

# CAR SPECIFIC SERIES

## 4-channel amplifier with built-in DSP and ISO harness

### GZCS DSPA-4.60ISO

## Owner's manual

(AWV2.0)

### Features

- 4-channel amplifier with built-in digital signal processor (DSP)
- 4-channel ISO harness
- 8-channel DSP with 4-channel line output
- 2x Analog Devices SigmaDSP
- Auto-on function & turn-on delay
- Ready for start-stop vehicles
- Realtime setup (via PC or APP\*)
- One-page graphical user interface (Windows<sup>®</sup> compatible)
- Channel-separated parametric equalizer (8x 10 bands)
- Channel related time alignment (0-8 ms / 0-272 cm / 0-107")
- Adjustable crossover (HPF / LPF / BPF from 20 Hz to 20 kHz)
- Selectable crossover slope (6 to 24 dB/oct)
- 3 filter characteristics (Butterworth/Bessel/Linkwitz-Riley)
- Selectable phase shift for (0° or 180°)
- Memory for 6 individual user presets
- Remote control socket for wired remote control  
GZDSP REM 4-8XII-S (available separately)
- Wireless music streaming with interface GZDSP BTS 4-8XII  
(\*available separately)

# GROUND ZERO GZCS DSPA-4.60ISO

## Product description

The GZCS DSPA-4.60ISO is a compact amplifier with an integrated digital signal processor improving the sound quality of the car's music system, significantly under certain conditions based on two 28-bit DSP chips in connection with four 24-bit analog-to-digital and eight digital-to-analog converters. This amplifier can be connected plug 'n' play using the supplied ISO harness or one of the vehicle-specific harnesses, available separately. In addition to the four amplified output channels, further amplifiers can be connected to the four pre-amplifier output channels.

## App control & music streaming

To use your mobile device controlling GZCS DSPA-4.60ISO and changing adjustments, please install the GROUND ZERO GZDSP 4-8XII 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.

## Table of contents

Package content / terms of warranty	2
General installation note	3
ISO harness	3
Connector pinout	4
PC software and USB connection	4
Graphical user interface (GUI)	5-6
Memory and Options dropdown menu	6
Error diagnosis	7
Safety instructions / Declarations	7
Technical specifications	8

## List of content

- 1 x GZCS DSPA-4.60ISO
- 1 x USB cable (A to B connector)
- 1x ISO plug 'n' play harness
- 1 x CD-ROM (software & drivers) compatible with  
Microsoft Windows® XP SP3, Vista, 7, 8, 8.1 and 10
- 1 x Owner's manual (German/English)
- 1 x Fastening kit

Available separately

- GZDSP BTS 4-8XII wireless music streaming  
and app control interface (USB dongle)
- GZDSP REM 4-8XII-S wired remote control

## 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.

# GROUND ZERO GZCS DSPA-4.60ISO

## General installation note

As a precaution, it is recommended to disconnect the vehicle's battery before mounting the amplifier. (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!)

