P15XXUL1 and P15XXUH1
Power Amplifier User's Manual

1. General Information.

Power Amplifier (PA) is an AB/C-class unit. It is intended for amplification of single carrier phase (frequency) modulated narrowband signals.

Working frequency range lies between 403 MHz and 470 MHz for UL unit (P15XXUL1) and between 450 MHz and 512 MHz for UH unit (P15XXUH1). Code "xx" shows the input power range:

Code:	R1	R2	R5	1	2	5	10	20
Range, W:	0.1-0.2	0.2-0.5	0.5-1.0	1.0-2.0	2.0-5.0	5.0-10	10-20	20-50

In the normal operating mode the minimum output power is 150 W.
Input VSWR is not greater than 1.7:1.
PA meets all FCC requirements to harmonic and spurious levels.

The nominal power supply voltage is 13.8VDC.
DC current consumption does not exceed 44A at 13.8V.
Working ambient temperature range lies from -30ºC to +60ºC.

Input and output power levels are set up in the factory. Customer has an opportunity to reduce the output power, adjusting the special trimmer resistor in the unit, or picking up the value of outer resistor, connected to PA control pin.

PA has automatic power control loop that provides the stability of output power during the normal operation and all necessary changes of power in the case of load mismatch or unit overheating.

PA is intended for rack mounting in the standard 19" cabinet. The front panel is 10" high. The deepness of unit does not exceed 5".
Four LED at the front panel indicate the status of unit operation.
The hole in the side wall gives an access to the trimmer resistor, which allows reducing the output power against the set value.
There are two N connectors at the back of chassis.
There is power filtering DC connector at the back of chassis with four # 6-32 screws: two for "+" pole and two for "-" pole.
There are 3 filters at the back of chassis that bring alarming signal, as well signals for the outside power control.
Two fans at the back side of unit perform the forced air cooling. Fans start rotating, when RF signal comes to the unit input.

2. Installation Guide.

2.1. Unit installation shall provide a proper air access to the unit; no obstacle for air is allowed closer than 3" from fans and heatsink.

2.2. Copper wires # 10 AWG shall be use in DC power line. Wires shall be crimped for making ring terminals. Two parallel wires shall be used for each pole.
Put terminal under PI-shape shunts of DC connector. Do not remove shunts!

3. Operation Guide

3.1. Power supply voltage shall be in the range 13.8 V $\pm$ 1.0 V.

3.2. The input power inside the working frequency range shall be within the listed above limits. It is prohibit applying any RF signal out of the working frequency range with a power, greater than 10% of the minimum rated one.

3.3. Green LED "DC ON" is on, when DC voltage is applied to the unit.

3.4. Red LED "LOW POWER" is on, when the output power drops below 80% - 85% of set level. In majority of cases it warns about of inside problem. However, the output power may fail due to high load VSWR (in that case LED tells that the power decrease is stronger, then it is needed for VSWR protection).

3.5. Red LED "HIGH VSWR" is on, when the load VSWR exceeds 2.4 – 3. The output power is reduced.

3.6. Red LED "HIGH TEMP" is on, when the heatsink temperature is over +85˚C. Then the unit operates with output power, reduced to about 75% of rated one. Fans are running continuously, no matter, is RF drive applied or not.

3.7. Voltage at filter "ALARM" is about 9.5V during the normal unit operation and drops to less than 0.8V, when any of mentioned above red LED goes on. If 1.8 kOhm resistor is connected between this filter and the ground, TTL compatible output is created.

3.8. It is possible to significantly reduce the output power, pulling filter "SH/D" to the ground. However, it is possible to change the output power smoothly by a trimmer resistor (50 kOhm is the recommended value of it), connected between this pin and the ground.

3.9. The output power drops to about 75% of rated level, if the filter "CTRL" is pulled to the ground.