

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

# Powerful sound tool

- ▶ After the M12, which caused a sensation in 2022, Musway is now launching the M10, a slightly different concept designed to supply even more extensive car audio systems with a single amplifier.



**MUSWAY**  
HIGH QUALITY SOUND SYSTEM

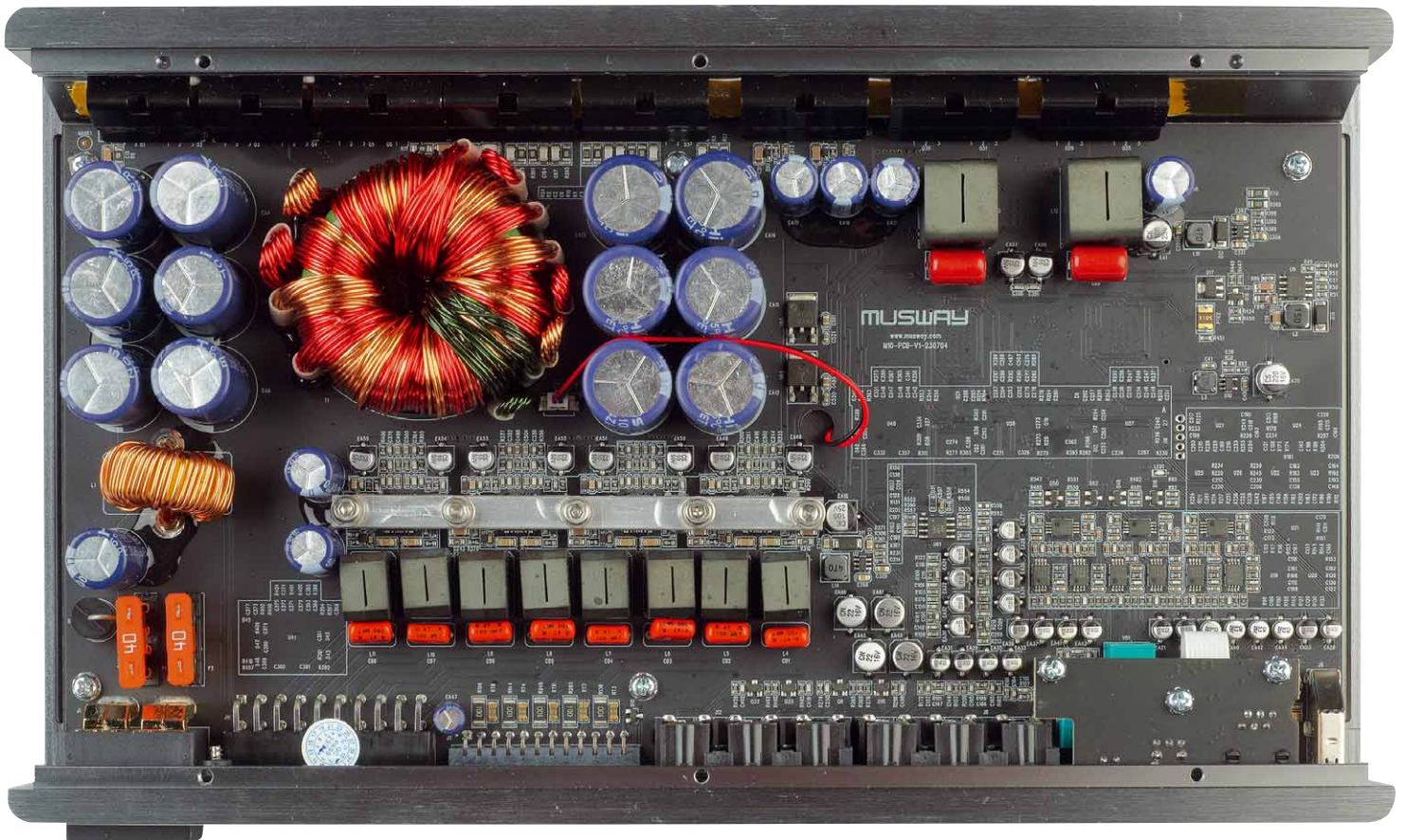


RCA sockets for six inputs and four outputs, high level, and speakers run via Molex

