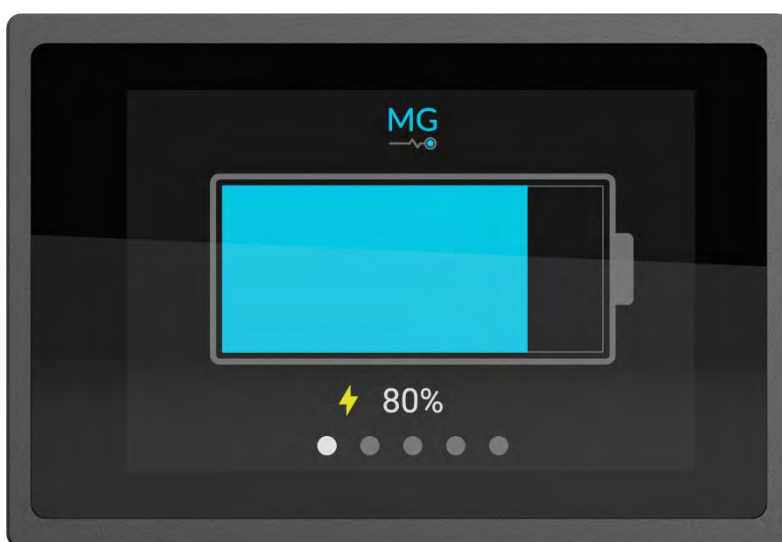


MG Energy Monitor

MGEMD010001

Manual EN



Version: 1.0
Date: 26-03-2020

Copyrights © 2020 MG Energy Systems B.V.
All Rights Reserved

This publication or parts thereof, may not be reproduced in any form, by any method, for any purpose.

For conditions of use and permission to use this manual for publication in other than the English language, contact MG Energy Systems B.V.

MG ENERGY SYSTEMS B.V. MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, REGARDING THESE MG ENERGY SYSTEMS B.V. PRODUCTS AND MAKES SUCH MG ENERGY SYSTEMS B.V. PRODUCTS AVAILABLE SOLELY ON AN “AS IS” BASIS.

IN NO EVENT SHALL MG ENERGY SYSTEMS B.V. BE LIABLE TO ANYONE FOR SPECIAL, COLLATERAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING OUT OF PURCHASE OR USE OF THESE MG ENERGY SYSTEMS B.V. PRODUCTS. THE SOLE AND EXCLUSIVE LIABILITY TO MG ENERGY SYSTEMS B.V., REGARDLESS OF THE FORM OF ACTION, SHALL NOT EXCEED THE PURCHASE PRICE OF THE MG ENERGY SYSTEMS B.V. PRODUCTS DESCRIBED HERE IN.

MG Energy Systems B.V. reserves the right to revise and improve its products as it sees fit. This publication describes the state of this product at the time of its publication and may not reflect the product at all times in the future.

1 Table of contents

1	GENERAL	5
1.1	Document history	5
1.2	Terms, definitions, and abbreviations	6
2	SAFETY INSTRUCTIONS.....	7
2.1	Safety message level definition	7
2.2	User health and safety	7
2.2.1	General precautions.....	7
2.2.2	Qualifications and training.....	8
2.2.3	Non-compliance risks.....	8
2.2.4	Unacceptable modes of operation	8
3	TRANSPORT, STORAGE, AND UNPACKING.....	9
3.1	Transport.....	9
3.2	Storage	9
3.3	Unpacking	9
3.3.1	Scope of delivery.....	9
4	GENERAL DESCRIPTION.....	10
4.1	Battery system components	10
4.2	Functional description	10
5	DEVICE MODELS.....	11
5.1	Models	11
5.2	Identification label	11
6	CONNECTIONS.....	12
6.1	General overview	12
6.2	Detailed connection overview	13
6.2.1	CAN-bus connectors details	13
6.2.2	External power connector.....	14
7	OPERATION	15
7.1	Main pages.....	15
7.1.1	Main page indication	15
7.1.2	Minimal start.....	15
7.1.3	Expanded start	16
7.1.4	Devices	16
7.1.5	Alarms	16

7.1.6	Settings.....	17
7.2	Pop-ups	17
7.3	Status icons	18
7.4	Using the touchscreen	19
8	INSTALLATION	20
8.1	Installation procedures	20
8.2	Mounting procedure	20
8.3	Electrical connection procedure	22
8.3.1	CAN-bus connection procedure	22
8.3.2	External power supply connection	25
9	SERVICE	26
9.1	Maintenance	26
9.1.1	Cleaning.....	26
9.2	Updating.....	27
10	TECHNICAL SPECIFICATIONS	28
10.1	Specifications	28
10.2	Dimensions.....	29
11	ORDERING INFORMATION	30
12	CONTACT DETAILS.....	31

1 GENERAL

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

1.1 Document history

Table 1 - Document history

Revision	Date	Changes	Revision author
0.1	26-03-2020	Initial document.	Diederik Glashouwer
1.0	15-05-2020	Minor changes.	Mark Scholten

1.2 Terms, definitions, and abbreviations

Battery system	A battery system consists of one or more battery modules in combination with one or more battery management controllers.
BMS	<i>Battery Management System</i> ; The BMS is the electronics that monitors the battery cell parameters to keep it within the operation specifications.
EMS	<i>Energy Management System</i> ; The EMS controls all power sources and consumers in a system.
CAN-bus	<i>Controller Area Network bus</i> ; CAN-bus is a standard serial data bus that provides data communication between two or more devices.
DeviceNet	A network protocol used in the automation industry to interconnect control devices for data exchange, standardised in the IEC 62026-3.
NMEA 2000	A plug-and-play communications standard used for connecting marine sensors and display units within ships and boats, standardised in the IEC 61162-1.
SoC	<i>State-Of-Charge</i> ; is the remaining capacity in a battery cell or module in percent (%).

2 SAFETY INSTRUCTIONS

2.1 Safety message level definition

Table 2 - Safety message levels overview



WARNING:

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



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.

ELECTRICAL HAZARD:

The product is used in combination with a permanent energy source (battery). Even if the equipment is switched off.



