

# GENELEC®

**8351B**  
Smart Active Monitor

Operating Manual



## Introduction

Thank you for choosing Genelec! Fulfilling your dreams by offering the most truthful sound reproduction has been the source of our enthusiasm since 1978. Already over one million Genelec monitors are in use around the world - welcome to our story!

Genelec monitors are designed to last long our spare part support extends far into future. They are hand-built in Iisalmi, Finland, using certified sustainable methods. They are individually tested and calibrated for the highest performance. They have also all been designed for low power consumption in use and in standby.

Please register your monitor at

<http://www.community.genelec.com/>

and receive an extended five-year warranty for spare parts. For more information about our service and technical support, please visit

<http://www.genelec.com/customer-service>.

## System Characteristics

Each 8351B is supplied with a mains power cable, five-meter GLM network cable and this operating manual. The Genelec 8351B is suitable for all professional monitoring applications calling for very high precision and reliability. The 8351B combines many remarkable Genelec technologies to provide the benefits of a point source and controlled directivity over an extraordinarily wide audio bandwidth. The 8351B may be oriented horizontally or vertically. Listening distances can vary from less than one meter to more than 4 meters, depending on the room size and maximum sound level requirements.

### Genelec Loudspeaker Manager™ (GLM™) Software and GLM User Kit

The GLM software tailor-fits the 8351B to your room. It is downloadable free of charge at [www.genelec.com/glm](http://www.genelec.com/glm). Check regularly for updates and new features, and consider using the cloud-based GLM services for the most up-to-date methods. A GLM User Kit, comprising a USB adapter device and measurement microphone, enables precise acoustic calibration and operation of the GLM loudspeaker management network.

### Minimum Diffraction Coaxial (MDC™)

The minimum diffraction coaxial transducer MDC design implements a coaxial driver with unparalleled acoustic directivity control. A powerful midrange transducer surrounds a high output tweeter transducer, enabling a high resolution response extending to ultrasonic frequencies. The MDC minimizes acoustic diffraction, produces a flat frequency response on the acoustical axis, and a neutral off-axis sound character.

### Directivity Control Waveguide (DCW™) and Acoustically Concealed Woofers (ACW™)

The 8351B has an exceptionally large Directivity Control Waveguide extending over the whole enclosure front. The midrange transducer cone forms a part of this DCW. Two woofers radiate low frequencies through openings at the enclosure edges and sum acoustically placing bass on the same acoustical axis with the coaxial transducer. This unique design enables directivity control of all audio down to low bass frequencies.

## Smart Active Monitoring (SAM™)

Smart Active Monitors automatically tune several parametric filters in themselves to precisely compensate for room colorations using Genelec Loudspeaker Manager (GLM) software. This enables SAM monitors to sound neutral and achieve precise stereo imaging in all acoustical environments, improving accuracy of monitoring.

## Audio Inputs

The 8351B inputs support balanced analog line-level audio and AES/EBU digital audio. At maximum sensitivity, -6 dBu analog and -30 dBFS digital audio signals produce 100 dB SPL level at one meter distance in free space.

The analog input is selected when a digital signal is not present. The digital input is selected automatically when a digital signal is present even when the signal is silent. The GLM software can select either input.

When the digital audio source can adjust level, it is advantageous to lower the output level of the 8351B using the rear panel controls or the GLM Master Fader. This enables a higher output level at the source with more resolution while taking full advantage of the impressively low self-generated noise of the 8351B.

An AES/EBU digital audio signal carries two channels in one cable. A channel is selected using the DIP switches or GLM software. The DIGITAL OUT carries an unaltered copy of the input, enabling daisy-chaining of up to four monitors.

## Power Management

The mains power input supports any mains voltage (100-240 VAC, 50-60 Hz) and the 8351B always delivers full power even when the mains voltage fluctuates. When powered with a generator, inverter or UPS device, we recommend filtering the mains power to remove harmonics.

The energy saving function Intelligent Signal Sensing (ISS™) puts the monitor to power reduced sleep mode when no signal is present. Upon sensing an input, the monitor wakes up. The function is activated using GLM software or the ISS dip switch on the monitor. With GLM the time before entering the sleep mode can be adjusted, the ISS dip switch activates a fixed 60 minute time.

