FULL

Solar Pumping system

www.usfull.com

Website

Wechat

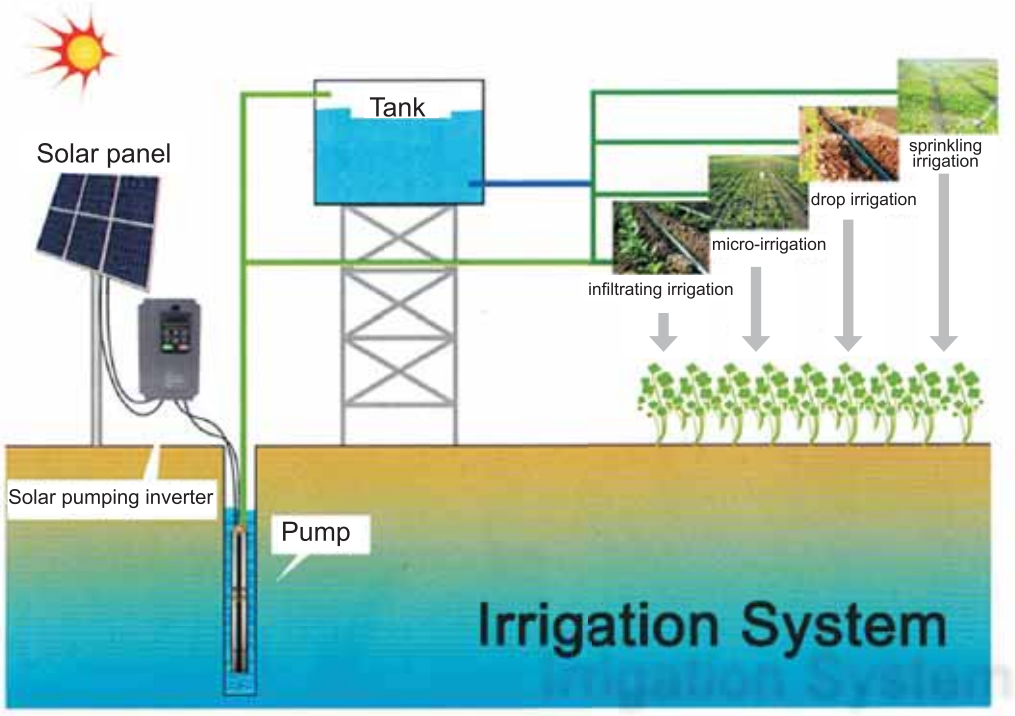
ZHEJIANG FULLWILL ELECTRIC CO.,LTD.

FULL

Innovation Services Honesty Aggressive

INTRODUCTION

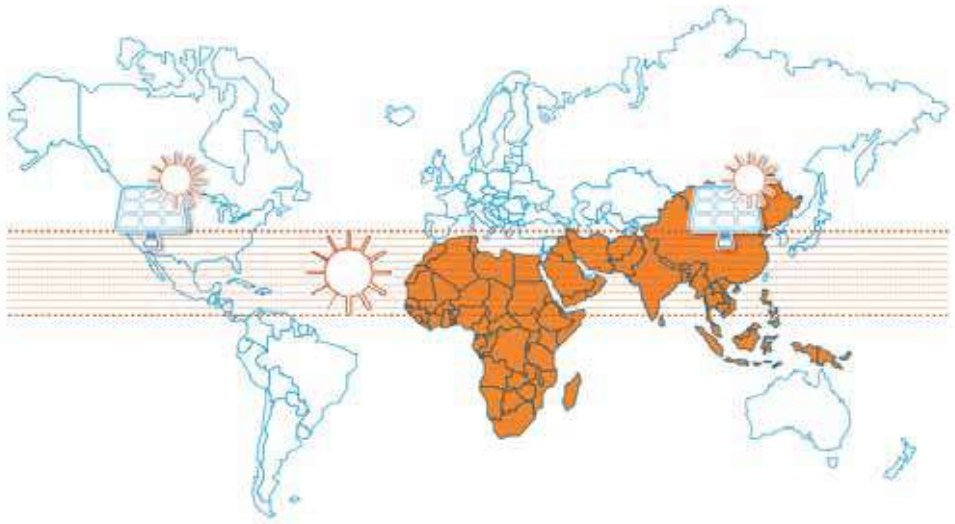
The FU9000S solar pumping system serves to provide water in remote applications where electrical grid power is either unreliable or unavailable. The system pumps water using a high-voltage DC power source such as a photovoltaic array of solar panels since the sun is only available during certain hour of a day and only in good weather weather conditions, the water is generally pumped into a storage pool or tank for further usage.



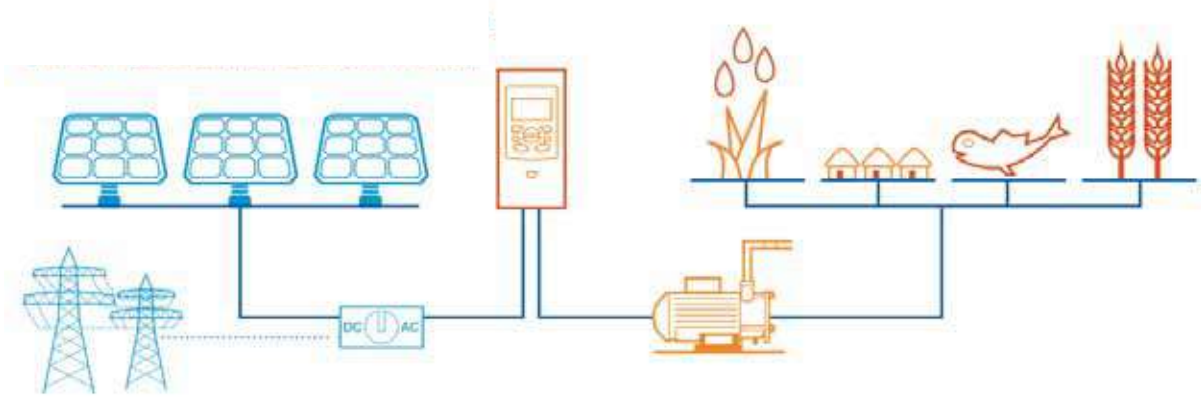
Why solar pump?

There are still regions in the world which do not have wide coverage to grid electricity, or where the availability of electricity is uncertain.

In many cases these regions are hot and dry, so it is vital to obtain clean water.

