**Engineering Note: EN0117 Data logging and analysis with Hydro-Com or Hydro-View / Hydro-Hub**


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| Summary: | An explanation of how to save sensor signal trace log file using Hydro-Com software or Hydro-View / Hydro-Hub device and how to open the saved file for analysis using Hydro-Com. |
| Products affected: | Hydro-Com, Hydro-View / Hydro-Hub |
| Revision Date: | 22/10/2024 Author: C. Kowalik |


# 1 Introduction

To assess the performance of Hydronix moisture sensor installation, the sensor's measurement output often needs to be analysed. To perform this analysis, the sensor's measurement output value over time needs to be recorded.

A log of the sensor value over time can be created using either the Hydro-Com software or a Hydro-View / Hydro-Hub device. The log data consists of selected sensor output values and a timestamp in a text file.

The saved text file can be analysed either by using the 'Data Analysis' tool in Hydro-Com or with the help of third-party software such as Microsoft Excel.

Connecting to Hydronix moisture sensors using Hydro-Com software or a Hydro-View / Hydro-Hub device is described in 'Hydro-Com User Guide' (HD0682) and the 'Hydro-View / Hydro-Hub User Guide' (HD0864), respectively. Both documents are available to download from Hydronix.com

# 2 Types of Logging

In most cases, it is recommended to create two types of log files.

Investigations involving flow characteristics require filter analysis. For this the 'Raw Unscaled' value recorded at the 'Raw' log rate should be selected.

For analysing long term changes such as the change in moisture over time in a process a long-term trend should be recorded. A log rate suitable for the length of time of the log should be used. This can vary from every second to every 60 minutes. Consideration should be made on the length of time logging is required, how much the signal is expected to change over a time span and the size of the file produced.

In earlier stages of commissioning, the 'Raw Unscaled' parameter tends to be analysed to check that a stable measurement can be obtained. In later stages, the trend of the 'Filtered Unscaled' parameter's value is often studied to see changes in moisture over time.

In most applications logging Mode F is sufficient.

# 3 Generating Log Files with Hydro-Com

To create a log file, select the following sections in the Hydro-Com navigation window:

- **'Trending and Logging'**
  - **Connection type**
    - **Sensor to be logged**
      - **Parameter to be logged**

- **Measurement mode**

After selecting the desired parameter to log, click on the arrow above the ‘Logging Setup’ text to expand the log file details window (see Figure 1 and Figure 2).

