INFINITY AVIONICS

YOUR EYES IN SPACE

INFINITY
AVIONICS

Infinity Avionics is an Australian company which provides reliable and rugged optical sensor and processor solutions for the space industry and other high-reliability applications.

Our vision is to put our customers at the forefront of their missions through our reliable, robust and qualified technology solutions complemented by our know-how, specialised facilities, experience and expertise.

The team at Infinity Avionics is experienced in electronics design for space applications, project management, systems engineering, defence, and manufacturing, having contributed to the success of several Australian space missions.

Infinity Avionics provides space flight-proven and radiation-tested sensor and processor subsystems for space missions worldwide. Additionally, Infinity Avionics provides consulting services to design and deliver custom sensor payloads to meet customers' mission requirements in a timely manner.
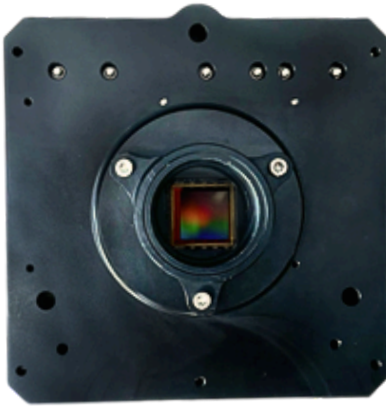
Onboard **20+** space missions

Designed **100+** electronics modules for space

5+ space qualification campaigns

Provided expertise to **20+** design studies

30+ years collective Aerospace experience

LYNX4MP

Lynx4MP is a 4MP RGB/Monochrome camera electronics backend designed for space applications. The system has been designed based on a space proven processor, sensor, and readout and storage electronics.

Lynx4MP is mechanically compatible with standard CubeSat form factor and can support precise image capture timing requirements. The system has been qualified for thermal vacuum, vibration and shock and tested up to 40kRad TID. Lynx4MP camera backend electronics can be combined with different optical assemblies to suit a range of space applications.

Technical specifications	
Image sensor	CMOS Global Shutter
Spectral bands	RGB Bayer / Monochrome
Pixel resolution	2048 x 2048
Pixel size	5.5 um
Control interface	UART / RS485
Data interface	UART / RS485 / USB2 / Ethernet
Power supply	5V DC
Power consumption	2.75 W
Operating temperature	-10 C to 60 C
On-board RAM	30 full resolution images
On-board flash memory	800 full resolution images
Dimensions	100 mm x 100 mm x 125 mm
Weight	500 g
TRL	9

LYNX4MP-10

Lynx4MP-10 comes with a 10 mm focal length wide angle ruggedized optical assembly. The wide field of view is ideal for space based space asset monitoring and close proximity applications.

Technical specifications	
Field of view	58 degrees
Focal length	10 mm
F Number	Adjustable: F/1.9 to F/16
Spectral range	VIS, NIR
Optics interface	C-mount
Dimensions	100 mm x 100 mm x 90 mm
Weight	440 g
Recommended temperature for imaging	10 - 30 degrees

LYNX4MP-70

Lynx4MP-70 is a Lynx4MP camera variant with a 70mm ruggedized optical assembly. The camera can be used as an engineering camera, in docking/rendezvous applications as well as low spatial resolution Earth Observation.


Technical specifications	
Spatial resolution (GSD)	39 m at 500 km orbit
Focal length	70 mm
F Number	2.2
Spectral range	VIS, NIR
Optics interface	C-mount
Dimensions	100 mm x 100 mm x 125 mm
Weight	500 g
Recommended temperature for imaging	10 - 30 degrees

LYNX4MP - 550

Lynx4MP-550 camera comes with a space grade 550mm focal length optical assembly to support Earth Observation and space based space surveillance/ space domain awareness applications.

