GROUND ZERO®

GERMAN ENGINEERING

DSP
Processing

DSP SERIES
10-Channel Digital Sound Processor

GZDSP 6-10SQ

Quickstart Guide

AWV4.2

General information

The information and advice contained in this guide may be deviate from the delivery condition of the device. This is due to constant further development of the product.

Content

- GZDSP 6-10SQ
- USB cable, type A to type B (1,5 m)
- Power supply and high-level input harness
- Built-in BT antenna
- Quickstart Guide

Safety

- As a precaution, it is recommended to disconnect the vehicles battery before mounting the DSP. (Note: For new vehicles, disconnecting the battery might cause various errors in your vehicle´s electric system that can be cleared only by authorized service partners of your vehicle´s manufacturer! Please ask your service partner first before disconnecting the battery!)

- The power supply wire (+12 V) has to be protected within max. 20 cm / 8" by a main fuse holder with a fuse value matching the recommendation for your amplifier
(Note: If there is more than one DSP connected using this power wire, the main fuse value must be equal to the sum of the recommended fuses of all connected devices. However, make sure the diameter of your power wire will be sufficient for the required current!)

- If necessary, replace a defective fuse by a fuse with identical quality and value

- Never drill a hole to the vehicle´s gas tank or brake lines, to wirings or any other important vehicle parts!

- Never pass wires over sharp edges or vehicle parts to avoid any kind of damage

- Keep the wiring away from the antenna and electronic devices contributing to radio reception

- Lay the power supply wiring always separated from speaker wiring to avoid disturbance

Specifications

- Digital signal processor (DSP)
- High Performance Analog Devices SigmaDSP Audio Processor
- Premium DAC with differential signal routing
- High-quality OP-amps with lowest noise and distortion behaviour
- 6-channel line input (RCA)
- 6-channel high-level input (with auto-on function)
- Coaxial and optical S/PDIF input
- 10-channel line output (RCA)
- Realtime setup of all functions (via PC or app)
- Simple handling graphical user interface (Windows® compatible)
- Input equalizer (7 bands per source)
- Input channel time alignment
- Output equalizer (10 x 31 bands)
- Time alignment (0-20 ms / 0-692 cm / 0-272") for each channel
- Adjustable crossover (HPF / LPF / BPF from 20 Hz to 20 kHz)
- Selectable crossover slope (6 to 48 dB/oct)
- 3 filter characteristics (Butterworth/Bessel/Linkwitz-Riley)
- Selectable phase shift for each channel (0° or 180°)
- Memory for 10 user presets (selectable via remote control, PC or app)
- Group selectable EQ settings
- Optional wired remote control GZREM 6-10 available separately
- BT 5.0 for wireless music streaming and DSP settings

Product description

The GZDSP 6-10SQ is a digital signal processor that can significantly improve the sound quality of a car music system under certain conditions. The basis for this is a 32-bit SigmaDSP in conjunction with six 32-bit analog-to-digital and ten digital-to-analog converters. Thanks to the free combination of up to 6 input channels and a 31-band equalizer for each output channel, the GZDSP 6-10SQ can be integrated into almost any factory system. The source-specific, 7-band input equalizer also helps optimize the input signal.
In addition to the 6 analog high- and low-level connections, the GZDSP 6-10SQ also offers an optical, digital and BT interface.