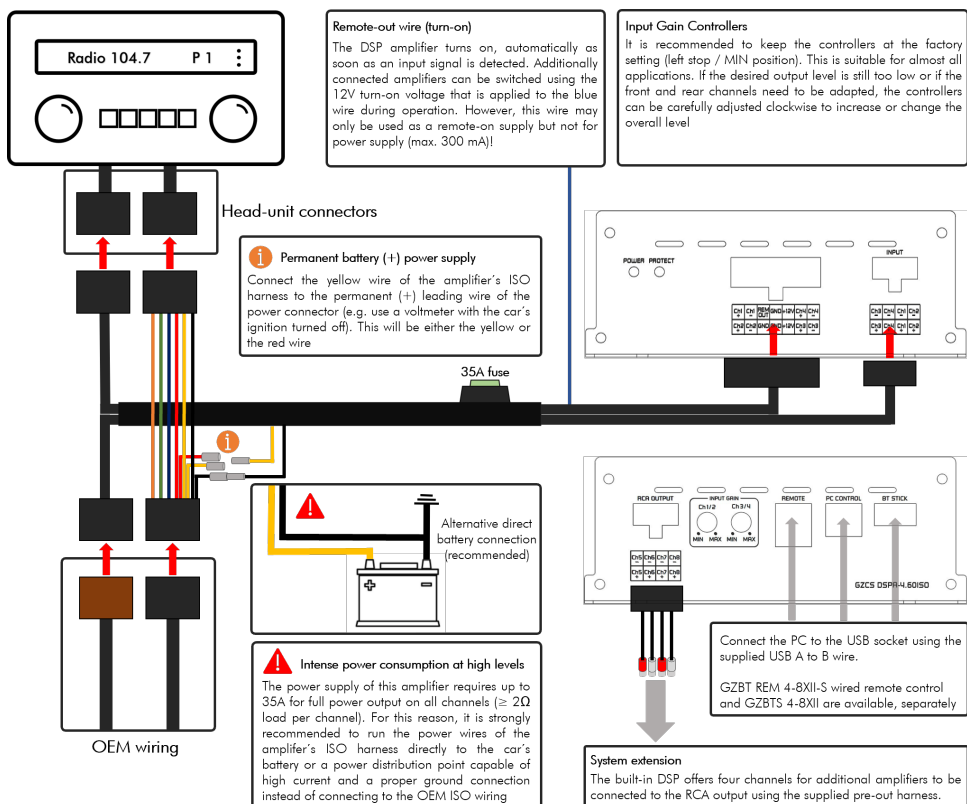
The power supply wire (+12 V) should be protected within max 20 cm / 8" by using a main fuse with a value matching the recommendation for your amplifier.

(Note: If there is more than one amplifier 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.

The amplifier contains a temperature protection circuit that turns the device off in case of overheating. After a certain cooling time, it will turn on automatically. To avoid heat build-up, sufficient air supply for cooling must be provided. Never cover the surface of the amplifier's 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. Some amplifiers offer a high-level input option, however if a pre-amplified output (RCA) is available (at the head unit), it is strongly recommended to make use of them.

## ISO harness installation



# GROUND ZERO GZCS DSPA-4.60ISO

## Connector pinout (14-pin & 8-pin)

1	violet/black	Channel 4 (-)	To connect the right rear speaker output (-)
2	green/black	Channel 3 (-)	To connect the left rear speaker output (-)
3	violet	Channel 4 (+)	To connect the right rear speaker output (+)
4	green	Channel 3 (+)	To connect the left rear speaker output (+)
5 / 6	yellow	+ 12 Volt Power supply	Connect the unit to the positive pole (+) of the vehicle's battery. Use adequate wiring gauge (not less than 4.0 mm <sup>2</sup> / 12 AWG) with an additional fuse (35 A) not further than 30 cm / 12" away from the terminal of the battery
7 / 8 / 10	black	Ground (GND)	Connect the unit to a suitable ground terminal. The ground wire (not less than 4.0 mm <sup>2</sup> / 12 AWG) should be as short as possible and be mounted to an unvarnished metal part
9	blue/white	Remote output	The DSP amplifier turns on automatically as soon as an input signal is detected. Additionally connected amplifiers can be switched on using the 12V switching voltage that is applied to the blue/white wire at operation. However, this wire may only be used as a remote wire but never for power supply (max. 300 mA)
11	white/black	Channel 1 (-)	To connect the left front speaker output (-)
12	grey/black	Channel 2 (-)	To connect the right front speaker output (-)
13	white	Channel 1 (+)	To connect the left front speaker output (+)
14	grey	Channel 2 (+)	To connect the right front speaker output (+)

