

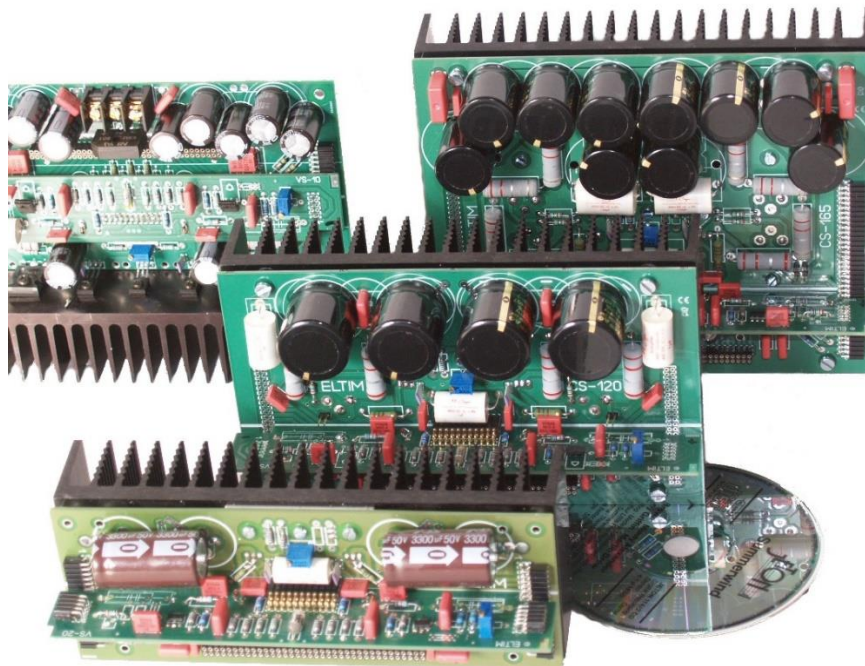


High-end / reference quality POWER AMPLIFIER modules

In brief

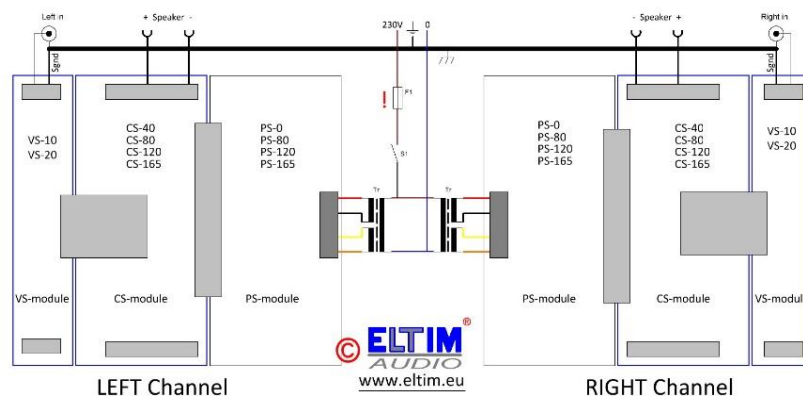
updated April 30th, 2026

We noticed that about all amplifier designs are built in a similar way; all separate and very densely populated PCB's hooked up with a lot of wire. We believed that due to a different, more spread construction and symmetrical layout of the electronics, the sound would improve. And it does, as [is recognised by several audiophiles](#) by now....



Former models shown, as soon as prototypes are ready, we will show them.

This is the short version document where we only list the possibilities with our amp modules. If you are interested in how we did it exactly, perhaps you better read our [long version](#) where all is explained. The whole idea was to develop an easy to fit amplifier module range making it possible to fit in any amplifier system for every need from reference quality to rugged PA-applications. To fill this working field, the design must be as rigid and temperature stable as possible as well as being capable of driving the most difficult loads. Our designs are fully symmetrically designed, electronically, PCB-layout AND mechanically. Furthermore, since wiring degrades sound and is one of the most common failures in electronics, we decided to build our amplifiers in a way that there is hardly any wiring required:



Former model numbers shown, new designs have similar modular construction.

