ELTIM® high-end AMPLIFIER modules

updated November 22nd, 2020

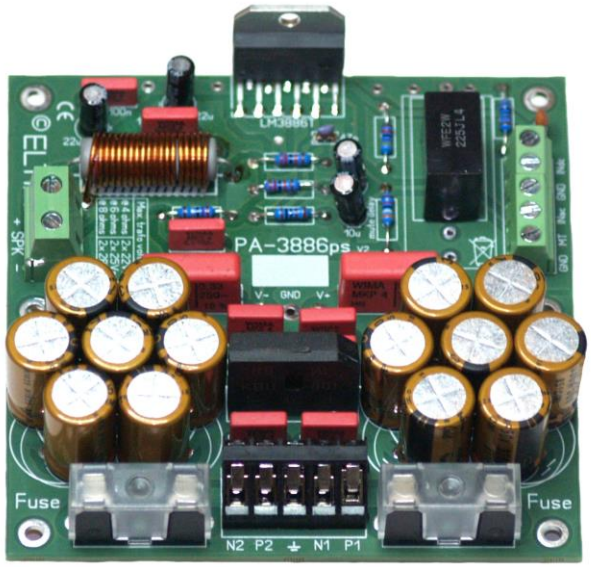
PA-3886(ps) v2 Amplifier modules

Despite the fact that there are many amplifier modules on the market using the LM3886 IC, we decided to develop modules with this IC as well. Why? Because most of them use cheap and bad performing copies of the original Texas Instruments LM3886 IC. Besides that, we are sure that about all are constructed way to simple, where the PCB's and other parts used don't match the capabilities of the IC itself.
Due to this and more, the IC cannot perform as it actually is supposed to do.

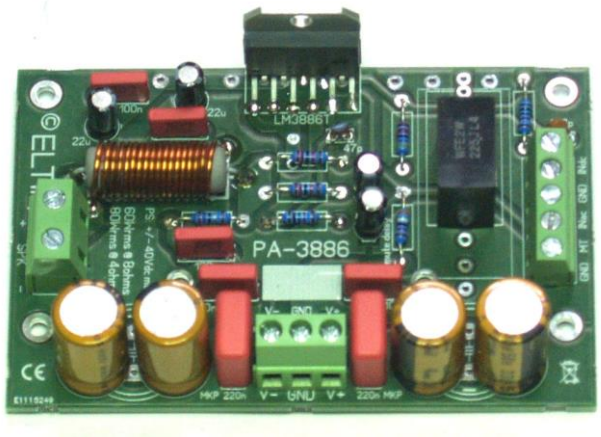
We constructed these amplifier modules based on the very nice performing / cost effective ORIGINAL LM3886 IC from Texas Instruments, mounted on a double sided (35um) quality PCB. Unlike about all the others we use a version with a metal back plate. Due to a better heat exchange, original and quality parts and a way better PCB our modules are able to deliver around 80Wrms.

These most easy to build and to use modules will fit in a lot of projects like small stereo amplifiers and active speaker systems. We also have models with an integrated power Supply where you just need to connect a suitable transformer. Also a very nice project for starters (schools!) actually. With a clever PCB design we also could implement some nice extra features.

As an environmental friendly company, we use the LM3886T, RoHS compliant and Lead-free. It is capable of delivering 10A+ of audio currents. With our **DOUBLE LAYER** copper (**35um) PCB** , made in EU in an environmental friendly way, we made the power grid and speaker lines 4mm wide and where possible even wider. Our tracks are capable of feeding 12A+. Close to the IC we go some smaller, but added short tracks on the other side there. Despite the fact that a double sided PCB costs more, we believe this IC deserves it and give it the ELTIM design/sound signature as requested by some people, where this nice and cost effective IC truly can show what it is capable of. Of course, we only use ORIGINAL, quality and brand new parts.



PA-3886ps UFG LP



PA-3886 UFG

At left a module with complete linear Power Supply with 2x7 NICHICON UFG 330uF/50V "Fine Gold Muse" caps. At right a version without integrated power supply.

We have several models, where the only difference is the size and quality of the power supply capacitors.

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How we do it

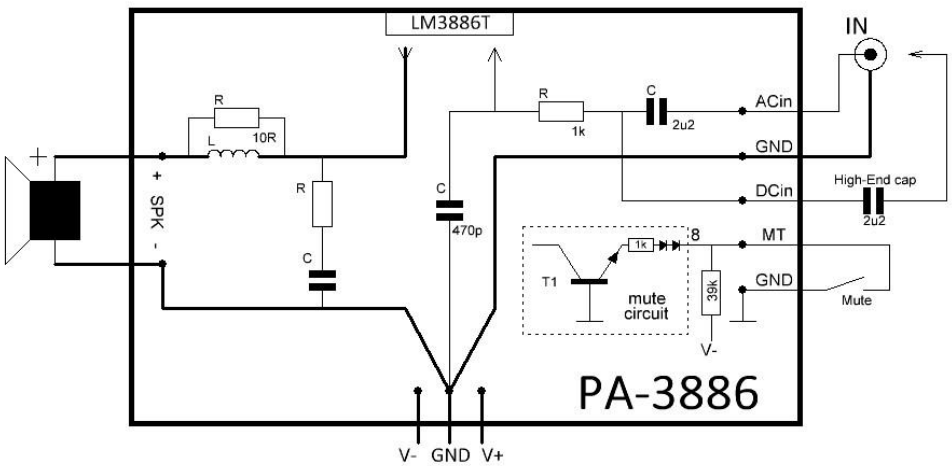
An IC as used here always struggles with the fact that it is hard to connect the required components in the shortest way AND at the same time have sufficient wide PCB tracks, able to let the currents flow. With the over 10A this IC can do, the only correct way to do this job is by a double sided PCB. Even then, regular 15um thick copper is not enough, so we use (2x) 35um copper layers. Due to the double sided board, we also could make the tracks as short and wide as possible. Together with quality components, this IC now shows what it really can do.
We use an EU manufactured double sided FR4+ board with parts printing, solder mask, etc. You won't find better quality! Now it even makes sense to use high quality connectors, wiring and speakers !

