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Million Dollar Sound For Under \$4000



The Omnia-3FMT sounds better than any other processor, digital or analog, in this price class



► Omnia-3FMT: The powerful audio processor that gives you all the clarity, punch, and loudness that Omnia is known for, at an amazingly affordable price.

Omnia-3FMT comes standard with features you might not see in even the most expensive processors. Like 48kHz sampling, multi-band processing, AES/EBU inputs and outputs, integrated composite clipper and a removable PC card that makes it easy to share, store and retrieve favorite settings.

But even more impressive than the features is the Omnia sound—your station will come alive and jump off the dial! And by using Omnia-3FMT, your station has an unbelievably loud signature sound without sacrificing clarity.

- All-digital FM audio processor delivers the clarity and precision of digital with the fullness and depth of analog
- Unique DSP algorithms provide incredible loudness without the digital artifacts typically associated with aliasing products in outdated, less sophisticated DSP-based processors
- Easily upgradeable PC Card lets you conveniently store and share your custom settings and processing presets
- Powerful, user-friendly interface with “normal” and “expert” levels allows precise tailoring of the on-air sound—a sound that’s uniquely yours—to match your station’s format and meet the competitive requirements of your market
- Fully digital stereo generator with clipper and composite filter for crisp, clean loudness
- Both analog and digital inputs (I/O) and dual composite outputs for easy, flexible installation
- PDD (Precision Digital Dynamics) clipper of non-aliasing, distortion-controlled design. This keeps the Omnia free from digital grunge

▶ They say that imitation is the sincerest form of flattery. If that's true, we're very flattered! Omnia pioneered 48kHz digital sampling for on-air processing. In fact, our audio processors have raised technical standards across the board for broadcast processors. The Omnia-3FMT continues this tradition by incorporating the most in-demand technical features — like our unique PDD (Precision Digital Dynamics) clipper. This non-aliasing, distortion-controlled design delivers the performance of a 192kHz-sampled system, but is actually achieved within a 48kHz architecture. While it may seem to defy the laws of digital audio, believe us — we've done the math!

Don't think that Omnia-3FMT isn't mighty because it's small in size. Its unique, technically advanced multiband limiter uses a feedback configuration for low and mid bands, while the high bands utilize a feed-forward design. In plain English, Omnia-3fm Turbo gives you a larger, warmer sound in the lower frequencies while maintaining a more open, natural texture in the higher frequencies. And there's plenty more power where that came from: the Omnia-3FMT features famous Omnia bass management controls for powerful, warm low end and a flexible 3-band AGC section to give you the power you need to craft the "signature sound" you desire. You'll even find an integrated, near-theoretically-perfect digital stereo generator, to complete the Omnia-3FMT audio processing package.

As we field-test the Omnia-3FMT and hear from more and more experienced engineers around the world, they tell us over and over that Omnia-3FMT delivers the bold, thumping low end, crystal-clear highs and the warm, natural, open feeling for which Omnia is famous. Above all, Omnia-3FMT delivers the processing muscle you've been wishing for to grab and hold button happy listeners — and send your competition running for cover.

▶ "We've looked at other processors but nothing has come even close to the Omnia in providing the full, rich competitive sound we use to tantalize our listeners."

Mike Callaghan, Chief Engineer
KIIS-FM/KXTA-AM, Los Angeles, California USA

▶ "One of the most important steps KTU has ever taken is the Omnia. Now, our sound has the best of both worlds: clarity and amazing loudness. And I love to crank it up."

Frankie Blue, Programming Director
WKTU-FM, New York City, New York USA

▶ "The digital nature of the Omnia means that filters and compression act closely to the ideal, with composite output that has fabulous width and purity."

