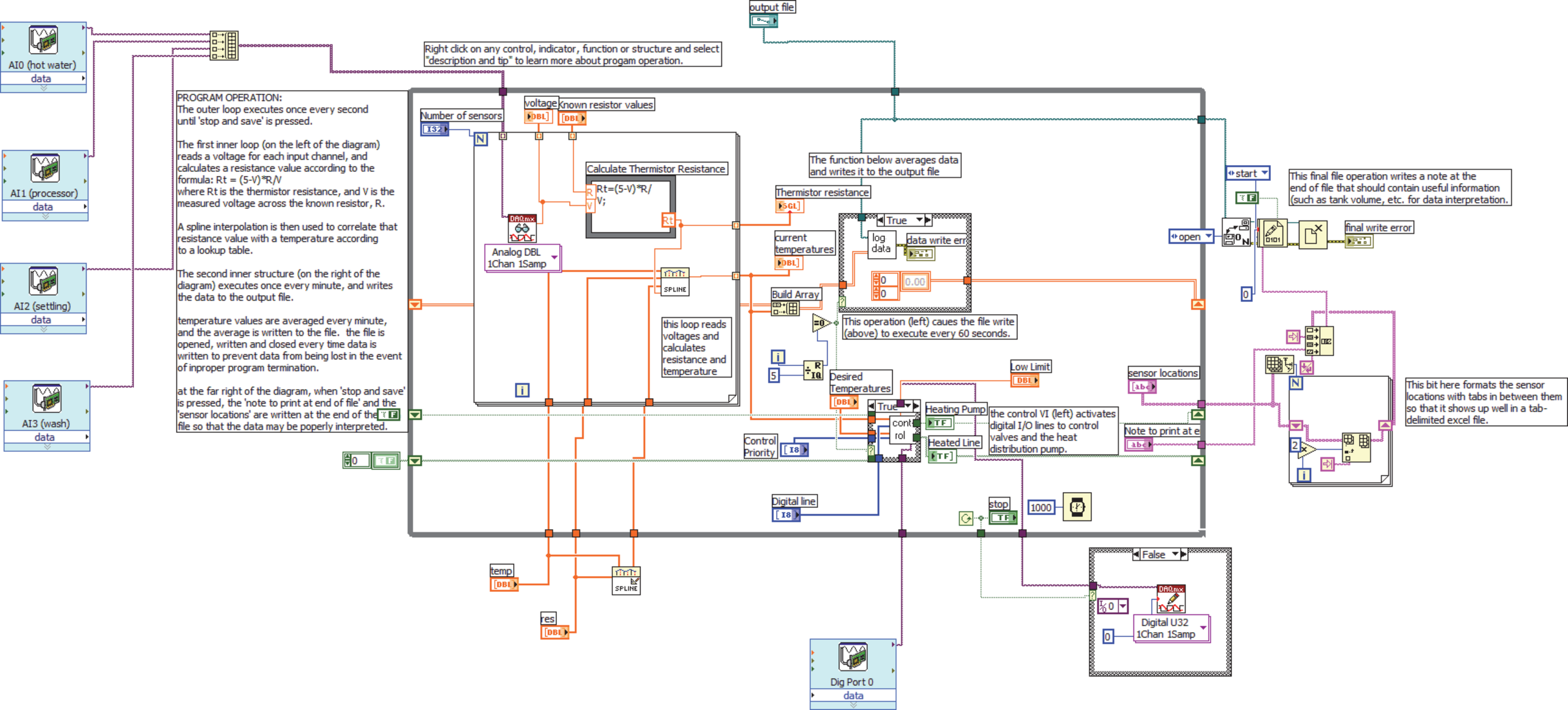
AI0 (hot water)
data
AI1 (processor)
data
AI2 (settling)
data
AI3 (wash)
data
Right click on any control, indicator, function or structure and select "description and tip" to learn more about progam operation.
output file
PROGRAM OPERATION:
The outer loop executes once every second until 'stop and save' is pressed.
The first inner loop (on the left of the diagram) reads a voltage for each input channel, and calculates a resistance value according to the formula: Rt = (5-V)*R/V
where Rt is the thermistor resistance, and V is the measured voltage across the known resistor, R.
A spline interpolation is then used to correlate that resistance value with a temperature according to a lookup table.
The second inner structure (on the right of the diagram) executes once every minute, and writes the data to the output file.
temperature values are averaged every minute, and the average is written to the file. the file is opened, written and closed every time data is written to prevent data from being lost in the event of inproper program termination.
at the far right of the diagram, when 'stop and save' is pressed, the 'note to print at end of file' and the 'sensor locations' are written at the end of the file so that the data may be poperly interpreted.
Number of sensors
voltage
Known resistor values
Calculate Thermistor Resistance
Rt=(5-V)*R/V;
Analog DBL 1Chan 1Samp
SPLINE
this loop reads voltages and calculates resistance and temperature
The function below averages data and writes it to the output file
Thermistor resistance
current temperatures
Build Array
True
log data
data write err
This operation (left) caues the file write (above) to execute every 60 seconds.
Desired Temperatures
Low Limit
Control Priority
Heating Pump
Heated Line
the control VI (left) activates digital I/O lines to control valves and the heat distribution pump.
sensor locations
Note to print at e
Digital line
stop
1000
temp
res
Dig Port 0
data
False
Digital U32 1Chan 1Samp
start
open
final write error
This final file operation writes a note at the end of file that should contain useful information (such as tank volume, etc. for data interpretation.
This bit here formats the sensor locations with tabs in between them so that it shows up well in a tab-delimited excel file.