Auxiliary Board Address Decoder

PROM A5 is the address decoder for the Red Baron™ Auxiliary PCB. When I/O on pin 13 is low, the address decoder PROM A5 is enabled and receives EAB3-EAB6 from the game address decoder. When ER/WB is low, A5 enables the appropriate circuitry on the auxiliary board, via decoders B5, and gates C4 and D3.

Math Box

Blue arrows indicate signal flow of each test during signature analysis.

* All signatures with an asterisk are taken with a 1K ohm pull-up resistor attached between the signature analyzer data probe and +5 VDC.

Audio Output

Shift registers E4, F4, and gate H4 function as a random noise generator. The output on F4 pin 13 is gated with CRSH4-CRSH7 to produce BANG, and with SHOT to produce SHOT SND.

CRSH4-CRSH7 and RNOISE are gated at F3 and the output is a digital crash signal. This signal is summed by resistor network R14-R17 and applied to comparator K4 pin 6.

Potsel Circuitry

Horizontal (H POT) and Vertical (V POT) inputs from the joystick are applied to analog switches J5. When POTSEL from data latch E3 goes high, H POT passes to K5 pin 12 and compares with the output from K5 pin 1. The result is applied to counters A3 and B3. Depending on the polarity of the signal, A3 and B3 count up or down. This count is applied to DAC B4 as P0-P7 and the custom audio and control chip B2. The output of DAC B4 is an analog current equal to the digital input from A3 and B3.

This current is converted to a voltage at K5 pin 1 and is sent to comparator K5 pin 13. When POTSEL goes low, V POT passes, and the circuit works as explained for H POT.

When $\overline{OL}$ goes high, E3 latches the MPU data (EDB0-EDB7) for CRSH0-CRSH7, SHOT and SQUEAL sound inputs, and the start LED. When $\overline{RESET}$ on pin 1 goes high, the output of E3 is cleared.

High Score Memory

The High Score Memory circuit stores the three best scores and other pertinent information. These scores are saved even if power is removed from the game. The High Score Memory circuit consists of an erasable reprogrammable ROM C0, latches A0, H0, F0, buffer E0 and timer J0.

J0 produces a 12 KHz 0-15V square wave. This signal when +15V forward biases diode CR7 and allows capacitor C54 to charge to −29V. When the signal is 0V, CR7 is cutoff and CR6 is forward-biased which causes C53 to develop a charge. C53 charges to approximately −28V. This is the potential required for EAROM C0 to operate.

The MPU addresses the EAROM (AB0-AB5) via latch A0, when $\overline{EAROMWR}$ is high. Data is latched into the EAROM on EDB0-EDB7 through latch F0.

The function of the EAROM (read, write or erase) is determined by the MPU on data lines EDB0-EDB3. Latch H0 receives a high EAROMCON signal from the MPU address decoder and function data is passed to the EAROM.

Data in the EAROM is read by the MPU when the $\overline{EAROMRD}$ signal to buffer E0 goes low. The EAROM is addressed by the MPU after a reset pulse or during Self-Test.

The custom audio and control chip B2 generates most of the audio for the Red Baron™ game. It also serves as the data buffer for the POTSEL input to the MPU.

When low, $\overline{ACHPEN}$ enables the custom audio chip B2. The clock frequency of ER/$\overline{WB}$ determines whether data is written into the chip or read from the chip. P0-P7, from the POTSEL circuit, represents steering information from the game joystick. This is buffered and latched to the MPU when addressed by address lines EAB0-EAB3. The audio output from B2 is also selected by addressing EAB0-EAB3 from the address decoder.

SHOT SND, BAND, SQUEAL SND, and the custom audio output are summed at resistor network R8-R11 and applied to push-pull amplifier K4. The output is AUDIO I and AUDIO II.

ATARI®

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RED BARON™

Auxiliary PCB Audio Output
Control Panel Input
Math Box

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