Installation/Operator's manual

Battery charger for recreational vehicles PE2169/ 04 13.8V/10A

IMPORTANT SAFETY INSTRUCTIONS

(a) SAVE THESE INSTRUCTIONS : THIS MANUAL CONTAINS IMPORTANT SAFETY AND OPERATING INSTRUCTIONS

(b) WORKING IN THE VICINITY OF A LEAD ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON IT IS OF THE UTMOST IMPORTANCE THAT EACH TIME BEFORE USING YOUR CHARGER, YOU READ AND FOLLOW THE INSTRUCTIONS PROVIDED EXACTLY

(c) TO REDUCE RISK OF BATTERY EXPLOSION, FOLLOW THESE INSTRUCTIONS AND THOSE MARKED ON THE BATTERY

(d) NEVER SMOKE OR ALLOW AN OPEN SPARK OF FLAME IN THE VICINITY OF THE BATTERY OR ENGINE

(e) NEVER CHARGE A FROZEN BATTERY

(f) IF IT IS NECESSARY TO REMOVE BATTERY FROM VEHICLE TO CHARGE IT, ALWAYS REMOVE GROUNDED TERMINAL FROM BATTERY FIRST. MAKE SURE ALL ACCESSORIES IN THE VEHICLE ARE OFF IN ORDER TO PREVENT AN ARC

(g) STUDY ALL BATTERY MANUFACTURER'S SPECIFIC PRECAUTIONS SUCH AS REMOVING OR NOT REMOVING CELL CAPS WHILE CHARGING AND RECOMMENDED RATES OF CHARGE .

(h) FOR A CHARGER HAVING AN OUTPUT VOLTAGE SELECTOR SWITCH, REFER TO THE CAR OWNER'S MANUAL IN ORDER TO DETERMINE THE VOLTAGE OF THE BATTERY AND TO MAKE SURE THE OUTPUT VOLTAGE IS SET AT THE CORRECT VOLTAGE. IF AN OUTPUT VOLTAGE SELECTOR SWITCH IS NOT PROVIDED DO NOT USE THE BATTERY CHARGER UNLESS THE BATTERY VOLTAGE MATCHES THE OUTPUT VOLTAGE RATING OF THE CHARGER.

(i) NEVER PLACE THE CHARGER DIRECTLY ABOVE OR BELOW THE BATTERY BEING CHARGED, GASES OR FLUIDS FROM THE BATTERY WILL CORRODE AND DAMAGE THE CHARGER. LOCATE THE CHARGER AS FAR AWAY FROM THE BATTERY AS DC CABLES PERMIT

(j) DO NOT OPERATE CHARGER IN A CLOSED IN AREA OR RESTRICT VENTILATION IN ANY WAY

General Description

The PE2169/ 04 AC to DC converter converts 120V AC to 13.8V DC.
The converter operates in a battery-float electrical system. The charger has two outputs : one for the "SB = **S**tarter **B**attery" and one for the "VB = **V**an **B**attery". The charger is either switched to the Van Battery or to the Starter Battery. While giving priority to the VB a timing sequence allows to monitor the SB.

Application field :

the converter is intended for use in recreational vehicles and is NOT intended to be used in marine applications.

Cooling :

the converter is convection cooled and is protected by a self-resetting over-temperature protection..
Caution : to prevent reset, do not cover or obstruct ventilation openings. Do not mount in zero clearance compartment, overheating may result and resetting the unit.

Installation

Mounting :
fixing : the converter is flush mounted from the base with five M5 screws, see fig. 2.
The mounting positions are given in fig. 1.
Mount the converter on a low-vibration surface and in a well ventilated area.

Environmental conditions :

Warning

This equipment employs components that tend to produce arcs or sparks. To prevent fire or explosion, do not install in compartment containing batteries or flammable materials.

Caution:
spilled beverages or dirt and moistures from the outdoor could damage or destroy the converter. Mount the converter where it will not be exposed to these hazards.

CAUTION: DO NOT EXPOSE TO RAIN

Wiring and connections

Warning:

voltages and currents within the electrical system present a shock hazard that can result in severe personal injury or death. Wiring must be performed only by technical qualified personnel. Perform the wiring steps in the order given and take special care to avoid shorting the DC output or contacting the AC line.

