

## FLAT-PAK™ SERIES

### Model FP-PA18

#### 18 W Audio Power Amplifier with Power Supply

- 18 Watts RMS into 8 Ω
- Automatic Energy-Saving Sleep Mode
- Selectable Sleep Delay: Off, 5, 15, 25 Minutes
- Input / Output Detachable Terminal Block Connections
- Line Level Balanced or Unbalanced Input
- Compressor/Limiter Controls Clipping
- LED to Indicate Audio Compression Threshold
- Compressor Produces Maximized Average Output Power
- Audio Quality Superior to Standard Amplifiers
- Ultra-compact All Metal Construction
- High-Efficiency Class D Operation
- Thermal and Short-Circuit Protection



The FP-PA18 is part of the group of versatile FLAT-PAK products from Radio Design Labs. The unique FLAT-PAK case can be directly screwed or bolted to cabinets or shelves. Optionally available rack-mounting accessories permit single or multiple FLAT-PAK module mounting.

**APPLICATION:** The FP-PA18 is a high efficiency 18 W power amplifier with a line input, 8 ohm output, integral audio compressor and an automatic sleep mode. The FP-PA18 features a balanced line level input that may be connected unbalanced. A gain control located next to the terminal block is designed to be adjusted manually or with a trimming screwdriver. The gain range will accommodate standard unbalanced levels as well as professional balanced levels. The output drives one 8 ohm speaker or multiple speakers connected to present an 8 ohm load to the amplifier.

The FP-PA18 includes an analog compressor/limiter for fidelity audibly superior to conventional class D amplifiers with digital limiting. The input **GAIN** setting determines whether the limiter alone is used for clipping suppression, or if the full compressor/limiter will be used to substantially increase the average output power beyond that of a standard 18 W amplifier. A red **COMPRESSION** LED flashes when the limiter is preventing output clipping. Normal audio level signals remain unaffected by the compressor thereby preserving audio dynamics. If the input level is increased so that the compressor is active, the LED remains dimly lit between peak flashes. The audio is compressed according to three dynamic time constants providing aural transparency while maintaining clean, unclipped amplified audio for input overloads of up to 20 dB. The FP-PA18, with compression, is capable of producing average audio output levels and clarity normally expected from amplifiers with a much higher output power rating.

The FP-PA18 circuits are all designed for low power consumption. In the absence of an audio input, a digital timer is enabled to switch the class D output stage off. When this sleep mode is active, the amplifier module and its included RDL power supply consume less than 1 W of mains power. A control on the end plate sets the sleep mode delay timer to 5, 15 or 25 minutes. The control also permits the installer to bypass the sleep mode to conform to system specifications that require the amplifier to be active at all times. Upon detection of an input signal, the amplifier is nearly inaudibly and instantly restored to full operation within 150 milliseconds.

The output stage includes an audio detector that illuminates the green **OUTPUT ACTIVE** LED and provides an active open collector output when amplified audio is present at the module output. This output is useful to control other equipment or to verify amplifier operation using high or low frequency low-level test tones. The detector triggers with only 30 mW of output power at 20 Hz or 5 mW of output power at 20 kHz.

A blue **POWER** LED illuminates when the FP-PA18 is powered from its external 24 Vdc power supply. The power LED is dimly illuminated when the sleep mode disables the amplifier and glows brightly when the amplifier operation is fully enabled. The module is equipped with both thermal and output short-circuit protection. The high-efficiency Class D output stage produces minimal heat for all levels of expected voice or music modulation.

Wherever an ultra-compact, high quality, high efficiency eco-friendly audio power amplifier is needed to provide reliability and unsurpassed versatility, the FP-PA18 is the ideal choice. Use the FP-PA18 individually, or combine it with other RDL products as part of a complete audio/video system.

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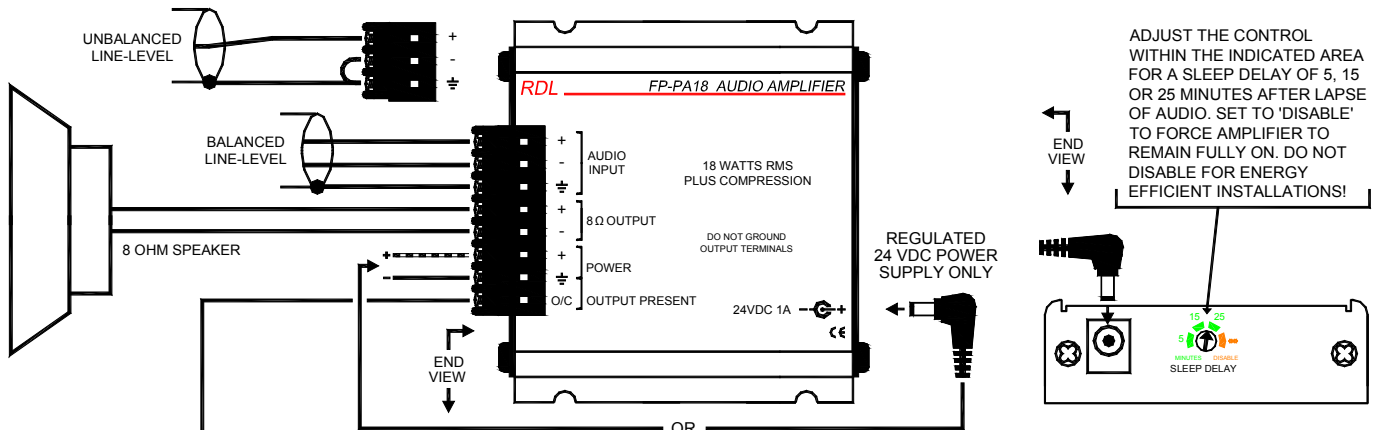
## Installation/Operation



