Detector timing settings

This page is intended to serve as a cheat sheet documenting trigger settings for common devices.

FEE Detectors

CameraLink and PGP Cameras

N.B. Cspad numbers were determined in CXI and worked in XPP.

Febo numbers were determined in XCS.

Camera Model	Pulse Polarity	Pulse Delay	Pulse Width	comments
Adimec Opal 1000	Pos	0.0008	0.0002	Pulse width affects exposure time. 0.0001 sec is too short.
Adimec Opal 4000	Pos	0.0008	0.0002	Maximum trigger rate is 30Hz.
Pulnix TM-6740CL	Neg	0.0006	0.0005	Pulse width affects exposure time.
LBL FCCD	Pos			Pulse width does not affect exposure time.
Cspad	Neg	2.5e-4 after Run Delay	1e-5	The integration window in the full cspad is positioned by the sum of two settings. They are the Run Delay in 119 MHz ticks and the Acq Delay in either 1.024 or 2.048 microsecond ticks. For 1.0 firmware, use 2.048 and for 1.2 or 1.5, use 1.024. The firmware that supports the v1.5 ASICs, will use 1.024 microsecond Acq Delay ticks and introduce a fourth variable in the mix above, the Internal Trigger Delay in 125 MHz ticks. On last sighting, the FEL was in the low 890 microseconds after the event code 140. Discussion on timing CSpad variants
Cspad2x2 Version 1.5 and Daq release after 6.1.1	Pos	5.5e-4	1e-5	Run trigger the same, 5e-4 seconds, or 59524 ticks in the Daq system (typically evrstandalone process) N.B. the above assumes a Acqdelay of 280. AcqDelay is in units of 1.024e-6 seconds and the runTriggerDelay above. (ONLY FOR SCANNING TIMING! Start with 11020 runTriggerDelay in the configuration Scan Run Trig Delay in units of 8e-9 seconds to time in or scan across.) Discussion on timing CSpad variants
Febo (normal)	Pos	7.78e-4	1e-6	For normal mode, trigger width not critical
Febo (Average)	Pos	4.41e-4	1e-6	For averaging mode, trigger width not critical
IPIMB	Neg	0.000651824	5e-06	
Wave8 (LCLS-I)	Pos (Normal)	7.0676e-4 (83000 ticks for code 40) Run 1.0177e-3 (120000 ticks for code 40) Readout	832 ticks (does not matter) 832 ticks (does not matter)	Assumes CSA release delay of 15000 * Rst delay of 80000 in wave8 expert config.

Zyla/Neo	Pos	0.0007	1e-05	For camera in 'overlap' mode using the global shutter only. Pulse width does not affect exposure time. For details on other modes please see: Zyla: Trigger Timing, Readout Mode Configuration and Extender Setup
Jungfrau0.5M/1M	Pos	0.00065	1e-05	N.B. This works when using the standard internal delay of the Jungfrau of 0.000238 s
Jungfrau4M	Pos	0.00065	1e-05	The original delay for the Jungfrau4M was 0.000238 s Using EVR2 as the trigger, the Jungfrau internal delay needed to be changed from 0.000238 to 0.000831s. This change persisted after moving the detector back to EVR1.
Alvium	Pos	0.00065	1e-05	N.B. Setting the exposure via the pulse width does not currently work so timed exposure must be used.

Other Cameras

Camera Model	Pulse Polarity	Pulse Delay	Pulse Width	comments
Timepix	Neg	0.00085	0.0002	Pulse width affects exposure time.
Rayonix	Pos	0.003	1e-5	Pulse width does not affect exposure time. 10 Hz max@2x2 binning.

Other Devices

Model	Pulse Polarity	Pulse Delay	Pulse Width	comments
Agilent Acqiris U1065A and U1051A (High Speed ADC and TDC)	Pos	0.0007	0.0003	Pulse width is not critical.
General Standards GSC16AI32SSC (Beam Rate ADC)	Pos	0.0007	0.0003	Pulse width is not critical.