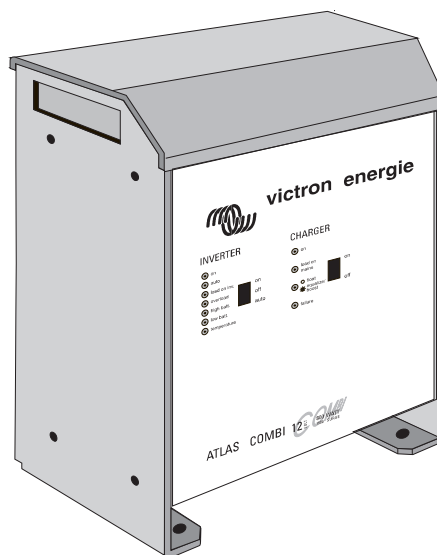


**USER MANUAL
GEBRUIKSAANWIJZING
GEBRAUCHSANWEISUNG**

Victron Atlas Combi 12/800



Subject to change without notice

AC04001E / 271095



SECTIONS

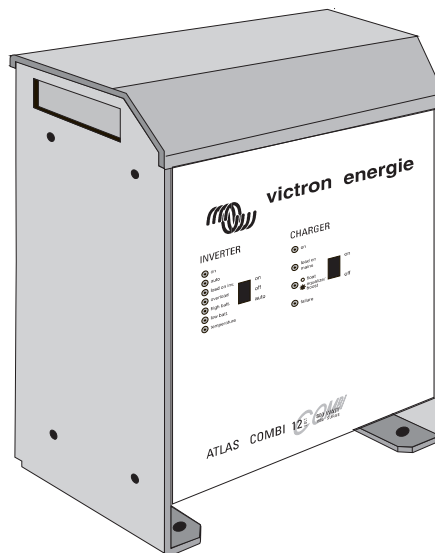
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ENGLISH

USER MANUAL

Victron Atlas Combi 12/800



INTRODUCTION



Victron Energie has established an international reputation as a leading designer and manufacturer of power systems. Our R&D department is the driving force behind this reputation as it is continually seeking new ways of incorporating the latest technology in our products. Each step forward results in value-adding technical and economical features.

Our proven philosophy has resulted in a full range of state-of-the-art equipment for the supply of electrical power that meets the most stringent requirements.

Victron Energie systems provide you with high-quality AC supplies in places where there are no permanent sources of 230-Volt AC power.

An automatic stand-alone power system can be created with a configuration comprising a Victron Energie inverter, battery charger, mains manager (if required) and, last but not least, batteries with sufficient capacity.

Our equipment is suitable for countless situations in the field, on ships or other places where a mobile 230-Volt AC power supply is indispensable.

Victron Energie has the ideal power source for all kinds of electrical appliances used for household, technical and administrative purposes, including instruments susceptible to interference. All of these applications require a high-quality power supply in order to function properly.

Victron Atlas Combi 12/800

This manual contains directions for installing the Atlas Combi model 12/800. It describes the functionality and operation of the Atlas Combi, including its protective devices and other technical features.

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1. DESCRIPTION



1.1 General

Victron Atlas Combi 12/800 units are tested to ensure correct functioning before leaving the factory. They are packed in shock-absorbing polystyrene and packed in sturdy cardboard boxes for secure transportation.

The Victron Atlas Combi is housed in a robust aluminium cabinet (IP21) suitable for floor or wall mounting. The AC output terminals, the DC battery terminals and the terminals for a remote control panel can be reached by opening the front of the cabinet with a screwdriver.

IP21 =
protection against
materials larger
than 12 mm (for
example a finger)
and protection
against vertically
descending water-

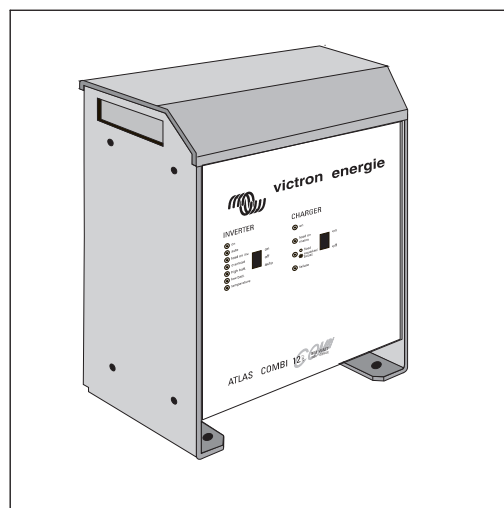
1.2 Victron Atlas Combi

The Atlas Combi is a compact combination of an inverter and an automatic battery charger, hence the name Atlas Combi. The coding of the Combi models is composed as follows:

example: Atlas Combi 12/800:

12 = 12 Volt, battery voltage
800 = 800 Watt, continuous power

Watt =
unit of power
Volt =
unit of voltage
Volt_{rms} =
root mean square
(effective value of
alternating wave)
Hertz =
unit of frequency



The Atlas Combi delivers a trapezoidal alternating current of 230 V, 50 Hz. Continuous power can be delivered at all times. A maximum short-duration power can be delivered for about three seconds.

Almost any electric or electronic device powered by a 230 VAC (50 Hz) supply may be connected to the inverter of the Atlas Combi.

1.3 The battery charging section

The battery charger of the Atlas Combi is suitable for a 230 V (50 Hz) mains voltage. The charger works automatically and delivers a maximum current of:

The batteries may remain permanently connected to the charger, even during winter storage. The Atlas Combi is suitable for starter batteries and semi-traction batteries of the lead/acid type in open or sealed designs. A starter battery may be connected to the second charger output. This charger can charge a starter battery with a maximum current of 4 amp.



1.4 The inverter section

The inverter converts a direct current of 12 V into an alternating current of 230 V, 50 Hz. With the Atlas Combi switched on (i.e. switch set to “on”) the inverter’s own no-load power consumption per model is:

A full-load efficiency of approximately 91% is achieved through the use of FET transistors (see illustration 1).

The Atlas Combi has a “stand by” facility, as standard. It is activated by setting the switch to the “auto” position. This switches the inverter to a lower stand-by voltage at times when the external equipment does not require power. This limits power consumption to 2 Watt and the inverter operates when a load is detected. Substantially reduced power consumption is achieved when there are intermittent loads. The sensitivity of the AES (Automatic Economy Switch) can be adjusted, for more information see section 5 “Start-up”.

starter battery =
a battery used
only to start
machines (such as
the engine of a
boat) and suitable
for high cold
currents

**semitraction
battery =**

PCB =
Printed Circuit
Board

The inverter is furnished with a “Load on inverter” LED. This indicates that the inverter voltage has been switched to the output.

1.5 Changeover

When a mains voltage is connected to the Atlas Combi, the inverter is automatically switched to mains after about 10 seconds. This changeover is indicated by the yellow “load on mains” LED (the “load on inverter” LED goes out) and the inverter is immediately switched off. More information about this changeover is given in section 5.4.

intermittent load =
a load regularly switched on and off automatically in equipment such as refrigerators or electric heaters with thermostats.

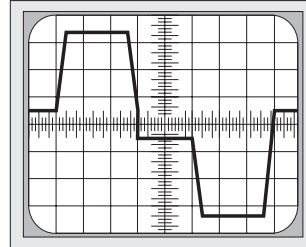


Illustration 1. No-load output voltage during “on” mode.