Musway has always excelled with advanced DSP concepts since the introduction of the brand in Europe. The amplifiers are compact and work with many factory systems, so they are also popular as sound upgrades in modern vehicles. In addition to the stand-alone signal processors DSP68 and Tune12, there are various DSP amplifiers, including the small M6, which is now

available in its third generation, and the previous flagship, the M12, with 12 amplifier channels and 16-channel DSP. The M10 is a new model with ten amplifier channels, which competes with the M12, especially as they are offered at the same price. Both have similar features and DSP functionality, except the M10 „only“ has 14 DSP channels, i.e., four processed outputs for expanding the

system. This is perfectly acceptable, as the main difference between the M12 and M10 is the division of the amplifier channels. While the M12 contains twelve equal amplifier paths, the M10 comes with eight small channels and two „high-power“ channels with a whopping amount of extra power. The M10 is, therefore, predestined to drive the entire audio system, including the



The eight small channels reside under the powerful power supply with XXL transformer. The larger coils at the top right belong to the large channels



The PC software shows all essential functionality in the main window

subwoofers. If, for example, a system with an active three-way front system, center, rear system, and woofers is required – there is no problem with the M10. Ten speaker-level inputs are available for connection to the factory radio, which can handle up to 24 volts of input voltage and are, therefore, also suitable for factory packages with amplifiers. Musway even goes one step further for the bass channels with a maximum input voltage of 32 volts. The bass channels also have their own gain

control, and there are two more for the small channels and the AUX inputs.

There is also an optical digital input and an interface for accessories. Various boxes, such as the DRC display remote control, can be docked here, but Bluetooth retrofitting is also likely to be very popular. There are two Bluetooth modules for this, the BTA2 and the BT-HD. The BTA2 is recommended for users who want to program the DSP wirelessly and have audio streaming on board. The

BT-HD, however, does without the programming function but 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 with a CD. The BT-HD is, therefore, ideal for users of streaming services such as Tidal or Qobuz, which offer high-resolution music.

The housing of the M10 is made entirely of aluminum; it is very nice that two windows on the front of the housing are sufficient for reliable cooling, and there is no fan. Many power-carrying components are cooled via the housing cover, and this also gets a little warm during operation, so some space should be provided here when installing. However, the transistors of the power supply are located at the rear of the housing and are fastened classically with clips; the same applies to the end transistors of the high-power channels. The eight small channels, on the other hand, rely on two-channel amplifier ICs, as is standard in multi-channel amplifiers. A fivefold screwed heat-sink provides the necessary contact

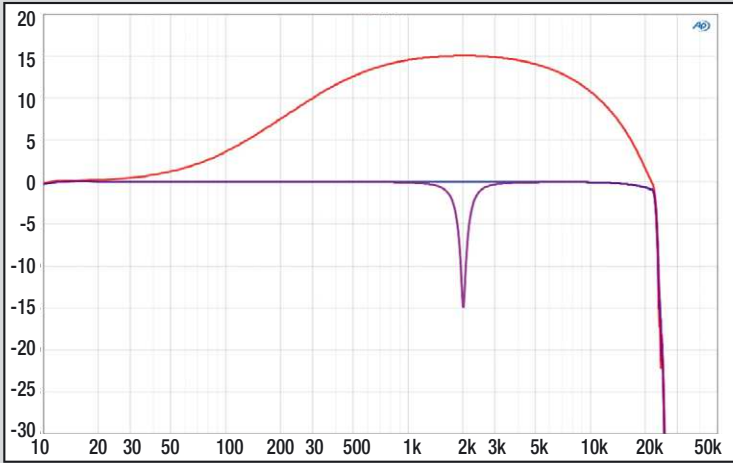
## Software

All Musway DSPs can be programmed using PC desktop software or an Android app, the latter in conjunction with the optional BTA2 accessory. Except for routing and minor details, all relevant settings can be found in one window. When routing, it is essential to note that it is not enough to meter the inputs in the routing matrix; the correct checkmark(s) must also be set in the main window. There are bandpass crossovers for all channels up to 48 dB/octave in three characteristics. Programming the crossovers is a bit of a hassle, e.g., with odd orders for Linkwitz or varying attenuation at the set crossover frequency. However,

