



MINIDRIVE™

**CROSSOVERS, LIMITERS,
EQ & DELAY IN A
SINGLE DIGITAL
PROCESSOR**



BSS FDS-334T
42 2XWEDGES

MINIDRIVE™ NTM

BSS FDS-336T
54 2X3WAY

MINIDRIVE™ NTM

OUT 3 R Low *
Limit 3.0dBu

OUT 1 L Low *
Eq14 +- +3.5dB

OUT 5 L High *
Delay 0.126m

Now incorporating WISEWORKS – NTM filters

BSS performance, from club to conference

Minidrive™ is specifically designed for smaller touring and installed sound applications which nonetheless demand the unique power and flexibility of BSS loudspeaker management performance.

The Minidrive™ range offers a choice of either 4 or 6 output devices, making it ideal for controlling front-of-house and monitor systems, portable PA systems, and theatre and broadcast delays. And unlike other low-cost processors, Minidrive™ is much more than just a digital crossover, delivering all the core functions of the industry-standard BSS Omnidrive™ system: crossover, assignable parametric EQ, mid-band limiters and input/output delay.

Applications

The Minidrive™ range offers a perfect solution for stage monitor systems, combining DSP control and bi-amp feeds in a single rack-mountable unit. It features adjustable crossovers, parametric EQ and delay, with limiters for speaker protection, and can be set up for stereo in-ear monitoring.

An ideal choice for rehearsal room complexes, Minidrive™ provides a cost-effective way to add BSS processing to the equipment inventory. It can also be used as a multitap delay line in broadcast and theatre applications.

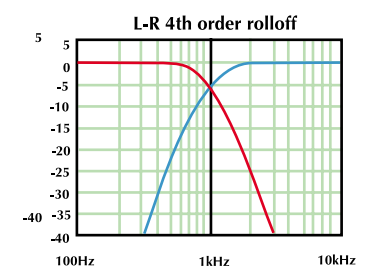
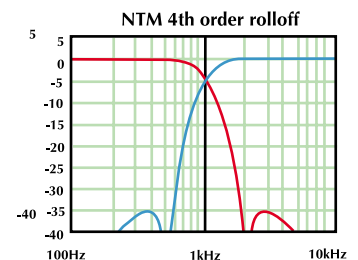
Passive loudspeaker systems with separate sub-bass cabinets will benefit from using Minidrive™, even if they already have passive crossovers, since Minidrive™ makes efficient use of the power amplifiers feeding each cabinet to ensure no power is wasted on non-audible frequencies.

Minidrive™ can be used in clubs and restaurants to send different feeds of the same mono signal into different zones, from bars to under balconies. This distributed system can also improve intelligibility for conferences and corporate events.



A New Filter Design for Outstanding Performance

The new Version 2.0 firmware includes new filter designs in the shape of the WHISEWORKS – NTM* topology. This new design, developed by Neville Thiele and patented by Australia's Precision Audio, provides the fastest roll-off slopes outside of the pass band in modern IIR filter designs, while maintaining zero phase difference between adjacent bands throughout the crossover region, preventing beam-tilting. Listening tests have shown a marked and noticeable enhancement in performance over traditional Linkwitz-Riley 48dB filters. The new filters are kinder on the ear, and like the L-R design also maintain a flat frequency response throughout the crossover region.



Now you can manage your loudspeakers without losing control of your budget.

The Minidrive™ loudspeaker management system combines many signal processors essential to touring, fixed installation and monitoring applications into a single DSP powered rack-mountable unit.

Add to this its setup memories, security lock out modes and the high BSS audio quality inherent in all our product designs, and the result is a reliable, flexible loudspeaker management system for stage, front-of-house or installed sound use.

Flexible Modes of Operation

Each Minidrive™ processor can be configured to operate in different modes. The FDS-334T, with 2 balanced inputs and 4 balanced outputs, can operate as either a 4-way mono zoned system or a 2 x 2-way routing system, making it ideal for use with small active or passive systems, bi-amped monitors, or as a 2 output stereo delay. The FDS-336T has 6 balanced outputs, enabling it to be configured as a mono (6-way zoning), LCR 2-way or 2x3-way system. Minidrive™ can also be controlled by SIAsoft's SMAART LIVE analysis program for creating systems with integrated measurement and processing.

Active Filtering and EQ

Each Minidrive™ input, or a sum of the two, can be processed by dividing the audio spectrum into bands. Filters can be selected from Bessel, Butterworth, Linkwitz-Riley and WHISEworks-NTM, with slopes of up to 52dB per octave. Minidrive™ also features up to 38 bands of digital parametric or shelving EQ, enabling the response of a loudspeaker system

to be tailored to any particular room acoustic or desired sound. High and low shelving, with 6dB or 12dB slopes, and bell EQ types can be selected, with adjustable frequency, cut/boost and bandwidth (bell EQ only).