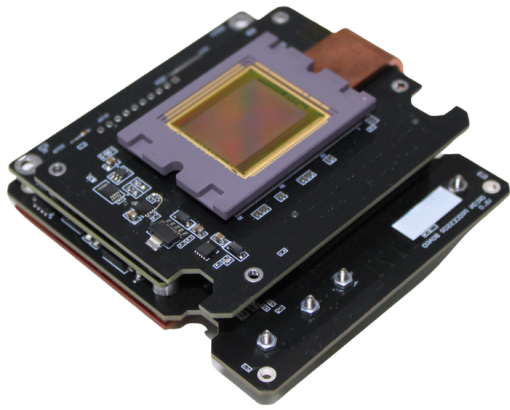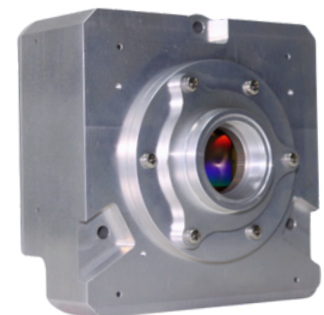| Technical specifications	
Spatial resolution (GSD)	5 m at 500 km orbit
Focal length	550 mm
F Number	6
Spectral range	400 nm - 1000 nm (customizable)
Dimensions	100 mm x 100 mm x 250 mm
Weight	1.5 kg
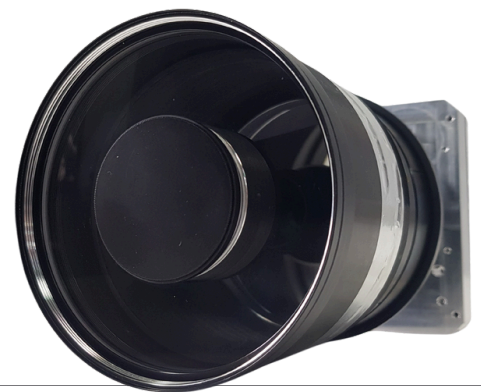
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ORION12MP

Orion12MP is a 12 Megapixel RGB/ Monochrome camera back end electronics unit which can be combined with application specific optical assemblies. Orion12MP is suitable for a range of space applications such as Earth observation, hyperspectral imaging, space based space surveillance, and docking/rendezvous applications based on the selected optical assembly.

The camera provides high FPS image capture capability with on-board non-volatile data storage options. Orion12MP is designed leveraging a modular methodology providing the ability to customize the camera with different sensors and interface options with reduced engineering effort and cost. The system has been qualified for thermal vacuum, vibration and shock.

Technical specifications	
Pixel resolution	12 MP (4096x3072)
Pixel size	5.5 um
Sensor technology	CMOS Global Shutter
Frames per second	Up to 100 at full resolution
Control interface	UART / RS485
Bulk data interface	USB / UART / RS485
Power supply	5V DC
Power consumption	3 W typical / 6 W while imaging
Operating temperature	-10 C to 60 C
On-board RAM	Up to 290 full-resolution images
On-board nonvolatile memory	256 Gbytes
Dimensions	100 mm x 100 mm x 55 mm
Weight	500 g
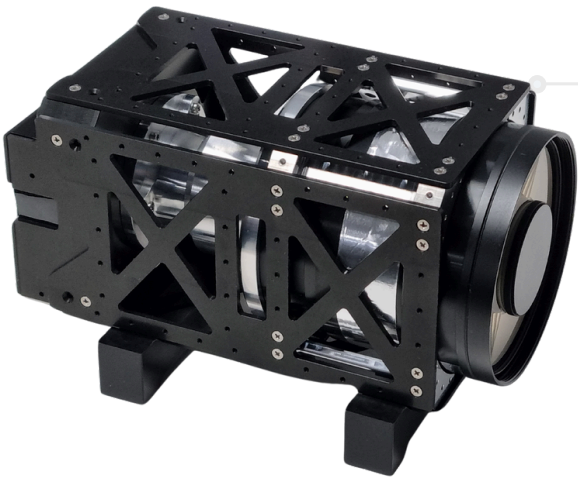
ORION12MP - 550

Orion12MP-550 camera comes with a 550mm focal length space grade optical assembly to support earth observation and space based space surveillance applications.
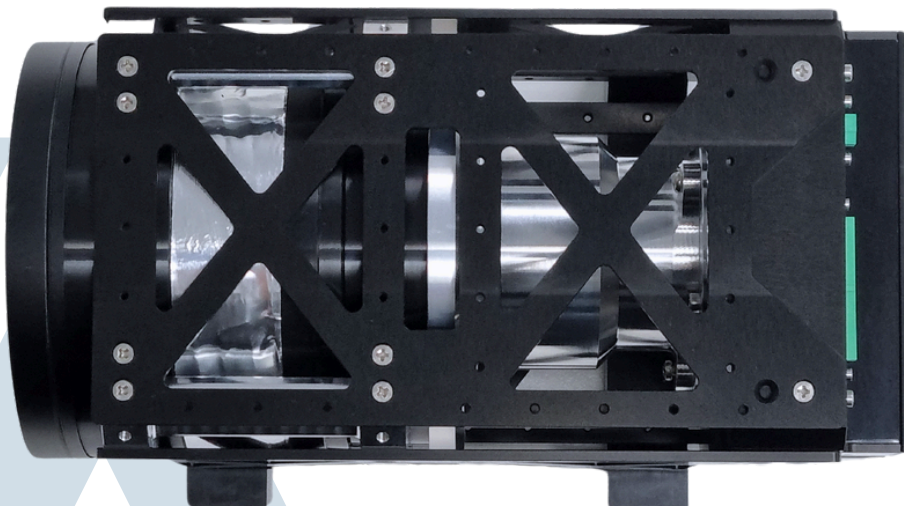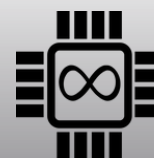
Technical specifications	
Spatial resolution (GSD)	5 m at 500 km orbit
Focal length	550 mm
F number	6
Spectral range	400 nm - 1000 nm (customizable)
Dimensions	100 mm x 100 mm x 250 mm
Weight	1.5 kg

