updated August 21th, 2020

PS-UN50S

Universal, symmetrical output Power Supply modules

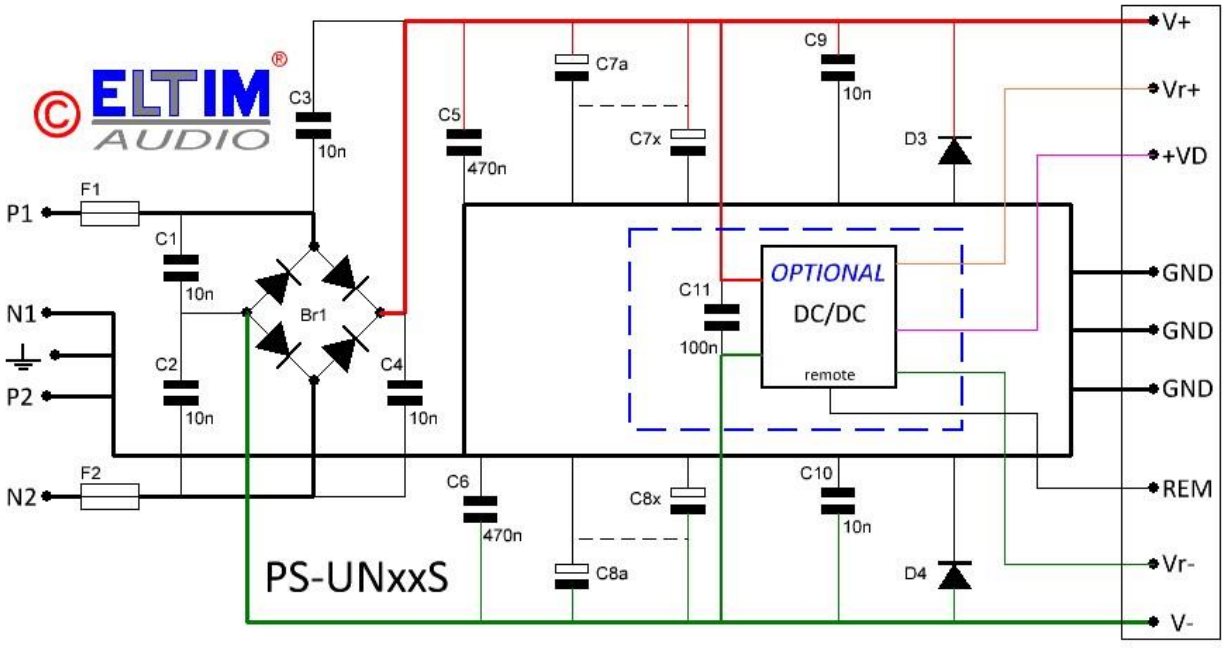
In our universal Power Supply range this one is a high power, symmetrical voltage version.
It can develop up to ±50V/8A, and so very suitable for High-End power amplifiers.
Besides all the regular standard components of a linear power supply, we added several parts about nobody else does, but required as well in order to make a difference.

You can add one of our DC/DC converter/regulator modules, providing up to three (single, symmetrical and symmetrical/digital) regulated voltages for extra electronics. 3,3V; 5V; 12V; 15V.

With this Power Supply module we provide the proven design philosophy of a linear Power Supply, which is in dynamics performance way superior to the more and more used Switched Mode power supplies. High frequency (40-100kHz) ripple voltages of over 100mV is common, hardly useful in high quality audio, since this signal interferes with your precious audio gear.
Compared to all the (very) cheap linear supplies you'll find all over the internet, there is hardly any difference noticed indeed, but building it the way as it should be done with quality components and wide copper tracks on a solid FR4 board as we do, its different cake!
With us no "stressed" components, no RF, etc. Just plain, solid and pure power without fuzz.