Alex Lakey, Chief Engineer
Virgin Radio, London, England

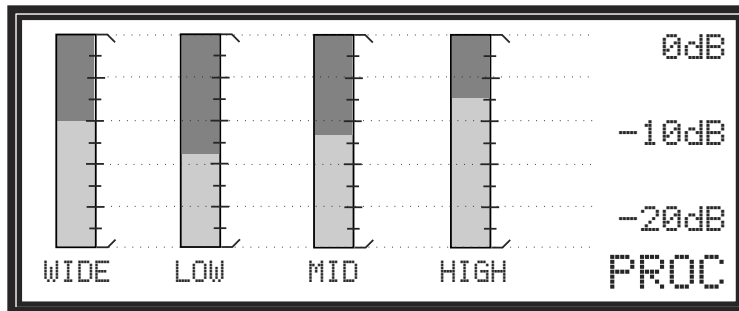
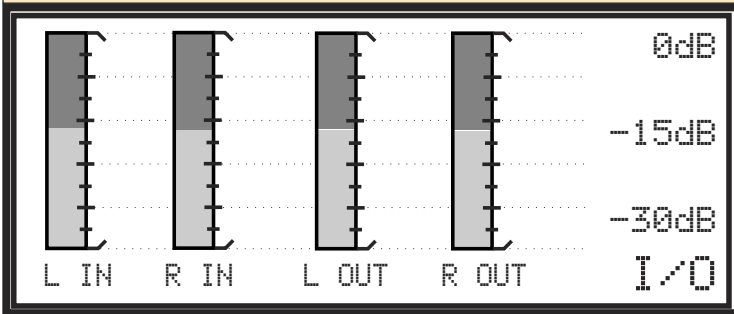
▶ "It's clear that with Omnia, the best processor on earth, and the enormous help of the Omnia team, even a leading radio station can sound better than it already did."

Rob Korver, Technical Manager
Sky Radio, The Netherlands

▶ "Some formats or program directors may be satisfied with preliminary adjustments and that's fine. But the Omnia is such a powerful tool that you can satisfy the toughest program director."

John Boehm, Chief Engineer
WGCI-AM/FM, Chicago, Illinois USA

A single turn of the jog wheel accesses the processing and I/O screens.



Features like 48kHz sampling, an integrated, near-theoretically-perfect digital stereo generator, three-band limiting, famous Omnia bass management controls and an integrated composite clipper, you get unmatched clarity and compelling competitive loudness.

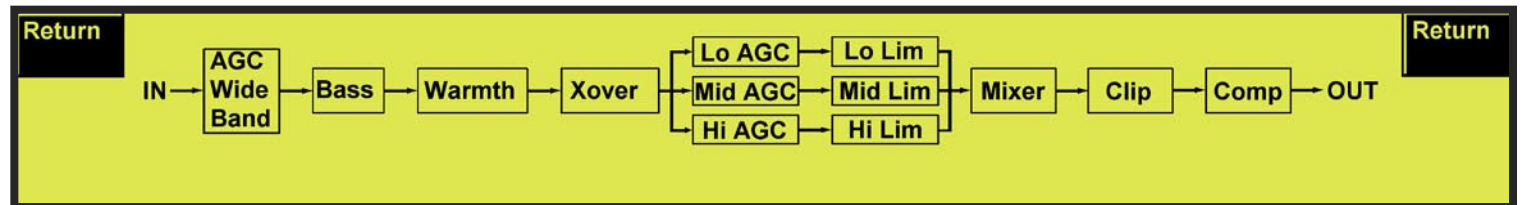
- ▶ The LCD screen on the front panel of the Omnia-3FMT indicates processing activity on a single screen that shows bar graphs for the wideband AGC and limiter sections. When the unit is turned on, it will display audio I/O level indications; a single turn of the jog wheel accesses the processing screen.
- ▶ Wideband AGC is a flexible wideband leveler section designed to provide smooth, transparent control of the input program. A dual reference gate references the input dynamics to a "rolling level." A "make-up" gain algorithm allows overall AGC functions to operate with a slower time constant, yielding lower intermodulation distortion while retaining loudness in the softer passages.
- ▶ Thunder Boost EQ provides up to 12dB bass boost that shakes the walls! This is a highly complex bass EQ that considers the time alignment of the low frequencies as they pass through the entire system, producing a very loud and clean low end, and never compromising overall loudness.
- ▶ Warmth gets vocals and other critical musical elements in the upper mid, lower presence range of frequencies more "up front." A range of 6dB is provided.
- ▶ Three-band, phase-linear, dynamically flat, time aligned crossover allows the entire audio spectrum to be precisely synchronized. This reduces the chance for phase errors to occur at the crossover frequencies, resulting in a rich, more natural sound.

▶ Three-band AGC dynamically equalizes the audio to provide a consistently big, crisp signature sound, and pre-conditions each band for subsequent processing by the limiters. A built-in gate feature allows the AGC to rest momentarily or return to a selectable platform during longer pauses, avoiding pumping of background noise and preventing the limiters from being overdriven after silence. Omnia exclusive “make-up gain” is included in each band to bring out quieter passages without resorting to fast time constants that would create breathy, pumping artifacts.

