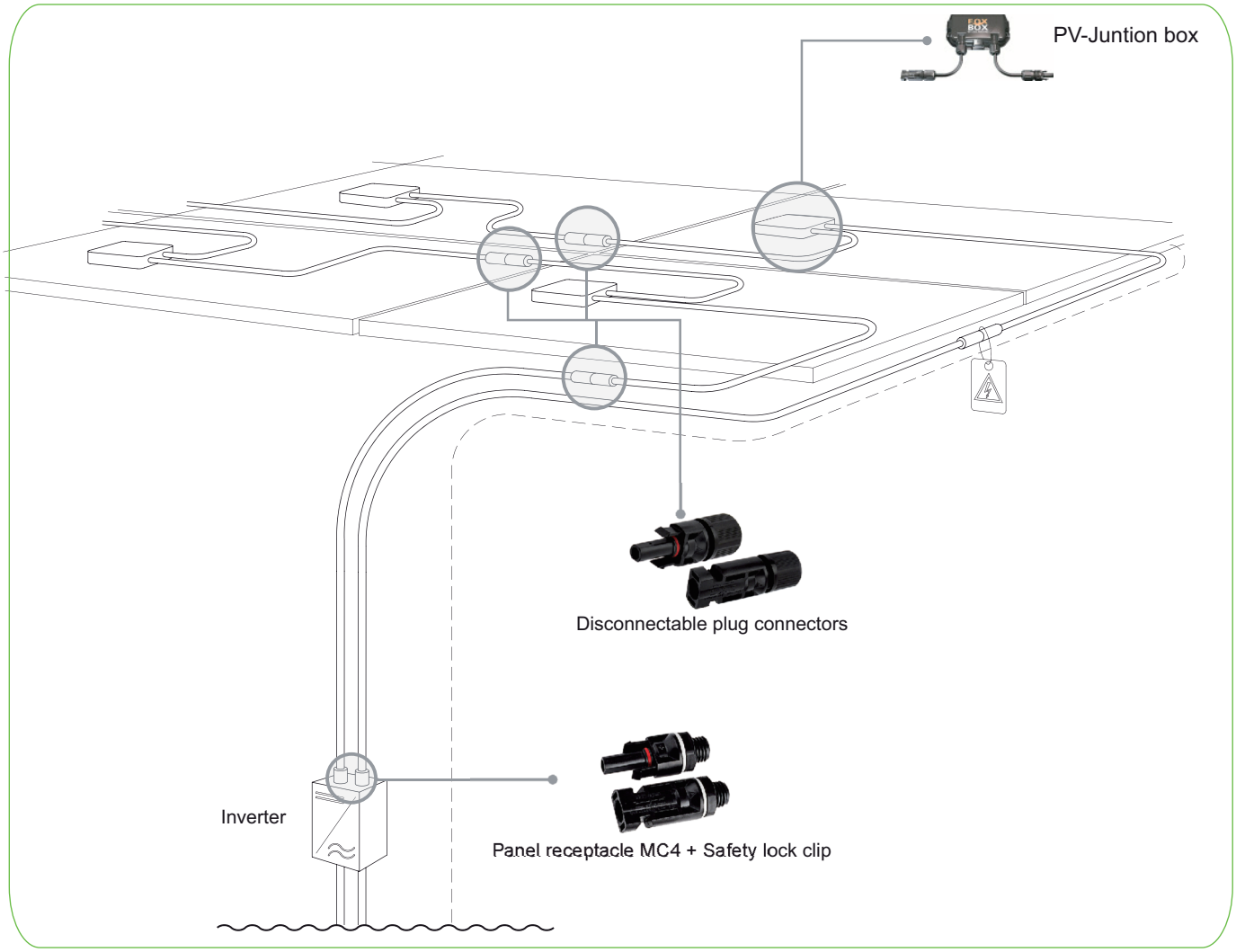
Solar connector

Connectors for Renewable Energy

Installation examples
with the solarsystem

SolarPanel
Multi-Contact
Connectors

Owner's
Manual



INTRODUCTION

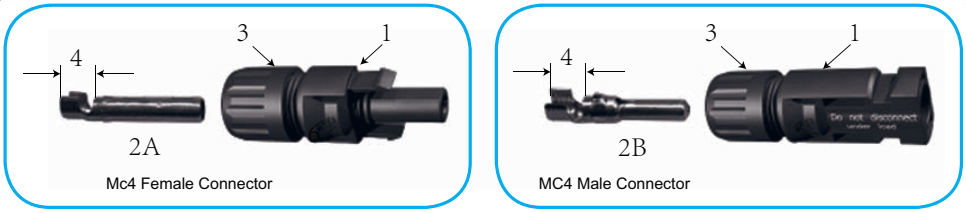
MC4 Multi-Contact Connectors (Fig. 1)

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.Specifi cations 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

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.



1. Outer insulated housing
2A. Tin plated, Copper female mating contact
2B. Tin plated, Copper,male mating contact
3. Nut with internal rubber bush for tightening the sealing around the wire entry
4. Crimping area

