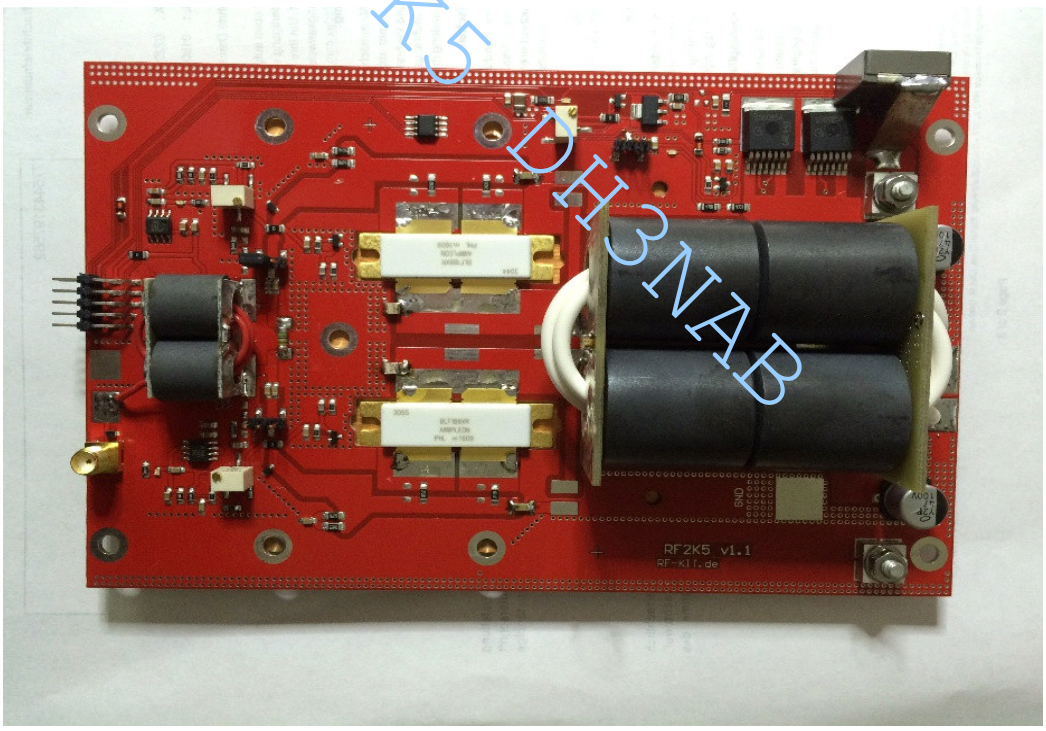
Setting up and adjusting the RF2K5

I want to point out that there is a whole lot of power here!

A cautious approach is necessary in order to avoid costly damage.

There are to be set, only the two bias currents and the current limit.

However, you can here through carelessness quickly destroy an LDMOS.



1. Pin assignment of the 10 pin male header

Pin 1 = + 12V Bias Input

Pin 2 = Ground / GND

Pin 3 = Voltage sensor for the 50V voltage measurement. An output of 5V = 60V measured.

Pin 4 = not used

Pin 5 = +12V level to apply the 50V operating voltage across the MOSFET to the LDMOS. At the same time the current limiting is activated.

This pin can be permanently set to + 12V, but must, in the case of the current limit being activated the +12V must be removed briefly in order to perform a reset.

If you connect this pin to the +12V supply on Pin 1 (+12V Bias) it is switched each time the bias voltage is applied to the LDMOS. In current limit it is then automatically reset after PTT OFF and ON.

Pin 6 = Ground / GND

Pin 7 = This pin can be used both as an input and as an output.

- Output: 11.5 V = OK, <3V = current limit active
- Input: GND switches the 50V for the LDMOS OFF.

Pin 8 = 1 wire temp sensor

Pin 9 = Current Sensor 5V = 80A

Pin 10 = + 5V supply temp sensor

Pins viewed from the front of the connector.

