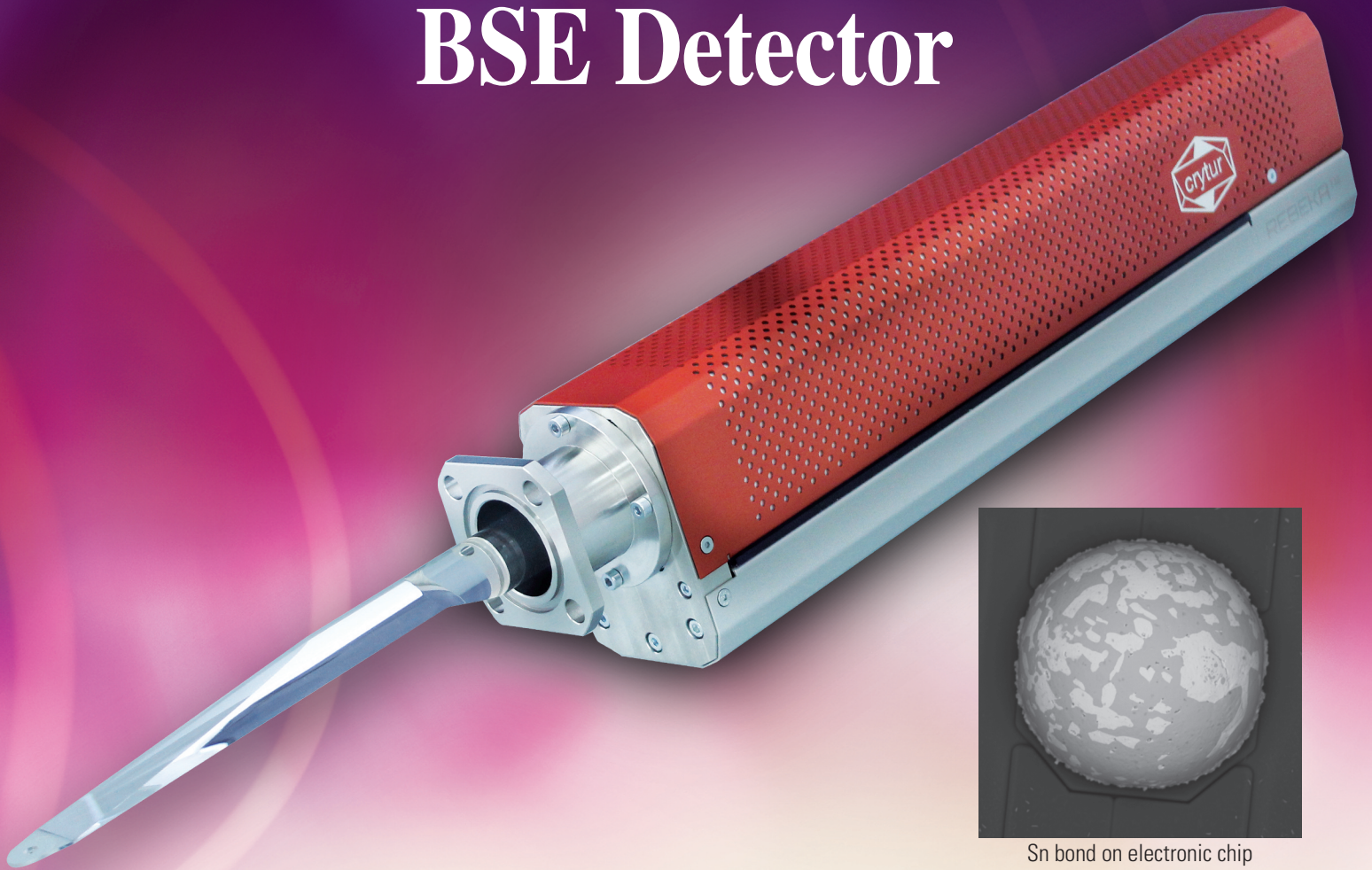


# REBEKA BSE Detector



Sn bond on electronic chip

Upgrade your SEM with a retractable BSE detector.

REBEKA™ combines the best available single crystal scintillators manufactured by Crytur with precise high-vacuum mechanics and readout electronics in one ready-to-use package.

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## REBEKA BSE Detector for SEM



The Rebeka Backscatter detector is a scintillator based detection unit for scattered electrons which includes YAG:Ce scintillator and light-guide (Sensor Unit), vacuum optical feed-through, bellows based vacuum retraction mechanism (Mechanical Unit), photomultiplier (PMT) and Electronics Control Unit. The scintillator is a YAG:Ce single crystal with a conductive ITO coating. The scintillating light is detected by the PMT module. The retractable vacuum mechanics is motorized. The REBEKA can be fitted to most SEMs.

