

9301B

Operating Manual

Genelec 9301B

Multichannel AES/EBU Interface

GENELEC®



Genelec 9301B Multichannel AES/EBU Interface



Introduction

Congratulations and thank you for purchasing the Genelec 9301B multichannel AES/EBU interface.

This manual addresses the setting up and use of the Genelec 9301B multichannel AES/EBU interface intended for 7300 series subwoofers.

The 7300 series smart active monitoring (SAM) subwoofers have one AES/EBU input. The 9301B expands the digital audio connectivity to 16 audio channels, for example for 9.1.6 channels, when the low frequency effects (LFE) channel is also used.

The energy-saving Intelligent Signal Sensing (ISS) function puts the 9301B automatically into a power-save state when no input signal is present. The waiting time until entering the ISS power save can be configured using the GLM software. In the power-save state the 9301B consumes less than one watt of power. Upon sensing an AES/EBU input signal the 9301B wakes up to normal operating mode.

Each 9301B is supplied with

- a mains cable,
- one 5 m GLM network cable
- and an operating manual.

Installation

Before connecting up signal cables, we recommend the mains power is switched off in all devices.

Connections

The mains input supports a wide voltage range (100-240 VAC, 50-60 Hz). If the mains power is provided with a generator, inverter or a low-quality UPS device, we recommend filtering of the mains power voltage harmonics.

The digital audio input connections for AES/EBU digital audio use two DB25 connectors. If LFE signal is in use, the channel and subframe carrying the LFE channel is assigned in the GLM software (See Figure 1 overleaf).

The digital audio output for the monitors uses one DB25. This outputs 16 channels of AES/EBU format audio. The output signals are bit-to-bit copies of the input digital audio signals. Because of this, the outputs retain the original signal quality without any modification. When it is used, the LFE signal is output in the same channel and subframe in the digital output DB25 connector. This means that the LFE channel content is also available for devices connected to this output.

The digital audio output for the subwoofer uses one male XLR. This is connected to using an AES/EBU cable and carries in one AES/EBU subframe the sum of all the main channel inputs and the LFE channel (if used) in the second AES/EBU subframe. Genelec Loudspeaker Manager (GLM) software manages the 9301B to work with 7300 series subwoofers.

The AES/EBU output on the 7300 series subwoofers enables daisy-chaining onwards to more SAM subwoofers to increase the low frequency acoustic output capacity. When more than one subwoofer is used this way, GLM software manages aligning this complete system of subwoofers with the monitors.

Two GLM Network connectors are available for management using the Genelec Loudspeaker Manager (GLM) software.

Functionality

All settings to 9301B are done using the GLM management network and GLM software.

9301B provides bit-to-bit copy of the input AES audio signals to AES outputs, and therefore the output has the same sample rate and format as the input audio data. Each AES input carries two channels of audio.

The subwoofer link out is a scaled sum of all the input audio channels and the LFE channel. Before summing all the input channels are sample rate converted to the same sample rate at the summation point. The LFE channel is assigned by GLM software and handled separately.

Input cabling

The input cabling for the digital audio from the audio source, such as a DAW, is done using two standard DB25 to DB25 Tascam-format digital audio pin-out cables, for example Avid DB25 - XLR M+F AES/EBU 4. Using this method allows the AES inputs to the DAW on