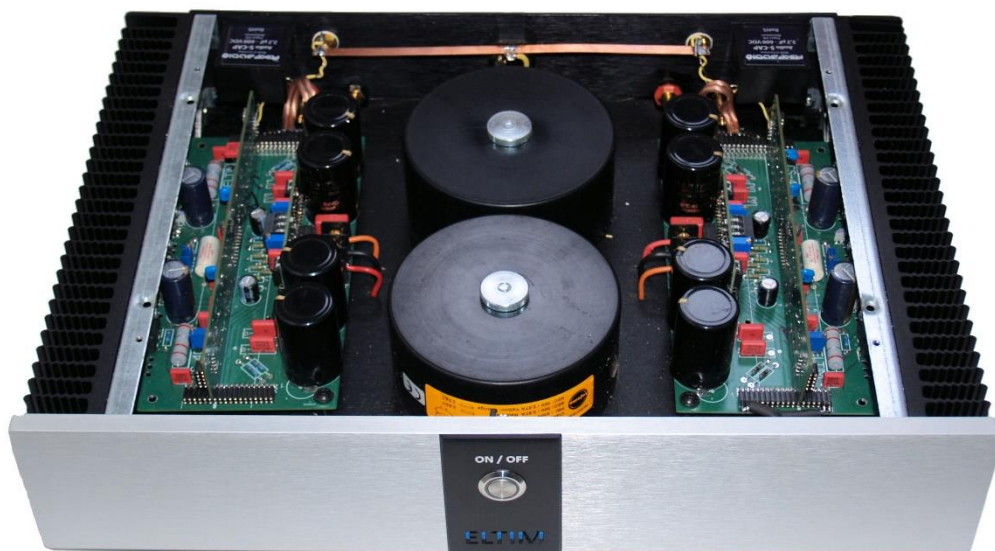
In order to make this wide range possible we needed (and wanted) to use high power Hexfets for rugged applications and unique EXICON lateral Mosfets for true high-end applications. Despite it's fantastic tube-like sound, fast Hexfet and Mosfet designs mostly are compromised due to a poor PCB layout and limited power capabilities. We made the PCB's symmetrical also by using human common sense and "old school" handwork. Takes time (read: money) though....

We believed we could improve the sound even more by using better components as you see everywhere else. The power supply capacitors very close to the power transistors ensures a deep, rock-solid bass fundament. Since these caps are available in a wide range of quality/pricing, we have modules with different types.

Some examples equipped with ELTIM amplifier modules (dual mono) looks f.e. like this:



Very first custom built ELTIM A3300 HRQ model. (V-caps over the power lines are extra). This customer developed a hobby: at audio communities he demonstrated its amazing sound quality.



Our demo amplifier, unfortunately no longer to be sent out since people are "modifying" it..... Unbelievable. Final "drop in the bucket" was sending back without shockproof material where a heatsink fan got bent and all connectors at the back destroyed. After mounting new ones, the amp played fantastic again, despite the heavy shock. We use exactly this one in our living room for over ten years already, powering our [SOLO speakers](#). Speaker guru [Rob Meyst of MC speakers](#) has a verdict (da's mooi = that's nice) over exactly this amp within 4 seconds. In this one we added some RIKE High-End input capacitors, visible in the back top corners.

You don't need to be that technical to recognise that this indeed looks different than about all amplifier designs available today. Everybody will notice that there is about NO wiring, picking up hum, causing Electromagnetic Interference (EMI), and lack of speed, pace and rhythm. With us, a powerful bass punch due to lack of long leads from where the power is (Power Supply) and where it must be (power transistors). Instead, we store energy in large capacitors as close to the power transistors as possible. We have received several messages that builders got "an extra octave of low frequency and punchy response". So, it works.

With our designs all is located as close to each other as physically possible and connected by wide and mostly thicker than regular copper tracks on double layer, high quality FR4+ boards of EU manufacture, connected by high-quality gold plated, beryllium copper (3A/pin) multi pin connectors. By multi-pin we mean that all current leading tracks are fed by several 3A contacts, f.e. the power lines use 12 contacts each, capable of leading 36A of constant current, which will never happen. Note that commercials mostly use tinned 1A/single contacts.

By connecting several different modules, a complete High-End or even Reference Quality power amplifier comes alive. Basically, we split an ELTIM amplifier circuit in two parts, an input- and an output stage, resulting in a lot of advantages. The most important one is, as people recognise by now, "the awareness of being there", as it is meant to be. At following pages we give some brief info about these modules.

We have a [special page](#) where some examples of our bespoke, hand built amplifiers are listed. Due to our modular setup, we can build about any type of amplifier you have in mind. [MAIL](#)
We also didn't forget the DIY market. You can buy all modules built and tested and even buy them as kits.