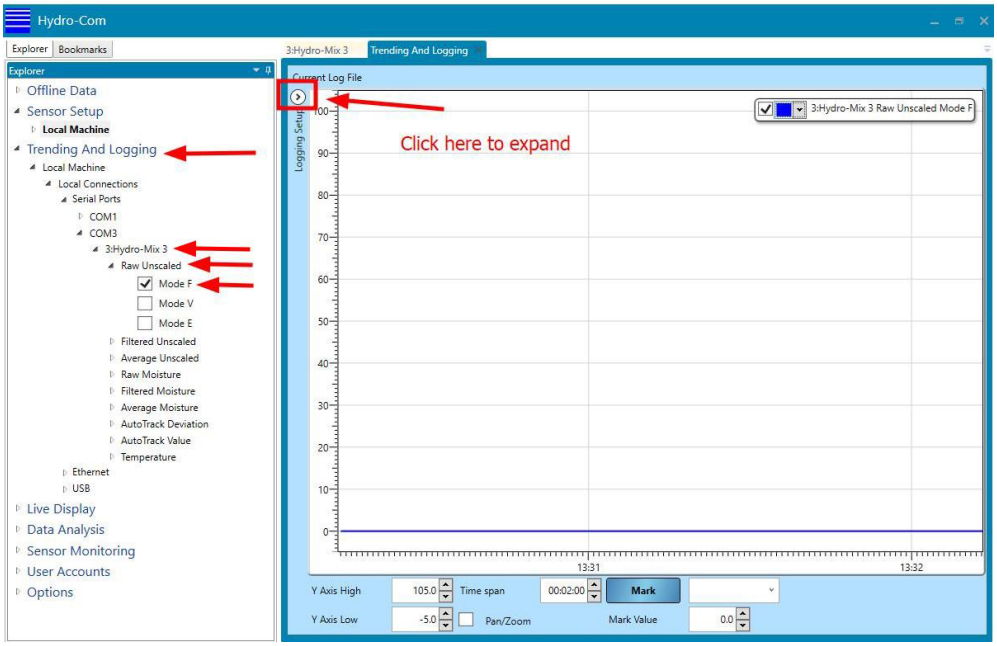


**Figure 1: Accessing logging parameters window**

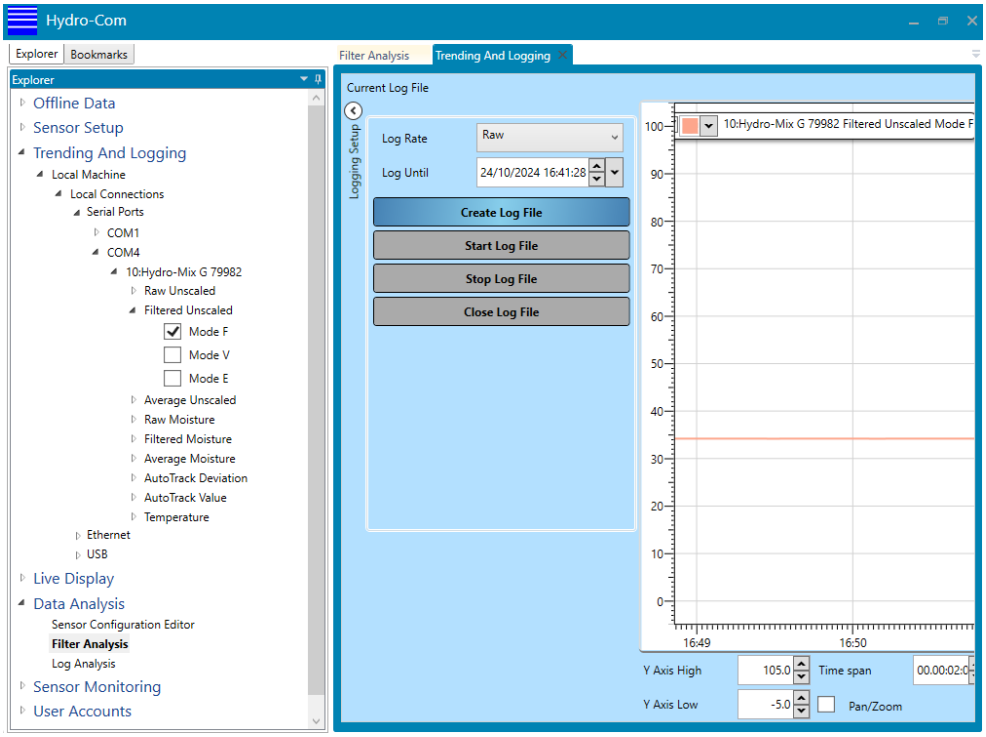


**Figure 2: Log rate and log file parameters window**

## 3.1 Saving a Raw Log File

To save a ‘Raw log’ file (this utilizes the sensor’s ability to perform 25 measurements per second), the ‘Log Rate’ must be set to ‘Raw’.

Confirm that the ‘Log Until’ date and time are set not earlier than the planned end of the logging session, then press ‘Create Log File’.

**NOTE: When logging the signal at a raw log rate, do not log more than one parameter.**

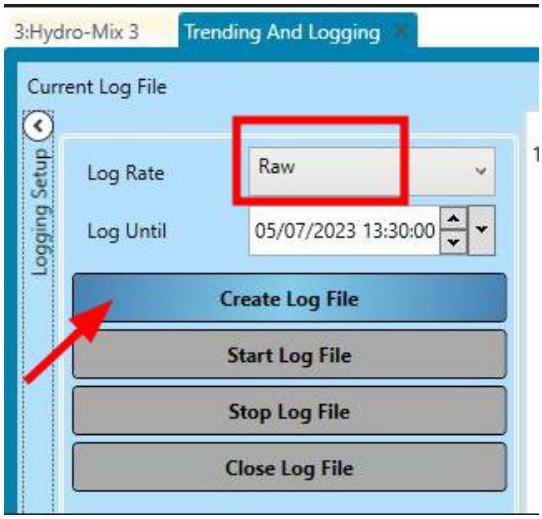


**Figure 3: Creating a raw log file**

In the pop-up explorer window, set the desired path and the name for the log file to be saved under (see Figure 4).

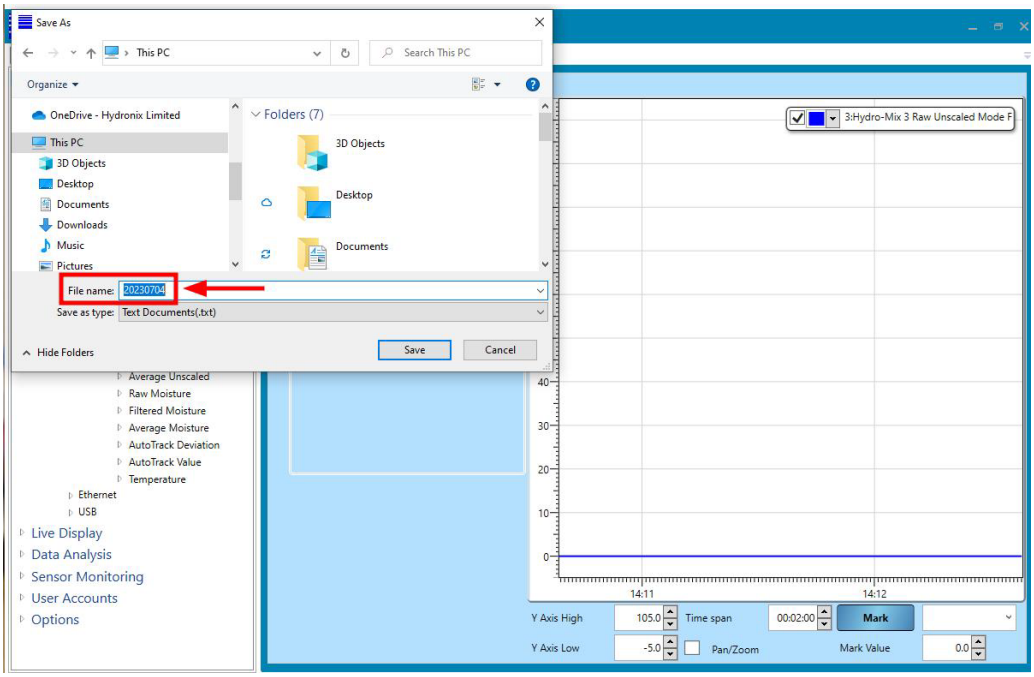


**Figure 4: Selecting file destination path**

To start the logging process press ‘Start Log File’. Ideally, the log file should start before the beginning of the process batch or cycle. Press ‘Stop Log File’ after the desired period.

Ensure that the ‘Close Log File’ is pressed so the recorded values are saved into the log file (see Figure 5).

