MASTERVOLT

THE POWER TO BE INDEPENDENT

# AC Master

## 12/300, 12/500, 24/300, 24/500

PURE SINE WAVE INVERTER


CE

USER AND INSTALLATION MANUAL

*1000014304/01*

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visit our website: www.mastervolt.com

# Table of contents

# 1 Safety instructions

**WARNING!**

Read the entire manual before using the AC Master. Keep the manual in a secure place.

- Use the AC Master following the instructions and specifications stated in this manual.
- Connections and safety features must be executed according to the locally applicable regulations.
- Operation of the AC Master without proper grounding may lead to hazardous situations!
- Use DC-cables with an appropriate size. Integrate a fuse in the positive wiring and place it nearby the battery. Refer to the specifications.
- If the positive and negative wires on the DC-input (battery) are exchanged, the AC Master will be damaged. Damage of this kind is not covered by guarantee. Check whether all connections are connected correctly before placing the fuse.
- Do not connect the AC-output of the AC Master to an incoming AC source.
- Never connect the AC Master in parallel with any other inverter.
- Never open the housing as high voltages may be present inside!

# 2 Liability

Mastervolt cannot be held liable for:

- Consequential damage resulting from the use of the AC Master.
- Possible errors in the included manual and the consequences of these.
- Use that is inconsistent with the purpose of the product.

# 3 Disclaimer

Our products are subject to continual development and improvement. Therefore, additions or modifications to the products may cause changes to the technical data and functional specifications. No rights can be derived from this document. Consult our most current Terms & Conditions of Sale.

# 4 Warranty

Mastervolt assures the product warranty of the AC Master during two years after purchase, on the condition that the product is installed and used according to the instructions in this manual.

Installation or use not according to these instructions may result in under performance, damage or failure of the product and may void this warranty. The warranty is limited to the cost of repair and/or replacement of the product. Costs for labour or shipping are not covered by this warranty.

# 5 Correct disposal of this product

(Waste Electrical & Electronic Equipment)

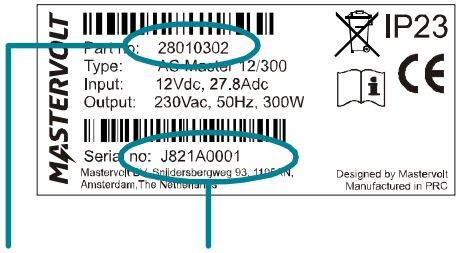
This product is designed and manufactured with high quality materials and components, which can be recycled and reused. When this crossed-out wheeled bin symbol is attached to a product, it means the product is covered by the European Directive 2012/19/EU.

Please be informed about the local separate collection system for electrical and electronic products. Please act according to your local rules and do not dispose of your old products with your normal household waste. The correct disposal of your old product will help prevent potential negative consequences to the environment and human health.

# 6 Product description

The AC Master is a sine wave inverter. The AC Master converts DC power from the battery into AC output power.