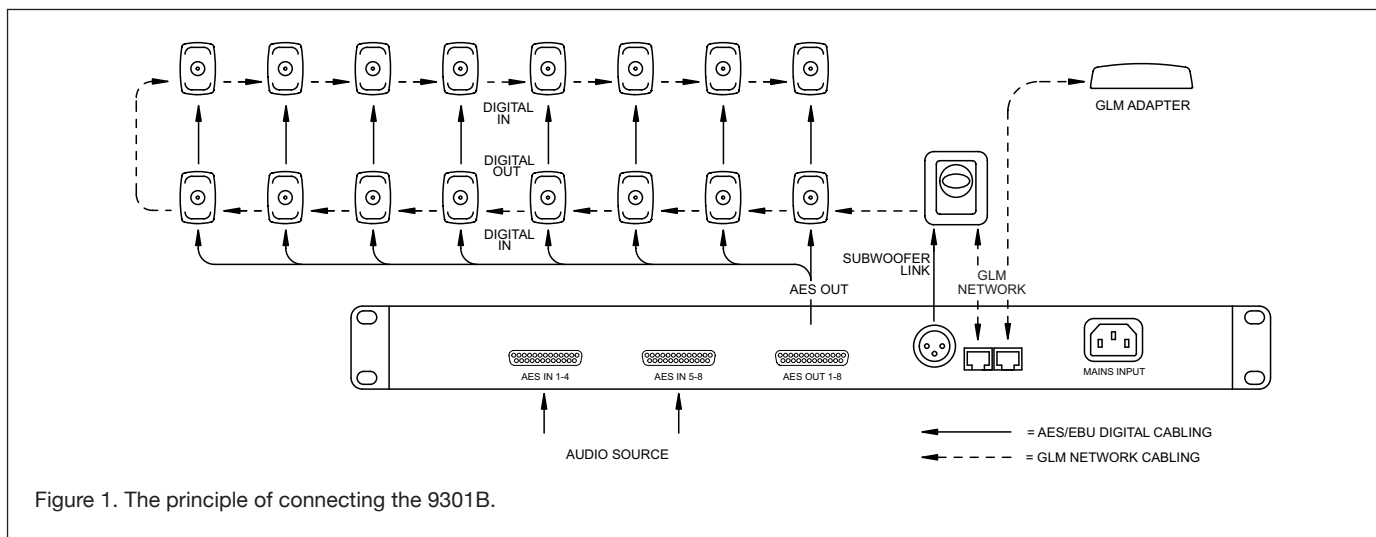


Figure 1. The principle of connecting the 9301B.

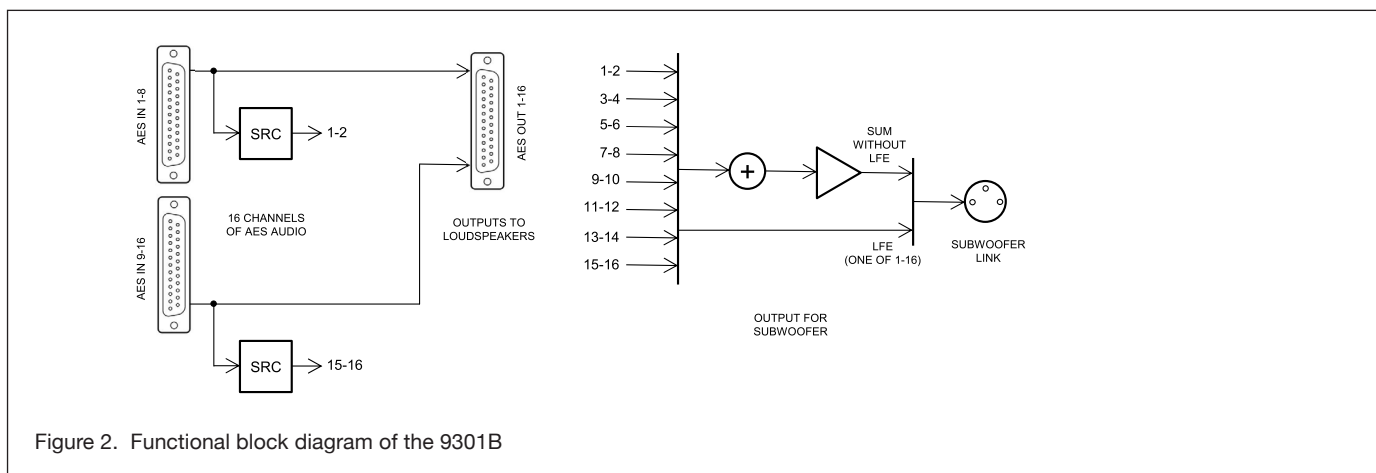


Figure 2. Functional block diagram of the 9301B

the DB25 connectors to be used.

