THC Log Analyzer Users Guide

v2022Q2.1

THC Log Analyser Users Guide

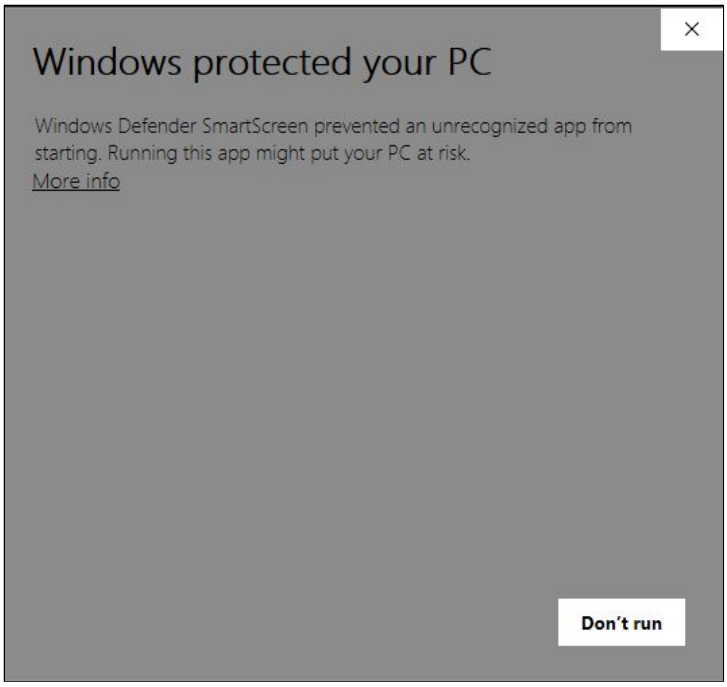
1. Log Analyser Installation

Download and Install .NET Framework

- **.NET Framework** - Microsoft .NET Framework 2.0 is required for the THC Log Analyser to install properly. Please confirm you have .NET Framework 2.0 installed, or download and install .NET Framework 3.5 (which includes 2.0) from Microsoft: **https://www.microsoft.com/en-us/download/details.aspx?id=21**.

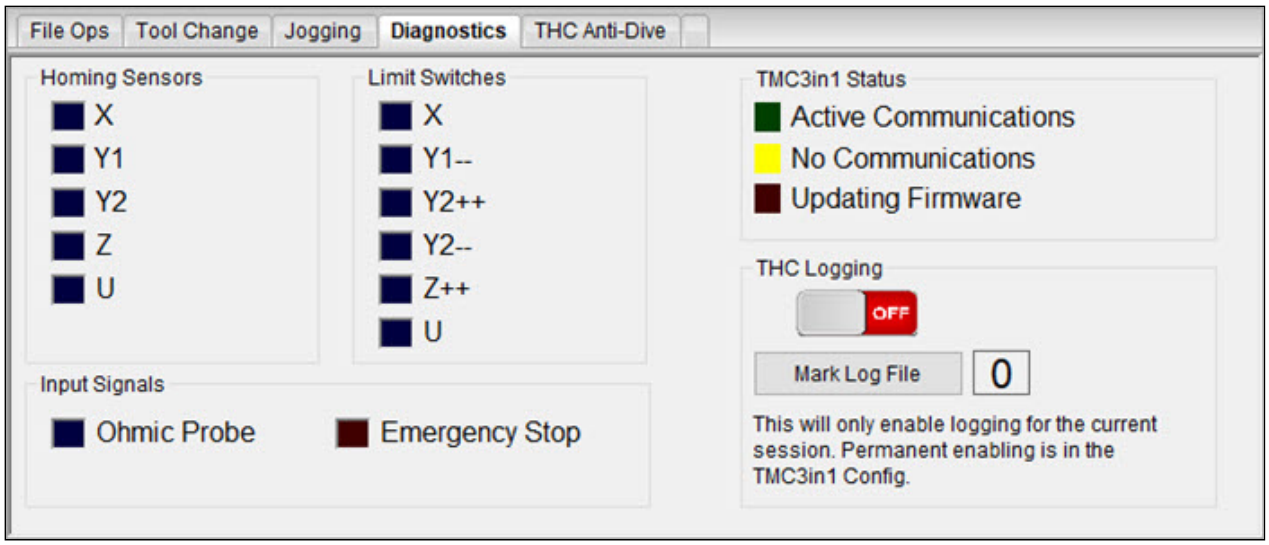
Download and Install The THC Log Analyser

- **Download THC Log Analyser** - **Download the Log Analyser** from Avid CNC. (https://www.avidcnc.com/cdata/cad/2018Q2/THCLogAnalyser.msi)
- **Install THC Log Analyser** - Run the "THCLogAnalyzer.msi" you downloaded from the above link.

