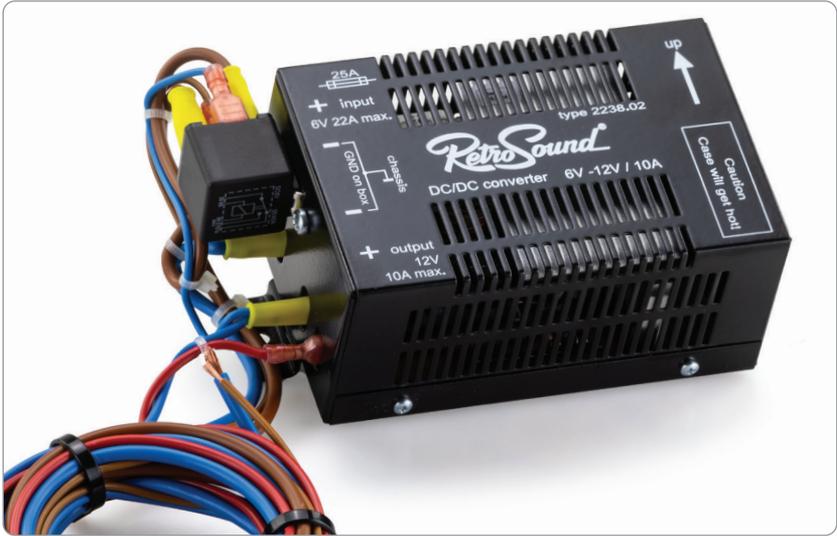


# 6-12 VOLT - CONVERTER

Type 2238.02

## Installation Guide



### **\*\*ATTENTION! PLEASE READ CAREFULLY!\*\***

READ THESE INSTRUCTIONS THOROUGHLY. WARRANTY CLAIMS ARE VOIDED FOR ANY DAMAGE CAUSED BY FAILURE TO FOLLOW THESE INSTRUCTIONS. WE ASSUME NO LIABILITY FOR CONSEQUENTIAL DAMAGES.

## 1. Introduction

**The intended purpose of the voltage converter is to generate 12V DC from a 6V DC power source. This allows powering 12V DC devices with a maximum current consumption of up to 10A from a 6V battery.**

The converter is activated by a car relay, with the control input powered via the ignition switch (terminal 15), ensuring the converter only operates when the ignition is on, preventing battery drain through idle current.

This device is designed for car systems with negative ground (chassis). The converter is intended for wall mounting (installation position is indicated on the device housing). At full load, the converter produces approximately 30W of heat, which needs to be dissipated. Ensure adequate airflow around the device during installation. In poor installation positions, the device is protected from overheating by a thermal switch, which reduces the output voltage to match the input voltage. If a poor installation position is unavoidable, avoid drawing maximum current.

Due to high current from battery devices, keep cables short and proper gauge. (wires supplied are 6 gauge/4mm and 12 gauge/1.5mm) for the input/output circuits.

The device has E1 approval for vehicle installation.



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## 2. Safety Information

**2.1** The device is radio-interference suppressed in accordance with VDE 0875 T.3, Curve G.

**2.2** Avoid using the device in adverse environmental conditions, which can damage the converter and pose a hazard to the user. Adverse conditions include:

- Excessive humidity (> 80% relative humidity)
- Moisture, including condensation
- Exposure to dust, flammable gases, vapors, or liquids
- High ambient temperatures (> approx. 95°F) or overheating due to poor ventilation, e.g., incorrect installation, strong sunlight, or covering the ventilation slots.

**2.3** In commercial settings, observe accident prevention regulations from the professional associations for electrical installations and equipment. When installing in vehicles or other systems, follow applicable regulations.

**2.4** Disconnect the device from the battery and load before opening. Removing covers or parts (other than those that can be removed by hand) may expose live parts. Disconnect the device from all power sources before servicing or replacing parts if opening is necessary. Adjustments or repairs under power should only be performed by qualified personnel familiar with the associated hazards and regulations.

**2.5** Capacitors inside the device may still be charged even if disconnected from all power sources.

**2.6** Use only fuses of the specified type and rated current as replacements. It is prohibited to use repaired fuses or to bypass the fuse holder. The device is overload and short-circuit protected. A blown internal input fuse indicates a serious fault, which must be corrected by a qualified technician before a new, intact fuse is installed.

**2.7** Never turn on the device immediately after bringing it from a cold to a warm environment. Condensation may damage the device. Allow it to reach room temperature while turned off.

**2.8** Operate the device only with the cover in place.

**2.9** The device is not intended for series connection.

**2.10** Do not cover the device's ventilation slots!

**2.11** Neither the device nor connected loads should be left unattended during operation. Ensure protective and safety measures for connected loads against effects from the device (e.g., over-voltage or power failure) and for any effects and hazards from the loads themselves.

**2.12** The device's outputs (flat plugs) and connected cables must be protected from direct contact. The cables used should have sufficient insulation and voltage resistance. Use insulated caps for the flat plugs of connected cables and ensure secure contact, as loose contacts can cause sparks, arcing, or excessive heating, affecting the device's operation.

**2.13** Avoid laying bare metallic wires and contacts. Cover these areas with suitable, flame-retardant insulation materials or other measures to prevent direct contact. Also, ensure that electrically conductive parts of connected loads are protected from direct contact.

**2.14** If it is assumed that safe operation is no longer possible, immediately take the device out of operation and secure it against unintentional use.

