DALSA

User's Supplement

HS-82-04K80-00-R

The HS-82-04K80-00-R camera is a TDI camera, designed based upon the standard HS-80-08K80-00-R camera. It hosts a sensor with 4K pixels, 14 um × 14 um pixel pitch and 48 stages. The camera can achieve a line rate over 100 kHz, much higher than that of the standard HS-80-08K80-00-R camera. The HS-82-04K80-00-R camera inherits the same feature set as the HS-80-08K80-00-R camera, with the exception of the features highlighted in this document.

This document supplements the Piranha HS-xx Camera User's Manual (03-032-10095-15), outlining the differences between the HS-80-08K80-00-R camera and the HS-82-04K80-00-R camera.

Camera Highlights / Features

- 4096 pixels, 14µm x 14µm pixel pitch

- 4 or 8 taps, bidirectional TDI

- Up to 640 megapixels/second throughput

- Over 100 kHz line rate

- 6 independently stage-selectable Time Delay and Integration (TDI) imaging regions for remarkable user-controlled sensitivity

Software Commands

Mnemonic	Syntax	Parameters	Description
Stage Select	**stg**	**i**	Sets the number of TDI stages. Allowable values are: **8**, **16**, **24**, **32**, **40**, **48** (default)
Set Binning Vertical	**sbv**	**m**	Sets the vertical binning value. Available values are **1** to **4**
Set Sync Frequency	**ssf**	**i**	Set the frame rate to a value from: TDI: **3499.87 – 111111** Area: **1 – 9017.13**

Vertical Binning (SBV)

Binning increases the camera's light sensitivity by decreasing horizontal and/or vertical resolution — the charge collected by adjacent pixels is added together. Binning is also useful for increasing frame rate (vertical binning) or increasing the pixel pitch.

The default binning setting (1x1) in HS-82-04K80-00-R camera is essentially equivalent to performing 2x2 binning in standard HS-80-08K80-00-R camera. Horizontal binning is achieved by binning two adjacent columns together during the VCCD to HCCD transfer while vertical binning is achieved by transferring two VCCD rows into the enlarged HCCD prior to horizontal transfers. This difference translates the 1x - 8x binning capability of HS-80-08K80-00-R camera to 1x - 4x binning in the HS-82-04K80-00-R camera.

Stage Selection (STG)

Sensitivity level of a camera can be adjusted by setting the number of CCD integration stages. For such purpose, standard HS-80-08K80-00-R camera has six different allowable settings: 16, 32, 48, 64, 80 and 96. With modifications to the binning setup, the HS-82-04K80-00-R camera retains this feature of the standard camera, but the number of stages is halved (8, 16, 24, 32, 40 and 48) to reflect such change.

Line Rate / Frame Rate (SSF)

Camera's line / frame rate can be generated internally through the software command ssf or set externally with an EXSYNC signal (CC1). With an enlarged HCCD, behaving the same way as performing 2x horizontal binning on a standard HS-80-08K80-00-R camera, the number of pixels to be clocked by the sensor is halved in the HS-82-04K80-00-R camera compared to the HS-80-08K80-00-R camera. This enables the HS-82-04K80-00-R camera to achieve a higher line rate of over 100 kHz, compared to 68610.6 Hz of the HS-80-08K80-00-R camera.