

# ELECTROSTATIC BEAM SWEEP SYSTEM



## Features

- Three output voltage ranges
- Sweep voltage up to 20 kV
- Reliable and easy operation
- Crystal locked scan frequency ratio

## General description

The HVEE beam sweep system is designed for a very uniform implantation over a large target area. The system enhances an implantation dose non-uniformity of less than 1%. This unique beam sweep system is ideal for all applications that require a sweep of 3 MeV of double charged ions. The sweep system has proven reliable after several years of use in HVEE ion implantation applications at several customers, without periodic adjustments or maintenance.

The HVEE beam sweep system consists of two sets of electrostatic plates, two vertical and two horizontal. The two sets of deflection plates are positioned sequentially to ensure a high uniformity. The high voltage for each set of plates is supplied by separate beam amplifiers, which are controlled by a beam sweep generator. The beam sweep generator supplies the scan frequency signals, which consist of two triangle wave shaped crystal locked scan frequencies to ensure a correct scanning pattern of the wafer. The beam sweep system contains controls for horizontal and vertical amplitude and sweep centering as well as the automatic tracking system. This automatic tracking system can be used to correct the control voltages of the triplet lenses, sweep system and electrostatic switcher with the accelerator voltage. The high output voltage for horizontal and vertical deflection is supplied by two separate beam amplifiers. Three different output voltage ranges are available.

## HIGH VOLTAGE ENGINEERING

Particle Accelerators Systems for the scientific, educational and industrial research communities



# HIGH VOLTAGE ENGINEERING EUROPA B.V.

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## SPECIFICATIONS

Output voltage ranges	: 0 - 2.5 kV, 0 - 5 kV or 0 - 10 kV (peak to peak)
Sweep voltage plate to plate	: 0 - 2.5 kV, 0 - 5 kV or 0 - 10 kV (peak to peak)
Output voltage offset	: -1 to +1kV DC
Output frequency	: 1015 Hz (horizontal) & 1036 Hz (vertical); crystal locked frequency ratio
Sweep linearity dV/dt	: within 1% of scan, within 2% peak to peak
Dose non-uniformity	: a dose non-uniformity of less than 1% is measured at implantation lines In combination with this beam sweep system
Output load	: max. 150 pF
Automatic tracking system	: outputs for: <ul style="list-style-type: none"><li>· Beam sweep system</li><li>· (Quadrupole) triplet lens</li><li>· Neutral particle trap</li></ul>
Power requirements	: 230V/ 200mA 50/60Hz for 2.5 and 5kV type : 230V/ 400mA 50/60 Hz for 10kV type
Dimensions	: Beam sweep generator: Width for 19" rack mounting, height 88 mm, depth 245 mm  Amplifier cabinets: Width for 19" rack mounting, height 134 mm, depth 305 mm  Beam sweep scanner: 8" tube diameter, standard equipped with 250ISO flanges. (Other flange types on request)

Length of standard beamlines from entrance to target in mm								
Terminal voltage		Output voltage	Wafer diameter					
			1"	2"	3"	100mm	125mm	150mm
500kV	Single ended	2.5 kV	2900	2900	2900	3100	3500	3900
1MV	Tandem (q=2)	5 kV	3300	3300	3300	3500	4100	4700
2MV	Tandem (q=2)	5 kV	3800	3800	4300	5000	5700	6500
2MV	Tandem (q=2)	10 kV	n.a.	n.a.	3800	4000	4300	4600
3MV	Tandem (q=2)	5 kV	3800	4800	5800	6800	8300	9800
3MV	Tandem (q=2)	10 kV	n.a.	3800	4000	4300	4800	5300

## Options

1. Pumping port
2. Aperture plate with provisions for water-cooling for beam scanners
3. Customized beamline lengths

## Sales offices in Europe and Japan

EBSS-3

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