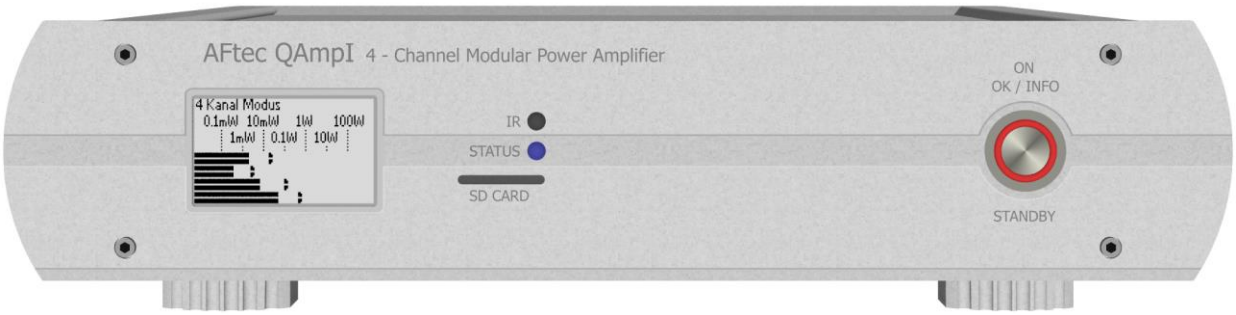
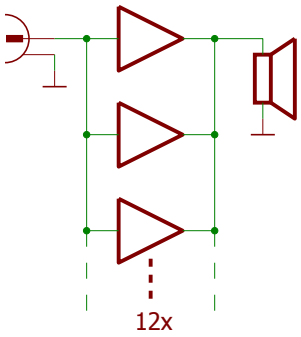
QAmpI modular 4-channel-poweramp with new concept



New Concept

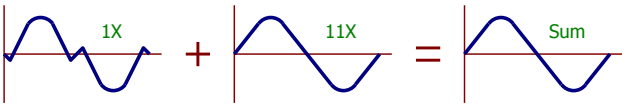
The circuit design of the QAmpI is a completely new innovation in commercial amplifier construction. Instead of one single big amplifier here are used many small amplifiers, which all work together optimally.



This automatically creates some valuable benefits which are not accessible in other ways.

Crossover distortion removed

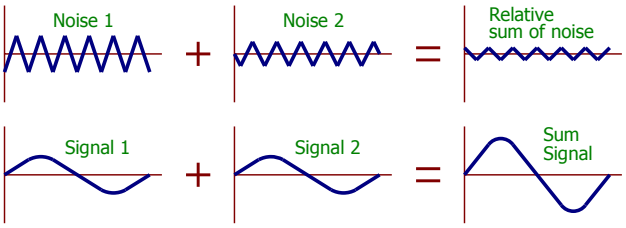
Conventional analogue amplifiers in class-AB-design all have the problem of crossover distortion. This arises from the fact that the positive and negative half waves of sound are processed by separate circuit parts. When transferring from one to the other circuit part it causes distortion. The only amplifier technology which minimized this problem is the class-A design, but this has disadvantages with a very small output power and the constant conversion of a lot of power into heat.



Inside the QAmpI the crossover distortion is eliminated in a completely new way. By combining many individual amplifiers the following happens: Each amplifier always has a small offset error. This is normally a disadvantage, however here it is used to advantage. Every single amplifier has at its material scatter a different offset error, all amplifiers are trying constantly to compensate for each other. The result is a new amplifier which has almost no crossover distortion, because whenever a single amplifier crosses the zero-line (=point of maximum crossover distortion), all others are not; because of their different offset values. Therefore this point brings a very clean signal.
An additional bonus is that all offset errors of the amplifiers compensate with each other's.

Noise Minimized

Each amplifier has an unavoidable self-noise. This should be as small as possible in order to have no disruptive influence in the music playback.
The new innovation in QAmpI is the interconnection of many small amplifiers all which the same signal, the sum signal treat being obtained by simple addition of all signals. However, the noise from every single amplifier is individual and the effect of averaging increases the noise less than the desired signal. This minimizes the relative sum signal of noise with every single cooperating amplifier.

