INFINITY AVIONICS

YOUR EYES IN SPACE

SPACE-QUALIFIED CAMERAS AND EDGE PROCESSORS FOR ANY SPACE MISSION

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INFINITY AVIONICS

Space qualified cameras and edge processors for any space mission.

OUR VISION

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, specialized facilities, experience and expertise.

OUR TEAM

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 international space missions.

WHAT WE DO

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.

Designed **110+** electronics modules for space

6+ space qualification campaigns

40+ years collective Aerospace experience

Onboard **25+** space missions

Provided expertise to **20+** design studies

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THIRD PLANET ORBITAL
ARGO SPACE CORP
HEX20
ASTRION
creotech
nurjanatech
OQ TECHNOLOGY
AETHERFLUX
Adelaide University

COLLABORATING WITH OUR VALUED PARTNERS AND CUSTOMERS

60+ PAYLOADS CURRENTLY IN ORBIT

150+ HARDWARE SYSTEMS DELIVERED GLOBALLY

8+ YEARS OF SPACE HERITAGE

KEY APPLICATIONS OF OUR PRODUCTS

Our spacecraft camera systems with smart edge processing are customizable, and can be used for a range of space applications.

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Space Situational Awareness

- Self monitoring
- Space Domain Awareness (SDA)
- Resident Space Object (RSO) detection and tracking
- Deployment and structural monitoring
- Formation flying and inspection
- Collision avoidance support
- Space traffic management

Proximity Operations

- Rendezvous, Proximity Operations and Docking (RPOD)
- Active Debris Removal (ADR)
- In-space manufacturing and robotics
- Autonomous GNC and vision-based navigation
- Pose estimation
- Lunar and planetary applications

Earth Observation

- Ground Sampling Distance (GSD) down to 5m at 500km
- Wide swath / wide field-of-view contextual imaging
- Environmental and disaster monitoring
- Maritime domain awareness
- Infrastructure and land use monitoring
- High-revisit constellation architectures

On-Orbit Data Processing

- Payload interfacing
- Sensor fusion
- Machine learning and edge AI
- Data compression, encryption, and handling
- Automous space systems
- Hosting control and navigation algorithms

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SPACE SITUATIONAL AWARENESS

As low Earth orbit becomes increasingly congested and the strategic value of GEO-based assets increases, space situational awareness becomes increasingly important. Two main aspects of situational awareness are self-awareness and long-range surveillance of other space resident objects (RSOs).

ANTENNA/BOOM ARM MONITORING WITH SELFIECAM

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Short-Range Situational Awareness (Self Awareness)

Wide field-of-view cameras for close-proximity observation across the challenging lighting conditions.

- Monitoring spacecraft deployments
- Structural inspection of host platforms
- Verifying solar panel or antenna deployment
- Tracking nearby assets during formation flying

Long-Range Situational Awareness (Space-Based Space Surveillance)

Space-based Space Surveillance and Long-range SSA capabilities using narrow focal-length optics.

- Detection and tracking of resident space objects, including debris, active satellites, and upper stage rocket bodies at significant range
- Space traffic management
- Collision avoidance
- Space fence operations

THRUSTER MONITORING WITH LEO CAMERA

SOLAR PANEL MONITORING WITH SELFIECAM

SPACECRAFT DEPLOYMENT MONITORING WITH SELFIECAM

Image Credits: Satoro, Exotrail, DSTG Australia, and UNSW Canberra Sapce

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PROXIMITY OPERATIONS

Rendezvous, Proximity Operations, and Docking (RPOD) require precise, reliable visual feedback across all lighting conditions.

Infinity Avionics cameras combined with the BRAIN edge processor provide the high-confidence situational awareness needed for fully autonomous in-space operations, from final approach and docking through to in-space manufacturing and active debris removal.

Docking & Rendezvous

High-frame-rate cameras paired with onboard illumination enable precise relative navigation during final approach and docking. With real-time video streaming through **Aquila**, missions can support both autonomous GNC algorithms and ground-in-the-loop control.

The **Leo2MP**'s wide field of view and integrated LED illumination are engineered to manage the extreme lighting transitions that occur throughout the approach phase, ensuring reliable visual performance when it matters most.

In-Space Manufacturing & Robotics

Compact, low-power cameras with integrated LED illumination enable reliable monitoring of robotic arm movements, material handling, and manufacturing processes in microgravity — key capabilities for the growing in-space manufacturing economy.

The **Leo2MP** is purpose-built for these missions, providing dependable visual monitoring for spacecraft structures, deployment activities, space-based manufacturing, and rover operations.

Debris Removal

Vision-based characterization of tumbling or uncooperative targets is essential for active debris-removal missions.

By combining multi-camera configurations with **BRAIN**-powered sensor fusion, operators gain robust pose estimation of non-cooperative objects — a critical capability for successful grappling and removal.

Landing Systems

Wide-angle cameras with onboard image processing enable terrain-relative navigation, hazard detection, and precision landing for lunar and planetary missions.

The compact **Leo2MP** and **Aquila** systems are engineered for constrained lander architectures, delivering reliable visual performance in the most demanding descent and landing environments.

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EARTH OBSERVATION

Earth observation data underpins everything from environmental monitoring and disaster response to agriculture, infrastructure planning, and defence.

Infinity Avionics enables this with scalable, CubeSat-ready optical payloads delivering wide-area contextual imagery and sub-5 metre high-resolution from low Earth orbit, giving mission designers flexible, platform-fit imaging solutions.

Wide-Swath EO (Low Resolution)

Wide-field-of-view cameras deliver broad contextual coverage ideal for applications such as deforestation monitoring, flood-extent mapping, waterbody tracking, bushfire detection, and weather observation.

Medium-Resolution EO (Up to 5 m GSD)

Narrow-focal-length optics achieve ground sampling distances of up to 5 m from a 500 km sun-synchronous orbit, enabling effective infrastructure monitoring, land-use classification, maritime vessel detection, and sub-10 m change detection.

Low Altitude LEO EO

Operating at lower orbital altitudes (200–400 km), Infinity Avionics camera configurations can achieve significantly finer GSD, delivering very-high-resolution imaging without the mass or cost of larger-aperture systems. This capability is especially valuable for the growing class of small-satellite missions flying below 400 km.

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ON-ORBIT DATA PROCESSING

The shift from raw data collection to true on-orbit intelligence is reshaping the NewSpace economy. With the BRAIN edge processor integrated into Infinity Avionics camera systems, spacecraft gain up to 100 TOPS of AI/ML compute power directly onboard.

This enables autonomous decision-making, dramatically reduces downlink demands, and delivers faster, more responsive operations across every mission type.

Sensor Fusion

BRAIN combines imagery from multiple cameras with data from IMUs, LiDAR, star trackers, and other onboard sensors to create a unified, high-fidelity situational picture.

This fused output enables capabilities such as autonomous docking manoeuvres and debris-avoidance decisions that no single sensor could reliably support on its own.

On-Orbit AI & Machine Learning

Deploy trained neural networks directly on BRAIN's NVIDIA Jetson Orin NX architecture to perform object detection, change detection, pose estimation, anomaly detection, and image classification in orbit. Mission logic can react to these detections in real time, without waiting for a ground-station pass.

Custom AI models can be uploaded and updated throughout the mission, enabling continuous improvement on orbit.

OUR TECHNOLOGY

Infinity Avionics is an Australian company that develops intelligent camera systems and processors for space applications, including proximity operations, space domain awareness, and space-based space surveillance. We have been providing sensor and processor solutions for the global space sector since 2020.

We have specialized in-house facilities to support electronics manufacturing, assembly, testing and optical alignment.

INFINITY AVIONICS

Infinity Avionics vision systems are designed with a modular concept which can be customized to support your mission specifications and concept of operations.

We offer ultimate customization of products as experts in electronics, firmware, and mechanical design for space applications. We provide **spacecraft/payload assembly, integration and testing, including environmental qualification and radiation testing**.

In addition to offering tailoring and customization of our existing products to best suit your needs, we also offer a **full turn-key electronics, firmware and mechanical design services for space payloads**.

If you are working on a space payload and need an extra hand with electronics, firmware or mechanical design, or just a sanity check and review before kicking off manufacture of your payload, get in touch with us to explore how best we can support you.

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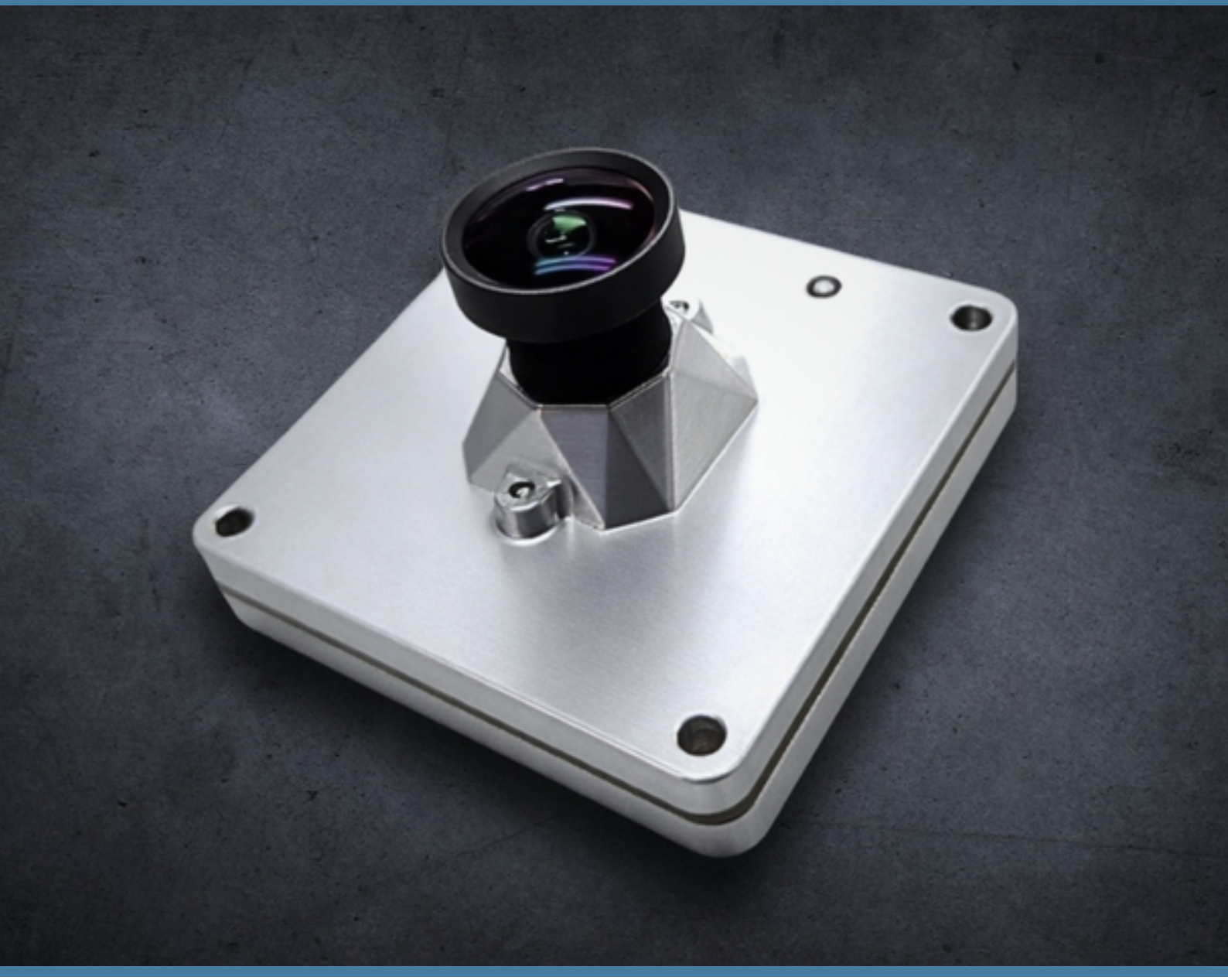

