SIGHTLINE PRODUCT OVERVIEW

June 2016

SightLine Applications provides
onboard video processing to integrators.

Make your system *AMAZING*!

APPLICATIONS

Advanced Video Processing for a Wide Range of End Uses (Civil, Commercial, and Military):

- ✓ Intelligence, Surveillance & Reconnaissance (ISR)
- ✓ Border Patrol / Law Enforcement / Search and Rescue
- ✓ Fire / Environmental Survey
- ✓ Infrastructure Inspection
- ✓ Industrial Security
- ✓ Agriculture & Resource Mapping
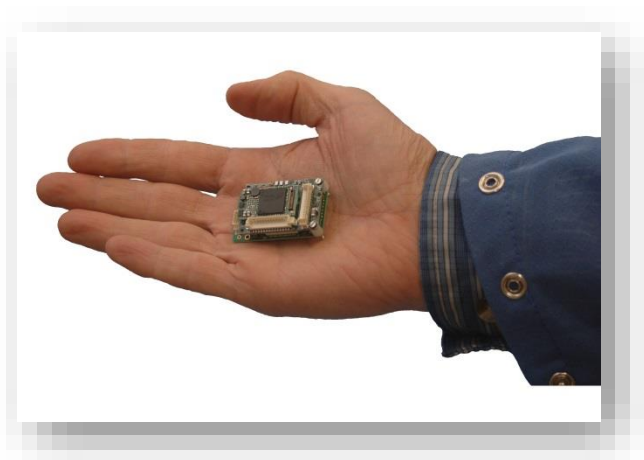
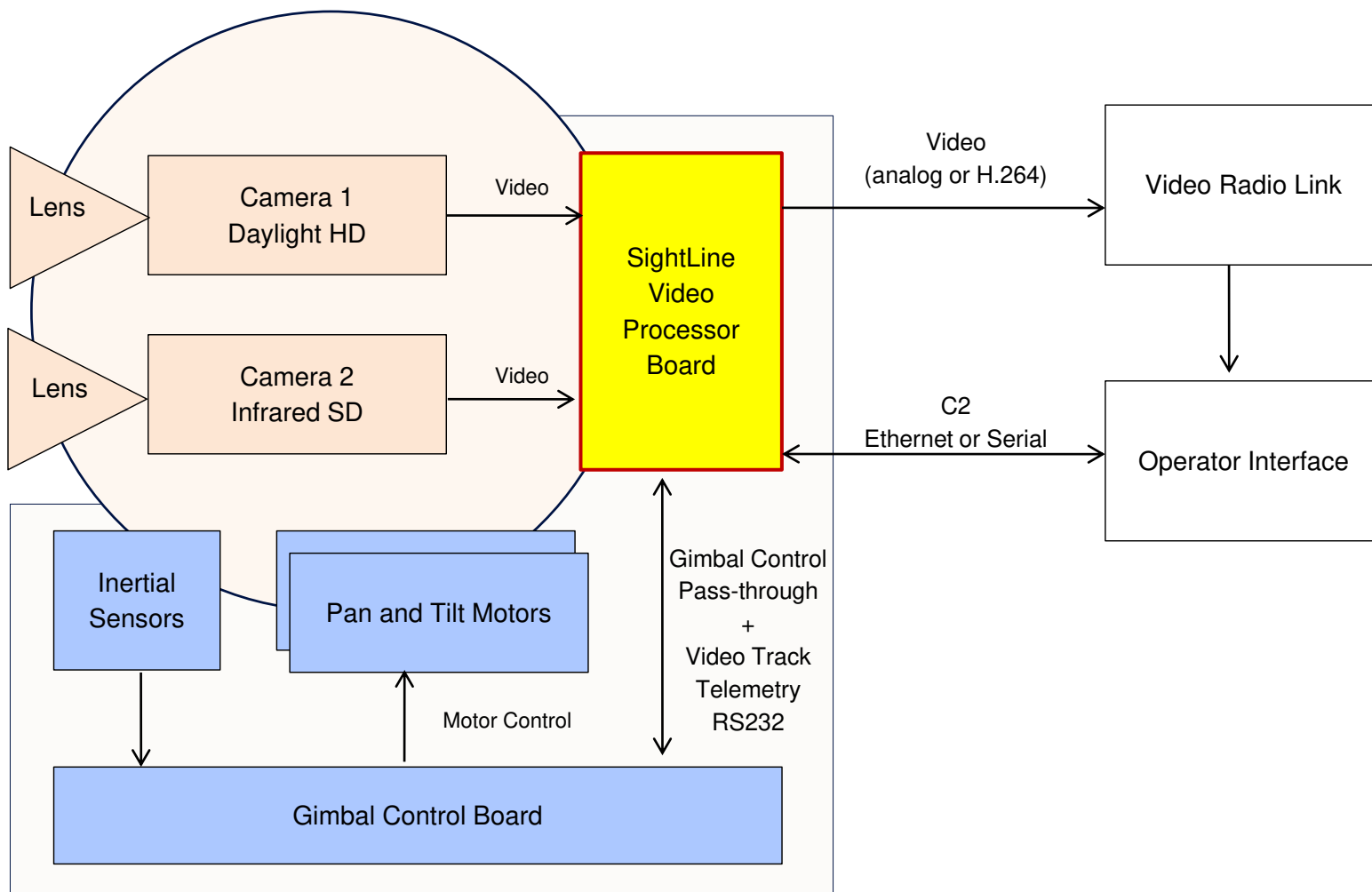Airborne / Aerostat / Ground / Marine
Unmanned / Manned