▶ A built-in hold feature allows the limiter to rest momentarily in order to reduce IM distortion. The low and mid bands use a feedback configuration for a larger, warmer sound in the lower frequencies. The high band utilizes the feedforward design that a more open, natural texture in the higher frequencies.

▶ Stereo generator (encoder) offers an all-digital implementation that approaches theoretical perfection. Stereo separation is greater than 65dB and suppression of the 38kHz carrier is greater than 75dB. User parameters include separation, pilot phase, pilot level and composite output level for seamless integration within your broadcast chain.

▶ Composite clipper with phase-linear composite low-pass filter provides a turbo-charged signal for additional loudness and doesn't interfere with the 19kHz pilot. A built-in digital composite filter allows processing to be used without generating any harmonic content in the SCA spectrum. You won't lose loudness because wasted energy is never transmitted.

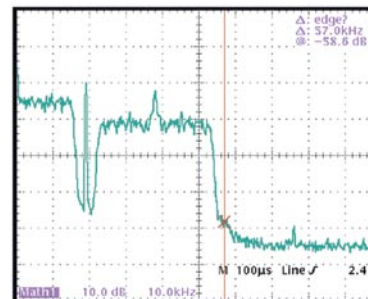


User friendly on-screen block diagrams make processing adjustments fast and easy.

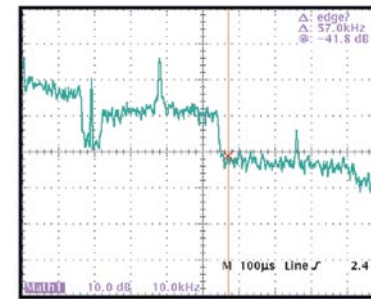
Omnia pioneered the use of adjustable composite clipping, the preferred technique used by thousands of broadcasters to achieve clear, loud audio.

With the fully integrated composite clipper, complete processor function can be controlled remotely and included in stored presets. And the unique PDD (Precision Digital Dynamics) clipper with its non-aliasing, distortion-controlled design, you get rock-solid peak control even without composite clipping.

The Omnia-3FMT includes a precision digital composite low-pass filter which eliminates interference to subcarriers (including RDS) from clipping by-products. And the pilot is added after the clipper—the ideal place.



OMNIA-3FMT COMPOSITE
SPECTRUM WITH 2dB OF
COMPOSITE CLIPPING

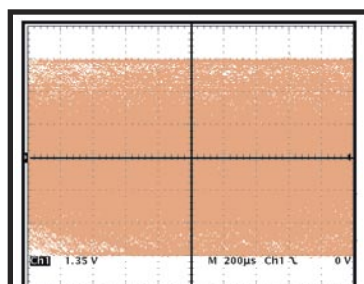


SPECTRUM OF EXTERNAL
COMPOSITE CLIPPER
WITH 2dB
OF COMPOSITE CLIPPING

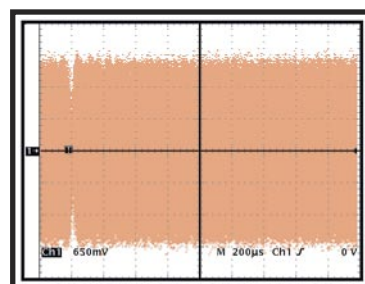
HERE'S HOW:

The test signals were generated by a Delta Electronics SNG-1 (Stereo Noise Generator); spectrum analysis was performed with a Tektronix TDS-744A Digital Scope in the FFT mode. The graph at left shows the spectrum out to 100kHz of the Omnia-3FMT with its built-in, all-digital composite clipper and composite low-pass filter. The graph at right shows a different processor combined with an external composite clipper. Both composite clippers were set for 2dB of clipping. Notice in the graph at right the significant harmonic energy in the SCA region as a result of composite clipping.

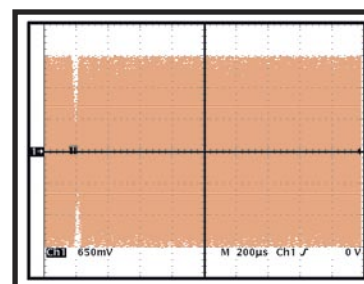
When the Omnia-3FMT is incorporated into transmission systems sampled at 32kHz, overshoots can result from sample-rate-conversions and their attendant low-pass filtering. Until yesterday's systems catch up to the Omnia-3FMT, the built-in Prediction Analysis Clipper will predict and eliminate overshoots. The result? All the benefits of the Omnia-3FMT, without the inevitable flaws of 32kHz sampled systems. Examine the oscilloscope graphs below and see the results for yourself.



