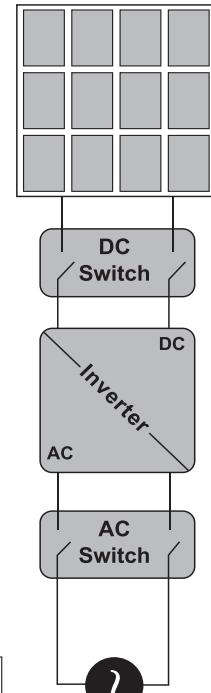
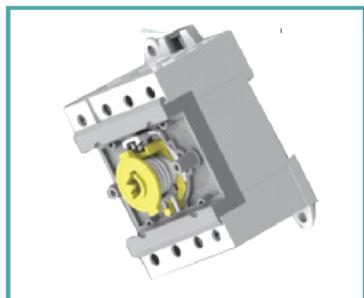


Solar isolator switch

HGN4-002GL 1000VDC Isolator Switch

The HAN4-002GL DC Isolators have been specifically designed to switch Direct Current (DC) at voltages up to 1000Volts. Their robust design and ability to switch such voltages, at rated current, mean that they are ideally suited to be used in the switching of Photovoltaic (PV) systems. All Photo Voltaic installations must have a DC Switch to disconnect the DC/AC inverter from the photovoltaic panels in accordance with IEC 60364-7-712 as illustrated Fig1.



Solar Array

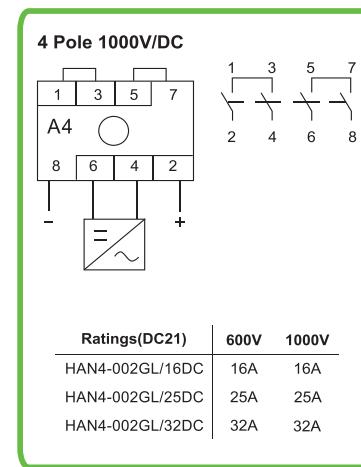
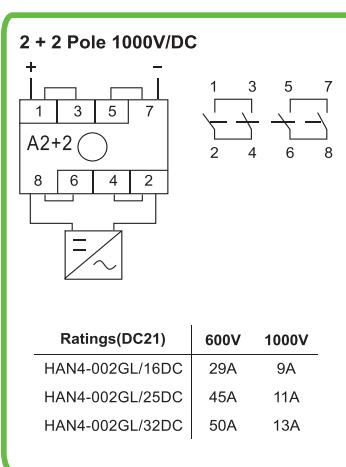
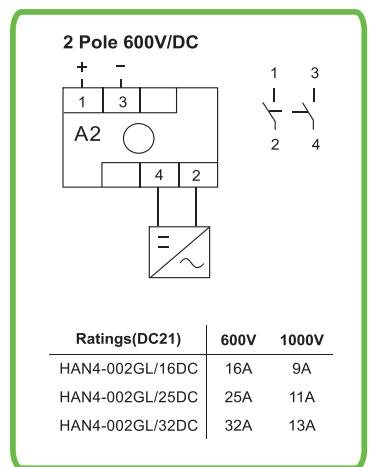
* Fig 1

- IP66 rated enclosure
- Knife edge self-cleaning contacts for increased switch life.
- Long arc chambers to help rapid arc suppression
- 16mm² rising clamp terminals for easy wiring

■ Technical Data (IEC60947-3 Rated operation DC21B)

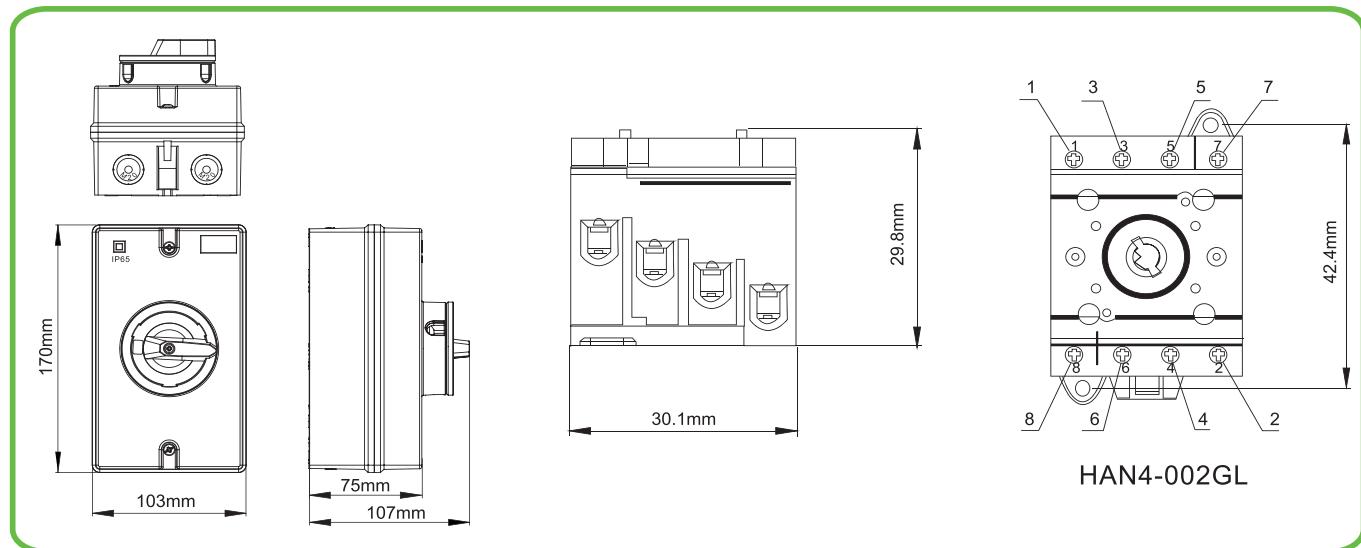
Model Number	HAN4-002GL	Standard	IEC60947-3
No. of Poles	2&4 poles	Rated Current	16,25,32A
IP Rating	IP66	Mechanical life	10 ⁴
Max Rated Operating Voltage	DC 1000V	Rated Short-time withstand current	8KA
Maximum cable cross sections solid or stranded	4-16mm ²	Enclosure knockouts size	M20/25
Maximum ambient temperature operation open	-5 to +65°C	Maximum ambient temperature operation enclosed	-5 to +45°C

■ Wiring Diagram

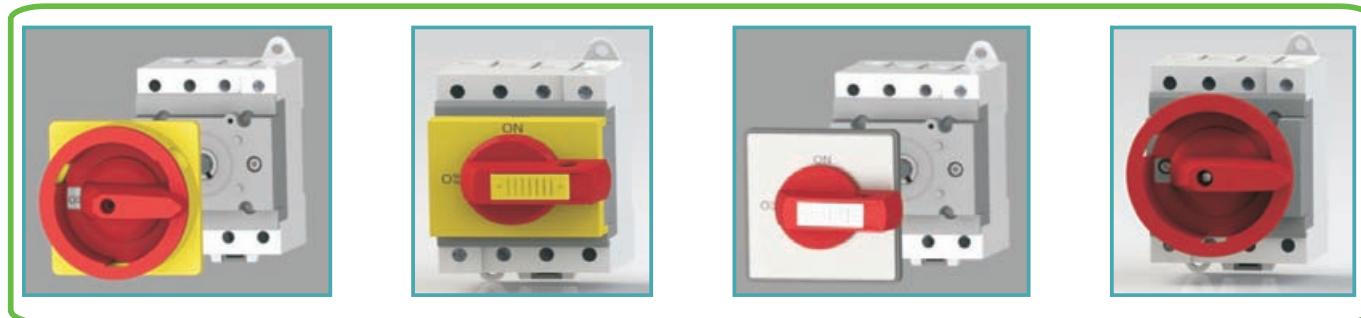


Solar isolator switch

Dimensions



Installation Version



HGN4-003GL 1000VDC Isolator Switch

The isolator switch adopts the latest opposed wiring mode, which is different from the cross dislocated wiring of the previous similar products(HGN4-002GL). They are ideally suited to be used in the switching of Photovoltaic (PV) systems.



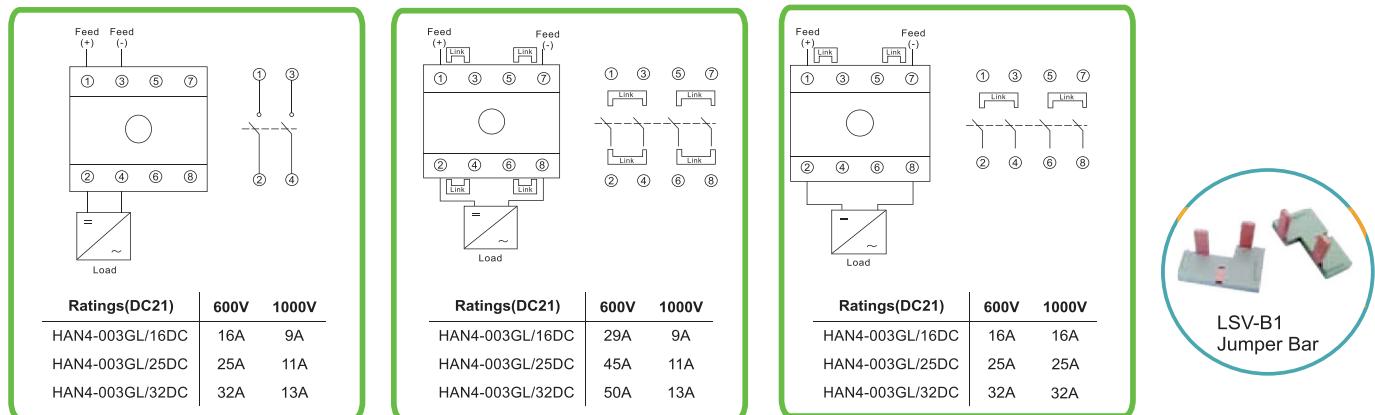
- IP66 rated enclosure
- opposed wiring mode
- Knife edge self-cleaning contacts for increased switch life.
- Long arc chambers to help rapid arc suppression
- 16mm² rising clamp terminals for easy wiring

Solar isolator switch

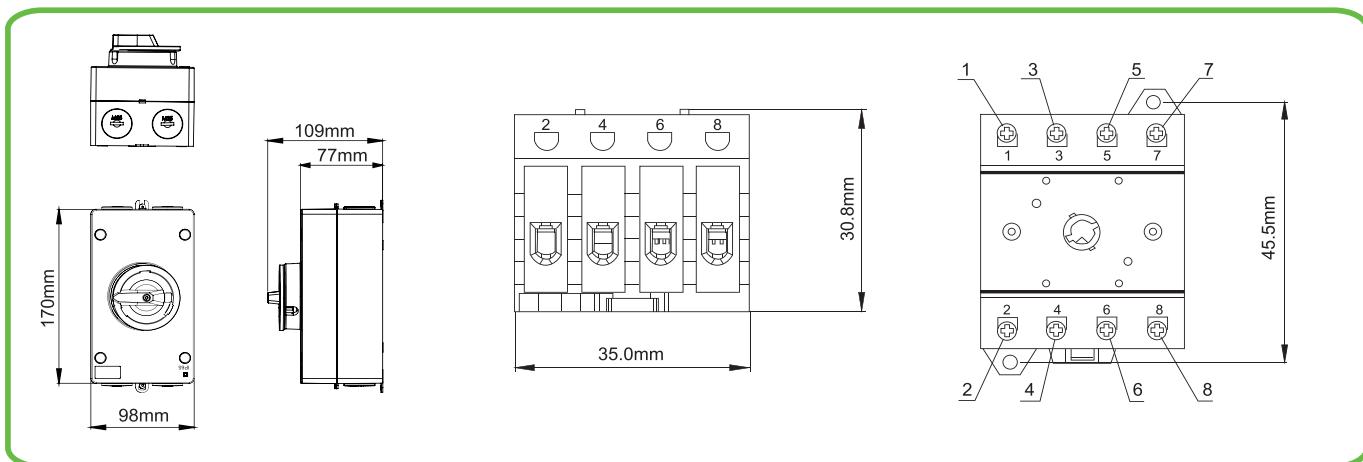
Technical Data (IEC60947-3 Rated operation DC21B)

Model Number	HAN4-003GL	Standard	IEC60947-3
No. of Poles	2&4 poles	Rated Current	16,25,32A
IP Rating	IP66	Mechanical life	10^4
Max Rated Operating Voltage	DC 1000V	Rated Short-time withstand current	8KA
Maximum cable cross sections solid or stranded	4-16mm ²	Enclosure knockouts size	M20/25
Maximum ambient temperature operation open	-5 to +65°C	Maximum ambient temperature operation enclosed	-5 to +45°C

Wiring Diagram



Dimensions



Installation Version

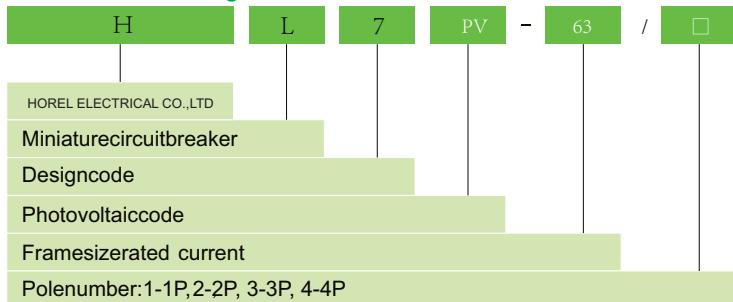


HL7-63Photovoltaic miniature circuit breaker

1.Application

HL7-63 solar mini circuit breaker (hereinafter referred to as circuit breaker) is applicable to the circuit with rated voltage of DC 1000V , and rated current up to DC 63A for overload and short circuit protection, and also for infrequent operational transformation in the circuit under normal condition. This product accords with the standard of IEC60947-2.