Batteries :

Warning : ignition of explosive battery gases can cause severe personal injury. Do not smoke or cause any arcs or sparks while servicing batteries.

CAUTION: CHARGE ONLY LEAD ACID TYPE BATTERIES. OTHER TYPES OF BATTERIES MAY EXPLODE CAUSING PERSONAL INJURY AND DAMAGE.

Installation :

* perform wiring in accordance with applicable electrical codes.
* the connections to the mains supply must be done in accordance to the national wiring rules

1. Disconnect the three-conductor AC plug.
2. Disconnect the batteries; remove the negative terminal first.
3. Make all connections to the plugs as shown on fig. 3.

Note : on delivery : not connected for LOCAL sensing. The SENSE connections as shown in fig. 3 MUST be done by the user even if no option is used.

4. Connect the batteries cables to the plug as shown in fig. 3.

Caution:
improper (reverse) connection of the batteries to the electrical system will damage the converter.
Observe correct polarity when plugin the battery : " **+** " to **+** and " **-** " to **-** .

5. Connect the 6-pole output plug (MATE-N-LOCK) to the converter.
6. Connect the 2-pole output plug (MATE-N-LOCK) to the converter
7. Route and secure output wiring using strain relief clamp.
8. The charger must only be plugged into a socket outlet with a earth contact.
   Plug the three-conductor AC plug into a protected (16 Amp) AC outlet.
   The plug must remain accessible by the user after installation unless a disconnect device (switch) complying with UL458 is provided.

9. Supply will be used in vertical or horizontal position
   Fixing screws : 5 X M5 (washer and spring-washer)

MOUNTING POSITIONS

The following clearances from rectifier to any object or surface must be respected.

