AEPRMon User Guide

Introduction 🔗

Welcome to the Scribner AEPRMon program for MS Windows. AEPRMon is designed to be used with the Scribner Automatic Electrolysis Pressure Regulator to control and measure electrolyzer cell back pressure. Please refer to the `AEPR Installation and User Manual` for installation details and hardware specific information.

System Requirements 🔗

- AEPR with RS-485 port
- AEPRMon Software
- Computer System requirements
  - Microsoft Windows 10 or later
  - 2 GHz or faster processor with 2 or more cores
  - Minimum 8 GB RAM
  - 256 GB or larger storage device
  - Minimum 1600x900, recommended 1920x1080 or larger display
  - 1 available USB or RS-485 COM port

Technical Support 🔗

Please review [Getting Started](#) and [Basic Operation](#) before contacting support. Users of AEPRMon Software can receive technical assistance through the following channels:

- Contact the system integrator where the AEPRMon Software and electronics were purchased
- USA and Canada only:
  Scribner
  1930 N. Poplar Street, Suite 23
  Southern Pines, North Carolina, USA 28387
  Software & Sales Support: +1-910-695-8884 (Eastern Time)
  email: info@scribner.com
- Other Areas: Contact your Scribner System Representative

Safety Precautions 🔗

> ⚠️ **WARNING:** High Pressure and Temperature Hazard
> **DO NOT** loosen or adjust any lines while the system is pressurized.

> ⚠️ **WARNING: DO NOT** block the vent port of the instrument.
> The safety of the instrument depends on the ability of the instrument to exhaust reaction product gasses. A blocked vent port can lead to Hydrogen gas leakage, and result in product failure.

> ⚠️ **CAUTION:** Exposed fittings surfaces may become hot.

> ⚠️ **CAUTION:** DO NOT exceed EVENT connector electrical specifications.
> AEPR damage may occur.
> Absolute Maximum Input Voltage on *Inputs 1-3*: 24V
> Absolute Maximum Output Current on *Alarm Out*: 250mA

Software Installation 🔗

The AEPRMon Setup program that will install the software required to operate the Scribner AEPR, can be downloaded from Scribner's main website (www.scribner.com).
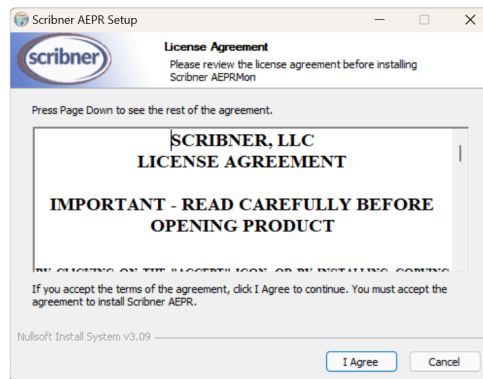
Installation Guide 🔗

> ℹ️ The text between % signs, refer to MS Operating System predefined environment variables which can be used on a command line or in the File Explorer to locate the corresponding files and folders without having to manually enter the full path.
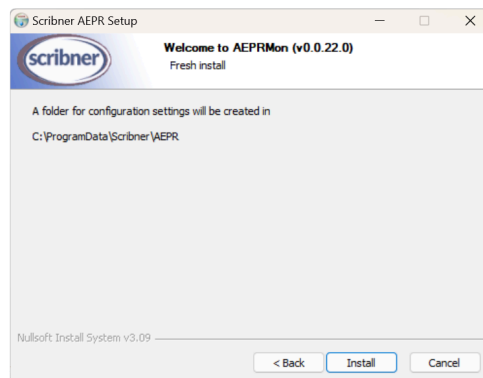
The installation program:

1. Installs the main executable and dependencies to the folder `%PROGRAMFILES%\Scribner\AEPR`
2. Installs the AEPRMon.INI configuration file to `%PROGRAMDATA%\Scribner\AEPR`
3. Installs shortcuts to the Main Application, User Guide and New Features manuals in `%PROGRAMDATA%\Scribner\AEPR`
4. Creates a folder for data files `%PROGRAMDATA%\Scribner\AEPR\Data`
5. Creates a shortcut on the desktop
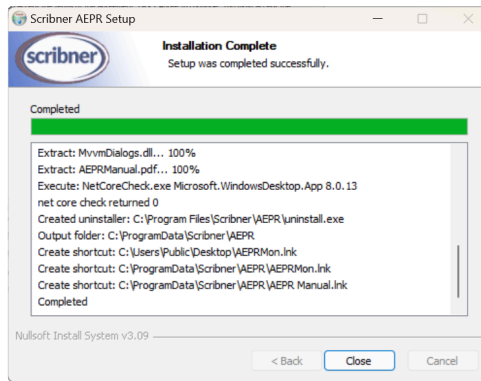
AEPR Installer Setup 🔗