Two PCB setup

In order to obtain the best possible low signal performance, we split the input- (VS, Voltage Stage) and output- (CS, Current Stage) parts and made two separate PCB's for this. This means that you need **BOTH** CS- and VS-module to make a working ELTIM High-End power amplifier. Any VS-module fits on any CS-module.

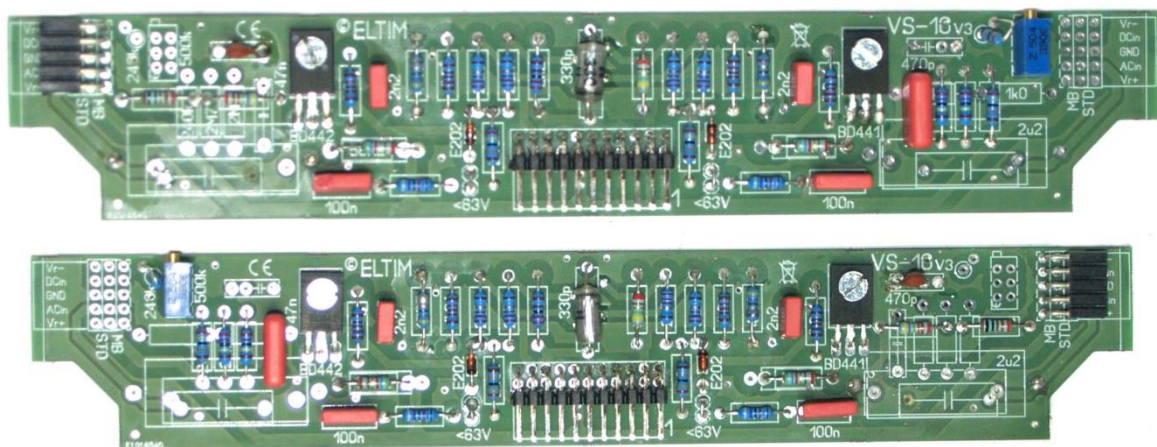
As noticed by many listeners this unique approach works, since everybody notices the extreme fine detail of our amps, especially noticed by room reflections in the recording area, etc. As with a very good tube amp, but better, like finer, detailed highs, uncoloured mids and simply smiling low frequency control and performance.

VOLTAGE STAGE modules

The input module is as we called it the Voltage Stage module. The input signal is fed here and converted in signals capable of driving our CS- Current (output) Stage modules.

These modules are sandwich- or L-mounted to our Current Stage modules by a 2x11 pin connector. Only together they form a working amplifier module. By the way: all connectors both rows are paralleled.

[VS-10](#) For lower costs and/or high-power purposes we made the VS-10 version, where the double mirror input circuitry is based on regular (SMD) transistors:



The group of 4 SMD transistors are positioned within 1 cm² of each other exactly in the middle at the back side, making sure that they maintain at the same temperature. This prevents temperature "drift" of the amp.

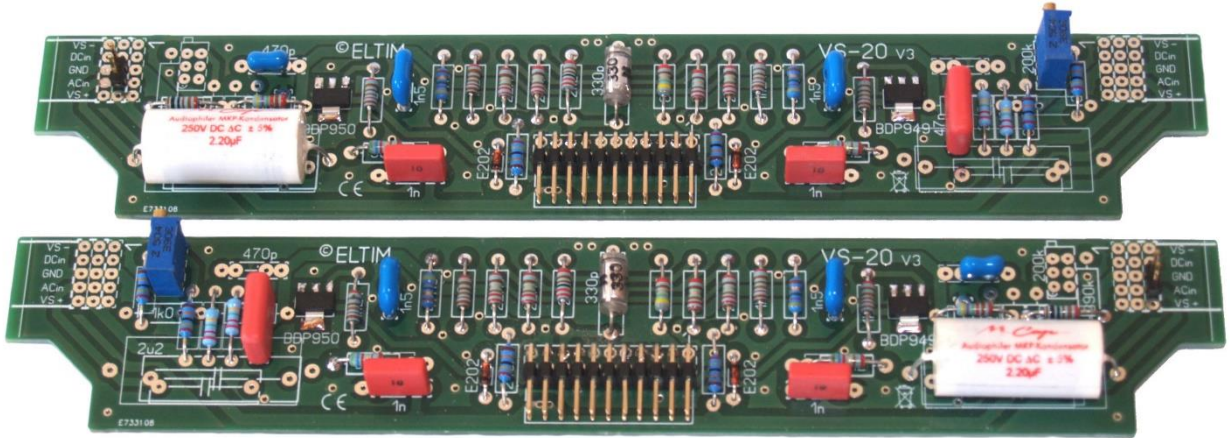
You can supply up to +/- 100V, meaning that in combination with a suitable CS-module, you can make about any power you like (2kW+/2ohms actually).