Tascam-format DB25 is carrying four input and four output cables of AES/EBU. In some cases, the DAW needs to input digital audio on the same DB25. In this case, two fan-out cables with XLR connectors on one end and a DB25 on the other enable also the inputs to the DAW to be connected.

Output cabling

The audio output to monitors uses a DB25 to 8 x XLR male fan-out cable with the Tascam analogue pin-out, for example an Avid DB25-XLRM Digisnake 4. AES/EBU XLR-to-XLR cables are needed to extend the signal onwards to the the monitors.

Connector pin-outs

The input connector pin-out of the two DB25 audio input connectors follow the standard Tascam digital audio pin-out shown in Figure 3.

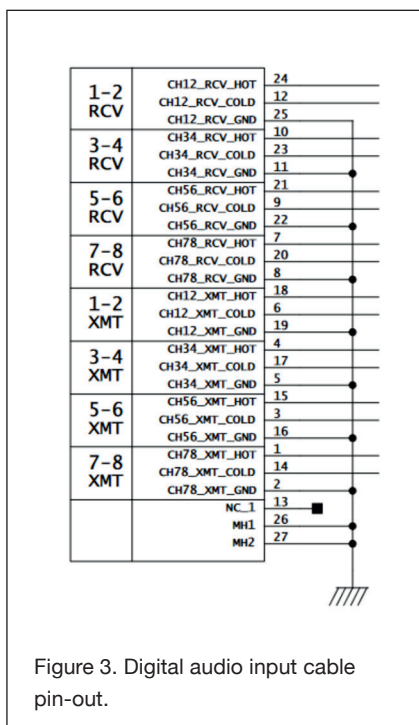


Figure 3. Digital audio input cable pin-out.

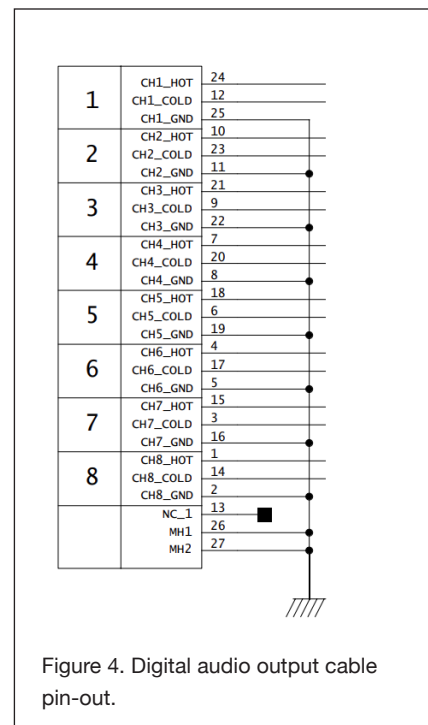


Figure 4. Digital audio output cable pin-out.

The output connector pin-out of the one DB25 is shown in Figure 4. This pin-out is compatible with the Tascam analogue output pin-out. However, we recommend high quality AES/EBU digital audio cable to be used for the output.

Controls And Adjustments

The 9301B front panel features the mains power switch with power on light and active connection indicator lights for all AES/EBU inputs, each carrying two channels of audio.

The 9301B is completely set up using the GLM software. See section 'Use With GLM Management Network' for details.

When the power switch light is flashing continuously, the 9301B settings are being edited with the GLM software. When the input cable lights are lit a valid AES/EBU input has been detected. If the input cable light is off, there is a problem with the AES/EBU data or there is no valid AES/EBU input. See Table 1 for a list of light functions.

Use With GLM™ Management Network

The 9301B is set up using the Genelec Loudspeaker Manager GLM™ software using the Genelec monitor management network. More information about the GLM™ is available in the SAM System Operating Manual.