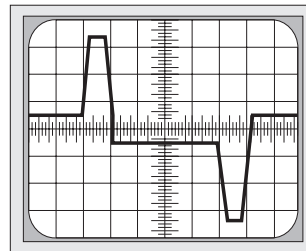


Illustration 2. No load output voltage during “auto” mode.

1.6 Charging

The automatic part of the charger starts up about 5 seconds after the charger switch has been set to the “on” position and 230 VAC is present.

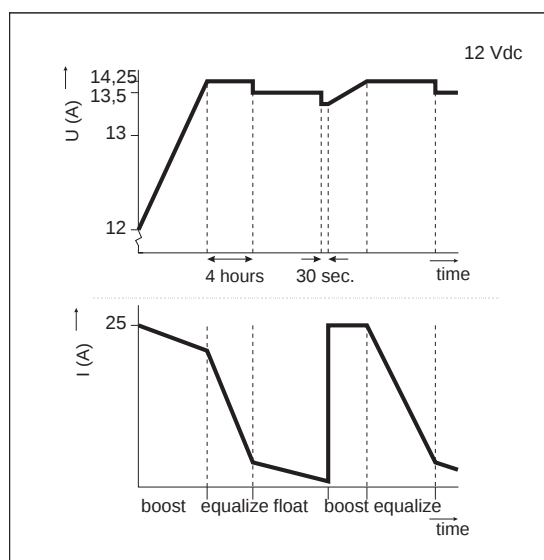
Charging takes place according to the IUoUo characteristic (see illustration 2).

12 V battery voltage

The charging current reaches a maximum at a battery voltage of 12 V (see section 1.3). The standard settings for boost charging voltage and float charging voltage are 14.25 V and 13.5 V respectively.



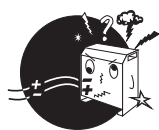
AC =
Alternating
Current.
DC =
Direct Current.



2. PROTECTIVE DEVICES



The Atlas Combi is extremely reliable thanks to numerous built-in protective devices. Descriptions of these devices are given below.



short circuit current = current supplied when a short-circuit on the output occurs.

2.1 Short-circuits

With the Atlas Combi 12/800, inverter output (which is protected against short-circuiting) amounts to 2.75 amp.

In this condition the output voltage approaches 0 V. Once the short-circuit has been rectified the inverter immediately resumes normal operation. This eliminates the need to fit a fuse in the inverter's output circuit.



2.2 Maximum power

There is an upper limit to the power which the inverter can deliver. This level, which is limited electronically, can be delivered for 3 seconds.

	continuous power	maximum-power
Atlas Combi 12/800	800 Watt	1500 Watt

2.3 Overload

If the inverter is subjected to a high load, it may reach the critical limit (approx. 1000 Watt) and the overload protection will be activated.

The overload protective device fitted to the Atlas Combi 12/800 works as follows:

- ☐ If the critical limit is reached, the red “overload” LED lights up. After 3 seconds, the inverter limits the power to ca. 1000 Watt.
- ☐ If the load drops below the critical limit within 3 seconds, the inverter continues working normally and the “overload” LED goes out.
- ☐ When, after 3 seconds, the inverter has reached the limit of its capacity and the load then drops below the

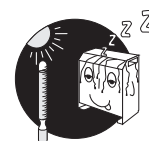
LED =
Light Emitting
Diode



- critical limit, another 3 seconds must elapse before the inverter again delivers full power.
- ❑ If the inverter is overloaded for too long, the thermal protection device will switch off the inverter after a few minutes.

2.4 Temperature

The temperature of the electronics is measured continuously. The inverter switches off before the temperature reaches an unacceptably high level due to short-circuiting, overloading or excessive ambient temperatures. The red “temperature” LED lights up when this situation occurs. The inverter restarts automatically once the temperature has dropped to an acceptable level.



input voltage =
DC voltage
delivered by
batteries

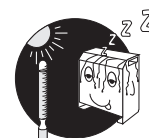
output voltage =
AC voltage
delivered by the
Victron product

2.5 Low input voltage

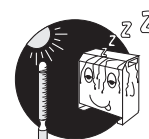
The inverter switches off if the input voltage is too low. This input voltage limit is 10 V. The inverter restarts when this voltage exceeds ± 11 V.

2.6 High input voltage

The inverter switches off if the input voltage is too high. The inverter switches off if the input voltage rises above 17.3 V and restarts once the input voltage has dropped below ± 16.3 V.



The Atlas Combi 12/800 is NOT protected against reversed polarity (i.e. “+” connected to “-” and “-” connected to “+”). Accordingly, please follow carefully the instructions which are given in section 4.3.



3. COMPENSATED CHARGING



V.T.S. =
Victron
Temperature
Sensor

The Atlas Combi has a temperature compensation facility which adjusts the charger voltage to the battery temperature.

In order to use this facility, a temperature sensor (V.T.S.) must be fitted to the battery. This is because a higher charging voltage can be used with a cold battery than with a warm battery. The reference charging voltage is 14.25 V at a battery temperature of 20°C (see illustration 4).

3.1 Connection of temperature sensor

In order to connect the temperature sensor, jumper HDR6 must first be switched off (position "0"; see Drawings section, drawing no. AC04013E, page 42). The temperature sensor is operating when its yellow LED is lit up (for information on jumpers, see section 4.6, "Jumpers, general").

3.2 Battery temperatures of up to +10°C

At temperatures of up to +10°C, the charger supplies a maximum charging voltage of 14.5 V. This output voltage is limited because at higher voltages problems might occur in the external equipment (see illustration 4, section "A").

3.3 Battery temperatures between +10°C and +50°C

In this temperature range, the output voltage is dependent on battery temperature (as measured by the sensor). As the temperature increases, the output voltage of the charger decreases by 30 mV/°C (5 mV/°C per cell). (See illustration 4, section "B").



3.4 High battery temperature

At battery temperatures of +50°C and above, the charging voltage drops sharply. At values of 55°C and above, the charger operates as a rectifier with an output voltage of 12 V (see illustrations 4 and 5, sections “C” and “D”).

The plastic bag containing connection materials includes instructions showing where the temperature sensor must be fitted. It is also necessary to change jumper HRD6 on the control PCB (see section “Drawings”, drawing number AC04013E, page 42)

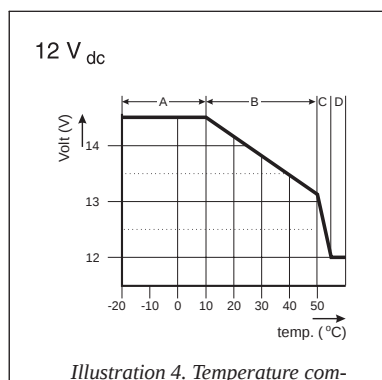


Illustration 4. Temperature compensation while loading.

4. INSTALLATION



4.1 Materials required for 230 V connections

- ☐ Two mains leads, 1.5 mm², maximum length 6 m;
- ☐ Screwdriver No. 1 (to connect the 230 V cables);
- ☐ Open-end spanner M8.

4.2 Location

- ☐ Install the inverter in a dry area with good ventilation.
NOTE:
High ambient temperatures will reduce output power, impair efficiency and shorten working life (see “SPECIFICATIONS”).
- ☐ There are holes in the bottom and rear of the cabinet for floor or wall mounting. For the dimensions, refer to section 8 “Drawings”, drawing number AC04015E, page 39.
- ☐ The Atlas Combi is suitable for mounting either on a wall or on a horizontal surface. Ensure that there is adequate ventilation, to allow for natural cooling. The front of the Atlas Combi is detachable. Make sure you will have easy access to the inside of the unit, from the front, after installation.
- ☐ Keep the distance between the Atlas Combi and the battery(ies) as short as possible.