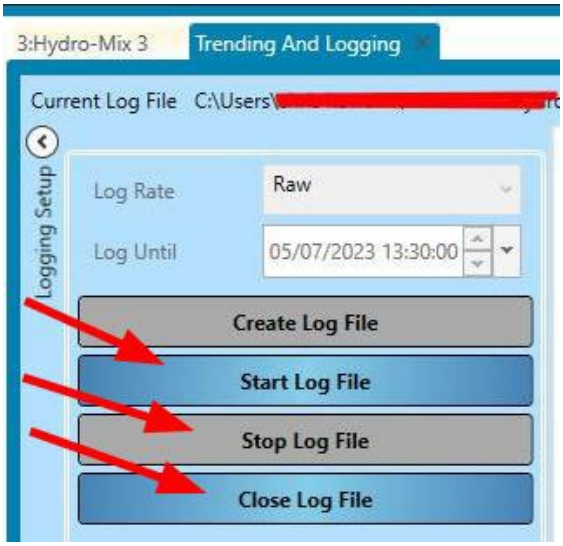


**Figure 5: Initiating and finalising the log file data capture**

## 3.2 Saving Long-Term Trend Log File

To save a long-term log file, set the ‘Log Rate’ to ‘1 Second’ or higher.

Confirm that the ‘Log Until’ date and time are set not earlier than the planned end of the logging session, then press ‘Create Log File’ (see Figure 6).


**Figure 6: Creating a long-term log file**

In the pop-up explorer window, set the desired path and the name for the log file to be saved under (see Figure 7).

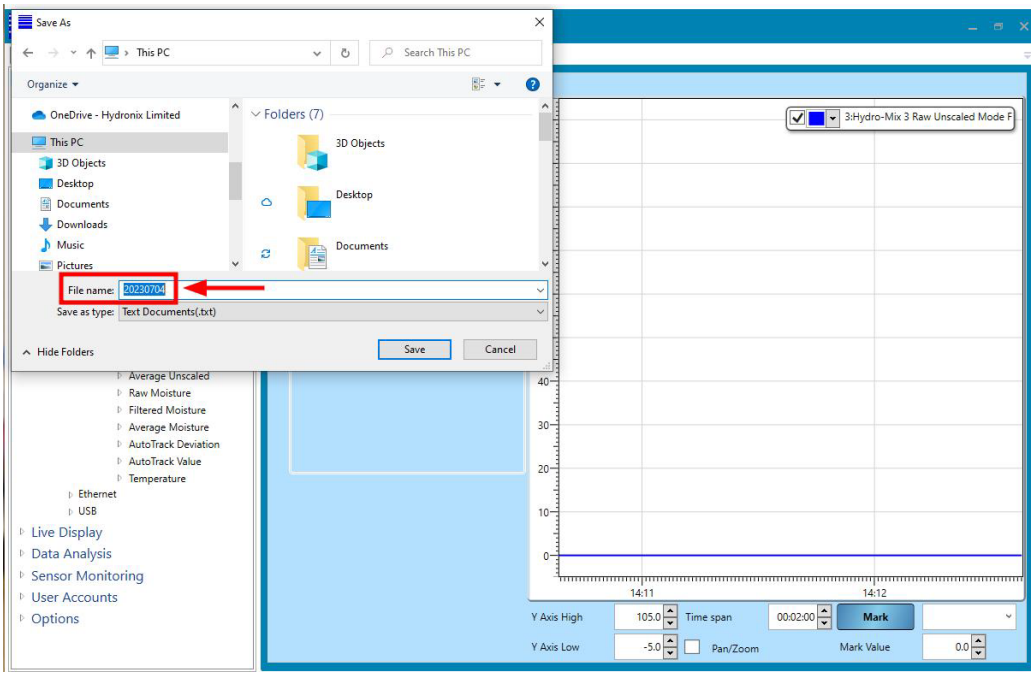


**Figure 7: Selecting file destination path**

Press ‘Start Log File’ to start recording the sensor output values. Press ‘Stop Log File’ after the desired period. This might be one hour, two hours, twenty-four hours or any other period desired or discussed with Hydronix support. Press ‘Close Log File’ to save the recorded values into the file (see Figure 8).

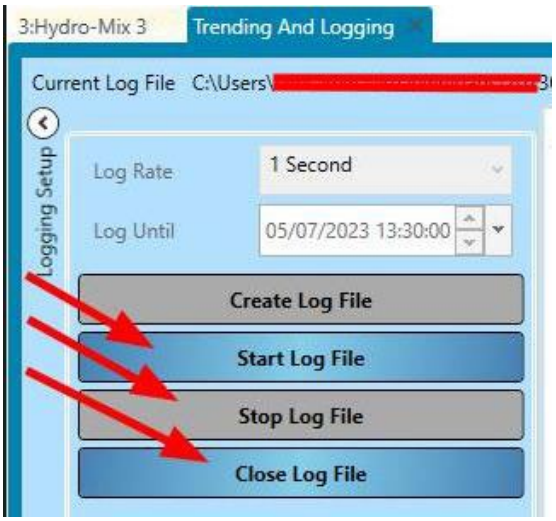


**Figure 8: Initiating and finalising the log file data capture**

# 4 Generating Log Files with Hydro-View / Hydro-Hub

## 4.1 Accessing The Logging Screen

Log in to the device by using the correct password (Figure 9). If the custom password is not set, the default password is 0336.

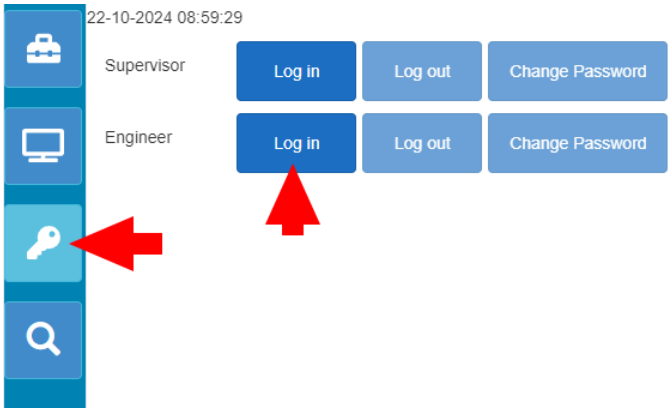


**Figure 9: Logging in to Hydro-View (Hydro-Hub)**

Navigate to the trending and logging page (see Figure 10).