## Identification label

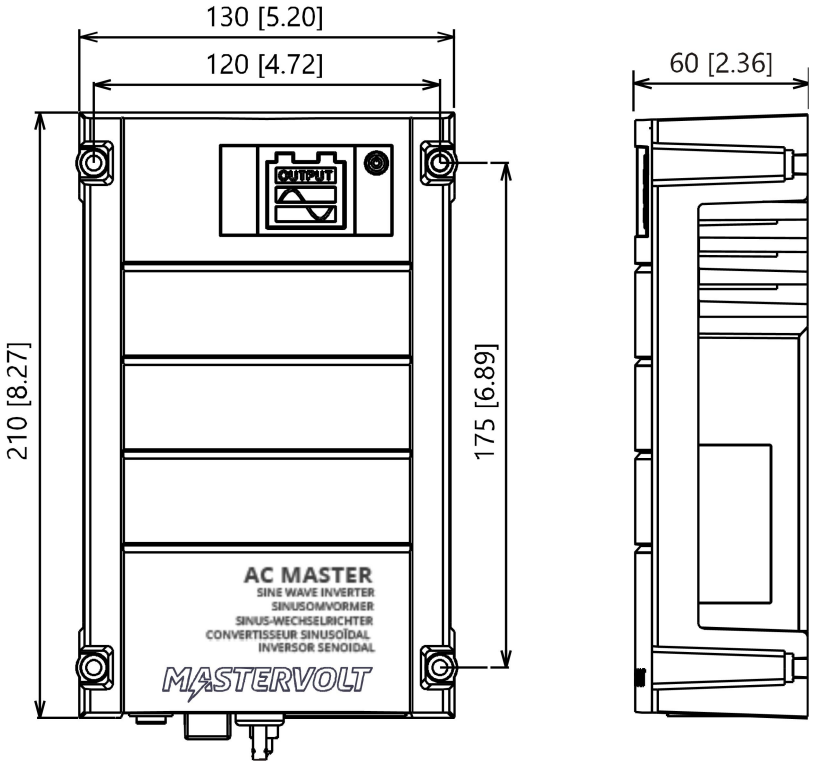



Part number Serial number J821**A**0001 with device version “A”

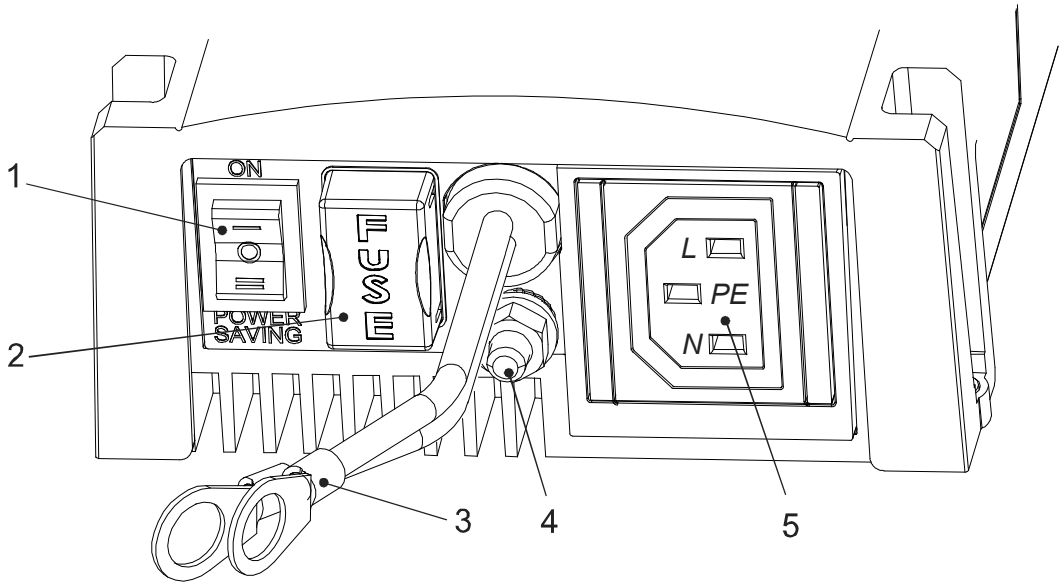
Important information required for service or maintenance can be derived from the identification label.

Never remove this label!

## Dimensions in mm [inch]



**Connections**

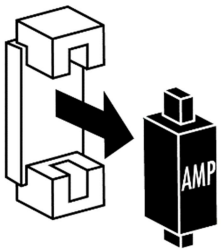



1 Main switch
2 DC fuse(s)
3 DC input cables (1.5m)
4 Chassis ground terminal (M6)
5 AC output socket (IEC)

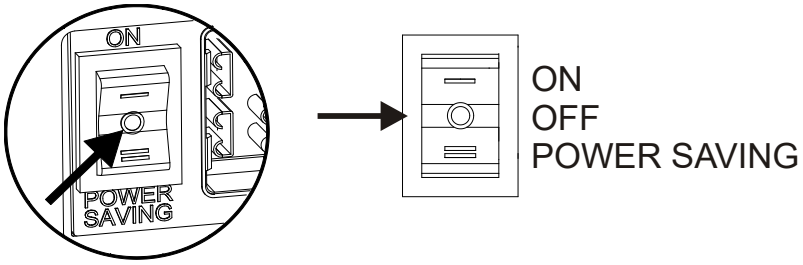
## 7 Installation instructions

This section provides a step by step instruction of the basic installation of the AC Master.