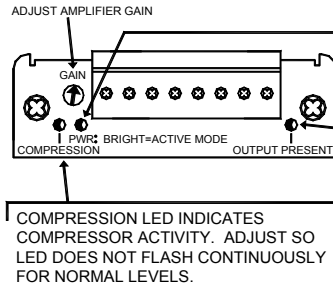
EN55103-1 E1-E5; EN55103-2 E1-E4  
Typical Performance reflects product at publication time exclusive of EMC data, if any, supplied with product. Specifications are subject to change without notice.

### Mounting

The FP-PA18 should be mounted in a location with good ventilation. If the module is mounted using a box that does not provide ventilation, the amplifier should be secured to the outside surface of the box. The ambient operating environment must not exceed 40 degrees C.



THE O/C TERMINAL IS PULLED TO GROUND WHEN AN AUDIO SIGNAL IS PRESENT AT THE AMPLIFIER OUTPUT. CONNECT THE TERMINAL TO AN INDICATOR OR TO THE LOGIC INPUT OF OTHER EQUIPMENT (GROUND TERMINALS MUST BE CONNECTED BETWEEN THE OTHER EQUIPMENT AND THE MODULE). THE O/C TERMINAL MAY BE USED TO VERIFY THE OPERATION OF THE FP-PA18 OR TO SWITCH ON OTHER EQUIPMENT BASED ON PRESENCE OF AUDIO SIGNAL.



POWER INDICATOR ILLUMINATED (BRIGHT OR DIM) = ON  
BRIGHT = AMPLIFIER FULLY ACTIVE  
DIM = AMPLIFIER SLEEP MODE

THE 'OUTPUT PRESENT' LED INDICATES AUDIO IS PRESENT AT THE AMPLIFIER OUTPUT AND THE OPEN COLLECTOR (O/C) TERMINAL IS PULLED TO GROUND.

Sleep Mode is automatic after the sleep delay time has elapsed following absence of input audio.  
Sleep Mode may be activated manually by repowering the module with input audio absent.

### TYPICAL PERFORMANCE

Input: Line level (+4 dBu nominal balanced; -10 dBV nominal unbalanced)  
Input Impedance: 10 kΩ balanced bridging; 5 kΩ unbalanced  
Gain Adjustment: Single turn audio taper  
Minimum Input Levels:  
Balanced: .....-18 dBu (to cross compressor threshold)  
Unbalanced: .....-20 dBV (to cross compressor threshold)  
Maximum Input Levels:  
Balanced: .....+23 dBu  
Unbalanced: .....+21 dBV  
Frequency Response: 20 Hz to 20 kHz (+/- 1 dB)\*  
THD+N: < 0.5% (20 Hz to 20 kHz)\*  
Compressor: Threshold 3 dB below rated output, automatically adjusting attack and release times  
Noise: < -72 dB (below 18 W RMS, +4 dBu input)  
CMRR: > 45 dB (50 Hz to 3 kHz)  
Output Power: 18 W RMS into 8 Ω  
Output Circuit: Class D  
Output Signal Detector Threshold: 30 mW @ 20 Hz; 20 mW @ 30 Hz; 10 mW @ 50 Hz; 5 mW @ 65 Hz through 20 kHz  
Output Signal Detector Output: Open collector, 5 mA  
Sleep Mode Power Consumption: < 1 W (amplifier and included power supply)  
Sleep Mode Delay: 5, 15 or 25 minutes (selectable)  
Sleep Mode Disable: Selectable  
Active Mode Delay: < 150 mS after input audio detected  
Audio Detector Threshold: -50 dBu balanced, -52 dBV unbalanced  
Ambient Operating Environment: 0° C to 50° C Maximum  
Indicators (3): Red LED: **COMP** LED indicates compressor activity  
Green LED: **OUTPUT ACTIVE** (controlled by output signal detector)  
Blue LED: **POWER** on; Dim: Sleep mode active; Bright: Amplifier active  
16 mA (idle), 975 mA (max.), Ground-referenced  
24 Vdc power supply current: 100 to 240 Vac, 50-60 Hz, 1A max.; 24 Vdc output to module  
Power Supply (included): 100 to 240 Vac, 50-60 Hz, 1A max.; 24 Vdc output to module  
Dimensions: Height: 1.15 in.(2.92 cm); Width: 3.25 in.(8.26 cm); Length: 3 in.(7.62 cm)

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rule. These limits are designed to provide reasonable protection against harmful interference in a residential installation. The equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off an on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

\*measured at compressor threshold level equalling 12 W RMS output power