

## HELIX P SIX DSP MK2 – 6-channel amplifier with DSP

## World premiere



► Last year, Helix scored a multiple award-winning hit with the P SIX DSP. The DSP amplifier of the finest engineering is now available in a new edition as MK2.

The Helix P SIX DSP is the dream amplifier for all those who have always been waiting for a truly high-end digital amplifier. With six channels and a high-performance 8-channel DSP, it can be used in versatile ways. And thanks to its small footprint, not to mention its well-designed integration features, it is modern and cutting-edge. Now there is an MK2 added to the name, and product manager Julian Fischer is quick to point out that it is more of an update than a successor product (see interview).

The basic configuration and the vast majority of the features have thus remained the same on the MK2. What we have here is a handy amplifier that is mechanically and electronically at its best. Inside the cabinet, made of solid aluminum, there is a circuit board from which you can tell right away that this is not your run-of-the-mill amplifier. Even the power supply is different than usual, it works with a highly efficient step-up converter instead of a transformer, and it has even been recently equipped with a 24 V input, which

makes it suitable for trucks and buses. On the other hand, 6 Volts are enough, it has start/stop capability. The signal inputs are also variably configured. There are not only separate high and low inputs and three gain controllers for the internal channels, but the highlevel inputs can also be re-jumpered for two levels of sensitivity and input impedances, which means that it also works perfectly on premium sound packages ex works. This feature is provided by the ADEP circuit which makes the diagnostics system of modern vehicles think you have intact factory-fitted loudspeakers.

The main screen delivers all the information on crossovers, EQ and time correction. From here, you proceed into the input/output menu, into the Device-Configuration menu and to the RTA frequency response measurement.

Additional nice features are the power save mode and the automatic signal-dependent switching of digital sources. Here is where the HEC port also comes into play, an expansion slot for additional inputs and outputs, e.g. for wireless audio streaming. All inputs and outputs and modes can be individually configured in the software. The same also applies to the optional remote controls, of which



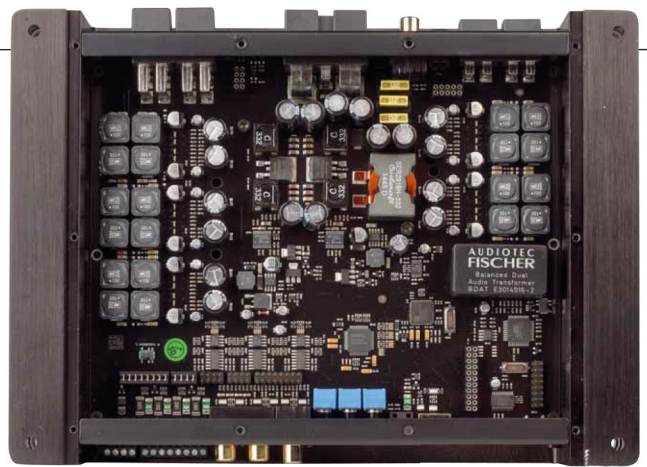
there are several, from the volume adjuster with an input selector, right down to the flagship Helix Director, a multi-functional minicomputer with a touchscreen.

In terms of hardware, the greatest difference of the MK2 compared to the original P SIX DSP lies in the amplifier output. This is a task handled by specialized amplifier ICs located on the underside of the circuit board, directly on the heat sink. Following a supplier change, Helix now sources these ICs from Texas Instruments, and the new chips really pack a punch. With them, it is now possible to amplify the full 44 kHz audio bandwidth, whereas the ICs previously deployed had to be limited at 22 kHz (i.e. "only" CD quality). The signal processor on the P SIX, originating from the Helix DSP PRO top model, can already process high-resolution audio, thanks to its internal 96



The remote control "Director" comes with its own processor and touchscreen.

State-of-the-art configuration with the finest components: The power supply is located on top in the middle, and the DSP is on the lower right-hand side. Hidden beneath the five quad blocks of coils are the five high-performance ICs under the circuit board.



kHz signal processor. Thus, with the said DSP PRO, Helix has not only the first high-resolution DSP but with the P SIX DSP MK2 now also the first high-resolution DSP amplifier. The only feature eliminated with the new TI chips is the counter-coupling, which enabled astronomical attenuation factors; the chips on the new MK2 are now in the normal range for such a design.

