

High Power Relay / Low Noise Amplifier Combination

22-May-2013

1. Bottom plate can be rotated 90° for different mounting configuration if necessary. If clamping to a mast pipe, an appropriate saddle should be used as shown in Figure 1, to avoid bending the enclosure.
2. Unit comes assembled with silicone sealer under all connectors, and internally wired for operation. Waterproof 6-pin plug for control wiring is provided.
3. Recommend sealing bottom plate and cover with silicone once final configuration is implemented (I will do this prior to shipment if requested).
4. Transco relay coils are individually wired, but need to be powered in parallel for 24 volt transmit operation and can be configured in series for 48 volt operation, if desired. Relay coils are bypassed with spike elimination diodes, so polarity must be observed.
5. Recommended operation is with a sequencer so that for transmit, isolation relay is de-energized first, followed by Transco activation, followed by transmitter enabled, etc. Reverse sequence to terminate transmission. This can be accomplished mechanically with the use of a rotary switch. The more elegant solution is with an electronic sequencer.
6. Recommend using 6 wire control cable and providing 2 separate ground wires. Transco-Y requires 200mA per coil, so it may not be wise to run only one ground wire for the unit (unless it is sized for sufficient current capacity). Grounds can then be connected together on the control end. I recommend separate wires for the two coils also.

Specifications:

Maximum power: 1500 watts (144MHz); 1200 watts (222MHz); 1000 watts (432MHz)

LNA Noise figure: <0.3dB

LNA Gain: 17dB (unconditionally stable)

LNA Input Voltage: +7 to +15 volts @ < 50mA

Rx loss from input to LNA: <0.2dB

Overall Noise figure: <0.5dB

Isolation relay voltage: +24 volts @ 70 mA

Transco relay voltage: +24 @ 400mA or +48 volts @ 200mA (series)

LNA design uses MGF1302 GaAs FET built on a Rogers Duroid 5870 31 mil board with small source feedback to prevent microwave oscillation. Includes output feedback RLC circuit and drain resistance for additional stability. Very low noise figure is achieved through the use of a high quality porcelain input capacitor, very high Q silver plated noise match inductor and very high Q Johansen piston trimmer. Additional high performance is achieved with custom milled aluminum enclosure.

If this LNA is a long distance from the receiver, and/or other than low loss coaxial cable is used, a second stage preamplifier with noise figure less than 1.0dB is recommended. If there are problems with RFI, a good filter should be installed between LNAs.

Parts:

This information shows the materials (and their typical costs) used in the product and does not reflect on the actual price of the unit, which is actually \$400.00 plus shipping. This price is less than shown below since much of the material is surplus, NOS, or used.

Transco-Y is either refurbished or New-Old-Stock (NOS), model 11300 configuration. SMA relay is Transco 919C70100, either NOS or used (both excellent condition and tested).

Relays and coax assemblies are individually tested on HP 8756A Network Analyzer and after assembly with a HP 8970A/HP 346 Noise Figure Meter.

<u>Parts List:</u>	<u>Cost</u>
Transco-Y (rebuilt or NOS)	45.00
SMA Relay	35.00
LNA (PTT custom built <0.3dB)	220.00
Miscellaneous Aluminum	25.00

<u>Connectors:</u>	
Cable, N(M)-RG-393-N(F)	20.00
RX Output N(F)Panel	8.00
N input connector(custom)	35.00
SMA M-M Adapter (NOS)	10.00
SMA 50 ohm Termination	8.00
Cable, SMA(M)-141-N(M)	25.00
Cannon (or equiv) (M&F)	30.00
Enclosure	100.00
S-S hardware (40 screws)	8.00
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	524.00

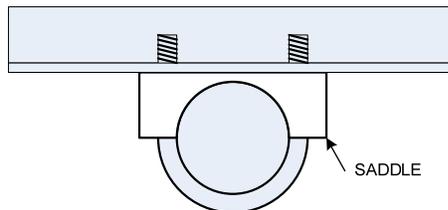


FIGURE 1
U-CLAMP