Implementation ( LPC2148 based Oscilloscope)

Written on

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Friday

Contents

# Elements

* Window
  + Size
    - Placement (X1, Y1) ( initial vertex of rect)  
      (X2, Y2), ( diagonally opposite vertex of rectangle)
  + Color
    - Background
    - BorderColor
* Grid
  + Grid spacing ( DX, DY)
  + Color
  + Centre position referenced ZeroLine
  + Dotted Lines
* Graph (AD0,AD1)
  + V vs t (normal plot)
    - Color
    - DataPoints
    - ZeroLine ( dashed Line)
      * Marker for zeroline
  + V vs V
    - Color
    - Centre offset
  + Amplitude vs Hz
    - FFT Plot
    - Color
* Input (circuitry)
  + Vmeas = Voffset+Gain x Vreal
  + Vmeas = Measured Value
  + Voffset = Offset added to voltage after multiplied
  + Gain = Gain due to amplifier
  + Vreal = Actual Voltage Input
* Voltage Scale (AD0, AD1)
  + Color (text)
  + Value ( real ) per grid div (DY)
* Time Scale ( common for both)
  + Color (text)
  + Value (real) ( us/ms/s) per grid division (DX)
* Frequency Scale
  + Color (text)
  + Value (real) ( Hz/GridDiv )
* X-Y plot
  + Color (text)
  + X Scale , Y Scale
* TriggerMarker
  + Voltage Trigger
  + Sample Number ( time Trigger)
  + Color
  + Position (x, y)
  + Trigger Line

# Global Variables

* Samples <int> = 256 ( preffered) (a.k.a N)
  + Stores Number of Samples acquired in one stream
* Mode <int>
  + Stores the mode
    - V vs t (Normal Voltage-time graph)
    - A vs Hz (FFT Plot)
    - V vs V ( X-Y Plot)
* Analog0\_raw[N] <int> & Analog1\_raw[N]
  + Raw Data stored from ADC
* DAC\_raw[N] <int>
  + Raw Data For DAC
  + Generated in beginning of sampling
* Analog0[N] <float> & Analog1[N] <float>