2.Modelandmeaning



3.Normalworkingconditions

- 1.Ambient temperature: -5° C~+45° C; Average temperature within 24h: +35° C.
- 2.Altitude: 2000m
- 3.Humidity: The air relative humidity under the highest temperature +40° C cannot surpass 50%; Under the lowest temperature has a higher relative humidity, the wettest month's average lowest temperature cannot surpass +25° C, and the average relative humidity cannot exceed 90%;
- 4.Pollution degree: class 2
- 5.Mounting category: II III
- 6.35mm standard rail

4.Structure features

1. Excellent current limiting characteristic, short arcing time, high breaking capacity, accurate protection characteristic, long using life, reliable performance
2. Equipped with obvious contact position indication
3. Wiring terminal with frame structure, reliable in wiring
4. Complete range of accessories including auxiliary contact, alarm contact, shunt release, etc, which provide convenience for intelligent application

5.Maintechnicalparameters

- 1.Basic technical parameters see sheet 1 sheet.1

Frame size rated current (A)	Rated volt Ue (V) DC	Rated current In(A)	Rated limit short circuit breaking capacity Icn(A)	Rated service short circuit breaking capacity Ics(kA)	Pole	Rated impulse withstand volt Uiimp(kV)	Using category	Operation Cycles	Instantaneous release type
63	(1P)250V (2P)550V (2P)800V (3P)750V (4P)1000V	1,2,3 4,5,6 10,16 20,25 32,40 50,63	6000A 10000A	7500A	1 pole 2 Pole 3 Pole 4 Pole	6	A	2000 (on-load 8000times)	Power distribution protection

HL7-63Photovoltaic miniature circuit breaker

2.Over current trip characteristics,see sheet 2
sheet 2

Overcurrentprotectioncharacteristics	Ratedcurrent In(A)	Initialstate	Testcurrent(A)	Trippingtime(t)	Expectedresult	Ambienttemperature
Inversetimeprotecting Instantaneousprotecting	≤ 63	Coldstate	1.05In	$>1\text{h}$	Nontrip	$30^\circ\text{C} \pm 2^\circ\text{C}$
		Heatstate(followabovetest)	1.30In	$\leq 1\text{h}$	Trip	
		Coldstate	8In	$\leq 0.2\text{s}$	Nontrip	Normal temperature
			12In	$< 0.2\text{s}$	Trip	

3. Cross section area of copper line,see sheet 3.
sheet. 3

RatedcurrentIn(A)	≤ 6	10	16 ~ 20	25	32	40 ~ 50	63
Crosssectionareaofcopperline(mm ²)	1	1.5	2.5	4	6	10	16

4.The temperature reducing capacity coefficient at different temperature see sheet4.
sheet. 4

Temperature	10 °C	20 °C	30 °C	40 °C	50 °C	60 °C
Coefficient	1.12In	1.05In	1In	0.95In	0.9In	0.85In

Note:There may be some differences due to different actual service environment.

5.Rated dispersion coefficient when use at combiner box,see sheet 5
Sheet .5

Maincircuitquantity	2 ~ 3	45	6-9	>10
Rateddispersioncoefficient atmaincircuitquantity	0.9In	0.85In	0.8In	0.8In

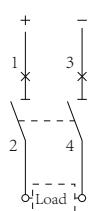
Note:According to the different size and material of junction box,above data will be different,values provided are only for reference

6.The reducing capacity coefficient in high altitude:when the altitude exceeds 2000m,the circuit breaker should be adjusted as sheet 6.
sheet. 6

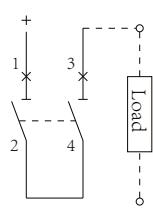
Altitude(m)	2000	3000	4000	5000
500	450	400	350	
750	675	600	525	
1000	900	800	700	
1250	1125	1000	875	
1500	1350	1200	1050	
Ratedworkingcurrent	1In	0.96In	0.93In	0.9In

HL7-63Photovoltaic miniature circuit breaker

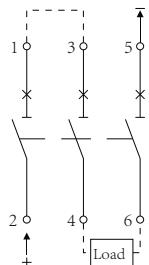
6.Wiringdiagram



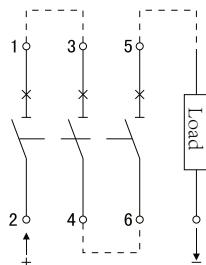
1.Ctypewiringfor2Pbreaker



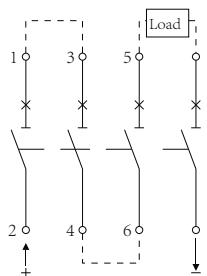
2.Dtypewiringfor2Pbreaker



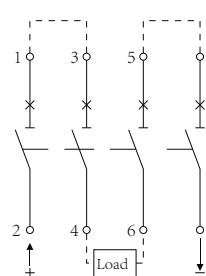
3.Etypewiringfor3Pbreaker



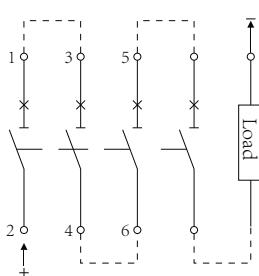
4.Ftypewiringfor3Pbreaker



5.Gtypewiringfor4Pbreaker

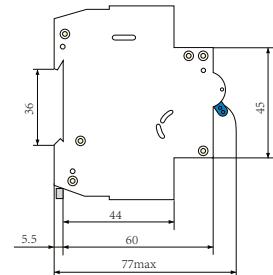
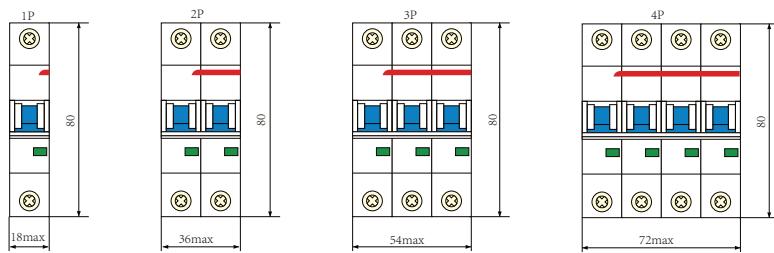


6.Htypewiringfor4Pbreaker



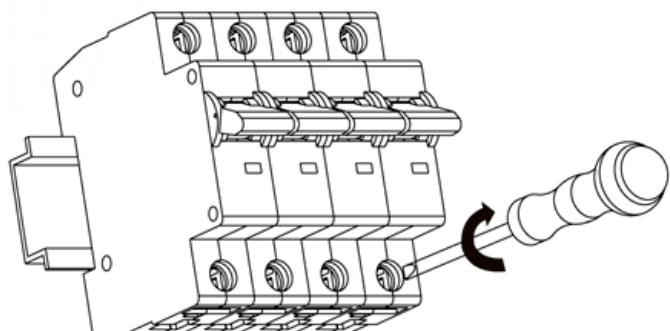
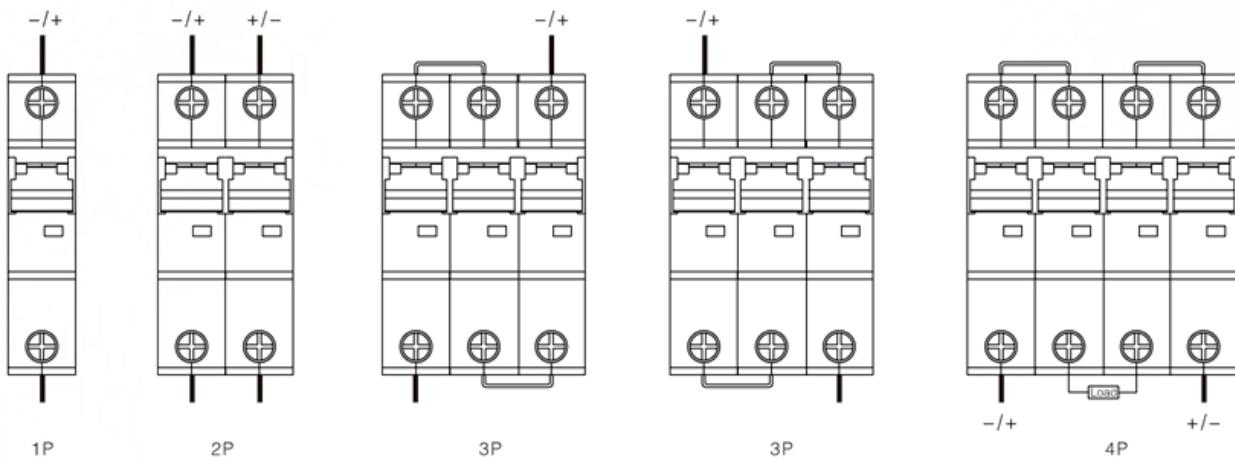
7.Itypewiringfor4Pbreaker

7.Overallandmountingsize



HL7-63Photovoltaic miniature circuit breaker

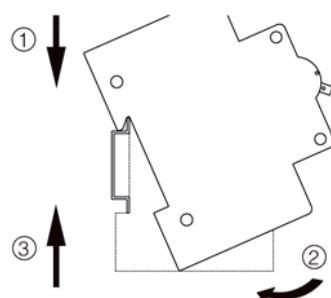
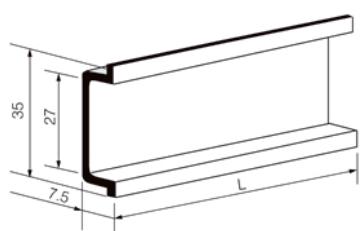
Wiring diagram



Rated current (A)	Sectional area of wire(mm^2)	Tightening torque of connecting wire(N.m)
1、2、3、4、5、6	1	
10	1.5	
16、20	2.5	
25	4	
32	6	
40、50	10	
63	16	

Both the power side and load side are 2.0

Installation diagram



Solar surge protection device

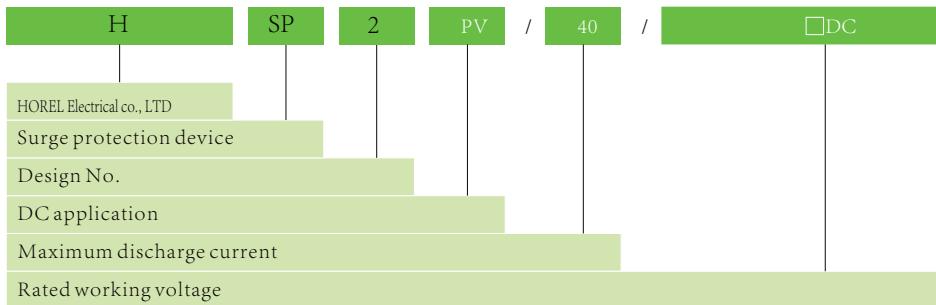
1. Application



HSP2-PV(HSP3-PV) surge protection device is a surge protection specialized for solar PV generation system, mainly used in generation system with voltage DC1000V and the maximum discharge current capacity 40kA.

When over voltage surge caused by lightning strike or other reasons appears, the protector will rapidly act to protect electric equipment within nanoseconds, leading the surge voltage to the ground.

2. Model and meaning



3. Normal working conditions

1. Normal service condition

- a. Altitude: $\leq 2000m$
 - b. Ambient temperature: $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$, limit range: $-40^{\circ}\text{C} \sim +70^{\circ}\text{C}$
 - c. Relative humidity: $30\% \sim 90\%$ at 25°C
 - d. Current type: DC
 - e. Voltage: the voltage continuously exerting in connecting terminal should not exceed its maximum continuous operating voltage
 - f. Protection class: IP20
- 2. Normal mounting conditions
 - a. Inclination angle: $\leq 5^{\circ}$
 - b. At place without obvious shake and impulsive vibration
 - c. At places without explosive risk, without gases or conducting dust that may be corrosive to metal or cause damage to the insulation.
 - d. Adopts TH35-7.5 standard mounting rail
- 3. Normal storage and transport conditions
 - a. Range of temperature: $-40^{\circ}\text{C} \sim +70^{\circ}\text{C}$
 - b. Relative humidity (at $+25^{\circ}\text{C}$): $\leq 90\%$
 - c. Handle with care and avoid violent collision during transportation

4. Structural features

1. Adopt high quality pressure sensitive resistance with powerful function, high discharge capacity and reliable quality
2. Modular design, easily to test and replace
3. With remote control device, convenient for remote monitoring
4. Failure indication clearly showed as red mark in monitoring window
5. Short response time

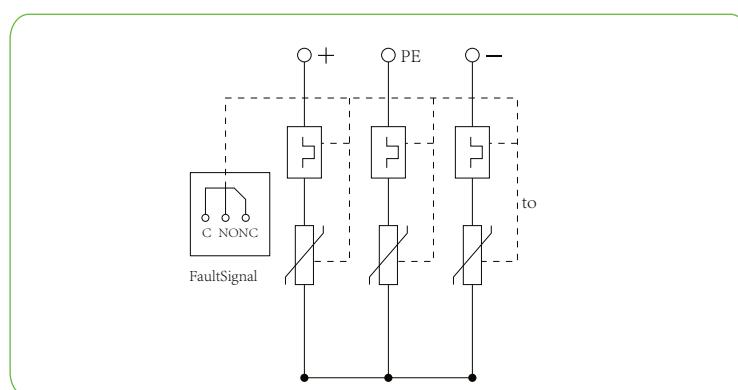
Solar surge protector device

5. Maintechnicalparameters

Solar surge protector	HSP2PV			HSP3PV
PVDC-specific(LEC66143-1/EN61643-11)				
Pole		2P		3P
ElectricalParameter				
Classifiedtest		II		II
Uocmax(VDC)	500	800	1000	1000
Uc(VDC)	500	800	1000	1000
In(8/20)us(kA)		20		20
Imax(8/20)us(kA)		40		40
Up(kV)		2.0		3.8
Remotecontrolandindication				
Indicationwindow				
Plug-inModule				
Remotesignalcontact				
	maximumworkingvoltage(V)	250AC/30VDC	250AC/30VDC	
Remotesignalcontact	maximumworkingcurrent(A) 1A(250V/AC) 1A(30VDC)	1A(250V/AC) 1A(30V/AC)	1A(250V/AC) 1A(30V/AC)	
Wiringandinstallation				
Wiringcapacity(mm ²)	Hardwire Flexiblewire	4~25 4~16	4~25 4~16	
Strippinglength(mm)		10		10
Terminalscrewa		M5		M5
Torque(Nm)	Maincircuit Remotesignalcontact	3.5 0.25	3.5 0.25	
Protectionclass	Allprofile Connectionport	IP40 IP20	IP40 IP20	
Installationenvironment		Noobviousshockandvibration		
Altitude(m)		<2000	<2000	
WorkingTemperature(°C)		-30~+70	-30~ +70	
Relativehumidity		30%~90%	30%~90%	
HowtoInstall		InstalledwithH35-7.5/DIN35steelmountingrail		
Size(mm)(WxHxL)	W H L	36 90 67.6	54 90 67.6	
Weight(kg)		0.24	0.36	

