Maximize Your Solar Self-Consumption with ATESS EV Charger

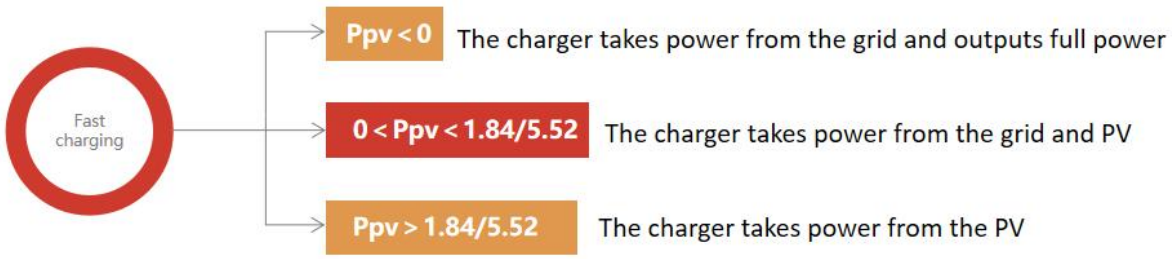
1. Background

Today, in response to the call for green travel and mitigation of vehicle exhaust pollution, electric vehicles have gradually penetrated into people's daily lives and become a necessity. The main source of power for electric vehicles currently on the market is the utility grid, but as the number of electric vehicles increases, it will inevitably put pressure on the grid, which will lead to certain restrictions on the charging of electric vehicles. In order to solve this contradiction and improve energy efficiency, ATESS integrates solar charging with its EV charging technology.

2. ATESS solution

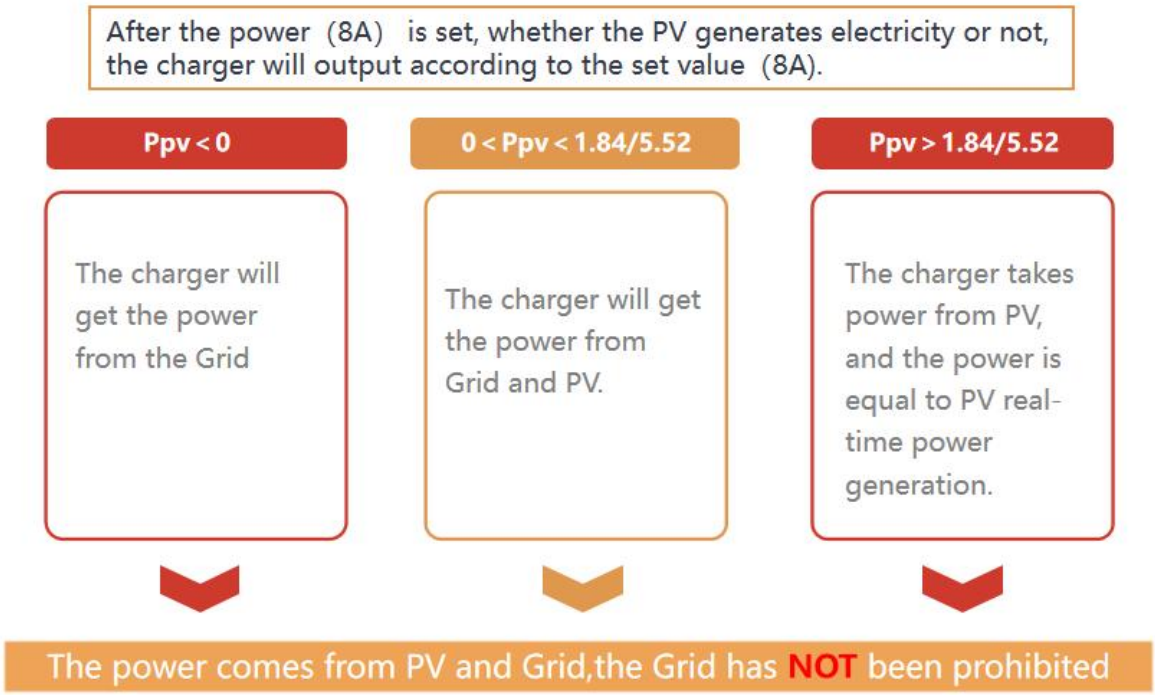
The ATESS EV charger can work with grid-tied solar system, to detect and use the surplus solar power to charge your car that otherwise would be fed back to grid. This can help increase the self-consumption rate of the solar system and reduce electricity bill for the house-owner.
The EV charger supports 4 charging modes with grid-tied PV system: FAST charging, ECO, ECO+, and schedule charging.

FAST charging： Charge at the rated power, the car can be fully charged in the shortest time.



