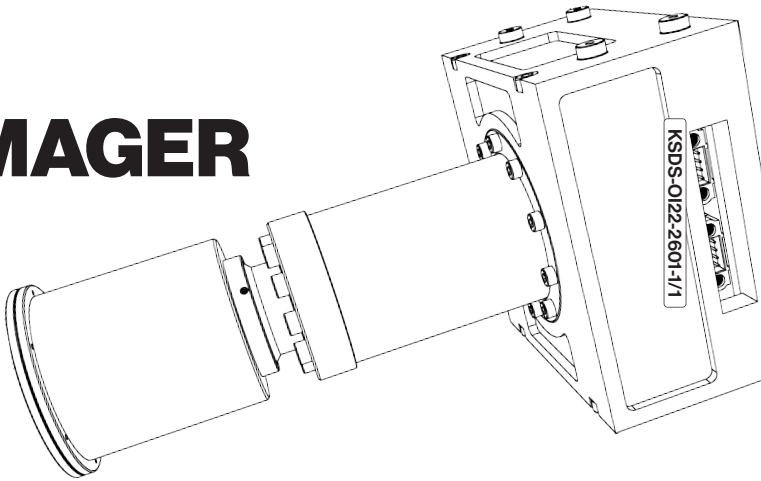


KS0I-22 OPTICAL IMAGER

DATASHEET

KS0I-22 optical imager utilizes space qualified optics, which was initially developed for a lunar orbiter and has successfully performed the mission. It features wide operating temperature, high-performance and passive self-focusing, ideal for solving agriculture, civilian and scientific tasks of remote sensing. This camera has the possibility to work with stable MTF in range of temperature from -55°C to +60°C. The payload has 2 different options for sensors. The main difference between sensors is the resolution and pixel size, please refer to the specifications for details.



Specifications	12MP	1.3MP
GSD @600km, Panchromatic	20 m	20 m
Swath width @600km	81.9 km	38.4 km
Swath length @600km	61.4 km	30.7 km
Storage capacity	128 Gigabyte EDAC protected NAND Flash	
Image processing	Binning, Thumbnails	
Image compression	No image compression	
Mass	850 g ±(10%)	
Dimensions	170.3 x 89.6 x 84.0 (±1) mm	
Power supply	5V DC ± 150 mV	
Power consumption	Idle: 1 W, operation: 1.5 W, Peak: 3 W	
Data interface	UART (default) / CAN / RS422 / RS232	
Data rate	CAN: 250 kbit/s (2 Mbit/s optional) UART/RS422/RS232: 19.2 kbit/s (250 kbit/s optional)	
Data format	12MP	mono 8/10/12 bit
	1.3MP	mono 8/10 bit
Control interface	UART (default) / CAN/ RS422 / RS232	
Nominal pointing direction	Earth / Space	
Operating temperature	-55 °C ~ +60 °C , vacuum	
Surviving temperature	-55 °C ~ +125 °C	
Sun facing duration	Sun can be within FoV for up to 3 minutes	
Radiation (TID)	Tested beyond 25 kRad, without shielding, using a Co ⁶⁰ source	
Design life	3 years	
Heritage / TRL	TRL 9	
ITAR restriction / Export control	None	

Optics	
Aperture diameter	14 mm
Focal length	76.5 mm
F number	f / 5.46
Field of View (horizontal x vertical)	12°
Optical transmission and vignetting	> 94 %

Detector	12MP	1.3MP
Type of detector	CMOS matrix	
Shutter mode	Global	
Lower/upper wavelength	400 - 900 nm (PAN)	
Resolution (horizontal x vertical)	12MP	4096 (H) x 3072 (V) pixels
	1.3MP	1280 (H) x 1024 (V) pixels
Pixel size	2.8 μm	5.3 μm
Maximum pixel depth	12 bit	10bit
Spectral bands	PAN (default, no filter)	
	Up to 6 bands (RGB, Red Edge, NIR)	
Gain	Analog: 0 dB to 24 dB, (0.1 dB step)	
	Digital: 24 dB to 48 dB, Analog +0.1 d step	
SNR	> 100	
Instantaneous FoV (for a pixel), arcsec	6.6 x 6.6	14.2 x 14.2
Min/Max exposure time	Min 9 μs / Max 30 s	
Quantum efficiency, QE @ 600nm	> 99 %	> 90 %
Ensquared energy	96 %	86 %
Full well capacity	7200 e-	8400 e-
Read-out noise electrons	3.5 e-	30.5 e-
Dark current @20C (e-/s)	< 10	< 21
Accuracy of time tagging per picture	400 ns	