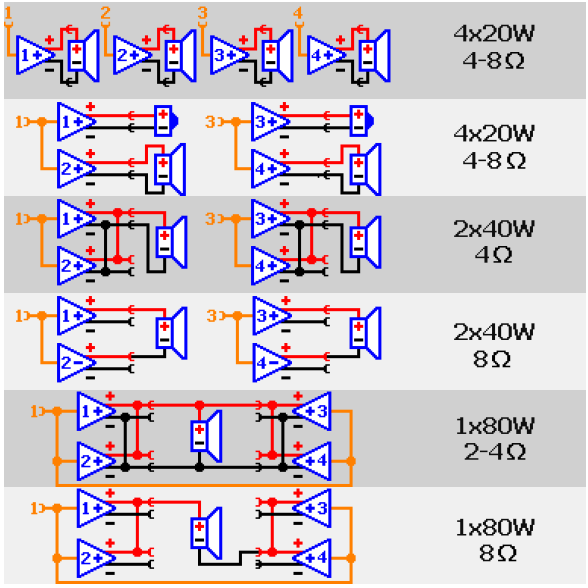


With the new way in the QAmpI of combining many small amplifiers a reduction in the noise level by 85% is possible, in comparison with conventional solutions.

Perfect Modularity

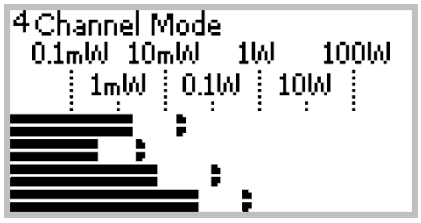
By designing the AFtec QAmpI the flexibility of the amplifier was a big priority. Now it is possible to configure an amplifier individually. The base is 4 amplifier groups, which can be configured to almost any application. Each amplifier group contains 12 individual amplifiers, which are always to be regarded as a block.
There are 6 basic modes available for different, power outputs and optimized terminal impedances. Here there is the possibility of "bi-amping" for 2-way speakers, without complicated wiring possible for the first time, since all switching to reach the right mode takes place entirely within the device.

Depending on the mode of operation there are 1, 2, 3 or 4 individual channels available.



Configurable Display

The Display of the QAmpI shows a power meter with a high dynamic performance. The fallback-time and the peak-hold-time are selectable to find an optimal individual display behavior.
The backlight of the display can be set by color and by brightness.



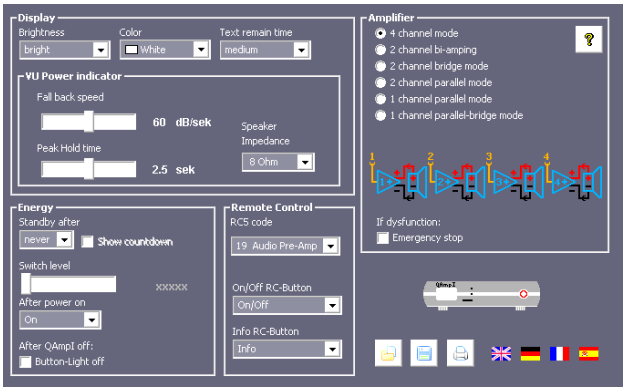
Flicker-Free Display

The control of the backlight is not done by dimming. It is performed entirely in analog circuit technology. This results in a flicker-free display at every brightness.

Signalprocessing without compromise

The entire audio signal routing inside the device is made with 18 gold-contact-relays (no CMOS switches). Additionally is a completely DC-coupled-design without distorting capacitors.
Because of the DC coupling it was possible to cut out the usual output-relays between the amplifier and the loudspeaker, this allows a perfect signal transmission.

All amplifier stages and all individual power amplifiers operate with their own feedback loop; there is no overall feedback loop in the whole design.
The internal monitoring constantly monitors all amplifier outputs and shows possible problems, such as overload or too large DC levels in the input signal. An emergency shutdown select is possible to protect the speakers.
A configurable automatic shutdown feature turns the amplifier off after a set time period when no audio signal is present.
The QAmpI contains two completely separate power supplies for each pair of amplifiers. A third power supply is used for the control and display section. Each power supply also contains its own power filter, which deletes almost all spurious components from the power grid, and making a very clean working environment.
All configuration tasks can be performed easily on a PC, the handover to QAmpI can done with a memory card.



Technical Data

Power consumption	150 W
Power supply	230 VAC ±10 % / 50 Hz
Input sensitivity	1 Veff
Input impedance	10 kΩ
Slew-Rate	15 V/µs
Amplification	26 dB
Frequency response	0 Hz-300000 Hz
Output power RMS	4x20 W / 2x40 W / 1x80 W
Damping factor	max. 300 with 8 Ω load
THD+N	0,0005 % at 1 W
S/N-Ratio	106 dB
Display	LCD 128x64 Pixels
Standby power consumption	<0,5 W
Standby waiting time	5 min-6 h or never
DC-level warning	>3,5 V status-LED=yellow
Overload warning	>20 W status-LED=red
Dimensions W H D	332x75x272 mm
Weight	5.0 kg