Advanced Technologies | Datasheet

CALIAN®
Confidence. Engineered.

Multi-Camera Image Capture System

Capture system for drone, security, and AI Applications

Low-Latency FPGA-Based Image Capture Solution

Calian's Image Processing System provides high-speed image capture from multiple cameras simultaneously with low-latency processing capabilities suitable for drone, security, and time-sensitive AI applications.

Simultaneous High-Quality Image Capture

The Image Processing System supports up to 6 real-time controllable cameras each capable of streaming RGB-IR (Infrared) high-framerate images to a central FPGA processing unit for RAW image storage, image processing, and AI processing.

- Real-time configuration/control
- GPS Timestamps & sensor metadata per frame
- RAW image color reconstruction

Synchronized Auxiliary Sensor Suppor Support

Multiple auxiliary sensors (i.e. LiDAR) can be added to tailor the system for your unique requirements and use cases providing maximum flexibility for a differentiated solution.

High-Capacity Image Storage

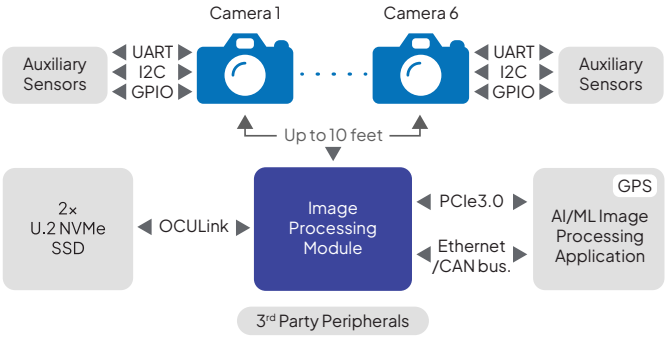
Capture and store millions of RAW images to a pair of high-capacity solid state drives (up to 32 TB each) for non-time-critical analysis and post processing, allowing longer capture times before needing to change storage devices.

Low-Latency Processing

Low-latency image processing of images is performed in an FPGA to support time critical applications. A high-speed PCIe interface allows the Image Capture System to be easily integrated into existing AI/ML solutions, reducing time to market.

Easy Integration – Endless Configuration

Designed with standards-based interfaces and a REST API to be easily and quickly embedded into existing designs. In addition, each camera can be placed up to 10 feet from the central processing unit allowing the cameras to be placed in unique configurations for maximum flexibility in physical design.



Parameter	Specification
Storage	
Image Format	RAW 12-bit per pixel Colour 4 x 8-bit per pixel
Image Capture to PCIe processing	<20ms
Image Sensor –5.33MP CMOS	
Resolution	2592 x 2056
Frame Rate	Up to 120 fps*
Shutter	Progressive scan
Pixel Size	3.4um x 3.4 um
Filter Type	RGB-IR
ROI	8 Regions (capable)
Interfaces	
Camera board	6 x Automotive USB-C 6 x... USB-C (**proprietary protocol**)
Oculink	4i x 2 – U.2 NVMe Storage devices 8i x 1 – PCIe 3.0 x 8
RJ45	Management/Control, IEEE1588
CAN Bus	Management/Control (future)
Aux Sensor	I2C; GPIO; UART
Power	
Input Voltage	12VDC @ < 60W
Environmental	
Dimensions	8.35" x 5.2" – Image module 3.63"x 3.4" – Camera module

* System supports up to 50 fps for 6 - camera use case due to PCIe 3.0 data rates caps. Sensor is capable of up to 120 fps.

Use Cases/Applications

Geographical Surveying

- Multiple cameras capture larger geographical areas by increasing the area captured by each pass of the drone at maximum resolution.
- Auxiliary sensors can provide additional information specific to unique surveying applications.
- Dual high-capacity storage devices allow longer flight time of lossless image capture before reaching maximum onboard storage capacity.

Security Automation

- Low-latency edge-compute image processing for time-critical threat detection via connected AI system for detect-then-act applications.
- Multiple cameras provide information from different angles to better assess potential hostile situations.
- Infrared imaging provides higher quality imaging in low-light environments and times of day.

Quality Assurance

- Maximize efficiency of defect screening in high-volume manufacturing by using low-latency image processing in combination with AI and ML.
- Utilize multiple cameras to inspect goods from different perspectives simultaneously.
- Use infrared imaging and or sensor fusion data to gain high degree of insight for produce, pharmaceutical sorting/grading.

Infrastructure Structural Inspection

- Efficient inspection over large geographical distances in a single pass by positioning up to 6 cameras in unique configurations.
- Combine with sensors and low-latency image processing to enable AI to auto detect defects that need human intervention.

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