

19 Inch Shelf Kit

- Manual -

MG3000444

MG Energy Systems B.V.



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1 General

Before continuing please read the instructions in this chapter carefully and be sure the instructions are fully understood. If there are questions after reading the instructions please consult MG Energy Systems.

1.1 Document history

Table 1 - Document history

Rev.	Date	Changes	Revision author
1.0	18-09-2025	Initial.	F. Schothorst

1.2 Terms, abbreviations, and definition

Table 2 - Terms, abbreviations, and definitions

Battery cell	<i>Battery cell</i> ; the smallest building block in a battery, a chemical unit.
Battery module	<i>Battery module</i> ; is an assembly of submodules, BMS, fluid cooling and outer enclosure.
BMS	<i>Battery Management System</i> ; The BMS is the electronics that monitors the battery cell parameters to keep it within the operation specifications.
CAN-bus	<i>Controller Area Network bus</i> ; CAN-bus is a standard serial databus that provides data communication between two or more devices.
C-rate	<i>C-Rate</i> ; the current (A) used to charge/discharge the battery system divided by the rated ampèr-hours (Ah).
BOL	<i>Beginning-of-life</i> ; Typically used to indicate a value like the internal resistance at the beginning of life of the battery module.
EOL	<i>End-of-life</i> ; Typically used to indicate a value like the internal resistance at the end of life of the battery module.
DeviceNet	<i>DeviceNet</i> ; is a network protocol used in the automation industry to interconnect control devices for data exchange, standardised in the IEC 62026-3.
EMS	<i>Energy Management System</i> ; The EMS controls all power sources and consumers in a system.
HVIL	<i>High Voltage Interlock Loop</i> ; is a wire loop which is created for protection of pulling cables from the battery system while in operation. It shuts down the system when loop is not closed.
MSDS	<i>Material Safety Data Sheet</i> ; is a document that lists information relating to occupational safety and health for the use of various substances and products.
NMEA 2000	<i>National Marine Electronics Association's NMEA 2000</i> is a plug-and-play communications standard used for connecting marine sensors and display units within ships and boats, standardised in the IEC 61162-1.
PPS	<i>Propagation Prevention System</i> ; a fluid based protection system to prevent cell-to-cell and module-to-module propagation in case of a thermal runaway of one cell.
SoC	<i>State-of-Charge</i> ; is the remaining capacity in a battery cell or module in percent (%).
SoH	<i>State-of-Health</i> ; is a figure of merit of the condition of a battery (or a cell, or a battery pack), compared to its ideal conditions.

1.3 This revision

This revision replaces all previous revisions of this document. MG Energy Systems B.V. has made every effort to ensure that this document is complete and accurate at the time of writing. In accordance with our policy of continuous product improvement, all data in this document is subject to change or correction without prior notice.

1.4 Scope

This product manual contains technical description, installation, safety and commissioning instructions and other relevant information for the 19 Inch Shelf Kit in combination with the MG LFP battery series.

1.4.1 Document structure

This document is structured into three categories:

- System design: Guidelines and general recommendations for system integrators and designers.
- Installation, commissioning and maintenance: Procedures and instructions for installers and maintenance personnel.
- Operation: Instructions and procedures for general users.

1.5 Related documents

More related documents for the MG LFP battery module can be found on our [Download Center](#).

2 Safety instructions

2.1 Safety message level definition

Table 3 - Safety message levels overview



WARNING:

A hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION:

A hazardous situation which, if not avoided, could result in minor or moderate injury.



LIMITATION:

A limiting factor, which must be considered for safe use of the equipment.



ELECTRICAL HAZARD:

The possibility of electrical risks if instructions are not followed in a proper manner.



NOTICE:

- A potential situation which, if not avoided, could result in an undesirable result or state.
- A practice not related to personal injury.

2.2 User health and safety

2.2.1 General precautions

This product is designed and tested in accordance with international standards. The equipment should be used according the intended use only.



WARNING:

A battery is a permanent energy source which cannot be turned off.



ELECTRICAL HAZARD:

- Wear applicable personal protective equipment when working on a battery system.
- Use insulated tools when working on a battery system.
- Make sure the local health and safety regulations for working on battery systems are followed.