4.3 Battery cables

The wire diameters of the battery cables are suitable for continuous loads and peak loads.

Distances to the battery(ies)	cable diameter:
less than 1.5 m	25 mm ²
more than 2.5 m but less than 4.0 m	35 mm ²
more than 4.0 m but less than 6.0 m	50 mm ²

Avoid contact resistances by tightening up all connections.

4.4 Connections

4.4.1 Earth

Connect the mains earth wire to the earth terminal of the AC terminal block. The circuit is functional only if the cabinet is connected to earth. An M4 earth screw is fitted in the bottom of the cabinet. Connect the cabinet earth terminal to earth. The earth for vessels is the hull or earth plate; for motor vehicles it is the chassis.

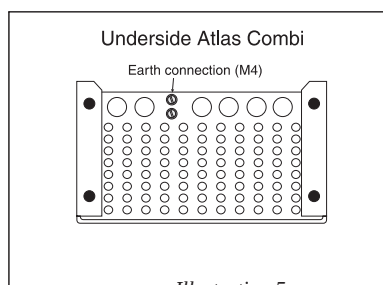


Illustration 5.

4.4.2 230 VAC output

The terminal block is located on the PCB. The 230 V external equipment must be connected to the inverter by means of a three-wire cable (see illustration 7). Use a cable with a flexible core and a wire diameter of 1.5 mm² to 2.5 mm². The connection arrangement of the output terminal block is:

Phase:	Brown or Black wire to:	L1
Neutral:	Blue wire to:	N
Earth:	Yellow/Green wire to:	PE

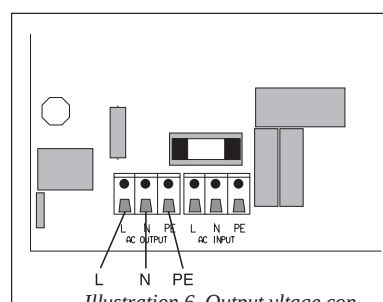


Illustration 6. Output voltage connections.

4.4.3 230 VAC input

A 230 VAC supply is needed if the Atlas Combi's battery charger is used. Use a three-wire cable with a wire diameter of 1.5 to 2.5 mm². The connection arrangement of the input terminal block is in the same order as the output terminal block (see illustration 8).

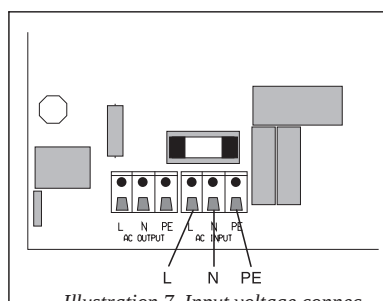


Illustration 7. Input voltage connections.

The inverter will be damaged if another alternating current (e.g. from a generator) is connected to the 230 V output.

output terminal block =
output (delivery
230 Volt)

input terminal block =
input (acceptance
230 Volt)

remote connections =
connections for
remote control

4.4.4 Battery

The functioning and working life of equipment and batteries depend on the battery connections being made correctly.

Between the battery and the Atlas Combi there is a circuit with a low voltage and high

current. Resistance decreases accordingly as cables become shorter and thicker. The combined resistance of the two cables must not exceed 4 milliohms.

As previously explained (in section 2.6) the inverter is not protected against reversed polarity. The following procedure should therefore be used:

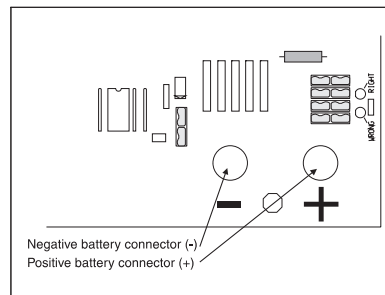
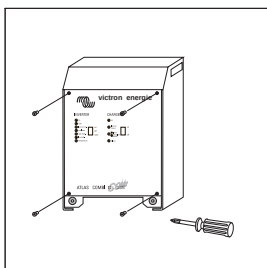
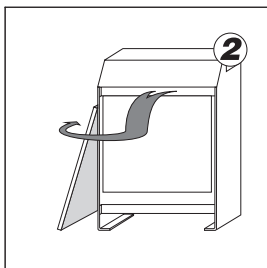


Illustration 8. Battery connections.



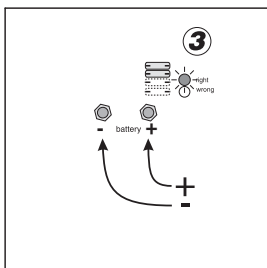
step 1

Unscrew the four screws on the front of the cabinet (1).



step 2

Carefully slide the front of the cabinet to one side.



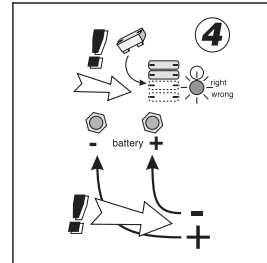
step 3

Satisfy yourself that the four fuses (30 ampere) have been disconnected. You will find the fuses with the other connection material. Connect-up the battery cables; the “+” (red) to the right-hand connector and the “-” to the connector on the left. If the connections have been made properly, the green LED (“right”) will light up.



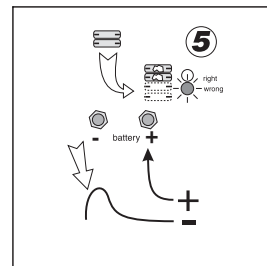
step 4

If the red LED (“wrong”) lights up, this means that the battery cables have been wrongly connected. In this event, immediately disconnect the battery cables. Switch the cables over, then reconnect them.



step 5

When the green LED “right” is lit up, the four 30 ampere fuses can be fitted. To this end, disconnect the plus pole of the battery cable. Fit the fuses, then reconnect the plus pole again.



step 6

Check that the connections have been sufficiently tightened. Use the M8, open-end spanner.

4.5 Starter battery

Connect the starter battery to terminals 19 and 20 of the “remote” terminal blocks (19 is the “+” and 20 is the “-” of the battery). A wire thickness of 1.5 mm² is sufficient for connecting-up this battery.

Ensure that all switching between different 230 VAC power supplies (e.g. shore generator) takes place by means of DOUBLE-POLE switches. Otherwise the Atlas Combi may be damaged.

double-pole switching
switching by means of a relay which has two separate contacts, i.e. one for phase and one for the neutral wire

4.6 Jumpers, general

Jumpers are small removable connectors situated on the PCB. By placing and removing the jumpers various features can be enabled or disabled. Illustration 10 shows how to set the jumpers.

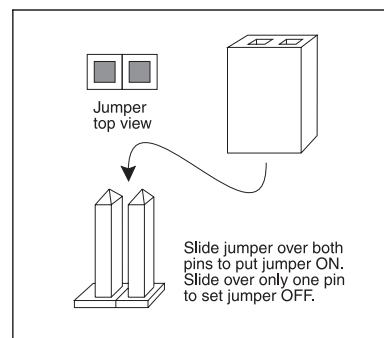


Illustration 10. Jumpers.

4.7 Potentiometers, general

Potentiometers are adjustable resistors. Turning the screw increases or reduces the values associated within the potentiometer.

