

Greg:

In general, those boxes appear to include the following

1. 2 optical receivers to convert optical triggers into voltages and send those voltages to other devices
2. 1 diode buffered circuit that takes two signals (one from the optical trigger and one from one of the devices) and combines them into a single trigger line
3. One AND gate that is opened by a long optical pulse and another that is the output from the laser firing signal. When both are true, it creates a gate to gate the camera. The initial optical pulse is also sent to the camera to open the shutter.

Here is what we would want in a new configuration

1. Optical receiver for primary trigger to Agilent generator. This is the "warm up" circuit
2. 1 diode buffered circuit that combines the signal from a second optical receiver and the Agilent output and sends the combined signal to the Rigol delay generator. This is the "last" pulse circuit
3. A third Optical receiver that sends a signal to the camera shutter to open (the "shutter" circuit) and feeds into an AND gate, the other input to the AND gate is the Q switch output from the laser. The output of the AND date is the "camera gate" circuit. This circuit should also have an output that can be used to trigger a scope. The optical "shutter" input from the DAQ system will actually be split into two so it can go to both TS boxes. The camera gate output could be optical or analog (see additional box below)

So the new box would have 3 optical inputs instead of two and the other outputs as listed above. We would want **3** of these boxes as one of the ones in use actually does two of these functions. Then there would be an additional 4th box that combines the "camera gate" signals from both laser Q-switch outputs and creates the signal that goes to the actual camera. Now this one is tricky as the signal from the lasers only precedes the moment of measurement by a few tens of nanoseconds. Right now there is a physical disconnect to swap cables. I think making them initially optical and then converting the combined signal will be too slow. So maybe the output of #3 stays analog and there is a simple box with a physical switch that must be flipped to change the choice of Q-switch signals from the 2 lasers.

Let me know if this is not clear.

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