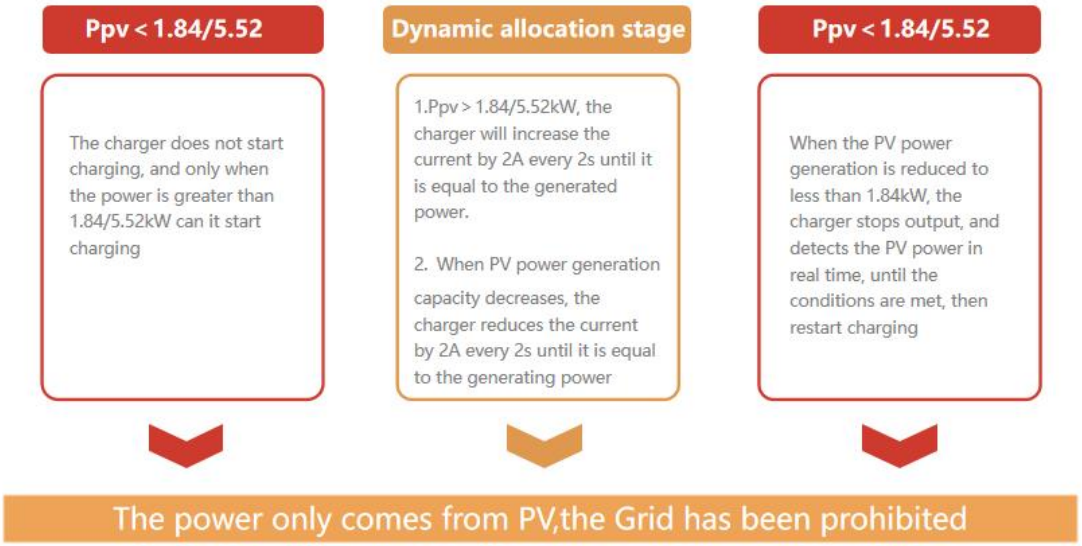
ECO Mode :

(1)The EV charger uses only surplus solar power to charge car when it is greater than set current value X(X is between 8A and maximum output current). (2)When surplus solar power is lower than set current value X(between 8A and maximum output current), the EV charger will charge at X and use grid power to offset the shortage.



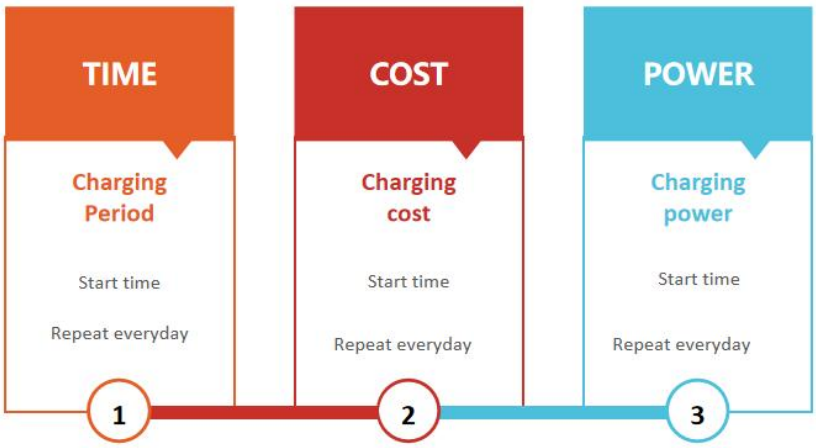
ECO+ mode:

In this mode, the power only comes from PV, and the grid has been prohibited.



