



## **DEM Part Number TC** **TRANSVERTER CONTROL PC BOARD**

The DEM Transverter Control (DEM TC) is the new circuit board interface that is installed in every DEM transverter 2.3 GHz and higher. It was designed to replace the DEM PIN (or PIN KIT) pin switch attenuator. This new design now incorporates many new features with the standard functions of the DEM PIN.

### **Circuit Description:**

The DEM TC circuit board measures 3.75" x 2.0", which is designed to fit all of the newer DEM microwave enclosures and can be easily used to replace the older DEM PIN's that were installed in transverters with a simple modification to the enclosure. The TC offers all of the features of the DEM PIN such as common or split IF operation with either a PTT High or Low for keying. It also still incorporates adjustable attenuators for both transmit and receive and can be connected to a 2 mixer system. It also still has a option for additional receive gain if required and will perform all DC switching functions for the transverter. The New features now include a 10 watt attenuator and a RF relay that replaces the PIN diode switch network. The rely offers more isolation and is a not frequency sensitive allowing any frequency IF to be used with out changing components. Another feature included on the new TC circuit board is a 1.5 A, 9 Volt regulator and a 24 Volt relay driver for Type SMA relays used for Transmit and Receive switching of the RF frequencies. All of these new circuit improvements have been in DEMI's standard microwave transverters in the past, but have all been independent circuits. With this new design, building this circuit as a kit is simpler, and will improve reliability of the transverter.

### **Operation:**

The 50 ohm load resistor is designed to handle 35 watts with proper heat sinking. When mounted to the front panel of the transverter, it will not tolerate more than 10 watts reliably for a long period of time. You may experiment with external heat sinking if you desire additional external attenuation. External attenuation may be used in the transceive path. The added attenuation on the receive signals may be overcome by the additional gain of the RXIF gain stage. The level may be adjusted with the RXIF adjustment.

The RX/TX IF isolation is  $\approx 60$ dB. The adjustable RXIF and TXIF controls have 15 -20 dB of range. Simply grounding the PTT-H line or applying a voltage between 1-15V to the PTT-L input will switch all RX/TX functions in your transverter and provide external DC switching functions. If you transceiver has +voltage on the coax during transmit, the L1 inductor may be installed to perform the TX/RX switching functions of the transverter. The output of the +24 volt relay driver should measure +24 to +28 VDC with no load. It will only measure the DC input voltage of the transverter if it is loaded with a common type SMA relay.

The TC is not designed to be a RF sensed switch. It has 3 relays and it may be connected to external mechanical relays. If any RF sensing scheme is added to the circuit, it will cause excessive relay chatter that will not only ware out the relays prematurely, but could cause other failures to external preamplifiers and or power amplifiers if used in your system. RF sensing circuits are not recommended with any circuit the contain mechanical relays at RF frequencies!!