

## Interfacing the HL2 to the HR-50 (firmware version 3.0D)

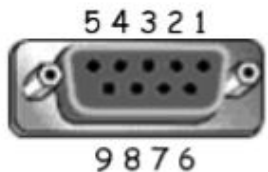
Overview – The HR-50 was built to use with the HL2 for those times when you need just a little more push. The HR-50 was found to be an excellent power amplifier for this application. It is well designed, rugged and very tolerant of builder/operator errors.

After a few errors and learning experiences on my part building the HR-50 (mostly with transformer winding), the interface of the HL2 and HR-50 began and is quite easy to accomplish. The only issue identified was the need to install a pull up resistor on pin 2 (or pin 3 if your using a cross over cable) at the HL2 DB9 output to ensure a solid reliable serial data signal to the HR-50 for proper automatic band selection.

This project involved using the HL2 DB9 adapter board (follow this link - <https://github.com/softerhardware/Hermes-Lite2/tree/master/hardware/companions/db9>). For this project, level shifters for both pins 2 and 3 of the adapter board were installed. Since a straight through serial cable was to be used to connect the HL2 to the HR-50 pin 2 of the DB9 adapter board was utilized. The DB9 adapter board shifters are powered via pin location 10 from location 7 of DB1 (vlds), ground pin 5 is connected to location 13 of DB1 and the signal driving pin 2 of the DB9 adapter board is from DB1 location 3 (TXD). Connected to the HR-50 ACC port is pin 2 and pin 5 which is ground. Following Steve's - KF7O recommendation, to ensure a clean serial signal to communicate with the HR-50, a 3.3K pull up resistor as added, soldering one end to the DB9 PC board trace close to pin 2 of the connector, and the other end connected to 3.3V from the HL2. The DB1 pin location 19 was selected as a convenient location for the 3.3-volt connection. Steve - KF7O has stated that on future designs of the DB9 board, he will include a location/trace to install a pull up resistor. For reference, HR-50 DB9 ACC pin assignments from the HR-50 instruction manual follow:

The ACC jack is one means of interfacing transceivers to the HR50 amplifier. The jack is a standard DB9 female connector with the following pin assignments:

### DB9 Female



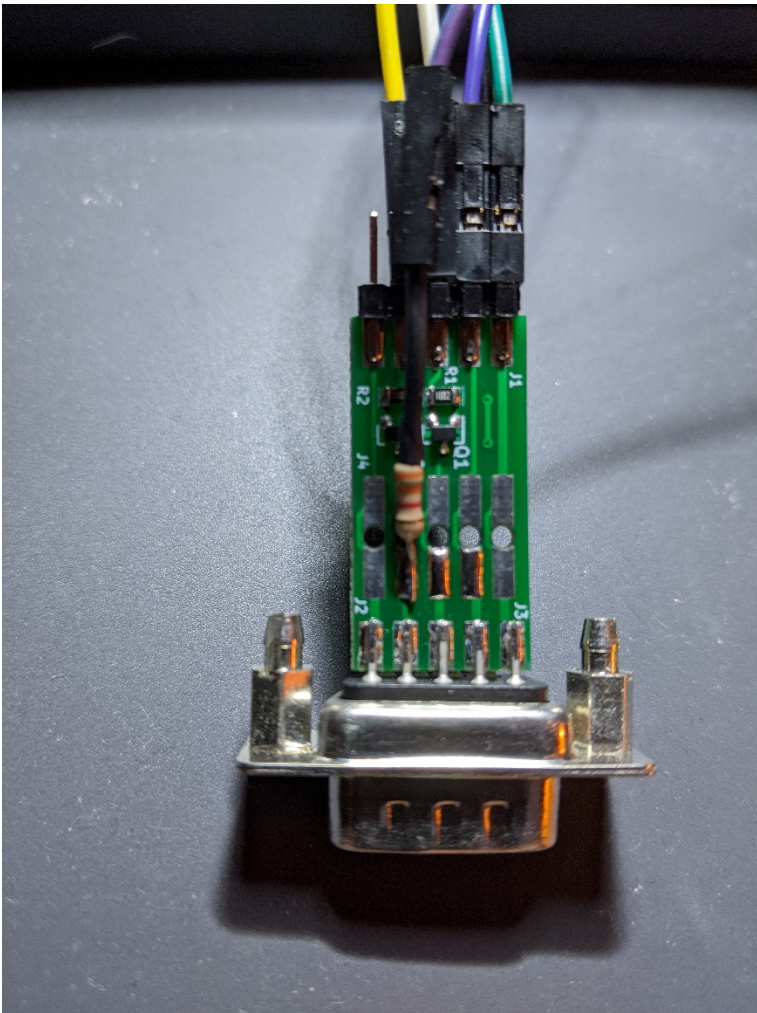
- Pin 1 – Not used
- Pin 2 – Serial data into the HR50 or analog band voltage input
- Pin 3 – Serial Data out of the HR50
- Pin 4 – PTT input to the HR50
- Pin 5 – Ground
- Pins 6-9 – Not used

