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HELIX DSP.3S Digital High-Res 8-channel Signal Processor User Manual

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HELIX DSP.3S Digital High-Res 8-channel Signal Processor

Congratulations!

Dear Customer,

Congratulations on your purchase of this innovative and high-qual ity HELIX product.

Thanks to more than 30 years of experience in research and development of audio products the HELIX DSP.3S sets new standards in the range of digital signal processors. We wish you many hours of enjoyment with your new HELIX DSP.3S. Yours,

AUDIOTEC FISCHER

General instructions

General installation instructions for HELIX components

To prevent damage to the unit and possible injury, read this manual carefully and follow all installation instructions. This product has been checked for proper function prior to shipping and is guaranteed against manufacturing defects.

Before starting your installation, disconnect the battery's negative terminal to prevent damage to the unit, fire and / or risk of injury. For a proper performance and to ensure full warranty coverage, we strongly recommend to get this product installed by an authorized HELIX dealer.

Install your HELIX DSP.3S in a dry location with sufficient air circulation for proper cooling of the equipment. The signal processor should be secured to a solid mounting surface using proper mounting hardware. Before mounting, carefully examine the area around and behind the proposed installation location to insure that there are no electrical cables or components, hydraulic brake lines or any part of the fuel tank located behind the mounting surface. Failure to do so may result in unpredictable damage to these components and possible costly repairs to the vehicle.

General instruction for connecting the HELIX DSP.3S signal processor

The HELIX DSP.3S signal processor may only be installed in vehicles which have a 12 Volts negative terminal connected to the chassis ground. Any other system could cause damage to the signal processor and the electrical system of the vehicle.

The positive cable from the battery for the entire sound system should be provided with a main fuse at a distance of max. 30 cm from the battery. The value of the fuse is calculated from the maximum total current draw of the car audio system.

Use only the provided connectors for connection of the HELIX DSP.3S. The use of other connectors or cables can result in damage of the signal processor, the head unit / radio or the connected amplifiers / loudspeakers!

Prior to installation, plan the wire routing to avoid any possible damage to the wire harness. All cabling should be protected against possible crushing or pinching hazards. Also avoid routing cables close to potential noise sources such as electric motors, high power accessories and other vehicle harnesses.

Connectors and control units

1. **Line Input**

   RCA inputs for connecting pre-amplifier signals.

2. **Coax Input**

   Electrical input for digital stereo signals (SPDIF format).

3. **Optical Input**

   Optical input for digital stereo signals (SPDIF format).

4. **Highlevel Input**

   Highlevel speaker inputs for connecting a factory radio or an aftermarket radio without low level line outputs.

5. **Power Input**

   Connector for the DC power supply with an additional remote in- and output. The remote output has to be used to switch on external amplifiers.

6. **Ground lift switch**

   Can be used to define the connection between the power ground and signal ground of the inputs and outputs.

7. **Control pushbutton**

   Use this button to either switch between the setups or initiate a reset of the device.

8. **Status LED**

   This LED indicates the operating mode of the DSP and of its memory.

9. **USB input**

   Connects the HELIX DSP.3S to your PC.

10. **SCP (Smart Control Port)**

    Multifunction interface for e.g. an optional remote control or other HELIX accessory.

11. **Line Output**

    Line outputs for connecting amplifiers. Make sure that the remote output is used to turn on these devices.

Initial start-up and functions

1. **Line Input**

   6-channel low level line input to connect signal sources such as head units / radios. Input sensitivity is factory-set to 4 Volts (maximum CCW position). It is possible to vary the sensitivity between 2 and 4 Volts using the DSP PC-Tool software (DCM menu → Signal management). Further information about adjusting the input sensitivity can be found on page 19 point 4.

2. **Coax Input**

   Coaxial input in SPDIF format for connecting sources with a digital audio output. The sampling rate of this input has to be in the range of 12 and 192 kHz. The input signal is automatically adapted to the in-ternal sample rate.

In order to control the volume of this input, we recommend to use an optional remote control or the WIFI CONTROL.

Note: This signal processor can only handle stereo input signals and no MP3- or Dolby-coded digital audio stream!

Note: Before first use, the Coax Input has to be activated in the DSP PC-Tool software, with an optional remote control or the WIFI CONTROL. The Optical Input is activated by default.

Note: It is possible to use the Optical and Coax In-put at the same time, but switching between these two inputs requires the optional remote DIRECTOR or the WIFI CONTROL.

