

RCA Design and Development Plan

Interfaces

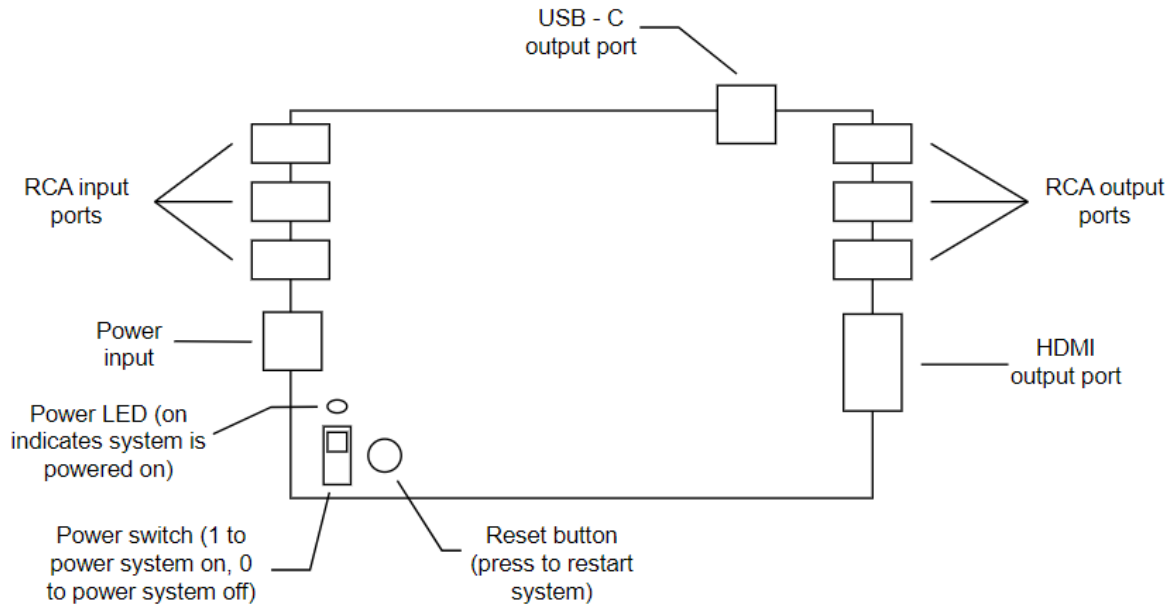


Figure 1: Diagram of human interfaces and controls, with the possible inclusions of a Power Switch and Reset Button

Systems

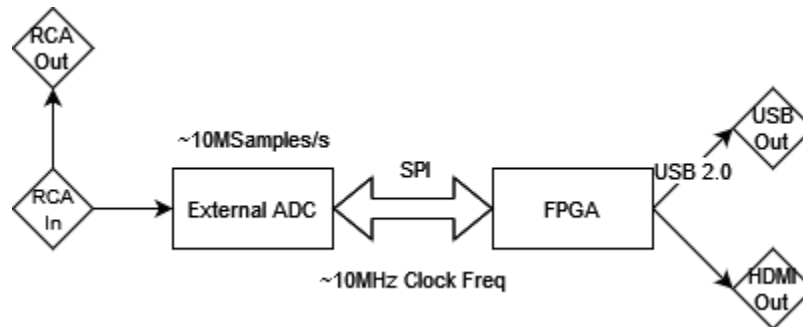


Figure 2: System diagram of components. Lists all inputs and outputs, as well as formats used for communication and frequencies they will run at to prevent undersampling of the RCA signal.

Networking

This section was unneeded for our project as it does not rely on any sort of networking to communicate the data. The data is solely transmitted through the hardware connections.

Storyboards

Our project will be primarily hardware-based, with the only software scene being the transmitted data displayed in the user's recording software of choice. We've displayed how it would look using Open Broadcaster Software (OBS) below.



Figure 3: Visualization for how the transmitted data would look in video recording software when sent via USB from the capture card.

Draft Schematics

For the conversion of external analog signals into digital signals, the use of external ADC converters for each RCA input will be utilized. This will allow for all signals to be processed in parallel and reduce delay from the source to the FPGA. Similarly, we have not decided between USB C or B outputs, as the difficulty of implementation and conversion is not currently known. We should know what type (or both, hardware permitting) of USB output we will use soon.

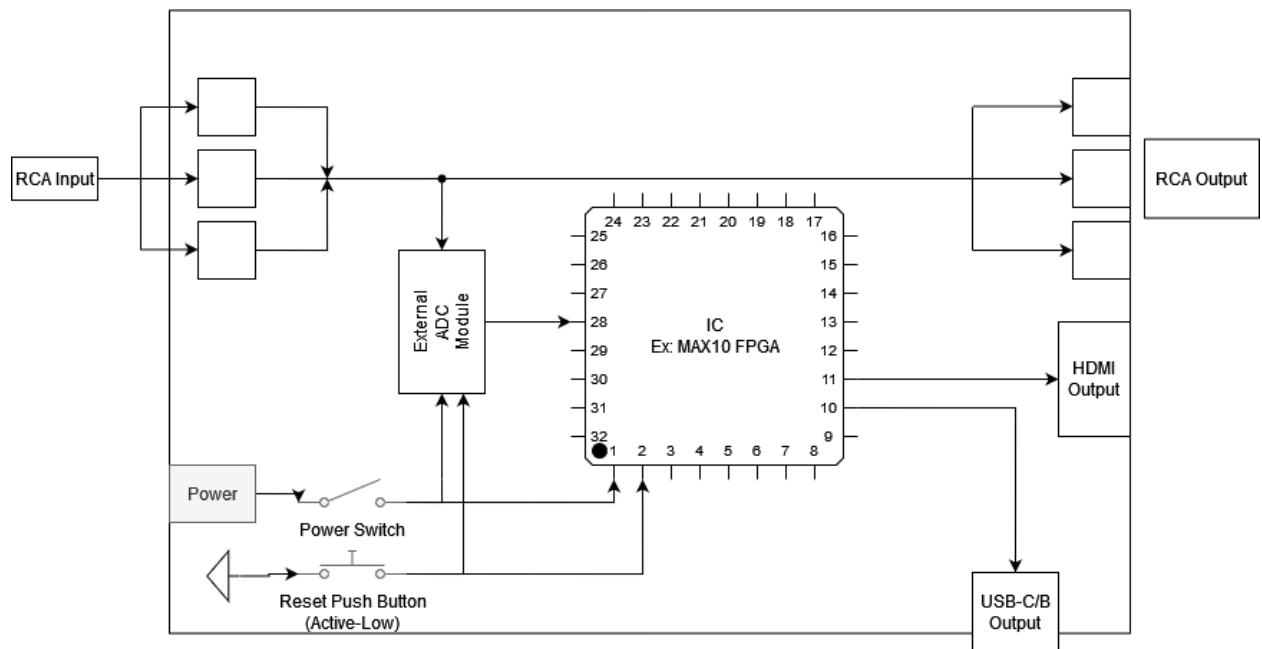


Figure 4: Draft Schematic of the FPGA using a basic combination of an IC, RCA and HDMI inputs and outputs, and possible inclusions of a Power Switch and Reset Button.