## Setup Using The GLM™ Control

Genelec recommends setting up the 8351B and other SAM monitors using GLM. This is described in the GLM System Operating Manual. Although it can be used without GLM and the network, the 8351B reaches its full potential with this method. GLM software runs on Mac or Windows computers. GLM also works as a monitor controller, for switching between sets of loudspeakers, soloing, muting, invoking calibrated levels, etc.

Setup with the GLM User Kit consists of the following steps:

1. Connect a CAT5 (RJ45) cable to each monitor (and subwoofer) and finally to the GLM Adapter device (see Figure 1).
2. Connect the GLM Adapter device to computer USB connector.
3. Using a microphone stand, place the Genelec measurement microphone (in GLM Kit) at the listening location. Point microphone upwards. Place the microphone top at the ear

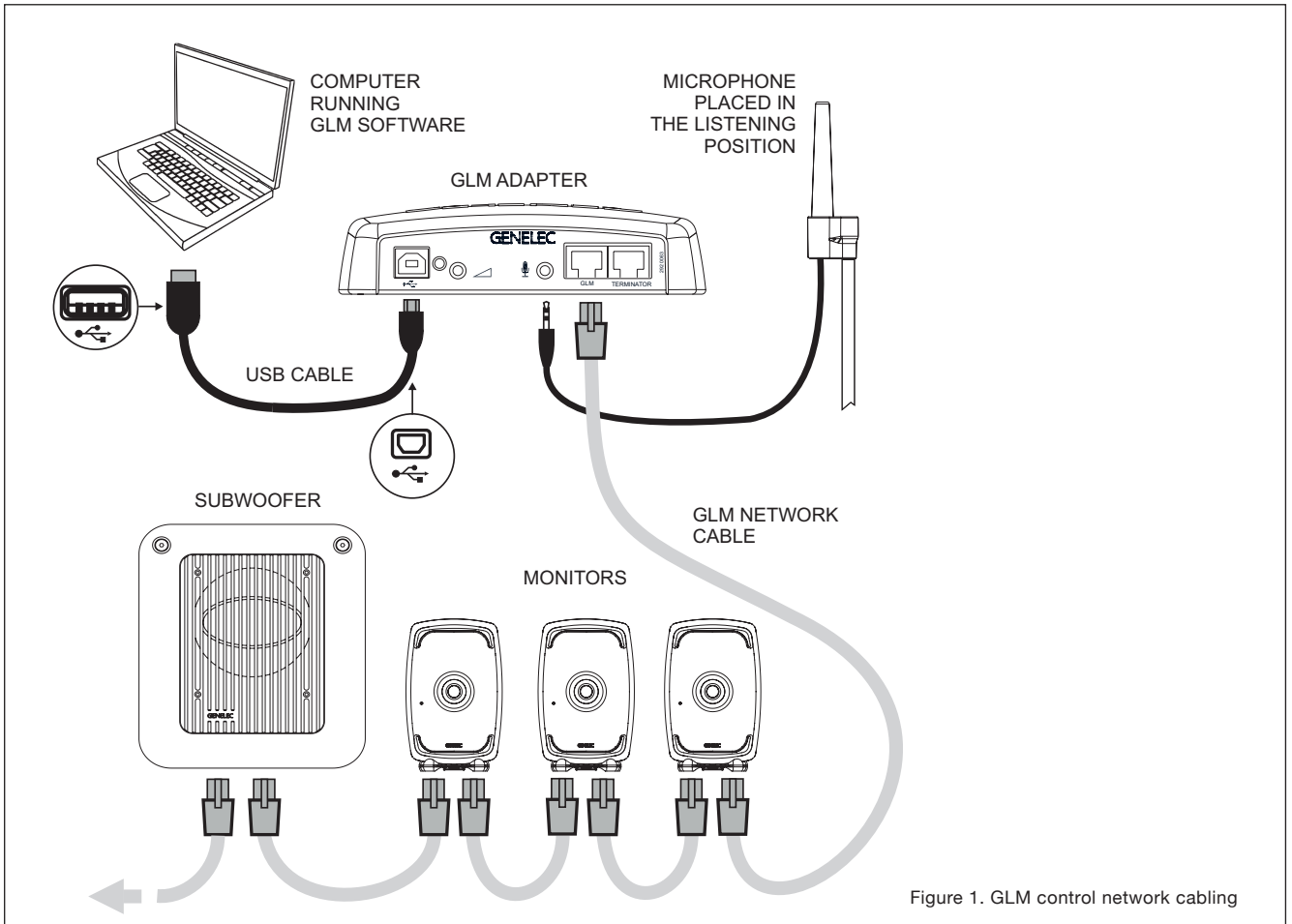


Figure 1. GLM control network cabling

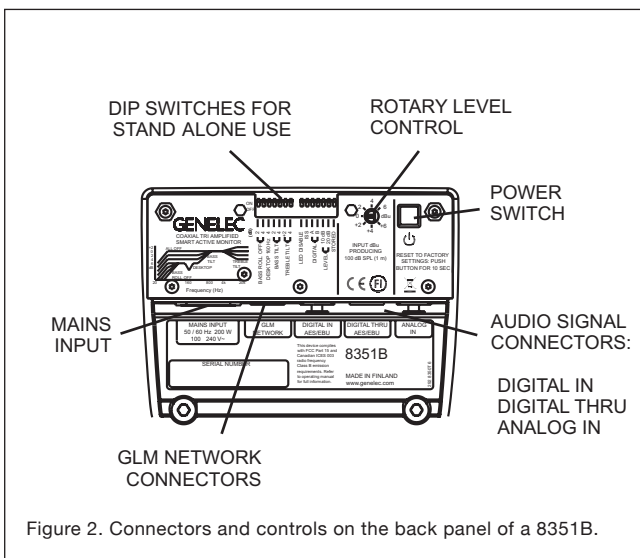


Figure 2. Connectors and controls on the back panel of a 8351B.



Figure 3. Connector panel detail.

The CONTROL NETWORK RJ-45 connectors are not Ethernet LAN compatible. Do not connect to Ethernet LAN.

### Stand-alone Mode: Setup Without Using The GLM

You can adjust the 8351B without GLM using the controls on the back of the monitor. These stand-alone settings are limited and provide some fundamental compensations for room acoustic effects, input selections and input sensitivity. To use, disconnect the GLM management network and set the DIP switch “Stored” to OFF position.

