



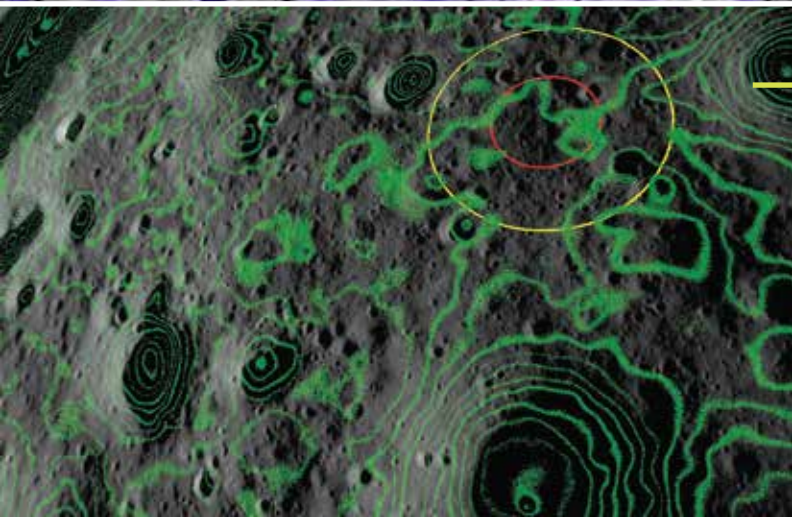
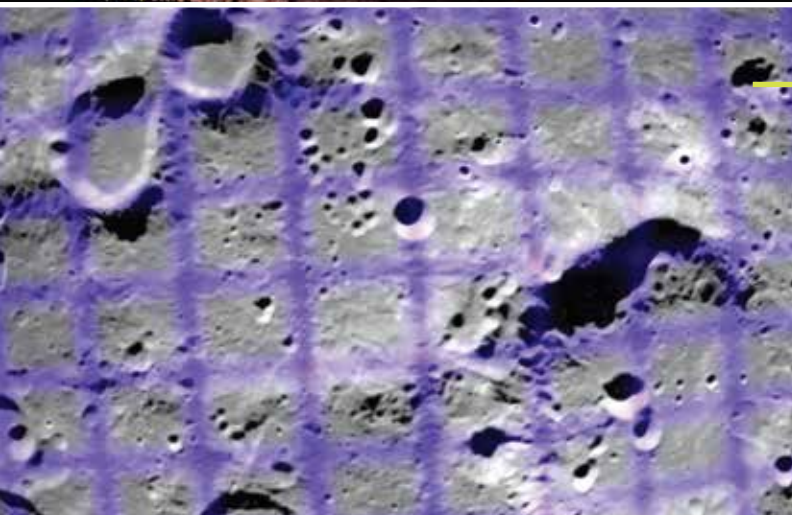
FIREFLY
AEROSPACE



SOLUX

*Integrated Vision System
for Autonomous Spacecraft*

Capabilities



Imaging

- Monitor structures, payloads, deployment activities, and the space environment with ad-hoc, scheduled, or event-driven image acquisition.
- Leverage on-board video encoding and post-processing, video streaming, HDR capture, and metadata management.

Custom Applications

- Build custom applications on top of heterogeneous compute (CPU, GPU, NPU) in a flexible software environment.
- Develop, test, and operate efficiently on top of foundational capabilities including camera calibration, image simulation, and on-orbit software updates.

State Estimation

- Achieve high-precision estimation of spacecraft position and attitude relative to terrain, stars, astronomical bodies, and rendezvous targets.
- Extend navigation capabilities and increase fault tolerance with multi-camera measurements.

Perception

- Detect and characterize hazards, landmarks, or other targets of interest for terrestrial or orbital applications, including rendezvous, proximity operations, and docking.
- Support space domain awareness applications with object detection, optical orbit determination, stereo depth estimation, and 3D reconstruction.

Solux Base Unit



Optimized Compute for Imaging, Navigation, & Beyond

- Supporting up to 12 Camera Modules, the Base Unit supplies centralized processing, power, and data to support Firefly's various algorithms, including adaptive video compression, optical navigation, and neural-network-based pose estimation.
- Software integration on the Base Unit is adaptable, ranging from simple command and telemetry to custom computer vision application development using the Solux SDK.

