Amplifier Monitor

The function of this circuit is to set the bias currents of the 2 active devices on the Ampleon BPC2425M9X2S250 pallet and monitor the current and power taken by this amplifier and provide a 12 volt supply for 2 x 50mm fans forced cooling. Some of the circuit is taken from the Ampleon datasheet.
There is a 1.3" OLED display and 2 pushbuttons. The display has 2 modes, normally it shows the voltage and current being taken by the module along with the total input power. When setting the bias currents, one of the 2 bias levels is shown instead of the power.
The current monitors are fully isolated and can be connected in either polarity. They have a range of +/-25A and the resolution is 6.25mA so the display will change in about 6mA steps (6, 12, 18, 25 ...).

Wiring.

At one end the connections are arranged to provide a one-to-one correlation to the module. The board needs a ground (0v) connection; it can take its supply voltage (30v) from either current monitor. These current monitors may be connected in any polarity and either may be used for the 2 stages.

Removal of Offset.

At first switch-on there may be an offset of 1 or 2 bits which will manifest itself as +/-0.006 or 0.012; this can be removed (only once per switch-on) by pressing both buttons together.

Bias setting mode.

This is entered by holding down one of the buttons whilst applying the power. Which button is held is down determines which bias setting will be adjusted.
The bias levels can range from 0 to 3.300 volts in 1mV steps. Note that there is a resistor divider and thermistor circuit before this voltage goes to the module, so this is not the value output to the module.
Pressing any button will either increment or decrement the bias value;

holding the button will cause the value to change rapidly. Monitor the current value whilst adjusting the bias until it is set correctly 50mA for the first stage and 25mA the output stage. Do ***not*** turn-off the circuit until the display reverts to the Input Power (there is a 10 second timeout) as the bias value is not saved until then.

Push-to-Talk.

An additional switch may be used to disable the bias outputs. This requires a connection to pin 18 of the microprocessor, a series resistor and a decoupling capacitor.
However, the quiescent power is only 2 watts so this may be unnecessary.