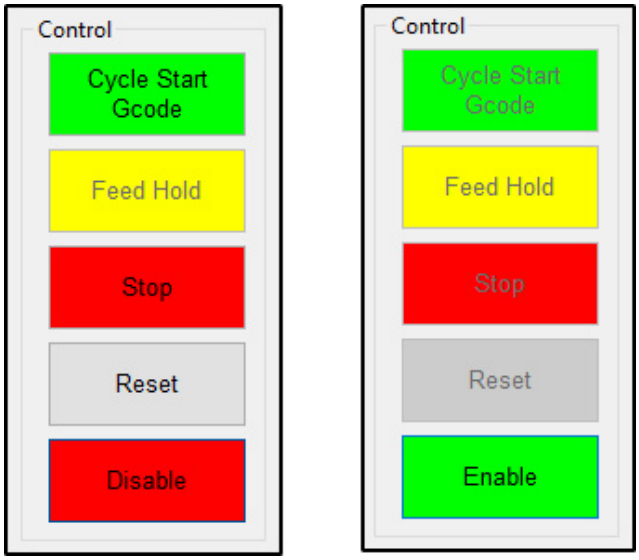


- You may see a Windows Defender alert display in some versions of Windows. Press "More Info" and then "Run Anyway" to run the Log Analyser Installer. Follow the on screen prompts to complete the installation.

2. Collect THC Log Data



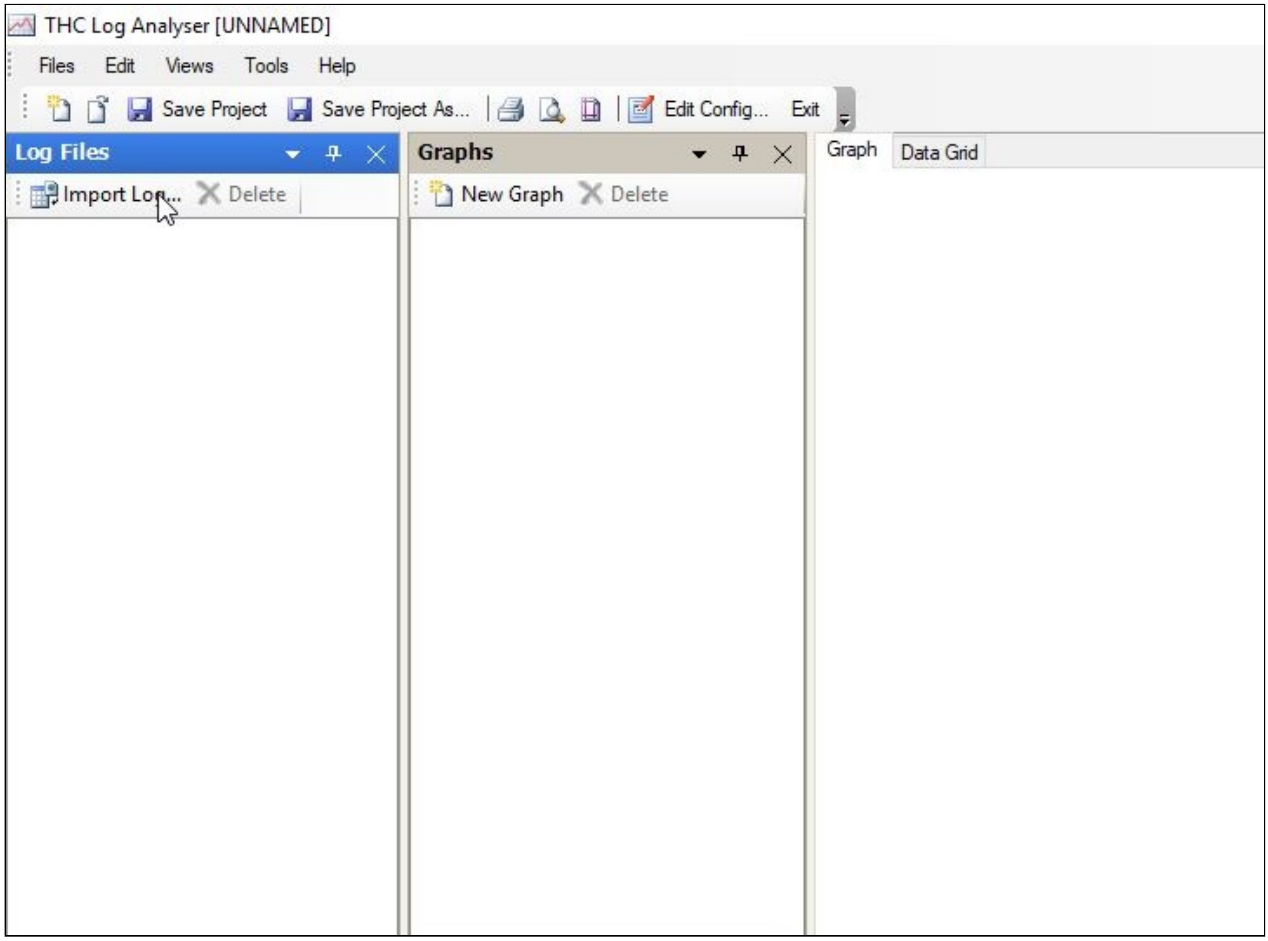
- **Setting up THC logging in Mach4** - To collect THC Log data, ensure the **THC Logging** toggle is ON.