Step 1. Disconnect power supplies.



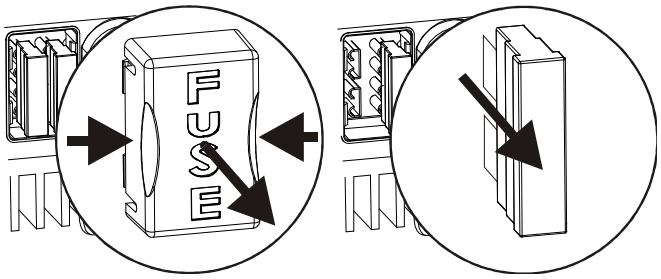

Step 2. Switch OFF the AC Master.



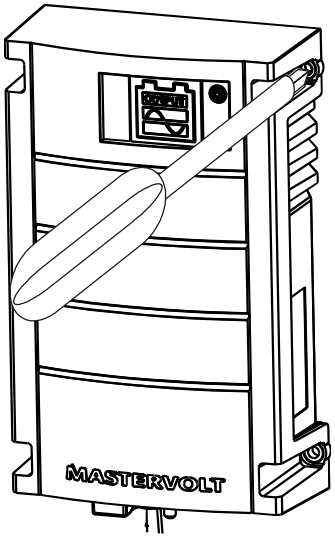
Step 3. Select a location to install.

- Install the AC Master in a well-ventilated room protected against rain, snow, spray, vapour, bilge, moisture and dust.
- Ambient temperature: -20 to 40°C / -4 to 104°F.
- Never use the AC Master at a location where there is danger of gas or dust explosions. Mount the AC Master vertically with the cables hanging downwards and so that airflow through the ventilation openings is guaranteed. Mounting the AC Master in another position is possible but influences the ingress protection degree (IP)!
- No objects are to be located within a distance of 10 cm / 4 inch around the AC Master.
- Do not install the AC Master in the same compartment as the batteries. Do not mount the AC Master straight above the batteries because of possible corrosive sulphur fumes.

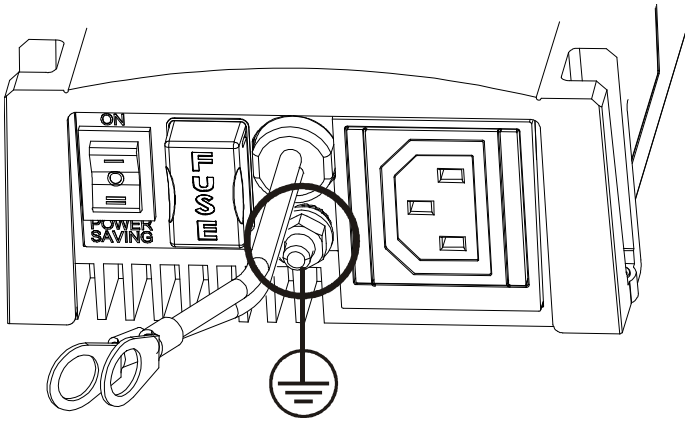
Step 4. Remove the fuse cover and DC fuse(s).



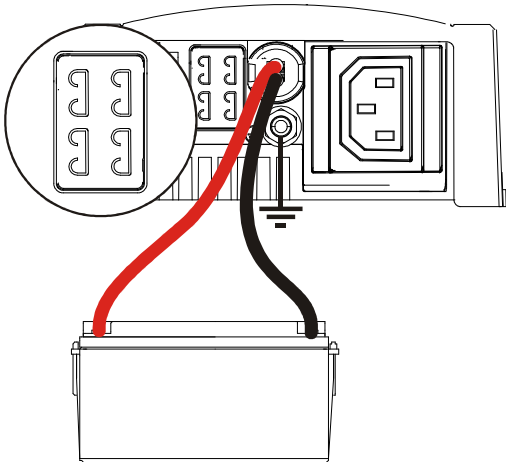

Step 5. Mount the AC Master with four screws to a solid surface.




