



Musway M10 - 10-channel power amplifier with 14-channel DSP

One for everything

► After the M12, which caused a stir in 2022, Musway is now launching a slightly different concept with the M10 in order to supply even extensive car audio systems with a single power amplifier.

Musway has always stood out with advanced DSP concepts since the brand was introduced in Europe. The amplifiers are compact and work with many factory systems so that

They are also often used as a sound upgrade in modern vehicles. In addition to the stand-alone signal processors DSP68 and Tune12, there are various DSP amplifiers, including the small M6, the medium-sized

is currently available in the third generation, and the previous flagship, the M12 with 12 amplifier channels and 16 channel DSP. Now the M10 is a new model with 10 amplifier channels, the M12



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

Of course there is a lot of competition, especially since the two cost about the same. Both have similar features and DSP functions, except that the M10 "only" has 14 DSP channels, meaning it offers four processed outputs to expand the system. That's perfectly fine, because the main difference between M12 and M10 is the distribution of the amplifier channels. While the M12 contains twelve identical amplifier strips, the M10 comes with 8 small channels and two "high-power" channels with a whopping chunk of extra power. The M10 is therefore predestined to drive the entire audio system including subwoofers. For example, if a system with an active three-way front system, center, rear system and woofers is required - no problem with the M10. There are 10 high-level inputs available for connection to the factory radio, which can handle up to 24 volt input voltage and are therefore also suitable for factory packages with an amplifier. When it comes to the bass channels, Musway even goes one step further with a maximum input voltage of 32 volts. The bass channels also have their own gain control, and two more are available for the small channels and for the AUX inputs. There is also an optical digital input, and there is also an interface for accessories. Various boxes can be docked here, for example the DRC display remote control, but the Bluetooth retrofit is also likely to be very popular. That's what it's for

two Bluetooth modules, the BTA2 and the BT-HD. The BTA2 is recommended for users who also want to program the DSP wirelessly, and there is also audio streaming on board. The BT-HD, on the other hand, does without the programming function, but instead includes HiRes audio streaming including aptX HD and up to 48 kHz/24 bit with Bluetooth 5.0 specification. In theory, this means better quality than CD, making the BT-HD ideal for users of streaming services such as Tidal or Qobuz, which offer high-resolution music.

The M10's casing is made entirely of aluminum. What's nice is that two windows on the front of the casing are enough for reliable cooling and there is no fan. Many high-performance components cool themselves via the housing cover, and this is

Also a bit warm during operation, so some air should be provided during installation. However, the transistors of the power supply are located on the back of the housing and are classically attached with clips; the same applies to the end transistors of the high-power channels. The 8 small channels, on the other hand, rely on two-channel amplifier ICs, as are standard in multi-channel power amplifiers. A five-fold screwed heat sink ensures the necessary contact pressure for reliable cooling. When it comes to the power supply, the M10 relies on a classic transformer solution, which costs some efficiency, but performance is not a problem. The digital group has hidden Musway on the underside of the circuit board on the heatsink side. Four typical size slots can be identified, and based on our experience

The 8 small channels are located under the powerful power supply with an XXL transformer. the larger coils belong to the top right the major canals



RCA sockets for 6 inputs and 4 outputs, high level and loudspeaker speakers run via Molex



The remote control controls the master and subvolume, Subwoofer groups and muting

Technical data

Entrances

- 6-channel RCA
- 10-channel high-level with autosense, 2 x gain controls
- 1 x digital S/PDIF (optical)
- 1 x AUX (RCA, stereo) with gain control
- Sensitivity 6 V (RCA), 24 V (high level channels 1-8), 32 V (channels 9 + 10)

Exits

- 4-channel RCA (processed)
- Remote out

channels

- 14

DSP software (V 3.4 in test) equalizer

Exits

- fully parametric EQ, 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 7.1 V
- EPS (Error Protection System) for diagnostic function

- Automatic switching to Bluetooth
- Switch 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 BTA2 (audio streaming and app control of all functions)
- Remote controller DRC1 (volume, bass level, sources, setups)

The M12 is likely to contain a 32-bit ARM processor, a DSP ADAU1452 or a related Sigma processor from Analog Devices and two PCM3168 audio codecs with AD and DA converters.

