NDS | DOMETIC

# POWER & CONTROL CHARGERS

## POWER SERVICE PLUS25, PLUS30, PLUS40, GOLD25-M, GOLD30-M, GOLD40-M

## Copyright

# English



## 1 Important notes

Please read these instructions carefully and follow all instructions, guidelines, and warnings included in this product manual in order to ensure that you install, use, and maintain the product properly at all times. These instructions MUST stay with this product.

By using the product, you hereby confirm that you have read all instructions, guidelines, and warnings carefully and that you understand and agree to abide by the terms and conditions as set forth herein. You agree to use this product only for the intended purpose and application and in accordance with the instructions, guidelines, and warnings as set forth in this product manual as well as in accordance with all applicable laws and regulations. A failure to read and follow the instructions and warnings set forth herein may result in an injury to yourself and others, damage to your product or damage to other property in the vicinity. This product manual, including the instructions, guidelines, and warnings, and related documentation, may be subject to changes and updates. For up-to-date product information, please visit documents.dometic.com.

## 2 Explanation of symbols

A signal word will identify safety messages and property damage messages, and also will indicate the degree or level of hazard seriousness.

**WARNING!**
Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

**CAUTION!**
Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

**NOTICE!**
Indicates a situation that, if not avoided, can result in property damage.

**NOTE** Supplementary information for operating the product.

# 3 Safety instructions

## General safety

**Also observe the safety instructions and stipulations issued by the vehicle manufacturer and authorized workshops**.

**WARNING! Electrocution hazard**

> Installation and removal of the battery charger may only be carried out by qualified personnel.
> Do not operate the device if it is visibly damaged.
> If this device's power cable is damaged, the power cable must be replaced by the manufacturer, a service agent or a similarly qualified person in order to prevent safety hazards.
> This device may only be repaired by qualified personnel. Improper repairs can lead to considerable hazards.
> If you disassemble the device:
  - Detach all connections.
  - Ensure that no voltage is present on any of the inputs and outputs.
> Do not use the device in wet conditions or submerge it in any liquid. Store the device in a dry place.
> Only use accessories that are recommended by the manufacturer.
> Do not modify or adapt any of the components in any way.
> Disconnect the device from the power supply:
  - Before each cleaning and maintenance
  - After every use
  - Before changing a fuse
  - Before carrying out electrical welding work or work on the electrical system

**WARNING! Health hazard**

> This device can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and know-ledge if they have been given supervision or instruction concerning use of the device in a safe way and understand the hazards involved.
> **Electrical devices are not toys.** Always keep and use the device out of the reach of very young children.
> Children must be supervised to ensure that they do not play with the device.
> Cleaning and user maintenance shall not be made by children without supervision.

**NOTICE! Damage hazard**

> Before start-up, check that the voltage specification on the data plate is the same as that of the power supply.
> Ensure that other objects **cannot** cause a short circuit at the contacts of the device.
> Ensure that the negative and positive poles **never** come into contact.
> Do not pull the plug out of the socket by the connection cable.
> Ensure that the connection to the mains complies with the national wiring regulations.
> Connect the battery charger only to a grounded socket.

## Installing the device safely

**DANGER! Explosion hazard**
Never mount the device in areas where there is a risk of gas or dust explosion.

**CAUTION! Risk of injury**
- Ensure that the device and the battery is standing firmly. The device and the battery must be set up and fastened in such a way that it cannot tip over or fall down.
- When positioning the device, ensure that all cables are suitably secured to avoid any form of trip hazard.

**NOTICE! Damage hazard**
- Do not place the battery charger near heat sources (heaters, direct sunlight, gas ovens, etc.).
- Set up the device in a dry location where it is protected against splashing water.

## Safety when connecting the device electrically

**DANGER! Electrocution hazard**
- **For installation on boats:** If electrical devices are incorrectly installed on boats, corrosion damage might occur. Have the device installed by a specialist (marine electrician).
- If you are working on electrical systems, ensure that there is somebody close at hand who can help you in emergencies.

**WARNING! Electrocution hazard**
- Observe the recommended cable cross-sections.
- Lay the cables so that they cannot be damaged by the doors or the hood. Crushed cables can lead to serious injury.

**NOTICE! Damage hazard**
- Use ductwork or cable ducts if it is necessary to lay cables through metal panels or other panels with sharp edges.
- Do **not** lay the 230 V mains cable and the 12 V⎓ cable in the same duct.
- Do **not** lay the cable so that it is loose or heavily kinked.
- Fasten the cables securely.
- Do not pull on the cables.

## Operating the device safely

**DANGER! Electrocution hazard**
- Do not touch exposed cables with your bare hands. This applies especially when operating the device from the AC mains.
- To be able to disconnect the device quickly from the AC power supply, the socket must be close to the device and be easily accessible.

**WARNING! Electrocution hazard**
Only use the device in closed, well-ventilated rooms.

**CAUTION! Explosion hazard**
Do not operate the device under the following conditions:
- In salty, wet or damp environments
- In the vicinity of corrosive fumes
- In the vicinity of combustible materials
- In areas where there is a danger of explosions

**CAUTION! Electrocution hazard**
> Before starting the device, ensure that the power supply line and the plug are dry and the plug is free from rust or dirt.
> Always disconnect the power supply when working on the device.
> Observe that parts of the device may still be under voltage even if the fuse has blown.
> Do not disconnect any cables when the device is still in use.

**NOTICE! Damage hazard**
> Ensure that the air inlets and outlets of the device are not covered.
> Ensure a good ventilation.
> Never pull the plug out of the socket by the connection cable.
> The device shall not be exposed to rain.

## Safety precautions when handling batteries

**WARNING! Fire hazard**
Only use rechargeable batteries.

**WARNING! Risk of injury**
> Batteries contain aggressive and caustic acids. Avoid battery fluid coming into contact with your body. If your skin does come into contact with battery fluid, wash that part of your body thoroughly with water. If you sustain any injuries from acids, contact a doctor immediately.
> When working on batteries, do not wear any metal objects such as watches or rings. Lead acid batteries can cause short circuits which can cause serious injuries.
> Only use insulated tools.
> Do not place any metal parts on the battery.
> Wear goggles and protective clothing when working on batteries. Do not touch your eyes when working on batteries.
> Do not use defective batteries.

**WARNING! Health hazard**
Keep the battery out of the reach of children.

**CAUTION! Electrocution hazard**
> Keep the battery away from water.
> Avoid short circuits.
> Avoid clothing rubbing against the battery.
> Wear antistatic clothing when handling the battery.

**CAUTION! Explosion hazard**

- Do not place the battery in areas with flammable liquids or gases.
- Never attempt to charge a frozen or defective battery. Place the battery in a frost-free area and wait until the battery has acclimatised to the ambient temperature. Then start the charging process.
- Do not smoke, use an open flame, or cause sparking near the engine or a battery.
- Keep the battery away from heat sources.

**NOTICE! Damage hazard**

- Prevent any metal parts from falling on the battery. This can cause sparks or short-circuit the battery and other electrical parts.
- Ensure that the polarity is correct when connecting the battery.
- Follow the instructions of the battery manufacturer and those of the manufacturer of the system or vehicle in which the battery is used.
- If the battery has to be removed, first disconnect the ground connection. Disconnect all connections and all consumers from the battery before removing it.
- Only store fully charged batteries. Recharge stored batteries regularly.
- Do not carry the battery by its terminals.

