


# g-2 modified DAQ updates

- [Manual created for DAQ](#) usage hosted on github
  - Living document
- Meinberg card no longer needed
  - “Master” triggers replaced by FC7 internal trigger count
- Current rate limitations at UKY:
  - ~ 10kHz event rate
  - ~ 120 MB/s uncompressed data rate
  - Other programs can cause slowdown on some system
- CentOS7 reached EOL June 2024
  - Migrate to ALMA9 Linux when possible

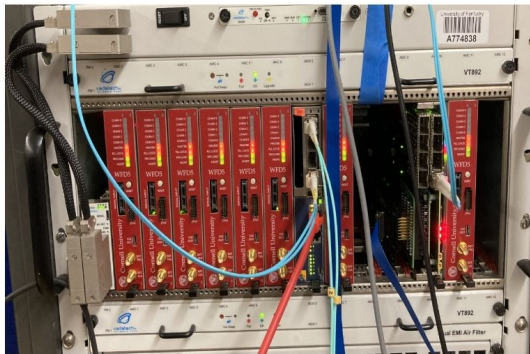
 g-2 modified DAQ Manual

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Welcome to the g-2 Modified DAQ Manual

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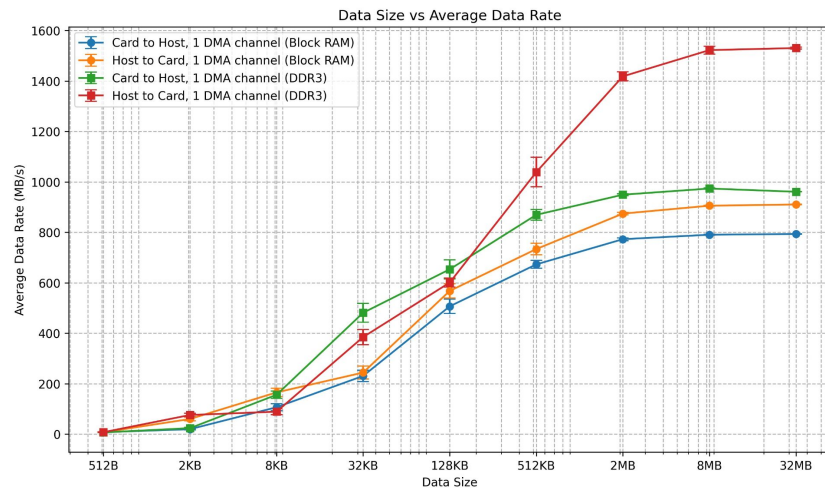
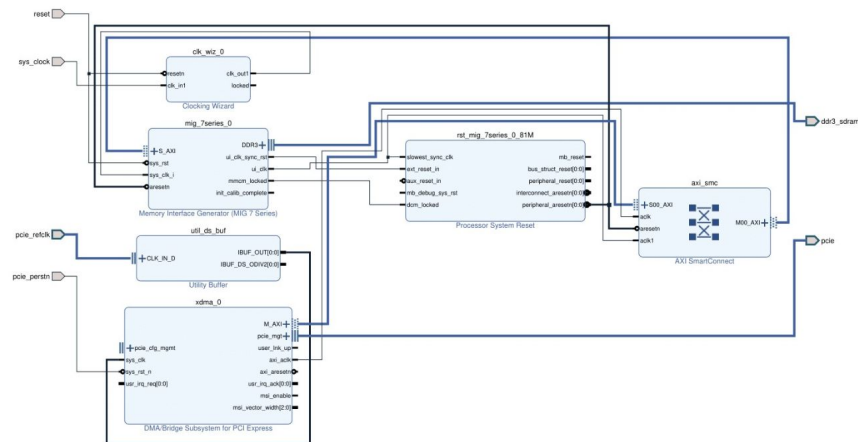


The purpose of this manual is to aid users with setup, usage, and debugging of the g-2 modified data acquisition (DAQ) system. This DAQ's purpose is to aid with various test stands across the PIONEER collaboration. Most topics are simplified to only include information needed for operating this DAQ. Some external links are provided for additional, generalized information.

Many of the guides on this webpage are thorough, as they are aimed to give solutions to problems I've encountered. However, every system is different; there may be some additional

# PIONEER DAQ Updates

- Improvements in transfer speed with RAM change (Block RAM → DDR3)
- Working on C++ library for reading and writing via PCIe DMA
  - Will work for Xilinx XDMA IP core
  - May need adapting for PIONEER electronics



# Nalu Scientific HDSoc chip DAQ (NaluDAQ)

- ATAR readout uses Nalu Scientific HDSoc chip
  - Have python package for readout already made
  - [Examples here](#)
- Integrate into midas with a python frontend
- Rate tested python frontends
  - Max data rate ~90MB/s (per frontend, not concurrent with max event rate)
  - Max event rate ~10kHz (per frontend, not concurrent with max data rate)

### Run Status

Run 58  
Running  
Stop Pause

Start: Fri Sep 6 16:09:27 2024  
Alarms: On

Running time: 0h00m07s  
runStatusSequencer

Data dir: /data/ssd/simdaq\_data/

1725653367 16:09:27.530 2024/09/06 [mhttpd,INFO] Run #58 started

### Equipment

| Equipment +             | Status           | Events | Events[/s] | Data[MB/s] |
|-------------------------|------------------|--------|------------|------------|
| Data Simulator          | Frontend stopped | 0      | 0.0        | 0.000      |
| Python Data Simulator   | Running          | 1745   | 476.0      | 92.987     |
| MyPolledEquipment       | Frontend stopped | 1481   | 0.0        | 0.000      |
| Python Data Simulator 2 | Running          | 1880   | 475.2      | 92.830     |

### Logging Channels

| Channel          | Events   | MB written | Compr.  | Disk Level |
|------------------|----------|------------|---------|------------|
| #0: run00057.mid | 0        | 0.000      | 0.0%    | 12.5%      |
| Lazy Label       | Progress | File Name  | # Files | Total      |

### Clients

mserver [localhost] mhttpd [localhost] Logger [localhost]

DataSimulator-Python [localhost] DataSimulator-Python1 [localhost]