

# De Tech

*Detector Technology, Inc.*

## “The EverLast™” Series 1000

Committed  
to Excellence

*“Longer Life With A  
Long Term Savings”*



**Series 1000 “The EverLast™” Continuous Dynode Electron Multiplier**  
Channel Electron Multipliers (CEMs) are traditionally used in mass spectrometers and surface science instruments. Over ten years ago Detector Technology introduced the first product of its extended life CEM series. The Series 1000, also known as “The EverLast”, is currently the multiplier of choice with several Original Equipment Manufacturers because of its long life and wide dynamic range.

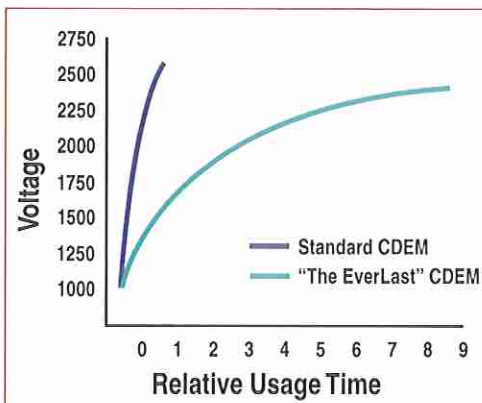


**FIGURE 1**  
Standard CDEM



**FIGURE 2**  
“The EverLast” CDEM

**Theory** In a contamination free environment the lifetime of a CEM has been found to depend upon the number of electron impacts per unit surface area. If these impacts are spread over a larger surface area the CEM will have a longer lifetime. “The EverLast” uses a rectangular active inner dimension, increasing the surface area when compared to the standard CEM, see Figures 1 and 2. When the CEM is active the electron cloud is spread over the entire rectangle, therefore, less electron impacts occur in each unit surface area.



**FIGURE 3**  
Extended Lifetime Detector  
(Life Comparison to Standard Detector)

**Testing** Detector Technology has performed extensive testing on the Series 1000 product line. Figure 3 shows the results of these tests. The tests performed were in a controlled, clean environment under conditions which could be repeated easily for comparison. A high input current was used to accelerate the testing process, and the CEMs were run at a gain of  $10^5$ . Under these conditions, “The EverLast” CEM lifetime averaged seven times greater than that of a standard CEM. The tests performed also addressed other important characteristics of the CEMs, such as noise, gain vs. voltage, and detection efficiency. These characteristics were found to be identical for “The EverLast” and the standard CEMs.

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*Prices & Delivery Quoted  
via the E-mail*

*Please contact the Detech  
Sales Department for specific  
application information regarding  
Series 1000 multipliers.*

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[WWW.DETECHINC.COM](http://WWW.DETECHINC.COM)

## Characteristic Curves

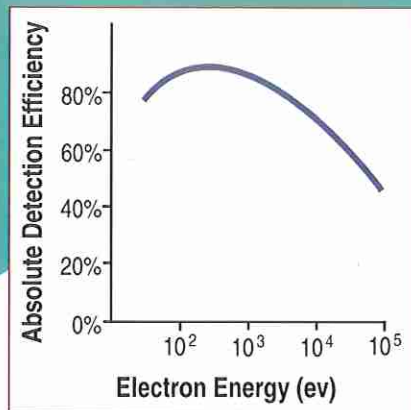


FIGURE 3

Absolute Detection - Efficiency vs Energy

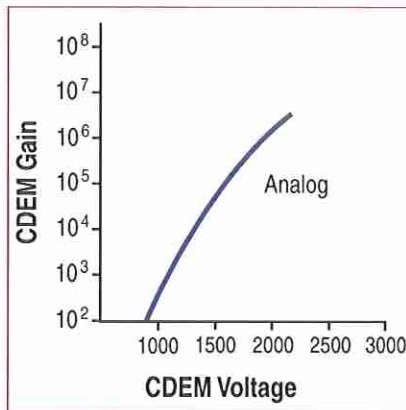
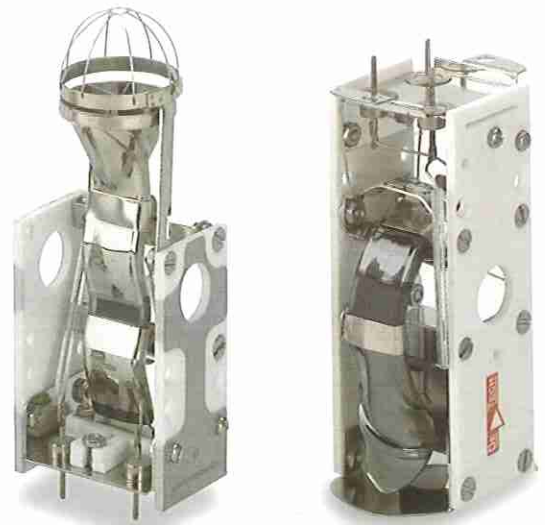


FIGURE 4

Typical Gain Curve



## Copper Beryllium Multiplier Upgrade



BEFORE



AFTER

## Benefits Over Cube

- ▶ Air Stable
- ▶ Low Noise
- ▶ Low Cost
- ▶ Wide Dynamic Range
- ▶ 24 Hour Turnaround

*DeTech offers a low cost solution to replacing your existing copper beryllium multipliers. Please consult DeTech Sales for more details.*

**Series 1000 Application Specifications** These are General Series 1000 Specifications and may be adjusted depending on specific model numbers. Consult DeTech Engineering for questions about specific model numbers.

Our Electron multipliers are manufactured from a lead glass tube. The input of the CDEM is funneled to a size which covers the required input aperture area. Standard funnels are round, but rectangular funnels can be manufactured to specification.

Each electron multiplier is tested before shipment to ensure its performance is within specification. Each multiplier is delivered with a quality control test report indicating its model number, serial number, test voltage, gain at that voltage, bias current at test voltage, and date of shipment.

Model Number	General Series 1000
Maximum bake temperature	350°C
Maximum operating temperature	200°C
Mode of operation	Analog
Typical gain at 2200 volts	>1 X 10 <sup>7</sup>
Typical bias current	44 Micro Amps
Resistance	30 - 300 MΩ
Maximum linear output current	< 10% of Bias
Dark current	< 1 X 10 <sup>-12</sup> Amps
Typical voltage for gain of 10 <sup>5</sup>	1500 Volts
Operating lifetime	4 times typical CDEM



ISO 9002 Certificate No. 10099

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