Via the centre connector it is connected to any of our CS-modules and driving it the correct way.

Normally we mount an angled version as in the picture, where it is L-mounted to a CS-module.

We can also supply versions with a straight connector mounted on the back side. You can use those on some modules in order to save some space. Input capacitor is a radial Panasonic 2,2uF MKP.

VS-20 version is using a special transistor array IC where only 4 matched transistors fit, so it is not any kind of Op-Amp but precision transistors, trimmed within 500uV! This T1-T4 couple is mounted at the back side and is a very small SMD component. This rare, exactly symmetrical 4-transistor array with a grounded substrate is used in order to obtain a perfect symmetrical layout on this small 3,5cm wide board. While grounding the substrate of this chip, noise, RFI, etc. at the lowest (unmeasurable) possible level. Even with your ear at the tweeter you won't notice any noise. "Of course", you will find it exactly in the back centre of this board.



VS-20 first version where both sides are shown

Since the transistor mirror circuit (so, not an Opamp!) and other parts have a limited voltage range, we suggest staying below +/- 63Vdc. With a suitable CD-module you could make over 200Wrms/8ohms. Unlike in the picture, input capacitor is MUNDORF MCap400-2,2uF since v4.

We develop a variant where the PCB surrounds the large power supply capacitors on the supply module.

In cases where higher Power Supply voltages are used, or when you want to apply a regulated voltage to this input module you could decide to mount a Voltage Regulator board as well. Feeding a regulated supply voltages to it, also increases the overall sound quality. Later more about that.

If no Voltage Regulator module is used, you must remove two jumpers where >±63Vdc is used (v4).

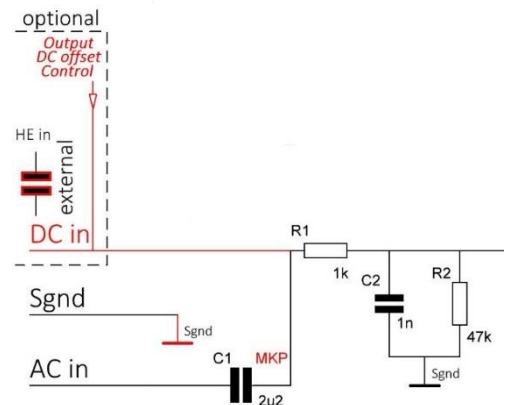
VS-modules input circuit/DC-level control.

All VS-modules have a DC- and AC-input. While using the AC-input, signal flows through a reasonable high quality MUNDORF MCap-2,2uF. In that case the frequency range is from 10Hz up to 1MHz in highest quality monoblock versions. Actually, without precautions we can reach even 2MHz.....

The idea of the DC-input is that you could use an external and large high-end cap outside of the VS-board, f.e. a large Mundorf or Intertechnik capacitor or even leave it out if your preamp already has an output capacitor.

Just connect this special 2,2uF capacitor between the Line in connector of the amplifier and the DCin input of this module. The mounted capacitor is then out of function (bypassed):

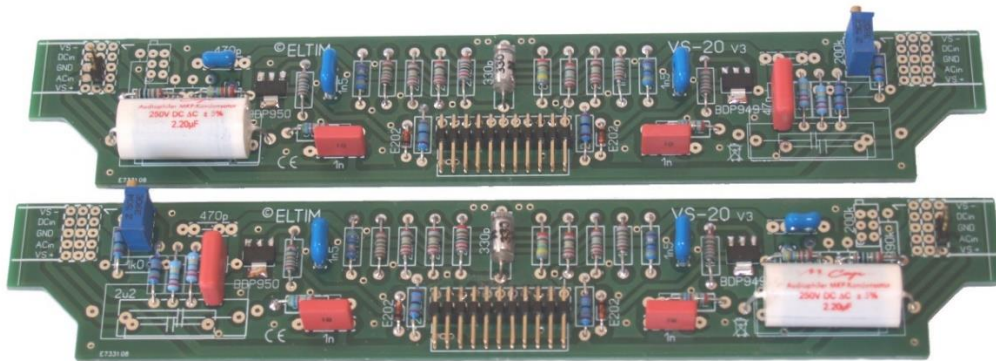
We provide special [input boards](#) where even the largest (f.e. Mundorf SUPSGO) fits.