### Safety precautions when handling lithium batteries

**CAUTION! Risk of injury**

Only use batteries with integrated battery management system and cell balancing.

**NOTICE! Damage hazard**

- Only install the battery in environments with an ambient temperature of at least 0°C.
- Avoid deep discharge of the batteries.

### Safety precautions when handling lead acid batteries

**CAUTION! Health hazard**

The water-acid liquid inside the battery can evaporate and cause an acidic odor. Use the battery only in a well-ventilated area.

**NOTICE! Damage hazard**

- The battery is not sealed. Do not turn the battery on its side or upside down. Place the battery on a horizontal surface.
- Check the acid level for open lead acid batteries regularly.
- Immediately recharge deeply discharged lead acid batteries to avoid sulfation.

# 4 Scope of delivery

| Description | Quantity |
|---|---|
| Battery charger | 1 |
| Short operating manual | 1 |

# 5 Accessories

| Accessory | Ref. no. |
|---|---|
| IM12-150 | 9620008481 |

# 6 Intended use

**PLUS25, PLUS30 and PLUS40 only**: The battery charger is used to charge 1 or 2 house batteries. The battery charger uses DC voltage as a power source and supplies this to the connected house battery.

**GOLD25-M, GOLD30-M and GOLD40-M only**: The battery charger is used to charge 1 or 2 house batteries. The battery charger uses DC or AC voltage as a power source. AC is converted to DC voltage. DC is supplied by the battery charger to the house battery.

The battery charger enables the charging of lead acid, gel, AGM, and lithium (LiFePO4) batteries with a capacity of more than 75 Ah.

The charger is intended to be used in campervans and RVs.

The battery charger is **not** intended for charging the starting battery or for operation with a remote control.

This product is only suitable for the intended purpose and application in accordance with these instructions.

This manual provides information that is necessary for proper installation and/or operation of the product. Poor installation and/or improper operation or maintenance will result in unsatisfactory performance and a possible failure.

The manufacturer accepts no liability for any injury or damage to the product resulting from:

- Incorrect installation, assembly or connection, including excess voltage
- Incorrect maintenance or use of spare parts other than original spare parts provided by the manufacturer
- Alterations to the product without express permission from the manufacturer
- Use for purposes other than those described in this manual

Dometic reserves the right to change product appearance and product specifications.

# 7 Target group

The electrical installation and setup of the device must be performed by a qualified electrician who has demonstrated skill and knowledge related to the construction and operation of electrical equipment and installations, and who is familiar with the applicable regulations of the country in which the equipment is to be installed and/or used, and has received safety training to identify and avoid the hazards involved.

All other actions are intended also for non-professional users.

# 8 Technical description

The battery charger monitors the voltage and thereby the state of charge (SoC) of the house battery. The battery charger regulates the output current according to the requirements of the house battery and the amount of energy supplied. When charging a house battery, the battery charger consumes 13 mA.

## Functions

The battery charger provides the following functions:

- Charging with up to 40 Ah

- Efficiency of up to 92%
- 5-stage charging
- Selectable charging curve for AGM, Gel, Flooded, and Lithium (LiFePO4) batteries
- Auxiliary connection for 12 V devices
- A split-charge relay for separating the starting and house battery
- Compatible with Euro 6 vehicles with smart alternator
- Cooling fan speed regulation
- Overheating protection
- Fuses for circuit protection
- Alternator overload protection
- Overvoltage protection for solar modules
- Power supply when no house batteries are connected
- Automatic emergency switch that switches back to the original charging system in the event of a fault

While driving the battery charger gradually reduces the output current if the alternator is overloaded and the input voltage of the alternator and/or the starting battery falls below 12.8 V.

The battery charger's cooling fan is only activated when the battery charger internally reaches a certain temperature. The speed of the cooling fan is controlled electronically depending on the internal temperature of the battery charger. If the internal temperature of the battery charger is too high, the battery charger automatically reduces the output current and switches itself off at a certain temperature. The battery charger reactivates itself as soon as the internal temperature of the battery chargers returns to an acceptable working level.

## Charging from the alternator

After starting the engine the ignition+ or D+ signal connected to the battery charger input (Fig. **8** on page 15/Fig. **9** on page 15 **3**) is active. If the input voltage exceeds 13.3 V, the battery charger starts charging the house battery.

During the charging process the voltage of the starting battery is constantly monitored in order to quickly register supply problems or an overload of the alternator to reduce the output current soon or to stop the charging process completely.

The output current is limited if the battery charger detects an active ignition+ or D+ signal and a starting battery voltage below 12.8 V.

The battery charger switches off completely when it detects a voltage of 12.5 V on the starting battery or when the ignition+ or D+signal is no longer detected and the vehicle engine is switched off.

When selecting the charging curve of the smart alternator for Euro 6 vehicles, the activation threshold of the battery charger is > 11.4 V after a few minutes and the deactivation threshold is < 11 V. The output current is limited if the battery charger detects an active ignition+ or D+ signal and a starting battery voltage below 11.6 V.

## Charging from the solar panel

If the battery charger is connected to a solar panel and the ignition+ or D + signal is **not** active, the charging process starts via the integrated solar controller when the solar panel generates a voltage of more than 16 V. The battery charger terminates the charging process via the solar regulator when the voltage of the solar panel is lower than the voltage of the house battery.

## Priority levels

The power source is selected according to the following power priority:

1. Alternator
2. 230 V power supply (**GOLD25-M, GOLD30-M and GOLD40-M only**)

3. Solar panel

## Connecting 12 V devices

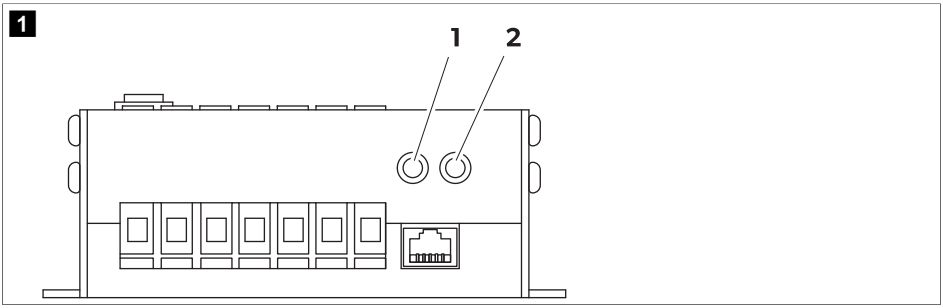
The battery charger is equipped with an auxiliary connection socket (Fig. **8** on page 15/Fig. **9** on page 15 **5**). The connection is used to connect the split-charge relay or the original control unit where 12 V devices such as a refrigerator, lighting, a pump, etc. are connected (see Installation on page 13).

The devices connected to the auxiliary connection are supplied via the house battery when the ignition+ or D+ signal is not active. When the ignition+ or D+ signal is active, a relay ensures that the devices connected to the auxiliary connection are supplied with power from the alternator.

