

# PCB Pressure Gauges Data Collection

## *Instructions*



***AXPRO GROUP***  
***Advanced Explosive  
Processing Research Group***  
*Explosive Research and Education Center*

# Instrumentation

Sensing element



PCB 123A23 Pencil Gauge

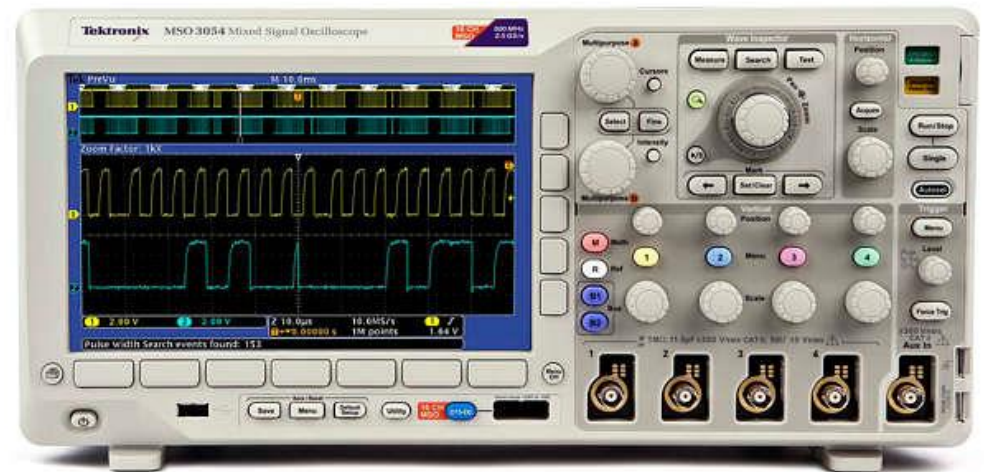
Sensing element



PCB 102B03 Free-face Gauge

