SCALES

Pocket Guide v0.2
10/27/25

Imager

Modes:
Regular Imaging
Non-Redundant Mask
Zernike Wavefront Sensor
Pupil Imaging

Broad-Band Filters:

Band	Range (μm)
Y	0.97-1.07
J	1.17-1.33
H	1.49-1.78
CH4s	1.53-1.66
Kp	1.95-2.29
Ks	1.99-2.30
K	2.03-2.36
Lp	3.43-4.13
Ms	4.55-4.79

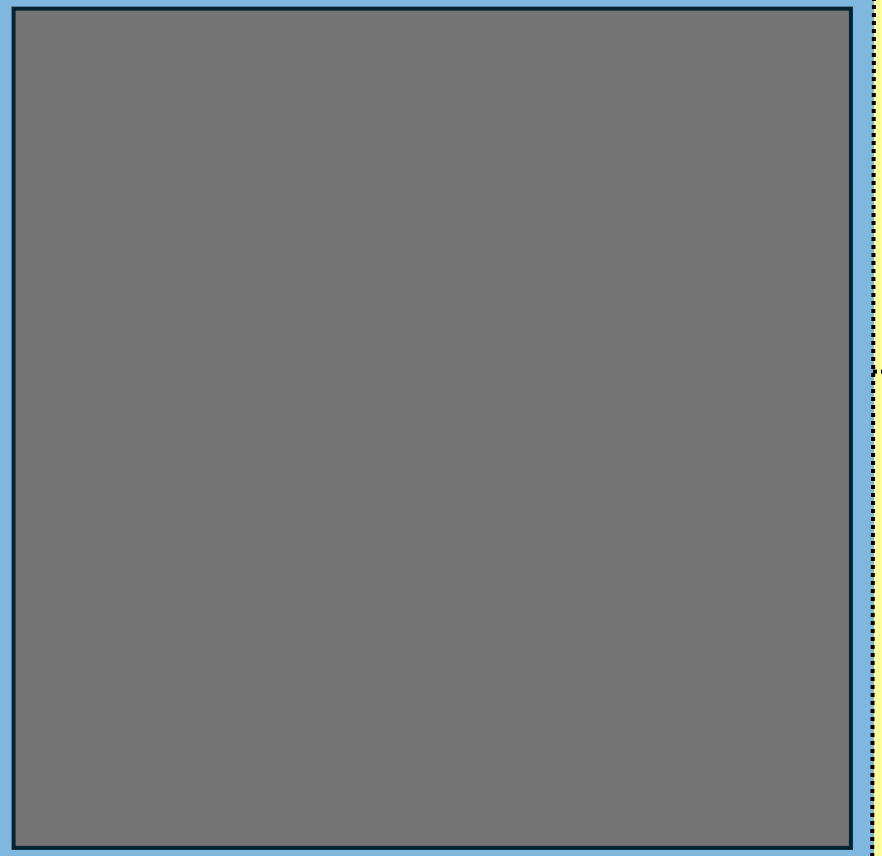
Narrow-Band Filters:

Band	Range (μm)
Pa Beta	1.28-1.30
FeII	1.63-1.66
Br Gam	2.15-2.19
K_cont	2.26-2.29

Neutral Density Filters
(In combo with Broad-Band)

ND1	10x suppression
ND2	100x suppression
ND3	1000x suppression

12.2 x 12.2” FOV



0.006 x 0.006” pixels

Integral Field Spectrograph

Modes:
Regular IFS
Coronagraphic IFS
Non-Redundant Mask IFS
Spectro-Polarimetric IFS

Low-Resolution Prisms:

2 x 2” FOV
(varies with prism)

0.02 x 0.02” spaxels

Band	Range (μm)	Resolution
K	2.0-2.4	~150
KL	2.0-4.0	~50
KLM	2.0-5.0	~35
L	2.9-4.15	~80
Ls	3.1-3.5	~200
M	4.5-5.2	~200
KLpol	2.0-4.0	~20

Pipeline makes calibrated cubes: 110 x 110 spaxels x 80 wavelengths

Medium-Resolution Gratings:

0.34 x 0.36” FOV

0.02 x 0.02” spaxels

Band	Range (μm)	Resolution
K	2.0-2.4	~6,000
L	2.9-4.15	~2,500
M	4.5-5.2	~7,000

Pipeline makes calibrated cubes: 18 x 17 spaxels x 2000 wavelengths

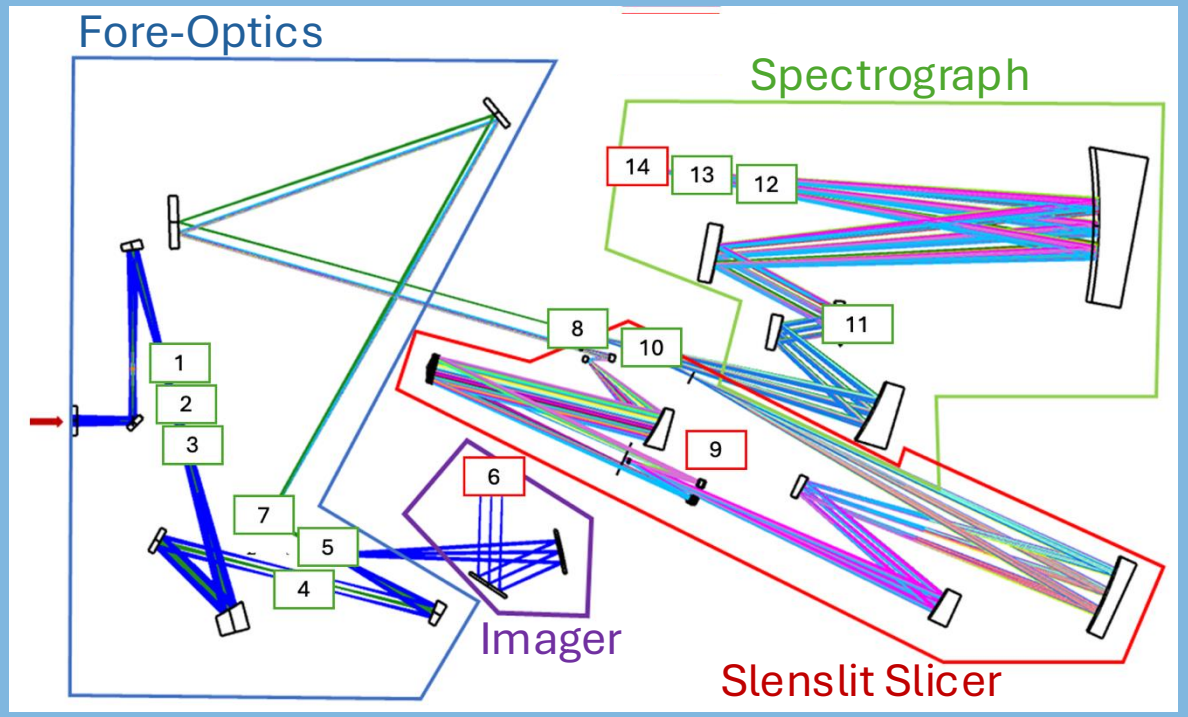
Optics Line Diagram

Entrance Window

1. Cold Stop
   1. Vertical Angle
   2. Position Angle
   3. Stationary
2. Imager Filter Wheel 1
   1. Open
   2. ND1
   3. ND2
   4. ND3
   5. Blank
   6. Pa Beta
   7. Fe II
   8. Br Gamma
   9. Kcont
   10. NRM 9holeC 1.2m
3. Imager Filter Wheel 2
   1. Open
   2. Y
   3. J
   4. H
   5. K
   6. Kp
   7. Lp
   8. Ms
   9. CH4s
   10. Ks
4. Coronagraph Slide
   1. Open
   2. M-vortex
   3. L-vortex
   4. K-vortex
   5. K-meta-vortex
   6. Lyot Spots
   7. Zernike Mask
   8. Pupil Imaging Lens
   9. Blank
5. Lyot / Imager Pickoff
   1. Open
   2. 1% Lyot Stop
   3. 2% Lyot Stop
   4. 3% Lyot Stop
   5. Blank
   6. Dummy Mass
   7. Imager Flat
   8. Pupil Imaging Mirror
   9. 1% Lyot Stop (Dup)
   10. 2% Lyot Stop (Dup)
   11. 3% Lyot Stop (Dup)
   12. NRM 9holeA 1.2m
   13. NRM 9holeB 1.2m
   14. NRM 9holeC 1.2m
   15. NRM 9holeA 1.3m
   16. NRM 9holeA 0.8m
6. Imager Detector
7. Tip/Tilt Mirror
   1. Low-Res Field
   2. Med-Res Field

   ... Scripted Moves
8. Lenslet Array
   1. Low-Res Field
   2. Med-Res Field
   3. Blank
9. Med-Res Slicer
10. Mode Selector
    1. Low-Res Field
    2. Med-Res Field
    3. Blank
11. Dispersion Carousel
    1. Ls-prism
    2. Mirror
    3. Small Diffuser
    4. L-prism
    5. Large Diffuser
    6. Blank
    7. KLM-prism
    8. M-prism
    9. K-grating
    10. L-grating
    11. KL-prism
    12. KL-pol-prism
    13. K-prism
    14. M-grating
12. IFS Filter Wheel 1
    1. Open
    2. KL
    3. Blank1
    4. Blank2
    5. Blank3
    6. Ls
13. IFS Filter Wheel 2
    1. Open
    2. K
    3. KLM
    4. Blank
    5. M
    6. L
14. IFS Detector

Optics Diagram



Detectors

	Imager	Spectrograph
Detector	5 µm cutoff H2RG 4-channel readout	5 µm cutoff H2RG 4-channel readout
Electronics	SIDECAR + MACIE	SIDECAR + MACIE
QE (1-5µm)	80.6% average	88.1% average
Read-Noise	TBD	TBD
Dark Current	TBD	TBD
Frame Time (Slow Mode)	Full Frame: 5.24s reset + 5.24 s/read	Full Frame: 5.24s reset + 5.24 s/read
Frame Time (Hybrid Fast Mode)	Full Frame: 0.58s reset + 0.58 s/read Sub Frames: TBD	Full Frame: 0.58s reset + 0.58 s/read Sub Frames: TBD
Well Depth (Slow Mode)	TBD	TBD
Well Depth (Hybrid Fast Mode)	TBD	TBD
Readout Modes	Single, CDS, Up-the-Ramp	Single, CDS, Up-the-Ramp