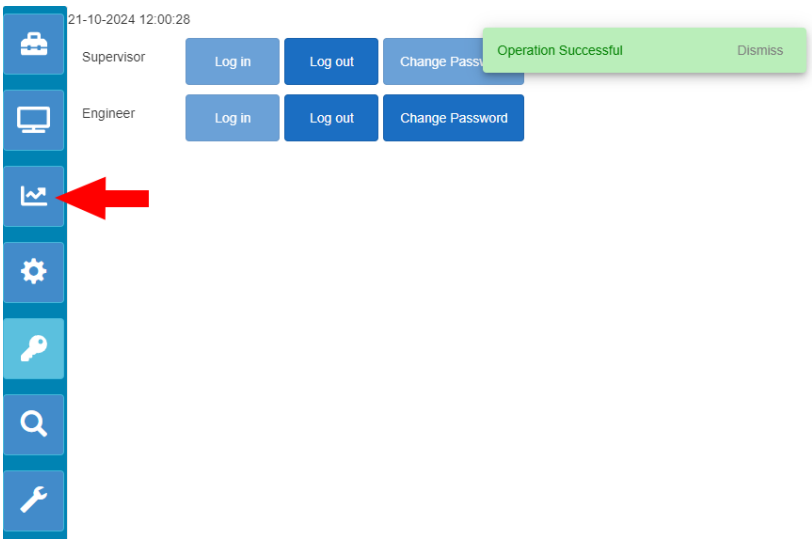


**Figure 10: Sensor signal logging page access button**

## 4.2 Creating a Log File

To save a ‘Raw log’ file (this utilizes the sensor’s ability to perform 25 readings per second), the ‘Log Rate’ must be set to ‘Raw’. To save a long-term log file, set the ‘Log Rate’ to ‘1 Second’ or higher. To select the ‘Log Rate’ parameter use the drop-down window indicated in the Figure 11).

**NOTE: When logging the signal at a ‘Raw’ log rate, do not log more than one parameter.**

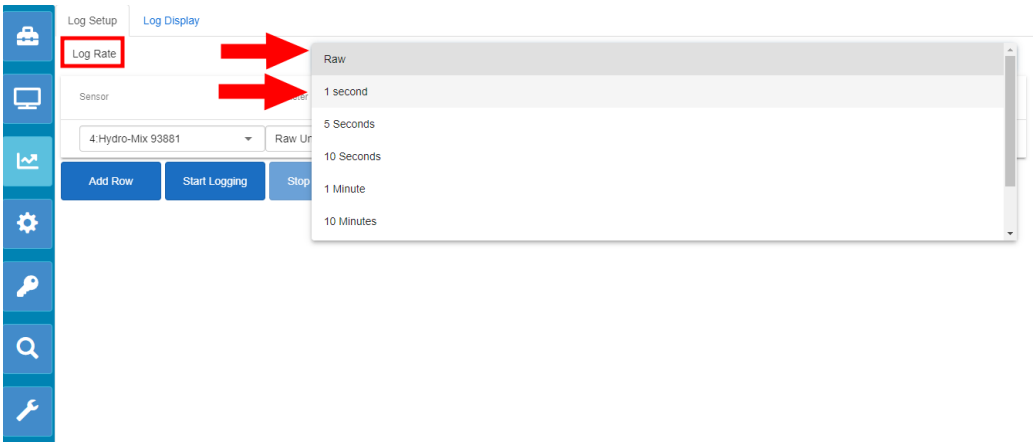


**Figure 11: Selecting the logging rate and initiating a log**

Select the desired parameter to log using the drop-down windows indicated in the Figure 12, and press the ‘Start Logging’ button to initiate the logging session.

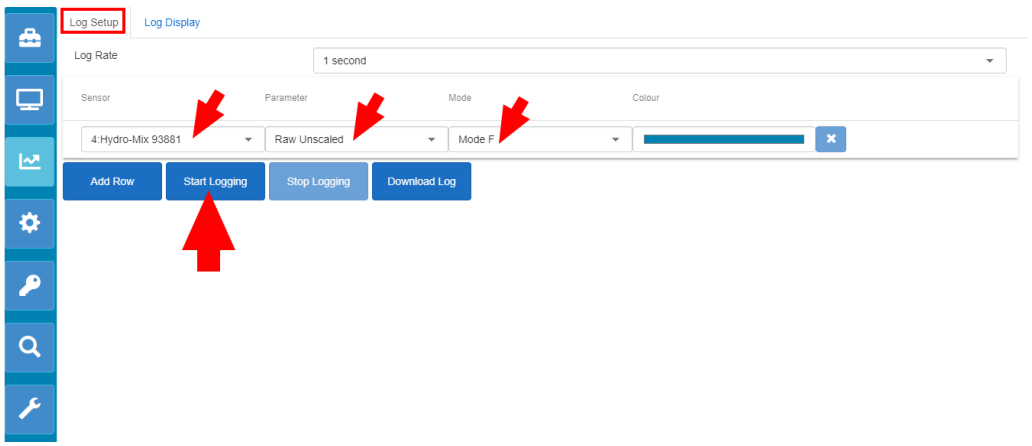


**Figure 12: Selecting logging parameters**

The live trend can be viewed on the ‘Log Display’ tab of the logging screen.

If navigating away from the trending and logging page is necessary during a logging session and it is required that this trend display is updated whilst not logging, the ‘Always Logging’ box needs to be selected (see Figure 13).