Note: "Male" and "Female" designation is based on the mating characteristic of the internal mating contact (see 2A and 2B)

Fig. 1. MC4 Male and Female Connectors

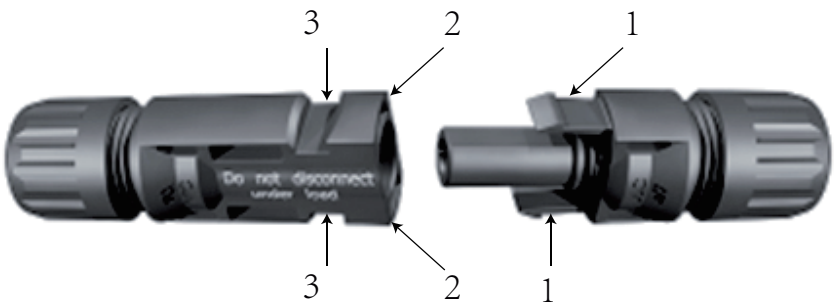
The Male and Female MC4 Connectors consist of the following components (See Fig. 1).

- 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.



1. Locking tabs on the MC4 Female Connector
2. Locking slots on the MC4 Male Connector
3. Press here to release the locking tabs. Make sure that no current is flowing when uncoupling is attempted.

Fig. 2. Snap-in Locking System

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.ThePositive(‘+’)wirehas 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.

