Temperature	-5°C~+40°C			
Storag Temperature	-30°C~+70°C			
Installation Method	DIN35			
Altitude	≤ 2000m			
Accessory	MX+OF DC 12-24V Passive, MX+OF DC 48-60V Passive, MX+OF DC 24-48V Active, MX+OF DC 24-48V Passive, MX+OF DC 48-60V Active			

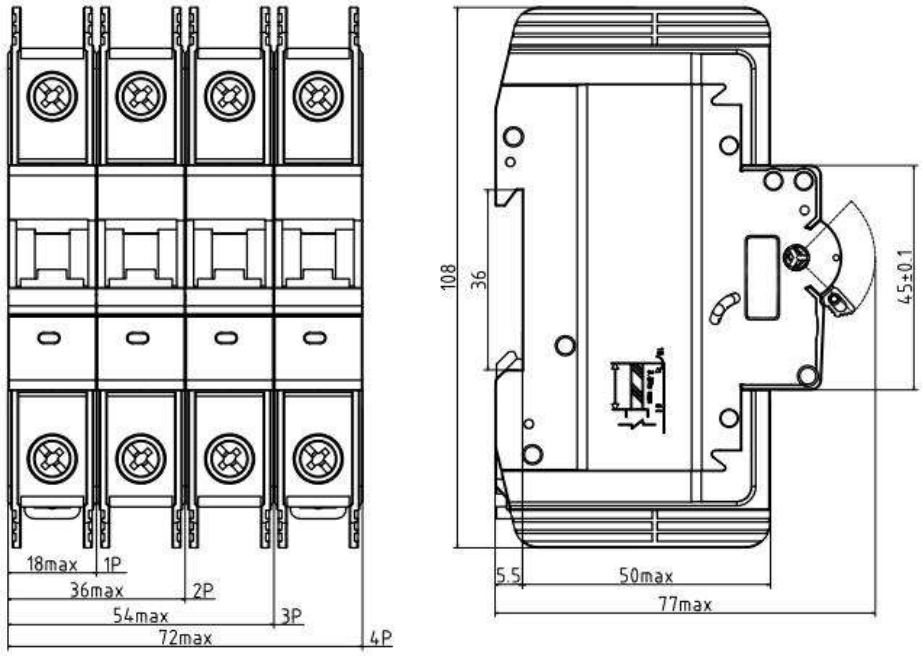
Internal resistance of DC products

Current specification	Internal resistance	Current specification	Internal resistance
16A	6.7mΩ	40A	2.5mΩ
20A	4.7mΩ	50A	1.6mΩ
25A	3.4mΩ	63A	1.2mΩ
32A	2.7mΩ	80A	1.1mΩ

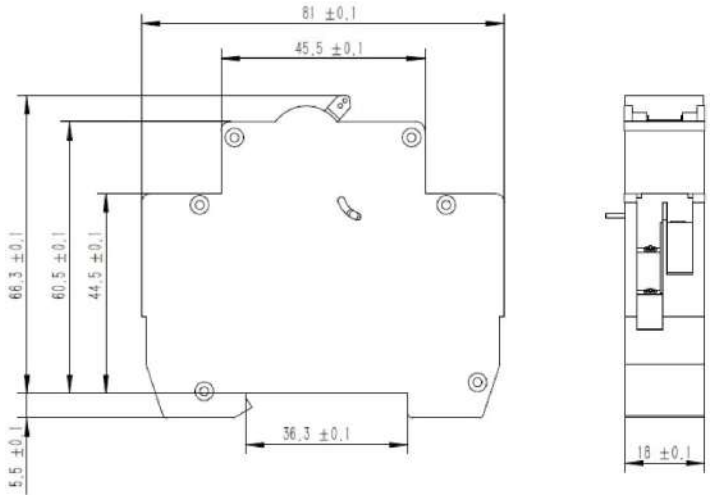
Decoupling + Auxiliary (MX + OF) Technical Parameters

Name	MX+O(Severely Energized+Auxiliary Integrated Type)
Rated insulation voltage Ui (V)	415
Rated control voltage Us (V)	DC:12～24 DC:24～48 DC:48～60
Trip power consumption (W)	DC: 12V - 24V, minimum tripping power consumption is 25W DC: 24V - 48V, minimum tripping power consumption is 45W DC: 48V - 48V, minimum tripping power consumption is 50W
Closing voltage	（0.7～1.1）Us
Auxiliary contact OF	6A 240VAC/1A 130VDC

