1.3m MkIII Installation Procedure
Last Updated: 04/18/07 Steven Magee

Prerequisites

This procedure is used when installing the MKIII instrument to the 1.3m telescope Multiple Instrument System (MIS). Instrument rotator needs to face North.

Equipment Needed

- Canned air.
- Allen wrenches.
- Adjustable wrench.

Hardware Installation

Pump the cryostat until the vacuum stabilizes and then add liquid nitrogen. See separate procedure on pumping cryostats.

Remove the MKIII from its storage box in the 1.3m dome and place onto the hydraulic table. Remove the slit cover on the MkIII and dust off with canned air. Check that the rotator is in the North position, guider camera should be facing North. Check which guider lens is installed by looking through the Multiple Instrument System (MIS).

Remove the MKIII slit cover and dust off the slit with canned air. Bolt the MKIII on to the 1.3m telescope Multiple Instrument System (MIS), with the focus adjuster to the North.
It should look like this when attached to the Multiple Instrument System (MIS).

Dust off the optics on the MkIII with canned air prior to attaching the tilt plate.

Attach the tilt plate to the MkIII with the micrometer facing East.

Attach the detector electronics facing North. Use the two bolts on the tilt plate to attach it. Bolt on the detector power supply if necessary to the side of the telescope.
Push the slit viewing mirror into the beam. (The hand shows location of the knob in the picture)

Remove three of the four detector mountings, leaving the fourth loose. Remove the detector cover plate and dust off the detector window with canned air. Mount the detector to the tilt plate by sliding it under the one remaining mount. Attach the other three mounts with the electronics connections facing west. Rotate the detector to the alignment marks before tightening the mounts.

The detector has four clamps like this that hold it into position. Make sure to attach the clamps as shown. This picture shows the detector roughly aligned using the marks on the tilt plate and the detector housing.

Change out the grism if necessary: Loosen the two center set screws either side of the grism. Remove the grism access hatch and attach the grism removal handle. Remove the old grism and install the new one with the ball handle flush with the side of the instrument. Tighten the set screws and attach the cover plate.
Connect the shutter mechanism. From the shutter connection on the telescope - green wire to black jack, white wire to blue jack. From the CCD controller – negative side of BNC cable to the yellow jack on the shutter drive unit. Power on the shutter controller and test the shutter for opening and closing. Leave the switch in the closed position and power off.

Make sure that the CCD power supply is off then cable up the detector system. It has mains power to the power supply (blue box in photo). A signal cable runs from the power supply to the controller (gold box in photo). Two cables connect the controller to the detector – connect the small connection first. The controller connects to the control room using fiber optics (orange cable in photo), make sure that the red colored connections match. Strain relief cables. Turn on CCD Power supply.

Now balance the telescope according to the balance long which is kept in the dome control console top draw. Adjust both vertical weights to 300 as shown on the counters.

At the telescope base:
Add 1 long and 1 short weight in position #2.
Add 1 long and ½ short on North bolt in position #5.

The base weights should look like this when done.
Using the RA weight controls on the side of the telescope, drive the RA counter balance weights until the counter reads 820.

The RA weights should look like this when in the correct position.

Drive the telescope down to the North until it points to the second conduit up from the dome base – be careful as the telescope can coast a long way. Raise the hydraulic platform all the way – be careful not to drive it into the telescope. Add 6 small weights in the standard position on the secondary. Lower the platform and drive the telescope back to zenith.

Only change the guider lens if the wrong lens is installed: Turn off power to the guider camera at the Fairchild power supply (Silver box at top of photo).

Wash your hands before dusting off the 85mm lens. Install the 85mm guider camera lens at the widest aperture of f1.8 and with the focus set in between infinity and the next marking down.
Change the camera cabling over in the control room to include the digital video integrator and manually adjust the camera for the correct rotation on the guider camera screen. Tighten up the guider camera.

Manually adjust the slit until it is in the middle of the camera display.

Top off the cryostat with liquid nitrogen.

The MkIII should look like this when it is finished.

Make sure both monitors are connected and reboot mcgraw. Now bring up the software in the control room following the instructions below.
Software Installation

- Log into mcgraw
- From the background menu, select “Telescope control – XTCS”.
- From the background menu, select “Telescope control – XMIS”.
- On both the XTCS and XMIS displays click on initialize.
- In the XMIS display, click on “Preset – Slit”.
- From the background menu, select “Data acquisition – ccdcom”.
- In the ccdcom window that pops up, type “ccdcom”.
- In the ccdcom window, type “dfwilbur” to download the detector software to the wilbur detector. If another detector is used, type “df<detector name>” to download the correct software.
- In the ccdcom window, type “ut init” to initialize the CCD detector board.
- Click on the IRAF icon to bring up IRAF.
- Click on the DS9 icon to bring up DS9.
- Both of the above can also be brought up from the background menu on the Data Acquisition menu.
- In an xterm, type “telconfig” and follow the prompts.
- In an xterm, type “ccdconfig” and follow the prompts.
- In the ccdcom window, type “?” will list all commands.
- In the ccdcom window, type “sf” to set up the CCD and follow the prompts. (For Templeton detector: Binning of columns = 1, binning of rows = 1, number of columns to skip = 300, number of rows to skip = 0, number of columns to read = 300, number of rows to read = 10, number of bias overclock to read = 0)
- Click on the lamps in the MIS gui and this will bring up the comparison lamp gui. Turn on the neon lamp.
- In the ccdcom window, type “et 0.5” to set up for a 0.5 second exposure.
- In the ccdcom window, type “go” to take the exposure.
- In IRAF, change to the current image directory and type “disp<filename>” to see the image.
- If the spectrum is not aligned with the CCD, rotate the detector a little and repeat the exposure.
- Once aligned, tighten up the CCD mounts.
- Put the guider probe to slit.
- Check that the slit viewing optics are in.
- Put the camera selector to guider.
- Set the camera selector voltage gain to about 1 volt.
- Focus using the guider focus hand paddle (to the left of the guide monitor).
- Keep the DVI integration time below 0.5 second where possible.
- When in focus some scratches may be visible on the slit plate.
- Turn off the flat lamp and put Retrocam to out.
- Turn guider off.