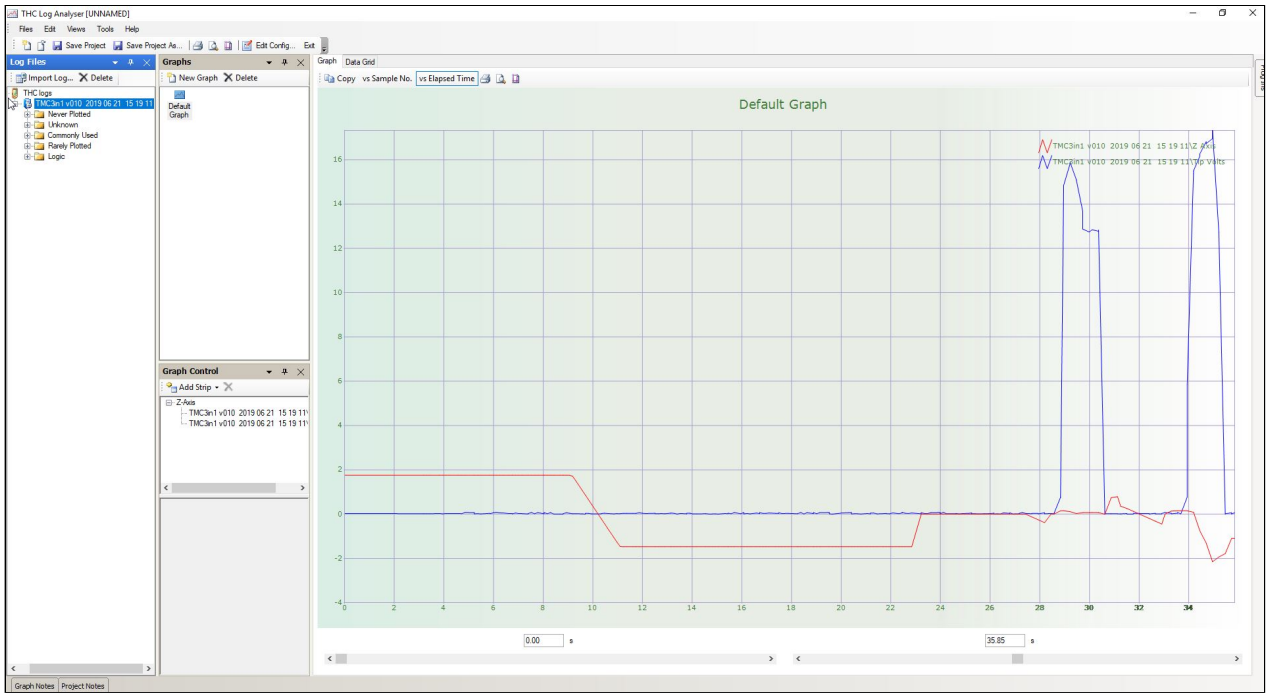
- **Collect Data** - Load G-Code of the cut you wish to log. Once your settings are properly configured for the plasma cutting operation, run your program. Once your program has finished running, the log file will be saved in the W9_HC folder (C:\Mach4Hobby\W9_HC).

