



Falcon 4M60 and 4M30 Addendum: New Snapshot Modes - Revision 05 and higher

This document supplements the Falcon 4M60 and 4M30 User's Manual (03-32-10121). It describes the new Snapshot Modes with useful timing diagrams. All cameras that are Revision 05 or higher now have Snapshot Mode #1 enabled as their default setting. Snapshot Mode #1 is the recommended setting by DALSA because it produces the best quality images.

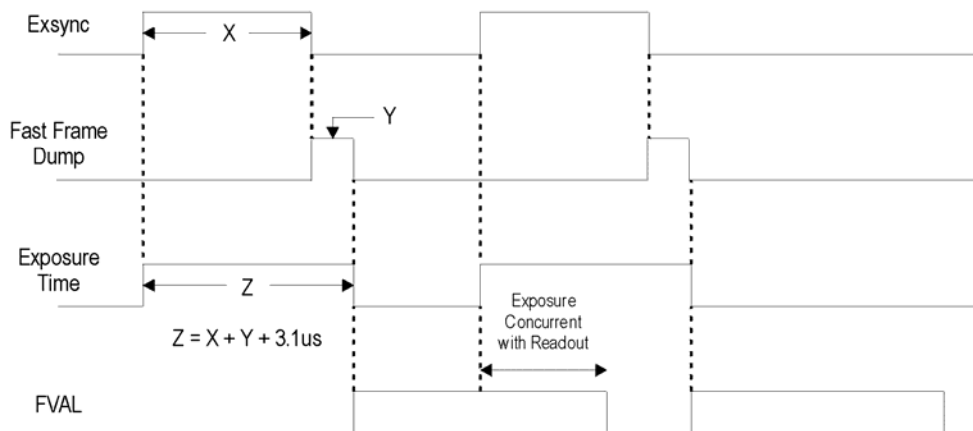
What is Snapshot Mode?

The Falcon 4M60 and Falcon 4M30 revision 05 cameras include a new feature called Snapshot Mode #1. Snapshot Mode #1 allows the camera to produce clean images when intervals between Exsyncs are large (>200ms). Revision 04 and lower cameras suffered because the first image out of the camera after a long pause (>200ms) would show elevated dark offset levels, FPN and hot pixels. Revision 05 corrects this problem when Snapshot Modes are enabled.

By altering the internal timing, Snapshot Mode #1 performs a fast clearing of a frame concurrently with integration. Thus, any dark current that caused elevated dark offset levels, FPN or hot pixels, is cleared from the sensor prior to readout. The end result is that the camera produces quality first images every time.

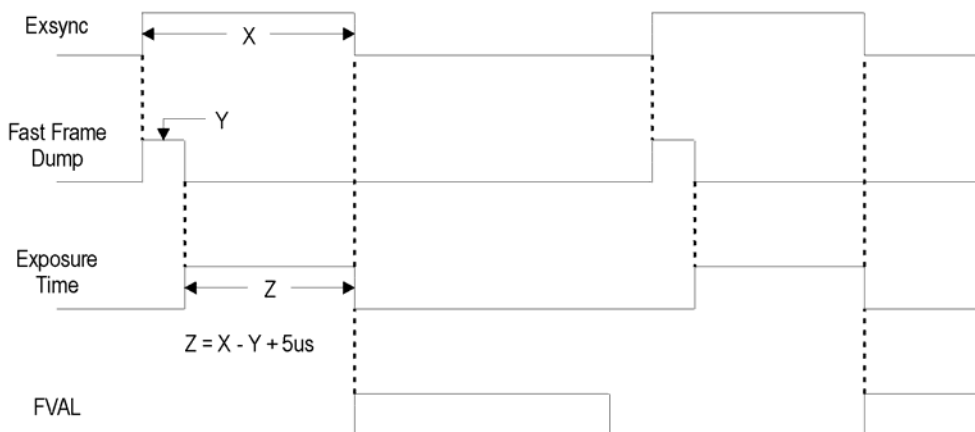
With Snapshot Mode #1, please note that the timing of Exsync with respect to the integration time has changed. Figure #1, illustrates Snapshot Mode #1 timing. The difference is that the Integration Time, Z , is now equal to the Exsync high time, X , plus the time it takes to clear the image, Y (plus 3.1us of additional overhead). The total time to clear the frame is Y (approximately 500us). Therefore, the minimum integration time in Snapshot Mode #1 is $Y + 3.1us$.

Snapshot Mode 1 Exposure Concurrent with Readout is Allowed



If having a minimum integration time of about 500us is not acceptable, the next revision of the camera (after revision 05) will include Snapshot Mode #2, which allows for integration times as low as 10us at the expense of concurrent integration and readout. Therefore, it is recommended to only use Snapshot Mode #2 if your integration time must be below 500us. This is also the reason why Snapshot Mode #1 is the default mode. Figure #2 shows the timing operation of Snapshot Mode #2. Notice, with Snapshot Mode #2 there is a delay of Y between the rise of integration and when exposure begins.

Snapshot Mode 2 Exposure Concurrent with Readout is NOT Allowed



Determining the Y parameter

As mentioned the Y parameter is around 500us. The Y parameter depends upon the number of rows used, whether the camera outputs at 80MHz or 65MHz, and whether the camera being used is in 2 tap mode (Falcon 4M30) or 4 tap mode (Falcon 4M60). To obtain the Y parameter, execute the 'gcp' command. The camera should respond and state:

"Frame Dump Time: 487.5us".

The 487.5us used here represents the Y parameter for the factory settings of the Falcon 4M60.