

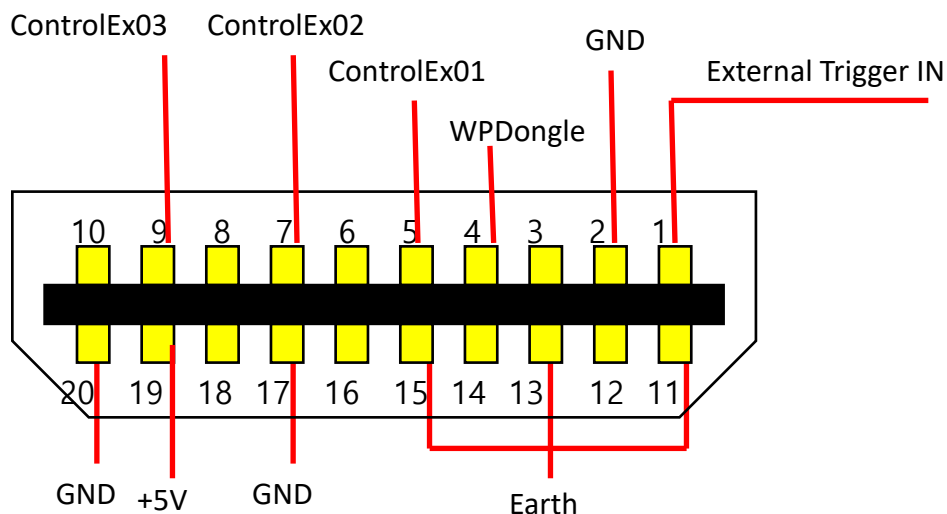
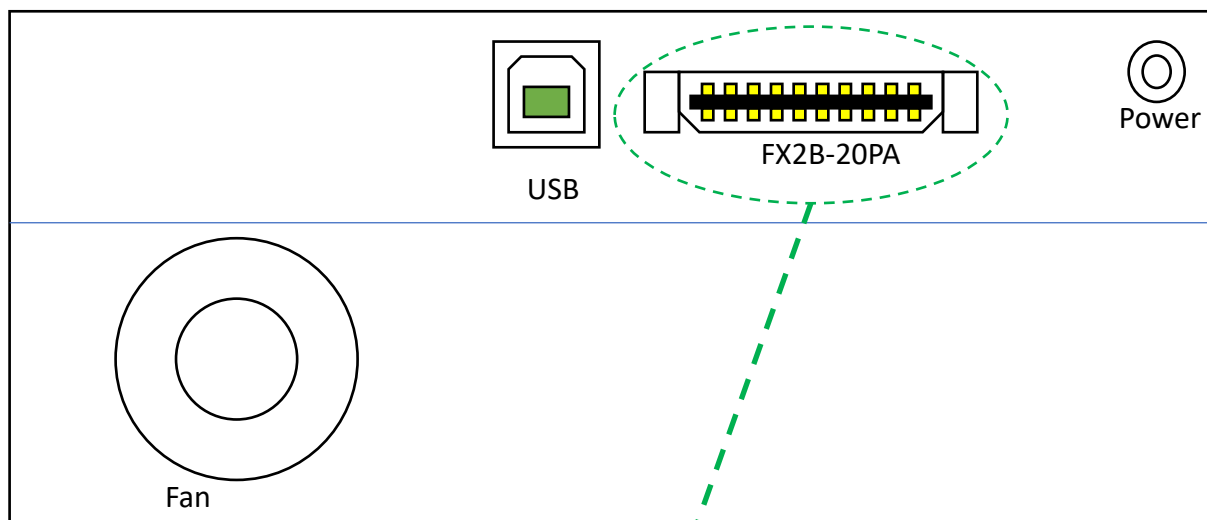
# Instruction for External Triggering on SM304 series

## 1. Introduction

This manual contains the instruction for the external triggering on SP's SM304 series.

## 2. Connector Information

The back side of the SM304 would look as follows.



