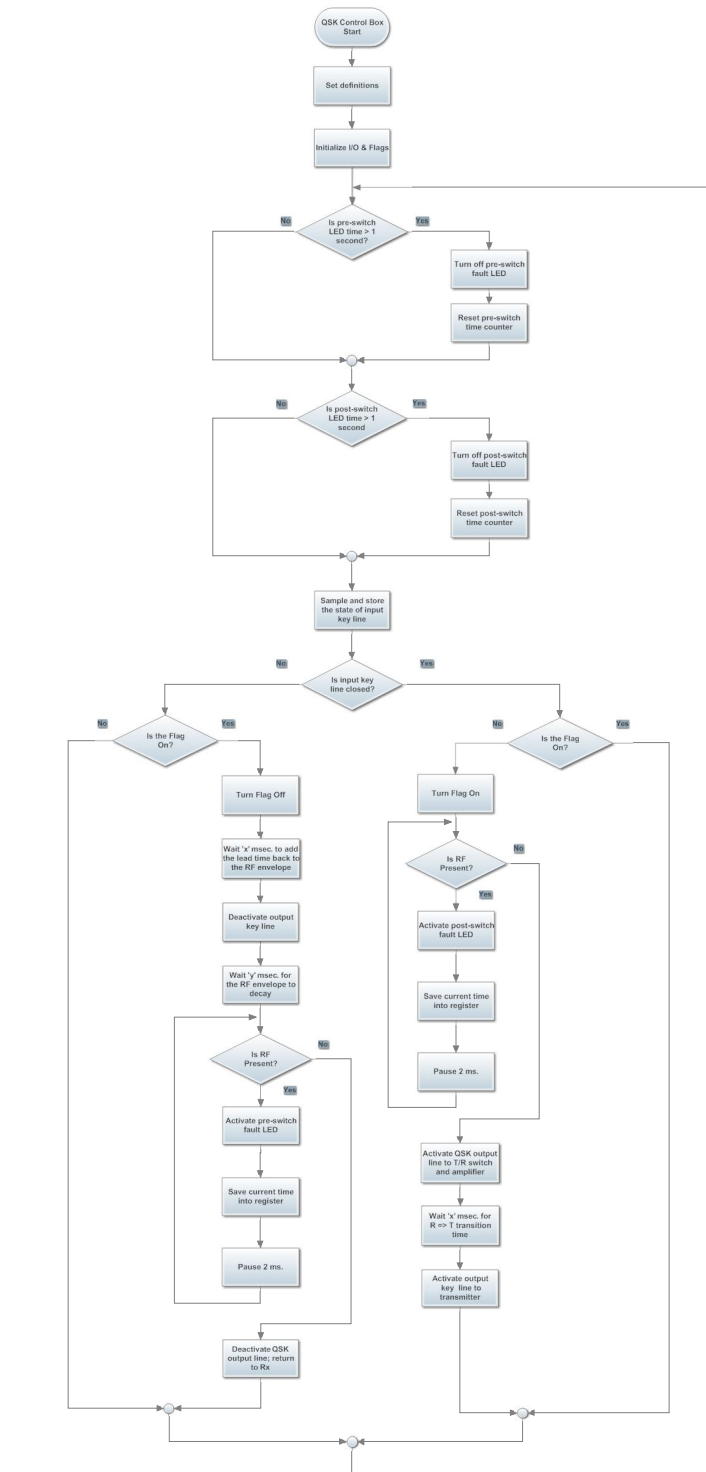


## QSK CONTROL BOX



QSK Control Box  
(first version 0.32)  
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- 1) This program establishes precise T/R sequenced switching between a receiver and transmitter -- although the device can also be adapted to amplifier switching applications. The lead and tail times are independently adjustable to accommodate transmitter various timing and RF envelope characteristics.
- 2) An Arduino Nano microcontrollerboard is used, programmed in the C++ language. Themicrocontroller and peripheral circuits are powered by the USB port during testing, and an external +7 is +10V supply during normal operation.
- 3) The QSK Control Box takes its input from any electronicskeyer, straight key, or semi-automatic "bug."
- 4) Inputs to the QSK Control Box are optoisolated for RF and arc-flash protection. Both the key line and QSK output lines activate optically-isolated MOSFET switching transistors. The outputs are rated at 60V @ 1A AC or DC.
- 5) The input key line is polled in a loop. Depending on the input key line state and the state of a flag bit, the QSK Control Box key line and QSK output lines are switched with time sequencing to avoid "hot-switch" effects.
- 6) The "lead" time variable represents the QSK lead time in msec before the transmitter is keyed; the "tail" variable represents the time the QSK line remains active after the RF envelope decays.
- 7) The QSK Box is hot-switch protected by sampling the presence of the complete RF envelope. If RF excitation is present at the input to the QSK Control Box before the input key line is active, a switch from Rx to Tx is inhibited. Likewise, if the RF envelope has not decayed to zero after transmission, the QSK Control Box will not switch back to Rx. If either type of timing fault occurs, one of two LEDs will illuminate, showing the fault. The LEDs remain lighted until the timing fault clears. Each LED is pulsed to remain on for at least 1 second in the event of brief timing faults. The RF input sample is optically coupled from the Input RF line to a photo-transistor with bi-directional LED inputs. RF sampling is optically isolated from the microcontroller digital inputs.