

A Universal LPT Interface for VHF Log

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Abstract - This short paper describes a simple but effective interface for controlling a complete VHF-Microwave station from W3KM's popular "VHF Log" contest logger.

The ability to control my portable contest station from the logging computer keyboard has been a priority from the inception of the project. There are many contest logging programs that incorporate LPT BCD encoded outputs for band switching. These included CT, NA, VHF Log and many others. Although these are all fine programs none of them is designed specifically with the VHF contester in mind, except VHF Log.

VHF Log (www.qsl.net/w3km) is a full featured logging program created by fellow Pack Rat Dave Mascaro, W3KM. The program has many features that set it apart from other contest programs; such as a digital voice keyer, a Pack Rat activity hour reminder, and (my favorite) the ability to control an external band switch via the LPT port. While many other logging programs offer the ability to control an external band switch, Dave's program is geared toward VHF contests and provides binary coded outputs for all bands from 50 MHz to 10GHz. As the operator changes bands via keyboard commands, the LPT port of the computer provides a binary encoded signal suitable to drive a decoding interface. Table 1 provides the logic of the outputs provided by the computer's LPT port, along with a pin out for the LPT port.

Table 1

Band (Mhz)	A	B	C	D	
50	0	0	0	0	
144	1	0	0	0	
222	0	1	0	0	1 = High (>2.4v)
432	1	1	0	0	0 = Low (< 2.4v)
903	0	0	1	0	
1296	1	0	1	0	A = LPT Pin 2
2304	0	1	1	0	B = LPT Pin 7
3456	1	1	1	0	C = LPT Pin 8
5760	0	0	0	1	D = LPT Pin 9
10368	1	0	0	1	Common = LPT Pin 18 -25

Although there may be more, I know of only one commercially made band switch interface, the Top Ten box. Although the Top Ten Box is a very well designed interface, it was designed with the HF station in mind. Among its shortfalls are its six-band limitation (I need to switch 10 bands!), the lack of "dry" relay closures, and the absence of buffered binary outputs. My existing system required both NO, NC and isolated binary outputs to control my existing equipment. After speaking with other amateurs; I realized that a more flexible interface would be a welcome addition.

This paper describes a universal interface that provides decoding of the binary outputs to decimal DPDT c-form relays, along with buffered binary outputs that are also DPDT c-form.

The circuit is very simple! ISO1 – ISO4 provide a level shift from the ~5v LPT output to the +12 (or 13.8V) used by the interface board. ISO1 – ISO4 could be four discrete devices, but a single PS2505-4 (which has four opto-isolators in a single 16 pin DIP package) does nicely! Transistors Q1- Q4 along with relays K1 - K4 provide the buffered binary circuits to drive my microwave IF switch, while IC 1 provides binary to decimal decoding. Transistors Q5-Q13 operate in emitter follower configuration, receiving decimal drive from IC 1 and provide voltage to drive K5-K13.

My pet peeve is any published amateur project that is not assembled on a printed circuit board! Although this circuit could be built on a perf-board, it is quicker to assemble it on a printed circuit board! The board for this project was auto-routed, tested for compliance and compiled with the help of the software program QCAD. QCAD is a commercial software package that auto routes multi-layer printed circuit boards from a CAD drawn schematic. Once the board is routed it can be printed on a standard printer or files can be generated for your favorite printed circuit manufacturer.

For the initial design, I had three printed circuit boards made from a prototype board house. I assembled two while I sent the third to Ed Finn, WA3DCR. During a past Packrats meeting; Ed had mentioned to me that he would like to integrate the design into his station. Along with the board I sent schematics, parts layout and a complete parts list. In no time Ed had the board built and installed into his existing transverter switch box. No problems were encountered and Ed now enjoys control of his station via the keyboard.

A complete parts kit is available, it includes the PCB along with all parts required to populate the board. For those with a diverse junk box, the PCB is available as a separate item. All profits realized from this project go directly to fund the Mid-Atlantic States VHF Conference and the Mt Airy VHF Radio Club.

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