The following are the HR-50 Menu Settings used for this project:

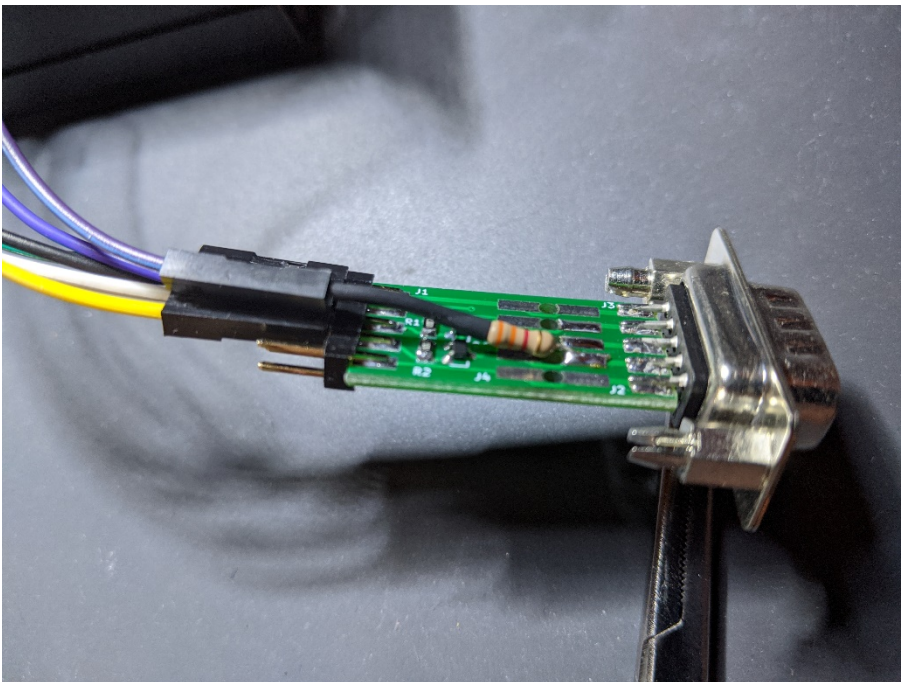
- #1 is Exit back to normal operations – no input
- #2 ACC Baud Rate – 9600 – Required setting to match the HL2 Baud rate
- #3 USB Baud Rate – 9600
- #4 KX3 Serial – No – Required setting for HL2
- #5 FT-817 Mode – No – Required setting for HL2
- #6 Temp Display – Fahrenheit
- #7 Adj Watt Metr - +1%
- #8 COR Hang Time – 0 msec
- #9 Key-up Delay – 0 msec
- #10 ATU Mode – No ATU – I do not have the ATU installed in the HR-50 yet

The HL2 EXTTR signal was also connected to the DB9 pin 4 (see picture page 3) which connects to the HR-50 ACC pin 4 allowing the HL2 to directly trigger a PPT on the HR-50.

