MODEL T6411

SINGLE 400W, 100 VOLT POWER AMPLIFIER CARD

The Model T6411 is a Class D (switching mode) single channel 400W amplifier into 25 Ohms (100 Volts into 25 Ohms). The amplifier may be used in the IED T9160 digital Integrated Power Amplifier Mainframe or in the IED T6400 analog Power Amplifier Mainframe. Any card may be placed in any slot in the mainframes without any configuration settings needing to be made on the amplifier cards.

Class D operation combined with an integral switching mode power supply offers many advantages, and the unique IED design makes full use of these benefits. They include higher efficiency, increased reliability, improved performance, and lower cost. Switching mode operation combined with high voltage power MOSFET devices make it possible to eliminate the heavy, costly, bulky transformers. IED's design is stable under all load conditions (phase angles of 0 to 360 degrees). The amplifier card has 37 dB of input gain and no attenuation controls onboard. Attenuation is handled ahead of the power amplifier by electronics or controls on the amplifier mainframes.

The power amplifier has built-in voltage limiting to protect the speakers being driven. In addition, a temperature sensor on the heatsink will automatically shutdown an amplifier that becomes too hot, such as due to cooling fan blockage or failure, so as to protect the electronics. In the IED T9160 mainframe application, the temperature and other status conditions of the power amplifier are reported back to the digital controller in the IED mainframe for reporting to a user, generation of alarm conditions or for automatic throttling of input signals to try to keep the amplifier operating within safe limits. In the IED T6400 application, these status signals are presented at the back of the mainframe for monitoring by another system or controller. When used in one of these amplifier mainframes, only the "A" channel input is functional.

The amplifier card has 3 LEDs located on its front edge. There is one green LED for the card plus one multi-color LED per channel. The green LED when lit steadily, represents that the amplifier is powered up. The channel LED is yellow to represent output signal presence of the amplifiers. The signal presence indicator turns on when 1 Watt is detected on the amplifier output. This same LED changes to red to indicate when the voltage limit has been reached on that channel.

There is a switch on the front of the power amplifier to turn it off without taking the whole frame down. This may be used for example, to remove/replace an amplifier without affecting any other channels in the frame. The 6411 provides +24V through current limiting resistors for operation of the fans in the rear of the mainframe.

Model T6411L is the part number for 120VAC power source, and Model T6411H is the part number for 240VAC power source.

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Figure 1 - IED T6411H Power Amplifier Card

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SPECIFICATIONS

ELECTRICAL, ANALOG

All Measurements at 120VAC unless noted otherwise

1. Power Output (per channel), R_L = 25 Ω . . . . . 400 W (100 V)
2. Efficiency
   - Power Output, P_O = 400 W 78%
   - Power Output, P_O = 200 W 72%
3. Power Input, quiescent 40W
4. Clipping Level . . . . . 141 V Peak
5. Frequency Response . . . . . ± 1 dB
   P_O = 100 W, 20 Hz – 20 kHz
6. Power Bandwidth . . . . . 20 Hz - 20 kHz
   –3 dB
7. Signal-to-Noise Ratio . . . . . > 85 dB
   Unweighted, 20 Hz - 20 kHz
8. Total Harmonic Distortion, THD . . . . . < 0.2% @ 2 kHz
   P_O = 400 W
9. Input Sensitivity . . . . . +5 dBu
   P_O = 400 W, R_L = 25 Ω
10. Input Impedance . . . . . 20 kΩ, Balanced
11. Input Common Mode Rejection Ratio, CMRR . . . . . > 70dB
    20 Hz - 20 kHz
12. Output Impedance . . . . . 0.35 Ω
13. Output Loading. . . . . Stable for any load 0 Ω to infinity
    20 Hz – 20 kHz
14. Overcurrent Protection . . . . . 5 A, 2AG fuse

CONTROLS

1. Power Switch . . . . . Two position slide switch

INDICATORS

1. Signal Present/Clipping . . . . . Yellow/Red LED
   2, one per channel
2. Power 'On' . . . . . Green LED

CONNECTORS

1. 32-pin Euro Connector . . . . . Panduit 100-032-033

MECHANICAL

1. Size (maximum overall dimensions)
   - Height . . . . . (17.3 cm) 6.8“
   - Width . . . . . (4.6 cm) 1.8“
   - Depth . . . . . (31.75 cm) 12.5"
2. Weight . . . . . (1.8 kg) 4.0 lbs.

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ENVIRONMENTAL

1. Operating Temperature Range. . . . . (0 °C - +50 °C) +32 °F - +122 °F
   Applicable for typical voice paging and background music applications.
2. Storage Temperature Range . . . . . C - +70 °C) –40 °F - +158 °F