

Nr	Device or Task	What to do	MODS - to do	where to find
1	Check Revision	REV 037	REV 05 checked on 16.4.2018	while PCB is V05, Blue is V3
2	24 V 4Ampere PSU	Check Ripple and real Earth GND 18Volt minimum decoupling caps	add some Caps for less ripple, maybe CRC filtering	#112 page 11 #143 page 15 retest of original PSU with new LM317 regulation !
			Those capacitors used in my FX5025PRO amp are 35V caps except the 6 analog input DC blocking caps are 10V caps. So I will say the maximum DC input is 32V DC. Under the 10% safety factor, 35x0.9=31.5V DC. I will read the LM317 set to 24V DC output for the OpAmp is a safeguard when it is higher than 24V DC power supply read. For example, 27V DC input will turn out an ADB610 if not the 24V DC limit, because the OpAmp is +13V DC or 26V DC input voltage. I am not concern of under voltage on the LM317 if it uses quality power supply. If using 32V DC power supply for the FX amp, I am only concern the over heat problem. It is because the aluminum case is a no airflow holes enclosure.	page 22 #220 if you want to use the original psu /24v then the regulator has to be re configured to 20v output - then the regulator is operating correctly!
3	Voltage regulator	LM317M to provide 24V, rest of voltage reg. are always powered (LM2596HVS 12V / AMS1117 3.3V)	change to LM117QML-SP (Space Grade = low noise) ??	#100 page 10
			The mods I've found making a difference so far as PSU-related. Looks like the FX502 has a buck regulator (the 5pin device) which will generate plenty of noise. Hence filtering out its noise pays dividends in S/N. I also just found out that more decoupling on the TPA's analog internal regulator output (pin 14) - AVDD pin - improves dynamics and transparency. I started off with 470uF (put in parallel with the 1uF the application shows) and I've since moved up to 1800uF.	#116 page 12 datasheet TI TPA3250
			v) TPA3255 modding provide 3.3V for 8bit MCU ST 5003F3P6 (datasheet 100mA) ~ total max approx 0.36A LDO LM317 ~ 7V drop gives 1.2W heat. I am using the factory's 24V SMPS on this amp. I opened the amp to replace the 2 TI NE5532 to 2 JRC NE5532DD last night. I used multimeter to take the voltage readings on the regulators for reference. I find that the LM317 is directly use the input supply DC voltage to step-down voltage for the Opamps. The 2 program resistors for LM317 pinboard are R1=240R and R2=4.3K. I checked with the LM317 voltage calculator, they are for 24V DC output. The meter readings for LM317 input and output are 24.3V and 22.6V DC respectively. It is under supply voltage for the LM317 and the LM317 is not full functional. If it uses 27V to 30V DC power supply for power input, the LM317 will provide full 24V DC . If it cannot provide 27V to 30V DC to the amp to make the LM317 full functional, but a cleaner power input also good for the Opamps.	v) http://www.diyaudio.com/forums/class-d/267470-tpa3255-diy-discussion-design-etc-60.html #591 page 60 #222 page 23
			You may change the 4k3 resistor to lower the LM317 output voltage to i.e. 18V, thus it is not working in dropout-mode anymore. For 18.4V it is 3k3. Or solder 15k in parallel to 4k3 to get 3k34	#208 page 21 page 52 #210 page 21
4	pre amp NE5532	input is 775mV	clipping ?	page 52
5	NE5532 replacement	change OPAMP	OPA1602	#41 page 5 #43 page 5 https://largesoft.net/audio/opamps.html
		change OPAMP	1642 with DIP8 to SOIC adapter	
			LME49720 (511) metal can LME49720HA (TO-99) LME49860 The 4562 is the 49720. And the 49860 is the same chip, but binned for low leakage and rated for 44V rail-to-rail operation. That's it.	#99 page 10 #123 - #124 page 13 #159 page 16
		change OPAMP	change opamp OPA2134 vs NE5532	#120 page 12 #122 page 13
		change OPAMP	LM4562NA	#154 page 16
		change OPAMP	AD8599 op amp	Cambridge Azur modding thread page 10 #94 http://www.diyaudio.com/forums/solid-state/54329-modding-azur-640a-10.html
6	Aircolls	measure the interference on coils	shielding the air coils - mumetal cases if EMI is a problem change to shielded with flat wires (doctormord)	#143 page 15 #247 page 25
7	error /protection LED	check the exact behave		error Led accure if load 4ohms and original LM317 (24V-no regulation) configuration. Regulation should be correct to about 20V out at 24V put! Page 52
8	More Mode	How is this to configure?	?	#60 page 6 #60 page 7 the caps are ok with 50V rating, the Rubycon 1800 looks original. Add some 1uF in parallel for HF catching
9	24V SMPS cap check	is it rated for 25V? TPA3250 is 32V max.!		page 52 #103 page 11
10	SE mode, balanced inputs	3-e board has provisions for SE and balanced connection, and balanced is the way to go...	SE mode possible?	not needed-closed
11	Potentiotmeter for volume	smaller steps for volume control	change to ALPs Poti or similar	#197 page 20 http://www.diyaudio.com/forums/class-d/319909-running-load-2.html page 2 #15
12	Catching diodes	change to shottky diodes		
13	Connector	On the right, marked Red are 4 connector poles - not sure if what can we use it for	check this on pic FX5025PRO, labeled.jpg I'm not taking the circuit and the values on the board I would speculate and can imagine two reasons for placing an IRLF9530N power mosfet near the power supply socket: - protection against false poling of the external power supply - protection against other false operating conditions (overdrive, heat,...) derived from the TPA chip protection circuit	page 23 #28
14	voltage input protection	IRF9530N	TPA datasheet e.g. BST_A 23P HS bootstrap supply (BST), external 0.033 uF capacitor to OUT_A required	page 23 #230 no idea page 52 #512
15	check boot strap caps	change or check	TPA datasheet - chapter 11.2 in Ti datasheet The TPA3250 does not require a power-up sequence, but it is recommended to hold RESET low minimum	
16	powering up TPA3250	check	400ms after PWD0 supply voltage is turned ON.	
17	heatsink for TP3250	silicon pad under TPA3250, because the bottom side is the POWERPAD	400ms after PWD0 supply voltage is turned ON. see it like: http://www.360customs.de/2016/06/tpa3251-tpa3255-aka-model-tiny-in-aluminumgehause/	changing the washers from plastic to alu under the heatsink. Additional mount under the pcb - Tpa chip a ceramic resistor to get the heat to the alu bottom plate.