

Musway M6 Pro - 6-channel power amplifier with 10-channel DSP



Leistungs- hammer

► The M6 was Musway's first serious DSP product to be offered in Europe. The v3 version has now been on the market since 2022, so Musway is now releasing the M6Pro.

Musway has established itself as a serious provider of DSP products in recent years. At the latest with the multi-channel

Musway is also active in the segment of retrofitting modern factory systems with M10 and M12 power amplifiers. Now comes with the M6 Pro

a more traditional DSP power amplifier to the specialist dealers, which initially doesn't look spectacular. According to M6, M6v2 and M6v3



The PC software shows all essential functions in the main window



Master and sub levels in the Android app



EQ setting in the Android app

so M6Pro is coming? Yes and no, because the new Pro is not just an updated M6, but a completely new power amplifier. While the original M6 could pass as a cheap upgrade for small factory systems, the new M6Pro is a completely different caliber - more on that later. The proven basic concept has of course remained the same, we have a compact amplifier that, with six high-level inputs, readily makes contact with small and medium-sized factory equipment. The inputs can handle 20 volts, so they are also suitable for vehicles with factory amplifiers, and up to 100 watts

per channel. The high-level inputs can also be converted to low-level sources such as retrofit radios using a jumper; suitable RCA adapters are available from Musway. In general, there is a selection of ready-made cable harnesses for connection to the vehicle, for example on Quadlock or ISO. We also find a pair of RCA sockets as AUX inputs and there is also an optical digital input. The USB socket accommodates various accessories. In addition to a remote control, you can choose from the simple streaming module BTS, the BTA2, which can also be used to program the DSP, and that

BTS-HD, which also enables high-resolution music streaming with up to 24Bit/96 kHz using the latest Bluetooth standard and aptX HD certification. And of course, with high-level input, the in-house EPS is available to fool factory radios with loudspeaker diagnostics and suppress the corresponding error message. When you look at the front panel, you notice that the M6Pro has gained a few cinch sockets, there are now four processed outputs, so we have a 10-channel DSP on board - the first upgrade to the previous M6. The DSP works with the popular ADAU1452 DSP core from Analog Devices, which is still the method of choice when it comes to high-quality signal processors. The analog-digital-analog conversion is probably carried out by the also established codec PCM3168 with six ADCs and 8 DACs, probably because Musway hides the converters deep under the motherboard. There are still two channels missing from the digital-to-analog conversion, which could be made up for with a small two-channel DAC. So the DSP section of the M6Pro doesn't have to hide from other designs. With 24 bit converters and a sampling rate of 48 kHz, we don't have a high-end, but we certainly have a very solid product that does a great job. The real highlight of the M6Pro is yet to come: the completely new reinforcement. Recognizable externally by the speaker screw terminals, which can now accommodate thicker cables instead of the Molex cable harness, we find a completely new reinforcement inside the M6Pro. Where integrated final amplification in the form of three 2-channel amplifier chips was popular as a small upgrade power amplifier with the M6v3, Class D driver chips now rule



The massive transformer power supply supplies 6 identical channels that are fired via MOSFETS

Technical data

Entrances

- 6-channel high-level with autosense, optionally 6-channel RCA (with adapter)
- 1 x digital S/PDIF optical
- 1 x AUX (RCA, stereo)
- Sensitivity 6V (RCA), 20V (high level)
- 2 x gain controls (high level), 1 x gain controls (AUX)

Exits

- 4-channel RCA (processed)
- Remote out
- DSP channels
- 10

DSP software (V 3.2 in test) equalizer

Exits

- fully parametric EQ on outputs, 31 bands per channel
- 20 – 20k Hz, 1 Hz steps
- + 15 – -15 dB, Q 0.1 – 10

Crossovers

- 20 – 20k Hz, Butterworth, Bessel, Linkwitz, 1 Hz steps
- Edge steepness up to 48 dB/oct.

