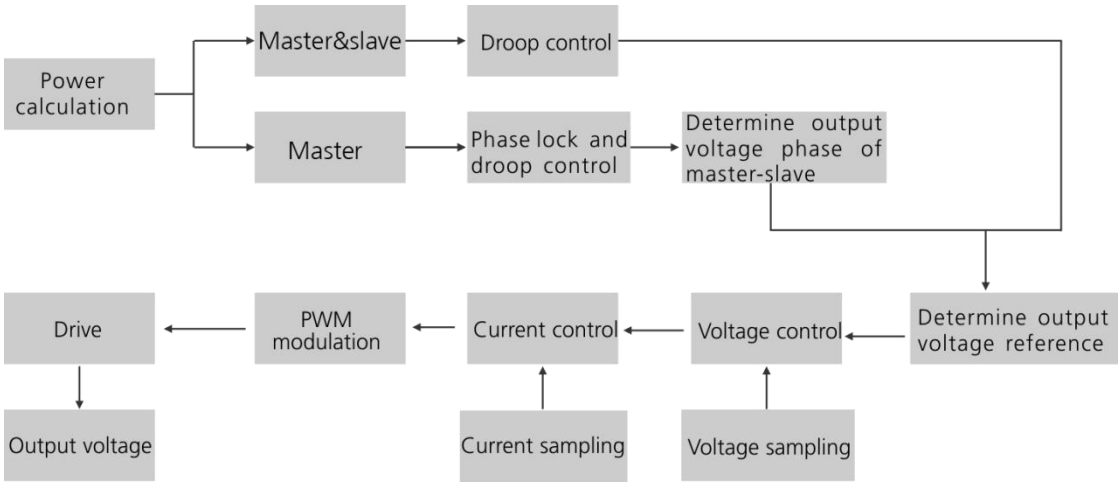
All You Need to Know About ATESS HPS' Parallel Feature

Background

Today solar energy storage inverter undoubtedly has been a common choice for residential and industrial power supply, for now there are two ways to construct medium to large-scale applications: one is to use single high-power inverter; the other is to use several smaller inverters in parallel. Single high-power inverter might have disadvantage in volume, quality, installation and other aspects. In addition, the reliability of single high-power scheme is relatively poor, one error may make the whole system paralyzed. Therefore, the technology of parallel connection is worth being applied in wider field.

How to realize parallel connection

The control objective of inverter parallel connection is to achieve the frequency, amplitude and phase consistency of each inverter, as well as the load current balancing that connected to every inverter unit. The representative product of ATESS, HPS series solar energy storage inverter, has made a breakthrough in this field, its parallel control logic is master-slave mode, as shown in the figure below.



