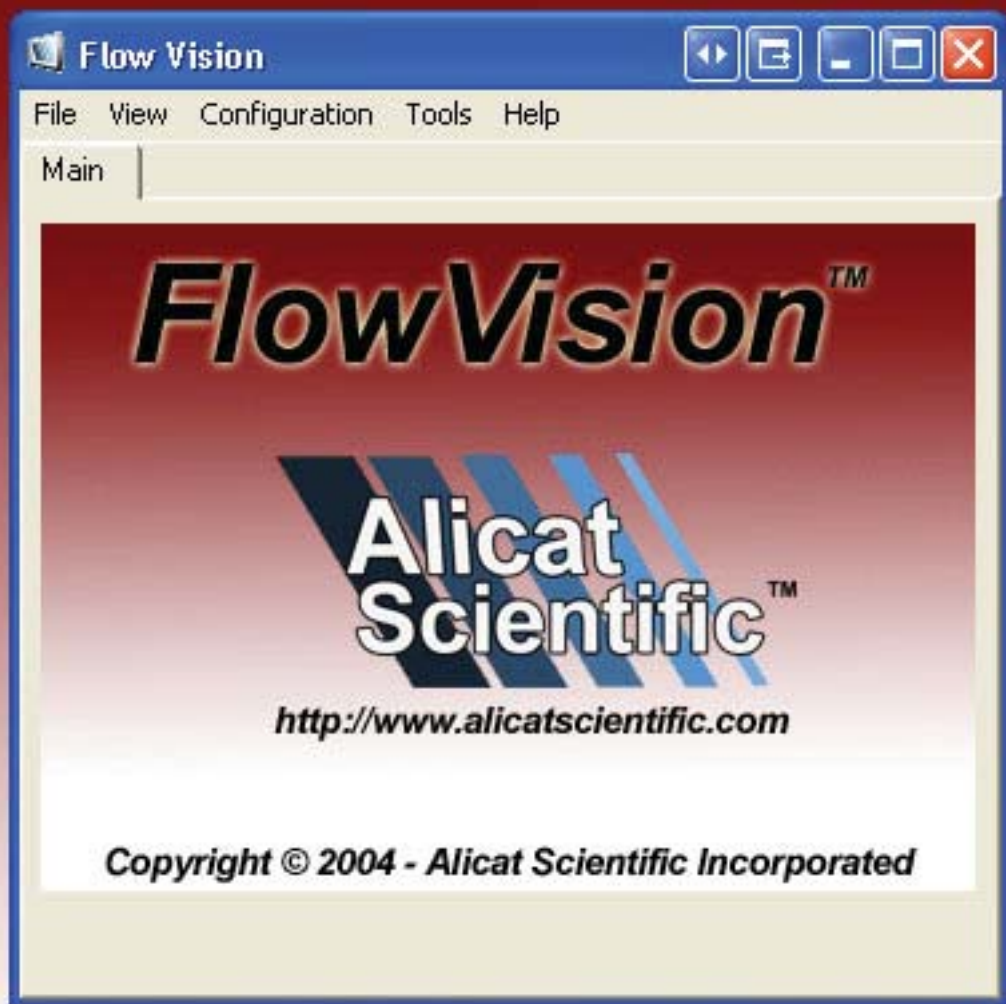




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Overview

Software

Alicat Scientific's Flow Vision® software program is designed to have a simple, intuitive, user-friendly interface. Flow Vision® has been written specifically for Alicat flow instruments to allow users to take the fullest advantage of their Alicat devices in a graphical environment.

Technical Requirements

- Microsoft® Windows® XP
- Microsoft® .NET Framework Version 1.1
(A copy of Microsoft® .NET Framework can be downloaded at: <http://www.microsoft.com/downloads/details.aspx?FamilyId=262D25E3-F589-4842-8157-034D1E7CF3A3&displaylang=en>)
- 2 MB hard disk space
- Available COM port that supports 19200 baud communications*

* Note: Many laptops are not equipped with serial ports. A virtual serial port can be created using a USB to Serial adapter.

