ELTIM high-end POWER SUPPLY modules

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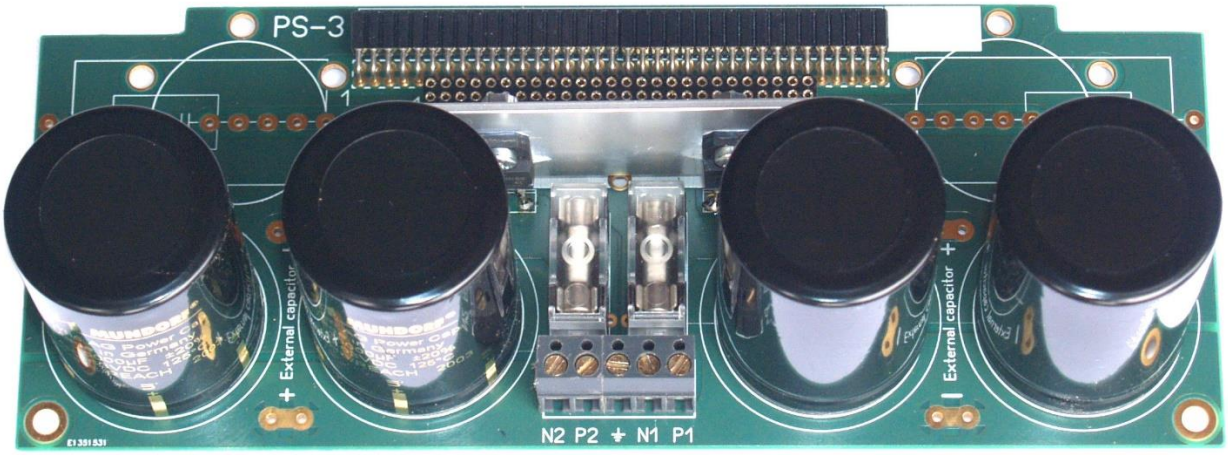
PS-3 Power Supply module

We designed this PS-3 for our CS-75/80/100/120/150/165 modules where they are L-mounted to. We took special care that it can deliver high power for longer periods of time.
This special power supply module is based on so called 4-pole capacitors, meaning that they have in- and output leads. Due to this the current in the pins only flows in one direction and the full capacitor is used, while the current flows over the pole plates.
Long electrolytic capacitors up to Ø40mm fit standing up. With the height of CS-80 in mind this length could be up to 65mm without exceeding the height of the CS-80 current stage module.
Just add a suitable transformer to this pack to complete this Power Supply.
This PS-3 module can power all ELTIM CS-modules, except PS-35/35ps/40ps/60ps (already have a PS).
Besides the transformer wiring, there is NO further wiring needed!

It exactly fits to our CS-modules, we use extremely wide tracks (95% of all surfaces actually) and we added some extra parts most linear Power Supplies lack, like caps and cooling around the rectifier diodes, being efficient and fast Schottky types. It is L-mounted to ELTIM CS-modules.

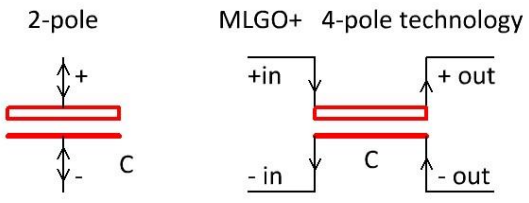
This PS-3 Power Supply module highlights:

- Space saving, L-mounted construction in combination with any ELTIM CS- module.
- 2x2 Ø30/35/40mm large radial mounted 4-pole electrolytic capacitors fit. MUNDORF MLGO+ and KEMET ALN20S
- Positions for two large MKP capacitors, increasing sound stage and high frequency detail.
- Same width as our CS-amplifier modules.
- Gold plated, 2x36 pin (3A each) angled header connector provides direct contact with CS-board.
- Gold plated, 2x 26 pin female header connector for mounting of a VR-2 Voltage Regulator board.
- 6,3mm Faston blade locations for connecting extra, chassis mounted capacitors.
- Quality covered fuse holders (max. 10A) in the transformer secondary power lines.
- Double sided PCB with unusual wide copper tracks (8mm+) for high power purposes.
- No wiring needed, except for transformer connections by screw terminals.
- Dimensions: 200x80x??mm (depends on height of caps used).



Capacitors

On this ELTIM PS-3 Power Supply module fit 4x Ø/35/40mm serious sized capacitors in 4-pole technology only.
There are just two types available known by us:
MUNDORF MLGO+ and KEMET ALN20S, last one hard to find.
Also, two significant MKP capacitors, improving overall sound quality, fit. You also could connect extra (chassis mounted) capacitors and/or electronics via extra 6,3mm gold-plated Faston blades, further increasing the bass fundament quality.



