

# Acuview 2 Meter Data Management Software Users Manual



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# **Chapter 1: Introduction**

#### 1.1 Welcome to Acuview 2

Developed by Accuenergy, Acuview 2 Meter Data Management Software is designed for the Acuvim II-V3 and Acuvim-L-V4 series power meters.

This document explains the installation process and configuration using the Acuview 2 software for these power meters.

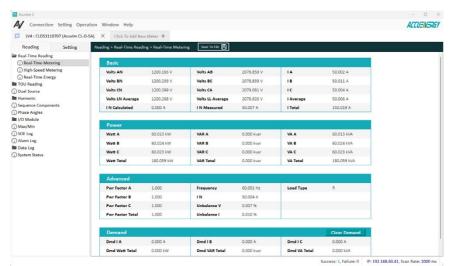


Figure 1-1 Acuview 2 Reading Page

Acuview 2 Meter Data Management Software provides a user-friendly interface with real-time monitoring and data logging features for energy-saving and power quality analysis. The primary objective of this software is to provide users with a comprehensive tool for continuous monitoring of multiple parameters and allow users to monitor and maintain the meter on a real-time basis.

# 1.2 Copyright Notice

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# Acuview 2 Meter Data Management Software

the terms of the license agreement. This software is protected by copyright laws in the USA and other countries, and international treaty provisions.

# **1.3 Contact Information**

For technical support or further information, please contact us at

North American Toll Free	1-877-721-8908
Fax:	416-497-4130
Web	www.accuenergy.com
Email	support@accuenergy.com



# **Chapter 2: Getting Started**

## 2.1 Installation

## 2.1.1 System Requirements

To ensure optimal performance and compatibility, the system must meet the following minimum requirements:

· Operating System: Windows 7/8/10/11

· Memory: 128MB/256MB or more

HDD: 100MB/500MB or more free space

Display Resolution: 1280 × 720 or higher

#### 2.1.2 How to Install the Acuview 2 Software

To install the Acuview 2 software, please follow these steps:

- 1. Download Software: The user can download the Acuview 2 software installation file from the official Accuenergy website at <a href="https://www.accuenergy.com/acuview2">www.accuenergy.com/acuview2</a>.
- 2. Initiate Installation: After the installation zip file is downloaded successfully, navigate to the folder where the installation file is stored, and unzip the installation file into desired folder. Navigate to the folder to begin the installation process by double clicking on the executable (.exe) file.
- 3. Complete Installation: Follow the on-screen instructions to complete the installation of Acuview 2 software. Users will have the option to specify the installation directory. Upon successful installation, a desktop shortcut for the software will be automatically created for the user's convenience.

#### Note:

- 1. Do not install this software under any folder that is continuously synchronized with One Drive or any other cloud-based services. This may cause the Acuview 2 software to crash during running.
- 2. Older versions of the Acuview 2 can be upgraded by installing the latest version in the same folder. Note, all data under folders Datalog, Downloaded Configuration Files and Export will be permanently cleared and will no longer be available after the upgrade. Ensure all files have been backed up in these folders before starting the upgrade process.





#### 2.1.3 How to Uninstall the Acuvim 2 Software

To remove Acuview 2 software, please follow these steps:

- 1. Locate Uninstaller: Navigate to the installed folder and locate the "Acuview2MaintenanceTool. exe" file.
- 2. Initiate Uninstall: Double click the "Acuview2MaintenanceTool.exe" file to begin the uninstall process. When prompted, confirm the removal of the Acuview 2 software and all its associated components. Upon completion, the Acuview 2 software will be successfully removed from the user's computer.

# 2.2 Meter Configuration

# 2.2.1 Introduction to the Meter Connection Page

To communicate with the meter(s), it is necessary to first add a meter to the Connection page and to establish a connection between the Acuview 2 software and the meter(s). The Connection page can be accessed by launching the Acuview 2 software and the Connection page will be the first screen presented, as shown in Figure 2-1.

