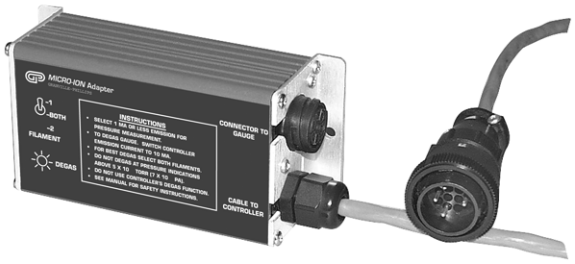
Micro-Ion® Gauge Adapter - Installation and Operating Instructions

For Catalog Numbers 355002, 355003, 355007, 355008



This Instruction Sheet applies only to Micro-Ion Gauge Adapter Catalog Numbers 355002, 355003, 355007, 355008 when used with the Granville-Phillips 355001 Micro-Ion Gauge, and a Series 303, 307, 330, 338, 340, or 350 Vacuum Gauge Controller.

Adapter Functions

The Micro-Ion Adapter:

- Allows direct plug-in operation of the Micro-Ion Gauge to specified Controllers.
- Protects the filament from being overpowered by limiting current from the Controller to 3 A maximum.
- Permits filament selection (filament 1, filament 2, or both.)
- Protects the grid from being overpowered by limiting the grid current from the Controller to 15 mA maximum.
- Automatically generates electron bombardment degas power when 10 mA emission current is sensed.
- Allows pressure measurement during degas.
- Indicates degas operation with an LED indicator.

Safety Instructions

Safety pays. Think before you act. Understand what you are going to do before proceeding. Read this instruction sheet. before installing, using, or servicing this equipment. If you have any doubts about how to use this equipment safely, contact MKS Instruments, Inc Customer Service at the location listed below.

WARNING: The possibility exists for harmful electrical shock. Ionization gauges are safe for use only if all exposed conductors on the gauge, the controller, and on the vacuum system are grounded. This is true for all ionization gauges regardless of style or manufacturer. Do not touch any gauge pins while the gauge is at vacuum or while the gauge is connected to a controller. All connections to the gauge pins should be fully covered by the gauge cable connector.

Installation Instructions

For best results, locate pressure gauges close to the point where the pressure is to be measured. Gas sources, long tubulation or other constrictions can cause the pressure in the gauge to be significantly higher than the pressure in the vacuum chamber being measured. If the gauge is placed near the pump, the pressure at that location may be considerably lower than in the rest of the system. If the gauge is placed near a gas inlet or source of outgasing, the pressure at that location may be much higher than in the rest of the system.

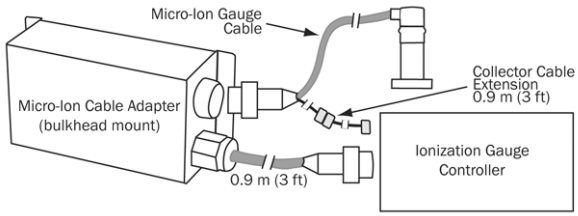
To minimize temperature effects, locate pressure gauges away from internal and external heat sources in a region where the ambient temperature is reasonably constant.

Avoid mounting the gauge near strong magnetic fields.

	Be aware that an electrical discharge through a gas may couple dangerous high voltage directly to an ungrounded conductor almost as effectively as would a copper wire connection. A person may be seriously injured or even killed by merely touching an exposed ungrounded conductor at high potential. This hazard is not peculiar to this product. All conductors in, on, or around the vacuum system that are exposed to potential high voltage electrical discharges must either be shielded at all times to protect personnel or must be connected to earth ground at all times. Verify that the vacuum port to which the Micro-Ion Gauge is mounted is electrically grounded. It is essential for personnel safety as well as proper operation that the envelope of the gauge be connected to a facility ground. Use a ground lug on a flange bolt if necessary.
	Finite Lifetime – After ten years of normal use or even non use, the electrical insulation in this product may become less effective at preventing electrical shock. Under certain environmental conditions which are beyond the manufacturer's control, some insulation material may deteriorate sooner. Therefore, periodically inspect all electrical insulation for cracks, crazing, or other signs of deterioration. Do not use if the electrical insulation has become unsafe.