The TI datasheet strongly recommends to keep the speaker track as thick and as short as possible and as far away from the input circuitry, so we did. Actually, shorter and wider as we do is simply not possible.
The speaker ground goes directly to the power Supply capacitors and the central ground connection.
Also, we kept the input ground apart from the output ground as strongly recommended by TI (we always do).
The input ground also leads directly to this centre ground pin, so not affected by speaker currents.
Both use large surface area's at both sides ground planes, so about 50% of both sides is actually grounded.

As also recommended by the TI datasheet, we use an output coil, so capacitive loads (as more and more speaker systems tend to show due to complex flitering) will be accepted more easy. We wound this coil around a 10R/5W Mundorf MOX resistor, which is also recommended by TI.

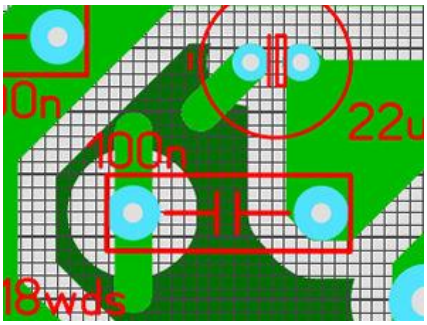
Besides way to thin copper tracks and mostly counterfeited IC's, In the cheap Internet modules you'll also find the cheapest input capacitor one can find and so, acting as a filter already. With us, you can mount a serious MKP version, f.e. Mundorf MCap400 or Intertechnik KPQS-2,2. There are multiple holes for all kinds of dimensions, 15/22,5/27,5/41mm pitch versions. Max width is 19mm. This cap is connected to the ACin line.
Ready built modules and kits are delivered with a nice MKP Panasonic ECWFW-2,2uF/450V, pitch 15mm.
If you want other types, just mention it in the order form comment line. We have lots to choose from.

We added a INdc input, where you bypass the on-board input capacitor. In that case, be sure that the input signal is dc free! You could also use this INdc while using a large, external mounted (mostly large) High-End capacitor as shown in the picture below.
As it always should be, RF interference from outside is blocked by an RC network in the input circuit and the gain of the IC is limited beyond the audio range by the TI listed circuit, avoiding oscillations and other mishaps.



As it should be done always (increasing GSM, 4G, Wifi, etc. signals), the input is filtered by an RC network (1k/470p).
The gain and bandwidth of the IC is limited beyond the audio range by the TI listed circuit, avoiding oscillations and other mishaps. We found out that more simple solutions to be found at the internet tend to show oscillations and severe "motorboating" effects very easy! So, don't use those simplified schematics.
With a small SMD capacitor between both inputs of the IC, gain is limited to 1x at very high frequencies.
These simple extra's make our modules very safe working units in cases something really could go wrong.

As in about all our designs, we use quality 1% MOX resistors. In some of our top models we even use 0,1%, like in the transistor array mirror circuit of our VS-20 input module for our reference quality amplifier modules.

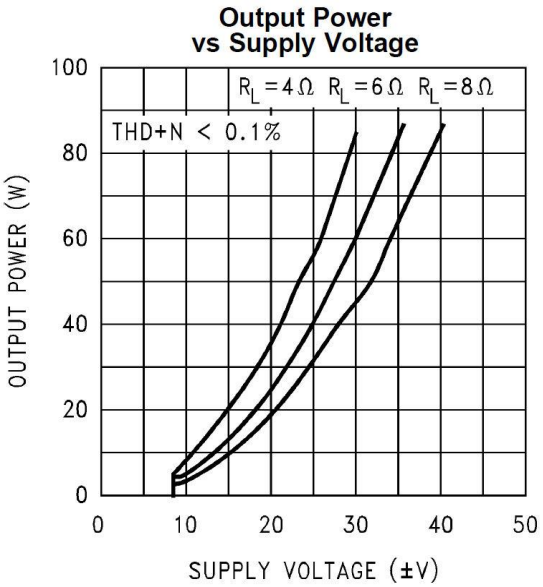


The PCB's have that much copper and are conducting heat that well that it normally would be hard to solder larger or heat sensitive parts to it. Around the heat sensitive/large parts we took precautions and partly decoupled them from the main track.
Still, you need a 60W (temp. controlled!) iron to solder several parts, f.e. the rectifier and power supply capacitors.

The boards are EU made, so NO (China/India) pollution and no people doing the job about for free for you. We would be ashamed.

Output power

We see all kinds of output data for the LM3886 on the internet, mostly just by copying each other. The data there is just general information, so specified for the least performing types. Basically it's the data of the ORIGINAL plastic versions. Copies as on many Ebay/Alibaba modules perform even less. This text copying, mostly by non-technicians only reading the first page of a datasheet, results in incorrect or incomplete info. Better is to study the TI datasheet completely, which may be believed to be true and interesting data. The Texas Instruments LM3886 datasheet shows us following graph at page 14:



This graph shows what an ORIGINAL T-version (with metal back plate) can perform: **80W+** . We use this one !
Use the voltage matching the load, f.e. 4ohms, +/-30Vdc max.

So, it's not 40Wrms @ 8 ohms (or 68W) as we read everywhere, but **80W** instead, which is quite some difference (3dB in sound). But then the PCB must be designed properly with wide tracks, etc. as we do.
You can't lead over 10A (IC specs.) of dynamic current over a 1mm wide (or even smaller) track and expect to get a dynamic, rich sound. We don't understand this, since everybody agrees that a speaker cable has to be as thick as possible…. And fed by a tiniest possible track? Weakest chain!
Our calculations show that you need at least 4mm tracks with a thickness of 35um of copper as we do. Safe side calcs. 0,1% distortion is an acceptable figure, not noticed by most people. Probably not even by you.

Cooling

You need to cool the IC properly with sufficient cooling surface. The IC datasheet helps you out.
Please note that the metal mounting strip of the IC is connected to V-, so NOT to ground!
Due to this, you need to isolate the IC somehow. 95% of all modules are using plastic versions where this "problem" doesn't occur, accepting the loss of power, dynamics, sound quality, life cycle, etc.
With our metal versions you need to isolate it by use of a (quality) thermal pad and mounted by a nylon M3 bolt. Unfortunately this gives a small thermal resistance, but is still way better than while using plastic versions. With our modules and kits we supply both a high quality thermal pad (Silpad 400) and a nylon M3 bolt. Even better is to use an insulated heatsink for maximum heat exchange. There you can mount the IC directly to the heatsink. Actually, only then the IC can show what it can do at 100% of its capabilities.