3. **Optical Input**

Optical input in SPDIF format for connecting signal sources with a digital audio output. The sampling rate of this input must be between 12 and 96 kHz. The input signal is automatically adapted to the in-ternal sample rate. In order to control the volume of this input, we recommend to use an optional remote control or the WIFI CONTROL.

Note: This signal processor can only handle stereo input signals and no MP3- or Dolby-coded digital audio stream!

Note: In standard configuration the Optical Input is activated as well as the manual activation via an optional remote control is configured.

Note: It is possible to use the Optical and Coax In-put at the same time, but switching between these two inputs requires the optional remote DIRECTOR or CONDUCTOR or the WIFI CONTROL.

4. **High level Input**

6-channel highlevel loudspeaker input to connect the signal processor directly to loudspeaker outputs of OEM / aftermarket radios or OEM amplifiers that do not have any pre-amplifier outputs. Input sensitivity is factory-set to 11 Volts. It is possible to vary the sensitivity between 5 and 11 Volts using the DSP PC-Tool software (DCM menu → Signal management). Further information about adjusting the input sensitivity can be found on page 19 point 4. Attention: Solely use the pluggable screw-terminal for the high level connector which is included in de-livery!

Important: It is strictly forbidden to use the High-level and low level Line Input of an individual channel at the same time as this may cause severe dam-age to the low level line outputs of your car radio. Nevertheless it is possible to use the High level In-put of one channel and the low level Line Input of another channel simultaneously.

5. **Power Input**

This input is used for connecting the signal processor to the power supply of the vehicle and for remote in / out. If the high level loudspeaker inputs are used the remote input (Remote in) can be left unconnected.

The remote output is used for turning on / off amplifiers that are connected to the Line Outputs of the HELIX DSP.3S. Connect this remote output to the remote inputs of your amplifier/s. This is essential to avoid any interfering signals.

The remote output is activated automatically as soon as the booting process of the DSP is completed. Additionally this output will be turned off during the "Power Save Mode" or a software update pro-cess.

Attention: Solely use the pluggable screw-terminal which is included in delivery to connect the HELIX DSP.3S to the power supply!

Important: Never use a different signal than the remote output of the DSP to activate connected amplifiers!

6. **Ground lift switch**

Nevertheless, there are use cases where it will be necessary to directly connect input and output ground or to

tie both grounds together via a resistor. Therefore the Ground lift switch has three positions:

- center position: input and output ground separated.
- left position: input and output ground tied together.
- right position: input and output ground connected via 200 Ohms resistor.

7. **Control pushbutton**

The DSP.3S provides 10 internal memory locations for sound setups. The Control pushbutton allows the user to switch between two memory positions. These can be defined in the DSP PC-Tool.

- Setup switch: Press Control pushbutton for 1 sec-ond. The memory locations one and two are defined by default. Switching is indicated by a single red flash of the Status LED. Alternatively, the optional URC.3 remote control can be used for switching. To switch between all internal memory locations, optional accessories like the DIRECTOR display remote control, CONDUCTOR or WIFI CONTROL are required.
- Device reset: Press pushbutton for five seconds. This completely erases the internal memory and is indicated by a continuous red glowing and constant green flashing of the Status LED.
  Attention: After erasing the setups from memory the DSP.3S will not reproduce any audio output un-til the device is updated via the DSP PC-Tool soft-ware.

8. **Status LED**

The Status LED indicates the operating mode of the signal processor and of its memory.

Green: DSP is ready for operation.

Orange: Power Save Mode is active.

Red: Protection Mode is active. This may have different root causes. The HELIX DSP.3S is equipped with protection circuits against over- and under-voltage as well as overheating. Please check for connecting failures such as short-circuits or other wrong connections.

If the DSP is overheated the internal temperature protection switches off the remote and signal output until it reaches a safe temperature level again. Red / green slow flashing: No operating software installed. Connect the signal processor to the DSP PC-Tool software and confirm the automatic update of the operating system. You will find the latest version of the DSP PC-Tool software at **www.audiotec-fischer.com**.

Red / green fast flashing: The currently selected sound setup memory is empty. A new setup has to be loaded via the DSP PC-Tool software or switch to a memory position with existing sound setup.

9. **USB input**

Connect your personal computer to the DSP.3S using the provided USB cable. The required PC software to configure this signal processor can be downloaded from the Audiotec Fischer website **www.audiotec-fischer.com**.

Please note: It is not possible to connect any USB storage devices.

