

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 integrates 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 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.

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 request¹.
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.

eConf² : 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-L*).

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 eConf² platform, via USB or Embedded Modbus Server (to connect to 3rd party Modbus master).
- **Remotely**, using Elum ePowerMonitor³ 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 - S Version	MC - M Version	MC - L Version
Dimensions (mm)	500 x 400 x 250	500 x 400 x 250 (with screen 600x600x300)	600 x 600 x 300
Weight (without accessories)	1,4 kg	1,4 kg (30 kg)	30 kg
Maximum capacity (indicative solar kWp) Maximum BESS Capacity	300 kWp 600 kWh	1,000 kWp 1,000 kWh	3,000 kWp 3,000 kWh
Max. number of devices	32	64	128
PV inverters	16	32	64
BESS	16	16	16
Genset	2	6	16
Meters	4	16	32
Grid Connections (point of injection)	2	4	5
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	-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	4 x serial (RS485/RS422/RS232) 3 x LAN (RJ45 - 100 Mbps) 2 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)	2 modules max	4 modules max	8 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	10 minutes 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	32Go (up to 256GB) - >100 days of data stored		
Data Export	USB CSV export/FTP/FTPS standard, EnergySoft, QOS, Meteocontrol		

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 