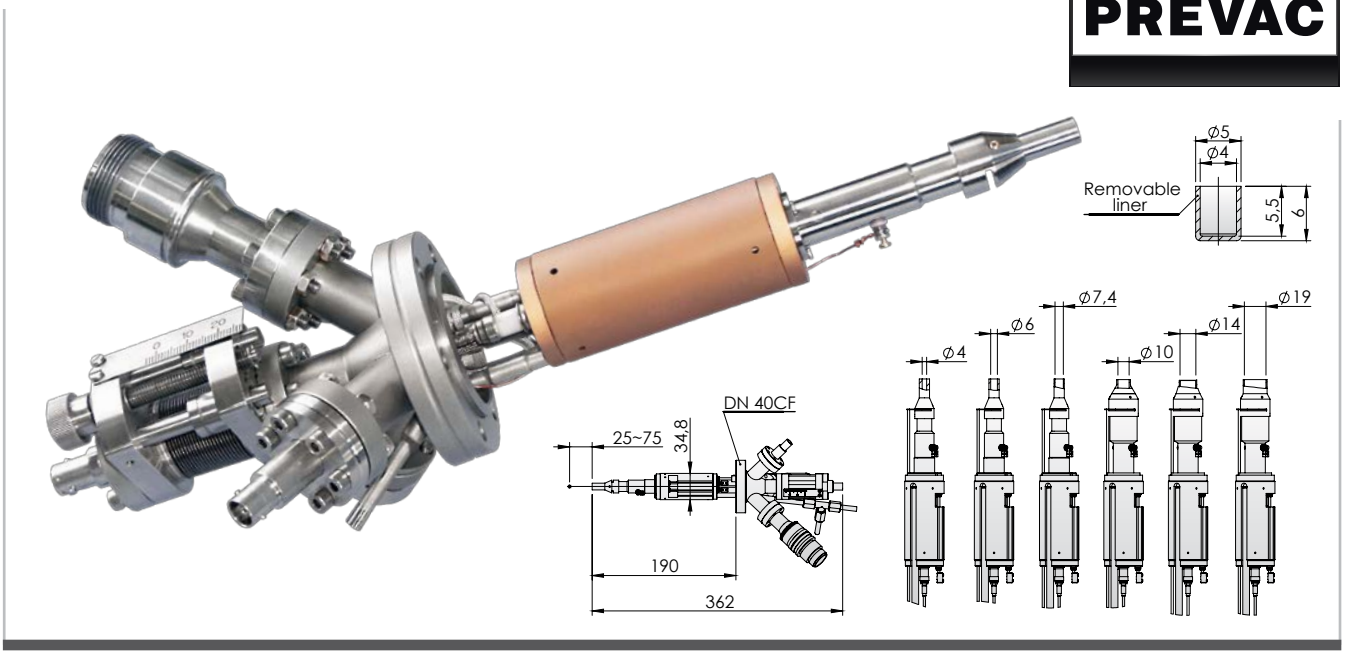
EBV 40A1

ELECTRON BEAM EVAPORATOR



DESCRIPTION

The electron beam evaporator EBV 40A1 is designed for ultra-pure sub-monolayer and multilayer thin film growth by molecular beam epitaxy. The precisely defined evaporant beam means highly uniform deposition on the sample, the deposition area being determined by the distance from the E-beam evaporator to the sample and the choice of one of the easily exchangeable exit apertures. The electron beam evaporator EBV 40A1 is configured with choice of manual or automatic shutter. Custom insertion length 190 - 345 mm (other on request).

FEATURES

- Manual or electro-pneumatic shutter, integrated flux monitor
- W/Th-filament for evaporation from rod material or from small conductable crucible
- Wide range of exchangeable exit apertures
- Integral water cooling
- Suitable for various materials
- Unique high reliability design
- Extremely high power densities

OPTIONS

- Customised insertion length
- With or without integrated manual/electro-pneumatic shutter
- Linear shift
- Crucibles

TECHNICAL DATA

Mounting flange	DN 40 CF (rotatable)
Temperature range (for evaporated materials)	160 °C - 2300 °C (3300 °C for molybdenum connector)
Filament current	typically 1.8 - 2.2 A, max 2.3 A
Evaporating rod diameter	2 mm standard (other on request); step 2 mm, wire feed 25 mm, wire length 43 mm
Water cooling (required)	water flow > 0.5 l/min temperature: 20 - 30 °C max pressure: 6 bar
Exit aperture diameters	set 1: ID 4, ID 6, ID 7.4 (standard) set 2: ID 10, ID 14, ID 19
Type of shutter	manual or pneumatic
Power	▪ 50 W for high vapor pressure materials ▪ up to 200 W for crucibles and thick wires
Energy range	1 - 1500 eV
Cathode type	thoriated tungsten
Crucible type (option)	Knudsen cell type made of: Mo, W, liner PBN, Al2O3
Crucibles volume	0.07 ml
Evaporated materials	all typical materials according to crucible type
Others	▪ flux regulation via ion current incl. electrode, feedthrough, display unit and regulator ▪ rear-loading evaporant
Insertion length	min. 190 mm (other on request); OD: 34.8 mm
Deposition area	dependent on working distance (e.g. 6 mm for distance 25 mm - ID 4, 33 mm for distance 75 mm - ID 19)
Working distance	25 - 75 mm (optimum)
Bakeout temp.	up to 250 °C
Working pressure	< 10^{-5} mbar

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EBV40A-PS

EBV POWER SUPPLY

DESCRIPTION

A key feature of the EBV40A is the integrated flux monitor. Evaporant flux is indirectly monitored via the measured ion current, providing accurate flux adjustment and faster deposition rate control. The ion collector is contained within the beam exit column. At a given electron emission current and beam energy the measured ion flux measured is directly proportional to the flux of evaporated atoms. The EBV40A-PS is equipped with built-in PID controller which stabilizes evaporant flux at the desired level. The unit can be operated in AUTO mode (with ion flux control) or MANUAL mode (without ion flux control). The EBV40A-PS can be supplied as a full width 19" rack mounting unit (3U height) or free standing. Unit can be remotely controlled via one of available interfaces.

APPLICATION

The EBV40A-PS power supply drives the EBV40A Electron Beam Evaporator for ultra-pure sub-monolayer and multilayer growth in MBE applications.

EBV CONTROL APPLICATION

TECHNICAL DATA

Supply voltage	110 V or 230 V, 50/60 Hz (specify at order) (power consumption max 600 W)
Anode voltage range (U_{eng})	0 - 1500 eV at max 200 mA; resolution < 1V; ripple < 0.5_{PP}
Cathode current range (I_{fil})	0 - 2.3 A, resolution < 0.1 A, ripple < 0.05 A
Ion current range (Flux)	1.00 nA - 99.9 mA
Max emission currrent	200 mA
Temperature monitor	0 - 75 °C, temperature of water-cooled copper cylinder
Flux current regulator	flux current controlled with internal regulator
Operating modes	auto/manual
Timer	dual mode timer 0 s - 99 h 59 min
Communication interface* (option)	RS232/485/422, USB
User interface	large LCD graphics display, functions keys & digital encoder
Interface languages	English, Polish
Dimensions	483 × 133 × 380 mm (W×H×D), 19" rack mountable
Weight (approx.)	9 kg

* Only one comms interface can be used at any one time and is chosen at time of order. However, this may be swapped/interchanged with any other comms interface at any future date via simple rear panel plug and play swap, without having to access the internals of the unit.

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