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AQUILA

| RPOD | SELF-MONITORING | IN-SPACE ROBOTICS | SITUATIONAL AWARENESS |

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Aquila is a small form factor, easy to integrate, HD/ FHD camera with image data capture, save, and stream capability up to 30 FPS. The camera is ideal for monitoring camera applications as well as RPOD and In-Space Manufacturing to obtain real-time visual feedback.

Aquila is perfectly suited for key space-based roles:

- asset monitoring
- situational awareness
- manufacturing
- robotics
- rendezvous, proximity operations, and docking (RPOD).

Aquila's M12 optical interface allows for flexible optical assembly customization tailored to specific mission requirements.

Technical Specifications	
Image sensor	**CMOS RGB Rolling shutter**
Pixel resolution	**1280 x 720 / 1920 x 1080**
Pixel size	**2 µm**
Spectral range	**VIS**
Field of view (degrees)	**10° / 45° / 90° (Other lens options are available)**
Focal length	**2.4mm / 4.4mm/ 2.18mm (Other lens options are available)**
F number	**F/2.3 - F/2.8**
Optical assembly	**M12 interface (customisable)**
Image encoding	**RGB565/ JPEG/ RAW**
Frames per second	**30 FPS - JPEG Compressed 15 FPS - RGB565/ RAW**
On-board storage / flash memory	**Over 5000 images**
Communication / control interface	**UART / RS485 / Ethernet**
Image / bulk data interface	**UART / RS485 / Ethernet**
Input voltage / power supply	**5 V DC**
Power consumption	**0.5 W idle / 2.5 W max**
Size / dimensions	**50 mm × 50 mm × 30 mm**
Weight / mass	**55 g**
Operating temperature	**−20°C to 60°C**
Recommended temperature for imaging	**−20°C to 60°C**
TRL	**6**

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AQUILA

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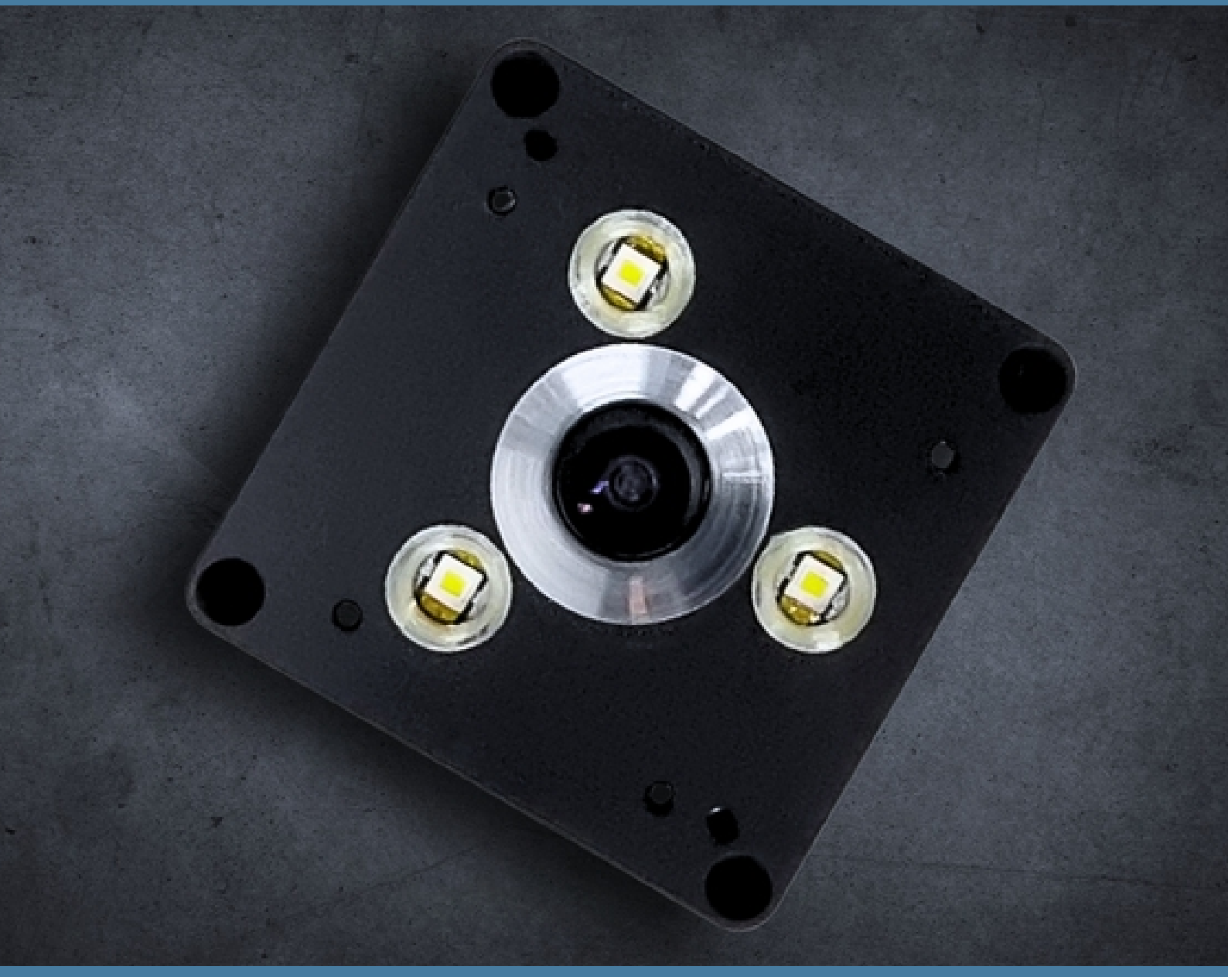

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LEO2MP

| DEPLOYABLE STRUCTURE MONITORING | SOLAR PANEL MONITORING |
| THRUSTER MONITORING | AUTONOMY |

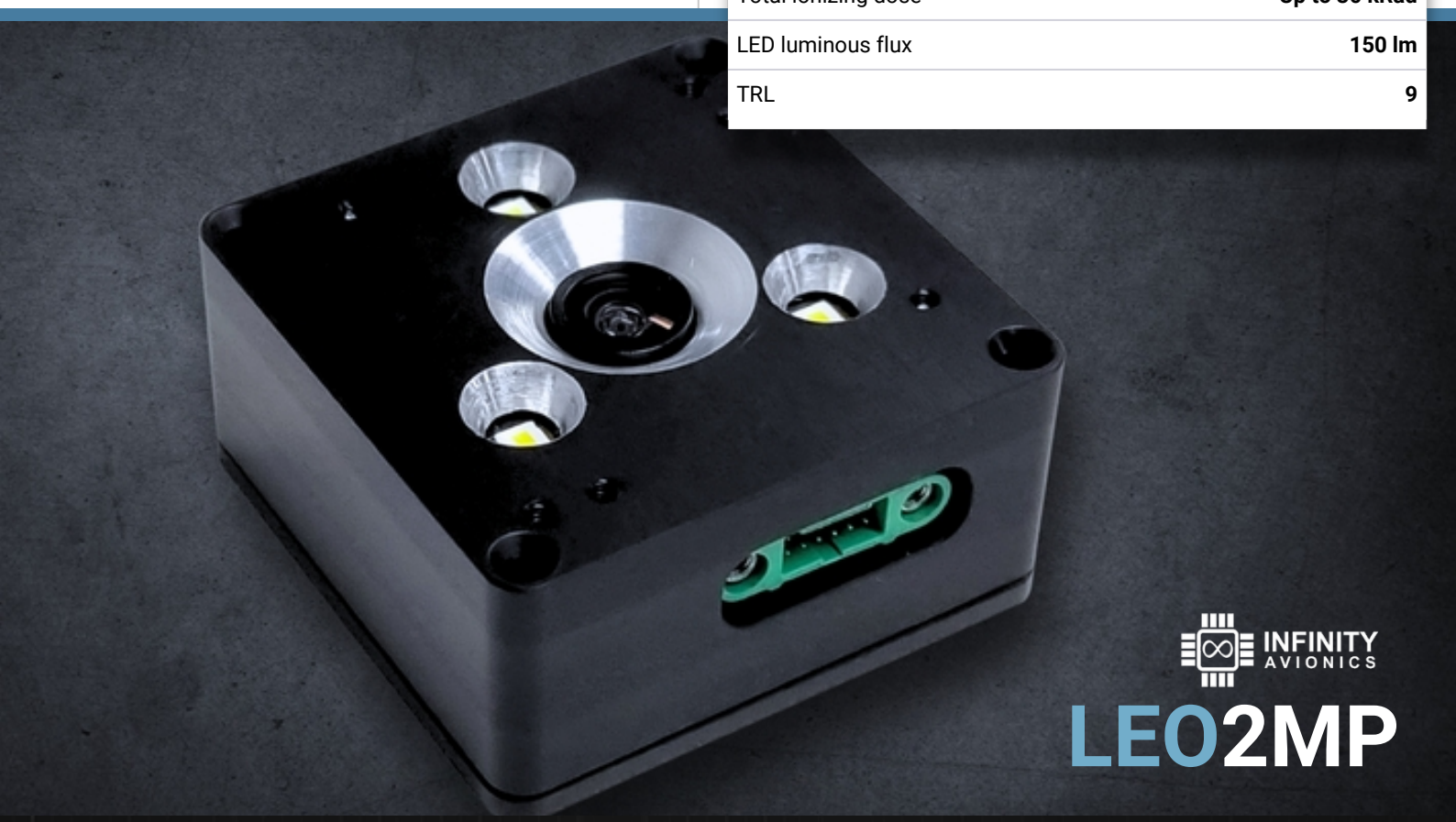
Leo2MP is a TRL9 2MP small form factor camera designed to support monitor camera applications. The camera support both image capture and save on-board memory or streaming over USB2 interface.