2.2.2 Qualifications and training

The personnel responsible for the assembly, operation, inspection, and maintenance of the battery system must be appropriately qualified. The purchasing company is responsible for:

- Defining the responsibilities and competency of all personnel working with this product and all relevant systems.
- Providing instruction and training.
- Ensuring that the contents of the operating and safety instructions have been fully understood by the personnel.
- Ensuring that the system is installed in compliance to all local, federal codes or any other organism with jurisdiction over the system.

MG Energy Systems can, at the purchaser's request provide all necessary training or instructions required for proper installation and usage of the system.

2.2.3 Non-compliance risks

Failure to comply with all safety precautions can result in the following conditions:

- Death or serious injury due to electrical, mechanical, and chemical influences.
- Environmental damage due to the leakage of dangerous materials.
- Product damage.
- Property damage.
- Loss of all claims for damages.

2.2.4 Risk assessment

For every integration of the battery system it might be applicable, depending on the application, to perform a risk assessment.

Goal of the risk assessment is to identify the hazards and determine the corresponding risks for the particular application.

The following topics need to be addressed:

- Fire hazards (fire from the batteries, fire from external source etc.)
- Environmental hazards (moisture, water ingress, vibration, heat etc.)
- Electrical hazards (short-circuit, cable dimensioning, cable routing etc.)
- Installation and operational hazards (lifting, communication, power loss etc.)

2.2.5 Unacceptable modes of operation

The operational reliability of this product is only guaranteed when it is used as intended. The operating limits on the identification tag and in the data sheet may not be exceeded under any circumstances. If the identification tag is missing or worn, contact MG Energy Systems B.V. for specific instructions.



WARNING:

The battery modules must be used in combination with a [MG Master HV](#) or [MG Master LV](#).

3 Transport, Storage and unpacking

For transport, storage and unpacking check the LFP manual for details.

3.1 Scope of delivery

The scope of delivery is as following:

- LFP304 19 Inch shelf
- LFP304 front clamp
- Quick installation guide

Not included are:

- MG LFP304 battery modules; **MGLFP244304**
- Master HV 19 Inch 750V/160A; **MGMHV750160**
- MG Energy Monitor; **MGEMD010001**
- MG SmartLink MX; **MGSLM48001**
- Monitor & Control Mounting Kit; **MG2000170**
- **Fuses and cabling;**

4 General description

The 19 Inch shelf kit is an easy to install shelf for a standard 19 inch rack. This shelf can support up to two MG 24V/304Ah LFP SLP batteries. The design is made to be stackable in a 19 inch rack. With use of a Master HV 19 Inch a system of 94kWh can be setup very easily.



NOTICE:

