updated May 27th, 2020

PS-UN63

Universal, single output Power Supply modules

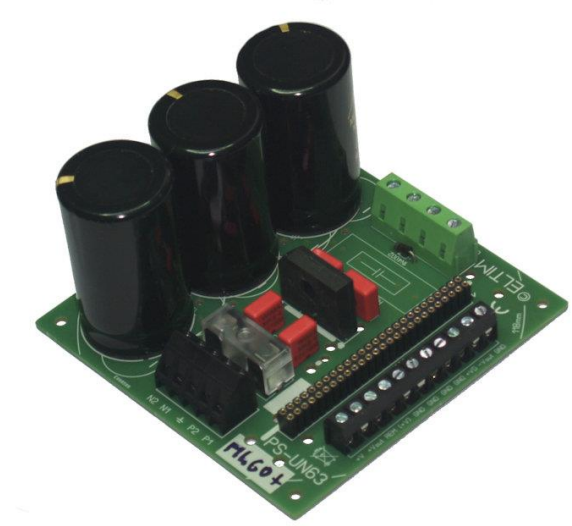
In our universal Power Supply range this one is a high power, single voltage version.
It can develop up to 63V/8A, and so very suitable for single voltage power amplifier like most class-D designs are. Besides all the regular standard components of a linear power supply, we added several parts about 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 something different! With us no "stressed" components, no RF, etc. Just plain, pure power.

PS-UN-63xx highlights:

- European manufactured FR4 PCB, 35um copper, solder mask and parts printing
- 8A/140Vac rectifier with cooler
- PCB tracks are over dimensioned (15A)
- Several types of power supply capacitors fit:
  - 9x Ø16/18mm, pitch 7,5mm + MUNDORF EVO or 2x radial MKP/MKT 15/22,5/27,5mm
  - 4x Ø30mm, pitch 10mm + MKT/MKP pitch 27,5mm
  - 3x Ø30mm, pitch 10mm + MUNDORF EVO or 2x radial MKP/MKT 15/22,5/27,5mm
  - 2x Ø35mm, pitch 10mm + MUNDORF EVO or 2x radial MKP/MKT 15/22,5/27,5mm
  - 2x Ø40mm, 22,5mm/4pin + MUNDORF EVO or 2x radial MKP/MKT 15/22,5/27,5mm
- OPTIONAL DC/DC converter/Voltage regulator with up to three low voltage supply outputs.



Introduction
With this PS-UN-63xx 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.

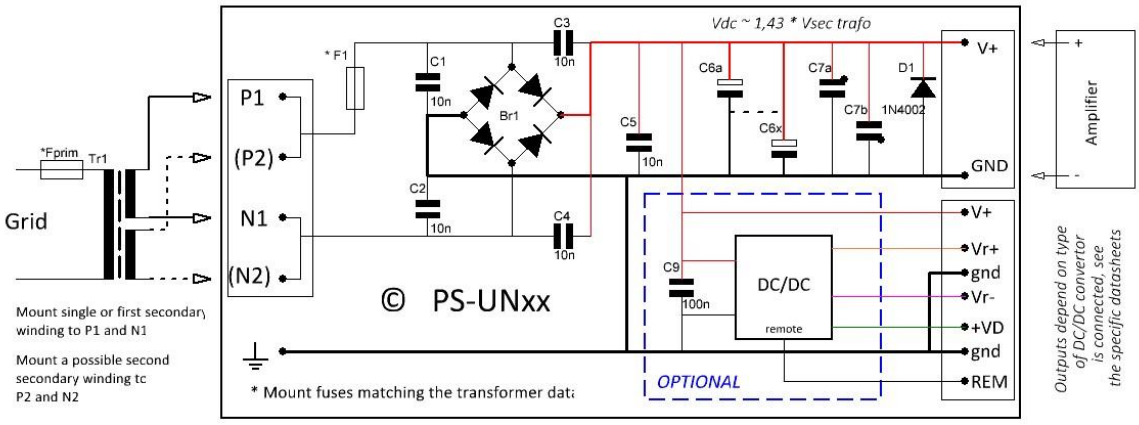
As an ELTIM built module, this PS-UN63 module can handle up to **63 Volts** at a current of **5-8A max**.
This voltage/current limit is based on the rated voltage of the supply capacitors we use.
Use a quality transformer of 40V / 300VA or less. This module could fit on top of the transformer.

