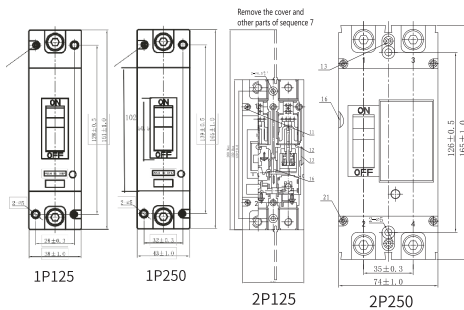
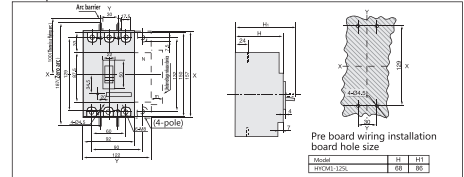


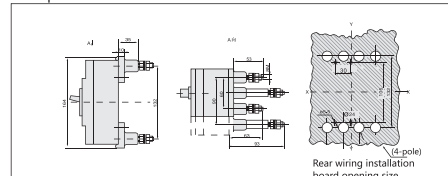
11. Appearance and installation dimensions



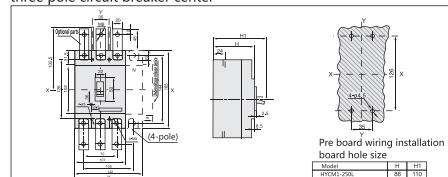
HYCM1-125PV board front wiring dimensions (three pole, four pole) X-X, Y3 three pole circuit breaker center



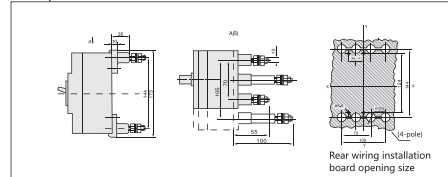
HYCM1-125PV board rear wiring size (three pole, four pole) X-X, Y-Y three pole circuit breaker center



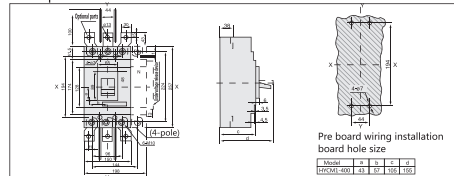
HYCM1-250PV board front wiring size (three pole, four pole) X-X, Y-Y three pole circuit breaker center



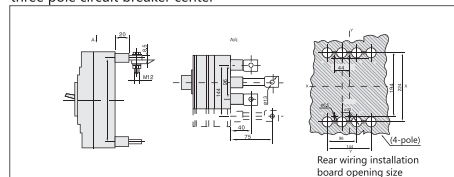
HYCM1-250PV board rear wiring size (three pole, four pole) X-X, Y-Y three pole circuit breaker center



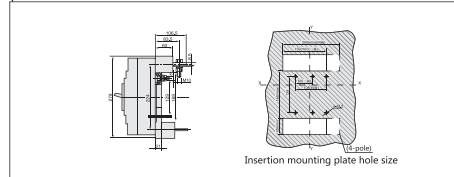
HYCM1-400PV board front wiring size (three pole, four pole) X-X, Y-Y three pole circuit breaker center



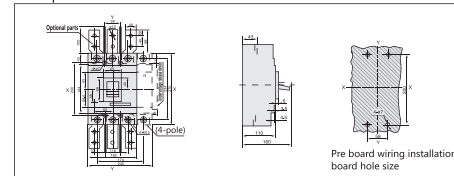
HYCM1-400PV board rear wiring size (three pole, four pole) X-X, Y-Y three pole circuit breaker center



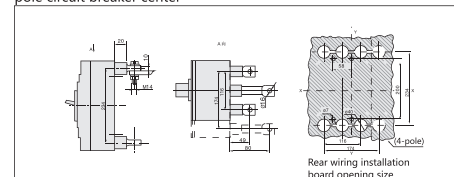
HYCM1-400PV plug-in wiring size (three pole, four pole) X-X, Y3 three pole circuit breaker center



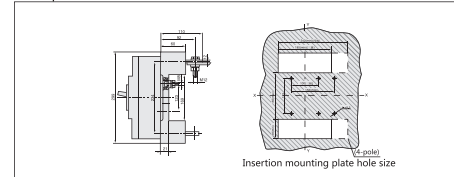
HYCM1-630PV board rear wiring size (three pole, four pole) X-X, Y-Y three pole circuit breaker center



HYCM1-630PV plug-in wiring size (three pole, four pole) X-X, Y-Y three pole circuit breaker center