- Wear applicable personal protective equipment when working on a battery system.
- Use insulated tools during when working on a battery system.
- Make sure the locale 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 user company must do the following tasks:

- Define the responsibilities and competency of all personnel working on the battery system.
- Provide instruction and training.
- Ensure that the contents of the operating and safety instructions have been fully understood by the personnel.
- Check the local safety rules and guidelines they have higher priority over the manufacturer's specification in this manual in case of regulatory conflicts.

Instruction and training can be carried out by MG Energy Systems B.V. by order of the user company.

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 emission of hazardous substances.
- Product damage.
- Property damage.
- Loss of all claims for damages.

2.2.4 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 datasheet may not be exceeded under any circumstances. If the identification tag is missing or worn, contact MG Energy Systems B.V. for specific instructions.

3 TRANSPORT, STORAGE, AND UNPACKING

3.1 Transport

The Package and transport instructions provided by the manufacturer must be followed in all circumstances.

Notes on transport:

- Transport in original packaging.



NOTICE:

No liability can be accepted for damage during transport if the equipment is not transported in its original packaging or if the original packaging is opened before the destination is reached.

3.2 Storage

The storage instructions provided by the manufacturer must be followed in all circumstances.

Notes on storage:

- Store in a dry and clean location.

3.3 Unpacking

Follow these handling guidelines when handling the product to prevent damage during unpacking:

- Use care when handling the product.
- Leave protective caps and covers on the product until installation.

3.3.1 Scope of delivery

The scope of delivery is as following:

- | | |
|---------------------------------|-------------|
| ▪ MG Energy Monitor | MGEMD010001 |
| ▪ Termination resistor male | MGM12000010 |
| ▪ M12 Female 90° to RJ-45 Cable | MGM12001033 |

4 GENERAL DESCRIPTION

The MG Energy Monitor is an easy to use touchscreen display that shows the status of your MG Lithium-Ion battery system. The small size and high IP rating makes the MG Energy Monitor suitable for a wide range of applications. Scrolling through the status pages and changing settings is easily done by touch.

The Wi-Fi capabilities of the Energy Monitor allow it to communicate with the MG Energy Portal, an online portal that gives the user the possibility to remotely monitor their battery system.

4.1 Battery system components

MG's Lithium-Ion battery system consists of the following components:

- One or more MG Master HV or LV battery management systems.
- One or more Lithium-Ion battery modules, e.g. RS series, LFP series or HE series.
- Optionally an MG Energy Monitor.

Consult MG Energy Systems B.V. for compatibility between device types.

4.2 Functional description

The main purpose of the Energy Monitor is to show battery system information and parameters. Secondly it can be used as a gateway to send all the status information to MG's Energy Portal to monitor the battery system remotely.

MG's system philosophy is to have one master BMS, e.g. a MG Master LV or MG Master HV, per string of battery modules which communicates with one or more slave BMSs integrated in the Lithium-Ion battery module(s). The slave BMSs are monitoring the battery cell parameters like, cell voltage, cell temperature. Besides monitoring, the slave BMS also controls balancing of the cells based on the input of the master BMS.

These parameters are sent to the MG Master via a dedicated CAN-bus which collects all the data and monitors them. When an MG Energy Monitor is connected to the system it will receive parameters from both the master and all the batteries in the system. This information is then available on the Energy Monitor via a series of pages, some of which can be altered to precisely match the user's specific use case.

5 DEVICE MODELS

5.1 Models

There is one model of the MG Energy Monitor. The **MGEMD010001**.

5.2 Identification label

The identification label of the MG Energy Monitor is located at the top side of the device, as shown in figure 1.

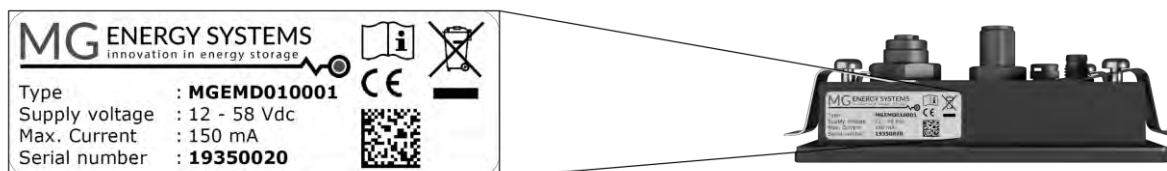






Figure 1 - Example identification label

The identifications label shown in figure 1 contains written information about the product. The explanation of the symbols used on the identification label is stated in Table 3.

Table 3 - Identification label logo explanation

	Declaration of conformity with health, safety, and environmental protection standards for products sold within the European Economic Area as per directive 2014/35/EU.
	Symbol indication the manual must be read before installation and use of the device.
	Device is treated according the Waste Electrical and Electronic Equipment (WEEE) Directive 2012/19/EU.
	GS1 data matrix type barcode containing detailed product information.

6 CONNECTIONS

This chapter shows an overview of the connections and parts of the MG Energy Monitor.