10. **SCP (Smart Control Port)**

This multi-functional input is designed for HELIX DSP.3S accessory products like a remote control which allows to adjust several features of the signal processor. Depending on the type of remote control, at first its functionality has to be defined in the " Device Configuration Menu" of the DSP PC-Tool software.

Attention: If the accessory product does not have a NanoFit connector solely use the NanoFit adaptor which is included in delivery for connection.

NanoFit adaptor
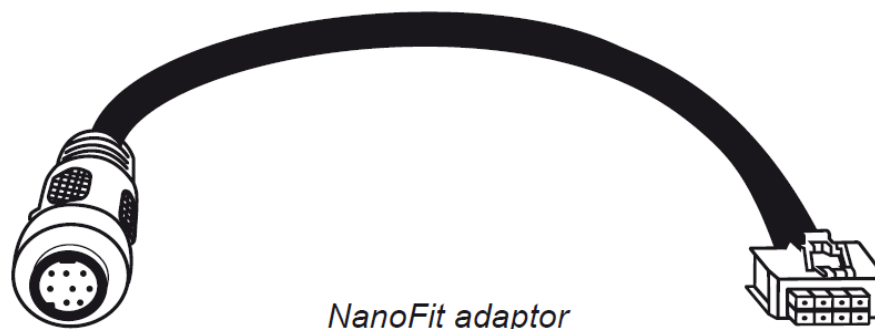
11. **Line Output**

8-channel pre-amplifier output for connecting power amplifiers. The output voltage is 6 Volts max. Please make sure that you always turn on / off external amplifiers using the remote output of the signal processors Power Input. Never directly control the external amps by a signal from the ignition switch of your car! Additionally this output will be turned off when the "Power Save Mode" of the signal processor is active. The outputs can be assigned to any of the inputs as desired using the DSP PC-Tool software.

Installation

Connection of HELIX DSP.3S to the head unit / car radio:
Caution: Carrying out the following steps will re-quire special tools and technical knowledge. In or-der to avoid connection mistakes and / or damage, ask your dealer for assistance if you have any questions and follow all instructions in this manual (see page 15). It is recommended that the device will be installed by an authorized HELIX dealer.

1. **Connecting the pre-amplifier inputs**

Use the correct cable (RCA / cinch cable) to connect these inputs to the pre-amplifier /low level / cinch outputs of your head unit / car radio. Each input can be assigned to any output using the DSP PC-Tool software. The automatic turn-on circuit does not work when using the pre-amplifier inputs. In this case the remote in-put has to be connected to activate the HELIX DSP.3S.

Important: It is strictly forbidden to use the High level and low level Line Input of an individual channel at the same time as this may cause severe damage to the low level line out-puts of your head unit / car radio. Nevertheless it is possible to use the High level Input of one channel and the low level Line Input of another channel simultaneously.

2. **Connecting the high level speaker inputs**

The high level loudspeaker inputs can be connected directly to the loudspeaker outputs of an OEM or aftermarket radio using appropriate cables (loudspeaker cables with 1 mm² / AWG 18 max.).

We recommend the following channel assignment if a common car radio will be connected to the signal processor:

Channel A = Front left

Channel B = Front right

Channel C = Rear left

Channel D = Rear right

Actually it is not mandatory to use all high level speaker inputs. If only two channels will be connected we recommend to use the channels A and B. Make sure that the polarity is correct. If one or more connections have reversed polarity it may affect the performance of the signal processor. If this input is used the remote input does not need to be connected as the signal processor will automatically turn on once a loudspeaker

signal is received.

3. **Connecting a digital signal source**

If you have a signal source with an optical or coaxial digital output you can connect it to the signal processor using the appropriate input. In standard configuration the Optical Input is activated as well as the manual activation via an optional remote control is configured. Alternatively you can activate the automatic turn-on feature in the DCM menu of the DSP PC-Tool software. The feature activates the configured digital input as soon as a signal is applied to its input.

The automatic turn-on circuit does not work when a digital input is used. Therefore it is mandatory to connect the remote input of the Power Input.

Important: The signal of a digital audio source normally does not contain any information about the volume level. Keep in mind that this will lead to full level on the outputs of the HELIX DSP.3S and your connected amplifiers. This may cause severe damage to your speakers. We strongly recommend to use an optional re-mote control for adjusting the volume level of the digital signal input!

Information: The HELIX DSP.3S can only handle uncompressed digital stereo signals in PCM format with a sample rate between 12 kHz and 96 kHz / 192 kHz and no MP3- or Dolby-coded digital audio stream!

