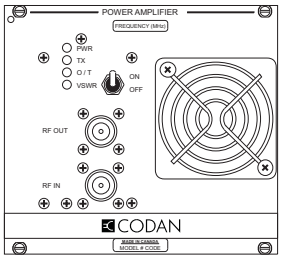
TN460 AMP-2/450 UHF 30 Watt Power Amplifier



The AMP-2/450 30 Watt power amplifier operates in one of two frequency bands: 406 to 430 MHz or 450 to 470 MHz. The power amplifier is rated for continuous duty at an adjustable RF output power of 20 to 30 Watts. The RF power output is set by the exciter module. The input to the power amplifier cannot exceed 2.0 Watts.

Specifications

Frequency Bands	406 - 430 MHz / 450 - 470 MHz
RF Output Power	20 to 30 Watts adjustable (set by exciter)
RF Input Power Range	1.0 to 2.0 Watts from exciter
Conducted Harmonics	≤ -70 dBc @ 30 Watts RF output
Conducted Spurious	≤ -70 dBc @ 30 Watts RF output
Radiated Spurious	≤ -20 dBm @ 3 m
Thermal	Thermal interlock disables @ +80°C (175°F)
Fan	Fan activates @ +40°C
Output Impedance	50 Ω
Standby Current Drain	≤ 6 mA
Transmit Current Drain	≤ 6.00 A / 5.00 A (typical)

Models Available

AMP-2/450-30-00	FM, 20 - 30 Watts continuous duty, 406 - 430 MHz / 450 - 470 MHz

Power Amplifier Operating Frequency

The AMP-2/450 is installed in the subrack (taking up a transmitter and receiver slot) and is mated with a transmitter exciter. The AMP-2/450 has a heavy duty aluminum heatsink and a thermally switched cooling fan. The power amplifier has three standard LEDs, one optional LED, and a power switch on the front panel. The TX LED illuminates when an RF signal is present. The O/T (Over Temperature) LED will illuminate (and the power amplifier will shut down) when the heatsink temperature exceeds 80°C (175°F) and will reset when the temperature falls below 63°C (145°F). The VSWR LED illuminates when a high VSWR (3:1) is sensed in the amplifier.

The power amplifier is initially aligned at the factory for the frequency shown on the label on the front panel. It is recommended to re-align the power amplifier for any change in frequency, however this may not be required. For a small frequency change, no re-alignment of the power amplifier may be required. If the frequency change is greater than **±2 MHz** from the frequency at which the last complete power amplifier alignment was performed, the power amplifier will need to be realigned.

43 Erie Street
Victoria, B.C.
Canada V8V 1P8

Toll Free Canada & U.S.A.
Phone: 1-800-664-4066
Fax: 1-877-750-0004

International
Phone: 250-382-8268
Fax: 250-382-6139

Internet
Email: LMRsales@codanradio.com
Web: www.codanradio.com

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Transmitter Exciter Alignment:

Before aligning the 30 Watt Power Amplifier, the Transmitter Exciter should be tuned properly following the alignment procedures in the Technical Notes or Instruction Manual for the transmitter. **Disable the output power alarm, VSWR alarm, and VSWR overload** (if applicable, depending on use and model). Set the RF output power at **1.5 Watts**.

Key the transmitter exciter with a 50 Ω dummy load connected to the RF output and measure the total current draw of the radio system. Note this value.

Power Amplifier Alignment:

To align and / or adjust the power amplifier the outer wrap-around cover needs to be removed, the power amplifier needs to be plugged into the subrack via a cable and extender card and power must be applied to the system. Connect a Wattmeter capable of forward and reverse power measurements between the exciter RF output and the power amplifier RF input. Connect the transmitter exciter RF output to the Wattmeter using the 37 cm cable supplied with the power amplifier. Connect the Wattmeter to the power amplifier input using another 37 cm, “roughly” 1/2 wavelength cable (for accurate VSWR readings). **Do not exceed 2 Watts** at any time into the power amplifier. Connect an ammeter to the power input of the radio system to measure system current draw. Set the input power voltage at +13.8 Volts nominal (if possible). When the power amplifier is connected using the extender card, there is typically a 1 to 1.5 Volt drop of the input power voltage. Measuring the input power voltage of +13.8 Volts at the power amplifier (Pins B2 or Z2) will accomodate for this voltage drop.

Turn the power switch on the front of the amplifier to ON. Key the exciter by flipping the switch on the front panel to KEY TX. Adjust C1 and C2 for minimum reflective power (**0.20 Watts maximum**).

Adjust C9, C15, C16 as well as C1 and C2 to get maximum RF power output with minimum current draw of the power amplifier. Power Amplifier current draw should not exceed **7 Amps**. Measure the total current draw of the system with the power amplifer operating and subtract the current draw, measured WITHOUT the amplifier, to determine the power amplifier current draw. RF power output should not exceed 35 Watts at any time during alignment. If the RF power output exceeds 35 Watts, turn the exciter down slightly from 1.5 Watts.

Connect the output of the power amplifier to a Spectrum Analyzer and check for spurs (harmonics). If possible, adjust the input power voltage from +11 to +16 volts and continue to check for spurs. If spurs are present, re-adjust C1, C2, C9, C15 and C16 for all four conditions: VSWR, current draw, RF power output and spectral purity.

To set the VSWR LED, terminate the transmitter with a 3:1 mismatch load. Monitor the VSWR LED and slowly turn R5 counter clockwise until the VSWR LED switches on.

MT-3 Transmitter Exciter

The AMP-2/450 power amplifier’s maximum input power is 2.0 Watts. When connecting this amplifier to an MT-3 Transmitter, the 0.5 to 2.0 Watt UHF exciter must be used with this power amplifier. In order to use a 2.0 to 8.0 Watt MT-3 Transmitter as an exciter with this power amplifier, an attenuator must be put in between the exciter and amplifier. Use of the 0.5 to 2.0 Watt exciter is the preferred method. The MT-4E Transmitter exciter is capable of operating from 0.5 to 8.0 Watts.

Note: For complete alignment procedures, refer to the instruction manual. These notes are for reference only.

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