

Fast Kinetics Mode

Technical overview

Fast Kinetics Acquisition Mode can be used to acquire bursts of data with submicrosecond time resolution. The iXon family is configured to make available not only the rows of the image area, but also rows under the frame transfer mask for storage of acquired data prior to readout. The 'overclocked' vertical shift speeds of the iXon renders it ideal for extremely fast temporal resolution in Fast Kinetics Mode.

Fast Kinetics is a special read out mode of iXon Ultra and iXon3 that uses the actual sensor as a temporary storage medium and allows an extremely fast sequence of images to be captured. The capture sequence is illustrated here:

Step 1: both the Image and Storage areas of the sensor are fully cleaned out (the Keep Clean Cycle)

Step 2: the Keep Clean Cycle stops and the acquisition begins. The image builds up on the illuminated section of the sensor.

Step 3: the sensor remains in this state until the exposure time has elapsed, at which point the complete sensor is clocked vertically by the number of rows specified by the user.

Steps 4 and 5: the process is continued until the number of images stored equals the series length set by the user. The iXon is set up to utilize the entire area of the frame transfer mask for additional signal storage.

Step 6: at this point the sequence moves into the readout phase by first vertically shifting the first image to the bottom row of the sensor. The sensor is then read out in the standard method.

Points to consider for Fast Kinetics Mode:

- Light MUST only be allowed to fall on the specified sub-area. Light falling anywhere else will contaminate the data.
- The maximum number of images in the sequence is set by the position of the sub-area, the height of the sub-area and the number of rows in the CCD (Image and Storage area)
- There are no Keep Cleans during the acquisition sequence.
- The industry fastest vertical shift speeds of the iXon3 enables fastest time resolution with minimal vertical smearing.
- A range of internal trigger and external trigger options are available for Fast Kinetics Readout.

The Fast Kinetics Mode capability of the iXon Ultra and iXon3 renders it uniquely suited to microsecond order kinetic measurements, facilitated by rapid vertical shifts and extensive on-chip storage areas.

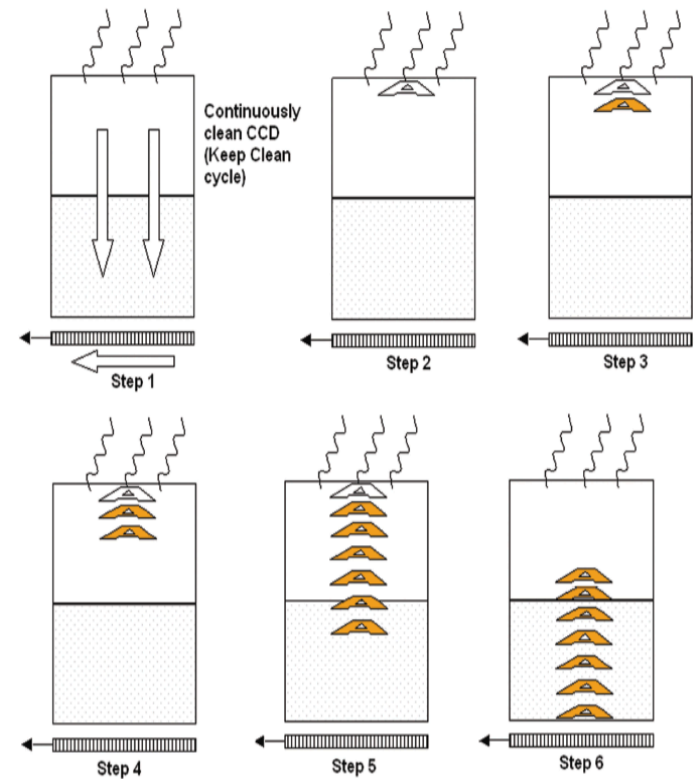


Figure 1 - Illustration showing Fast Kinetics Mode capture sequence of the iXon