System Configuration

The setup is easy and consists of the following steps:

- Connect the digital audio inputs.
- Connect the digital audio output fan-out cable with XLR-to-XLR cables to each monitor. Use cables intended for carrying AES/EBU digital audio. Genelec discourages the use of standard analogue microphone cables as this may reduce system performance.
- Connect the SUBWOOFER LINK output to the DIGITAL IN connector in a subwoofer.
- Connect CAT5 (RJ45) cables between the 9301B, every monitor and subwoofer. Finally connect to the GLM Adapter device (see Figure 1). The order of connecting devices is not significant. Connect the GLM Adapter device to computer USB connector.
- Install and run GLM software.

Indicator	Colour, indication	Meaning
Power switch	Solid green	Power on, normal operation
	Blinking green	GLM is adjusting 9301B
	Green blink every 10 s	9301B in power save mode
	No light	No power, power off
Input signal indicator	Solid green	Valid digital audio is detected and received
	No light	Valid input is not detected

Table 1. Front panel indicator light functions

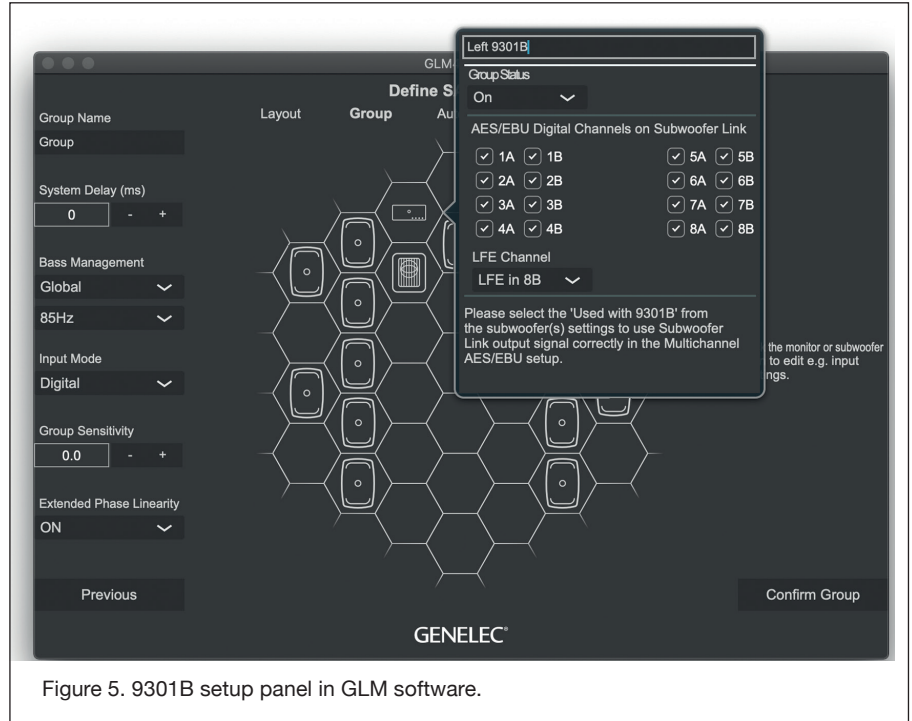


Figure 5. 9301B setup panel in GLM software.

All your devices appear in the monitor stack in the GLM software. When you keep devices in the GLM monitor stack to the honeycomb grid, you will eventually find the 9301B in the product stack, drag and drop it to an area on the Layout grid adjacent to where the subwoofer will be placed (see Figure 5).

In case you have multiple 9301B units, observe that when you click with the mouse on a 9301B icon, the front panel light on the selected 9301B starts flashing. This can help in identification.

In GLM software settings of the 9301B:

- Set the 'Input Signal Type' of the monitor Group. If the 'Input Signal Type' of the

monitor Group is set to AES/EBU Digital, activate 9301B devices in that group. At the same time, 'Digital Input Used With' in all 7300 subwoofers turn to '9301B' multichannel mode.