Step 6. Connect the chassis ground terminal to the central grounding point of the vehicle/ship.

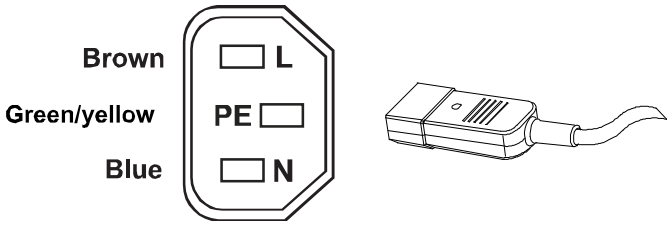


Step 7. Connect the battery to the DC input. Do not place the fuse yet!



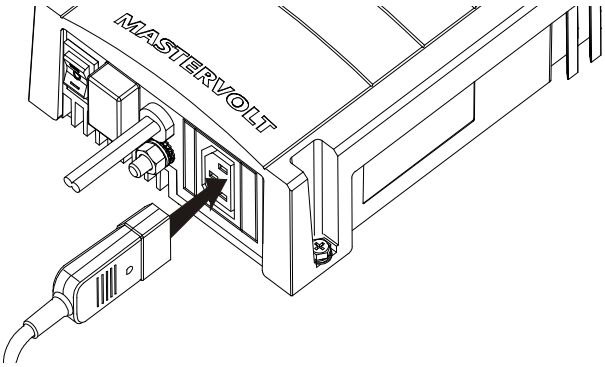
Step 8. Wire the IEC plug.

See also figure *Connections* on page 5.




*Front view of the IEC C14 male plug*

Step 9. Connect the AC load.




For safe installation:

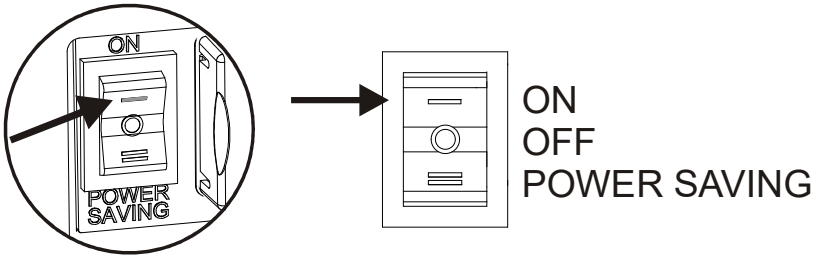
- The neutral conductor (N) of the AC output of the AC Master must be connected to the safety ground (PE/GND).
- Integrate a ground fault circuit-interrupter (GFCI/RCD) in the wiring of the AC output.

Refer to locally applicable regulations on these issues!

Step 10. Check all wiring. When all wiring is OK: place the DC fuse(s) and close the fuse cover.

When the fuse is placed, internal capacitors may cause a spark. This is normal.

Step 11. Switch ON the AC Master.



# 8 Operation

### Switching ON and Power Saving

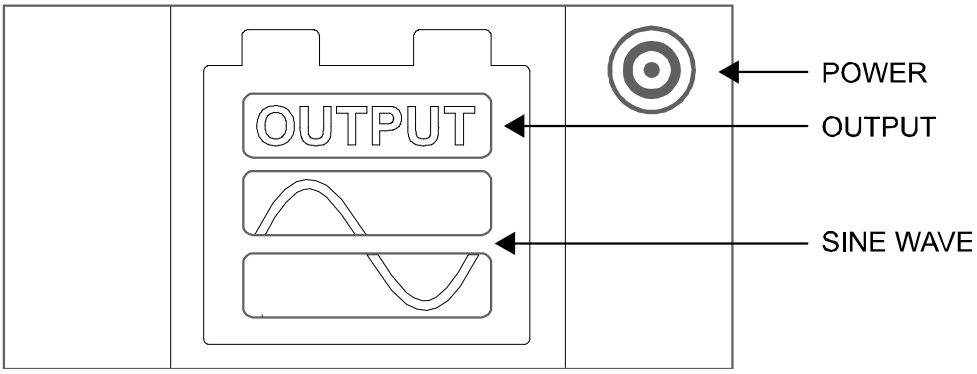
Move the main switch to position I (ON) or II (POWER SAVING).

