Chapter 8 – Main Page Items

<u>Alarm Window</u>

The alarm window can display up to three active alarms or faults. If an alarm occurs a small window will appear in the center of the screen first.

The user needs to acknowledge the alarm, and then resolve it. After the alarm has been resolved, clicking on the reset button will reset the alarm. All alarms must be acknowledged before they can be reset.

All acknowledged alarms are stored in the alarm history as shown below.
The alarm history window opens if the alarm history button is clicked on in the alarm bar. All alarms and their status are shown here. Clicking the clear button under the alarm history will open a window to verify the user wants to clear the alarm history.

This window opens, and if clear is selected, the alarm history page will now be blank.
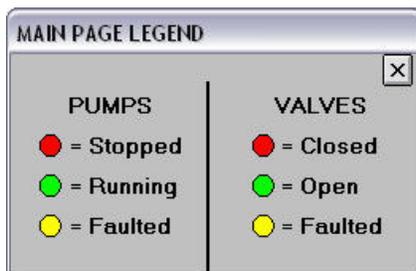
Legend

The legend window for the status dots beside each component can be opened by clicking on the Legend button located at the bottom of the main page.

Turbo Pump Soft Start Mode

Soft Start is a user selectable programmable option available on Agilent turbo pumps. When implemented, Soft Start causes the pump speed to ramp up slowly. The slow start up allows more time for the lubricant in the pump bearings to be correctly distributed before the pump reaches high speed. Soft Start can reduce wear and increase the life of the pump.

Soft Start works by increasing the step curve of the startup frequency/speed, where the speed increases in different steps, giving about 15-45 minutes for the pump to reach the full speed ramp, depending on the size of the pump.

Soft Start is recommended for:
1. New pumps.

2. Pumps that did not spin or were on a shelf for 6-8 weeks or more. We recommend no more than 45 days.

3. Pumps that transitioned from one place to another, for example when a system is moved or shipped.

Soft Start can be enabled with the toggle button on the manual turbo pump control page. Toggle Soft Start and then start the pump. The turbo up to speed time delay setpoint is disabled when Soft Start is enabled as the pump takes more time to achieve full speed when the Soft Start function is enabled.

Note on extended tool idle time
If the turbo pump has been left off for an extended period of time the turbo pump must be rechanneled. The shelf life of all turbo molecular pumps is 10 months from the shipping date. Pumps that did not spin or have been on a shelf for more than 10 months must be sent back to Agilent for rechanneling. Rechanneling can be performed at Agilent facilities in Lexington, MA and Torino, Italy.

Chamber Pressure Gauge

The chamber pressure is read by a Brooks/Granville-Phillips® 390 Micro-Ion® vacuum gauge module attached to the chamber. The module contains three sensors including a heat gauge and a Micro-Ion® filament hot cathode sensor to measure high vacuum. The changeover between sensors / ranges is controlled by the electronics contained within the module. The gauge output from atmosphere to high vacuum is a 0-10 volt DC analog signal. The analog value is passed to the PLC through an analog card. A calculation is performed on the analog value in the PLC to derive the pressure in Torr. More information on the gauge module is included in the manufacturer's operation manual, which is included in the appendix of this manual.
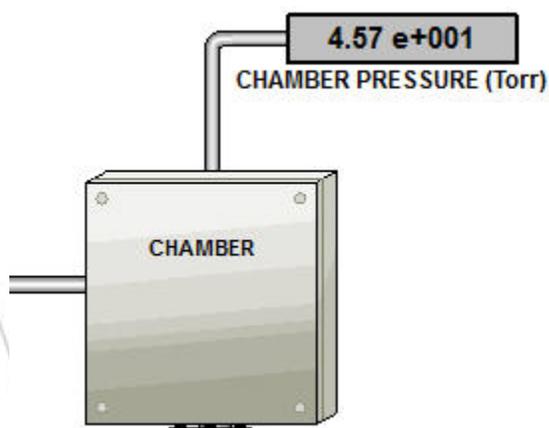
Clicking on the chamber pressure displays the window shown below.

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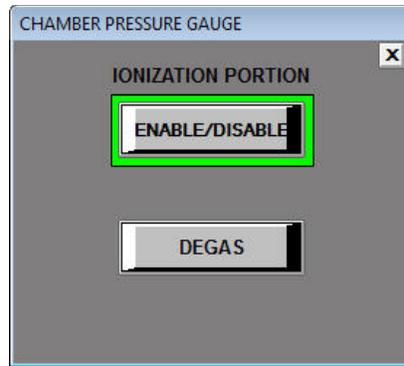
The degas button turns on the ion module filament degas. This cleans the filaments and provides more accurate pressure readings at lower pressures (less than 5.0×10^{-7} Torr). The degas function is only available if the user is logged in at the Supervisor level or higher. When degas is selected the gauge will automatically degas each of the two ion filaments for 1 minute each. The degas cycle ends after the two minute duration time has elapsed. During degas the pressure readings may fluctuate. Chamber pressure readings should be lower than 5.0×10^{-6} Torr before attempting to degas the filaments.   Degas is not selectable at pressures above 1.0×10^{-5} Torr.