4. Adjustment of the input sensitivity Attention: It is mandatory to properly adapt the input sensitivity of the DSP.3S to the signal source in order to avoid damage to the signal processor.

The input sensitivity can be optimally adapted to the signal source using the DSP PC-Tool soft-ware. Input sensitivity is factory set to 11 Volts for the High level and 4 Volts for the Line Input. This is definitely the best setting for most applications. Only if the head unit / car radio doesn´t deliver enough output level, the input sensitivity should be increased.

The setting affects both the low level and the high level inputs!
Follow the subsequent steps to perfectly adapt the signal processors input sensitivity to your signal source:

1. Don't connect any amplifiers to the outputs of the DSP.3S during this setup.
2. First turn on the signal processor and then start the software. The function can be found in the "Signal Management" tab of the DCM menu under the item "Main Input → Input Gain".
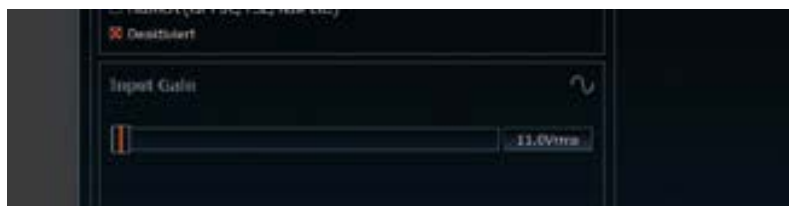
3. Adjust the volume of your radio to approx. 90 % of the max. volume and playback an appropriate test tone, e.g. pink noise (0 dB).
4. If the clipping indicator in the DSP PC-Tool already lights up (see picture below), you have to reduce the input sensitivity using the scroll bar until the indicator turns off.
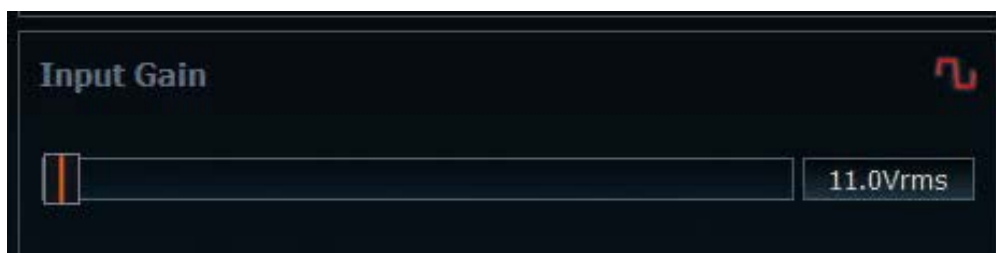
5. Increase the input sensitivity until the clip- ping indicator lights up. Now turn the control back until the indicator turns off again.
6. Connection to power supply Make sure to disconnect the battery before installing the HELIX DSP.3S!
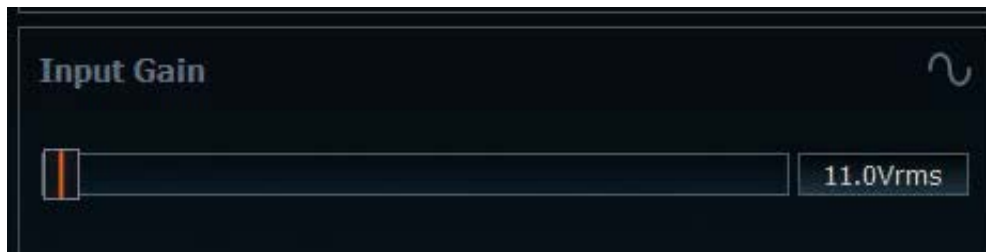
Solely use the included screw-type terminal to connect the HELIX DSP.3S to a power supply. Make sure of correct polarity. The ground wire must be connected to the vehicle chassis at a non-insulated point. Inadequate grounding causes audible interference and malfunctions. The positive wire has to be connected to the battery's positive post or a power distribution block. Though the current draw of the HELIX DSP.3S is rather low (approx. 450 mA) we recommend a minimum wire gauge of 1 mmÂ² / AWG18 for both power supply wires.

7. **Connecting the remote input**

   The remote input of the Power Input has to be connected to the radio remote output if the signal processors lowlevel Line Inputs or the Optical Input is / are used as signal input/s. We do not recommend controlling the remote input via the ignition switch to avoid pop noise during turn on / off.