Main Menu:

Flow Vision's main menu consists of five main categories:

- File
- Configure
- Capture
- Tools
- Help

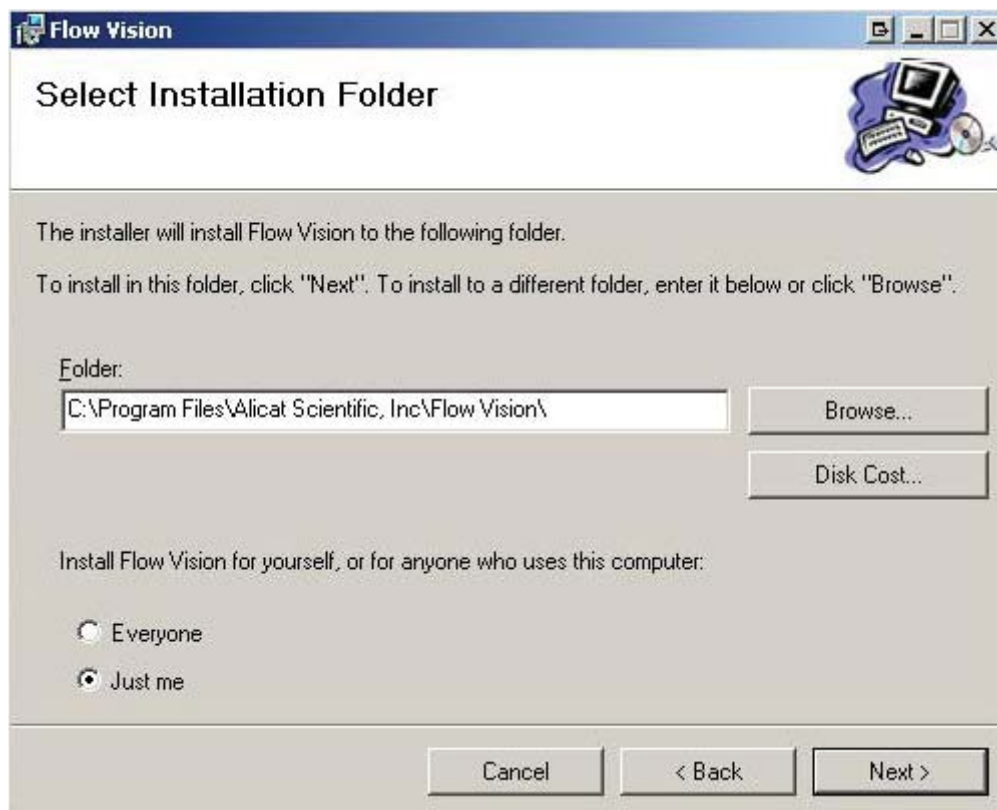
From these five categories you will be able to access all of the functions of Flow Vision.

Getting Started

Installing Flow Vision

To install Flow Vision from the CD:

1. Insert the CD into the CD/DVD drive
2. If the program does not start automatically, do the following:
 - a. In the Start menu, click on the 'Run' icon. In the text box type 'D:\setup.exe', and click 'OK' (if your CD/DVD drive is a letter other than 'D', replace 'D' with the letter that corresponds to your drive) You may also use Windows® Explorer® to navigate to your CD/DVD drive contents and select 'setup.exe' from the Flow Vision file directory.
3. The installation will begin with a welcome screen. Read the notes and the warning and click 'Next' to continue.
4. Next choose the directory in which you would like the software installed.
 - a. The default directory is C:\Program Files\Alicat Scientific, Inc\Flow Vision\ The destination path can be changed in the text box by typing the desired destination directory or choose 'Browse' to select a directory. Select 'Disk Cost' if you would like to know how much hard drive space Flow Vision will occupy after installation.
 - b. Flow Vision can be installed for a single user on a computer or for anybody who uses the computer. If you would like your login to be the only user, select 'Just me' or if you would like anybody who is logged into the computer to be able to use Flow Vision, select 'Everyone'.
 - c. After you have selected your installation directory and defined who can use the software, click 'Next'.