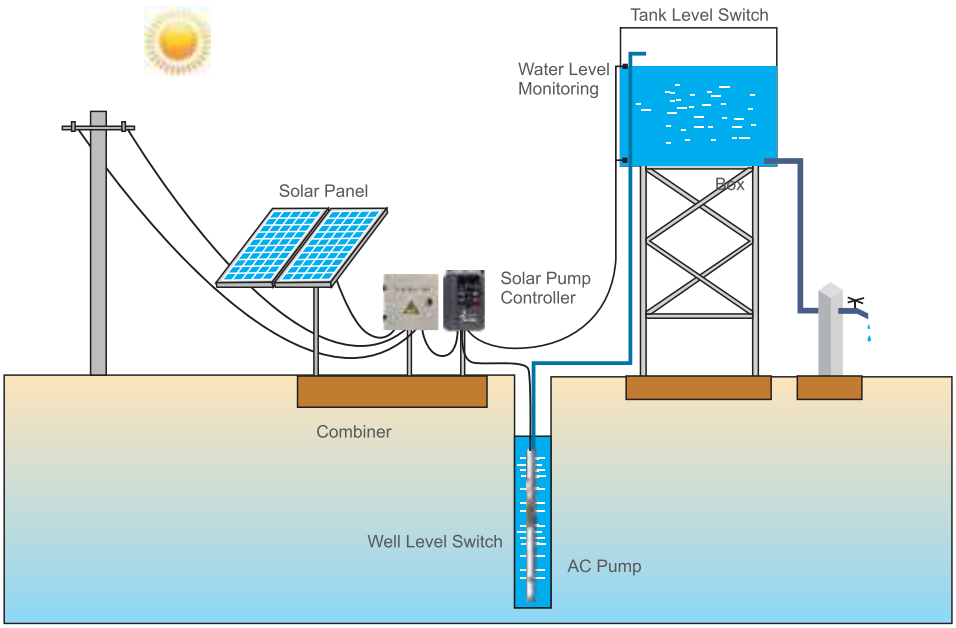


Meanwhile solar panels are becoming less expensive and there are more and more useful applications for them. The FU9000S solar pump system is designed to effectively use that energy.



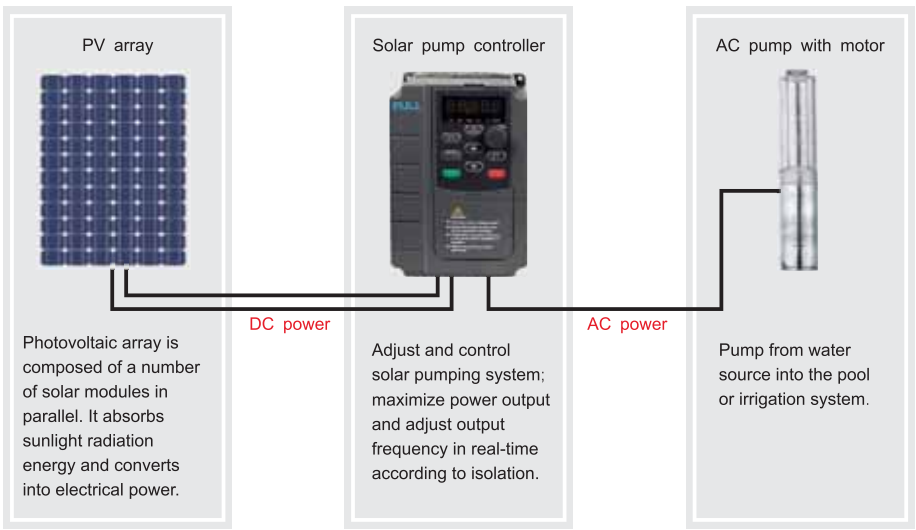
Ac Solar Pumping System

The FU9000S Ac solar pumping system mainly consists of PV array, mounting system, combiner box, FU9000S solar pump controller submersible AC pump, line reactor(optional), liquid level switch and solar cables, shown as Figure 1.



(Figure1: AC Solar Pumping System)

This system does not have storage batteries, completely powered by solar energy, thus realizing a cost-effective purpose. An appropriate water tank can be prepared to store water for later use.
High-efficient AC submersible pump is adopted for the system, satisfying different requirements.
The system is characterized by Maximum Power Point Tracker technology, regulating the working of the pump automatically to realize the maximum generated energy for the system.
Automatic control is adopted for the system such as: automatic start-up and shut-off respectively in the morning and evening, automatic shut-off for full tank and water shortage in the well. Protection measures are taken for the rotation jam of the pump, 3-phase equilibrium etc. Thus prolonging the service lifetime of both the pump and controller.



FULL

FU9000S

In order to satisfy the demands of various pumping applications, the FU9000S solar controller adopts Max Power Point Tracking and proven motor drive technology to maximize power output from solar modules. It supports both DC and AC power inputs. When solar power is not available, the controller can be switched to an alternate single-phase or three-phase AC input such as a generator or inverter from battery, if available. The controller provides fault detection, motor soft start, and speed control. The FU9000S solar controller is designed to provide these features with the plug and play ease of installation.

Feature

◎ Flexibility
◎ Compatible with any IEC three-phase asynchronous motors
◎ Compatible with popular solar arrays
◎ Grid main supply optional

Smartness

◎ Self-adaptive maximum power point tracking technology with up to 99% efficiency
◎ Automatic regulation of pump flow
◎ Self-adaptation to the drive used in the installation
◎ Smart multi-pump control card optional for more efficient solar energy utilization

Cost Effectiveness

◎ Plug-and-play system design
◎ Embedded pump functions
◎ Battery-free for most apllications
◎ Effortless maintenance

Reliability

◎ 10-year market proven experience of leading motor and pump drive technology
◎ Soft start feature to prevent water hammer and increase system life
◎ Smart IGBT module integrated to simplify system design, educe board space, simplify the manufacturing process and thus
◎ Improves system reliability
◎ Built-in overvoltage, overload, overheat and dry-run motor protection

Remote Monitoring

◎ Standard RS485 interface equipped for each solar pump controller
◎ Spots value of solar pump parameters monitoring available from anywhere
◎ History of solar pump parameters and events lookup support