Onboard Video Processing

Why ONBOARD

- Tight Integration with Camera Systems
- Low Latency Feedback
  - Gimbal Pointing
  - Operator Situational Awareness
  - Landing Guidance
- Enables FULL-DIGITAL Video Path
  - Best Video Quality for Processing and Operator
  - Easy Compatibility with IP Radios, Rovers, etc.
- Reduced Ground Station Complexity
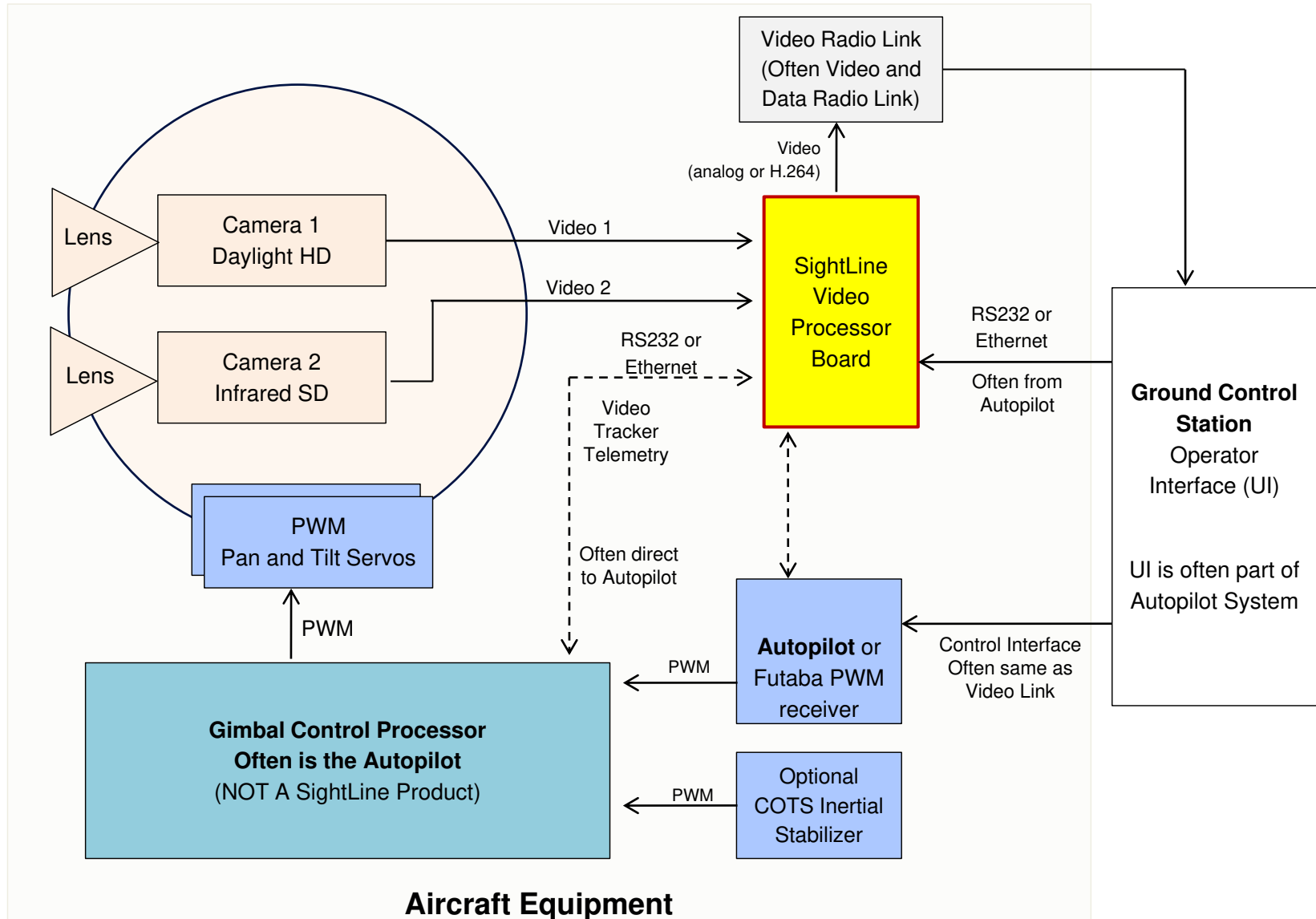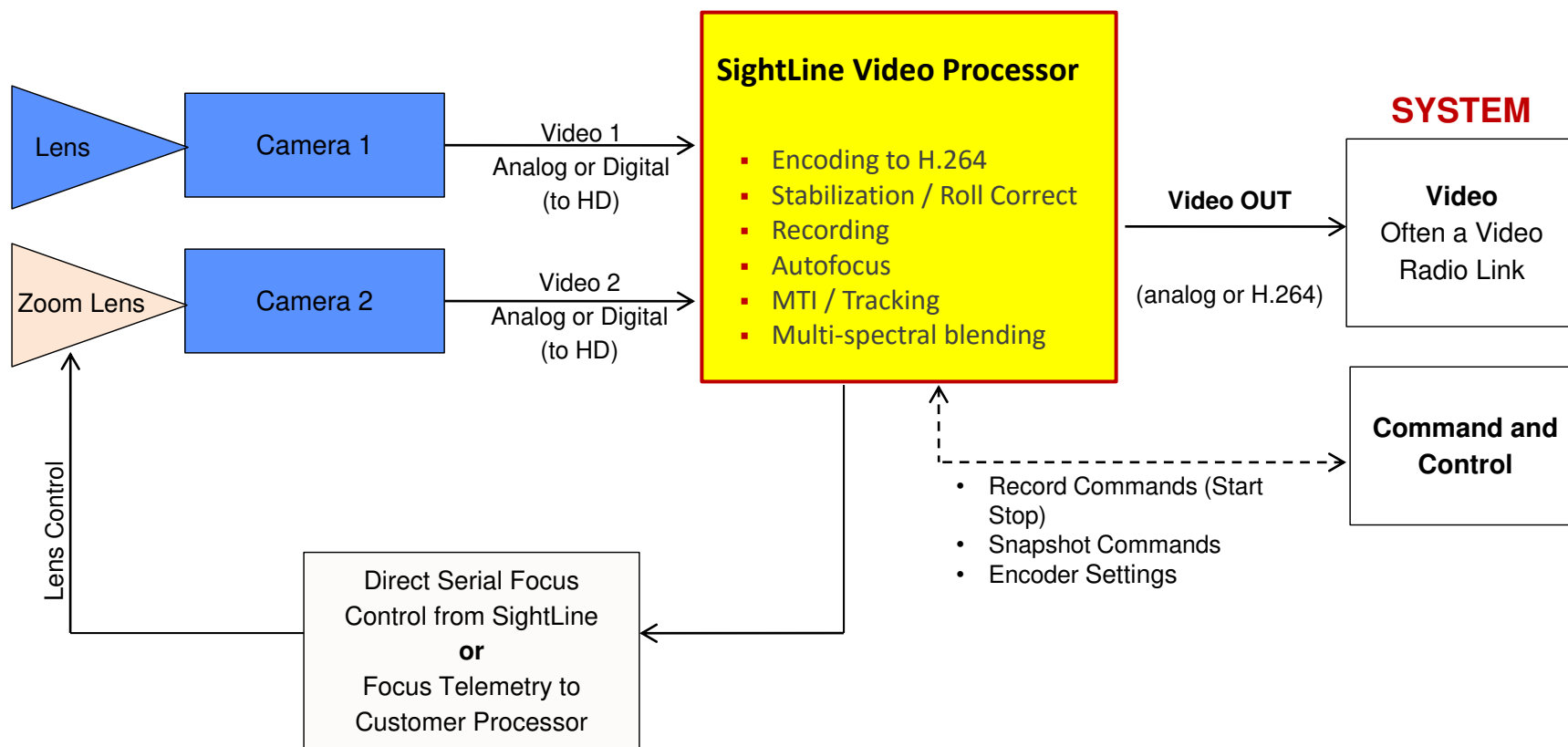- Low Size, Weight, and Power (SWaP)