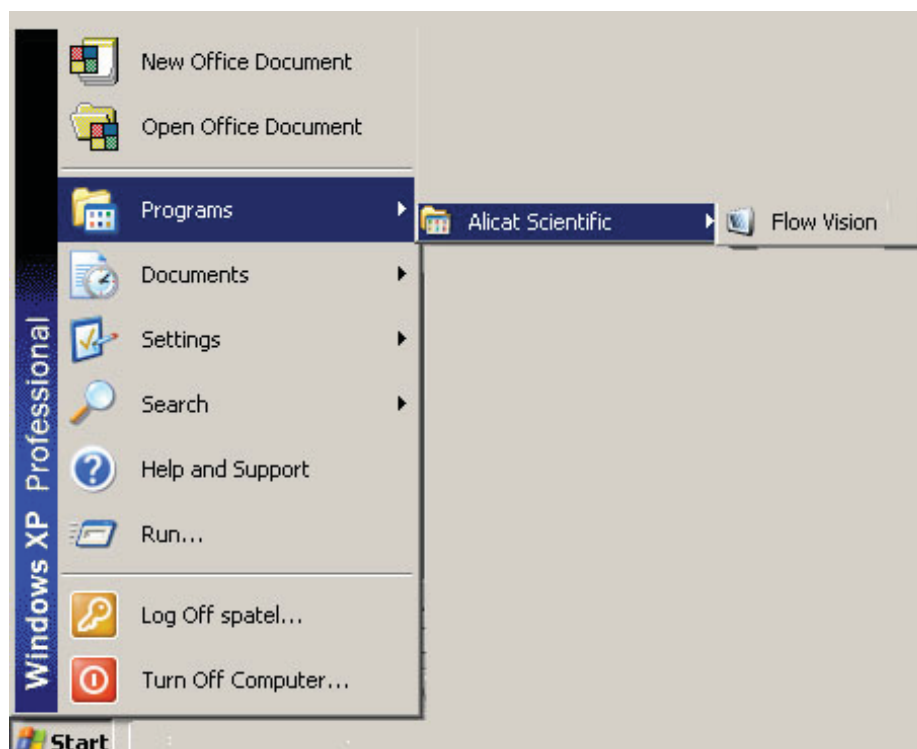


5. Flow Vision will show the installation progress. Upon completion of the installation click 'Finish'.

Note: Flow Vision does not require a registration code and can be installed on other computers with the original installation CD with full functionality.

Starting Flow Vision

In the 'Start Menu' select the 'Programs' icon. From the list of available programs highlight the 'Alicat Scientific' group and select the 'Flow Vision' icon.

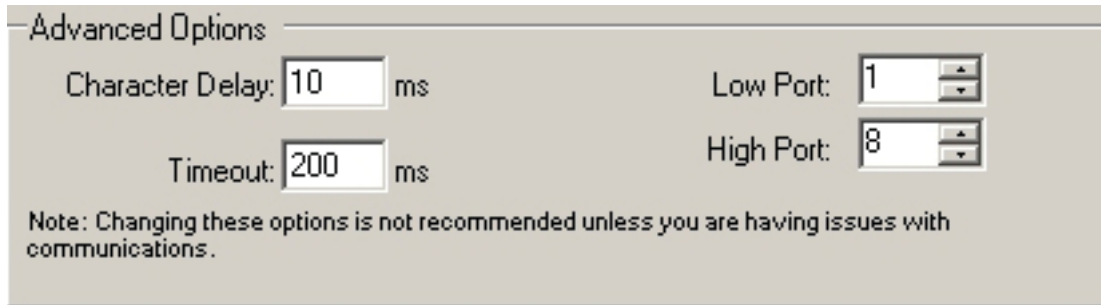


Using the Flow Vision Software

Installing a Device

Connect your Alicat instrument to your computer's serial communications port using an Alicat MD8DB9 or equivalent cable. If you are not familiar with how to find your computer's serial communications port or if you are unsure whether your computer is equipped with this port, refer to the documentation supplied with your computer.

You may wish to use the '*Advanced Options*' settings to tailor how Flow Vision searches for a device.



The '*Advanced Options*' settings can be found in the '*Capture*' menu in Flow Vision's main toolbar. In the Configure menu select '*Properties*'. This will bring up the '*Properties*' box. The '*Advanced Options*' can be found at the bottom of the Properties box.

'*High Port*' and '*Low Port*' will set the number of ports for Flow Vision to search. Low Port is the first port that Flow Vision will search. Flow Vision will search each port sequentially thereafter until it arrives at the high port number. For example, if Low Port is set to 1 and High Port is set to 4, Flow Vision will start by searching port 1, followed by port 2, port 3, and last port 4.

Note: Leaving the default settings for high port and low port could result in Flow Vision spending a significant amount of time searching ports for devices. If you know which port the Alicat flow instrument is connected to, assign that port number as the high port and low port and Flow Vision will only search that port. If you know that the Alicat device is in a specific port range, assign the high and low port to reflect that range.

The '*Character Delay*' allows users to set how much time Flow Vision spends searching for device letters.

'*Timeout*' allows users to set how much time Flow Vision spends accessing a port.