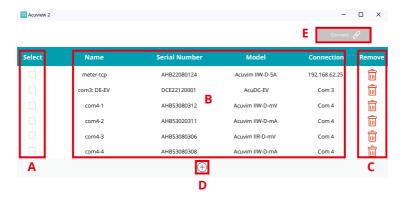


Figure 2-1 Connection Page

The following includes a description of each section on connection page:

**A. Select Meter:** Choose the desired meter(s) by checking the corresponding checkbox in the Select column.





- **B. Meter Information:** These columns contain the display name, serial number, meter model, and connection of the meter(s) added to the software. Please note that in the Connection column, the IP address will be displayed for Modbus TCP connection, and the communication port number will be displayed for a Modbus RTU connection.
- C. Remove Meter: Remove the corresponding meter from the list.
- **D. Add Meter:** Click to access the Add Meter page, to configure the meter settings required for establishing communication between the software and the new meter. It also adds the meter to the list for future use.
- **E. Connect:** Establishes the connection between the software and selected meter(s).

#### 2.2.2 Add Meter

To add a new meter onto the list on the connection page by clicking the Add button  $\oplus$ . The Add Meter page will be presented. There are four sections within this page:

- Meter: Define the meter's name, select the appropriate model type, and specify the preferred connect way.
- **Connection:** Set timeout and scan rate to optimize communication.
- Connection Setting: Provide the required information to establish the communication.
- Advanced: Set user-defined labels and annotations.

#### **Meter Settings**



Figure 2-2 Meter Section on Add Meter Page

Name: Users can enter a display name for the meter.

**Model:** Acuview 2 software is specifically developed for the AcuvimII-V3 and AcuvimL-V4 series power.

**Connect Way:** Acuview 2 software supports two types of connection, Modbus RTU and Modbus TCP. Select the desired connection type from the drop-down menu.





# Acuview 2 Meter Data Management Software

- Modbus RTU (Remote Terminal Unit): A serial communication protocol that uses binary
  encoding for data transmission. Users can connect the meter to the software using an RS485
  to USB converter.
- Modbus TCP (Transmission Control Protocol): a protocol that allows Modbus communication over Ethernet networks.

#### **Connection Setting**

In the Connection section, users can configure the Timeout and Scan Rate. Both Timeout and Scan Rate can be left at their default values of 2000ms.



Figure 2-3 Connection Section on Add Meter Page

Once the Connection Way is determined, users will need to provide additional information in the Connection Setting section to establish communication. The information required will depend on whether Modbus RTU or Modbus TCP was selected.

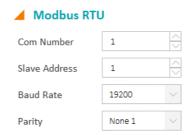


Figure 2-4 Connection Setting when Modbus RTU is selected as Connect Way

When Modbus RTU is selected as connection way

**Com Number:** Enter the assigned communication port number for the serial port used to connect to meter.

Slave Address: Enter the meter's slave address (device address).

Baud Rate: Select the appropriate Baud Rate from drop-down menu, the value selected should





match the baud rate in meter settings.

Parity: Select the desired parity from drop-down menu.

**Note:** Make sure the physical connection on the meter is correct and the communication setting parameters are properly configured before establishing a connection with the Acuview 2 software.



Figure 2-5 Connection Setting when Modbus TCP is selected as Connect Way

When Modbus TCP is selected as connection way

 $\label{lem:ip} \textbf{IP Address:} \ \textbf{Enter the IP address of the meter}.$ 

Unit ID: Enter the meter's Unit ID (slave ID).

**Port Number:** Enter the port number used for directing network traffic to the meter.

**Note:** Make sure the meter has a valid IP address and the communication setting parameters are properly configured before establishing a connection with the Acuview 2 software.



#### 2.2.3 Establish Communication

Users can initiate the communication with selected meter(s) by checking the corresponding checkboxes from the Select column (region A in Figure 2-6), and then clicking on Connect button located at the top left corner of the window (region B in Figure 2-6). The software will establish connections with the chosen meter(s) within the Acuview 2 interface.

