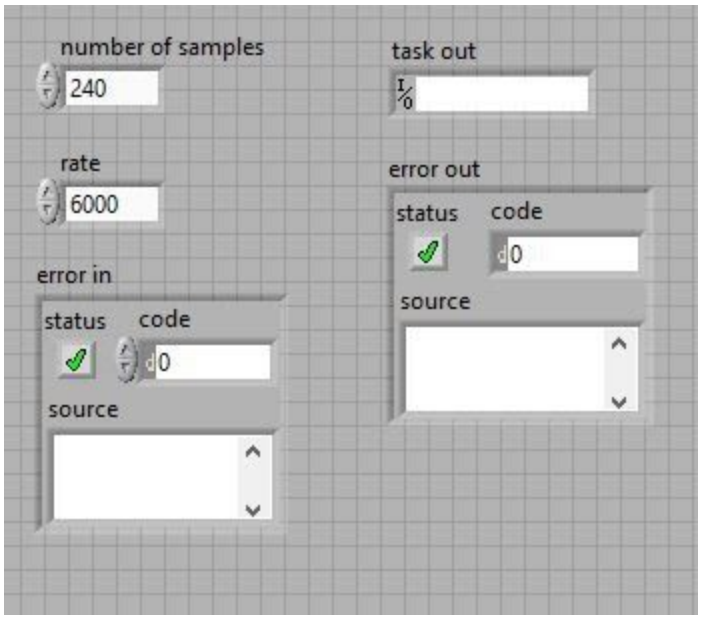
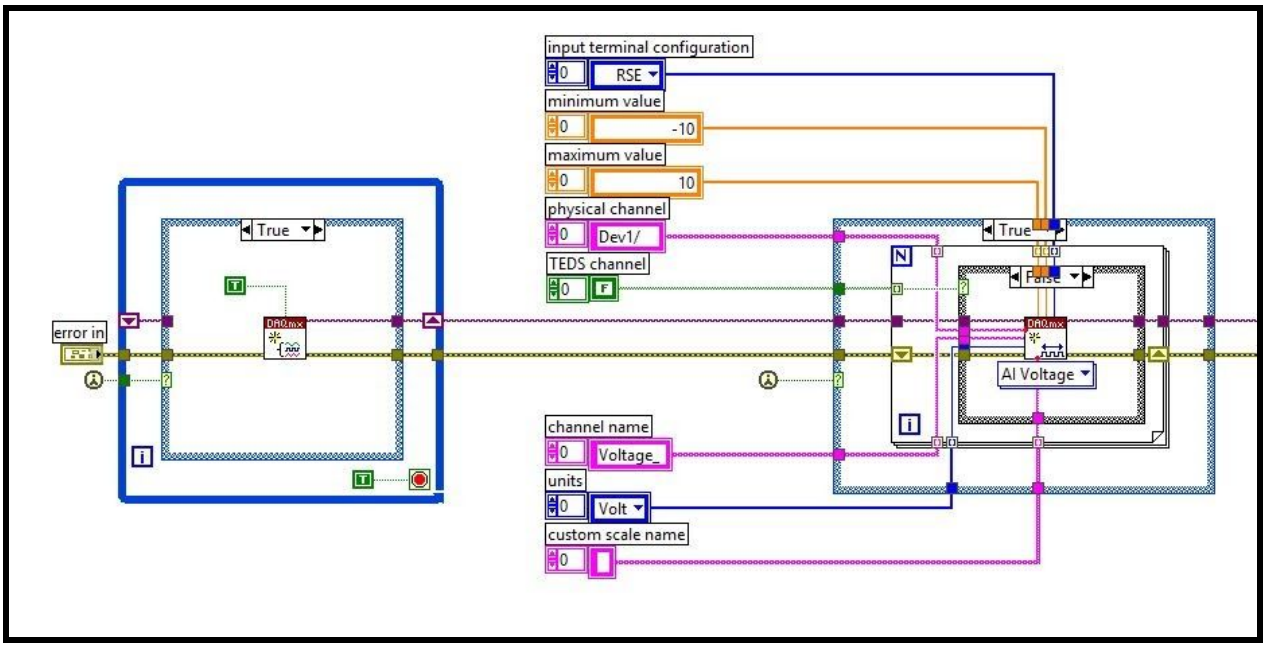


The VI 10 DAQ Config (PFI0) is used to find analog voltage inputs. The entire VI performs specific actions to acquire and record the voltages. After doing so once, only the task out and any error outs are sent to the Front Panel via the use of First Time boolean case structures.