Mute function

In their datasheet TI recommends to connect pin 8 (MT) via a resistor and a switch to V- for (de)activating the mute circuit, which is most unpractical, due to the fact that the switch is connected to V-, mostly around -35V. In that case some extra electronics would be required to come to TTL/CMOS level resp. ground.
After studying the internal schematics and some controlling measurements on our prototype, we found a way better solution. We mounted a 39k resistor directly from pin 8 to V-, causing a current out of pin 8 from 0,42-0,85mA, depending supply voltage. Due to this, the amp is active (Gain 0dB), see graph below.

With this fixed mounted connection to V- by a resistor, the MT line of the IC is at a potential of around -2,7V, where the base of the internal mute transistor is at ground level, so conducting > sound. See the picture at former page where we also drew the internal mute circuitry.

By connecting this MT line to ground now, the internal transistor will lead no current since the BE part of it is <0,5V and so the circuit is in mute mode, that's it ! Now you can use a switch to ground or an active circuit via f.e. a processor system.
Any applied voltage higher than aprox. -1V will activate the mute function. Due to the internal diodes, this can even be a quite high voltage. The MT pin on our boards take hardly any current (diodes/transistor blocked), so it can be driven by any circuit. While MT is not connected, the amplifier is active.

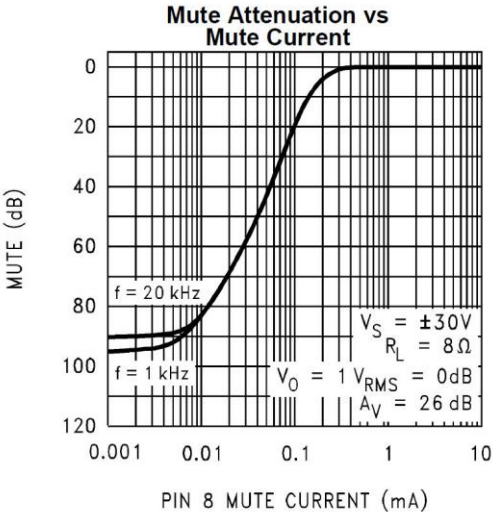


Figure 44.

Sinking around 0,05mA or less gives a gain of around -93dB, while 0,35mA or more sets the gain at 0dB, see graph above. So, in a range of 0,3mA, you could control the gain from 0 to -93dB. Sink this current to V- !
You could use a variable resistor of 500k in series with a 39k resistor, connected to MT and V-.
This comes in place of our 39k resistor, so cut this one off the board or put the potmeter in series with it.
Please note that we did NOT try this ourselves and it is not meant to function this way!

By mounting a some larger capacitor from MT to V+, the amplifier's sound will fade in slowly after the power is switched on. While uncharged it will connect MT to V+ first. Then it's charged by the 39k resistor causing the voltage on MT dropping. After passing around -1V at the – pole (=MT), the sound comes in faded.
Since the MT line will reach -2,7V, connect the – pole of the cap to MT ! The voltage of the cap needs to be V+ + 3V at least. You could mount it on the marked PCB position. We placed a 10uF/50V already.

Power Supply
An impulse rich current draining device as these amplifier modules require a Power Supply capable of delivering this. Most Switched Mode Power Supplies (SMPS) CANNOT perform this and are meant to feed quite constant currents! Also, they mostly contain lots of high frequency residues on the power rails and even worse, the impedance rises with load frequency, together resulting in poor bass and screaming highs.

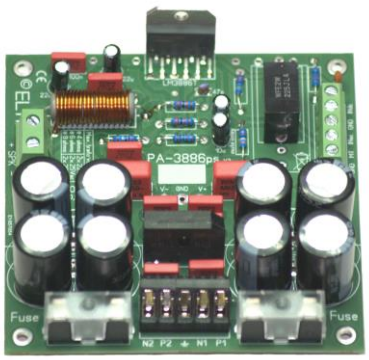
We use a LINEAIR symmetrical power supply instead of a single voltage one where an audio degrading output capacitor is required. While using a single supply as most other do, the output swings around ½ V+, causing the need of a large value (4700uF) POLARISED electrolytic capacitor. However, capacitors like these are totally incapable of passing ac signals, especially the cheap ones we see on the Ebay modules. Those are only meant to store dc energy in a Power Supply! You get a "70's sound" where with the first solid state amps this principle was common! Also, 50% of the time this cap is polarised the wrong way, shortening it's lifetime and degrading sound quality. With a symmetrical supply as we use, the output swings around ground level and so, no capacitor is required. Instead, you'll find the recommended output coil. Due to this coil also capacitive loads, as many speakers tend to show today caused by complex filtering circuits, can be powered as well.

On our PA-3886 modules we mounted a pair of small supply capacitors as assistance to a connected supply.

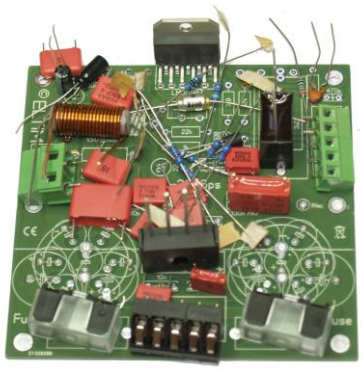
On our PA-3886ps modules, we use a LINEAR symmetrical power supply, where a variety of types can be mounted. Since these capacitors are part of the Power Supply chain (!) they have an influence on the sound quality. As we do with about all our modules where Power Supply capacitors come in action, you can decide for several types and qualities. Since prices (read: quality/lifecycle) of electrolytic capacitors differ a lot, we can make a range of modules with different pricing this way. All other electronics are exactly the same.

NOTE: if you buy a kit version, there NEVER are power supply capacitors included in any ELTIM DIY kit!
While doing so, you can decide yourself what price/quality/brand you want to use.