PS-UN-50S highlights:

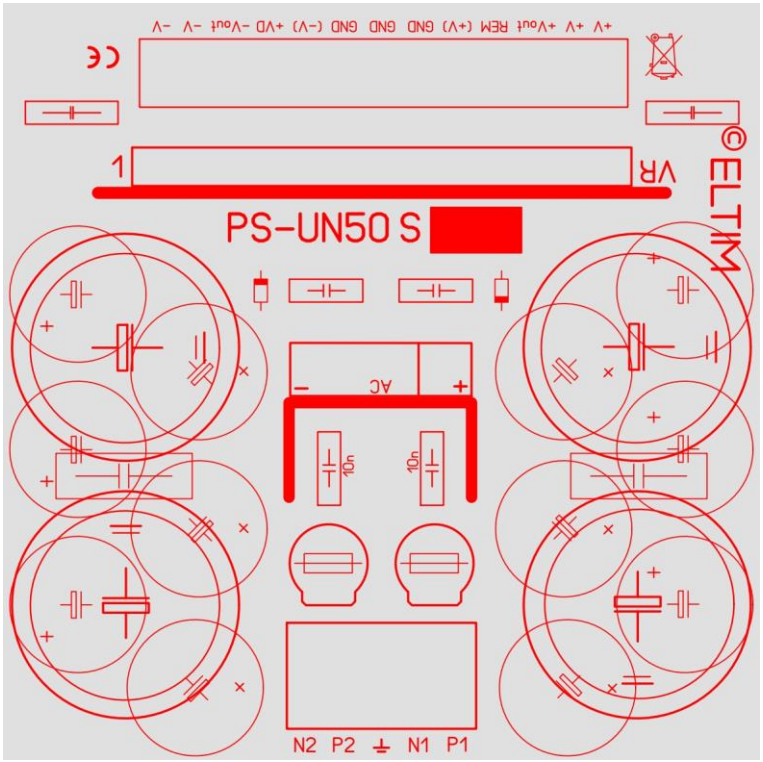
- European manufactured FR4 PCB, 35um copper, solder mask and parts printing
- 8A/140Vac rectifier with cooler
- PCB tracks are over dimensioned (15A) for optimal dynamic performance
- Several types of power supply capacitors fit:
  - 2x6 Ø16/18mm, pitch 7,5mm for low profile and/or cost effective solutions
  - 2x2 Ø25/30mm, pitch 10mm for low profile/low ESR figures
- OPTIONAL DC/DC converter/Voltage regulator with up to three low voltage supply outputs.



Introduction
With this PS-UN-50S range we provide linear power supply modules with all the parts these kind of supplies should have and all have a function. Leaving some out, as many do, would degrade its quality level.
Our module is instant powerful with a high/wide dynamic range, low ESR and free of noise and RF signals.

As an ELTIM built module, this PS-UN50S module can handle up to **±50 Volts** at a current of **4-6A max**.
This voltage limit is based on the rated voltage of the supply capacitors we use.
Use a quality transformer of 30V / 225VA or less.
The max. current varies with the available storage capacity on board, depending on the model.

Kit builders can use other voltages/values as well, since with our kits the supply capacitors have to be bought separately in order to give you maximum freedom of choice. We have a lot to choose from.
The V+ and GND screw terminal can handle 3,3mm² wires for extraction of this significant current.



PS-UN50S layout, with multiple capacitor types fitting, 100x100mm

Schematics explanation
The secondary windings of a suitable transformer (not included) are connected to P1 – N1 and P2 – N2.
As recommended by most transformer manufacturers, both secondary windings are fused.
The 50/60Hz AC power is rectified by an 8A/140Vac bridge rectifier.
As it always should be, every diode of this bridge is decoupled with a small capacitor (C1-4) in order to avoid noise and sparks. The rectifier will charge the capacitors to the Vac peak level, being **√2 (1,414) higher** as listed (=Veff) in the transformer specifications! For beginners: The required transformer can be calculated as **Uac = Udc/√2+1**. So, f.e. for 60Vdc you need 60/1,42 +1 = 43Vac. The Vac of the trafo is given as an effective voltage (giving the same power as a dc voltage of this value would give). Calculate with "free running" values! **While using f**.e. a TALEMA 225VA/30V transformer, it's free running voltage is 32,8Veff. After rectifying there will be around 47V over the 50V storage capacitors. We ourselves would use a 25V trafo to play safe, especially if you use transformers with a lower power rate. Due to their higher internal resistance, their free running voltages are higher and after rectifying most probably will exceed the 50V the capacitors can handle. 25V versions are always at the safe side! While loaded there will be around 40V available.
This PS-UN50S module fits over a Ø115mm (300VA) toroidal transformer.

