Charts and Graphs

Charts and graphs are used to display data in a graphic form. There are several chart and graph functions:

1. Wavefornt Charts
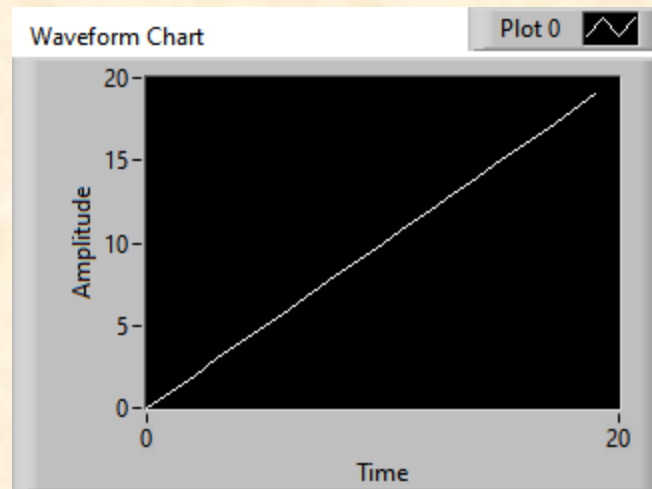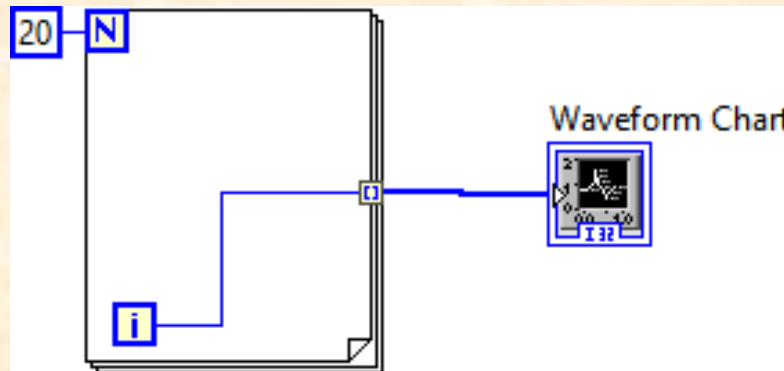
2. Wavefront Graph

3. XY Graphs
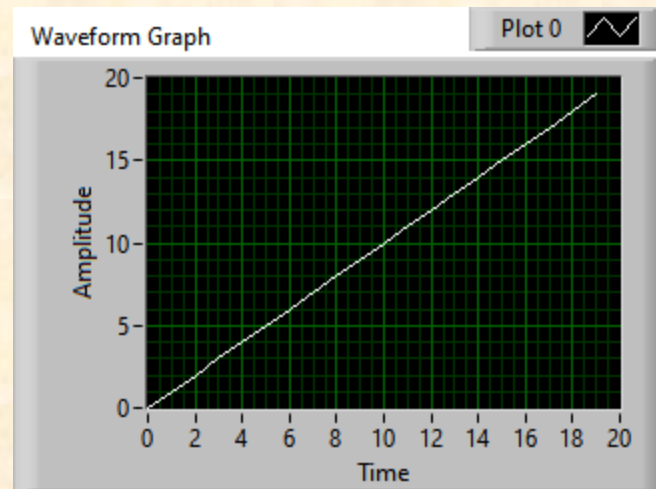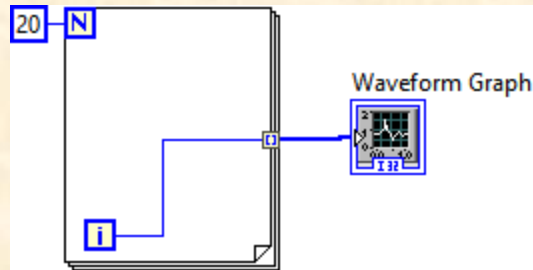
4. Other 2D and 3D Graphs (Using Math Plots)

