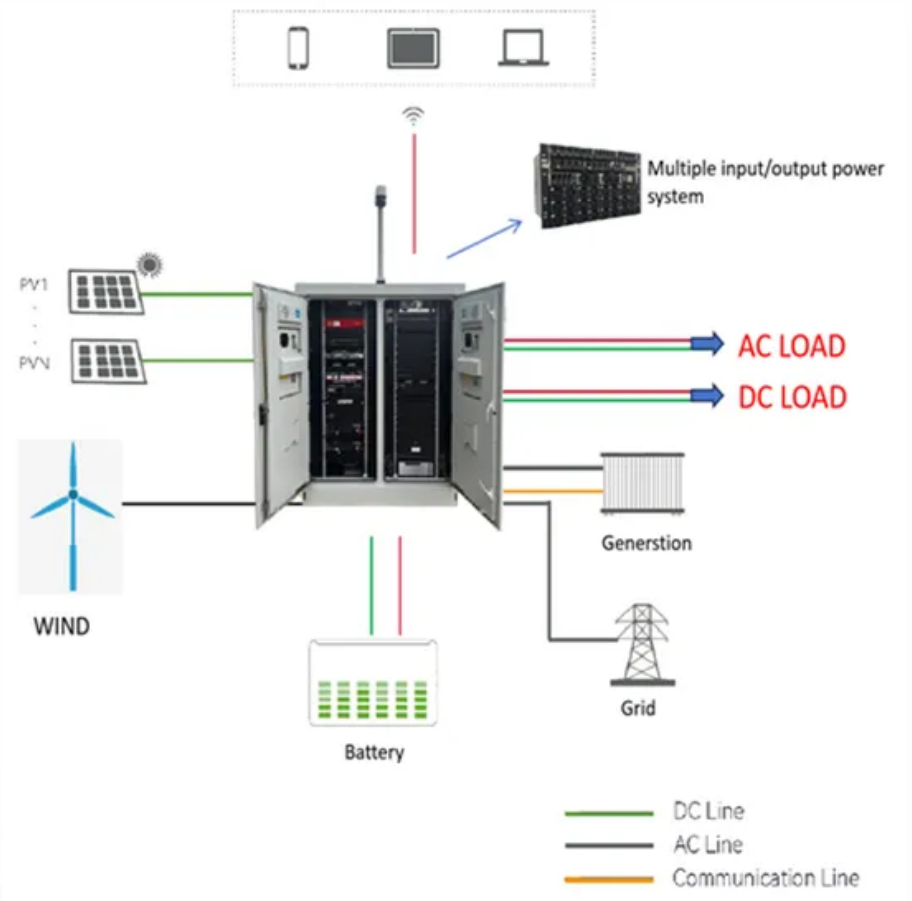
SolarInnovate Energy Solutions

Communication system for solar power plants



Overview

Are communication and control systems needed for distributed solar PV systems?

The existing communication technologies, protocols and current practice for solar PV integration are also introduced in the report. The survey results show that deployment of communication and control systems for distributed PV systems is increasing.

Why is wired communication important for Solar System monitoring & safety?

With the increased number of solar installations, importance of system monitoring and safety rises. In this trend, wired communications play a key role. Safety standards like SunSpec® Rapid Shutdown (RSD) which support NEC 2014, NEC2017 and UL1741 module-level rapid shutdown are built on wired communication interface.

Which power line communication options are implemented in different solar installations?

Figure 1 shows typical power line communication options implemented in different solar installations. These installations can be divided into communication on DC lines (red) and communication on AC lines (blue).

Can distributed solar PV be integrated into the future smart grid?

In the report, the communication and control system architecture models to enable distributed solar PV to be integrated into the future smart grid environment were reviewed. The existing communication technologies, protocols and current practice for solar PV integration are also introduced in the report.

Which modulation scheme is used in power line communication?

There are different modulation schemes used in power line communication. In narrowband application On-Off-Keying (OOK), Frequency-Shift-Keying (FSK)

and Orthogonal Frequency Division Multiplexing (OFDM) are the most common modulations, while in broadband PLC mainly OFDM is used.

Do distributed PV systems need a grid-scale coordinated control network?

The increasing penetration of distributed PV systems also request for a grid-scale coordinated control network. The control paradigm of current electrical power system is slow, open-looped, centralized, human-in-the-loop, deterministic and, in worst-case, preventive.

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