Plasmatronics **Jackal**

CVM kit instructions

The Plasmatronics **Jackal** has three modes of operation:

- Current sense mode (typically good for PWM and MPPT regulators)
- Frequency shift mode (only for AC coupled systems that use frequency shift control)
- Constant voltage mode (CVM)(good for AC coupled systems without frequency shift control and can improve yield in PWM/MPPT systems that have a FLOAT output)

The Jackal CVM kit is intended for use with systems that use Constant Voltage Mode (CVM). In practice, CVM can be implemented in two different ways:

- CVM only
- CVM combined with Current sense mode

CVM only

This means that the Jackal controls the battery voltage by drawing power from the system and delivering it to the Jackal load. The voltage is fixed at 13.7, 27.4 or 54.8V for 12,24 and 48V systems respectively.

The bus splitter supplied is used to install both the Jackal iSense current sensor and the CVM cable to the BUS port. CVM only mode is activated by joining the black and green wires together. The bus splitter comes with a self-adhesive pad that can be used to mount it inside the Jackal case as shown below. The iSense current sensor must also be fitted to the BUS splitter, but no wire is threaded through the hole. It is possible to run a system with the wires permanently connected together, but it results in quite crude battery charge control and is not recommended for that reason. A better solution is to arrange the charge controller, inverter or other device doing the charge controller function to make the connection only when the system is in the FLOAT mode. Some charge devices will have a contact closure output for this function. Some may require a relay. Some devices do not give a FLOAT output at all.

The voltages have been selected to be slightly under the typical float voltages on most devices so as to draw as much power as possible without compromising the float stage regime significantly. When the charging device reaches the FLOAT stage and makes the connection, the Jackal starts delivering power to the load and takes all the power that the battery doesn't need. This is a lot better than connecting the wires all the time, but it still wastes some energy that could have been scavenged before the device went to float.

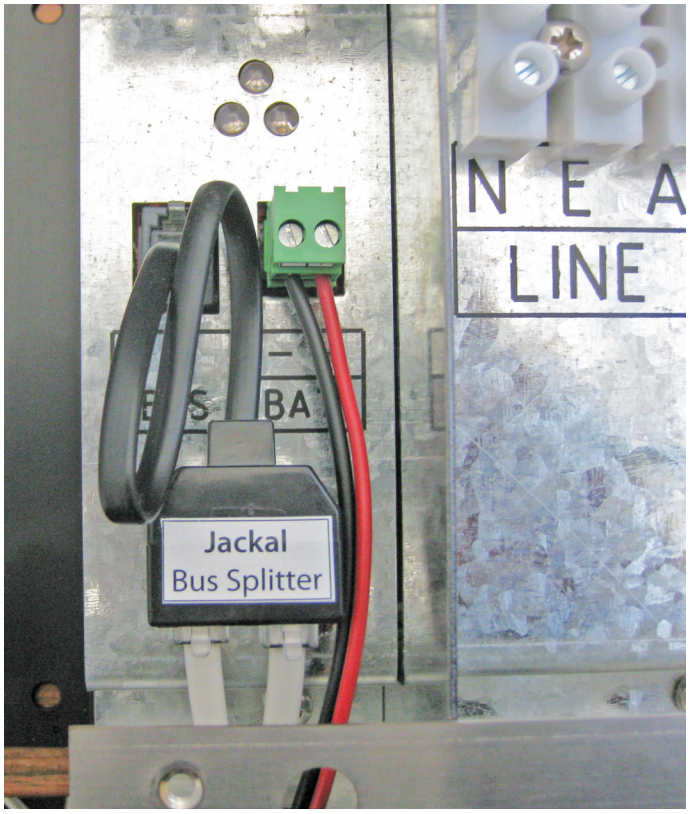
CVM combined with Current sense mode

This improves the situation further. The bus splitter supplied is used to install both the Jackal iSense current sensor and the CVM cable to the BUS port. The iSense is fitted according to the Jackal instructions for Current sense mode and the CVM cable is fitted as described above under CVM only.

In this mode the Jackal extracts whatever power it can in current sense mode until the controlling device reaches the FLOAT mode and then it extracts all the available power as in CVM only.

This implementation (CVM + Current sense) is preferable to CVM only wherever possible and usually results in harvesting significantly more energy. For some common AC coupled inverter combinations it also dramatically improves the battery voltage regulation and charge control in both modes.

www.plasmatronics.com.au rev 1.0 09/18



Jackal Bus Splitter connection