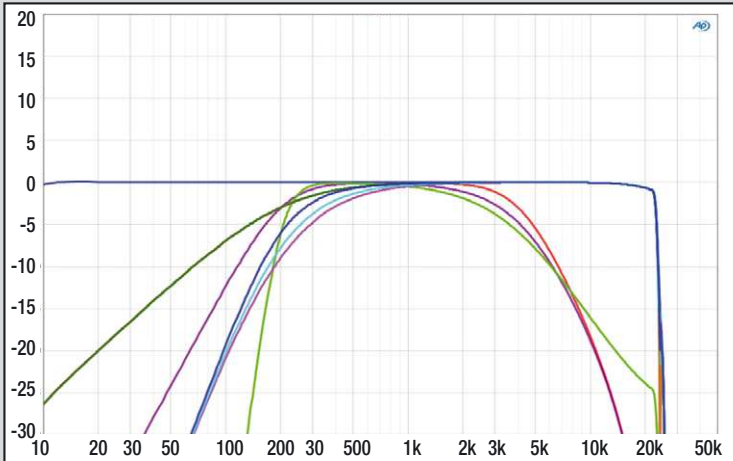
the crossovers work in principle. The EQ bands can be set fully parametrically, and there is also time alignment of the outputs in 0.02 ms or 7 mm steps. Conveniently, the time or path is displayed precisely and in plain text, without any frills such as coarse and fine adjustment. The frequency window clearly shows what is happening, and the EQs are also easy to operate (also via the keyboard). The grouping of channels is well solved; 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 few, but they are

important. We have a power-saving cut-off for Can vehicles, a setting for switching through vehicle sounds, and an auto-mute function to prevent crackling. Furthermore, the M12 offers an input pin for the reverse gear, which feeds in the vehicle sounds. This means that the Musway software is not the most complete on the market, but in most cases, it enables problem-free operation. A big plus point is the Musway „Tunest“ app, which, in conjunction with the BTS2, allows complete DSP programming and enables remote control functions such as master and sublevel, source selection, and source selection.

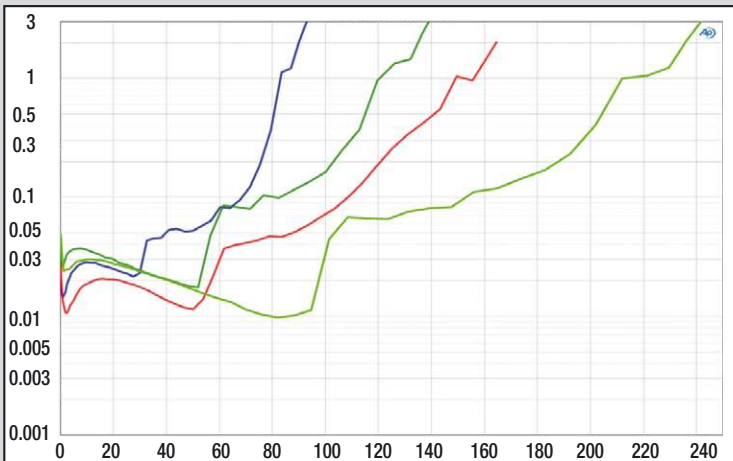
# CAR & HIFI Laboratory



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 cut-off point is 22 kHz. The crossovers are programmed somewhat carelessly. Shown here: High-pass at 200 Hz (But, Bes, Lin) and low-pass at 3 kHz



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



The remote control regulates the master and sub volume, subwoofer groups, and the mute function

pressure for reliable cooling. The M10 relies on a classic transformer solution for the power supply, which may cost some efficiency, but performance is not a problem. Musway has hidden the digital section on the underside of the board on the heat sink side. Four mounting holes of the typical size can be seen, and based on our experience with the M12, a 32-bit ARM processor, an ADAU1452 DSP or a related Sigma processor from Analog Devices, and two PCM3168 audio codecs with AD and DA converters are likely to be hidden underneath.



Master and sub levels in the Android app



EQ settings in the Android app

## Measurements and sound

We first notice that the M10 works with a sampling rate of 48 kHz. This can be seen from the fact that the frequency response is low-pass filtered at 22 kHz. Nothing else was to be expected given the 14 DSP channels, which already overload the DSP quite a bit, so a double sampling rate (which requires double the computing power) is not an option here. We liked the time alignment, which works in 7-millimeter steps (and displays them accurately). Only the crossovers are a bit of a mess: They do deliver steeper filter slopes with increasing steepness, but these are only remotely related to the set frequency. This is ok in practice, where you do not have to calibrate according to a numerical value anyway, as you can already find a good sha-

pe for the curve. The EQs, on the other hand, work perfectly according to the instructions. Let's move on to the M10's favorite discipline; fortunately, this is its performance! Even on the small channels 1 - 8, the M10 increases its output compared to the M12, namely 83 watts into 4 ohms and a whopping 157 watts into two ohms. Channels 9 and 10, with their thick MOSFETs, conjure up 122 watts into 4 ohms and 222 watts into 2 ohms.

