

Enetek RMS

Remote Monitoring System

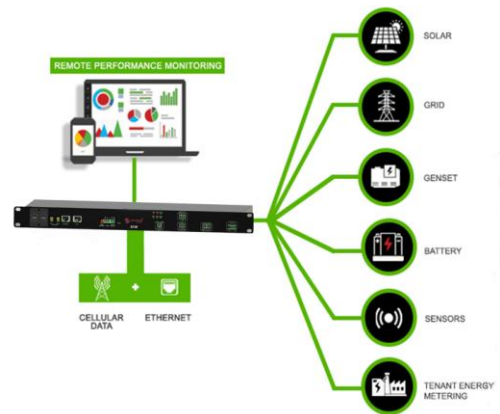
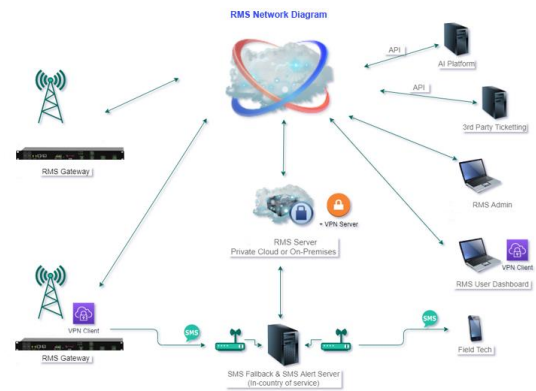
PRODUCT DESCRIPTION

The Enetek RMS solution is designed to facilitate remote monitoring and management of connected DC power systems over private/public network, providing users near real time data to manage and maintain the sites more effectively and efficiently.

KEY FEATURES

- Remote monitoring of site power and connected devices
- Built-in energy management
- Data analysis and custom reporting
- Allow >30 days of stored site data
- LTE/4G with auto fail-over to 3G/2G/SMS
- Firmware upgradable over the air (OTA)
- Supports server agnostics and multiple protocols
- Supports both cloud hosting (preferred) or on-premise server
- Standard 19" rackmount

RMS NETWORK DIAGRAM



RMS Gateway – ECM02



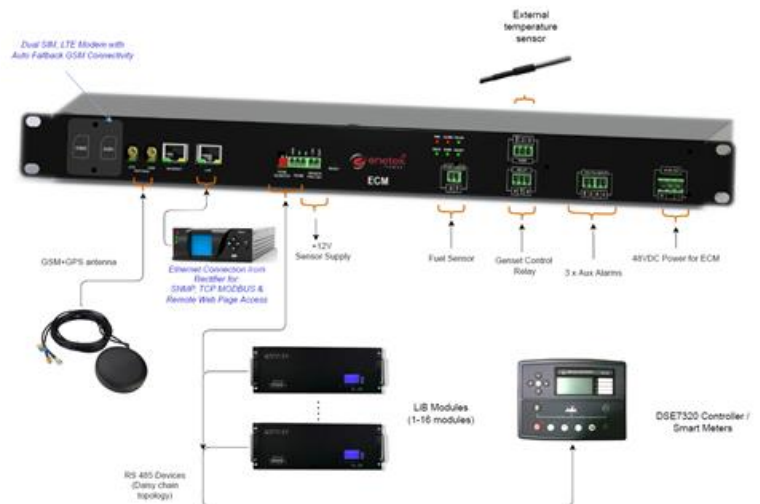
PRODUCT DESCRIPTION

ECM02 (Enetek Communication Module) is a GSM data based enhanced communication gateway for data collection of connected devices. It forms a virtual bridge between the connected devices and server, thus enabling the function of a remote monitoring system.

ECM02 polls each connected devices sequentially to collect the online data, which is then embedded into standard TCP/IP protocol for transmission to the server. This thus facilitates real time monitoring and reporting.

KEY FEATURES

- Dual SIM LTE modem with auto fallback GSM connectivity
- GSM/GPS antenna
- LAN port for rectifier controller. More ports can be achieved through the use of a network switch
- RS485 port, allowing connected devices in daisy chain topology
- Fuel sensor port
- Genset control relay port
- Temperature sensor ports
- Auxiliary alarm ports
- Data are stored in RMS gateway device



TECHNICAL

| | |
|--------------------------------|--|
| Power | |
| Input | 20-60Vdc, Reverse Polarity and Fuse Protected |
| GSM | |
| Bands | FDD-LTE: B1/B3/B5/B7/B8/B20; WCDMA/HSDPA/HSPA+: B1/B5/B8; GSM/GPRS/EDGE: 900/1800MHz |
| Bandwidth | LTE CAT1: Uplink up to 5Mbps / Downlink up to 10Mbps HSPA+: Uplink up to 5.76Mbps / Downlink up to 42Mbps UMTS: Uplink/Downlink up to 384Kbps; EDGE: Class Uplink/Downlink up to 236.8Kbps GPRS: Uplink/Downlink up to 85.6Kbps |
| Communication Interface | |
| Slave Devices (RTU) | Isolated RS485 port: Modbus and Proprietary Protocols Ethernet LAN port: SNMP Master/Modbus TCP/Web Browser VPN Ethernet PoE LAN via 4 port external switch (optional) |
| With Server | Built-in LTE 4G/3G/2G Modem and Ethernet Uplink |
| Local Access | Ethernet LAN / USB |
| I/Os | |
| Digital Inputs | 3 x Digital Inputs (Dry Contacts) |
| Analog Inputs | 1 x External Temperature Sensor |
| Environmental | |
| Operating Temperature | 0°C to 50°C |
| Humidity | 90% RH (non-condensing) |
| Physical | |
| Dimensions / Weight | 19" width, 1U height / 4kg |
| IP rating | IP20 |
| Extended Functions | |
| GPS | GPS/GLONASS based location monitoring (latitude and longitude) |
| Fuel Monitoring | 1 x Analog Input for Fuel Sensor (4-20mA) |
| Digital Outputs | 1 x Relay Output, Dry Contact (NO/COM/NC) - May be used for genset/hybrid control |

