

DEM BCD-FLEX1500

VHF - Microwave Band Controller

Preliminary: More than 15 years ago, a universal controller board (UCB) was designed by K3TUF as an interface to Flex Radio's "FlexWire" system. It utilized the Texas Instrument PCA9555 16-bit I/O expander for the two-line bidirectional bus that talks "FlexWire". This interface is adapted from that previous design.

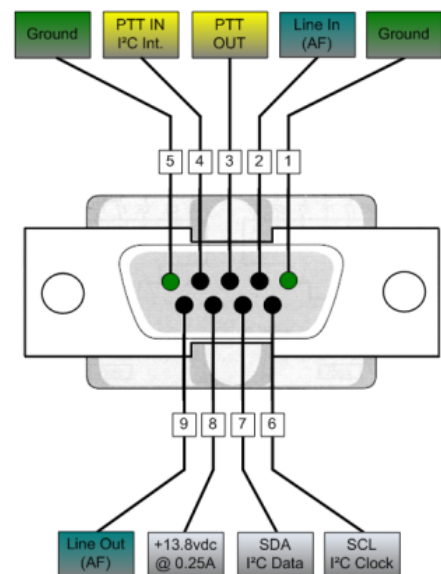
Basically, serial data (with a serial clock signal) is sent through the FlexWire connector utilizing the Flex radio firmware (POWERSDR version 2.8.0 or higher) and programs the I2C chip. This chip will then provide single signal outputs for 14 bands. These signals are routed to a diode matrix providing standard BCD outputs for 11 bands of operation 2M and up.



Design Description: To the right is the V2 connector pin out (a standard DB-9 Socket Female connector) for the Flex 1500 connector and is also listed below.

- Pin 1 - Ground
- Pin 2 - Transmit Audio Line Input
- Pin 3 - PTT Output (Open Drain)
- Pin 4 - PTT Input (Also I2C interrupt request input, if used)
- Pin 5 - Ground
- Pin 6 - I2C Bus, Serial Clock
- Pin 7 - I2C Bus, Serial Data
- Pin 8 - +13.8 Volts Out (Same as voltage into power connector)
- Pin 9 - Receive Audio Line Output

FlexWire™ v2 Connector (end on view)



The DEM BCD FLEX1500 interfaces the Flex 1500 to any transverter system that requires standard BCD input to control the band functions. In addition, the interface passes the PTT-L signal through the connection so no additional wiring is required. The utilized IC2 chip has 16 outputs but only 14 are addressable by POWERSDR and 11 are configured through the matrix. This schematic shown at the end of this document only shows ten outputs interfaced to the diode matrix. The diode matrix is utilized to produce the A through D BCD band outputs. The special feature about this interface is that the POWERSDR program can designate any BCD code output to be any band and is specified in during the transverter set up.

If a BCD output is not desired, the output pins may be used directly to drive small relays or solid state circuits for switching purposes but a circuit modification would be required to bypass the diode matrix. The DEMI FLEX 1500 interface is provided wired to connect to the V2 connector. Your effort is in the Firmware set up but once done, it is easy to use. A special note is with the FLEX 1500 and Power SDR, the drive levels can be set per band as desired.

Output Cable Identification

Color	Purpose
Black	Ground
Red	+ 5VDC when Flex 1500 is powered. Use to enable circuitry
Orange	Band decoder "A"
Yellow	Band decoder "B"
Green	Ground
Blue	Band decoder "C"
Violet	Band decoder "D"
White	PTT-OUT from Flex 1500 to Transverter system

