

SMART SOLAR POWER

Solar-panel efficiency is reaching its theoretical and commercially practical limits, and manufacturing efficiencies have made panels a commodity. To compete, solar solution providers must now focus on Balance of System (BOS) and overall installation efficiencies. Echelon can help. With our reliable, energy control networking platform,

Echelon is transforming the solar industry by reducing operations and maintenance costs, maximizing return on investment, and minimizing the total cost of ownership for end-users.

Echelon's energy control networking platform has been proven in some of the largest installations on the planet:

- More than 35 million smart meters use our power line control networking platform

to deliver daily communications at 99.7 – 100% reliability

- Over 300,000 buildings use our platform for controlling energy use, comfort and safety
- Streetlights in 500 cities are managed using our power line technology, for energy savings of up to 30% or more

INCREASE EFFICIENCY OF ANY PHOTOVOLTAIC SOLAR POWER INSTALLATION 10%-20%.

An Echelon energy control network can be installed quickly using existing wires, without adding new enclosure holes. Our highly scalable networking solution gains additional cost-effectiveness through simple integration with enterprise software, building management systems, or utility operations centers using standard IT technologies.

INDUSTRY-LEADING RELIABILITY FOR INSIGHT AND CONTROL FROM THE CENTRAL INVERTER TO PANEL

Using the platform, you can access, monitor, and control thousands of

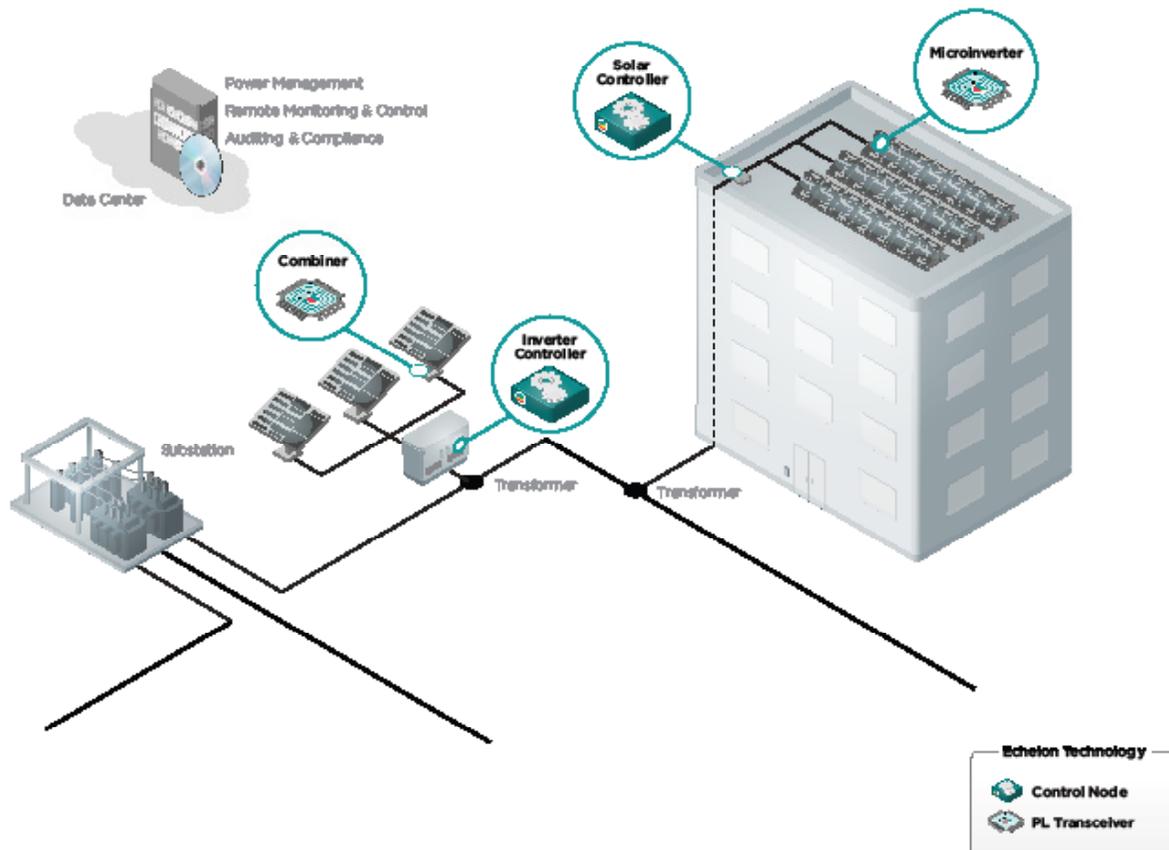
electronic devices within the solar installation. With actionable information from key devices — central inverters to the panels — you can achieve better performance, lower operating costs, and improve grid stability for utilities.