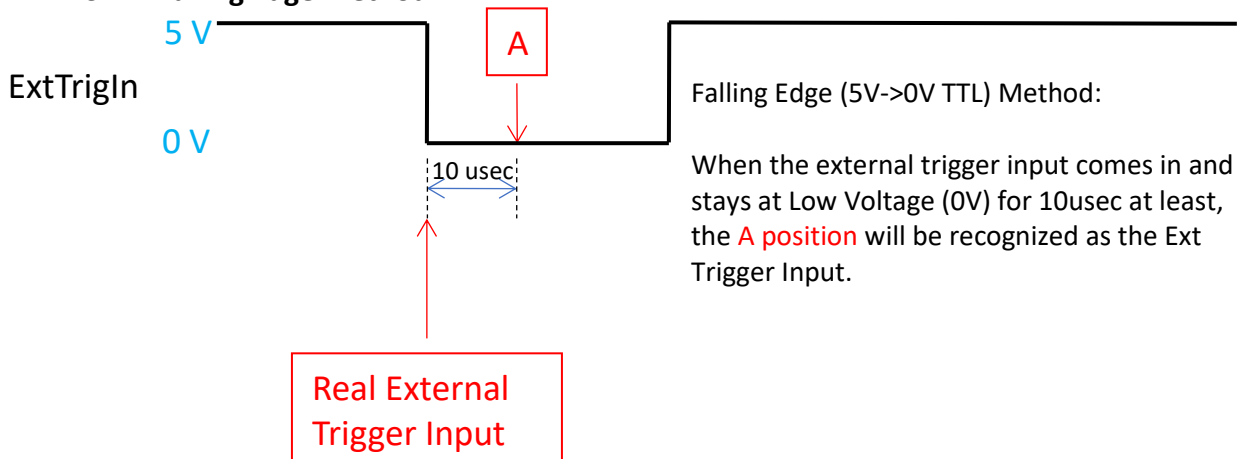
The female connector type is “FX2B-20PA”. The pin information is as follows.

PIN	Description	PIN	Description
1	External Trigger Input	11	Earth
2	GND	12	Reserved
3	Reserved	13	Earth
4	WPDongle(EEPROM WP)	14	Reserved
5	ControlEx01	15	Earth
6	Reserved	16	Reserved
7	ControlEx02	17	GND
8	Reserved	18	Reserved
9	ControlEx03	19	+5V Out (5mA Max)
10	Reserved	20	GND