6.1 General overview

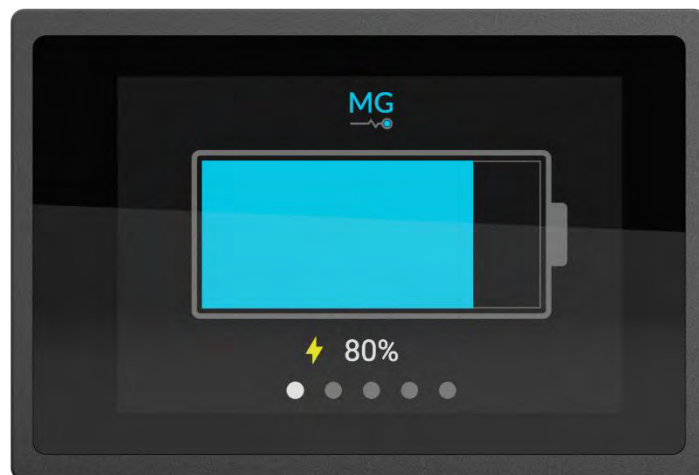


Figure 2 - Front view



Figure 3 - Rear view



Figure 4 - Top view

6.2 Detailed connection overview

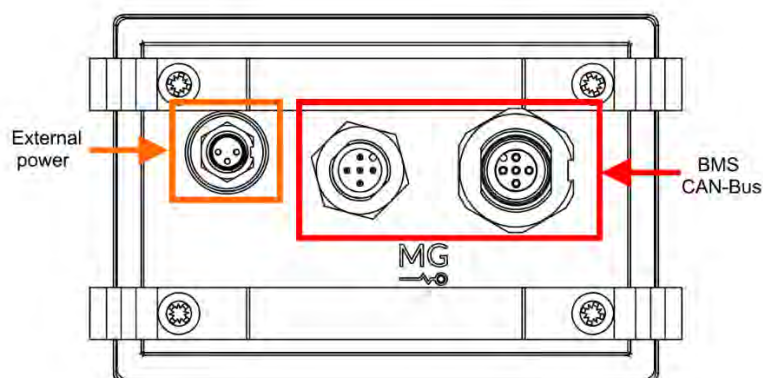


Figure 5 - Energy Monitor rear view

6.2.1 CAN-bus connectors details

The MG Energy Monitor communicates with and is powered by the connected system via CAN-bus. This is a dedicated CAN-bus where only MG battery modules of the same type or other MG devices may be connected.

6.2.1.1 Connector details

The CAN-bus connector of the Energy Monitor are circular M12 connectors with 5 positions and A-coded keying.

Table 4 - Circular M12 connector with 5 positions A-coded details

Pin	Description	Connector view
1	Shield	<p>M12, 5-pin, A-coded</p>   <p>Male Female</p>
2	V+	
3	GND	
4	CAN-H	
5	CAN-L	

Cables to be used are typically referred to as NMEA 2000 or DeviceNet compatible cables. The minimum requirements for cables are:

- Twisted pair connected to pins 4 and 5 for communication with a minimum wire cross sectional area of 0.2 mm² (24 AWG).
- Pair of conductors connected to pin 2 and 3 for power and HVIL with a minimum wire cross sectional area of 0.34 mm² (22 AWG).



NOTICE:

Do not use sensor/actor cables. They often don't have any twisted pairs and are therefore not suitable for this application.

6.2.2 External power connector

The external power connector is used to provide power to the Energy Monitor. This is optional and is only needed when multiple Energy Monitors are used in one system or long CAN-bus cable lengths are used.



NOTICE:

- The external power input and CAN-bus grounds are not electrically isolated.
- Connecting the external power supply is optional. In most use cases it will be powered from the CAN-bus.

6.2.2.1 Connector details

Table 5 shows the pinout of the external power connector.

Table 5 - MGEMD010001 power connectors

Pin	Name	Description	Specifications	Connector view (mating side)
1	VCC	Power supply input	12 ... 58 V	
2	-	Not fitted		
3	GND	Power supply return connection		
4	N/C	No connection		

7 OPERATION

This chapter describes the operation of the Energy Monitor and its capabilities.

7.1 Main pages

The Energy Monitor has a number of main pages the user can switch between, each page has a different function suited for a specific purpose. Generally, there are a number of default colours used to indicate certain states or properties of a value, namely:

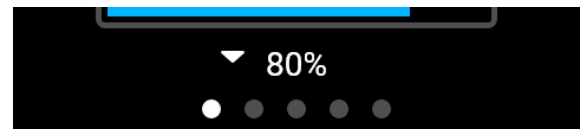
- White: variable or active item
- Grey: description or inactive item
- Blue: highlight, description or active button
- Orange: warning
- Red: error

On both of the start screens (see 7.1.2 and 7.1.3) an orange warning or red error icon can be shown, touching this icon will take the user to the relevant page. Here a status message will be shown indicating what is causing the issue.

In each of the following subsections one of the main pages will be described, to get a full overview of all the possible pages and their usage please refer to the User Guide.

7.1.1 Main page indication

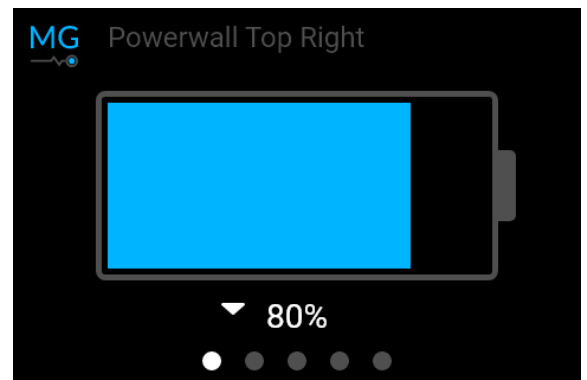
There are five main pages. These pages are indicated at the bottom of the screen with five dots. The white dot is the current page. Swiping to left or right will change from page.



7.1.2 Minimal start

This page shows a graphical representation of the state of charge of the system, as indicated by the amount of the battery icon that is filled in. Below this icon is the current state of charge as a percentage. If the system is currently charging or discharging this is indicated by an arrow next to the state of charge percentage.

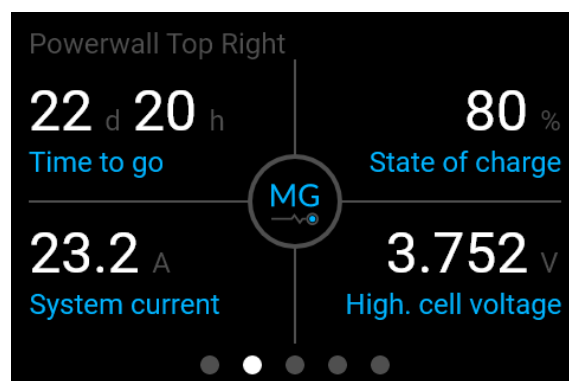
The minimal start page is one of the two options for the default start up screen of the Energy Monitor. From the factory, the monitor will use minimal start as the start screen.



