

The Orban 412A Compressor/Limiter

The Essential AGC: A basic, cost-effective compressor/limiter with remarkably natural sound and extraordinary ease-of-use.



Performance Highlights

- Streamlined, straightforward front panel offers the most-demanded user controls, including ATTACK TIME, RELEASE TIME, RATIO, and THRESHOLD. These wide-range controls permit extremely natural sound or special effects.
- Exclusive Orban feedback control circuitry (adapted from our popular 424A Gated Compressor/Limiter/De-Esser) achieves remarkably transparent sound.
- User controls interact intelligently to simplify and speed setup, and to prevent errors.
- Peak limiting and compressor functions are crosscoupled to eliminate potential pumping and modulation effects.
- THRESHOLD control with 20dB range allows user to determine the level at which gain reduction first occurs, without changing below-threshold gain. Ideal for sound reinforcement applications.
- Proprietary circuitry achieves optimum headroom and signal-to-noise regardless of THRESHOLD control setting.
- Front-panel OUTPUT ATTENUATOR control with OUTPUT CLIP LED to indicate line amplifier clipping.
- Illuminated, true peak-reading GAIN REDUCTION meter is more accurate and readable than LED displays.
- GAIN REDUCTION OVERLOAD lamp warns of control circuit overload due to a demand for G/R which exceeds the range of the VCA.
- Hard-wired system bypass switch for fail-safe protection.
- Side-chain externally accessible for special effects such as frequency-selective limiting.
- Proprietary Class-A Orban VCA features very low distortion and noise.
- Stereo 414A has STEREO COUPLING switch to permit either stereo or dual-mono operation; an unlimited number of units can be wire-coupled to track $\pm 0.5\text{dB}$.
- All-metal chassis with RFI suppression on input, output, and AC leads.

Back to Basics

The 412A is Orban's entry into the general-purpose compressor/limiter sweepstakes—it's designed to make **you**, the audio professional, the winner! Based on circuitry from the extremely popular Orban 424A (Gated Compressor/Limiter/De-Esser: the "Studio Optimod"), the 412A offers the controls and features most demanded by audio professionals. This is a no-frills unit with all the essentials—plus no-compromise sound, performance, quality and reliability at a **very** attractive price.

Familiar ATTACK TIME, RELEASE TIME, RATIO and OUTPUT ATTENUATOR controls make operation quick and intuitive. **Both** THRESHOLD and INPUT ATTENUATOR controls are available, so you can adjust the amount of G/R exactly according to the needs of your application—the 412A can keep above-threshold output level **or** below-threshold gain constant, depending on which control you adjust. And Orban's proprietary low-distortion Class-A VCA lets you adjust the THRESHOLD control without compromising headroom or signal-to-noise ratio: They stay optimized over the control's 20dB range.

Attack and release times are program-controlled: the ATTACK TIME and RELEASE TIME controls simply scale the complex time constants faster or slower. With these controls set beyond about "12:00", the 412A produces very natural, open sound with considerable short-term dynamic range—even when the unit is adjusted for high compression ratios. As time constants are sped up, the result is increased loudness and density with a minimum of unnatural compression artifacts. So, depending on the settings of these controls, the 412A can serve as a peak limiter, a pure, gentle compressor, or a combination compressor/limiter.

The unit is utterly simple to operate, and can be used either as a "hands-off" device or as a powerful creative tool. For either use we've built-in an "automatic transmission": The threshold of limiting interacts with both the ATTACK TIME and RATIO controls to keep the peak output approximately constant regardless of control settings. (Of course, it **is** affected by the THRESHOLD and OUTPUT ATTENUATOR controls, as expected.) That way, many annoying corrective readjustments of other controls become unnecessary, making your work easier and more efficient.

This feature provides a bonus: Unlike many other units, it is impossible to severely clip the 412A's VCA unknowingly. Other potential overload conditions are indicated by two LED's: one to indicate program amplifier clipping and the other to indicate overload of the control circuitry. Between the program-controlled time constants, automatic threshold adjustments, and overload monitoring, the 412A is close to foolproof—it facilitates good, fast results even from inexperienced or overburdened operators.

