FUTURING SMART ENERGY

www.lsis.com

The Best Solution For the Next Generation,

Photovoltaic Energy!

Home Energy Management System

GridSol HEMS

LS IS

Have You Ever Worried About?

- ☑ Electricity bill of my house seems higher than that of the neighbor's house.
- ☑ I would like to know the electricity bill before I receive the billing.
- ☑ I was upset because of an extreme high electricity bill.
- ☑ I am afraid of purchasing new electrical appliances because of the electricity bill.
- ☑ I would like to use a fixed amount of electricity just like the cell phone charges.
- ☑ I would like to view all house energy data in real-time using a cell phone or computer.
- ☑ I would like to use the solar photovoltaic power generation for energy consumption in the house and save the rest for later use.

Our House Energy Manager, GridSol HEMS Will be the Solution.

10%
Monthly average energy reduction

10 types
Devices that can be controlled in interconnection

540kWh
Monthly average amount of solar photovoltaic power generation

180kWh
Monthly average amount of energy storage

90%
Customer satisfaction of HEMS

GridSol HEMS Home Energy Management System

The Best Solution For the Next Generation, Photovoltaic Energy!

GridSol HEMS displays the amount of solar photovoltaic energy and commercial power supply, the amount of storage battery charged/discharged, total energy consumption in the house, as well as the energy information of each electronic appliance at home.
LSIS offers a special home solution to support your energy management at home.

Main Functions

- Offering IoT, big data service bases
- Cloud access service
- ESS network compatibility/ Interconnection for home use
- Measurement unit network compatibility/ Interconnection
- Web monitoring service
- DB linkage
- Online firmware update
- Energy management algorithm

Rating Specifications

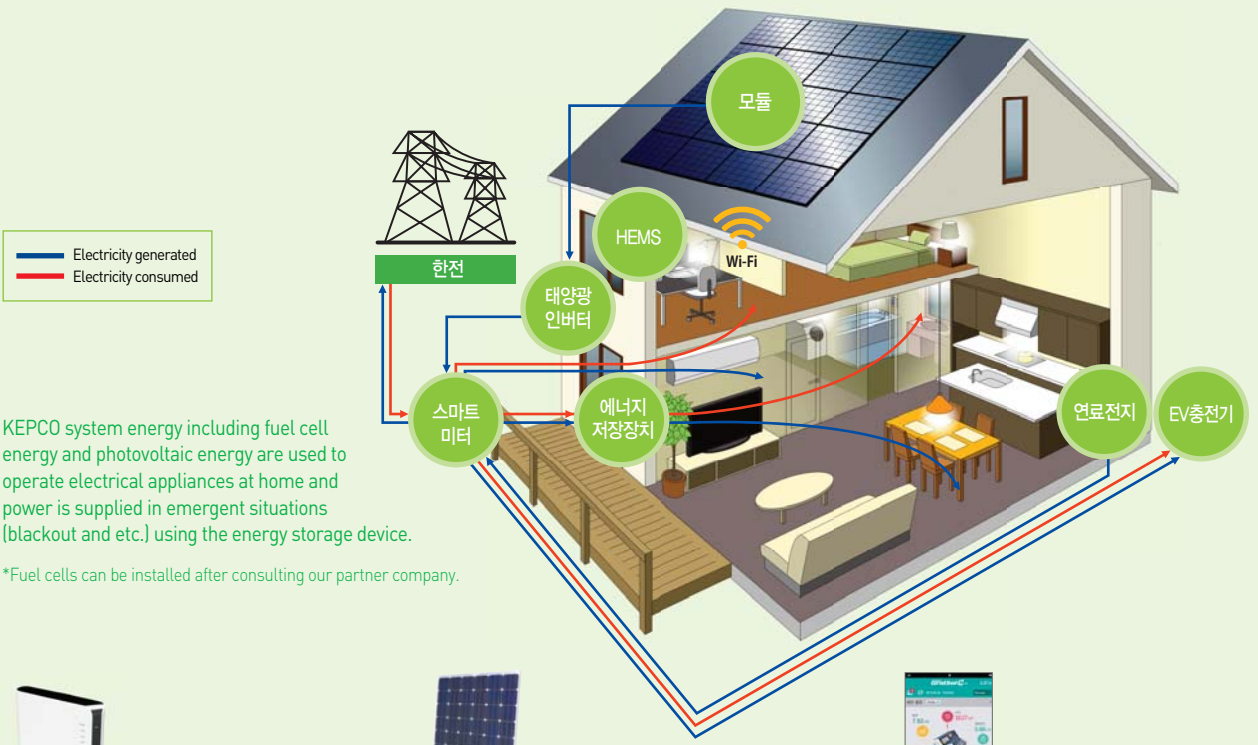
General Specifications	
Model Name	LSP-HV01, LSP-HV01WS-JP
Rated Voltage	AC 100~240V, 50/60Hz
	DC 24V 12A
Power Consumption	Below 5W in average
Dimension	180 x 170 x 38 mm
Certification	KC, PSE, J-MIC