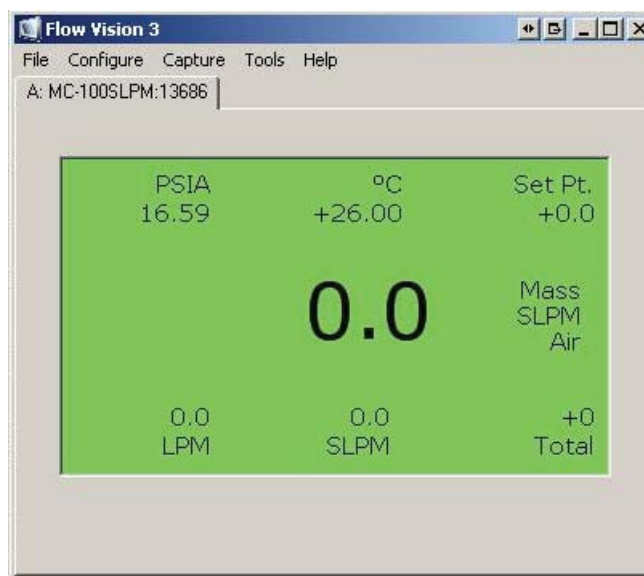
Choose '*Apply*' to save your changes.

Starting a Session

With an Alicat device connected to your computer via the serial communications port, select '*New Session*' from the '*File*' menu in Flow Vision. This process may take a few minutes to complete as Flow Vision will search the system for communication ports and installed devices.

If the device(s) and connection have not changed since the last time Flow Vision was run, choose '*Load Last Session*' to skip the port and device searching process.

Once Flow Vision has established a connection with the device, a measured parameter screen will appear that resembles the display on the instrument. (If the unit is a non-display model the measured parameter screen will still appear)



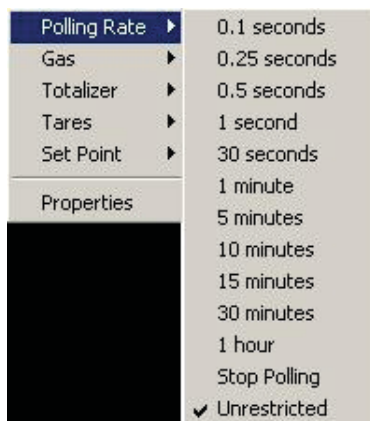
If trouble is encountered in connecting, use the '*Help*' function in the main toolbar to access an error log from Flow Vision. Use of this log may be required when obtaining technical support from Alicat Scientific.

Device Configuration

Choose the '*Configure*' option from Flow Vision's main menu to make functional changes to the device.

Polling Rate

The 'Polling Rate' is the rate at which the computer queries data from the connected Alicat flow device. The sensors in the Alicat device are sensing changes in temperature, pressure and flow hundreds of times per second. The results of which are rapid, minute changes in the display of process conditions. Changing the polling rate will either increase or decrease the number of times the computer will query the connected Alicat flow device for information.



Changing the polling rate will not affect the accuracy of the device, only the amount of data being received by the connected computer.

Gas Select

All Alicat gas flow instruments come from the factory with 30 pre-installed gas calibrations. The gas calibration for the unit can be changed by selecting the 'Gas' submenu. A list of the installed gas calibrations will be shown. Simply choose the gas for which the unit should be configured. The gas select screen does not apply to pressure and vacuum or liquid devices.

Totalizer

If the 'Totalizer' function is installed on the Alicat device, connected users can reset the totalizer by selecting the 'Reset' function in the 'Totalizer' menu.

Flow Tare

The installed device's zero flow point can be reset by selecting the 'Flow Tare' function in 'Tares' menu.

Set-Point Control

This function applies to Alicat controllers only. Users can select the valve set-point for their Alicat Flow Controller by using the 'Set Point' menu. There are selections for 100% (the % symbol is not required) of full scale flow and no flow. If you want another percentage choose 'Other'. When 'Other' is selected a text box will appear, in the blank space enter the desired set-point as a percentage of full scale (again, the % symbol is not required).

Data Capture

Flow Vision's data capture feature allows for measured data from the connected flow instrument to be captured to either a .csv file or a .txt file. The capture function is useful for analyzing flow data over a given period of time.

To start a capture, the capture parameters must first be configured. Start by choosing 'Capture' from the main menu and select 'Capture Path' to bring up the capture properties box.

Capturing

☐ Capture data from all devices.

☒ Capture data from only the currently selected device.

Data Types

☐ Pressure	☐ Mass Flow	☐ Gas
☐ Temperature	☐ Set Point	☒ Date
☐ Volumetric Flow	☐ Totalizer	☒ Time

Capture Path:

Begin by selecting whether you want to collect data from a single device or from multiple devices. In order to capture data from multiple Alicat devices, all the devices need to be connected and communicating with the computer running Flow Vision. To learn more about connecting multiple Alicat devices to a single computer consult the user manual that accompanied your Alicat device.