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
- rover applications.

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

Technical Specifications	
Image sensor	**CMOS RGB Rolling shutter**
Pixel resolution	**1200 x 1600 / 1024 x 768 / 800 x 600/ 640 x 480**
Pixel size	**2.2 µm**
Spectral range	**VIS**
Field of view (degrees)	**110°**
Focal length	**1mm**
Optical assembly	**Integrated optics with the sensor**
Image encoding	**JPEG**
Frames per second	**Up to 12 FPS (resolution dependent)**
On-board storage / flash memory	**200 images**
Communication / control interface	**UART – ASCII commands**
Image / bulk data interface	**UART / USB2**
Input voltage / power supply	**5 V DC**
Power consumption	**1 W (without LED) / 3.5 W (with LED)**
Size / dimensions	**45 mm × 45 mm × 20 mm**
Weight / mass	**65 g**
Operating temperature	**−20°C to 60°C**
Recommended temperature for imaging	**−20°C to 60°C**
Total ionizing dose	**Up to 30 kRad**
LED luminous flux	**150 lm**
TRL	**9**



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LEO2MP

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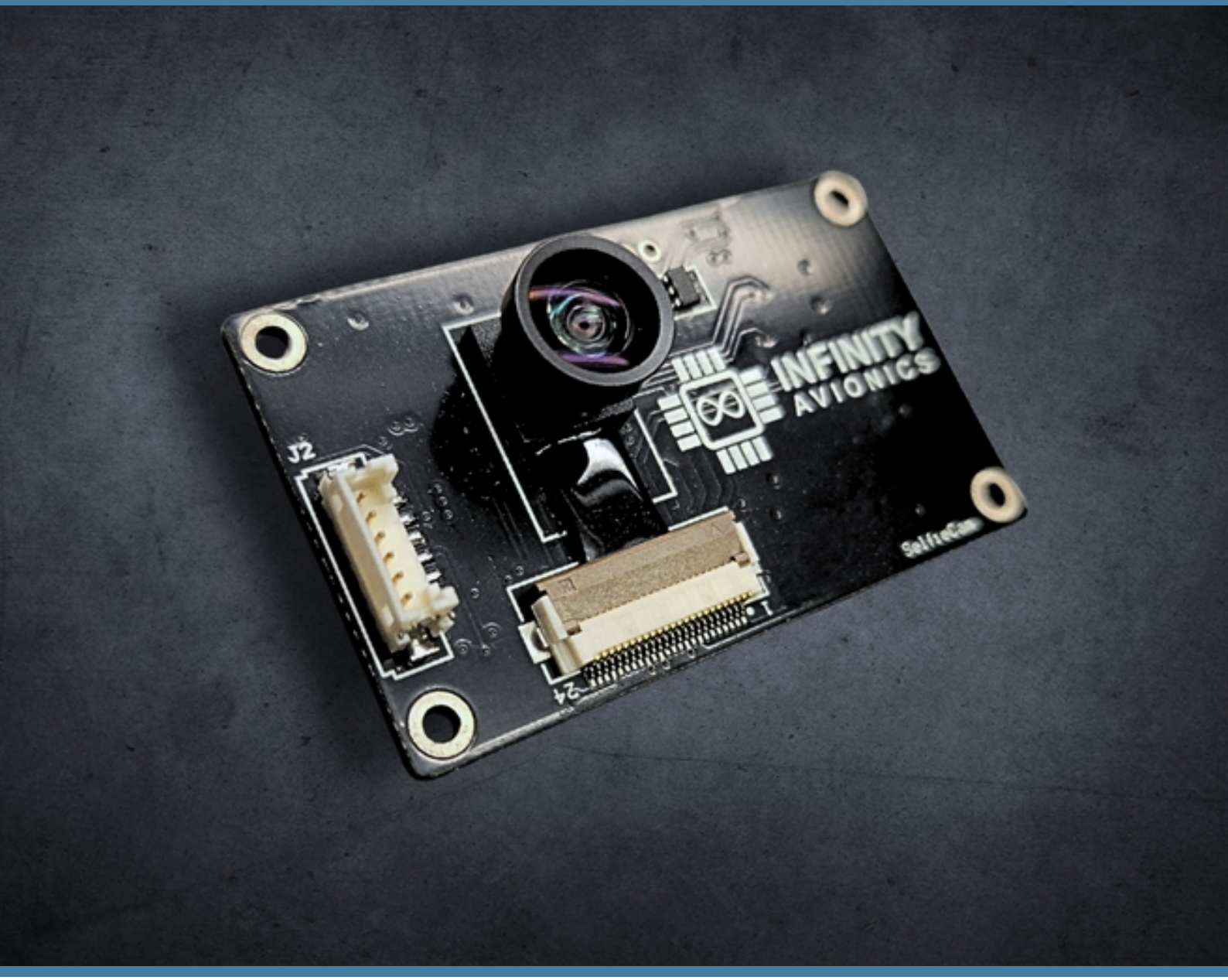

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SELFIECAM

| DEPLOYABLE STRUCTURE MONITORING | SOLAR PANEL MONITORING |
| THRUSTER MONITORING |

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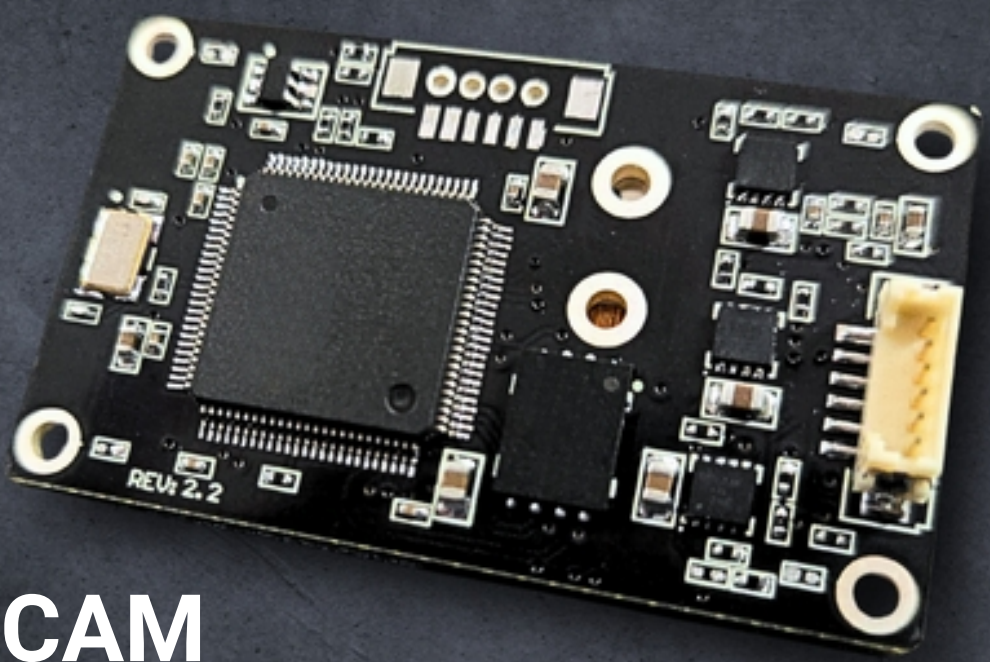
SelfieCam is a small form factor, TRL 9, space asset monitoring camera with demonstrated flight heritage through numerous space missions. The camera can capture and save images in non-volatile memory.

SelfieCam is designed with ease of integration and operation in mind, providing on-orbit imaging capability to your mission. On-board JPEG encoding enables small image sizes to support easy data downlink even with a weaker communication link. SelfieCam can be directly mounted on spacecraft chassis.