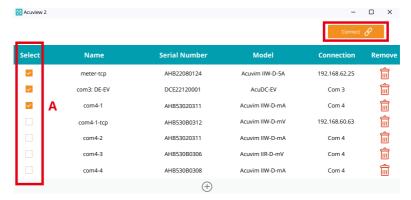


Figure 2-6 Establish Connection



# **Chapter 3: User Interface**

### 3.1 Main Window

After the connection is established successfully, users will be taken to the main window of the Acuview 2 User interface. The main window includes a menu bar on the top, and a workspace to display meter windows.

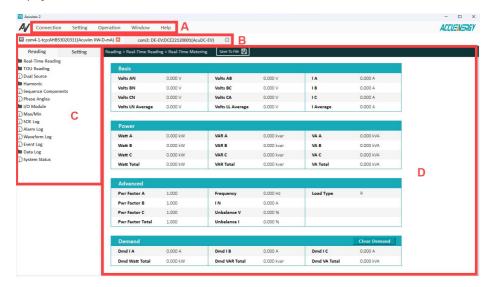


Figure 3-1 User Interface Main Window

As shown in the Figure 5-1, the following includes a description of all items:

- A. Menu Bar: Please see section 3.2 for detailed information.
- B. Window Title: Display name, serial number and model type for each device. Users can choose the device they want to interact by clicking the corresponded tab.
- C. Explore Panel: Allow for quick navigation of the meter's functions. The basic functions of the device are divided into two parts: Reading and Setting. Data in Reading part will automatically refresh according to the configured Scan Rate when the user connects.
- D. Data Panel: Present real-time readings of the meter and provide users with various operations to interact with and control the meter's functionality. The top function bar will exhibit the current page name along with additional operation buttons, such as save and reset.





#### 3.2 Menu Bar

The Menu Bar includes Connection, Setting, Operation, and Help.

#### 3.2.1 Connection

Connect: Connect device, enable data reading, and allow write command.

**Disconnect:** Disconnect device, stop data reading, and disallow write command.

Add Connection: Add and connect to a new device.

Remove Connection Disconnect and remove current active connection.

## 3.2.2 Setting

General Setting: Check and set the general setting of the application.

**Data Log Setting:** Check and set the data log setting of each connected meter.

# 3.2.3 Operation

**Export Configuration**Save current active meter's configuration and export as

configuration file.

| Select downloaded configuration file and import settings to

current meter.

Firmware Update Select firmware file and update available meters.

**Find Device** Search for all available meters on the local network.

Calculate Pulse Constant Tool that helps calculate pulse constant parameters.

Start Data Logging Start data logging if the data log setting is completed.

Start data logging in the data log setting is completed.

Stop Data Logging Stop data logging.

## 3.2.4 Help

User Manual Open Acuview 2 user manual.

**About** Open a window that displays software information.



# **Chapter 4: Detailed Functions and Software**

# 4.1 Device Management

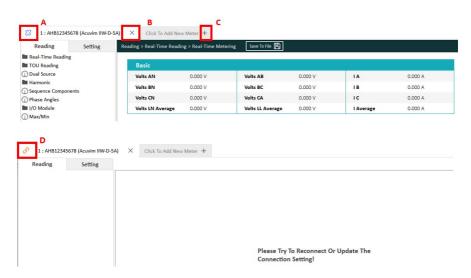


Figure 4-1 Device Management

The following includes a description of each section on the Connection page:

- A. Disconnect: Click this button to disconnect from the meter after establishing the connection.

  Note that the tab will remain open, allowing users to reconnect at any time. This function is identical to Disconnect in the menu bar.
- **B. Remove Connection:** Click this button to remove the entire tab. If the meter is currently connected, please disconnect it first and then use this option to remove it. This function is the same as Remove Connection in the menu bar.
- C. Add Connection: Click to add a new connection. This will open the Add Connection window to create a new connection or connect to an existing meter. This function is equivalent to **Add** Connection in the menu bar.
- D. Reconnect: Click to reconnect with the meter. This function is the same as Connect in the menu bar.