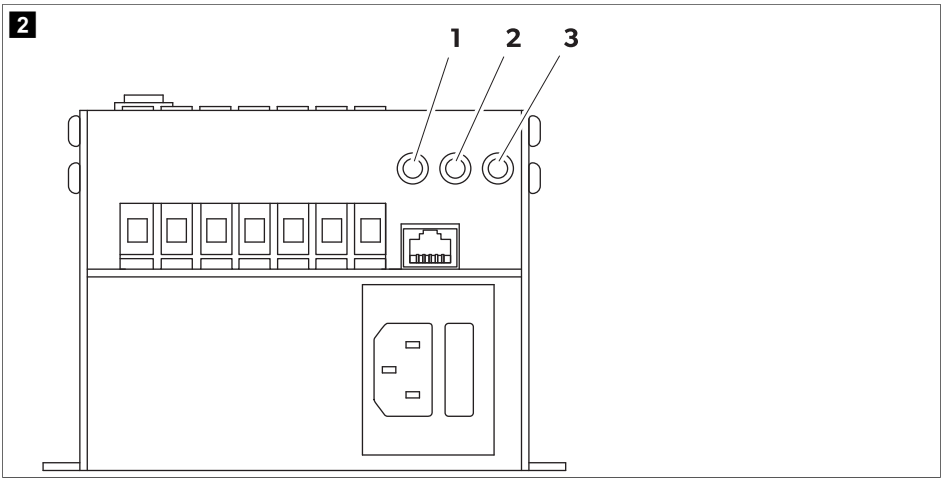
## LED indicator

The battery charger is equipped with LED indicators that show the source of the incoming charge. The LED indicators also show the battery's current charging phase by flashing a specific number of times (see Configuring the battery charger on page 11).

**PLUS25, PLUS30 and PLUS40 only**




**GOLD25-M, GOLD30-M and GOLD40-M only**



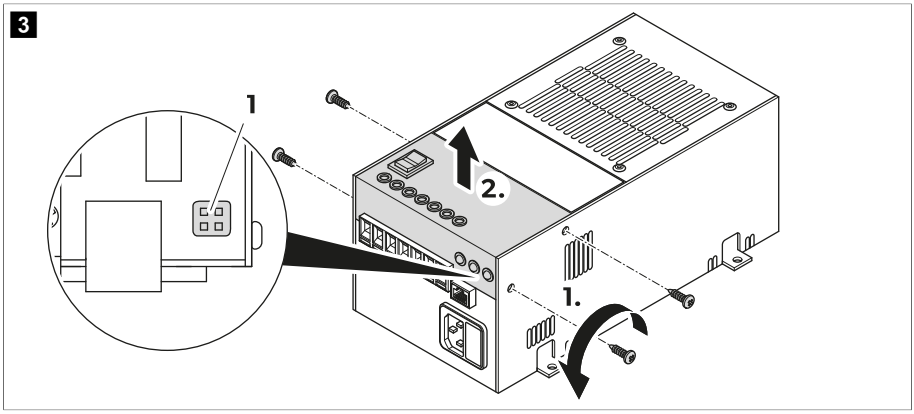
| No. | LED |
|---|---|
| 1 | Alternator |
| 2 | Solar panel |
| 3 | 230 V power supply (GOLD25-M, GOLD30-M and GOLD40-M only) |

# 9 Configuring the battery charger

**NOTICE! Damage hazard**
If the charging curve for smart alternators/Euro6 vehicles has been selected and the ignition+ has been connected to the battery charger instead of D+, do not leave the power switched on for longer than 30 s.

An internal jumper must be set to select the necessary charging curve depending on the type of house battery used. The charging phases work independently of the input energy source. The voltage and the supplied current are continuously monitored for each charging phase.

1. Unscrew the front cover.




2. Install the jumpers as required to set the charging curve.

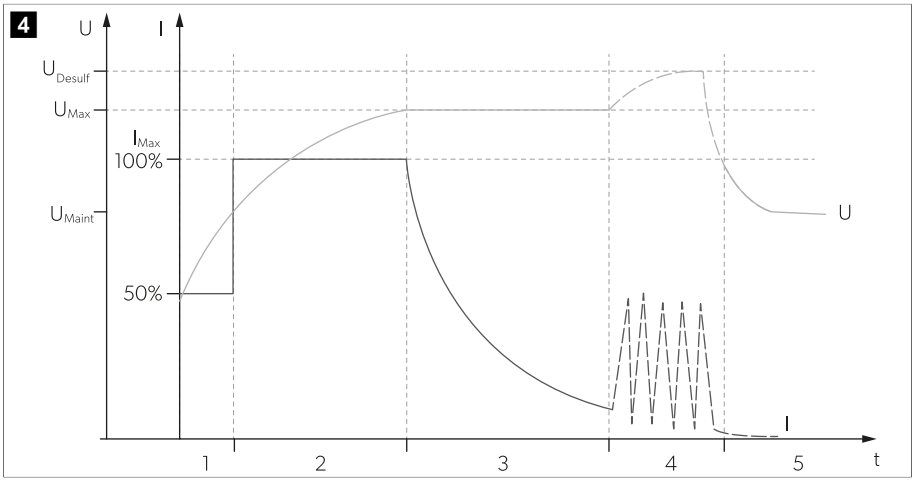
| Jumper configuration | Battery type | Maximum voltage ($U_{Max}$) | Float voltage ($U_{Maint}$) | Maximum desulfation voltage ($U_{Desulf}$) |
|---|---|---|---|---|
|  | AGM batteries | 14.8 V | 13.8 V | 15.8 V |
|  | Gel batteries | 14.3 V | 13.6 V | 15.8 V |
|  | Flooded and LiFePO4 batteries | 14.5 V | 13.5 V | – |

| Jumper configuration | Battery type | Maximum voltage ($U_{Max}$) | Float voltage ($U_{Maint}$) | Maximum desulfation voltage ($U_{Desulf}$) |
|---|---|---|---|---|
|  | Smart alternator/Euro6 vehicles (LiFePo4 batteries) | 14.6 V | 13.7 V | – |

**NOTE** If the charging curve for smart alternators/Euro6 vehicles has been selected, the battery charger is activated after a few seconds.

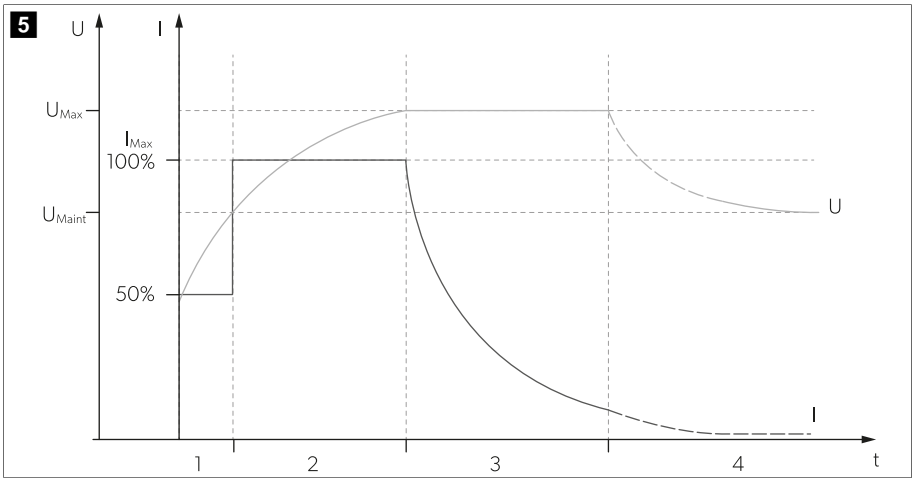
v The charging curve is as follows:

**AGM and gel batteries**




| No. in Fig. 4 on page 12 and quantity of LED flashes | Charging phase |
|---|---|
| 1 | Reconditioning |
| 2 | Bulk |
| 3 | Absorption |
| 4 | Desulfation |
| 5 | Maintenance |

**Flooded and LiFePo4 batteries**




| No. in Fig. 5 on page 13 and quantity of LED flashes | Charging phase |
|---|---|
| 1 | Reconditioning |
| 2 | Bulk |
| 3 | Absorption |
| 4 | Maintenance |

**NOTE** When an LED has indicated the charging phase by flashing, a 2 s pause follows. After the pause, the current charging phase is indicated again. This process is repeated until the house battery is fully charged.