Ultimately, the proof is in the **listening**. We believe that our resolutely un-trendy feedback control circuitry provides a natural sound unmatched at the 412A's modest price—and matched only by our own more sophisticated 424A. Finally, it is possible for smaller studios and production rooms, fixed installations (like churches and theaters), and traveling reinforcement systems, to get top-quality level control at an affordable price. And, because the 412A doesn't compromise basic audio quality, it is fully suited for the most demanding applications requiring its particular assortment of features.

If even more flexibility is needed, consider the 422A (single-channel) and 424A (dual-channel/stereo) Gated Compressor/Limiter/De-Essers, which combine the superb audio quality of the 412A with sophisticated gating circuitry (to prevent compression-induced noise breathing) and an effective de-esser.

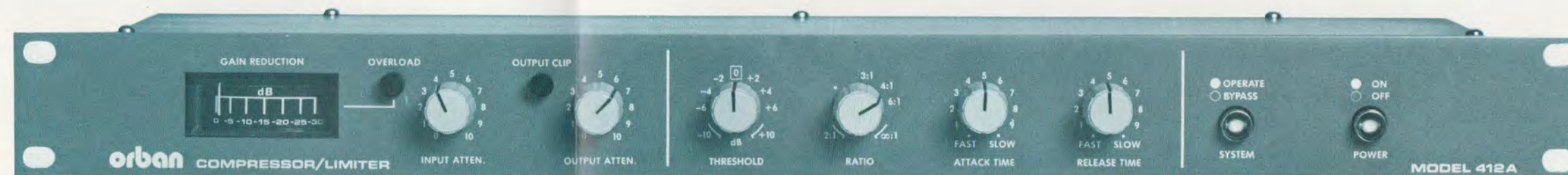
Between the 412A and the 422A, Orban offers a compressor/limiter to satisfy virtually any requirement in professional audio—with unmatched quality and singular standards of documentation and customer support.

Order Guide

Model 412A Single Channel
Compressor/Limiter
RET-28A XLR-type Connector
Field Retrofit Kit
RET-29A TRS Phone Jack
Field Retrofit Kit

Model 414A Dual Channel/Stereo
Compressor/Limiter
RET-28B XLR-type Connector
Field Retrofit Kit
RET-29B TRS Phone Jack
Field Retrofit Kit

(Barrier strip connections standard,
#5 screw)



Specifications

Input

Impedance: greater than 10 k ohms active balanced (interfaces with balanced or unbalanced sources).

Level: -15dBm produces 10dB gain reduction with ATTACK TIME control centered, INPUT ATTEN control fully CW, and RATIO control at infinity-to-one.

Absolute Overload Level: +21dBm

Output

Impedance: approximately 100 ohms, electronically balanced and floating (drives balanced or unbalanced loads)

Levels: +4dBm nominal; absolute peak overload better than +19dBm

Frequency Response

±0.25dB 20-20,000 Hz below limiting threshold

Compressor/Limiter

Characteristics

Attack Time: manually adjustable in range of approximately 500us to 200ms; automatically scaled by program content.

Release Time: adjustable in range of approximately 3dB/sec to 80dB/sec; automatically scaled by program content.

Compression Ratio: adjustable from 2:1 to infinity-to-one at threshold. Lower ratios automatically increase as gain reduction increases.

Range of Gain Reduction: from 15dB to 35dB depending on setting of THRESHOLD control; 25dB with THRESHOLD control at center detent.

Total Harmonic Distortion

(ATTACK and RELEASE TIME controls centered, infinite RATIO, 15dB gain reduction): less than 0.05% @ 1kHz. Typically 0.04% @ 100Hz; 0.025% @ 1kHz; 0.035% @ 10kHz.

SMPTE IM Distortion (controls set as above; 60/7000Hz 4:1; 15dB gain reduction): typically 0.2%.

Tracking of Multiple Channels: ±0.5dB.

System Noise

RMS noise in 20-20kHz bandwidth better than 85dB below output clipping threshold for any degree of gain reduction; 90dB typical.

Crosstalk (414A Only)

Better than -70dB @ 20kHz. Unmeasurable below 10kHz.

Operating Controls

INPUT ATTENUATOR
OUTPUT ATTENUATOR
THRESHOLD
COMPRESSION RATIO
ATTACK TIME
RELEASE TIME
SYSTEM OPERATE/BYPASS
(Hardwire Bypass)
STEREO COUPLING (414A Only)
POWER ON/OFF

Indicators

GAIN REDUCTION METER
GAIN REDUCTION OVERLOAD LAMP
OUTPUT CLIP LAMP

Power Requirement

115/230 VAC ±10%; 50-60Hz.
U-ground power cord attached.

