IC9700 PTT Extender Box

Introduction

The Icom IC9700 provides a single “SEND” signal on the ACC socket. Many operators prefer a separate PTT to each of their amplifiers / LNAs.

The IC9700 Extender Box monitors the CI-V serial communications from the 3.5mm jack to determine the band in operation by the MAIN and reflects the radio PTT to the box’s RCA jack the band in use.

The box connects to the radio by the ACC via an 8pin DIN cable and the 3.5mm CI-V jack. This connection provides the supply for the box and provides an optional connection of the ALC from each amplifier to the radio.

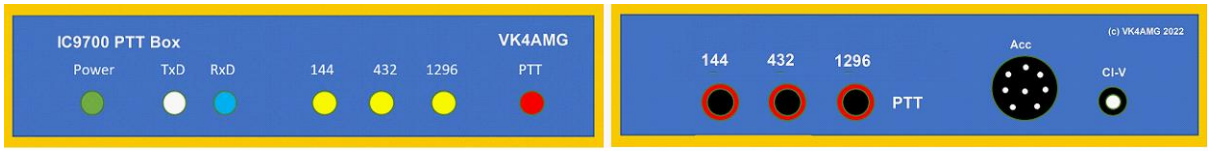
Front panel LEDs indicate CI-V data states, band-in-use, radio PTT state.

The box is designed to avoid conflict with other applications using the CI-V bus (either 3.5mm or USB). Selecting “transceiver” option in the CI-V menu ensure regular updates of the radio frequency to the box. In this configuration, the box only transmits to the CI-V bus to confirm band when PTT is applied.

The box is housed in a polyester instrument enclosure. The rear panel carries a 3.5mm phone jack for CI_V, an 8 pin DIN socket, and three sets for RCA dual jacks providing PTT connections for the three bands. The font panel carries the status LEDs.

Enclosure

The electronics uses leaded components mounted on a single sided printed circuit. The microprocessor is an Arduino Nano connected by headers. The PCB is mounted on the base of a 140 x 110 x 35mm polyester instrument enclosure. The front panel carries the power and status LEDs.



The rear panel carries the 3.5mm phone jack for the 5V CI-V serial data, an 8pin DIN socket with pinouts matching the IC9700, and dual RCA female jacks for ALC and PTT for the three bands.

IC9700 PTT Extender Box

Operation

When the radio is turned on, the Box is powered via the ACC cable. A Power LED indicates the Box is operating. After initialisation, the front panel LEDs are flashed in turn. No outputs are operated during initialisation. Band-in-use LEDs will be extinguished until valid CI-V band / frequency messages are decoded.

If the PTT is applied by the radio when the Box initialises, the red PTT will flash rapidly as a warning, nothing further will occur until the PTT is removed.

CI-V activity is indicated by the flashing the blue RxD LED. Once band or frequency information is decoded, the band-in-use by radio MAIN transceiver is indicated on one of three yellow LEDs. Application of the PTT will then be indicated on the red PTT LED and the PTT output for the operating band will be grounded.

On removal of the PTT, the red PTT LED will extinguish.

Any change of band / frequency will be indicated on the yellow “band-in-use” LEDs. If no valid band /frequency CI-V messages are decoded for 30 seconds, the yellow “band-in-use” LEDs will extinguish, and no further output operations will occur until normal operation is established.

NOTE: The USB CI-V and remote control must be uncoupled in the IC9700 connections menu

Specification

Power supply	13.8 Vdc 100mA max from IC9700 ACC pin 2
Baud rate	19200 8,n,1 link configurable 9600 or 38400. Must match IC9700 configuration
CIV	Icom IC-R8600 CI-V Reference Guide.
PTT output	V max up to 24 Vdc. Active low 1V @100mA
	Latency < 20mS key down key up.