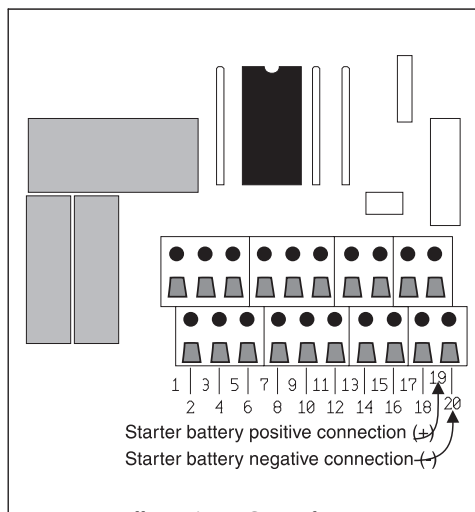


Illustration 9. Starter battery connections.

These values may concern matters such as voltage, frequency or switch-on sensitivity. The screw must be turned by means of a screwdriver (No. 0) and sealed with Tipp-Ex or nail polish (see illustration 11).

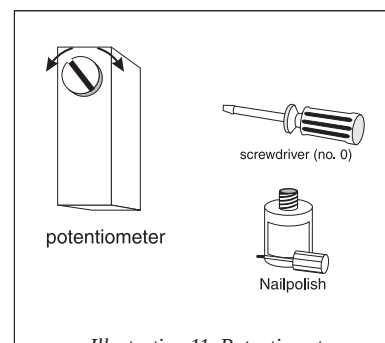


Illustration 11. Potentiometers



5. START-UP



5.1 Operation

The switches and LEDs of the inverter are located on the front of the Atlas Combi (see illustration 12).

inverter	description
on	= switched on
auto	= automatic (AES)
load on inverter	= inverter switched to the output
overload	= overload indication
high battery	= high input voltage
low battery	= low input voltage
temperature	= temperature indication

charger	description
on	= switched on
load on mains	= load switched at input
float	= charging voltage for checking the battery
equalize/boost	= charging voltage, once battery are fully charged
failure	= charger not functioning properly

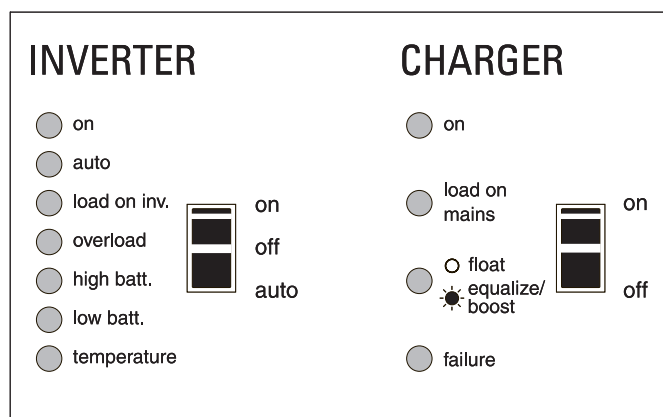


Illustration 12. Atlas Combi 12/800 frontpanel.

5.2 “On” position

Start the inverter by setting the “inverter” switch to the “on” position. The LEDs “on” and “load on inverter” light up if an output voltage is present.

5.3 “Auto” position

When the inverter is in the “auto” mode (bottom position of the switch), the yellow “auto” LED and the “load on inverter” LED light up to indicate that the AES has been activated. Refer to the fault tracing list if this does not occur. The inverter starts as soon as the load at the output exceeds 9 Watt. The yellow “auto” LED goes out and the green “on” LED lights up. The inverter switches back to the “auto” mode automatically as soon as the load is switched off. The yellow “auto” LED lights up again.

5.4 Changeover

5.4.1 Engaging 230 V mains

If the inverter is connected to the 230 V mains, the following sequence of events will occur:

1. After about 10 seconds, the load is switched from the inverter to the mains network. The yellow “load on mains” LED lights up.
2. The inverter switches off. All LEDs go out.
3. The battery charger starts to operate:
4. The “on” LED lights up.
5. The “equalize/boost” LED lights up.
6. The charging capacity of the charger reaches a maximum about 5 seconds after the “equalize/boost” LED lights up.

5.4.2 Disengaging 230 V mains

If the 230 V mains voltage is switched off, the following sequence of events will occur:

1. The load is switched to the inverter.
2. The inverter starts immediately. The “load on inverter” and “on” LEDs light up.
3. The external equipment is reconnected to a 230 V supply within 1 second.
4. The “load on mains” LED goes out and the battery charger is switched off.

5.5 Charger

The charger of the Atlas Combi is switched on by setting the “charger” switch to the “on” position. The “on” and “equalize/boost” LEDs then light up.

The charging current starts to rise a few seconds after the “on” and “equalize/boost” LEDs light up.

The voltage rises gradually, depending on battery capacity, discharge and consumption.

When the battery reaches a voltage of 14.25 V, the charging current drops.

This high charging current is maintained for four (or eight) hours, producing optimum recharging of the batteries. After this period the charger switches to a lower voltage of 13.5 V. The “equalize/boost” LED is now off.

The battery charger works with the VDL 2-step charging system made by Victron Energie. It automatically keeps the battery in a perfectly charged condition for extended periods. External equipment has immediate access to power.

If, during the float charge cycle, the voltage drops below 13.5 V for longer than 30 seconds, a new boost charge cycle is started. This may occur after the switching on of external equipment which requires more than 30 amp. A new “boost - equalize - float” cycle is also started if the charger is switched off briefly.

With the VDL system, the battery can remain permanently connected to the battery charger, without overcharging (gassing).

V.D.L. =
Victron trickle
charge system
float charge
mode =
recharging
boost charge
mode =
initial charging

5.6 Adjustments

Open the cabinet by unscrewing the four outer screws on the front, which is then removed. The adjustment points are on the control PCB of the inverter. The PCB has six adjustment points (see illustration 13).

5.6.1 Frequency

The frequency is set to a standard value of 50 Hz although this can be altered by turning potentiometer P1 to the left (“-”) or to the right (“+”). This can be measured with a digital frequency meter. Please note that analog frequency meters often give incorrect readings.

5.6.2 Output voltage

The output voltage is set to a standard value of 225 Vrms at a load of continuous power and an input voltage of 12 V. The unloaded output voltage is approximately 232 Vrms. The output voltage may be adjusted by turning potentiometer P2 (top right) to the left (“-”) or to the right (“+”).

5.6.3 Switch-on sensitivity on “auto”

If the inverter fails to start when the external equipment requests power, the AES sensitivity may be increased by unscrewing the front PCB and turning potentiometer P5 (in the centre of the PCB) to the right. Check whether the inverter returns to “auto” once the external equipment has switched on.

5.7 Battery charger

5.7.1 Maximum charging current

The maximum charging current has been set to 30 amp by means of potentiometer P6 (the one farthest to the right). Measure this with a separate current meter. Switch on the charger and apply a load that creates an output voltage of 12 V. Turn potentiometer P6 until the correct current has been set. Seal the adjusting screw of potentiometer P6 with nail polish or Tipp-Ex.