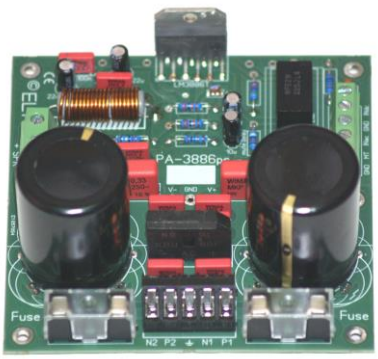
ELTIM PA-3886(ps) TECHNICAL SPECIFICATIONS:	
Frequency range:	10-80.000Hz
Harmonic distortion:	0,03% (@30W/8ohms)
Intermodulation distortion:	0,004% (60Hz/7kHz, 4:1)
Output power:	See graph above
Output current limit:	11,5A
Slew rate:	19V/uS
Signal to noise ratio:	92,5dB (@1kHz/1W/A weighted)
Power Supply voltage:	+/- 10 – 42Vdc (all versions, see power graph) Also on models with integrated power supply.
Max. transformer voltages (ps versions) @ 4 ohms loads @ 6 ohms loads @ 8 ohms loads	Only on models with integrated power supply: 2x 22Vac 2x 25Vac 2x 28Vac
Power Supply capacitance:	Depending the model, see table at last page
Protection:	completely safeguarded at the output against over/under supply voltage, overloads, shorts to ground or supplies, thermal runaway and instantaneous temperature peaks.
Dimensions:	100 x 65mm (basic versions) 100 x 100mm (versions with power supply) The Supply capacitors decide the height of the module



PA-3886ps FRA

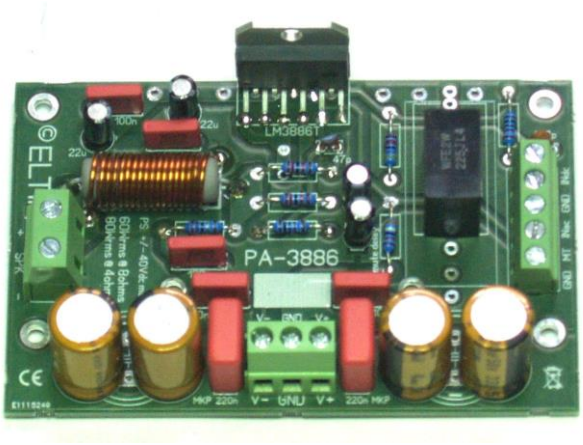


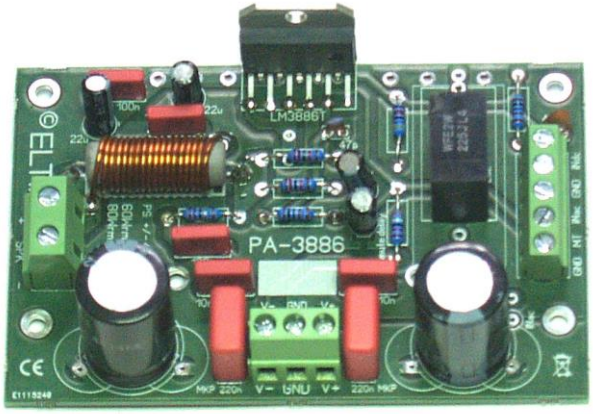
PA-3886ps DIY kit



PA-3886ps MLGO

ELTIM PA-3886, module without Power Supply:





ELTIM PA-3886 UFG ELTIM PA-3886 NHG

Connect a symmetrical Power Supply, +/-40Vdc max.

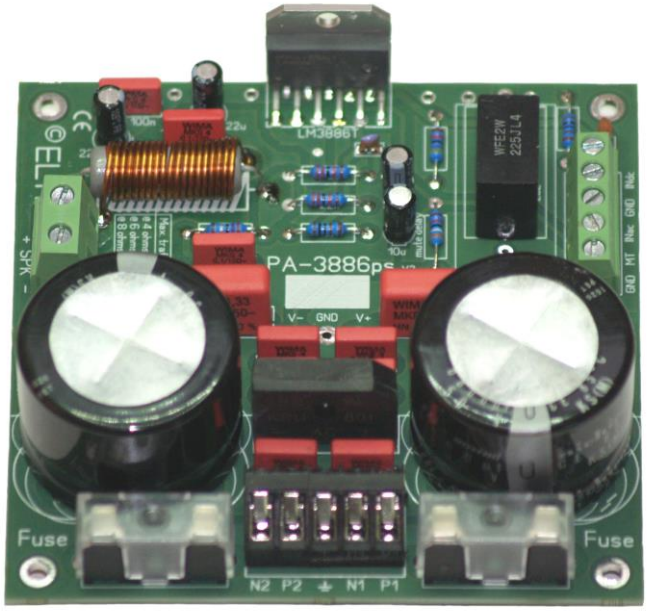
This module is meant to connect to a decent (so, preferable not a cheap SMPS!) power supply with sufficient capacity on board. We have some in our program. Most SMPS supplies have RF on the power lines, which can cause a deterioration in audio quality or worse: oscillation of the amplifier! We did all possible to prevent this, but it still is possible if the added power is of poor quality and/or contains significant high frequency content.

This ELTIM PA-3886 PCB requires about all energy from an external Power Supply, but fits 2x Ø16/18mm or 2x2 Ø12,5mm electrolytic capacitors to bring some extra energy reserve closer to the IC.
If you mount some, use quality caps like NICHICON Fine Gold ! You will be rewarded with better sound.
Low ESR capacitors like these only make sense while mounting them close to the load with thick/wide tracks as we do. Unlike the cheap internet modules, we use serious AND Audio Grade capacitors on our ready built modules with sufficient capacity and a long life span to do the job properly.
Furthermore we added 330nF MKP capacitors close to the supply connections in order to keep RF outside and increasing high frequency sound quality. We also added some extra capacitors over the power rails, as close to the IC as possible, a 100n and a 22u type as recommended in the TI datasheet, not seen anywhere else.

In the comment line of the order form you can ask us to mount other types of electrolytic capacitors. We will respond with an offer to you. We can supply about any type. While building it as a kit you could mount up to 2x 3300uF/50V actually, but they are way higher and Ø18mm, but fit.
As always, in DIY kits we leave out the Power Capacitors, since many want to use their own preferenced caps. So, if you want them from us anyway, order the capacitors you like, matching your requirements/wallet.