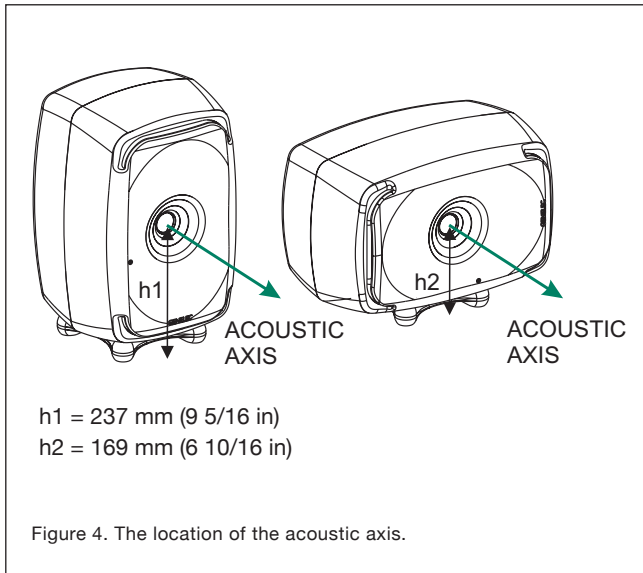
### Stand-Alone Functionality

#### Bass Roll-Off Control

The Bass Roll-Off setting reduces bass level for spaces with strong low frequency reverberation. It reduces output near the

- height for typical listener.
4. Connect the microphone to the microphone input in the GLM Adapter device.
  5. Download and install the GLM software at the Genelec web site ([www.genelec.com](http://www.genelec.com)). Follow instructions in the software to measure and set up your monitors.
  6. If you plan not to use a computer for managing monitors, store settings in monitors with GLM software (menu item “Store | Store the Current Group Settings...”).

Enable stored settings by turning the DIP switch “Stored” on the monitor to ON after the network has been disconnected.



low cut-off. Attenuation can be selected by combining settings on one or more switches.

### Desktop reflection compensation

The desktop control reduces frequencies near 160 Hz by 4 dB. This compensates the boost when the monitor is placed on a meter bridge or table.

### Bass Tilt Control

The Bass Tilt control offers three attenuation levels for the response below 800 Hz. This control is used when monitors are placed near wall or room corner. Attenuation can be selected by combining settings on one or more switches.