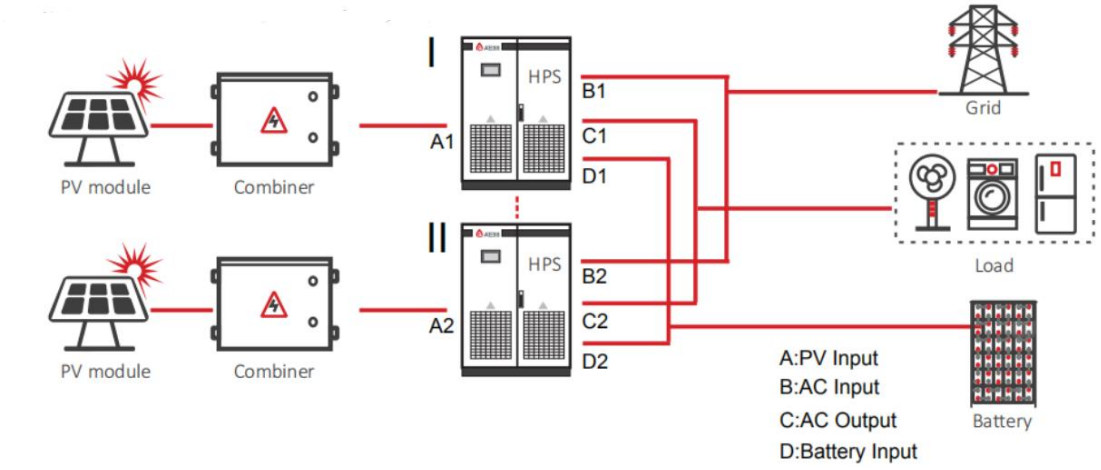
Highlights

1) Convenient maintenance and high reliability

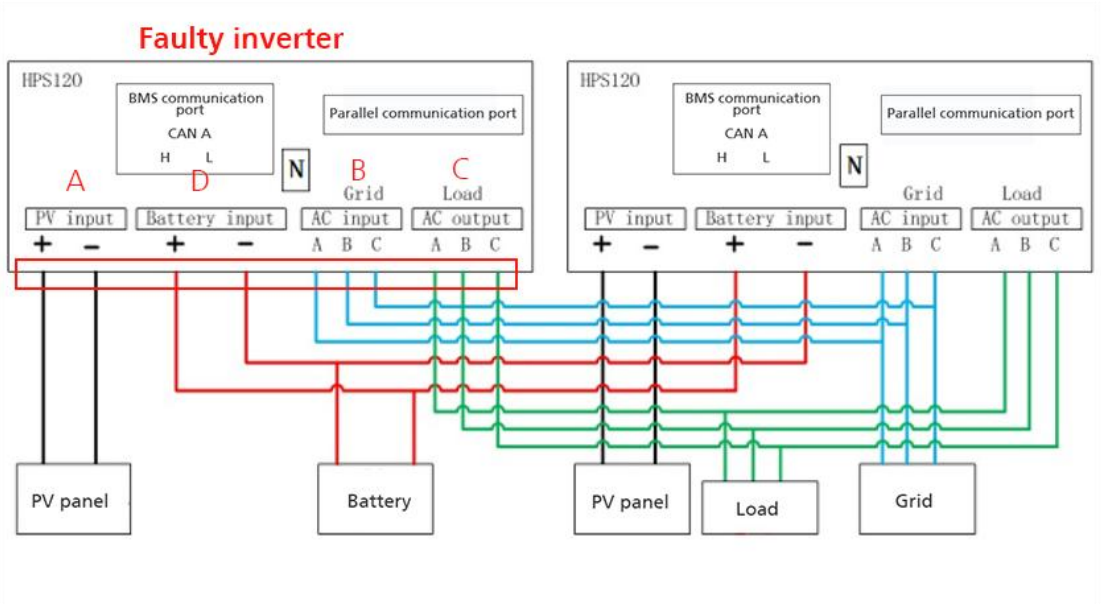
Besides model selection in primary stage, inverter maintenance in later stage is also a general concern of the customer. Flexible expansion of the inverter capacity can form a parallel redundant system to improve the operation reliability and system maintainability. When a single HPS model fails, the whole system stopping will not only brings to the user great inconvenience as well as maintenance difficulties. While in the case with multiple parallel inverters, if the slave inverter fails, it can be easily replaced or repaired. Even if the master inverter fails, just stop it first and change the communication address of the slave inverter to that of the master, thereafter the slave will become the master instead and run independently to keep the system working and avoid affection on the customer's load supply.(failure of two inverter at the same time can be eliminated as the chance is too slim.) It should be noted that when the inverter is connected to grid (or DG) that works normally, it’s not necessary to cut off the whole system, but only the faulty inverter for maintenance; Only when it’s disconnected with grid/DG, or when grid/DG is defective, the whole system needs to be shut down before maintenance operations can be carried out.

Maintenance procedure

Step 1
When any one of the two paralleled inverters gets faulty and need to be repaired, the power switch A,B,C,D of it must be all cut off and system needs to be tested safe before repair.



Step 2
Remove the cable

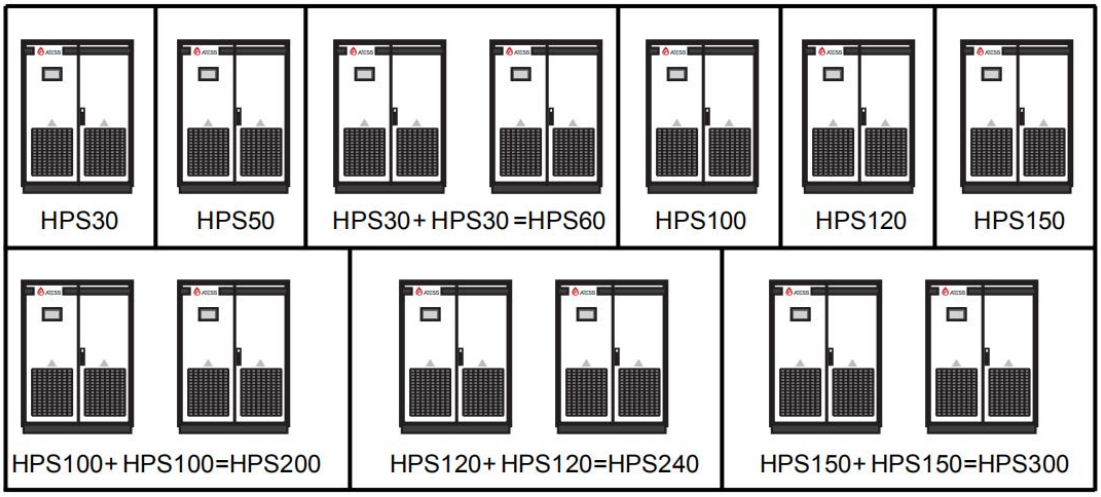


Step 3
If faulty one is the master inverter, modify the communication address of slave inverter, power supply can be expected to resume in 1 minute; if faulty one is the slave inverter, the system can keep running and just repair the slave inverter.

2) Expand power rating, more flexible configuration

At the moment ATESS HPS models can be parallel up to two units, and they work together through CAN communication. In terms of capacity expansion, it means you also have 60/100/200/240/300 models for option, providing customers with more possibility in the range of 30-300kw. The following figure shows the optional power section of ATESS HPS inverter.

I.e. when a customer needs a 60kW system, the HPS50 is slightly small for the requirement, which can not meet the load demand, while the HPS100 is way too large and would cost superfluous cost. In this situation, it just hits the spot when two HPS30 models are connected in parallel to be 60kw.



Know more about HPS

Some people might think that 150 in HPS150 represents that the maximum solar input power is 150KW, as a matter of fact, 150 only represents its rated power. The actual solar input power of HPS30-150 model could reach 1.5 times of the rated power, which can make full use of solar to supply load and charge the battery. HPS solar storage integrated inverter has not just the superiority of integrating solar conversion and energy storage function, it can also realize automatic seamless switch when connected to grid and DG to avoid troubles caused by sudden power failure.

In a nutshell, ATESS HPS can be widely applied in 30~300kw scale solar storage projects, providing more flexibility and reliability in system configuration,operation and maintenance.