CONTACT :

DEALER
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INFORMATION

SCAN FOR TECHNICAL SPECIFICATIONS

RELATED MG PRODUCTS

- LFP Series
- RS Series
- SmartLink MX
- Energy Monitor

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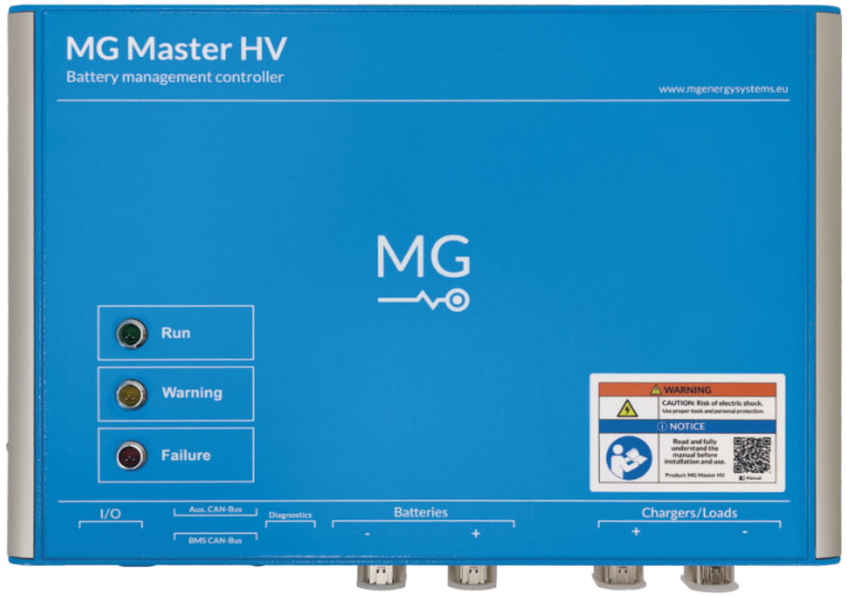
MG
Master HV



CERTIFIED BY DNV·GL MARITIME

MG

MG
Master HV

The MG Master HV is the safety and control unit of the battery system in the range of 48 Vdc to 900 Vdc.

The MG Master HV is a high voltage battery management controller and serves as the safety and control unit of the battery pack. It protects the connected battery modules against over-charging, over-discharging, exceeding temperature limits, and it controls the balancing of the battery cells. The Master HV communicates with the connected battery modules and provides information to the EMS. The master BMS functionality is added to the battery system to provide all the safety and control measures.

Hardware is integrated to connect the battery pack to the DC-Bus, or to disconnect the battery pack from the DC-Bus. This includes main contactors and a pre-charge circuit to ensure a safe and reliable operation.

SAFE BY DESIGN

All essential components for a safe and reliable battery system are integrated in this compact designed device.

- Integrated pre-charge circuit
- Safety contactors in positive and negative power paths
- High Voltage Interlock Loop (HVIL)
- Internal event logging
- CAN-Bus communication
- Tracking State-Of-Health and State-Of-Charge
- Monitoring of all battery parameters

EASY INSTALLATION

The Master HV is easy to install in your MG battery system, thanks to the integrated safety components. It therefore requires less cables and external equipment. This results in a quick plug and play installation. The integrated CAN-Bus automatically detects the configuration and updates the firmware of the batteries when a new version is available.

CONTROL & PROTECTION

MONITORING AND CONTROL

Protecting, monitoring and controlling a battery system is very important to create a safe, reliable and easy-to-use system. MG's system philosophy is to have one or multiple Master BMSs (e.g. MG Master HV) connected to the lithium-ion battery bank. Each MG battery module contains an integrated slave BMS. These slave BMSs monitor the battery cell parameters, like cell voltage, cell temperature and they control the cell balancing. All these parameters are sent to the MG Master HV via a separate CAN-Bus. The MG Master BMS receives and evaluates the measured data to keep the entire battery system at the highest safety level.

SAFETY CONTACTOR FOR BATTERY PROTECTION

The main function of the MG Master HV is protection of all connected battery modules. The Master BMS collects all the data and constantly monitors critical parameters to detect any battery failure. This way, the Master BMS avoids electrical abuse of the battery cells. When a parameter exceeds the limit, the user first will receive a warning. If the exceeded limit will stay, then the MG Master HV disconnects the batteries from the chargers and loads by opening its safety contactors.

CELL BALANCING

Balancing is a technique that helps the battery to maximize the capacity and increase each cell's lifetime. The slave BMS monitors each individual cell in the battery module, and the Master BMS intervenes when an action is necessary to protect cells and modules from any imbalance.

PROTECTION AGAINST

- OVERVOLTAGE
- UNDERVOLTAGE
- OVERTEMPERATURE
- UNDERTEMPERATURE
- IMBALANCE

MG BATTERY SYSTEM

Each battery system consists of the following

One or multiple battery modules
(HE Series, LFP Series, RS Series)

One or multiple Master BMSs
(MG Master LV or MG Master HV)

MODELS

There are two models of the MG Master HV, the 300 A and 500 A. Both models are suitable for systems with a voltage range from 48 Vdc up to 900 Vdc. They have the same enclosure dimensions and safety features. The only difference between the two models are the power connectors. This means that they differ in the maximum allowable current.

Pre-charge circuit

Shunt

Status LEDs

Safety contactors

I/O connector

Power connectors

Including high voltage interlock loop

Aux. CAN

BMS CAN

Diagnostic port

SCAN FOR MORE TECHNICAL SPECIFICATIONS

CERTIFICATION

The Master HV complies with several type approvals and standards. This battery management controller has the DNV-GL type approval for marine applications. This type approval consists of several mechanical, thermal and electrical tests, and also requires a quality system, audits and functional safety on product level. In addition, the Master HV complies with the IEC-EN 62619. This standard specifies requirements and tests for the safe operation of lithium batteries in energy storage systems used in industrial and stationary applications.