App control & music streaming

To use your mobile device controlling the unit and changing the adjustments, please install the GROUND ZERO GZDSP 6-10SQ control app on your device (Android / iOS) and connect the separately available music streaming interface. Check the web page for further information and to download the app´s owner´s manual.
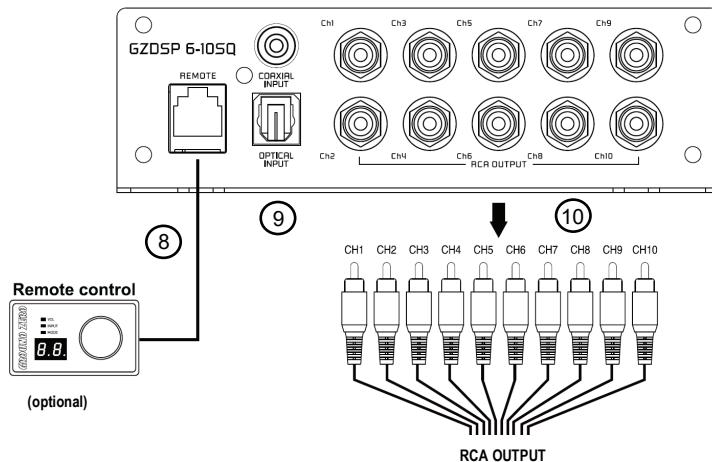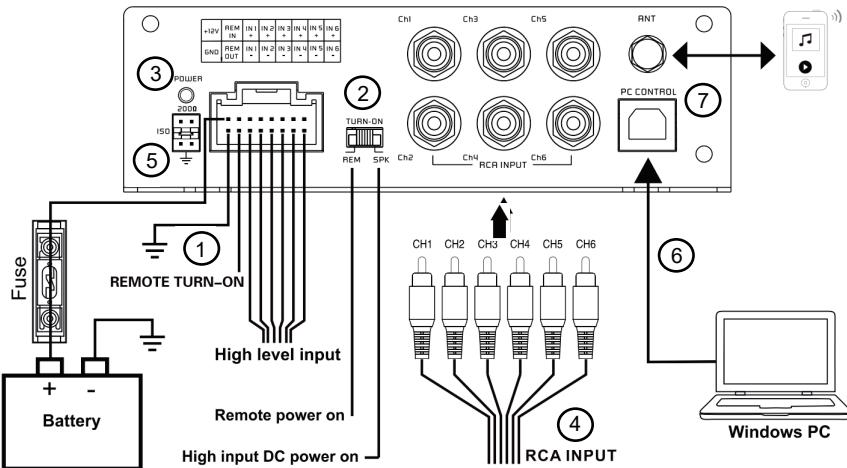
Terms of warranty

The limited warranty for this product is covered by GROUND ZERO´s regional distribution partners and their terms and conditions. For further information contact your local retailer or distributor.

General installation note

- To avoid heat build-up, sufficient air supply for cooling must be provided. Never cover the surface of the heatsink entirely.
- The DSP unit should NEVER be mounted onto a vibrating part or surface such as a subwoofer enclosure. This might lead to malfunction due to loosened electrical parts inside the amplifier.

Connections

1	Harness connection	To connect the power and speaker input harness (check the pinout on the next page).
2	TURN-ON switch	This unit offers automatic turn-on. Using the feature, it´s unnecessary to connect a remote wire. Set the switch to the RCA position for line input using the Remote cable or SPK position for the high-level input turn-on sensing. **Caution: The high-level input and the line input cannot be used simultaneously. This may lead to malfunction and cause serious damage to the DSP unit.**
3	Power indication	Indicating the operation status
4	Line input (RCA)	To connect the head-unit´s pre-amplified line output audio signal (RCA)
5	Signal-Ground Jumper	Separates the signal ground from power ground. Presetting is 50 Ω. In case of having system noise or engine noise the jumper can be selected to 200Ω or 0Ω.
6	USB port	To connect the supplied USB cable to a compatible Windows PC´s USB port
7	BT Antenna	BT connection to control the device via APP and to stream music
8	Remote socket (opt.)	To connect the optional wired remote control
9	S/PDIF input	To connect a S/PDIF signal source
10	Line output (RCA)	To connect one or more amplifiers using RCA signal cables