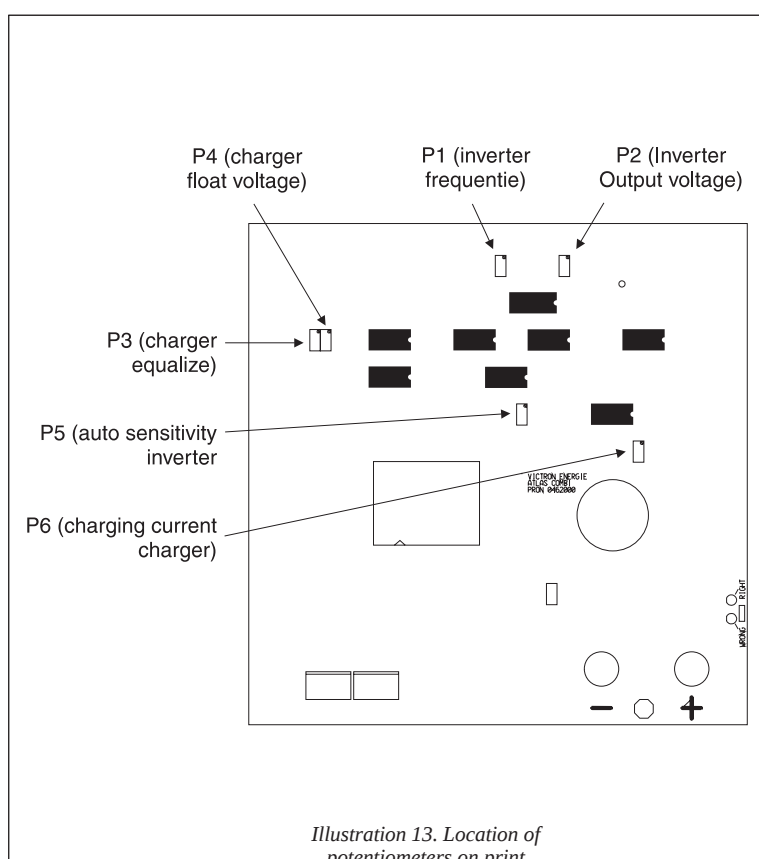
5.7.2 Adjustment of voltage

The battery charger operates with two charging voltages which must be adjusted separately. First set the low charging voltage (float) and then the high charging voltage (equalize).

5.7.3 Float

The low charging voltage is adjustable by means of potentiometer P4 (the one on the left). Switch on the charger and disconnect all external equipment. Wait until recharging has finished and the yellow “equalize/boost” LED has gone out.

Connect a voltmeter with a reading accuracy of at least 0.1 V to the output of the charger. Turn potentiometer R4 until the correct voltage is set. Seal the adjusting screw of potentiometer R4 with nail polish or Tipp-Ex.



5.7.4 *Equalize*

The high charging voltage is adjustable by means of potentiometer R3 (farthest left). Switch on the charger. Wait until the batteries are charged to a level where the charging current is below 5 amp. The yellow “equalize/boost” LED should now light up. Connect a voltmeter with a reading accuracy of at least 0.1 V to the output of the charger. Turn potentiometer R3 until the correct voltage is set. Seal the adjusting screw of potentiometer R3 with nail polish or Tipp-Ex.

5.8 **Maintenance**

The Atlas Combi does not require any special maintenance. It is advisable to check the electrical connections periodically (once a year). Keep the converter as dry and clean as possible.

6. FAULT TRACING LIST



6.1 General

The following tables will facilitate the rapid tracing of the most common types of faults.

For the checks to be carried out on the charger:

- ☐ Connect the mains supply to the charger.
- ☐ Disconnect all 12 V external equipment from the batteries.

The fault tracing tables assume the following phenomena:

- ☐ the inverter does not start;
- ☐ the AC output voltage is too low;
- ☐ the charger does not start;
- ☐ The battery(ies) overcharge;
- ☐ The battery(ies) do not charge fully.

6.2 The inverter fails to start

step 1

Set the “inverter” switch to the “on” position and check whether the green “on” LED lights up. Go to step 2.

step 2

The following may occur:

- ☐ The green “on” LED lights up and the Atlas Combi produces only a “buzzing” noise; go to step 3.
- ☐ The green “on” LED lights up and the “overload” LED lights up after a few seconds; go to step 3.
- ☐ The green “on” LED lights up and the “battery low” LED lights up; go to step 4.
- ☐ The green “on” LED does not light up; go to step 8.

step 3

Remove the load from the AC output and check whether the “overload” LED goes out when the inverter is switched on. If it does not, go to step 8.

step 4

Check the input voltage of the battery(ies) on the terminals of the Atlas Combi. The input voltage of a 12 Volt battery should lie between the following two values:

min. input voltage: 11 Volt

max. input voltage: 16 Volt

If the input voltage is not between the minimum and maximum values, go to step 5. If the input voltage is correct, go to step 7.

step 5

Check whether the 12 V connecting cables are properly connected and the wires are of a sufficient diameter. Rectify the situation if the connecting cables are not properly connected or the wire diameters are not in conformity with the specifications. If this action does not solve the problem, go to step 6.

step 6

The batteries must be charged. Go to step 7 if the batteries have been sufficiently charged or recharged but the inverter does not start.

step 7

Check whether the plus (“+”) and minus (“-”) of the battery(ies) and the Atlas Combi correspond. Go to step 8.

step 8

Contact your Victron Energie dealer to have the Atlas Combi repaired.

6.3 The AC output voltage is too low

step 1

If you have determined with an RMS voltmeter (moving-iron voltmeter) that the AC output voltage is too low, go to step 2.

step 2

Turn potentiometer P2 (see section 5 “Adjustments”) to the right and check whether the voltage returns to the normal value. If it does not, go to step 3.

step 3

Contact your Victron dealer to have the Atlas Combi repaired.

6.4 The battery charger does not start

step 1

Turn on the charger by setting the “charger” switch to the “on” position. If the “on”, “equalize/boost” and “current amps” LEDs light up, proceed to section 6.6. If the LEDs of the battery charging section fail to light up, go to step 2.

step 2

Turn off the 230 V mains supply. Check the ceramic fuse (F7). This is located on the charger PCB in the cabinet. In addition, use a voltmeter to check whether the input voltage exceeds 200 Volt. If the fuse is intact, go to step 4. If the fuse is defective, proceed to step 3.

step 3

Replace the defective fuse. Reconnect the 230 V mains supply to the Atlas Combi. The problem has been solved if the fuse operates normally. If it becomes defective again, go to step 4.

step 4

Contact your Victron Energie dealer to have the Atlas Combi repaired.

6.5 The batteries overcharge

step 1

Check the battery voltage when the “equalize” LED lights up. Go to step 2.

step 2

If the battery voltage is about 14.25 V on a 12 V battery(ies), contact the manufacturer of the battery because the battery is probably defective. If so the battery(ies) must be replaced. If the voltage is higher than the above values, go to step 3.

step 3

Check the jumpers on the charger PCB. They are located to the left on the inside of the door. For normal usage, jumpers HDR 1, 2, 4 and 6 are switched on, jumper HDR 5 is switched off and HDR 3 is in the left-hand position (see section 8, drawing number AC04013E on page 42). If this is the case, go to step 4.

step 4

Contact your Victron dealer to have the Atlas Combi repaired.

6.6 The batteries do not charge fully

step 1

Check whether the cables to the batteries are properly connected to the cable terminals. Repair these connections if the contacts are defective. If this does not solve the problem, go to step 2.

step 2

Check the mains voltage at the input of the Atlas Combi. If it is higher than 200 V_{AC}, go to step 3. If it is lower than 200 V_{AC}, go to section 6.3.

step 3

Allow the Atlas Combi to charge continuously for about eight hours with the 12 V external equipment switched off. The problem has been solved if after this period the 12 V batteries have values of about 14.25 V. If the values are lower, go to step 4.

step 4

Check whether too many pieces of external equipment are connected to the Atlas Combi and check the batteries for:

- ☐ defective cell(s);
- ☐ a maximum capacity of 300 a.h.
- ☐ If the batteries are in proper working order, go to step 6. Any battery(ies) not meeting the specifications, must be replaced. After replacement, go to step 5.

step 5

Check the charger again. The problem has been solved if the charger works properly. If it does not, go to step 6.

step 6

Contact your Victron dealer to have the Atlas Combi repaired.

step 7

Check the mains supply or generator supply for the correct voltage, drops of voltage in lines, excessively long cables, etc. If necessary consult the manufacturer of the item(s) concerned.