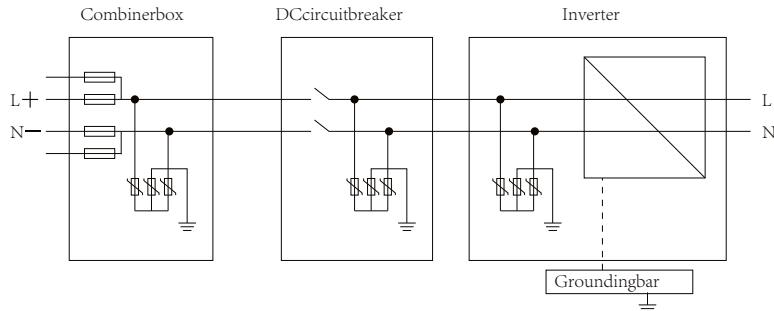
6.Wiringdiagram

1.Schematicdiagram

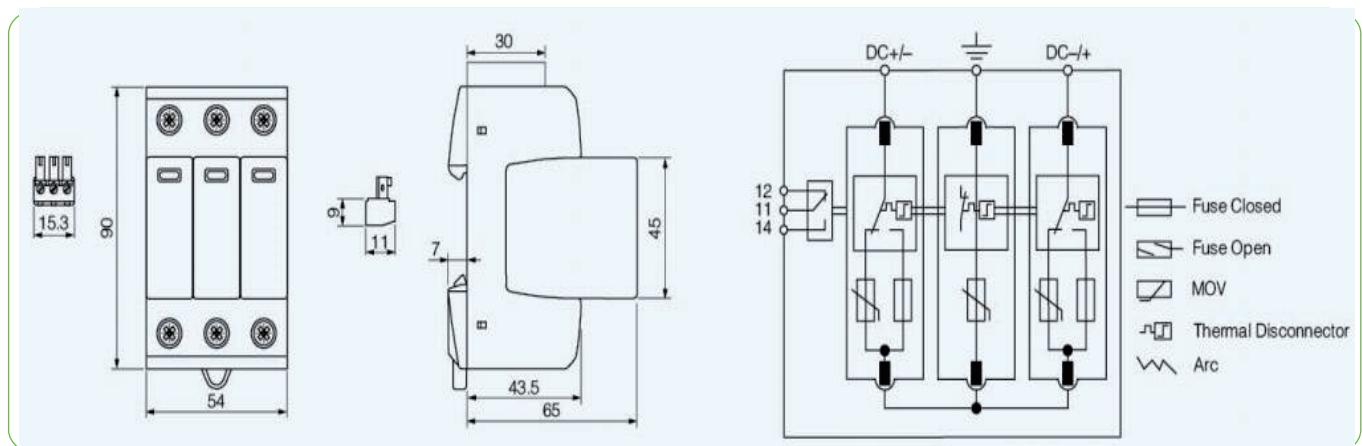


Solar surge protector device

2.Wiringdiagram



7.Contourandmountingdimension



8.Installation and maintenance

1. Power down before mounting, do not operate with power
2. Cascade fuse or circuit breaker in front-end of anti-lighting module
3. Mount as per wiring diagram, + refers to positive wire, - refers to cathode wire, and PE refers to grounding wire. After wiring, switch on to check if it works-
4. Put the module in place after installation, to check if the anti-lighting module works.
5. Regularly test and check the fault display window when using the anti-lighting module, if the window shows red or the remote control device alarms, the anti-lighting module needs maintaining or replacing.

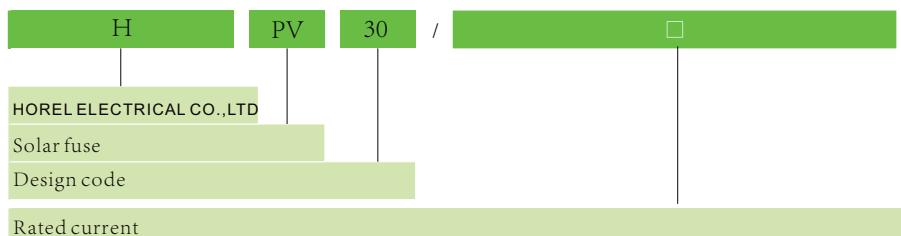
Solar fuse



1. Application

HPV-30 PV fuse (herein after referred to as fuse) is used in solar PV generation DC combiner box, to protect solar PV component plate from being damaged by overload, and short circuit. It conforms to the standard of IEC 60269-1, IEC 60269-6

2. Model and meaning



3. Structure features

1. Ambient temperature: -40°C ~ +70°C
2. Altitude: ≤ 2000m
3. Relative humidity: air humidity no more than 50% when the maximum temperature is ± 40 °C;
the humidity can be higher in lower temperature, and it should take consideration on condensation caused by temperature change.
4. Pollution class: 3
5. Service environment: At places without explosive risk, without gases or conducting dust that may be corrosive to metal or cause damage to the insulation.

4. Main technical parameters

1. Type: the fuse consists of fuse-link and fuse-holder or fuse-base.
2. Breaking range: "g" fuse-link (with full range breaking capacity)
3. Utilization category: "gPV" PV electrical energy system has full range DC breaking capacity.
4. Basic parameters see sheet 1
Sheet. 1

Rated current In(A)	Rated working voltage Ue(V)	Rated insulation voltage Ui(V)	Rated breaking capacity	Installation method	Rated power	
2,3,4,6,8,10,12,15,16,20	DC1000	1500	> 10kA	TH-35 standard rail	Receiving power ≥ 5	Loss power ≤ 4

5. Conventional time and current of "gPV" type fuse see sheet 2
Sheet. 2

Rated current In(A)	Rated time(h)	Conventional fuse current In	Conventional fuse current If
In ≤ 63	1	1.13In	1.45In

6. The reducing capacity coefficient at different temperatures see sheet 3
Sheet. 3

Temperature	20	30	40	50	60	70	80
Reducing capacity coefficient	100%	100%	95%	93%	88%	83%	80%

7. The reducing capacity coefficient in high altitude: when the altitude exceeds 2000m, the circuit breaker should be adjusted as sheet 4
Sheet. 4

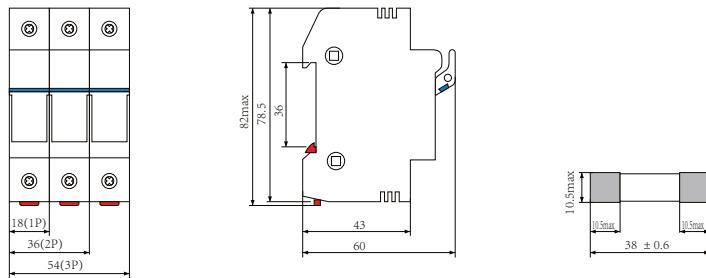
Rated working voltage/V	2000	3000	4000	5000
	500	450	400	350
	750	675	600	525
	1000	900	800	700
Rated working current/A	100%	96%	93%	90%

Solar fuse

5.Specifications

PV dedicated fuse	HPV-30						
PVDC-specific(LEC66143-1/EN61643-11)							
Pole	1P						
ElectricalParameter							
RatedvoltageUe(VDC)	1000						
RatedcurrentIn(A)	1,2,3,4,5,6,8,10,12,15,20						
Biggestblockability(KA)	33						
Themosthighpowerconsumption(W)	3.5						
ConnectionandInstallation							
Connection(mm ²)	2.5~10						
WorkingTemperature(°C)	-30~+70						
Resistanceanddamphot	Class2						
Altitude(m)	≤2000						
Relativehumidity	≤95%						
Rotectionclass/degree	IP20						
Pullotion	3						
Installationenvironment	Noobviousshockandvibration						
Installationclass	Class III						
Installationtype	DINrail						
Size/dimension(mm)							
(WxHxL)	<table border="1"> <tr> <td>W</td> <td>18</td> </tr> <tr> <td>H</td> <td>89</td> </tr> <tr> <td>L</td> <td>90</td> </tr> </table>	W	18	H	89	L	90
W	18						
H	89						
L	90						
Fusesize	10×38						
Weight(kg)	0.07						

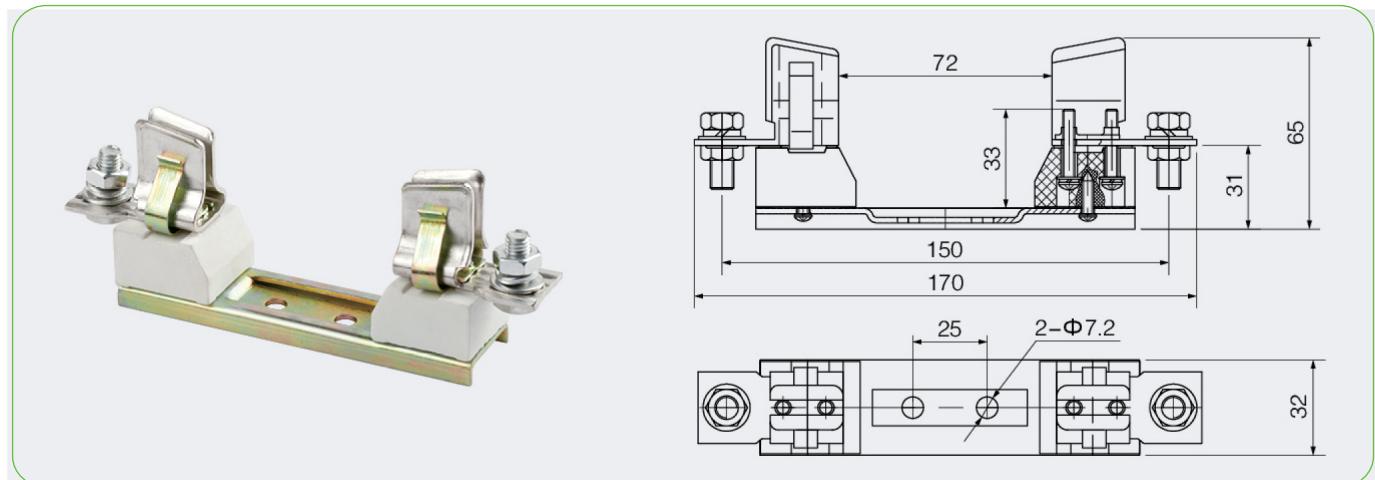
6.Contourandmountingdimension



Solar (PV) power protection:fuse

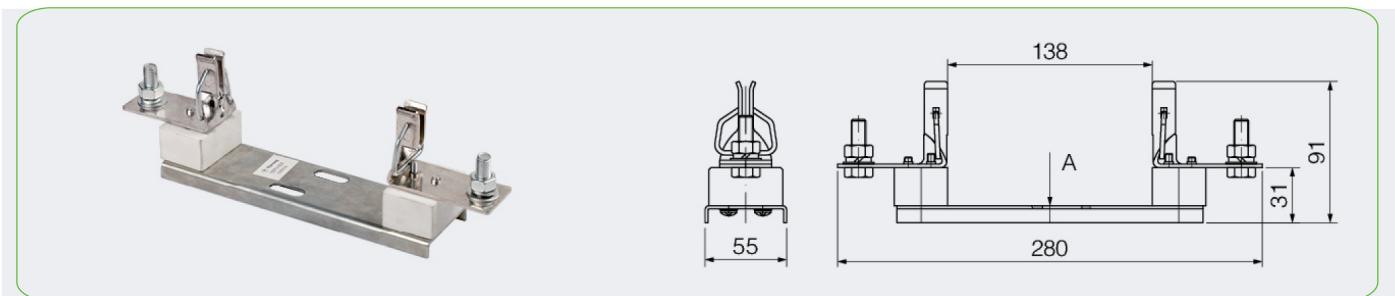
1) fuse base 160A

Model	Rated voltage	Rated current	Matched with fuse body measurement
HRPV-160	DC1000V	160A	HRPV-160



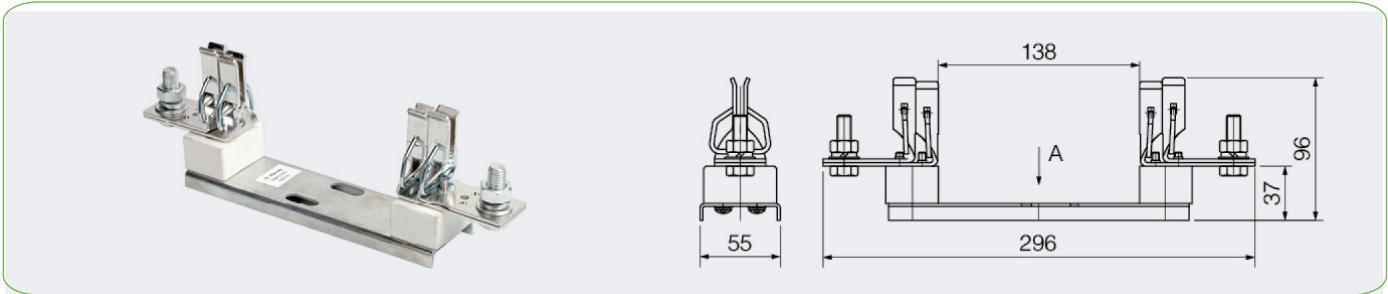
2) fuse base 250A

Model	Rated voltage	Rated current	Matched with fuse body measurement
HRPV-250	DC1000V	250A	HRPV-250



3) fuse base 630A

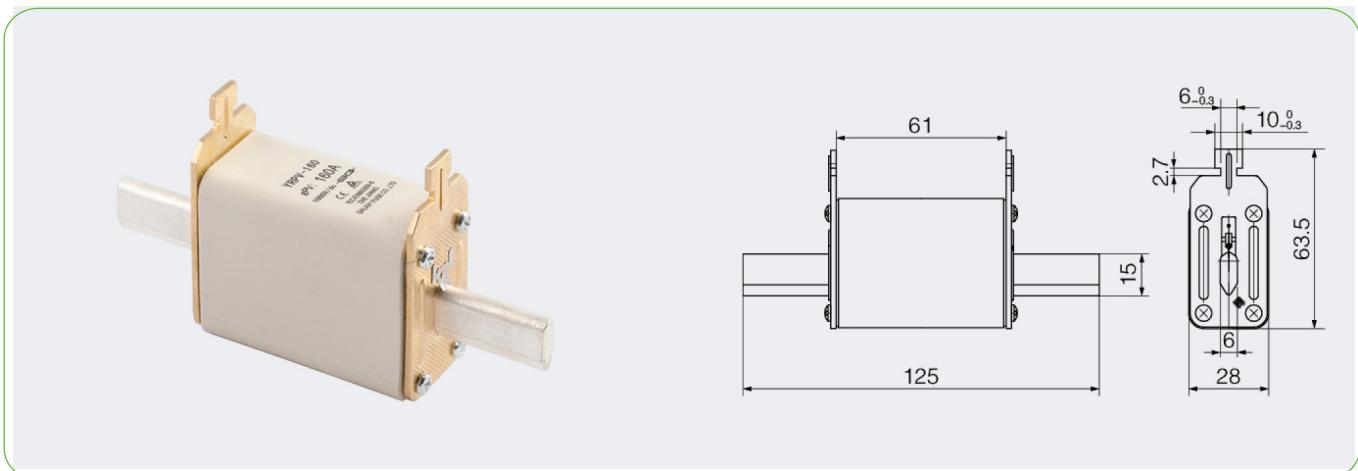
Model	Rated voltage	Rated current	Matched with fuse body measurement
HRPV-630	DC1000V	630A	HRPV-630