### Treble Tilt Control

The Treble Tilt control adjusts the high frequencies above 5 kHz. It corrects bright or dull sound and compensates high frequency loss when a monitor is placed behind a screen.

### LED Disable

This switch turns off the front panel LED light.

### ISS

This switch activates and deactivates the ISS power saving function when the 8351B is used in a Stand Alone mode. The default time for going to power save mode is 60 minutes, but this can be adjusted in the GLM software.

### Digital

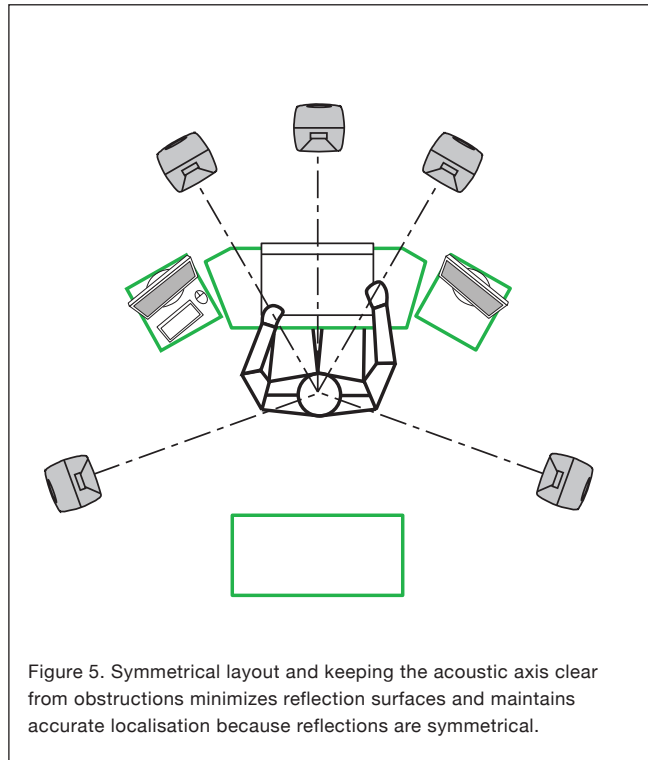
The Digital switch selects the digital audio signals A and B carried in one AES/EBU cable. Turning on both switches reproduces the sum of the signals. When both are selected, a 6 dB attenuation is applied to avoid an overload.

### Level

The Level switches reduce the monitor output in 10 dB steps (-10 dB, -20 dB and both switches -30 dB). The switches combine with the rotary level adjustment. The total adjustment range is 42 dB. GLM software enables wider level adjustment.

### Stored

The Stored switch selects between the controls on the monitor back panel (OFF position) or applying the settings stored in the monitor using the GLM software (ON position).



Monitor Mounting Position	Treble Tilt	Bass Tilt	Bass Roll-Off	Desktop
Flat anechoic response	None	None	None	None
Free standing in a damped room	None	-2 dB	None	None
Free standing in a reverberant room	None	-4 dB	None	None
Near field on a reflective surface	None	-2 dB	None	-4 dB
In a corner	None	-4 dB	-4 dB	None

Table 1. Suggested Tone Control settings for some typical monitor placement positions.

## Operating Environment

This product is designed for indoor use only. The permissible ambient temperature is 15-35 degrees Celsius (50-95°F) and relative humidity 20% to 80% (non-condensing). To prevent condensation after the product has been in a cool environment, wait at least one hour before opening the packaging and connecting the mains power.

Cooling of the 8351B must be ensured. The minimum clearance behind, above and on both sides of the monitor is 50 mm (2 in). When 8351B is installed in a recess, the recess space must be ventilated sufficiently to remove the heat.

## Mounting and Placing Monitors

### Mounting Options

The Isolation Positioner/Decoupler™ (Iso-Pod™) stand allows tilting of the monitor and isolates vibrations. As delivered from the factory, the Iso-Pod retainer spring is attached to the bottom of the enclosure for vertical orientation. If you want to use the monitor in horizontal position, remove the retainer spring and reattach it

Colour	Indication
Solid green	Normal state, normal operation
Blinking green	GLM is adjusting the monitor
Green blink every 10 sec.	Monitor is in an ISS power saving sleep state
Red blink	Power amplifier overload protection is active (audio is modified because of protection)
Solid red	Monitor is muted
Yellow	Monitor is not in the active (playing) group
Yellow blinking	Overheat protection is active (audio is modified because of protection)

Table 2. Monitor front panel light indications summary

to the side mounting threads (see fig. 6). Never use the iso-Pod without the retainer spring as this may cause the monitor to fall.