7. SPECIFICATIONS



7.1 Inverter

7.1.1 Input



Nominal input voltage:	12 V _{DC}
Input voltage range:	10 -17.25 V _{DC}
Switch-on voltage:	11 V _{DC}
Switch-off voltage:	10 V _{DC}
Voltage ripple:	maximum 5% RMS
Nominal input current:	80 amp
Maximum input current:	150 amp
No-load in "auto" mode:	2 Watt
No-load in "on" mode:	7.5 Watt
Input fuses	4 x 30 Amp (carfuse)

7.1.2 Output



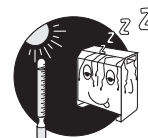
Output voltage:	230 V _{AC} + 5%
Frequency:	50 Hz; + 1 Hz
Waveform of output voltage:	Trapezoidal
Power factor:	0.9 capacitive to 0.4 inductive
Power at 20°C:	800 Watt, power factor 1
Power at 30°C:	700 Watt, power factor 1
Switch-on behaviour:	The inverter can start under any load conditions. The nominal output voltage is reached in 50 msec.

7.1.3 Automatic Economy Switch (AES)

Switch-on:	9.5 Watt
Adjustable sensitivity:	2 - 48 Watt
Switch-off:	4.5 Watt
Test voltage on "auto":	65 V _{rms} 50 Hz
Efficiency:	91% (maximum)
Dynamic stability:	Maximum surges of 10% when switching on and off at 50% nominal load. Recovery time is 1/2 period.



Overload protection:	The delivered power is limited electronically to: 185% (12 Volt battery) of the continuous power at the nominal input voltage.
Short-circuit protection:	The output is short-circuit proof. The short-circuit current is 2.75 A _{rms} .
Ambient temperature protection:	Sensors measure the temperature of critical components. The sensors switch off the inverter if the temperature on the FETs rises above 75°C and/or the transformer temperature rises above 140°C. The inverter restarts automatically after the components have cooled down.
High/low input voltage protection:	The inverter switches off automatically at values above 17.25 V _{DC} and below 10 V _{DC} .



7.2 Battery charger

7.2.1 Input

Nominal input voltage:	230 V _{AC}
Frequency:	47 - 63 Hz
Input voltage range:	10%
Input voltage fuse 230/240 V:	1 x 10 amp slow; 5 x 20 mm
Power factor:	0.7 inductive



7.2.2 Output

Nominal charging voltage:	12 V _{DC}
Boost charging voltage:	14.25 V _{DC}
Float charging voltage:	13.5 V _{DC}
Charging characteristic:	IUoUo according to DIN 41772
Voltage stability:	1 %
Output current:	30 amp
Trickle charge fuse	15 Amp (car fuse)



7.2.3 Changeover

Maximum switching capacity:	2300 Watt
Changeover time:	0.1 sec.
Changeover delay:	ca. 10 seconds
Protective device:	ceramic fuse, 10 amp slow; 5 x 20 mm

7.3 General

EMC:

Electro-magnetic compatability according Council Directive 89/336 EEC

Emission	EN 55014 (1993) EN 60555-2 (1986)
Immunity	EN 50082-1 (1991)