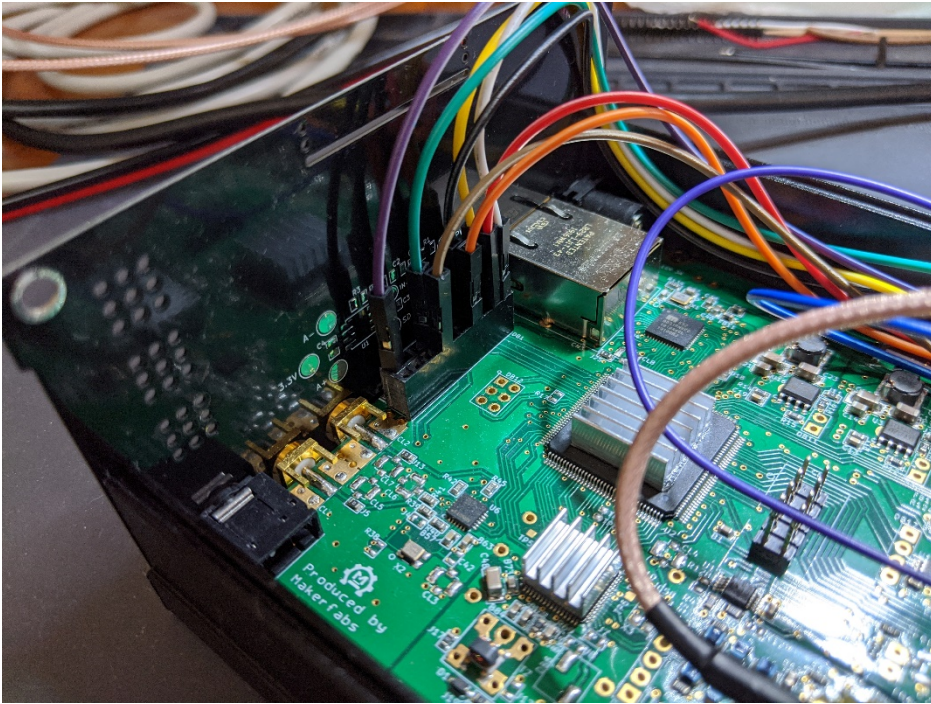
Front view of DB-9 accessory board modified on pin 2 with 3.3K pull up resistor



