QPD

QPD In → **QPD Amp**

Sum Out → **Shutter Controller**

Inputs: Setpoint

Outputs: Trip State
PD Input Level

Trigger
Low on Fault →

Need pulse timer

Shutter Driver

Hi Power Pulse → **Fast Shutter**

- **Output Bits:**
- Ready to fire (capacitor charged)
- Pulse in progress (extended to 1 second for visibility, will have a duplicate output for watchdog blanking)
- Power supply outputs (window comparators)
- Fault Condition (input or output cable fault)

- **Inputs:**
- High Voltage
- Low Voltage
- Reverse Pulse

- The output of the shutter controller is logic high during normal (untriggered) conditions making it easy to design the input of the shutter driver to be able to sense an open cable. The presence of a shorted (not pins right next to each other) set of pins on the fast shutter end of the cable will allow sensing of the cable chain for the driver to shutter connection.
- A fixed (set in hardware) duration pulse will be generated by the shutter driver in response to a trigger event.

LIGO E1300819-V2
ISC HAM6 Fast Shutter Hardware Chain