Environment Specifications	
Operating Environment	Indoor
Operating Temperature	0~50℃
Storage Temperature	-20~60℃
Operating Humidity	5~95%
IP Rating	IP21
Operating Environment	Attached to the wall /Stand-type

Network Specifications

- RS-485 x 3EA
- Ethernet x 3EA(WAN, LAN1, LAN2)
- Wi-Fi x 1EA(ONE Band 2.4G 2T2R)
- Wi-SUN x 1EA(920MHz)
- USB2.0 x 1EA
- Sunspec
- ECHONET-Lite

Solar Photovoltaic Energy Home Package Based on Our Home Energy Manager, GridSol HEMS



KEPCO system energy including fuel cell energy and photovoltaic energy are used to operate electrical appliances at home and power is supplied in emergent situations (blackout and etc.) using the energy storage device.

*Fuel cells can be installed after consulting our partner company.

LSIS HEMS (Home Energy Management System)

- Integrated monitoring through remote communications (RS 485)
- Real-time display of operation status and various data through a smart device(Smart TV, Smart Phone, Tablet PC and etc.)screen
- Can be solely purchased

LSIS PID Free Photovoltaic Energy Module

- Increased amount of energy generation owing to the development of PID Free high-energy cells
- Rated output within the error range of 0 ~ +3%
- Certificates from the international certificate authorities, including TUV and VDE, as well as the domestic certificate on new and renewable energy
- Product warranty (5 years) and output warranty (91.5% for 10 years and 83% for 25 years)

LSIS HEMS Monitoring

- Real-time energy management
- Monitoring by time, day and month & trend analysis
- ESS status detection and setting in a remote place
- N-screen service based on responsive web technologies

LSIS Smart Meter

- Electric power quality monitoring
- Integrated reading of two-way electric measurement
- Current/power/energy monitoring by branch circuit
- Event history records (contact status, communications status, power status, short circuit, over-current and etc.)
- Real-time consumption analysis

LSIS Energy Storage System

- 6.3/12.6kWh lithium-ion battery built-in
- Dump power charging; high-quality power supply for audio power
- Emergency power supply when disasters or accidents occur
- Peak shift function
- IP65 (outdoor installation possible)

LSIS Transformer-less Photovoltaic Energy Inverter for Home Use (Capacity: 3kW)

- Easily installed at home
- Maximum power generation through estimation and control of the maximum /output points
- High efficiency and low distortion factor
- Small quantity; compact and low-noise design
- IP65 (outdoor installation possible)
- KS certification

Installation Capacity & Area

- Appropriate capacity installation is recommended based on the amount of power consumption.
- A space that extends to 6.48M2 (about 2 pyeong) is needed to install 1kW.

※ LSIS prioritizes maintainability from the system design stage.