Wiring

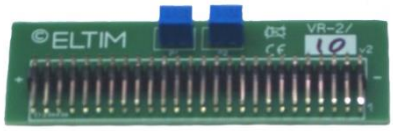
With this module, wiring is most easy. Just L-mount the module to any ELTIM CS-module (except CS-35/40/60ps) via the 2x 36 pin angled header connector and all required interconnections are made already.
Study the schematics and discover that the +V and –V are provided via 2x6=12 pins, which could carry 3A each. So, theoretically you could drain a constant 36A over these contacts, which will hardly happen. Power ground even uses 2x 8 pins and there are also two pins for the VS-module ground and two pins for the input signal ground. So, all grounds are coming together at the centre front earth contact, avoiding any possible hum or noise on the ground tracks.
About all copper forming the total of six supply tracks (V-in, V-out, GNDin, GNDout, V+in, V+out) is used at both sides.

Transformer

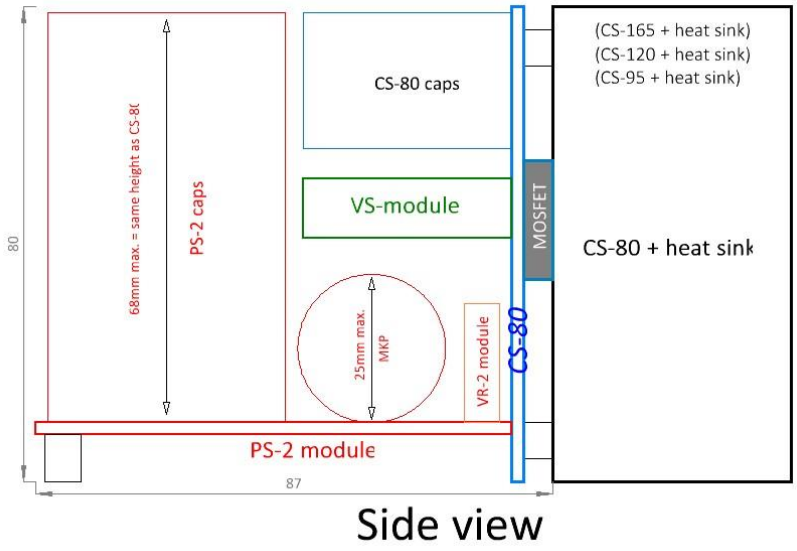
Connect a double secondary windings transformer to the centre screw terminal, that's it. Since our amps run in A/B setting, the efficiency is around 67%. This means that your transformer needs to be able to deliver 150% of max. output power (rated in VA). One winding to P1/N1 and the other one to P2/N2. You could earth the pack via the middle tap.
There is no further wiring needed, just connect a transformer to this ELTIM PS-3, input lines to a VS-xx and output lines to a CS-xx. All modules are directly connected by multiple pin headers without further wiring required, a clean amp without bundles of wires.
NOTE: if you don't measure V+ and V- voltages, reverse the connections of one of the sec. windings, then it will work!
If you connected the wrong way, the ac voltages are in counter phase and will cancel each other out due to this.
There are two fuse holders (F1/F2, 5x20mm) on board. Place two fuses, matching the connected transformer specs.

Don't forget to fuse the transformer at the primary side as well !

Voltage Regulator module (optional)



You could improve the sound quality of the pack by mounting a VR-2 Voltage Regulator module. With larger CS-modules you could mount a VR-3. While mounting this, the VS-input stage's power is regulated, causing an even better sound signature. VR-3 can be used in most cases but is to high i.c.w. CS-75/80! There VS-xx is in the way.
It fits on this PS-3 at the header marked VR-2. There is no extra work needed, except for removing the two jumpers (or diodes) on the CS-module. Don't forget to remove these, otherwise your VR-module is bypassed.



True 1:1 representation of a mounted full pack based on CS-80.

Supply capacitors
On this PS-3 only a few types of capacitors fit. They must be true 4-pole capacitors.
While trying to mount regular 2-pole types all is disconnected, so won't work. In that case use PS-2.
Basically, PS-2 is the same as PS-3, but with a different layout made for 2-pole types only.

While ordering currently we only supply several MUNDORF MLGO+ types, selectable by you.
Available in 63V: 15000 and 22000uF, Available in 80V: 6800 and 10000uF
Available in 100V: 2200, 3300 and 4700uF (extra chassis mounted caps required for high power).
Since KEMET ALN-20S is hardly to get, we have no stock of those, sorry. If you want / have these, just select "no caps" in the order process. Always mount four of the same value and voltage!