THE POWER OF AN OPEN STANDARD

With efficient monitoring and control, ground, elevated, and rooftop solar facilities can become more reliable and cost-effective for the businesses or utilities they serve.

And as solar installations become commonplace, capabilities for predictive analytics and weather and security monitoring will be necessary. Our platform is based on open standards such as IP and ISO/IEC 14808.1 and .3, ensuring the control network will interoperate with solutions and products from hundreds of vendors including the top 10 building control companies in the world, be expandable with future capabilities, and integrate with over 300,000 building existing control systems.

ECHELON'S SOLAR POWER SOLUTION



PROVEN. OPEN STANDARD. MULTI-APPLICATION.

For example, the network can easily expand to include a variety of sensors and actuators such as irradiance sensors, pyrometers, theft detection devices, etc., without any changes to the system. With industry standard signaling and communications, equipment from hundreds of standards-compliant vendors can be used to improve the operating performance of the solar installation.

MULTI-APPLICATION FUTURE FOR SOLAR POWER

Our energy control networking platform can seamlessly integrate solar installations with existing building, other facilities, and utility systems across the grid. Based on one of the two globally accepted standards for building automation, the platform can easily add a solar installation to a LONWORKS®-based facility or campus management system. Integration to achieve centralized management can lower operating costs and increase efficiencies. Smart-grid applications from leading utilities are already reaching solar inverters and installations.

With Echelon's platform, smart grid applications can be used to improve the operating characteristics of the solar installation and or individual devices to increase performance, reduce maintenance costs, and secure better grid stability and management of distributed generation.

PARTNERS FOR THE SERVICES YOU NEED

Our partners can deliver solar installations using best-of breed products and services.

Third-party providers combine advanced monitoring with smart solar control. Individual panel, inverter, combiner, microinverter or inverter control builds on the power of installation management services. For installation, operation, or maintenance, our innovative partners can provide solutions tailored to your needs — from inverter to microinverter based installations.