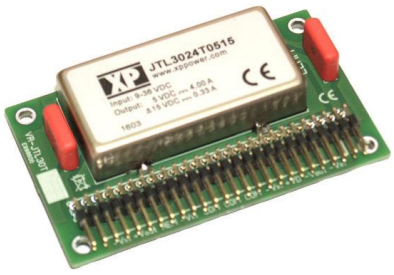
Power reserve
The power reserve comes from C6a/C6x, with different number, values and qualities depending the model. Here we have a huge difference compared to SM supplies: we already have the power reserve available in the capacitors if required, resulting in a way better “punch” and impulse power.
Also the ESR value (“internal resistance”) is way lower, noticed by f.e. more solid bass response.
High frequency response is way less “**p**ointy” a**Ss**s we hear everywhere today. With us cymbals singgggg again!
Most SMPS supplies are meant to use in more or less constant current electronics like laptops, chargers, etc.!

Models/specifications
Max. output voltage of ±50V, 8 amps max. (transformer max. 30V). Board size: 100x100mm.

PS-UN50S UFG	2x4 NICHICON UFG “Fine Gold”, 2200uF/50V, 85ºC, 1000 hours	Ø18x38
PS-UN50S UKW	2x4 NICHICON UKW, 3300uF/50V, 85ºC, 2000 hours	Ø18x36
PS-UN50S LKG	2x2 NICHICON LKG, 3300uF/50V, 85ºC, 1000 hours	Ø30x30
PS-UN50S MLGO	2x2 MUNDORF MLGO, 4700uF/40V, 125ºC, 8000 hours	Ø25x30

Regulated, single or symmetrical extra output voltage(s) OPTIONAL
On this PS-UN40Sxx modules our symmetrical, linear voltage regulator modules fit. With those you can make lower supply voltages, meant to supply preamplifier, DSP, etc. circuits.

In February 2018 we developed a wide range of switching DC/DC converter/regulator modules.
With these, one can extract up to three independent and completely different voltages from about any available voltage. Also these fit on all our PS-UNxx modules. There are ranges in 8, 10, 12, 15, 20, 30 and 40W.
Input voltage ranges from 9Vdc to 256Vdc. Available output voltages are 3,3V; 5V; 12V, 15V, ±12V and ±15V as single, symmetrical and even symmetrical + digital supply voltage (VR-JTL30T only, see picture below).
While using a version with a header connector you can mount them on about any of our Power Supplies.
So, while having one of our PS-UNxx(S) modules, you also can have supply voltages for preamplifier, DSP, etc.



Triple version with header

Triple version with screw connector

This sounds interesting to you, but you already have a power supply? Then select the screw terminal option and receive a separate module which can be mounted with 4x M3 bolts and connected with the other electronics by a screw terminal instead of a header. Here some more info about these modules.
Just connect it to about any power supply and have the low voltage supply voltage(s) you require as well.
Actually, you could even use a 12/24V battery from, f.e. a car, RV or boat.
As by now people expect from us, we use the best DC/DC converters we could find, not the cheapest ones.
These last a lifetime, have an efficiency of around 90% and use a harmless high (>300kHz) switching frequency.
Of course, as it always should be while using high frequency devices, it is metal shielded/grounded, so ours don’t spread around magnetic fields at the switching frequency all around, causing oscillations, etc.

Check our website for ordering. Dealers and OEM are welcome.