Aim the acoustic axis of the monitor towards the listening position (see Figure 4). Place monitors symmetrically and at equal distances from the listening position. Preference should be made in placing the listening position on the left-right centerline of the room (see Figure 5). If a monitor is placed far (1.0-2.2 m, 3-7 ft) from the acoustically hard wall behind the monitor, a reflection from the wall may reduce bass output. Avoid these distances.

Place monitors away from acoustically reflective surfaces. Reflections from desks, cabinets, computer monitors and such objects can colour audio and blur sound images. Place monitors on stands behind and above a mixing console as this usually improves audio compared to placing monitors on a meter bridge.

Ceiling and wall mounts are available through Genelec dealers. Monitor mounts attach to four M6 x 10 mm threaded holes on the enclosure back. Consult the Genelec Accessories Catalogue at [www.genelec.com](http://www.genelec.com) or distributor/dealer for information.

### Front Panel Light

The light on the front panel is normally green. Red and yellow colours indicate special situations. See Table 2.

### Use with Subwoofers

Genelec recommends 7300 series subwoofers and the W371 Adaptive Woofer System for 8351B. Consult the on-line Genelec Product Selection Tool at [www.genelec.com](http://www.genelec.com).

### Maintenance

Do not open the monitor enclosure. Opening the monitor may lead to loss of the monitor calibration and may damage components. There are no user serviceable parts inside. Maintenance or repair can only be done by Genelec certified service.

### Safety Considerations

The 8351B follows international safety standards. To ensure safe operation, the following warnings and precautions must be observed:

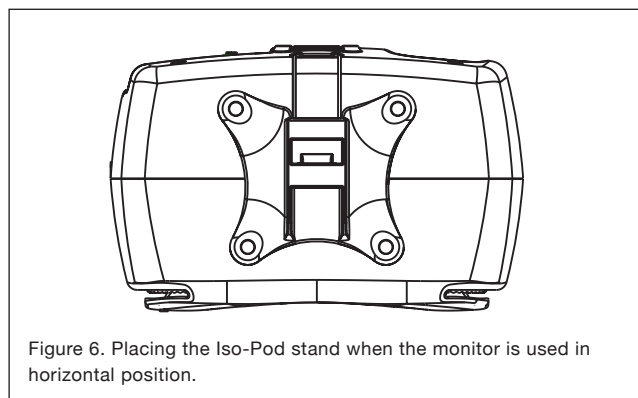


Figure 6. Placing the Iso-Pod stand when the monitor is used in horizontal position.

- Servicing and adjustment must only be performed by certified Genelec service personnel. The monitor enclosure must not be opened.
- Use the product only with a mains cable having a protective ground terminal and with a mains connection with a protective earth terminal. Failing to do so may lead to personal injury.
- To prevent fire and electric shock, do not expose the unit to water or moisture.
- Do not place objects filled with liquid, such as vases, on the monitor or near it.
- Note that the device is not disconnected from the AC mains service unless the power cable is removed from the monitor or the mains outlet.
- Free flow of air behind and around the monitor maintains sufficient cooling. Do not obstruct airflow around the monitor.

### WARNING!

The 8351B is capable of producing sound pressure levels in excess of 85 dB, which may cause hearing damage. Sound exposure level integrated over eight contiguous hours should be limited to  $Leq=80dB(A)$  to reduce the risk of permanent hearing damage. For each 3 dB increase in this sound level, half this exposure time.

### Guarantee

The Genelec 8351B is guaranteed for two years against manufacturing faults or defects altering performance. You can get an additional three-year guarantee covering spare part costs by registering your product at [www.genelec.com](http://www.genelec.com). Refer to your point of purchase for full sales and guarantee terms.

### Compliance to FCC Rules

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 to 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.