7.1.3 Expanded start

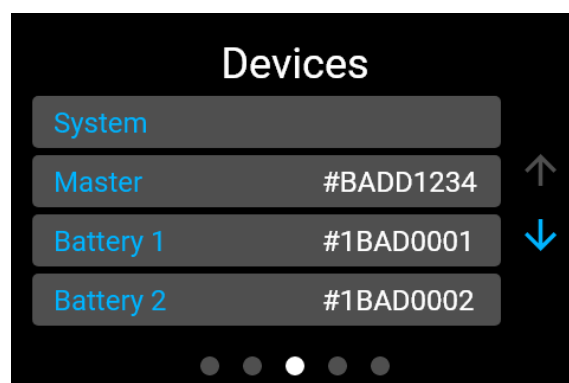
Expanded start shows 4 parameters in an easy to read way. The four parameters shown are customisable by the user, allowing the user to adapt the Energy Monitor to their specific use case. The parameters can be chosen from a list of values. Possible options include: state of charge, time to go, system voltage, system current and highest cell voltage in the system. To change one of the parameters all the user has to do is touch and hold down any of the 4 values for a short while. This will show a page where a new parameter can be selected.

The expanded start page is the second of the two options for the default start up screen of the Energy Monitor.



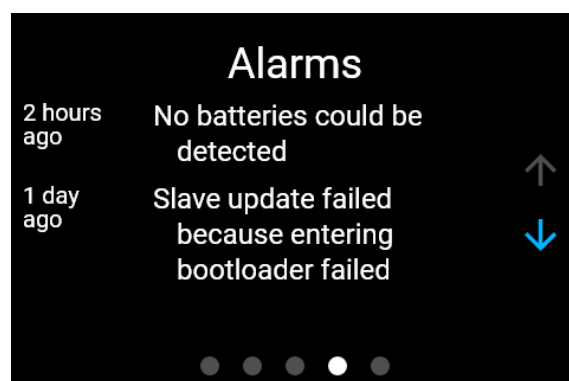
7.1.4 Devices

The Devices page shows an overview of all the devices in the connected system. By using the arrow buttons or swiping up or down it is possible to scroll through the devices. Clicking on any of the buttons will show specific information about the selected device. A number of variables will be visible on a Master page, as well as more detailed information about the device and its status. The page for battery units will show all cell voltages as well as all the values from the temperature sensors in the module. The system page shows the highest and lowest of these voltages and temperatures in the system, with a button to jump to the specific device. It will also show information about the connected system like the number of batteries in series or parallel.



7.1.5 Alarms

The Alarms page shows a list of all the errors that were reported by the connected MG Master unit. It is possible to scroll through the list by either using the buttons to the side or swiping up or down. Clicking on an event will show more info about that particular event, like what device or sensor triggered it as well as the time it occurred.

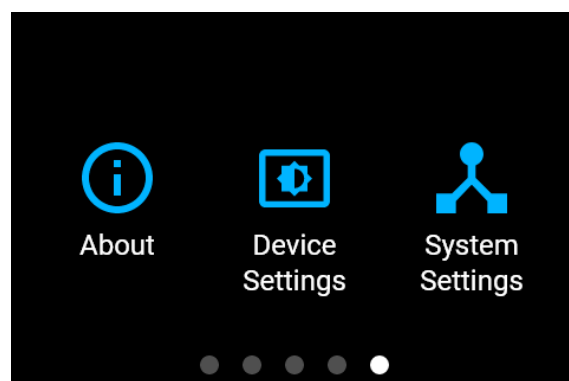


7.1.6 Settings

The Settings page offers the user the option to jump to 3 specific pages: About, Device settings and System settings.

7.1.6.1 About page

The About page shows information about the MG Energy Monitor being used. The information that can be found includes the device type, serial number, the status messages or the version numbers of the device. It also allows the user to name the device to allow for easy identification if multiple monitors and systems are used side by side. It also shows a tab where the user can reboot the monitor or change the permissions level. Changing this level will lock some settings behind a password to prevent unintended changes to the device and system configuration.



7.1.6.2 Device settings page

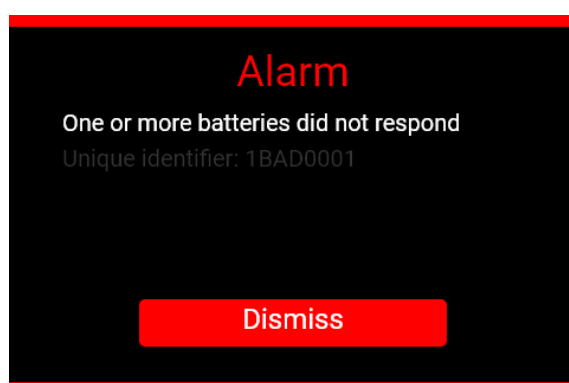
The Device settings page allows the user to change a range of parameters of the Energy Monitor, including the brightness or what wireless network it should connect to. Please refer to the User Guide for more in-depth information about all the possible settings.

7.1.6.3 System settings page

The System settings will show the user a list of settings of the connected MG Master device. Where available a more information button is shown on the individual settings pages, clicking this will bring up a page where the user can learn more about the setting in question. Please refer to the manual of the MG Master product being used before making any changes to any of the available settings. A full rundown of all the available settings and their effects can be found there.

7.2 Pop-ups











A pop-up will appear if an issue is encountered by either the Energy Monitor or the connected MG Master. This pop-up will show the user what kind of issue occurred and it will give a description of what caused the issue or what can be done to solve it. If an issue is resolved by itself the pop-up will automatically clear. If the issue is still active when the user has clicked the dismiss button an icon on the start screens will indicate that the issue is ongoing.



7.3 Status icons

A number of status icons can appear in the top right of each of the main pages. These give the user a quick indication about the status of the Energy Monitor.










Table 6 - Status icons

Icon	Function
	Wi-Fi connected
	Establishing Wi-Fi connection
	Wi-Fi connection failed
	Portal connected
	Establishing connection to portal
	Portal connection failed
	Full synchronisation detected
	Synchronising with the system failed
	Developer mode unlocked
	Demo mode enabled

7.4 Using the touchscreen

The Energy Monitor has a capacitive touchscreen allowing smooth and accurate user interaction. Using the touchscreen, the user can swipe left and right to switch between the different main pages described in section 7.1, while swiping up or down will scroll through lists. In Table 7 a number of common buttons are shown, these are used across the user interface of the Energy Monitor and are used for most of the user interactions. To get a detailed description of all possible interactions please refer to the User Guide.