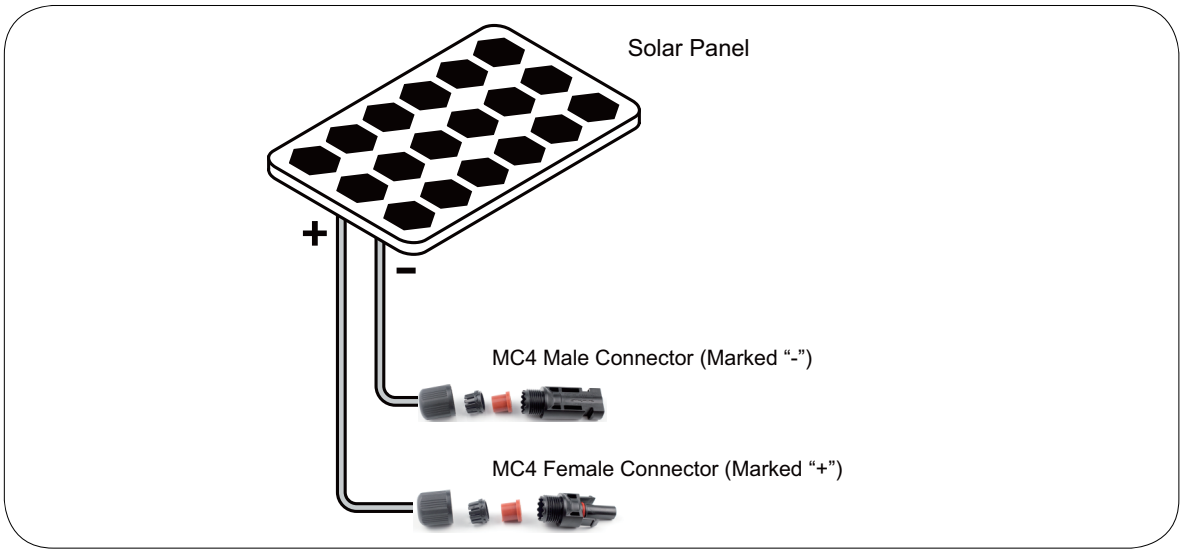


Fig 3. Solar panel with MC4 Connectors

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 my 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

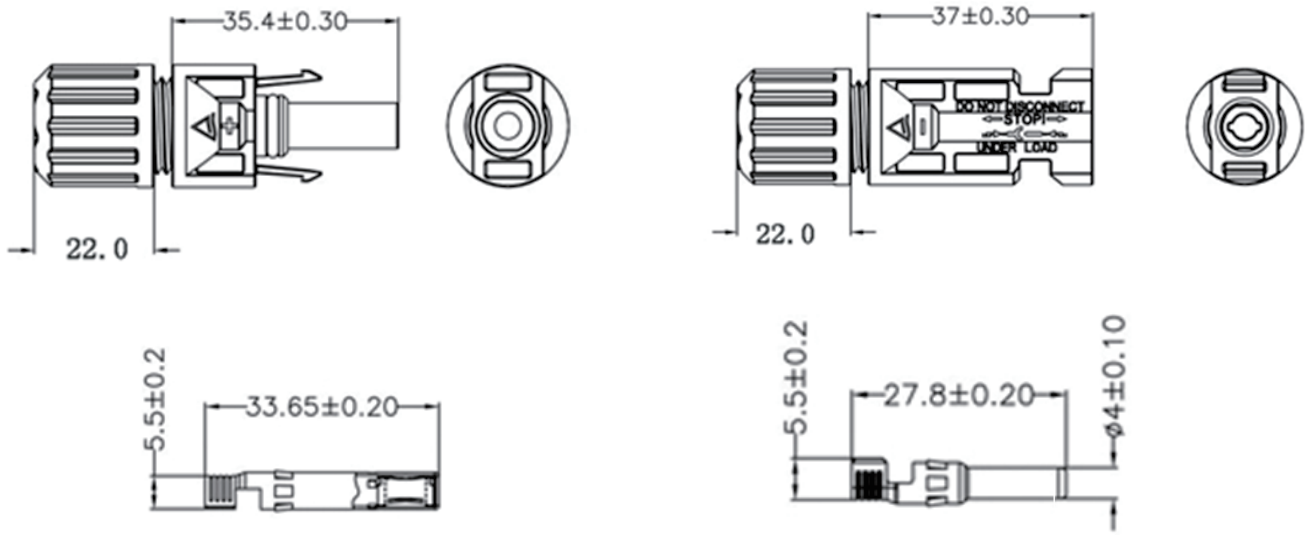
Installation procedure (See Fig. 1 and Fig. 2)

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 (ϕ Dmm)
MC4-CMMM-I4	MC4-CMMM-H	MC4-CM-TI4	AWG 14(2.5 mm^2)	ϕ 4.5-φ8.5
MC4-CMMM-I2		MC4-CM-TI2	AWG 12(4.0 mm^2)	
MC4-CMMM-I0		MC4-CM-TI0	AWG 10(6.0 mm^2)	

