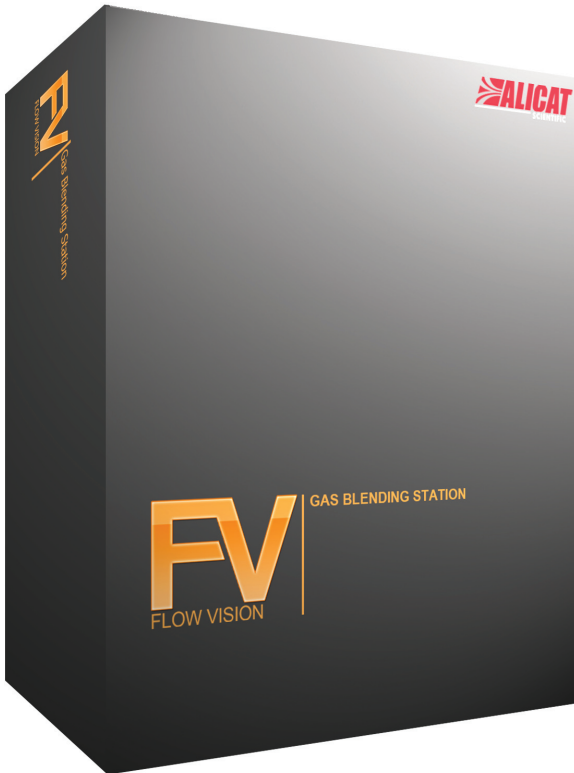




Operating Manual



Flow Vision™ Gas Blending Station

Innovative Flow and Pressure Solutions

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For more information regarding this or any Alicat product, please contact us at:

Alicat Scientific, Inc
7641 N Business Park Drive
Tucson, Arizona 85743
USA

Ph: 520-290-6060
888-290-6060

Fax: 520-290-0109
email: info@alicatscientific.com
Web site: www.alicatscientific.com

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Welcome to Flow Vision™ Gas Blending Station

Flow Vision™ Gas Blending Station is a graphical software package that aides in the process of mixing gases. Currently, up to six Alicat Scientific, Inc.™ mass flow controllers are supported.

