

OUR SOLUTIONS

Intelligent Controller™ (DG-IC™)



A powerful, extensible control and communication software platform for energy storage systems and other distributed energy resources, enabling cost-effective integration of renewable energy while maintaining power quality and reliability.

Benefits and Outcomes for Utilities

The DG-IC™ enables a powerful, utility-integrated solution that helps you maximize your energy storage system's value through intelligent site-level dispatch that delivers:

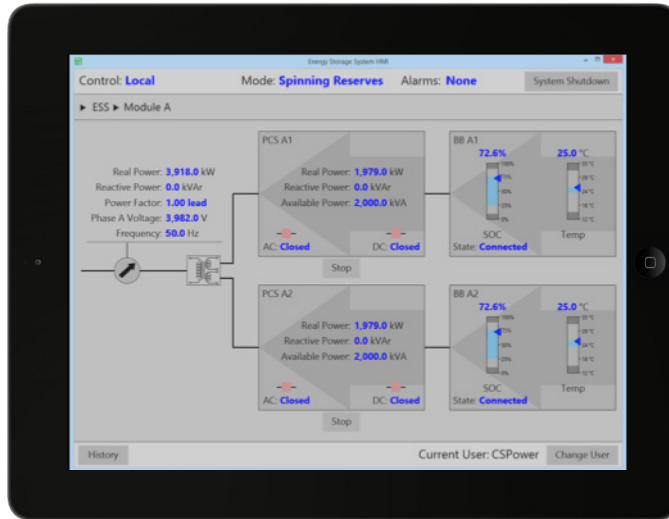
- **Scalability:** Real time monitoring and control of 50+ PCS-Battery banks, solar photovoltaic and/or auxiliary devices within a customizable control system.
- **Efficacy:** Prioritizable operating modes for real and reactive power use cases such as power smoothing and frequency response, increasing the value of an ESS.
- **Safety:** Local, remote and automatic control function coupled with a three-tier alarm system to ensure safe operation.
- **Reliability:** Islanding support to serve local needs when grid service is lost.
- **Flexibility:** Open standards communication to lower the cost and risk of scaling up to a fleet of systems.

Features and Functionality

- 16 operating modes with user-defined prioritization – targeting both real and reactive power use cases.
- Customizable device configuration provides extensive monitoring capabilities of ESS components (e.g., PCS and battery banks), local power meters, relays, switches, etc.
- Multiple means of control – local, to remote to automatic – with user-configurable access ensures the right level of access for every stakeholder.
- Communication between internal ESS components using Modbus and external communication using DNP3 that is compliant with leading open standards specifications – MESA, SunSpec, Open ADR.
- Local site installation on a substation-hardened PC enables subsecond response to grid events.
- Human-Machine Interface (HMI) built to be touch-screen compatible for standard PC or mobile platform displays making field control more effective.
- Configurable alerts and alarms for all components of the ESS, including automatic system shutdown.
- Battery warranty tracking with history on battery performance compared to the manufacturer's warranty limits.

Designed with utility-integration in mind

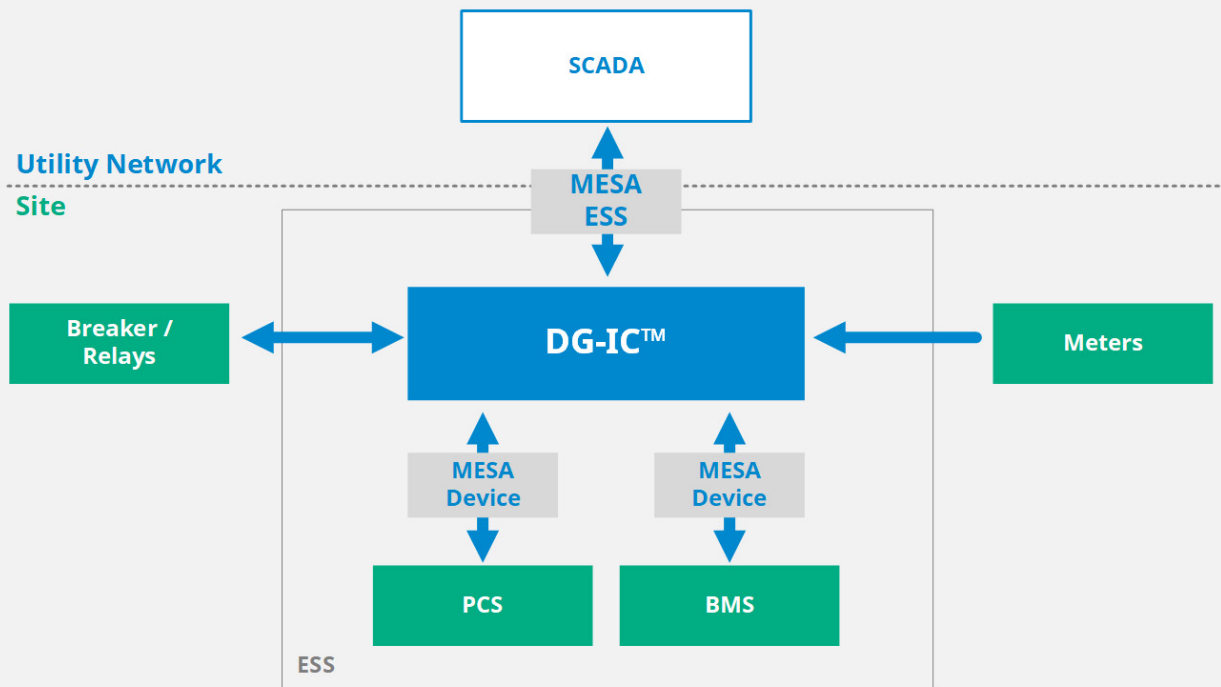
The IC serves as the site-level platform for managing dispatch of an ESS to support the local distribution power system in response to real-time grid events including variations in real load, reactive power, voltage or frequency. Embedded on hardened PCs in the field and accessible for remote monitoring and control in the utility control center using standards-based communication protocols (e.g., DNP3), the IC interacts with both the ESS components (e.g., PCS, battery management system (BMS)) and nearby grid devices (e.g., meters, relays, etc.) using MODBUS communication protocols. Communication and control of the ESS takes advantage of MESA open standards to ensure maximum interoperability of the ESS components.



DG-IC's graphical HMI is built on industrial design standards, ensuring clear and effective communication of system status.



Conceptual Schematic DG-IC™ Interactions with Utility and ESS Resources



About Doosan GridTech

Doosan GridTech™ is a global software and solutions provider that helps electric utilities and other megawatt scale power producers to evaluate, procure, integrate and optimize energy storage and other distributed energy resources. The Seattle-based company has managed nearly 65 MW of multiple energy storage and renewable integration projects on open standards software platforms across the country and in Southeast Asia. The firm is ranked as one of the top energy storage solution providers by Navigant Research and Bloomberg New Energy Finance. Its parent company, Doosan Heavy Industries & Construction Co Ltd, is headquartered in South Korea and is a multinational conglomerate with an emphasis on industrial and infrastructure products and services.