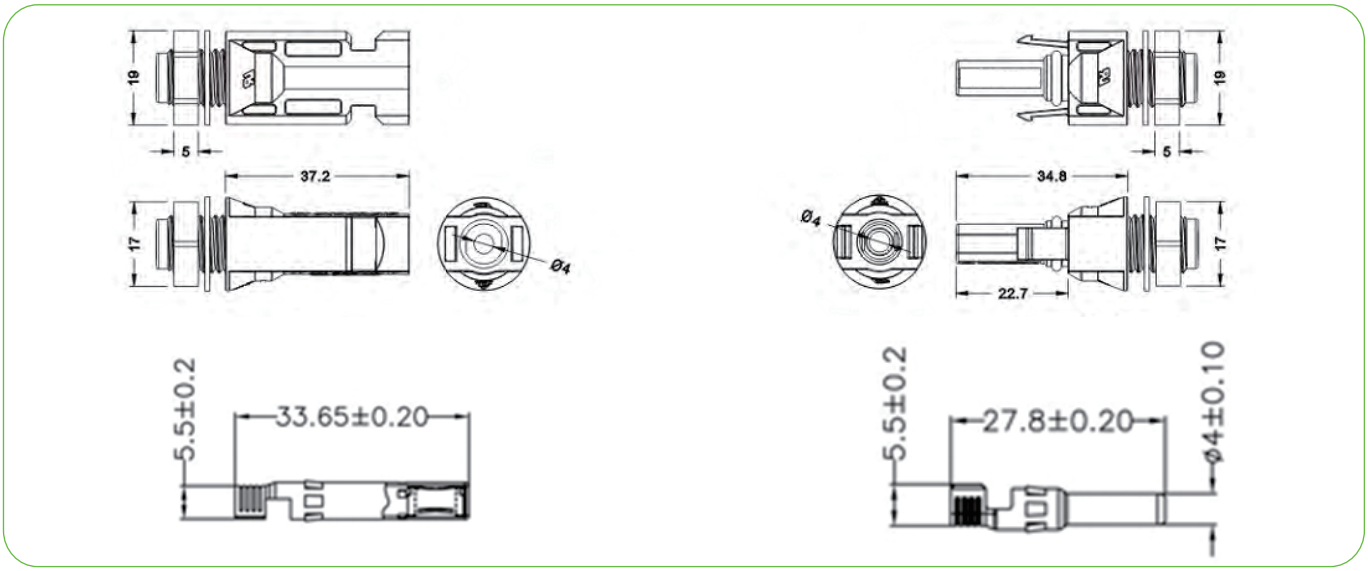
Order NO.	Part P/N		Cable special	
	Connector	Terminal	Conductor size mm^2	Cable OD (ϕ Dmm)
MC4-CFPM-I4	MC4-CFPM-H	MC4-CF-TI4	AWG 14(2.5 mm^2)	ϕ 4.5-φ8.5
MC4-CFPM-I2		MC4-CF-TI2	AWG 12(4.0 mm^2)	
MC4-CFPM-I0		MC4-CF-TI0	AWG 10(6.0 mm^2)	

Technical Parameter	
Rated current	30A(2.5-6mm^2)
Rated voltage	1000v DC
Test voltage	6000V(50Hz, 1min)
Overvoltage 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℃~+125℃

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 mm²	Cable OD (ϕ Dmm)
MC4-CMMM-I4	MC4-CMMM-H	MC4-CM-TI4	AWG 14(2.5 mm²)	ϕ 4.5-φ8.5
MC4-CMMM-I2		MC4-CM-TI2	AWG 12(4.0 mm²)	
MC4-CMMM-I0		MC4-CM-TI0	AWG 10(6.0 mm²)	