Exceptional Sound Quality

With balanced inputs and outputs, 24-bit A-D and D-A conversion and high quality digital signal processing, Minidrive™ offers optimum signal integrity. From live gigs to installed sound systems, it will enhance your mix, providing a wide dynamic range with low noise and distortion. And, housed in a 1U rack unit, Minidrive™ takes up less space in the rack.

User Setups

With space for up to 60 user programs to be stored in memory, Minidrive™ provides quick access to configured setups for use in certain locations or applications. Each can be recalled and displayed on the LCD screen for further editing.

Program Protection

Minidrive™ features three different levels of security lock modes to protect or hide individual program settings. With Lock Out enabled, all the parameter editing functions are disabled, ensuring the unit is safe from unauthorised adjustment. The OEM and Owner Locks protect all or a few of the parameters in a program from adjustment, allowing input and output screens to be accessed as normal.



"The biggest step forward in digital crossover technology since Linkwitz-Riley. Significantly lower distortion artifacts, increased clarity, greater projection coupled with a closer, tighter sound are among the benefits of using these new filters."

Jerry Wing,
Britannia Row, UK

Our WHISEWORKS – NTM filters are designed around 4th order and 8th order topologies. Since WHISEWORKS – NTM filters have a very fast roll-off this can often be used in place of an 8th order Linkwitz-Riley filter with a much improved group delay characteristic. These new filters use a notching characteristic to 'speed-up' the roll-off slope. This notching action causes the slope to change continuously, actually nearing infinity dB/Octave close to the notch, which is one octave away from the crossover frequency (in each direction).

Existing users can upgrade their Minidrives to include WHISEWORKS – NTM filters by registering their unit on the BSS Audio website at www.bss.co.uk/minidrive/thiele.htm, where you can also find a white paper describing in detail the advantages of this new design.

*The words "WHISEWORKS", "Neville Thiele Method" and NTM logotype are trademarks of Precision Audio Pty. Ltd. (registration pending). Manufactured under licence from Precision Audio Pty. Ltd. International Patents Pending.

FDS-336T

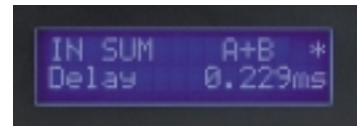
With simple controls, a clear front-panel display, two inputs



Key features

- 2-input/4-output or 2-input/6-output Minidrive™ systems
- Simple menu-driven user interface with Navipad providing access to functions
- Clear dot-matrix display
- Lockable output level trim controls and mutes
- Each output assignable to any input or sum of inputs
- Assignable parametric EQ and delay on each input
- Crossover, assignable parametric Q, mid-filter limiters, polarity and delay on each output
- Bessel, Butterworth, Linkwitz-Riley or WHISEworks-NTM crossover filter types
- 6, 12, 18, 24, 36, 48 or 52dB crossover slopes (filter type dependent)
- 60 user programs
- LED bargraph meters on every input & output
- MIDI control

Central to the operation of Minidrive™



is its clear, 2x16 character screen, which displays all programming parameters. The screen is divided into four key areas – mode, parameter, value and information – ensuring it is quick and simple to navigate.

To the left of the LCD screen lies the 'Navipad' four-way selection switch, which navigates through the different screens. Using the up and down keys, it is possible to select the parameter to be edited, while the left and right keys or the encoder are used for further menu navigation or parameter adjustment.



Minidrive™ editing modes (Input, Output



and Utility) can be selected by pressing UTILS, INPUT SELECT or one of the output channel level controls, providing instant access to a channel for editing.

Minidrive™ is exceptionally fast to set up, with ENTER/STORE and RECALL buttons on the front panel enabling user programs to be stored and recalled from internal memory.



Programs can also be named, with a lock facility preventing individual programs from accidental overwriting.

and six outputs, the FDS-336T is perfect for use in front-of-house applications



FDS-334T The FDS-334T features 2 inputs & 4 outputs

All inputs and outputs feature balanced metal XLR-type connectors for optimum signal and connection quality. Minidrive™ processors can be linked via MIDI, allowing stereo pair linking, program changes to be transmitted or received, and system exclusive data dumps to be transmitted. An RS-232 port allows software updates via a PC, or external control.

Output Control

Each output features a limiter to help protect loudspeakers and prevent sound system overload, with adjustable thresholds and automatic attack and release settings. The outputs can be phase reversed and feature $\pm 15\text{dB}$ of digital gain adjustment. In addition, outputs can be stereo-linked, enabling the settings on one channel to be applied to another simultaneously.