System Requirements

Supported Operating Systems: Microsoft® Windows® XP, Windows® Vista, Windows® 7

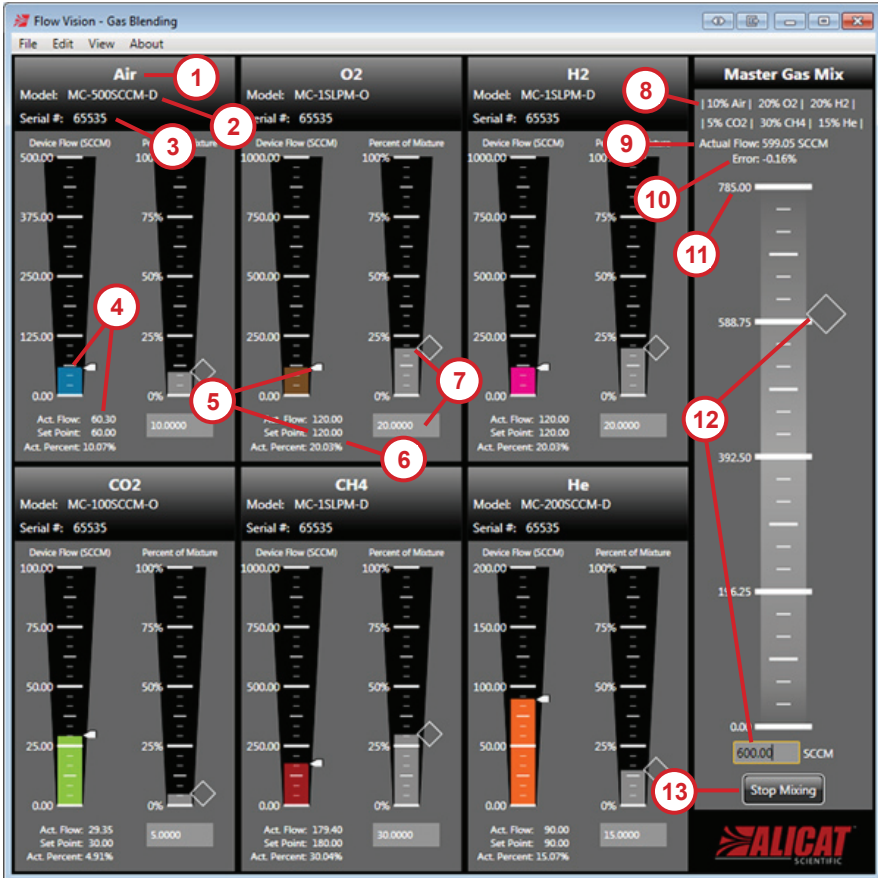
Software: Microsoft®.NET Framework 3.5

Hard Disk: Up to 10 MB of available space may be required for installation. Data logs may require additional space.

Hardware: Available COM port, at least one Alicat Scientific, Inc.™ mass flow controller

Display: Minimum of 860 x 860

Overview



1. *Device Gas*: The gas that the target device is set to flow.
2. *Device Model Number*: The model number of the target device.
3. *Device Serial Number*: The serial number of the target device.
4. *Actual Mass Flow*: The current mass flow measurement of the target device.
5. *Device Set-Point*: The current set-point (target flow) of the target device.
6. *Actual Percent*: The actual concentration percentage of the gas that the target device is flowing. This will vary with the actual flow of all devices.
7. *Target Percent*: The target concentration of the gas in the overall blend.
8. *Blend Composition*: The makeup of the final gas blend.
9. *Actual Total Flow*: The total flow of the final gas blend.
10. *Error*: The flow error in terms of the target flow.
11. *Maximum Flow*: The maximum flow rate that can be reached.
12. *Target Blend Flow Rate*: The target rate of flow for the blend.
13. *Start/Stop Mixing Button*: Button to start/stop the mixing process.

Creating a Blend

Guided Setup

Begin by selecting File > New Blend > Wizard Setup from the menu.

The wizard will guide you through the process of adding control devices to your blend.

After clicking the “Next” button, select the number of mass flow controllers that are connected to your computer.

The *Gas Blending Station* currently supports up to six distinct devices.

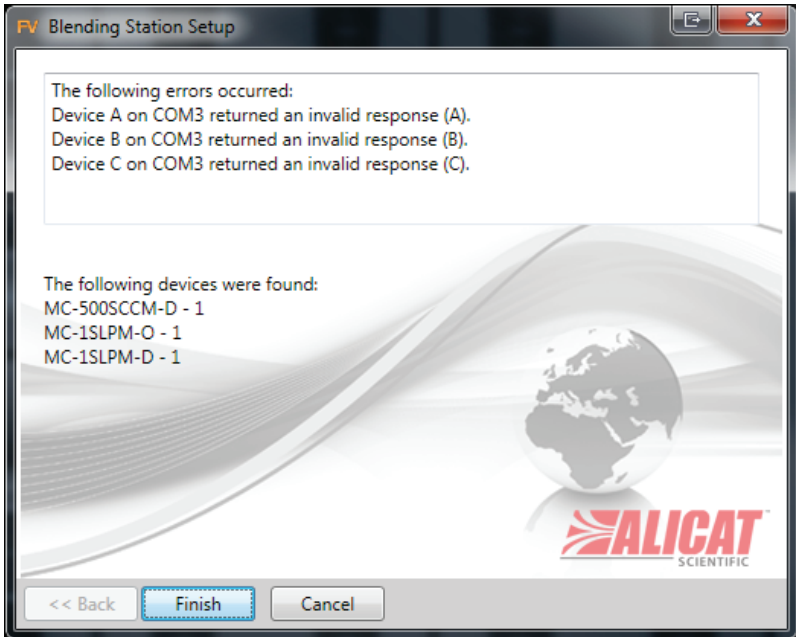
Click the “Next” button to continue.