# 10 Installation

**WARNING! Explosion hazard**
Do not install the battery charger in the vicinity of flooded batteries, as flooded batteries produce flammable, corrosive and explosive gases.

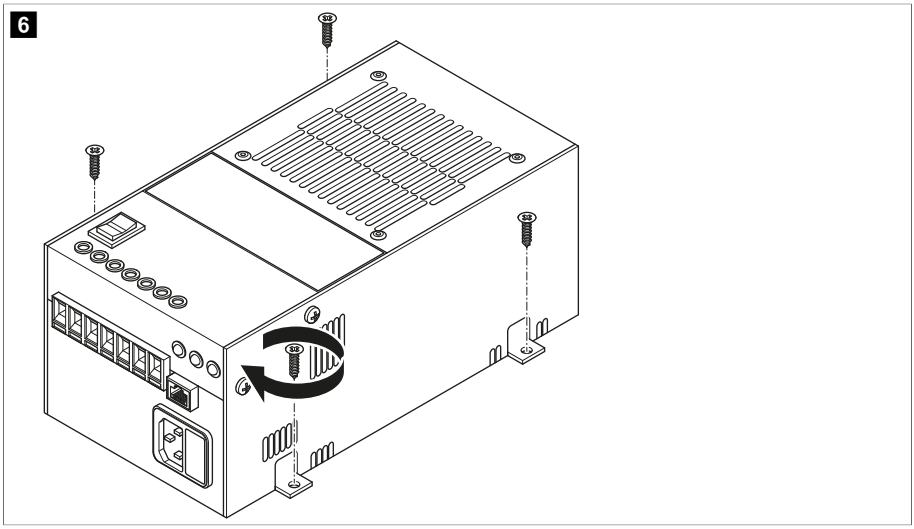
**NOTICE! Damage hazard**
Ensure that the mounting surface is capable of supporting the weight of the battery charger.

**NOTE** Install the battery charger as close to the house battery as possible.

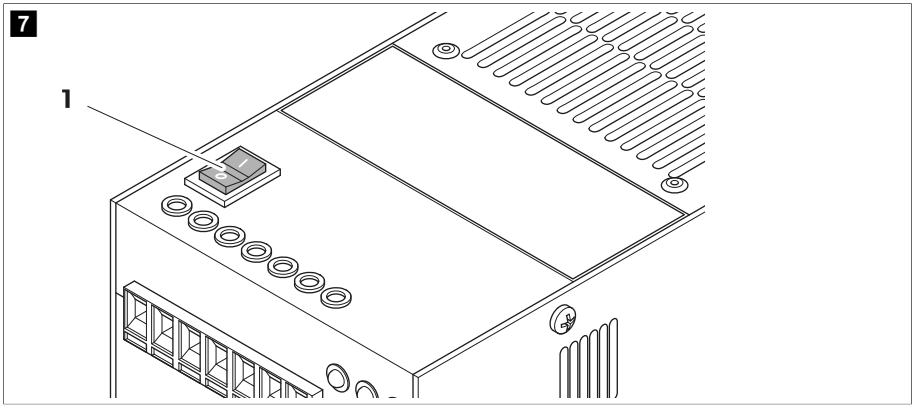
## Mounting the battery charger

**NOTE** The battery charger can be installed in any position. If the battery charger is mounted on a vertical surface, the short side should be installed in parallel to the floor. The connections should point downwards.

1. Mount the battery charger with 4 flange screws.




2. **GOLD25-M, GOLD30-M and GOLD40-M only**: Disconnect all mains battery chargers from the original charging system.
3. Switch the battery charger off using the On/Off switch (Fig. **7** on page 14 **1**).



## Connecting the battery charger

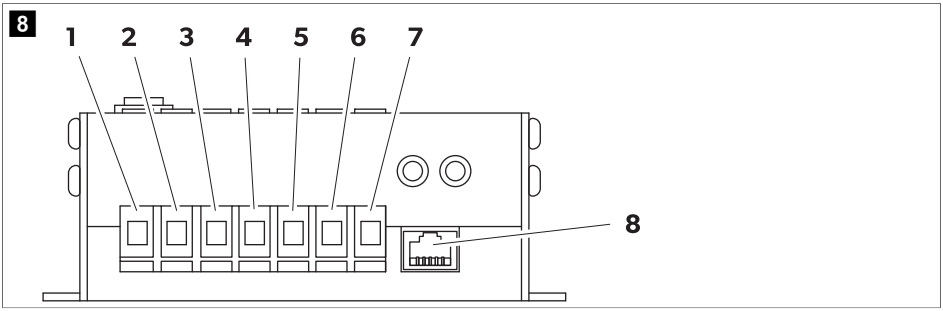
**NOTICE! Damage hazard**

> Socket **8** (Fig. 9 on page 15/Fig. 8 on page 15) is for technical use only. Do not connect any devices to socket **8**.
> Solar modules may have a maximum voltage of 28 V.

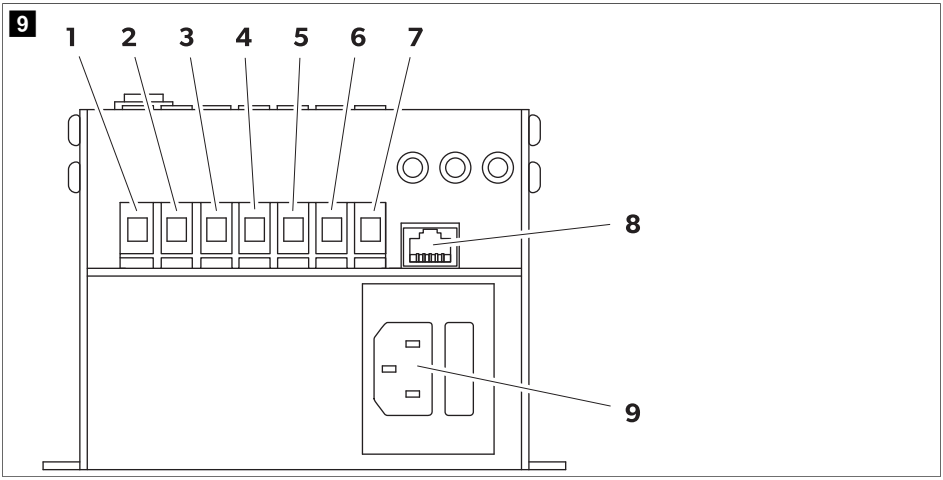
**NOTE**

> Use cables with cross-section of at least 10 mm² for the connections between the starting battery and the battery charger and for the output cables to the house battery. If the distance between the starting battery and the battery charger is more than 2 m, use cables with cross-section of at least 16 mm² to reduce voltage drop and power losses.
> Install a split-charging relay if the battery charger is installed in a vehicle without a control unit so that the house battery can be charged via the alternator in the event of a fault.