Power saving mode scans the output and compares the detected load to the threshold value (40W). If a load is detected which is below the threshold value, the inverter switches to power saving mode. If a load is detected higher than the threshold value, the inverter is switched on.

### Switching OFF

Move the main switch to the position O (OFF). Note that switching off the AC Master does not disconnect the batteries!

### LED indicators




| Output LED | Sine Wave LED | Power LED | Meaning |
|---|---|---|---|
| Continuous (green) | Continuous (green) | Continuous (green) | Inverter OK |
| Blinking (green) | Blinking (green) | Continuous (green) | Power Saving |
| Off | Continuous (red) | Continuous (green) | Inverter fault |
| Off | Blinking slowly (red) | Continuous (green) | Battery voltage low/high |
| Off | Blinking fast (red) | Continuous (green) | Short circuit |
| Off | Off | Off | Inverter off |

# 9 Troubleshooting

| Problem | Possible cause | What to do? |
|---|---|---|
| All LED indicators are off | Main switch is set to the OFF position. | Set the main switch in ON position. |
| | DC fuse(s) blown. | Replace the fuse(s). |
| | AC feedback, feedback protection has caused the inverter to switch off. | Remove AC power source for the AC output and switch on the AC Master. To avoid damage do not install in parallel with another AC source. |
| Output LED blinking green | Power saving: Inverter is in Power saving mode. | Increase the load or put the main switch in position I. |
| Sine Wave LED continuously red (Inverter fault) | Over temperature. Reduce the load and let the inverter cool down. It will switch on again when the internal temperature is sufficiently low. | Check the airflow through the inverter. The operation of the cooling fan may not be blocked. |
| | Overload. Inverter attempts restarting 5 times. If it still fails, the AC Master remains in Overload . | Reduce the load and/ or check the AC wiring for possible short circuits. Then reset the inverter manually by switching the main switch off and on again. |
| | Fan fault. | Contact your Mastervolt supplier. |
| Sine Wave LED blinking slowly red (Battery voltage low/high) | DC input voltage too low (flat battery). | Check the battery. At low voltage, disconnect the load and charge the battery. The inverter will switch on again when the input voltage is > 11.0V (22.0V). |
| | DC input voltage too low: voltage drops across the DC cables due to too long or too narrow cables. | Reduce the length of the DC cables or use cables with a larger gauge. |
| | DC input voltage is too high. | Check battery voltage; switch off charger. The inverter will switch on again when the input voltage is < 14.5V (29.0V). |
| Sine Wave LED blinking fast red (Short circuit) | Inverter attempts a restart 5 times. If it still fails, the AC Master remains in Short circuit. | Switch off the AC Master and check the AC wiring. Only switch the inverter on when the wiring problem has been solved. |