BRAIN

Infinity Avionics BR**AI**N is a Jetson Orin NX based edge processing solution for space applications. BR**AI**N brings up to 100 TOPS processing power to enable space edge processing. The edge processor comes with ruggedized enclosure and easy to integrate thermal interface.
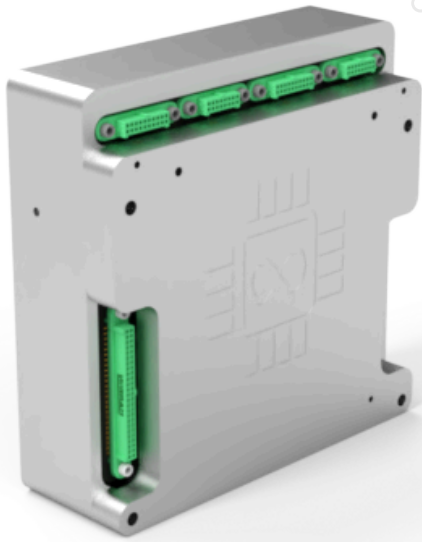
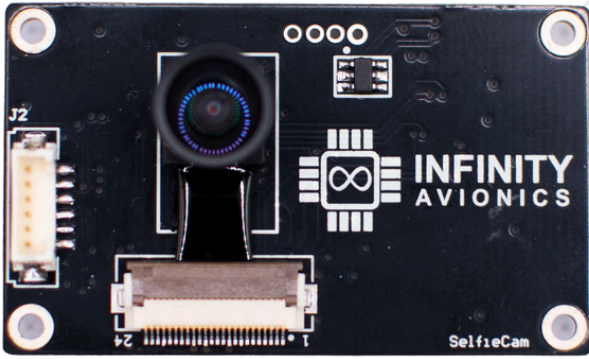| Technical specifications	
Processor	Nvidia Jetson Orin NX 16GB RAM
NVMe storage	PCle Gen3 256GB
Input voltage	12V
Input power	25 W max
Interfaces	Ethernet, USB, UART, GPIOs
Operating temperature	-10C to 60C
Form factor	100mm x 100mm x 35mm
Weight	500g
Camera interfaces	Direct interfaces to Infinity Avionics cameras

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SELFIECAM VIDEO

SelfieCam is a small form factor, TRL9, low resolution space asset monitoring camera. The camera can capture and save images in non-volatile memory. It is designed with ease of integration and operation in mind, providing capability of low-resolution imaging on-orbit.

| Technical specifications	
Field of view	40/90/110 degrees
Resolution	1024 x 768 800 x 600 640 x 480
Image encoding	JPEG
On-board storage	500 images
Frames per second	Up to 12 FPS
Communication interface	UART with ASCII commands
Baud Rate	115200
Power consumption	750mW
Operating temperature	-20 C to 60 C
Mass	10 g
Size	50 mm x 30 mm
Flight heritage	Since 2018
Environmental qualification	NASA GEVS
Total ionizing dose	Up to 30 kRad
TRL	9
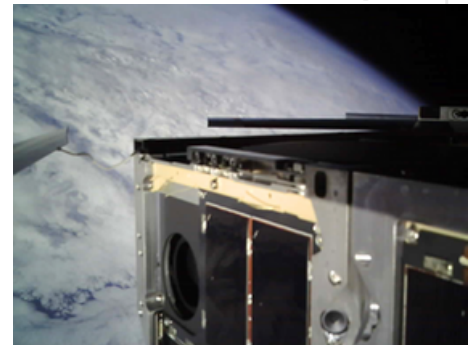
Image credit: UNSW Canberra Space
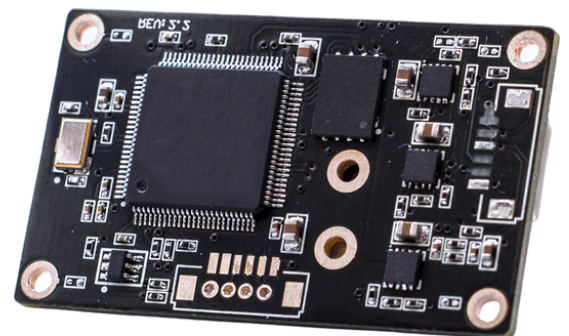
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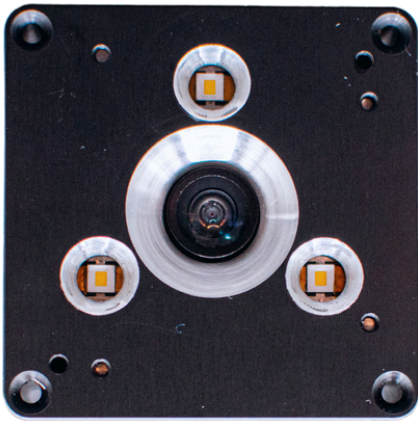
LEO2MP

