

# 14DM482 Low-noise HED Detector for Quadrupole GC-MS Instruments

## INTRODUCTION

The 14DM482 HED detector assembly is a high dynamic range detector for quadrupole GC-MS instruments. The assembly is designed so that the multiplier is a clip-in replacement unit that can be replaced in a few minutes with no tools required.

Three new concepts utilized in the 14DM482 lead to superior signal to noise performance:

- The ion trajectories are rotated through 270° onto the HED leading to a major reduction in noise from radiation and neutrals.
- An Einzel collimator efficiently transfers ions to the HED region through small diameter holes which minimize the passage of radiation and neutrals, further reducing noise.
- Ions strike the HED surface at a grazing angle, 60° from normal, increasing the secondary yield by up to X2 with a comparable increase in ion detection efficiency for high masses.

This detector includes a mount assembly incorporating the HED, which is permanently bolted to the instrument.

Electrical connections are:

- HED, via a 1mm diameter pin,
- Lens, via a 1mm diameter pin,
- Multiplier HV, via a 1mm diameter receptacle, and
- Output signal, via a 1mm diameter pin

Separate leads are required for these connections, and can be designed and manufactured by ETP as required.

ETP multipliers incorporate "ACTIVE FILM" materials in a discrete dynode multiplier design to achieve exceptionally sensitive ion detection with long operating life and excellent stability in air.

## 14DM482 PRELIMINARY DETECTOR SPECIFICATIONS\*

Input Aperture	6 mm dia. (nominal)
Voltage Divider: Resistance Total	10.2 MΩ (nominal)
Zener Total	133 V (nominal)
Number of Dynodes	17
Maximum Recommended Bias Voltage	3500 V
Maximum Sustained Output Current for Linear Operation	35 μA
Recommended Lens Voltage	±600 V
Maximum HED Voltage	±10 kV
Maximum Dark Counts (-HV @ -2500 V, HED @ -10 kV)	< 20 counts per minute (>2 mV)
Maximum Analog Dark Current (-HV @ -2500 V, HED @ -10 kV)	<1 pA
Maximum Operating Pressure	10 <sup>-4</sup> Torr

\* Specifications subject to change.