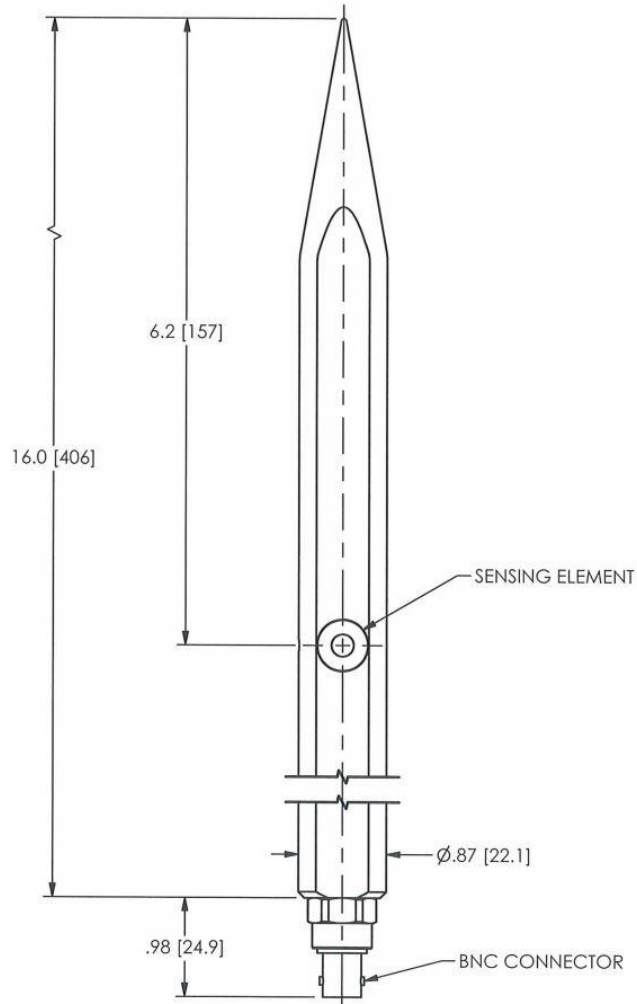


PCB 482C05 Signal Conditioner

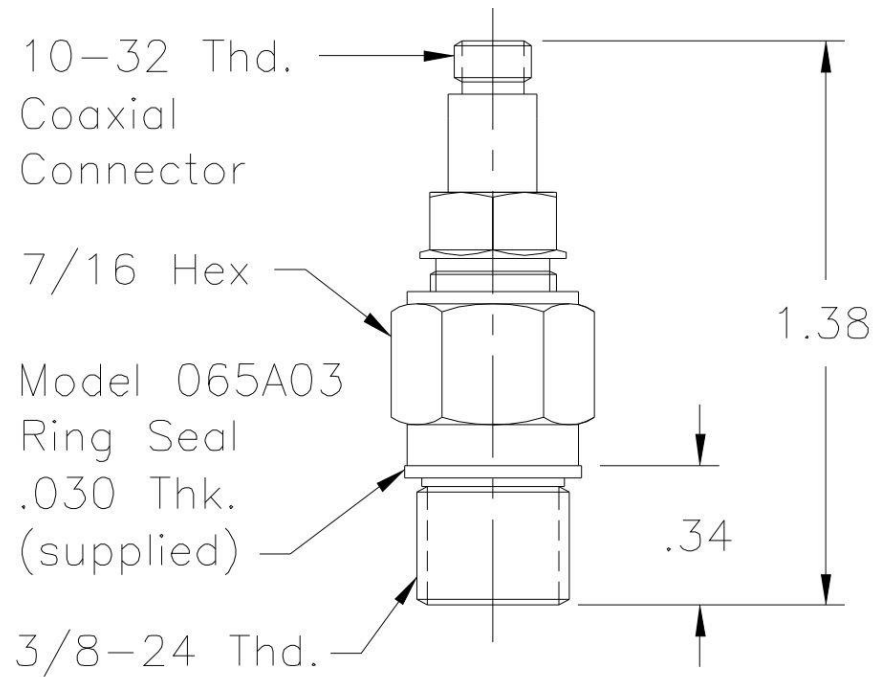


Tektronix DPO 3014 Oscilloscope

# Drawings



**PCB 123A23 Pencil Gauge**



**PCB 102B03 Free-face Gauge**

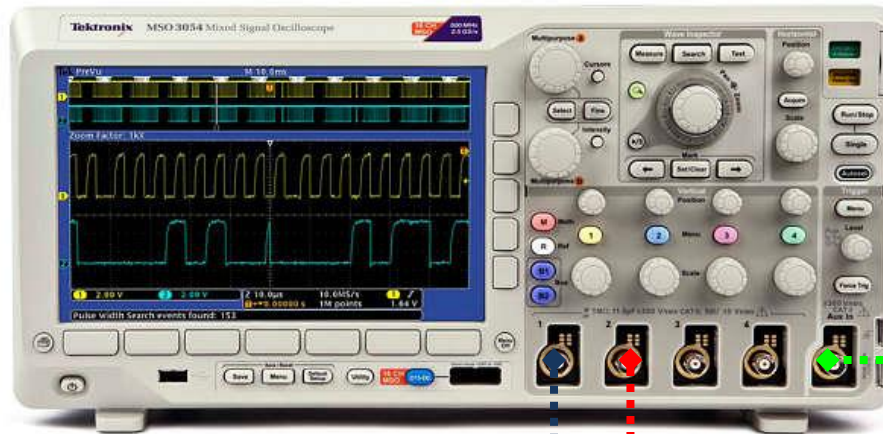
# Setup



Black vinyl electrical tape to minimize possible signals generated by flash temperatures