We always try to get some more out of a specific module design. Since we also hobby (for over 45 years now), we mostly can and do think as many do, meaning that we try to make our modules as useful as possible.
In this case, with these small modules we also found a nice extra, without any extra costs.
You can sandwich-mount this one, even on top of our version with its own Power Supply as shown at the next pages. Mount it on top of a PA-3886ps module, using some distance holders. Three straight copper rods leads form the power lines of a full pack. On the PA-3886ps version and the extra capacitor “booster pack” PS-BOOSTER there are holes exactly at the same location, so the copper rods are easy to mount.
With this sandwich possibility, you become a solid pack for stereo, parallel, bridged, 2- or 3-way active setups, etc., all fed by just a single transformer, connected to the PA-3886ps module, but 8A (±250W output) max.
We also see a function where multiple PA-3886 units are connected to a PA-3886ps, for multichannel purposes like home theatre systems or for shopping malls, etc. as improved replacement of 70/100V systems.
In that case, also mount at least one PS-BOOSTER. See our example at the last page of this document.
If all carry the same signal, feed it to only one and add a small copper rod just below the input capacitors, similar as the Power Supply rods we mention below ! All INac lines are connected then. Mount the jumper!
This line even goes through any type of PS-BOOSTER module at the same PCB location.

ELTIM PA-3886ps v2, module with integrated linear Power Supply:



PA-3886ps LKS, 100x100mm with on board symmetrical Power Supply
with low profiled (Ø35x25mm) Nichicon LKS capacitors 6800uF/50V.
Just connect a transformer, 2x28Vac max. (8 ohms, IC limits!)

This ps version is technically identical to the basic PA-3886, except for a full functioning linear, symmetrical Power Supply with quality secondary fuse holders, a rectifier + small caps around it and required larger supply capacitors. The PCB is designed in a way that several types fit without degrading the PCB track widths:

- 2x Ø25/30/35mm radial capacitors, pitch 10mm, so indeed and even serious ones can be mounted. You could even use f.e. low profiled ones Ø35mm, and only 20mm high.
  With these total could become only 22mm high, IC height + PCB. (Ø35mm is NEW on v2 model)

- 2x2 Ø18mm, pitch 7,5mm, mostly used in low cost (NHG) setups. You can even use (very) long Ø18mm ones (f.e. 3300uF/50V), even if a PA-3886 or PA-4766 is mounted on top, see the horizontal PCB marking. The capacitors fit next to a sandwich mounted PA-3886 or PA-4776 module.

- 2x4 Ø16mm, pitch 7,5mm, mostly used for low profile (FRA) or low cost setups, depending the quality of the capacitors. v1 only could have 2x3 of these caps, the new v2 version can mount 2x4 of these.

- 2x7 Ø12,5mm, pitch 5mm. (on V1 it was Ø10mm). Some prefer to use multiple small caps (Nichicon Fine Gold is fantastic) electrolytic capacitors. Here only relatively small values fit, f.e. 2x7 Nichicon 330uF/50V "Fine Gold" (85ºC!), which is insufficient for 80W bass output. With a total capacity of 2x 2300uF it is meant for low power purposes or driving midranges/tweeters only or assisted by our PS-BOOSTER module! In that case its best to use capacitors of the same "family" in both modules. You could mount higher value/lower voltage types! Then use according transformer. The 60º positioning looks nice too.

NOTE: Mostly we use quality capacitors with a temperature range up to 105ºC. MLGO version is even 125ºC.

Transformer
In order to complete this module in a working power amplifier, you only need to connect a (quality), regular or toroidal (less magnetic stray fields) transformer. Its secondary windings are connected to P1/N1 and P2/N2. Fuse them as listed with the transformer data. Primary and secondary fuses (on PCB) are NOT supplied since their value differs with the transformer used. Also, you could decide for high quality 5x20mm like AHP fuses. Since even these are part of the chain, we use good quality (made in Germany) fuse holders, not the cheap basic ones used everywhere. Even a dust cap is supplied with the modules and kits.

Fuse the primary side of the transformer accordingly !

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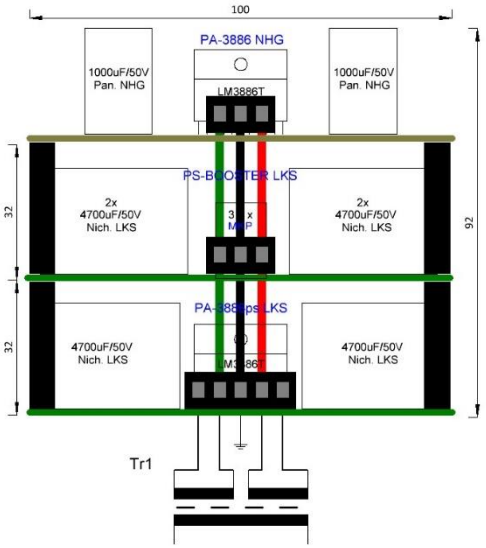
Sandwich mounting
We designed our PCB's in a way that they can be sandwich mounted as well, requiring a minimum of space. While using ONE PA-3886ps or PA-4766ps module, you can sandwich mount one or more PA-3886 and/or PA-4776 modules. The total will be a very compact multiway amplifier, perfect for driving active speakers. All are using the supply of the ps version and fed by just a single transformer.
Please note that the mounted rectifier can handle 8A continue current maximum! This is around 250Wrms.

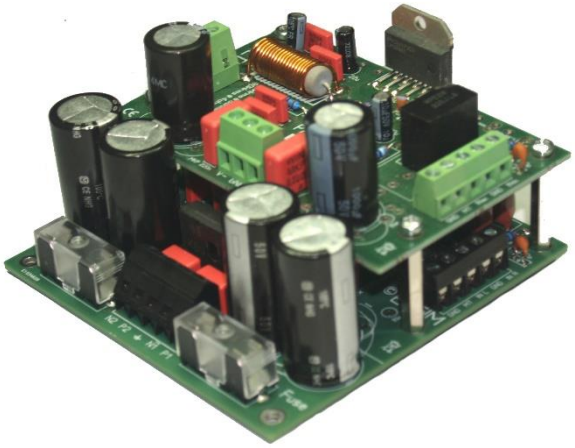
The V+, GND, V- and input signal can be fed to other sandwich mounted units by 1,5mm² solid copper rods, located at the exact same positions in the PCB's. For even better performance you could connect a PS-BOOSTER module with extra power supply capacity in the same way. We recommend to use this one where three or more channels are sandwiched this way.

Also with these modules, the INac line can be fed to all sandwiched modules. A single wire through all connected modules is feeding the input signal to all of them. Mount the jumper for this use!
Then, all the amps receive the same signal and you just have to feed the signal to any one of them.

