updated May 15th, 2023

PS-UN40S

Universal, symmetrical output Power Supply modules

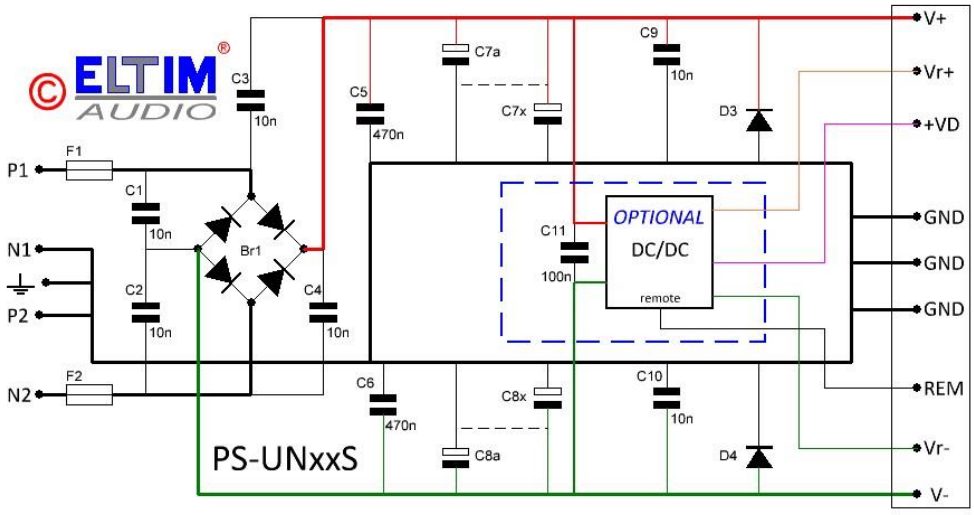
In our universal Power Supply range this one is a high power, symmetrical voltage version.
With this very small model we implemented the most practical capacitor values and corresponding voltages. It can develop up to ±35V – 50V/4A, depending on the model and so very suitable for mid power rated High-End power amplifiers requiring a symmetrical supply voltage.
Besides all the regular standard components of a linear power supply, we added several parts about nobody else does, but required as well to make a difference.

You can add any of our linear or switching DC/DC converter/regulator modules, providing up to three (single, symmetrical, and symmetrical/digital) regulated voltages for extra electronics.

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 where 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. Besides that, our module has an efficiency of around 95%, where switching ones reach only 70% at max.
Comparing switching versions 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, the difference is very well noticed! With us no "stressed" components, no RF, etc. Just plain, solid, and pure power without fuzz.

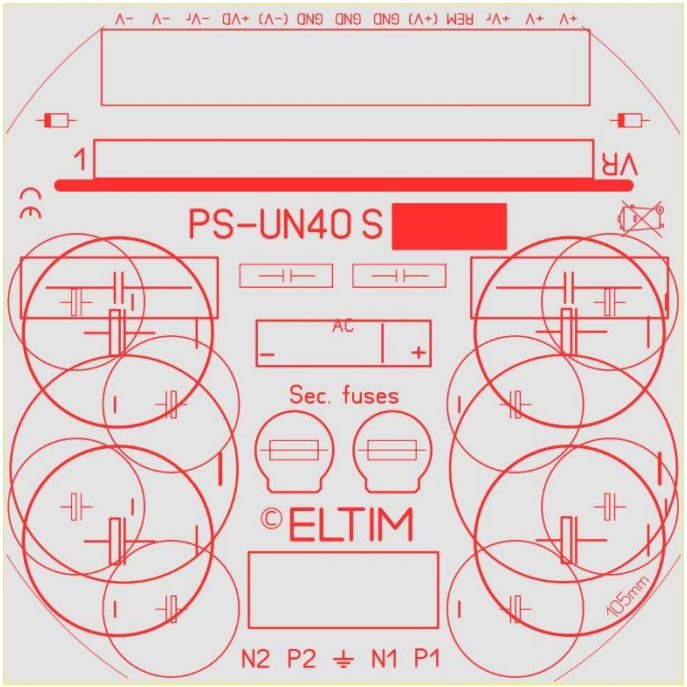
PS-UN-40S highlights:

- European manufactured FR4+ PCB, 35um copper, solder mask and parts printing
- 6A/140Vac rectifier
- PCB tracks are over dimensioned (10A)
- Several types of power supply capacitors fit:
    - 2x4 Ø16/18mm, pitch 7,5mm for low profile and/or cost effective solutions
    - 2x2 Ø25mm, pitch 10mm for low profile/low ESR figures
    - 2x1 Ø30mm, pitch 10mm for low profile/low ESR figures + large MKP capacitor.
- OPTIONAL ELTIM DC/DC converter/Voltage regulator with up to three low voltage supply outputs.