1	grey/black	Channel 2 (-)	To connect the right front speaker input (-)
2	grey	Channel 2 (+)	To connect the right front speaker input (+)
3	white/black	Channel 1 (-)	To connect the left front speaker input (-)
4	white	Channel 1 (+)	To connect the left front speaker input (+)
5	violet/black	Channel 4 (-)	To connect the right rear speaker input (-)
6	violet	Channel 4 (+)	To connect the right rear speaker input (+)
7	green/black	Channel 3 (-)	To connect the left rear speaker input (-)
8	green	Channel 3 (+)	To connect the left rear speaker input (+)

## PC software installation

The PC software is compatible\* to Windows™ XP (SP3) operating systems (or later). One USB port and 25 MB free memory space is required for the installation. The files are located on the included CD-ROM. If there is no CD drive available, the software can be downloaded from the Ground Zero web page: [www.ground-zero-audio.com](http://www.ground-zero-audio.com)

\* compatible operating systems: Microsoft Windows® XP SP3 / Vista / 7 / 8 / 8.1 / 10  
 PC requirements: min. 1.5 GHz processor with 1 GB main memory (RAM) and graphic cards with a resolution of 1024x600 pixels or more

Run the **setup.exe** file. The installation wizard will guide through the installation process.

**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.

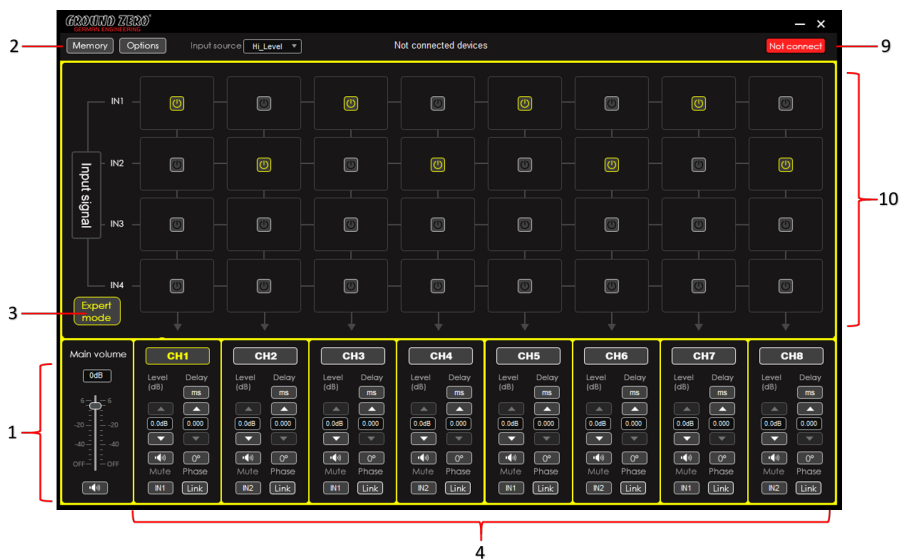
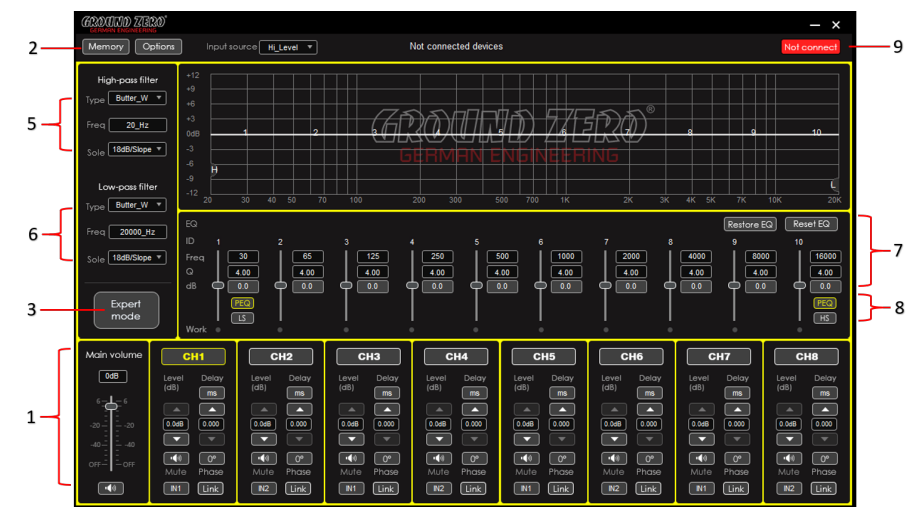
**Windows® user account control (UAC):** In case the PC operating system is set to restricted security clearance regarding software with unknown source or without digital signature a window will appear each time at the program is starting. Please confirm with >Yes< (language depends on your local setting)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