Select the types of data you would like to capture by selecting measured parameters listed inside the 'Data Types' box. Simply click in the appropriate parameter's check box. The presence of a check next to a parameter will indicate that the data is selected for capture. Choose 'Apply' to save changes.

Note: Not all shown 'Data Types' parameters are applicable to all Alicat devices.

To select a capture path, type a destination folder and filename into the text box marked 'Capture Path'. You can also click the 'Browse' button to select an existing directory.

Flow Vision Tools

Flow Vision has been outfitted with a number of tools that make working with an Alicat flow device easier and more productive. Flow Vision's tool package allow users to run time based scripts and graph flow data. For users who prefer command line communication, an ASCII terminal has been added to allow sending command line instructions to the unit.

Building and Running Scripts

The scripting system inside Flow Vision makes it very easy to send time based commands to Alicat flow instruments. A script allows a user to pre-program a flow program for an Alicat device and walk away. Without a script, a user would have to wait next to the unit with a stopwatch and send commands to the unit as time triggers pass. A script does this automatically.

To build a script, first select the Tools option from the main toolbar. From that menu select the 'Scripts' menu and choose 'Launch ScriptBuilder'.

The ScriptBuilder window has a menu bar with File, Edit, Configuration, and Help. Below the menu bar is a table with three columns: Time, Unit, and Command. The table has 10 rows. Below the table is a section titled 'Time Based Commands'. This section contains a 'Unit' dropdown menu with 'A' selected, a 'Time' text box, and a 'Command' text box. Below these is a 'Quick Commands' section with a dropdown menu labeled 'Choose a Quick Command'. At the bottom of the window is an 'Add Command' button.

Time	Unit	Command

Time Based Commands

Unit: A Time: Command:

Quick Commands: Choose a Quick Command

Add Command

To begin a script, make sure the unit identifier listed in the 'Unit' box corresponds to the unit ID of the connected device. If it does not, use the dropdown arrow to select the letter of the device for which the script is being written. Next, select the 'Time', in seconds - relative to the start time of the script (0.0) , at which the script command should take place. Last, enter the 'Command'. For your convenience, a 'Quick Commands' drop down menu lists the most commonly used commands. After each command is selected be sure to click 'Add Command' to update the list.

A finished script will look like this:

The ScriptBuilder application window displays a table of commands and configuration options. The table lists commands at specific time intervals for unit 'A'. Below the table, there are fields to add new commands and a section for quick commands.

Time	Unit	Command
0.0	A	Execute a Flow Tare
1.0	A	Setpoint = 10% of Full Scale
30.0	A	Setpoint = 25% of Full Scale
60.0	A	Setpoint = 50% of Full Scale
90.0	A	Setpoint = 75% of Full Scale
120.0	A	Setpoint = 100% of Full Scale
150.0	A	Setpoint = 0% of Full Scale
151.0	A	Reset the Totalizer

Time Based Commands

Unit: Time: Command:

Quick Commands

Once the script is completed, be sure to use save the script using the 'Save' function in the 'File' menu in the main toolbar.

The ScriptBuilder utility has it's own main toolbar. Choose the 'Configuration' command to bring up the 'ScriptBuilder - Configuration' box.

The Script Builder - Configuration dialog box contains several sections for configuring the script execution. The 'Looping' section sets the number of times the script runs. The 'Wait Time' section sets the time between executions. The 'Programming Type' section allows choosing between time-based and procedural execution. The 'File Format' section allows choosing between Flow Vision and HyperTerminal formats.

Script Builder - Configuration

Looping

Number of times the script will run:
Note: Enter 0 to run the script indefinitely.

Wait Time

Time to wait between executions: seconds
Note: Enter 0 to run the scripts back-to-back.

Programming Type

☒ Time Based - Commands run at a given time from when the script begins.

☐ Procedural Type - Commands run in a procedural fashion allowing for loops, if statements, etc.

File Format

☒ Flow Vision Format - Timed format that will run in Flow Vision (.als).

☐ HyperTerminal Format - Standard format that can be transferred through HyperTerminal (.txt)

Cur. Ver. 3.0

The '*Looping*' function will tell Flow Vision how many times to run the script from start to finish. A setting of zero will allow the script run indefinitely.

'*Wait Time*' will add a time delay between commands inside a script.