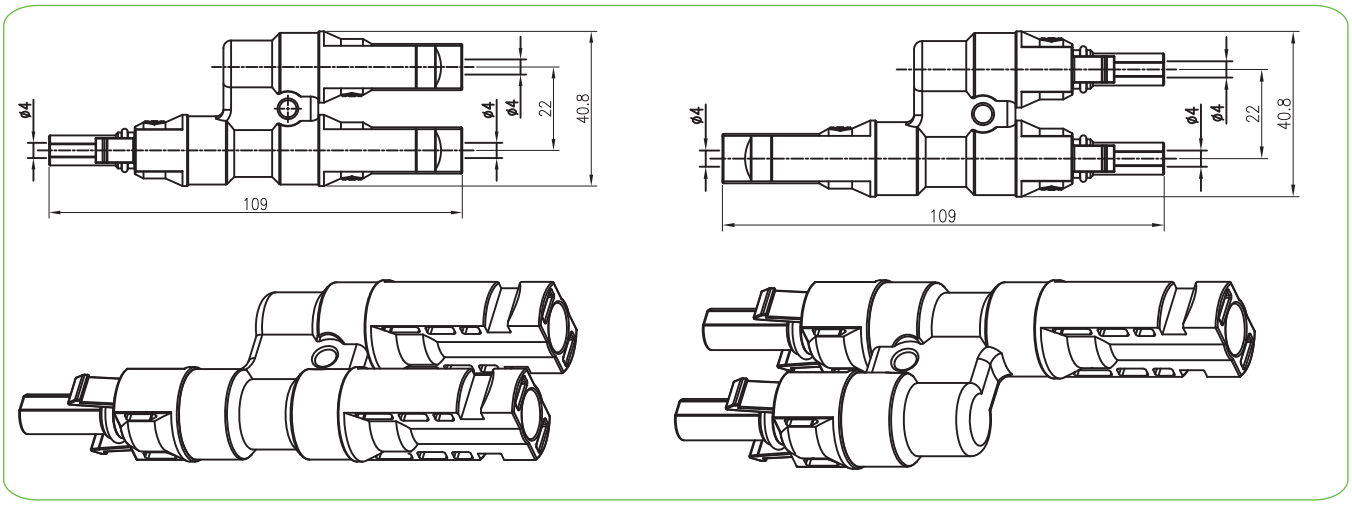
Order NO.	Part P/N		Cable special	
	Connector	Terminal	Conductor size mm²	Cable OD (ϕ Dmm)
MC4-CFPM-I4	MC4-CFPM-H	MC4-CF-TI4	AWG 14(2.5 mm²)	ϕ 4.5-φ8.5
MC4-CFPM-I2		MC4-CF-TI2	AWG 12(4.0 mm²)	
MC4-CFPM-I0		MC4-CF-TI0	AWG 10(6.0 mm²)	

Technical Parameter	
Rated current	30A(2.5-6mm²)
Rated voltage	1000v DC
Test voltage	6000V(50Hz, 1min)
Overvoltage 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 mm²)
Insertion force/withdrawal force	≤50N/≥50N
Connecting system	Crimp connection
Temperature range	-40℃~+125℃

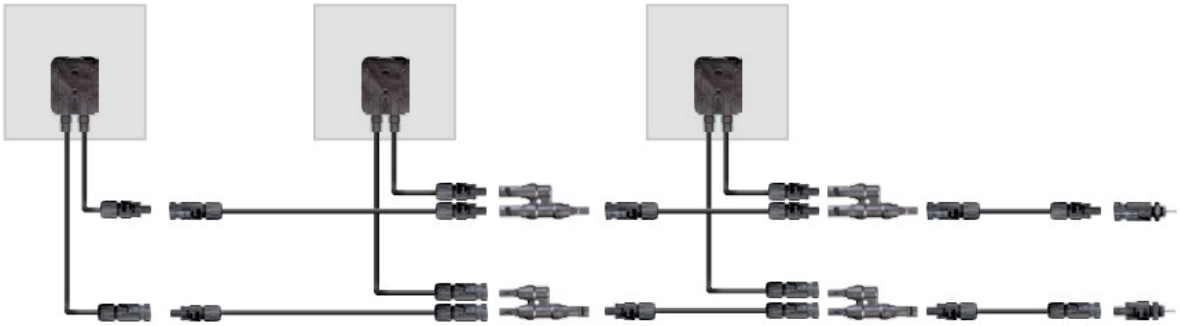
MC4T connector

- 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.