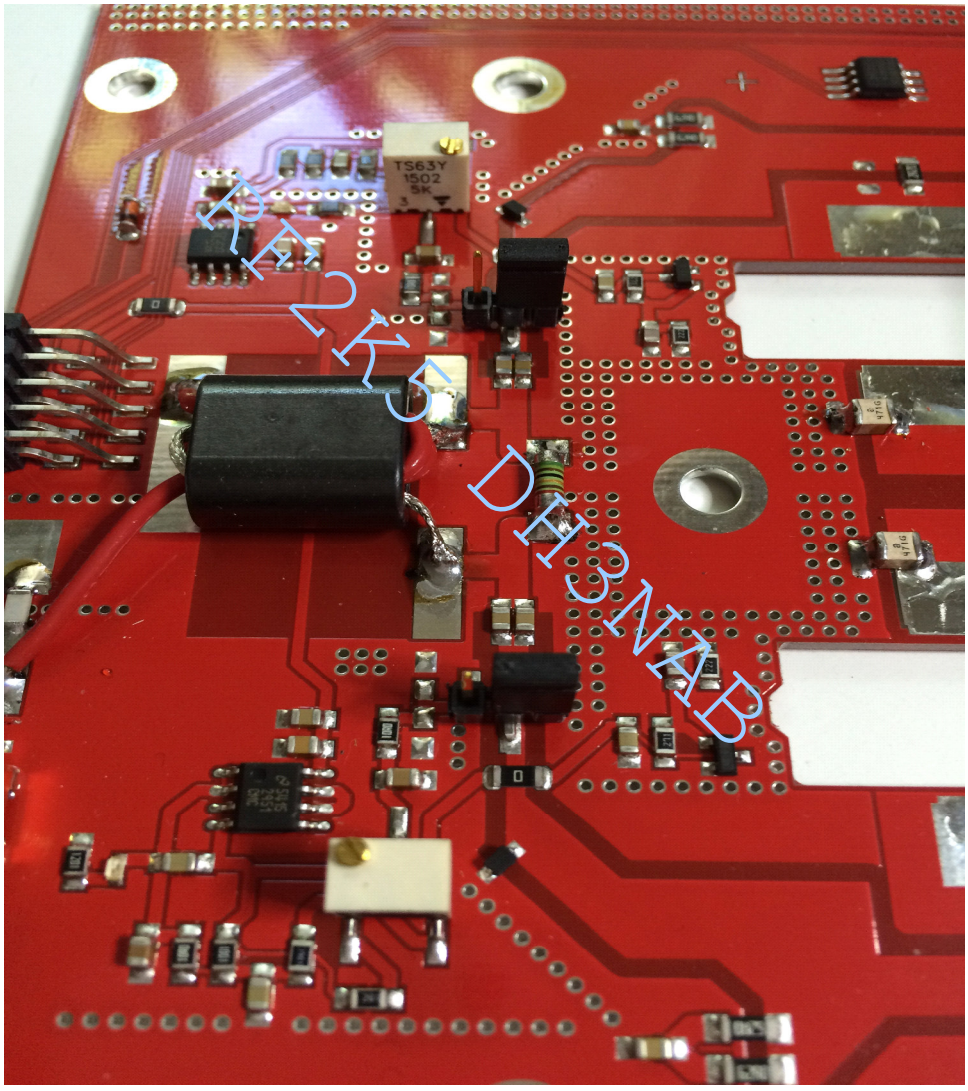
2	**4**	**6**	**8**	**10**
1	**3**	**5**	**7**	**9**

2. Preparations

Bias Jumpers:

Inserted on the left two pins = Bias ON
Inserted on the right two pins = Bias OFF

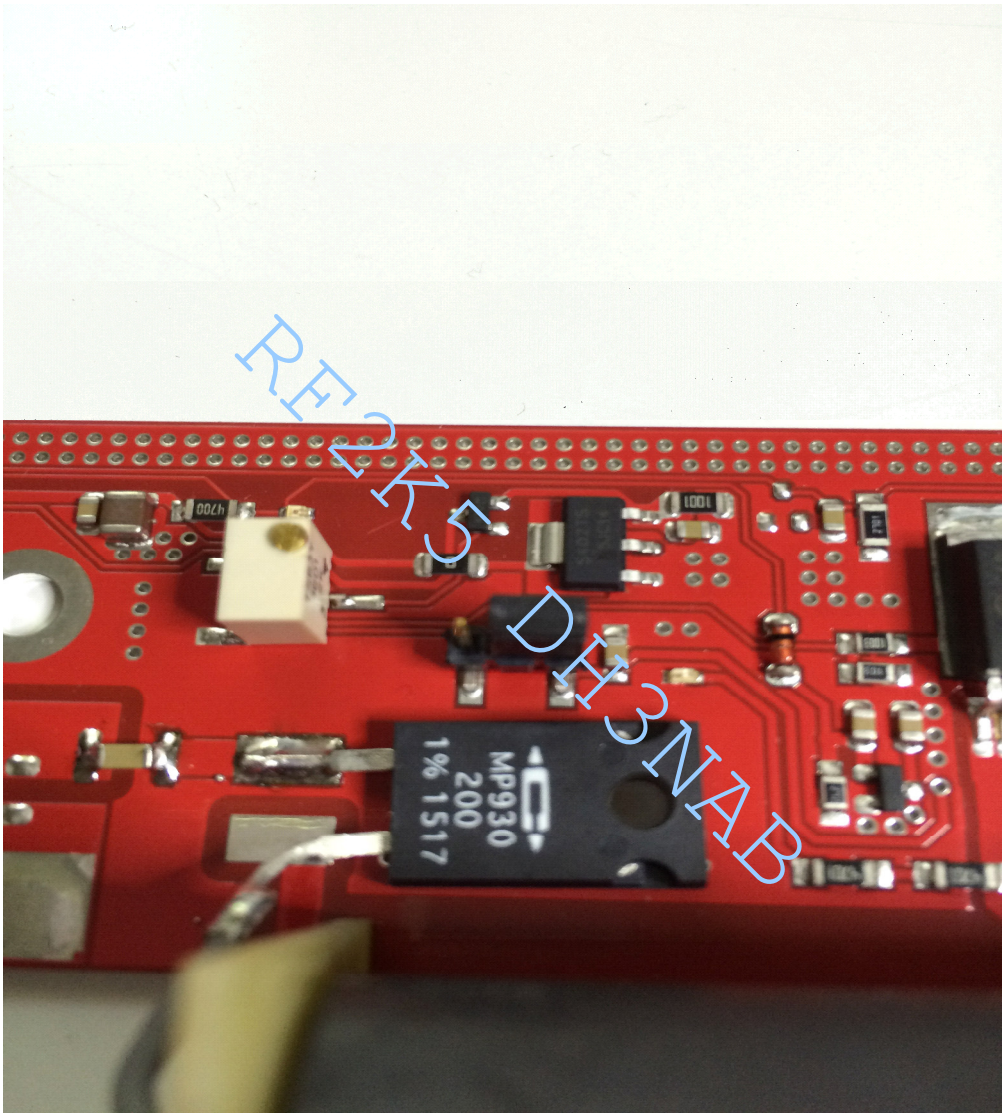
Shown in the picture are the two jumpers for **bias set to OFF**