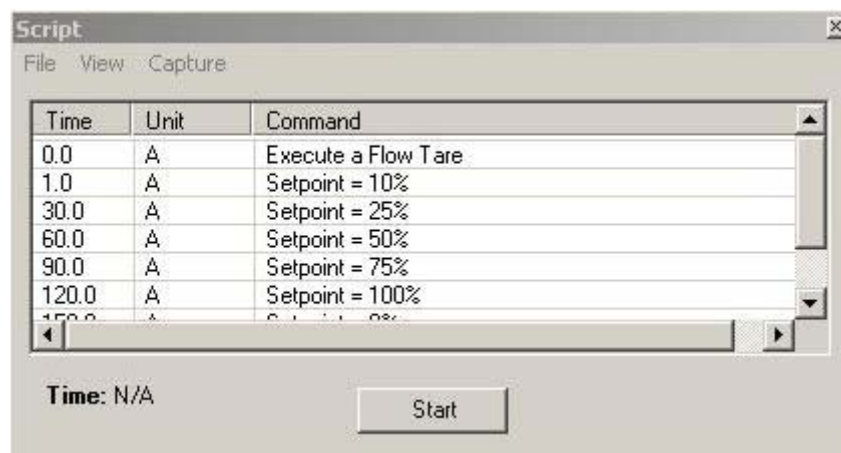
A script can be based on time or procedures. The '*Programming Type*' allows users to select if a script is triggered by time events or by programming events.

'*File Format*' allows users to build scripts that can be executed inside Flow Vision or by command line programs like HyperTerminal®. A HyperTerminal® style script can be useful if a script needs to be written for an Alicat device connected to a computer that does not have Flow Vision installed. To run a script in HyperTerminal®, please refer to your instrument's operating manual.

Once you have completed your script, set the configuration and saved the script, you can close ScriptBuilder.

To run a script, select the Tools menu in the main toolbar and in the Scripts menu. Select '*Run*'. A folder box will appear asking you to select a script file. Select the script file you built using the ScriptBuilder program.

Once you have selected the file, Flow Vision will bring up a script box showing the command list and the time interval. To start the script simply press the '*Start*' button at the bottom of the box.

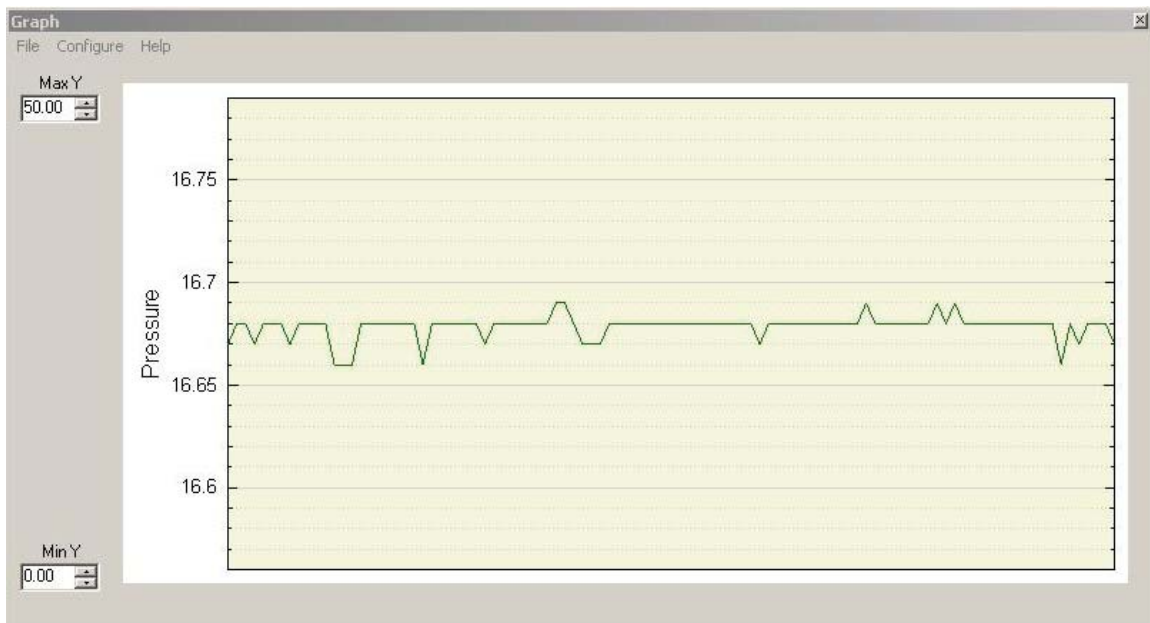


Once the '*Start*' button is clicked Flow Vision will execute the script. You can stop the script at any time by selecting the '*Stop*' button that has replaced the '*Start*' button.