**NOTE: Do not navigate to the ‘Live Display’ screen during an active logging session.**

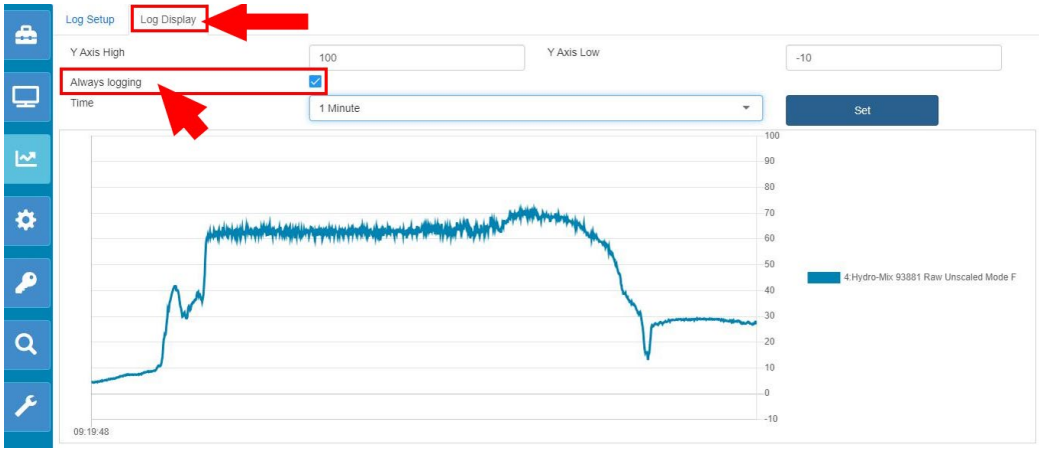


**Figure 13: Viewing the trace being logged live**

To end the logging session press the ‘Stop Logging’ button. To save the log file press the ‘Download Log’ button (see Figure 14).

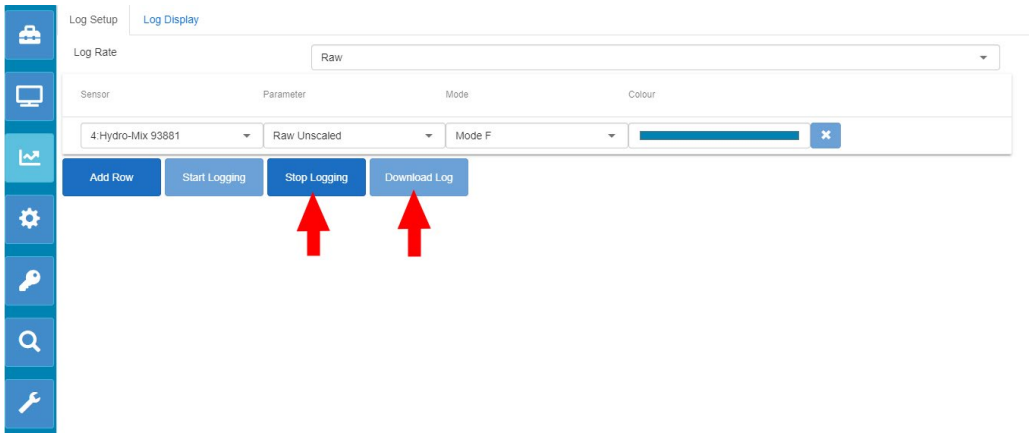


**Figure 14: Ending a log and downloading log file**

When accessing the system locally from the Hydro-View touchscreen, a USB memory stick must be connected to one of the device’s USB ports to save the backup file.

When accessing the Hydro-View / Hydro-Hub remotely, the backup file will be saved on the device used for the remote connection.

Pressing the ‘Download Log’ button will save the log file on the Inserted USB memory stick or in the remote device’s download folder, respectively, automatically.

# 5 Graphical Log Representation with Hydro-Com

A log file created using Hydro-Com software or Hydro-View / Hydro-Hub can be opened and viewed for analysis purposes via the ‘Data Analysis’ section of Hydro-Com (see Figure 15).

The ‘Log Analysis’ and ‘Filter Analysis’ tools show graphical representations of the recorded values.

A ‘Raw’ log file (a file saved with a ‘Log Rate’ set to ‘Raw’) can be opened using either the ‘Log Analysis’ tool or the ‘Filter Analysis’ tool.

A log file with a ‘Log Rate’ other than ‘Raw’ can only be opened using the ‘Log Analysis’ tool.