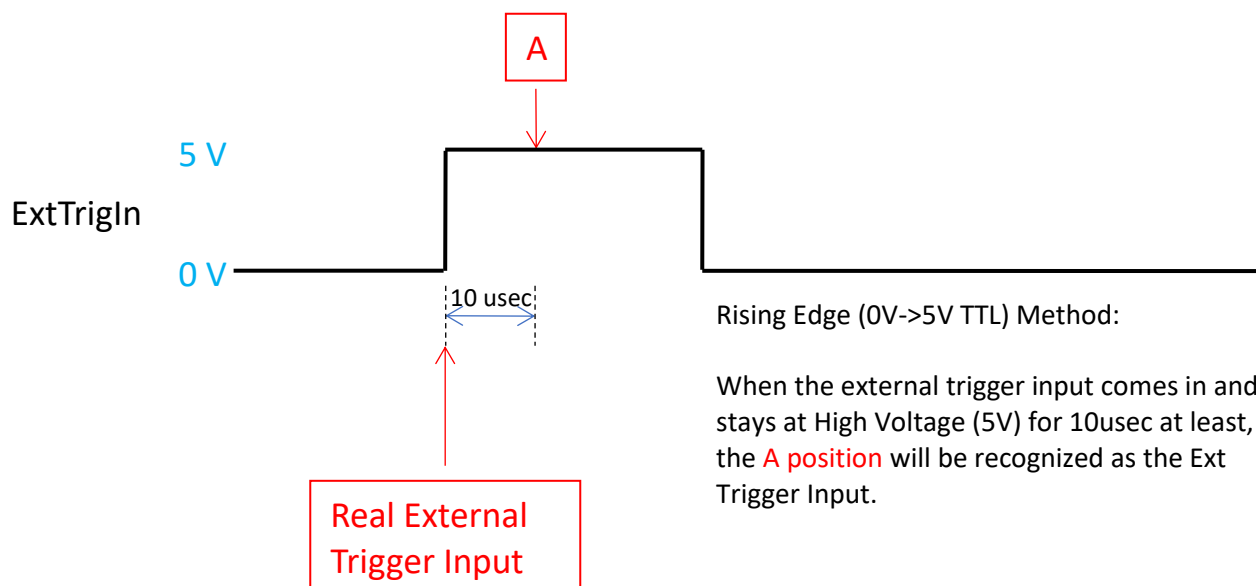
### 3. External Triggering Operation

#### 3.1 The recognition of the Input External Trigger Signal:

##### 3.1.1 Falling Edge Method:



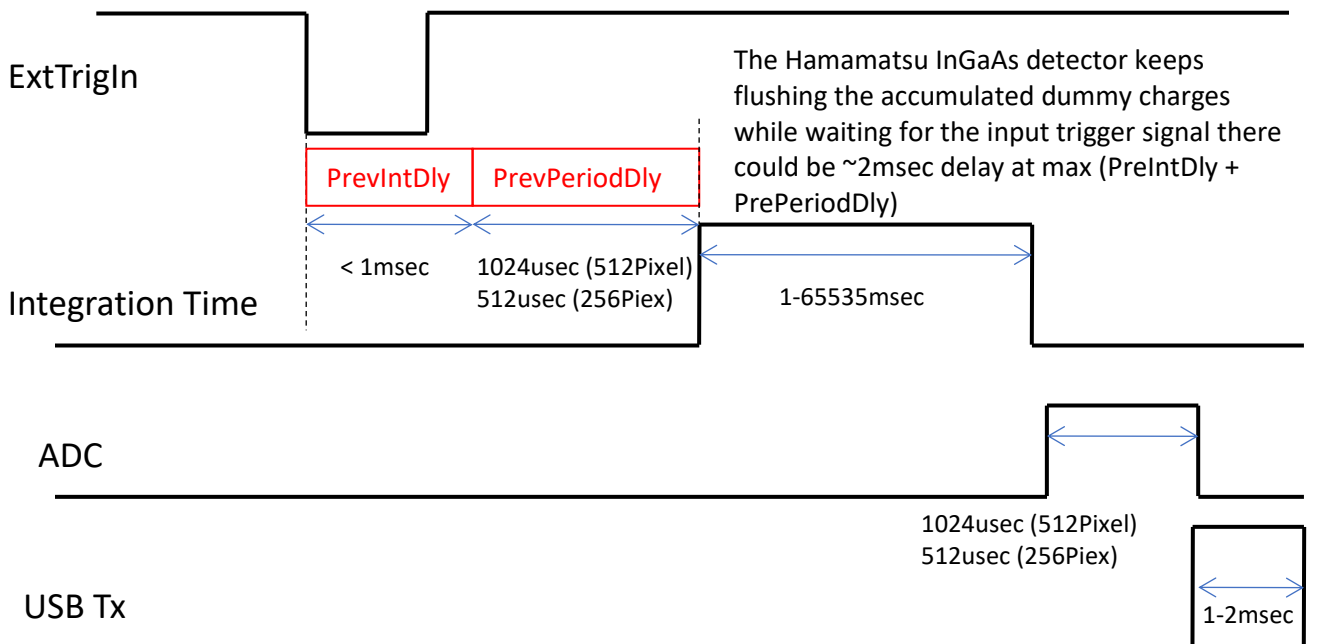
##### 3.1.2 Rising Edge Method:



