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BOSCH
 Invented for life

LBB 1968/00 Plena Feedback Suppressor



- ▶ **Patented feedback suppression algorithm**
- ▶ **Suppresses feedback before it occurs**
- ▶ **Automatically adapts to the acoustical situation**
- ▶ **Up to 12 dB additional gain before feedback occurs**
- ▶ **Balanced line or microphone input with phantom supply**
- ▶ **Second microphone input with automatic mixer**

The Plena feedback suppressor uses a powerful DSP with a patented algorithm to suppress acoustic feedback. It actively filters out unwanted room reverberations using an echo-cancellation and de-reverberation algorithm. By adding masked (inaudible) noise to the output signal or by shifting the frequency of the output signal by five hertz, the Plena feedback suppressor is able to detect the reverb component of the signal and remove it before feedback occurs. This leaves the original signal intact.

Functions

The adaptive filter can be switched between fast mode and accurate mode. The fast mode is for situations where the microphone position changes over time, such as in a discussion system with multiple switching microphones. The accurate mode is for situations with a fixed microphone position, such as on a pulpit where the acoustical environment is more stable. The adaptive filter is allowed to converge more slowly, suppressing reverberation components even more effectively. Depending on the acoustical environment and the chosen mode of operation, up to 12dB of additional gain is possible before acoustic feedback occurs.

The Plena feedback suppressor also features a built-in automatic mixer for the two microphone inputs. In many situations, such as on a rostrum, a pulpit or a conference table, two microphones are used to capture the voice of a moving speaker better, even though this increases the risk of acoustic feedback. To counter this, the automatic mixer in the Plena feedback suppressor reduces the gain of the microphone with the lowest signal input and increases the gain of the microphone with the highest signal input. This way, it tracks the moving speaker for optimum speech intelligibility, while maintaining a maximum feedback margin by keeping the combined gain constant. The automatic mixer function remains operational even when the feedback suppressor is deactivated.

Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity
Safety	acc. to EN 60065
Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1

Installation/Configuration Notes



LBB 1968/00 back view

Parts Included

Quantity	Components
1	LBB 1968/00 Plena Feedback Suppressor
1	Power cord
1	Set of 19" mounting brackets
1	0.5 m XLR cable
1	Installation and User Instructions
1	Plena CD

Technical Specifications

Electrical

Mains power supply

Voltage	230/115 VAC, $\pm 10\%$, 50/60 Hz
Inrush current	1.5 A @ 230 VAC / 3 A @ 115 VAC
Max power consumption	50 VA

Performance

Sample rate (fs)	32 kHz
Frequency response	125 Hz to 15 kHz
Distortion	$< 0.1\%$ @ 1 kHz
Gain (bypass mode)	0 dB line in, 24 / 36 / 48 dB mic in
Gain (active mode)	0 dB line in, 24 / 36 / 48 dB mic in
S/N	> 90 dB
Signal delay	< 11 ms
Decorrelator	Frequency shift, 5 Hz up Masked noise

Mic / line input

Connectors	3-pin XLR, 5-pin DIN, balanced
Max level	18 / 6 / -6 dBV line in, -18 / -30 / -42 dBV mic in
Impedance	10 kohm / 2 kohm (line / mic)
CMRR	> 25 dB (50 Hz to 20 kHz)
Phantom power	16 V (mic only, switchable)
Priority control	Loop through of pin 4 and 5 of DIN

Mains power supply

Mic input	1 x
Connectors	3-pin XLR, 5-pin DIN, balanced
Max level	-18 / -30 / -42 dBV
Impedance	2 kohm
Phantom power	16 V (switchable)
Priority control	Loop-through of pin 4 and 5 of DIN

Line input

Connector	Cinch, unbalanced
Max input level	18 / 6 / -6 dBV
Impedance	20 kohm

Line output

Connector	3-pin XLR, balanced
Max level	18 / 6 / -6 dBV (line in), 6 dBV (mic in)
Impedance	< 100 ohm

Line output

Connector	Cinch, unbalanced
Max level	18 / 6 / -6 dBV (line in), 6 dBV (mic in)
Impedance	< 100 ohm

Mic output

Connector	5-pin DIN, balanced
Max level	22 / -34 / -46 dBV (line in), 34 dBV (mic in)
Impedance	< 100 ohm
Priority control	Loop-through of pins 4 and 5 of DIN from inputs

Mechanical

Dimensions (H x W x D)	56 x 430 x 270 mm (19" wide 1U high)
Weight	3 kg (6.6 lb)
Mounting	Stand-alone, 19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	$< 95\%$

Ordering Information

LBB 1968/00 Plena Feedback Suppressor LBB1968/00

a powerful DSP with a patented algorithm to suppress acoustic feedback