
NSLS-II CSX Beamline Docs Documentation

Release 0.1

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CONTENTS

1	CSX-1 (23-ID-1) Beamline Documentation	3
1.1	Fast CCD Detector	3
2	Indices and tables	5
3	Downloads	7
4	Indices and tables	9

Contents:

- Pixel Size: 30 μm x 30 μm
- Active Area: 1920 pixels (column) x 960 pixels (row)
- 192 super columns = 192 outputs (480 rows x 10 columns)
- Back illuminated
- 250 μm - 350 μm thickness
- Full well : ~900k e^- per pixel
- Sensitivity : 6 e^- / ADU for 8x gain (max gain)
- Pixel readout time: 500 μs
- Digitization time: 2 μs at 120 Hz
- 100 Hz maximum data collection

1.1.2 Data Format

In treating the raw CCD data from the FastCCD there are a few important considerations related to the multi-gain behaviour of the fCRIC amplifier and digitizer. The raw 16 bit values that are recorded in the data file follow the *16 Bit fCRIC Data Format* shown below with the two gain bits following the *fCRIC Gain Setting*.

Table 1.1: 16 Bit fCRIC Data Format

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
G1	G0	ERR	D12	D11	D10	D09	D08	D07	D06	D05	D04	D03	D02	D01	D00

Table 1.2: fCRIC Gain Setting

G1	G0	Gain	Pre-factor
0	0	x8	x1
1	0	x2	x4
1	1	x1	x8

Here the two most significant bits record the gain setting for the encoded value. The least significant 13 bits hold the measured analogue value. The actual value is therefore related to the measured value by:

$$A_{\text{corr}} = G(A_{\text{meas}} - O)$$

where A_{corr} is the corrected intensity, A_{meas} is the measured value by the ADC, G is the gain of the ADC and O is the bias offset

1.1.3 Useful Links

- [LBNL Fast CCD Site](#)
- [csxtools python analysis routines](#)
- [libcin low level c driver](#)
- [areaDetector Driver](#)

INDICES AND TABLES

- `genindex`
- `modindex`
- `search`

DOWNLOADS

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