HYCM1-630PV board front wiring size (three pole, four pole) X-X, Y-Y three pole circuit breaker center



CERTIFICATE OF QUALITY

Name: **DC MCCB**
 Model: **HYCM1-PV SERIES**
 Ex factory date: _____
 Inspector: **003**

This product complies with the IEC 60947-2 standard and has been inspected and approved for shipment

CSQ
SIQI TECHNOLOGY CO., LTD.
 Add: No.198, Wei 3rd Road, Economic Development Zone Of Yueqing, Wenzhou city, China
 Tel: +86-577-6173 7670
 Fax: +86-577-6272 8447
 Http: //www.csqelectric.com
 E-mail: csq@siqi.cc

PHOTOVOLTAIC DC MOLDED CASE CIRCUIT BREAKER USER MANUAL

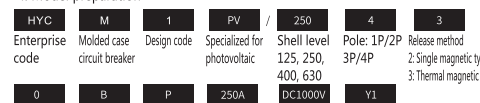
SIQI TECHNOLOGY CO.,LTD.

Photovoltaic DC molded case circuit breaker

1. Purpose and scope of use
 With the development of the solar energy industry, solar photovoltaic power plants with large installed capacity are also developing rapidly. People have also put forward higher and higher requirements for the performance of control and protection appliances equipped in large-scale solar photovoltaic power plants. When the power of the photovoltaic power plant exceeds a certain level of water, it needs a circuit breaker or isolation switch, especially for the protection and isolation of the inverter, which puts new requirements on low-voltage components. To this end, our company has developed a new generation of photovoltaic DC circuit breakers on the basis of the original photovoltaic DC circuit breaker.
 Photovoltaic DC molded case circuit breaker (hereinafter referred to as circuit breaker) is used in its rated voltage DC250V-DC1000V, rated working current 63A~630A DC power grid circuit, the circuit breaker has overload long delay, short circuit instantaneous protection function, used to distribute power and protect lines and power equipment from overload, short circuit and other faults.

This circuit breaker meets the standard:
 IEC 60947-1 IEC 60947-2
 GB 14048.1 (Low voltage switchgear and control equipment - Part 1: General Provisions)
 GB 14048.2 (Low voltage switchgear and control equipment - Part 2: Circuit breakers)
 2. Normal working conditions
 2.1. the elevation of the installation site does not exceed 2000m;
 2.2. Allow the ambient temperature not higher than +70°C 5°C
 2.3. Atmospheric conditions: when the ambient temperature is 40°C, the relative humidity of the atmosphere does not exceed 50%, and a higher relative humidity is allowed at a lower temperature, such as 90% at 20°C, and considering the condensation on the surface of the product due to temperature changes;
 2.4. Pollution level is level 3;
 2.5. Installation category is III;
 2.6. The magnetic field of the installation position shall not exceed 5 times of the earth magnetic field in any direction;
 2.7. In a medium without explosion risk, and there is no gas and conductive dust sufficient to corrode metal and destroy insulation in the medium;
 2.8. Where there is no snow erosion;

2.9. Resistant to humid air;
 2.10. Resistant to the effects of salt spray oil spray;
 2.11. Resistant to mold;
 2.12. Installation Conditions:
 a) can be installed horizontally and vertically;
 b) There should be no significant impact and vibration at the installation place, and it should not be installed in inflammable and explosive places.
 Note: When the conditions of use of the product are harsher than the above conditions, the capacity reduction should be considered, and the specific matters should be negotiated by the user
 3. Product classification
 3.1. According to the form of protection: line protection, line isolation;
 3.2. According to the wiring method, it is divided into: front wiring, back wiring, plug-in wiring, and withdraw-type wiring;
 3.3. According to the attachment device: with and without attachment device two kinds;
 3.4. According to the operation mode: direct operation of the handle. Electric operation;
 3.5. According to the series: one pole, two poles, three poles, four poles;
 4. Model preparation



Refer to Table 3 for the attachment codes
 Wiring method code: none, front board, B: Rear board, C: Pull out type
 External attachments: none, Body, P: Electric operation, 2: Manual operation
 Rated current (63A-630A)
 Rated working voltage DC1000V
 Wiring Method: None, Self connecting, Y1D: Upper and Lower Exits, Y2B: Lower and Lower Exits
 Electrical operating voltage: AC110V AC220V DC24V DC220V
 Note: Y2B>400A shell bracket is not applicable to internal links, shell bracket above 630A adopts autonomous connection
 Note 1: There is no code for the direct operation of the handle, and the electric operation is represented by P (125A 250A shell for the electromagnet 400A~630A shell for the motor mechanism); External attachment manual operation mechanism Dz3;
 Note 2: Annex codes are shown in Table 3