NOTE: Since the rectifier only has diodes inside, you can ALSO connect a symmetrical dc power supply to it! Connect the V+ and V- of this supply to P1 and N2, no matter the polarity, the rectifier will correct it. Ground of this external supply goes to the middle GND (earth) contact and/or P2/N1. All three are connected on PCB.



Just use three 1,5mm² copper rods to feed the Power Supply rails to all units


Sandwiched example with PA-4766ps NHG + PA-3886 FC

With our setups you can make very compacts multi-channels for f.e. active speaker systems. In the example above is a PA-3886ps for the woofer 80W/4ohms), in the middle a PS-BOOSTER for extra power supply capacitance and on top a PA-3886 (80Wrms) making it a compact 2x80Wrms system.
Instead of a PA-3886 you could use a PA-4766 2-channel (2x50W/8ohms) for midrange and tweeter making it an active driven 3-way speaker setup 80+50+50Wrms. Just connect a suitable transformer, see datasheets.
It's a strange phenomenon that (DSP?) active driven/filtered speakers sound louder than passive somehow! You would need way over 250W in a passive system for a similar experienced sound level.

You can combine as many modules as you like in a random mix of PA-3886 and PA-4766 modules.
One of them has to be a version with integrated Power Supply. The supply can handle 400Wrms max though.

Following products are available from our webshop and dealers:

Ready built and tested basic modules (100x65mm):

PA-3886 NHG	with 2x	1000uF/50V	Panasonic NHG capacitors	Height 27mm
PA-3886 FG	with 2x2	330uF/50V	Nichicon Fine Gold capacitors	Height 23mm

Ready built and tested modules with integrated 8A Power Supply (100x100mm):

PA-3886ps NHG LP	with 2x7	470uF/50V	Panasonic NHG capacitors	Height 22mm
PA-3886ps NHG*	with 2x2	3300uF/50V	Panasonic NHG capacitors	Height 38mm
PA-3886ps FRA	with 2x4	1000uF/50V	Panasonic FR-A capacitors	Height 28mm
PA-3886ps FG LP	with 2x7	330uF/50V	Nichicon Fine Gold capacitors	Height 22mm
PA-3886ps FG	with 2x4	1000uF/50V	Nichicon Fine Gold capacitors	Height 33mm
PA-3886ps LKS	with 2x	6800uF/50V	Nichicon LKS capacitors	Height 27mm
PA-3886ps MLGO	with 2x	10000uF/**40V**	Mundorf MLGO capacitors	Height 42mm

* On top of PA-3886ps NHG fits a PA-3886 or PA-4776 module. Together they form a compact 2x80W or 80+50+50W block in height of only 45mm. The long and high value supply capacitors on the ps module just fit along the standard modules. A PS-BOOSTER module could fit as well.

Most modules like this use 35V supply capacitors. We use 50V capacitors. Why? A 25Vac transformer (most common) produces unloaded 27,1Vac. Vdc = 1,414 * Vac = 38,32Vdc so they can't use 25V trafo's, or accept that the caps are overloaded, causing shorting of lifecycle and/or even blow within weeks of use. Calcs error made: 25 * 1,41 = 35,2V….. While calculating they all use the loaded transformer voltage value, which is incorrect, you need the unloaded voltage, since mostly the amp is producing no or maybe only 1W (= about speech level with average efficient speakers). Also, since lower supply voltage has to be applied, they can't come to the IC's 80W rated power ! Ours can though. While using 50V capacitor types, the price difference is worth the increase of sound quality, power and lifecycle. If you want other types of supply capacitors mounted, send us an email and we'll respond with an offer.

On request, we can assemble any combination of the above as a multichannel combination.
Just mention this in the comment line of the order form. We do this free of extra charge for now!

DIY kits:

PA-3886 kit	with all parts, except power supply capacitors.
PA-3886ps kit	with all parts, except power supply capacitors and transformer.

Catalogue, instructions and wiring diagrams can be found on our website.

Please note that pricing (margin) of DIY kits doesn't allow us to give technical help at any time!
In the case you are not able connecting a ready built module
or (assembling) a DIY kit, we can help you at € 60,-/hour charge.
Just send back and write the problem you face with it. Don't forget to mention your name and address.

We did NOT attempt to make them as cheap as possible but as good and as multifunctional instead.

We have an increasing number of audio related modules, also available for dealers. Inquire here.

Other electronic parts

Besides our amplifier- and Power Supply modules/kits we also have a numerous number of quality parts in our webshop, all together around 12000 items. Drive units, Gramophone cartridges and styli, capacitors, coils, resistors, power transistors, nice electronics cabinets, connectors, cable, damping material, etc.

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Stereo Smartphone or bridged Monoblock power amplifier example:

- 1x or 2x PA-3886ps Power amplifier,
2x 80Wrms, >100W/8ohms as bridged Monoblock
- Toroidal transformer 120VA/2x25V (just fits)
- MODU Galaxy cabinet, 124x230x40/80mm

Just connect your smartphone/tablet and enjoy powerful, quality sound. For this, you need two PA-3886(ps) modules. Mount some 15-47ohms resistors (as earpiece dummies) over the input connector as load for the smartphone output for better sound, especially at higher frequencies. You device wants to “see” a load!

Monoblock
Have some fun and build the probably smallest true analogue MONOBLOCK in bridged mode! Enjoy the uncompressed and powerful sound. Use a single module in a 40mm cabinet, or a dual in bridged mode in a 80mm high MODU Galaxy cabinet as shown at right. Feed them directly with a balanced signal, but better use one of our buffer input modules in order to do it as it should be done.

With a single module it could make 50Wrms/8ohms, 75W/4ohms while using a 2x25V /80VA transformer. This one just fits in height!