Spacecraft Interface

Data: 10/100/1000BaseT

Input Voltage: 24-40 VDC

I/O

Camera Modules: 12 (6 Simultaneous)

Input: Isolated Trigger (5 V)

Output: 2x Aux 12 V Power

Data: 2x RS-422

Integrated IMU: 4 X 6DoF Chip Scale IMUs

Mass & Power

Dimensions (cm): L:19.8 x W: 10.2 x H: 5.0

Mass: <0.75 kg

Idle Consumption: <3 W

Max Consumption: 30 W

Compute

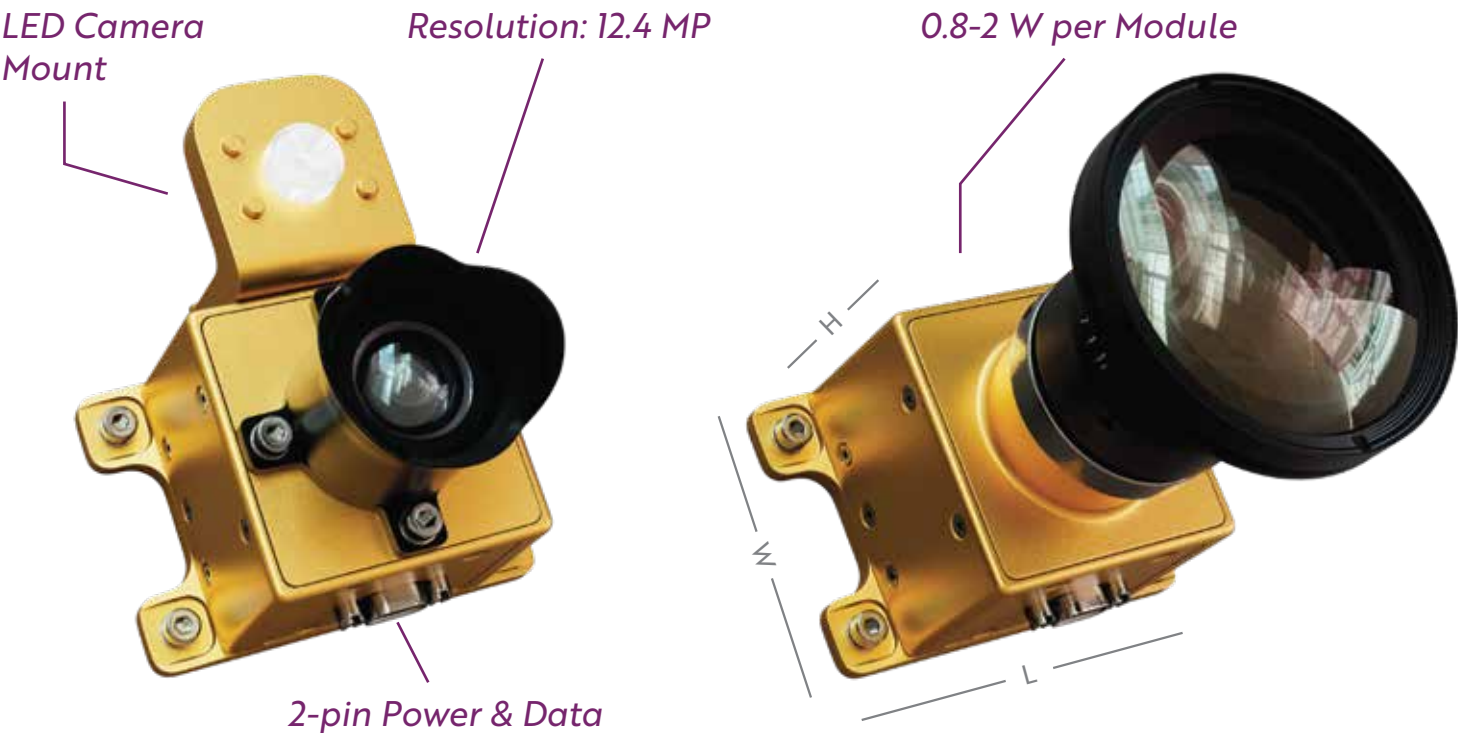
CPU: 8-core ARM Cortex

GPU/NPU: 15 Tera Operations Per Second

RAM: 8 GB

Storage: 1 TB

Solux Camera Module



Seamless Vision for Any Mission

- Each Camera Module can be configured with various sensors, mounts, LED illuminators, and lenses to support multiple use cases, including autonomous navigation, 360° situational awareness, and payload imaging.
- The Camera Module delivers full-resolution image frames at a low integration cost by providing both power and data over a single twisted pair.
- The Camera Module connects to the Base Unit with an included custom harness of up to 10 m in length.

Specifications			
Dimensions	L: 6.5 cm (2.5 in)	W: 4.8 cm (1.75 in)	H: 4.2 cm (1.5 in)
Mass	0.15 - 0.28 kg		
Sensing			
Sensor Options	RGB or Monochrome		
Shutter Type	Rolling or Global		
Bit Depth	8 to 12-bit		
Frame Rate	>30 FPS Full ROI (10-bit mode)		
Integrated IMU	6 DOF IMU on every camera module		
Connectivity			
Data Rate	Up to 6 Gbps per camera module		
Cabling	Single 24 AWG coax for power and data		
Cable Length	Up to 10 m between base unit and cam modules		

Lenses & Lights



Flight S-Mount Lenses

Lens	HFOV	VFOV	F#
S-185	185°	185°	2.0
S-123	123°	89°	2.8
S-85	85°	63°	2.8
S-64	64°	51°	2.6
S-28.2	28.2°	21°	2.5
S-22.1	22.1°	16.5°	2.5
S-14	14°	10.5°	2.5