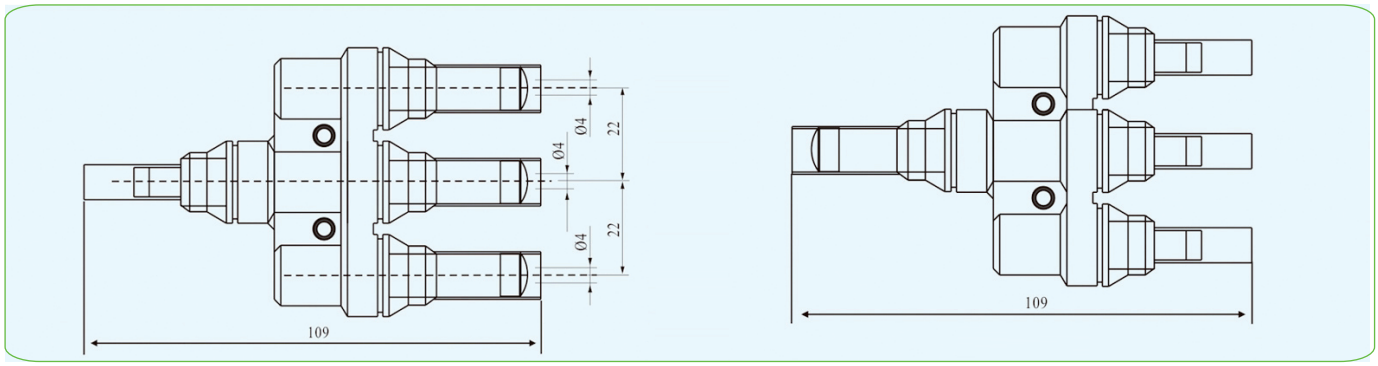
Specifications

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



MC4T 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.