# 10 Specifications

| | **AC Master 12/300-230V** | **AC Master 24/300-230V** |
|---|---|---|
| *Part number* | *28010302* | *28020302* |
| **General** | | |
| Output voltage | 230Vac (± 5%) – 50Hz (± 0.1%) | 230Vac (± 5%) – 50Hz (± 0.1%) |
| Output waveform | True sine | True sine |
| Nom. battery voltage | 12V | 24V |
| Cont. power at 25°C, cos phi 1 | 300W | 300W |
| Cont. power at 40°C, cos phi 1 | 250W | 250W |
| Peak load | 600W (5s, Uac>210V) | 600W (5s, Uac>210V) |
| AC connection | IEC 60320 - C13 (female) | IEC 60320 - C13 (female) |
| Included IEC plug | IEC 60320 - C14 (male) | IEC 60320 - C14 (male) |
| Efficiency (Max) | ≥ 90% | ≥ 91% |
| Display/read-out | 3 × LED | 3 × LED |
| Dimensions, h×w×d | 210 × 130 × 60mm | 210 × 130 × 60mm |
| Weight | 1.2kg | 1.2kg |
| Approvals | CE, E-mark | CE, E-mark |
| **Technical** | | |
| Technology | High frequency | High frequency |
| DC input voltage range | 10.0 – 15.5V | 20.0 – 31.0V |
| Low battery voltage, switches off at | 10.0V +/- 3 % | 20.0V +/- 3 % |
| Low battery voltage, switches on at | 11.0V +/- 3 % | 22.0V +/- 3 % |
| High battery voltage, switches off at | 15.5V +/- 3 % | 31.0V +/- 3 % |
| High battery voltage, switches on at | 14.5V +/- 3 % | 29.0V +/- 3 % |
| Input current (nominal load) | 27.8A | 13.7A |
| No-load power consumption (ON mode) | 0.67A @ 12V | 0.33 A @ 24V |
| No-load power consumption (Power Saving mode) | 0.33A @ 12V | 0.17 A @ 24V |
| DC fuse (integrated) | 40A × 2 | 40A |
| DC Cable length (integrated) | 1.5m | 1.5m |
| Harmonic distortion typical | < 6% | < 6% |
| Cos phi | All power factors allowed | |
| Temperature range (ambient temp.) | -20°C to 60, derating above 40°C | |
| Cooling | Fan | |
| Protection degree | IP23 (if vertically wall mounted) | |
| Protections | Over temperature, over load, short circuit, high/low battery voltage | |

| | **AC Master 12/500-230V** | **AC Master 24/500-230V** |
|---|---|---|
| *Part number* | *28010502* | *28020502* |
| **General** | | |
| Output voltage | 230Vac (± 5%) – 50Hz (± 0.1%) | 230Vac (± 5%) – 50Hz (± 0.1%) |
| Output waveform | True sine | True sine |
| Nom. battery voltage | 12V | 24V |
| Cont. power at 25°C, cos phi 1 | 500W | 500W |
| Cont. power at 40°C, cos phi 1 | 400W | 400W |
| Peak load | 800W (5s, Uac>210V) | 800W (5s, Uac>210V) |
| AC connection | IEC 60320 - C13 (female) | IEC 60320 - C13 (female) |
| Included IEC plug | IEC 60320 - C14 (male) | IEC 60320 - C14 (male) |
| Efficiency (Max) | ≥ 90% | ≥ 91% |
| Display/read-out | 3 × LED | 3 × LED |
| Dimensions, h×w×d | 210 × 130 × 60mm | 210 × 130 × 60mm |
| Weight | 1.2kg | 1.2kg |
| Approvals | CE, E-mark | CE, E-mark |
| **Technical** | | |
| Technology | High frequency | High frequency |
| DC input voltage range | 10.0 – 15.5V | 20.0 – 31.0V |
| Low battery voltage, switches off at | 10.0V +/- 3 % | 20.0V +/- 3 % |
| Low battery voltage, switches on at | 11.0V +/- 3 % | 22.0V +/- 3 % |
| High battery voltage, switches off at | 15.5V +/- 3 % | 31.0V +/- 3 % |
| High battery voltage, switches on at | 14.5V +/- 3 % | 29.0V +/- 3 % |
| Input current (nominal load) | 46.3A | 22.9A |
| No-load power consumption (ON mode) | 0.67A @ 12V | 0.33 A @ 24V |
| No-load power consumption (Power Saving mode) | 0.33 A @ 12V | 0.17 A @ 24V |
| DC fuse (integrated) | 40A × 2 | 40A |
| DC Cable length (integrated) | 1.5m | 1.5m |
| Harmonic distortion typical | < 6% | < 6% |
| Cos phi | All power factors allowed | |
| Temperature range (ambient temp.) | -20°C to 60, derating above 40°C | |
| Cooling | Fan | |
| Protection degree | IP23 (if vertically wall mounted) | |
| Protections | Over temperature, over load, short circuit, high/low battery voltage | |

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