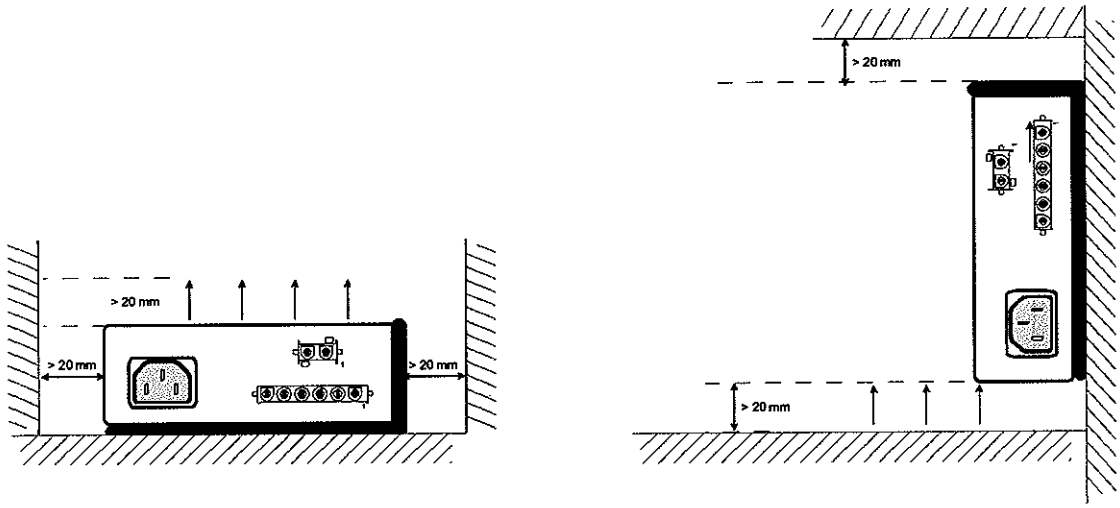

Fig. 1

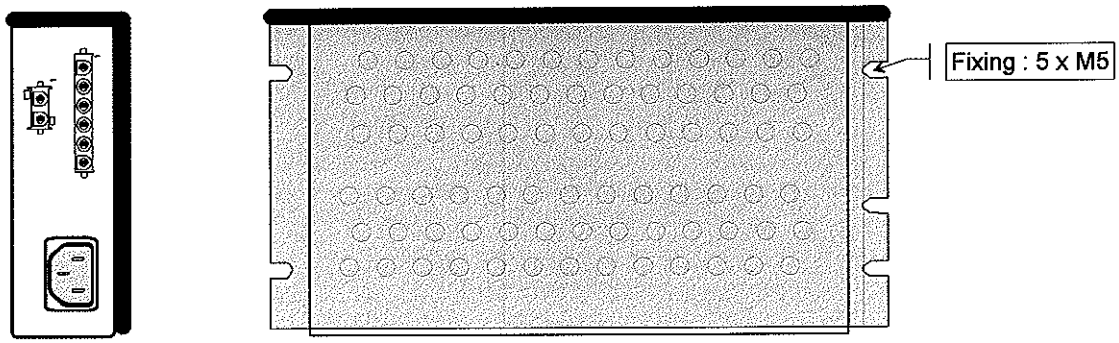

Fig. 2

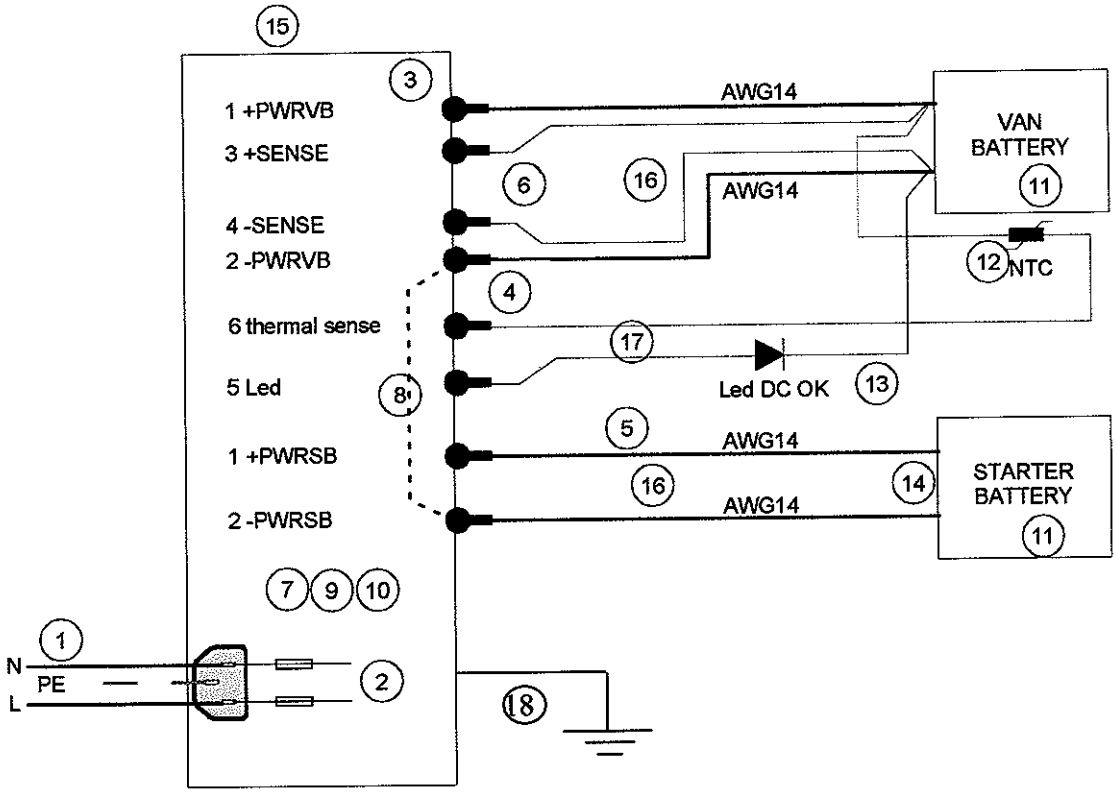
15
3
1 +PWRVB
3 +SENSE
4 -SENSE
2 -PWRVB
6 thermal sense
5 Led
1 +PWRSB
2 -PWRSB
7
9
10
1
N
PE
L
2
8
6
16
AWG14
AWG14
VAN
BATTERY
11
12
NTC
4
17
Led DC OK
13
5
AWG14
16
AWG14
14
STARTER
BATTERY
11
18

Fig. 3

References to fig. 3

1. SUPPLY CORD:
   Type : GTS3 – 42R02 – 3212

2. Internal fuses :
   Fuse in L : 3.15A T (slow)

3. OUTPUT MATING CONNECTOR: AMP Inc. Mate-N-LOCK
   Female 6-pole for AMP 926 300-3
   Female 2-pole for AMP 350 777-1

4. CONNECTORS ARE POLARIZED
   Removal or insertion of female connectors under voltage is prohibited.

5. Output cable : use strain relief for cable securement

6. With REMOTE sense:
   output voltage measured on sense terminals (3-4);
   max. total drop in the load lines : 0,5V
   on delivery : NO sense connections , must be done by the user

