

# HELIX M FOUR DSP

## **That rocks – the new M FOUR DSP**

The M FOUR DSP is more than “just” another four-channel amplifier – rather, despite its small dimensions, you are dealing with a powerful control center that has not less than a total of ten processed DSP channels. In addition, the amplifier delivers plentiful output power with generously 100 Watts RMS per channel into both 4 Ohms and 2 Ohms load. Finally its awesome price performance ratio in combination with the fantastic feature set will ensure bright eyes.

## **Tonally absolutely HELIX!**

Compromises in terms of sound quality have no place in a HELIX product – and that's why the M FOUR DSP is equipped with all the finesse for perfect sound. Of course, excellent and separate AD and DA converters are just as natural as on the DSP circuit board, which is completely manufactured in Germany, you will find only excellent, separate AD and DA converters as well as an extremely powerful DSP from Analog Devices. In addition, the six pre-amplifier outputs with 6 Volts output voltage provide more than enough level to drive any additional amplifier.

## **Maximum flexibility**

Even the internal amplifier section of the M FOUR DSP is extremely variable – it can either be operated in 4-channel mode or, thanks to its bridging capability, can also be configured as a 3-channel or even 2-channel amplifier.

But that's not all – in connection with the six pre-amplifier outputs, the sound system can be expanded in a diverse manner and upgraded to up to 10 channels.

In combination with other amplifiers of the M series (M ONE X, M ONE, M FOUR or M SIX), there are more than enough possibilities to expand the number of power channels.

This makes complex, yet affordable and, above all, space-saving multi-channel systems with enormous performance possible.

## **Virtual Channel Processing – that´s how signal routing works today**

Many DSP channels need to be managed and configured properly – so there was no question that the M FOUR DSP is also equipped with Audiotec Fischer's innovative virtual channel processing.

The adaptation to modern OE sound systems via an increasing number of inputs has a significant impact on the complexity of the signal routing inside the amplifier. Especially when several input signals are mixed together and then split again into multi-way systems, conventional routing concepts quickly reach their limits, both in terms of implementation and usability. Audiotec Fischer's new multi-stage "Virtual Channel Processing", in conjunction with the recognized user-friendly DSP PC-Tool software makes it easy to realize even highly complex system configurations. Besides, it allows to freely assign our proprietary FX sound features such as "RealCenter" or "Augmented Bass Processing".

## The plus in speed – thanks to ACO

Faster is better – the particularly powerful 32 Bit ACO platform takes over all control tasks and ensures significantly more speed, especially for data communication with our DSP PC-Tool software but also for the lightning-fast switching between up to ten sound setups. But ACO offers much more – fantastic sound effects such as Augmented Bass Processing or RealCenter are implemented as well as a channel-separated Input EQ including the Input Signal Analyzer (ISA) for easy analysis and compensation of input signals of OE radios that already include an “ex works” sound setup.

## Compact, cool and absolutely practical

Despite its vast range of functions and huge output power the M FOUR DSP presents itself in the same classic, compact HELIX design with distinctive lines like a HELIX M FOUR or M ONE. Thanks to its Class D amplifier technology, it keeps a "cool head" even at full power. And thanks to features such as start-stop capability, ADEP.3 circuit and power save mode, it is also ideally equipped for the now everyday challenges of OEM integration.

## Features

- Up to 135 Watts RMS max. output power per channel into 4 & 2 Ω
- Extremely powerful 64 Bit “fixed point” Audio DSP and state-of-the-art 32 Bit AD and DA signal converters from AKM
- ACO – Advanced 32 Bit CoProcessor platform for enhanced system and DSP features like:
  - ISA (Input Signal Analyzer) and InputEQ for easy analysis and compensation of input signals
  - SFX sound effects – Augmented Bass Processing, StageXpander, RealCenter & Co.
- Smart 6-channel highlevel input with ADEP.3 circuit
- Six RCA / Cinch line outputs with max. 6 Volts output voltage
- Virtual Channel Processing (VCP) allows even more flexible configuration for highly complex sound systems
- Bridgeable amplifier channels for driving powerful woofer or subwoofer
- DSP-board manufactured in Germany

## Special features:

### ACO – Advanced 32 Bit CoProcessor

The HELIX M FOUR DSP incorporates an extraordinary powerful 32 Bit CoProcessor of the latest generation for all monitoring and communication tasks, both internally and externally. In opposite to the 8 Bit predecessor generation this MCU achieves way higher speeds with respect to setup switching and data communication with our DSP PC-Tool software. A further significant advantage is the integrated, native boot loader of the CoProcessor. It allows software upgrades of all components of the integrated DSP in order to adjust the microcontroller-controlled ADEP.3 circuit for example to future requirements of the

diagnostic system of factory radios or if the device will be extended with additional interfaces. In addition, thanks to the new flash memory, the ACO offers 10 memory locations for sound setups instead of the common two.