- The 19 inch solution is only made for use in stationary applications.
-

4.1 Battery systems components

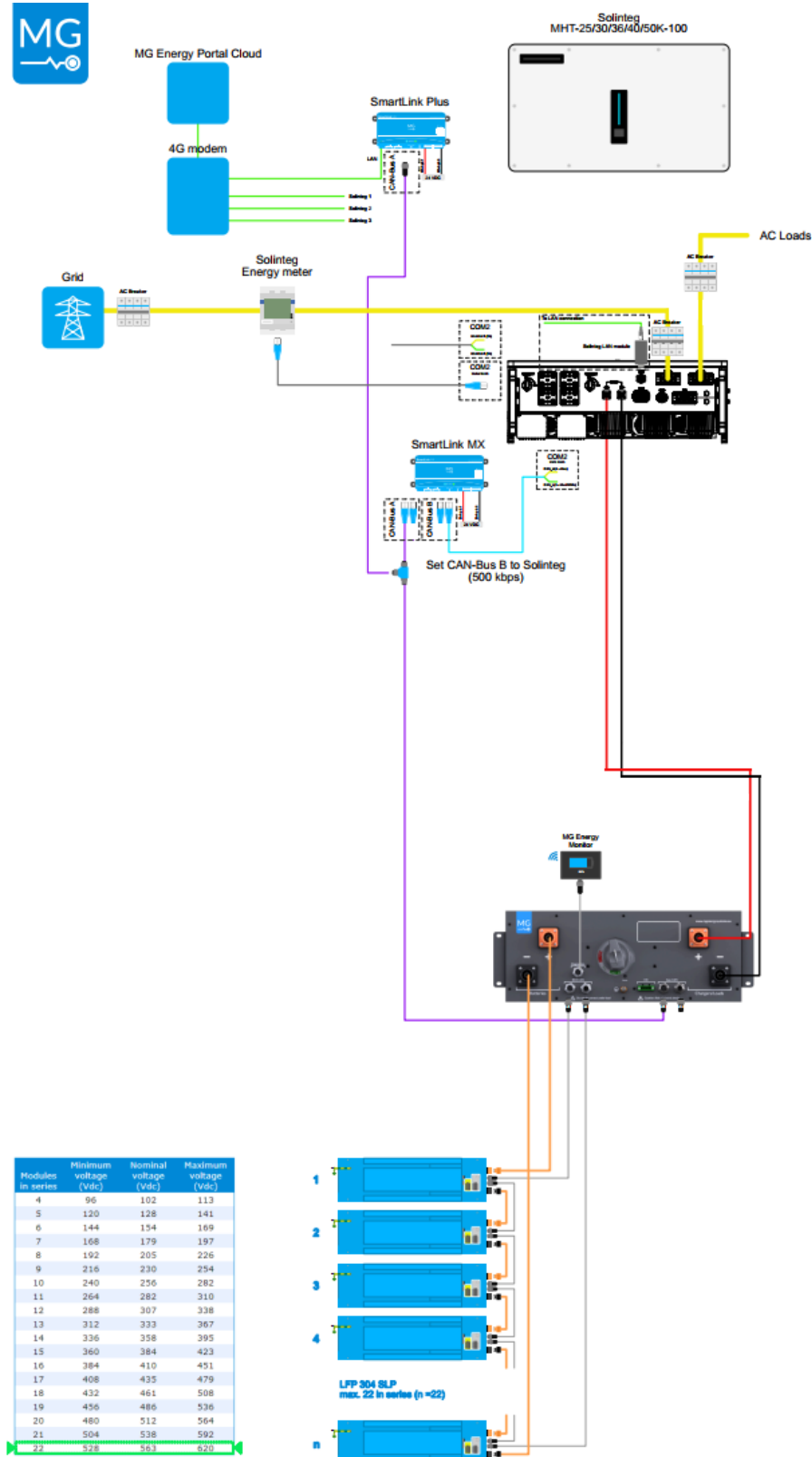
A 19 inch rack battery system consists of the following components:

- One or more [MG LFP SLP battery modules](#) of the same type;
- One Master unit;
 - [MG Master LV](#) or [MG Master HV](#) battery management system; Details of these battery management controllers can be found in their separate description documents;
 - **MG Master HV 19 Inch 750V/160A**
 - When using this Master unit, a minimum of 14 SLP batteries are needed, see MG Master HV 19 Inch manual for details.
- [MG Energy Monitor](#) (optional);
- [MG SmartLink MX](#) for parallel redundant control (optional);