SelfieCam can capture and save JPEG compressed image frames up to 12 FPS allowing spacecraft deployment monitoring

Technical Specifications	
Image sensor	**CMOS RGB Rolling shutter**
Pixel resolution	**1024 x 768 / 800 x 600 / 640 x 480**
Pixel size	**2.2 µm**
Spectral range	**VIS**
Field of view (degrees)	**110°**
Focal length	**1mm**
Optical assembly	**Integrated optics with the sensor**
Image encoding	**JPEG**
Frames per second	**Up to 12 FPS (resolution dependent)**
On-board storage / flash memory	**500 images**
Communication / control interface	**UART with ASCII commands**
Image / bulk data interface	**UART**
Input voltage / power supply	**5 V DC**
Power consumption	**750 mW**
Size / dimensions	**50 mm × 30 mm**
Weight / mass	**10 g**
Operating temperature	**−20°C to 60°C**
Recommended temperature for imaging	**−20°C to 60°C**
Total ionizing dose	**Up to 30 kRad**
TRL	**9**



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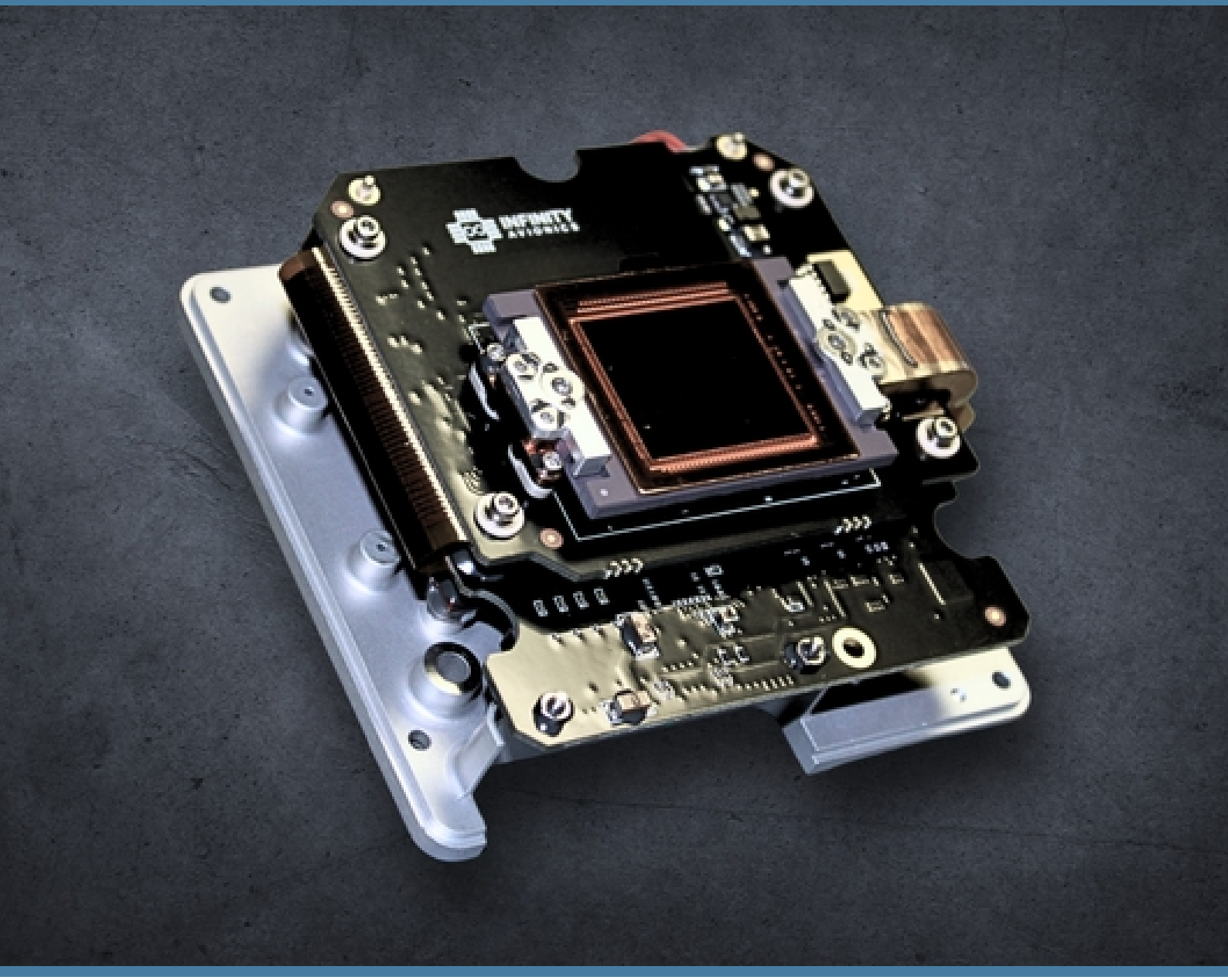

INFINITY AVIONICS

ORION12MP

| EARTH OBSERVATION | HYPERSPECTRAL IMAGING | SPACE BASED SPACE SURVEILLANCE | DOCKING/RENDEZVOUS |

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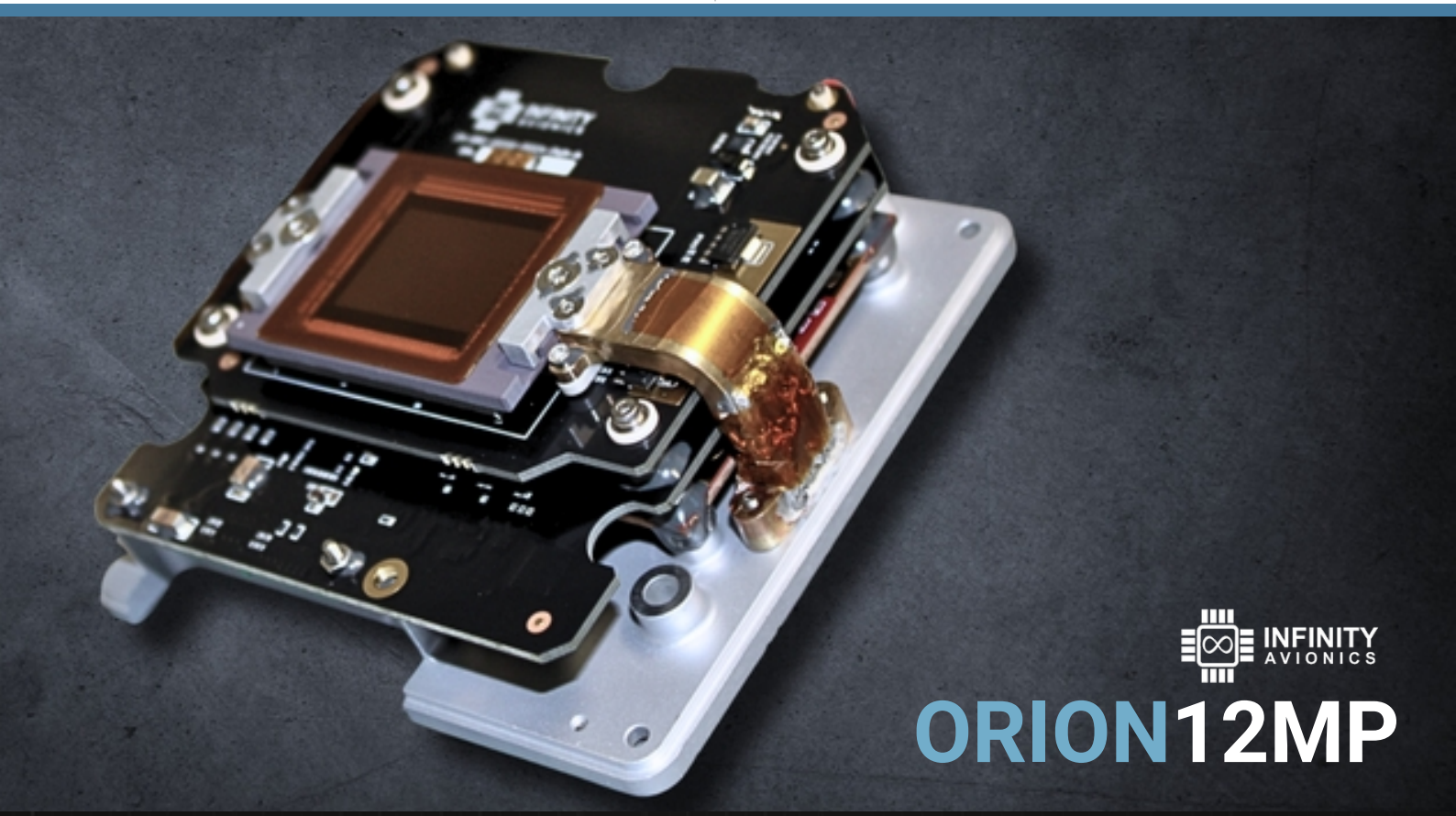
Orion12MP is a 12 Megapixel RGB/ Monochrome camera backend electronics unit which can be combined with application specific optical assemblies. Orion12MP is suitable for a range of space applications such as Earth observation, hyperspectral imaging, space based space surveillance, and docking/rendezvous 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 camera can be used to support:

- Space based space surveillance
- Space domain awareness
- Earth observation
- Rover/ lander applications

Technical Specifications	
Image sensor	**CMOS Global shutter**
Pixel resolution	**4096×3072 (12 MP)**
Pixel size	**5.5 µm**
Spectral bands	**RGB / Monochrome**
Image encoding	**RAW**
Frames per second	**Up to 100 FPS at full resolution**
On-board storage / flash memory	**256 GB**
On-board RAM	**Up to 290 full-resolution images**
Communication / control interface	**UART / RS485 / Ethernet**
Image / bulk data interface	**UART / RS485 / Ethernet**
Input voltage / power supply	**5 V DC**
Power consumption	**2.5 W Idle/ 6W max**
Size / dimensions	**96 mm x 91 mm x 37 mm**
Weight / mass	**290 g**
Operating temperature	**−10°C to 60°C**
Recommended temperature for imaging	**−10°C to 60°C**
TRL	**9**



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ORION12MP

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INFINITY AVIONICS

ORION12MP-550

| EARTH OBSERVATION | SPACE BASED SPACE SURVEILLANCE |

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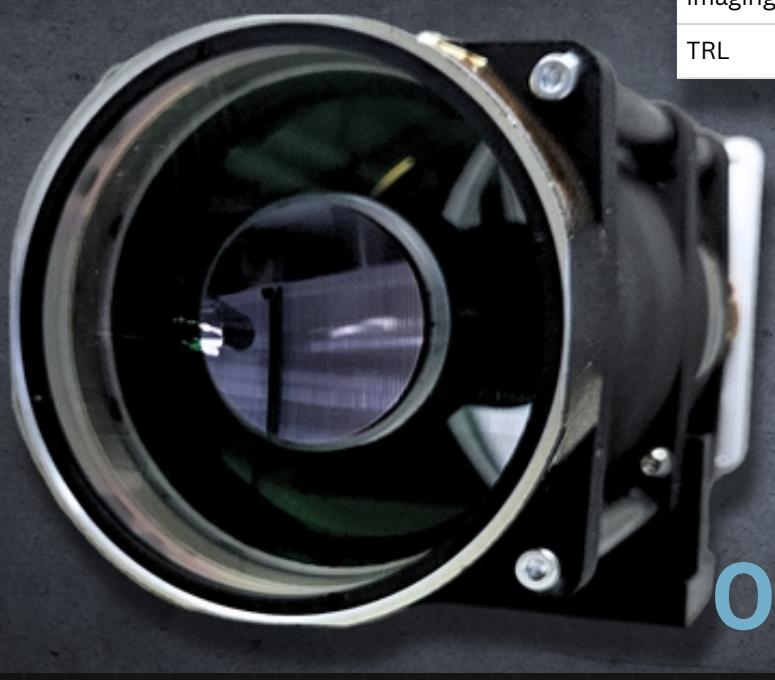
Orion12MP-550 camera comes with a 550mm focal length space grade optical assembly to support earth observation and space based space surveillance applications.