CE | IEC EN 62619 | DNV-GL

MODELS

HV

Current 300 A

Voltage range: 48 up to 900 Vdc

Current 500 A

Voltage range: 48 up to 900 Vdc

MG Energy Systems offers the Master LV as the battery management controller for systems with lower voltages.

CHARGERS & LOADS

Charger

DC MOTOR 12 Vdc - 96 Vdc

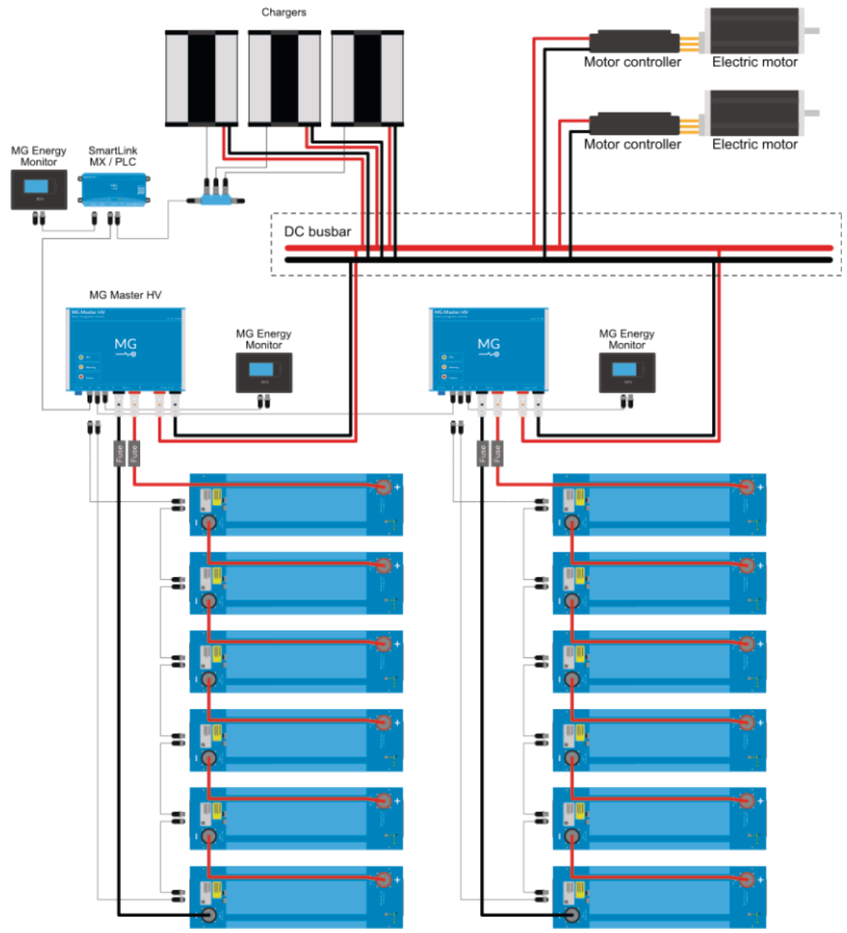
Inverter

DC PUMP 12 Vdc - 96 Vdc

DC Solar

LED

144 Vdc PROPULSION SYSTEM EXAMPLE



ACCESS TO DATA

DIAGNOSTIC TOOL

Battery system diagnostics are important during commissioning, system testing, service, maintenance and troubleshooting. The diagnostic tool provides all the detailed information about the battery system. Main values, like voltage, current and State-Of-Charge can be viewed and logged to a file. It shows other details, such as temperature sensor data and firmware version. In addition, daily reports, history values and stored events can be accessed from the Master. To create more flexibility, settings can be configured, for example CAN-Bus protocol selection or adding a function to a dedicated output.

EVENT LOGGING

The MG Master HV stores information on an internal memory with daily reports and special events, such as fail-safe triggers that have occurred. The recorded information can be extracted from the MG Master HV and saved to a file with the MG Diagnostic Tool. Daily reports will be stored with the following information: uptime, energy charged, energy discharged, average cell temperature, highest cell voltage, lowest cell voltage, highest cell temperature, and lowest cell temperature.

ENERGY PORTAL

Remotely monitor and control your battery system with the MG Energy Portal. This web-based platform gives direct insight into all relevant data and essential battery parameters of your installation. It shows historical battery usage and the performance of each individual battery.

ENERGY MONITOR

This high resolution display with touchscreen shows all important battery parameters at a glance. It can also be used to configure and diagnose your battery system with the option to use it as a gateway for the MG Energy Portal.

SMARTLINK

Use the SmartLink MX or PLC for battery systems with two or more MG Masters. The SmartLink collects and combines the data from all the MG Masters in your battery system. It transmits the combined data on to the CAN-Bus and makes this data available for third party devices. Furthermore, the MG SmartLink provides the necessary controls to start, stop and reset the battery system.

REDUNDANT SYSTEM SETUP

Another unique feature of the Master HV is the ability to create a redundant battery system. In order to achieve this, configure two or more MG Master HVs in “Combined mode”. The advantages of multiple Master HVs in combined mode are larger scalable storage systems and redundancy of your battery bank. This ensures that the battery system will always be operational and communication and power to the charger and loads will be maintained. In some applications it is required to have a redundant battery bank, for example in propulsion systems for commercial vessels.

REDUNDANT SYSTEM EXAMPLE