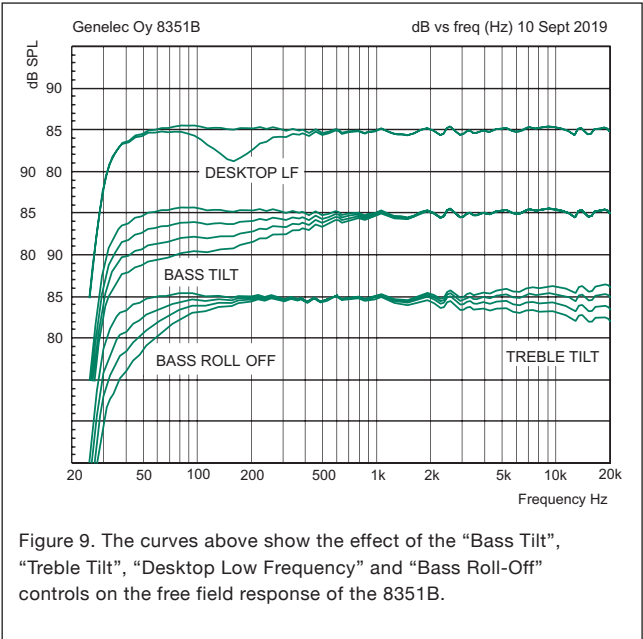


Figure 9. The curves above show the effect of the “Bass Tilt”, “Treble Tilt”, “Desktop Low Frequency” and “Bass Roll-Off” controls on the free field response of the 8351B.

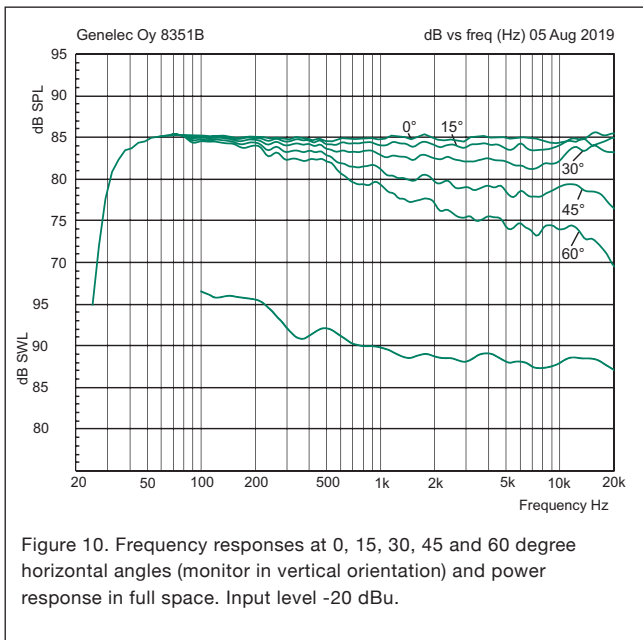


Figure 10. Frequency responses at 0, 15, 30, 45 and 60 degree horizontal angles (monitor in vertical orientation) and power response in full space. Input level -20 dBu.

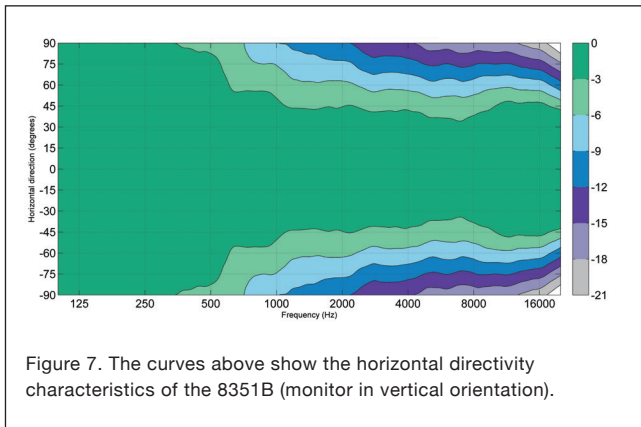


Figure 7. The curves above show the horizontal directivity characteristics of the 8351B (monitor in vertical orientation).

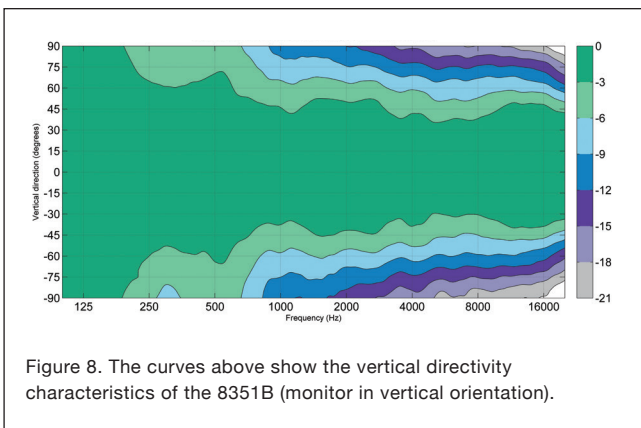


Figure 8. The curves above show the vertical directivity characteristics of the 8351B (monitor in vertical orientation).

