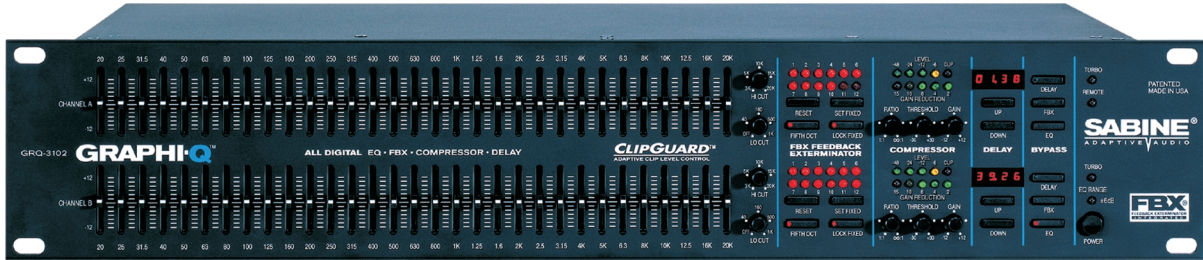


The GRAPHI-Q™ All Digital Equalizer, FBX, Compressor, Delay!

Hands-on and Computer Control gives you every control option you need for every application.



GRQ3102: 2U, dual channel (two in / two out)

GRAPHI-Q™ GRQ3100 SERIES 32-bit

**GRQ3102 & 3102S
dual channel**

**GRQ3101 & 3101S
single channel**

**“At last, a hands-on digital EQ
with built-in FBX automatic
feedback control, all at the
right price – this is just what
I’ve been waiting for”**



“Tweak n’ Peek”

Touch any front panel control and see the exact setting on the LED display – digital precision with analog control!

Sabine is proud to announce the birth of a new family of professional digital signal processors. The GRAPHI-Q 3100 Graphic Equalizer Series combines six indispensable audio products into one very affordable, all-digital package.

Flexible Configurations

The Graphi-Q gives you instant hands-on, front panel control, or you can choose the blank front panel versions for the ultimate in system security and economy. RS232 remote computer control, 70 on-board program memories, and remote switching via contact closures are standard in all Graphi-Qs (blank or active front panel). No other professional audio device gives you this level of control, this superb quality, at this low price.

Graphi-Qs are designed for rigorous and continuous use in all these applications:

- Main Sound Systems
- Monitor Systems
- Insert Points
- Wireless Mic Systems
- Touring Sound & Fixed Installations
- Churches & Schools
- Convention Centers & Sports Arenas
- Board Rooms & Meeting Rooms
- Teleconferencing & Distance Learning
- Paging & Desktop Audio

How do we do it? Our 24-bit A/D and D/A give the cleanest audio possible, and Analog Devices' new 32-bit floating-point SHARC™ digital processor powers every Graphi-Q, allowing simultaneous use of these essential functions:

- 31-band Digital Graphic EQ, with ± 6 or 12 dB range and High & Low Cut Filters
- Patented FBX Feedback Exterminator: 12 Filters (switchable to fully parametric), TURBO Setup Mode for FBX
- Full-featured digital Limiter
- Full-featured digital Compressor
- 12 Parametric Filters
- Digital Delay, with up to 1 second delay, adjustable in 20 microsecond increments

Simultaneous Functions – Independent Control

The GRQ3101 and 3102 provide hands-on, “analog style” front panel control for every function, yet every function is all digital. When you grab one of the smooth EQ faders on the Graphi-Q, you are controlling a digital equalizer, so you can be sure that every filter is precisely shaped with no phase shifting, no drifting, and extremely low distortion. When you use the Graphi-Q’s digital compressor, you get smooth control, a full, punchy sound, and extremely fast transient response to prevent overloading speakers or recorders.

The Graphi-Q digital delay provides precise speaker alignment, with 20-microsecond resolution, at the touch of a button. And you get dedicated bypass switches for FBX, EQ, and Delay with built in LED indicators.

Only From Sabine

- **Patented FBX Feedback Exterminator®:** Industry standard automatic feedback control; works in setup and during the program. Super-accurate algorithm places filters on feedback, not on music.
- **Patented ClipGuard® Adaptive Clip Level Control:** Accepts input levels up to 26 dBV, prevents digital clipping, and extends signal-to-noise ratio to >105 dB.
- **GRQ-Remote Software for Windows™:** Control up to 16 channels of Graphi-Qs via computer. Every Graphi-Q includes serial port and software for remote control, and remote switching connections for scene changes.

Sabine’s Graphi-Q Remote software gives you instant access to all front panel controls and to an additional layer of functions. Built-in Flash RAM lets you upgrade Graphi-Q firmware and software with the touch of a button. And all Graphi-Qs are now controllable via SIA Smaart™ software.