4.2 Example application

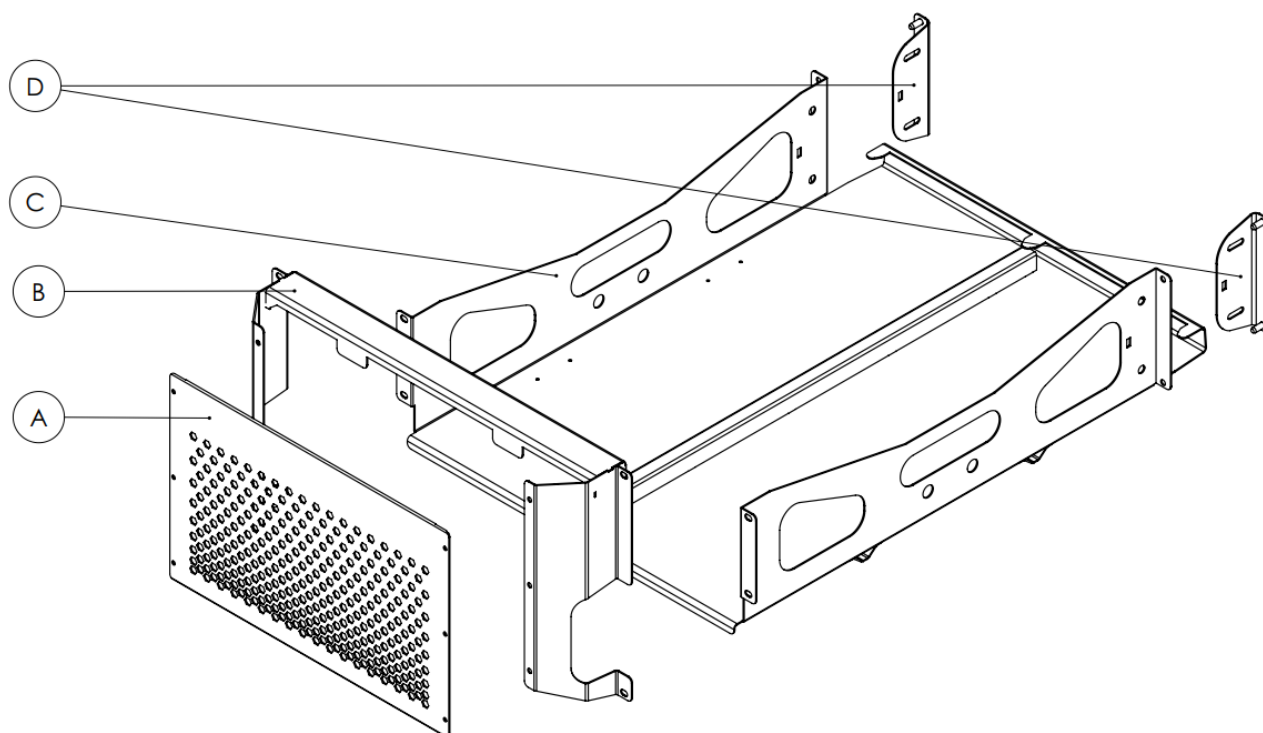
The MG 24V/304Ah LFP SLP batteries mounted in a 19 inch rack with a shelf kit has the ability to easily scale up for an ESS system with a hybrid solar inverter shown in the example below.

A **Master HV 19 Inch 750V/160A** makes the system complete and able to connect straight to an inverter.



5 Overview

This drawing shows an overview of the LFP 19 Inch Shelf Kit.



Part	Description
A	Front panel
B	Front clamp
C	Shelf
D	Shelf rear mounting clamps

6 Integration requirements and instructions

This chapter describes the integration requirements and instruction. Read this chapter carefully.

6.1 Risk assessment

Integration of a battery system requires in any case an assessment of the risks. Depending on the application, specific rules might apply. For details consult the LFP battery manual.

6.2 Location

The location of the battery system needs special attention, since some regulatory categorize Lithium-Ion battery systems as hazardous. Check for the local rules for the requirements of the battery system location in the used application.

General recommendations and requirements for the battery space with respect to the MG LFP series battery module are as following:

- Make sure the battery space is in accordance with the applicable rules.
- Keep the battery string connection cables as short as possible.
- Ensure that the equipment is used under the correct operating conditions.

6.2.1 Thermal management

The MG LFP battery modules are air cooled (convection). Therefore ambient temperature directly affects the battery module temperature.

- Make sure there is sufficient air flow in the battery space to dispose the heat rejected by the batteries and/or other equipment.
- The most optimized ambient temperature for the batteries is around 25 °C.



NOTICE:

Take into account the heat rejection of other equipment in the same space of the batteries.



NOTICE:

A significant decrease of cycle life will occur when the battery modules are used at high ambient temperatures.

If forced air ventilation is used for the battery room please make sure the environmental specifications, given in chapter 13 of the LFP battery manual, are met. Temperature difference should in no way cause condensation on the battery module nor on other parts of the battery room.

6.3 Systems design

Different kind of battery system configurations can be created because of the modular design. A 19 inch rack can contain a Master HV 19 Inch and a MG Energy Monitor with MG SmartLink MX.



A 19 Inch Shelf Kit can support two 24V LFP SLP battery modules. Battery capacity can be increased by adding more shelves. It is possible to increase the capacity by designing multiple battery banks and connect them in parallel on to a bus bar.