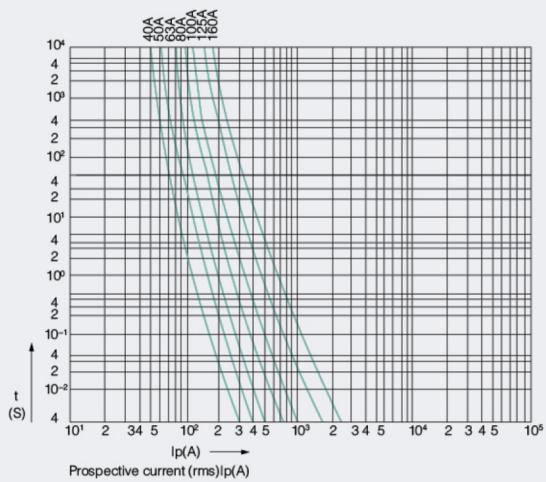
Solar (PV) power protection:fuse

HRPV-160 160A fuse

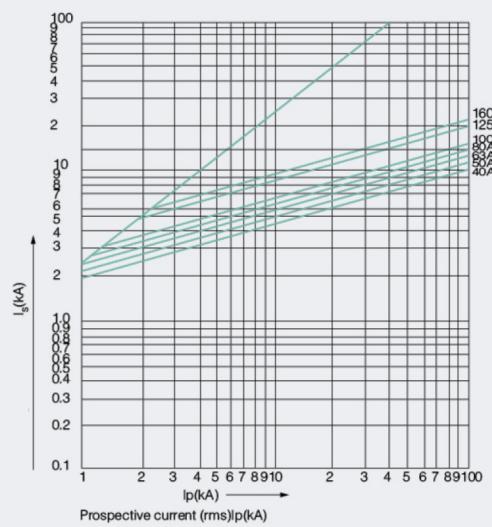
Model	Rated voltage(V)	Rated current(A)
HRPV-160	DC1000V	40,50,63,80,100,125,160



Characteristics Curve(For Reference Only)



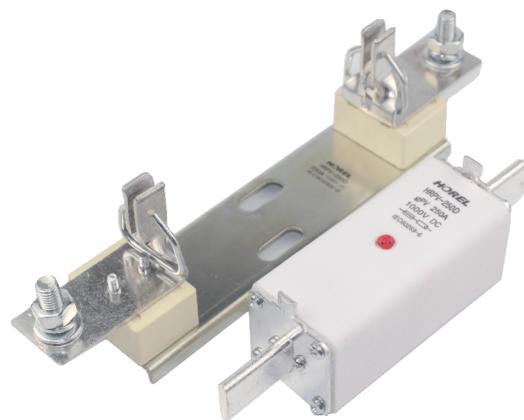
Time / current characteristics



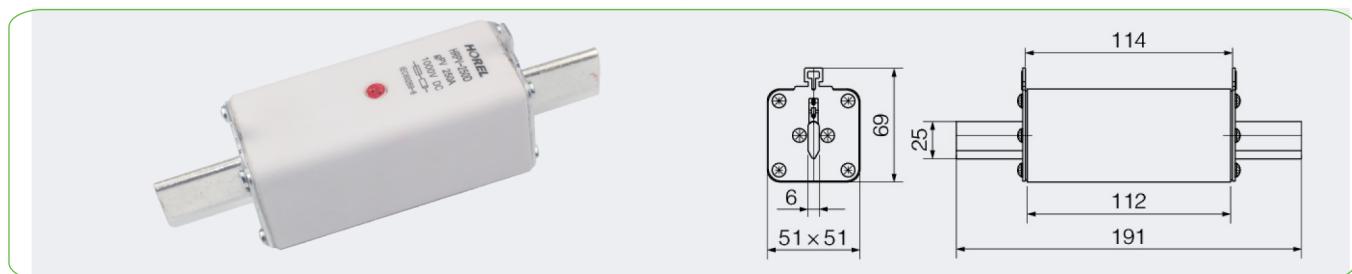
Current limiting / current characteristics

Solar (PV) power protection:fuse

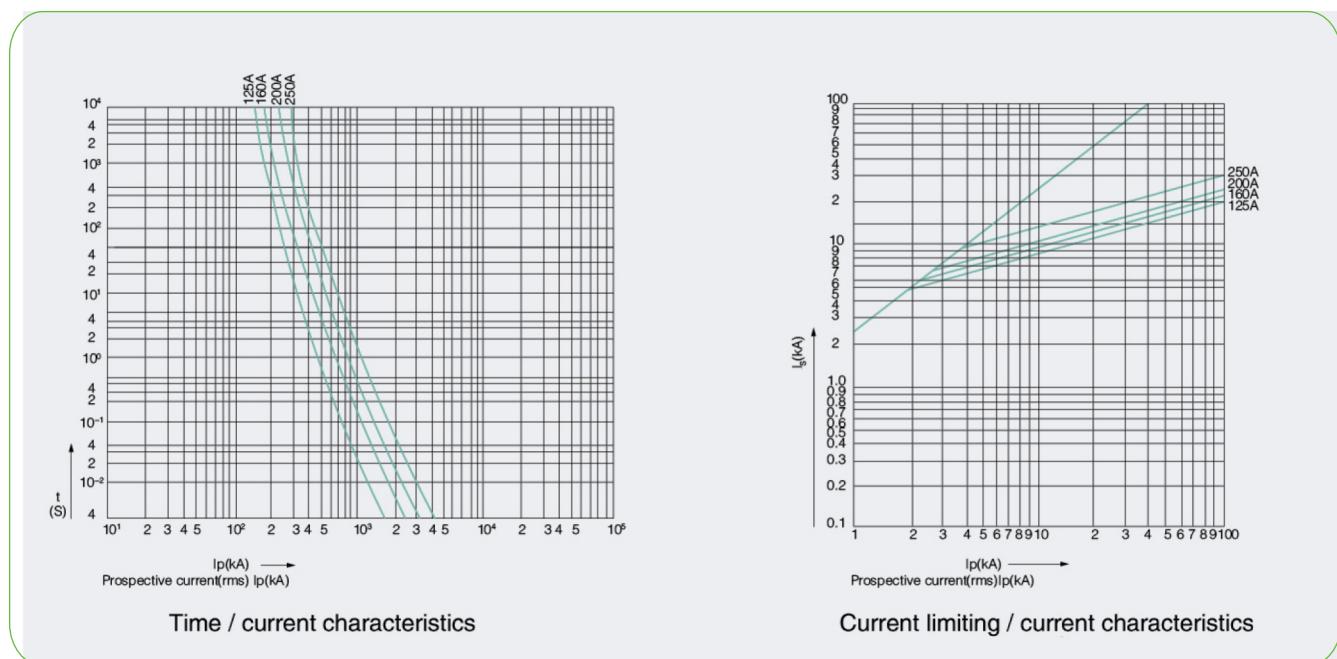
HRPV-250 250A fuse



Model	Rated voltage(V)	Rated current(A)
HRPV-250	DC1000V	125,160,200,250



Characteristics Curve(For Reference Only)



Solar cable



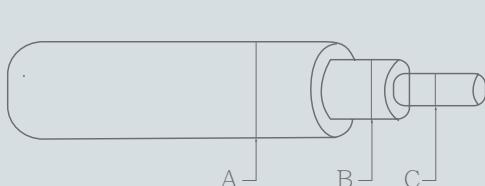
single core PV cable

Dualwall insulation, electronbeam cross-linked
Excellent resistance to UV, water, ozone, fluids, salt, general weathering
Excellent resistance to abrasion
Halogen-free, flameretardant, low toxicity
Excellent flexibility and stripping performance
High current carrying capacity
TUV and UL approved

Specifications

Type	Crosssection	Stranddesign	Conductor diameter	Conductor resistance	Outerdiameter Ax B	Ratedvoltage	Ratedcurrent
	mm ²	No.x ϕ (mm)	mm	Ω / km	mm	VAC/DC	A
PV-1x1.5mm ²	1.5	30x ϕ 0.25	1.6	13.9	4.5	1000/1800	20
PV-1x2.5mm ²	2.5	50x ϕ 0.25	2.0	8.06	5.3	1000/1800	30
PV-1x4.0mm ²	4.0	56x ϕ 0.3	2.6	4.97	6.4	1000/1800	50
PV-1x6.0mm ²	6.0	84x ϕ 0.3	3.3	3.52	7.2	1000/1800	70
PV-1x10.0mm ²	10.0	200x ϕ 0.25	4.4	2.12	8.3	1000/1800	95
PV-1x16.0mm ²	16.0	224x ϕ 0.3	5.2	1.95	9.5	1000/1800	140

Wire	Class 5, tinned
Insulationmaterial	XLPE
Doubleinsulated	
Halogen-free	
Highresistanceagainstoils, greases, oxygenandozone	
Microbe-resistant	
UVresistant	
Highwearandabrasionresistance	
Flamtestaccordingto	DINEN50265-2-1UL1571(VW-1)
Smallestpermissiblebendingradius	5XD
Temperaturerange	-40 °C ~ +90 °C
Colours	Black/red



Solar cable

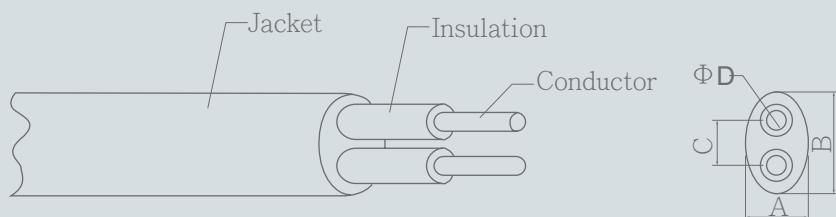


Twine core PV cable

Dualwalliinsulation , electronbeamcross-linked
ExcellentresistancetoUV,water , ozone , fluids , salt , general
weathering
Excellentresistancetoabrasion
Halogenfree , flameretardant , lowtoxicity
Excellentflexibilityandstrippingperformance
Highcurrentcarryingcapacity
TUVandULapproved

Specifications

Type	Crosssection	Stranddesign	Conductor diameter	Conductor resistance	Outerdiameter AxB	Ratedvoltage	Ratedcurrent
	mm ²	No.x ϕ (mm)	mm	Ω /km	mm	VAC/DC	A
PV-2x1.5mm ²	1.5	30x ϕ 0.25	1.6	13.9	5.80x9.30	1000/1800	20
PV-2x2.5mm ²	2.5	50x ϕ 0.25	2.0	8.06	6.20x9.90	1000/1800	30
PV-2x4.0mm ²	4.0	56x ϕ 0.3	2.6	4.97	6.9x11.30	1000/1800	50
Wire				Class5, tinned			
Insulationmaterial				XLPE			
Doubleinsulated							
Halogen-free							
Highresistanceagainstoils, greases, ox ygenandozone							
Microbe-resistant							
UVresistant							
Highwearandabrasionresistance							
Flamtestaccordingto				DINEN50265-2-1UL1571(VW-1)			
Smallestpermissiblebendingradius				5XD			
Temperaturerange				-40 °C ~ +90 °C			
Colours				Black/red			



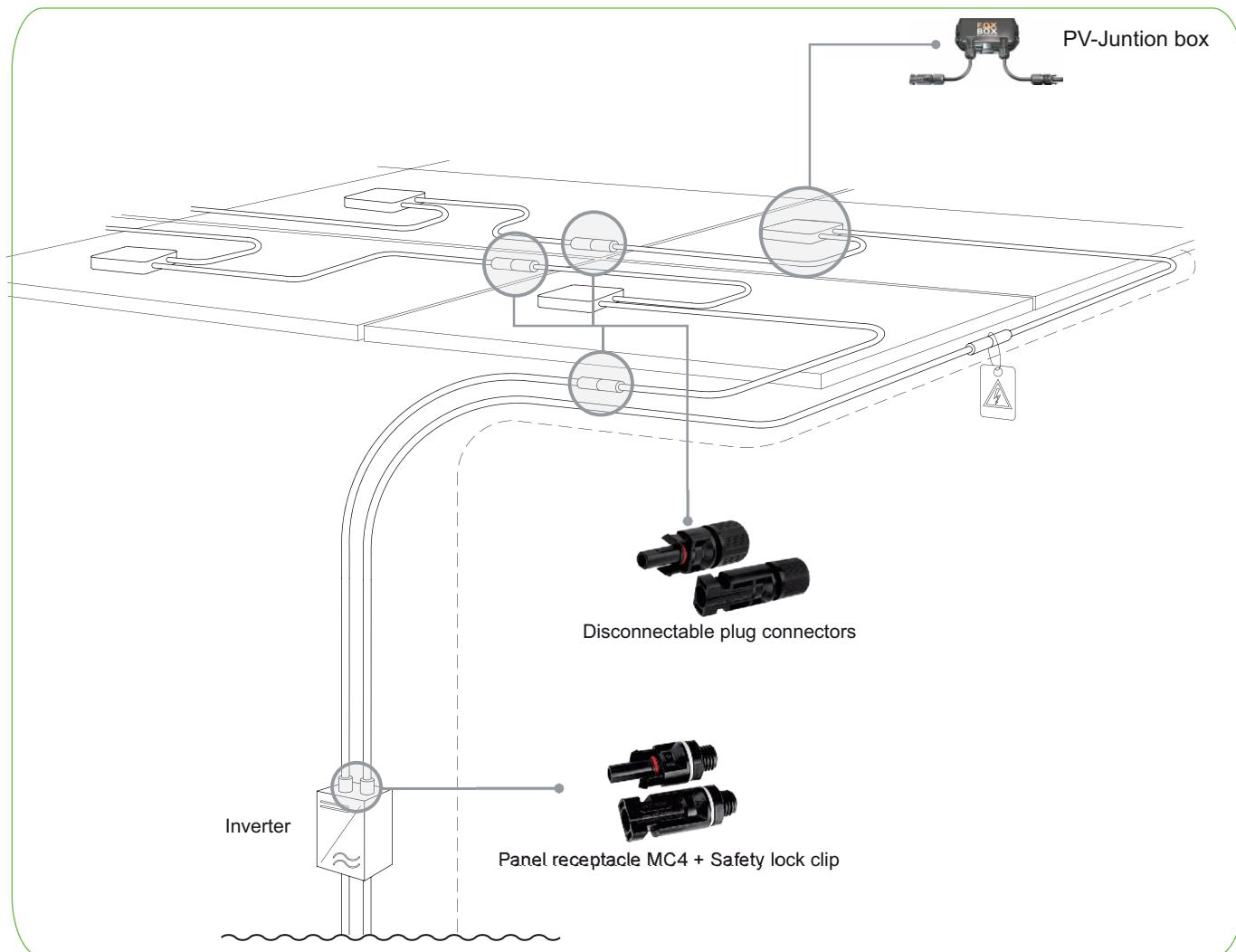
Solar connector

Connectors for Renewable Energy

Installation examples
with the solarsystem

SolarPanel
Multi-Contact
Connectors

Owner's
Manual



INTRODUCTION

MC4 Multi-Contact Connectors (Fig. 1)

