TPL COMMUNICATIONS
Employee Owned Company

USER MANUAL MID-BAND VHF CONTINUOUS DUTY POWER AMPLIFIERS

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L-PA2-2AX-RXRPS/RSPS-L5

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GENERAL SPECIFICATIONS

FREQUENCY RANGE: 72-76 MHz

MODEL	POWER INPUT	POWER OUTPUT	DC CURRENT DRAIN
PA2-2AB-RSPS-P	0.5-1 W	10 W	1.5 Amps.
PA2-2AC-RXR-PS-P	0.5-1 W	60 W	4 Amps.

OPERATING MODE:

FM / CW

OPERATING VOLTAGE:

110 VAC

EIA DUTY CYCLE:

100% / Continuous

HARMONIC AND SPURIUS EMISSIONS ATTENUATION:

Meets or exceeds FCC Certification requirements.

IN/OUT IMPEDANCE:

50 Ohms.

IN/OUT RF CONNECTORS:

Type "N"

RECEIVER PATH INSERTION LOSS:

1 dB maximum

General Specifications
(continued)

OPERATING TEMPERATURE:

-20° to +50° Celsius.

STORAGE TEMPERATURE:

-40° to +85° Celsius.

OPERATING HUMIDITY:

0% - 85% RH (non-condensing).

STORAGE HUMIDITY:

0% - 95% RH (non-condensing).

OPERATING PRECAUTIONS

CAUTION: This amplifier produces RF voltages that can cause painful and dangerous RF burns. Use caution! Connect and disconnect all RF connections with the DC power and drive power off.

DRIVE POWER: RF power transistors, although quite rugged in most respects, are easily damaged by overdrive. Be careful no to overdrive this amplifier, even for an instant. Higher than rated drive power may destroy the transistor and **VOID ANY WARRANTY.**

TERMINATIONS: The efficiency of this amplifier will degrade if it is operated into anything but a **50 Ohm** load. Lowered effeciency may mean any, or all, of the follow ing: lower power output, increased current drain, higher opearating temperature, and reduced life time.

INSTALLATION

This unit is designed for mounting in a standard 19" rack. When picking a location in the rack, cosideration must be given to the RF power output cable lengths, as well as cooling considerations.

Mount the unit where dust and other debris are not likely to clog the cooling fins. Avoid mounting the amplifier directly above hot pieces of equipment that could artificially raise the amplifiers temperature.

Connect the radio tranmsitter to the **"RF INPUT"** connector with a **50 Ohm** cable and a type **"N"** plug. Connect the antenna to the **"RF OUTPUT"** connector on the amplifier with **50 Ohm** coaxial cable and a type **"N"** plug.

Plug the AC line cord into the system AC power receptacle.

For safety, ensure that the rack and all equipment connected to the amplifier have proper AC grounds. Do not rely on coaxial cable shielding. Assure the installation has proper lightning protection (e.g. in line coaxial protectors manufactured by PolyPhaser Corporation or equivalent).

REMOTE MONITORING

The monitored functions are described in other sections. These same functions are available at the **REMOTE MONITOR** DB-9 connector on the rear panel. The outputs are as follows:

Monitor Signals

Function	Pin	Signal Definition	Source	Mode	Voltage	Current
GND	1	Ground	Chassis and Signal Ground			
VRM	2	Reflected Power Monitor	Buffer	Analog	8 V max, alarm on = 5.0 V	1 mA max
PTT	3	Push-To--Talk	Input	Active Low	5 V max	0.5 mA max
OTMP	4	Over Temperat-ure Alarm	Open Collector	Active Low	30 V max	20 mA max
VCC	5	+5 Volts	Reference	Supply	+5 VDC	20 mA max
RFON	6	RF Input On	Open Collector	Active Low	30 V max	20 mA max
VFM	7	Forward Power Monitor	Buffer	Analog	5 V @ nominal output	1 mA max
SWR	8	Standing Wave Ratio Alarm	Open Collector	Active Low	30 V max	20 mA max
LPA	9	Low Power Alarm	Open Collector	Active Low	30 V max	20 mA max

OPERATOR ADJUSTMENTS

The operator adjustments are accessible through a slot in the cover of the RF enclosure. These are 10-turn potentiometers VR1 through VR5 and switch SW1. Their functions are as follows:

Ref. Des.	Function / Adjustment
VR1	Determines the threshold for a valid input RF power level.
VR2	Low RF power output threshold set to determine the alarm level for the LPA signal at the Remote Monitor connector.
VR3	Sets the Forward Power Monitor (VFM) voltage at the Remote Monitor connector.
VR4	SWR threshold set to determine the alarm level for the SWR signal at the Remote Monitor connector.
VR5	Sets the RF output power level.
SW1	Determines the method of RF output power control. The TEST position provides regulated DC control. The OPER position provides RF feedback leveling control.

A basic understanding of RF principals is necessary before making any adjustments to the unit. This includes the knowledge of the relationship of forward and reflected power relative to SWR, etc. Adjustment also requires the familiarity and use of test equipment. If in doubt, consult your distributor, dealer or the manufacturer about changes.

OPERATOR ADJUSTMENTS

Switch SW2, located inside the RF enclosure, is set according to the particular configuration of each amplifier. This switch is factory set at the time of manufacture and should not be changed. *Never turn on more than one switch at any time!*

SW2	-1	-2	-3	-4
14V / REM	on	off	off	off
28V / REM	off	on	off	off
14V / PSC	off	off	on	off
28V / PSC	off	off	off	on

The necessary adjustment procedure to change the RF power level must be done in the sequence shown as follows:

Provide a proper low-VSWR RF termination for the amplifier.

1. Place SW1 into the RUN position.

2. Apply the minimum RF drive level and adjust VR5 for nominal output power.

3. With nominal RF output, measure the voltage on pin 7 of the monitor connector (VFM) and adjust VR3 to obtain 5 volts

4. Reduce input drive by 3 dB and adjust VR1 so the RFON signal at pin 6 of the monitor connector goes low

5. Restore minimum drive and set the output power down 3 dB from nominal with VR5. Adjust VR2 just until the LPWR signal at pin 9 of the monitor connector goes low. Increase the output power to nominal with VR5 while watching for the LPWR signal to go high.

6. With the RF drive off, disconnect the 50 Ù load and connect a 3:1 VSWR termination. Turn on drive power and set to the nominal level. Adjust VR4 just until the SWR signal at pin 8 of the monitor connector goes low.

WARRANTY

TPL COMMUNICATIONS has tested and found this unit to function properly and to operate within the parameters of its stated specifications.

TPL COMMUNICATIONS warrants that this product is free from defects in material and workmanship. If found to be defective within two (2) years from the date of purchase, the factory at its discretion, will either repair or replace the unit at no cost provided the unit is delivered by the owner to the factory intact. Warranty does not apply to any product which has been subjected to misuse, neglect, accident, improper installation or used in violation of instructions furnished by us, nor does it extend to units which have been repaired or altered outside our service department, nor where the serial number has been removed, defaced or changed.

SERVICE

For service on this amplifier, contact:

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Customer Service Department
PHONE (323) 256-3000
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