   If the Highlevel Input is used this input does not need to be connected as long as the car radio has BTL output stages.
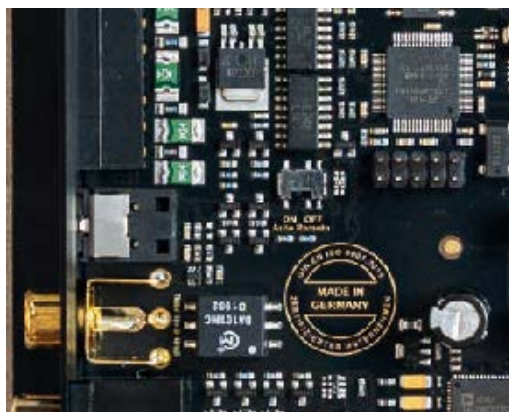
8. **Configuration of the remote input**

   The DSP.3S will be turned on automatically if the Highlevel Input is used or if a signal is applied to the remote input terminal. The "Auto Remote" switch allows to deactivate the automatic turn-on feature of the highlevel inputs. The feature should be deactivated (Auto Remote = Off) if there are e.g. noises while switching on / off the signal processor.

   Note: If the automatic turn-on function is deac-tivated it is mandatory to use the remote input terminal to power up the signal processor! The highlevel signal will be ignored in this case. Note: The automatic turn-on feature of the highlevel inputs is activated by default.

   To deactivate the automatic turn-on feature you have to open the device and change the position of the "Auto Remote" switch. Therefore dismantle the side panel (where the USB input is located) by removing the five screws (four Phillips screws and one Allen screw). Now you can pull out the bottom plate and get access to the switch. The switch is located near by the "Made in Germany" badge (see marking in the following picture).

Connection to a PC

It is possible to freely configure the HELIX DSP.3S with our DSP PC-Tool software.
The user interface is designed for easy handling of all functions and allows an individual adjustment of each of the eight DSP channels. Prior to connect-ing the signal processor to your PC visit our web-site and download the latest version of the DSP PC-Tool software.
Check from time to time for software updates. You will find the software and a huge knowledge base at

www.audiotec-fischer.com.

We strongly recommend to carefully read the DSP PC-Tool knowledge base before using the software for the first time in order to avoid any complications and failures.

Important: Make sure that the signal processor is not connected to your computer before the software and USB driver are installed!

In the following the most important steps how to connect and the first start-up are described:

1. Download the latest version of the DSP PC-Tool software (available on our website **www.audiotec-fischer.com**) and install it on your computer.

2. Connect the signal processor to your computer using the USB cable that is included in de-livery. If you have to bridge longer distances please use an active USB extension cable with integrated repeater or the optionally available WIFI CONTROL interface.

3. First turn on the signal processor and then start the software. The operating software will be up-dated automatically to the latest version if it is not up-to-date.

4. Now you are able to configure your HELIX DSP.3S with our intuitive DSP PC-Tool soft-ware. Nevertheless, interesting and useful hints can be found in our knowledge base at **www.audiotec-fischer.com**.

   Caution: We highly recommend to set the vol-ume of your car radio to minimum position during first start-up. Additionally no devices should be connected to the signal processor until general settings in the DSP PC-Tool software have been made. Especially if the DSP.3S will be used in fully active applications, a wrong setup can destroy your speakers right away.

Configuration notes for the DSP sound effects

The HELIX DSP.3S offers unique DSP sound effects like "Augmented Bass Processing", " StageXpander", "RealCenter" and many more. In order to enjoy the DSP sound effects, specific set-tings have to be made in the hardware and software configuration.

Notes for Center Processing with its functions RealCenter and ClarityXpander

If you want to use the RealCenter and ClarityXpander function for a center speaker follow the subsequent steps:

1. You need at least one left and one right analog or digital input signal.

2. Open the IO menu of the DSP PC-Tool. Route the left and the right analog or digital input signal (no sum signal) to the output channels A and B (see example in the following image). It does not mat-ter, if the output channels are defined as front, rear or center channel.
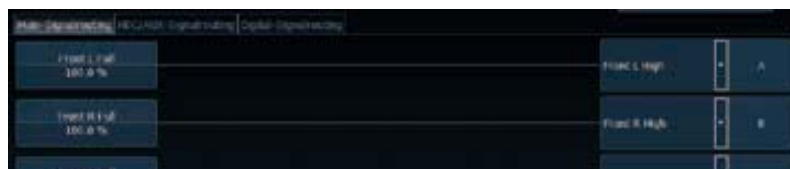

   Note: You will achieve the best performance if the input signal is a fullrange signal.