6 Outline dimensional (mm)

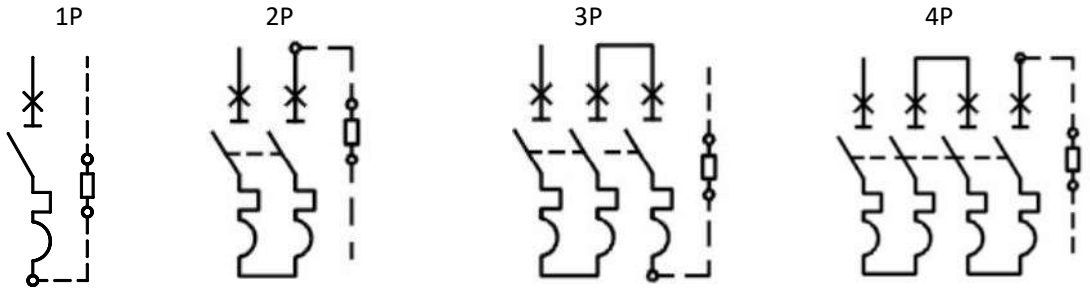


Sizes. MX+OF(Energized+Auxiliary)

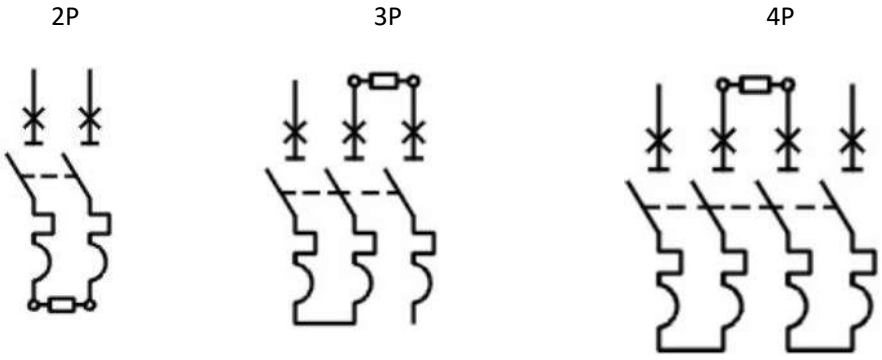


7 Direct current connection method

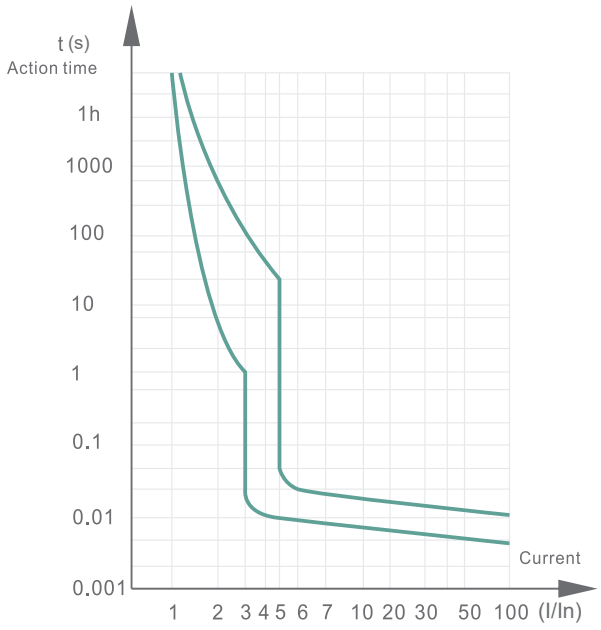
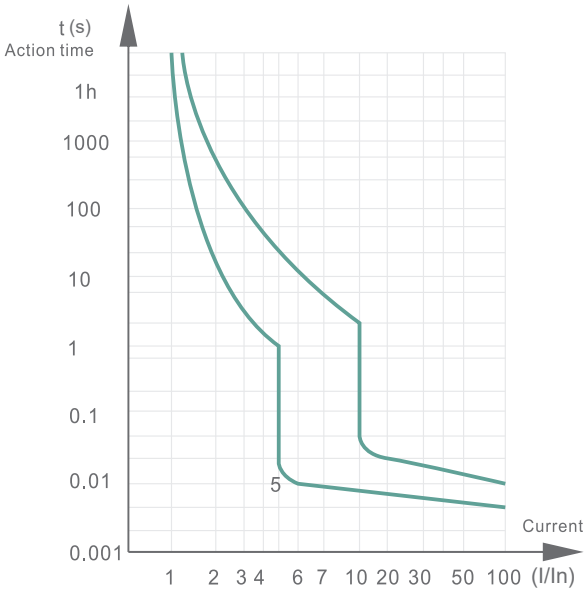
Grounding network diagram



