

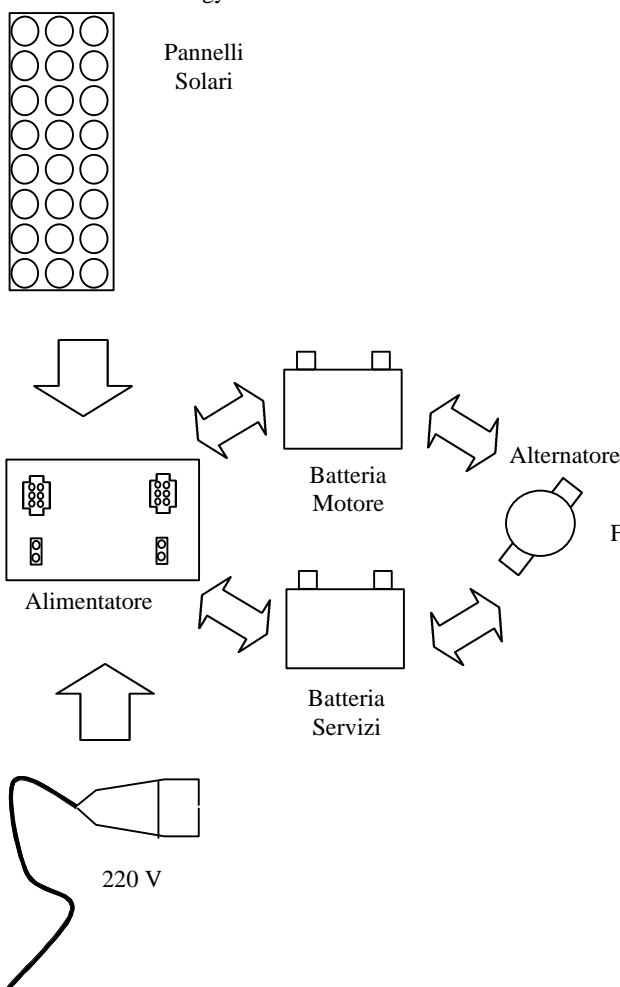
Application Notes for installing solar panels.

Introduction

These notes concern the installation of solar panels on motorhomes fitted with a distributed intelligence system.

General section

The distributed Intelligence control system developed by ArSilicii is capable of controlling the various sources of energy available on the motorhome.



In particular, the flows of energy are roughly shown below:

The power supply unit is thus capable of charging the batteries performing the charging cycle selected by the user, depending on the source available.

This way, no other appliances are necessary between the solar panel and the power supply unit, because, as mentioned previously, the charge regulator functions are already carried out by the power supply itself.

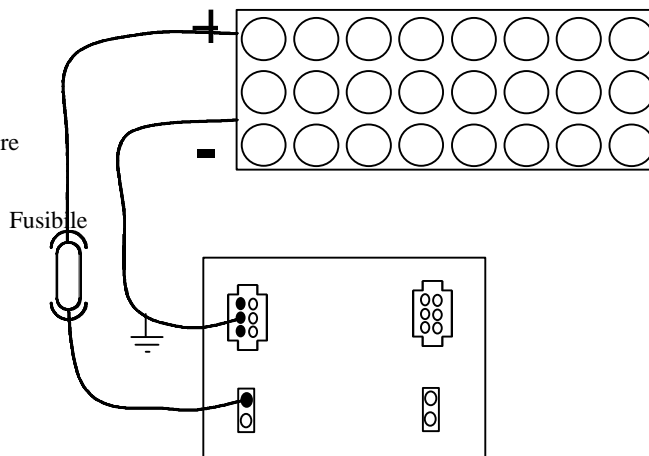
The power supply unit, in its base version, supports solar panels up to a **maximum of 100 Watt. (Current at the maximum power of 6 A).**

With this type of panels, the power supply unit also provides an estimate of the power that can be delivered by the panels and a main switch for cutting the panels themselves off.

In addition, thanks to the data normally given to the user of the battery voltage and current delivered to/from the services battery, it is possible to have an accurate evaluation of the energetic status of the vehicle and an index of the functionality of the panels.

Case 1 : Assembly of only one panel

In this case the panel will be connected as follows:



It should be noted that along the cable of the positive terminal an adequately-sized fuse is installed.

For example, for a 100 W panel the maximum current is approx.:

$$I_{max} = P_{max} / V_{min} = 100 \text{ W} / 15 = 6.6 \text{ A}$$

Increasing by 20 % it is possible to use a 10 A fuse .

Conversely, the negative terminal is to be connected to the most convenient point among those available connected to the shared point, i.e. to the battery negative terminal. In the example the shared point is taken from any contact of the left row of the big

connector on the left of the panel of the power supply unit.

Case 2 : Assembling two panels

Still taking into account that the maximum power that can be delivered by the sum of the two solar panels fitted must be below 100 W, it is however possible to add more than one panel, for example two 50 W panels.

Connection is similar to the previous one with the difference that a diode is needed for each panel to prevent a panel from discharging part of its power to the other if the panels are not insulated regularly or their output is not identical.

Also in this case, the negative terminals are taken to the shared point, i.e. to the battery negative terminal.

The diodes to be used must be able to withstand a maximum voltage of 20 V and a 15 A current.

A suitable model may be the 1N5401 diode or an equivalent. ($V_{max} 100V$ $I_{max} = 3A$)

