# ePowerControl ES Series

## Energy Storage controller



## PRODUCT DESCRIPTION

**ePowerControl ES Series is an advanced energy management system dedicated specifically for hybrid setups** that combine battery energy storage systems (BESS) with diverse energy sources, including PV, gensets*.

It employs an advanced control algorithm to oversee battery charging strategies, with the goals of **maximizing PV utilization, preserving battery health , and minimizing expenses associated with diesel fuel.**

**Genset integration and backup applications (off-grid operation and grid/off-grid transitions) are supported only by the ePowerControl ES model.*

## PRODUCT FEATURES

**eConf[2]: Intuitive commissioning interface & pre-configured communication drivers library:** configuration via any local web browser for quick setup and commissioning, with a drop-down list of common devices for faster configuration.
**Log:** View and download error logs and setpoints history from the “Logs” page for easy diagnosis.
**Power Flow Graph:** Real-time visualization of power flows between sources and load, enabling quick monitoring, trend analysis, and troubleshooting through live power data and device statuses.

### Advanced BESS integration

- **Blackstart capability :** Restore power from blackout using BESS *(with genset if applicable for ES model).*
- **SoC Target :** Set and maintains desired state of charge levels.
- **SoC Equalize :** Balances state of charge across battery cells.

### Flexible genset start/stop**

Provides user-selectable strategies for managing the generator's automatic start/stop behavior when the BESS acts as the grid-forming unit.
Includes automatic blackstart and grid reconnection capabilities for enhanced reliability.

### Reliable data logging

Ensuring data security, it enables reliable acquisition and logging from all on-site devices. Secure local storage and an embedded database maintain data integrity, supported by GPS clock integration.

## PRODUCT BENEFITS

1. **Guaranteed interoperability with a large number** of devices (inverters, EV chargers, ESS, gensets controllers, meters, sensors, etc..). Integrates with MODBUS TCP/RTU and offers additional protocol support upon request[1].
2. **Multi-Brand compatibility:** ensures a homogeneous and uniform management of your installations by mixing different brands for more flexibility during project design & engineering phases.
3. **Effortless commissioning:** reduced commissioning time and cost with an user-friendly configuration interface
4. **Intelligent breaker control for reliable power management :** Based on real-time data like SoC, load**, grid interaction and genset operating conditions. .

### Optimized PV integration with grid feed-in management *(grid-tied only)*

Control active and reactive power at the PCC to optimize PV penetration **while ensuring zero export to the grid,** avoiding penalties from the grid operator. It also allows setting **Maximum Export limits** and **Minimum Import thresholds.** *(Grid assistance functions, including reactive power control at the PCC, are available only with the ePowerControl ES+ model)*

### Virtual synchronous generator (VSG) integration *(Supported on ePowerControl ES only)*

Implements VSG mode to improve grid stability and facilitate transitions while ensuring grid reliability during the integration of renewable energy sources.

### Smart control : *(grid-tied only)* Efficiently manage your systems with dynamic setpoints for :

- Scheduled time of use management based on week days for both BESS and gensets.
- Peak shaving via BESS
- Peak Shaving via gensets**.
- Self consumption

### Data export & visualisation

Multiple ways for data export and visualisation available:

- **Locally,** through Elum's eConf[2] platform, via Embedded Modbus Server (to connect to 3rd party Modbus master).
- **Remotely,** using Elum ePowerMonitor[3] or compatible third-party monitoring platforms (FTP, SFTP, push, API integration).

**Available only on the ePowerControl ES model*
1. *Refer to the compatibility list for more details*
2. *is a user-friendly tool for configuring Elum loggers and controllers, find more details here : eConf.*
3. *is a data-visualization platform for managing multi-energy sites, find more details here : ePM.*

# TECHNICAL SPECIFICATIONS

| GENERAL INFORMATION | ES Compact | ES | ES + |
|---|---|---|---|
| Dimensions (mm) | 101 x 27 x 128 | 101 x 27 x 128 | 132 x 122 x 87 |
| Weight (without accessories) | 0.3 kg | 0.3 kg | 0.3kg |
| Maximum capacity (indicative solar kWp)<br>Maximum BESS capacity (KWh) | 500 kWp<br>500 kWh | 500 kWp<br>500 kWh | 1 MWp<br>1 MWh |
| **Max. number of devices**<br>PV inverters<br>BESS<br>Genset<br>Meters<br>Grid Connections (point of injection) | **16**<br>10<br>4<br>N/A<br>4<br>1 | **16**<br>12<br>4<br>2<br>6<br>1 | **32**<br>20<br>8<br>N/A<br>12<br>2 |
| Standards | IEC-60068-2-27, IEC 61000-4-2/3/4/6/8, UL 60950-1, IK10, UL508A | | |
| Installation | DIN rail mounting | | |
| Protection class for optional wall mounting kit) | IP 66 | | |

| AMBIENT CONDITIONS | |
|---|---|
| Temperature | -10°C to 60°C |
| Humidity | 5% to 95% (non condensing) |

| POWER SUPPLY | |
|---|---|
| Input parameters | 12 to 24 VDC, 480 mA @ 12 VDC, 225 mA @24 VDC |
| Power consumption (max) | 20W |
| UPS | Optional - 19,2 / 28.8 / 76,8 / 172.8 / 288 Wh (Up to 24h autonomy) |

| COMMUNICATION & SECURITY | |
|---|---|
| Compatible protocols | Modbus TCP/RTU[1]<br>(Other protocols can be configured upon request) |
| Available ports | 2 x serial (RS485/RS422/RS232)<br>1 x LAN (RJ45 - 100 Mbps)<br>1 x USB 2.0-A |
| Cellular modem | Optional - LTE/HSPA+/GSM/GPRS/EDGE/EV-DO |
| Remote access | eConf[2] / ePowerMonitor[3] / 3rd party Monitoring Platforms (FTP Push) |

| OTHER INTERFACES | | |
|---|---|---|
| Extensions (I/Os, RS485, weather station) | 2 modules max | 4 modules max |
| Power measurement | From compatible meter models only[1] | |

| DATA ACQUISITION | | |
|---|---|---|
| Collected data | Active / reactive power, current, voltage, ...[4] | |
| Equipment alarms (with ePowerMonitor[3]) | Mail & web notifications, configurable thresholds on all read variables | |
| Cloud storage granularity | Down to 1 minute for data on ePowerMonitor[3] , 5 minutes for data on some third party platforms, real-time for alarms[5] | |
| Control loop duration | Default 5 seconds, can be optimized to 1s or 500ms depending on system configuration and number of connected devices | |
| Data Storage | 8GB (up to 256GB) | 32GB (up to 256GB) |
| Data Export | FTP/FTPS standard, EnergySoft, QOS, Meteocontrol | |

For more information about the product

1. Refer to the compatibility list for more details.
2. is a user-friendly tool for configuring Elum loggers and controllers.
3. is a data-visualization platform for managing multi-energy sites.
4. Sample list. Data will be in accordance with the connected device.
5. Varies based on equipment communication protocols and physical connectivity.