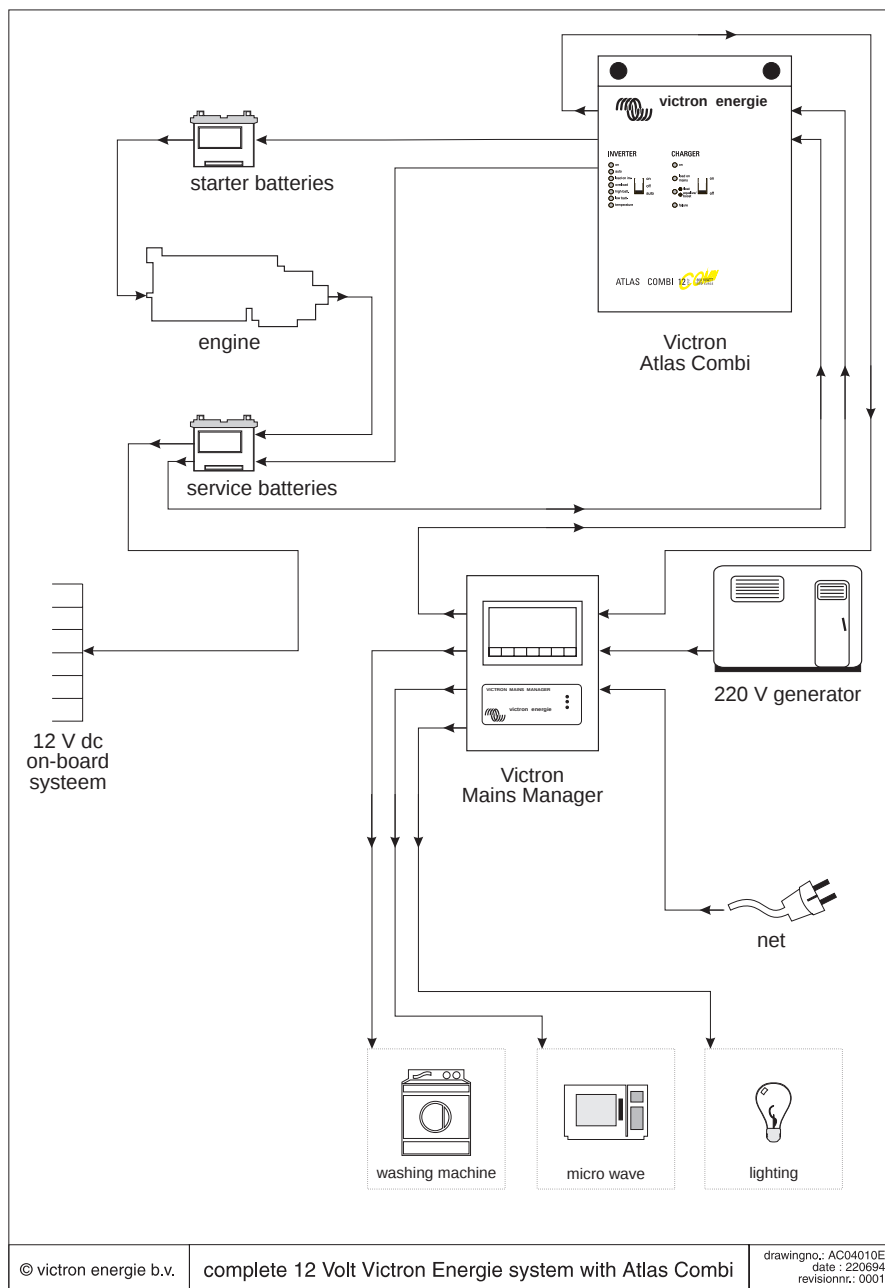
7.4 Mechanical data

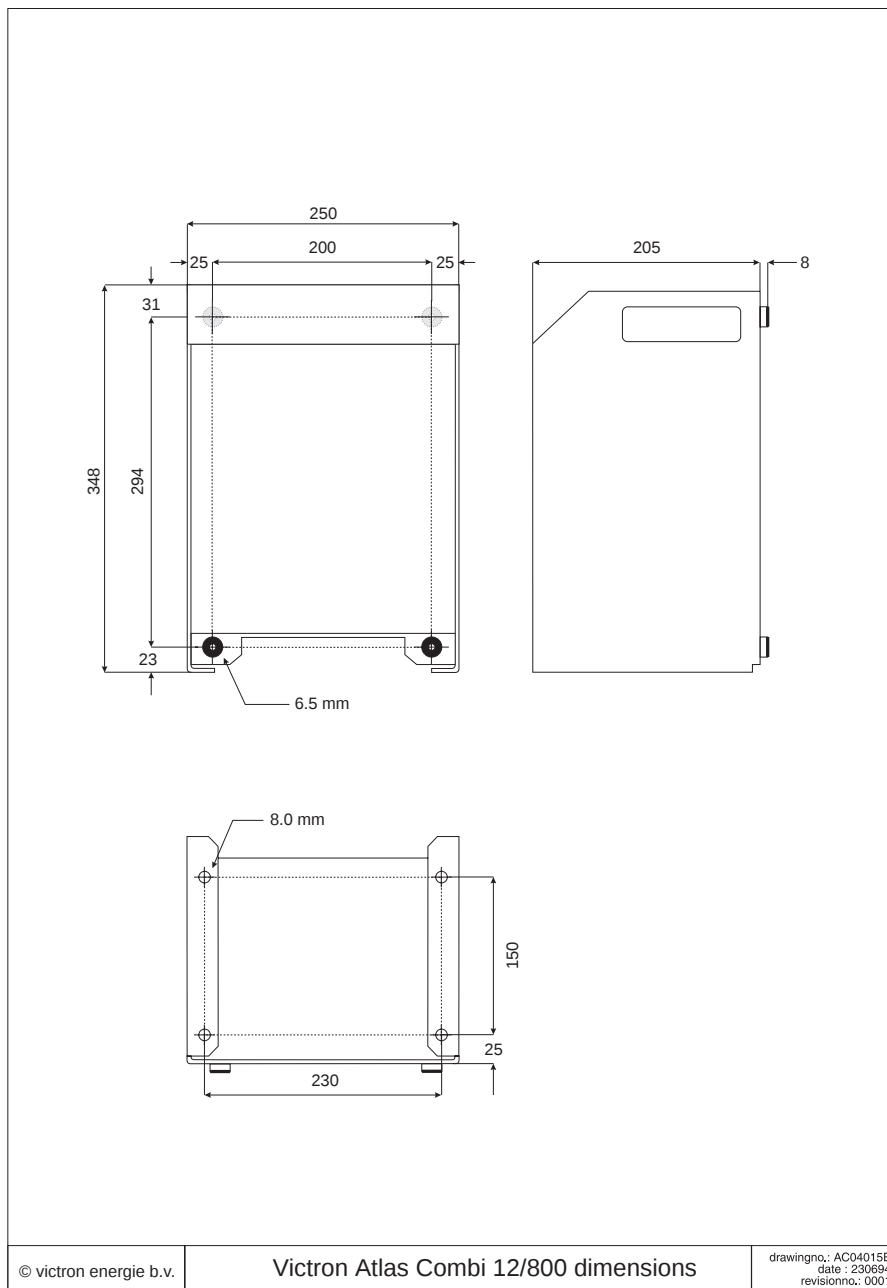
Noise level:	40 dB(A)
Cabinet:	Aluminium, resistant to seawater
Protection:	IP21
Colour:	Blue (RAL 5012), epoxy
Dimensions (H x W x D):	350 x 250 x 213 mm
Weight:	16,5 kg
Connecting points:	
Output	230 V _{AC} terminals (2.5 mm ²)
Output/input 12 V _{AC} :	M8 screws
Trickle charger:	
Input:	230 V _{AC} terminals (2.5 mm ²)
Earth	M4 screw
Cooling:	Natural cooling
Relative humidity:	95% (maximum)