3. Generate a summation signal from the same two input signals and route this to the output chan-nel G. For an active setup with a tweeter and midrange speaker, this channel should be defined as " Center Low" and channel F as "Center High".
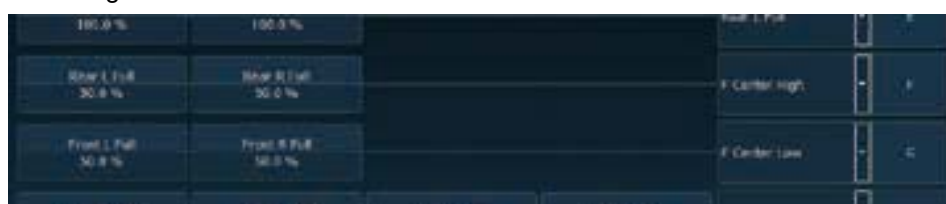
4. Only for active speaker setup: activate the Active Setup function in the tab of the FX menu by placing a tick.
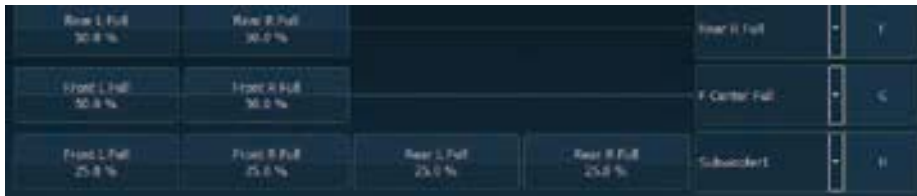
5. Repeat steps two and three for all routing matrices that are used.
6. Now switch to the "Center Processing" tab of the FX menu and activate the desired sound effect by placing a tick.

Note: Depending on the speaker setup (active or passive) the Center Processing affects only the out-put channel G or the output channels F and G.

Notes for Front Processing with its functions StageXpander and ClarityXpander

Normally, the settings of the StageXpander and Front ClarityXpander only affect the output channels A and B. If you want to drive an active 2-way front system, it is necessary that these sound features affect all four output channels A to D. Therefore, you have to activate the routing in the FX menu under "Front processing" by activating the "Link to C+D" function.

Notes for Augmented Bass Processing with its functions Dynamic Bass Enhancement and SubXpander
There are as well some adjustments necessary if the Augmented Bass Processing and its sound ef-fects shall be used.

1. You need either a mono or stereo input signal (analog or digital).
2. Open the IO menu in the DSP PC-Tool. Route all left and right analog or digital input signals to output channel H.

3. Repeat the routing for all routing matrices used.

Note: The Augmented Bass Processing affects only the output channel H.

ACO platform features

Beside the unique DSP sound effects the DSP.3S provides a bunch of new system and DSP features. In the DCM menu of the DSP PC-Tool software in-dividual settings can be made for several of these system features.

- **Turn On & Off Delay**

  This function allows to determine the delay time with which the DSP is switched on and off. The factory setting is 0.2 seconds. The delay time should only be modified if there are e.g. noises while switching on / off the signal processor.

- **URC Setup Switch Configuration**

  The ACO provides ten internal memory locations for sound setups instead of the common two.

  By using an optional URC remote control or the Control pushbutton it is possible to toggle between two of the ten memory locations. These two memory lo-cations can be determined in the "URC Setup Switch Configuration". The memory locations one and two are preassigned by default. To switch between all internal memory locations, the optionally available remote controls DIRECTOR and CONDUCTOR or the HELIX WIFI CONTROL are / is recommended.

- **Remote Output Configuration**

  This function controls if the remote output (which switches on and off the connected amplifiers) will be temporarily deactivated during a sound setup switch. This function is activated (ON) by default.

- **ADEP.3 Configuration**

  If the DSP.3S is connected to an OEM radio via the highlevel inputs it may happen that the ADEP.3 circuit has to be adapted to the diagnostic mode of the radio if the latter is equipped with a so-called output

  The ADEP.3 circuit should be adjusted if there are e.g. distortions in the upper volume range. The compatibility mode is disabled by default.

