

Model HRC-10B Transmitter Combiner

APPLICATION

The Marti HRC-10B is a microstrip-hybrid designed to combine two 10 watt STL-10 transmitters to a single 50 ohm transmission line and antenna. The HRC-10B is capable of providing more than 40 dB isolation between transmitters, placing the IM products well below the FCC emission mask.

SPECIFICATIONS

Frequency range:	500 - 1000 MHz.
Transmitter power (each):	10 watts
Dummy load rating:	20 watts
Impedance (all ports):	50 ohms
Isolation between transmitters:	40 dB
Connectors:	UG-58
Dimensions:	4" x 4" x 1.5"
Weight:	12 oz.

INSTALLATION

The STL-10 transmitters should be installed in a standard rack cabinet with a minimum of one rack space (1-3/4 inches) between transmitters. Connect the upper transmitter output (J6) to transmitter 1 connector and the lower transmitter to transmitter 2 connector of the HRC-10B combiner using the special double-shielded RG-214/U cables provided. These cables have an effective length selected to minimize connector VSWR. Double-shielded cables are necessary to prevent coupling between cables, which lowers isolation between transmitters. Swing the HRC-10B over to the side of the cabinet and locate a mounting area which provides good air circulation while allowing the two cables to be separated as far as possible. The HRC-10B can be fastened to the side of the rack cabinet by drilling four 5/32 diameter holes on 3" centers to line up with the hole at each corner of the HRC-10B. Attach using machine screws and nuts (not provided). Using a third PG-1.7B/585-017 as a jumper cable, connect the ANTENNA connector to the STL transmitting coaxial cable.

OPERATION

In continuous operation, it is normal for the internal 50 ohm load to feel quite warm to the touch. With an antenna system having low VSWR (less than 0.3 watts reflected power), the HRC-10B should provide a level of isolation to prevent any interaction between transmitters when metering forward or reflected power.

ADJUSTMENT

The HRC-10B is tested and adjusted at the factory for operation into a 50 ohm resistive termination. When operating into an antenna system which presents a reactive load component to the HRC-10B, less than optimum isolation may result. Isolation can be determined by viewing the combined transmitter spectrum with a high resolution spectrum analyzer. A coaxial sampling device rated for 1 GHz may be used, or an antenna can be connected to the analyzer to monitor the radiated signal from the STL antenna. The transmitter carriers and their intermodulation products should appear as shown on page 12 of the STL-10 manual. If the IM levels are less than 40 dB below carrier reference, the trimmers located on the side of the HRC-10B adjacent to the ANTENNA connector can be adjusted for minimum IM level. Use a **Johansen No. 8777 microwave trimmer tool** or equivalent for this adjustment.

For installations requiring more than 40 dB isolation, a more costly combiner utilizing a combination of hybrid coupler and ferrite isolators may be required.