The PCB layout enables us to mount all kinds of supply capacitors on board. Besides these caps, there is always more or less space for mounting of an extra high quality MKP capacitor, improving high frequency behaviour. You can mount one of your choice at any time (is not mounted by us!) .

Schematics explanation
The secondary winding of a suitable transformer (not included) is connected to P1 – N1. An extra secondary winding (with the same voltage!) can be connected to P2 – N2.
P1 and P2 are connected as well as N1/N2, so the windings are paralleled by the PCB already.

As recommended by most transformer manufacturers, the paralleled windings are fused by F1 (not supplied). Make sure that the "hot" leads of both windings are connected to the P-marked connectors!
A possible single secondary winding can be connected either to P1/N1 or P2/N2.

The 50/60Hz AC power is rectified by an 8A/70Vac bridge rectifier. It has a cooler, so it can handle 8A.
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 a 40Vac transformer it's free running voltage will be around 44Veff. After rectifying there will be around 61V over the 63V storage capacitors. We ourselves would use a 35V 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 63V the capacitors can handle.
35V versions are always at the safe side! While loaded there will be around 50-55Vdc available.

This PS-UN63 module exactly fits over a Ø118mm (300VA) toroidal transformer.

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. Also the ESR value ("internal resistance") is way lower, noticed by f.e. more solid bass response. For improved transient response and detail you could add one or even two MKP capacitors.

Models/specifications

Max. output voltage of +63V, 8 amps max. (transformer max. 40V). Board size: 100x100mm.

MODEL	C6 capacitors mounted	C6 size
PS-UN63 ELP	2x RND, 10000uF/63V, 85ºC, 1000 hours	Ø35x50
PS-UN63 UFG	9x NICHICON UFG, 85ºC,1000uF/63V, 1000 hours	Ø18x36
PS-UN63 UKW	9x NICHICON UKW, 85ºC, 2200uF/63V, 2000 hours	Ø18x36
PS-UN63 LKS1	4x NICHICON LKS, 4700uF/63V, 85ºC, 3000 hours	Ø30x30
PS-UN63 LKS2	2x NICHICON LKS, 12000uF/63V, 85ºC, 3000 hours	Ø35x45
PS-UN63 MLGO1	4x MUNDORF MLGO, 3300uF/63V, 125ºC, 8000 hours	Ø30x30
PS-UN63 MLGO2	3x MUNDORF MLGO, 10000uF/63V, 125ºC, 8000 hours	Ø30x50
PS-UN63 ALC	2x KEMET ALC10, 15000uF/63V, 85°C, 18000 hours	Ø40x50

MUNDORF MLGO capacitors are glued to the PCB, have extreme low ESR values and a very long lifespan.
With all setups mentioned above there is still space to mount one or even two quality MKT/MKP capacitors for C7.

Regulated, single and/or symmetrical output voltage(s) (OPTIONAL !)

In February 2018 we developed a wide range of switching DC/DC converter/regulator modules.
With these, one can extract up to three independent voltages from about any available Supply voltage(s).

We modified our PS-UNxx(S) modules in a way that these switching modules can be mounted on these Power Supply boards and have extra, low supply voltages. There are ranges in 8, 10, 12, 15, 20, 30 and 40W. Input voltage ranges from 9Vdc to 256Vdc.

< PS-UN63 with JTL30 module: ±15V and 5V from single voltage!

Available output voltages are 3,3V; 5V; (9V); 12V and 15V as single, symmetrical and symmetrical + digital supply voltage. While using a version with a header connector you can mount them on about any of our Power Supplies. So, with this combination you also have supply voltages for a 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.
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 or boat.