This brings us to the laboratory tour, which the P SIX DSP MK2 passes with flying colors. The distortions are comfortably low, while still not at the sensational level of an analog Brax amplifier, yet easily in the lower tenths of a percent range. The noise ratio of the MK2 is also very low, despite the compact and full layout, we measure on average an excellent 91 dB signal-to-noise ratio. Another remaining feature is the asymmetry of the six amplifier channels. Among the total of five high-performance chips, four are dedicated to the four "large" channels C - F,

whereas the channel pair A/B has to share a chip. This benefits above all the current delivery capability, which means that the four large channels are loadable with 2 Ohms, whereas only 4 Ohms are allowed on A and B. Bridge mode is not allowed as a general rule. Thus, at 4 Ohms, we measure approx. 120 W on all channels. The channels C - F at 2 Ohms even deliver 195 W each of stable, continuous power to the load resistors. That's quite remarkable for such a small power amplifier. As already mentioned, the P SIX has more or less the most powerful DSP in the company fleet on board, essential components are identical with those of the Helix DSP PRO. This means nothing less than state-of-the-art technology with utmost computational accuracy, featuring converters from Burr-Brown and an analog devices DSP chip.

## 25 years of Audiotec Fischer Interview with Julian Fischer, Managing Director and Product Manager at Audiotec Fischer GmbH

**CAR&HIFI:** Above all, congratulations on your company's anniversary! 25 years of Audiotec Fischer and 25 years of "Made in Schmallenberg", that's something to be very proud of.

Julian, you've now been working in your family-owned company as a product manager for over five years now, responsible for your BRAX, HELIX and MATCH brands. Almost all the products are produced in Schmallenberg with the highest precision and according to automotive standards. Is "Made in Germany" still even worth it? Does it have a future?

**Julian Fischer:** Unequivocally, yes! Products "Made in Germany" still command a premium worldwide. The continuous growth of our company and a multitude of satisfied customers are a testimony to our success. Of all things, the "Made in Germany" label is our greatest success factor. The additional time and effort and the higher price are accepted worldwide without question, as many customers place value in utmost quality and innovative technology. What's more, as a manufacturing location, Germany offers decisive advantages: Short production times, state-of-the-art manufacturing processes, economical shipping routes, protection against exchange rate fluctuations and avoidance of unauthorized technology transfer are but a few. Naturally, having your own development department and production in-house is cost intensive, which, however, is mitigated by the extremely low failure rate and high flexibility. In addition, our development department, which now comprises five engineers, gives the products a unique and unmistakable character.

**CAR&HIFI:** What makes your products so special, and how do you differentiate the BRAX, HELIX and MATCH brands from one another?

**Julian Fischer:** BRAX is our absolute high-end brand with worldwide reference status. The majority of the products are handmade with selected components. HELIX offers a wide product range, from entry-level to the high-end class. This includes amplifiers, loudspeakers, processors, DSP amplifiers, subwoofers and accessories, so that everyone can find the right product here - from a compact amplifier, right down to a high-performance subwoofer, it's all here. The well-designed DSP solutions have been in focus for quite some time now. MATCH is the specialist for Plug & Play retrofit solutions where the main consideration is quick and easy installation. Here, state-of-the-art technology is combined with intelligent concepts, thus enabling upgrading to a complete factory-fitted sound system without even cutting a single wire.

**CAR&HIFI:** Approx. one year ago, you introduced the P SIX DSP amplifier, garnering the "EISA Award", winning the "Auto Sound Award" in Japan and setting off a sensation worldwide. Why are you already coming out with the MK2 version now and what is the difference?

**Julian Fischer:** Due to procurement difficulties for core components, we had to redesign the power amplifier section, and in doing so, we incorporated additional detail improvements. The main difference is that effective immediately, instead of the Class Ultra D Concept, the new Ultra HD Class D Concept from Texas Instruments is being deployed in the P SIX DSP MK2. This enables a sampling rate of 96 kHz and thus an extended audio bandwidth of more than 40 kHz. In addition, by popular demand, we have launched a 24 V capable amplifier. With this new concept, an amplifier can be installed without modification, both in a 12 Volts and 24 are but a few Volts on-board electrical system. That's why the P SIX DSP has been

supplemented with the MK2, it's not a new product. The straightforward design and unique sound characteristics typical of the HELIX have remained the same. By the way, I would also like to mention with pride that, starting this year, we are the development partner of Texas Instruments, and as a result, we have very fast access to that manufacturer's latest components.