**PLUS25, PLUS30 and PLUS40 only**



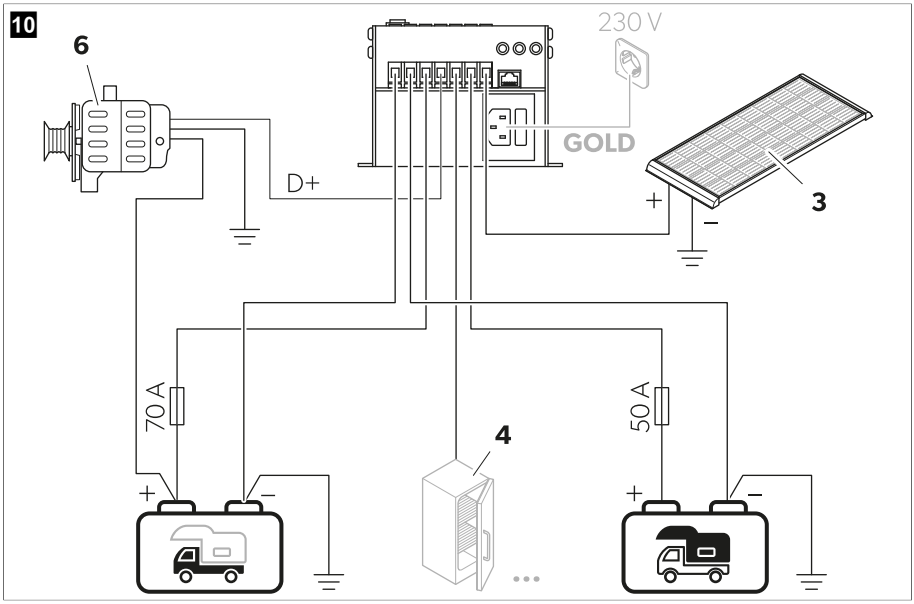

**GOLD25-M, GOLD30-M and GOLD40-M only**



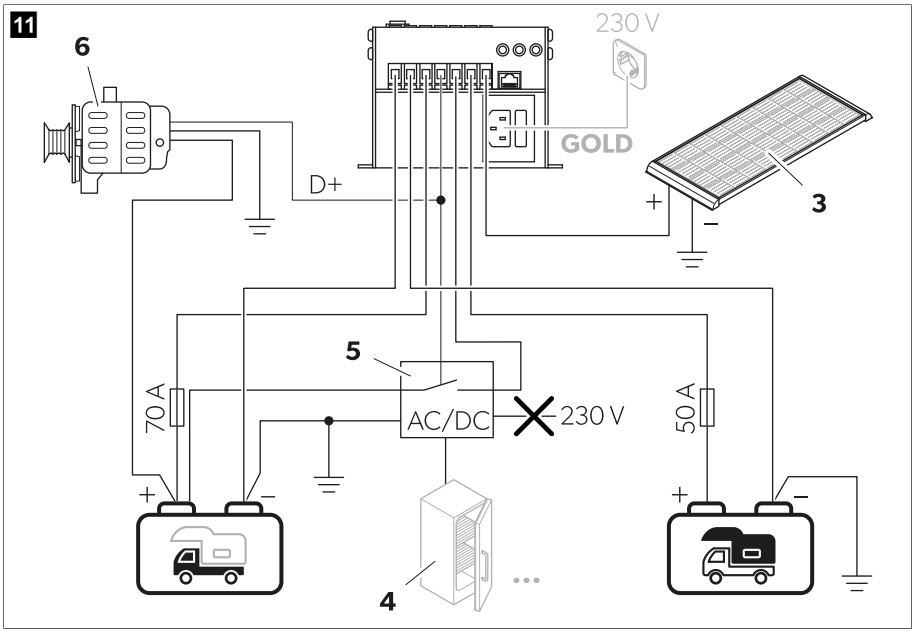

1. Connect the negative terminal of the starting battery to socket **1**.

2. Connect the positive terminal of the starting battery to socket **3**. Secure the line with a 70 A fuse.
3. Connect the negative terminal of house battery to socket **2**.
4. If **no** IM12-150 is connected, connect the positive terminal of the house battery to socket **6** (see Accessories on page 8). Secure the line with a 50 A fuse.
5. If an IM12-150 is connected:
   a) Connect the positive connection of the IM12-150 to socket **6** (see Accessories on page 8).
   b) Connect the positive terminal of the house battery to the positive socket of the IM12-150.
   c) Secure the positive terminal lines with a 120 A fuse.
6. Connect the D+ or ignition+ cable to socket **4**.
7. Connect all 12 V devices to socket **5**.
8. If present, connect the solar module 12 V nominal direct connection to socket **7**.
9. **GOLD25-M, GOLD30-M and GOLD40-M only**: Connect the 230 V power supply to socket **9**.
10. Also observe the following wiring diagrams:

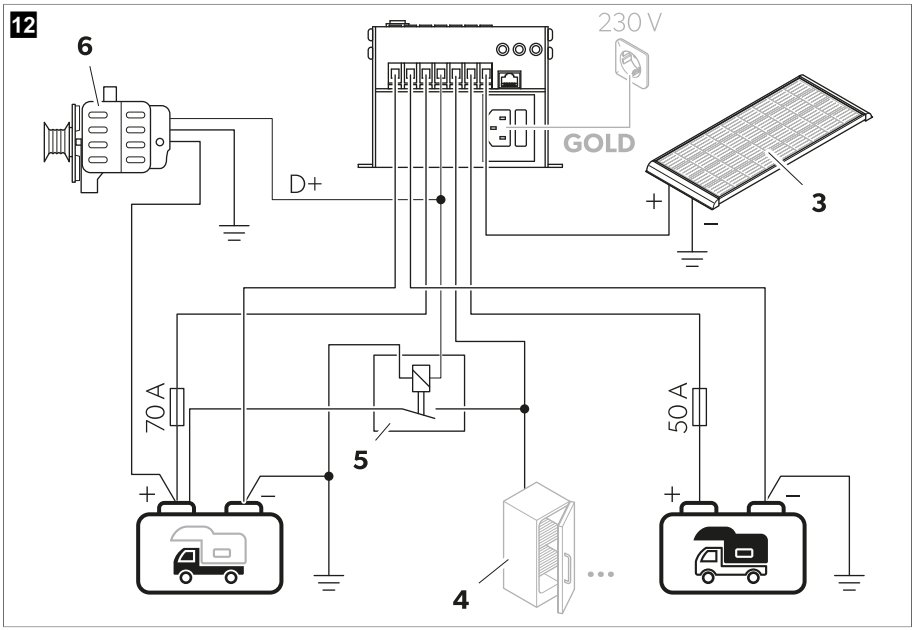
**Installation without an control unit or split charge relay**