Sensors must be electrically isolated from the mount

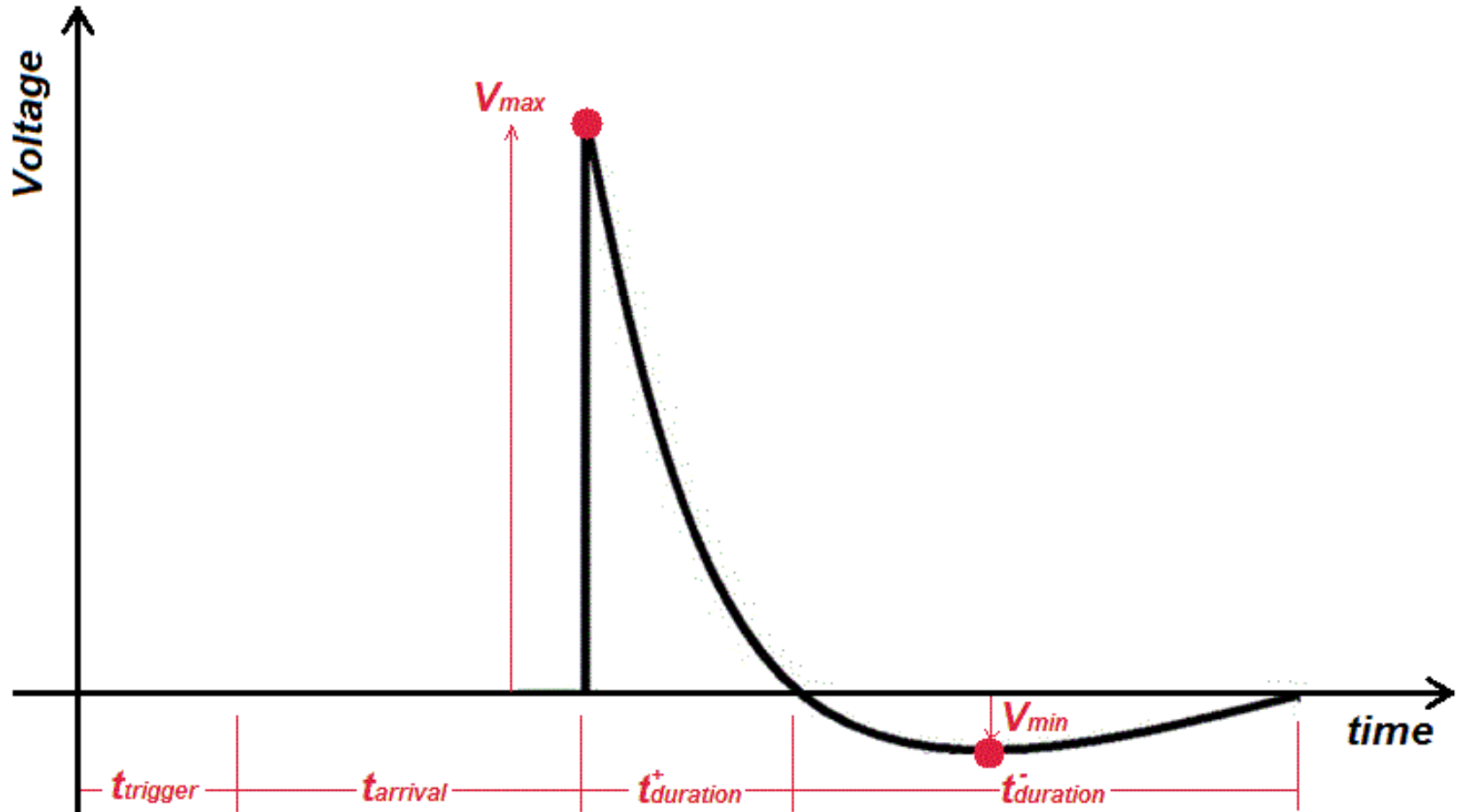


External Trigger

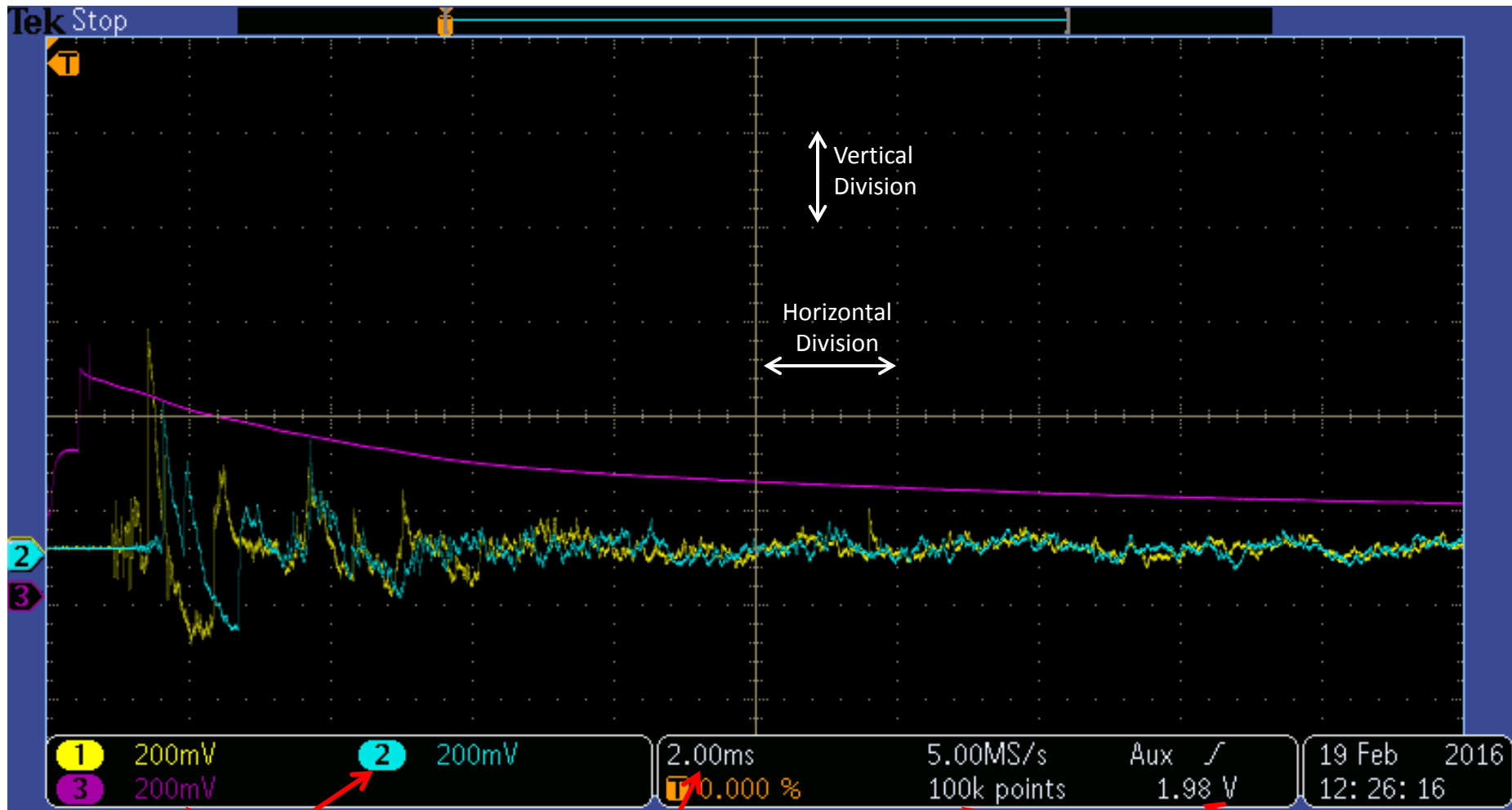


# ***Blast Parameters Estimation***

Before setting the oscilloscope, we need to have an estimation of the signal that is going to produce the pressure gauge. For this reason, the following blast parameters must be estimated:



# Oscilloscope Settings



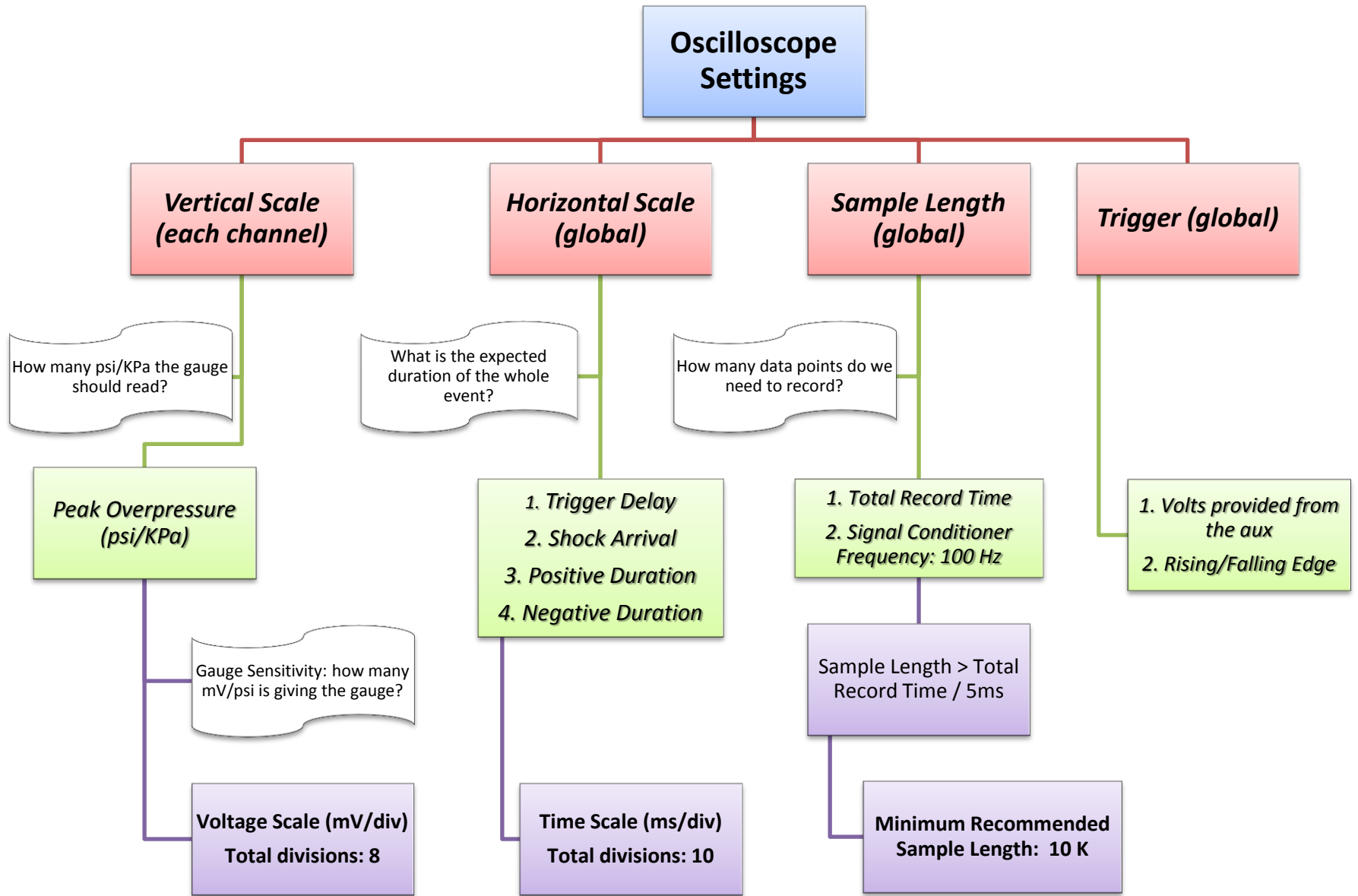
**Vertical (Voltage) Scale**  
[mv/div]

**Horizontal (Time) Scale**  
[ms/div]

**Sample Length**

**Trigger Level**

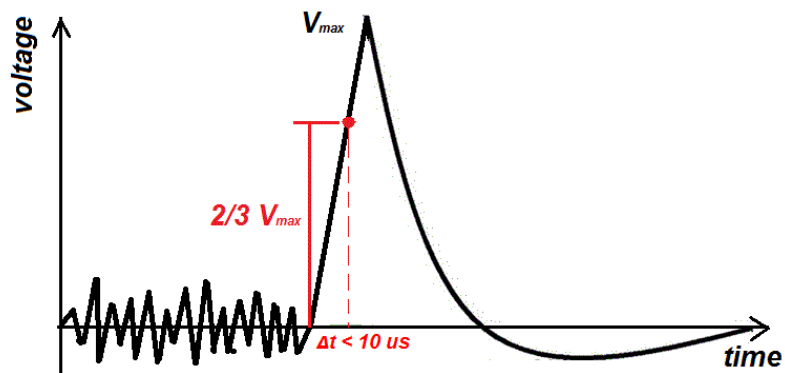
# Oscilloscope Settings



# Verification of the Data Collected

In order to verify the validity and accuracy of the data recorded regarding our blast wave. Two simple measurements should be made:

- 1. Rising Time:** the time from zero voltage to  $2/3$  of the maximum peak should be always less than 10 microseconds.



- 2. Signal to Noise Ratio:** the maximum peak value recorded should be at least the times higher than the peak to peak noise value.