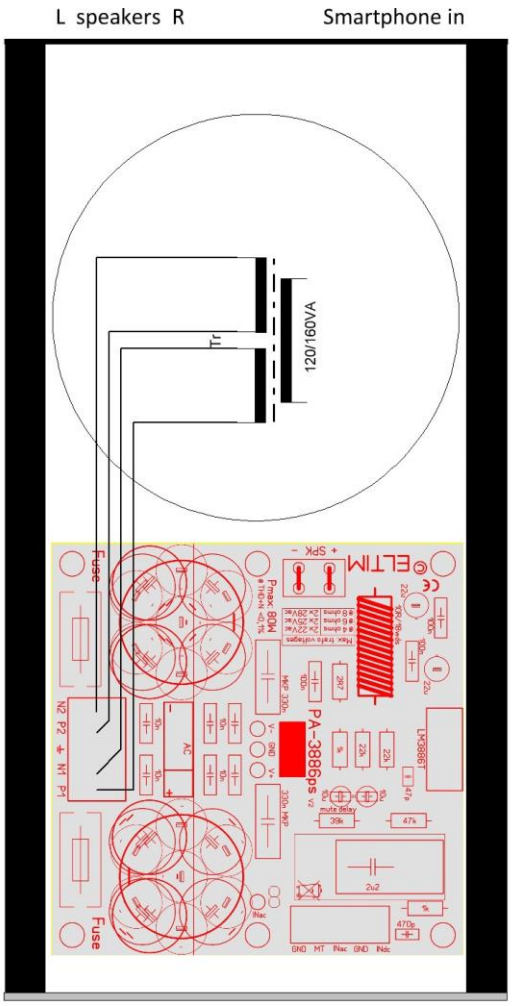
While using a 80mm high cabinet and two modules as shown at right, there could be 2x40W/8ohms or way over 100W/8ohms (only) with a 2x22V/160VA transformer in bridged mode. This size just fits (around 92x58mm).

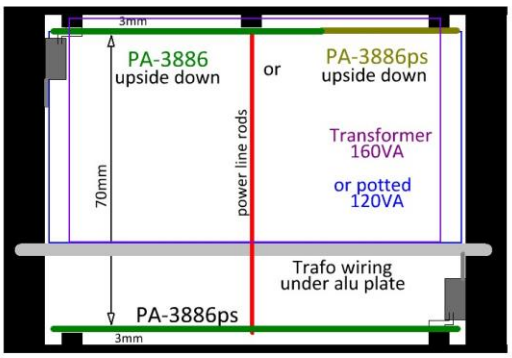
Cooling
For optimal airflow we let the IC stick out 2mm. Since this Galaxy cabinet has an internal width of 104mm, at both sides of the PCB is a 2mm gap and air can flow from under the PCB.
More cooling > less heat > better performance.

Not by coincidence, while fitting two modules upside down AND reversed (one IC to each flank) on top of each other we come to 104mm, being exactly the internal width of this cabinet. See example at the right. We even took the height of capacitors in mind, just fitting with a space of about 5mm in between.

Power interconnection
Also not by coincidence, the power rods are exactly in the middle of the PCB’s. So while mounted as shown, the +, GND and – power solder holes are above each other.
By mounting one module upside down AND mounted against the other side as shown at right, the power lines are even above each other with the same polarity, so no line crossings.
At the same time there is max. cooling since each IC has its own cooling surface. This also works with 2x PA-3886 modules !
(Not) surprisingly, the width is 104mm then, exactly the internal width of the MODU Galaxy 124mm wide cabinet.

Even while using 2x ps versions (because of more capacity available), just connect the trafo to one of them and use the three copper rods to connect them! This will fork fine as well, while both capacitor banks are paralleled by the rods. One of the rectifiers has no function then.





Recommended cabinet:
MODU Galaxy 124 x 230 x 40 (single unit) / 80mm (twin units)
3mm Trafo chassis plate fits in lower slide of flanks

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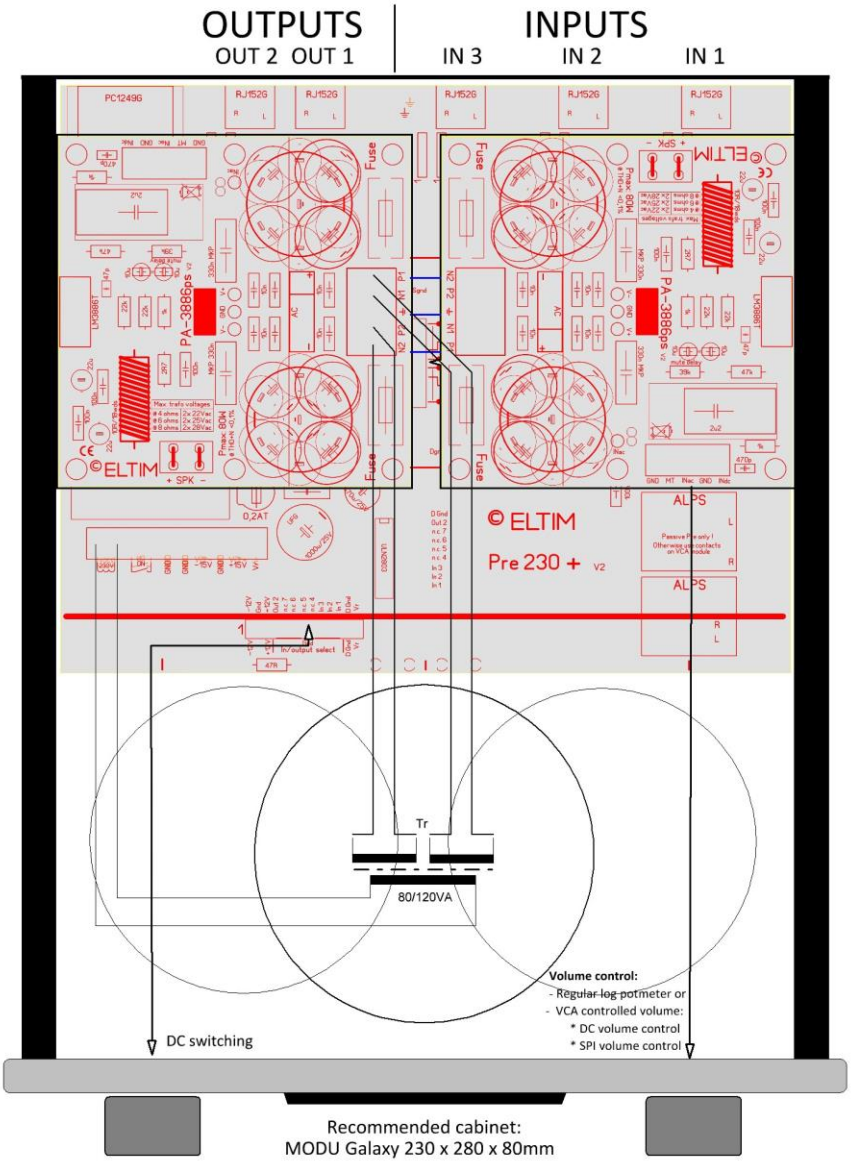
Integrated amplifier example with:

- PRE 230 preamplifier, 3 inputs, 2 outputs, independent Power Supply
- 2x PA-3886ps Power amplifiers, 2x 60Wrms @ 8ohms / 2x 80W @ 4ohms
- Toroidal transformer 120VA/2x25V (or 2x80VA/2x18V)
- MODU Galaxy cabinet, 230x280x80mm



For optimal channel separation, use ps types for both channels.
Both PA-3886ps modules are interconnected under the boards by short wires to solder pads (blue lines) if only one transformer is used. Select the module quality you prefer.
For even better channel separation use 2x 80VA transformers instead of one and connect to each PA-3886ps.