Table 7 - Default buttons

Icon	Function
	Go back to previous page
	Scroll up or down on a list. Greyed out icons indicate the end of a list.
	Toggle button. Enables or disables a particular setting or function.
	Increment or decrement the value. When not available the icon will turn grey.
	Touch to show keyboard.
	Show or hide variable, used for fields like passwords.
	General purpose button, will have text indicating its function.
	Clicking this button will show a page where more information will be available.
	Icons indicating which one of the main pages the user is looking at.

8 INSTALLATION

Read the installation instructions in this chapter before commencing installation activities.

WARNING:

Before continuing make sure the following instructions are met:



- Before switching the device ON check whether the available voltage source conforms to the configuration settings of the product as described in the manual.
 - Ensure that the equipment is used under the correct operating conditions.
-

8.1 Installation procedures

Below a list of the basic installation procedures:

1. Mounting procedure of the device.
2. Electrical connection procedure of the device.

8.2 Mounting procedure

This procedure describes how to mount the Energy Monitor. Mounting is done in the following steps:

1. Make a cut-out in the panel were the Energy Monitor is to be mounted. The size of the cut-out should be 96 mm width and 61.5 mm height. See MG Energy Systems website for Energy Monitor panel mount cut-out.

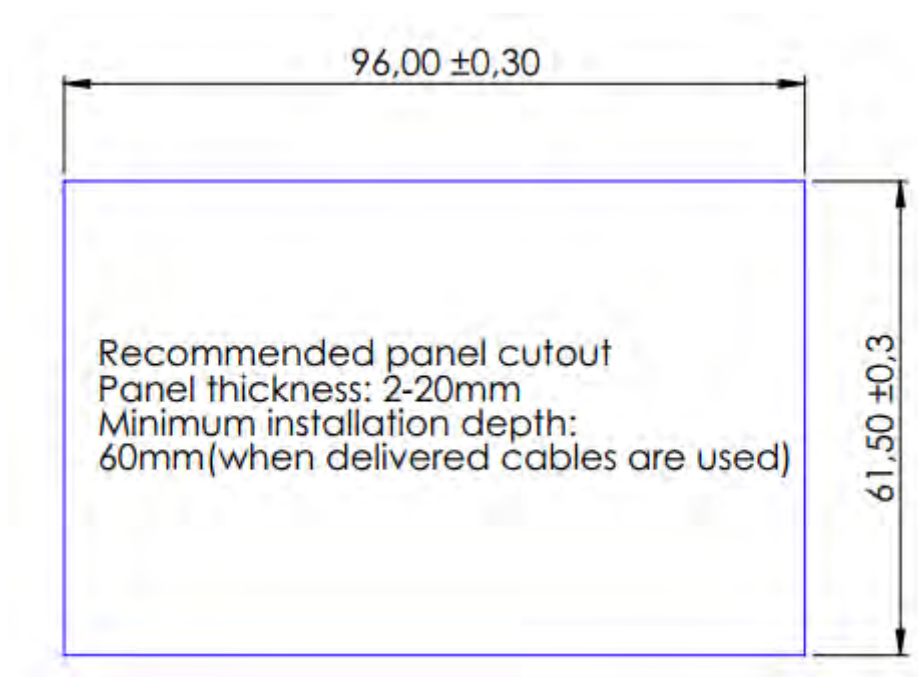


Figure 6 - Panel cut-out in mm

2. Remove the mounting screws and mounting strips from the back of the device.

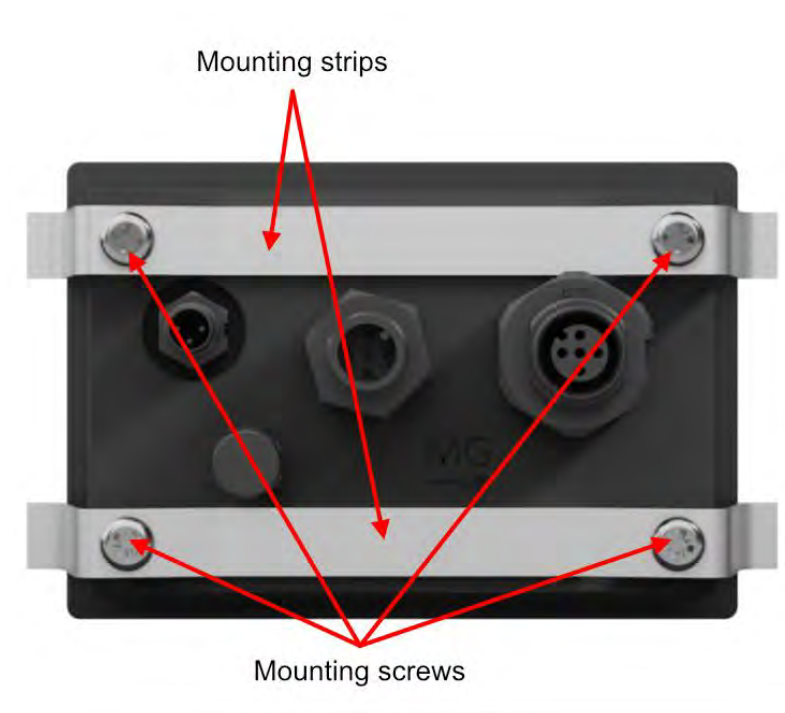


Figure 7 - Mounting details

3. Place the device in the cut-out.
4. Place the mounting strips back on the rear of the device and tighten each set of screws till the mounting strips are just flexing slightly. Do not over tighten.

8.3 Electrical connection procedure

The MG Energy monitor has several connections each for a dedicated purpose. Refer to chapter 0 for information about the available connections.

8.3.1 CAN-bus connection procedure

The display needs to be connected to the BMS CAN-bus of the battery system, please refer to the blue rectangles in Figure 8 and Figure 9 for what connectors to use on the different MG Master devices. This can either be RJ45 or M12 connectors. See chapter 11 for cables and adaptor cables information.