6.3.1 System requirements

Carefully consider stated requirements



NOTICE:

A 19 inch rack must consist of a 4 post version, the shelf is mounted in all four corners



NOTICE:

Take into account the load capacity of the 19 inch rack.
One loaded 19 Inch Shelf Kit with two MG 24V 304Ah LFP SLP battery modules is 120 kg.



NOTICE:

A fully loaded 19 inch rack can exert a relative high force on the ground/floor.
Consider placement and load bearing capacity of the location where the battery systems is placed.



NOTICE:

When using 19 inch racks with a height of 28U or more (4 levels of shelf's with battery modules) consider anchoring the rack to a secure wall or floor.



NOTICE:

When using an enclosed type 19 inch cabinet consult the battery manual for heat development and add ventilation if necessary.

7 Installation

This chapter describes the installation instructions of the shelves in a 19 inch rack. Read this chapter carefully.

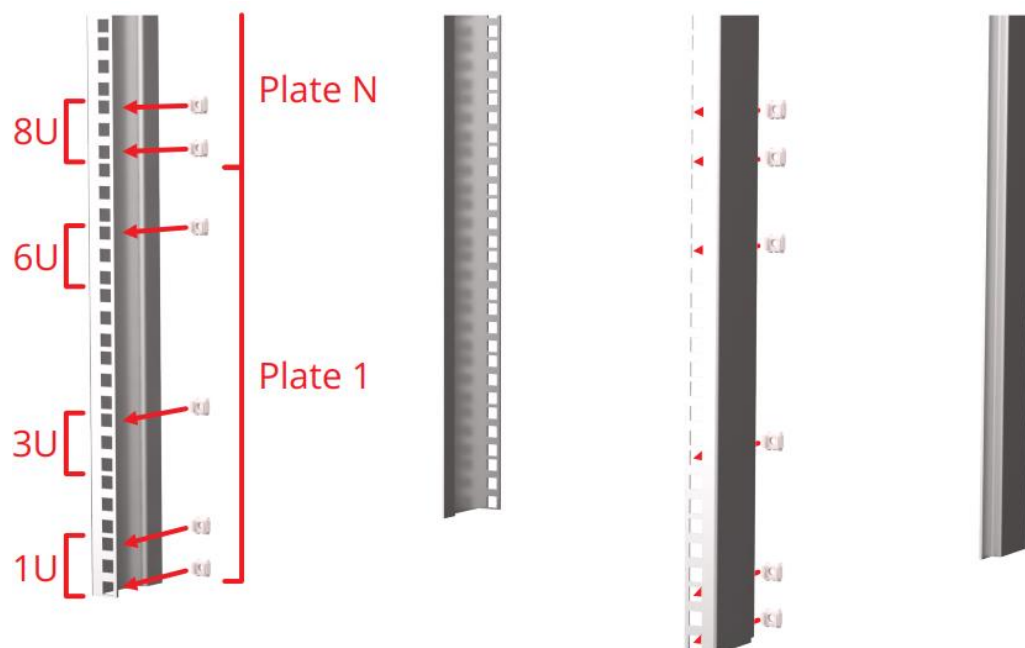
7.1 Electrical connections

For the electrical connection procedure refer to the **MG Master HV 19 Inch**, **MG LFP Series**, **MG Energy Monitor** and **MG SmartLink MX** manuals.