Time and level

Sample rate 48 kHz, 7 mm steps (0.02 ms)

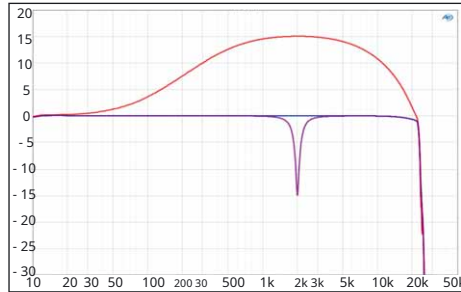
Exits

- 0 – 602 cm (17.7 ms), 1024 samples
- Phase reversal 0, 180°
- Level adjustment outputs 0.1 dB steps, mute function

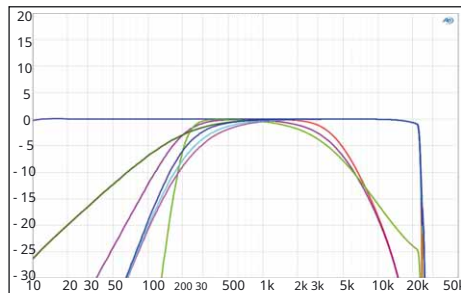
Furnishing

- 6 presets
- Inputs and outputs can be routed as required
- Start-stop capability up to 7 V
- EPS (Error Protection System) for diagnostic function
- Automatic switching to Bluetooth
- Adjustable switching to high level for vehicle sounds
- Choice of high-level or RCA inputs
- Optional accessories**
- Bluetooth dongle BTS (audio streaming)
- Bluetooth dongle BTS-HD (audio streaming in HiRes quality)
- Bluetooth dongle BTA (audio streaming and app control of all functions)
- Remote controller RC1 (volume, bass level, sources, setups)
- RCA adapter MPK-RCA6, MPK-RCA6-PP for ISO
- Vehicle cable sets (Mercedes, BMW, Audi, among others)

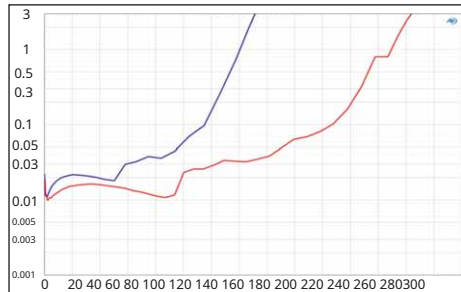
with large MOSFETs the final amplification. Of course, this has significantly more performance potential, which is also indicated by the reinforced transformer power supply and the thick Class D low-pass coils.



The 31 EQs per channel can be adjusted over a wide quality range with a gain of -15 to +15 dB



Due to the sample rate, the cutting edge is at 22 kHz, the crossovers are programmed like a glove, here high passes at 200 Hz (But, Bes, Lin) and low passes at 3 kHz



The M6Pro delivers an incredible 250W of stereo power into 2 ohms

software

All Musway DSPs are programmed either via PC desktop software or an Android app, the latter in conjunction with the optional BTA2 accessory. Except for routing and a few small things, we find all the relevant settings in one window. When routing, it is important to note that it is not enough to dose the inputs in the routing matrix; it is also necessary to set the correct checkmark(s) in the main window. There are bandpass switches up to 48 dB/octave in three characteristics for all channels. Programming the crossovers is a bit straightforward, for example with odd orders at Linkwitz or varying attenuation at the set crossover frequency. However, the switches basically work. The EQ bands can be set fully parametrically, and there is also a delay correction for the outputs in 0.02 ms or 7 mm increments. What is very pleasant is that the time or the route is displayed precisely and in plain text without any bells and whistles such as coarse and fine adjustments. In the frequency window you can clearly see what is currently happening, and the EQs are also easy to use (also via the keyboard). Grouping channels is a good solution; a bridge circuit can also be displayed and up to four channels can be combined into a subwoofer group, which is then recognized by the optional remote control. The extras are not numerous, but they are important. We have a power-saving switch-off for Can vehicles, a setting for switching through the vehicle sounds and an auto-mute function to prevent cracking. The M12 also offers an input pin for reverse gear, which then also feeds in the vehicle sounds. The Musway software is therefore not the most complete on the market, but in most cases it enables problem-free work. And a big plus point is the Musway "Tunest" app, which in conjunction with the BTS2 allows complete programming of the DSP and also enables remote control functions such as master and sublevel, source selection and source selection.