The application will search for, and load, any mass flow controllers connected to your computer.

The final screen summarizes any errors and displays the devices found.

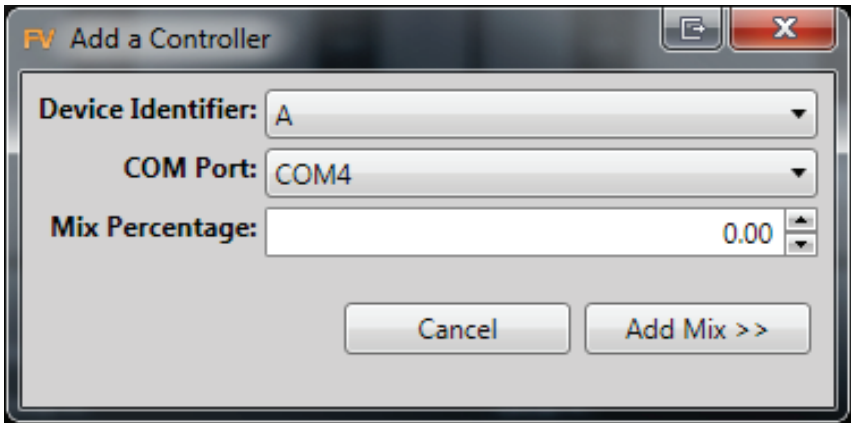
Click “Finish” to add these devices to your blend.

Devices are added to the blend with a concentration of zero percent.



By default, the wizard will launch on startup. Uncheck “Show wizard on startup” to disable this feature.

Manual Setup



Begin by selecting File > New Blend > Manual Setup from the menu.

Any existing blend information will be removed from the application.

Double click any of the six component locations.

Choose the Device Identifier and COM Port of the desired controller.

The Mix Percentage may also be entered if desired.

Click the "Add Mix" button to continue.

The *Gas Blending Station* will search for a mass flow controller using the selected parameters.

If the device is found, it will be added to the current mix.

Blending Gases

Adjusting Concentrations

The concentration of each gas in the overall mix can be adjusted in three ways.

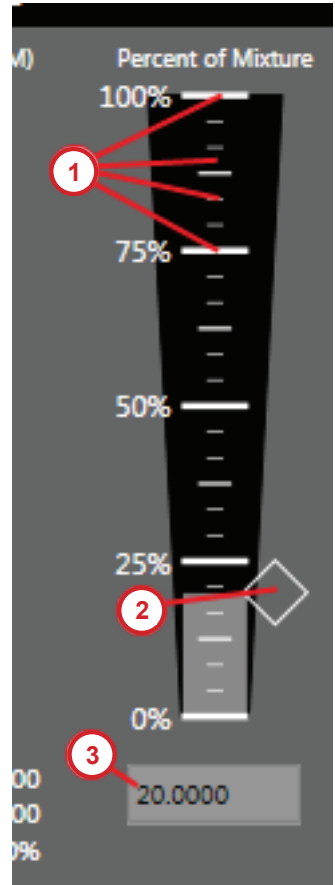
The background of the Percent of Mixture gauge can be clicked (1) to change a concentration to a selected value.

The indicator on the right of the gauge (2) can also be dragged up and down to adjust the value.

Finally, the value can be edited directly in the box under the gauge (3).

Mixing cannot begin until the total of all concentrations reaches 100%.

When this occurs, the “Start Mixing” button is enabled.



Devices that are at zero percent will not be represented in the final blend readings.

Controlling these devices outside of Flow Vision will create inaccurate blend readings.

Changing Flow Rates

When the total of all concentrations reaches 100%, the “Start Mixing” button becomes enabled.

Clicking this button will start the mixing process.

Once mixing has started, the individual gas concentrations can not be modified.

The percentages are unlocked when the mixing process ends.