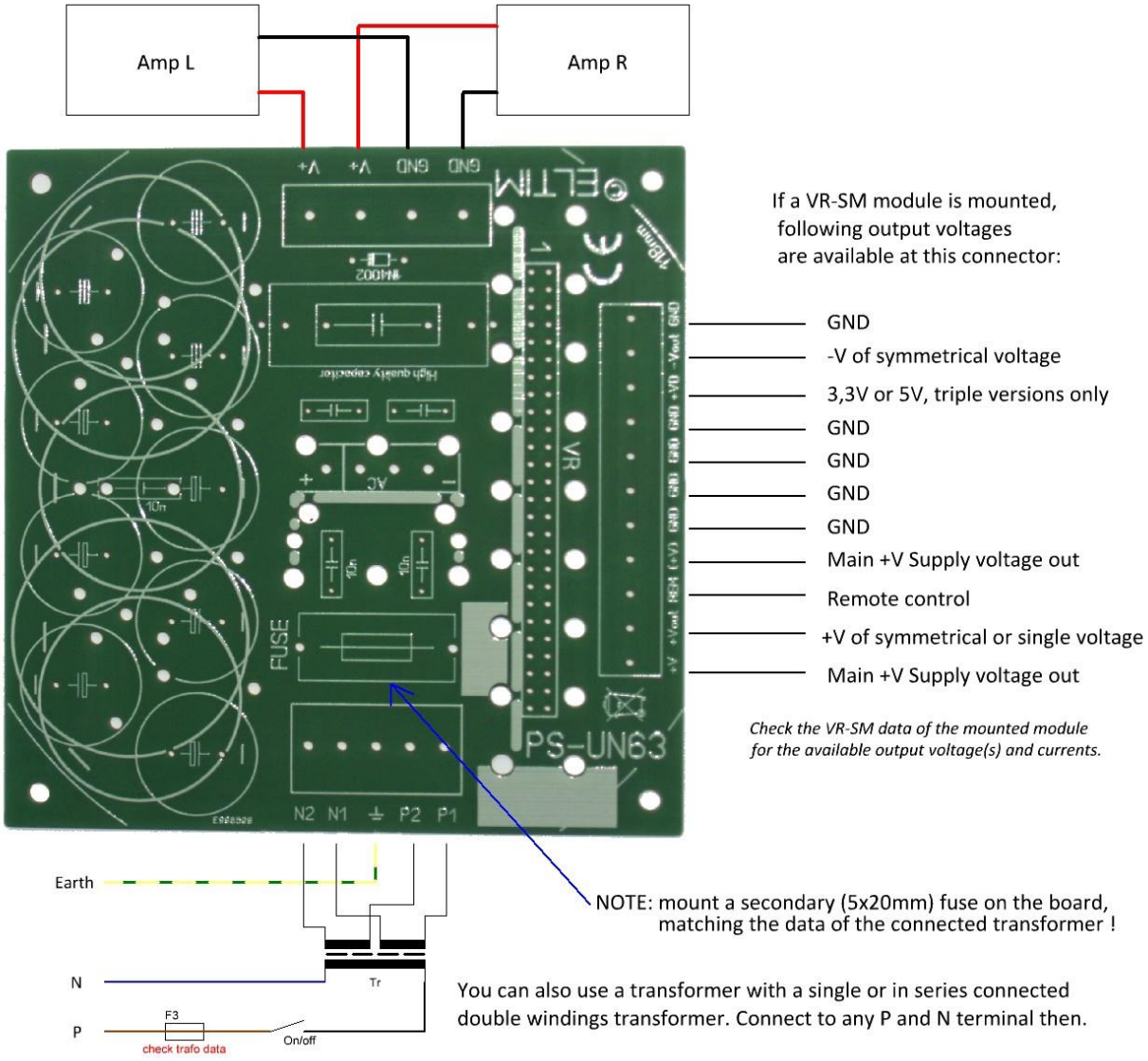
As by now people expect from us, we use the best DC/DC converters we could find, not the cheapest ones. These last a lifetime, have an efficiency of around 90% and use a harmless high (>300kHz) switching frequency.

Of course, as it always should be while using high frequency devices, it is metal shielded/grounded, so ours don't spread around RF magnetic fields at the switching frequency all around, causing oscillations, etc.

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

www.eltim.eu

PS-UN63 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.

Incorrect wiring can cause severe damage to people and/or equipment.
If you don't know exactly how to connect a module like this,
please don't. It's your responsibility, not ours !

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 !