3. Import Data into Log Analyser

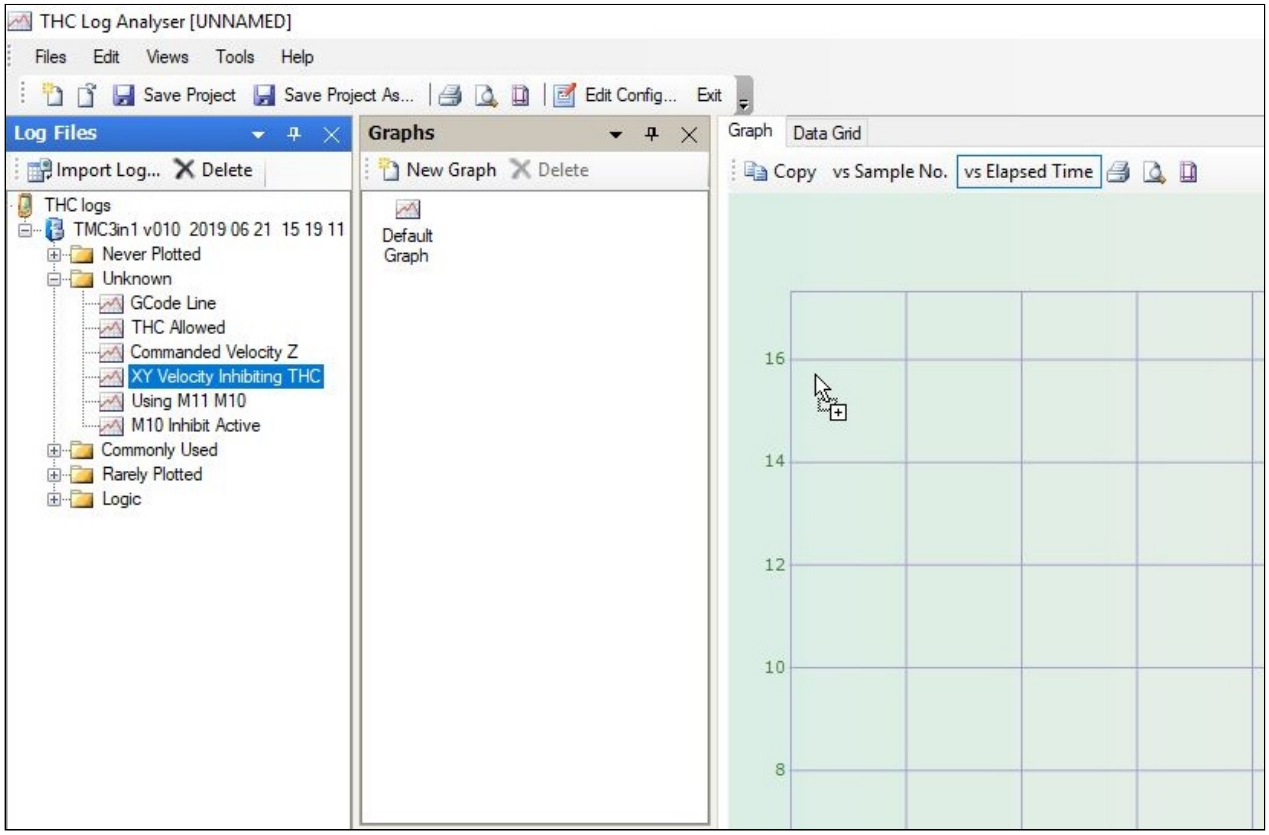
- **Open Log Analyser** - Open the windows start menu, search for "THC Log Analyser" and open the application.



