ePowerControl MC Series

Microgrid Controller



PRODUCT DESCRIPTION

ePowerControl MC is an advanced energy management system designed for islanded and hybrid systems operating with unreliable grids. It seamlessly integrate PV plants, grid, battery storage systems (BESS), diesel generators and circuit breakers (grid, load).

It employs an advanced control algorithm to manage genset start/stop cycles and setpoints, and implements efficient battery charging strategies. **This maximizes PV penetration, extends the lifespan of gensets and battery banks, and reduces diesel fuel expenses.**

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.

PRODUCT FEATURES

- **Advanced microgrid management :** For every microgrid mode, the controller offers dedicated features and ensures a **smooth transition from one mode to the other:**

1. GRID PRIME MODE

- **Costs and energy optimization:** Maximizes PV self-consumption, manages time of use, limits export and import (peak shaving), handles reactive power management with PV inverters and/or BESS.
- **Islanding control management:** Manages islanding mode by switching from grid prime to either genset or BESS prime in case of grid failure (can be configured by the operator).

2. BESS PRIME MODE

- **SoC management:** Controls PV inverters to prevent overcharging the BESS, manages gensets to avoid discharging the BESS with configurable cycle charging or load following strategies (including smart start/stop management), and controls load breakers based on SoC.
- **Power assist:** Manages gensets to ensure sufficient power reserve for the BESS in forming mode (including smart start/stop management), and controls load breakers based on power.

3. GENSET PRIME MODE

- **Minimum loading:** Automatically adjusts BESS charge/discharge to achieve maximum PV penetration while ensuring gensets do not run below the minimum loading requirements.
- **Reactive power management:** Controls BESS and PV inverters to improve the power factor of the installation.

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 energy flows between sources and loads, enabling quick monitoring, trend analysis, and troubleshooting through live power data and device statuses.

- **Hot redundancy (failover backup)**
  Ensures uninterrupted control by automatically switching to a synchronized backup controller in case of primary unit failure, with no manual reconfiguration needed *(Optional for MC-S/M/L/XL).*

- **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.

- **Data export & visualisation**
  Multiple ways for data export and visualisation available:
  - **Locally,** through Elum's eConf[2] platform, via USB or Embedded Modbus Server (to connect to 3rd party Modbus master).
  - **Remotely,** using Elum ePowerMonitor[3] or compatible third-party monitoring platforms (FTP push, API integration).

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	MC - XS	MC - S	MC - M	MC - L	MC - XL*
Dimensions (mm)	500 x 400 x 250	500 x 400 x 250	500 x 400 x 250 (with screen 600x600x300)	600 x 600 x 300	500 x 400 x 250
Weight (without accessories)	1,4 kg	1,4 kg	1,4 kg (30 kg)	30 kg	30 kg
Maximum capacity (indicative solar kWp) Maximum BESS Capacity (KWh)	1 MWp 1 MWh	2 MWp 2 MWh	3 MWp 3 MWh	5 MWp 5 MWh	50 MWh 50 MWh
Max. number of devices PV inverters BESS Genset Meters Grid Connections (point of injection)	**32** 16 8 4 8 2	**48** 24 12 6 12 2	**64** 32 16 8 16 4	**128** 64 24 12 24 8	**128** 64 32 16 32 8
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	-40°C to 70°C
Humidity	5% to 95% (non condensing)

POWER SUPPLY	
Input parameters	100 - 240 VAC, 50 Hz / 60 Hz, with Elum casing
Power consumption (max)	50W
UPS	Optional - 19,2 / 28.8 / 76,8 / 172.8 / 288 Wh (Up to 24h autonomy)

COMMUNICATION & SECURITY		
Compatible protocols	Modbus TCP/RTU[1] (Other protocols can be configured upon request)	
Available ports	2 x ports série; 1 x LAN (RJ45 - 100 Mbps); 1 x USB 2.0-A	4 x serial (RS485/RS422/RS232) 3 x LAN (RJ45 - 1,000 Mbps) 1 x VGA / 2 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)	Optional I/O expansion modules available depending on project requirements.
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 3 seconds, can be optimized to 1s or 500ms depending on system configuration and number of connected devices
Data Storage	32Go (up to 256GB)
Data Export	FTP/FTPS standard, EnergySoft, QOS, Meteocontrol

*** MC - XL:** Solution consisting of an ePowerControl MC XL controller and a DL10000 datalogger.

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.

For more information about the product