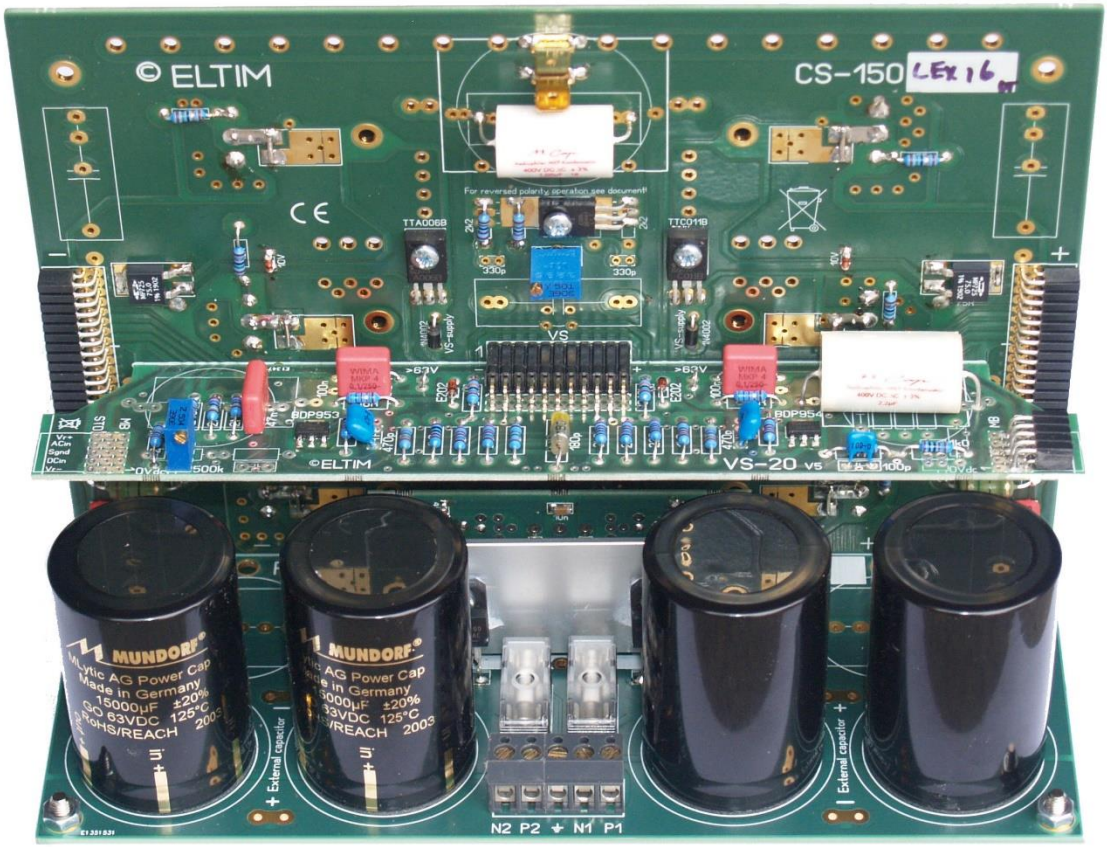
You could also decide to buy it as a kit (electrolytic capacitors select what you believe is best!).

NOTE that for a power supply you always need electrolytic supply capacitors, forming the power reserve.

Extra's:
In all cases two MKP capacitors pitching 15/22,5/27,5/37,5/50mm or up to Ø30x25mm (radial mounted) fit.
By adding these MKP types the overall sound quality will increase more or less, depending the quality of the MKP's and electrolytic types used. Mount what you prefer and/or can afford. Therefore we ask:

Do yourself and us a favour and do NOT use a switched mode power supply (SMPS) i.c.w. our High-End amps.
Our VS-xx/CS-xx amps won't perform at max. then and you could be disappointed, or even angry with us.
So far we have not seen an SMPS able to deliver the punch power we can make with our amps.
Besides that, SMPS's also tend to let a linear amp sound "hishing (tsjjjj…)" and with "screaming" highs.
Most class-D amps do that anyway, so there you wouldn't notice….. They only make power, ours also make music.
Do you believe SMPS is more efficient? An SMPS has around 70%, our linear ones around 95% efficiency!
And then the lifespan: SMPS 3-5 years due to cheap overheated parts, ours 20 years at least.

With this knowledge: the advantage of higher efficient (@ full power only!) of class-D designs is completely destroyed while using an SMPS feeding it…. It only makes sense for compact/light designs.
A linear amplifier and linear power supply like this PS-3 together show a similar efficiency compared to class-D, especially for home use equipment where its nor running at full power all the time!
And then we are not even talking about the difference in sound quality.
Class-D's don't need alignments and use cheaper parts, so cheaper to produce. Why do you pay similar then?
Stop believing all these commercial, fast selling nonsense talks please. Facts matter. *Time to change.*



PS-3 + + VR-3 + CS-150 LEX16 + VS-20 example

This PS-3 is equipped with 4x MUNDORF MLGO+ 15000uF/63V, true 4-pole capacitors.

CS-150 is provided with CADDOCK power resistors in the driving and feedback circuitry.
There are no current sensing resistors mounted.

CS-150 fits on a standard available heatsink 200x150mm
The grey connector at front centre connects a double windings transformer.

At the top (CS module) the speaker leads are connected where max. power can be extracted.
For lower output power you could use the connections at left and right side (not visible).
You also could connect the speakers to the side header connectors where 2x 10 pins connect the speakers.

The input (on VS) is at the right side here. We can make it at the left side in the same way.
If you order two systems, we will deliver both a left and a right one
unless you tell us not to in the order comment line.
With a L/R version, wiring is as short as possible and with the same length.

While ordering our products, you mostly can select several parts with different quality and pricing.
So, we build every module exactly the way you want it to be.