**CAR&HIFI:** Julian, as Product Manager of AUDIOTECH FISCHER GmbH, you naturally already know today what we can expect to see up ahead from your company and how you have geared up for the future. Could you tell us something about this, we are already very curious.

**Julian Fischer:** That's very understandable that you are. At the moment, we have many new products in the pipeline. Naturally, I don't wish to reveal too much right now, but there is one area where I can give you a behind-the-scenes preview. In February, a super-compact and high-performance 5-channel DSP amplifier is being launched, specifically under the MATCH brand. The M 5DSP is impressive not only due to its incredible 400 Watts output power, but also because of its vast, integrated 7-channel DSP, which is easy to operate with our DSP PC-Tool. This will also be flanked in the 2nd quarter by a 2-channel version with enormous output power.

Under HELIX, in the first quarter we will be bringing out the V EIGHT DSP, an 8-channel amplifier with integrated 10-channel DSP and a very small footprint. This amplifier concept, with 75 W per channel at 4 Ohms, offers enough output power for most configurations. What's more, the V EIGHT DSP has a large array of inputs and the modern HELIX Extension Card slot. Digital signal processing and the miniaturization of electronic components are significant trends for the future. Electronics in modern vehicles make retrofitting



of classic car hifi components more and more difficult, which is why the use of state-of-the-art computer technology is absolutely indispensable. In addition, cars surely do not offer the optimal acoustic conditions but can be corrected through high-performance processors, turning the vehicle interior into a concert hall. These concepts include innovative, compact, plug and play solutions, cutting-edge processors and highly efficient amplifiers. In this, our main attention in product development is focused on simple installation and handling, as well as greatest possible compatibility. Our company philosophy is to always be technologically one step ahead. And here is where our old adage still applies: "It is not the big fish which eats the small fish, it's the fast fish which eats the slow fish."

**CAR&HIFI:** Thank you for the full range of information. We are very excited about what is up ahead.



High- and lowlevel inputs and two processed RCA outputs are available, along with a digital input. Those for whom that's not enough can still upgrade the P SIX DSP MK2 with plug-in cards, creating additional inputs and outputs, e.g., also a wireless digital input for Bluetooth audio streaming.

On the software side, there are all kinds of features required for proper conditioning of the audio signal, such as high-precision time correction (3 mm) or even a fine phase adjustment in 11.25° steps. On the crossover and the EQ, there is typically more than you need.

**Listening check**

As we were already impressed by the P SIX DSP, we were not quite as astounded by the MK2. After all, it was to be expected that the P SIX DSP MK2 could not only outperform any normal class D power amplifier, but also keep up with a very good Class A/B amplifier. Nonetheless, it is once again impressive how splendidly musical this compact amplifier is. The P SIX produces wonderful tone colors, not too warm, not too cold. It somehow always chooses the proper mood, regardless of whether the music is soft or loud. JJ Cale plays

with exquisite casualness, and it is all the more natural that Motörhead has a driving, deafening beat. Likewise, it makes no difference in the precision if the deepest bass tones, instruments or spherical computer sounds are to be reproduced. It might feel that there is a slight increase in airiness and volume, but these disciplines belong to the showcase disciplines of the P SIX anyway.

**Conclusion**

There are clever little power amplifiers, and then there is the P SIX DSP MK2. It is not only the uncontested top dog on its turf, it is in fact nothing less than an outstanding high-end amplifier with contemporary features, and the only high-resolution-audio capable DSP digital power amplifier on the market. The digital reference.

**Helix P SIX DSP MK2**

Inputs	6 channel RCA, 6 channel high level, 1 x digital S/PDIF (optical)
Outputs	2-channel RCA, remote out
Optional inputs and outputs	HEC BT (Bluetooth aptX audio streaming + add. S/PDIF out), HEC Aux-in (3.5 mm jack input + add. S/PDIF out), HEC Optical in (optical S/PDIF input)

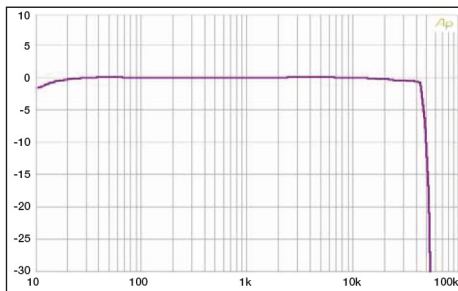
**Features**

Control connection programmable remote control and accessories, start-stop capability up to 6 V, inputs and outputs are randomly routable, signal-dependent switching to digital or Aux inputs, extremely variable input sensitivity (RCA: 2 - 4 V, Aux - 0.5 V; High in 5 - 10 V / 10 - 20 V), Power Save Mode, error protection circuit for factory radios with loudspeaker detection