Step 1: Double click the AEPR Installer self-extracting executable `AEPRInstaller_x_y_z.exe` and follow the instructions in the installation screens.

Step 2: Accept the license agreement

Step 3: Welcome screen

Step 4: Click Install and wait for the installation to complete - you can now close the installer.

Getting Started

Before starting the AEPRMon application for the first time, please ensure that your computer is connected to the instrument's RS-485 port. Please locate and double click the AEPRMon shortcut on your Windows Desktop.

Upon successful connection, you should see a main window similar to the following:

The green communication indicator shows that the computer is actively communicating with the instrument. If the indicator is not green, please refer to section Troubleshooting.
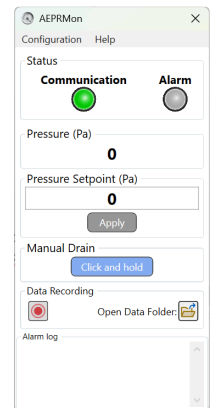
Basic Operation

The instrument's primary function is to achieve and maintain the desired pressure setpoint while monitoring the pressure reading. It continuously tracks various sensors, and if any anomalies are detected, the firmware initiates steps to ensure a safe state. Additionally, it may trigger one or more alarm conditions to alert the user. Optionally, data can be recorded to a file for further analysis.

Configuration File

When the program starts, operating parameters will be read from a configuration file, which is located at `%PROGRAMDATA%\Scribner\AEPR\AEPRMon.ini` .

> ℹ️ The very first time the application is started with factory default settings, the program will attempt to automatically detect the instrument by scanning any available COM ports and look for a unique response.

Generally, users do not have to edit the configuration file manually. Configuration of your instrument is done via a dedicated configuration dialog - see section Instrument Configuration.

Main Window

The main application window is divided into the following parts:

- Main menu with access to additional information and settings
- Communication and Alarm Status indicators
- Current pressure reading in the user selectable pressure units
- Several controls
- Alarm log - any alarms that are triggered will be shown with a date/time stamp, newest on top

Menu 🔗

The main menu provides access to:

- Instrument configuration - a separate dialog will open to allow for device specific settings, see section [Instrument Configuration](#) for details
- Help - access to documentation in PDF format and detailed product version information

Status Indicators 🔗

Communication indicator is green when the device is responding appropriately via the corresponding RS-485 connection. If this indicator is gray, then the device has disconnected or is not communicating - please see section [Troubleshooting](#).

Alarm indicator will light up red when one or more alarm conditions have been triggered. A corresponding date/time stamp and a description of one or more alarms will be shown in the Alarm log section.

Pressure Reading 🔗

The pressure reading is displayed in the currently selected units of pressure (Pascal, bar or PSI). The pressure unit is a global setting and can only be set by editing the configuration file manually. When this setting is changed in the configuration INI file, please restart AEPRMon for the new setting to take effect.

Controls 🔗

There are three items that can be controlled directly from the main window:

- Pressure setpoint
- Manual drain
- Data recording

Pressure Setpoint 🔗

Upon setting a new setpoint, the instrument will immediately start applying back pressure.

Manual Drain 🔗

The AEPR unit will automatically select and open a drain valve to maintain a consistent water level. Pressing this button bypasses this feature and manually holds the same valve open to drain water out of the tank. See [Pressure Drain Threshold](#). Releasing this button closes the drain. This feature is available regardless of the alarm state.

Data Recording 🔗

Data received from the instrument can be recorded to disk for further analysis. To enable data recording, click on the `Start Data Recording` button. Data will be written to a file in a predefined location on your computer. Data will always be recorded in Pascal, regardless of display units.