# GROUND ZERO GZCS DSPA-4.60ISO

## Graphical user interface (GUI)

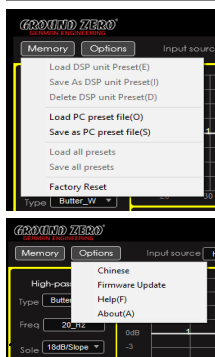


# GROUND ZERO GZCS DSPA-4.60ISO

## Graphical user interface (GUI)

1	<b>Main level adjustment</b>	Setting the main level (input sensitivity) in between the range of -60 up to +6 dB (the adjustment is equal to the remote control setting between 0 and 66) The MUTE button deactivates the output
2	<b>Memory / Options dropdown menu</b>	Tap the button to open the dropdown menu. Further information about the dropdown menu is to be found at the section below
3	<b>Expert mode</b>	Switch to the channel matrix. Further information about the dropdown menu is to be found at section 10
4	<b>Channel settings</b>	<b>Channel:</b> Select the required channel tapping the according button <b>Level:</b> Use the up/down buttons to adjust the output level of the channel <b>Mute:</b> Tap the button to deactivate the selected channel <b>Input:</b> The button is indicating the selected input channel. Tap repeatedly to select a channel <b>Delay:</b> The button indicates the selected unit of the time delay. Tap repeatedly to select a unit. Use the up/down buttons to adjust the time delay. The value can be entered to the display field directly, as well. <b>Phase:</b> Each tap inverts the phase (0°/180°) <b>Link:</b> Tap the button to link each pair of channels (e.g. 1 with 2, 3 with 4, etc.) to adjust both channels simultaneously
5	<b>High pass filter settings</b>	<b>Type:</b> Select the filter characteristic from the dropdown menu <b>Freq:</b> The required value can be entered to the display directly or selected using the scroll wheel of the PC mouse. The frequency chart shows the adjustments graphically (H=high pass) <b>Slope:</b> Select the crossover slope from the dropdown menu or deactivate the filter <b>Note:</b> The filter can be adjusted using the PC mouse at the frequency chart directly
6	<b>Low pass filter settings</b>	<b>Type:</b> Select the filter characteristic from the dropdown menu <b>Freq:</b> The required value can be entered to the display directly or selected using the scroll wheel of the PC mouse. The frequency chart shows the adjustments graphically (L=low pass) <b>Slope:</b> Select the crossover slope from the dropdown menu or deactivate the filter <b>Note:</b> The filter can be adjusted using the PC mouse at the frequency chart directly
7	<b>Equalizer settings</b>	As soon as the equalizer setting is changed from default, the following button appears <b>Bypass EQ:</b> Resets the adjustments temporarily to default setting. At bypass position: <b>Restore EQ:</b> Restores the previous setting of the equalizer <b>Reset EQ:</b> Resets the equalizer setting to default <b>Freq / Q / dB:</b> Enter the required value to the display field directly or select the value using the scroll wheel of the PC mouse. The frequency chart shows the adjustments graphically <b>Note:</b> Many settings can be changed at the frequency chart directly using the PC mouse
8	<b>PEQ or LS/HS selection</b>	Selecting one of the available modes for the first (1) and last (10) band, the default setting ( <b>PEQ</b> ) can be set to a variable shelf filter ( <b>LS/HS</b> ) instead with a slope of 6 or 12 dB/octave
9	<b>Connect / Disconnect button</b>	Tap the button to establish or separate the connection between the DSP unit and the PC via USB cable. The connection status is displayed at the top of the window
10	<b>Input signal</b>	Using the matrix, one or more input channels can be assigned for each output channel. If more than one channel is selected, the MIX-icon will be visible at the button

