NSLS2 Motorcontrollers and motion applications

Oksana Ivashkevych, 3 June 2019
Standards and deviations

• NSLS2 standardizes on Geobrick-LV-NSLS-II.
  • Units in production since 2012, low failure rates
  • Maintenance performed: changed air filters.
  • Newer units with hardware changes and possibly new components fails noticeably more.

• Several Power Pmacs (custom fly scan, controlling AC motor with custom interface)

• Few Newport XPS, vendor insisted, and beamline scientist brought from NSLS.
• Couple dozen FMB MCS-8, partner beamlines delivered in full by FMB, adopted old NSLS controllers.

• Piezo controllers: SmarAct MSC, Smarpod, PI (E621, E625, E712, E517, ECC100, E873), Autocube, Newfocus picomotors Npoint.
Recent Additions

• EZ4 AXIS from All Motion

  • For the compact size, in a tight space end station.

• Schneider Lexium integrated drive (controller on motor),

  • mandated by beamline controls review in 2018 to introduce a simple motorcontroller solution.
  • intend to gather enough operational reliability data before making it an alternate standard.
  • for small <~ 2 A motors
Software, EPICS IOCs

• Most on Debian 7
• Built using Debian packages
  • Base 3.14
• Model 3 driver
• Older version of pmac from
  https://github.com/epicsdeb/pmacasyn [pmacutil, pmaccoord]
  • This version is not in sync with pmac repo
  • There is a new pmac from Diamond
• CSS GUI
• Bluesky(https://nsls-ii.github.io/bluesky/) data collection interface.
Scans

• Step scan is done via bluesky
  • Move motor,
  • wait till the move is done DMOV
  • Trigger detector

• Flyscans also handled from bluesky.
  • There is no uniform hardware and software implementation
  • No difference from bluesky
Fly scans

• No standard
• Strong interest from beamlines.

• One custom solution with Power Pmac, piezo stack, and customized electronics.
• Using Zebra for triggering detectors and encoder capture

• Interested to know other sites solutions.