

Design of 3kw solar inverter





Overview

What are the specifications of a 3 kW PV inverter?

The input voltage and MPPT range are the most typical values for a 3 kW PV inverter. Other specifications like ac voltage/frequency range, power factor and THD are the mandatory requirements of certification standards. Fig. 2 shows the topology of the power stage of the 3 kW ZVS PV inverter.

What is a PV inverter?

As the interface between the renewable energy source and the utility grid, PV inverter is a key component of the distributed PV system. PV inverters with power level below 5 kW usually use single-phase dc-ac topology for residential roof-top applications.

Which resonant circuit is used in a 3KW residential PV inverter?

The ZVS-PWM technology is used in this 3kW residential PV inverter. As shown in Fig. 2, the ZVS-PWM technology requires additional resonant circuit including the resonant inductor L_r , resonant capacitor C_r , clamping capacitor C_c and active-clamping switch S_a .

What is the weighted CEC efficiency of a 3KW PV inverter?

The weighted CEC efficiency is calculated as 98%. The efficiency of a 3kW commercial H6 PV inverter mentioned in Section III is also measured with the same operation voltages, which is lower than the ZVS PV inverter due to higher switching loss and magnetic loss.



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