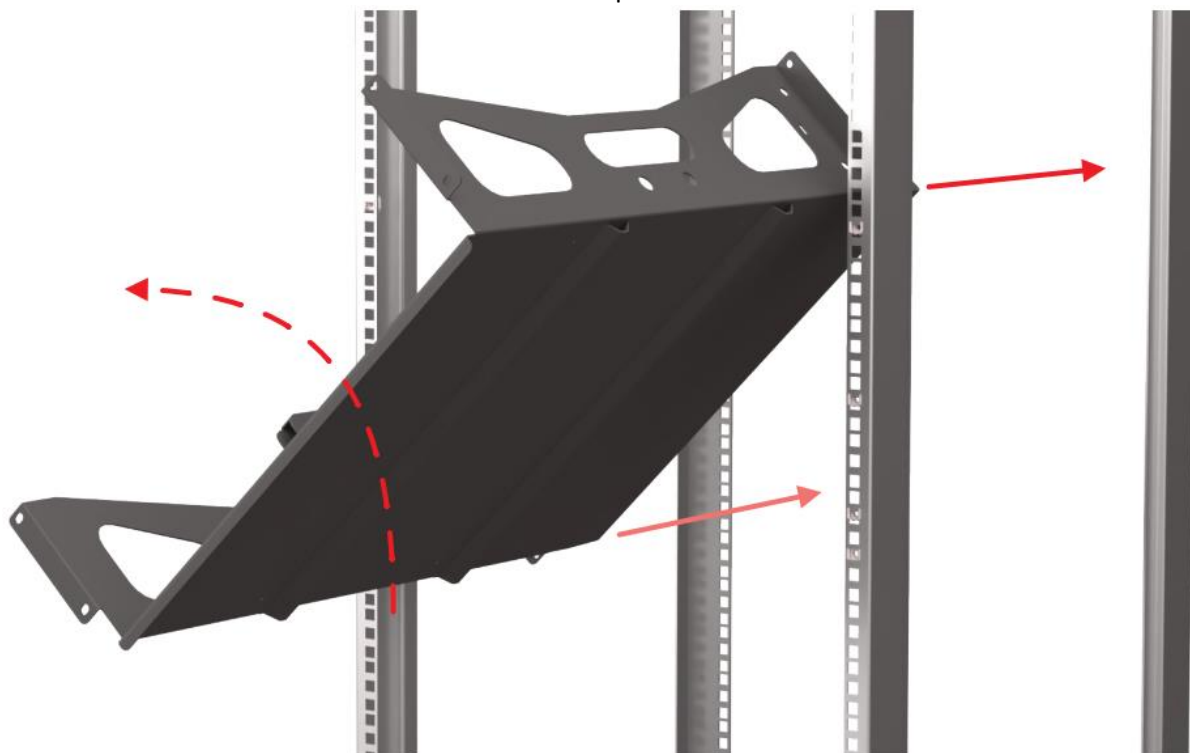
7.2 Installation

The installation procedure is as following:

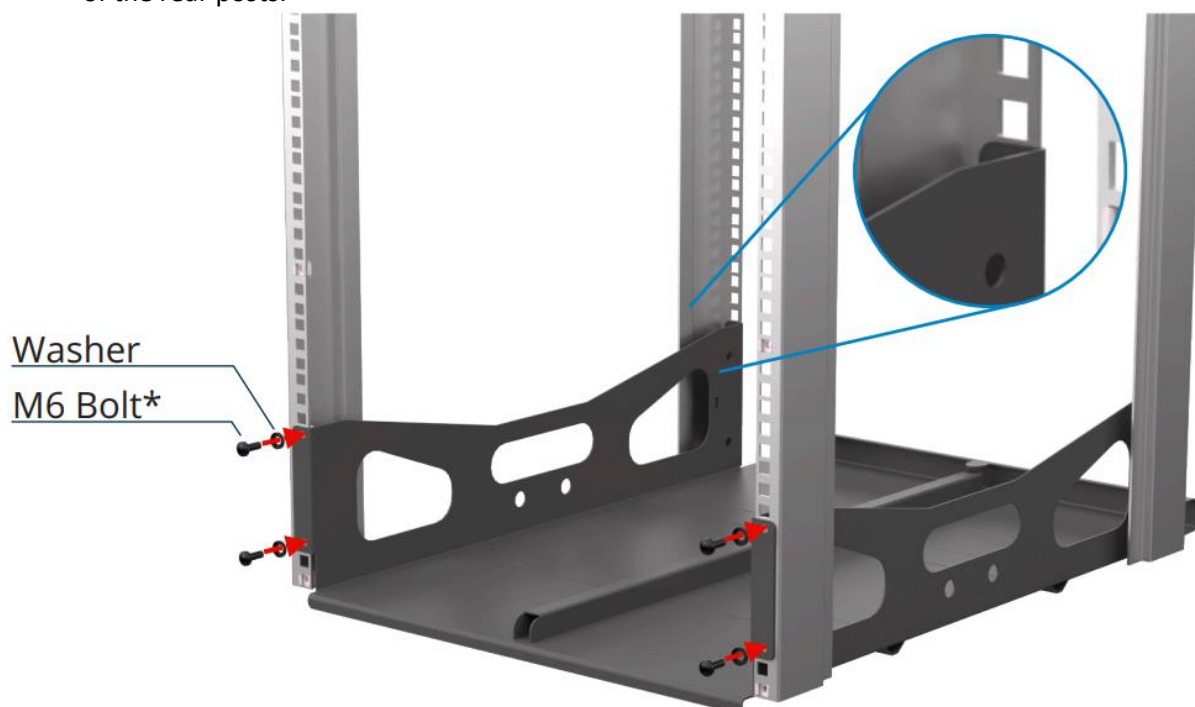
1. Count out the cage nuts for each shelf, 8 cage nuts for each shelf.