LEFT CHANNEL OUTPUT
OF OMNIA-3FMT



SAME SIGNAL
AFTER SAMPLE-RATE-
CONVERSION



LEFT CHANNEL OUTPUT
WITH PREDICTION
ANALYSIS CLIPPING
AND SAMPLE-RATE-
CONVERSION

HERE'S HOW

Low frequencies and clean high frequencies were used to provide a good challenge for the control of overshoots. The analog Left Channel output was connected to a Tektronix TDS-744A digital storage oscilloscope, which was set to the infinite persistence mode. Each waveform was stored for at least one minute so that the display "fills in" with traces of audio waveforms.

The "flat" lines along the top and bottom of the filled in section represent clipper performance. Any "dots" that exceed the reference level of 0.650 volts are overshoots. The center graph shows "blips" representing overshoots 15 to 20 percent beyond the reference peak level of ± 0.650 volts.

The Prediction Analysis Clipper reduces overshoots in the sample-rate-converted signal path to an insignificant three percent or less.

GENERAL FEATURES

Internal Sample Rate:	Up to 384 kHz
Internal Processing Resolution:	24-bit
A/D & D/A Resolution:	24-bit
Maximum bands of processing:	Three-band AGC, Three-band Limiter. Independent Compression/Limiting..
User Interface:	Back lit LCD control screen

AUDIO PERFORMANCE

Frequency Response:	±0.2dB 20Hz - 20kHz (software limited to 15kHz), de-emphasized, as measured at discrete left/right analog outputs.
System Distortion*:	<0.017% THD, de-emphasized.
Signal-to-Noise Ratio*:	>80dB de-emphasized.
Main to Sub Crosstalk:	>75dB, measured with a spectrum analyzer.
Sub to Main Crosstalk:	>75dB, measured with a spectrum analyzer

COMPUTER INTERFACE

Configuration:	Three methods: RS-232 for basic serial communication via DB-25 connector on the rear panel, or via optional PCMCIA modem card or via TCP/IP using optional Ethernet interface.
Communications:	Remote control can be established using a Windows®-based program (free download)

REMOTE CLOSURES INTERFACE

Configuration:	Eight user-selectable remote tally functions, set via front panel user interface.
Connector:	DB-9, EMI suppressed.

POWER

Configuration:	Universal power supply accepts 100-240VAC, 50-60Hz, 45VA.
Connector:	IEC, detachable 3-wire power cord, EMI suppressed.

*These parameters are measured at the recovered left/right audio output of a Belar FMS-2 stereo decoder. This figure is a system measurement inclusive of all processing along with the digital stereo encoder.



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ANALOG & DIGITAL I/O SECTIONS**Analog Audio Input**

	Discrete Left/Right Audio Inputs: 10k load impedance, electronically balanced bridging input, 24-bit analog-to-digital converter.
Maximum Input Level:	+24dBu.
Connector:	XLR, female, EMI suppressed.

Digital Audio Input

Configuration:	Stereo AES/EBU.
Sampling Rate:	32 – 96kHz*, sample rate converter provided.
Connector:	XLR, female, EMI suppressed, balanced and floating.

Analog Audio Output

	Discrete Left/Right: Flat or pre-emphasized, 600Ω load or greater, electronically balanced, 18-bit digital-to-analog converter.
Connector:	XLR, male, EMI suppressed.

Digital Audio Output

Configuration:	Stereo AES/EBU.
Sampling Rate:	48kHz
Connector:	XLR, male, EMI suppressed, balanced and floating.
Maximum Output Level:	+22dB

COMPOSITE I/O SECTION**SCA/RDS Subcarrier Input**

Type: Subcarrier input >53kHz sums into composite baseband output. Input level control provided via front panel user interface. High pass filter provided to suppress subcarrier sub-harmonics from causing crosstalk into main multiplexed baseband signal

Composite Outputs:

Configuration:	Two independent, individually adjusted outputs. Each output has separate output driver section. Capable of driving 100 feet of low capacitance RG-58A/U cable.
Connector:	BNC, unbalanced

Pilot Output:

Source	Buffered square-wave reference for RDS or other 57kHz subcarrier services. Logic level of 0-5V peak-to-peak.
Connector:	BNC, unbalanced

DIMENSIONS AND WEIGHT

19" w x 16.25" d x 3.5" h (48.3 x 41.3 x 8.89 cm) 25 lbs. (11.3 kg), net

WARRANTY

Two years, parts and labor, limited

*with rev. G motherboard.