Harness connector pinout

1	+12V	REM IN	IN 1 +	IN 2 +	IN 3 +	IN 4 +	IN 5 +	IN 6 +	8
9	GND	REM OUT	IN 1 -	IN 2 -	IN 3 -	IN 4 -	IN 5 -	IN 6 -	16

1	Yellow	+ 12 V Power supply	Connect the unit to the positive pole (+) of the vehicle´s battery. Use adequate wiring gauge (not less than 1.0 mm² / 17 AWG) with an additional fuse holder (5 A fuse) not further than 30 cm / 12" away from the terminal of the battery
2	Blue	Remote input	Using the line input (RCA), a remote wire can be connected to turn on the DSP unit. In this case, set the TURN-ON switch to the REM position. Setting the switch to the SPK position activates the auto-on function, in that case a remote wire is superfluous.
3	White	Channel 1 (+)	To connect the left front tweeter output (+)
4	Grey	Channel 2 (+)	To connect the right front tweeter output (+)
5	Green	Channel 3 (+)	To connect the left front speaker output (+)
6	Purple	Channel 4 (+)	To connect the right front speaker output (+)
7	Brown	Channel 5 (+)	To connect the left rear speaker output (+)
8	Orange	Channel 6 (+)	To connect the right rear speaker output (+)
9	Black	Ground (GND)	To connect to a ground point. A sufficiently dimensioned cable should be used for this (mind. 1 mm²)
10	Blue/Black	Remote output	To be used with additional system equipment like amplifiers to turn on together with the DSP unit. The current is limited to 500 mA max.
11	White/bl	Channel 1 (-)	To connect the left front tweeter output (-)
12	Grey/bl	Channel 2 (-)	To connect the right front tweeter output (-)
13	Green/bl	Channel 3 (-)	To connect the left front speaker output (-)
14	Purple/bl	Channel 4 (-)	To connect the right front speaker output (-)
15	Brown/sw	Channel 5 (-)	To connect the left rear speaker output (-)
16	Orange/sw	Channel 6 (-)	To connect the right rear speaker output (-)

PC software installation

The software can be downloaded from the support area at our Ground Zero web page: www.ground-zero-audio.com

* compatible operating systems: Microsoft Windows® XP SP3 / Vista / 7 / 8 / 8.1 / 10 / 11

PC requirements: min. 1.5 GHz processor with 1 GB main memory (RAM) and graphic cards
                                    with a resolution of 1024x600 pixels or more

Note: We strictly recommend using the latest DSP software available from the web page.

USB connection

USB connection: We don´t recommend using any passive extension cable together with the included USB wire, as the proper function can´t be ensured.

DSP setting: The unit must be connected to a PC with the DSP software installed using the included USB wire. To adjust any setting the unit must be in operation mode. Click the program icon on the desktop or select the program from the software list to start. The starting window appears.

Windows® user account control (UAC): In case the PC operating system is set to restricted security clearance regarding software with unknown source or without digital signature a window will appear each time at the program is starting. Please confirm with >Yes< (language depends on your local setting) to run the program

USB port

In order to use the software, a communication to the PC must be established. Therefore, an unused USB port is required. During the connection of the USB cable the system will assign automatically an USB port.

Software

The manual of the Software usage is available separate.
Please download from our web page at the support area: www.ground-zero-audio.com

Password

Default password for the iOS/Android app: 666666

Safety instructions / Manufacturer´s declaration

Safety Instructions: Use the device only in environments where wireless technology is permitted. Do not use the device if it has been damaged or exposed to liquids. Do not expose the device to extreme temperatures, fire or humidity. Keep the device, packaging and accessories away from children and pets to prevent accidents and suffocation.

Manufacturer's declaration: Herewith Ground Zero GmbH declares that the radio system type GZDSP 6-10SQ complies with the directive 2014/30/EU and further declares that this product is in conformity with the rules of the EU directives (including all applicable amendments) 2011/65/EU RoHS2 and 2001/95/EC General Product Safety Directive. The full text of the EU Declaration of Conformity is available at the following internet address: www.ground-zero-audio.com. Electronic products contain valuable raw materials and must not be disposed of with normal household waste. At the end of its service life, please bring the device to your local recycling facility.