Side view of DB-9 accessory board modified at pin 2 with 3.3K pull up resistor

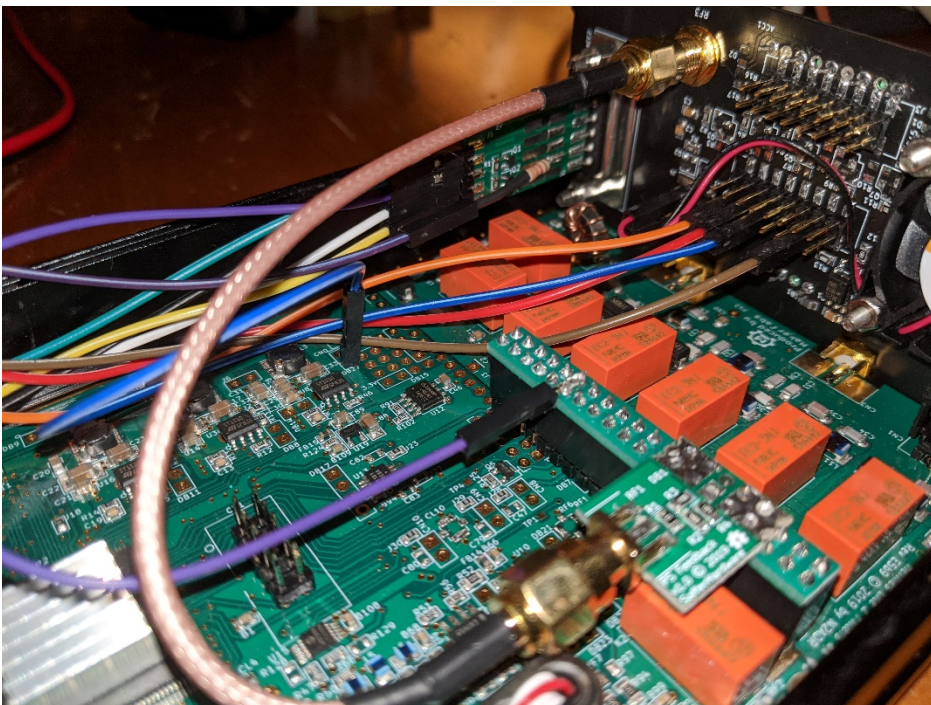




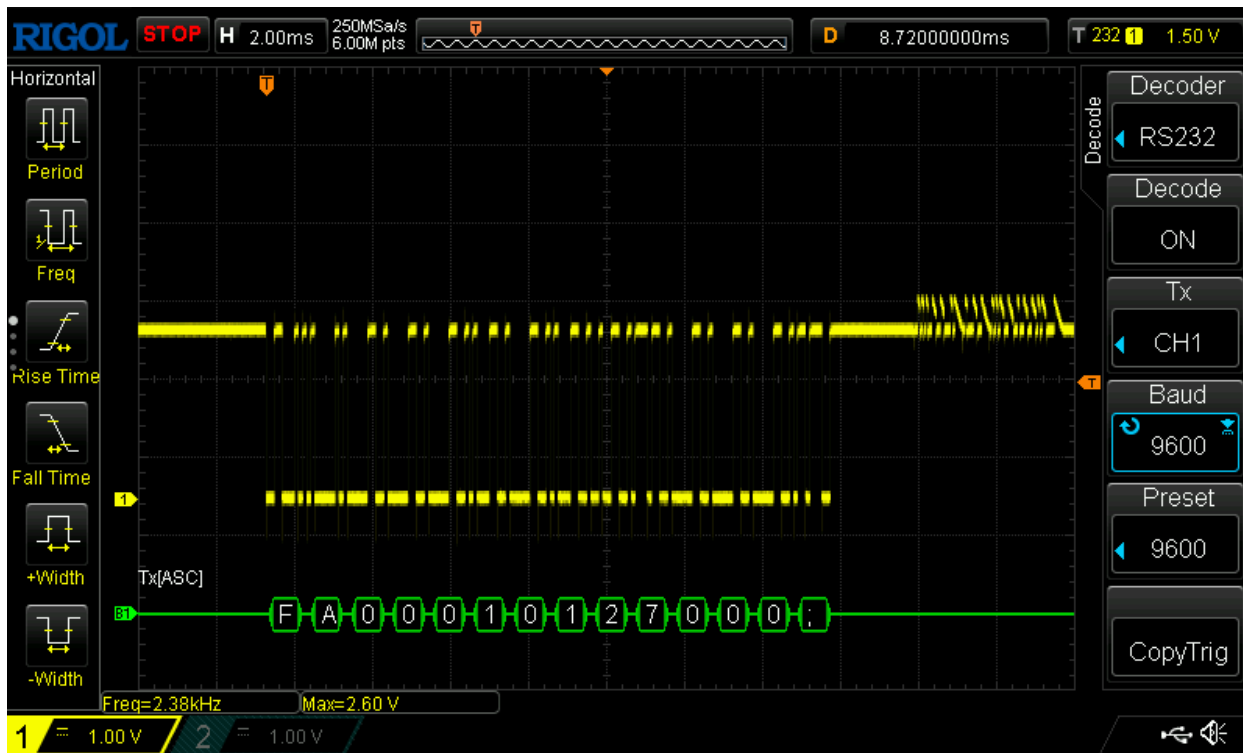


Above – Note 3.3-volt pickup location 19 on DB1 header for 3.3K pull up resistor

Below – In addition to the serial data signal modification, the EXTTR signal to pin 4 of the DB9 was installed allowing keying the HR50 via the HL2 and it works like a champ. It was tested it using PowerSDR, SDRConsole and SparkSDR as well as via the Key/PTT connector on the front of the HL2. The EXTTR signal location at pin 15 on top of the jumper connecting the HL2 and the N2ADR board (see photo) was selected as the place to tap into, it was convenient and an easy connection to change in the future as the need arises.



Output Signal from DB9 accessory board - no pullup resistor on pin 2 - input to HR50 pin 2 – note noise and low signal level



Output signal from the DB9 accessory board with 3.3 volt 3.3k pullup resistor installed on pin 2 as it connects to input at the HR50 ACC connection pin 2