**Installation with an existing control unit**




**Installation with an split charge relay only**



**Installation with an IM12-150 and 2 house batteries**

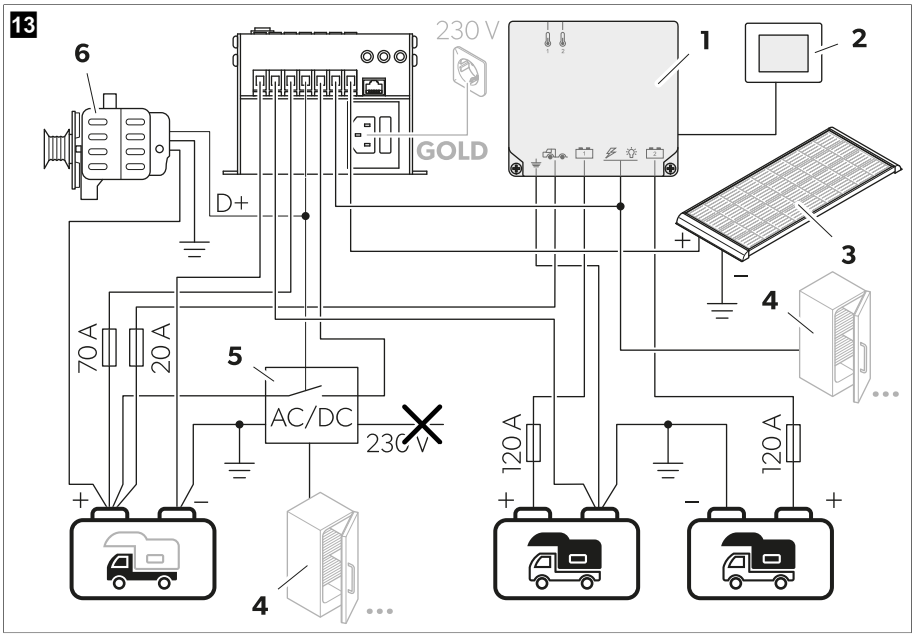



**Table 1: Legend**

| Position | Description |
|---|---|
| 1 | IM12-150 (battery management system) |
| 2 | Display |
| 3 | Solar panel |
| 4 | 12 V device |
| 5 | Control unit |
| 6 | Alternator |
|  | House battery |
|  | Starting battery |

# 11 Before first use

The correct functioning of the battery charger must be checked before the first use.

## Using the alternator

1. Ensure that the vehicle engine and the battery charger are switched off.

2. Ensure with a multimeter that the house battery is charged not more than 75%.
3. Switch the battery charger on.
4. Switch the vehicle engine on.

v The alternator LED (Fig. 2 on page 10/Fig. 1 on page 10 **1**) flashes.

5. Ensure with a multimeter that the voltage of the house battery is higher than the previously measured value.
6. Wait until the alternator LED (Fig. 2 on page 10/Fig. 1 on page 10 **1**) flashes twice in succession.
7. Use a clamp meter to ensure that the charging current corresponds to the maximum value of the battery charger.

**NOTE** If the battery is fully charged, the correct charging current will be displayed after a few seconds.

8. Use a multimeter to ensure that the voltage between the terminals of the starting battery and pin **1** and **3** (Fig. 9 on page 15/Fig. 8 on page 15) does not exceed 0.7 V.
9. If the voltage difference is more than 0.7 V, use a cable with a larger cross-section on pin **3** (Fig. 9 on page 15/Fig. 8 on page 15).
10. If necessary, improve the ground connection.

### Using a solar panel

1. Ensure that the vehicle is parked outside and the solar panel is illuminated by the sun.
2. Ensure that the vehicle engine is switched off.

v The solar panel LED (Fig. 2 on page 10/Fig. 1 on page 10 **2**) flashes.

3. Use a clamp meter to ensure that the house battery is supplied with current.

### Using a 230 V power supply

**NOTE** This function can **only** be used for GOLD25-M, GOLD30-M and GOLD40-M.

1. Ensure that the vehicle engine is switched off.
2. Connect the 230 V power supply.

v The 230 V power supply LED (Fig. 2 on page 10/Fig. 1 on page 10 **3**) flashes.

3. Use a clamp meter to ensure that the house battery is supplied with current.

## 12 Operation

**NOTE** When charging the house battery via an alternator and connecting the charger to an ignition+ instead of a D+ connection, do not leave the power switched on for longer than 30 s. Otherwise the house battery will be discharged.

› Switch the battery charger on.
⌄ The corresponding power supply LED flashes red with varying frequency depending on the charging phase (see Configuring the battery charger on page 11).

**NOTE** If the battery charger is switched off, the house battery is disconnected from the alternator. If the battery charger is connected to a solar panel or a 230 V power supply (GOLD25-M, GOLD30-M and GOLD40-M only), the battery charger charges the house battery as long as the vehicle engine is switched off.

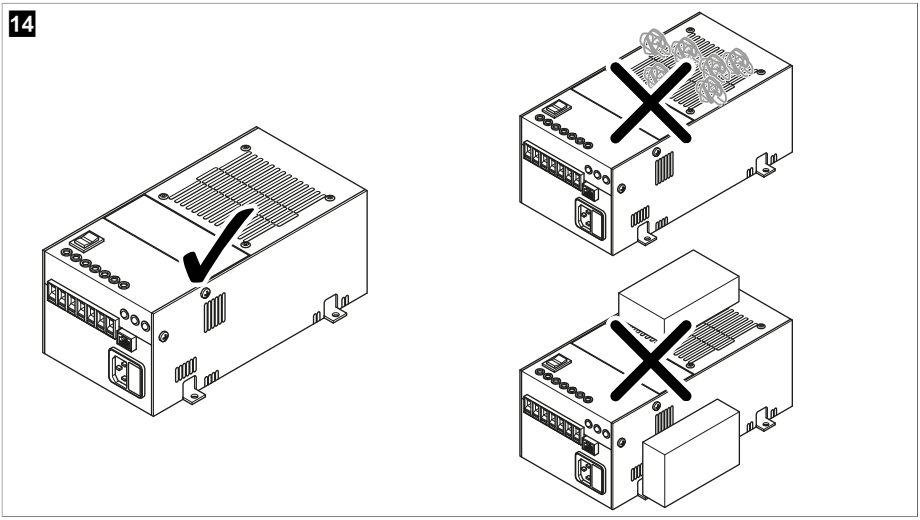
When charging the house battery, switch off the battery charger only if it has a fault. Then the house battery can be charged directly via the alternator when the engine is switched on.

# 13 Cleaning and maintenance

**WARNING! Damage hazard**

› Never clean the battery manager under running water or in dish water.
› Do not use sharp or hard objects, abrasive cleaning agents or bleach during cleaning as these may damage the battery manager.

