The eFlash™ has been designed to fulfill all user expectations regarding fast EBSD mapping. Due to recent advances in speed and sensitivity of CCD cameras, texture and grain size measurements with EBSD are now possible in a matter of minutes to a few hours. Bruker’s eFlash™ EBSD detector is the fastest on the market as it can acquire up to 930 patterns/s (pps) when used in the 8x8 binning mode. In 4x4 binning mode the eFlash™ can deliver up to 630 pps. Due to the higher pattern resolution, in this mode the EBSD system will deliver orientations with an unequaled accuracy of 0.5 degrees even at highest acquisition speeds.

The unique in-situ tilt option allows the user to shift the fluorescent screen vertically to cover a very large working distance (WD) range. This permits every measurement to be made at optimum pattern center values and with best diffraction signal distribution. For instance EBSD measurements at extremely high WDs on very large samples can be performed without compromising pattern or indexing quality. The detector tilt angle is electronically read and included in the pattern center calibration algorithm.

Moreover, the eFlash™ features a motorized high precision guiding system. The software controlled insertion/retraction allows speeds of up to 10 mm/s. This feature can be very useful for repetitive jobs like 3D measurements.

Touch panels on both sides of the detector provide manual control, if required.

The detector head of the eFlash™ has a slim and tapered design to enable working at small WDs as well as short detector-to-sample distances. The eFlash™ has been designed to work in combination with the XFlash® EDS detectors. When a high throughput EDS detector is used in combination with eFlash™ the system can acquire up to 930 points/s (EBSD pattern + EDS spectrum for each point).

Bruker’s latest hardware development is an optional imaging system of 2 backscattered electron (BSE) and 3 forescattered electron (FSE) detectors arranged above and below the screen, respectively (eFlash™+). While the BSE system delivers density contrast images, the FSE system generates color coded images displaying grain orientation contrast in ultra high detail. Existing eFlash™ detectors can be upgraded to eFlash™+.

The detector motion is integrated in a multi-level safety architecture. First of all, a blue LED indicator shows the current screen position. Should for any reason the screen come into contact with the sample or the stage, an integrated touch sensor triggers immediate retraction of the detector, so that severe damage is avoided. Screens can be exchanged easily by the user.
## Technical Specifications

- **Native resolution**: 640 x 480 pixels
- **Pixel binning and speed**: 210 patterns/s, 2 x 2: 380 patterns/s, 4 x 4: 630 patterns/s, 8 x 8: 930 patterns/s

### High end 12 bit digital CCD camera
- 34 x 25.5 mm phosphor screen, user replaceable

### High vacuum compatible detector with welded bellows, all electronics and moving parts integrated in case
- Detector in situ tiltable by max. ±4.5 degrees
- Motorized insertion mechanism, maximum speed 10 mm/s, positioning accuracy better than 0.01 mm, maximum insertion distance of 250 mm, software or manual control through a push button panel on both detector sides

### LED position indicator

### Safety mechanism with audio and visual alarm and auto-retract function

### Tapered detector nose to provide optimum conditions for simultaneous acquisition of EDS and EBSD data

### Digital Gigabit Ethernet output (no frame grabber required)

### Adaptable to most SEMs, minimum port diameter of 48 mm required

### Option: BSE/FSE imaging system with 2 BSE diodes above the screen and 3 FSE diodes below the screen ([eFlash](#)); existing eFlash detectors are upgradable at the customer’s site

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**Bruker Nano GmbH**

Berlin · Germany

Phone +49 (30) 670990-0
Fax +49 (30) 670990-30
info.bna@bruker.com

[www.bruker.com/quantax-ebsd](http://www.bruker.com/quantax-ebsd)