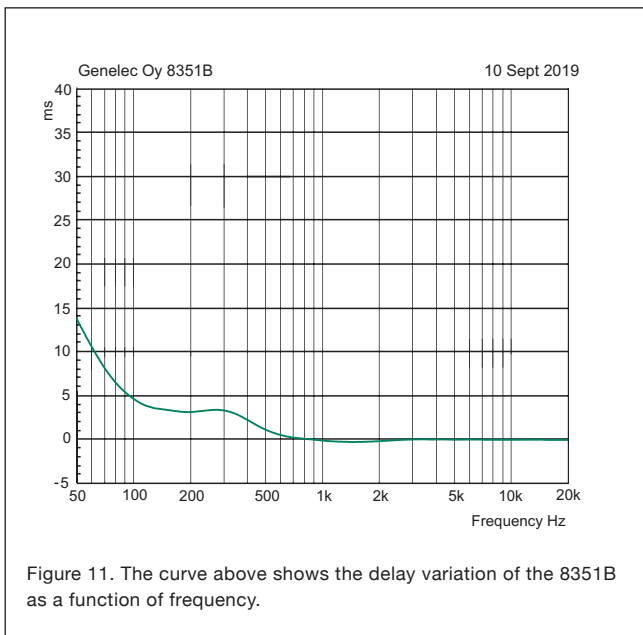


Figure 11. The curve above shows the delay variation of the 8351B as a function of frequency.