You can also connect a DC-Servo circuit to the DC-input. This circuit keeps the average DC-level of the speaker line at 0Vdc regardless temperature caused shifts, altering of components, etc. We are working on a module like that. It can be mounted at any time.

While no input capacitor is used, the frequency ranges from 0Hz (=DC) up -)

At all VS-module types, one can decide at what side the input circuitry is mounted:



VS-20 v3 version where left and right are shown. We use the same PCB actually!

At one side of any VS-module the Audio input circuitry is fitted (horizontal mounted parts and larger white cap), on the other side the output DC-adjustment circuit (vertical mounted parts with trimmer) find its place. So, doing it as we expect you to do, the input is always close to the input v3 connector, for left and right.

As said, our VS-modules are providing signals, capable of driving the heavy current processing CS-modules. Unlike told on the internet by “specialists”, our VS-modules are NO preamplifiers!

Separating the small signal processing parts from the high current processing parts have a huge advantage as [lot of people found out by now](#).

CURRENT STAGE Modules

The power delivered to the speakers comes from our Current Stage boards, processing large currents.

This module is driven by the former mentioned Voltage Stage modules via the centre 2x11-pin connector.

Depending on the model there are only some “slight” differences in the number of parts and their values.

The PCB’s however differ significantly by width and thickness of the tracks.

About all are equipped with some Power Supply capacitors very close to the Hexfets/Mosfets for better impulse response. Speaker leads can be connected to the left and/or right connectors.

We use IR Hexfets and [EXICON lateral Mosfets](#), especially designed for highest quality analogue audio amps.

They are that linear with low idle current already that setting them in a high-power consuming “Class-A” makes no sense. In other words: we produce cool amps with old fashion Class-A sound quality.

As they state, they are fast since our amps are FOUR times faster (>60V/us) than any high quality opamp is.

This also makes it possible to obtain a huge frequency range, even up to 1MHz. Senseless? NO!

While doing so, the phase characteristic (time required to pass the amps electronics is constant over the full audio range. This is very important, because time shift with frequency destroys the “staging” of the recording.

With all CS-modules there is power supply capacitance close to the power Fets.

The value and quality of them is also the main difference between all following modules.

The true power reserve comes from a separate Power Supply board. We have stack-mounted as well as regular L-mounted versions available. You also could make a “hardwired” Power Supply yourself.

A Power Supply is connected by the long horizontal connector.

At following pages, we show the CS-modules we have in our program today.

Please note that since 2025 we are totally redesigning our CS-modules, where we leave out the possibility of adding extra added (Mosfet and/or input)modules.

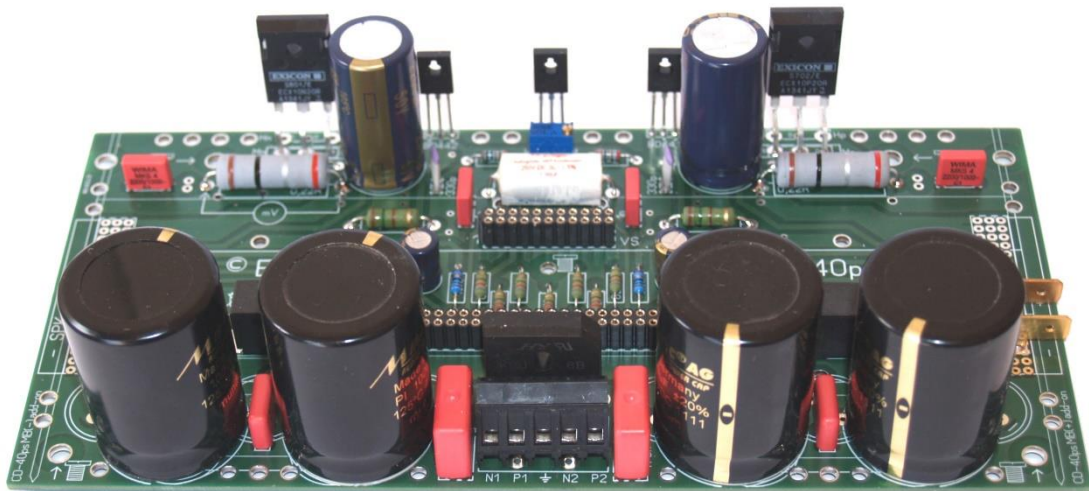
It appears that nobody except ourselves is using this option.