PERFORMANCE TIP Absolutely top class CAR & HiFi 4/2024	EMC TIP Undisturbed radio reception CAR & HiFi 4/2024
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Musway M6Pro

Price	around 900 euros
distribution	Audio Design, Kronau
Hotline	07253 9465-0
Internet	www.musway.de

Evaluation

sound	40%	1.2	-----	-
Bass foundation	8th %	1.0	-----	-
neutrality	8th %	1.0	-----	-
transparency	8th %	1.5	-----	-
spatiality	8th %	1.0	-----	-
dynamics	8th %	1.5	-----	-
laboratory	35%	1.1	-----	-
Performance	20%	1.0	-----	-
Damping factor	0%	—		
signal-to-noise ratio	5%	1.0	-----	-
Harmonic distortion	10%	1.5	-----	-
Practice	25%	0.8	-----	-
Furnishing	15%	0.5	-----	-
processing electronics	5%	1.5	-----	-
processing mechanics	5%	1.0	-----	-

Technical data

channels	6
Channel power 4 ohms W	6x142
Channel power 2 ohms W	6x249
Channel power 1 ohm W	—
Bridge power W	3x498
System performance W	1074
Sensitivity max. mV	400
Sensitivity min. V	4.0
THD+N (<22kHz) 5W%	0.023
THD+N (<22 kHz) half load %	0.037
S/N ratio dB(A)	91
Damping factor 20 Hz	263
Damping factor 80 Hz	263
Damping factor 400 Hz	248
Damping factor 1 kHz	213
Damping factor 8 kHz	15
Damping factor 16 kHz	4

Furnishing

Low pass	20 – 20k Hz
High pass	20 – 20k Hz
Band pass	20 – 20k Hz
Bass boost	- 12 – 12 dB/20 – 20k Hz
Subsonic filter	via HP
Phase shift	0, 180°/LZK via DSP
High-level inputs	•
Automatic switch-ON(Autosense)	•, DC
RCA outputs	• 4CH, processed
Start-stop capability	— (7.6V)
Dimensions(L x W x H in mm)	235x160x45
Miscellaneous	10 channel DSP

Musway M6Pro

Absolutely top class 1.1

CAR & HiFi 4/24

Price / offer: Very good

"Over one kW of power in a compact housing."



Accessories such as Bluetooth modules make contact via USB. You can also get it digitally via optical S/PDIF

Measurements and sound

First we'll take care of the basics, with the M6Pro turning out to be a typical Musway. According to the sampling rate of 48 kHz, the audio frequency response extends to 22 kHz and we have 0.02 millisecond steps in the time correction. These are (only) available for the outputs, as well as the 31 EQs per channel. Since the Musway software is responsible for all newer models, we also find the somewhat sloppily programmed crossovers that were noticed in the M12 test and recently with the M10 with their "painted" filter edges and odd Linkwitz orders (which simply do not exist). Apart from that everything works, you can live with that. But when the load resistors warm up during power measurement, the M6Pro's hour comes. With two loaded channels, it already produces 142 watts of channel power at 4 ohms, i.e. twice as much as standard power amplifier ICs. At 2 ohms it puts out 249 watts, almost half a kilowatt for a bridged 4 ohm subwoofer. This is very impressive, especially since our system output of 6 x 2 ohms produces well over a kilowatt from the M6Pro. This makes it clear that the M6Pro is not a normal, slightly pimped-up successor to the M6v3, but a completely new power amplifier for very demanding retrofit systems.

Conclusion

With the M6Pro, Musway presents a stylish six-channel power amplifier that aims at the upper class of DSP amplifiers with immense power. Together with the four processed outputs, XXL systems can be controlled that go far beyond a simple sound upgrade.

Elmar Michels



The DSP is located on the daughter board, here you can see the 32 bit ARM coprocessor and the DSP ADAU1452



re-Q : die neue Universal-Headunit...



Der re-Q ist das Tool, um Ihr Werksradio in ein Aftermarket-Radio mit hervorragender Klangqualität zu verwandeln. Es fehlt an nichts: zwei 10V Stereo-Cinch-Ausgänge, eine EBC-Fernbedienung, ein automatischer Remoteausgang und der re-Q, der den Bass wiederherstellt, der vom Fahrzeughersteller entfernt wurde. Und natürlich stand die Klangqualität bei der Entwicklung an erster Stelle.

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