

## INSTRUCTIONS FOR AMECO PREAMPLIFIER MODEL PT-3

**DO NOT OPERATE THE PT-3 UNTIL YOU READ THESE INSTRUCTIONS CAREFULLY AND COMPLETELY.**

The Ameco PT-3 preamplifier may be added to most transceivers operating in the frequency range of 1.8 to 54 MHz. It improves the gain, noise figure, spurious signal rejection and image rejection of the receiver section. Although the all-new PT-3 preamplifier may be used perfectly well with a receiver, it is designed specifically for use with a transceiver. Its sophisticated control circuitry permits it to be added to virtually any transceiver without modification. This is accomplished by the use of automatic antenna switching inside the PT-3.

The PT-3 consists of a tuned RF amplifier, that covers all amateur bands from 160 through 6 meters, all foreign broadcasts and all other services that fall within this frequency range. Model PT-3 employs a low noise, dual gate FET transistor that provides a low noise figure over the frequency range of 1.8 to 54 MHz. The preamplifier is most effective when used with those transceivers that employ a Pi-network that is common to the transmitter output section and the receiver RF stage input. Most transceivers of this type begin to suffer a noticeable decrease in sensitivity on 15 meters, and especially on 10 meters. The PT-3 will be most beneficial on these bands. The addition of 6 meters makes the preamplifier usable with 6 meter transceivers.

12 volts DC is required to power the PT-3. If 120 volts is available, the Ameco Adapter, model P-12T, can be used. It plugs into the 120 volt AC source and delivers an output of 12 volts DC for the standard PT-3.

The input and output impedances of the PT-3 are nominally 50 ohms. This matches most popular types of amateur installations.

### THEORY OF OPERATION

The Ameco PT-3 preamplifier can be used with a transceiver because it has an automatic sensing and switching circuit. As soon as this circuit senses transmitter power from the transceiver, it switches the preamplifier into its "TRANSMIT" mode. In this mode, the red LED on the front panel lights up and the transmitter power bypasses the preamplifier and goes directly to the antenna. After the transmitter power from the transceiver ceases, the preamplifier sensing circuit switches the preamplifier into its "RECEIVE" mode. In this mode, the green LED lights up and the preamplifier is in a condition to receive and amplify an incoming signal.

If amplitude modulation (AM) is used, the preamplifier is continuously in its "TRANSMIT" mode when the transceiver is in its "TRANSMIT" mode. This is because, in AM, the carrier power is on all the time, regardless of whether the transmitter is being modulated or not.

In Single Sideband, the situation is different. When the transceiver is in the transmit mode, output power is fed to the antenna only when modulation is present. As soon as the operator ceases to speak into the microphone, the output power drops to almost zero. The preamplifier senses this condition of "low or no transmitter power" and goes into its RECEIVE mode. At the same time, the preamplifier's relay switches over, causing the red LED to go off and the green LED to go on. As soon as the operator speaks into the microphone, the preamplifier senses this RF power and immediately goes into its TRANSMIT mode and the red LED lights up again. This switching of the preamplifier's relay and panel lights, in the SSB transmit mode, is therefore perfectly normal, and should not alarm the operator. (See paragraph 5 in the OPERATION section of the INSTRUCTIONS.)

In some cases, the red LED may stay on or tend to stay on in the SSB TRANSMIT mode, even though no one is speaking into the microphone. This is because the transmitter may still be putting out a slight amount of power, or the background noise may be modulating the transmitter enough to cause a slight amount of output power. This slight amount of power can activate the sensing circuit in the preamplifier. This is also a normal condition.

In order to minimize the switching of the relay and LEDs during the SSB transmitting mode, an adjustable delay has been incorporated into the preamplifier sensing circuit. When normal pauses occur during speaking, the delay will prevent the preamplifier from switching back and