For cryo pumped systems whenever the chamber gate valve is closed no matter what the pressure is in the chamber the ion portion of the gauge module is automatically disabled. This ensures the ion portion is not on for extended periods of time at high pressures where damage to the ionization filaments can occur. The user can click the enable/disable button to restore the ionization filament operation if they wish to perform a rate of rise test. When the gate valve is closed or the ionization portion has been disabled by the user a message is displayed above the gauge display to inform the user.

The ion portion is turned off for 7 seconds before the gate valve is opened or closed. This delay is also used before the chamber vent valve is opened. Manual control of the vent valve has the same feature.

The lowest pressure displayed will be the limit of the heat gauge in the mid -4 Torr range when the ion portion is off.

Source Detail and Shutter Control

This window allows for the testing, adjustment and manual operation of shutters (where applicable), substrate heating (where applicable) and substrate rotation (where applicable).

Shutter access is allowed as long as at least an operator level user is logged in to the control software. The Inficon override section of a shutter control allows the user to override the Inficon software control of the substrate shutter and keep the substrate shutter closed during the deposition phase for testing purposes. Click the 'Close' button to override Inficon and keep the shutter closed. The shutter will stay closed regardless of whether the Inficon software attempts to open it or not. 'Clicking the cancel button stops the override. Any sequence selection automatically closes all shutters.

The text in each black text box identifies the material at each location. The text can be modified by simply clicking on the red arrows to open an edit window. Information for the Inficon software such as source output and index numbers are noted here as well for designating which source to run in a deposition recipe.

The new tooling factor calculation is noted on this page for calculating tooling factors required in the Inficon deposition control software to ensure accurate thickness and rate measurement.

There are buttons to change the control path to the Radak source as well (where applicable).

Abort Button

The abort button can be used to stop any automatic sequence. Note that this will close all valves including the gate valve (where applicable), and stop any active deposition process. A confirmation dialog box will open if the button is clicked.
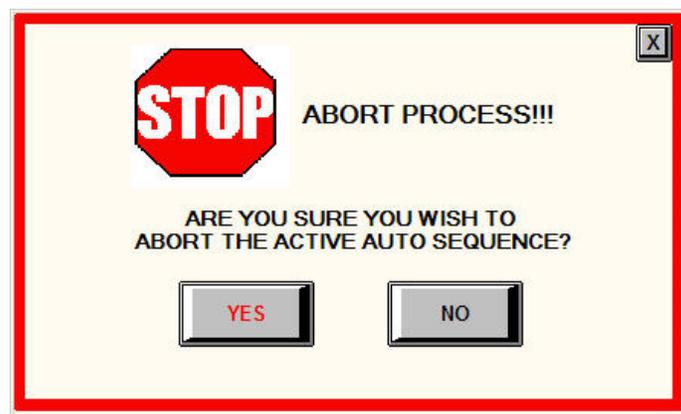
The X

The X at the bottom right side of the screen closes all windows that are open if the user has been operating the system in manual and has a number of windows open clicking the X will close all windows.

Data Logging

This feature allows the user to log system performance data to a file. The chamber pump down or rate of rise performance can be data logged to a file. Sampling rates are user selectable, as well as the file names and file locations.

Login / Logout / Change Password

Every time the SCADA software is opened the user is required to login. Click on the login button to display the login screen.
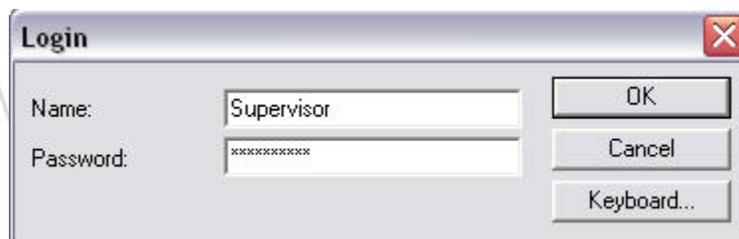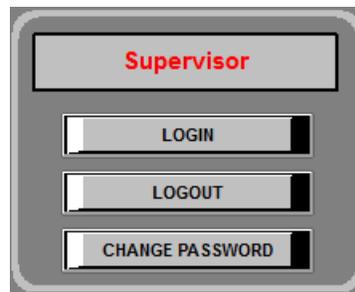
There are two levels of user allowed on the system. There are operators and supervisors. Operators do not have access to the manual controls. They can only operate the system using the automatic sequences.

Supervisors have access to all the system controls, and they can change operator passwords and add other operators. There is a special password required to change supervisor passwords or add supervisors. There is no need to logout unless you are a Supervisor and you want to leave the machine to an operator. System Default User names/passwords are Operator/Operator and Supervisor/Supervisor. The login is case sensitive.

Code Button

All PC controlled systems are equipped with an unlock code. Once full payment is received Angstrom Engineering will supply the code to input. After 6 months of use if no code has been entered the software locks and the tool cannot be used until the code is entered.