Technical Specifications	
Image sensor	**CMOS Global shutter**
Pixel resolution	**4096×3072 (12 MP)**
Pixel size	**5.5 µm**
Spectral range	**400 nm – 1000 nm (customisable)**
Spectral bands	**RGB / Monochrome**
Field of view (degrees)	**1.75°**
Focal length	**550 mm**
F number	**F/6**
Optical assembly	**Space-qualified 550 mm assembly**
Spatial resolution / GSD	**5 m at 500 km orbit**
Image encoding	**RAW**
Frames per second	**Up to 100 FPS at full resolution**
On-board storage / flash memory	**256 GB**
On-board RAM	**Up to 290 full-resolution images**
Communication / control interface	**UART / RS485 / Ethernet**
Image / bulk data interface	**UART / RS485 / Ethernet**
Input voltage / power supply	**5 V DC**
Power consumption	**2.5 W Idle/ 6W max**
Size / dimensions	**100 mm × 100 mm × 250 mm**
Weight / mass	**1.5 kg**
Operating temperature	**−10°C to 60°C**
Recommended temperature for imaging	**−10°C to 60°C**
TRL	**6**



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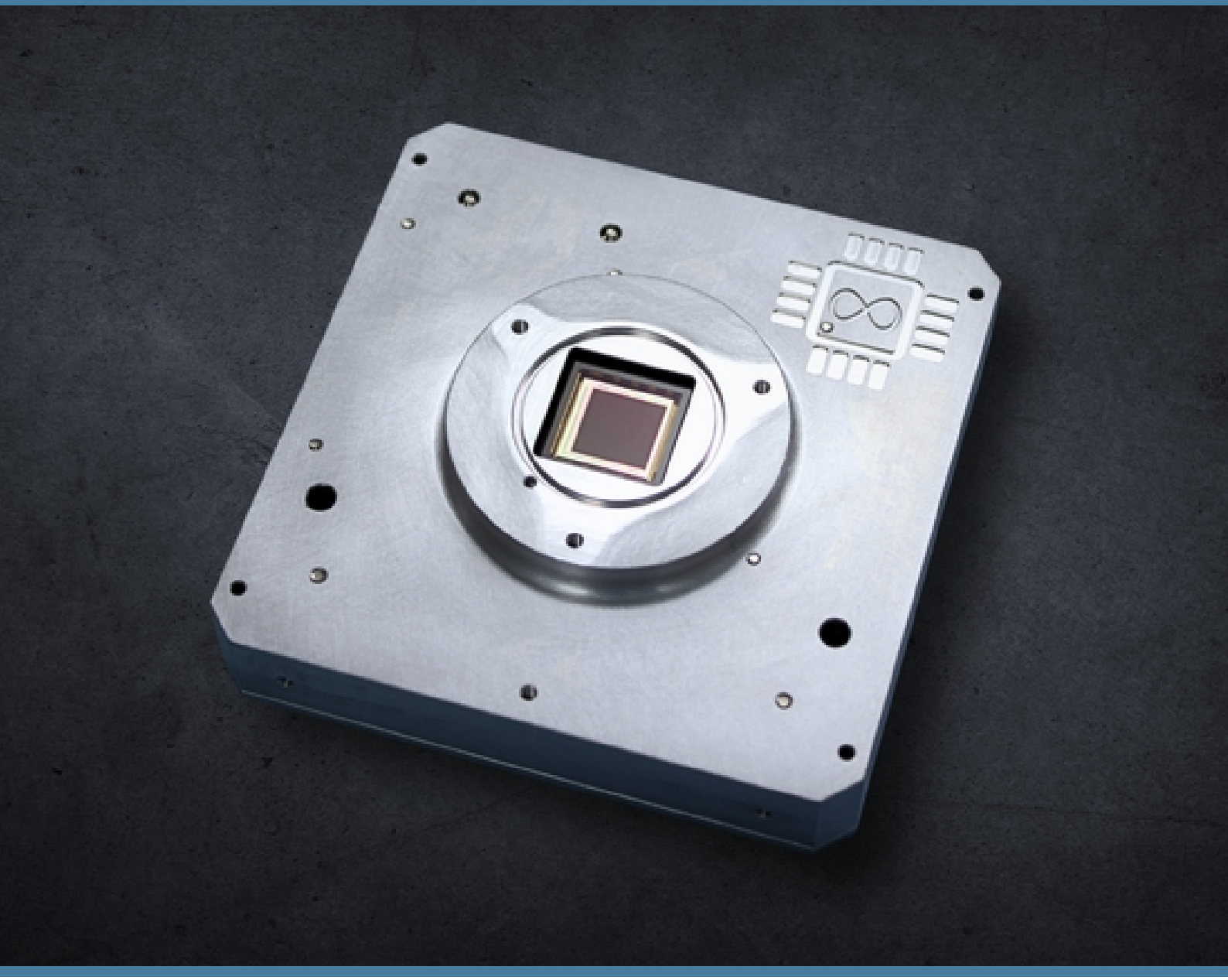

INFINITY AVIONICS

LYNX4MP

| EARTH OBSERVATION | NON-REAL-TIME SITUATIONAL AWARENESS |
| DEPLOYABLE STRUCTURE MONITORING | EXPERIMENT MONITORING |

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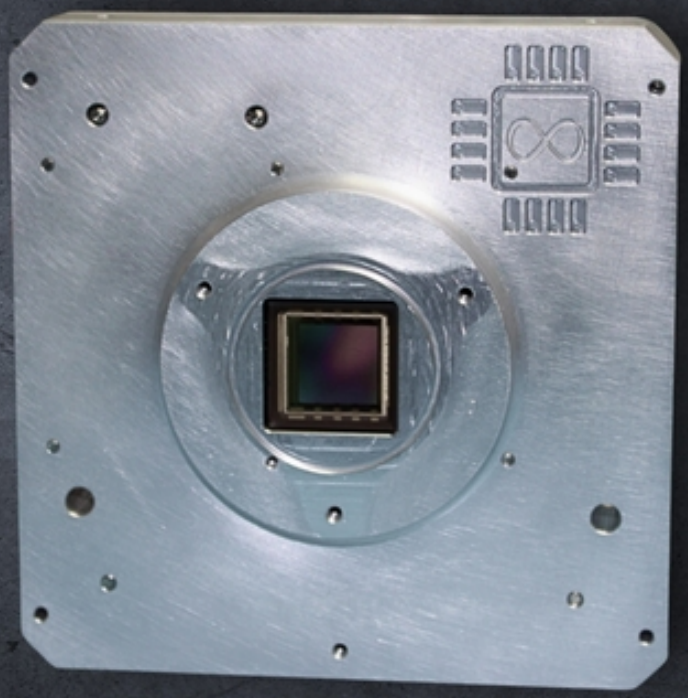
Lynx4MP is a 4MP RGB/Monochrome camera electronics backend designed for space applications. The system has been designed based on a space proven processor, sensor, and readout and storage electronics.

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**
Pixel resolution	**2048×2048 (4 MP)**
Pixel size	**5.5 µm**
Spectral bands	**RGB Bayer / Monochrome**
Image encoding	**RAW**
On-board storage / flash memory	**800 full-resolution images**
On-board RAM	**30 full-resolution images**
Communication / control interface	**UART / RS485**
Image / bulk data interface	**UART / RS485**
Input voltage / power supply	**5 V DC**
Power consumption	**2.75 W**
Size / dimensions	**95 mm × 95 mm × 21 mm**
Weight / mass	**255 g**
Operating temperature	**−10°C to 60°C**
Recommended temperature for imaging	**−10°C to 60°C**
Total ionizing dose	**Up to 40 kRad**
TRL	**9**



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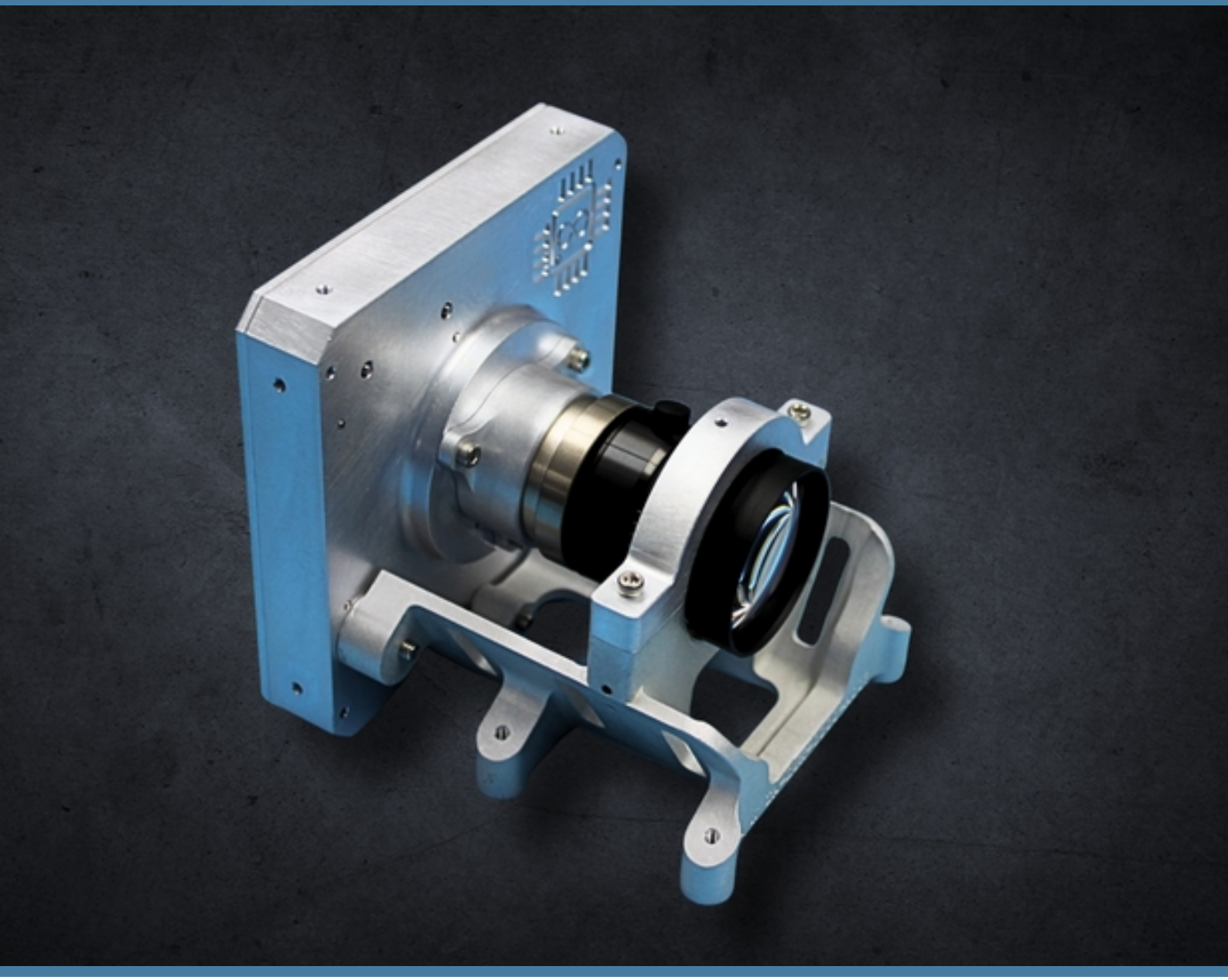