Flight C-Mount Lenses

Lens	HFOV	VFOV	Min F#	Max F#
C-88	88°	70°	2.4	16
C-38	38°	28°	1.8	11
C-11	11°	8°	4.0	22

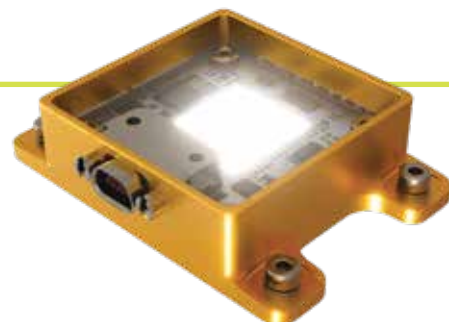


LED Camera Mount

Our integrated LED mount is more than a convenience, it's a field-tested solution for operations where local illumination is required

Floodlights

Our standalone floodlights match the form factor of our cameras and are built to slot seamlessly into the Solux architecture. Whether illuminating shadowed structures during RPO or supporting close-range inspection, they deliver targeted, reliable lighting without adding unnecessary bulk





- ✓ The Solux HDK puts flight-like compute and sensor hardware in engineers' hands early — accelerating integration and reducing surprises later in the program.
- ✓ Built as closely as possible to the flight units while avoiding the cost that comes with flight-grade parts, the Solux HDK lets you prototype, test, and move into IT&V with minimal software changes.

	Flight	EDU	HDK
Design	Flight Ready	Identical to Flight without acceptance testing	Lab and light field use
Material & Finish	Chemfilmed Aluminum	Chemfilmed Aluminum	Anodized Aluminum
Input Voltage	24–40 VDC	24–40 VDC	10-36 VDC (AC Adapter included)
Connectors	Flight-Grade	Flight-Grade	Commercial-Grade
Parts	Flight-Grade	Flight-Grade	Commercial-Grade

Solux HDK Lens Options

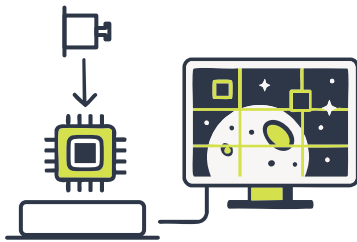
Lens	HFOV	VFOV	Min F#	Max F#
C-115.6	115.6°	70°	2.4	16
S-64	64°	51°	2.6	

The Solux HDK offers two lens options: the S-64 and the C-115.6. Both are focusable and removable and they are compatible with a wide range of S-mount and C-mount lenses. Additional lenses are available by special order.