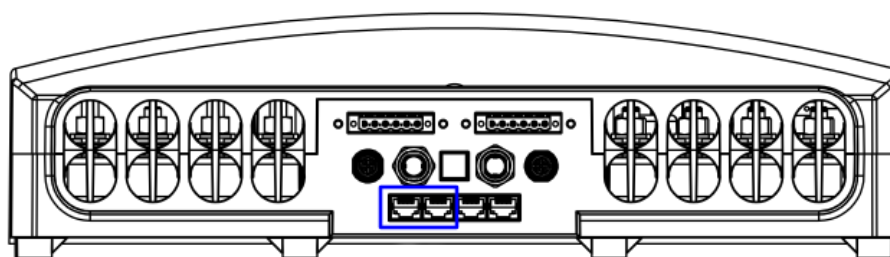


Figure 8 - MG Master LV

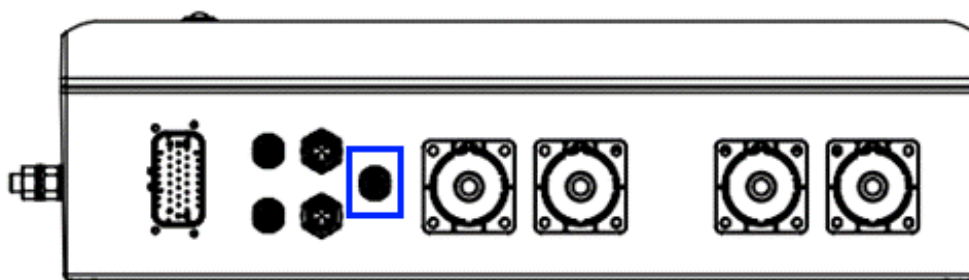


Figure 9 - MG Master HV

Preferably an Energy Monitor is at the end of a daisy chain closest to the master used, see Figure 10. When the Energy Monitor is at the end of a chain a termination resistor should be connected at the available M12 connector. There should always be two termination resistors on a CAN-bus system, in the case of the Master HV an termination resistor is already installed internally on the port that should be used for the Energy Monitor.

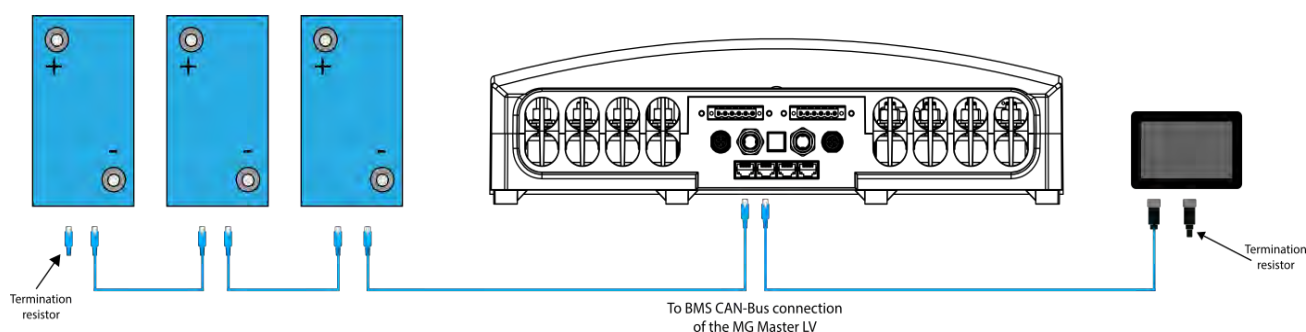
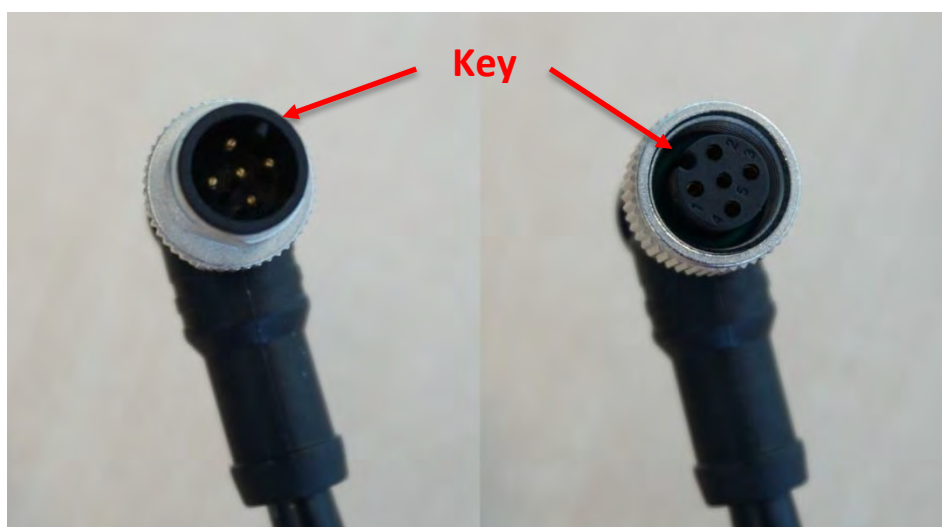
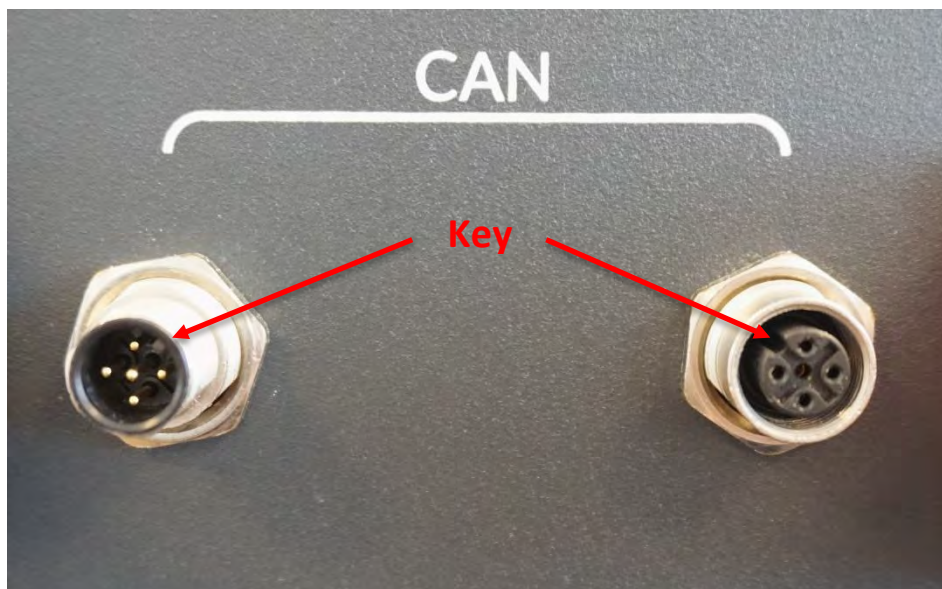