INFINITY AVIONICS

LYNX4MP-10

| EARTH OBSERVATION | NON-REAL-TIME SITUATIONAL AWARENESS |
| DEPLOYABLE STRUCTURE MONITORING | EXPERIMENT MONITORING |

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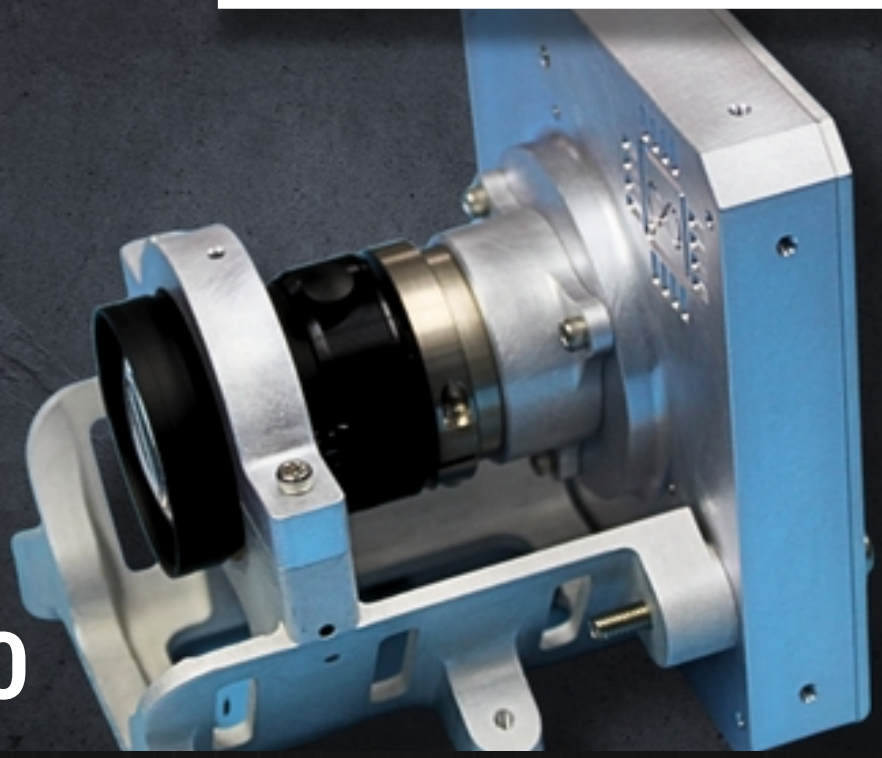
Lynx4MP-10 comes with a 10 mm focal length wide angle ruggedized optical assembly. The wide field of view is ideal for space based space asset monitoring and close proximity applications.

Lynx4MP-10 combines the TRL9 Lynx4MP backend electronics module with TRL9 C-mount optical assembly to provide wide field of view imaging capabilities to space missions.

Lynx4MP-10 is ideal to support space domain awareness, wide FoV earth observation, and space experiment monitoring applications.

Lynx4MP-10 can be customized with different optical filters based on the mission requirements.

Technical Specifications	
Image sensor	**CMOS Global shutter**
Pixel resolution	**2048×2048 (4 MP)**
Pixel size	**5.5 µm**
Spectral range	**VIS, NIR**
Spectral bands	**RGB Bayer / Monochrome**
Field of view (degrees)	**58°**
Focal length	**10 mm**
F number	**F/1.9 to F/16 (adjustable)**
Optical assembly	**C-mount, ruggedised**
Image encoding	**RAW**
Frames per second	**13 FPS**
On-board storage / flash memory	**800 full-resolution images**
On-board RAM	**30 full-resolution images**
Communication / control interface	**UART / RS485**
Image / bulk data interface	**UART / RS485**
Input voltage / power supply	**5 V DC**
Power consumption	**2.75 W**
Size / dimensions	**95 mm × 95 mm × 101 mm**
Weight / mass	**535 g**
Operating temperature	**−10°C to 60°C**
Recommended temperature for imaging	**10°C to 30°C**
Total ionizing dose	**Up to 40 kRad**
TRL	**9**



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LYNX4MP-10

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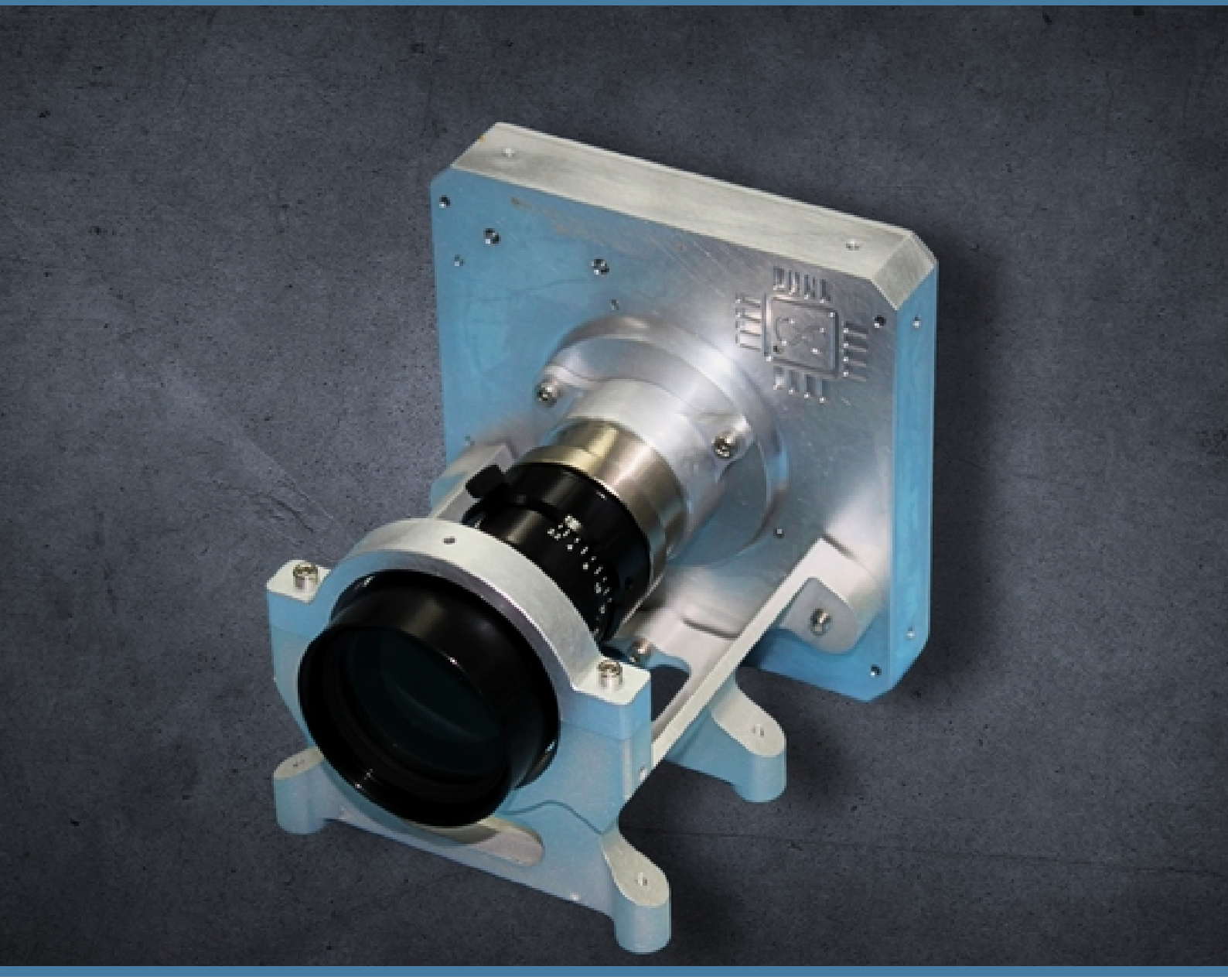