- **Import Data** - Click the "Import Log" button and navigate to the log file which you collected earlier. The default location of the THC log files is C:\Mach4Hobby\W9_HC.

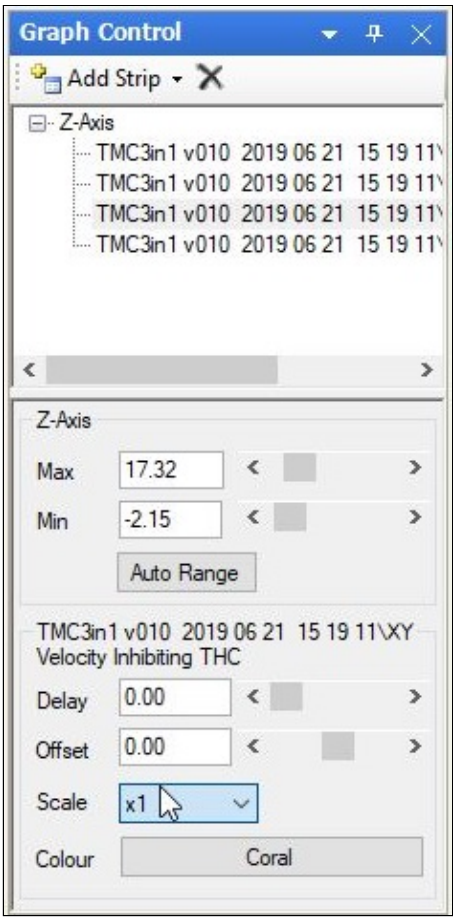


- **Default Graph** - By default the Tip Volts and Z Axis motion of the imported log file will be graphed on the right side of the application window.



- **Adding Log Data to the Graph** - Expanding the THC log menu on the left of the screen will display the different data which can plotted and compared. To plot specific data, select it on the left of the screen then click, drag, and drop the data onto the graph (right side of the screen).

- **Changing the Graph Scale** - The sliders at the bottom of the graph will change the time scale of the graph and the position of the graph along said time scale. Shorten the timescale (right slider) and scroll across the graph (left slider) to the point during the cut you wish to analyze.