Datasheet

Controller Model	FU9000S-OR7-2	FU9000S-1R5-2	FU9000S-2R2-2	FU9000S-2R2-4	FU9000S-004-4
Input Data					
PV Source					
Max Input Voltage(Voc)[V]	400			800	
Min Input Voltage at mpp[V]	180			350	
Recommended Volatage, at mpp	280VDC~360VDC			500VDC~600VDC	
Recommended Amps Input, at mpp[A]	4.7	7.3	10.4	6.2	11.3
Recommended Max Power at mpp[KW]	1.5	3.0	4.4	4.4	8
Alternate AC Generator					
Input voltage	220/230/240V AC(±15%), Single			380V AC(±15%), Three Phase	
Max Amps(RMS)[A]	8.2	14.0	23.0	5.8	10
Power and VA capability[KVA]	2	3.1	5.1	5.0	6.6
Outpur Data					
Rated Output Power[KW]	0.75	1.5	2.2	2.2	4
Rated Output Voltage	220/230/240V AC, Three Phase			380/400/415/440V AC(±15%), Three Phase	
Max Amps(RMS)[A]	4.5	7.0	10.0	5.0	9
Output Frequency	0-50Hz/60Hz				
Protection					
Surge protection, Overvoltage protection, Undervoltage protection, Locked pump protection, Open circuit protection, Short circuit protection, Overheated protection, Dry run protection.					
General Data					
Ambient Temperature Range	-20℃~60℃, ＞45℃, Derating as required.				
Cooling Method	FanCooling				
Ambient Humidity	≤95%RH				
Dimensions(H*W*D)[mm]	151.7*101*126.8			249.5*155.5*159.5	
Gross Weight[Kg]	1.4	1.5	3.4	3.5	3.6
Standard Warranty[month]	18				
Certificates	IEC/EN 61800-5-1, IEC/EN 61800-2:2004, IEC/EN 61800-3:2004, CE				

Controller Model	FU9000S-5R5-4	FU9000S-7R5-4	FU9000S-11-4
Input Data			
PV Source			
Max Input Volage(Voc)[V]	800		
Min Input Volage at mpp[V]	350		
Recommended Voltage,at mpp	500VDC~600VDC		
Recommended Amps Input,at mpp[A]	16.2	21.2	31.2
Recommended Max Power at mpp[KW]	11	15	22
Alternate AC Generator			
Input Voltage	380/400/415/440V AC(±15%),Three Phase		
Max Amps(RMS)[A]	14.6	20.5	26
Power and VA capability[KVA]	8.9	11	17
Output Data			
Rated Output Power[KW]	5.5	7.5	11
Rated Output Voltage	380/400/415/440V AC(± 15%),Three Phase		
Max Amps(RMS)[A]	13	17	25
Output Frequency	0-50Hz/60Hz		
Protection			
Surge protection	Integrated		
Overvoltage protection	Integrated		
Undervoltage protection	Integrated		
Locked pump protection	Integrated		
Open circuit protection	Integrated		
Short circuit protection	Integrated		
Overheated protection	Integrated		
Dry run protection	Integrated		
Commnunication			
MODBUS Commnunication card	Optional,RS-485 isolated		
General Data			
Ambient Temperature Range	-20℃~60℃, > 45℃,Derating as required.		
Cooling Method	Fan Cooling		
Ambient Humidity	⩽95%RH		
Dimensions(H*W*D)[mm]	250*150*180	320*220*220	
Gross Weight[kg]	3.5		6
Standard Warranty[month]	18		
Certificates	IEC/EN 61800–5–1,IEC/EN 61800–2:2004,IEC/EN 61800–3:2004,CE		

Controller Model	FU9000S-015-4	FU9000S-018-4	FU9000S-022-4	FU9000S-030-4	FU9000S-037-4
Input Data					
PV Source					
Max Input Volage(Voc)[V]	800				
Min Input Volage at mpp[V]	350				
Recommended Voltage,at mpp	500VDC~600VDC				
Recommended Amps Input,at mpp[A]	40.3	46.2	56.2	75	93.7
Recommended Max Power at mpp[KW]	30	37	44	60	74
Alternate AC Generator					
Input Voltage	380/400/415/440V AC(± 15%),Three Phase				
Max Amps(RMS)[A]	35	38.5	46.5	62	76
Power and VA capability[KVA]	21	24	30	40	57
Output Data					
Rated Output Power[KW]	15	18	22	30	37
Rated Output Voltage	380/400/415/440V AC(± 15%),Three Phase				
Max Amps(RMS)[A]	32.0	37.0	45.0	60.0	75.0
Output Frequency	0-50Hz/60Hz				
Protection					
Surge protection	Integrated				
Overvoltage protection	Integrated				
Undervoltage protection	Integrated				
Locked pump protection	Integrated				
Open circuit protection	Integrated				
Short circuit protection	Integrated				
Overheated protection	Integrated				
Dry run protection	Integrated				
Commnunication					
MODBUS Commnunication card	Optional,RS-485 isolated				
General Data					
Ambient Temperature Range	-20℃~60℃, > 45℃,Derating as required.				
Cooling Method	Fan Cooling				
Ambient Humidity	⩽95%RH				
Dimensions(H*W*D)[mm]	320*215*200	475*295*245			580*375*265
Gross Weight[kg]	7.2	22	22.5	23	35
Standard Warranty[month]	18				
Certificates	IEC/EN 61800–5–1,IEC/EN 61800–2:2004,IEC/EN 61800–3:2004,CE				

Controller Model	FU9000S-045-4	FU9000S-055-4	FU9000S-075-4	FU9000S-090-4	FU9000S-110-4
Input Data					
PV Source					
Max Input Volage(Voc)[V]	800				
Min Input Volage at mpp[V]	350				
Recommended Voltage,at mpp	500VDC~600VDC				
Recommended Amps Input,at mpp[A]	113.7	139.9	187.4	219.9	262.4
Recommended Max Power at mpp[KW]	90	110	150	180	220
Alternate AC Generator					
Input Voltage	380/400/415/440V AC(± 15%),Three Phase				
Max Amps(RMS)[A]	92.0	113.0	157.0	180.0	214.0
Power and VA capability[KVA]	69.0	85.0	114.0	134.0	160.0
Output Data					
Rated Output Power[KW]	45	55	75	93	110
Rated Output Voltage	380/400/415/440V AC(± 15%),Three Phase				
Max Amps(RMS)[A]	91.0	112.0	150.0	176.0	210.0
Output Frequency	0-50Hz/60Hz				
Protection					
Surge protection	Integrated				
Overvoltage protection	Integrated				
Undervoltage protection	Integrated				
Locked pump protection	Integrated				
Open circuit protection	Integrated				
Short circuit protection	Integrated				
Overheated protection	Integrated				
Dry run protection	Integrated				
Commnunication					
MODBUS Commnunication card	Optional,RS-485 isolated				
General Data					
Ambient Temperature Range	-20℃~60℃, > 45℃,Derating as required.				
Cooling Method	Fan Cooling				
Ambient Humidity	⩽95%RH				
Dimensions(H*W*D)[mm]	580*375*265		705*480*330		
Gross Weight[kg]	36	37	68		70
Standard Warranty[month]	18				
Certificates	IEC/EN 61800–5–1,IEC/EN 61800–2:2004,IEC/EN 61800–3:2004,CE				

