FIRE

Routine Use and Maintenance

Observer Controls

- Instrument Mode (Binary, Echelle or Prism)
- Exposure time
- Slit (choice of 8 + pinhole + dark slide)
- Lamps (Arc + 2 internal flats)
- Readout mode
  - Single CDS
  - Fowler 2, 4, 8, 16
  - Sample up-the-ramp
- Gain mode (more later)
- Filenames, etc
- Telescope offsets from acquisition camera


FIRE COMMAND CENTER


Fire-Control
Exposure
ExpTime 1.0
000
ReadMode Double
Gain High
ExpType Quartz1
Slit 0.5
Disperser Prism
Mirror In
Lamp Quartz1
Loop-Sequence
Go
Loops 1
00
Run# 1
Object FireStarter
test
Macro
Execute
File default
Abort
Line
Pause
Create
Dither
Calibration
Disk(s)
20%
n/a

Computing Interface

- All instrument mechanical, temperature control mastered by host pele (main Mac Mini)
- 2 onboard PCs to handle SIDECAR electronics control (WinXP required)
  - 1 each for spectrograph, acquisition detectors
  - Currently in standalone operation
  - Run SIDECAR IDE + IDL / HxRG acquisition software
  - Intent to control HxRG via TCP/IP so that XP machines can be autonomous slaves to pele
- Observer VNC's into pele, behind firewall from control room

Gain Modes

- High gain mode (sensitivity)
  - 1.23 e-/DN
  - ADC saturates at 30-50% of pixel full well
- Low gain mode (dynamic range)
  - 3.84 e-/DN
  - ADC digitizes 100% of pixel full well
- Some dynamic range compromised to keep noise low on ADCs, could offer a 3rd mode, similar to high gain with slightly more range, but higher noise.

Instrument Maintenance

- Daily routine
  - No cryogen servicing required
  - No interchangeable parts
  - No pre-run configuration
  - Instrument specialist monitors vitals
    - Internal and detector temperature (observer workstation)
    - Cryocooler He pressure, coolant flow and pressure (at compressor location)
    - Check focus and/or noise (observer workstation)
    - Monitor UPS battery status (compressor location)

Instrument Maintenance

- Occasional requirements
  - Connect/disconnect cryocooler lines
  - Recharge compressor He lines (kit provided)
  - Replace lamp bulbs (spare bulbs provided)
  - Motor servicing (spare drivers provided)
  - Pump down / cooling
  - Warmup

All serial communication, motor control, temperature control uses identical hardware and nearly identical software as the FourStar IR mosaic imager for observatory compatibility and ease of maintenance/staff training

Maintenance Restrictions

- Only US citizens service H2RGs, SIDECARs
- Rule of thumb:
  - Outside the dewar? Servicable by staff
  - Inside the dewar? Instrument team only.
- Magellan staff will be trained to perform slow warmup/cooldowns, and lifting on/off the telescope