Leo2MP is a small form factor engineering camera designed for space applications.

Capable of both on-board image data storage and image data streaming over USB interface, the camera is ideal for monitoring spacecraft structures or deployment activities, space manufacturing and robotics as well as rover applications.

Leo2MP comes with LED illumination to support challenging space lighting conditions.

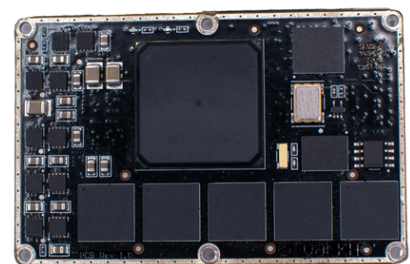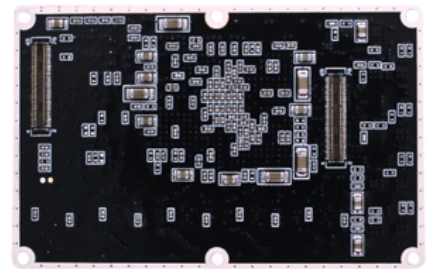| Technical specifications	
Image sensor	CMOS RGB - Rolling shutter
Field of view	90 / 110 degrees
Resolution	Selectable up to 2MP
Image encoding	JPEG
On-board storage	200 images
Frames per second	Up to 12 FPS (resolution dependent)
Command and telemetry interface	UART - ASCII commands
Image data interface	UART / RS485 / USB2 - JPEG encoded image data
LED luminous flux	150 lm
Power consumption	1 W (Without LED illumination) 3.5 W (With LED illumination)
Size	45 mm x 45 mm x 20 mm
Weight	65 g
Operating temperature	-20 C to 60 C
Total ionizing dose	Up to 30 kRad

VOLKH PROCESSOR PLATFORM
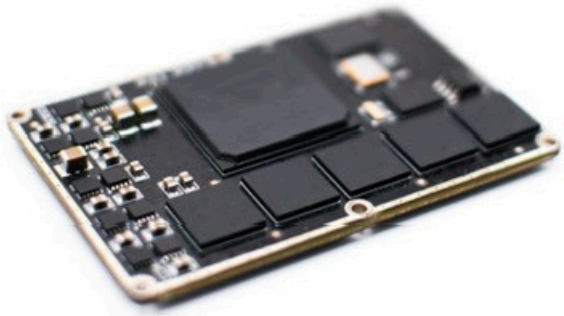
Volkh processor is a reconfigurable processing platform for space applications which can be used as a spacecraft onboard computer as well as a payload processor.

Technical specifications	
Processor	SmartFusion 2 Soc
Memory options	MRAM 8 MByte Flash 1 Gbit LPDDR 1 Gbit
Input voltage	5 V
Input power	750 mW to 1W (with DDR)
Processor clock options	20 MHz external 32 kHZ RTC Configurable Internal
Interfaces	UART, I2C, SPI, LVDS, CAN, USB ULPI, and custom
Operating temperature	-40 C to 85 C
Dimensions	70 mm x 45 mm x 6.2 mm
Weight	21 g
Flight heritage	Since 2020
Environmental qualification	NASA GEVS
Total Ionizing Dose	Up to 40 kRad
TRL	9

Unique FPGA based architecture enables reconfiguring communication interfaces and GPIOs based on system requirements.

FPGA SoC based processor comes in a small form factor making it a flexible option for a platform/payload processor. Volkh processor comes with a range of data storage options including SEU tolerant MRAM and low power DDR memory.
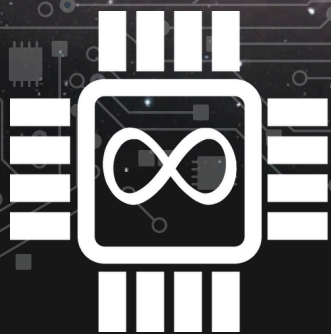
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