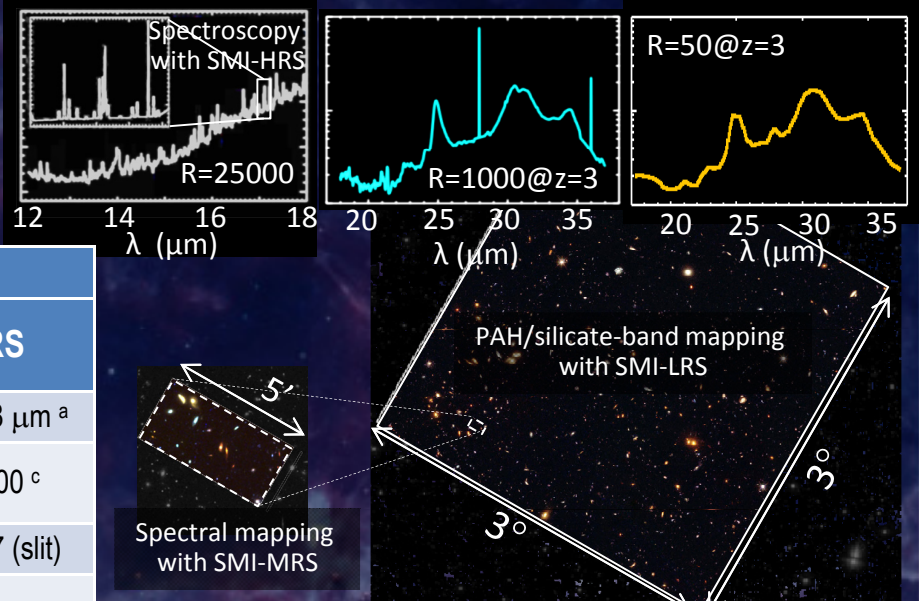
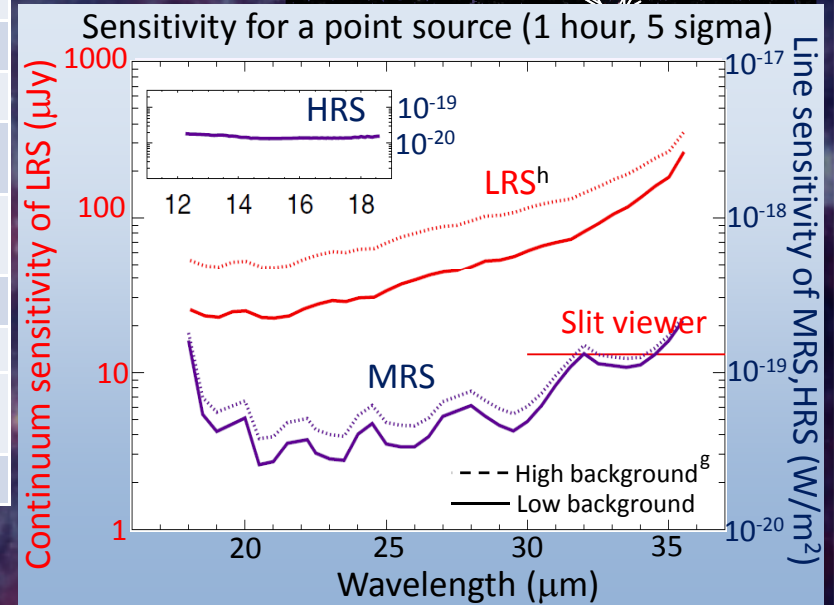


SPICA / SMI Fact Sheet

SPICA Mid-infrared Instrument (SMI) covers the wavelength range of 12–36 μm with three spectroscopic channels: LRS, MRS, and HRS.



Parameter	Function				
	LRS		MRS	HRS	
	Multi slit spec.	Slit viewer			
Wavelength range	17 – 36 μm	34 μm	18 – 36 μm	12 – 18 μm ^a	
Spectral resolution	50 – 120 ^b (point source) 20 – 110 (diffuse)	5	1300 – 2300 ^b (point source) 1100 – 1400 (diffuse)	28000 ^c	
Field of View	600" x 3."7 x 4 slits	600" x 600"	60" x 3."7 (slit)	4" x 1."7 (slit)	
FWHM	2."0 (20 μm) – 3."6 (36 μm), 2."0 (12 – 20 μm)				
Pixel scale	0."7 x 0."7	0."7 x 0."7	0."7	0."5	
Detector	Si:Sb 1K x 1K	Si:Sb 1K x 1K	Si:Sb 1K x 1K	Si:As 1K x 1K	
Point source	Cont. sensitivity (1 hr, 5 sigma)	20 – 200 μJy	13 μJy	300 – 3000 μJy	2 – 3 mJy
	Line sensitivity ^d (1 hr, 5 sigma)	(8 – 20) $\times 10^{-20}$ W/m ²	-	(3 – 20) $\times 10^{-20}$ W/m ²	(1.5 – 2) $\times 10^{-20}$ W/m ²
	Survey speed ^e	~16 arcmin ² /hr	~5900 arcmin ² /hr	~1.5 arcmin ² /hr	-
Diffuse	Sensitivity ^f (1 hr, 5 sigma)	Continuum		Line	
		0.02–0.1 MJy/sr	0.05 MJy/sr	(0.7 – 4) $\times 10^{-10}$ W/m ² /sr	(1.5 – 2) $\times 10^{-10}$ W/m ² /sr
Saturation limit		~20 Jy	~1 Jy	~1000 Jy	~20000 Jy



a: continuous coverage up to 17.3 μm + partial coverage for H₂O 17.77 and 18.66 μm
 b: $\lambda/\delta\lambda = 120$ (LRS) and 1300 (MRS) at $\lambda = 36 \mu\text{m}$.
 c: designed for $\lambda 20 \mu\text{m}$ diffraction limited PSF.
 d: sensitivity for an unresolved line.
 e: survey speed for the 5 sigma detection of a point source with the continuum flux of 100 μJy for LRS at $\lambda = 30 \mu\text{m}$ (slit viewer at 34 μm) and the line flux of 3×10^{-19} W/m² for MRS at $\lambda = 28 \mu\text{m}$, both in the low background case (see the right-hand figure).

f: sensitivity for a diffuse source in a 4" x 4" (LRS & MRS) or 2" x 2" area (HRS)
 g: background levels are assumed to be 80 MJy/sr (High) and 15 MJy/sr (Low) at 25 μm .
 h: continuum sensitivity rescaled with R=50