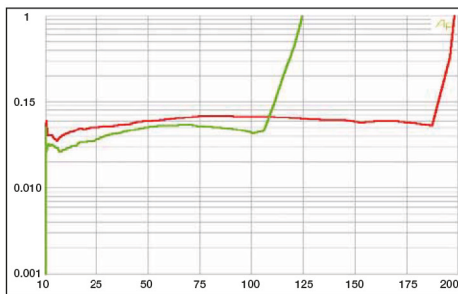
**DSP software (V.328d put to the test)**

High- and lowpass 1/51 octave steps Bessel, Butterworth, Chebychev, Linkwitz, User, up to 42 dB/Oct.  
 Phase 0.180° (full range), 0 - 360° (11.25° steps)  
 Time correction 0 - 318 cm, 3.5 mm steps (0.01 ms) fully parametric EQ with graphic display: 30 bands per channel, +6 - -15 dB, 20 - 20k Hz, 1-Hz steps, Q 0.5 -15  
 RTA real-time frequency response measurements (with optional microphone)

Elmar Michels



Thanks to internal 96 kHz signal processing, the signal response extends to 44 kHz



Both "small" channels put out 116 W continuous power at 4 Ohms, the four "large" channels even achieve 123 W. Add to this the full 4 x 195 W continuous power at 2 Ohms

**Helix P SIX DSP MK2**

Sales	Audio Design, Kronau	
Hotline	07253 9465-0	
Internet	www.audiodesign.de	

Sound	40 %	1,0	■■■■■
Bass response	8 %	1,0	■■■■■
Neutrality	8 %	1,0	■■■■■
Transparency	8 %	1,0	■■■■■
Auditory spaciousness	8 %	1,0	■■■■■
Dynamics	8 %	1,0	■■■■■

Lab	35 %	1,2	■■■■■
Performance	20 %	1,0	■■■■■
Damping factor		2,0	■■■■■
Signal-to-noise ratio	5 %	1,0	■■■■■
THD	5 %	1,5	■■■■■

Practice	25 %	0,6	■■■■■
Features	15 %	0,5	■■■■■
BQ electronics	5 %	0,5	■■■■■
BQ mechanics	5 %	1,0	■■■■■

**Technical data**

Channels	6
Output power @ 4 Ohms	2 x 116 + 4 x 123
Output power @ 2 Ohms	2 x 0 + 4 x 195
Output power @ 1 Ohm	0
Output power bridged @ 4 Ohms	0
Output power bridged @ 2 Ohms	0
Sensitivity max. mV	1060
Sensitivity min. V	3,3
THD+N (<22 kHz) 5 W	0,031/0,028
THD+N (<22 kHz) half load	0,06/0,053
Signal-to-noise ratio dB(A)	93/88
Damping factor 20 Hz	72/138
Damping factor 80 Hz	71/132
Damping factor 400 Hz	70/135
Damping factor 1 kHz	65/124
Damping factor 8 kHz	39/27
Damping factor 16 kHz	4/9

**Features**

Lowpass	10 - 20k Hz
Highpass	10 - 20k Hz
Bandpass	10 - 20k Hz
Bass boost	-15 - 6 dB/10 - 20k Hz
Subsonic filter	via HP
Phase shift	0 - 360°/LZK via DSP
Highlevel inputs	●
Power automatic (Auto sense)	●
RCA outputs	●, processed
Dimensions (L x W x H in mm)	260 x 190 x 48
Others	DSP, triggering of external sources, module bay, remotely controllable etc.

**Rating**

Price	around 1.200 Euro		
Sound	40 %	1,0	■■■■■
Lab	35 %	1,2	■■■■■
Practice test	25 %	1+	■■■■■

**Helix P SIX DSP MK2**

Absolutely top-notch

Top-notch  
 Upper class  
 Middle class  
 Entry level

**1,0**

Price performance: outstanding

„The Helix P SIX DSP MK2 is the last word in DSP power amplifiers.“