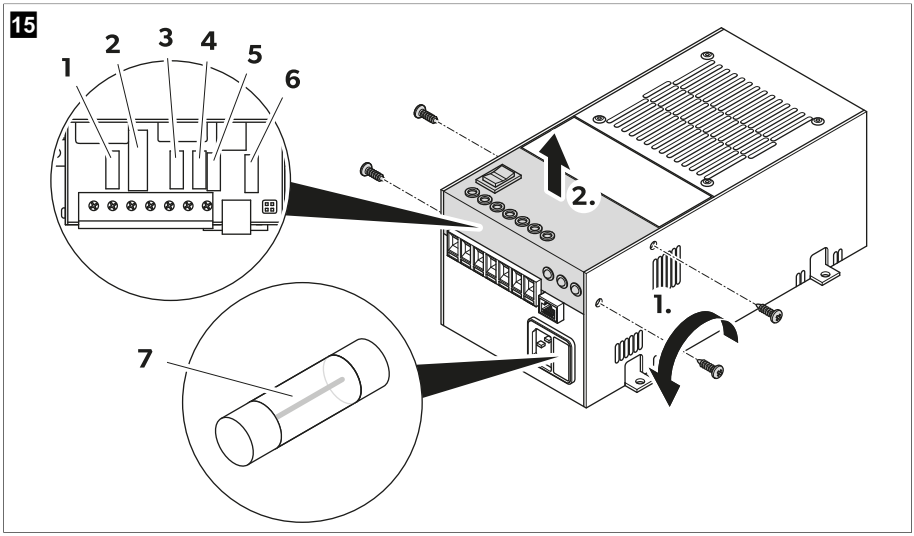
› Occasionally clean the battery manager with a damp cloth.
› Check regularly that the cables are securely connected.
› Check regularly that the ventilation slots are not blocked.




## Replacing the DC fuse

1. Switch off the battery charger using the On/Off switch (Fig. 7 on page 14 **1**).
2. Disconnect the power supply.
3. Unscrew the front cover.

**NOTE** The fuses **4** and **5** (Fig. 15 on page 21) are connected in parallel.




| No. | Description | Type |
|---|---|---|
| 1 | 230 V power supply socket (GOLD25-M, GOLD30-M and GOLD40-M only) | 40 A blade fuse |
| 2 | Starting battery connection (Fig. 15 on page 21 **3**) | 70 A blade fuse |
| 3 | Auxiliary connection (Fig. 15 on page 21 **5**) | 40 A blade fuse |
| 4 | Output connection (Fig. 15 on page 21 **6**) | 25 A blade fuse |
| 5 | | |
| 6 | Solar panel connection (Fig. 15 on page 21 **7**) | |
| 7 | 230 V power supply socket (GOLD25-M, GOLD30-M and GOLD40-M only) | 10 A glass fuse type 5 x 20 |

4. Lift up the front cover.

**NOTICE! Damage hazard**
Do not force the front cover off, otherwise the internal wires may be damaged.

5. Replace the corresponding a fuse of the same type.
6. Remount the front cover.
7. Switch on the battery charger using the On/Off switch (Fig. 7 on page 14 **1**)

v The battery charger restarts.

# 14 Troubleshooting

| Problem | Possible cause | Suggested remedy |
|---|---|---|
| All LEDs flash 5 times in succession. A buzzer sounds. After a short pause, the process repeats. | The output connection fuses have failed (GOLD25-M, GOLD30-M and GOLD40-M only). | 1. Ensure that the output connection fuses (25 A) are not defective.<br>2. Ensure that the output connection is securely connected. |
| | The solar panel voltage is too high. | > Ensure that the solar panel voltage is less than 28 V. |
| | The PCB is overheated. | 1. Let the battery charger cool down.<br>2. Restart the battery charger as soon as the house battery is no longer fully charged. |
| The LED of the alternator and the solar panel are lit continuously. | The ambient temperature is below –2°C. | This is a normal protective mechanism that is active when the charging curve for flooded and LiFePo4 batteries is selected (Configuring the battery charger on page 11). As soon as the ambient temperature rises above 0°C, the LEDs switch off. |
| The alternator LED flashes 6 times. | A voltage drop is detected at the alternator.<br>The alternator has insufficient power.<br>A power failure on the cables has occurred. | 1. Ensure that the cables have a minimum cross-section of 10 mm².<br>2. Ensure that cables with a length of more than 2 m have a minimum cross-section of 16 mm².<br>3. Ensure that the connections on socket **1**, **2**, **3**, and **6** (Fig. 9 on page 15/Fig. 8 on page 15) are securely connected.<br>4. Ensure that the battery charger is connected correctly. |
| An electronic malfunction has occurred. | The voltage of the house battery is higher than 15 V. | > Select the charging curve for flooded and LiFePo4 batteries to avoid the desulfation phase (see Configuring the battery charger on page 11). |
| The voltage of the house battery exceeds 16 V. | The desulfation phase takes place. | This is a normal process that can take up to 2 h. |
| The charge was interrupted. | The starting battery is overcharged. | 1. Ensure a suitable battery type is connected (see Intended use on page 8).<br>2. Ensure that the correct charging curve is selected (see Configuring the battery charger on page 11).<br>3. Ensure that the starting battery is not overheated. |

| Problem | Possible cause | Suggested remedy |
|---|---|---|
| | | 4. **Gel batteries only**: Ensure that there is no odor coming from the starting battery.<br>5. Ensure that the ambient temperature is not too high (see Technical data on page 25).<br>6. Ensure that the starting battery is not swollen.<br>7. If necessary, replace the starting battery. |
| | The solar panel has an overvoltage. | > Replace the solar panel. |
| | The ambient temperature is too low. | This is a normal protective mechanism when the charging curve for flooded and lLiFePO4 batteries has been selected. |
| The battery charger has switched itself off. | The alternator is overloaded.<br>The starting battery and/or its connection cables are not clean. | 1. Ensure that the starting battery voltage is more than 13.3 V (11.4 V for Euro 6 vehicles).<br>2. Ensure that the connection cables and starting battery are clean. |
| | The alternator is overloaded. A voltage drop on the positive side (output circuit) has occurred. | 1. Connect a multimeter to terminal B+ of the alternator and the positive terminal of the starting battery.<br>2. Switch on the engine, radio, lights, and ventilation of the vehicle.<br>3. Ensure that the measured voltage is less than 0.2 V.<br>4. If a voltage of more than 0.2 V is displayed, contact an authorized service agent.<br>5. Ensure that all cables, sockets, and connections are intact, clean, and corrosion-free.<br>6. Disconnect the multimeter.<br>7. Reconnect the starting battery. |
| | The alternator is overloaded. A voltage drop on the negative side (ground circuit) has occurred. | 1. Connect the negative connection of a multimeter on the housing of the alternator or on the ground cable.<br>2. Connect the positive terminal of the multimeter to the negative terminal of the starting battery.<br>3. Switch on the engine, radio, lights, and ventilation of the vehicle.<br>4. Ensure that the measured voltage is less than 0.2 V. |

| Problem | Possible cause | Suggested remedy |
|---|---|---|
| | | 5. If a voltage of more than 0.2 V is displayed, contact an authorized service agent.<br>6. Ensure that all cables, connector sockets and connections are intact, clean, and corrosion-free.<br>7. Ensure that there are no broken, loose, or missing grounding points and straps between the engine and the chassis.<br>8. Disconnect the multimeter.<br>9. Reconnect the starting battery. |
| | The voltage regulator of the alternator is defective. | 1. Connect a multimeter to terminal B+ the alternator.<br>2. Switch on the engine, radio, lights, and ventilation of the vehicle.<br>3. Ensure a regulated voltage when approx. 10 A is reached.<br>Follow the test standards and values specified by the vehicle manufacturer.<br>4. Switch on the high beam and set the ventilation to the highest level.<br>5. Ensure that the output current is at or above the standard values specified by the vehicle manufacturer.<br>6. If necessary, contact an authorized service agent to replace the alternator voltage regulator. |
| | A fuse is defective. | > Ensure that all fuses and fusible links in the circuit are intact. |
| | The anti-friction belt of the alternator is defective. | > Contact an authorized service agent. |
| | The alternator is defective. | > Contact an authorized service agent. |
| The battery charger reduces the output current and switches itself off after some time. | The battery charger and/or the power source is overheated. | > Let the battery charger cool down.<br>✓ The battery charger switches itself back on when its temperature has dropped. |

