GRANVILLE-PHILLIPS®

VACUUM QUALITY MONITOR™

Quick Installation and Startup Guide for the

830 to 835 Vacuum Quality Monitor™ System Upgrade

For safety and proper 835 VQM® System operation, follow the steps below in the prescribed order. The Instruction Manual and Release Notes (including known issues) can be downloaded at: www.mksinst.com

Important System Ground Requirements

See the Hardware Installation Chapter of 835 VQM Instruction Manual (p/n 835000) for the complete requirements list.

The proper system electrical grounding procedure must be adhered to for proper 835 VQM System operation and personnel safety.

Verify that the vacuum port to which the MS Gauge is mounted is electrically grounded. It is essential for personnel safety as well as proper operation that the envelope of the MS Gauge be connected to a facility ground. If necessary, connect a ground wire to one of the flange mount bolts. Make sure the vacuum port to which the MS Gauge is mounted is properly connected to a known Earth ground.

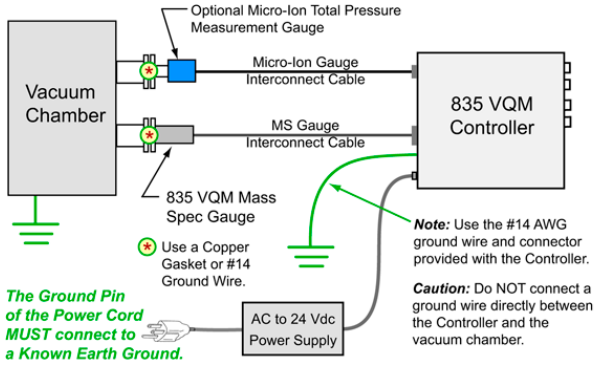
Maintain all exposed conductors at Earth ground. Be aware that an electrical discharge through a gas may couple dangerous high voltage directly to an ungrounded conductor. A person may be seriously injured or even killed by merely touching an exposed ungrounded conductor at high potential.

Connect the Controller to a facility ground using the #14 AWG ground wire and connector provided with the Controller.

Do NOT connect a ground wire directly between the Controller and the vacuum chamber.

Connect the power cord to a properly grounded outlet.

VQM System Grounding Diagram



Standard Components of 835 VQM System

1. Series 835 VQM Controller
2. VQM Viewer Application Software CD

Computer Requirements

Processor/Memory: Minimum: Intel® Core™ 2 Duo T7250 @ 2Ghz with 2.56GB of RAM or equivalent
Screen Resolution: Minimum: 1024 x 768 pixels, larger to take advantage of resizing
OS: Windows® 7 (32 or 64 bit) / Windows XP (32 bit) SP2
.NET 3.5 Framework SP1 (provided)
Disk space: Minimum 1.6 GB. (More needed for large log files.)
Note*: Minimum requirements are for one PC connected to one VQM Controller. Four or Eight core systems are recommended when driving multiple Controllers.*

1. Determine the MS Gauge Settings

With the 830 VQM Controller still connected, open the 830 Viewer Application, connect to the 830 Controller, go to the Tune Screen and go to the Advanced Display Mode.
Record the following settings:
Filament Emission: _____
Repeller Bias: _____
Exit Plate Bias: _____
EM Shield bias: _____
EM Bias: _____
RF Amplitude: _____

2. Vacuum Chamber Preparation

a. Pump down the vacuum chamber to $1x10^{-5}$ Torr or lower. See the Initial Operation Procedure in Section 8.3 of the Instruction Manual (p/n 835000) for the factory recommended Initial Pumpdown procedure.

3. Install the 835 VQM Controller

a. Disconnect the power and interconnect cables from the 830 Controller.

b. Mount the 835 Controller within reach of the existing interconnect cables.

c. Connect the cables: 1) Mass Spectrometer Gauge interconnect cable, 2) Micro-Ion Total Pressure Gauge (if used) interconnect cable, and 3) ground wire. See the System Grounding Diagram.

d. Connect the AC to 24 Vdc power supply to the Controller and an Earth grounded AC source.

4. Connect the VQM Controller to your Computer

a. Install the VQM Viewer Software: See Chapter 4 of the 835 VQM Instruction Manual or simply run the ***835 System Software Suite.exe*** application on the Installation CD**.** Follow the on-screen prompts.

b. Connect the Controller to the computer via the provided USB cable.

5. Initial Startup of the VQM System

Both Filament Outgassing and Electron Multiplier Preconditioning are recommended before the Mass Spectrometer Gauge is activated. See Chapter 8, Section 8.3, Initial Operation Procedure, of the VQM Instruction Manual (p/n 835000).

a. Pump down the vacuum chamber to $1x10^{-5}$ Torr or lower before turning ON the VQM Controller.

CAUTION: The MS Gauge filament may be damaged at system pressures higher than $1x10^{-5}$ Torr.

b. Press the Power button on the front of the VQM Controller to turn ON power to the Controller.

c. Open the 835 VQM Viewer Application by clicking on the 835 VQM.exe icon.

d. Click on the Connect icon to activate the connection between the computer and the 835 VQM System.

e. Perform the filament outgassing and electron multiplier preconditioning procedures as outlined in the Initial Operation Section, Chapter 8 of the Instruction Manual.

f. Go to the Settings screen and select 390 TPMK as the Pressure Source so the software recognizes the optional 390802 total pressure measurement gauge.

g. Be sure the system is stabilized at the normal process pressure before continuing.

h. Click the Auto Tune icon. If Auto Tune succeeds, the optimum settings for the attached gauge are stored in volatile memory in the VQM Controller. They can be stored in non-volatile memory after calibration, so select Continue Without Flashing at this time.

i. If conditions do not allow Auto Tune to succeed, manually enter the settings recorded in Step 1.

6. Adjusting Gain and Calibration

a. Select Scan on the Gauge Operating mode selector to begin MS scans (see Section 8.4.2 in Chapter 8 of the 835000 Instruction Manual).

b. On the Tune Screen select: Averaging Mode=Running and Avgs to Collect=25

c. Click on the Display Sector button right above the words “Controller Settings” and select Raw (nA)

d. Step the EM Bias voltage, in -20V increments, until the tallest peak in the mass spectrum reaches a 20 nA amplitude. Use the AUTOSCALE Y button to rescale the Y-axis scale each time the mass peaks become clipped.

e. Select a known peak in the mass spectrum (i.e. Water by entering 18 in the Mass Peak entry box). See Table 8-1 in the Instruction Manual. Use the Left and Right Calibrate Arrows (i.e. Top of Tuning Spectrum) to mass-shift the peak until the location window indicates the correct amu (18.01 for Water). This provides single gas mass-axis calibration for the 835 VQM System.

f. Click on the Store User button to save the optimized EM Bias and calibrated Mass Cal Factor to the User Settings.

g. The 835 VQM System is now ready to operate. See Section 8.4 in the Instruction Manual.

To assure maximum gauge lifetime: (1) Complete the recommended Filament Outgassing and Electron Multiplier Preconditioning procedures and (2) Turn the MS Gauge Off or to Standby when not in use. See the Initial Operation Section of the Instruction Manual for additional instructions.

7. Return the 830 Controller to Granville-Phillips

Please send the 830 VQM Controller to Granville-Phillips at:
6450 Dry Creek Parkway
Longmont, Colorado, 80503 USA

Customer Service/Support

For customer service within USA, 8 AM to 5 PM Mountain Time Zone, weekdays excluding holidays:

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