Jumper for the current limiting:

Right = On
Left = OFF

Shown in the picture **current limiting set to ON**



Adjusting the current limiting

It is recommended for this adjustment that you place a temporary fuse of about 5A in the +50 V supply (only for adjustment). Connect the output of the PA to a dummy load of > 2K5W rating.

Prepare an adjustable power supply of 0-12VDC at about 1A

As the current sensor supplies 6V at 80A the current limiting response can be adjusted as below.

When the current limit is reached the 50V supply to the LDMOS is switched off.

Adjustment

Step 1 - Remove jumper

Step 2 - Apply + 12V to pin 5

Step 3 - At the now free middle pin of the current sensor jumper apply the variable voltage source set to the voltage that equates to the desired limiting current (see below) and turn the potentiometer until the red LED illuminates.

- Right - turn means higher currents for shutdown.
- Left - turn means lower power for shutdown.
- 4V supply = approx 53A
- 3V supply = approx 40A
- 2V supply = approx 27A

By taking away and re-connecting the + 12V on Pin 5 a reset is performed.

Step 4 - Install the jumper to ON (right side).

After adjustment is complete remove the temporary 5A fuse and power supply (n.b. if you are also going to adjust the bias current the fuse should be left in place for the time being).

Adjusting the Bias Current

The best IMD3 test results were achieved with a bias current per LDMOS of about 1.5A.

Since the bias current varies with temperature, the recommendation is to set it at a heat sink temperature of about 35-40 degrees.

This means that in the cold state the PA output is higher (higher bias current), but the heat sink rapidly heats, in normal QSO operation it is never less than about 35 degrees.

This experience can be seen in connection with the B26RF01 PA controller, because the fan shuts down at about 39 degrees the heat sink will not be cooled down further.

Preparation:

For safety reasons it is recommended that for setting the bias current you place a temporary 5A fuse in the + 50V power supply along with an ammeter (or clamp ammeter) with at least a 20A range.

Adjustment:

Step 1 – Set both of the Bias Jumpers to OFF (placed on the two Right Hand side pins), or remove them completely.

Step 2 – Apply + 12V to pin 5. Now a green LED lights as a sign that the 50V is present at the LDMOS

Step 3 - Apply + 12V to pin 1 "Bias ON"

Steep 4 - Use a voltmeter connected between GND and the left hand side pin of the Bias jumper pins and measure the voltage.

The voltage measured should not be higher than 1.2 volts. If it is higher than this turn the potentiometer down.

Step 5 - Insert the bias jumper into the ON position and increase the voltage slowly until the measured quiescent current increases (bias current) you should proceed with caution, because with a small change in the potentiometer setting a very large current change may result.

At a voltage of approximately 1.7V you should see current flow on the ammeter.

Set the bias current in the cold state to 1.8A

Step 6 - When the current is set to 1.8A place the jumper to the OFF position and then follow the same procedure with the other LDMOS.

After adjustment is completed you can verify if both are equal by activating the bias and switching the jumper from one LDMOS to the other.

Step 7 - Place both jumpers to the ON position (on the left side two pins)

These are all the settings required and RF2K5 module adjustment is completed !!

Have fun and remember that we are talking about a lot of power.

If you want to prolong the enjoyment of your PA module, it should not always be turned up to the full limit. Whether 1K5 or 2K no one on the other end can distinguish.

Important !!!!!

The module has a very high gain.

Even with 0,5Watt at the input an output of 1KW can be reached on the output.

Maximum 2-3 watts at the input !!!!!!

Through applying more input power, the module may ruined. Be sure to carefully test the performance limits of the driver.

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