### **Smart highlevel input ADEP.3**

Modern, factory-installed car radios incorporate sophisticated possibilities of diagnosing the connected speakers. In particular the latest generation of car radios are equipped with additional monitoring functions so that failure messages and loss of specific features (e.g. fader function) quite often appear if an amplifier will be hooked up – but not with the M FOUR DSP.

The new ADEP.3 circuit (Advanced Diagnostics Error Protection, 3rd Generation) avoids all these problems without loading the speaker outputs of the OE radio during high volumes unnecessarily.

### **Power Save Mode**

The Power Save Mode is incorporated in the basic setup. It allows to significantly reduce the power consumption of the amplifiers that are connected to the HELIX M FOUR DSP once there's no input signal present for more than 60 seconds. Please note that in many up-to-date cars with "CAN" or any other internal bus structures it may happen that the radio remains "invisibly" turned on for up to 45 min. even after locking and leaving the car! Once the "Power Save Mode" is active the remote output and therefore the connected amplifiers will be turned off.

The M FOUR DSP will reactivate the remote output within a second if a music signal is applied. It is possible to either modify the turn-off time of 60 sec. or completely deactivate the "Power Save Mode" via the DSP PC-Tool software.

### **Start-Stop capability**

The switched power supply of the HELIX M FOUR DSP assures a constant internal supply voltage even if the battery's voltage drops to 6 Volts during engine crank.

## **DSP features**

### **RealCenter**

The "RealCenter" feature is an algorithm, developed by Audiotec Fischer, that emphasizes the music information which is present in both the left and right front channel to create an unique center signal. In contrast to common procedures, in which only the channels are summed up, the intensity of the center signal is also dynamically controlled by the stereophonic informational content of the left and right channel.

Sounds complicated but this effect is astonishing: That means if solely the left or right channel delivers an audio signal, the center channel will not reproduce a signal. In the case of common algorithms, the volume level of the center channel is only reduced by 6 dB (= half volume level). Audiotec Fischer's "RealCenter" allows a unique, broadened sound staging for both driver and co-driver at the same time! Therefore, the disadvantages of a conventional center channel, such as an intrusive, small sound stage, are things of the past.

## Augmented Bass Processing

Audiotec Fischer's proprietary "Augmented Bass Processing", consisting of the two revolutionary sound features "Dynamic Bass Enhancement" and "SubXpander", has been especially developed to dramatically improve the bass reproduction of subwoofers. The "Dynamic Bass Enhancement" ingeniously combines maximum deep bass and highest sound pressure – regardless of the music style or the tone controls in the head unit. Depending on the input signal, the "Dynamic Bass Enhancement" gains the lower frequency range and varies the cut-off frequency of the subsonic filter. The result is a significantly more powerful and deeper bass response at low and medium volume levels without the risk of overloading the subwoofer neither mechanically nor electrically at high volume levels. It is simply fascinating which bass performance is suddenly possible. If you want an even lower and "darker" bass reproduction, the "SubXpander" can be additionally activated. Therefore, subharmonic tones are added to the fundamental tones in the frequency range between 50 and 100 Hz.

## StageXpander

Depending on the speaker arrangement in the vehicle, a more or less wide stereo sound stage can be created on the front seats. A center speaker may limit the spatial reproduction of the music additionally. This is where Audiotec Fischer's new "StageXpander" comes into play – a sound feature which seems to break the acoustic limitations and thus allows to create a way broader stereo base without negatively affecting the precision of the localization of voices or instruments! The effect can be adjusted according to your personal preferences in four steps.

## ClarityXpander

You are looking for more transparency and substance in the treble reproduction? With the "ClarityXpander" Audiotec Fischer is now offering the right tool. Properly adjusted (and therefore selectable in three steps) the feature adds additional harmonics in the upper frequency range – this is especially useful if the original speakers lack some brilliance in the treble response. The extra treble-kick is not only available for the two front channels but also separately adjustable for the center channel. Even better – the center channel allows to activate an automatic and dynamic control so that music with "loads" of treble doesn't fatigue your hearing.