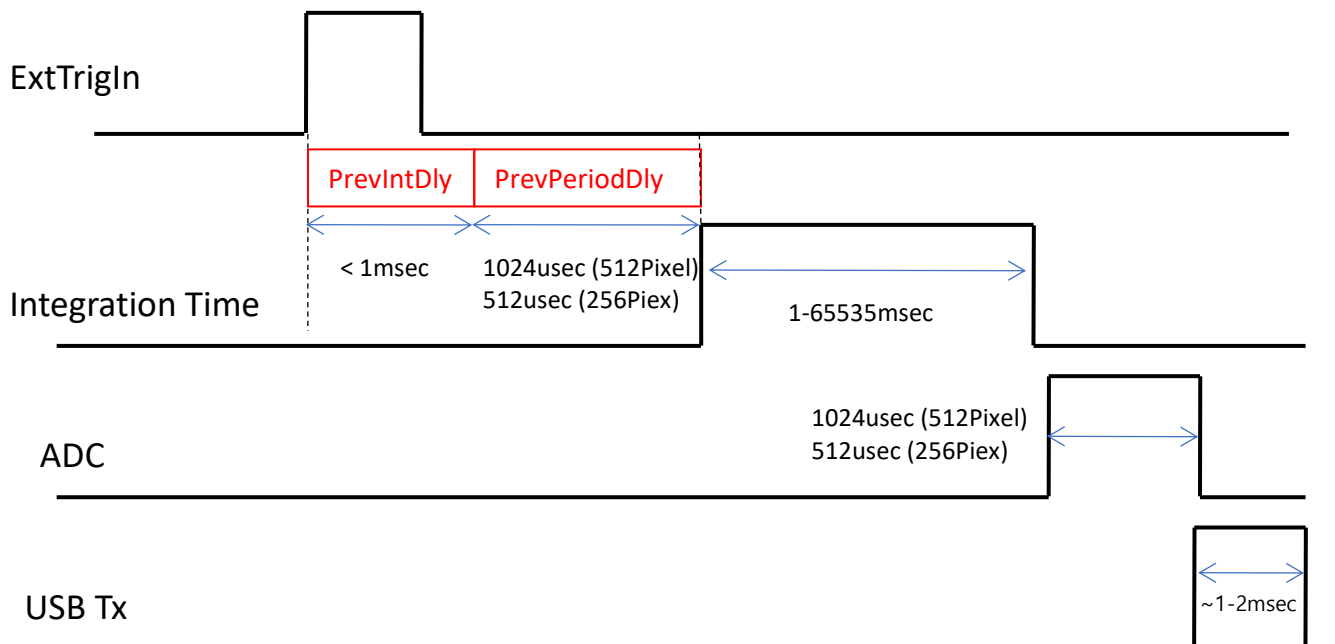
At each method, the input signal must stay for 10usec at least to be recognized as a real external trigger signal. This is to avoid for any electric/electronic noise to be recognized as a trigger signal.

## 3.2 External Triggering Timing chart:

### 3.2.1 Falling Edge Method:



### 3.2.2 Rising Edge Method:





Spectrometers · Spectrophotometers · Color Instruments · Spectrographs · Monochromators

---

111 Highland Drive · Putnam, CT · 06260 · USA  
PHONE (860) 928-5834 · FAX (860) 928-2676  
<http://www.spectralproducts.com>

The Hamamatsu's InGaAs array detector keeps flushing accumulated dummy charges during idle time. This flushing time takes ~1msec. During this flushing process, any external triggering signal comes in, it could be between 0msec and ~1msec (PrevIntDly). After the received signal is recognized as an external trigger signal, as soon as the flushing process is over, another ~1msec will be used for synchronizing the external trigger signal and the board (PrePeriodDly). The "PrePeriodDly" time is fixed per detector pixel number. But the "PrevIntDly" time varies between 0msec and ~1msec so it needs to be considered for accurate synchronization.

The A/D converter used in the electronic board is 500KHz and therefore the A/D converting time is ~1msec for 512 pixels and ~0.5msec for 256 pixels.

The data transferring time through USB is ~1-2msec, which would be depending on the performance of the computer, such as memory speed, USB interface speed, etc.