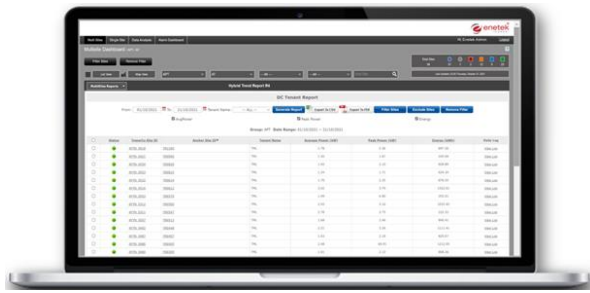
DASHBOARDS



Login Page



Multisite Dashboard



DC Tenant Reporting



Single Site Dashboard



Graphical Analysis (Grid-Voltage-Quality)



Graphical Analysis (Grid-Genset-Run)

SENSOR DEVICES



- 1-phase / 3-phase Smart AC Energy Meter
- Compatible with various current transducers
- Operates from 45-65Hz
- Operating temp @ -20degC to +70degC
- L-N @ 1-300Vrms; L-L @ 1-500Vrms
- Data logging
- Modbus RTU protocol
- Measuring data include:
 - Total Active Power
 - Total Reactive Power
 - Total Apparent Power
 - Total Active Energy
 - Total Reactive Energy
 - Frequency
 - Current
 - Neutral Current
 - Voltage
 - Power Factor
 - THDV, THD



- Piezoresistive diffused silicon pressure sensor
- Level measurement using probe
- Multiple protective design provides respective high protection ability
- Options for different density liquid (medium compatibility)
- Pressure Range @ 0-1m, 5m, 10m (customizable)
- IP68 protection

Due to continuous product development, specifications are subject to change without prior notice

Rev02

STANDARD PACKAGE OFFERING

| Basic Remote Monitoring System Portal - SaaS Model, Part A-1 | | |
|--|----------------------------|--|
| 1.1 | Energy Management | Efficiency Analysis, Performance Analysis, Energy Consumption Analysis, Historical Data Analysis |
| 1.2 | Battery Management | Performance Analysis, Alarms, Estimated Lifetime, Cycle Counter, Warranty Performance Analysis, etc. |
| 1.3 | Generator Management | Generator Hours, CPH Table Vs DG Loading, Consumption per Tenant, Remote Mode Changes (where available) |
| 1.4 | Fuel Management | Consumption, Fuel Filling, Fuel Theft & Leakage detection (Where FS available from Genset Controller, Detection on Portal) |
| 1.5 | Alarm Handling | Real-Time Alarms & Notification handling (On Dashboard + Email), 3rd Party API integration (ex: Ticketing) |
| 1.6 | Tenant Energy | Tenants Energy Reports |
| 1.7 | Report Generation | Report Handling, Automatic Reports refer to tab "RMS reports", Auto reports to be sent on scheduler |
| 1.8 | Portal | Tenants, Manager Level, O&M Service Partner |
| 1.9 | RMS Application Management | RMS Application / Software Setup, Maintenance & Upgrades |
| 1.10 | RMS Operations Management | Setup & Maintenance of setups related to Site, Device Drivers, Dashboard, Reports & User Access |
| 1.11 | Training | Online RMS Portal training as per user categories, as required (max 4 sessions per category per year) |

| ECM Site Controller Software & Operations Support - SaaS Model, Part A-2 | | |
|--|---------------------------------------|--|
| 2.1 | Site Controller Setup at installation | Communications setup, device polling configurations, DI/DO verifications, troubleshooting |
| 2.2 | Data mapping as per required API | Mapping required portal API data with each device data basket. Setup math/logical re-mapping / custom alerts as required |
| 2.3 | VPN management | Setup OpenVPN server, controller & human user client profile setup. On demand VPN enable/disable via VPN server |
| 2.4 | Rectifier web access via VPN | Setup rectifier IP and port forwarding in controller. Provide VPN IP URL link via portal |
| 2.5 | Site Controller OTA upgrades | Site Controller software / firmware management, add customs features & edge computing modules. Future ready |
| 2.6 | Training | Training to Installers/ O&M/ Energy Teams |

| ECM Site Controller Software & Operations Support - SaaS Model, Part B | | |
|--|-----------------------|---|
| 3.1 | Fuel management setup | Fuel Sensor & tank volumetric calibration, work with installers. Set Fuel Re-fill & Theft thresholds in ECM |

| ECM Site Controller Software & Operations Support - SaaS Model, Part C | | |
|--|-------------------------|--|
| 4.1 | Energy management setup | EMS module setup, for DG/battery/rectifier/solar control functions as required. |
| 4.2 | Edge Computing | Site level data analysis (ex: grid quality/voltage, fuel CPH, Battery performance, tenant load, etc) at 10s resolution. Remote power |