HELIX Extension Card slot (HEC slot)

It is possible to extend the functionality of the HELIX DSP.3S by inserting an optional HELIX Extension Card (HEC) – for example a Bluetooth® Audio Streaming module, a High Resolution Audio USB soundcard etc.
To install a HELIX Extension Card it is necessary to remove the side panel of the DSP.3S and replace it by the new side panel that comes with the HEC module.
Attention: Install the HEC module only in the designated device and its specific slot. Using the HEC module in other devices or slots can result in damage of the HEC module, the signal processor, the head unit / car radio or other connected devices!
Read in the following the steps how to install a HEC module:

1. First disconnect all cables from the device.
2. Dismantle the side panel where the USB input is located by removing the four Phillips screws and one Allen screw.
3. Pull out the bottom plate sideways.
4. Prepare the module for installing it into the de-vice. Any further mounting information will be found in the instruction manual of the respective HEC module.

5. Insert the HEC module into the specific slot of the device which is marked in the following picture.
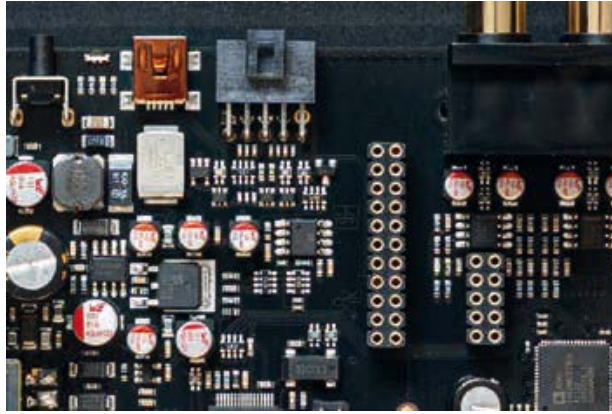
6. Make sure that the HEC module is installed properly and all pins are fully inserted into the socket.

7. Reinsert the bottom plate and fix the new side panel which is delivered with the HEC mod-ule with the four Phillips screws and one Allen screw.
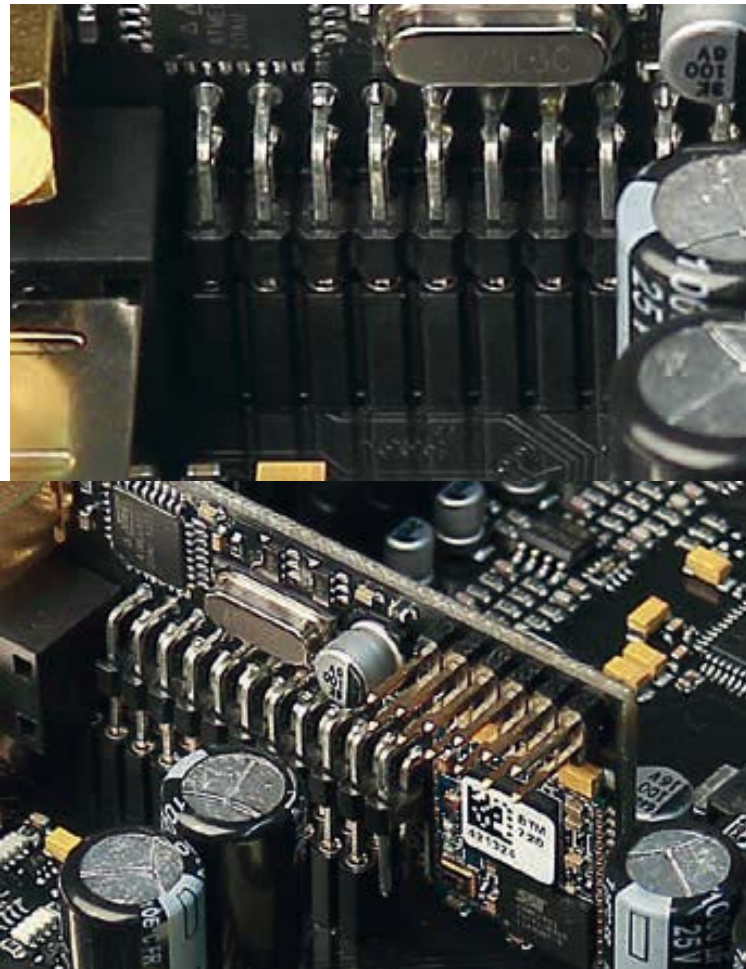
8. Bolt the HEC module to the side panel. Precise mounting information will be found in the instruction manual of the respective HEC module.

9. Reconnect all cables to the device.

10. Turn on the signal processor. The HEC module is automatically detected by the device and the Status LED of the HEC module lights up green.

