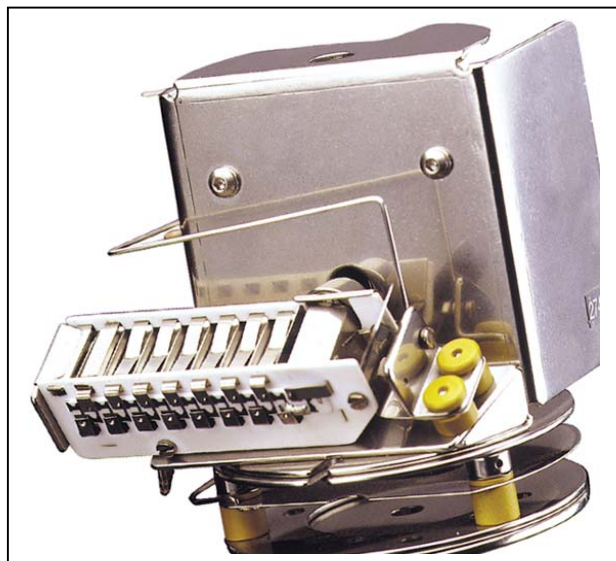


Highlights

- ETP Electron Multipliers

Inside

- Features and Benefits.
- What is it?
- Frequently Asked Questions.
- Who would use Electron Multipliers?



ETP Electron Multipliers

Features & Benefits:

- Optimized ion and electronic optics and unique dynode shapes for maximum performance
- Increased surface area for enhanced sensitivity and extended operational life
- Total compatibility with all major quadrupole, magnetic sector and TOF instruments
- Better overall performance than channel or continuous dynode multipliers

What is an Electron Multiplier?

An electron multiplier is used to *amplify* the signal produced by ions separated by the mass analyzer (e.g. quadrupole, ion trap, time-of-flight).

How do Electron Multipliers work?

Typically, the separated ions will strike a *conversion dynode* (not included in this part, and Restek does not sell these parts), which will produce secondary charged particles (in this case, electrons). These electrons are accelerated towards the *electron multiplier* where they will collide with the surface of the multiplier, creating more and more electrons with each collision, generating a gain from 10^4 - 10^8 in signal.

Mass spectrometry inherently creates very small signals, so some means of signal amplification is necessary.

Do the electron multipliers carry a warranty?

Yes, there is a 2 year **shelf life** if the unit is stored in the original sealed package.

Installation and Operation Tips

Care should be taken to minimize exposure of the multiplier to airborne particles such as dust or lint. When installing a multiplier leave it in its sealed plastic cover until you are ready to place it in the vacuum system. It is important to remember that the gain/voltage is returned to the default position prior to installing the new multiplier. If this is not done, the newly installed multiplier may give erroneous readings.

Installation and Operation Tips – What is the mount?

What is the mount that is included with the Agilent 5973 & 5975 GCMS (catalog #23074) and LC MSD (#23076) multipliers? The mount is the mechanical housing and multiplier module that is guaranteed to be plug compatible with the instrument and auto-tune functions will operate normally. Subsequent replacements require only the multiplier. No additional mount is required for the Agilent 5971 and 5972 instruments.

What storage recommendations can you offer?

If you need to store the multiplier after it has been removed from its original packaging, it should be kept in a dust free, dry environment. Ideally it should be stored in a glass dessicator containing Silica Gel.

Handling/Operating Tips

Store in the original packaging/container.

Handle only using powder-free gloves.

Do not apply power if multiplier has been contaminated by pump oil.

Insure all connections have been properly made.

Set power supply to lowest, or default, setting when installing a new multiplier.

Operate at the lowest voltage consistent with desired results.

Can the Multipliers be cleaned?

Yes, although cleaning is not recommended or necessary unless the multiplier has been contaminated. Multipliers may be cleaned using Heptane or another non-polar solvent. The detector may be immersed in the solvent in an ultrasonic bath. Make sure the detector is thoroughly dry before reinserting in your instrument.

Frequently Asked Questions.

Q What is the shelf-life of a Multiplier?

A Shelf-life is guaranteed for two years if stored in the unopened original packaging.

Q Why do I regularly have to increase the applied high voltage (autotune voltage) to maintain performance?

A This is normal for all types and brands of electron multipliers.

Over the life of a multiplier, the voltage applied to it will need to be increased regularly to maintain the gain (performance) of the multiplier. In general, the average rate of necessary voltage increase is greatest in the early months of the multiplier's life. If it has been 1-2 years since a user has had a new multiplier, they may forget this and be surprised when comparing the rate of voltage change of the previous multiplier (at the end of its life) with that of the new multiplier

Q Will my instrument operate the same with an ETP electron multiplier?

A Yes. Instrument auto-tune and analysis functions will be unaffected. Overall performance (i.e. sensitivity, etc.) will, in many cases, be improved.

Q What is the lifetime of a Multiplier?

A Operational lifetime will vary based on instrument, application, sample type and usage.

Trouble Shooting

Why did the multiplier auto-tune voltage suddenly jump by several hundred volts after several months of stable operation?

This is the typical symptom of a vacuum accident, where the multiplier voltage was left on during venting or where high pressure in the chamber has caused pump oil to backstream.

If the problem resulted from pump oil backstreaming onto the multiplier while no voltage was applied to the multiplier (and it was not used afterwards), then the multiplier can be cleaned in an Ultrasonic bath using a non-polar solvent (such as heptane. This may restore performance; otherwise a new multiplier must be purchased.

Trouble Shooting

Most Common Problem – Failure to reset power supply voltage to lowest or default level.

If I need additional trouble shooting assistance, what information should I provide?

Catalog Number

Serial Number

Date of Installation

Initial operating voltage

Final or current operating voltage

Detailed description of the issue

Who would use electron multipliers?

Any chromatographer using a GC or LC mass spectrometer.

Who are the competitors?

SGE-ETP

Burle

K&M

DeTech

What other products can be sold with Electron Multipliers?

All Mass Spec Supplies

What Literature is Available?

Electron Multiplier New Product Flier

International Version, catalog #GNFL1000-INT

Product Listing

Description	Qty	Cat #
Electron Multipliers for Agilent GC-MS and LC-MS		
For Agilent 5970 GC-MS	ea	23072
For Agilent 5971, 5972, GCD GC-MS	ea	23073
For Agilent 5973 & 5975 GC-MS (includes mount for initial installation)*†	ea	23074
For Agilent 5973 & 5975 GC-MS and LC-MSD (Replacement Multiplier)*†	ea	23075
For Agilent LC-MSD (includes mount for initial installation)*†	ea	23076
Electron Multipliers for Applied Biosystems (Sciex)		
For API 300, 3000 & 4000 Applied Biosystems	ea	23077

*Note: The electron multipliers have been specifically developed to retrofit the original manufacturer's equipment. The detector incorporates a modular design to facilitate ease of replacement and additional innovations intended to enhance performance. First time installation requires a mount which includes the mechanical housing. After initial installation, only the replacement electron multiplier is required.

†This unit is designed for use in the 5975, 5973 GC and the LC/MSD.

Other Multipliers for various instruments available upon request.