## Memory / Options dropdown menu



<b>Load DSP unit Preset</b>	Loading a setup from the DSP memory
<b>Save as DSP unit Preset</b>	Saving a setup to the DSP memory Preset can be named individually
<b>Delete DSP unit Preset</b>	Deleting a preset from the DSP memory
<b>Load PC preset file</b>	Loading a preset from the PC memory
<b>Save as PC preset file</b>	Saving a setup to the PC memory
<b>Load all presets</b>	Loading all presets (from the PC to the DSP)
<b>Save all presets</b>	Saving all presets (from the DSP to the PC)
<b>Factory Reset</b>	<b>Caution:</b> The unit will run through a number of routines. Some windows will appear and disappear. The process will last for about 15 seconds.
<b>Language</b>	Select the Chinese or English version of the software
<b>Update</b>	Opens a window to select the update file
<b>Help</b>	Opens the GROUND ZERO web page within the browser
<b>About</b>	Displays the software version

# GROUND ZERO GZCS DSPA-4.60ISO

## Error diagnosis

Error	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 high-pass 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
	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

## Safety instructions / Manufacturer's declaration

**Safety Instructions:** Do not expose the device to extreme temperatures, fire, high humidity or direct contact with liquids. Do not use the device if it has been damaged or exposed to liquids. 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 this product complies with the directive 2014/30/EU (EMC) 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 Declaration of Conformity (EU) is available at the following internet address: [www.ground-zero-audio.com](http://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.

# GROUND ZERO GZCS DSPA-4.60ISO

## Technical specifications

Model	GZCS DSPA-4.60ISO
Type	4-channel amplifier with built-in digital signal processor (DSP) Sampling frequency 48 kHz / resolution 56-bit
Frequency range	20 Hz – 20 kHz (-3 dB)
DSP chipset	2x Analog Devices SigmaDSP
Sensitivity	High-level input (via ISO harness) 1.5 to 13 V RMS
Input impedance	39 $\Omega$
Output voltage / channel	$\geq 2.5$ V max
Remote current	max. 300 mA
Switching voltage / speaker input	$> 1.3$ V
Recommended fuse value	35 A
Dimensions (heatsink/overall)	160/182 x 52 x 136 mm / 6,30/7,16 x 2,05 x 5,35" (l x h x w)
Software compatibility	Microsoft Windows™ XP SP3, Vista, 7, 8, 8.1, 10
Preset memory	6 presets (individually assignable)
Equalizer	8x parametric 10 band EQ (20 Hz – 20 kHz) with adjustable Q
Time delay	0 – 8 ms / 0 – 272 cm / 0 – 107"
Crossover	6 / 12 / 18 / 24 dB/oct. slope with selectable filter characteristic
Phase correction	0° / 180°
Available accessories (optionally)	Interface for wireless music streaming GZDSP BTS 4-8XII Wired remote control GZDSP REM 4-8XII-S

Output power / channel @ 4 ohms	4x 45 Watts RMS @ 4 ohms ( $\leq 1\%$ THD+N)
Output power / channel @ 2 ohms	4x 60 Watts RMS @ 2 ohms ( $\leq 1\%$ THD+N)
Output power (max)	4x 70 Watts max. @ 2 ohms ( $\leq 10\%$ THD+N)

\*based on the CEA-2006-A standard



GROUND ZERO products are engineered in Germany  
GROUND ZERO – international sponsor



Ground Zero GmbH

Erlenweg 25, 85658 Egming, Germany  
Tel. +49 (0)8095/873 830 Fax -8310  
[www.ground-zero-audio.com](http://www.ground-zero-audio.com)