INFINITY AVIONICS

LYNX4MP-70

| EARTH OBSERVATION | NON-REAL-TIME SITUATIONAL AWARENESS |
| DEPLOYABLE STRUCTURE MONITORING | EXPERIMENT MONITORING |

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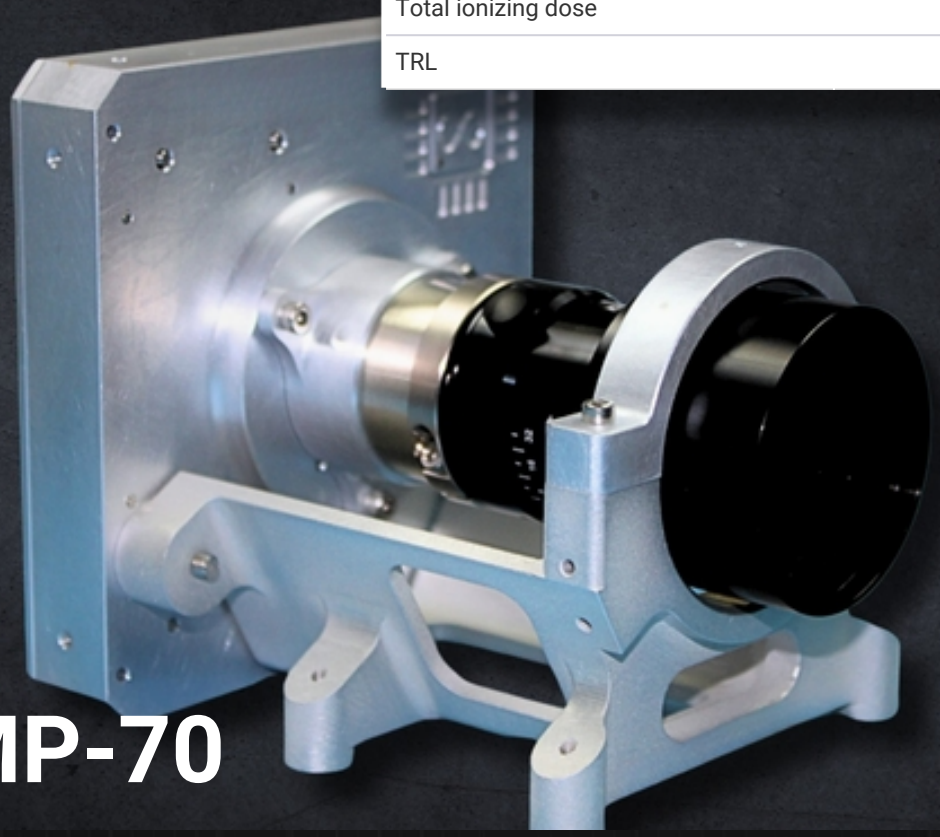
Lynx4MP-70 is a Lynx4MP camera variant with a 70mm ruggedized optical assembly. The camera can be used as an engineering camera, in docking/rendezvous applications as well as low spatial resolution Earth Observation.

Lynx4MP-70 combines the TRL9 Lynx4MP backend electronics module with TRL7 C-mount optical assembly to provide mid field of view imaging capabilities to space missions.

Lynx4MP-70 is ideal to support space domain awareness and wide FoV earth observation Lynx4MP-70 can be customized with different optical filters based on the mission requirements.

Technical Specifications	
Image sensor	**CMOS Global shutter**
Pixel resolution	**2048×2048 (4 MP)**
Pixel size	**5.5 µm**
Spectral range	**VIS, NIR**
Spectral bands	**RGB Bayer / Monochrome**
Field of view (degrees)	**9°**
Focal length	**70 mm**
F number	**F/4**
Optical assembly	**C-mount, ruggedised**
Spatial resolution / GSD	**39 m at 500 km orbit**
Image encoding	**RAW**
Frames per second	**13 FPS**
On-board storage / flash memory	**800 full-resolution images**
On-board RAM	**30 full-resolution images**
Communication / control interface	**UART / RS485**
Image / bulk data interface	**UART / RS485**
Input voltage / power supply	**5 V DC**
Power consumption	**2.75 W**
Size / dimensions	**95 mm × 95 mm × 111 mm**
Weight / mass	**595 g**
Operating temperature	**−10°C to 60°C**
Recommended temperature for imaging	**10°C to 30°C**
Total ionizing dose	**Up to 40 kRad**
TRL	**9**

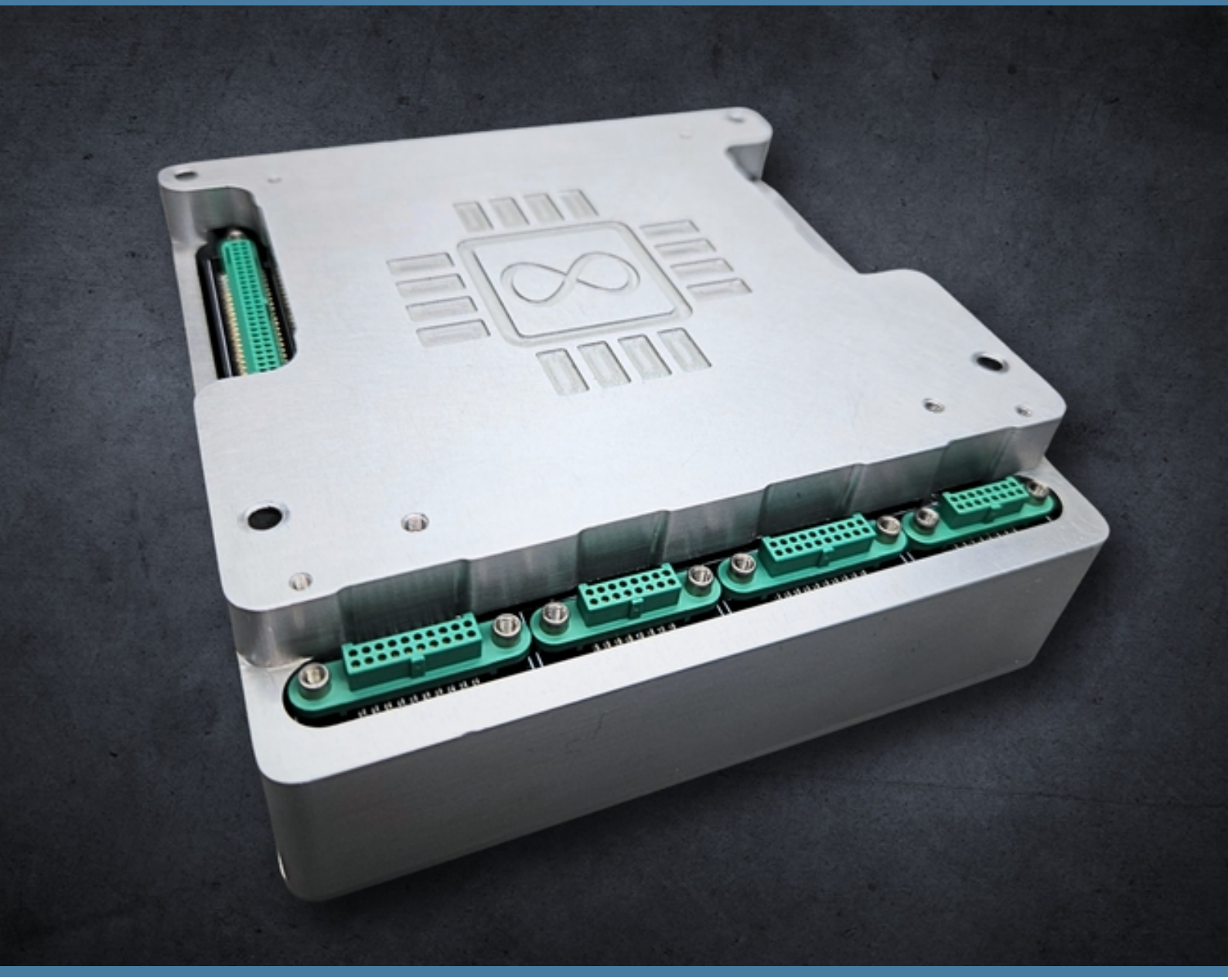


INFINITY AVIONICS

LYNX4MP-70

www.infinityavionics.com

info@infinityavionics.com



INFINITY AVIONICS

BRAIN

| SPACE EDGE PROCESSOR | ON-ORBIT IMAGE PROCESSING | SENSOR FUSION | DATA PROCESSING | AI AND MACHINE LEARNING |

www.infinityavionics.com

info@infinityavionics.com

Infinity Avionics BRAIN is a Jetson Orin NX based edge processing solution for space applications. BRAIN 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.

BRAIN processor can be used as a general purpose space edge processor to support:

- on-orbit image processing
- data processing
- sensor fusion
- artificial intelligence and machine learning

Combine with data streaming cameras like Leo2MP, Aquila, or Draco with powerful BRAIN processor to support real time process monitoring, control loops, and improved autonomy.

BRAIN Processor is available with polymer based radiation enclosures for added radiation protection.

Technical Specifications	
On-board storage / flash memory	**PCIe Gen3 NVMe 256 GB**
On-board RAM	**16 GB/ 8GB (Jetson Orin NX)**
Communication / control interface	**Ethernet, USB, UART, GPIOs**
Input voltage / power supply	**12 V**
Power consumption	**7W Idle/ 30 W max**
Size / dimensions	**100 mm × 100 mm × 35 mm**
Weight / mass	**530 g**
Operating temperature	**-25°C to 99°C (SoM temperature)**
TRL	**9**