Controller Model	FU9000S-132-4	FU9000S-160-4	FU9000S-200-4	FU9000S-220-4	FU9000S-250-4
Input Data					
PV Source					
Max Input Volage(Voc)[V]	800				
Min Input Volage at mpp[V]	350				
Recommended Voltage,at mpp	500VDC~600VDC				
Recommended Amps Input,at mpp[A]	316.1	379.8	471.0	532.2	581.0
Recommended Max Power at mpp[KW]	264	320	400	440	500
Alternate AC Generator					
Input Voltage	380/400/415/440V AC(± 15%),Three Phase				
Max Amps(RMS)[A]	256.0	307.0	385.0	430.0	468.0
Power and VA capability[KVA]	192.0	231.0	250.0	280.0	355.0
Output Data					
Rated Output Power[KW]	132	160	200	220	250
Rated Output Voltage	380/400/415/440V AC(± 15%),Three Phase				
Max Amps(RMS)[A]	235.0	304.0	377.0	426.0	465.0
Output Frequency	0-50Hz/60Hz				
Protection					
Surge protection	Integrated				
Overvoltage protection	Integrated				
Undervoltage protection	Integrated				
Locked pump protection	Integrated				
Open circuit protection	Integrated				
Short circuit protection	Integrated				
Overheated protection	Integrated				
Dry run protection	Integrated				
Commnunication					
MODBUS Commnunication card	Optional,RS-485 isolated				
General Data					
Ambient Temperature Range	-20℃~60℃, > 45℃,Derating as required.				
Cooling Method	Fan Cooling				
Ambient Humidity	≤95%RH				
Dimensions(H*W*D)[mm]	870*440*350				
Gross Weight[kg]	80				
Standard Warranty[month]	18				
Certificates	IEC/EN 61800–5–1,IEC/EN 61800–2:2004,IEC/EN 61800–3:2004,CE				

Controller Model	FU9000S-280-4	FU9000S-315-4	FU9000S-350-4	FU9000S-400-4
Input Data				
PV Source				
Max Input Volage(Voc)[V]	800			
Min Input Volage at mpp[V]	350			
Recommended Voltage,at mpp	500VDC~600VDC			
Recommended Amps Input,at mpp[A]	649.7	730.9	812.1	905.8
Recommended Max Power at mpp[KW]	560	630	710	800
Alternate AC Generator				
Input Voltage	380/400/415/440V AC(± 15%),Three Phase			
Max Amps(RMS)[A]	525.0	590.0	665.0	785.0
Power and VA capability[KVA]	396.0	445.0	500.0	565.0
Output Data				
Rated Output Power[KW]	280	315	355	400
Rated Output Voltage	380/400/415/440V AC(± 15%),Three Phase			
Max Amps(RMS)[A]	520.0	585.0	650.0	725.0
Output Frequency	0-50Hz/60Hz			
Protection				
Surge protection	Integrated			
Overvoltage protection	Integrated			
Undervoltage protection	Integrated			
Locked pump protection	Integrated			
Open circuit protection	Integrated			
Short circuit protection	Integrated			
Overheated protection	Integrated			
Dry run protection	Integrated			
Commnunication				
MODBUS Commnunication card	Optional,RS-485 isolated			
General Data				
Ambient Temperature Range	-20℃~60℃, > 45℃,Derating as required.			
Cooling Method	FanCooling			
Ambient Humidity	⩽95%RH			
Dimensions(H*W*D)[mm]	983*650*377			
Gross Weight[kg]	80			
Standard Warranty[month]	18			
Certificates	IEC/EN 61800–5–1,IEC/EN 61800–2:2004,IEC/EN 61800–3:2004,CE			

Major Components

【 Solar Modules 】

■ Guaranteed Performance

10 Years Manufacturing Warranty
10 Years Warranty 90% Power Output
25 Years Warranty 80% Power Output

■ Quallfications and Certificates

■ Features

◎ Easily installed on the ground,roof,building surface or tracking system.Applies to commercial,residential applications for off gridapplications. Reduces electricity cost and creates energy independently.
◎ Modules certified by TUV and global testing facilities:IEC61215,IEC61730,CE,ROHS to withstand high level of wind loads(2400 Pa) and snow loads(5400 Pa),confirming mechanical stability.
◎ Most updated desigh with drainage holes in the frame ensures the modules to withstand various weather conditions.No moving parts, fully scalable and easily installed.
◎ Junction box and bypass diodes guarantee the modules free of overheating and “hot spot effect” ,minimal wiring effortRequired as the module has high reverse current resistance.
◎ Manufactured with international quality standards and environment management system:ISO9001 and ISO14001,18001.Reliable and virtually maintenance-free power generation
◎ The most vertically integrated solar manufacturer in the industry with production modules using both mono crystalline and poly crystalline technology.

Monocrystalline Solar Modules:245W-315W

Models	Max. Power (Pmax)	Optimum Operating Voltage(Vmp)	Optimum Operating Current(Imp)	Open-circuit Voltage(Voc)	Shart-Circuit Current(Isc)	Module Efftciency	Power Tolerance	Dimension	Weight	Max system Voltage	Max. series Fuse Rating
FU-245M-60	245Wp	30.10V	8.13A	36.80V	8.65A	15.09%	0+3%	1640×990 ×40mm	21kg	1000VDC	15A
FU-250M-60	250Wp	30.50V	8.21A	37.30V	8.74A	15.40%	0+3%	1640×990 ×40mm	21kg	1000VDC	15A
FU-255M-60	255Wp	30.60V	8.32A	37.40V	8.85A	15.71%	0+3%	1640×990 ×40mm	21kg	1000VDC	15A
FU-260M-60	260Wp	31.10V	8.35A	38.00V	8.89A	16.01%	0+3%	1640×990 ×40mm	21kg	1000VDC	15A
FU-265M-60	265Wp	31.51V	8.41A	38.52V	9.13A	16.32%	0+3%	1640×990 ×40mm	21kg	1000VDC	15A
FU-270M-96	270Wp	49.50V	8.45A	58.90V	5.85A	16.09%	0+3%	1580×1062 ×50mm	21.5kg	1000VDC	15A
FU-295M-72	295Wp	36.30V	8.13A	44.40V	5.65A	15.28%	0+3%	1950×990 ×50mm	25kg	1000VDC	15A
FU-300M-72	300Wp	36.50V	8.21A	44.60V	8.74A	15.54%	0+3%	1950×990 ×50mm	25kg	1000VDC	15A
FU-305M-72	305Wp	36.90V	8.26A	45.10V	8.79A	15.80%	0+3%	1950×990 ×50mm	25kg	1000VDC	15A
FU-310M-72	310Wp	37.10V	8.35A	45.40V	8.89A	16.06%	0+3%	1950×990 ×50mm	25kg	1000VDC	15A
FU-315M-72	315Wp	37.60V	8.39A	46.00V	8.95A	16.32%	0+3%	1950×990 ×50mm	25kg	1000VDC	15A

