

## Zapco DSP-Z8-IV-AT

# Zapco DSP-Z8-IV-AT 8-Channel Digital Sound Processor User Manual

## INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your Zapco DSP-Z8-IV-AT 8-Channel Digital Sound Processor. Please read this manual thoroughly before using the device to ensure proper functionality and to maximize its performance.

## KEY FEATURES

- **DSP Processor:** Cirrus Logic CS47048
- **Power:** 150 MHz/32 bit/192 KHz
- **Channels:** 8-Channels IN, 8-Channels OUT
- **ADC:** Cirrus Logic CS47048 32 bit/192 KHz, Dynamic Range/THD: 108 dB/-98 dB
- **DAC:** Cirrus Logic CS8422 24 bit/192 KHz, Dynamic Range/THD: 140 dB/-120 dB
- **Input Sensitivity (Low Level/Pre):** 1-5 VRMS
- **Input Sensitivity (High Level/Speaker In):** 2-20 V
- **Digital Inputs:** Optical and Coaxial, 24 bit-192 KHz
- **Frequency Response (-3dB):** 10 Hz - 22.5 KHz
- **Signal-to-Noise Ratio (Digital Input):** 110 dBA
- **Signal-to-Noise Ratio (Analog Input):** 106 dBA
- **Total Harmonic Distortion + Noise (Digital Input):** 0.002%
- **Total Harmonic Distortion + Noise (Analog Input):** 0.005%
- **Crosstalk at 1 KHz:** 90 dB
- **Front/Rear EQ:** 1-6 channels, Graphic & Parametric, 31 poles
- **Effect EQ:** 7-8 channels, Graphic & Parametric, 11 poles
- **Mute/Solo:** Yes, per channel

- **Time Alignment (Range/Steps):** 0-15 ms / 0.02 ms
- **Maximum Delay (Cm/Steps):** 515 cm / 0.68 cm
- **Polarity:** 0/180°
- **Remote Control:** Included
- **HD-BT Streaming:** With optional HD-BT II-D module
- **PC/Display Connection:** USB/6-pin Mini DIN
- **Dimensions (W x L x H):** 213 mm x 113 mm x 50 mm (8.4 x 4.4 x 2 inches)

## SETUP AND CONNECTIONS

This section details the physical connections required for the Zapco DSP-Z8-IV-AT. Ensure all connections are secure before powering on the device.



Figure 1: Rear panel view of the Zapco DSP-Z8-IV-AT, illustrating the input section. This includes the High Level Input terminal block, individual Input Gain potentiometers with Clip indicators for channels 1-8, Coaxial and Optical digital input ports, and eight RCA analog input channels (CH1-CH8).

### Input Connections

1. **High Level Input:** Connect your speaker-level outputs from your head unit or amplifier to the 16-pin terminal block labeled "HI LEVEL INPUT". This allows the DSP to accept signals directly from speaker wires.
2. **Analog RCA Inputs (CH1-CH8):** For low-level signals, connect your source unit's RCA outputs to the corresponding RCA input jacks (CH1 through CH8).
3. **Digital Inputs:**
  - **Coaxial:** Connect a digital audio source using a coaxial cable to the "COAXIAL" RCA port.
  - **Optical:** Connect a digital audio source using an optical TOSLINK cable to the "OPTICAL" port.
4. **Input Gain:** Adjust the "INPUT GAIN" potentiometers for each channel pair (CH1/2, CH3/4, CH5/6, CH7/8) to match the input signal level. The red "CLIP" indicators will illuminate if the input signal is too high, indicating potential distortion. Adjust the gain until the clip light flashes only on the loudest peaks, or ideally, not at all.



Figure 2: Rear panel view of the Zapco DSP-Z8-IV-AT, detailing the output and control section. This includes eight RCA analog output channels (CH1-CH8), the Auto Tune Mic input, Remote control port, PC USB connection, Power input terminal, and an Auto On/Off switch.

## Output and Control Connections

1. **Analog RCA Outputs (CH1-CH8):** Connect these outputs to your external amplifiers. Each channel can be independently configured and processed by the DSP.
2. **Auto Tune Mic:** Connect the optional auto-tune microphone to this 3.5mm jack for automated system calibration.
3. **Remote:** Connect the included remote control to this port for convenient adjustments.
4. **PC USB:** Connect a computer via a USB cable to this port for detailed configuration and tuning using the Zapco DSP software.
5. **Power:** Connect the power supply according to the wiring diagram provided in the full installation guide (not included in this manual). Ensure correct polarity for +12V, GND, and REM IN/OUT connections.
6. **Auto On/Off:** Use this switch to enable or disable the automatic power-on feature, typically triggered by a signal on the high-level inputs or a remote turn-on signal.

## OPERATION

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The Zapco DSP-Z8-IV-AT is controlled primarily through its dedicated PC software, accessible via the USB connection, or through the optional remote control. The device processes audio signals digitally, allowing for precise adjustments to equalization, crossover points, time alignment, and more.

