



**RDL**<sup>®</sup>  
Radio Design Labs

SPECIALISTS IN PRACTICAL PRECISION ENGINEERING™

## FLAT-PAK™ SERIES

### Model FP-PA18H

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

- 18 Watts RMS into 8 Ω
- Operation in Elevated Ambient Temperatures to 70°C
- 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-PA18H 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-PA18H is a high efficiency 18 W power amplifier with a line input, 8 ohm output and audio compressor capable of operation in a high ambient temperature environment. The thermal characteristics of the module case and construction throughout using high temperature components permit operation over a range of 0 to 70 degrees C. The FP-PA18H is ideally suited to outdoor applications, signage and other installations where ambient temperatures may become elevated due to limited convection.

(Note: The power supply must be mounted in a location with a maximum ambient temperature of 40 degrees C. The FP-PA18H module is available separately for installation with a high temperature power supply or in systems with distributed 24 Vdc power. Contact RDL technical support for more details.)

The FP-PA18H 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-PA18H 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-PA18H, with compression, is capable of producing average audio output levels and clarity normally expected from amplifiers with a much higher output power rating.

The output stage includes an audio detector that illuminates the green **OUTPUT ACTIVE** LED and provides an active open collector output when the output stage is active and 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-PA18H is powered from its external 24 Vdc power supply. 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 audio power amplifier is needed to provide reliability and unsurpassed versatility, the FP-PA18H is the ideal choice. Use the FP-PA18H individually, or combine it with other RDL products as part of a complete audio/video system.

## FLAT-PAK™ SERIES

### Model FP-PA18H

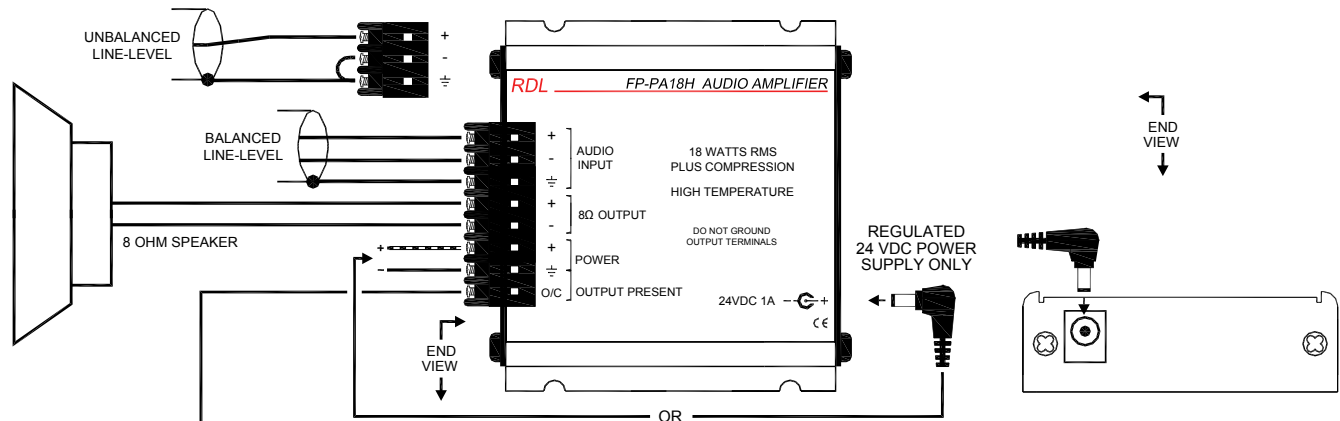
### 18 W Audio Power Amplifier with Power Supply

## Installation/Operation

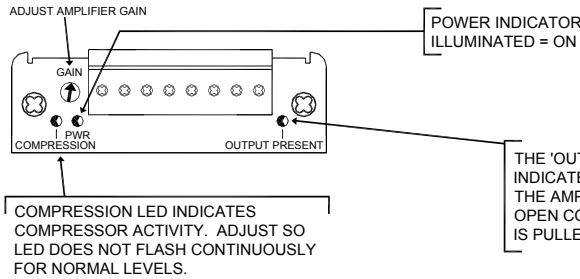
EN55103-1 E1-E5; EN55103-2 E1-E4  
 Typical Performance reflects product at publication time exclusive of EMC data, if any, supplied with product. Specifications are subject to change without notice.

#### Mounting

The FP-PA18H should be mounted in a location with the best possible ventilation. If the module is mounted inside a box that does not provide ventilation, the amplifier should be secured to an exterior surface of the box. The ambient operating environment must not exceed 70 degrees C. (Note: The power supply must be mounted in a location with a maximum ambient temperature of 40 degrees C. The FP-PA18H module is available separately for installation with a high temperature power supply or in systems with distributed 24 Vdc power. Contact RDL technical support for more details.)



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-PA18H OR TO SWITCH ON OTHER EQUIPMENT BASED ON PRESENCE OF AUDIO SIGNAL.



#### 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  
 CMRR: > 45 dB (50 Hz to 3 kHz)  
 Noise: < -72 dB (below 18 W RMS, +4 dBu input)  
 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  
 Ambient Operating Environment: 0° C to 70° C Maximum  
 Indicators (3):  
 Red LED: **COMP** LED indicates compressor activity  
 Green LED: **OUTPUT ACTIVE** (controlled by output signal detector)  
 Blue LED: **POWER** on  
 24 Vdc power supply current: 80 mA (idle), 975 mA (max.), Ground-referenced  
 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 and 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 equaling 12 W RMS output power