FULL

Polycrystalline Solar Modules:5W-100W

Models	Max. Power (Pmax)	Optimum Operating Voltage(Vmp)	Optimum Operating Current(Imp)	Open-circuit Voltage(Voc)	Short-Circuit Current(Isc)	Module Efficiency	Power Tolerance	Dimension	Weight	Max. System Voltage
FU5P(36)	5WP	17.3V	0.29A	21.5V	0.32A	15%	0~+3%	228 × 254 × 18mm	0.7Kg	1000VDC
FU10P(36)	10WP	17.3V	0.58A	21.5V	0.64A	15%	0~+3%	390 × 254 × 18mm	1.2Kg	1000VDC
FU15P(36)	15WP	17.3V	0.87A	21.5V	0.95A	15%	0~+3%	552 × 254 × 18mm	1.7Kg	1000VDC
FU20P(36)	20WP	17.3V	1.16A	21.7V	1.26A	14%	0~+3%	480 × 366 × 25mm	2.0Kg	1000VDC
FU22P(36)	22WP	17.5V	1.25A	21.9V	1.35A	15.20%	0~+3%	480 × 366 × 25mm	2.0Kg	1000VDC
FU24P(36)	24WP	17.9V	1.34A	22.2V	1.43A	16.60%	0~+3%	480 × 366 × 25mm	2.0Kg	1000VDC
FU30P(36)	30WP	17.3V	1.74A	21.7V	1.89A	15%	0~+3%	506 × 506 × 25mm	3.0Kg	1000VDC
FU32P(36)	32WP	17.5V	1.83A	21.9V	1.97A	16%	0~+3%	506 × 506 × 25mm	3.0Kg	1000VDC
FU34P(36)	34WP	17.9V	1.90A	22.2V	2.04A	16.80%	0~+3%	506 × 506 × 25mm	3.0Kg	1000VDC
FU40P(36)	40WP	17.3V	2.32A	21.7V	2.53A	15.20%	0~+3%	650 × 506 × 30mm	4.0Kg	1000VDC
FU42P(36)	42WP	17.5V	2.40A	21.9V	2.59A	15.80%	0~+3%	650 × 506 × 30mm	4.0Kg	1000VDC
FU44P(36)	44WP	17.9V	2.46A	22.2V	2.65A	16.60%	0~+3%	650 × 506 × 30mm	4.0Kg	1000VDC
FU50P(36)	50WP	17.5V	2.85A	21.7V	2.15A	15.20%	0~+3%	784 × 506 × 30mm	4.5Kg	1000VDC
FU55P(36)	55WP	17.7V	3.11A	21.9V	3.30A	16.50%	0~+3%	784 × 506 × 30mm	4.5Kg	1000VDC
FU60P(36)	60WP	17.3V	3.47A	21.5V	3.93A	15.60%	0~+3%	700 × 664 × 30mm	5.8Kg	1000VDC
FU65P(36)	65WP	17.5V	3.71A	21.7V	4.04A	16.60%	0~+3%	700 × 664 × 30mm	5.8Kg	1000VDC
FU70P(36)	70WP	17.7V	3.96A	21.9V	4.20A	16.20%	0~+3%	768 × 664 × 30mm	6.0Kg	1000VDC
FU75P(36)	75WP	17.3V	4.34A	21.5V	4.91A	15.20%	0~+3%	880 × 664 × 30mm	7.0Kg	1000VDC
FU80P(36)	80WP	17.4V	4.60A	21.6V	5.14A	16.20%	0~+3%	880 × 664 × 30mm	7.0Kg	1000VDC
FU85P(36)	85WP	17.5V	4.86A	21.7V	5.37A	17.10%	0~+3%	880 × 664 × 30mm	7.0Kg	1000VDC
FU90P(36)	90WP	17.6V	5.12A	21.8V	5.58A	15.80%	0~+3%	998 × 664 × 30mm	8.0Kg	1000VDC
FU95P(36)	95WP	17.8V	5.34A	21.9V	5.78A	16.00%	0~+3%	998 × 664 × 30mm	8.0Kg	1000VDC
FU100P(36)	100WP	17.4V	5.75A	21.7V	6.31A	15.20%	0~+3%	113 × 664 × 30mm	8.6Kg	1000VDC

Polycrystalline Solar Modules:240W-305W

Models	Max. Power (Pmax)	Optimum Operating Voltage(Vmp)	Optimum Operating Current(Imp)	Open-circuit Voltage(Voc)	Short-Circuit Current(Isc)	Module Efficiency	Power Tolerance	Dimension	Weight	Max. System Voltage
FU-240P-60	240Wp	30.00V	8.00A	35.70V	8.57A	14.78%	0~+3%	1640 × 990 × 40mm	21Kg	1000VDC
FU-245P-60	245Wp	30.4V	8.05A	36.10V	8.63A	15.09%	0~+3%	1640 × 990 × 40mm	21Kg	1000VDC
FU-250P-60	250Wp	30.60V	8.17A	36.30V	8.71A	15.40%	0~+3%	1640 × 990 × 40mm	21Kg	1000VDC
FU-255P-60	255Wp	30.7V	8.30A	36.40V	8.80A	15.71%	0~+3%	1640 × 990 × 40mm	21Kg	1000VDC
FU-260P-60	260Wp	30.90V	8.42A	36.70V	8.89A	16.01%	0~+3%	1640 × 990 × 40mm	21Kg	1000VDC
FU-285P-60	285Wp	35.90V	7.94A	42.70V	8.51A	14.76%	0~+3%	1950 × 990 × 40mm	25Kg	1000VDC
FU-290P-60	290Wp	36.30V	8.00A	43.20V	8.57A	15.02%	0~+3%	1950 × 990 × 40mm	25Kg	1000VDC
FU-95P-60	295Wp	36.50V	8.08A	43.30V	8.64A	15.28%	0~+3%	1950 × 990 × 40mm	25Kg	1000VDC
FU-300P-60	300Wp	36.70V	8.17A	43.60V	8.71A	15.54%	0~+3%	1950 × 990 × 40mm	25Kg	1000VDC
FU-305P-60	305Wp	49.50V	8.27A	43.70V	8.78A	15.80%	0~+3%	1950 × 990 × 40mm	25Kg	1000VDC

【 Mounting System 】

Feature

◎ Quick and easy to mount
◎ Flexible solution of all types of foundation
◎ Environment friendly and recyclable
◎ Material as per customers request
◎ Fast installation of the modules
◎ Compatible with thin film modules
◎ Easy cabling