Benefits of GridSol HEMS

Energy-saving Effects and Comfortable Energy Management

- Visualization of energy consumption
  About 10% reduction of energy consumption
- EMS scheduling
  Easier energy control at home based on the optimized operating modes of photovoltaic energy and storage battery, including the economic mode, self-supply mode and environment mode

Optimal Home Package in Connection with the Smart Meter

- Communications between the smart meter for measurement and HEMS & monitoring
  Connected to the national smart meter like Tokyo Electric Power in Japan and KEPCO in Korea; Two-way home package system for home use can be built

Offering Convenience for Customers

- Control of electrical appliances (Echonet-lite support)
  Convenient for customers to monitor and remote-control the electric energy of electrical appliances
- Easier access to smart device (Smart phone, iPad, TV, laptop and etc.) screens
- Can be used without Internet connection by supporting wired/wireless AP functions
- Cloud-based big data consulting service

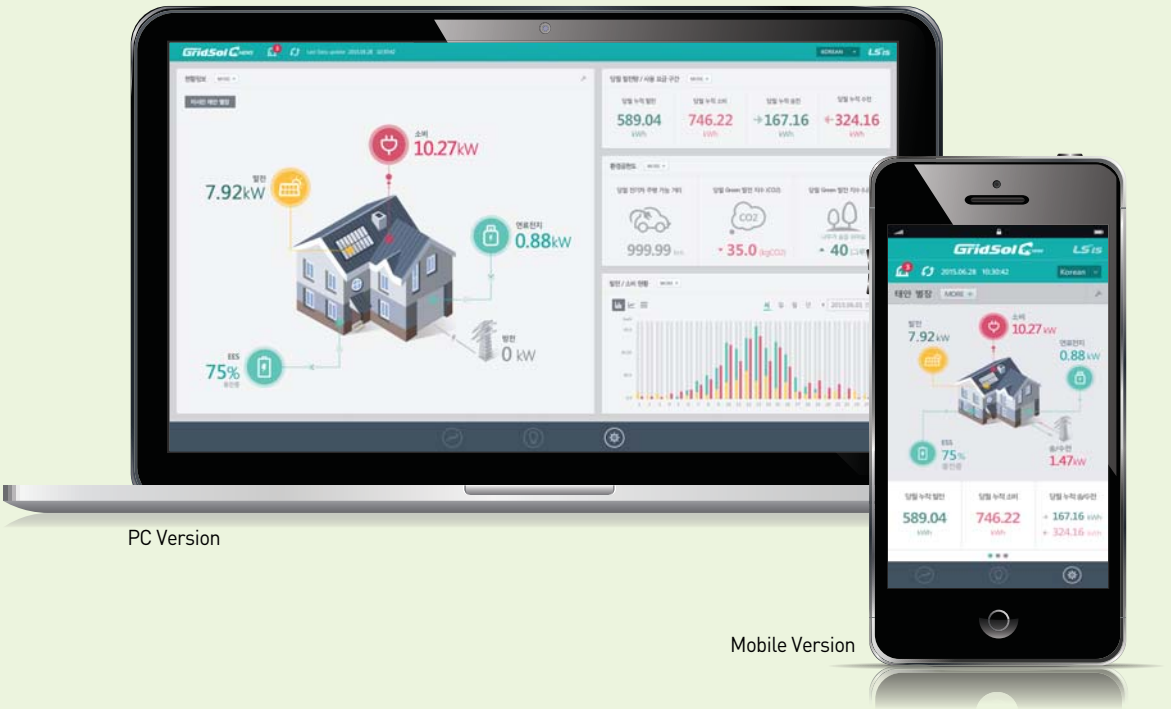
Increase in Revenue Through Sales of the Electric Power Generated

- Restriction on output of photovoltaic energy conditioner
  When entering contracts for power generation, the unit price of power generation can be 31 yen ~ 33 yen per 1kW; contributes to increase in revenue from photovoltaic power generation (2 yen per 1kW)
  Ex) For a household with 5.5kW installed, about 14,000 yen when calculated by 365 days x 3.5h x 5.5kW
- Prevention of double-generation from the storage battery
  When entering contracts for power generation, the unit price of power generation can be 25 yen ~ 27 yen per 1kW; contributes to increase in revenue from photovoltaic power generation (2 yen per 1kW)

Intelligent GridSol HEMS

Monitoring Technology

It is an intelligent monitoring system developed by LSIS to easily check the energy consumption at home in connection with the PC, tablet or smart phone.