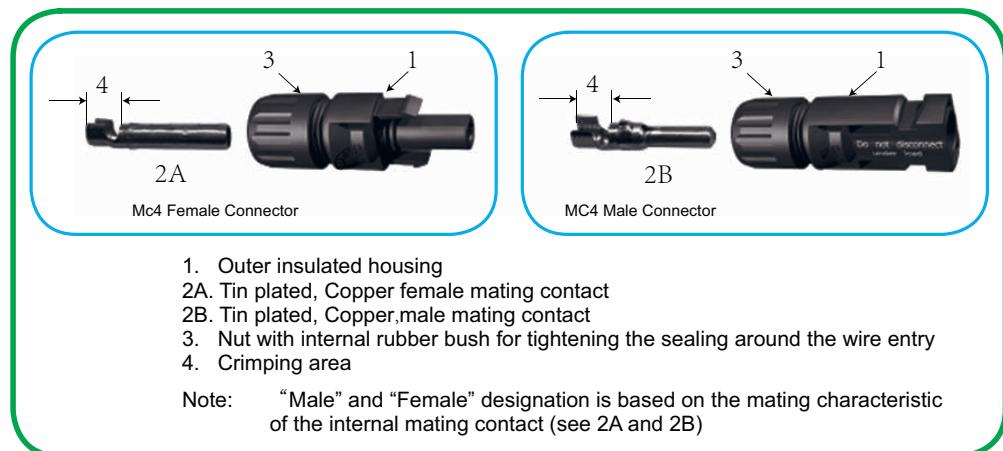
Mc4 Kit contains 1 male and 1 female MC4 solar panel connector. This type of connector system is easy to install and uses "snap-in" safety locking tabs to lock two mating connectors, thereby avoiding unintentional disconnection. Also when locked, the mating contacts are sealed against ingress of dust and water. Specifications are as follows:

- Connectors supplied with this kit are for use with wire size AWG # 10 or AWG # 12 with outer insulation diameter of 3 – 6 mm
- Contact diameter Ø4mm
- Maximum rated current - 30 A
- Maximum system voltage - 1000 V
- Degree of ingress protection when connected and properly locked - IP67
- Temperature range 40°C to +90°C
- TÜV Rheinland – type approved, UL listed

Solar connector

Construction of MC4 Connectors (See Fig. 1)

The connectors can be crimped / soldered to wire size AWG #10 or AWG # 12 with an outer insulation diameter of 3 to 6 mm.



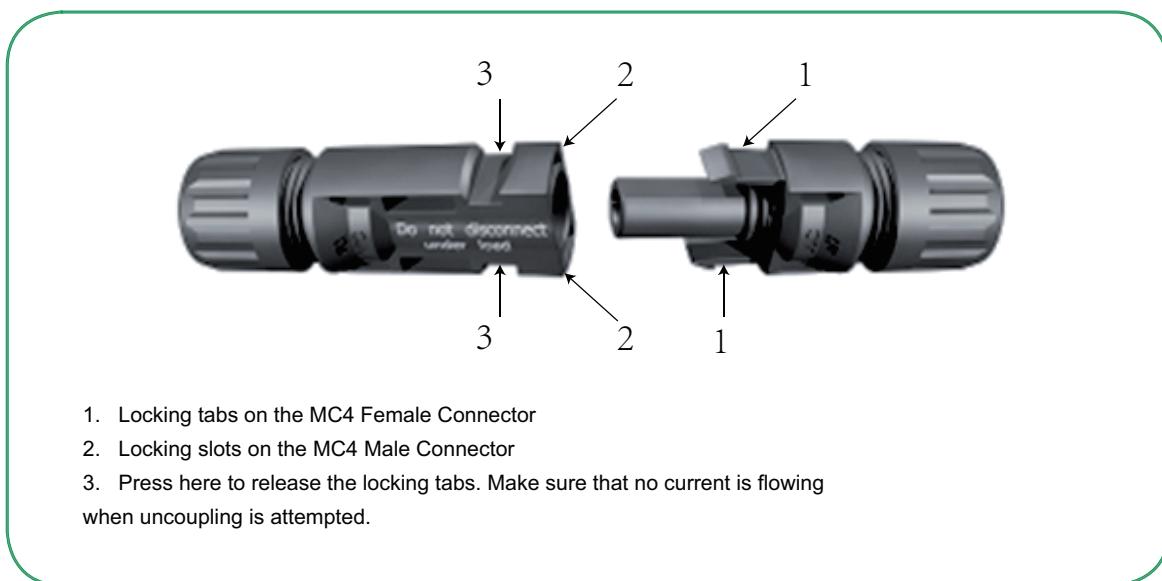
The Male and Female MC4 Connectors consist of the following components (See Fig. 1).

- Outer insulated housing with locking arrangement (1 of Fig. 1)
- Tin-plated Copper metallic male & female mating contacts (2A and 2B of Fig. 1). The wire is placed in the crimping area (4 of Fig 1) and crimped with a special crimping tool
- Nut & internal rubber bush (3 of Fig. 1). When the nut is tightened, the internal rubber bush is compressed around the outer jacket of the cable and thus, provides water-tight sealing.

MC4 Connector ?Locking Arrangement (Fig. 2)

Two locking tabs (1 of Fig. 2) are provided on the MC4 Female Connector. Two corresponding locking slots (2 of Fig. 2) are provided on the MC4 Male Connector. When the two connectors are coupled, the locking tabs slide into the locking slots and secure.

To uncouple the two connectors, press the ends of the locking tabs as shown (3 of Fig. 3) to release the locking mechanism.



Solar connector

Wire Connections on Solar Panels (See Fig. 3)

Most solar panels come with approximately 3 ft of Positive ('+') and Negative ('-') wire. One end of each wire is connected to the junction box of the panel. In most solar panels (for example, solar panels manufactured by Samlex Solar), the other end of each wire is terminated with an MC4 connector. The Positive ('+') wire has a Female MC4 Connector and the Negative ('-') wire has a Male MC4 Connector. To extend the length of the wires of these solar panels for connection to a charge controller / combiner box or grid connected inverter, an extension wire is required with corresponding Male and Female MC4 Connectors.

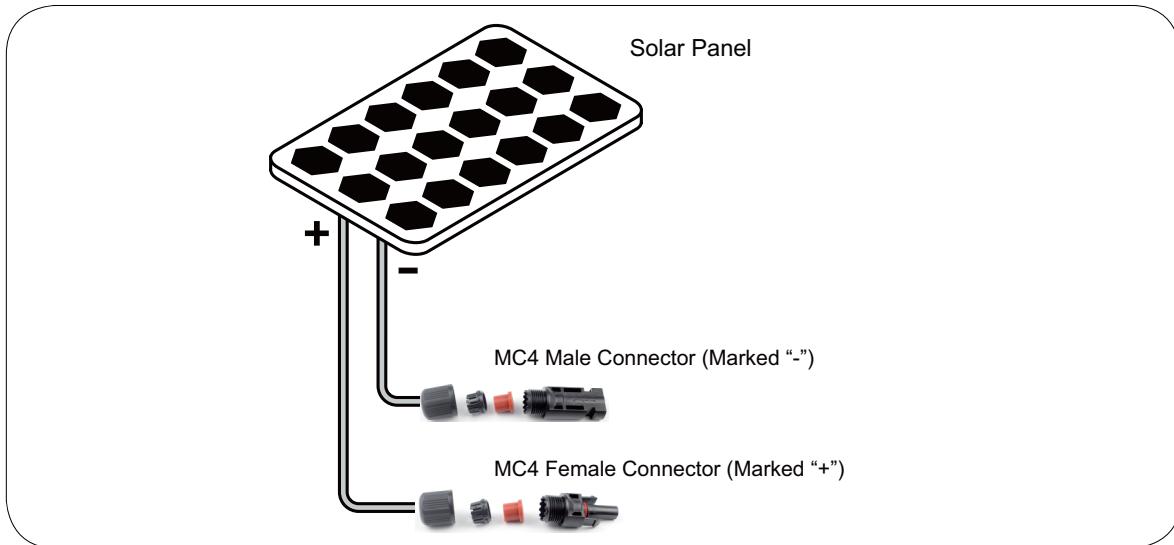


Fig 3. Solar panel with MC4 Connectors



Warning!

When the surface of the solar panel / array is exposed to sunlight, a DC voltage appears at the output terminals turning it into a live voltage source. For example, a 24 V nominal solar panel may put out an open circuit voltage of around 45 VDC that may produce electrical shock. Multiple solar panels connected in series (to increase the output voltage) will put out higher lethal voltages. To avoid any electrical shock hazard during installation, make sure that the solar panel / array is covered with an opaque (dark) material to block solar irradiation.

INSTALLATION

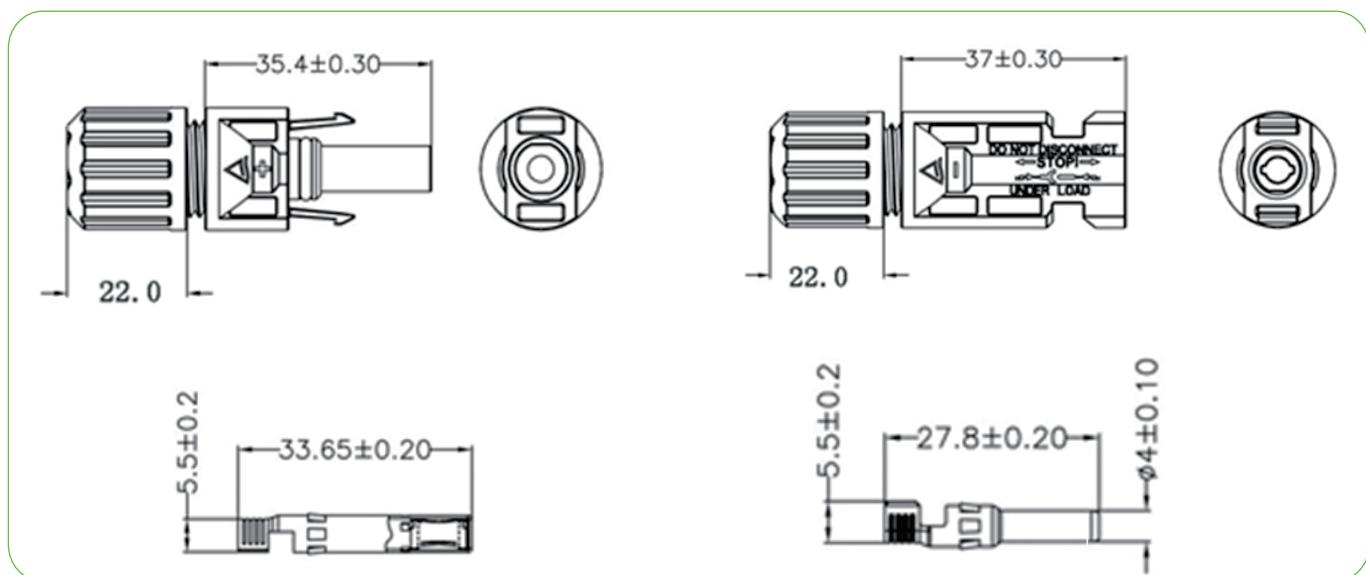
Installation procedure (See Fig. 1 and Fig. 2)

The MC4 connectors provided are compatible for use with AWG #10 or AWG #12 wire with outer insulation diameter 3 – 6 mm. Wires may be single conductor, Type UF (Underground Feeder - marked as sunlight resistant), Type SE (Service Entrance) or Type USE/USE-2 (Underground Service Entrance).

1. Strip 1/4" of the wire insulation using a wire stripper. Take care not to cut individual strands.
2. Insert the bare conductor into the crimping area (4 of Fig. 1) of the metallic mating contact and crimp using a special purpose crimping tool. The end may be soldered if the crimping tool is not available. Take care that the solder does not flow beyond the crimp area.
3. Insert the metallic mating contact with the crimped wire through the cable gland into the insulated housing, till the metallic pin fits snug into the housing.
4. Tighten nut (3 of Fig. 1) so that the rubber bush is compressed around the wire entry to ensure proper sealing.

Mc4 Connector

Simple on-site processing.
 Acomodates PV cable with different insulation diameters.
 Mating safety provided bykeyed housings.
 Multiple plugging and unplugging cycles .
 High current carrying capacity.
 TUV and UL approved.



Specifications

Order NO.	Part P/N		Cable special	
	Connector	Terminal	Conductor size mm ²	Cable OD (Ø Dmm)
MC4-CMMM-I4		MC4-CM-TI4	AWG 14(2.5 mm ²)	
MC4-CMMM-I2	MC4-CMMM-H	MC4-CM-TI2	AWG 12(4.0 mm ²)	Ø 4.5-Ø8.5
MC4-CMMM-I0		MC4-CM-TI0	AWG 10(6.0 mm ²)	

Order NO.	Part P/N		Cable special	
	Connector	Terminal	Conductor size mm ²	Cable OD (Ø Dmm)
MC4-CFPM-I4		MC4-CF-TI4	AWG 14(2.5 mm ²)	
MC4-CFPM-I2	MC4-CFPM-H	MC4-CF-TI2	AWG 12(4.0 mm ²)	Ø 4.5-Ø8.5
MC4-CFPM-I0		MC4-CF-TI0	AWG 10(6.0 mm ²)	

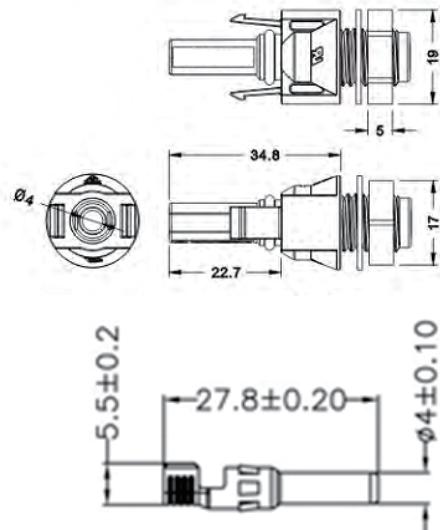
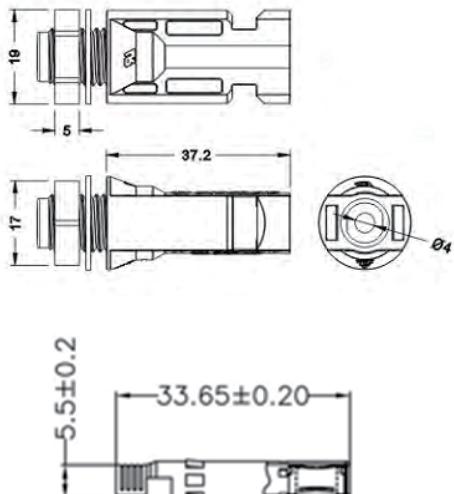
Technical Parameter	
Rated current	30A(2.5-6mm ²)
Rated voltage	1000v DC
Test voltage	6000V(50Hz, 1min)
Oversvoltage type/pollution degree	CAT III/2
Contact resistance of plug connector	1mΩ
Contact material	Copper,Tin-plated
Insulation material	PPO

Technical Parameter	
Degree of protection	IP2X/IP67
Flame class	UL94-VO
Safety class	II
Suitable cable	OD 4.5-8.5(2.5-6.0 mm ²)
Insertion force/withdrawal force	≤ 50N/≥ 50N
Connecting system	Crimp connection
Temperature range	-40 C ~ +125 C

Mc4 Panel Connector



Simple on-site processing.
Acomodates PV cable with different insulation diameters.
Mating safety provided bykeyed housings.
Multiple plugging and unplugging cycles .
High current carrying capacity.
TUV and UL approved.