Graphing Flow Data

Flow Vision contains a graphing utility that allows users to visually track mass flow, volumetric flow, pressure, temperature, set-point or totalizer in real time.

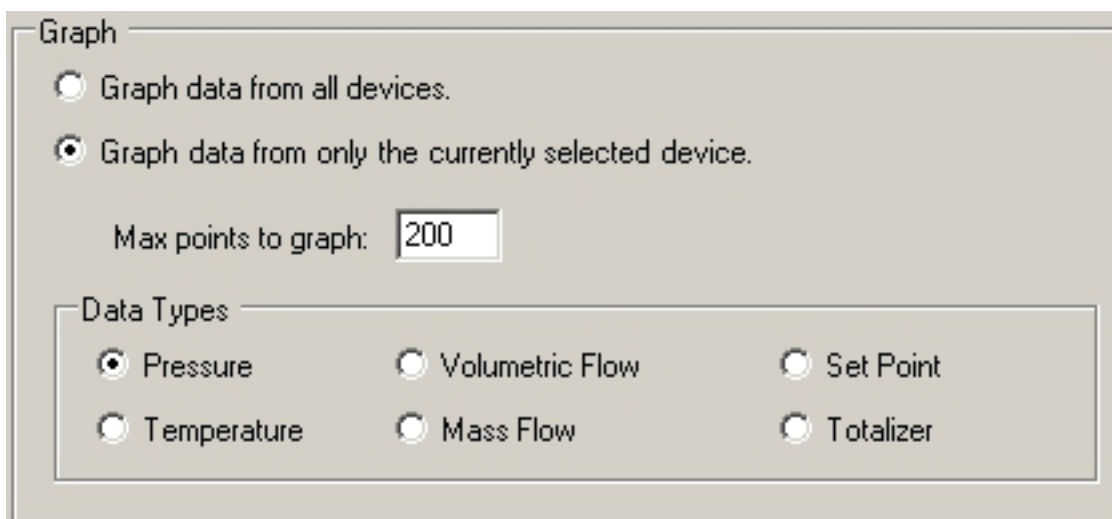
To access the graphing utility select the '*Tools*' menu from the main toolbar and choose the '*Graph*' function. The graphing box will appear.



If the range of the graph is not acceptable, select the '*Configure*' menu from the main toolbar inside the graph box and choose '*Auto-Size*'. When '*Auto-Size*' is selected, Flow Vision will size the Y axis of the graph to maximize resolution of incoming data.

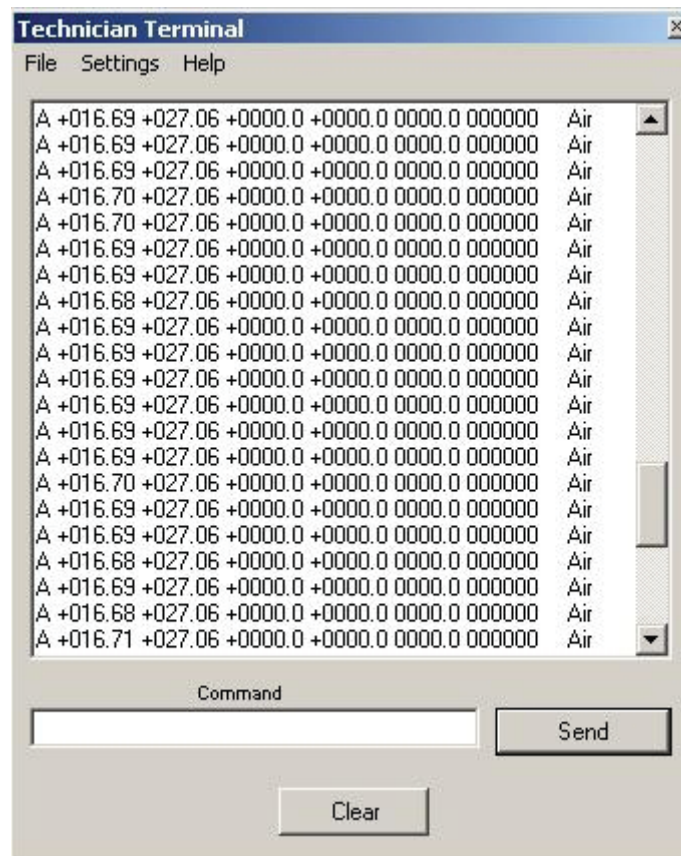
The '*File*' menu from the main toolbar will allow graphing to be paused and restarted. Users can also print graphs from the file menu.