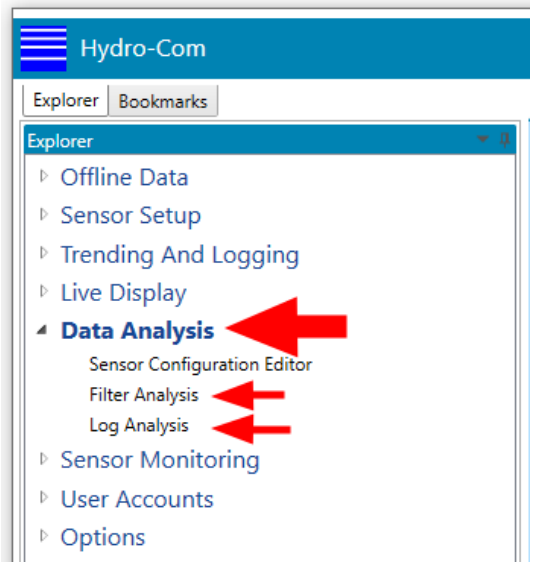


**Figure 15: Data Analysis section of Hydro-Com**

## 5.1 Log Analysis Tool

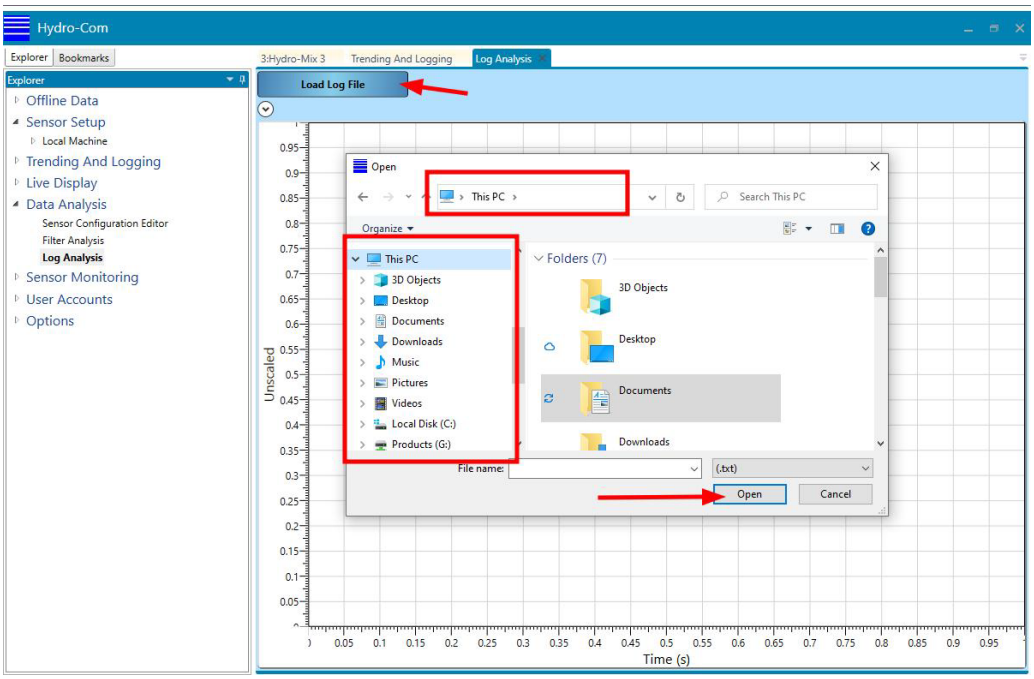


**Figure 16: Opening a log file in the 'Log Analysis' tool**

Figure 17 shows an example of a ‘Raw’ log file opened in Hydro-Com’s ‘Log Analysis’ tool.

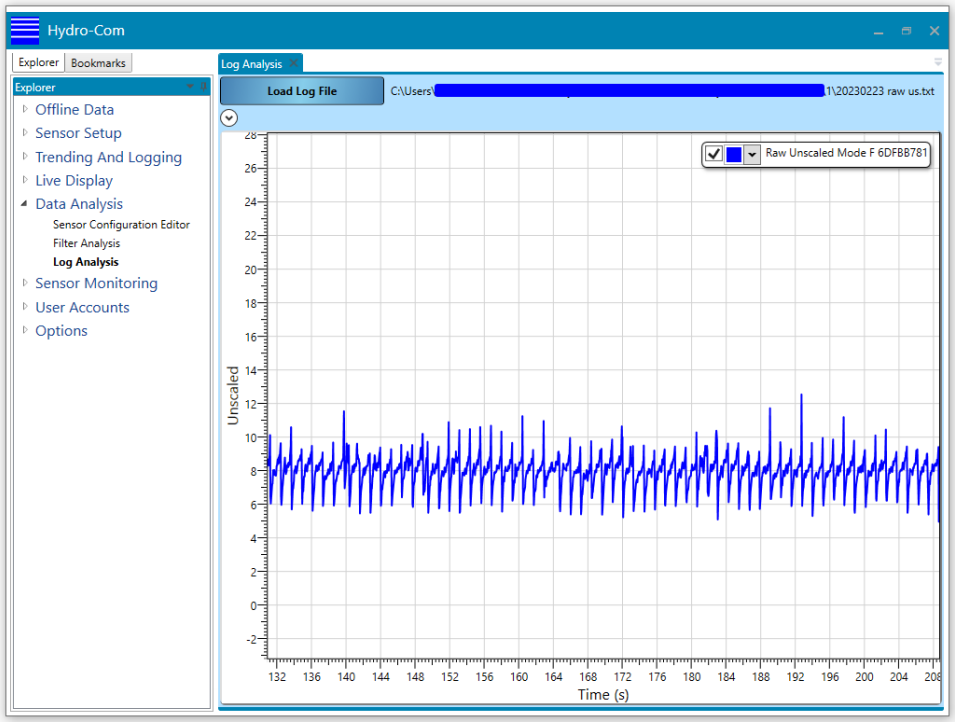


**Figure 17: A 'Raw' log file viewed in the 'Log Analysis' tool**

When viewing a log file, the graph can be zoomed in or out by using the mouse scroll over the graph area. The X and the Y axes can be zoomed in or out individually by using the mouse scroll on the desired axis area (see Figure 18).