Specifications

Order NO.	Part P/N		Cable special	
	Connector	Terminal	Conductor size mm ²	Cable OD (Ø Dmm)
MC4-CMMM-I4		MC4-CM-TI4	AWG 14(2.5 mm ²)	
MC4-CMMM-I2	MC4-CMMM-H	MC4-CM-TI2	AWG 12(4.0 mm ²)	Ø 4.5-Ø8.5
MC4-CMMM-I0		MC4-CM-TI0	AWG 10(6.0 mm ²)	

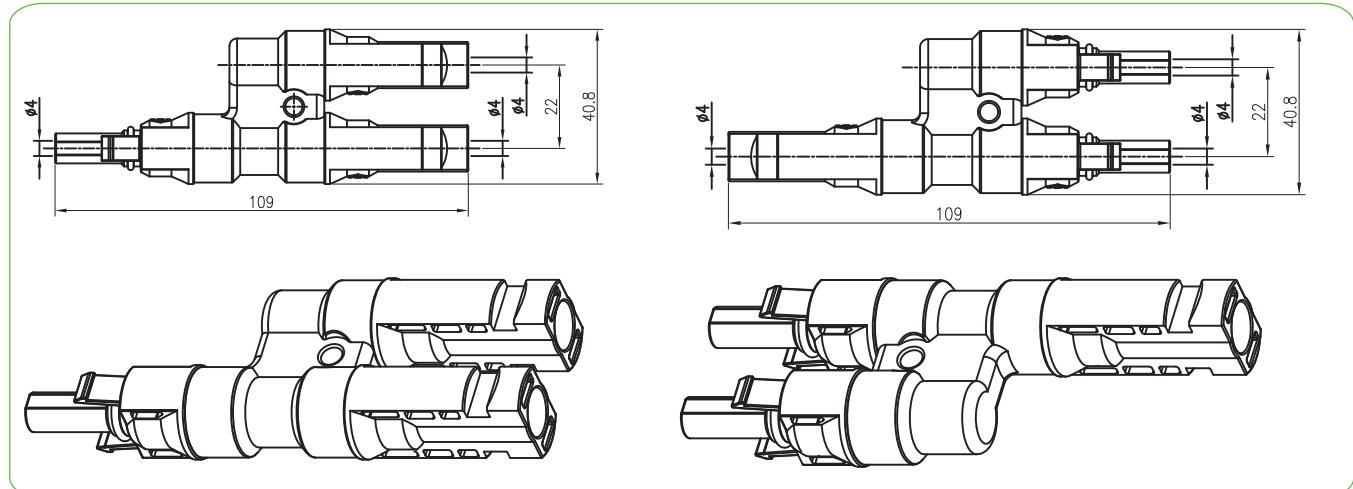
Order NO.	Part P/N		Cable special	
	Connector	Terminal	Conductor size mm ²	Cable OD (Ø Dmm)
MC4-CFPM-I4		MC4-CF-TI4	AWG 14(2.5 mm ²)	
MC4-CFPM-I2	MC4-CFPM-H	MC4-CF-TI2	AWG 12(4.0 mm ²)	Ø 4.5-Ø8.5
MC4-CFPM-I0		MC4-CF-TI0	AWG 10(6.0 mm ²)	

Technical Parameter	
Rated current	30A(2.5-6mm ²)
Rated voltage	1000v DC
Test voltage	6000V(50Hz, 1min)
Oversupply type/pollution degree	CAT III/2
Contact resistance of plug connector	1mΩ
Contact material	Copper,Tin-plated
Insulation material	PPO

Technical Parameter	
Degree of protection	IP2X/IP67
Flame class	UL94-VO
Safety class	II
Suitable cable	OD 4.5-8.5(2.5-6.0 mm ²)
Insertion force/withdrawal force	≤ 50N/≥ 50N
Connecting system	Crimp connection
Temperature range	-40 C ~+125 C

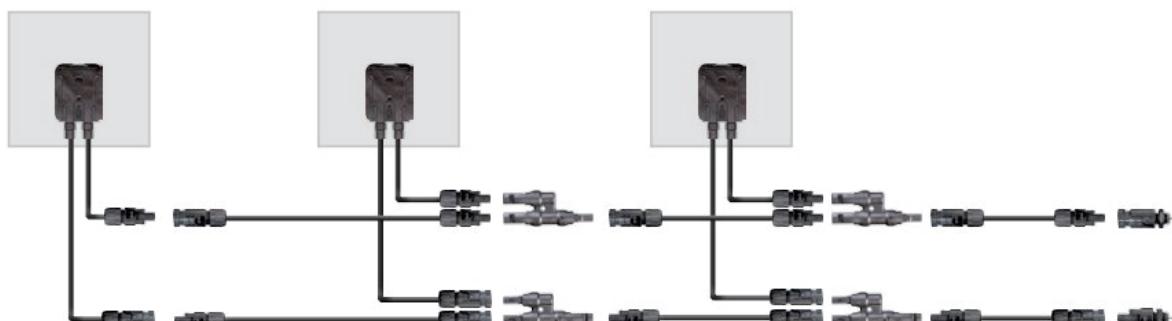
MC4T connector

- Simple on-site processing.
- Acomodates PV cable with different insulation diameters.
- Mating safety provided bykeyed housings.
- Multiple plugging and unplugging cycles .
- High current carrying capacity.



Specifications

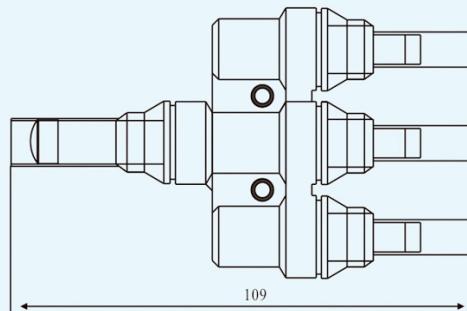
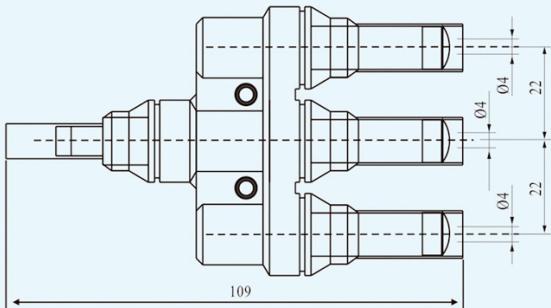
Type And meaning	MC4 T connector
Rated current	40A
Rated voltage	1000V DC
Test voltage	6000v (50Hz, 1 min)
Over voltage Category/Pollution degree	CAT II/2
Contact resistance of plug connector	1m Ω
Contact material	copper, Tin-plated
Insulation material	PA/PO
Degree of protection	IP2*/IP65
Flame class	UL94-VO
Safety class	II
Insertion force	$\leq 50N$
withdrawal force	$\geq 50N$
Temperature range	- 40 °C ~ +110 °C



MC4T connector 3 to 1



- Simple on-site processing.
- Accommodates PV cable with different insulation diameters.
- Mating safety provided by keyed housings.
- Multiple plugging and unplugging cycles.
- High current carrying capacity.

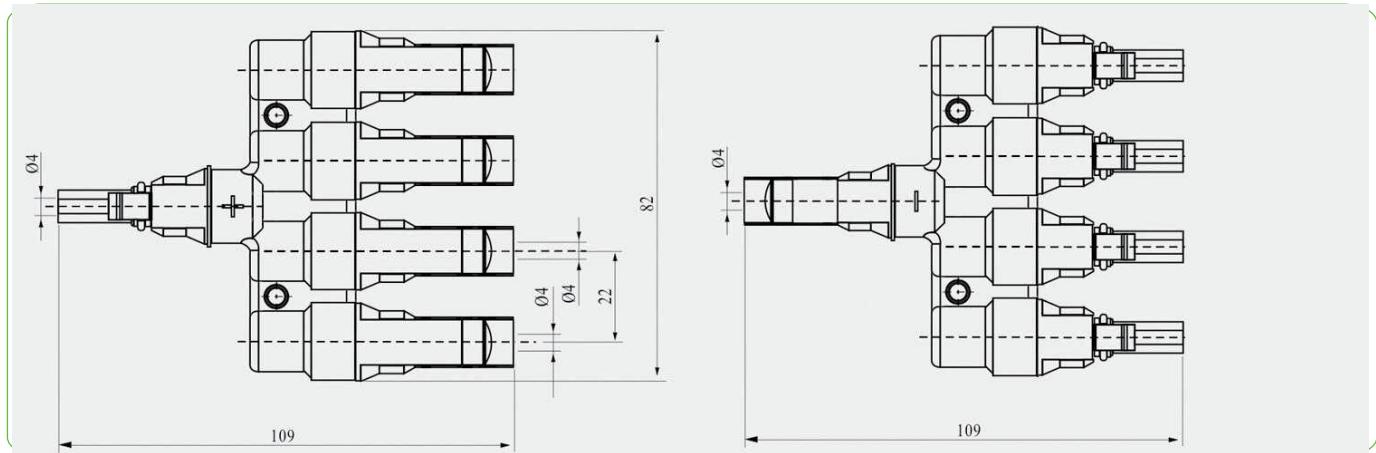


Specifications

Type And meaning	Mc4 T 3 to 1 connector
Rated current	40A
Rated voltage	1000V DC
Test voltage	6000v (50Hz, 1 min)
Over voltage Category/Pollution degree	CAT II/2
Contact resistance of plug connector	1m Ω
Contact material	copper, Tin-plated
Insulation material	PPO
Degree of protection	IP2*/IP65
Flame class	UL94-VO
Safety class	II
Insertion force	$\leq 50N$
withdrawal force	$\geq 50N$
Temperature range	-40 °C ~ +110 °C
Suitablecable	2.5-6.0mm ²

MC4T connector 4 to 1

- Simple on-site processing.
- Acomodates PV cable with different insulation diameters.
- Mating safety provided bykeyed housings.
- Multiple plugging and unplugging cycles .
- High current carrying capacity.



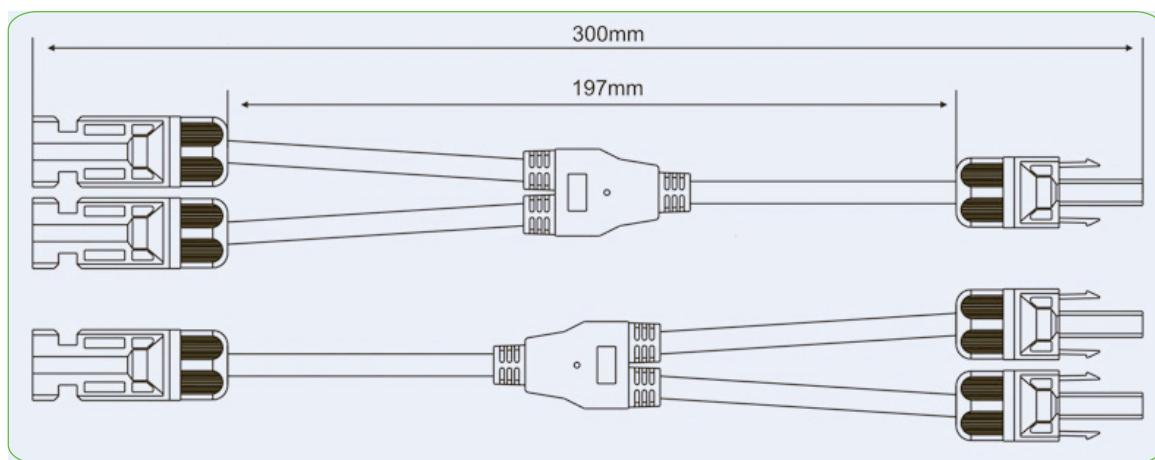
Specifications

Type And meaning	MC4T 4 to 1 connector
Rated current	40A
Rated voltage	1000V DC
Test voltage	6000v (50Hz, 1 min)
Over voltage Category/Pollution degree	CAT II/2
Contact resistance of plug connector	1m Ω
Contact material	copper, Tin-plated
Insulation material	PPO
Degree of protection	IP2*/IP65
Flame class	UL94-VO
Safety class	II
Insertion force	≤50N
withdrawal force	≥ 50N
Temperature range	- 40 °C ~ +110 °C
Suitablecable	2. 5-6. 0mm ²

MC4Y connector



- Simple on-site processing.
- Accommodates PV cable with different insulation diameters.
- Mating safety provided by keyed housings.
- Multiple plugging and unplugging cycles .
- High current carrying capacity.