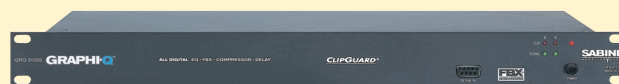
The single-channel Graphi-Qs have two outputs for maximum system flexibility. Graphi-Q Remote allows you to independently choose which functions are active in each of the two outputs. For example, you can use one channel for a delayed speaker, and choose which other processing you want on that delayed channel: FBX, compressor/limiter, or equalizers. You can have independent delay on level settings on each output. The front panel delay switch controls Output B.



GRQ3101: 1U, single channel (1 in / 2 out)



GRQ3101S: 1U, blank front panel, single channel (1 in / 2 out)

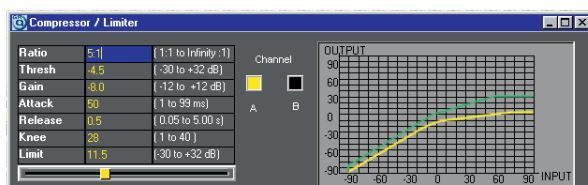


GRQ3102S: 1U, blank front panel, dual channel (1 in / 2 out)

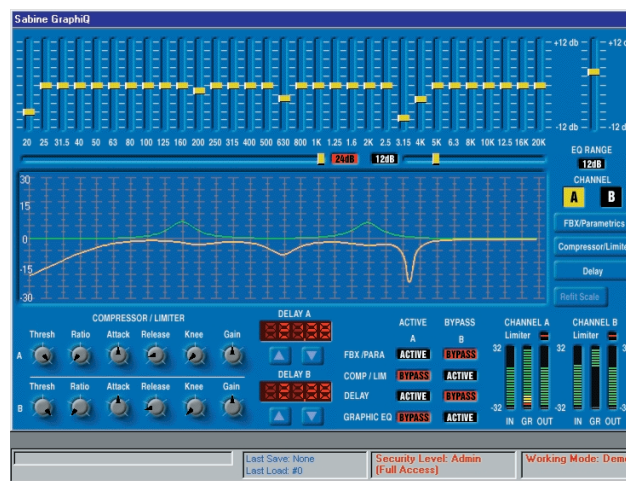
Graphi-Q Remote Control Software

Graphi-Q Remote for Windows gives you the same hands-on feel as the front panel, and allows you to control up to 16 channels of Graphi-Qs simultaneously. All the major functions you need are there on the screen, ready for use. You rarely need to leave the main screen or pull down a menu to access the control you need.

Several additional features are included in the software, and, as in all Graphi-Q functions, they all work concurrently. The Response Curve section is very flexible. Display the curve for the graphic EQ, high & low cut, parametric, and FBX filters, for both the A and B channels, in any combination. Parametric Filter Control allows you to switch any filter from fully-programmable parametric to Fixed or Dynamic FBX filters. You also get one-button Automatic TURBO Setup Mode. In this mode the Graphi-Q auto-



Compressor/Limiter Screen, with gain structure graph.



GRQ Remote Software Main Screen

atically sets up the FBX filters – just sit back and watch as the unit raises the gain, places all the FBX filters at a super-quiet level, and displays the added gain you get, all in real time.

Use the BYPASS and RESET matrix to manage the status of every Graphi-Q function. Make fine adjust-

ments to other Graphi-Q functions, including graphic EQ filter widths from ½ octave to one full octave, and adjust attack, release, and knee on the compressor. We'll even show you a line graph of your gain structure, graphically displaying every parameter.

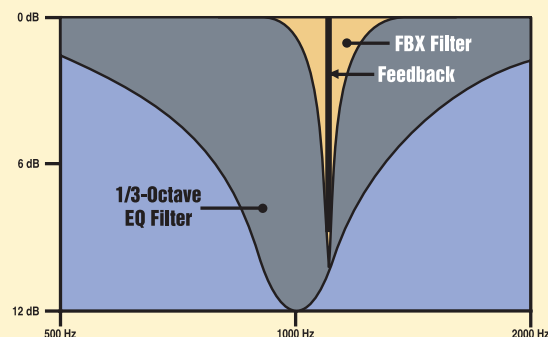
Using your computer as a platform gives you unlimited memory storage of Graphi-Q files. Each file holds up to 70 presets, and you can transfer these settings to the on-board memory locations within each Graphi-Q. You can also access all Graphi-Q memory locations via the back-panel Euro-block remote switching connectors. Using a simple contact closure switch, you can offer scene change options to users who have no other access to any Graphi-Q controls. And you can print a three-page report that records the setting of every parameter in the Graphi-Q, including a frequency response curve.