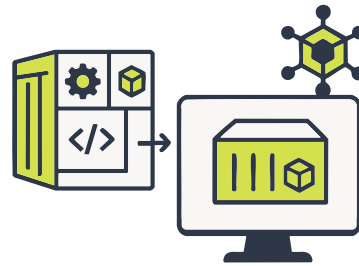
*Lenses subject to change without notice

Solux SDK

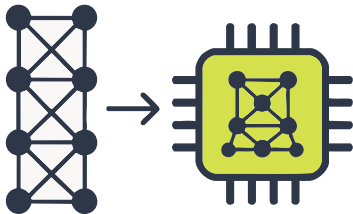
Solux flight software has everything you need to build a solution for your problem domain. Command cameras and stream imagery via the network API, or write a custom onboard application for direct access to heterogeneous compute and the imaging pipeline.



Real-time Image
processing



Custom Containerized
Applications



Deep Neural Network
Acceleration



Modern Developer
Experience



Solux Vision Simulation Workstation

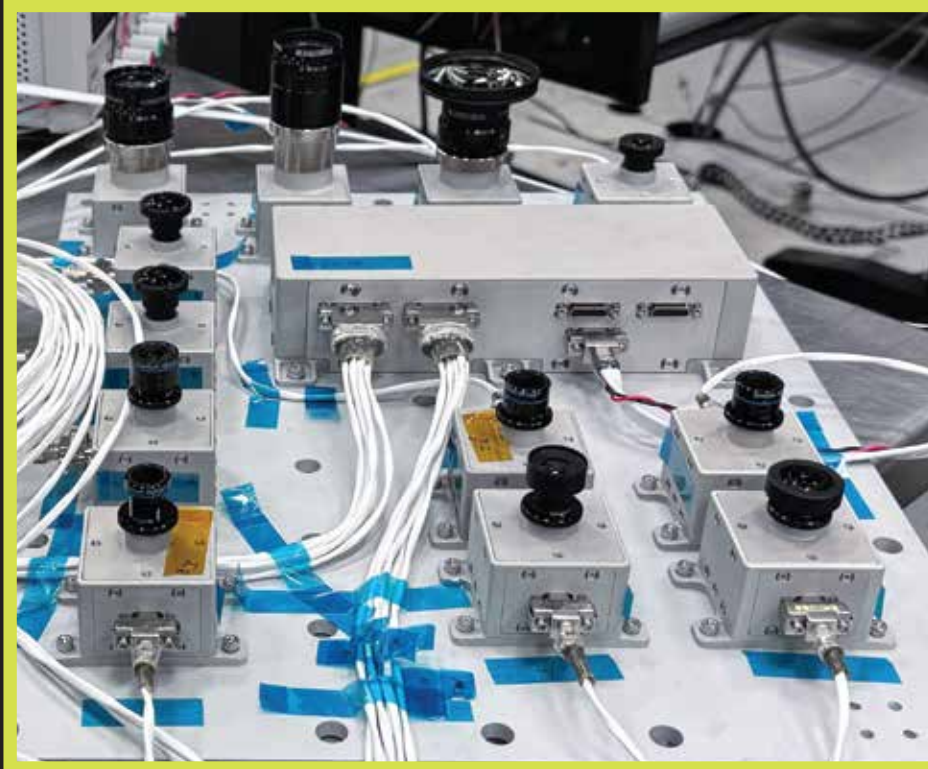
Accelerate confidence in your flight software with image simulation and injection

Inject simulated images into the camera interface on the Solux Flight Base Unit or HDK. Bring your own GPU-accelerated simulation pipeline for advanced hardware-in-the-loop testing.

What Class Is Your Mission?

Let's tailor a vision system to match.

Whether for lunar landing, satellite servicing, or in-orbit inspection, Solux is built to adapt.



SOLUX

***Integrated Vision System
for Autonomous Spacecraft***



Request a Quote

fireflyspace.com