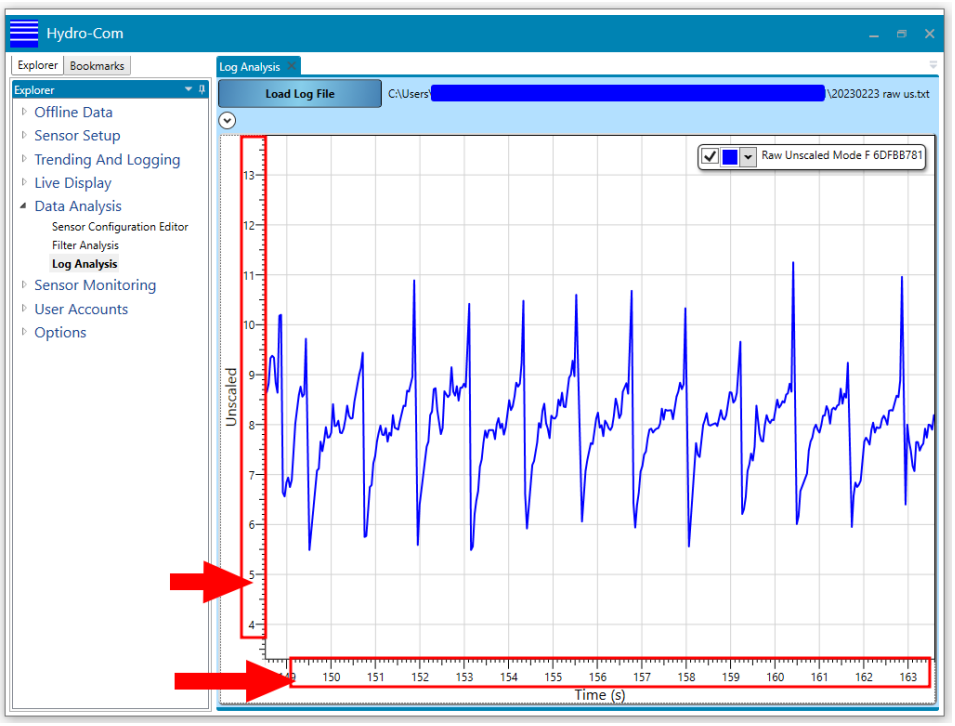


**Figure 18: Zooming in or out on axes individually**

## 5.2 Filter Analysis Tool

To open a log file in the ‘Filter Analysis’ tool, press the ‘Load Log File’ button and select the path to the desired file (see Figure 19).

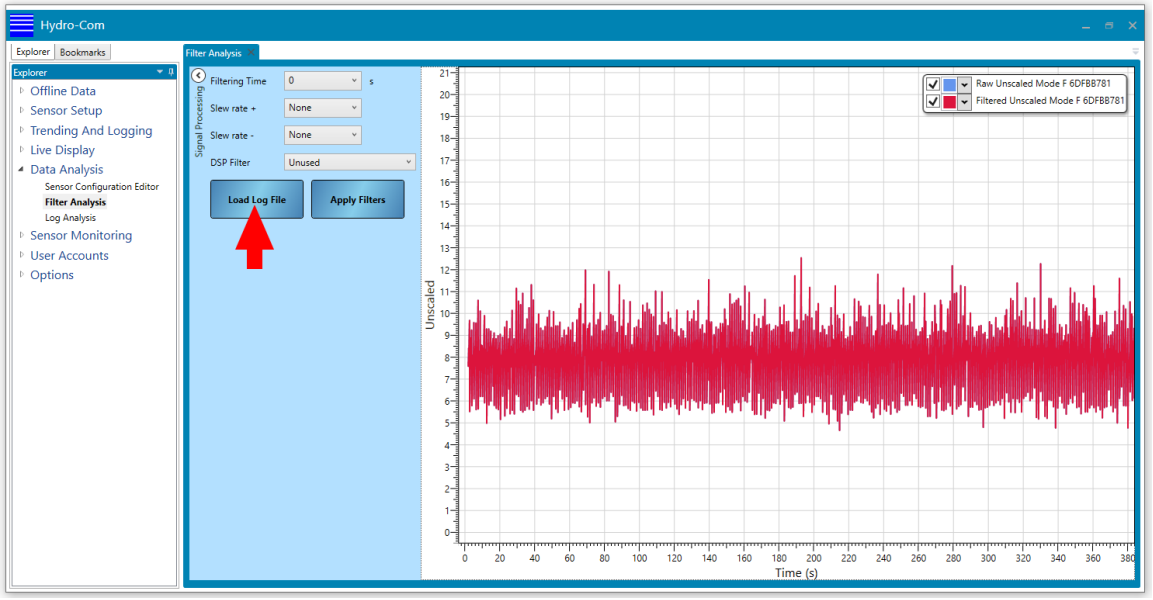


**Figure 19: Opening a log file in the 'Filter Analysis' tool**

To view the filtered unscaled value against the raw unscaled value, select the desired filtering parameters and press the ‘Apply Filters’ button (see Figure 20).