Datasheet

	FUF-01A	FUF-02A	FUF-03A	FUF-04A	FUR-02A	FUR-02A (solder type)	FUY-01A
Mounting Area	open field ground type	open field ground type	open field ground type	open field ground type	open field roof type	open field roof type	open field roof type
Material	zinc-plated steel	zinc-plated steel and aluminum	zinc-plated steel and aluminum	zinc-plated steel	steel Q235	steel Q235	zinc-plated steel
Standard	DIN1055 Eurocode 1 EN 1991 Eurocode 9 EN 1999	DIN1055 Eurocode 1 EN 1991 Eurocode 9 EN 1999	DIN1055 Eurocode 1 EN 1991 Eurocode 9 EN 1999	DIN1055 Eurocode 1 EN 1991 Eurocode 9 EN 1999	***	***	DIN1055 Eurocode 1 EN 1991 Eurocode 9 EN 1999
PV Module Size	any size and brand	any size and brand	any size and brand	any size and brand	any size and brand	any size and brand	any size and brand
Pitch Angle	up to 30°	up to 30°	up to 45°	up to 32°	20° –45°	20° –45°	5°
Module Orientation	portrait and landscape	portrait and landscape	portrait and landscape	portrait and landscape	portrait and landscape	portrait and landscape	portrait and landscape
Snow Load	< 1.4Kn/m^2 (at 25° angle)	< 1.6Kn/m^2 (at 25° angle)	< 1.6Kn/m^2 (at 25° angle)	< 1.6Kn/m^2 (at 25° angle)	< 25Kn/m^2	< 25Kn/m^2	< 1.8Kn/m^2 (at 25° angle)
Wind Load	< 25m/s^2	< 30m/s^2	< 25m/s	< 25m/s	< 60m/s	< 60m/s	< 25m/s
Anti-earthquake Level	< magnitude 9	< magnitude 9	< magnitude 9	< magnitude 9	the level differs from different house structure	the level differs from different house structure	< magnitude 9
Application Environment	-40℃~+80℃	-40℃~+80℃	-40℃~+80℃	-40℃~+80℃	-40℃~+80℃	-40℃~+80℃	-40℃~+80℃
Basic Fixing	steel pile or cement pile	steel pile	concrete pile	steel pile or cement pile	***	***	***

FULL

【 Solar Pump 】

All solar pumps are manufactured by our partner,the international leading pump supplier who has sold its pumps to over 120 countries and regions all over the word.Including Europe, North America, Middle and South America,Southeast Asia,Middle East Africa etc.

◆BASIC DATA

【 Submersible Pumps 】

Pump

Flow range:1~30(m^3/h)
Maximum fluid temperature:40℃
Maximum sand content:0.25%

Motor.

Power:Three phase:3~30KW 380~415V
Insulation class:F
Protection grade:IP68
Frequency:50Hz

150 SP 17 - 1

- 1 — Impeller number
- 17 — Flow
- SP — Stainless-steel-Impeller pump
- 150 — pump outer diameter(6"/145mm)

Components	Material
Motor external casing	AISI304
Bottom support	Cast-iron HT200
Bottom bearing chock	Cast-iron HT200
Top bearing chock	Cast-iron HT200
Rotator	AISI304
Connector	AISI304
Outlet	AISI304
Pump external casing	AISI304
Splinted hub	AISI304
Strainer mesh	AISI304
Diffuser	AISI304
Impeller	AISI304
Cover plate	AISI304
Shaft coupling	AISI304
Control box	Start control box/ Automatic control box
Outlet diameter	2.5".3"

3.5SP 2 Technical data

Item Number	Power		Outlet Diameter	Flow m^3/h	0	0.4	0.8	1.2	1.6	2	2.4	2.8	3.2
	HP	kW											
90QJ2-28/7	0.5	0.37	1” 1.25”	Head(m)	42	40	38	33	30	28	26	22	18
90QJ2-36/9	0.75	0.55			55	52	50	42	39	36	32	28	21
90QJ2-48/12	1	0.75			69	65	63	54	51	48	42	39	31
90QJ2-56/14	1.5	1.1			76	72	69	65	60	56	49	43	36
90QJ2-68/17	2	1.5			97	92	88	83	73	68	60	52	44
90QJ2-76/19	3	2.2			104	99	94	90	81	76	67	58	49
90QJ2-100/25	3.5	2.5			136	130	123	116	107	100	87	77	64

3.5SP 4 Technical data

Item Number	Power		Outlet Diameter	Flow m^3/h	0	0.8	1.6	2.4	3.2	4	4.8	5.6	6.4
	HP	kW											
90QJ4-21/7	0.75	0.55	1” 1.25”	Head(m)	35	33	31	28	25	21	16	11	6
90QJ4-27/9	1	0.75			46	43	41	37	33	27	20	14	8
90QJ4-33/11	1.5	1.1			55	51	49	44	39	33	25	17	10
90QJ4-39/13	2	1.5			68	63	60	54	48	39	29	20	12
90QJ4-48/16	3	2.2			76	70	67	60	54	48	36	25	15
90QJ4-60/20	3.5	2.5			94	87	83	74	67	60	45	31	18

4SP 2 Technical data

Item Number	Power		Outlet Diameter	Flow m^3/h	0	0.5	1	1.5	2	2.5	3	3.5	4
	HP	kW											
100QJ2-25/5	0.4	0.3	1.25” 1.5”	Head(m)	29	28	27	26	25	23	21	17	15
100QJ2-35/7	0.5	0.37			41	40	38	37	35	32	26	24	19
100QJ2-45/9	0.75	0.55			53	51	49	47	45	42	36	31	26
100QJ2-55/11	1	0.75			65	63	60	58	55	52	46	39	34
100QJ2-70/14	1.2	0.9			84	82	80	76	70	65	55	47	40
100QJ2-80/17	1.5	1.1			99	95	90	86	80	75	63	55	46
100QJ2-100/20	2	1.5			122	118	112	107	100	94	85	75	64
100QJ2-154/30	3	2.2			183	177	171	163	154	143	131	117	101
100QJ2-183/38	4	3			224	215	206	198	183	175	148	141	126
100QJ2-220/46	5.5	4			266	258	251	237	220	211	171	166	133
100QJ2-278/58	7.5	5.5			335	320	304	292	278	266	223	190	168
100QJ2-385/76	10	7.5			435	424	412	394	385	357	334	285	259