Digital Delay

Delay is used in the Minidrive™ to ensure correct loudspeaker system alignment. This can include aligning drivers within a loudspeaker, aligning loudspeakers within an array, and even aligning different arrays. A maximum delay of 630ms is available (in 21 μs increments) for each input to output path.

Metering & Controls

There's no need to scroll through menus to access metering for each channel, since individual LED metering for all inputs and outputs are provided. Each input channel features a 7-segment LED bargraph meter, which includes a signal present indicator, while the output channels also feature signal limit and signal over indicators. Output gain trim can be instantly and independently adjusted for each output using front panel controls, while illuminated output mute buttons provide an invaluable at-a-glance indication of each channel's status.

Full MIDI Implementation

MIDI In, Out and Thru ports are provided on the rear of each Minidrive™, enabling parameters to be adjusted simultaneously on multiple units when linked together. In addition, set up data can be dumped as a system exclusive MIDI message from one processor to another, or for backup to a MIDI sequencer or computer. An RS-232 port on the rear of the Minidrive™ enables a PC to be connected for control from a PC application, such as SIASoft's SMAART LIVE, or for the unit's own firmware upgrades.



TECHNICAL SPECIFICATIONS

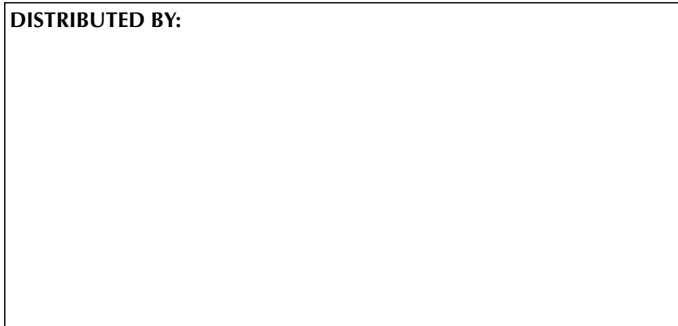
Inputs:	2 channels, max level +20dBu, 10kΩ impedance Pin 2 hot (+ve), electronically balanced
Outputs:	6 channels (FDS-336T), 4 channels (FDS-334T), max level +20dBu, into 600Ω impedance Pin 2 hot (+ve), electronically balanced
Output Impedance:	47Ω
Dynamic Range:	>108dB unweighted 22Hz to 22kHz
Frequency Response:	< +/-0.25dB, 15Hz-20kHz with filters out
Distortion (THD):	< 0.01%, 20Hz-20kHz @ +10dBu input level
Audio Sample Rate:	48kHz
Channel Separation:	> 80dB, 20Hz-20kHz
A/D & D/A Conversion:	24-bit, input and output
Configurations:	FDS-334T: mono 4-way, stereo 2-way FDS-336T: mono 6-way, stereo 3-way, stereo 2-way with A+B sum 2-way Any combination of 2 inputs to up to 6 outputs with individual passbands
Crossover Slopes:	Bessel: 12 & 24dB/octave, Linkwitz-Riley: 12, 24 or 48dB/octave Butterworth: 6, 12, 18, 24 or 48dB/octave WHISEworks-NTM: 36 & 52dB/octave
Limiters:	Mid-filter 2-stage limiters with threshold of -10 to +20dBu
Assignable Equalisation:	Up to 38 bands of EQ, dependent upon used crossovers slopes. High and Low shelving at 6dB or 12dB/octave or fully parametric with bandwidth of 0.05 to 3.0 octaves Frequency range 15Hz to 16kHz, gain of +/-15dB in 0.5 dB steps

Delay Time:	635ms maximum delay on each input to output path
Delay Time Resolution:	21µs steps
Delay Units:	Milliseconds, metres, feet or frames per second
Front Panel Controls:	Programming keys: UTILS, STORE/ENTER, RECALL Input selectors, A, B and SUM (A+B) Mute, edit selection and trim controls on each output 2 x navigation controls
Metering:	Input level LED meters: 'SIG' present, -3, 0dBu, +3, +6, +12, and 'CLIP' Output level LED meters: 'OVER', 'LIMIT', -3, -6, -12 and -20dB below threshold, 'SIG'
Display:	2 x 16 character backlit LCD
Memory:	60 User Programs stored in flash memory
Dimensions (HxWxD):	44.4mm x 483mm x 203mm (1.75" x 19" x 8")
Net Weight:	2.8 kg (6.2 lbs)
Shipping Weight:	4.5 kg (9.9 lbs)
Safety Agency Approvals:	CE, ETL
Power Requirements:	Power supply AC mains 50/60Hz, 90V-264V
Power Consumption:	< 30VA

BSS Audio reserves the right to change specifications and features without notice.



DISTRIBUTED BY:



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