Energy Management System

DeltaGrid® EM

- Precise management of energy sources and loads
- AI-based energy usage and performance optimisation
- Digital services and predictive maintenance

Commercial Facilities

Factories

Grid Ancillary Service

Solar Power Plant

# Unleash the Full Value of Your Energy System with DeltaGrid® EM

The DeltaGrid® EM energy management system is a forward-looking digital platform that leverages novel AIoT technologies, energy control, cybersecurity and reliability technologies for nanogrid energy consumption optimisation, utility ancillary services, distributed energy resource (DER) generation monitoring, reduction of carbon emissions tracking and other applications.

Its control modes and AI algorithm can control energy flows precisely and automatically, thus optimising energy usage, maximising system performance and making your energy systems more valuable and economical. DeltaGrid® EM can be paired with the DeltaGrid® O&M digital services platform to upkeep energy assets, maximise uptime and optimise operational efficiency.

System Architecture

Application Layer

DeltaGrid® EM

DeltaGrid® O&M

Communication and Control Layer

IoT Hub

Communication
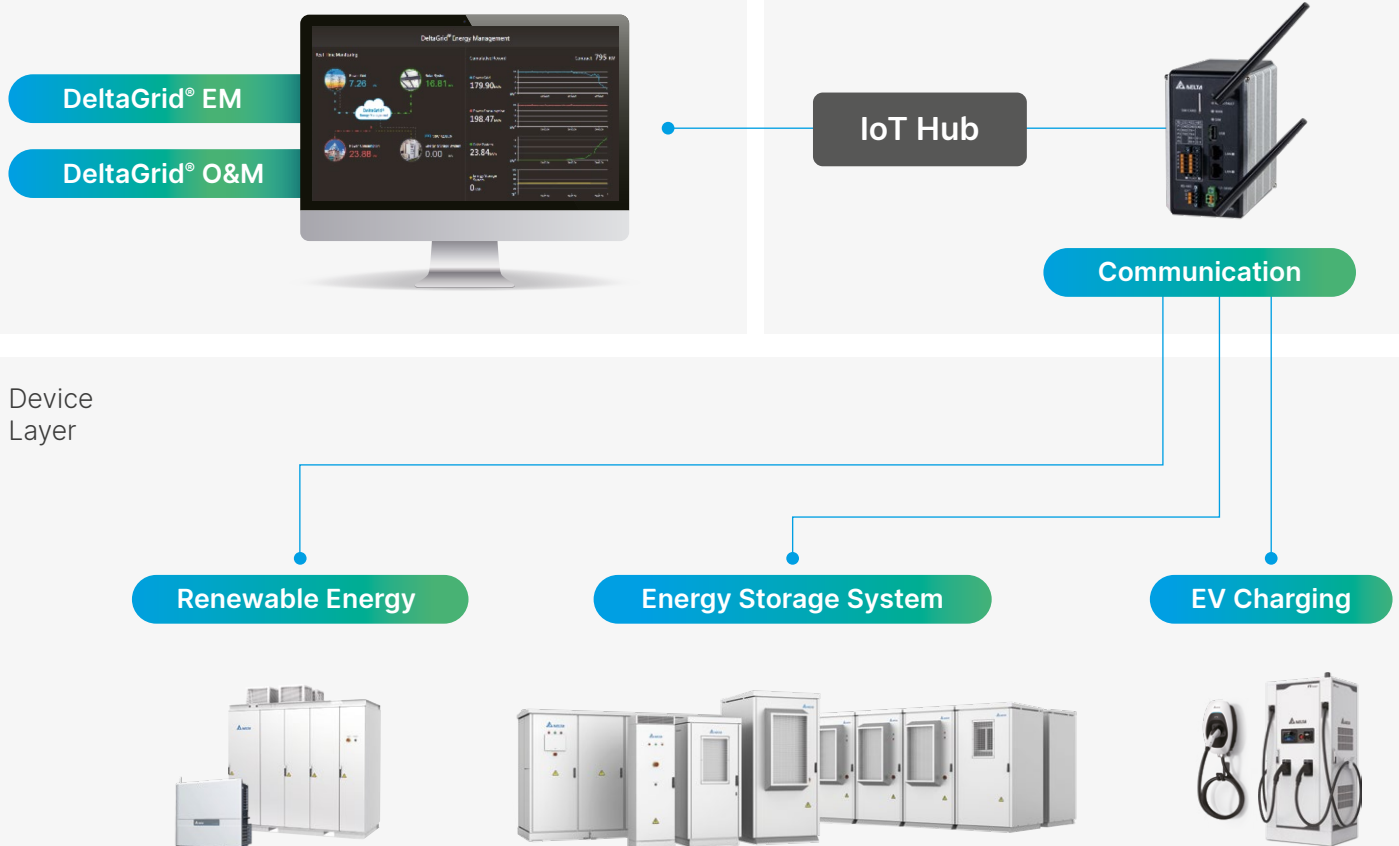
Device Layer

Renewable Energy

Energy Storage System

EV Charging

Application Highlights

Nanogrid Energy Optimisation

• Peak shaving, meter tracking and ToU scheduling modes to
  reduce energy costs
• Power backup functionality to increase self-reliance
• PV self-consumption optimisation to boost usage of
  locally-produced power (often more economical than selling)

Grid Ancillary Services

• Fast frequency regulation monitoring and control
• IEC 61850-compliant client/server communications
• Predictive maintenance to detect of ESS issues in a timely manner
• Forecasting and bidding suggestions
• Monthly/daily statistics

Factory Carbon Emission Tracking

• Carbon emission tracking by production line/product/work order
• AI algorithm for identifying abnormal power
  consumption and energy saving opportunities
• Carbon reduction performance indicators
• Leverage solar and energy storage systems

DER and Solar Power Plant Monitoring

• Real-time and accumulative power generation monitoring
• Day-by-day and month-to-month generation comparison
• AIoT algorithm for supporting predictive maintenance services to
  reduce system down time due to equipment failure

System Design and Features

Advanced digital platform with up-to-date AIoT, security and reliability technology to protect your energy system and maximise system uptime, thus optimizing operational efficiency.

Cyber Security

Reduce maintenance and transaction risks

• IEC 62443-3-3
• VLAN/VPN/TLS

High Availability & Redundancy

24/7 operation with self-detection and quick recovery

• Virtual Router Redundancy Protocol (VRRP)
• DeltaGrid IoT Hub

System Diagnostics

Nonstop operation and services

• Network communication status
• System operational status
• Monitoring of platform service status

Container-based Architecture

Rapid extension, deployment, and integration

• Single UI with support for optional application modules
• IoT Hub & Virtual Gateway
• Micro-service framework

Function List

	Utility Ancillary Services	Nanogrid Energy Optimisation	Distributed Energy Resources + ESS Control	Factory Carbon Emission Tracking
Basic				
Multi-site Management	●	●	●	●
Metering	●	●	●	●
Dashboard	●	●	●	●
Scheduling	●	●	●	●
Time of Use		●	●	●
Energy Control Mode				
Frequency Regulation	●			
Peak Shaving		●		
PV Output Smoothing			●	
Energy Shifting		●	●	
Target SoC	●	●	●	
Analysis & Management				
Consumption Analysis		●	●	●
Abnormal Usage Analysis				●
Reporting	●	●	●	●
Energy Trading & Data Delivery	●			
Operation & Maintenance				
Asset Management	●	●	●	●
Error Notification & Work Order	●	●	●	●
Single Line Diagram	●	●	●	