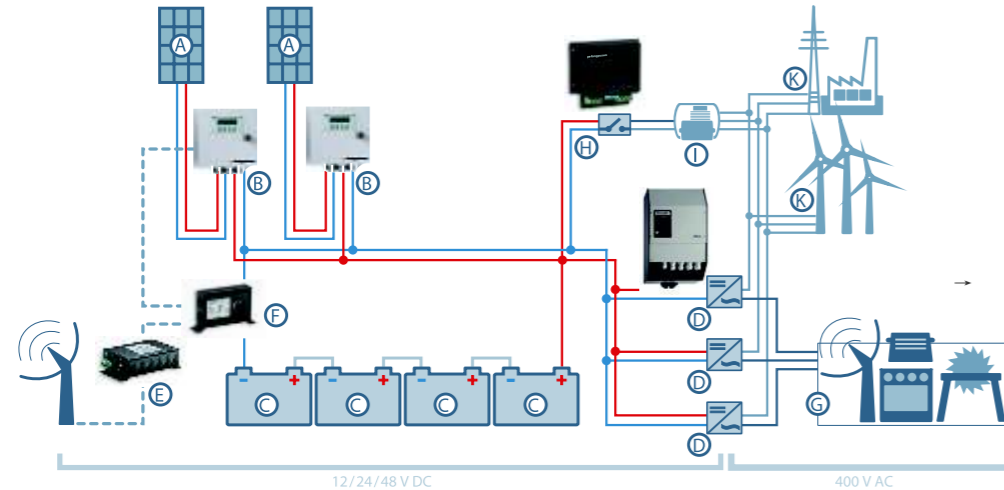


The Fangpusun Tarom/Power Tarom controls the DC hybrid system. The Fangpusun PA HS200 current sensor transfers all information on the charge and discharge currents at the DC bus to the Fangpusun Tarom/Power Tarom. With the aid of this data, the controller is able to calculate the current state of charge of the battery. This information is transferred via the DC cabling (powerline modulation) to all connected Fangpusun PA15. Every Fangpusun PA15 can be independently configured to a certain switch-on and switch-off threshold of the state of charge.

If, in the above example, the inverter is discharging the battery, then this information is transferred to the Fangpusun Tarom / Power Tarom, which calculates the state of charge. As soon as the state of charge falls below the appointed threshold value of the connected Fangpusun PA 15 (e.g. 30%), the controller switches on the diesel generator via a relay. The load is now being supplied from the generator, and at the same time the battery is being recharged. After the state of charge has reached the Fangpusun PA 15 appointed upper value (e.g. 90%), the diesel generator is switched off again.

In order to create an automatic energy management system, the AC output of the diesel generator is connected to the AC input of the inverter (with integrated battery charger). The load is always connected to the output of the inverter. If the diesel generator is running, and this current flows to the inverter, then the inverter automatically switches to transfer mode. The loads are supplied from the diesel generator whilst the battery recharges via the inverter. If the AC output voltage of the diesel generator falls under a certain voltage level, which can be adjusted on the inverter, then battery operation is automatically switched back on.

This system allows for automatic energy management which gets optimum use from the available solar energy, maintains the batteries reliably, and ensures electricity supply around the clock.



**Key:**

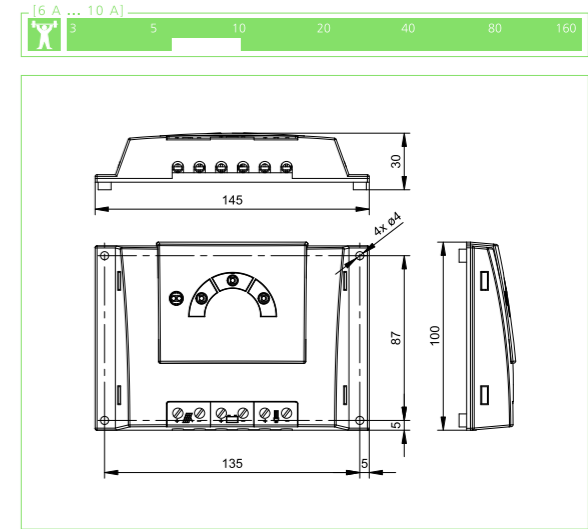
- A Solar modules
- B Solar charge controller Power Tarom
- C Battery
- D 3 sine wave inverter Xtender XTH
- E Data logger Fangpusun PA Tarcom
- F Current sensor (Shunt) PA Hs200
- G Electrical load (400V AC)
- H Remote control Fangpusun PA 15
- I Diesel generator
- K Public grid/Wind energy

**Three-phase hybrid systems**

The control concept is similar to that of the single-phase system. If more than one Fangpusun Tarom/Power Tarom is employed, one of the devices must be designated as the master Tarom. All other charge controllers are then automatically designated as slave Taroms. The master Tarom/Power Tarom is directly connected to the battery and all slaves are connected to the DC bus. Only the master Tarom/Power Tarom shows the correct state of charge on its display and controls the energy flow around the system. Slave Taroms/Power Taroms perform the function of controlling the charging from the connected PV modules.