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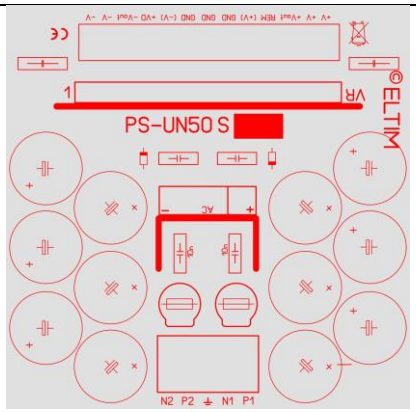
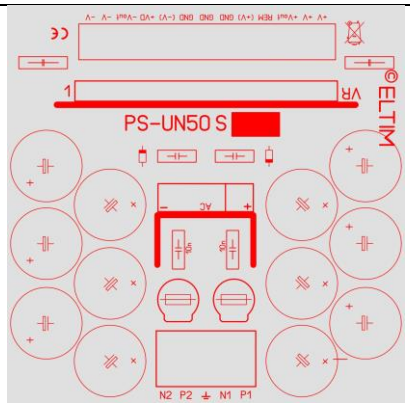
PS-UN50S Model program

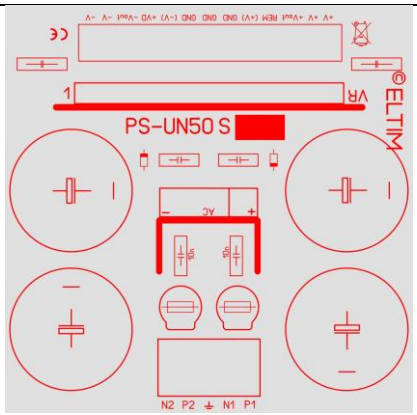
Click on a picture to go to the product in our webshop



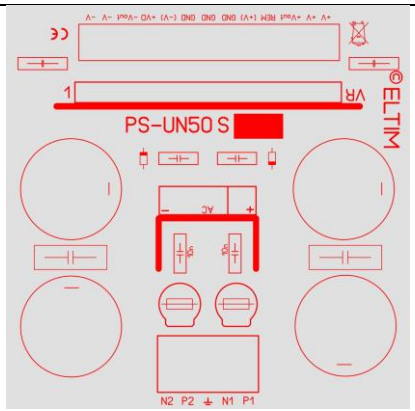
PS-UN50S UFG



PS-UN50S UKW

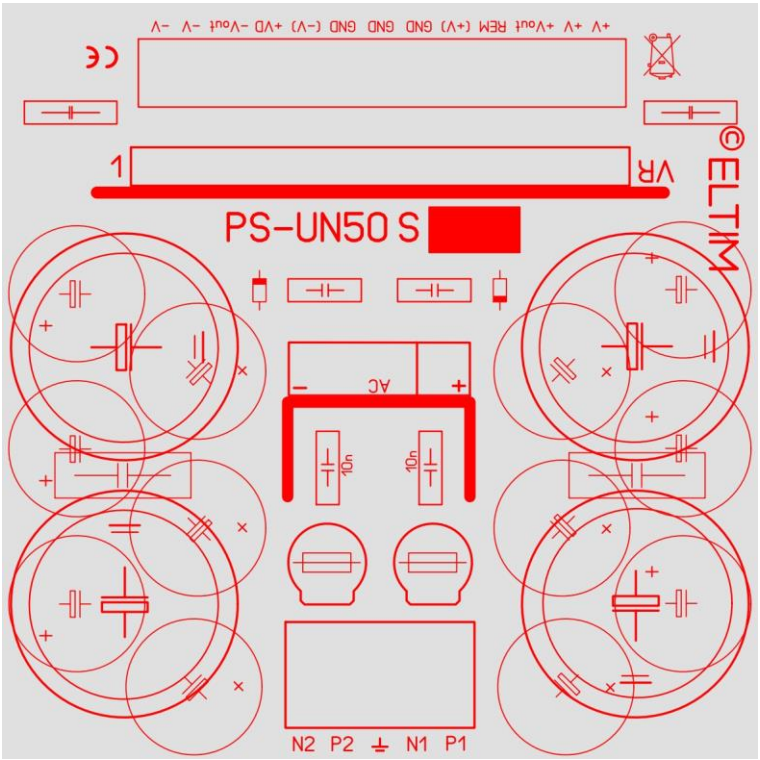


PS-UN50S LKG



PS-UN50S MLGO

Since we produce on demand, we can mount capacitors of your preference as well. MAIL