5. LabVIEW's **Vision and Motion** uses its dedicated intensity based graph functions to show the result.
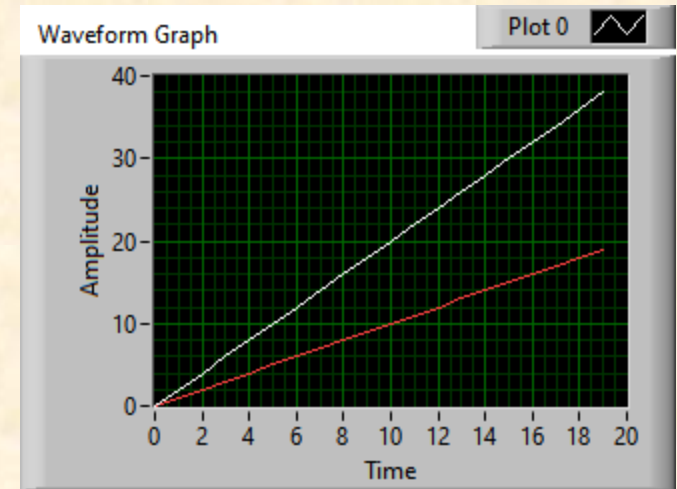
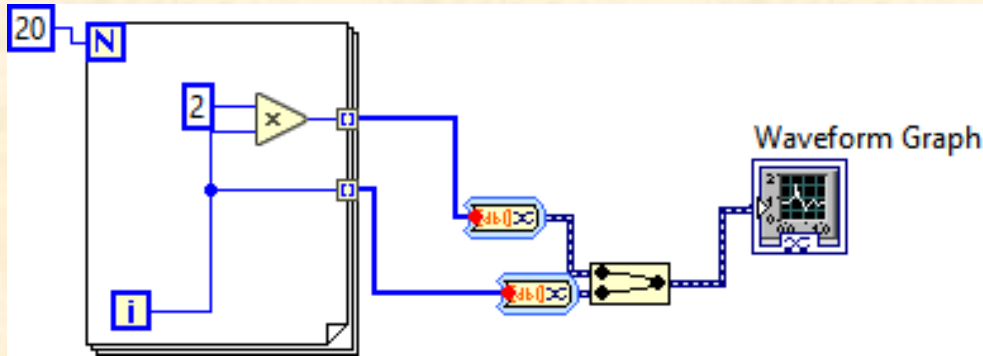# 1. Waveform Charts: One input serial of an array

2. Waveform Graphs: One input serial of an array:

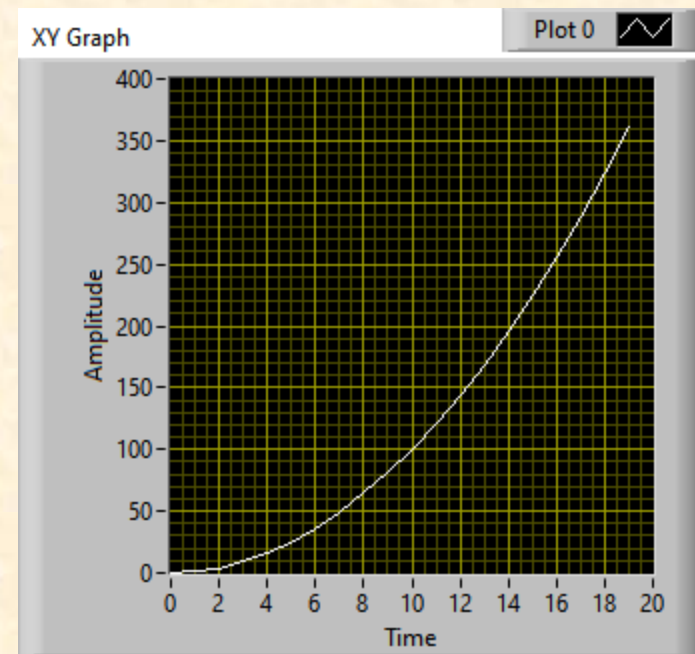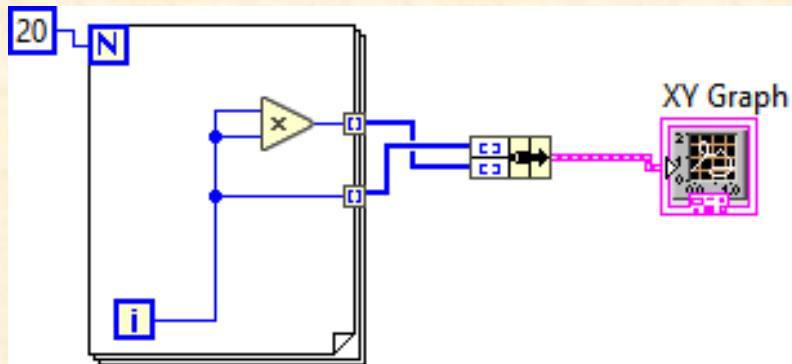**For example, you measure the temperature at different sample points.**