Failure Diagnosis

Failure	Control	Help / Solution
No function	PWR LED on?	-check the fusing -check the remote wire -check the +12 Volt connection and wire -check the ground connection and wire
No sound (PWR LED on)	signal wire no contact or broken	-check the contact or replace the wire
	no audio signal from the head-unit	-check the audio output signal of the head-unit
	amplifier not switched on	-check the remote out of the DSP -check the amplifiers power supply
	non operational source selected	-check the setting
	activated >MUTE< function (User Interface)	-check the setting
	adjusted level on optional remote control unit too low	-check the setting
Single channels with no function	signal wire no contact or broken	-check the contact or replace the wire
	no audio signal from the head-unit	-check the audio output signal of the head-unit
	balance or fader control of the head-unit not in center position	-check the setting of the head-unit
	wrong setup of input and output mode	-check the setting
	>GAIN< level too low or >Mute< function (user interface) active	-check the setting
Impure sound, incorrect stereo reproduction	inverted phase of one or more speakers	-check the polarity of the speaker connection -check the polarity of the high-level input -check the >PHASE< setting -check the >TIME ALIGNMENT< adjustment
Distorted sound quality	speaker overload	-reduce the volume level -check the highpass filter and slope
	DSP input override (distortion)	-select the correct input mode -pay attention to the input sensitivity of the DSP unit
	head-unit output override (distortion)	-reduce the volume level of the head-unit -set the sound controls of the head-unit to center position -deactivate the >Loudness< function of the head-unit
	amplifier override (clipping)	-check the amplifiers input sensitivity -reduce the level
Increased noise level	>GAIN< level too high	-reduce the >GAIN< level
	head-unit creates noise	-select a superior quality head-unit -use the optical output (if available) -let the audio store or manufacturer check the head-unit
Car specific interferences audible through the audio system	diverse power supplies or ground connection	-the head-unit, the DSP and each amplifier should be wired up to a common ground and +12 Volt connection - Change signal ground jumper position
	signal wire no contact or broken	-check the contact or replace the wire
	head-unit defective	-let the audio store or manufacturer check the head-unit
	amplifier defective	-let the audio store or manufacturer check the amplifier
	DSP unit or amplifier mounted close to an automotive control unit	-choose another mounting position

Technical Specifications

Model	GZDSP 6-10SQ
Type	10-channel signal processor (DSP) with 6 inputs
Frequency range	20 Hz – 20 KHz (-3 dB)
SNR / line input	≥110dB (A-weighted)
SNR / opt. and coaxial input	≥113dB (A-weighted)
THD	0.002 %
DSP chipset	Analog Devices SigmaDSP
Sensitivity	Line input (RCA) max. 3V RMS High level input max. 8.0 V RMS
Input impedance	Line input (RCA) ≥20 kΩ
Output voltage / channel	≥3,8 V
Remote current	max. 500 mA
Remote input voltage	>3 V
Switching voltage / speaker input	>3,2 V
Turn on delay	6 seconds
Recommended fuse value	5 A
Operating voltage	8.5 – 16 V
Dimensions	132 x 143 (171) x 40 mm / 5.20" x 5.63 (6.73)" x 1.57" (w x l x h)
Software compatibility	Microsoft Windows™ XP SP3, Vista, 7, 8, 8.1,10,11
Preset memory	10 presets (individually assignable)
Gain range	-60 bis 0 dB
Equalizer	10x parametric 31 band EQ (20 Hz – 20 kHz) with adjustable Q
Time delay	0 – 20 ms / 0 – 692 cm / 0-272 inch
Crossover	6 – 48 dB/oct. slope with selectable filter characteristic
Phase correction	0° / 180°
Optionally available accessory	Wired remote control GZREM 6-10

GROUND ZERO products are engineered in Germany
GROUND ZERO - international sponsor of

Ground Zero GmbH
Erlenweg 25, 85658 Egmating, Germany
Tel. +49 (0)8095/873 830
www.ground-zero-audio.com