

Power Amplifier Module



MTR3000 Power Amplifier Module

The Power Amplifier (PA) is a forced convection-cooled continuous wave RF power amplifier. It accepts a low-level modulated RF signal from the Exciter Module, and amplifies the signal to the end users selected transmitter output power.

The PA is designed for continuous-duty operation across the specified band for all power levels. All PA modules contain a multi-stage power amplifier board at the input (RF Board), a circulator with isolation load termination, a low-pass filter, and directional couplers at the output (Output Board), and a DC Distribution Board incorporating circuitry for diagnostics and RF power control.

The PA provides alarms for VSWR, Low Output Power, High Temperature, Low/High DC voltage and Cooling Fan failures (cooling fan is field replaceable). In the event of these alarms, with their severity weighed, the PA in conjunction with the station firmware will take measures such as rolling the power back or de-keying the station to protect the hardware from damage or improper operation.

The PA and its sub-circuits are broad-band devices and require no manual tuning or alignment to operate at the site as their calibration parameters are stored in the PA's EEPROM. As such, in the event the PA requires replacement, no calibration is needed after its replacement.

Note: If the station is upgraded from MTR2000, refer to MTR2000 Basic Service Manual (included with the original MTR2000 station) for all PA information.

Power Amplifier Connections

There are three electrical connection assemblies on the PA:

- Power supply (rear cable harness)
- Communications connector (rear ribbon cable).
- RF input connector (BNC female)
- RF output connector (N-Type female).

PA Containment

The PA is secured to the station chassis with 6 TORX screws (T20 bit size required).

PA Basic Electrical Performance

Power Amplifier Performance Specification

Parameter	Specification		
Operational Frequency Range	403-470 MHz	470-524 MHz	800/900MHz
Minimum Input Return Loss (TX mode)	7 dB	7 dB	10 dB
Rated RF Output Power Range	8 - 100 W	8 - 100 W	8 - 100 W
Rated RF Input Power Range	9.8 – 14 dBm	9.8 – 14 dBm	12.8 – 18.5 dBm
28 V Supply Nominal Voltage (AC Power)	28.6 V (+/- 4%)	28.6 V (+/- 4%)	28.6 V (+/- 4%)
14 V Supply Nominal Voltage	14.2 V (+/- 3.5%)	14.2 V (+/- 3.5%)	14.2 V (+/- 3.5%)
28V Supply Maximum Current Draw	12.6 A	12.6 A	12.6 A
14V Supply Maximum Current Draw	2.0 A	2.0 A	2.0 A
Maximum Standby Power Consumption	1.2 W	1.2 W	1.5 W

Power Meter Accuracy

The forward power meter is typically +/-10% at maximum rated output power. Keep in mind that the calibration point of the reading is the output connector of the PA. This is important to remember when duplexers, isolator trays, or antenna relays are installed.