INFINITY AVIONICS

BRAIN

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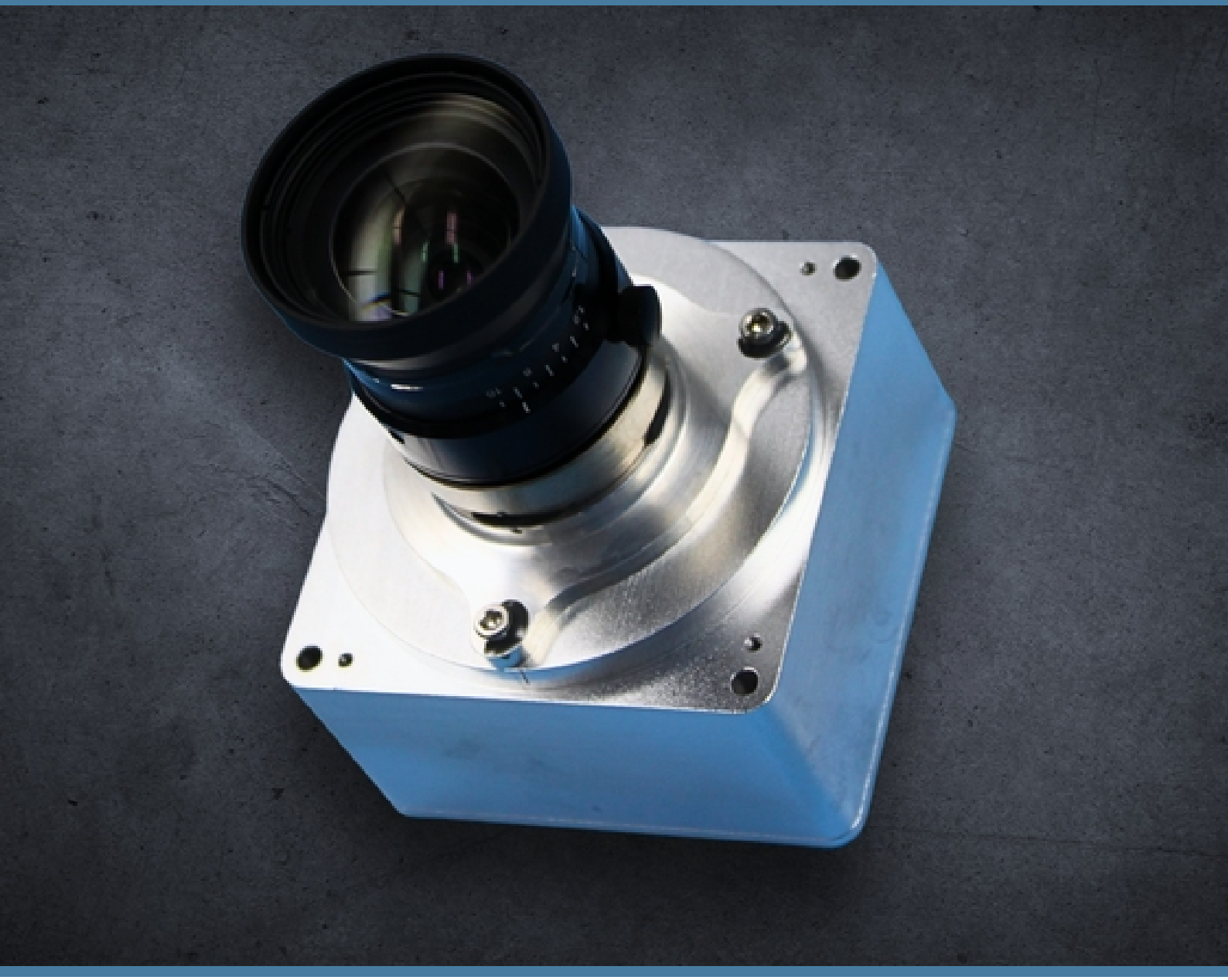


INFINITY
AVIONICS

DRACO

| NAVIGATION | RENDEZVOUS, PROXIMITY OPERATIONS AND DOCKING |
| SPACE DOMAIN AWARENESS |

www.infinityavionics.com

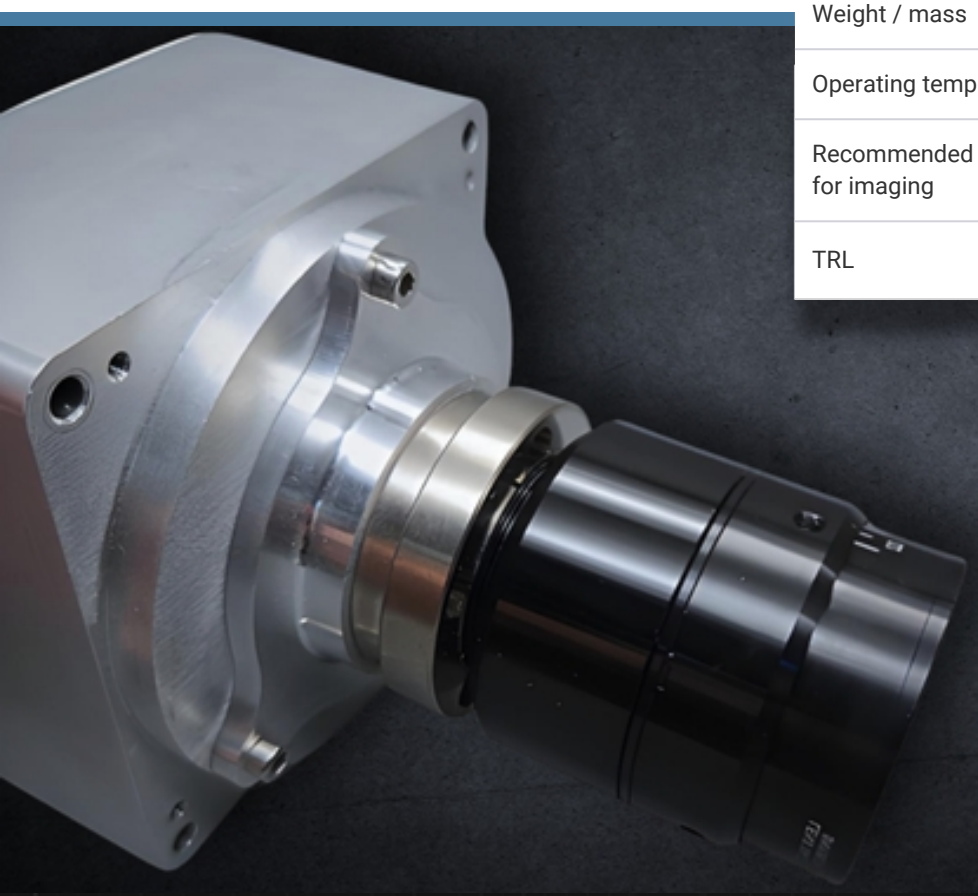
info@infinityavionics.com

DRACO is an Event Based Sensor (EBS), also known as a Neuromorphic Sensor, designed to support space applications. Due to its inherent sensing technology, it produces low amounts of data and requires low power making it suitable for persistent space surveillance applications while supporting a high dynamic range.

Draco backend electronics can be combined with different optical assemblies to suit a range of space applications ranging from navigation to Rendezvous & Proximity Operations (RPO) to Space Domain Awareness (SDA).

Draco is available with Infinity Avionics BRAIN processor as an integrated system including camera driver software and SDK to support easy integration.

Technical Specifications	
Image sensor	**CMOS Event sensor (neuromorphic)**
Pixel resolution	**640×480**
Pixel size	**9 µm**
Spectral range	**VIS**
Spectral bands	**VIS**
Field of view (degrees)	**Multiple wide FoV and narrow FoV options**
Focal length	**Multiple focal length options**
F number	**Multiple F numbe roptions**
Optical assembly	**Multiple wide / narrow FoV options**
Communication / control interface	**USB 2/3**
Image / bulk data interface	**USB 2/3**
Input voltage / power supply	**5 V DC**
Power consumption	**0.5 W**
Size / dimensions	**Depends on the optics options**
Weight / mass	**Depends on the optics options**
Operating temperature	**0°C to 70°C**
Recommended temperature for imaging	**0°C to 70°C**
TRL	**4**



INFINITY AVIONICS

DRACO

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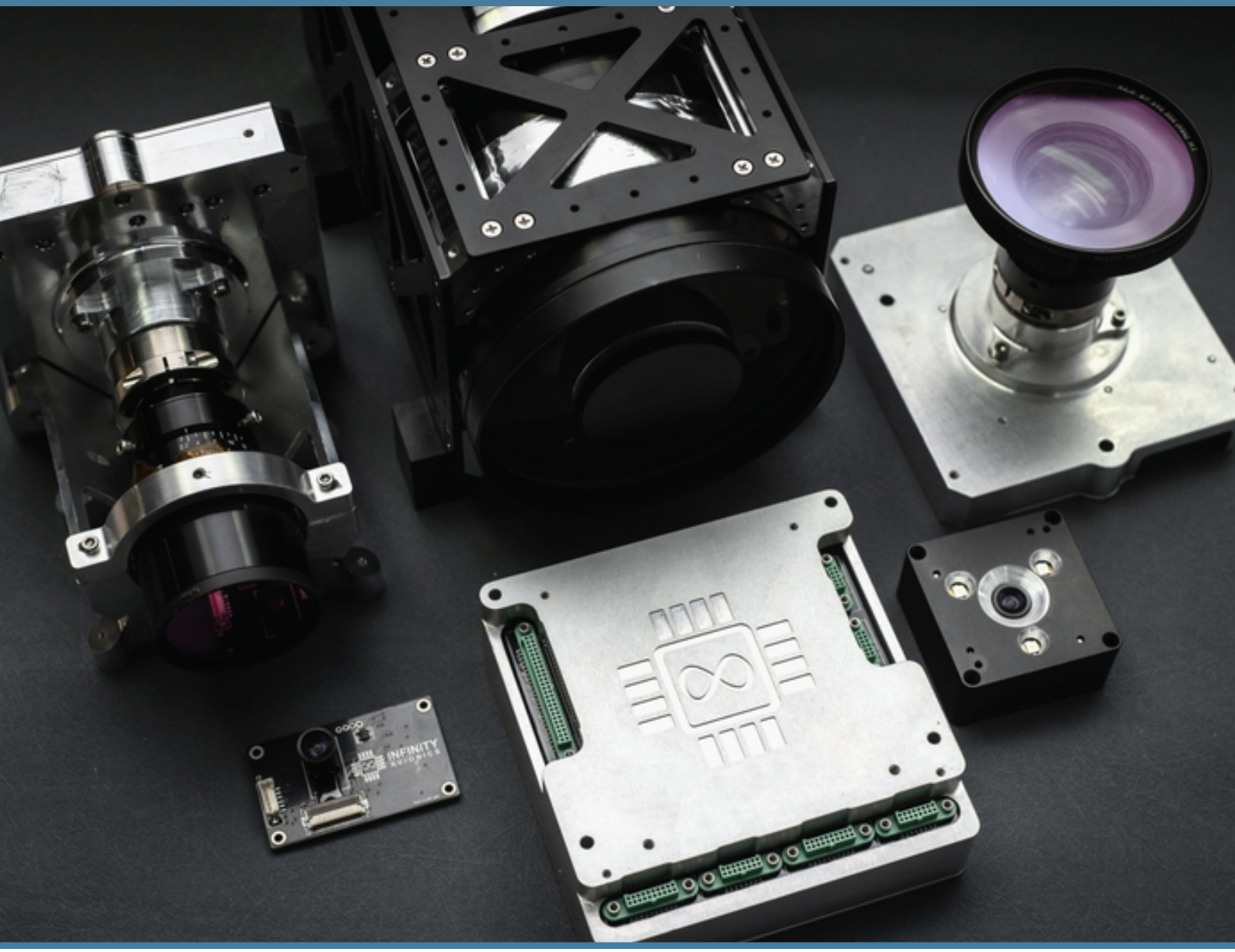

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Rev. 15.