**K9HZ Dual Encoder Board - Assembly Manual**

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**INTRODUCTION**

The Dual Encoder (DE) board is a simple way to interface dual encoders to electronics like the T41-EP Radio. The board is generic in that it was designed accommodate several different brands of dual encoders like the Bourns PEC11D series. Data line routings for the individual encoders can be reversed easily by positioning shorting resistors in the right places on the board for clockwise and counter-clockwise sequence quadrature generation. Connections are also available for the push switch on the center encoder shaft is used.

**INVENTORY AND PREWORK**

Before you begin, inventory your parts against the Dual Encoder board BOM to make sure you have everything you need to complete the adapter board. The BOM and Schematic are shown:

A table with text on it

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A diagram of a computer

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**BUILDING THE BOARD**

1. Find a place where you can spread out your work, including printouts of the schematic and BOM. Your workstation should be such that you can leave it overnight without having to "clean up". The workspace should also be kid- and cat-proof. If you get tired, stop. Come back to it tomorrow. Rushing the assembly rarely works out saving time.
2. Start by cleaning the bord with IPA (Iso-propyl or “rubbing” alcohol) to make sure it’s clean:

A green circuit board with yellow dots and white text

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1. Pin 1 of the ribbon cable connector is the pin on the above board on the lower left hand side (the lower “G” designator). The encoder is set up such that:

A close-up of a sign

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In addition to Ground on pins 1 and 2, and +3.3V on pins 3 and 4.

1. Install “0” Ohm resistors in the following positions depending upon the clockwise or counter-clockwise quadrature generation nature of the encoder shown below:

A group of black text

AI-generated content may be incorrect.

1. Install the 0.01uF capacitors in positions C1-C6 on the PCB board.
2. Install a “0” Ohm resistor in position R1 or R2 depending on which pin should be used for the switch:

A close-up of a number

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1. Install the encoder on the back side of the board:

A green circuit board with white text

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1. Finally, Install the 2x5 Female IDC connector on the board as shown here:

A green circuit board with black and silver components

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1. The board is now complete. Use IPA again to clean the flux off the board.

**USING THE BOARD**

This adapter can only be used when the K9HZ front panel boards are used. This is because the 10-pin “Encoders” connector on the main board is connected to the 10-pin “Encoders” connector on the adapter. The RF-in connector is connected to the receiver antenna output on the LPF board. This signal is split into two channels, one for each receiver. These signals go to