

HAMTRONICS® PF-1 PHANTOM POWER KIT

GENERAL.

The PF-1 kit provides a means of feeding +12Vdc power through the coax cable from a vhf or uhf receiver to a model LNK or LNY or similar pre-amp.

Normally, the preamp receives its power on a terminal which is capacitively filtered to prevent any stray rf or noise from being introduced into the signal line. Dc feed requires the use of a small gauge (#22 or #24) wire for the positive power line and usually uses the coax shield for a ground.

Using the PF-1 Phantom Power Kit saves running a separate hookup wire to carry the power to the preamp. We have long discouraged trying to save a few cents on some light-gauge hookup wire this way because of the risk of loading down the rf line or contaminating it with noise or other interference. However, we recognize that there are installations which make it desirable to feed the dc power up the coax cable to a tower-mounted pre-amp, and so we have provided this kit to help implement the conversion to coax dc feed. The reservations we have about doing this are:

a. Addition of circuitry to multiplex the dc power feed on the coax line must be done carefully to avoid many potential loading, noise, and feedback problems.

b. Even then, performance of the preamp may not be as good as with a separate dc power feed.

c. The components and techniques used for this kit are viable only for receivers in the frequency range of 130-500 MHz. They are not suitable for higher or lower frequencies.

PARTS SUPPLIED.

- 2 each 0.33 μ H rf chokes
- 2 each .001 μ F disc capacitors (may be marked 102)

MODIFICATION OF RECEIVER.

You may already have a receiver which provides for preamp dc power on the coax. If so, merely check to confirm that the power is +12Vdc referenced to the coax shield. I.e., +12Vdc on the center conductor and negative return on the shield.

If your receiver does not already have such provisions, you need to modify the rf input circuit to add one of the 0.33 μ H rf chokes from a nearby source of +12Vdc power to the antenna input jack as shown in figure 1. Use the shortest possible leads, and be careful of lead dress to avoid feedback in the rf amplifier stage which could cause oscillation later. Also, add a .001 μ F bypass capacitor with very short leads from the point at which you pick up the 12V power to ground to avoid coupling any stray noise or rf into the receiver input.

Most receivers we design have a two capacitors in the rf input tuned

circuit to provide impedance matching, as shown in figure 1a. This automatically provides dc blocking from the antenna terminal to ground.

If your receiver has a dc path through a coil from the antenna terminal to ground, you must add one of the .001 μ F disc capacitors between the tuned circuit and the antenna terminal for dc blocking, as shown in figure 1b.

MODIFICATION OF PREAMP.

The preamp unit must have an rf choke added from the output connector to the normal B+ line. It must be connected from the rf output terminal to the dc power input terminal. Precautions are necessary to avoid feedback from the output to the input of the amplifier. In particular, the rf choke must be kept well away from the output coil.

In the case of the LNY or LNK Pre-amp or the LNP Preselector, the pc board already has a place for the choke, called L3 (L5 for the LNP).

If you use some other preamp, make sure the B+ side of the choke has an rf bypass capacitor. There is an extra .001 μ F capacitor in this kit if you need it. The LNK, LNY, and LNP units already have the bypass capacitor; so you don't need to add one.