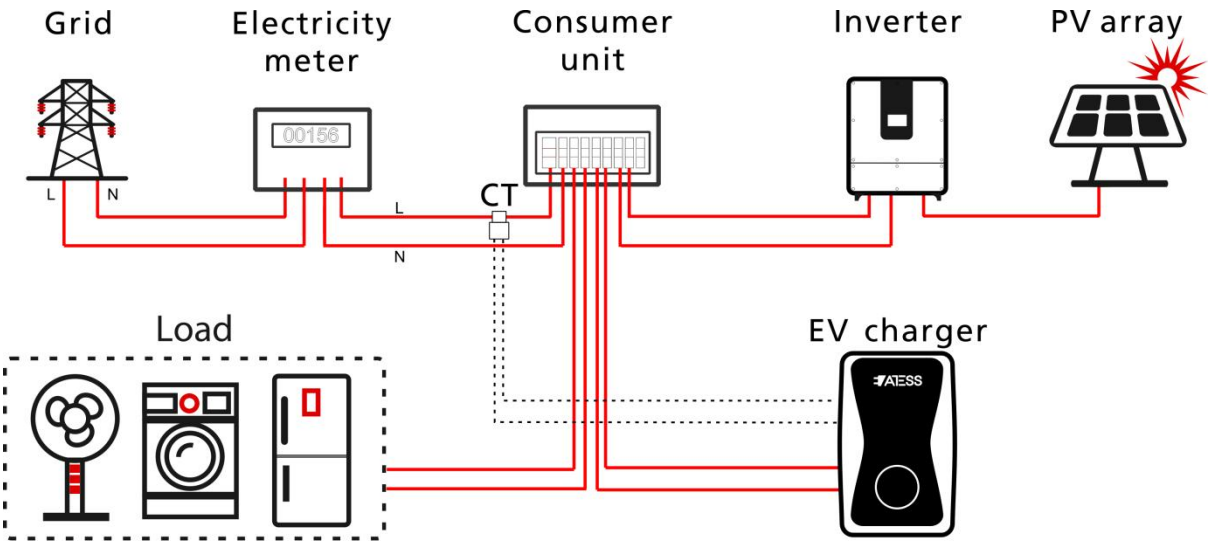
Schedule Charging：

The EV charger starts charging according to the user's set value (by electricity, time or cost), which can take effect once or at a fixed time every day.

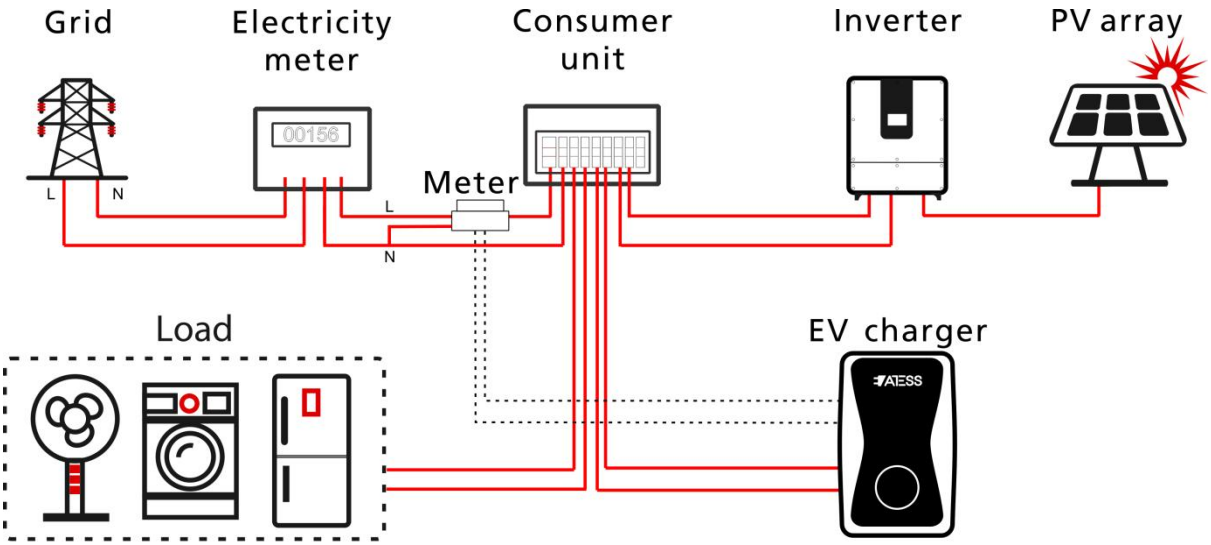


2.1. Wiring

To monitor the real-time power flow, a CT or meter will be needed.
If CT is used, the wiring will be as below:



If meter is used, please wire it as below



2.2. Parameter configuration

(1) Connect the EV charger to a laptop with an Ethernet cable, access the parameter setting page on the web browser.

(2) Scroll down to find the following parameters: Solar Mode, Solar ECO Limit Current(8-32A).

(3) Select CT or meter as sampling device of the solar charge function. Scroll down to find the option: External Power Sampling Wiring(0:Inner CT 1:PowerMeter). If CT is used, please set it to 0; if meter will be used, please set it to 1.

3. Benefit analysis

A house has installed a 7KW PV system, assume the average irradiation time is 4 ho urs per day, then 28 kWh of solar energy can be generated in a day. During working days, load consumption is only 15kWh daily, which self-consumption rate is only arou nd 54%, if a 7kW EV charger is installed, during lunch break, it can charge around 6kW to the car for 1.5hours, then another 9kWh that was supposed to fed to grid can be utilized, improving self-consumption rate 32% higher to 86%, and significantly reducing electricity bills.

Case reference

In the west of Birmingham, UK, there is a community using ATESS EV chargers connecting with PV systems. The PV installed capacity is 8KW for each house, EV charger is 22KW, solar energy is used to power the charger besides of supplying the load, maximizing energy conservation and utilization.