2. Waveform Graphs: One input serial of an array

You cal also use Signal Merge Function to merge 2 signals together:
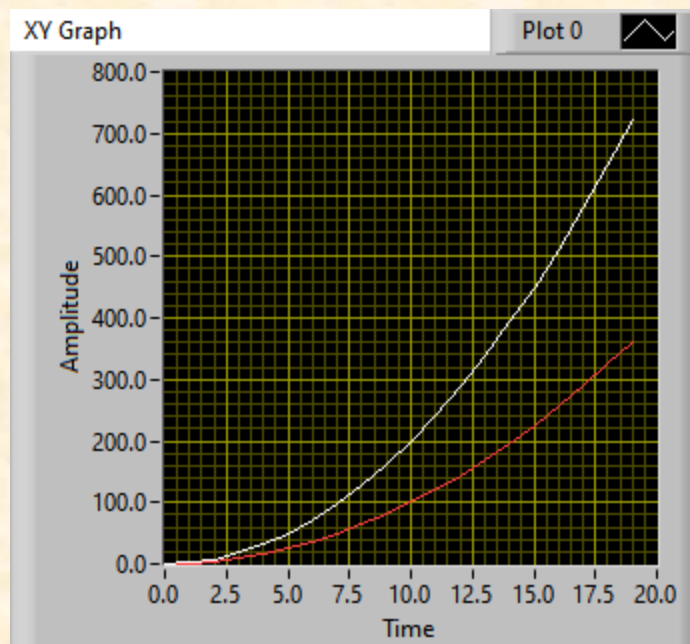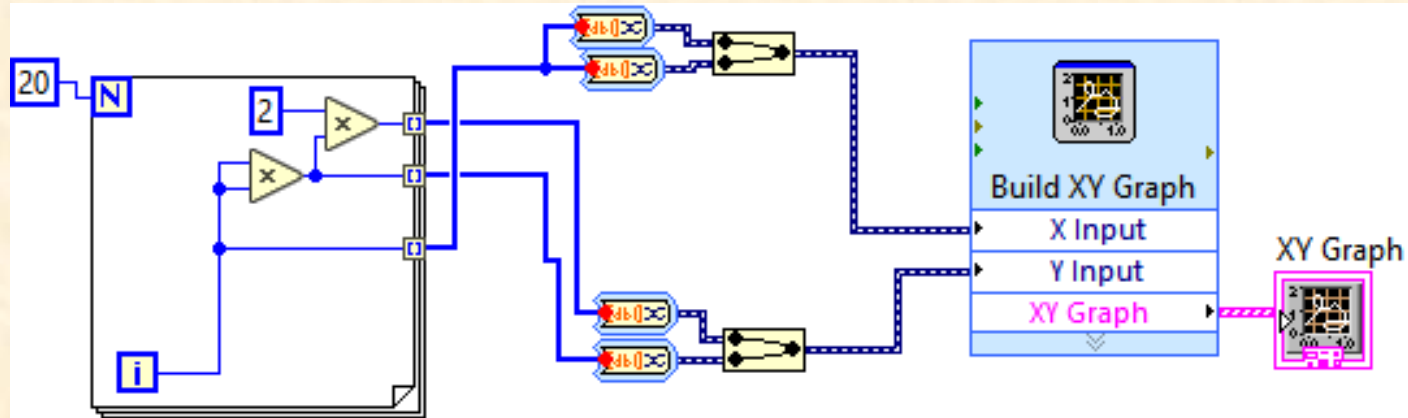**Express/Sig Manip**

3. XY Graphs

When you need to control both X and Y inputs: Y is a function of X!

3. XY Graphs

Using Ex XY graph **when you need merge 2 plots together:**

Assignment 1:

Create a VI that plots an ellipse

$$r^2 = \frac{A^2 B^2}{A^2 \sin^2 \phi + B^2 \cos^2 \phi}$$

Where r, A and B are input parameters from your front panel.

And $0 \leq \phi \leq 2\pi$

Assignment 2

Create a VI that graphs the function y=10, where x=0, … 20.
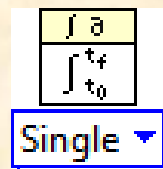
Calculate the integral

$$y = \int_0^{20} 10 \, dx$$

Suggested sampling points: 20

Using an XY graph to show the curve of 10 and the sampling points.

Hint:

Use the LabVIEW function "1D Numeric Integration VI"

Which can be fund from "Mathematics/ Integ & Diff"

1D Numeric Integration VI
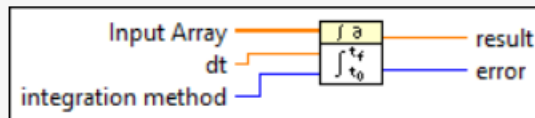
Updated 2023-08-14 | ⏱ 4 minute(s) read | # LabVIEW # API Reference # LabVIEW G

Performs numeric integration on the **Input Array** using one of four popular numeric integration methods.

Wire data to the **Input Array** input to determine the polymorphic instance to use or manually select the instance.

Inputs/Outputs

- **[DBL]** **Input Array** —

Input Array contains the data to be integrated, which is obtained from sampling an integrand f(t) at multiples of **dt**, that is, f(0), f(**dt**), f(2**dt**),....

- **[DBL]** **dt** —

dt is the interval size, which represents the sampling step size used in obtaining data in **Input Array** from the function.
If you supply a negative **dt**, this VI uses its absolute value.

- **[I32]** **integration method** —

integration method specifies the method to use to perform the numeric integration.

Assignment 3

Create a VI that graphs the function y=sin x , where x=0, … nπ.
Calculate the integral and show the result with an indicator of

$$y = \int_0^\pi \sin x dx$$

Suggested sampling point: 50.

Using an XY graph to show the curve of sin(x) and the sampling points.

Assignment 4

Create a VI that graphs with the functions $y_1=sin\ \theta$ and $y_2=cos\ \theta$, where x=θ=0, 10º, … ,360º.

Merge these two plots and show them in a single X and Y graph.

Hint:

You need to use the Ex XY graph plot function.