



***eFlash*¹⁰⁰⁰ – High performance EBSD detector**

The ***eFlash*¹⁰⁰⁰** 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*¹⁰⁰⁰** EBSD detector is the fastest on the market as it can acquire up to 850 patterns/s (pps) when used in the 8x8 binning mode. In 4x4 binning mode the ***eFlash*¹⁰⁰⁰** can deliver up to 630 pps. Due to the higher pattern resolution, in this mode the EBSD system will deliver orientations with an unequalled 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 ***eFlash*¹⁰⁰⁰** 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 ***eFlash*¹⁰⁰⁰** has a slim and tapered design to enable working at small WDs as well as short detector-to-sample distances. The ***eFlash*¹⁰⁰⁰** has been designed to work in combination with the XFlash® EDS detectors. When a high throughput EDS detector is used in combination with ***eFlash*¹⁰⁰⁰** the system can acquire up to 520 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*¹⁰⁰⁰⁺**). 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*¹⁰⁰⁰** detectors can be upgraded to ***eFlash*¹⁰⁰⁰⁺**.

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 native resolution: 210 patterns/s, 2 x 2: 380 patterns/s, 4 x 4: 630 patterns/s,
8 x 8: 850 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 0.1 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 (**eFlash¹⁰⁰⁰⁺**); existing **eFlash¹⁰⁰⁰** detectors are upgradable at the customer's site



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