# 4.1.1 Supported Devices

Acuview 2 is a continuously evolving software that will have support for more products and new features in the future. Please go to our website for more details. The Acuview 2 currently supports the device models as follows:

#### Acuvim II-V3:

- 1. Product Website
- 2. Datasheet
- 3. User Manual

#### Acuvim-L-V4:

- 1. Product Website
- 2. Datasheet
- 3. User Manual

# 4.2 Export / Import Configuration

The Export/Import Configuration feature allows users to export the meter's currently active configuration and import the saved configuration file to the meter.

# 4.2.1 Export Configuration

Users can access the export configuration feature by clicking on Operation in the menu bar and select **Export Configuration...** to open the Export Configuration window.

- · Within the window, select the configurations to be included in the export file.
- Click on the Export button located at the bottom right corner of the window to generate a \*.conf
  file containing the chosen configurations.





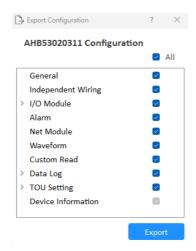


Figure 4-2 Export Configuration

# 4.2.2 Import Configuration

To import the saved configuration settings to the current meter, users can click on Operation from the menu bar and then select **Import Configuration...**.

- Select the downloaded \*.conf file and verify that the configuration file matches the current meter.
- The Import Configuration window will be opened after the configuration file is selected, allowing users to select which configuration settings will be imported to the current meter.
- Click on **Import** button located at the bottom right corner of the window to import the selected configurations to the meter.



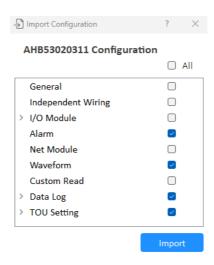


Figure 4-3 Import Configuration

# 4.3 Meter Firmware Update

If the meter is connected to the software using Modbus-RTU, users can update meter's firmware version using the meter firmware update feature in Acuview 2.

To access the meter firmware update feature, select **Operation** from the menu bar, then select **Firmware Update...** to open the **Meter Update** window. With the **Scan Mode** turned on and off, users can connect and update meters in different ways. The **Scan Mode** is set to "off" as the default value.

#### 4.3.1 Start

Within the Meter Update window, click on **Select Firmware File** first and choose the desired firmware update file. Detailed information about the selected firmware file will be displayed at the top right corner of the window.

After the update file is verified, select the **Programming Baud Rate** used for updating. A higher baud rate will result in a faster update speed but may increase connection instability causing the update to fail.





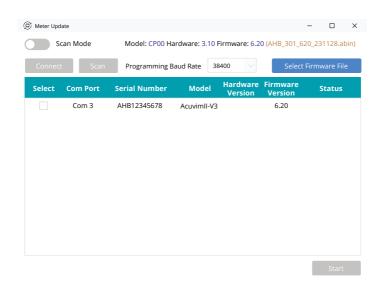


Figure 4-4 Meter Update (Start)

The process after this will be different depending on whether the scan mode is turned on or off.

#### 4.3.2 Scan Mode OFF

- A list of available meters and their detailed information is shown in the Meter Update window.
   If the selected firmware is matched with the meter, the check box in Select column will be enabled. To select the meters for firmware update, check the select box in the Select column.
- After selecting the meters, click the **Connect** button. The meter will be rebooted to enter the boot state to set up a firmware update connection.



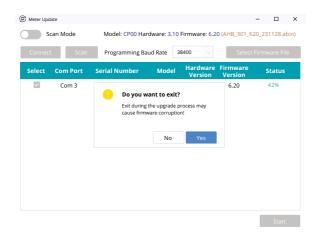


Figure 4-5 Meter Update (Exit During Update)

#### 4.3.3 Scan Mode ON

- In this mode, users will have to manually select the comport and set the communication settings. Click the **Scan** button to scan for available comports.
- Make sure the meter is connected through the right com port. To select the meters for firmware update, check the select box in the **Select** column.
- After selecting the meters, click on the **Connect** button. Users need to set up communication
  settings first. Please skip this part if the meter is already in boot state. Click OK and the software
  will try to set up a connection with existed meters.



