

Ten Tec Orion 565 PA notes

Information below is based on limited experience and has not been confirmed by official Ten-Tec technical staff. The alignment has been written with best intentions but everything is at your own risk. I do not accept any responsibility if something is wrong.

There are multiple versions of the PA design used for the 565. The alignment procedure is different for each version.

It seems the original version has transistors for the driver and just a single potentiometer to align the driver bias. The final transistors also use a single potentiometer for the final bias.

The subsequent version (which is based on the PA for 566) has actually FET's which are aligned using two potentiometers for bias. The final transistors use a single potentiometer for the final bias.

Having said above, the alignment procedure looks like;

1. Connect a mA current meter between the PA and its source. Its the red wire providing the power to the PA. Turn the Orion upside down and you will see a small PCB which has the red wire soldered.
2. Once connected make sure you do the following;
 - 2.1. Disconnect all possible audio connections, ensure no audio can be produced.
 - 2.2. Switch to 20M band and select USB mode (LSB would work the same).
 - 2.3. Connect a straight key to the key connector at the back of the Orion to key the rig.
 - 2.4. Enable using the straight key to key the transmitter during USB mode.
3. Key the transmitter in -USB- mode. We expect small current towards the PA. Write down the value, just to have it documented. Lets call this "original bias current".
4. Turn down the driver bias while monitoring the current meter. Do this carefully and if it increases you have to turn the potentiometer into the other direction.
5. Turn down the final bias while monitoring the current meter. Do this carefully and if it increases you have to turn the potentiometer into the other direction.
6. The goal is to turn the potentiometers to minimal current consumed by the PA while transmitting in USB mode.
7. Once minimal current has been achieved, write down the minimal current. This is an important value and lets call this the "idle current" value.
8. Now we start alignment of the driver potentiometer(s). When there is only one driver potentiometer, adjust the potentiometer to achieve "idle current" plus (+) 50 mA. If there are two potentiometers for the driver each potentiometer has to add 50mA above the "idle current" value. In other words, you add 100mA in total but obviously you want each driver to have an equal bias. Once completed write down the current and lets call this the "driver current" value.
9. Once the driver bias current has been set the final bias has to be adjusted. Here we need to adjust the current to "driver current" value plus (+) 500mA. It should be straightforward alignment,
10. You have completed the bias adjustment. If you like you can compare the "original bias current" with the new bias current. It might have changed?

Step	Action needed	Resulting current
Step 3	Measure "original bias current"	
Step 4	Minimal driver bias current	
Step 5	Minimal final bias current	
Step 7	Write down "idle current"	"Driver current" =

Step 8 (565) -> only one potentiometer	"Idle current" plus 50mA	
Step 8 (566) -> potentiometer 1	"Idle current" plus 50mA	
Step 8 (566) -> potentiometer 2	Previous plus 50mA	"Driver current" =
Step 9	"Driver current" + 500mA	