10 kw solar system price

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The use of solar energy has gained popularity due to its sustainability and cost-effectiveness. Among various solar power ratings, the 10 kW solar system stands out for its ability to meet household energy requirements. In this blog, we will explore the 10 kW solar system cost in both off-grid and on-grid variants, highlighting their essential components.

A 10kW solar power system usually covers 55 to 70 square meters and can generate up to 16,700 kWh of electricity annually. The cost of a high-quality 10kW solar system falls within the range of $9,900 to $26,600. This cost is influenced by factors such as module efficiency, tilt angle, orientation, space required and the geographical location of the solar power system can impact the overall cost.

The quantity of each component depends on the system’s capacity, increasing with kilowatts. To understand the 10kW solar system price, we have divided it into the basic components:

Solar panels typically contribute to 45% to 60% of the total system cost. When selecting panels for a 10kW solar system, their output rating is crucial. Output ratings range from 200 to 400 watts, with higher-rated panels generating more power in less space. Optimal for this system are 500-watt solar modules, requiring a calculation to determine the total needed.

The number of modules for a 10 kW system depends on their capacity, ranging from 250 to 670 watts. Choosing modules with higher capacity is advisable for long-term cost savings. Higher-capacity modules reduce the total needed, cutting down on cable length, support structures, and maintenance costs.

Mounting structures, necessary for securing panels to roofs or the ground, are available in various materials and designs. This can be made of either GI steel or aluminum. Railings, end clamps, mid-clamps, mounting brackets, and other accessories are commonly used and account for a significant amount of the total system cost.

Balance-of-system components, which include cables, wiring accessories, metering equipment, breakers, and switches, account for 10-20% of the total cost of the system.

For a 10kW solar system using a string inverter, it is recommended to use a minimum AC cable size of 10 sq.mm. To connect the inverter to the 3-phase main distribution board, a 4-core copper-protected cable is required. The DC cable should be a single-core copper solar cable with a minimum size of 4 sq. mm, connecting the solar strings to the inverter. On average a 10 mm DC solar wire would be Rs. 230 per sq. meter in India and would cost around $ 100 per 300 ft. in the U.S.

It is critical to ensure the proper sizing of breakers for installation on the AC Main distribution board. To get

an idea of the cost, confirm the maximum output current of the inverter because this information will help you choose the appropriate breaker size. A 32A 3-phase breaker is usually recommended for a 10kW solar power system.

The metering panel serves as the housing for the solar meter, which can be installed by either you or your electric utility. Its primary purpose is to measure the amount of energy produced by your system in kilowatt-hours (kWh). Its price varies for different areas and also depends on the electricity provider.

After learning about the 10kW solar system cost with a string inverter, let us check the price for the micro-inverter. A 10kW Solar System with a micro-inverter is priced in the range of $14,133 to $24,600. These micro-inverters are directly connected to individual solar panels, typically positioned just beneath each module.

The required number of micro-inverters depends on the number of solar modules installed. These inverters produce alternating current (AC) with a capacity close to that of the connected panel. Due to their lower output, a combiner or collector is necessary to merge the smaller AC outputs from micro-inverters into an electrical panel, providing power close to the system’s total capacity.

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