### Basic Operation

- **Power On/Off:** The unit powers on automatically when a remote turn-on signal is detected or via the Auto On/Off switch. Ensure your source unit is on.
- **Source Selection:** Input sources (analog RCA, high-level, coaxial, optical) are typically selected and managed within the DSP software.
- **Volume Control:** Master volume and individual channel levels are adjusted through the software or remote control.

### Advanced Configuration (via PC Software)

Connect the DSP to a computer using the USB port and launch the Zapco DSP software. This software provides access to the full suite of audio processing features:

- **Equalization:** Adjust graphic and parametric EQs for individual channels or groups.
- **Crossovers:** Set high-pass, low-pass, and band-pass filters for each output channel.
- **Time Alignment:** Precisely adjust the delay for each channel to ensure optimal sound staging.
- **Polarity:** Invert the phase (0/180°) of individual channels.
- **Mute/Solo:** Mute or solo individual channels for tuning purposes.
- **Autotune Function:** Utilize the autotune microphone (if connected) with the software for automated system calibration.
- **Bluetooth Streaming:** If the optional HD-BT II-D module is installed, enable and manage Bluetooth audio streaming through the software.

## MAINTENANCE

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Proper maintenance ensures the longevity and optimal performance of your Zapco DSP-Z8-IV-AT.

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the unit. Avoid using harsh chemicals, solvents, or abrasive cleaners.
- **Ventilation:** Ensure the unit has adequate ventilation to prevent overheating. Do not block any ventilation openings.
- **Connections:** Periodically check all input and output connections to ensure they are secure and free from corrosion.
- **Environment:** Avoid exposing the unit to extreme temperatures, humidity, or direct sunlight.

## TROUBLESHOOTING

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If you encounter issues with your Zapco DSP-Z8-IV-AT, refer to the following common troubleshooting steps:

- **No Power:**
  - Check all power connections (+12V, GND, REM IN).
  - Ensure the remote turn-on signal is present.
  - Verify the vehicle's battery voltage.
- **No Audio Output:**
  - Confirm all input and output RCA cables are securely connected.
  - Check the source unit for proper output.
  - Verify that the DSP software settings have not muted any channels or set crossover points incorrectly.
  - Ensure the input gain is set correctly and the "CLIP" indicators are not constantly lit.
- **Distorted Audio:**
  - Reduce the input gain if the "CLIP" indicators are frequently active.
  - Check for proper grounding of the unit and connected components.
  - Inspect cables for damage or interference.
- **Software Connection Issues:**
  - Ensure the USB cable is properly connected to both the DSP and the computer.
  - Verify that the correct USB drivers are installed on your computer.
  - Try a different USB port or cable.

For further assistance, please contact Zapco customer support.

## SPECIFICATIONS

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Feature	Detail
DSP Processor	Cirrus Logic CS47048
Processor Power	150 MHz / 32 bit / 192 KHz
Channels	8 Inputs, 8 Outputs
ADC	Cirrus Logic CS47048, 32 bit / 192 KHz
ADC Dynamic Range/THD	108 dB / -98 dB

DAC	Cirrus Logic CS8422, 24 bit / 192 KHz
DAC Dynamic Range/THD	140 dB / -120 dB
Low Level (Pre) Sensitivity	1-5 VRMS
High Level (Spk In) Sensitivity	2-20 V
Digital Inputs	Optical, Coaxial (24 bit / 192 KHz)
Frequency Response (-3dB)	10 Hz - 22.5 KHz
S/N Ratio (Digital Input)	110 dBA
S/N Ratio (Analog Input)	106 dBA
THD+N (Digital Input)	0.002 %
THD+N (Analog Input)	0.005 %
Crosstalk at 1 KHz	90 dB
F/R EQ	1-6 channels, Graphic & Parametric, 31 poles
Effect EQ	7-8 channels, Graphic & Parametric, 11 poles
Time Alignment (Range/Steps)	0-15 ms / 0.02 ms
Max Delay (Cm/Steps)	515 cm / 0.68 cm
Polarity	0/180°
PC/Display Connection	USB / 6-pin Mini DIN
Unit Dimensions (W x L x H)	213 mm x 113 mm x 50 mm (8.4 x 4.4 x 2 inches)
Item Weight	5 pounds
ASIN	B0DPLMWQ9C
Date First Available	December 4, 2024

## WARRANTY INFORMATION

The Zapco DSP-Z8-IV-AT comes with a **1-Year Warranty** from the date of purchase. This warranty covers defects in materials and workmanship under normal use. Please retain your proof of purchase for warranty claims. The warranty does not cover damage caused by improper installation, accident, misuse, abuse, negligence, or unauthorized modification.

For detailed warranty terms and conditions, please refer to the documentation included with your product or visit the official Zapco website.

## CUSTOMER SUPPORT

If you require technical assistance, have questions about your Zapco DSP-Z8-IV-AT, or need to initiate a warranty claim, please contact Zapco customer support through their official website or authorized dealer. When contacting support, please have your product model number (DSP-Z8-IV-AT) and proof of purchase readily available.

For the latest software updates and additional resources, please visit the [Zapco Store on Amazon](#) or the official Zapco website.