4SP 4 Technical data

Item Number	Power		Ourlet Diameter	Flow m^3/h	0	0.8	1.6	2.4	3.2	4	4.8	5.6	6.4
	HP	kW											
100QJ4-18/4	0.5	0.37	1.25” 1.5”	Head(m)	25	24	23	21	20	18	16	14	11
100QJ4-27/6	0.75	0.55			35	34	33	31	29	27	24	21	17
100QJ4-41/9	1	0.75			55	54	52	50	47	41	36	30	25
100QJ4-50/11	1.2	0.9			65	64	61	57	54	50	43	35	26
100QJ4-54/12	1.5	1.1			69	68	66	63	60	54	48	44	32
100QJ4-72/16	2	1.5			95	94	89	84	80	72	64	59	43
100QJ4-94/21	3	2.2			124	123	115	110	105	94	84	77	54
100QJ4-135/30	4	3			179	177	166	158	151	135	120	110	81

FULL

4SP 6 Technical Data

Item Number	Power		Outlet Diameter	Flow m^3/h	0	1	2	3	4	5	6	7	8	9
	HP	kW												
100QJ6-30/6	1	0.75	1.25" 1.5"	Head(m)	39	37	36	35	34	32	30	27	24	20
100QJ6-30/6	1.5	1.1			44	42	41	40	39	37	35	32	28	23
100QJ6-30/6	2.2	1.5			50	48	47	45	44	42	40	37	34	28
100QJ6-30/6	3	2.2			55	54	52	50	49	47	45	43	39	34

4SP 8 Technical Data

Item Number	Power		Outlet Diameter	Flow m^3/h	0	2	4	6	8	10	12	14	16
	HP	kW											
100QJ8-16/4	1	0.75	1.5" 2"	Head(m)	24	23	21	18	16	12	9	6	2
100QJ8-20/5	1.2	0.9			28	27	25	21	20	17	13	8	3
100QJ8-24/6	1.5	1.1			33	32	29	25	24	19	15	10	4
100QJ8-32/8	2	1.5			45	43	39	36	32	25	20	13	5
100QJ8-48/12	3	2.2			66	63	58	52	48	38	29	15	6
100QJ8-60/16	4	3			87	83	76	68	60	44	33	17	7
100QJ8-83/20	5.5	4			119	114	104	94	83	67	52	32	14
100QJ8-96/24	7.5	5.5			132	126	115	104	96	76	57	35	45
100QJ8-104/26	10	7.5			143	137	125	113	104	82	64	39	17

5SP 12 Technical Data

Item Number	Power		Outlet Diameter	Flow m^3/h	0	2	4	6	8	10	12	14
	HP	kW										
130QJ12-16/4	1.5	1.1	1.5" 2"	Head(m)	40	38	36	33	29	23	16	13
130QJ12-24/6	2	1.5			60	57	54	46	38	30	24	18
130QJ12-36/9	3	2.2			85	81	77	66	60	50	36	26
130QJ12-49/11	4	3			106	101	96	88	79	65	49	38
130QJ12-63/14	5.5	4			129	123	118	108	97	82	63	53
130QJ12-90/20	7.5	5.5			183	174	167	153	138	117	90	76
130QJ12-113/25	10	7.5			233	222	213	195	175	148	113	96
130QJ12-153/34	12.5	9.2			330	314	301	276	237	205	153	126
130QJ12-180/40	15	11			385	367	352	322	282	243	180	149

6SP 18 Technical Data

Item Number	Power		Outlet Diameter	Flow m^3/h	0	3	6	9	12	15	18	21	24	27
	HP	kW												
150QJ18-6	7.5	5.5	2.5" 3"	Head(m)	87	84	81	77	72	64	55	45	33	19
150QJ18-7	7.5	5.5			99	95	92	87	81	72	62	50	35	19
150QJ18-9	10	7.5			130	125	121	115	107	96	83	66	48	28
150QJ18-11	12.5	9.2			156	150	145	138	128	114	98	78	56	31
150QJ18-13	15	11			188	177	175	166	154	138	119	96	70	40
150QJ18-15	17.5	13			213	205	198	189	175	156	134	107	77	43
150QJ18-18	20	15			260	249	241	230	213	191	164	132	96	55
150QJ18-22	25	18.5			314	302	292	279	258	230	198	158	114	64
150QJ18-26	30	22			374	360	348	332	308	275	237	190	138	79
150QJ18-30	35	26			429	412	400	380	352	315	270	216	156	88
150QJ18-34	40	30			489	470	455	434	402	360	310	248	180	103
150QJ18-36	40	30			515	495	479	456	423	378	325	260	188	106

6SP 30 Technical Data

Item Number	Power		Outlet Diameter	Flow m^3/h	0	5	10	15	20	25	30	35	40
	HP	kW											
150QJ30-5	7.5	5.5	2.5" 3"	Head(m)	72	68	64	59	53	45	35	23	10
150QJ30-7	10	7.5			98	92	86	79	71	59	45	30	11
150QJ30-8	10	7.5			115	109	102	94	84	71	55	37	14
150QJ30-9	12.5	9.2			127	119	112	103	91	77	60	38	15
150QJ30-11	15	11			158	149	140	129	115	97	75	50	21
150QJ30-13	17.5	13			184	173	162	149	133	111	86	56	22
150QJ30-15	20	15			215	203	190	176	157	132	103	68	28
150QJ30-18	25	18.5			255	241	225	208	185	155	120	80	31
150QJ30-21	30	22			301	284	266	245	219	184	143	95	39
150QJ30-24	35	26			341	322	301	277	247	207	161	106	42
150QJ30-27	40	30			387	365	342	315	281	237	184	122	50
150QJ30-30	40	30			427	403	376	347	310	260	201	133	52

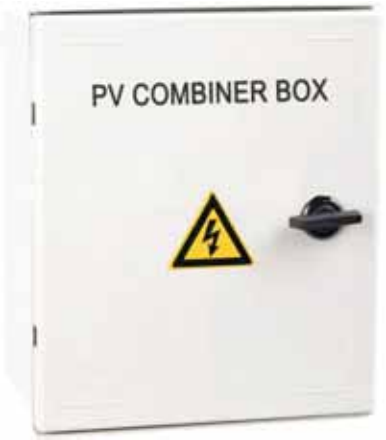
6SP 60 Technical Data

Item Number	Power		Outlet Diameter	Flow m^3/h	0	6	12	18	24	30	36	42	48	54	60	66	72
	HP	kW															
150QJ60-4	10	7.5	2.5" 3"	Head(m)	62	59	56	53	50	47	43	39	35	30	24	17	9
150QJ60-5	15	11			74	70	66	62	60	55	51	46	40	34	26	18	8
150QJ60-6	17.5	13			93	87	83	78	74	70	64	58	52	44	35	25	13
150QJ60-7	20	15			105	100	93	88	83	78	72	65	57	48	38	26	12
150QJ60-8	25	18.5			123	116	110	104	99	93	86	78	69	59	46	33	18
150QJ60-9	25	18.5			135	127	121	114	108	101	93	84	74	63	50	34	17
150QJ60-10	30	22			154	145	137	130	123	115	107	97	85	73	58	41	22
150QJ60-11	35	26			166	156	148	140	132	124	114	103	91	77	61	42	21
150QJ60-12	35	26			184	174	165	156	147	138	128	116	102	87	69	49	26
150QJ60-13	40	30			196	185	175	165	156	147	135	122	108	91	72	50	25
150QJ60-14	40	30			215	202	192	181	172	161	149	135	119	102	81	57	30
150QJ60-15	50	37			227	214	202	191	181	170	156	141	125	106	83	58	30
150QJ60-16	50	37			245	231	219	207	196	184	170	154	136	116	92	65	34