7. Not intended for series or parallel operation.

8. The two negative power outputs (-PWRVB & - PWRSB) are internally bridged

9. Internal thermal protection (restored after adequate cooling)

10. This unit has no user serviceable parts inside.

11. Batteries: lead-acid type (loading voltage=13.8 V at 20°C)
    Minimum capacity of batteries : 80Ah (current limitation = 10A)
    Use only batteries that are suitable to be charged with a current of 10A

12. Optional NTC (500 ohm at 25°C) type VW ref. 357 919 379

13. Optional external LED (typ. 2V/10mA)

14. **Warning:** if the wires for the battery connections are incorrectly connected (e.g. reversed), the power supply will be damaged.

15. **Warning:** this equipment contains components that tend to produce arcs or sparks. To prevent fire or explosion, do not install in compartment containing batteries or flammable materials.
    Caution: to prevent fire, do not cover or obstruct ventilation openings. Do not mount in zero clearance compartment, overheating may result and reset the unit.

16. Battery cables: use 14-gauge (AWG) stranded wire
    Important note : If the distance between converter and batteries>18 in. mount an external fuse in the positive battery line no more than 18 in. from the battery. Type of fuse: Littelfuse type 3111015.

17. Signal wiring : use 18-gauge (AWG) minimum.
18. Grounding lug: connected to the chassis of the vehicle with AWG 8 grounding wire (yellow/green or green) (see photograph in annex)

ELECTRICAL SPECIFICATIONS

INPUT

Voltage:	120 V AC nominal (range 108 .. 132 V AC)
Frequency :	50/60 Hz nominal (range 47 ... 63.6 Hz)
Power:	320VA typical (max. 350VA)
Input fuse :	3.15 A slow in Life
Earth leakage :	max. 500 µA

OUTPUT DC

Voltage: 13.8V DC (at +25°C with temperature sensor or equivalent fixed resistor: value 500 ohm)
15.0V DC max.(open temperature sensor)
12.7V DC min (short-circuited temperature sensor)
Current: 10A
Stability: +/- 0.4% (without temperature sensor)
Temperature coefficient : with recommended temperature sensor
- 0.18 % / K or - 4.2mV / K / element
Current limit: 10A (+1 / -1A)
Ripple: 100mV p-p (min. 2 A)

MECHANICAL

Dimensions: (65 x 128 x 245) mm
Weight : 1.3 kg

ENVIRONMENTAL

Ambient temperature; rated range of use
0 .. +55°C
Overtemperature : internal protection

SERVICE

The converter is not field-serviceable. The converter enclosure is to be opened by factory-trained personnel only. In the event of an electrical system failure, a few checks can be made to determine whether or not the converter must be replaced.

WARNING! Voltages and currents within the electrical system present a shock hazard that can result in severe personal injury or death.
Service must be performed only by technically qualified personnel.

If the converter fails in battery-float system, the battery will supply power to the DC line but will not be recharged.
Before troubleshooting the electrical system:

1. Disconnect AC power
2. Disconnect the batteries (- negative terminal first)
3. Connect AC power

Troubleshooting

TROUBLE	POSSIBLE CAUSE	CORRECTIVE ACTION
No DC output With or without battery	Blown external DC fuse(s) (if used)	Correct overload Replace fuse(s)
No DC output Without battery	No AC input Converter faulty	Plug in converter Reset open AC circuit breaker Restore utility or generator service Replace converter
DC drops out and automatically returns	Thermal overload condition Converter faulty	Check for and provide adequate ventilation Replace converter
LOW DC output (with batt.)	Battery faulty Optional temperature sensor (if used) Converter faulty	Replace 12V battery Check NTC resistance (typ. 500 ohm at +25°C) and wiring Replace converter
Too high DC output	Incorrect output wiring Optional temperature sensor (if used)	Check wiring of sense connections Check NTC resistance (typ. 500 ohm at + 25°C)

ANNEX: Supplentary earth connection to be connected to the vehicle chassis
Wire at least AWG 8