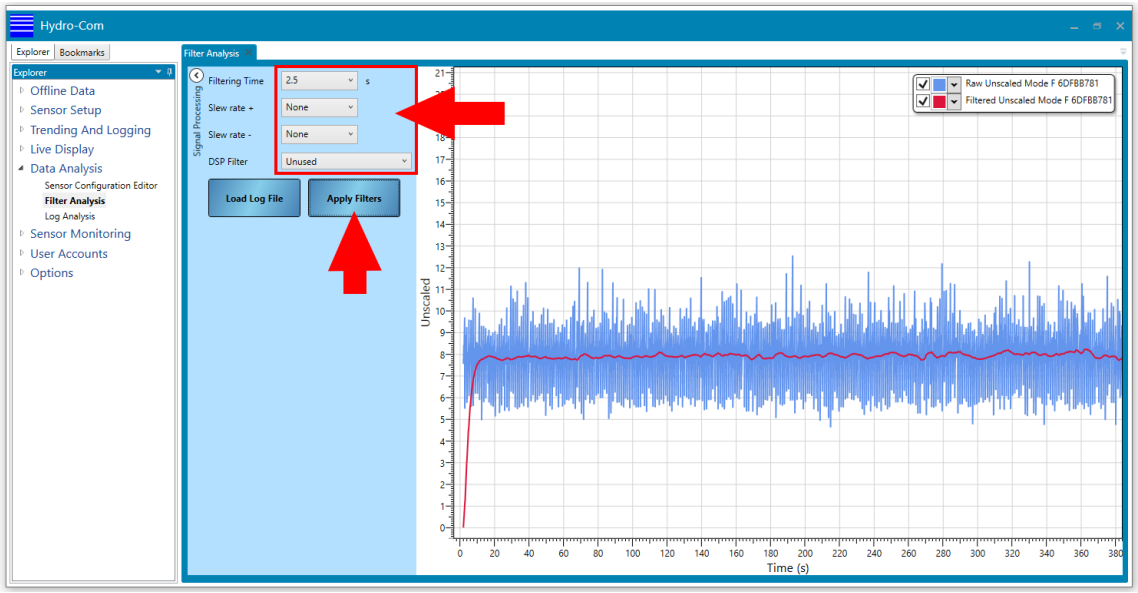


**Figure 20: A 'Raw' log file viewed in the 'Filter Analysis' tool**

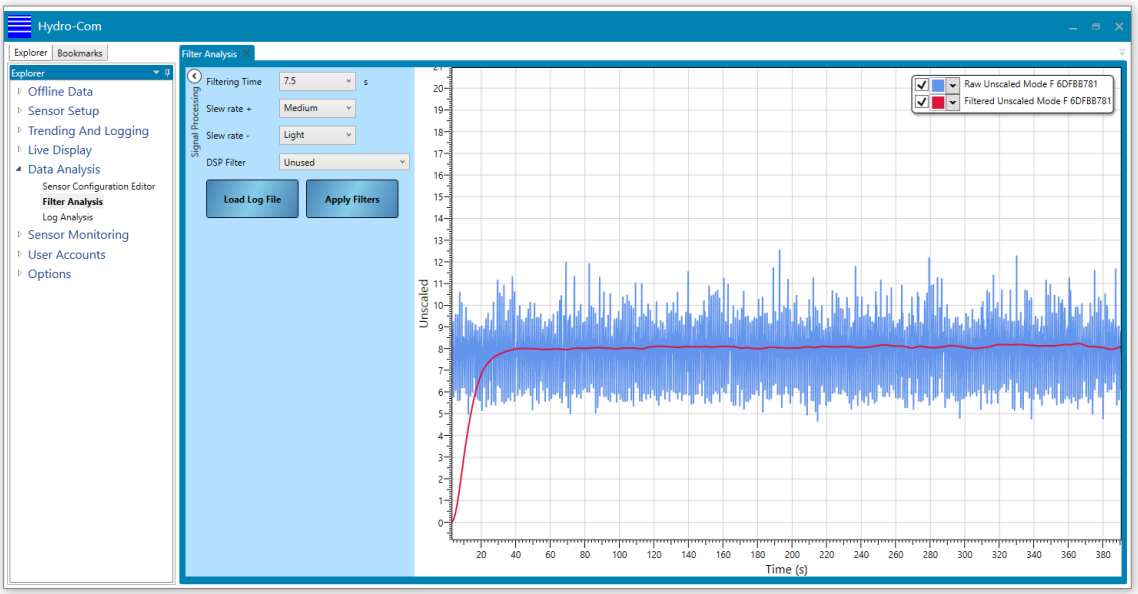


**Figure 21: A 'Raw' log file viewed with different filter settings applied**

When viewing a log file, the graph can be zoomed in or out by using the mouse scroll over the graph area. The X and the Y axes can be zoomed in or out individually by using the mouse scroll on the desired axis area (see Figure 22).

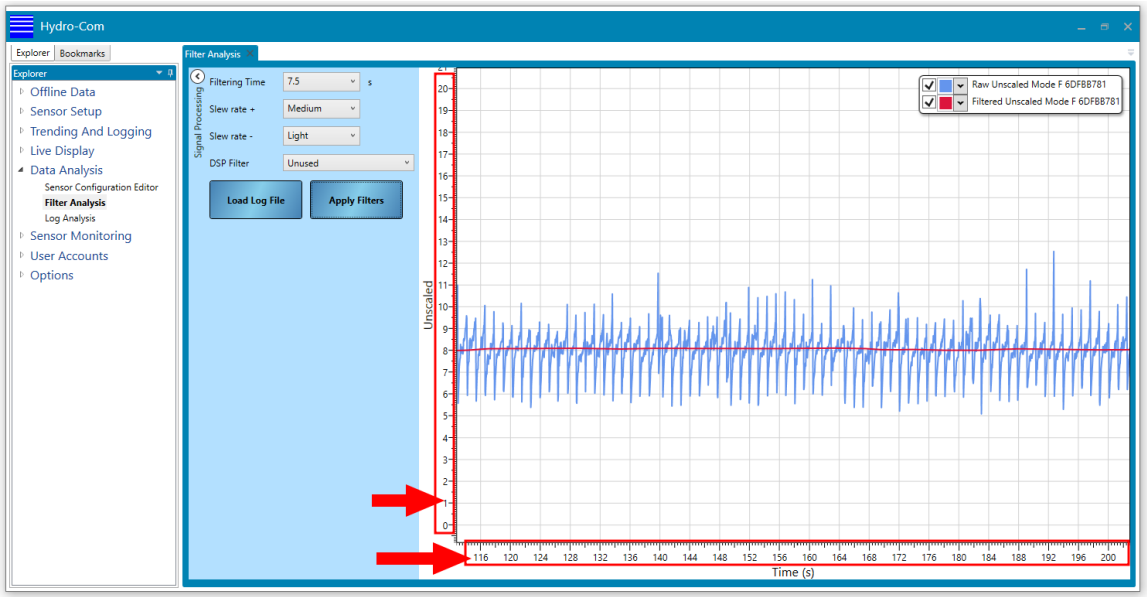


**Figure 22: Zooming in or out on axes individually**