2. Rotate the 19 Inch Shelf to fit it between the posts.



3. Rotate the 19 Inch Shelf level again and mount the shelf, the back lib must be on the front side of the rear posts.



Use M6 bolt with classification of 4.8 by ISO 898-1, tighten to 4 Nm.

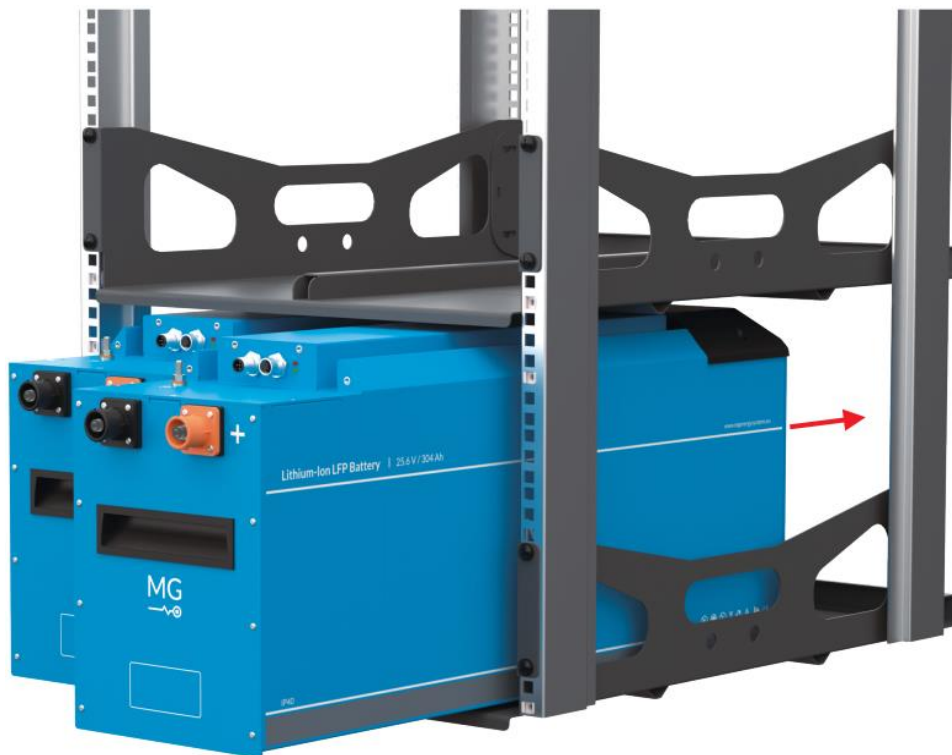
4. Insert the mounting plate from the back towards the front through the rear rack posts. It may be needed to lift the shelf up to insert the rear mounting plate.



A flat head screw driver can be used to pull the assembly tight. Screw the mounting plate in place with the assembly pulled tight, see detail image below.



5. When all shelves are mounted, slide in the batteries, starting at the bottom. Do not slide the batteries all the way to the back otherwise the CAN-bus connection cannot be made.



