- Firmware Changelog -

MG Master HV 900V/300A
MG Master HV 900V/500A

MG Energy Systems B.V.

To update the Master HV, install the Diagnostic tool from the MG Download Center and follow instructions given by the Diagnostic tool.

Latest release:
Master HV firmware: Version 1.28
MG Diagnostic Tool: Version 3.11
https://downloads.mgenergysystems.eu/diagnostic-tool/

v01.28 - 09-09-2024
Changes:

- *Added general purpose input 1 option "Emergency Mode". This can be required for regulations. When emergency input is active, the external CAN-bus communication time-out is disabled and charge allowed is disabled.*
- *Added support for new battery types.*
- *Updated battery firmware update process to support different processor types.*
- *Updated saving tracked data. Saving tracked data when an fail-safe condition is triggered.*
- *Added RS230 Battery processors self-tests monitoring.*
- *Updated battery registration process on start-up. Previously versions registration of RS-batteries could sometimes get in conflict, resulting in fail-safe.*
- *Updated data request handling from Diagnostic tool towards Master. Request is rejected/stopped when, start-up or shutdown is pending.*
- *Added support for different RS-Batteries in a system, different capacities but same number of cells. Lowest capacity will be used for calculations.*
- *Updated LFP Battery 24V 230Ah and 280Ah cell temperature monitoring. Based on overall batteries cell temperatures, a temperature that deviates will be excluded from the monitoring process but still visible in the Diagnostic tool and Energy monitor. In case a cell temperature deviates, likely an sensor defect, contact the dealer for repair. When a battery has more than 2 cell temperatures that deviate, the master will go to fail-safe mode.*
- *Added LFP Battery 24V cell temperature deviation monitoring.*
- *Updated/increased external CAN-bus "HV J1939 protocol" communication time-out values, see master manual.*
- *Updated watchdog clocks source for performance optimization.*
- *Updated handling required discharge/charge energy after fully charge/discharge condition is detected to enable the charge/discharge again. After fully charge more discharge energy was required than expected. Note: before charge/discharge is enabled again also depends on voltages, see battery manual – boundary limits.*

v01.27 - 20-02-2024
Changes:

- *Fixed issue where random CAN-bus message reception was lost due to unexpected internal task handling (introduced in version 1.26).*

v01.26 - 06-02-2024
Changes:

- *Updated pre-charging process according to the required voltage. Lower voltage, longer pre-charge time. Highest voltage, no changes.*
- *Updated HE batteries balance algorithm. Decreased idle time before balance and added always balance condition when cell voltage deviation becomes higher than 25mV.*
- *Updated NMEA2000 services.*
- *Updated MG NMEA2000 MGREGS statuses periodically time and on change condition. See communication guide.*
- *Updated Secondary boot loader, fixed required delay to restart batteries.*
- *Fixed SOH calculation for Battery RS-24S2P096*

v01.25 - 13-07-2023
Changes:
- *Fixed NMEA2000 SOH data handling. Note: SOH only available for RS-batteries..*
- *Added Master supported current monitoring.*
- *Added master current overload detected to VE statuses -> VE_REG_BMS_FLAGS:*
  - Alarm high current, bit 29;
- *Updated proper setting combinations handling.*

v01.24 - 25-04-2023
Changes:
- *Added support for new battery types.*
- *Added new master events:*
  - Number of batteries not supported;
  - Battery leakage detected;
  - Broken fuse detected.
- *Added RS battery leakage detection monitoring.*
- *Added leakage detected warning flag.*
- *Added battery leakage and humidity warning to programmable relay option "Warning".*
- *Updated interlock detection by interrupt, preventing incorrect contactor failure events.*
- *Updated broadcasting VREG settings when changed by tool or app.*
- *Updated calculation for discharged energy today.*
- *Updated SMA general warning with all warnings that are not handled.*
- *Updated battery command sending by master for better command handling by battery.*
- *Added support for different LFP24V-Batteries in a system, different capacities but same number of cells. Lowest capacity will be used for calculations.*

v01.23 - 28-02-2023
Changes:
- *Updated LFP battery 24V firmware fixing occurrence of temperature measurement problems.*
- *Updated process of loading stored device name memory.*

v01.22 - 10-01-2023
Changes:
- *Added support to set device name by NMEA2000.*
- *Fixed SOC synchronization handling.*
- *Fixed event watchdog report storage.*
- *Updated parameter control (DVCC) supporting low current limits in relative big systems.*
- *Added new VE Error reports to VE_REG_BMS_ERROR:*
  - Interlock, 37;
  - Emergency stop, 38;
  - Communication timeout, 39;
  - Safety lock, 40;
  - Terminal over temperature, 41;
- *Added new VE statuses to VE_REG_BMS_FLAGS:*
  - Warning cell imbalance, bit 30;
  - Warning service request, bit 31;
- *Updated all batteries firmware, fixed rounding on negative temperatures.*
- *More code improvements, not affecting functionality.*

v01.21 - 22-08-2022
Changes:
- *Added support for new battery types.*
- *More code improvements, not affecting functionality.*

v01.20 - 28-04-2022
Changes:
- *New MG NMEA2000 external CAN-bus updating by Victron VRM support, note: Master HV needs to be updated to V1.20 or higher with the Diagnostic Tool before supported.*
- *Updated LFP battery discharged voltage levels for improved battery protection. Adjustment has negligible influence on available battery capacity.*
- *Added support for new battery types.*
- *Added support for positive and negative battery terminal temperature readings if supported by battery.*
- *Updated all battery types firmware with improved measurement data processing.*
- *Updated parameter control (DVCC) for more stability in ESS systems when fully charged.*
- *Fixed unwanted external charger detection when start button is pressed.*
- *More code improvements, not affecting functionality.*

v01.19 - 08-02-2022
Changes:

- *New MG NMEA2000 external CAN-bus protocol.*
- *New Victron Energy MG specific product codes used on MG NMEA2000 CAN-bus.*
- *Added support for new battery types.*
- *Updated status, warning and failure flags that are send on the external CAN-bus, see communication guide.*
- *More code improvements, not affecting functionality.*

v01.18 - 20-12-2021
Changes:
- *Fixed restart and firmware update failure.*

Known issue:
- *With version 1.17 it is not possible to update or restart the Master HV. Updating will require a special tool. Please contact support@mgenergysystems.eu for further instructions if this is the case.*

v01.17 - 08-12-2021
Changes:
- *Fixed external button control, starting system without user CAN-bus communication is possible.*
- *more code improvements, not affecting functionality.*

v01.16 - 16-08-2021
Changes:
- *Fixed battery strategy handling when changed in operating system.*
- *Fixed SOC storage when Master HV is in combined mode and received stop command.*
- *Updated external CAN-bus SOC synchronization handling. Not processed anymore when contactor is open.*
- *Fixed Powerfinn charger support in external CAN-bus protocol Visedo.*
- *Added External CAN-bus protocol VE-MG-NMEA2000 to support MG-registers that are send every 250ms.*
- *Added more status information to master events.*
- *more code improvements, not affecting functionality.*

v01.15 - 16-03-2021
Changes:
- *Added support for new RS battery types.*
- *Added batteries critical over charge current handling for:*
  - LFP batteries;
  - HE batteries;
  See battery manual for the conditions when the system will go to fail-safe shut down.
- *Added combined battery systems control in combination with the Victron(NMEA2000) CAN-bus protocol*
  - Start command can be send by CAN-bus.
  - Changed green status LED flashes:
    - Short pulse, service mode;
    - on/off pulse, waiting for command;
    - Long pulse, ready to start when output voltage is the same as the battery voltage.
- *Updated SOC handling while charging. The SOC is limited to 99,9% when charging is still allowed based on the cell voltages. This prevents Victron Energy generator start stop control to stop at 100% SOC when the battery is not fully charged.*
- *Updated CAN-bus error handling.*
- *Updated external button control:*
  - General purpose input 2 is used as system service-, key-switch, to activate operational mode;
  - General purpose input 3 is used as start-restart push button;
- *New firmware for all battery types, fixed CAN-bus bit timing and CAN-bus error handling.*
- *Minor fix on temperature parameter control (DVCC) when temperature is going back to operating area. Before this was be steps of 2 degree Celsius, now fixed to steps of 1 degree Celsius.*

v01.14 - 01-10-2020
Changes:
- *Fixed over current warning based on maximum supported MG Master current.*
- *Only for NMC and RS batteries, added battery humidity warning.*
- *Updated Visedo CAN-bus warning flag, added high battery humidity.*
- *Renamed battery strategy "Default" to "Economic".*
- ***Removed** start/stop/restart function by default if external CAN-bus protocol is at "None". After firmware update, general purpose input 2 and 3 have to be configured.*
- *Added setting for the general purpose inputs 2 and 3 to be configured as start/stop/restart function. This setting isn't supported in combination with the external CAN-bus protocol set at Visedo.*

v01.13 - 23-06-2020
Changes:

- *Added support for new battery types.*
- *Added settings for maximum charge and discharge current. This setting will be used by the parameter control (DVCC).*
- *Updated High voltage contactors emergency stop handling.*
- *Added new master events:*
  - Current sensor failure;
  - System voltage measured by master outside configuration batteries voltage;
  - Master invalid measurements detected;
  - High internal master temperature;
  - Contactor warning;
  - Batteries current to high;
- *Added failsafe when critical over current charging is detected.*
- *Updated external 24V power supply check.*
- *Added internal current sensor hardware validation check.*
- *Updated warning LED control.*
- *Fixed minor bug, under voltage check on system startup to give charger time to start charging.*
- *Updated handling settings "battery strategy", on change there is NO master reboot required.*
- *Updated Time to Go calculation, faster response.*
- *Added SOH calculation, only active when there is a RS battery system connected.*
- *Added support for Powerfinn chargers CAN-bus control.*
- *Added external input handling:*
  Inputs can be configured as warning input and can be used for example as coolant liquid leakage detection.
  Input is represented by a status flag that is send by CAN-bus.
- *Updated user CAN-bus messages, see communication guide V2r8*
  - Added new message average cell voltage and average cell temperature;
  - Added data to message System measurements, SOH and TTG;
  - Updated status, warning and failure flags.
- *more code improvements, not affecting functionality.*

v01.12 - 30-12-2019
Changes:

- *Added support for new RS battery types.*

v01.11 - 28-11-2019
Changes:

- *Added support for new battery types.*
- *Added support for new hardware versions.*
- *Fixed bug on the balance control for the New LFP batteries with passive balance.*
- *Updated service warning flag handling.*
- *Fixed temperature measurement on RS batteries.*
- *Updated warning LED functionality.*

v01.10 - 10-09-2019
Changes:

- *Added new battery types.*
- *Added new events for Redundancy unit.*
- *Updated events related to contactor switching.*
- *more code improvements, not affecting functionality.*

v01.9 - 5-08-2019
Changes:

- *Added HE battery positive terminal temperature monitoring.*
- *Added RS battery terminals temperature monitoring.*
- *Updated DVCC, decrease charge and discharge current when highest terminal temperature comes above 64°C to 69°C.*
- *Updated new LFP battery balance control.*
- *Added RS default and performance mode.*
- *Added RS automatic SOC correction.*
- *Updated and added user CAN-bus warning and failure flags, see communication guide for updates..*
- *Updated contactor control.*
- *more code improvements, not affecting functionality.*