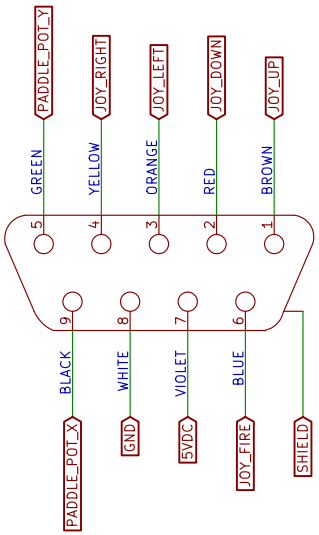
External Cable Connector

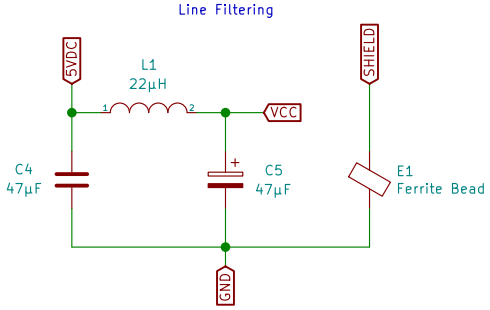


View is facing the female connector on the mouse cable.

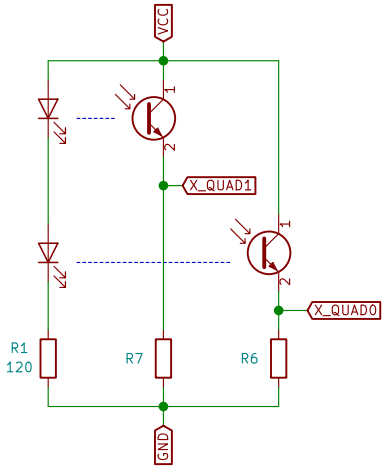
Pin numbering is standard for Commodore control port connectors.

Colors indicate the conductor wires leading from the cable to the mouse PCB.

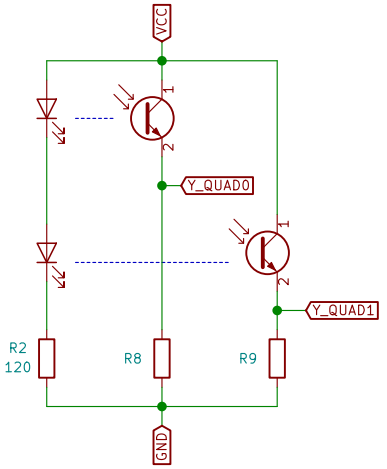
Line Filtering



X–Axis Quadrature Encoder



Y–Axis Quadrature Encoder

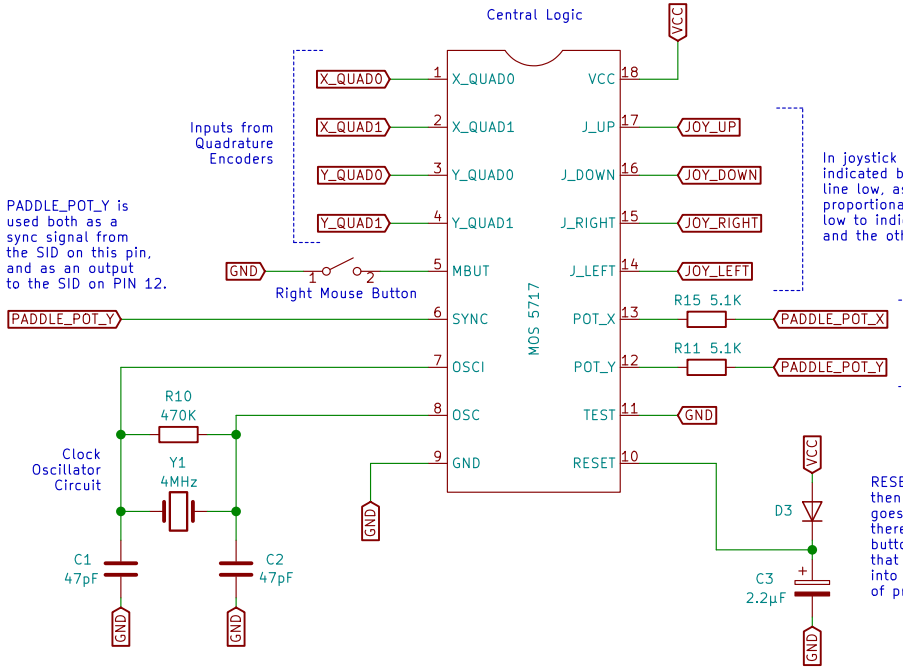


Dotted lines show which emitter (LED) shines on which receiver (phototransistor).

R6, R7, R8, R9 do not have fixed reference values. They vary from mouse to mouse, roughly in the range 5–15kΩ. Their values affect the sensitivity of the connected phototransistor. They were likely chosen during assembly to compensate for variation in emitter/receiver sensitivity, emitter/receiver alignment, and physical geometry of the plastic slots, encoder wheel, and wheel axis mounts.

In an old mouse, any of the above may have drifted over time, reducing the effective sensitivity of one or more optical paths. If the max voltage seen on X_QUAD0, X_QUAD1, Y_QUAD0, or Y_QUAD1 under mouse movement does not reach 4V, the result can be erratic or no mouse movement. Replacing the corresponding pull-down (R6, R7, R8, R9) may address this. Choose the resistance empirically so that the max voltage under mouse movement is between 4V and 5.3V.

Central Logic

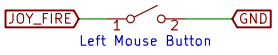


In joystick mode, movement is indicated by pulling the corresponding line low, as a joystick would. In proportional mode, JOY_UP is pulled low to indicate right mouse button, and the others are unused.

In proportional mode, movement is communicated to the SID via PADDLE_POT_X and PADDLE_POT_Y, pulling each high at specific times to simulate the delays the SID would see when reading the potentiometer in a real paddle. In joystick mode, PADDLE_POT_X is pulled low to indicate right mouse button, and PADDLE_POT_Y is unused.

RESET is low on powerup, then after a brief delay goes high and stays high thereafter. If right mouse button is pressed during that delay, the mouse goes into joystick mode instead of proportional mode.

Mouse Buttons



Left mouse button simply pulls the JOY_FIRE line low, as it would on a joystick.

Right mouse button is more complicated. It has to go through the MOS 5717 because it's used to initiate joystick mode on powerup, and also because it's sent over the cable differently depending on the mode (JOY_UP in proportional mode, PADDLE_POT_X in joystick mode).

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Title: Commodore 1351 Mouse Schematic, Assembly 0101930 Rev A

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