SMART PRODUCTS FOR SMART SOLAR

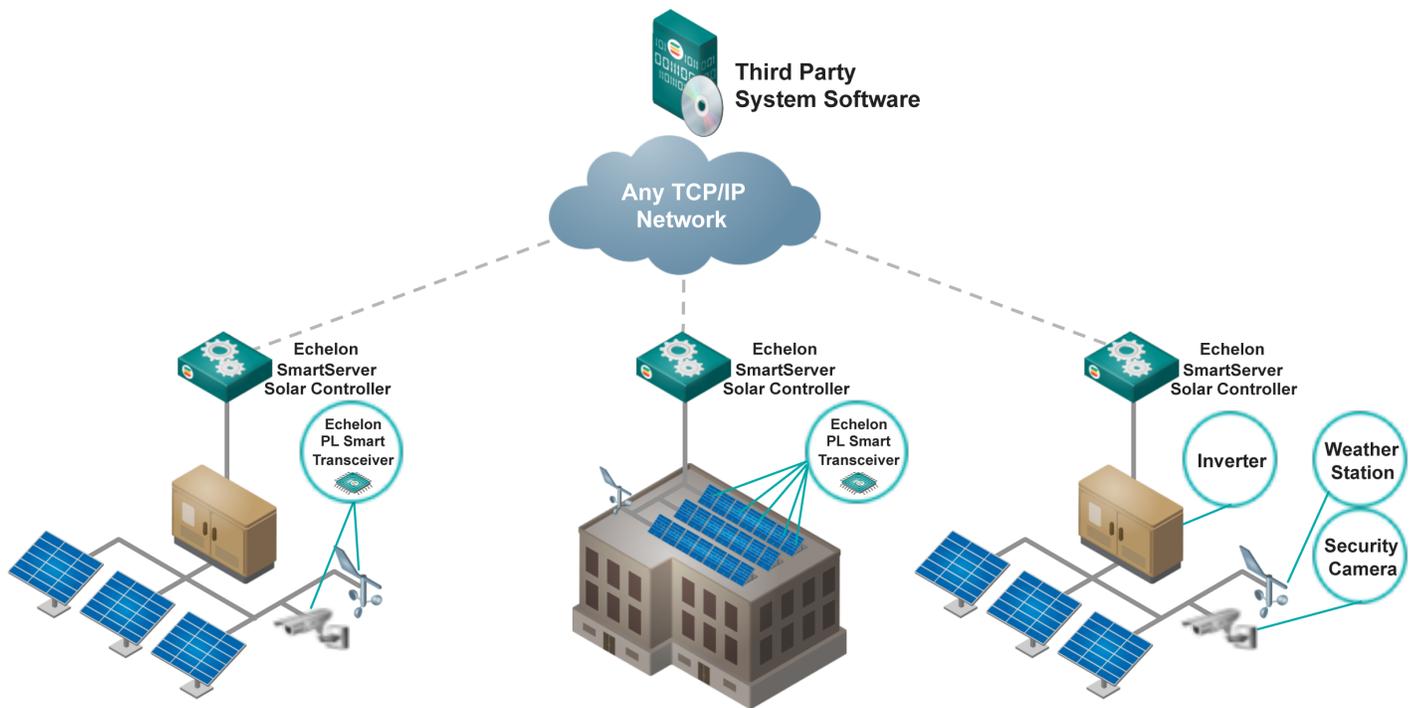
What do you get when you buy Echelon's energy control networking platform for smart solar? You get a three tier architecture of Echelon's power line transceivers, Echelon's SmartServer smart solar controller for device- and system-level monitoring and control along with a selection of third party software providers you can chose to complete one end-to-end solution. We've made it easy for you to start with a transceiver now for help bring real-time monitoring and automated control of each panel, junction box, microinverter, combiner, or inverter and then tie into an enterprise-ready architecture that can differentiate your to your end-customer.



“Echelon's energy control network multiplies the benefits of microinverters and gives us tremendous system control capabilities as well as insight into what is happening throughout the installation – system wide, by rows of panels, and at the individual panel. Efficiency and control are the combination that our customers want.”

Frank Cooper
President and Principal
Direct Grid

THREE-TIER CONTROL NETWORKING PLATFORM



ICs (integrated Circuits)

Echelon Power Line Smart Transceivers Device-on-a-chip 31x0 family of power line (PL) smart transceivers provide a time- and cost-effective solution for OEM manufacturers that want to deliver control networking capabilities over power lines. They combine applications processing using an 8-bit Neuron® processor core, a highly reliable narrow-band power line transceiver with ISO/IEC compliant signaling, and memory that can reside on or off chip for larger applications.



CONTROL NODES

Echelon SmartServer Smart Solar Controller. Provides the IP connectivity and supports software apps that connect solar instal-

lations to operations centers or buildings. Echelon SmartServers collect and disseminate information for device- and system-level monitoring and control. Easy to deploy and manage, and capable of both local and remote control, the SmartServer offers unparalleled flexibility. It can be used as a standalone server or integrated with the control system of your choice providing unprecedented connectivity to other systems via built-in drivers for industry-standard protocols including the LONWORKS protocol, Web services, Modbus, M-Bus, digital I/O, and pulse count input – and custom driver support for others. When equipped with a BACnet/IP Gateway Application, the SmartServer (and devices attached



to it) can be managed through any standard BACnet console.

SYSTEM SOFTWARE

Third-party System Software. Provides monitoring, management and control functions for solar installations interfacing with Echelon's SmartServer for control network access and communications. System software is available in hosted or server-based configurations.

START TODAY

To learn how Echelon can help you to get closer to your smart grid vision, call +1 408 938 5200 or visit us at www.echelon.com.