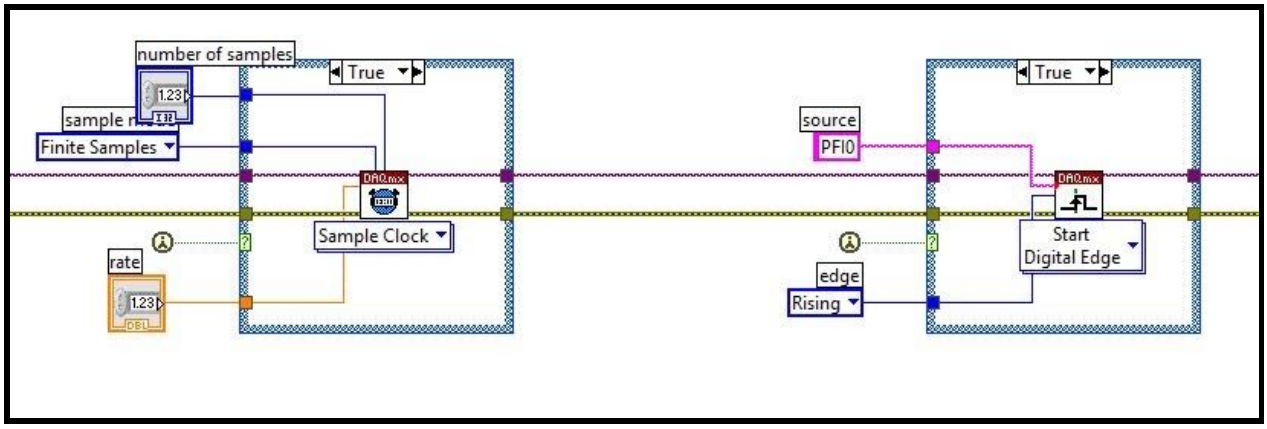
10 DAQ Config (PFI0) starts by taking any error in from the Front Panel. The first while loop consists of creating an arbitrary task out and error out. The “task” is the measurement that we want to make, or the voltage measurement. The task is different from a single AI measurement, because the settings of the task can change how the USB-6009 will measure the

voltage. Changing HOW the USB-6009 measures the voltage is the bulk of what 10 DAQ Config (PFI0) does. The first while loop shown above configures where, and what sort of values the USB-6009 will record.

Note that all of the shown inputs can be changed, but that is not recommended.

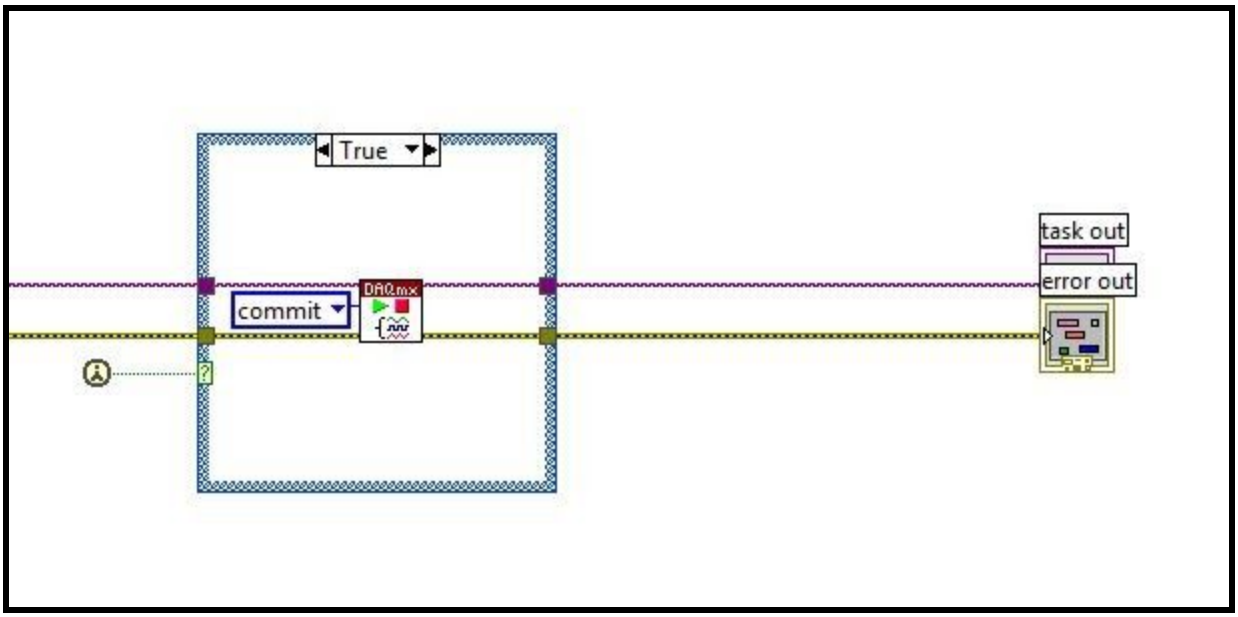
Also note that each of the inputs shown above can be expanded to show the setting values for 3 phase analysis.

Because of a “First Time” only boolean case, the “True” state is only called once, which sets the task out. For any repeat after the First time, the same Task and Error Out are returned. Once the task and error out arrive at the second case structure, a similar process occurs. If it is not the first iteration of the case structure, the error and task are sent through. However, on the first iteration, a voltage will be read by DAQmx Create Channel (TEDS-AI-Voltage-Basic). .



The second portion of 10 DAQ Config (PFI0) uses the VI DAQmx Timing (Sample Clock) to set all timing needs. DAQmx Timing sets the number of samples, the type of sampling, the rate of sampling, and source of the clock, all based on inputs sent from the user.
Once the sampling clock has been configured, the starting trigger is specified via DAQmx Start Trigger (Digital Edge) which needs a source. Source is input from the user that “specifies the name of a terminal where there is a digital signal to use as the source of the trigger.” In our case, we specify that the trigger is based on the digital input pin PFI0, from the USB-6009 OEM. When the USB 6009-OEM finds a rising digital edge on PFI0, it will begin to take data.

Note, PFI0 is pin number 33 on the USB-6009.



The last portion of 10 DAQ config (PFI0) uses the VI DAQmx Control Task to set the hardware to perform the task at hand, used through the input “commit.” This input can be set by the user. Once complete, any errors and the task out are handed to the Front Panel as output.