The output rate of your gas blend can be changed in three ways.

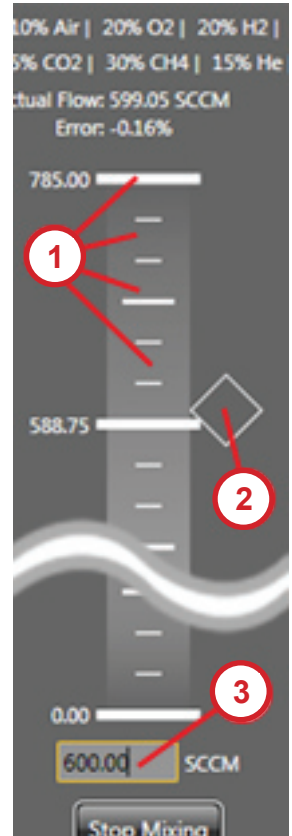
The background of the Master Gas Mix gauge can be clicked (1) to change a flow rate to a selected value.

The indicator on the right of the gauge (2) can also be dragged up and down to adjust the value.

Finally, the value can be edited directly in the box under the gauge (3).

To stop the mixing process, click the “Stop Mixing” button.

All device set-points will be set to zero and the gas flow will cease.



Saving a Blend

Begin by selecting File > Save Blend from the menu.

You will be prompted for a location on disc to store your blend.

Enter a file name and click the “Save” button.

Blends are stored using the .fvb extension in XML format and can be modified using a text editor.

Loading a Blend

Choose File > Load Blend from the menu to launch the open file dialog.

Navigate to the desired blend file (.fvb) and click the “Open” button.

The stored blend will be loaded, overwriting any existing blends.

Changing Flow Units

By default, all flow readings in Flow Vision™ *Gas Blending Station* are in **SLPM**.

The units can be changed by selecting the desired units from the Edit > Flow Units menu.

Changing Decimal Places

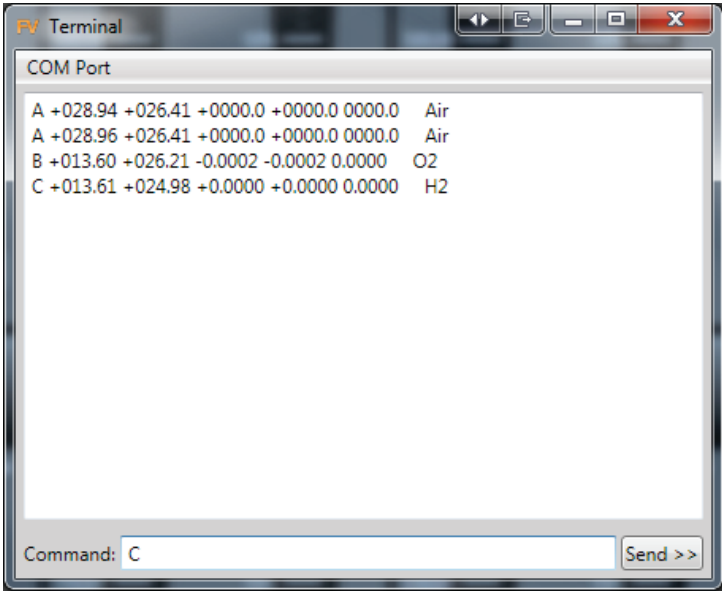
By default, all flow readings are shown to two decimal places.

Decimals can be increased or decreased using the Edit > Decimals menu.

Increasing the decimal places will not increase the resolution of the devices.

Using the Terminal

The terminal allows for basic RS-232 communication with your Alicat Scientific™ devices while gases are being mixed.



To launch the terminal, select View > Terminal from the main menu. Select a valid port from the COM Port menu to begin communications. Commands are entered into the box at the bottom of the terminal. Send a command by clicking the "Send" button.

For more information on the standard Alicat Scientific™ command set or RS-232 communications, please see the operating manual for your device.