The graphing parameters can be accessed using the '*Properties*' function inside the '*Configure*' menu in the main toolbar. From here users can select if data is graphed from a single connected device or from all connected devices. To set the max number of points to graph, enter that number in the text box next to '*Max points to graph*'. Finally, choose which parameter you would like to graph. Choose '*Apply*' to save your changes.

The image shows a configuration dialog box titled "Graph". It contains two radio button options: "Graph data from all devices." (which is unselected) and "Graph data from only the currently selected device." (which is selected). Below these is a text field labeled "Max points to graph:" containing the number "200". At the bottom, there is a section titled "Data Types" which contains six radio button options arranged in two rows: "Pressure" (selected), "Volumetric Flow", "Set Point", "Temperature", "Mass Flow", and "Totalizer".

Technical Terminal

The Technical Terminal is the command line interface for communicating with the Alicat unit connected. To access the Technical Terminal select '*Tools*' from the main toolbar and select '*Terminal*' from the '*Tools*' menu.



The Technical Terminal functions as a command line interface. To see a list of commands, please consult the documentation that accompanied the Alicat flow device.

Note: Accessing the Technical Terminal will close Flow Vision and once the terminal is closed Flow Vision will have to be restarted.

Uninstalling Flow Vision

To uninstall Flow Vision use the Add and Remove Programs function from your Windows® control panel. Flow Vision can be selected from the program group and uninstalled. If you are unfamiliar with the Add and Remove Programs function of your Windows® software please consult your system administrator or refer to your Windows® operating manual.

Troubleshooting and FAQs

<u>Question or Problem</u>	<u>Answer or Solution</u>
My Alicat device will not connect to Flow Vision.	1. Check all connections between Alicat device and computer. 2. Make sure Alicat unit is powered. 3. Make sure Alicat unit communication is set to 19,200 baud. 4. Verify that the communication cable is built and installed properly. 5. Verify that a connection can be made with the computer using Windows® HyperTerminal® following the instructions in the manual that accompanied the flow device.
Flow Vision will not start when I put the CD into my CD/DVD drive.	Your computer may not be able to run the autorun script. Simply run Flow Vision's setup.exe program from the drive directory using Windows® Explorer®
Flow Vision will not install properly.	1. Verify that your computer meets the minimum requirements to run Flow Vision. 2. If your computer meets the requirements and the problem persists please contact Alicat directly for support.
I cannot load a previous session.	Sometimes Windows® deletes the registry entry that saves the session information. Simply start a new session.
The process information displayed on my Alicat device and on the Flow Vision screen don't always match.	In the configure menu the polling rate will dictate how often the Flow Vision screen is updated. If the setting is changed to 'Unrestricted', Flow Vision will display data changes at a faster rate.
Flow Vision and the display on my Alicat device don't always match at zero flow.	The Alicat flow device comes with programming to help stabilize the display at zero flow. The Flow Vision display will not have this stabilization feature and will show minute fluctuations at zero, while the device's display will be a solid zero. This slight difference in reading is normal.
I start a data capture and nothing happens.	Flow Vision does not alert you that a data capture has started. To verify that Flow Vision is capturing data select the 'Capture' menu from the main toolbar and 'Stop Capture' will show as the menu choice instead of 'Start Capture'.
I can't find my captured flow data.	The default file and directory for data capture is: C:\Program Files\Alicat Scientific, Inc\Flow Vision\Capture.csv. To change the filename and save directory use the 'Capture Path' function in the 'Capture' menu.
I am trying to run a script but the program keeps asking for a file.	Make sure that you have run the ScriptBuilder utility and saved a script. Point Flow Vision to the script that you saved and a 'Script run' box should appear.

I am trying to graph data but I cannot get the graph to show any data.	1. Make sure that the right parameter is being graphed. To verify, use the properties box to select the desired graphing parameter. 2. Verify the graph range is correct. If the range is too high or too low, correct the range using the '<i>Auto-Size</i>' feature.
The technical terminal asks me if I want to close Flow Vision, will that break the connection to my device?	Your computer cannot maintain two connections so Flow Vision will close in order to run the Technical Terminal. If you want to use Flow Vision again, simply close the terminal and re-launch Flow Vision.