While leaving out the required side connectors we can now even use wider PCB tracks and simpler layout.

Due to this redesign, we only show PCB layouts on our website at this moment.

We are building a pair of most promising 300Wrms monoblocks at the moment.

CS-40ps our most “basic” CS-module (LEX08 model shown) with integrated Power Supply, for L-mounting to any cooling surface as commonly used. With this module the long horizontal connector could fit a protection or a voltage regulator board. This is our most sold module by far actually.



While using this CS-40ps module, an amplifier can be built in the simplest way:



Example of our very first custom built (0002) A 2280 RQ amplifier.

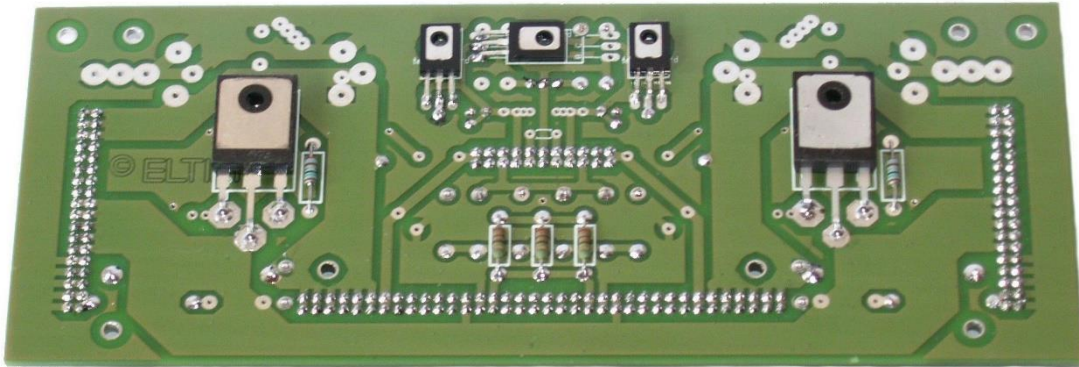
Just connect one or two transformer(s) and the input/output connectors with some short leads. Since the customer of this amplifier just needed little power for his highly efficient speakers, this MODU Slimline cabinet gives sufficient cooling to do the job in this 2x 50Wrms amplifier. Of course, these CS-40ps modules also fit in f.e. the MODU Pesante Dissipante cabinets with way larger cooling profiles. The most easy layout stays similar as in the picture above.

Customer's response: *“it comes very close to our € 6000,- Tube amplifier monoblocks”*. Huh? We built this one for Musical Affairs (R.I.P.), producing highly efficient full range speakers.

In 2026 we are designing new models, capable to handle higher power. The first one, a 300Wrms monoblock, is in a prototype stage now.

ELTIM sandwich mounted amplifier modules.

Quite unusual are following boards, fitting flat on the backside of a heat sink. Probably this isn't done by others due to the heat exchange between the heat sink, PCB and components. Most carton-like boards would burn black around the power transistors. We demonstrate that a cigarette lighter flame has no effect at all on our boards, not even the printing. However, our CS-80 (picture) f.e. becomes only hand warm while producing quite some power. This is possible due to the very low (10x lower) idle current they require to reach the absolute linear working range and the heat exchange between the chip itself and the cooling surface. We and others found out that with CS-80 at 150Wrms/4ohms, the heatsink will only become just hand warm. Besides that, mostly cheap 85°C, 1000 hours capacitors are used. The capacitors we use are 105°C or even 125°C types (MLGO 125°C). We also use highest quality FR4+, EU manufactured boards which are double sided, with soldering masks, printing on both sides and tinned (or even gold plated) for easy and reliable soldering. In 2026 we are producing four models, mounted flat against their heatsink like this former CS-80 model:



CS-80 back side view. Mounting directly to a heat conducting element/surface

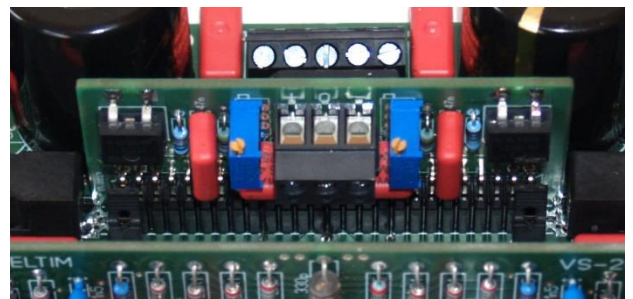
The power transistors are in the middle, NOT at the bottom as most do. We exchange heat better due to this.

In 2026 we are prototyping CS-150, CS-300, CS-450 and CS-750 models. Number refers to power.

Due to lack of time it takes longer than expected, sorry for that.

Voltage Regulator modules

In cases where quite high-power supply voltages are used, a Voltage Regulator board is required in case you use a VS-20 input module. You also could decide for a higher quality level by using one of our VR-boards. Doing so, symmetrical regulated voltages are supplied to the VS-input module.



At most of our Power Supply modules these VR-boards can be mounted, also without any wiring. We have three qualities available. VR-3 is most sold and using one of the "prehistoric" but for 40 years still very best performing LM317/337 circuits in SMD. We use all components as recommended by TI, not just 2 resistors. While using this VS-3, a VS-20 reference quality input board can be used in amps fed by up to $\pm 100\text{Vdc}$.

Our Voltage regulator boards fit directly on our CS-40ps with integrated power supply as shown here. It also fits directly on our PS-80/120/165 supply modules.

Protection

All CS-modules have fuses in the power lines as protection. We do NOT use (small) signal distorting relays, since our amps are also stable while firing them up or powering down, NO woofer movements visible! This, mostly large, woofer movement is the main reason why others use this relay, it's not to protect! The power transistors we use can handle at least 80A of peak current, so if something goes wrong, the fuses will blow before anything gets damaged.

If you believe you need more/better protection, use our [Protection module](#), checking max. 4 pairs of Power Fets, overload, distortion and over temperature (interior AND heatsinks separately). All types of overload could be indicated by LED's: overloaded, distorting and overheated. Also a combined LED, showing a mix. This module is in development since it has to work properly on all types of setups! If a failure is detected, we shut down the amp, not just disconnect the speaker, seems logical to us. Just remove the fuse holders in the powerlines, mount extra header contacts instead and place this module. Then your amplifier AND speaker are protected against about any possible failure.

Production

All our modules/amps are completely assembled and soldered by hand, noticeable by the shiny soldering's. Not by a small kid, who should be at school, but a grown up, experienced person. A soldering like this lasts forever. On request we can use any other soldering than regular, for example MUNDORF Silver/gold solder. Since we assemble them ourselves, we even could use the special components you prefer. We always produce in quite small amounts, so new ideas can and will be implemented fast. In our ready built modules, we have made some choices already and mounted capacitors we believe fit best.

Components

We also have other very interesting, rare, audiophile chips, transistors and passive components available in [our webshop](#). We provide f.e. very nice [MODU electronics cabinets](#) (base of all our designs), [EXICON](#) Mosfets (specifically designed for the highest quality analogue amplifiers), [THAT](#) audiophile analogue (!) [IC's](#), [power supply capacitors](#), Mundorf and Intertechnik crossover components, [drive units](#), [connectors](#), [phono cartridges](#) / [replacement styli](#) and many more nice, often hard to find DIY stuff..... -)

Sound quality.

Our first demo amplifier runs for ten years now as you would use it yourself, without any problems at all. We (and others) have listened to different bespoke amps, all sounding amazingly clean and natural. Read f.e. the [review where our CS40ps HRQ is tested against the famous HYPEx NCore](#) module (in Dutch). They all came to the same [astonishing conclusion](#): These amps sounds better than about all the high-end stuff they listened to so far with great pleasure. Nicer, warmer (tube like) 3D, rock solid bass, no sharp s and t sounds etc. One word came up all the time: ***EMOTIONAL*** That's exactly what we wanted to achieve -) We demonstrated at X-Fi show 2019 and got a lot of compliments, like "finally, here some *MUSIC* is made"

Documentation

We made a [special page](#) where all actual info bulletins, datasheets, etc. are available.

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