While data is being recorded, the `Stop Data Recording` button will be visible, accompanied by an animation indicating that data is actively being written to disk.
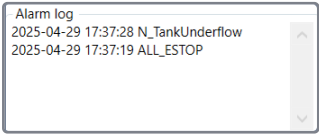
The factory default settings for data recording are:

Folder	`%PROGRAMDATA%\Scribner\AEPR\Data`
Base file name	`aepr`

Data will be written to disk using the following convention:

`<base file name>_yyyymmdd_hhmmss.txt`

Alarm Log 🔗

The alarm log area will show a history of alarms that triggered since the application was started. A date/time stamp indicates the time when the alarm occurred. Alarms are shown newest to oldest from top to bottom.

Here is a list of possible alarms:

- N_PressureDeviationExcessive
- N_TankOverflow
- N_TankUnderflow
- N_PressureChangeRateHigh
- N_HighPressure
- ALL_IOConn1
- ALL_IOConn2
- ALL_IOConn3
- ALL_ESTOP

For details and information on how to clear specific alarms, please refer to the `AEPR Installation and User Manual`.

Instrument Configuration 🔗

To access the instrument configuration dialog, click on 'Configuration' in the main menu. A separate window will open, resembling the example shown.

Device Communication 🔗

Address is used to communicate with a specific target on the RS-485 bus. The factory default is address `1`.

COM port is the RS-485 port on your computer that is connected to the instrument.

Baud Rate is the bus communication speed. The factory default is 9600 Baud.

Data Recording 🔗

The following data is written to a file when Data Recording is turned on:

- Time in seconds relative to the **DateTime** stamp located in the data file header.
- Pressure reading in Pascal.
- Pressure setpoint in Pascal.

The data file path is constructed using the following user defined parts:

- Base Name
- Data Folder

The complete data file path will be defined according to the following convention:

`<Data Folder>\<Base Name>_<yyyymmdd_hhmmss>.txt`

For example a base name of `MyData` and data folder `c:\My Data Folder` with a start recording time of 3:05pm on May 19, 2025, will result in the following path:

`c:\My Data Folder\MyData_20250519_150500.txt`

Time Constant (ms) 🔗

(default 1000)

All pressure readings are filtered via a first-order low pass filter. This value sets the time constant value for that low-pass filter. We recommend setting this value to twice the value of the AEPRMon data collection rate.

Pressure Drain Threshold (Pa) 🔗

(default 400,000)

There are two drains in the AEPR: a drain with an inline needle valve intended for High Pressure operation; and an unrestricted-flow drain intended for Low Pressure operation. This value sets the pressure threshold above which to energize the High Pressure drain valve instead of the Low Pressure valve during automatic drain operation.

Alarm Limits (Pa) 🔗

If any of the following limits are exceeded, the instrument will automatically initiate a shutdown sequence to ensure it returns to a safe state.

Allowable Pressure Deviation (Pa) 🔗

(default 10,000)

Sets the absolute difference between the setpoint and the observed pressure. When this limit is exceeded, trigger the `Pressure Deviation Excessive` alarm and behavior. Pressure deviation is allowed when a new setpoint is entered, until the setpoint is reached, as long as the pressure reading is moving towards the setpoint at an acceptable rate.

Maximum Pressure (Pa) 🔗

(Range: 0 – 3,200,000 default 100,000)

Sets the upper limit of the pressure. When this limit is exceeded, trigger the `High Pressure` alarm and behavior.
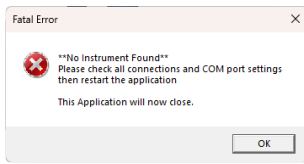
Allowable -dP/dt (Pa/s) 🔗

(default 100,000)

Sets the pressure drop limit in 1 second. When the rate of pressure change exceeds this limit, trigger the `Pressure Change Rate High` alarm and behavior. This alarm most likely indicates a membrane rupture or failure.
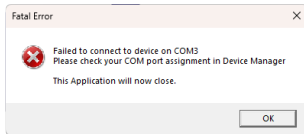
Troubleshooting 🔗

No Instrument Found 🔗

The application failed to detect any instruments on the available COM ports. This can happen if the instrument is not turned ON or when the host computer is not physically connected to the instrument.

Failed To Connect To Device On COMx 🔗

The COM port used in the configuration file is connected to a device, but it did not identify as an AEPR. Please ensure that the OS assigned COM port number in Device Manager for your USB to RS-485 converter is the same as specified in Instrument Configuration.