Figure 10 - MG Master LV daisy chain

Connection of the CAN-bus cable connectors or termination resistor is done in the following way:

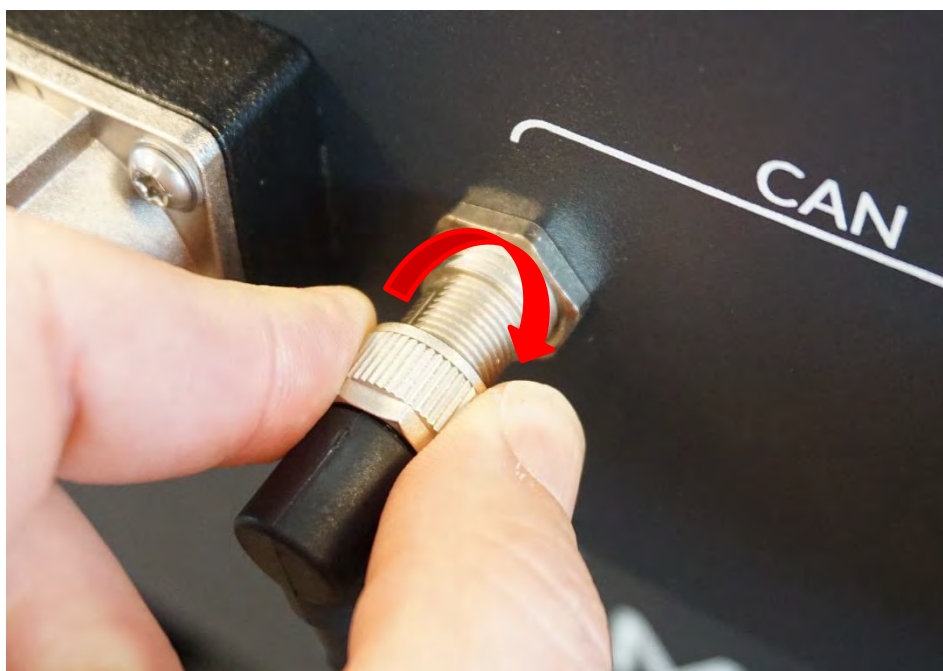
1. Locate the key in both connectors.



2. Bring the connections face of the cable connector up the device connector in such a way that the position of the key matches to that of the opposing connector.



3. Lock the connector by rotating the locking nut clockwise. Hand-tightened will be sufficient, do not use tooling to tighten.



4. Connectors in place.



Un-mating of the connector CAN-bus connectors is done by the above steps in opposite order.

8.3.2 External power supply connection

To connect external power to the Monitor, refer to the following steps:

1. Match alignment of the pins on both the connector and the cable.
2. Lock the connector by rotating the locking nut clockwise. Hand-tightened will be sufficient, do not use tooling to tighten.
3. Connector in place.



WARNING:

Make sure the voltage applied to the external power connector is in the range listed in the technical specifications (see section 10).

9 SERVICE

9.1 Maintenance

The device does not require maintenance. There are no user serviceable parts inside.

If an issue is encountered check if all connections are still correctly mated (see section 6.2). If this does not work try updating the Energy Monitor (see section 9.2) as well as the connected MG Master device (see device specific manual)

9.1.1 Cleaning

Cleaning of the device is best done using a dry or moist cloth. Limit the use of cleaning agents. If a cleaning agent is to be used, use of an electrically non-conductive cleaning agent is advised. When cleaning the touchscreen be aware that this might cause some unwanted interactions with the display. The working of the touchscreen will be impaired if the screen is wet, please dry before usage.

9.2 Updating

The firmware of the MG Energy Monitor can be updated using the MG Diagnostic Tool. Contact your supplier for more information.



WARNING:

Updating the Energy Monitor will take some time. Do not disconnect the device from the system or turn the system off while the update is in progress.



NOTICE:

The instructions in this section assumes the MG Diagnostics Tool software is already installed and configured on a computer. If in this section a reference is made to “computer”, the computer running the MG Diagnostics Tool software is meant with it.

For a full instruction of the MG Diagnostic Tool refer to the manual of the software.

Updating procedure

1. Connect a USB to CAN transceiver to the same CAN-Bus as the monitor.
2. Connect the USB-connector of the USB to CAN transceiver to the computer.
3. Start the MG Diagnostic Tool software on the computer.
4. Make sure the system is powered on and is remains on during the update. If this can't be maintained please connect external mower to the monitor.
5. Navigate to the spectator tab in the MG Diagnostic Tool.
6. Click the update button for the preferred Energy Monitor.
7. The MG Diagnostic Tool will ask for confirmation to update to the new firmware version.
8. The Energy Monitor will shut-down and perform the firmware update.
9. When the update was successful, the monitor will start-up automatically.