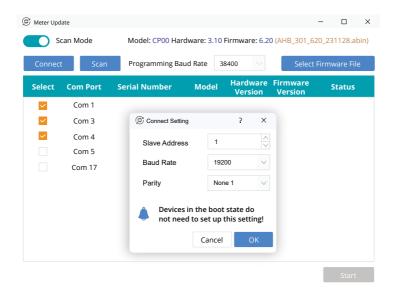


Figure 4-6 Meter Update (Scan Mode)

# 4.3.4 Connect and Update

- Once the status of the meter displays "Connected!", proceed to the next step. If the status shows a "Connect Failed!", this means the firmware update connection is not successfully set up, please wait until the meter boots up and retry. If the status shows "Model Unmatched!", this means the actual model of the meter is not matched with the model of the firmware update file, please use the matched firmware update file.
- Click on Start located at the bottom right corner of the window to initiate the firmware update
  process. Acuview 2 will remove all current connected meters to ensure a stable connection.
  Please be patient and allow the update to complete before closing the software or accessing
  other features within the software. Note: Exiting halfway or failing to update will cause the
  meter to fail to boot. In this case use Scan Mode to restore the firmware.

#### 4.4 Find Device

The find device feature enables the software to discover all the net modules connected to the local network. To access the find device feature, select **Find Device** from the **Operation** menu in the menu bar, and then the **Find Device** window will open.



# Acuview 2 Meter Data Management Software

- In the Find Device window, a list of net modules currently available on the network will be displayed. To access detailed parameters for a specific device, double click on that device in the list.
- To copy a device's IP address, select the desired device from the list and click on Copy IP Address button.
- To refresh the list of devices, click on Refresh button located at the bottom right corner of the window.

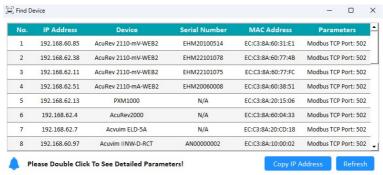


Figure 4-7 Find Device

## 4.5 Calculate Pulse Constant

- A pulse constant calculator tool can be used to determine the correct pulse constant. The tool
  can be accessed by clicking on the **Operation** menu on the menu bar and select **Calculate Pulse Constant** to open the Calculate Pulse Constant window.
- Under the PT and CT Ratios section of the window, enter PT1 and PT2 which represent the
  rated input and output of the Potential Transformer (PT) that is being used with the meter. If
  PTs are not being used, leave these settings as default of 400 for both PT1 and PT2.
- Enter the CT1 and CT2 values which represent the rated input and output of the Current Transformer (CT) being used with the meter.
- Enter the value of the **Primary Maximum Power** by performing the following calculation: 3\*(**PT1\*CT1)/1000**.
- Next, enter the desired pulse width and minimum interval for the energy pulse. The range for the pulse width is 20 to 1000 ms.
- Once all values are entered, click on Calculate.
- · The calculator will return the Maximum/Minimum values for the number of pulses as well as





how much one pulse will represent with the configured PT/CT ratios and Primary Maximum Power

- In the 'Primary: 1 Pulse =', enter the amount of energy (kWh) required to represent 1 pulse, then the pulse constant will be displayed in the 'Secondary: 1 kWh(kvarh) =' section of the window.
- Once the pulse constant is determined, it will need to be configured in the general settings. From Figure 4-8, the pulse constant that is entered into the meter is 100.

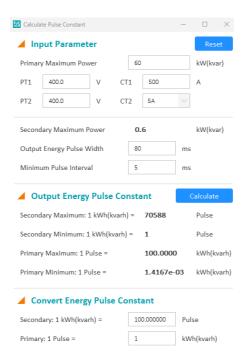


Figure 4-8 Calculate Pulse Constant

# 4.6 General Setting

Users can set the application settings in the General Setting window shown in Figure 4-9. This window can be accessed by clicking on the **Setting** menu on the menu bar and select **General Setting** to open the General Setting window.