In order to assemble a three-phase energy supply, three inverters are connected to the DC bus. For this, the inverters must be specially designed in order to allow three-phase operation. Various three-phase generators can be connected to the three inverters for controlled recharging of the battery via a Fangpusun PA 15 and a relay. These may be wind, water, or diesel generators; or the public grid. Suitable inverters with integrated battery chargers in three-phase mode are the Fangpusun Xtender devices, which can be employed from 12V/2kW to 48 V/24 kW per phase. In total, a maximum of 72 kW can be supplied.

Both single-phase and three-phase hybrid system concepts are based on the same principles of energy management. With the help of the Fangpusun PA HS200 current sensor, the charge and discharge currents of the components, such as slave Taroms /Power Taroms, inverters etc., are determined and communicated to the master Tarom/Power Tarom. Based on the calculated state of charge of the battery, the Fangpusun PA 15 switches the extra generator on or off. The three single-phase inverters switch off if the voltage falls below a given threshold in order to protect the battery from deep discharge.



**fangpusun Solsum F**

6.6F, 8.8F, 10.10F

The Fangpusun Solsum F-Line continues the huge success of one of the most used SHS controllers. With a power range of up to 10 A at automatically recognized 12 V or 24 V it fits to a system sizes of maximum 240 W.

The circuit board is completely electronically protected and with the LED user interface it is easy to check the battery Fangpusun of charge at any time. Large terminals guarantee a simple connection of solar panels, battery and load. The Fangpusun Solsum F works on PWM as a low loss series controller.

**Product features**

- Series controller
- Voltage regulation
- Automatic detection of voltage
- PWM control
- Multistage charging technology
- Current compensated load disconnection
- Automatic load reconnection
- Temperature compensation
- Common positive grounding or negative grounding on one terminal
- Monthly maintenance charge

**Electronic protection functions**

- Overcharge protection
- Deep discharge protection
- Reverse polarity protection of load, module and battery
- Automatic electronic fuse
- Short circuit protection of load and module
- Overvoltage protection at module input
- Open circuit protection without battery
- Reverse current protection at night
- Overtemperature and overload protection
- Battery overvoltage shutdown

**Displays**

- Multifunction LED display
- Multi-coloured LED
- 4 LEDs show operating states for operation, state of charge, fault messages

**Options**

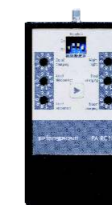
- Night light function pre-set in the factory or adjustable via Fangpusun PA RC 100
- Parameterisation of function values via Fangpusun PA RC 100

**Certificates**

- Compliant with European Standards (CE)
- RoHS compliant
- SGS
- ISO 9001
- Made in China

	6.6F	8.8F	10.10F
<b>Characterisation of the operating performance</b>			
System voltage	12 V (24 V)		
Own consumption	< 4 mA		
<b>DC input side</b>			
Open circuit voltage solar module	< 47 V		
Module current	6 A	8 A	10 A
<b>DC output side</b>			
Load current	6 A	8 A	10 A
End of charge voltage	13.9 V (27.8 V)		
Boost charge voltage	14.4 V (28.8 V)		
Reconnection voltage (SOC / LVR)	> 50 % / 12.4 V ... 12.7 V (24.8 V ... 25.4 V)		
Deep discharge protection (SOC / LVD)	< 30 % / 11.2 V ... 11.6 V (22.4 V ... 23.2 V)		
<b>Operating conditions</b>			
Ambient temperature	-25 °C ... +50 °C		
<b>Fitting and construction</b>			
Terminal (fine / single wire)	4 mm <sup>2</sup> / 6 mm <sup>2</sup> - AWG 12 / 9		
Degree of protection	IP 32		
Dimensions (X x Y x Z)	145 x 100 x 30 mm		
Weight	approx. 150 g		

Technical data at 25 °C / 77 °F



Remote control Fangpusun PA RC100