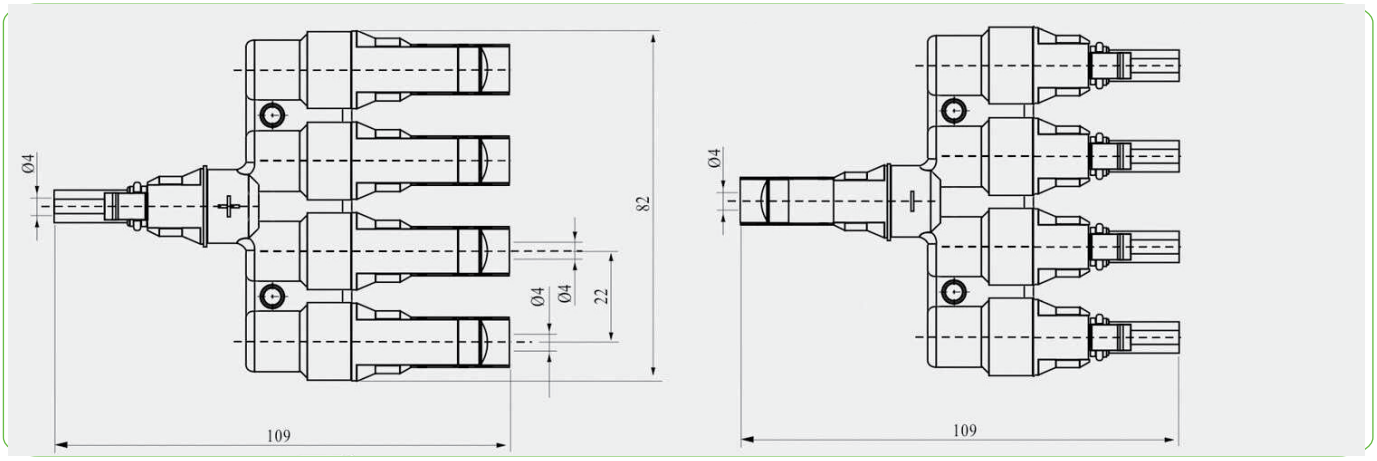


Specifications

Type And meaning	Mc4 T 3 to 1 connector
Rated current	40A
Rated voltage	1000V DC
Test voltage	6000v（50Hz，I min）
Over voltage Category/Pollution degree	CAT Ⅱ/2
Contact resistance of plug connector	Im 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 ℃～+110 ℃
Suitablecable	2. 5-6. 0m㎡

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.

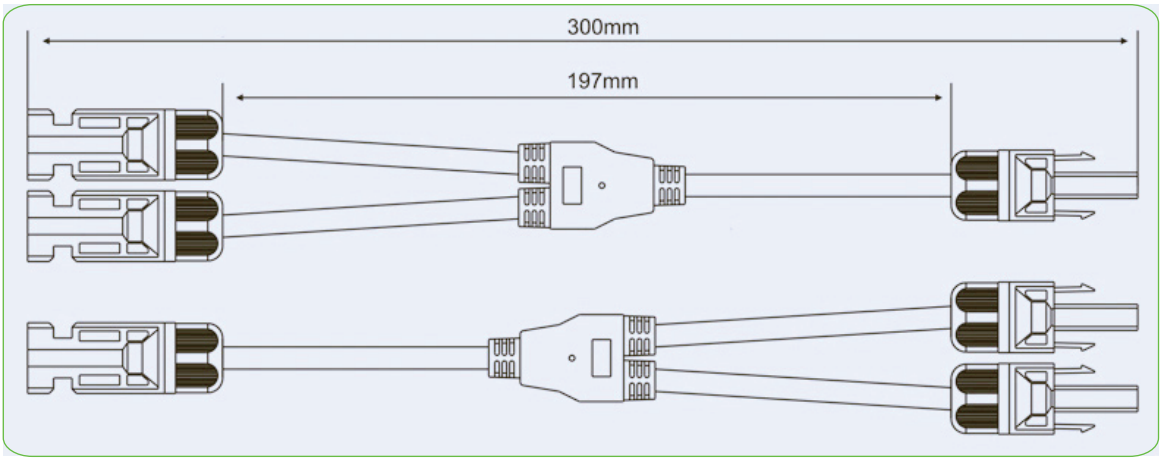


Specifications

Type And meaning	MC4T 4 to 1 connector
Rated current	40A
Rated voltage	1000V DC
Test voltage	6000v（50Hz，I min）
Over voltage Category/Pollution degree	CAT Ⅱ/2
Contact resistance of plug connector	Im 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 ℃～+110 ℃
Suitablecable	2. 5-6. 0m㎡

MC4Y 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.