# Acuview 2 Meter Data Management Software

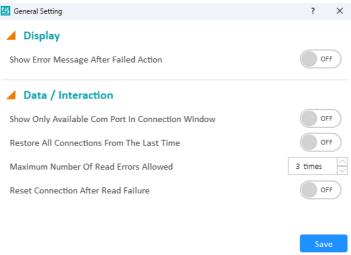


Figure 4-9 General Setting

#### Display

Show Error Message After Failed Action: When this setting is turned on, if an error occurs while
interacting with the device, an error message will be displayed in the status bar at the bottom
of the main interface. When this setting is turned off, the status bar will only show the times of
successful and failed actions.

#### Data / Interaction

- Show Only Available Com Port In Connection Window: When this setting is turned on, users
  can only add or modify the meter's Modbus RTU connection setting to an existing Com Port
  number. When this setting is turned off, users can set the meter's Modbus RTU connection
  setting to any Com Port numbers.
- Restore All Connections From The Last Time: When this setting is turned on, if the user exits the software with meters connected, the software will remember these connected meters and automatically connect to them the next time the user opens the software. When this setting is turned off, the software will start without automatically connecting to any meters.
- Maximum Number Of Read Errors Allowed: The software will consider the action as failed if
  the number of consecutive read failures exceeds this maximum number.
- Reset Connection After Read Failure: When this setting is turned on, if an error occurs while
  interacting with the device and the action was considered failed. The software will try to reset
  the connection with the device. This setting is useful when the connection to the device is not
  stable or disturbed by environmental factors.





# 4.7 Data Log Setting

Users can configure the data log in the Data Log Setting window shown in Figure 4-10. This window can be accessed by clicking on **Setting** from the menu bar and select **Data Log Setting** to open the Data Log Setting window.



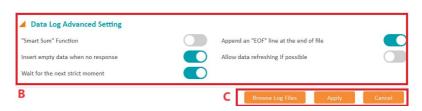


Figure 4-10 Data Log Setting

The following includes a description of each section on Data Log Setting page:

- A. Device Select Table: This Table lists all connected meters along with its detailed information. The device can only be selected when the status shows "Ready". By clicking the row, users can set the individual data log settings for each device. Please see section 4.7.1 for detailed information.
- **B. Data Log Advanced Setting:** Users can set advanced setting in this area. Please see section 4.7.2 for detailed information.

#### C. Action Area:

- Browse Log Files: Open a file browser windows for users to check current and saved log files. Please see section 4.7.3 for detailed information.
- **Apply:** Enables the data log function for the device(s) selected. Click the Apply button to save the settings and return to the main interface.
- Cancel: Click to discard all modified settings and return to the main interface.





# 4.7.1 Device Data Log Setting

Users can set the individual data log settings in the Device Data Log Setting window shown in Figure 6-11.

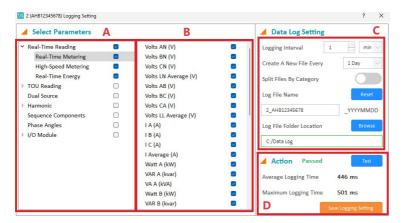


Figure 4-11 Individual Device Data Log Setting

- **A. Main Parameters Select:** This panel allow users to select what categories to include in the data log. By clicking the category item check box, all logging parameters under this category will be selected or deselected. Selecting the category item text will show all valid logging parameters for this category on the adjacent panel to the right. This panel is the Affiliated Parameters Select.
- **B. Affiliated Parameters Select:** User can select individual logging parameters under different categories.

#### C. Log Setting Area:

- Logging Interval: Setting the data logging interval indicates how frequent the software will store monitoring data. It contains three interval formats, which are minute, second and millisecond.
- Create A New File Every: Set time for when to create a new log file. When the time is reached, a new log file will be created.
- Split Files By Category: Switch on to split the logging files based on the category. Take
  Figure 4-11 as an example. If this option is turned off, all data will be stored under a file
  named "2\_AHB12345678\_YYYYMMDD.csv". If this option is turned on, all data will be
  separated by the category and store under three files named "2\_AHB12345678\_Real-Time
  Metering\_YYYYMMDD.csv", "2\_AHB12345678\_High-Speed Metering\_YYYYMMDD.csv" and "2\_