5. Specifications and main technical parameters are shown in Table 1. If you have special requirements, please consult with the manufacturer.

| Model | HYCM1-125PV | HYCM1-250PV | HYCM1-400PV | HYCM1-630PV |
|---|--|-------------------------|-----------------|-------------|
| Rated current In(A) | 63,80,100,125 | 125,160,180,200,225,250 | 250,315,350,400 | 400,500,630 |
| Rated insulation voltage U(V) | DC1000V | | | |
| Rated operating voltage Ue(V) | DC250V(1P);DC500V(2P);DC750V(3P);DC1000V(4P) | | | |
| Rated limit short-circuit breaking capacity Icu(kA) | 20kA | | | |
| Short circuit instantaneous tripping current value | 10In | 10In | 10In | 10In |
| Service life (sub) | 10000 | 8000 | 5000 | 5000 |
| Operating frequency (OPS/hour) | 120 | 120 | 60 | 60 |

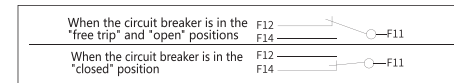
Note: Ics stands for rated operating short-circuit breaking capacity Icu stands for rated limit short-circuit breaking capacity

| Test current | I/ In | Appointed time | | | Initial state |
|-----------------------|-------|----------------|-----------------|-----------|---------------|
| | | In ≤ 63A | 63A ≤ In ≤ 250A | In ≤ 250A | |
| Agree on no trip time | 1.05 | ≥ 1h | ≥ 2h | ≥ 2h | Cold state |
| Set a trip time | 1.3 | < 1h | < 2h | < 2h | Hot state |

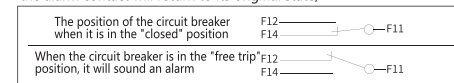
| Name | Alarm contact | Shunt release | Auxiliary contact | Shunt aid | Two-group aid | Shunt alarm | Auxiliary alarm | Shunt assisted alarm | Second unit auxiliary alarm |
|-------------|---------------|---------------|-------------------|-----------|---------------|-------------|-----------------|----------------------|-----------------------------|
| Code (name) | 08 | 10 | 20 | 40 | 60 | 18 | 28 | 48 | 68 |

| Classification | The rated values of auxiliary contacts and alarm contacts are shown in Table 4. | | |
|-------------------|---|--------------------------|-------------------------|
| | Shell level current A | Agreed heating current A | Rated working current A |
| Auxiliary contact | ≤ 225 | 3 | 0.26 |
| | ≥ 400 | 6 | 0.3 |
| Alarm contact | ≤ 225 | 3 | 0.26 |
| | ≥ 400 | 6 | 0.3 |

When the circuit breaker is working normally, the auxiliary contacts do not move, that is, F11/F14 is connected. When the circuit breaker is in the open or free tripping state, F11 F12 is connected.



When the circuit breaker is working normally, the alarm contact does not move, and only changes its original position after free tripping (or fault tripping), that is, normally closed to normally open, F11/F12 is connected, F11/F14 is disconnected. After the circuit breaker is tripped or closed again, the alarm contact will return to its original state;



Shunt release device
 When the applied voltage of the shunt release is between 70% and 110% of the rated control power supply voltage, it can reliably disconnect the circuit breaker.
 The rated values of the shunt release are shown in the following table

| Classification | Rated voltage | Rated insulation voltage |
|----------------------|---------------------|--------------------------|
| Shunt release device | DC24V DC110V DC220V | 400 |

8. Main technical indicators
 The thermal release of the circuit breaker has inverse time characteristics, while the electromagnetic release operates instantaneously.
 The characteristics are shown in Table 1 (for power distribution)

| Rated current of release device (A) | Thermal release device ambient temperature +40 ° C | | Electromagnetic release action current (A) |
|-------------------------------------|--|------------------------------------|--|
| | 1.05In (cold state) inactive time (h) | 1.30In (hot state) action time (h) | |
| 10 ≤ In ≤ 63 | 1 | 1 | 10In ± 20% |
| 63 < In ≤ 100 | 2 | 2 | 50In soil 20% and 10In soil 20% |
| 100 < In ≤ 0 | 2 | 2 | |

Note: The motor protection circuit breaker 1, 0In does not operate for 2 hours; The operating current is 1.20In (hot state) and the operating time is 2 hours. The operating current of the electromagnetic release is 12In ± 2% (A) and its on/off capability (Icu). See Table 2