- Select the active AES/EBU cables.
- If you use the LFE signal, select the AES cable and subframe carrying the LFE.
- Select the '+10 dB' setting when the LFE signal must be boosted in the subwoofer by 10 dB relative to the main audio channels.

If all 9301B devices are set to 'Group Off' state, then the 'Digital Input Used With' in all 7300 series subwoofers switches to 'Stereo' mode to play normal AES/EBU digital stereo digital audio input.

Acoustic Calibration

To acoustically calibrate your setup, place the Genelec measurement microphone on a microphone stand and put the microphone at the listening location pointing upwards with the microphone top at the listener's ear height. Then, follow instructions in the GLM software to calibrate your monitors and subwoofers.

Genelec recommends using the GLM software and having the GLM network connected.

When you do not wish to have the computer connected after calibration, you have the option to save the acoustic calibration into monitors, subwoofers, and 9301B units. This enables the calibration with the GLM network disconnected. The settings can be stored into the 9301B using GLM software menu item 'Store | Store the Current Group Settings...'. Note that the monitors and subwoofers have a switch selecting the use of the stored settings, and this switch must be set ON to operate the system without computer and GLM network. Removing the GLM network cable and powering down and up the 9301B and monitors enables the stored settings.

Returning to factory settings

The room settings stored in a 9301B can be erased by keeping the power switch depressed for more than 10 seconds. This returns the 9301B to factory settings. After this, GLM software should be used to reconfigure the system.

Operating Environment

The 9301B is designed for indoor use only. The permissible ambient temperature is 15-35 degrees Celsius (50-95°F) and relative humidity 20% to 80% (noncondensing). When the product has been stored or transported in cool environment and is taken into a warm room, wait 30-60 minutes before opening packing to prevent condensation. Sufficient cooling must be ensured. No minimum clearance is needed.

Maintenance

There are no user serviceable parts inside the 9301B. Maintenance or repair must only be done by Genelec-certified service personnel.

Guarantee

Genelec guarantees the 9301B for five years against manufacturing faults or defects altering performance. Refer to the reseller for full sales and guarantee terms.

Safety Considerations

The 9301B has been designed in accordance with international safety standards. To ensure safe operation, the following warnings and precautions must be observed:

- Servicing and adjustment must only be performed by Genelec certified service personnel.
- The enclosure must not be opened.
- Do not use this product with a mains cable or mains outlet having no protective earth (potential equalizing) connection as doing so may result in personal injury.
- To prevent fire or electric shock, do not expose the unit to water or moisture.
- Do not place objects filled with liquid, such as vases, on the 9301B or near it.
- The 9301B is not completely disconnected from the mains power unless the mains cable is removed from the device or the mains outlet.

Compliance to FCC Rules

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this

equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- Modifications not expressly approved by the manufacturer can void the user's authority to operate the equipment under FCC rules.

SPECIFICATIONS	
Weight	2 kg (4.4 lbs)
Dimensions: Height Width Depth	44 mm (1 11/16 in) 466 mm (18 3/8 in) 211 mm (8 5/16 in)
Mains voltage	100...240 VAC (50...60 Hz)
Mains tolerance	+/- 10 %
Power consumption ISS power saving mode Idle Full operation	1 W 1 W 2 W
Digital audio input connectors	4 XLR female
Digital audio input impedance	110 Ohm
Digital audio output connectors	5 XLR male
Digital audio format	AES/EBU (AES3-2003) Can also be used with S/P-DIF and AES3id signals when impedance converters are used
Digital audio word length	Minimum 16 bits, maximum 24 bits. Fixed point, AES/EBU format
Digital audio sample rate	Minimum 32 kHz, maximum 192 kHz. Supports single-wire AES/EBU audio, does not support dual wire AES/EBU audio

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