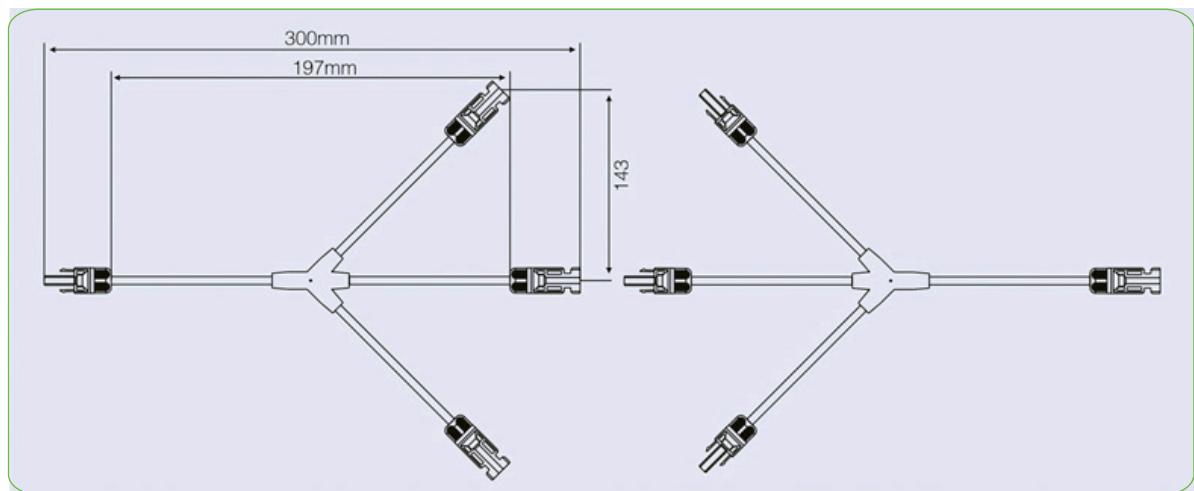


Specifications

Type And meaning	MC4Y connector
Rated current	30A
Rated voltage	1000V DC
Test voltage	6000v (50Hz, 1 min)
Over voltage Category/Pollution degree	CAT II/2
Contact resistance of plug connector	1m Ω
Contact material	copper, Tin-plated
Insulation material	PPO
Degree of protection	IP2*/IP65
Flame class	UL94-VO
Safety class	II
Insertion force	$\leq 50N$
withdrawal force	$\geq 50N$
Temperature range	- 40 °C ~ +110 °C
cable length	8cm

MC4Y connector 3 to 1

- Simple on-site processing.
- Acomodates PV cable with different insulation diameters.
- Mating safety provided bykeyed housings.
- Multiple plugging and unplugging cycles .
- High current carrying capacity.



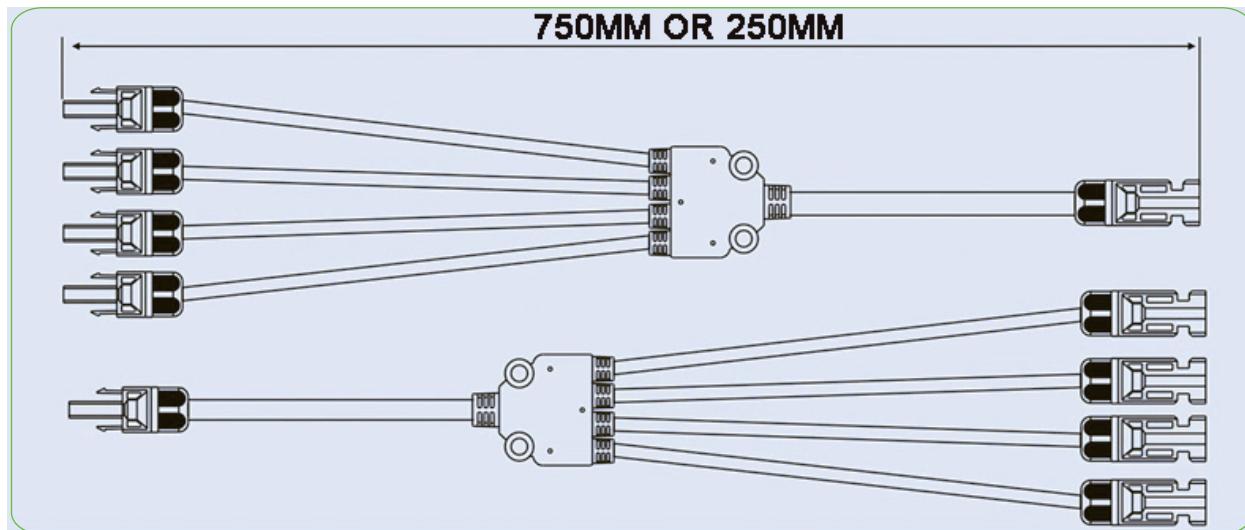
Specifications

Type And meaning	MC4Y 3 to 1 connector
Rated current	40A
Rated voltage	1000V DC
Test voltage	6000v (50Hz, 1 min)
Over voltage Category/Pollution degree	CAT II/2
Contact resistance of plug connector	1m Ω
Contact material	copper, Tin-plated
Insulation material	PPO
Degree of protection	IP2*/IP65
Flame class	UL94-VO
Safety class	II
Insertion force	$\leq 50N$
withdrawal force	$\geq 50N$
Temperature range	-40 °C ~ +110 °C
cable length	8cm

MC4Y connector 4 to 1



- Simple on-site processing.
- Acomodates PV cable with different insulation diameters.
- Mating safety provided bykeyed housings.
- Multiple plugging and unplugging cycles .
- High current carrying capacity.



Specifications

Type And meaning	MC4Y 4 to 1 connector
Rated current	40A
Rated voltage	1000V DC
Test voltage	6000v (50Hz, 1 min)
Over voltage Category/Pollution degree	CAT II/2
Contact resistance of plug connector	1m Ω
Contact material	copper, Tin-plated
Insulation material	PPO
Degree of protection	IP2*/IP65
Flame class	UL94-VO
Safety class	II
Insertion force	$\leq 50N$
withdrawal force	$\geq 50N$
Temperature range	-40 °C ~ +110 °C
cable length	8cm

PV tool



MC3钳口



泰科钳口



8-10平方钳口



MC4.0扳手



压线钳



压线钳



剥线钳



HM1PV Photovoltaic moulded case circuit breaker

1. Application



HM1PV-125

HM1PV moulded case circuit breaker (here in after referred to as circuit breaker) is applied to the DC circuit with rated voltage up to DC1000 V, and rated current 16A to 690A. Featured with functions of overload longtime delay protection and short circuit instantaneous protection, the product can distribute electric power, and protect the line and the equipment from being damaged due to overload, short circuit, and other failures. This product accords with the standard of IEC60947-2.

2. Normal operation conditions

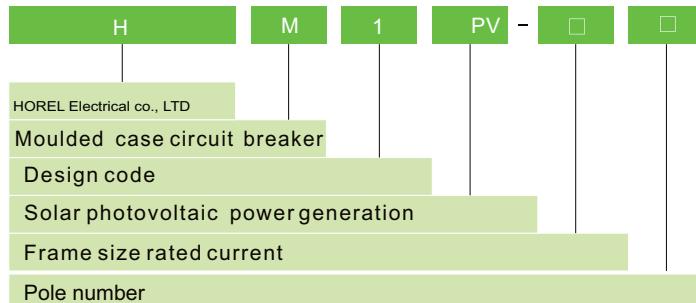
1. Ambient temperature: -25°C~+70°C; average temperature within 24h: ≤+35°C
 2. Altitude: ≤2000m
 3. Humidity: The air relative humidity under the highest temperature +40°C cannot surpass 50%; Under the lowest temperature has a higher relative humidity, the wettest month's average lowest temperature cannot surpass +25°C, and the average relative humidity cannot exceed 90%;
 4. Pollution degree: class 3
 5. Mounted at places without explosive risk, without gases that may be corrosive to metal or gases that may cause damage to the insulation, and with little conducting dust
 6. Mounting category: III



HM1PV-250

3. Model and meaning

1. Model and meaning

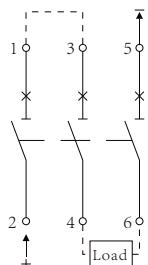


Sheet 1. Release type and accessories code

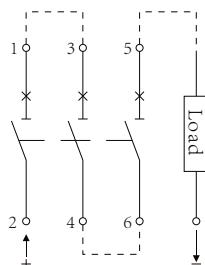
Accessories name	No accessories	Alarm contact	Shunt release	Auxiliary contact	Shunt release and auxiliary contact	Two groups of auxiliary contacts	Shunt release and alarm contact	Auxiliary contact and alarm contact	Shunt release, auxiliary contact and alarm contact	Two groups of auxiliary contacts, alarm contact
Over current release type	Code									
Instantaneous release	200	208	210	220	240	260	218	228	248	268
Duplex release	300	308	310	320	340	360	318	328	348	368

Note: As per power/load wiring mode, E, F type for 3P; G, H, I type for 4P

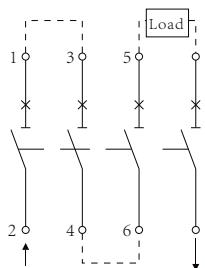
HM1PV Photovoltaic moulded case circuit breaker



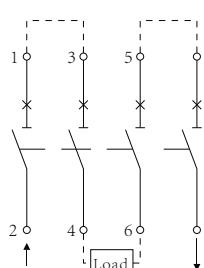
1.E type wiring for 3P breaker



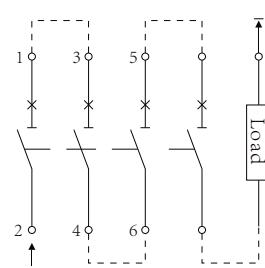
2.F type wiring for 3P breaker



3.G type wiring for 4P breaker



4.H type wiring for 4P breaker



5.I type wiring for 4P breaker

Power systems for above wiring mode please check sheet2.

Sheet. 2

volt	To earth insulation system	Negative grounding system	Neutral point grounding system
DC500V	E	E、F	-
DC750V	E、H	FQI、	H
DC1000V	H	I	H

4. Main technical parameters

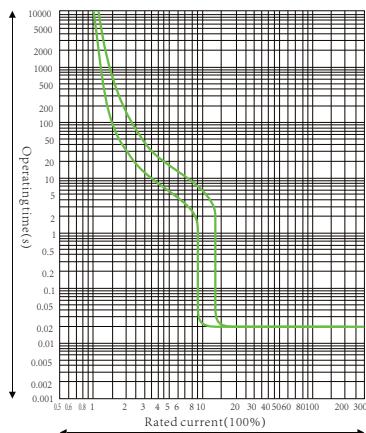
Sheet. 3

Frame size rated current	125			250			400			630	
Rated current In(A)	16、20、25、32、40、50、63、80、100、125			100、125、160、180、200、225、250			225、250、315、350、400			400、500、630	
Pole number	2	3	4	2	3	4	3	4	3	4	
Rated insulation voltage Ui (V)	1000										
Rated impulse withstand voltage Uimp(V)	8000										
Rated working voltage Ue (V)	DC 500 DC 750	DC 500 DC 1000	DC 750 DC 1000	DC 500 DC 750	DC 500 DC 1000	DC 750 DC 1000	DC 500 DC 750	DC 750 DC 1000	DC 500 DC 750	DC 750 DC 1000	
Using category	A										
Rated limit/service short circuit breaking capacity Icu/lcs(kA)	DC500 DC750 DC1000	15/15 5/5 5/5			65/65 40/20 40/20			65/65 50/50 40/20			65/65 40/20 50/50 40/20
Flashover distance (mm)	≤50			≤50			≤100			≤100	
Operation performance (times)	Energized Non-energized	5000 10000			5000 10000			1000 5000			1000 5000

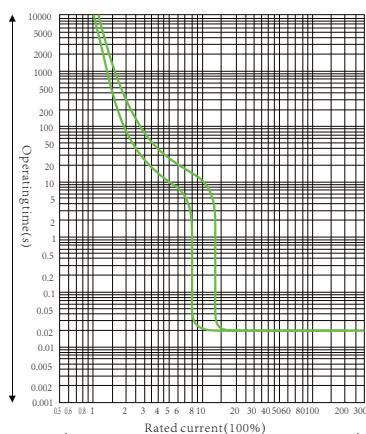
HM1PV Photovoltaic moulded case circuit breaker

5. Protection characteristics curve

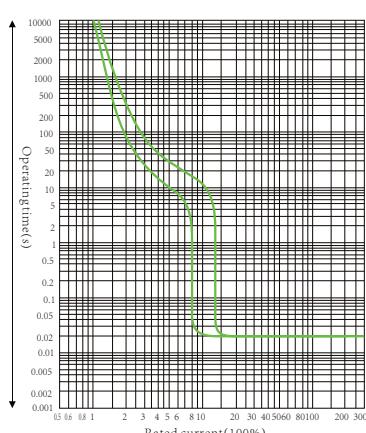
1.HM1PV-125 current temperature protection characteristics curve



2.HM1PV-250 current temperature protection characteristics curve

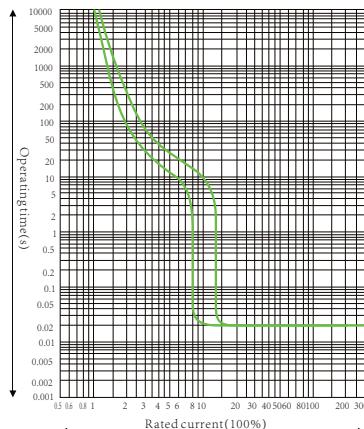


3.HM1PV-400 current temperature protection characteristics curve



HM1PV Photovoltaic moulded case circuit breaker

4.HM1PV-630 current temperature protection characteristics curve



5. The temperature reducing capacity coefficient at different temperature.

type	10 °C	20 °C	30 °C	40 °C	50 °C	60 °C	70 °C
HM1PV-125	1.15In	1.11In	1.15In	1In	0.93In	0.85In	0.8In
HM1PV-250	1.15In	1.11In	1.15In	1In	0.93In	0.85In	0.79In
HM1PV-400	1.16In	1.11In	1.15In	1In	0.94In	0.86In	0.81In
HM1PV-630	1.17In	1.11In	1.15In	1In	0.9In	0.8In	0.7In

6. The reducing capacity coefficient in high altitude: when the altitude exceeds 2000m, the circuit breaker should be adjusted as sheet 4 Sheet.4

Altitude(m)	2000	3000	4000	5000
Power frequency withstand voltage	3000	2500	2000	1800
Working current adjustment coefficient	1	0.94	0.88	0.83

7. DC system application: the following aspects should be considered before choose breaker in DC system.

- a. rated operation voltage, considering cascaded pole number
- b. rated current, considering load power
- c. breaking capacity , considering maximum short circuit current at mounting site
- d. Grounding system mode, see sheet 5