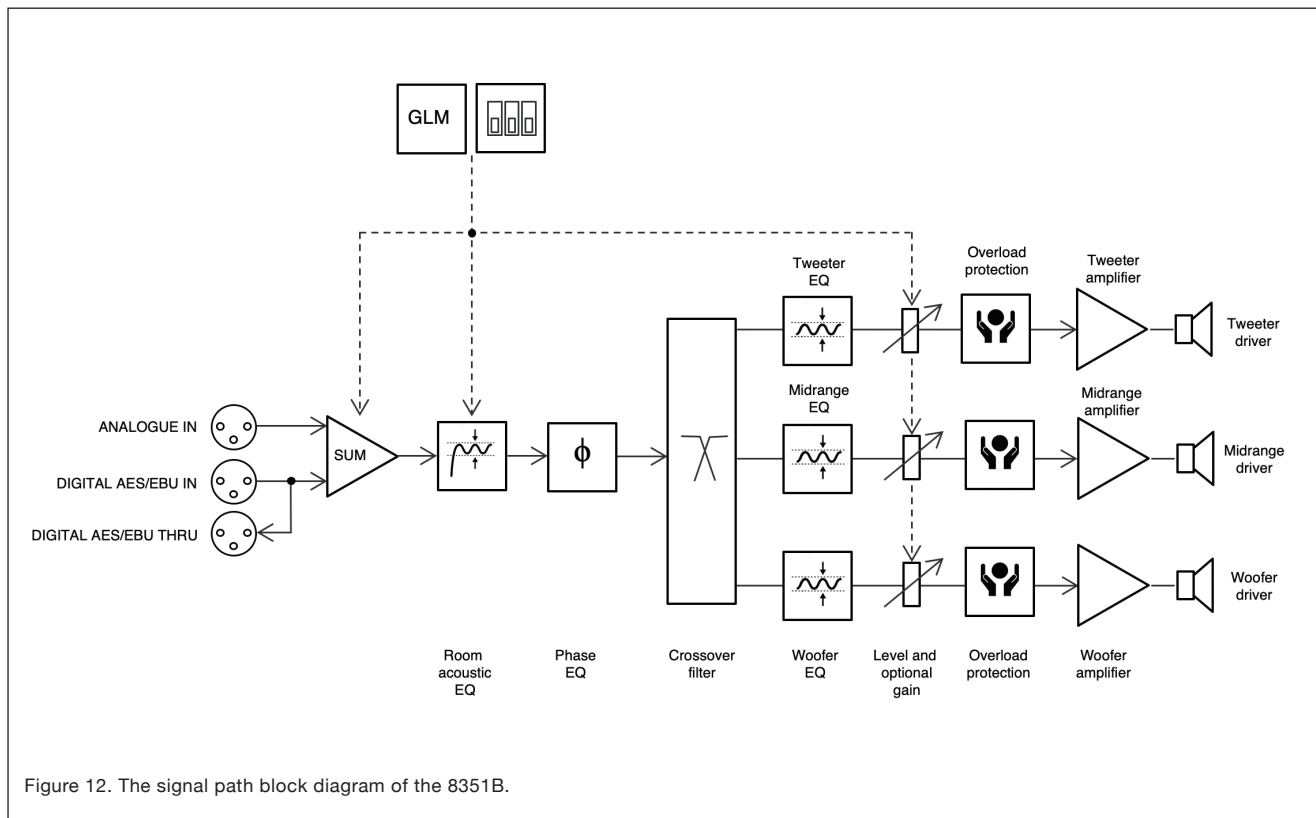


Figure 12. The signal path block diagram of the 8351B.

**SYSTEM SPECIFICATIONS**

Lower cut-off frequency, -6 dB	< 32 Hz
Upper cut-off frequency, -6 dB	> 43 kHz
Accuracy of frequency response, ± 1.5 dB	38 Hz – 20 kHz
Maximum short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz at 1 m	≥ 113 dB SPL
Maximum long term RMS acoustic output in the same conditions with IEC weighted noise (limited by driver protection circuit) at 1 m	103 dB SPL
Maximum peak acoustic output per pair in a listening room with music material at 1 m	118 dB
Self generated noise level in free space at 1 m on axis (A-weighted)	≤ 5 dB
Harmonic distortion at 90 dB SPL at 1 m on axis Freq: 50...100 Hz > 100 Hz	< 2 % < 0.5 %
Drivers Bass Midrange Treble	Dual 218 x 101 mm (8 <sup>5</sup> / <sub>8</sub> x 4 in) obround cones 130 mm (5 in) cone (coaxial) 25 mm (1 in) metal dome (coaxial)
Weight	14.3 kg (31 lb)
Dimensions Height including IsoPod stand Height without IsoPod Width Depth	454 mm (17 <sup>7</sup> / <sub>8</sub> in) 433 mm (17 in) 287 mm (11 <sup>1</sup> / <sub>3</sub> in) 278 mm (11 in)

## AMPLIFIER SECTION

Bass amplifier short term output power	250 W
Midrange amplifier short term output power	150 W
Treble amplifier short term output power (Long term output power is limited by driver protection circuitry)	150 W
Amplifier system THD at nominal output	<0.05%
Mains voltage	100-240 VAC 50/60 Hz
Power consumption	
ISS active	< 1 W
Idle	16 W
Full output (short term)	200 W

## SIGNAL PROCESSING

	8351B
Analog signal input connector XLR female, balanced 10 kOhm	pin 1 gnd pin 2 non-inverting pin 3 inverting
Maximum analog input signal	+25.0 dBu
Analog input sensitivity (100 dB SPL at 1 m)	-6 dBu
Analog input sensitivity control	Adjustable from +36 to -6 dBu
Digital signal input connector XLR female 110 Ohm	AES/EBU Single Wire
Digital signal output / Thru connector XLR male 110 Ohm	AES/EBU Single Wire
Digital audio input	
Word length	16 - 24 bits
Sample rate	32 - 192 kHz
Digital input sensitivity (100 dB SPL at 1 m)	-30 dBFS
Digital input maximum attenuation using DIP switches	42 dB
Digital input maximum attenuation using GLM software	120 dB
Control network	
Type	Proprietary GLM™ network
Connection	2 RJ45, CAT5 cables
Crossover frequencies	
Bass/Mid	320 Hz
Mid/Treble	2800 Hz
GLM™ software frequency response adjustment*	
Parametric notch filters	16
Shelving filters	2 LF and 2 HF
System room response calibration	Genelec GLM AutoCal™, GLM™ manual, Stand-alone*

\* The notch and shelving filters adjustments, AutoCal™ and GLM™ manual system calibration features are part of the Genelec Loudspeaker Manager (GLM™) software

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