Introduction
With this PS-UN-40S range we provide linear power supply modules with all the parts these kinds 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-UN40S module can handle a current of **6A max**. The Low-Profile models are rated at ± 35V while the Audio Grade classed ones are 40Vdc.
These voltage limits are based on the rated voltage of the supply capacitors we use.
Use a quality transformer 160VA or less. 35V versions 22Vac max., 40V versions 25Vac max.
The max. current varies with the available storage capacity on board, depending on the model.
The V+ and GND screw terminal (10A) can handle 3,3mm² wires for extraction of this significant current.



PS-UN40S layout, with multiple capacitor types fitting, 90x90mm.
It fits exactly over a Ø105mm toroidal transformer, saving space.

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. Always use a corresponding fuse value. The 50/60Hz AC power is rectified by a 6A/140Vac bridge rectifier.
As it always should be, every diode of this bridge is decoupled with a small capacitor (C1-4) to avoid noise and spikes. The rectifier will charge the electrolytic 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 40Vdc you need 40/1,42 +1 = 29Vac. 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 160VA/25V transformer, it's free running voltage is 27Veff. After rectifying there would be around 38V over the 35V storage capacitors, so just too much, except when using 40V Mundorf capacitors.
We ourselves would use a 22V trafo (in practice 18V is available) 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 35V the capacitors can handle.
18V transformer versions are always at the safe side! While loaded there will be around 25V available.

This PS-UN40S module exactly fits over a Ø105mm (160VA) toroidal transformer, saving space while mounted so. As with about all our designs, there are holes beneath the rectifier for natural cooling. Due to these holes in the PCB, there is a natural air flow from under the board. Less heat, longer lifecycle.

Power reserve
The power reserve comes from C6a/C6x, with different number, values and qualities depending on 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.

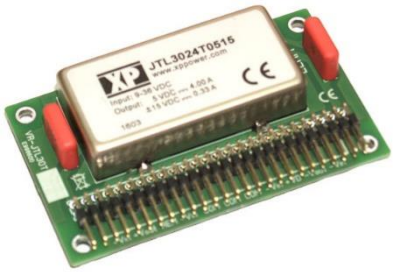
High frequency response is way less “**p**ointy” a**S**ss we hear everywhere **T**oday. With us cymbals singgggg again!
Most SMPS supplies are meant to use in more or less constant current electronics like laptops, chargers, etc.!

Models/specifications
Max. output voltage of ±35 – 40Vdc, depending on the type.
±4-6 amps max. (transformer max. 20 - 25V depending on model!). Board size: 90x90mm.

PS-UN40S UFG	2x4	NICHICON UFG “Fine Gold”, 85ºC, 1000uF/**35V**, 2000 hours	Ø16x25
PS-UN40S LKS	2x2	NICHICON LKS, 4700uF/**35V**, 85ºC, 1000 hours	Ø25x30
PS-UN40S MLGO	2x	MUNDORF MLGO, 10000uF/40V, 125ºC, 8000 hours	Ø30x40
PS-UN40S 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. These also 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.
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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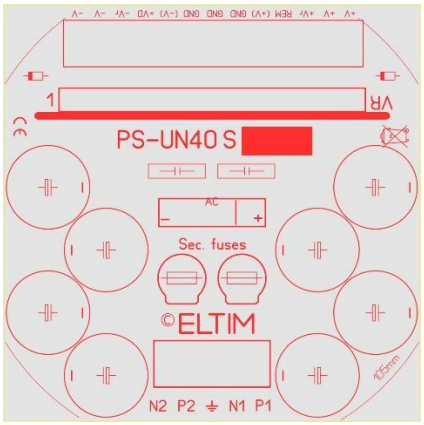
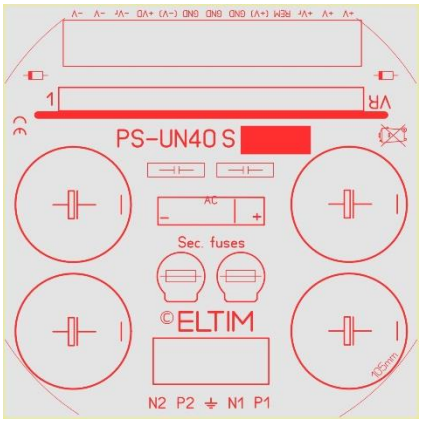
PS-UN40S Model program