While using only one transformer you can mount an ALPS potentiometer on the PRE-230 preamplifier module and lead a 6mm rod through the front panel and mount a volume knob.

With two transformers, the increased quality could be improved even more by use of one of our VCA volume control modules.
In that case you only need some (DC) wires to a single (linear) potentiometer or change volume by SPI data.

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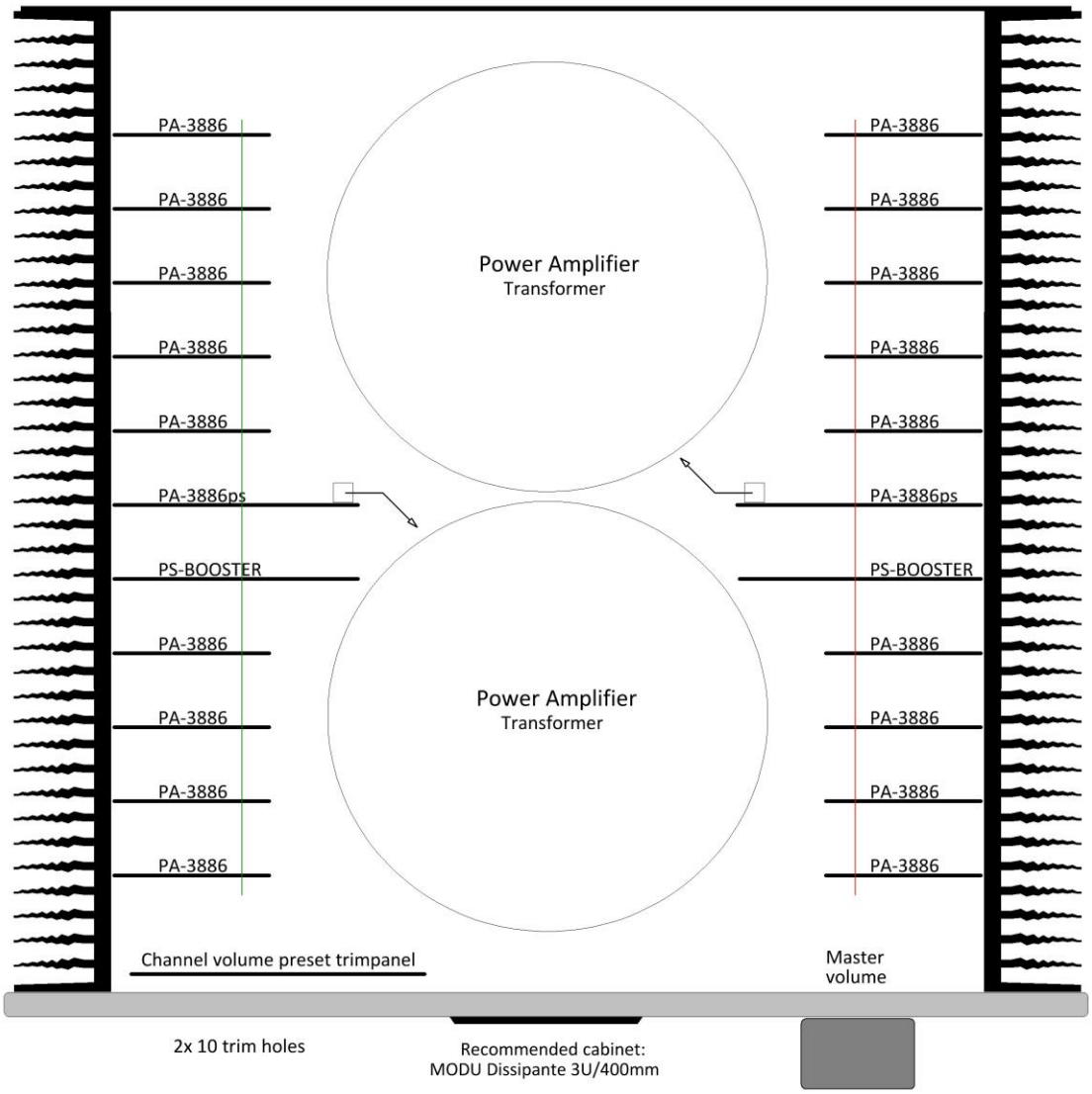
Multichannel setup example:

As a sound quality improving alternative of 100V PA systems in f.e. exhibition/sport halls, shopping malls, fun parks, etc., multichannel setups can be made with our PA-3886 modules. It's about free of supply wiring. Connect every speaker separately to an output and adjust the levels. Max. 20x 80Wrms……



Here about the max. number of channels possible : 20x in a MODU Dissipante 400mm deep, 120mm high cabinet.
This one provides way enough cooling for constant (professional) use in f.e. exhibition/sport halls, shopping malls, fun parks, etc.
With 20x 80W = 1600W there will be enough sound…..
In the middle a PA-3886ps with integrated power supply (400W max.). For higher total power we design a special power supply.
Just beneath it a PS-BOOSTER module with extra supply capacitors. All the others are PA-3886 models.
For all, select the quality you believe suits best.
For >400W of power per side, use a separate Power Supply!
In order to "feed" them right, use our line or balanced buffer input modules.

You could random mix with our PA-4766 range for even more channels as well.

You could build it yourself, but we can do this for you as we can with all our modules.
For this we have a separate website with some examples: www.eltimaudio.com
Just contact us and explain wat you require. We'll respond with an offer.

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