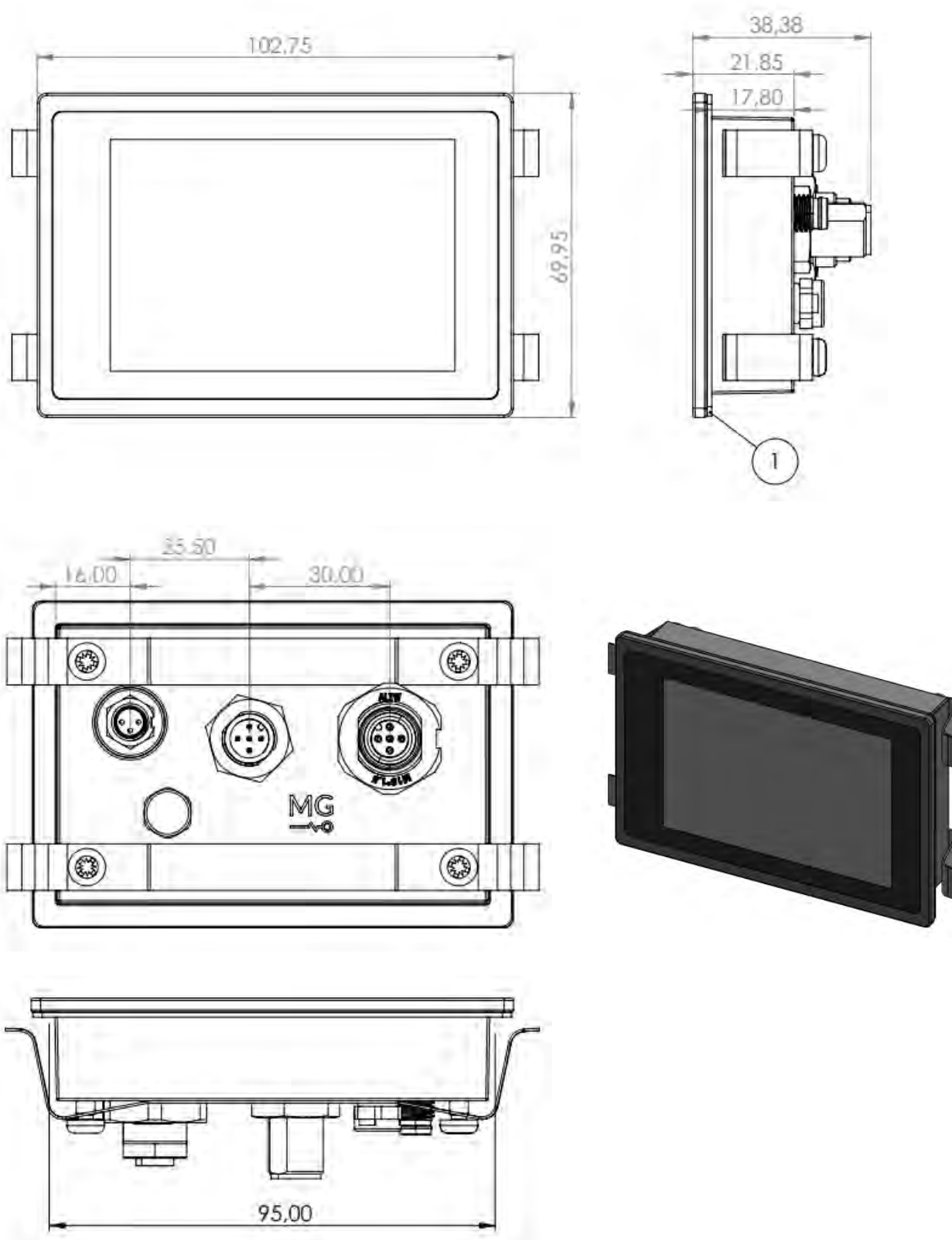
10 TECHNICAL SPECIFICATIONS

10.1 Specifications

Technical specifications	MG Energy Monitor MGEMD010001
Supply voltage	12 ... 58 VDC
Supply current	150mA @ 12V 90mA @ 24V External power connection available
Enclosure	
Material	ABS, glass
Dimensions	103 x 70 x 39 mm
Weight	150 g
LCD screen	
Type	TFT
Size	3,5" diagonal
Resolution	480 x 320
Colours	262K
Brightness	500 cd/m ²
Dimming	Yes
Wi-Fi connectivity	
Protocol	802,11 b/g/n
RF certification	SRRC, FCC, CE (RED), IC, NCC, KCC, TELEC (MIC)
Security	WPA/WPA2
Encryption	WEP/TKIP/AES
Environmental	
Operating temperature range	-20 °C to 50°C
Protection class	IP67
Connections	
Ext. Power connection	M8, 3 pins
CAN-Bus connection	M12, 5 pins
Standards	
EMC: Emission	NEN-EN-IEC 61000-6-3:2007/A1:2011
EMC: Immunity	NEN-EN-IEC 61000-6-2:2019
Low voltage directive	NEN-EN-IEC 60335-1:2012/A13:2017
RoHs	EN 50581:2012

10.2 Dimensions

Unless otherwise mentioned all dimensions are in mm.



11 ORDERING INFORMATION

This chapter describes the MG order numbers for spare-, service-, and replacement-parts for the MG Energy Monitor.

Article number	Name
MGM12001035	M12 CAN T-Splitter 3-way
MGM12001036	M12 CAN T-Splitter 4-way
MGM12001037	M12 CAN T-Splitter 6-way
MGM12001032	M12 CANOpen Female 0 deg to RJ45 2.5m
MGM12001033	M12 CANOpen Female 90 deg to RJ45 2.5m
MGM12001031	M12 CANOpen Male 0 deg to RJ45 2.5m
MGM12001034	M12 CANOpen Male 90 deg rot -90 deg to RJ45 1m
MGM12000020	M12 CANOpen Terminator Female
MGM12000010	M12 CANOpen Terminator Male
MGM12005002	M12 CANOpen cable 0 to 0 deg 0.5m
MGM12100002	M12 CANOpen cable 0 to 0 deg 10m
MGM12150002	M12 CANOpen cable 0 to 0 deg 15m
MGM12010002	M12 CANOpen cable 0 to 0 deg 1m
MGM12020002	M12 CANOpen cable 0 to 0 deg 2m
MGM12030002	M12 CANOpen cable 0 to 0 deg 3m
MGM12050002	M12 CANOpen cable 0 to 0 deg 5m
MGM12020003	M12 CANOpen cable 0 to 90 deg 2m
MGM12020004	M12 CANOpen cable 90 to 0 deg 2m
MGM12006001	M12 CANOpen cable 90 to 90 deg 0.6m
MGM12010001	M12 CANOpen cable 90 to 90 deg 1m
MGM12020001	M12 CANOpen cable 90 to 90 deg 2m
MGM12030001	M12 CANOpen cable 90 to 90 deg 3m
MGM12050001	M12 CANOpen cable 90 to 90 deg 5m
MGUSBCAN001	MG USB CAN Interface

12 CONTACT DETAILS

For specific questions please feel free to contact us.



MG Energy Systems B.V.

Foeke Sjoerdswei 3
NL-8914 BH Leeuwarden
The Netherlands

i : www.mgenergysystems.eu

e : info@mgenergysystems.eu

t : +31 (0) 58 750 89 47