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



PS-UN40S UFG

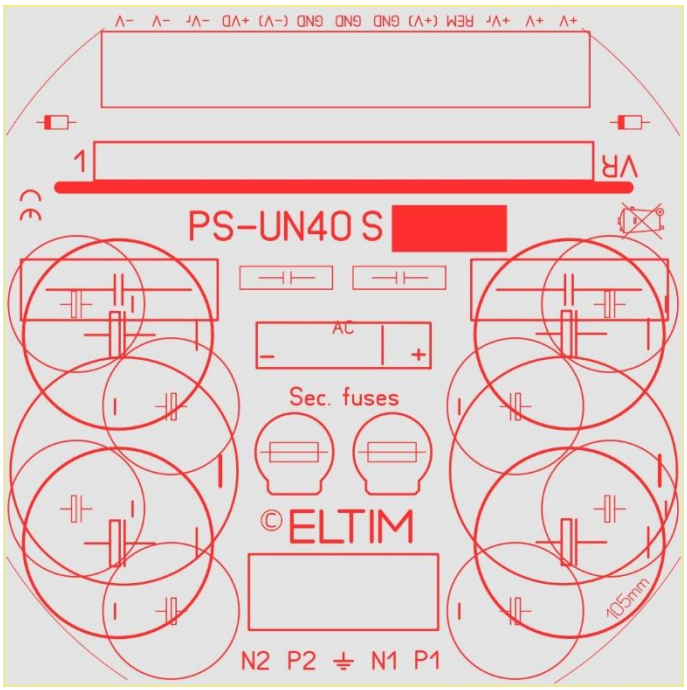


PS-UN40S LKS

PS-UN40S MLGO

PS-UN40S MLGO+

Since we produce on demand, we can mount capacitors of your preference as well. Send us an EMAIL.



Scale 1:1

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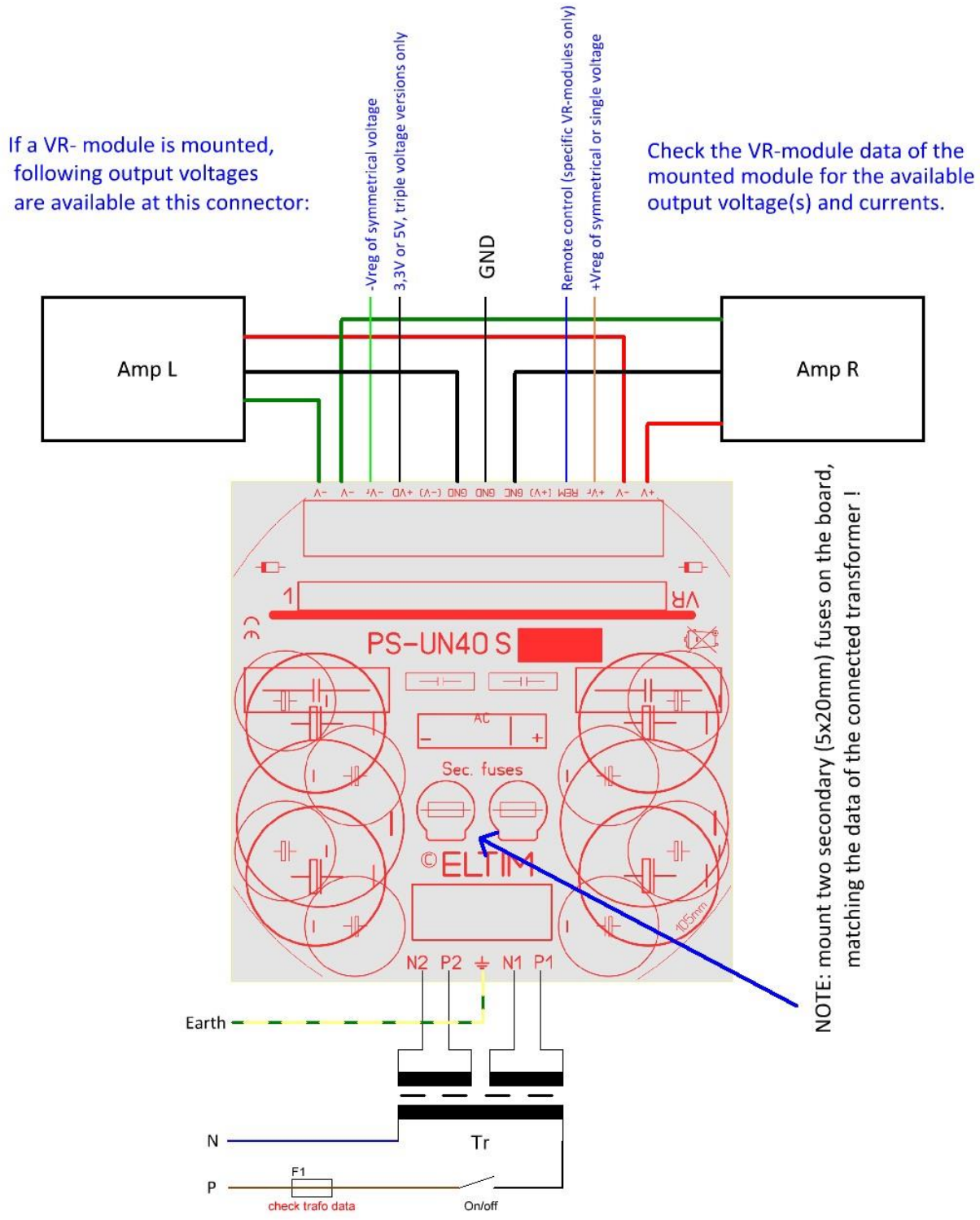
ELTIM PS-UN40S connecting diagram



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 or use, 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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