Non-grounded network diagram



8 Tripping Curve

B Curve 4In(1±20%)	C Curve 8In(1±20%)
	
B curve	C curve
Suitable for pure resistive load and micro-inductive circuit Available to rated current of 16A ~ 80A Instantaneous tripping range: 4In±20%	Suitable for general load and power distribution circuit Available to rated current of 16A ~ 80A Instantaneous tripping range: 8In±20%

9 Reduction coefficient

The temperature coefficient corresponding to the ambient temperature

Temperature Capacity Reduction Coefficient Table

Temperature ℃	-30	-25	-20	-15	-10	-5	0	+5	+10	+15	+20	+25
Coefficient	1.3	1.28	1.26	1.23	1.21	1.19	1.16	1.14	1.11	1.08	1.06	1.03
Temperature ℃	30	+35	+40	+45	+50	+55	+60	+65	+70	+75	+80	+85
Coefficient	1	0.97	0.94	0.91	0.88	0.84	0.81	0.77	0.73	0.69	0.65	0.6

Corresponding to the altitude, the reduction coefficient

Altitude Capacity Reduction Coefficient Table

Altitude (km)	Rated current coefficient	Rated insulation voltage coefficient	Rated impulse withstand voltage coefficient	Power frequency dielectric strength coefficient	Rated short-circuit capacity coefficient	Electrical life coefficient
2	1	1	1	1	1	1
3	0.97	0.90	0.90	0.90	0.87	0.87
4	0.91	0.82	0.82	0.82	0.77	0.77
5	0.86	0.76	0.76	0.76	0.67	0.67

10 Normal working environment

Normal Working Environment

The ambient air temperature shall not exceed +70℃ and shall not be lower than -30℃ (if it is lower or higher than 25℃, the product's current specification needs to be adjusted according to the corresponding temperature coefficient, see Table 3 for temperature reduction coefficient).

The altitude shall not exceed 2000m (if it is higher than 2000m, the product needs to be used with reduced capacity,).

The relative humidity of the air shall not exceed 50% at the highest temperature of +50℃, and it can have a higher relative humidity at lower temperatures, for example, 90% at 20℃. Special measures should be taken for condensation caused by temperature changes.

The product shall be installed in a medium without explosion hazards, and the medium should have no gases or conductive dust that can corrode metals and damage insulation, and avoid using it in areas exposed to rain and snow.

When the user's operating conditions are more severe than those mentioned above, consultation with the manufacturer is required.

11. Function Description of the Attachment

Split-Action + Auxiliary (MX + OF) Contacts

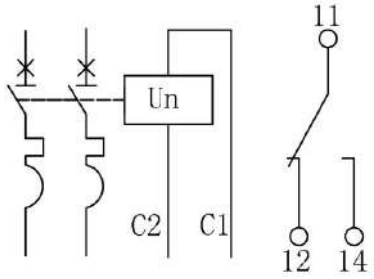
Main Function

The split-action trip unit MX + OF is assembled with the circuit breaker to achieve remote trip control and status indication functions.

Main Performance Indicators

Action Characteristics: The trip unit should reliably operate within the rated control power supply voltage range of 70% to 110% to open the circuit breaker. The passive-type trip unit has 5 connection terminals. The wiring principle is shown in Figure 9. Terminals C1 and C2 are connected to the working voltage of the split-action trip unit. When a trip voltage is applied between C1 and C2, the mechanism of the trip unit trips and drives the circuit breaker to trip and open. At the same time, the indicator of the trip unit shows a green mark. When the trip unit trips, the passive contacts 11-12 are connected, and the external safety signal light is illuminated; when the trip unit closes, the passive contacts 11-14 are connected, and the external warning signal light is illuminated.

Mechanical Life: The operating life of the trip unit is not less than 4000 times.



12 Storage Precautions

When the environmental temperature ranges from -40℃ to +75℃, it should be stored in a warehouse with good air circulation and relative humidity not exceeding 80%. The storage location should be free from acidic, alkaline or other corrosive gases in the ambient air.

Only trained or certified professionals can install and repair this circuit breaker, trip unit or other accessories. Before installing or removing any device, ensure that the power supply is turned off.