Scale 1:1

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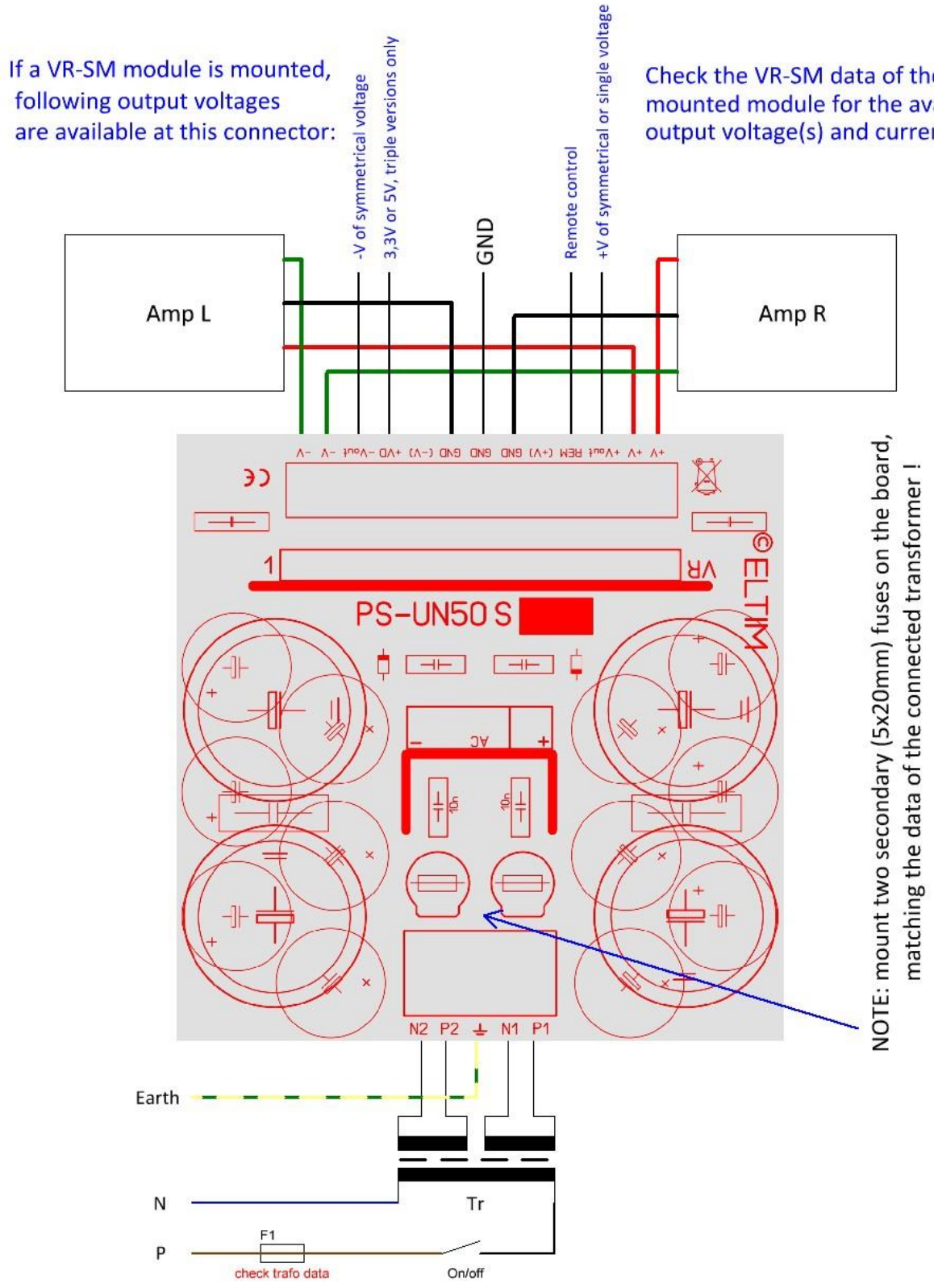
PS-UN50S wiring diagram:



ELTIM audio BV is using parts, matching common rules of VDE, UL, CE, RoHs, etc.
The transformer and the primary side wiring of it needs to comply local rules, laws, etc.
ELTIM audio BV cannot be held accountable for inappropriate wiring, nor any physical, mechanical, financial, etc. damage whatsoever. Be aware of shock and fire hazard !

The person and/or company mounting this device is single responsible !

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