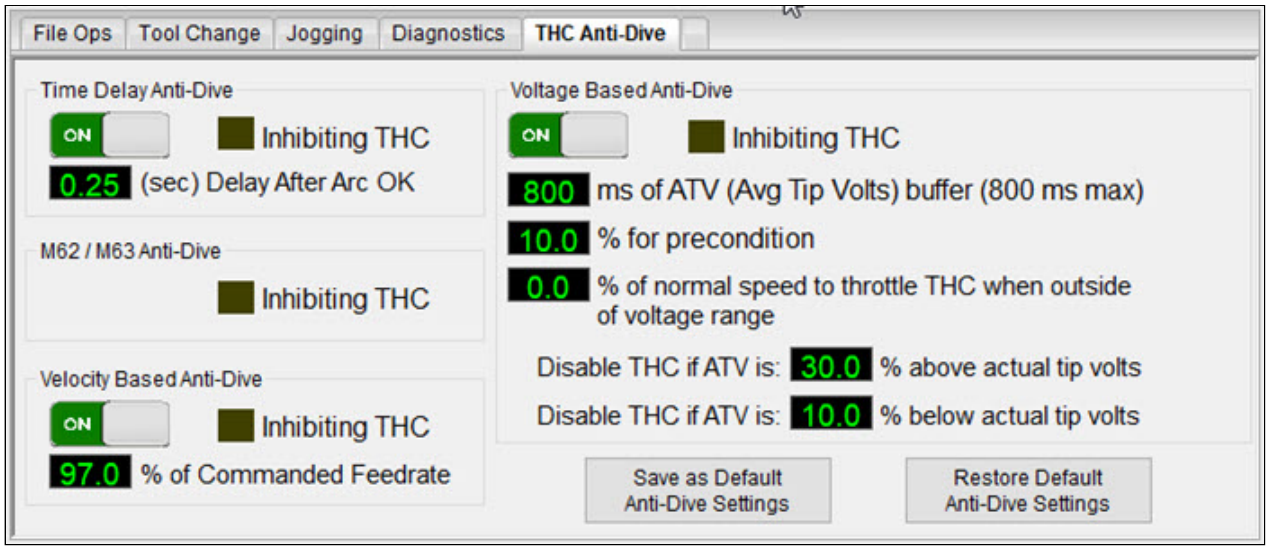


- **Scaling Log Data** - The Graph Control menu allows you to change the scale of individual data. The original scale of different data (Z axis height 0-8in, Tip volts 100-200V) can be altered (scale x10 or scale /10) to make them more easily comparable.

4. Example Data Analysis

Analyzing the Plotted Data - This data represents a single pierce and small circular cut.

- **M Code Anti-Dive** - The green line represents M-code based anti-dive and is shown inhibiting THC movement (green line goes up to 13 at 28.6 seconds) until 29.6 seconds (when the green line returns to 0). This represents the M62P3 and M63P3 lines in the g-code file which occur before the pierce movement and ends after the descend to cut height from pierce height.
- **Tip Volts** - The blue line represents the tip voltage. The tip voltage is very high during the pierce operation, this is normal. The tip voltage stabilizes near the target after the torch descends to cut height, torch height control then takes over and modulates Z-axis height to bring actual voltage in line with target voltage. The tip voltage then goes to 0 when the cut finishes.
- **XY Velocity Anti-Dive** - The yellow line represents XY velocity based anti-dive and is shown inhibiting THC movement after the torch descends to cut height but before the machine XY motion is up to speed during the cut feed. XY velocity anti-dive prevents THC motion directly after M Code based anti-dive goes to zero (yellow line spike at 29.8 seconds). Once the machine accelerates and achieves 97% cut feed velocity THC motion is allowed. At 30.4 seconds when the cut ends the machine decelerates and velocity drops below 97% commanded feed, THC motion is once again inhibited.
- **Z Axis Position** - The red line represents the Z axis position. At 28.8 seconds the Torch jumps to pierce height and then descends to cut height at 29.5 seconds. From 29.5 to 30.4 seconds the Z axis slowly increases in height, this mirrors the tip voltage (blue line) which increases steadily to achieve target voltage.



Adjusting the THC settings - The cut analyzed in the above example was successful, so the settings may not need adjustment. However, if an unsuccessful cut (crashed torch, low cut quality) is analyzed it may identify the fault with the THC settings causing the issue.

- **Torch Crash** - The cut may have ended with a torch crash due to a THC diving response, this can generally be avoided by increasing the sensitivity of the anti-dive settings. The anti-dive settings will be shown by the graph to not have inhibited THC motion during the crash. In Mach4 the anti-dive settings may be adjusted on the main screen under the THC Settings operations tab. Increasing the Time Delay after Arc OK, the % of commanded feedrate or decreasing the % change in ATV that activates voltage-based anti-dive may be appropriate depending on the situation. For more information on these anti-dive settings please see Mach4 Plasma Users Guide.
- **Poor Cut Quality** - The cut may have completed but failed to follow the material and achieve target voltage during the bulk of the operation, this can potentially cause a poor cut. The graph will show the anti-dive settings as inhibiting THC motion during most of or the entire cut. The solution to this issue is to decrease the sensitivity of the anti-dive settings. Decreasing the Time Delay after Arc OK, the % of commanded feedrate or increasing the % change in ATV that activates voltage-based anti-dive may be appropriate depending on the situation. For more information on these anti-dive settings please see Mach4 Plasma Users Guide.
- **Path Rules** - Another way cut issues may be addressed is to identify which part of the cut is causing the problem (using the log analyzer) and then create a "Cut Rule" in sheetcam which will inhibit or allow THC motion during this feature of the program using M code based anti-dive. For more information on SheetCam cut rules please see SheetCam Software Setup Guide.