

■ Solar-Powered Water Pumping Systems

Comparing 48V DC and 240V AC Options

Solar-powered pumping delivers reliable, sustainable water for farms, ranches, and homes. Two common options are ****48V DC direct-drive systems**** and ****240V AC inverter-driven systems****.

■ 48V DC Solar Pump Systems

- Panels wired for ~48V feed a DC pump via a controller.
- Efficient, simple, and ideal for livestock, gardens, or cabins.
- Best for pumps under ~1 kW and daytime use (unless batteries are added).



■ 240V AC Solar Pump Systems

- Larger solar arrays feed an inverter, producing 240V AC.
- Powers standard submersible/surface pumps.
- Handles deeper wells, larger flow, and integrates with grid or generator.
- Slightly less efficient due to DC→AC conversion.



Component	48V DC System	240V AC System
Solar Array	Small–medium (500W–2kW)	Medium–large (2kW–20kW+)
Pump Type	48V DC pump	Standard 240V AC pump
Controller/Inverter	MPPT DC controller	Solar inverter (DC→AC)
Flow Rate	Up to ~5,000 gal/day	10,000+ gal/day possible
Best For	Livestock, cabins, gardens	Farms, irrigation, communities

- Choose ****48V DC**** for smaller, efficient, and low-cost systems.
- Choose ****240V AC**** for high-demand, deep-well, or community-scale water pumping.

Both provide clean, reliable water powered by the sun. ■■