- AHB12345678\_Real-Time Energy\_YYYYMMDD.csv".
- Log File Name: For users to set the name of a log file. If the name of Log file is blank, the
  default file name will be used. Click "Reset" button to reset to default name. YYYMMDD
  means the year and date i.e. 2023-12-25 -> 20231225. Note: The file name must comply
  with Windows file naming regulations.
- Log File Folder Location: For users to set the file storage Path. If the file folder location is blank, the default file folder location will be used. Click the "Browse" button to set a file storage path.
- D.Action area: The time to complete each data logging round, measured as the Logging Time Cost, is dependent on the number of parameters included. Data logs with more added parameters will increase the Logging Time Cost and will require a longer Logging Interval. Logging Time Cost must be within the Logging Interval.

It is required to perform a test once the parameters or logging interval are modified. Click the "Test" Buttonto start the test. If the result displays "Passed", this indicates the allocated logging interval setting is valid. A result showing "Passed (Riskful)"indicates the time margin is not big enough to ensure consistent logging. Users are able to start data logging with these settings, however, it is recommended to decrease the number of parameters or increase the logging interval for a more stable and consistent logging. If the result shows "Not Passed", which means the time interval is too short to read all selected parameters, the user will have to decrease the number of parameters or increase the logging interval. Once users complete all settings, click "Save Logging Setting" to save the setting and go back to the main data log setting window.

# 4.7.2 Advanced Setting

- "Smart Sum" Function: This function can add the same parameters of multiple devices, store
  in a new logging file (named as "Smart Sum\_YYYYMMDD.csv"). For this setting to take effect, all
  devices selected to start data logging need to have the exact same settings except for the Log
  File Name. Note: If some settings are different, this function will not be enabled despite
  being turned on.
- Insert empty data when no response: When this option is turned on, if the device did not reply or replied incorrectly in a logging request, an empty record with the current timestamp will be automatically generated to ensure the continuity of the timestamp. If this option is turned off, empty records will not be generated.
- Append an "EOF" line at the end of file: When this option is turned on, an "EOF" line will be inserted at the end of each logging file.





- Allow data refreshing if possible: When this option is turned on, users can interact with the
  device that started data logging. Note: It is recommended to turn off this option if the time
  margin is very small, otherwise the interaction and logging may have conflicts, which will
  cause the interaction failure or inconsistent logging records.
- Wait for the next strict moment: When this option is turned on, the data log will start at the next strict moment. For example, if the logging interval is 5-minutes and the data logging was started at 9:28:26. If this option is on, the software will wait until 9:30:00 to start the data logging to ensure that timestamps are neat. If this option is off, the software will start data logging at the next full second, which is 9:28:27.

# 4.7.3 Browse Log Files

Users can browse or delete current and saved data log files in the Data Log File Browser Window shown in Figure 4-12.

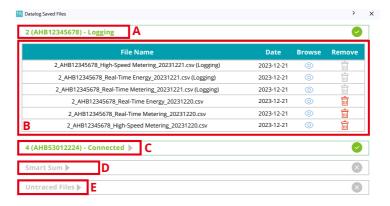


Figure 4-12 Data Log File Browser Window

The following includes a description of each section on Data Log File Browser Window:

- A. Device in logging: The device in logging will be displayed as Name (Serial Number) Logging
- **B. File Browser Table:** Users can find all data log files related to the device. If the file is currently being logged, the software will generate a copy of the current logging file to browse. In this case, users cannot delete the log file.
- **C. Device not in logging:** The device that is not in logging.
- **D. Smart Sum:** All smart sum log files will be displayed here.
- **E. Untraced Files:** All unrecognized csv files in the log file folder will be displayed here.





Note, if users accidentally open the file directly while it is currently being logged in Windows, and not in the data log file browser window, the software will not be able to write data into that file. The software will notify the user by showing "File Occupied" in the status bar as shown in Figure 4-13. Always make sure to only access the log files in the data log file browser window during data logging.

Datalogging: File Occupied, Success: 100, Failure: 0

Figure 4-13 Data Log File Occupied Status Figure





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