All channels can also be bridged so that a subwoofer with 444 watts can be driven on the high-power channels. And as if that wasn't impressive enough, the M10 comes into its own when all channels are loaded. With 10 x 2-ohm load resistors, the power output adds up to an impressive

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



## Specifications

### Inputs

- 10-channel high-level with autosense
- 6-channel RCA, 2 x gain control
- Sensitivity 6 V (RCA), 24 V (high level), 32 V (high level CH9+10)
- 1 x RCA stereo, gain control
- 1 x digital S/PDIF optical
- 1 x digital bluetooth

### Outputs

- 4-channel RCA
- Remote-out

### DSP-channels

- 14

### DSP software (PC V3.4 in test)

### Equalizer

#### Outputs

- parametric, 31 band per channel, +15 - -15 dB
- 20 - 20k Hz, 1 Hz steps, Q 0.1 - 10

#### Crossovers

- 20 - 20k Hz, 1 Hz steps
- Bessel, Butterworth, Linkwitz, 6 - 48 dB/oct.

#### Time and level

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

#### Outputs

- 0 - 602 cm (17.7 ms), 1024 samples
- Level steps 0.1 dB
- Phase 0, 180°, mute

#### Features

- 6 presets
- Inputs and outputs arbitrarily routable
- Start-stop capability up to 7.1 V
- EPS (Error Protection System) for diagnostic function
- Signal dependent switching to Bluetooth or S/PDIF
- Signal dependent switching to high-level for vehicle tones
- Either high or low-level inputs

#### Optional accessories

- Bluetooth dongle BTS (streaming)
- Bluetooth dongle BTS-HD (hi-res streaming)
- Bluetooth dongle BTA2 (streaming + app control)
- Remote controller DRC1 (volume, bass level, sources, setups)



1166 watts. Sound-wise, the M10 leaves no doubt about its performance. It sounds exceptionally stately and powerful, and there is never any doubt whether the amplifier has a grip on the speakers. The „small“ channels are more than sufficient to drive even more demanding loudspeakers or composite systems. There are always lovely dynamic notes, and the M10 doesn't miss a beat in the bass, either. The tonality is pleasing and relatively neutral so we can actually only find good things to say about the entire M10 sound.

### Conclusion

With the M10, Musway has created a powerful and universally applicable sound tool. Anyone who can cope with the 8+2 channel configuration should shortlist the M10.

*Elmar Michels*

### Specifications

Channels	10
Power 4 ohms W	8 x 83 + 2 x 122
Power 2 ohms W	8 x 157 + 2 x 222
Power 1 ohms W	–
Bridged power W	4 x 314 + 1 x 444
System power W	1166
Sensitivity max. mV	390
Sensitivity min. V	3,0
THD+N (<22 kHz) 5W	0,02/0,033
THD+N (<22 kHz) half power	0,051/0,071
Signal-to-noise 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

### Features

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	via DSP
High-level inputs	•
Auto turn-on	•, DC
Cinchausgänge	•, 4CH, processed
Start/stop capable	– (7,6 V)
Dimensions (L x W x H in mm)	280 x 166 x 46
Others	14-channel DSP

### Musway M10

Price	1200 Euro
Contact	Audio Design, Germany
Internet	<a href="http://www.musway.de/english/">www.musway.de/english/</a>

### Rating

▶ Sound	40 %	★★★★★
Bass	8 %	★★★★★
Neutrality	8 %	★★★★★
Transparency	8 %	★★★★★
Spatial imaging	8 %	★★★★★
Dynamics	8 %	★★★★★
▶ Lab	35 %	★★★★★
Power	20 %	★★★★★
Damping factor	5 %	★☆☆☆☆
Signal-to-noise ratio	5 %	★★★★★
Noise	5 %	★★★★★
▶ Practice	25 %	★★★★★
Features	15 %	★★★★★
Build quality electronics	5 %	★★★★★
Build quality mechanics	5 %	★★★★★

**Absolute Top Class**



**CAR & HiFi**  
INTERNATIONAL Germany 1/24

Price/performance: very good

"Powerful performance and versatile in use."