### System Features

#### Sensor Unit:

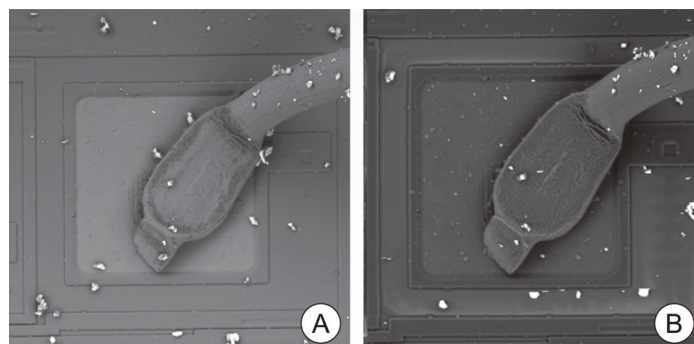
- YAG:Ce (CRY 18) scintillator with optimized efficiency and minimized afterglow.
- Exclusive CRYTUR LOW-ENERGY COATING™ sensitive down to 0.2 keV
- Exponential decay time: 45 ns with 30 photons/keV
- Outer diameter: 15 mm
- Inner hole diameter: 3/2/1.5 or 1 mm
- Sensitivity: down to 1pA beam current

#### Mechanical Unit:

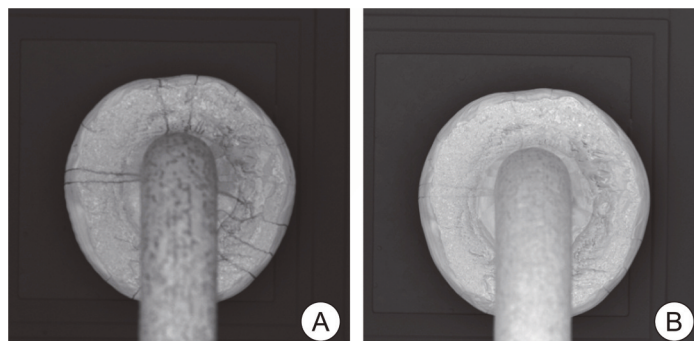
- Dimensions: 406 x 100 x 72 mm
- Bellows design for ultimate vacuum
- 150 mm motorized retraction
- +/- 2 mm fine adjustment in x, y, z axis
- 0.01 mm repeatability
- Flange adapted to customer's SEM system

#### Electronics Control Package:

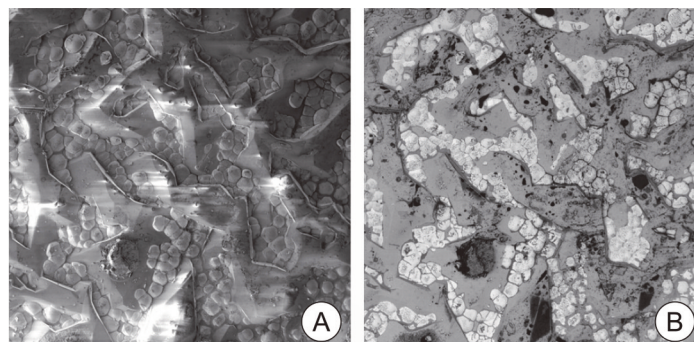
- Dimensions 210 x 180 x 80 mm
- Supply 230/110 V
- 3 noise filters optimized for different scanning speeds
- 50 MHz bandwidth
- Internal source 0-1200 V for PMT HV
- Output video signal -1/+1V (-5/+5V)
- Full remote software control



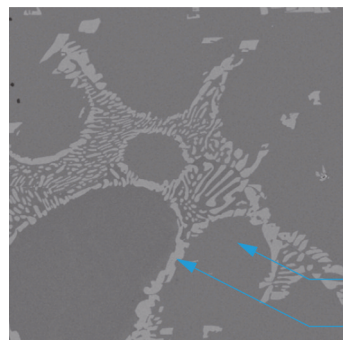
**Sample:** IC bonds - Al bond on Si wafer with partial contamination.  
**A** BSE 3kV | 80pA | 320  $\mu$ s/pxl **B** BSE 3kV | 10pA | 100  $\mu$ s/pxl



**Sample:** IC bonds - Au bond on metallized Si wafer  
**A** BSE 2kV | 20pA | 320  $\mu$ s/pxl **B** BSE 5kV | 20pA | 100  $\mu$ s/pxl



**Sample:** phases of  $\text{Lu}_2\text{O}_3$ ,  $\text{Lu}_3\text{Al}_5\text{O}_{12}$  and  $\text{Zr}_2\text{O}$   
**A** SE 2kV | 80pA | 100  $\mu$ s/pxl **B** BSE 3kV | 80pA | 100  $\mu$ s/pxl



**Sample:** Fe-Al-Nb alloy  
 BSE 10kV | 8100pA | 100  $\mu$ s/pxl  
**FE-25AL-0.25Nb**  
**FE-20.8AL-27.1Nb**



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