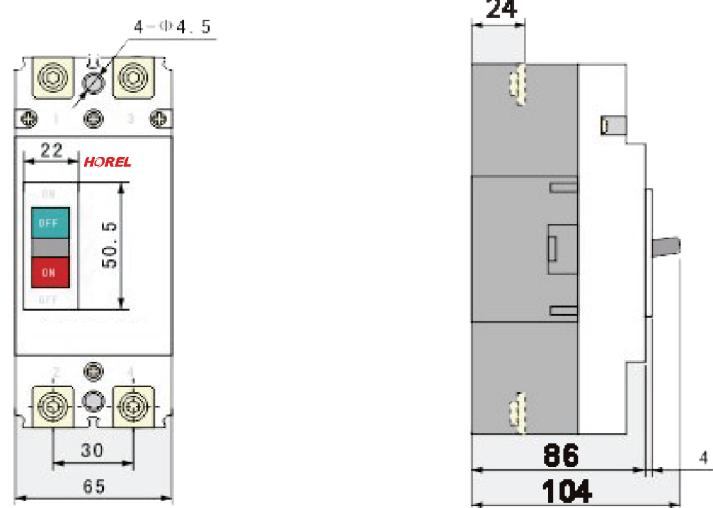
Sheet. 5

System type		Grounding system		Ungrounding system
All kinds of fault types				
Failure effect	Failure I	Generate maximum short circuit current Contact connecting to positive pole break	U/2 voltage produce maximum short circuit current Contact connecting to negative pole break	No effect
	Failure II	Generate maximum short circuit current All the cascaded contacts break	Generate maximum short circuit current All the cascaded contacts break	Generate maximum short circuit current All the cascaded contacts break
	Failure III	No effect	Same as failure I But only for contact connecting to negative pole	No effect
The worst situation		Failure I	Failure I and Failure II	Failure II
Breaking situation		Cascade in positive pole and break together	For each pole, break maximum short circuit current when U/2	Two poles break together

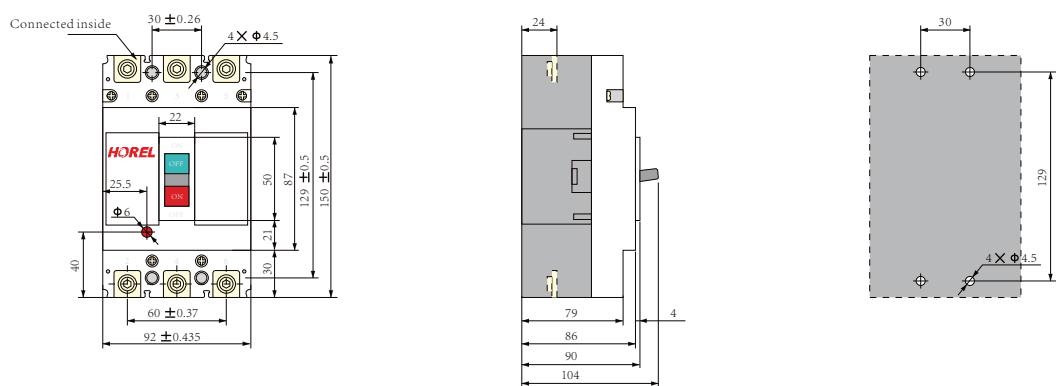
HM1PV Photovoltaic moulded case circuit breaker

6. Overall and mounting size

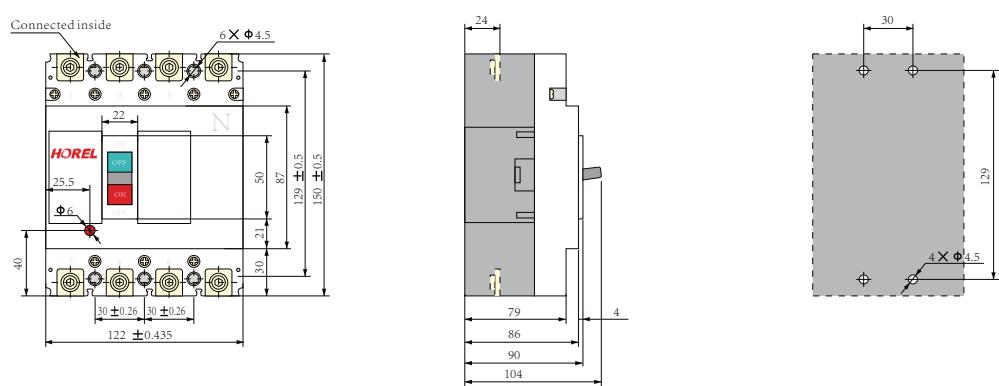
1. 2 pole HM1PV-125



2.E type wiring for 3 pole HM1PV-125

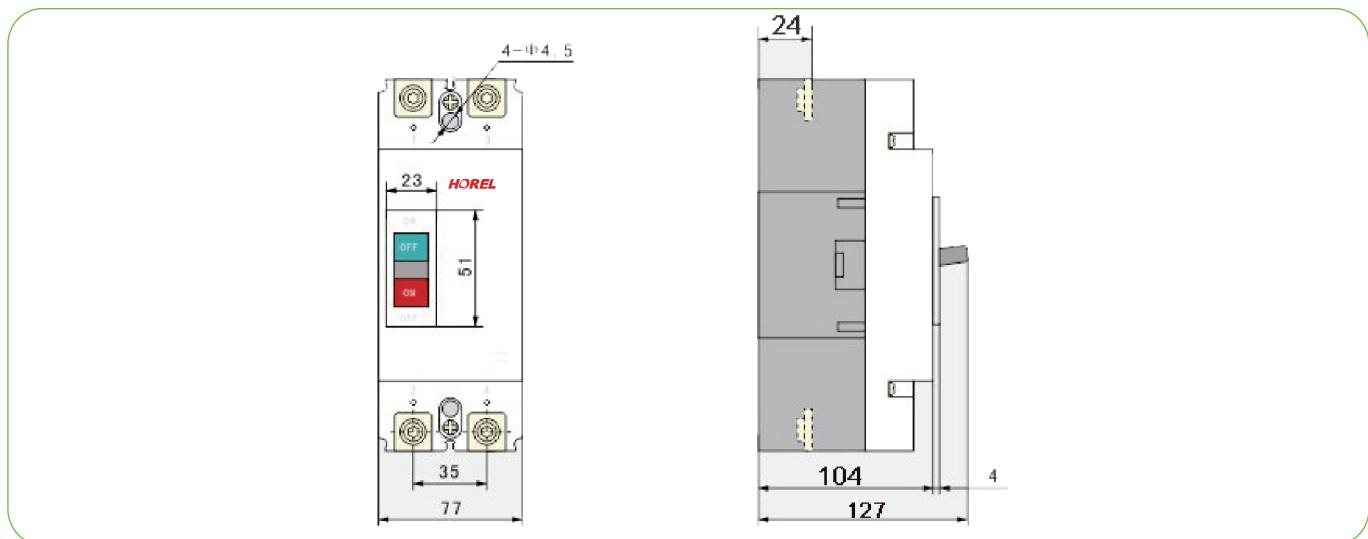


3.H type wiring for 4 pole HM1PV-125

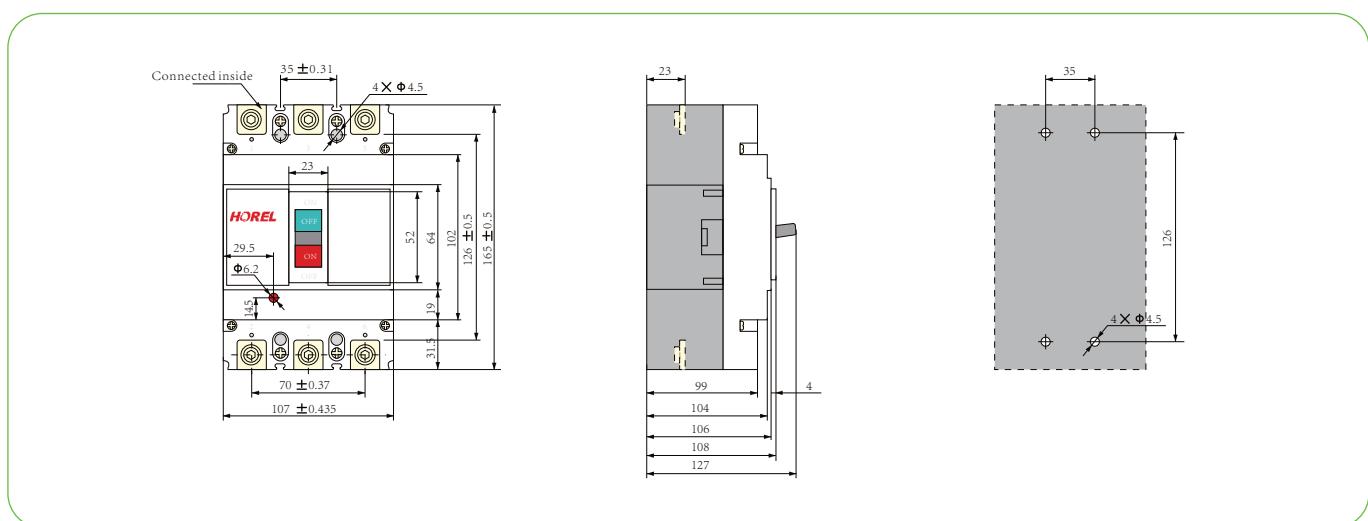


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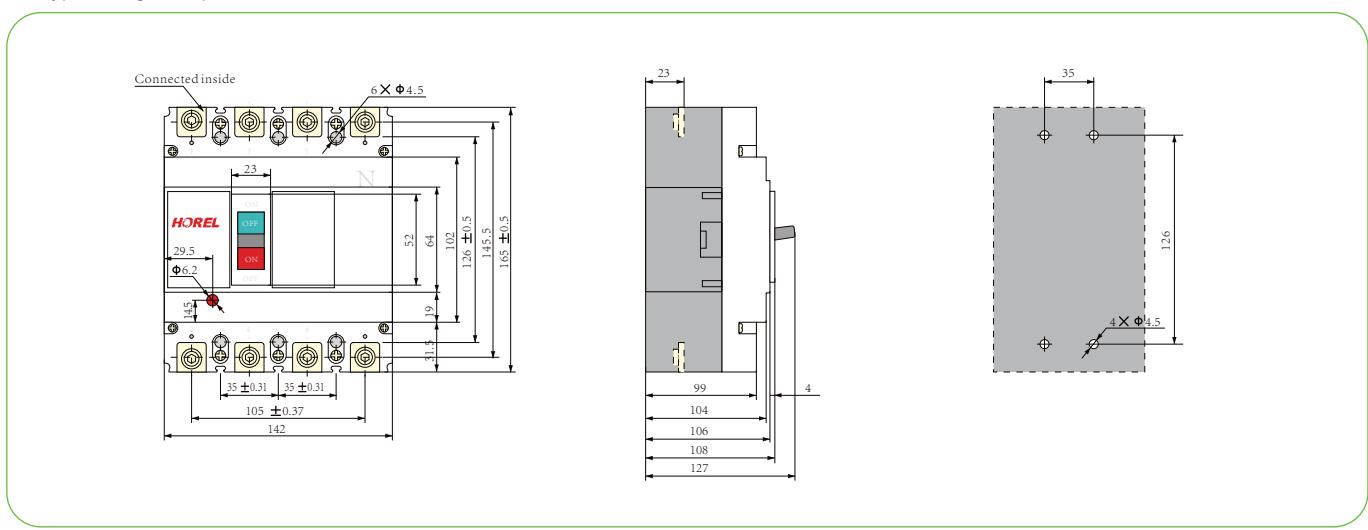
4. 2 pole HM1PV-250



5.E type wiring for 3 pole HM1PV-250

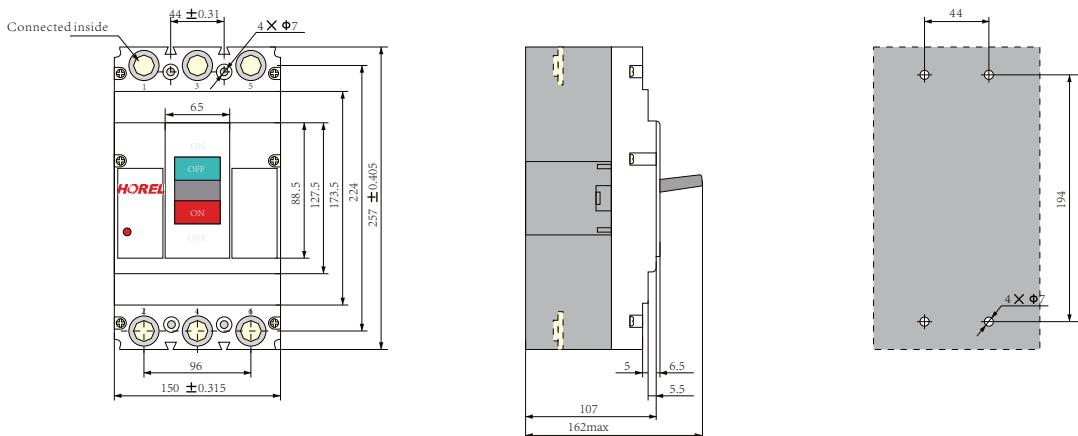


6.H type wiring for 4 pole HM1PV-250

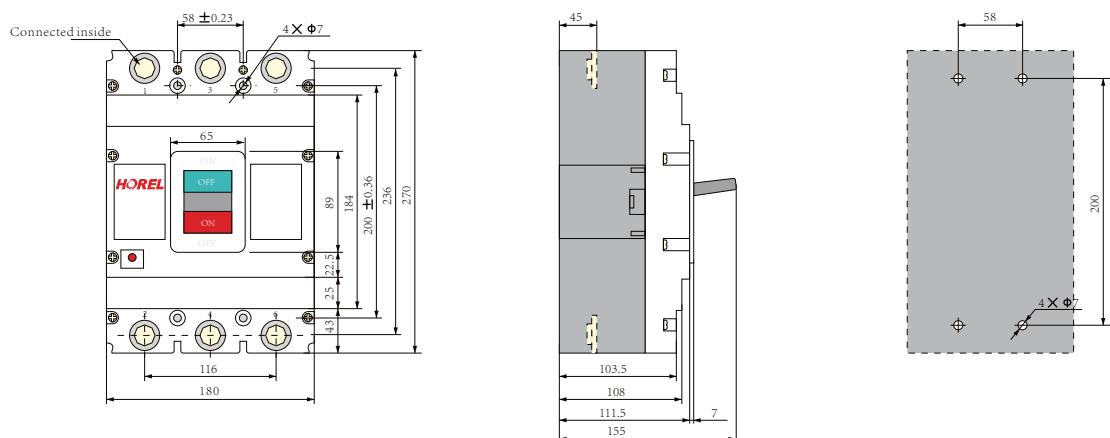


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7. 3 pole and 4 pole HM1PV-400



8.E type wiring for 3 pole HM1PV-630



8.H type wiring for 4 pole HM1PV-630