Dimensions

412A

19" (48.3cm) wide × 1.75" (4.5cm/1 unit) high × 5.3" (13.5cm) deep

414A

19" (48.3cm) wide × 3.5" (8.9cm/2 units) high × 5.3" (13.5cm) deep

Operating Temperature

0-45° C

Warranty

One year, parts and labor. Subject to limitations set forth in our Standard Warranty Agreement.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.



Orban Associates Inc. 645 Bryant St., San Francisco, CA 94107 (415) 957-1067 Telex: 17-1480



**ORDERING GUIDE &
SUGGESTED LIST PRICES**

Professional Audio
Products

Revision 15; Effective 1 February 1986
Changes: Add 275A, 275A/RC
No price changes
Change Security Cover from "GY" to "WH"

<u>Model</u>	<u>Description</u>	<u>Suggested List</u>
111B/1	Spring Reverberation (2 channels)	\$899.00
245F	Stereo Synthesizer	\$399.00
275A	Automatic Stereo Synthesizer	\$1,895.00
275A/RC	Remote Control for 275A	\$295.00
412A	Compressor/Limiter (1 channel)	\$425.00
414A	Compressor/Limiter (2 channels)	\$799.00
418A	Stereo Compressor/Limiter	\$899.00
422A	Gated Compressor/Limiter/De-Esser (1 channel)	\$629.00
424A	Gated Compressor/Limiter/De-Esser (2 channels)	\$989.00
536A	Dynamic Sibilance Controller (2 channels)	\$539.00
622A	Parametric Equalizer (1 channel)	\$569.00
622B	Parametric Equalizer (2 channels)	\$879.00
672A	Mono Graphic Parametric Equalizer	\$689.00
674A	Stereo Graphic Parametric Equalizer	\$1,299.00

Prices are domestic U.S. only; F.O.B. San Francisco. Prices based on Buyer's acceptance of Orban Standard Terms & Conditions of Sale are subject to change without notice. All units are supplied for 115V, 50/60 Hz operation unless otherwise specified.

See reverse side for accessories.

PROFESSIONAL AUDIO PRODUCTS ACCESSORIES

ACRYLIC SECURITY COVERS

All security covers are 19" wide. Add suffix in place of xx to specify color. Screws supplied. Fits most EIA-standard panels. 1 1/4" maximum protrusion.

CL Clear
BL Blue transparent
WH Opaque White

Suggested List

ACC-11xx	1 3/4" panel (1 rack space)	\$43.00
ACC-12xx	3" panel (2 rack spaces)	\$45.00
ACC-13xx	5 1/4" panel (3 rack spaces)	\$47.00
ACC-14xx	7" panel (4 rack spaces)	\$49.00

ACCESSORIES FOR 622A/622B

RET-05 Balanced output transformer. Order one per output. \$16.00

ACCESSORIES FOR 672A

RET-06 Balanced output transformer. Order one per output. \$16.00
RET-21 XLR connectors for input and both outputs. \$18.00

ACCESSORIES FOR 674A

ACC-03 Plexiglass security cover for filter section controls. \$9.00
RET-07 Balanced output transformers (2) for main outputs. \$32.00
RET-08 Balanced output transformers (4) for both outputs. \$64.00
RET-10 TRS phone jacks for inputs & all outputs. \$13.00
RET-12 XLR connectors for inputs & all outputs. \$30.00

ACCESSORIES FOR 422A/424A

RET-14 XLR connectors for input and output. (422A) \$12.00
RET-15 XLR connectors for both inputs and both outputs. (424A) \$24.00

ACCESSORIES FOR 245F

RET-19 Balanced output transformers (2) for both outputs. \$32.00

ACCESSORIES FOR 536A

RET-22 XLR connectors for both inputs and both outputs. \$24.00
RET-23 Balanced output transformers (2) for both outputs. \$32.00

ACCESSORIES FOR 412A/414A

RET-28A XLR connectors for input and output. (412A) \$12.00
RET-28B XLR connectors for both inputs and both outputs. (414A) \$24.00