11. Now you are able to configure the HEC module in the DSP PC-Tool software.

Unique features of the HELIX DSP.3S

- **96 kHz sampling rate**
  The HELIX DSP.3S allows to handle all signals with the doubled sampling rate of 96 kHz. Thus the audio

bandwidth is no long er limited to usual values like 22 kHz but allows an extended frequency response to more than 40 kHz. Doubling the sampling rate requires significantly higher DSP power as the number of possible arithmetic operations is halved. Only the implementation of the latest DSP chip generation allows raising the sampling rate to 96 kHz and adding new features at the same time.

- **ACO – Advanced 32 Bit CoProcessor**

  The HELIX DSP.3S 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 DSP in order to adjust the microcontroller-controlled ADEP.3 circuit for example at future modifications / changes in the diagnostic system of factory radios or if the device will be extended with additional inter-faces. In addition, thanks to the new flash memory, the ACO offers 10 memory locations for sound set-ups instead of the common two.

- **Smart highlevel input ADEP.3**

  Modern, factory-installed car radios incorporate sophisticated possibilities of diagnosing the connect-ed 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 a signal processor will be hooked up – but not with the DSP.3S.

  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.

- **Start-Stop capability**

  The switched power supply of the HELIX DSP.3S assures a constant internal supply voltage even if the battery's voltage drops to 6 Volts during engine crank.

- **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 DSP.3S 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 in-ternal 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 there-fore the connected amplifiers will be turned off. The HELIX DSP.3S 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.

- **Automatic Digital Signal Detection**

  The HELIX DSP.3S allows signal-controlled switch-ing between the analog and the digital inputs. As soon as an input signal is detected on the Optical or Coaxial Input, the signal processor automatically switches to the appropriate input. This feature can be deactivated in the DSP PC-Tool software. Alternatively you can use an optional remote con-trol for manual switching between analog and digital inputs.

Technical Data

- Inputs……………………………………………………………………….. 6 x RCA / Cinch
  - 6 x Highlevel speaker input
  - 1 x Optical SPDIF (12 – 96 kHz)

- ○ 1 x Coax SPDIF (12 – 192 kHz)
  - ○ 1 x Remote In
- Input sensitivity…………………………………………………….. RCA / Cinch: 2 – 4 Volts Highlevel: 5 – 11 Volts
- Outputs…………………………………………………………….. 8 x RCA / Cinch 1 x Remote Out
- Output voltage……………………………………………………6 Volts
- Frequency response…………………………………………….10 Hz – 44,000 Hz
- DSP power……………………………………………………...64 Bit / 295 MHz
- Sampling rate……………………………………………………96 kHz
- DSP type…………………………………………………...Audio signal processor
- Signal converters………………………………………….. A/D: BurrBrown D/A: BurrBrown
- Signal-to-noise ratio (A-weighted)……………………………… Digital input: 112 dB Analog input: 107 dB
- Total harmonic distortion (THD+N)………………………….. Digital input: < 0.0008 % Analog input: < 0.002 %
- IM distortion (IMD)…………………………………………… Digital input: < 0.003 %
- Analog input: < 0.005 %
- Crosstalk…………………………………………………...> 90 dB
- Operating voltage 9.6 – 18 Volts (max. 5 sec. down to 6 Volts)
- Power rating……………………………………………………DC 12 V 3 A max.
- Current draw……………………………………………………< 450 mA
- Max. remote output current…………………………………….500 mA
- Additional features…………………………………………… HEC slot, Ground lift switch, Smart Control Port, 32 Bit CoProcessor, ADEP.3 circuit, Auto Remote switch
- Dimensions (H x W x D)…………………………………………40 x 177 x 120 mm / 1.58 x 6.97 x 4.72”

Warranty Disclaimer

The warranty service is based on the statutory regulations. Defects and damage caused by overload or improper handling are excluded from the warranty service. Any return can only take place following prior consultation, in the original packaging together with a detailed description of the error and a valid proof of purchase. Technical modifications and errors excepted! We accept no liability for damage to the vehicle or device defects caused by the incorrect operation of the device. This product has been issued a CE marking. This means that the device is certified for use in vehicles within the European Union (EU).
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Documents / Resources

HELIX DSP.3S Digital High-Res 8-channel Signal Processor [pdf] User Manual
Digitaler High-Res 8-Kanal Signalprozessor mit, 96 kHz, 24 Bit Signalweg, DSP.3S, Digital High-Res 8-channel Signal Processor, processor with 96 kHz 24 Bit signal path

References

- Ⓐ [High-End Car Hifi & Audio - Made in Germany | Audiotec Fischer](#)