6. Connect the CAN-bus cables to the battery modules and then slide them all the way back.

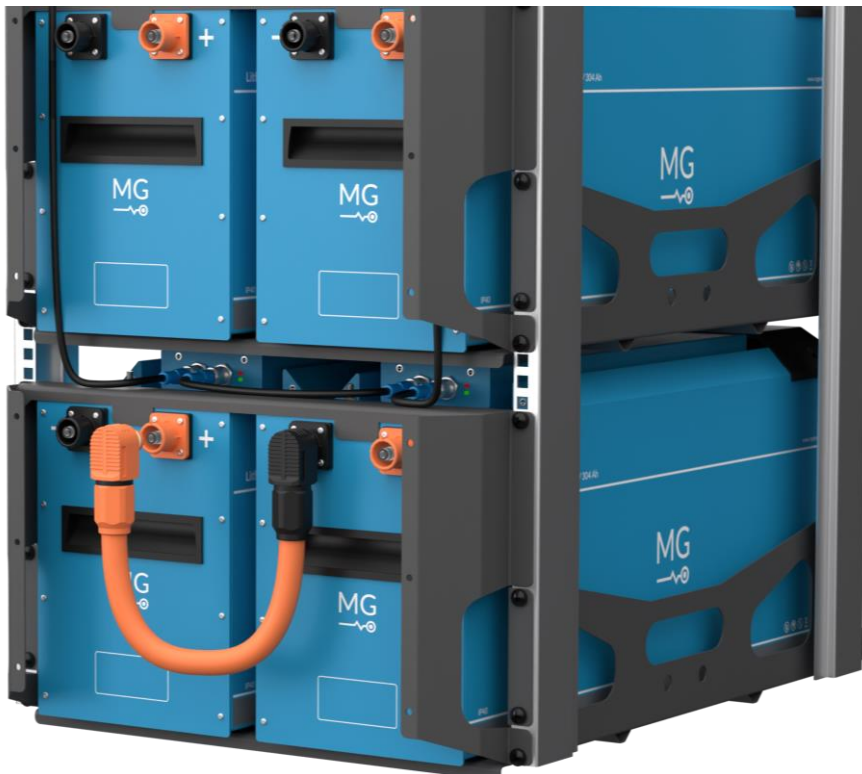


7. Repeat this process for all shelves.

8. Mount the front clamp as shown. Use M6 bolt with classification of 4.8 by ISO 898-1, tighten to 4 Nm.



9. Connect the power cables, make sure to seat the connector until the securing lock clicks.



10. Mount the front cover, tighten to 2 Nm.





8 Operation

For the operation of the E-Rack refer to the **MG Master HV 19 Inch**, **MG LFP Series**, **MG Energy Monitor** and **SmartLink MX** manuals.

9 Service

9.1 Maintenance

The device does not require specific maintenance.



ELECTRICAL HAZARD:

Do not pour or spray water directly onto the device. When cleaning the device, be aware that the connected battery string is a permanent energy source. Even when the device is turned off, the battery power connections might carry dangerous voltage levels.

9.1.1 Connections

It will suffice to check all connections once a year. Check if all connectors are mated correctly according to the instructions of the **MG Master HV 19 Inch**, **MG LFP Series**, **MG Energy Monitor** and **SmartLink MX** manuals.

9.1.2 Cleaning

Cleaning of the device is best done using a dry or slightly damp cloth. Limit the use of cleaning agents. If a cleaning agent is to be used, an electrically non-conductive cleaning agent is advised.

It is important to keep the battery spaces clean and tidy in order to minimise the need for cleaning. Prevent the use of moisture, vaporizing agents, oil, grease, etc. in the vicinity of the device.

10 CONTACT DETAILS

For specific questions please feel free to contact us.

10.1 Sales

For sales related questions, please contact a [local dealer](#).

For specific sales questions, please contact our sales team:

MG Sales team

sales@mgennergysystems.eu

10.2 Technical support

For technical support, please follow the steps below:

1. Consult the Manual.
Manual can be found on the [MG Download Center](#).
2. Watch the Installation Videos.
Videos can be found on [MG's You Tube channel](#).
3. Check Your Software Version.
Check and update the products software version to latest using the MG Connect App ([Apple](#) or [Android](#)) or [MG Diagnostic Tool](#).
4. Contact [MG Service Point](#).
5. Contact MG technical support.
Send an email with your technical questions to support@mgennergysystems.eu.