Measurements and sound

First, we note that the M10 operates at a sampling rate of 48 kHz. This can be seen from the fact that the frequency response is hard low-pass filtered at 22 kHz. Nothing else was to be expected given the 14 DSP channels, which already put a lot of strain on the DSP, so a double sampling rate (which requires twice the computing power) is not possible here. We really liked the time correction, which works in 7 millimeter increments (and displays them precisely). There is only a bit of chaos with the crossovers, because the higher the steepness is, the steeper the filters are.

edges, which, however, only have a remote connection with the set frequency. That's ok in practice, where you don't measure according to numerical values anyway, you can find a curve shape. The EQs work perfectly again as directed. Let's move on to the M10's favorite discipline, and fortunately that is performance! It already has an increase in the small channels 1 - 8 compared to the M12, namely 83 watts at 4 ohms and a whopping 157 watts at 2 ohms. Channels 9 and 10 with their thick MOSFETs already produce 122 watts at 4 ohms and 222 watts at 2 ohms. All channels can also be bridged, so that a subwoofer with 444 watts can be powered on the high-power channels. And as if that wasn't impressive enough, the M10 is in top form when

One of three Bluetooth sources: The BT-HD can stream audio in HiRes Quality



software

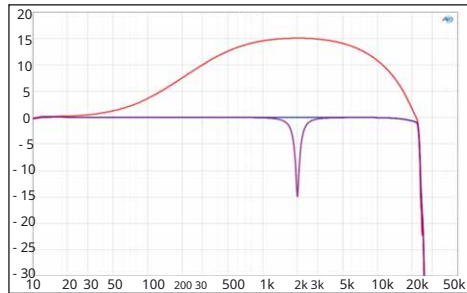
All Musway DSPs are programmed either via PC desktop software or an Android app, the latter in conjunction with the optional BTA2 accessory. Except for routing and a few small things, we find all the relevant settings in one window. When routing, it is important to note that it is not enough to dose 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.

all channels are loaded. With 10 x 2 ohm load resistors, the power adds up to an impressive 1166 watts. In terms of sound, the M10 leaves no doubt about its performance. It sounds extremely stately and powerful, and there is never any doubt as to whether the power amplifier has its speakers under control. The "small" channels are sufficient to power even more sophisticated loudspeakers or component systems. There are always beautifully dynamic tones and the M10 doesn't burn anything in the bass either. The tonality is pleasing and quite neutral, so we can basically only find good things about the entire M10 sound.

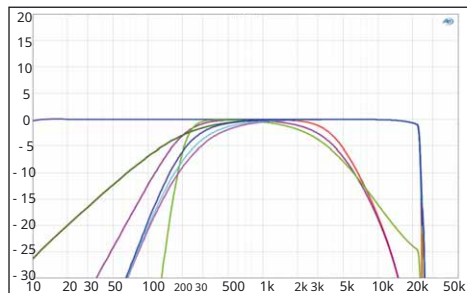
Conclusion

With the M10, Musway has created a powerful and universally applicable sound tool. If you can handle the 8+2 channel configuration, you should consider the M10.

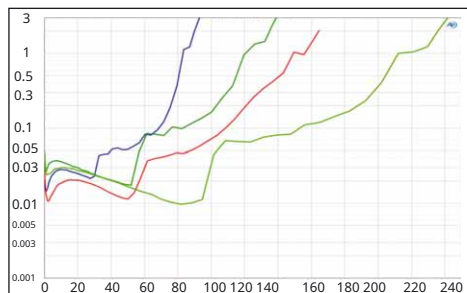
Elmar Michels



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



Small channels on 4/2 ohms: blue, red. Large channels at 4/2 ohms, dark, light green

PERFORMANCE TIP Absolutely top class CAR & HiFi 3/2024	EMC TIP Undisturbed radio reception CAR & HiFi 3/2024
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Musway M10

Price	around 1,200 euros
distribution	Audio Design, Kronau
Hotline	07253 9465-0
Internet	www.musway.de

Evaluation

sound	40%	1.1	-----	-
Bass foundation	8th %	1.0	-----	-
neutrality	8th %	1.0	-----	-
transparency	8th %	1.5	-----	-
spatiality	8th %	1.0	-----	-
dynamics	8th %	1.0	-----	-
laboratory	35%	1.2	-----	-
Performance	20%	1.0	-----	-
Damping factor	0%	—		
signal-to-noise ratio	5%	1.5	-----	-
Harmonic distortion	10%	1.5	-----	-
Practice	25%	0.7	-----	-
Furnishing	15%	0.5	-----	-
processing electronics	5%	1.0	-----	-
processing mechanics	5%	1.0	-----	-

Technical data

channels	10
Channel power 4 ohms W	8x83 + 2x122
Channel power 2 ohms W	8x157 + 2x222
Channel power 1 ohm W	-
Bridge power W	4x314 + 1x444
System performance W	1166
Sensitivity max. mV	390
Sensitivity min. V	3.0
THD+N (<22kHz) 5W%	0.02/0.033
THD+N (<22 kHz) half load %	0.051/0.071
S/N ratio dB(A)	89/84
Damping factor 20 Hz	128
Damping factor 80 Hz	128
Damping factor 400 Hz	124
Damping factor 1 kHz	109
Damping factor 8 kHz	12
Damping factor 16 kHz	3

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)	280x166x46
Miscellaneous	14 channel DSP

Musway M10

Absolutely top class 1.0

CAR & HiFi 3/24

Price / offer: Very good

"Excellent performance and can be used in a variety of ways."