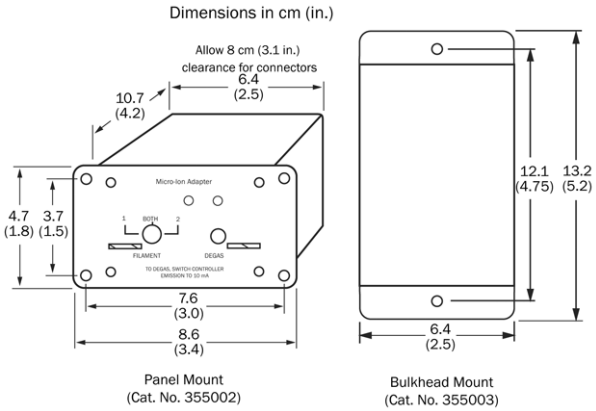
Adapter and Cable Installation

The Micro-Ion Cable Adapter will plug directly into Granville-Phillips Series 303, 307, 330, 338, 340, and 350 Controllers.



Cable Adapter Connections.

For safety and reliability reasons, no provisions have been made for connection to controllers other than those listed. For possible connections to other brands of controllers, contact MKS Instruments, Inc. Customer Service at the location listed below. The Adapter is designed to be used with the Granville-Phillips Micro-Ion Cable Assembly. This cable is prewired and ready to plug into the Micro-Ion Gauge.

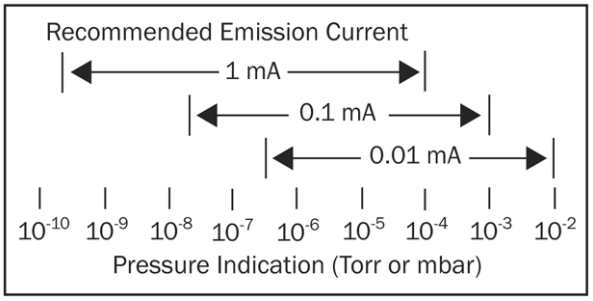


Cable Adapter Mounting Dimensions

Micro-Ion Gauge Operation

Emission Current

For pressure measurement, select an emission current on the gauge controller that is most appropriate for the application, but do not exceed 1 mA.



Recommended Emission Current Settings
on the Vacuum Gauge Controller.

Sensitivity

The pressure indication will be correct only if the sensitivity is set for the gas being measured. A different gas may give erroneous readings unless the sensitivity is again adjusted. Micro-Ion Gauge N_2 sensitivity is 20 Torr-1 (15 mbar-1, 0.15 Pa-1). Refer to your controller instruction manual for directions on adjustments for gauge sensitivity and gas type.

Degas

To degas the gauge, switch the controller emission current to 10 mA. For best degas results select both filaments using the switch on the Adapter. Do not use the controller's degas function. The yellow LED on the Adapter will illuminate when degas is activated. The Controller will continue to indicate pressure during degas.

A gauge that is in need of degas will increase its pressure indication when degas power is applied, and then begin to decrease. When the rate of decrease significantly slows down, degas should be terminated.

The Micro-Ion Gauge uses electron bombardment (EB) degassing of gauge electrodes, which is the most direct and efficient means to remove gas adsorbed on the internal surfaces of the gauge. High energy electrons striking the grid, heat the grid and help remove adsorbed gases. It is necessary to pump the desorbed gases from the gauge during degas. *It is not possible to degas the Micro-Ion Gauge by resistance (I2R) heating the grid.*

Degas should not be activated unless the Micro-Ion Gauge pressure indication is below 5×10^{-5} Torr (7×10^{-5} mbar, or 7×10^{-3} Pa). Degassing above this pressure is of little value and may cause pressure bursts that can cause an electrical gas discharge which can couple high voltage to the vacuum system hardware. ***Read the safety warnings on page 1.***

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