9. Technical data of accessory devices
 9.1. The auxiliary contacts, alarm contacts, and rated values are shown in Table 2

| Classification | Table 2 | | |
|-------------------|------------------------------|----------------------------|--------------------------|
| | Rated current of shell level | Agreed heating current Ith | Rated working current Ie |
| Auxiliary contact | 225A and below | 3 | 030 |
| | 440A and above | 6 | 1 |
| Alarm contact | 440A and above | 220V1A | |

9.2. When the working voltage of the shunt release is between 70% and 110% of the rated power supply voltage, it can reliably disconnect the circuit breaker.
 9.3. When the power supply voltage drops within the range of 70% to 35% of the rated operating voltage of the undervoltage release. The undervoltage release can reliably disconnect the circuit breaker; When the power supply voltage is lower than 35% of the rated working voltage of the undervoltage release, the undervoltage release can prevent the circuit breaker from closing; When the power supply voltage is higher than 85% of the rated working voltage of the undervoltage release, the undervoltage release can ensure the reliable closure of the circuit breaker.

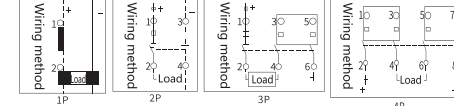
9.4. The rated current corresponding to the connecting wire and cross-sectional area is shown in Table 3.

| Rated current A | Wire cross-sectional area | | Copper size | |
|-----------------|---------------------------|--------------------|-------------|------------|
| | Quantity | Sectional area mm² | Quantity | Size mmxmm |
| 10 | 16 | 2.5 | 32 | 40 |
| 20 | 25 | 4 | 50 | 63 |
| 32 | 35 | 6 | 70 | 95 |
| 40 | 50 | 10 | 100 | 120 |
| 63 | 70 | 16 | 140 | 185 |
| 80 | 95 | 25 | 160 | 220 |
| 100 | 120 | 35 | 200 | 250 |
| 125 | 150 | 50 | 250 | 315 |
| 160 | 185 | 70 | 300 | 350 |
| 225 | 240 | 95 | 360 | 400 |

| Rated current value A | Wire cross-sectional area | | Copper size | |
|-----------------------|---------------------------|--------------------|-------------|------------|
| | Quantity | Sectional area mm² | Quantity | Size mmxmm |
| 500 | 2 | 150 | 2 | 30x5 |
| 630 | 2 | 185 | 2 | 40x5 |

9.5. The various characteristics and accessories of the circuit breaker are set by the manufacturer and cannot be adjusted arbitrarily during use. 9.6. The circuit breaker handle can be in three positions, indicating closed, open, and tripped states. When the handle is in the tripped position, it should be pulled down to make the circuit breaker trip again, and then closed.

9.7. The schematic diagrams of various types of wiring are as follows:



Note: The busbar at the slot of the third level circuit breaker cannot be disassembled, modified or installed at will, otherwise the responsibility for any adverse factors shall be borne by oneself.
 Release mechanism and accessory code

| Release mechanism | Alarm contact | Auxiliary contact | Shunt release device | Undervoltage release device | Lead direction |
|------------------------------|---------------|-------------------|----------------------|-----------------------------|----------------|
| Instantaneous release device | 200 | 208 | 210 | 220 | 230 |
| Compound release device | 300 | 308 | 310 | 320 | 330 |
| | 340 | 35 | 360 | 37 | 218 |
| | 228 | 238 | 248 | 268 | 278 |
| | 318 | 328 | 338 | 348 | 368 |
| | 338 | 348 | 368 | 378 | |

10. Release method and accessory code

| Model | Attachment | Poles | | | | Alarm contact | Auxiliary contact | Shunt release device | Undervoltage release device | Lead direction |
|----------|---|-------|---|---|---|---------------|-------------------|----------------------|-----------------------------|----------------|
| | | 3 | 4 | 3 | 4 | | | | | |
| 208..308 | Alarm contact | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 210..310 | Shunt release device | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 220..320 | Auxiliary contact | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 230..330 | Undervoltage release device | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 240..340 | Auxiliary contact of shunt release device | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 250..350 | Undervoltage release of shunt release device | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 260..360 | Two sets of auxiliary contacts | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 270..370 | Auxiliary contact undervoltage release device | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 218..318 | Alarm contact of shunt release device | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 228..328 | Auxiliary contact alarm contact | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 238..338 | Undervoltage release alarm contact | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 248..348 | Auxiliary contact alarm contact of shunt release device | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 268..368 | Two sets of auxiliary contact alarm contacts | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| 278..378 | Auxiliary contact undervoltage release alarm contact | □ | □ | □ | □ | □ | □ | □ | □ | □ |