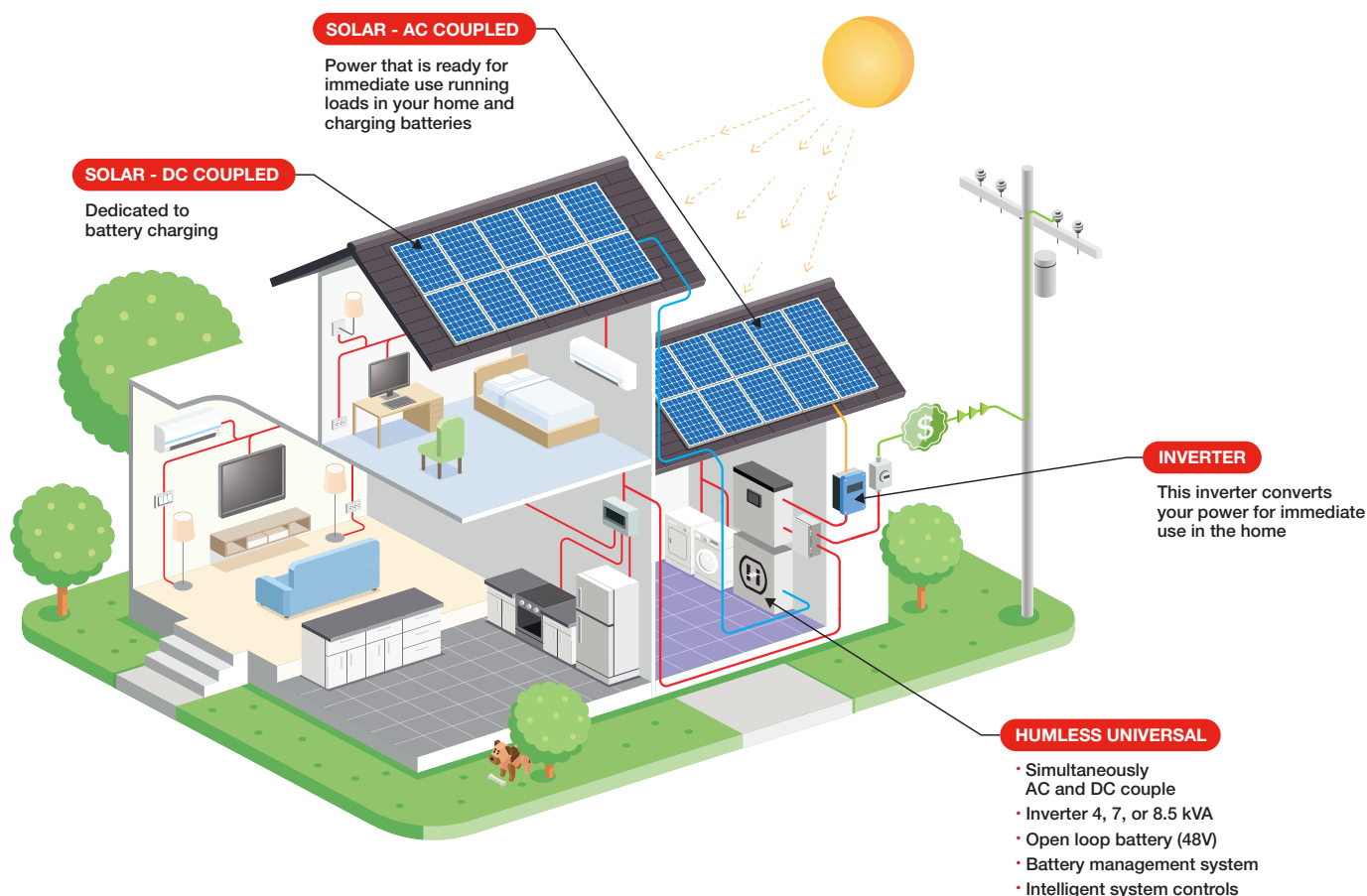




SIMULTANEOUS AC/DC COUPLING

A Step Forward for Solar Power Management



SOLAR ARRAYS

In both commercial and residential applications, a solar array paired with energy storage is most often installed to do three things: 1) convert to a clean and green form of energy, 2) save costs and 3) protect valuable systems from going offline in the event of a grid failure. For the homeowner, this means family security, protecting medication, food, and managing appliances. To accomplish these tasks, a control system is needed to help store and use the solar power captured from panels in an effective manner.

For most applications, there are two forms of coupling to a solar storage battery system—DC and AC. Each serves a slightly different purpose and has its own advantages.

DC COUPLING

For smaller off-grid systems, DC coupling is the most commonly used. A DC-coupled system is simple to build, and it costs less than an AC-coupled system. The DC-coupled system can use a single charge controller, and when the charger is programmed

correctly, it allows for precise battery charging and use.

AC COUPLING

AC-coupled systems are used for large scale, commercial projects, as well as residential projects. While AC-coupled systems handle a higher input voltage, they are not commonly sold with batteries. AC-coupled systems have many advantages. They allow solar energy to go directly from the panel to the load – so batteries are cycled less frequently and last longer. They can be used with micro inverters, making a rapid shutdown possible in emergencies. Additionally, during daylight hours, AC-coupled systems also assist in the running of larger loads and the starting of induction loads.

AC/DC COUPLING SIMULTANEOUSLY

With all of the advantages to each system, a combination of the two sources is a powerful option.

controller sends energy into a battery system, which is connected to a power inverter, allowing the energy to be drawn from the battery and used through a standard outlet.

Alternatively, the solar panels can bypass the charge controller through a grid-tied inverter that is on the AC output of the voltage source inverter as well as storing excess power in the battery.

This AC-coupling option allows energy to be used more efficiently, without paying for additional power through the grid. The first option allows for power to be stored, so your solar system is still working for you during night-time hours.

UNIVERSAL ENERGY MANAGEMENT (UEM)

With the Humless UEM however, you don't have to choose. You can have efficient energy storage and bypass your battery system at any given moment,



Humless Universal Energy Management
enables simultaneous AC/DC coupling, providing
the most intelligent energy management control
for new or existing solar arrays.

Up until now, AC and DC-coupled systems have been used in separate parts of a project to maximize efficiency. However, Humless Universal Energy Management (UEM) enables simultaneous AC/DC coupling, providing the most intelligent energy management control for new or existing solar arrays.

For the typical home or business, solar panels are set up to connect to a DC solar charge controller. The

depending on peak hours and the amount of energy you are currently using. This simultaneous AC/DC-coupled setup promises to be the next big step in solar energy management and storage. Now you can have all the advantages of both systems, in the ratio that makes sense for you on a custom basis.

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