PC Version

Mobile Version

Main Functions

- Real-time monitoring of electric power generation/consumption
- Quick responses to situations based on alarms in real-time
- Search for the monthly cumulative amount of power generation/ consumption/power transmission and receiving
- Estimated monthly electricity bill and estimating saving displayed in graphs
- Additional information on contribution to the environment
- Search for the current status of electrical appliances

Specifications

Resolution	1920 x 1080
OS	Android 4.1, 4.2, 4.3 iOS 9.X, Window 7 or higher versions
N-Screen	Support

Specifications of the Recommended Browser

Type	OS	Optimal Resolution	Optimal Device	Browser Supported
PC	Window 7 or higher versions	1920×1080	-	IE 10 or higher / Chrome
Tablet/Mobile	iOS 9	2048×1536	iPad Air, iPad mini2	Chrome
		375×667	iPhone 6, iPhone 6s	Safari
	Android	375×667	Nesus 5S	Chrome

Detailed Functions of Intelligent GridSol HEMS

Real-time Electric Power Generation Monitoring

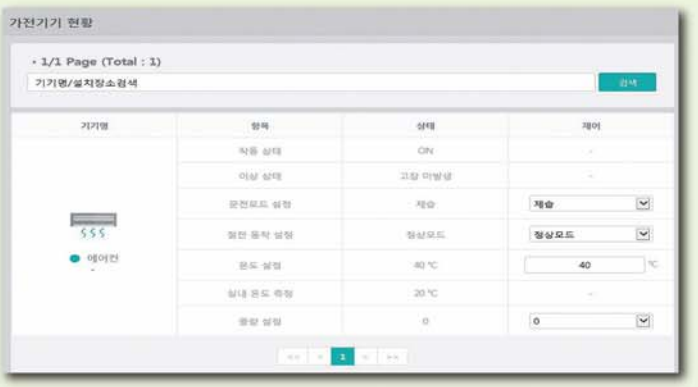
- Real-time display of the amount of power generation
- Real-time display of the amount of power generated from fuel cells
- Display of ESS charge/discharge/ standby status
- Monitoring of power transmission/ receiving/failure status
- Real-time display of power consumption

Cumulative Data search Function

- Search for the current status of power generation/consumption
- Search for the current status of power charge/discharge
- Search for the current status of power transmission/receiving
- Search for the estimated monthly bill/ previous bill
- Search for the previous amount by time, day, month and year

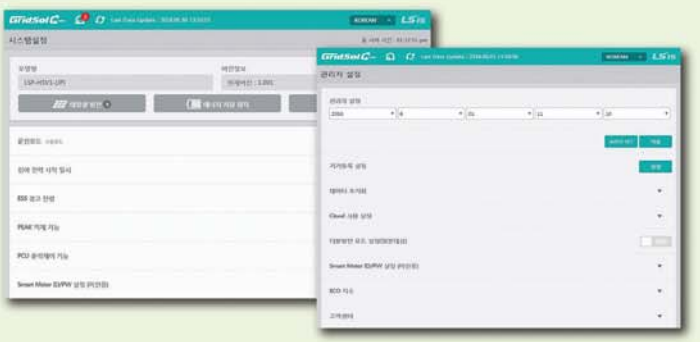
Electrical Appliance Search/ Control Function

- Echonet-Lite; 8 electrical appliances monitoring
- Search for the status of electrical appliances
- Electrical appliance control function



User/Administrator Setting

- EMS operating mode setting
- Billing system setting function
- Peak-preventing function/ PCU output control function
- Status data/log download function
- Convenient device registration and administration pages



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LSIS Co., Ltd.

LS Tower, 127 LS-ro, Dongan-gu, Anyang-si, Gyeonggi-do 431-848, Republic of Korea

Photovoltaic Energy Sales Team | Tel: 02-2034-4618 Fax: 02-2034-4428 E-mail: mcseong@lsis.com http://www.lsis.com

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