【 Combiner Box 】

Introduction

FU9000S Combiner Boxes available in sizes ranging from 4 to 16 PV inputs with greater flexibility and expandability in system design. Oversized bus-work adds high efficiency and dependability where it's needed most. The large IP65 enclosure provides ample room for conductors, which reduces installation time. Designed with installers in mind,the series combiner Boxes save valuable time and resources while improving system design and reliability.



Features

Convenient

◎ Greatly simplifies input and output wiring
◎ Available in 4 to 16 citcuit configurations

Reliable

◎ Reliable bus-work for particularly high current conductor combining
◎ Compact,rugged IP65 wall mount steel enclosure
◎ Integrated with smart anti-lighting modules
◎ Built-in DCstring fuses

Datasheet

	FU-CB4	FU-CB8	FU-CB12	FU-CB16
Number of Inputs(Positive & Negative)	4	8	12	16
Positive Input Wire Size	12 to 10 AWG	12 to 10 AWG	12 to 10 AWG	12 to 10 AWG
Positive Input Terminal Torque	14in-lb.	14in-lb.	14in-lb.	14in-lb.
Negative Input Wire Size	12 to 10 AWG	12 to 10 AWG	12 to 10 AWG	12 to 10 AWG
Negative Input Terminal Torque	35in-lb.	35in-lb.	35in-lb.	35in-lb.
Output Wire Size	6AWG to 350 KCMIL	6AWG to 350 KCMIL	6AWG to 350 KCMIL	6AWG to 300 KCMIL
Output Terminal Torque	350in-lb.	350in-lb.	350in-lb.	350in-lb.
Max.Input Fuse Rating(Midget)	12	12	12	12
Max.Output Current	48	96	144	192
Max.Continuous Output Current	40	80	120	160
Max.Number of Output Wires	1Pos,1Neg	1Pos,1Neg	2Pos,2Neg	2Pos,2Neg
PV Array Configuration	Negative Grounded*	Negative Grounded*	Negative Grounded*	Negative Grounded*
Enclosure Type	IP65,Steel	IP65,Steel	IP65,Steel	IP65,Steel
Weight(Approximate)	11 lbs	48 lbs	56 lbs	70 lbs
Dimensions W x H x D ininches	8 × 10 × 6	16 × 16 × 6	20 × 20 × 8	30 × 42 × 12

【 Solar Cable 】

PV1-F4.0

Solar cable 1.5/2.5/4.0/6.0/10.0mm²

Conductor:Stranded tinned copper

Insulation/Sheath:halogen free crosslinked polyolefin

Nominal Cross-Section:1.5/2.5/4.0/6.0/10.0mm²

Rated Temperature:-40~+90℃

Rated Voltage:DC:1.8kv–AC:0.6/1kv

Finished Cable O.D.:6.2 ± 0.1mm Conductor resistance

(20℃)：≤5.09Ω/km

Rated Current：25~32A

Weathering Resistance：UV

Burning Behaviour:(IEC60332-1,UL1581 VW-1)

No of core:1

Meas:250m/roll,17kg (TUV& UL Approval)

【 Solar Connector 】

YF-1001-TP

Panel connector compatible with TYCO

Cable standard:2.5/4/6mm²

Composite contact material:Copper,tin plated

Junction temperature current:25A

Contact presistance: < 0.3mΩ

Safety class:class Ⅱ

Waterproof grade:IP 67

Temperature range:-40℃~+85℃

Flame retardant grade:UL94-V0

Insulation material:PPO

FULL

【 Solar Connector 】

YF-1001

MC4 cable connector

Cable standard:2.5/4/6/10mm^2

Composite contact material:Copper,silver plating

Rate voltage:DC 1000V

Junction temperature current:16A

Contact presostance:<0.3mΩ

Safety class:class Ⅱ

Waterproof grade:IP 67

Temperature range:-40℃~+85℃

Flame retardant grade:UL94-V0

Insulation material:PPO

YF-1001-T

MC4 T-branch connector

Cable standard:2.5/4/6/10mm^2

Composite contact material:Copper,silver plating

Rate voltage:DC 1000V

Junction temperature current 30A

Contact presostance:<5mΩ

Safety class:class Ⅱ

Waterproof grade:IP 67

Temperature range:-40℃~+85℃

Flame retardant grade:UL94-V0

Insulation material:PPO

YF-LMC3-4
(Cable standard 2.5/4/6mm^2)

MC3 cable connector

For single-core cable cross-section:2.5/4/6mm^2

Withstanding Voltage:DC 600V

Contact resostance:<2mΩ

Insulation Resistance:>500MΩ

Ambient temperature:-40℃~+105℃

Protection grade:IP67

Security:level Ⅱ

Shell:TPE

Cable lenght:according to Customer's request

【 Solar Connector 】

YF-PMC3-4
(Cable standard2.5/4/6mm²)

MC3 panel connector

For single-core cable cross-section:2.5/4/6mm²

Contact:copper,tin

Withstanding Voltage:DC 6000V

Contact resostance:<2mΩ

Insulation resistance:>500MΩ

Cable diameter scope:Φ4.5mm–Φ7mm

Protection grade:IP67

Security:level II

Shell:PA

YF-MC3T

MC3 T-branch connector

Cable standard:2.5/4/6mm²

Contact:copper,tin

Current:30A(6mm²)

Withstanding voltage:DC 600V

Contact resistance:<2MΩ

Insulation resistance:>500MΩ

Ambient temperature：–40℃~+105℃

Protection grade:IP67

Security lever:II

Shell:PA

YF-G

Solar Cable Gland and Nut

Cable standard:2.5/4mm²

FULL

ZHEJIANG FULLWILL ELECTRIC CO.,LTD

ADD:Xinguang Industrial Zone, Liushi Town, Yueqing City, Zhejiang, China

Tel : 0086-577- 61728833

Fax: 0086-577-61728822

Website: www.usfull.com

E-mail: scarlett@usfull.com