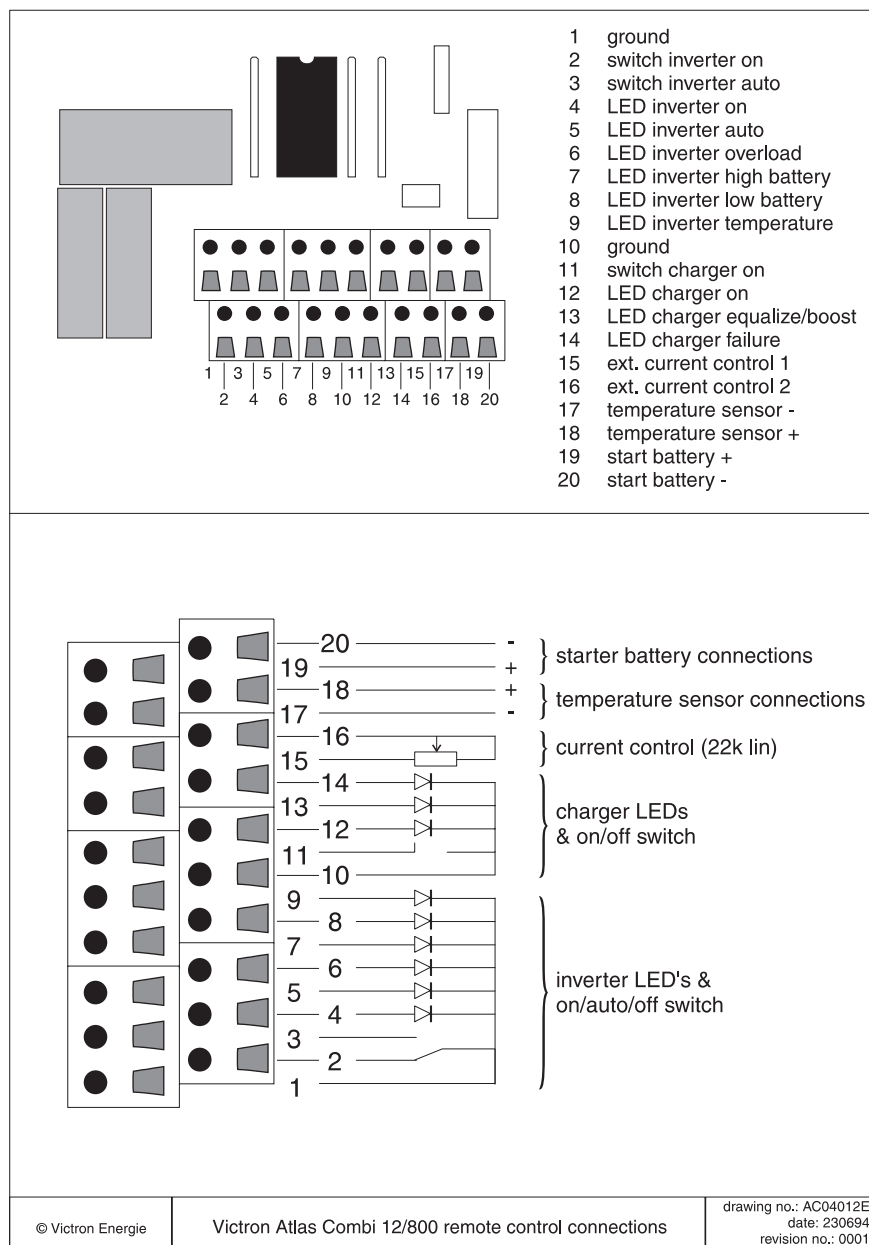


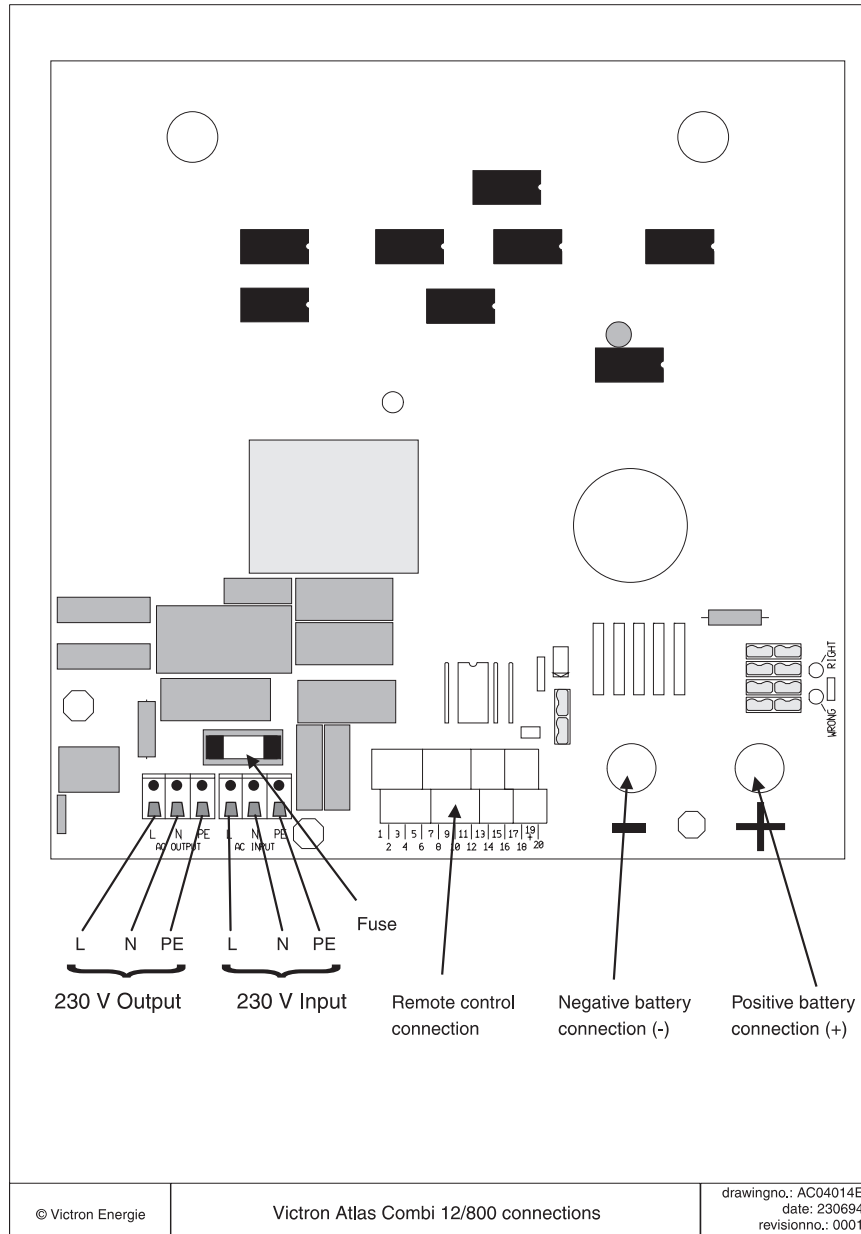
8. DRAWINGS

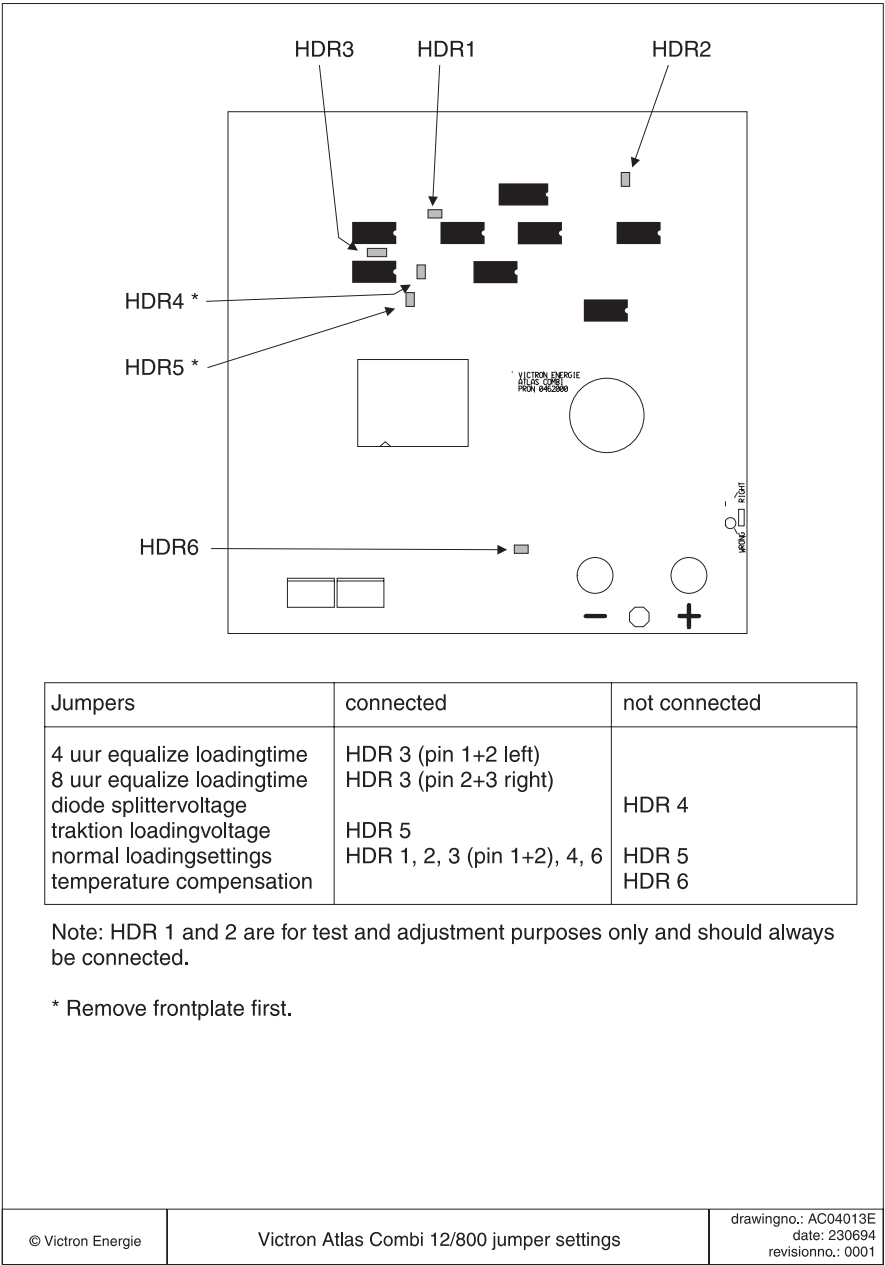
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