Unit	GQ1	GQ2	GQ3	GQ4	GQ5	GQ6	GQ7	GQ8
Name								
# of Channel	2							
Graphic EQ A	A1	A1	A2	R1	A3			
Graphic EQ B	A1	A1	A2	R1	A3			
Parametric A	A1	A1	R1					
Parametric B	A1	A1	R1					
Compl/L A					A2	A2		
Compl/L B					A2	A2		
Digital Delay A	A3	A3					R1	
Digital Delay B		A3					R1	
Output Level A	A1	A1						
Output Level B		A1						
Global Para A			A1	A1				
Global Para B			A1	A1				

Link Table: Link functions and channels independently, with relational or absolute links.

The FBX Feedback Exterminator®

Every Graphi-Q comes with the latest generation of Sabine's patented FBX Feedback Exterminator. Sabine pioneered the automatic feedback controller in 1990, and invented the digital feedback controller in 1991. The FBX in the Graphi-Q is the state-of-the-art in automatic feedback control – fast, reliable, and quiet.



Dark gray area shows the sound & power you get back when you use an FBX to control feedback instead of a Graphic EQ.

The secret to our success is the robust, patented feedback control algorithm. This innovative solution identifies feedback and places super-narrow filters with one Hz resolution, during setup and during the program. This real-time performance distinguishes the FBX from all other feedback controllers. Each filter is custom-made at the moment of feedback, and is placed just deep enough to remove the ringing tone, in 3 dB steps.

The power of FBX automatic feedback control lies in its ability to distinguish feedback from program material. If feedback occurs in that crucial moment of the play, or just when the worship leader begins the sermon, or in the middle of the big solo, the FBX can place a filter in less than a second, saving the performance and making you the hero.

And FBX filters do not disturb your program material, because their ultra-narrow width remains constant no matter how deep they go. Only the feedback is eliminated, not the power and sound you work so hard to achieve. And in Turbo Setup Mode, the FBX places filters even faster, and at a very low signal level. The whole setup takes less than a minute, and it's quieter than ever.

Here's what all this means to you: More gain before feedback, increased clarity and intelligibility, more wireless microphone mobility, fast, easy setup, and adaptive, automatic feedback control. No other audio device provides these benefits at this price.

**ALL-DIGITAL
WITH HANDS-ON
OR COMPUTER
CONTROL**

**GRAPHIC EQ
FBX FEEDBACK
EXTERMINATOR®
PARAMETRIC EQ
COMPRESSOR/
LIMITER
DIGITAL DELAY**

GRAPHI-Q 3100 SERIES Engineering specifications

Digital Processing

24 bit A/D and D/A, 32-bit DSP

Graphic Equalizer

31 digital filters on ISO 1/3-octave center frequencies, width adjustable ⁴ from 0.5 to 1.0 octave in .01 octave increments

± 6 or 12 dB boost and cut range

Low Cut Filter, user-controllable between 20 Hz and 3 KHz; 12 (or 24 ⁴) dB/octave roll-off

High Cut Filter, user-controllable between 1 KHz and 20 KHz; 12 (or 24 ⁴) dB/octave roll-off

Independent display and control of A & B channels

FBX/Parametric Filters

Twelve independent digital filters per channel, controlled automatically or parametrically from 20 Hz to 20 KHz, each switchable between FBX fixed filters, FBX dynamic filters, and parametric filters ⁴

Filter depth: user-controllable in 1 dB steps from +12 dB to -84 dB (parametric mode), 3 dB steps from 0 dB to -40 dB (FBX mode), max. automatic depth adjustable from -6 to -40 dB

Filter width: user-controllable from 9.99 to .01 octave (parametric), 1.0 to .01 octave (FBX ¹)

Resolution: 1 Hz from 20 Hz to 20 KHz in FBX and parametric mode

Time required to find and eliminate feedback: typically 0.3 seconds @ 1 KHz

Total number of combined filters active per channel: user-selectable, 0 - 12; plus low and high pass filters

Digital Compressor/Limiter

Threshold: +30 dBV to -30 dBV in 0.5 dB steps (independently adjustable for compressor & limiter ⁴)

Ratio: 1:1 through infinity

Knee: soft/hard ⁴

Attack: 1 to 100 msec in 1 msec steps ⁴

Release: .05 to 5 sec in .05 sec steps ⁴

Peak limits: +32 dBV to -30 dBV in 0.5 dB steps ⁴

Mode: Dual Mono or Stereo (GRQ3102 & 3102S)

Digital Delay

1.38 to 1001.0 msec in 20 μ sec steps

Programmable in milliseconds, feet or meters.