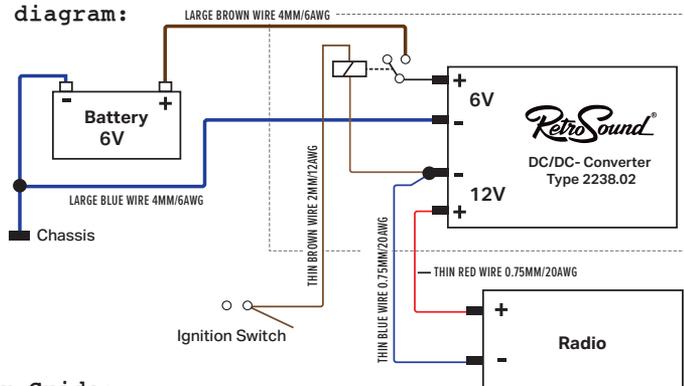
Safe operation is questionable if:

- The device shows visible damage
- The device no longer operates as expected
- After extended storage under unfavorable conditions
- The device has been exposed to severe transport stress.

### 3. Initial Operation

Connect the battery and load as shown in the diagram, observing polarity (Battery + to Converter input + / Battery - to Converter input - / Load + to Converter output + / Load - to Converter output -). We assume no liability for damages caused by incorrect connections! Also ensure the supply lines have adequate cross-sections (minimum 2.5mm<sup>2</sup>, recommended 4mm<sup>2</sup>).

#### Connection diagram:



#### Cable Color Guide:

Description	Wire Color	Wire Gauge	Terminal
Input +6V Constant Power / Battery	Brown	4mm/6AWG	30
-6V Chassis / Negative Battery Terminal	Blue	4mm/6AWG	31
-12V Output / Load (Negative Battery Terminal)	Blue	1.5mm/12AWG	-
+ Control Input 6V from Ignition Switch	Brown	0.75mm/21AWG	15 / 15R
+12V Output	Red	1.5mm/12AWG	-

The converter does not have an on/off switch. The idle current without a connected load is approximately 30mA, hence the use of a relay. The auxiliary relay is controlled by the ignition switch.

The converter does not have an output current limit! Overloading may cause the input fuse to blow and result in electrical damage to the converter itself.

#### \*\*Replacing the Fuse\*\*

The circuit is designed so that a failed component within the converter is generally the cause of a blown fuse. You can inspect the fuse through the ventilation slots near the fuse symbol on the housing.

To replace the fuse, open the housing after disconnecting the device from the battery and load. Loosen the screws on the housing shell, remove the old fuse, and replace it with a 25A FKS fuse (blade-type).

#### \*\*Caution! Burn Hazard!\*\*

Ensure adequate ventilation of the device, and never cover the ventilation slots on the top or bottom to prevent potential damage. When connecting a load, make sure it is in the off state.

An active load connected to the output terminals can cause sparking at the connection points, potentially damaging the terminals or connected wires and/or their contacts. Use proper wire gauge!

## 4. Technical Specifications 2238.02

Specification	Details
Input Voltage (DC)	5.5 – 7.5V
Output Voltage (DC)	12V
Output Current (DC)	10A (no limitation!)
Output Stability with Input Variation	Ua proportional to Ue
CV Stability at 0-100% Load	3V
CV Ripple (RMS)	25mV
No-load Current Consumption (DC/DC Converter)	< 30mA
Auxiliary Relay Current Consumption	approx. 300mA
Full Load Current Consumption	24A
Fuse Rating	25A
Regulation Time 10-100% Load	1.5ms
Operating Temperature Range	0 - 35°C
Max. Relative Humidity (non-condensing)	85% at 40°C
Cable Length	approx. 1.5m
Dimensions (W x H x D)	approx. 150 x 85 x 70 mm <sup>3</sup>
Weight	approx. 0.7 kg
Color	Black, RAL 9005
Protection Grade / Class	IP 30 / III
Electrical Connections modul (Input)	6.3mm flat connectors
Electrical Connections modul (Output)	6.3mm flat connectors
EMI Suppression	DIN VDE 0875 T 3 G

We reserve the right to make changes at any time.

### Limited 1-Year Warranty

Your product comes with a 1-Year manufacturer's warranty covering any defects in materials and workmanship. Retro Manufacturing, LLC (collectively referred to as "the warranter"), at its option, will either (a) repair your unit with new or refurbished parts or (b) replace it with a new or refurbished unit. The warranty period starts from the original purchase date and is valid for the length of time indicated in the chart below. The decision to repair or replace will be made by the warranter.

This warranty ONLY COVERS failures due to defects in materials and workmanship and DOES NOT COVER normal wear and tear or cosmetic damage. The warranty ALSO DOES NOT COVER damages that occurred during shipment, failures which are caused by products not supplied by the warranter, failures that result from accident, misuse, abuse, neglect, bug infestation, mishandling, misapplication, alteration, faulty installation, set-up adjustment, maladjustment of consumer control, improper maintenance, improper antenna, inadequate signal reception or pickup, power line surge, improper voltage supply, lightning, modification, commercial use (such as use in hotels, offices, restaurants, or other business uses) or rental use of the product, or service by anyone other than Retro Manufacturing, LLC, or damage that is attributable to acts of God.

THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER LIMITED WARRANTY. THE WARRANTER IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS UNIT OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. (As examples, this excludes damages for lost time, the cost of having someone remove or re-install an installed unit if applicable, travel to and from the servicer, and loss of media, data, or other memory contents. The items listed are not exclusive but are for illustration only.) ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE PERIOD OF THE LIMITED WARRANTY.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. If a problem with this unit develops during or after the warranty period, you may contact your dealer or Retro Manufacturing, LLC.

To handle a warranty issue go to: [www.retromanufacturing.com/returns-center](http://www.retromanufacturing.com/returns-center) and fill out the Returns Form for a Return Authorization (RA) number. A RA number must accompany all returns and warranty issues. Any product received without a RA number will be refused.



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