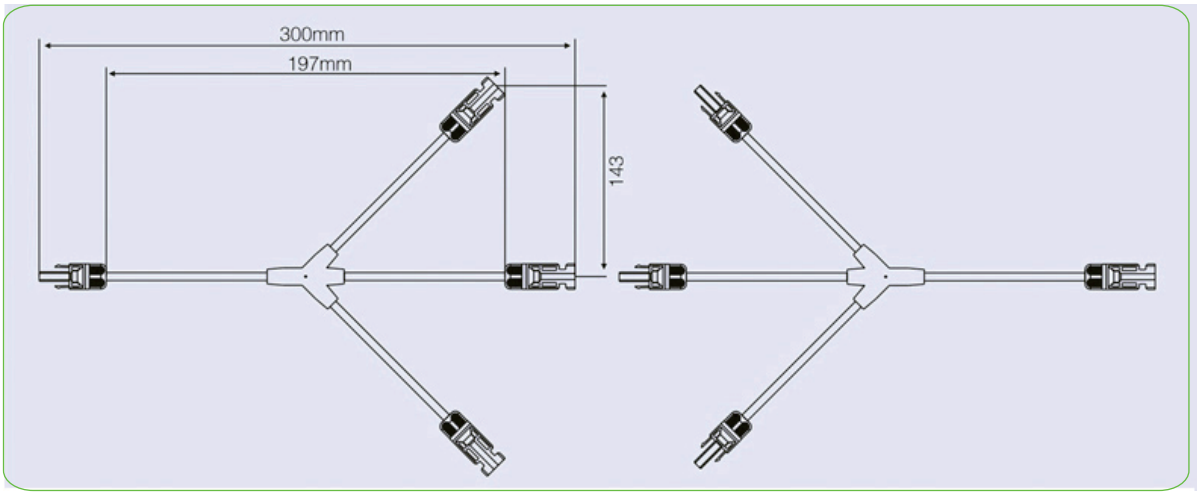


Specifications

Type And meaning	MC4Y connector
Rated current	30A
Rated voltage	1000V DC
Test voltage	6000v（50Hz，I min）
Over voltage Category/Pollution degree	CAT Ⅱ/2
Contact resistance of plug connector	Im 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 ℃～+110 ℃
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.

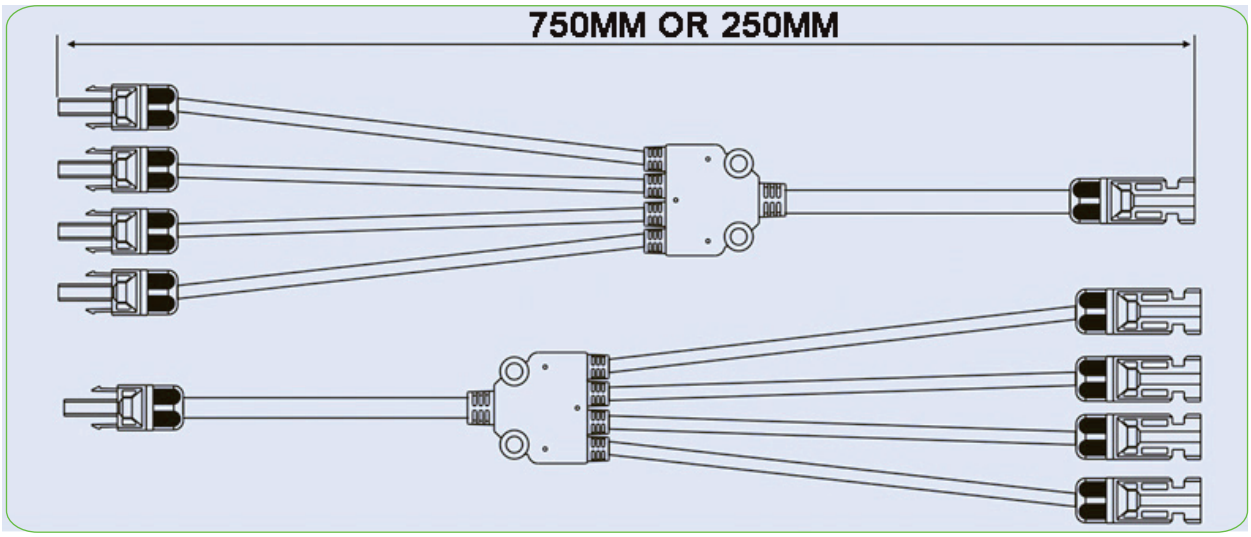


Specifications

Type And meaning	MC4Y 3 to 1 connector
Rated current	40A
Rated voltage	1000V DC
Test voltage	6000v（50Hz，I min）
Over voltage Category/Pollution degree	CAT Ⅱ/2
Contact resistance of plug connector	Im 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 ℃～+110 ℃
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，I min）
Over voltage Category/Pollution degree	CAT Ⅱ/2
Contact resistance of plug connector	Im 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 ℃～+110 ℃
cable length	8cm

PV tool