ARGUS VISION SYSTEM

PRODUCT DESCRIPTION

Introducing the Redwire Space ARGUS Vision System, an adaptable and high-performance smart camera platform tailored for spaceflight applications such as payload deployment verification, vehicle inspection, close to medium range situational awareness, in-space assembly and manufacturing (ISAM), Rendezvous Proximity Operations and Docking (RPOD), and support for robotic and crewed surface operations. ARGUS boasts onboard processing features like image compression, storage, and the flexibility to accommodate client-specific machine vision applications. This modular system offers numerous configurations with diverse interface options and the ability to support up to three image sensors. Tested for radiation and environmental resilience, ARGUS has a proven track record, with 14 units set to reach the lunar surface in 2024 as part of the Commercial Lunar Payload Services (CLPS) program and an additional unit scheduled for an RPOD tech demo mission in late 2023.

Stay tuned for upcoming imaging capability upgrades.

APPLICATIONS

+ Spacecraft State Monitoring (Deployments, Assembly, Inspection, PR)
+ Rendezvous, Proximity, and Docking Operations (Stereo Imaging, Hosted On-Board Machine Vision Algorithms)
+ Space Situational Awareness (Resident Space Object Detection, Surveillance)

PARAMETERS

DIMENSIONS

+ Dimensions
  79 mm x 83 mm x 65 mm

INTERFACES

+ Data
  Ethernet 1000 BASE-T | Micro-D
  RS-422 | Micro-D
  802.11 ac WiFi | SMA

+ Input VoltageRange
  24V to 32V | Micro-D
  Lower input voltage optional

+ Mass
  140-250 grams including lens(es)

+ Lens Interface
  S-Mount

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### Imaging Specifications

- **Maximum Image Resolution**: 4208 x 3120 pixels
- **Image Formats**: JPEG, RAW10
- **Pixel Bit Depth**: 8 or 10-bit
- **Maximum Video Resolution**: 4k-3840 x 2160
- **Maximum Video Frame Rate**: 30 FPS
- **Video Compression Codecs**: h.264 and h.265
- **Shutter**: Rolling Shutter, RBG
- **Qualified Lenses**: Multiple lens options ranging from 2mm to 16mm focal length.

### Memory and Storage

- **4 or 6 GB of SDRAM at 1.8 GHz**
- **128 GB On-board SD Card Storage**
- **On-Board GPU**

### Processing

- **8-Core ARM CPU**: (4 @ 2.7 GHz and 4 @ 1.7 GHz)
- **On-Board DSP**
- **On-Board GPU and DSP SDKs available**

### Testing

- **Radiation TID**: 10 krad (200MeV p*)
- **Radiation SEU**: 0.049 um^2 3-σ Cross-Section
- **Random Vibration**: 24 Grms
- **TVAC**:
  - Number of Cycles: 12
  - Op: -35°C to +65°C
  - Non-Op: -50°C to +85°C
- **Shock**: 1960 Gs

### Other Features

- 60-180 lumen LED illuminator for basic scene illumination and use with retroreflectors.
- Standard M12 lens interface for wide range of FOV options.
- On-board closed-loop heater for critical components.
- Software-defined heater and overtemperature setpoints.
- On-board over-current and over-voltage protection circuitry.
- Multiple mechanical configurations available: Normal, Panoramic, Stereo, Others.
- Stereo imaging.
- On-board camera function API for customer software development.
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