Password Configuration

4 levels ⁴

Controls

GRQ3102, 3101: Front panel, GRQ Remote (RS 232), Remote switching

GRQ3102S, 3101S: GRQ Remote (RS 232), Remote switching

Save & Recall Configurations

69 user defined

1 factory default

1 most recent configuration (power down save)

1 default front panel

Input/Output

Input impedance: Balanced ³ 10K Ohms, PIN 2 high

Output impedance: Balanced 10 Ohms nominal, PIN 2 high

Input/Output maximum signal levels: Balanced +29 dBV peak input, Balanced +29 dBV peak output ²

Output load: (600 Ohms balanced)

Bypass: true power-off bypass

I/O connectors: XLR-3, 1/4" TRS

GRQ3102 and 3102S: Dual channel, one input, one output per channel

GRQ3101, and 3101S: Single channel, one input, two parallel outputs. Functions on each output selectable via GRQ-Remote

Performance ⁵

Frequency response: 10 Hz to 20 KHz, ± 0.2 dB @ +22 dBV

THD: <0.01% at 1.0 KHz at +22 dBV with 30 KHz Bandwidth

SNR ³: >105 dB (with ClipGuard®)

Dynamic Range: >110 dB (with ClipGuard®)

Headroom: +22 dB peak @ 4 dBV nominal input

Upgrades

Operating system firmware stored in Flash RAM. All future upgrades for firmware and software downloadable from Sabine website using GRQ Remote.

Power

50/60 Hz available in 100 V, 120 V, 230 V; 18 W

Dimensions

2-U rack mount: 19 x 3.5 x 9.5 in. (48.3 x 9 x 22.9 cm); 9 lb. (3.9 Kg)

1-U rack mount: 19 x 1.75 x 9.5 in. (48.3 x 4.5 x 22.9 cm); 8 lb. (3.6 Kg)

Notes:

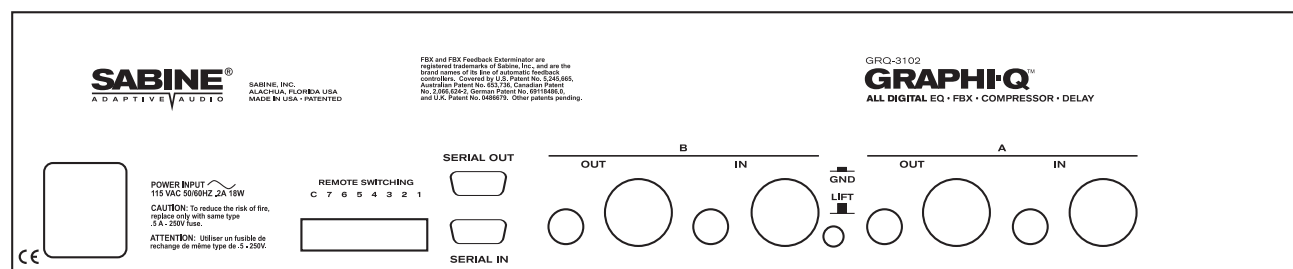
- Below approximately 200 Hz the feedback filters become slightly wider to increase the feedback and rumble capture speed at these low frequencies.
- Note: Inputs may be balanced or unbalanced. For maximum output capability, outputs must be balanced (XLR or TRS). If either side of an output is grounded, the peak output and dynamic range will be reduced by 6 dB.
- Signal-to-noise ratio is the ratio of the maximum undistorted signal by specification (26 dBV RMS sinewave) to the noise floor.
- Adjustable with GRQ Remote only.
- Tests performed using an Audio Precision System One model 322 or equal.

(SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE)

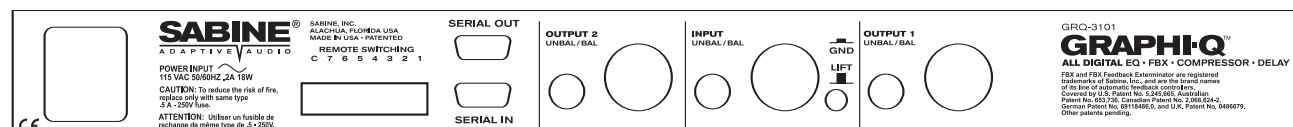
One-year limited warranty

Patented • Made in USA

FBX and FBX Feedback Exterminator® are registered trademarks of Sabine, Inc., and are the brand names of its line of automatic feedback controllers. Covered by U.S. Patent No. 5,245,665, Australian Patent No. 653,736, German Patent No. 69118486.0, U.K. Patent No. 0486679, and Canadian Patent No. 2,066,624-2. Other patents pending.



GRQ3102: 2U, dual channel (two in / two out)



GRQ3101: 1U, single channel (one in / two out)

Not Shown:

GRQ3102S: 1U, Blank front panel, dual channel (two in / two out)

GRQ3101S: 1U, Blank front panel, single channel (one in / two out)

SABINE
ADAPTIVE AUDIO

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