

E-Beam Evaporator

Electron beam evaporation is employed to provide a vapor stream from materials commonly difficult to evaporate with standard thermal techniques. An energetic electron beam is targeted onto the source material which has the effect of increasing the temperature. There is no intrinsic limit to the temperature which can be attained using this method, in contrast to conventional radiative or indirect resistive heating processes.

Mini electron beam evaporators are employed to give maximum control of the evaporation rate at low fluxes and, importantly, to minimize contamination of the vapor stream for sensitive application areas such as surface science or thin-film doping. The construction of *mini* e-beam evaporators should therefore be aimed at maximizing the evaporation control and minimizing contamination.



EV Series - Construction

The MANTIS *EV-Series mini* e-beam evaporators are constructed from high-quality, strictly UHV-compatible materials. The mounting hearth for the source material(s) and the surrounding evaporation head are highly-efficiently cooled, ensuring a rapid heat transfer to the cooling water. This allows all but the emission filament and the source material to remain at near ambient temperature, ensuring negligible outgassing during operation.



The sources are all equipped *as standard* with flux monitoring plates. These allow precise determination of the flux emerging from the source, and hence give the user excellent control of the deposition rate.

MANTIS *QUAD-EV* evaporators use independent filaments, flux-monitoring plates and high-voltage connections to allow each material to be evaporated independently of the other three. In the *QUAD-EV-C* source, this is employed to allow independent co-evaporation of up to four materials. Since each material uses an independent high-voltage connection, the evaporator will still function if there is a short-circuit due to accidental overheating of material in one of the pockets.

The power supplies are of a rugged construction, enabling seamless operation without shut-down or malfunction during discharges between the filament and source material (as can happen during initial operation after pump-down).

All evaporators can be equipped with either rods or crucibles interchangeably. The choice of which of the two is used depends on the rate required, the material capacity required and the properties of the source material. Please contact us for recommendations.

EV Series - Specifications

Model	M-EV	Quad-EV-S	Quad-EV-C	Quad-EV-HP
Max. Power	200 W	200/400 W	200/400 W	500W
Pockets	1	4	4	4
Flux monitoring	Standard	Standard	Standard	Standard
In-vacuum Diameter	34 mm	34 mm	34 mm	57mm
Mounting Flange	NW35CF (2 3/4")	NW35CF (2 3/4")	NW35CF (2 3/4")	NW63CF (4 1/2")
In-vacuum Length* (Standard)	200 mm	200 mm	200 mm	200mm
Cooling	Water	Water	Water	Water

* Or to customer requirement. Minimum in-vacuum length is 100mm.

NOTE: Specifications subject to change without prior notification.