# 15 Disposal

Recycling packaging material: Place the packaging material in the appropriate recycling waste bins wherever possible.

Recycling products with non-replaceable batteries, rechargeable batteries, or light sources:

- If the product contains any non-replaceable batteries, rechargeable batteries, or light sources, you don't have to remove them before disposal.
- If you wish to finally dispose of the product, ask your local recycling center or specialist dealer for details about how to do this in accordance with the applicable disposal regulations.
- The product can be disposed free of charge.

# 16 Warranty

The statutory warranty period applies. If the product is defective, please contact the manufacturer's branch in your country (see dometic.com/dealer) or your retailer.

For repair and warranty processing, please include the following documents when you send in the device:

- A copy of the receipt with purchasing date
- A reason for the claim or description of the fault

Note that self-repair or nonprofessional repair can have safety consequences and might void the warranty.

# 17 Technical data

| | PLUS25 | PLUS30 | PLUS40 |
|---|---|---|---|
| Nominal input voltage | | | |
| Alternator | | 12 V | |
| Solar panel | | | |
| Input voltage range | | | |
| Alternator | | 11 … 15 V | |
| Solar panel | | 12 … 28 V | |
| Maximum input current | | | |
| Alternator | 28 A | 34 A | 45 A |
| Solar panel | | 15 A | |
| Recommended input source power rating | | | |
| Alternator | ≥ 70 A | ≥ 90 A | ≥ 110 A |
| Solar panel | | ≤ 250 W | |
| Nominal output voltage | | 12 V | |
| Output voltage range | | 11 … 16 V | |
| Battery output number | | 1 | |
| Maximum charging current | | | |
| Alternator | 25 A | 30 A | 40 A |
| Solar panel | | 15 A | |
| Galvanic insulation | | No | |
| Maximum efficiency | 93% | 92% | 92% |
| Cooling | | Cooling fan | |
| Charging curves | | 5 phases | |

| | PLUS25 | PLUS30 | PLUS40 |
|---|---|---|---|
| Charging curve selector | | Yes via jumper | |
| Battery technology | | AGM, GEL, Flooded, LiFePO4 | |
| Recommended battery capacity | ≥ 75 Ah | ≥ 90 Ah | ≥ 120 Ah |
| Battery voltage detection | | Yes | |
| D+ signal alternator / ignition | | Yes / active high | |
| Euro-6 and smart alternator compatibility | | Yes | |
| Activation threshold | | | |
| Alternator | | Vm ≥ 13.3 V and D+ on | |
| Smart alternator | | Vm ≥ 11.4 V and D+ on | |
| Solar panel | | Vp ≥ 16 V and D+ off | |
| Deactivation threshold | | | |
| Alternator | | Vm ≤ 12.5 V or D+ off | |
| Smart alternator | | Vm ≤ 11 V or D+ off | |
| Solar panel | | Vp < Vbs or D+ on | |
| Connections | | 7-pole screw terminal block | |
| Status indicator | | 2 LEDs and buzzer | |
| Protection class | | IP20 | |
| Protections | | Short-circuit, reversed polarity, overheating | |
| Operating temperature | | –20 … 50°C | |
| Dimensions (W x D x H) | | 135 mm × 225 mm × 51 mm | |
| Weight | | 950 g | |

| | GOLD25-M | GOLD30-M | GOLD40-M |
|---|---|---|---|
| Nominal input voltage | | | |
| Alternator | | 12 V | |
| Solar panel | | | |
| 230 V power supply | | 230 V~ / 50 Hz | |
| Input voltage range | | | |
| Alternator | | 11 … 15 V | |
| Solar panel | | 12 … 28 V | |
| 230 V power supply | | 90 … 264 V~ /47 … 63 Hz | |
| Maximum input current | | | |
| Alternator | 28 A | 34 A | 45 A |
| Solar panel | | 15 A | |
| 230 V power supply | | 3.5 A | |
| Recommended input source power rating | | | |
| Alternator | ≥ 70 A | ≥ 90 A | ≥ 110 A |

| | GOLD25-M | GOLD30-M | GOLD40-M |
|---|---|---|---|
| Solar panel | | ≤ 250 W | |
| 230 V power supply | | ≥ 450 W | |
| Nominal output voltage | | 12 V | |
| Output voltage range | | 11 … 16 V | |
| Battery output number | | 1 | |
| Maximum charging current | | | |
| Alternator | 25 A | 30 A | 40 A |
| Solar panel | | 15 A | |
| 230 V power supply | | 20 A | |
| Galvanic insulation | | AC only | |
| Maximum efficiency | 93% | 92% | 92% |
| Cooling | | Cooling fan | |
| Charging curves | | 5 phases | |
| Charging curve selector | | Yes - jumper | |
| Battery technology | | AGM, GEL, Flooded, LiFePO4 | |
| Recommended battery capacity | ≥ 75 Ah | ≥ 90 Ah | ≥ 120 Ah |
| Battery voltage detection | | Yes | |
| D+ signal alternator / ignition | | Yes / active high | |
| Euro-6 and smart alternator compatibility | | Yes | |
| Activation threshold | | | |
| Alternator | | Vm ≥ 13.3 V and D+ on | |
| Smart alternator | | Vm ≥ 11.4 V and D+ on | |
| Solar panel | | Vp ≥ 16 V and D+ off | |
| 230 V power supply | | Grid available and D+ off | |
| Deactivation threshold | | | |
| Alternator | | Vm ≤ 12.5 V or D+ off | |
| Smart alternator | | Vm ≤ 11 V or D+ off | |
| Solar panel | | Vp < Vbs or D+ on | |
| 230 V power supply | | Grid unavailable or D+ on | |
| Connections | | 7-pole screw terminal block | |
| Status indicator | | 2 LEDs and buzzer | |
| Protection class | | IP20 | |
| Protections | | Short-circuit, reversed polarity, overheating | |
| Operating temperature | | – 20 … 50°C | |
| Dimensions (W x D x H) | | 135 mm × 230 mm × 94 mm | |
| Weight | | 1400 g | |

**Table 2: Legend**

| Unit symbol | Description |
|---|---|
| Vm | Starting battery voltage |
| Vp | Solar panel voltage |
| Vbs | House battery voltage |
| D+ | Positive voltage when the engine is running |