Gimbaled Camera System

Small UAS Servo Gimbal

Fixed Camera Support

SIGHTLINE ADVANTAGES

Flexible Solutions
- Complete HW/SW solutions – provides a range of processing options
- Customizable configuration to support best feature set for customer budget
- Customer Interface Board design support
- Agile Development Methodologies

Experience
- Extensive unmanned systems experience: micro gimbals, small gimbals, fixed
- Over 3,000 installations on both air and ground vehicles
- Approaching **1 Million** hours in-theater experience with stab/track +, resulting in proven algorithms

Customer Support
- True engineering integration support
- No additional cumbersome tools necessary

Non-ITAR solutions
- SLA products are controlled under the BIS, EAR ECCN 4A994, 4D994

SIGHTLINE PRODUCTS
FULL FEATURED VIDEO PROCESSORS

SLA and SLE Options

SLA Family: Full Featured Video Processors
- Scene and Object Tracking Telemetry Data - Feedback to **Steer Gimbaled Cameras**
- Access to the FULL set of SightLine functions

SLE Family: Advanced Video Encoder / Stabilizer / Recorder
- Same Hardware and Base Software as SLA
- Attractive Price Point
- No Telemetry or Tracking
- Upgradable to SLA

The Heart of SightLine Products – Our Video Processing Software

Video Stabilization

The starting point for all video processing improvements. Frame to frame registration provides corrections that dramatically improve video.

- Accurate frame to frame change detection
- Removes high frequency jitter

Roll Correction

Registration also provides ability to correct camera frame to frame rotation, further improving the user experience.

- Correction of platform roll motion
- Aerostats, Towers, UAS
- Roll/nod gimbal configurations

Scene and Object Tracking

Robust hands-free tracking of scene and designated objects. Onboard tracker provides low latency solution needed for nimble pointing control systems.

- Scene tracking = powerful, intuitive gimbal feedback mode
- Robust tracking – Automatic Track Re-initialization
- Track through temporary obstructions

SLAnding Aid

Autonomous landing pattern tracker and flight control feedback.

- Autopilot interface to provide flight corrections to landing pattern
- Provides range, angle, yaw, offsets
- Independent of GPS

The Heart of SightLine Products – Our Video Processing Software

Detection Functions

Multiple detection modes provide important situational awareness information and provide fast feedback **essential for effective track initialization on moving objects**.

- Detect very small moving targets
- Simple track selection method
- Three MTI modes support a range of applications
- Color based (histogram) difference detector algorithm helps find objects that are different that the scene background

Video Enhancement & OSD

A range of functions are provided to enable enhancement options to optimize video for the needs of each application.
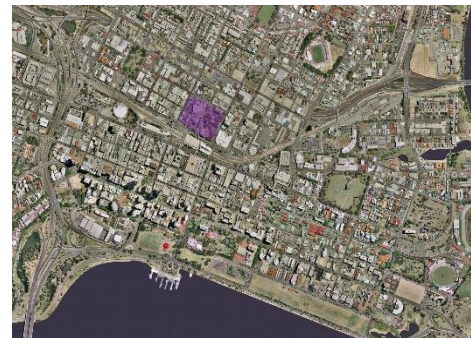
- Digital Zoom, CLAHE and LAP, De-Noising of video. Edge sharpening.
- Text, shapes and custom reticle overlays
- False color schemes
- Extended 14 bit-depth processing

Video Presentation

A range of functions are provided to enable enhancement options to optimize video for the needs of each application.

- Picture-in-Picture
- Multispectral Blending
- Side by Side
- Switching
- Multiple streams

The Heart of SightLine Products – Our Video Processing Software

Video Encoding and KLV Metadata

Ethernet video outputs support new IP radio options and reduces system bandwidth.

- MPEG2 TS (H.264 +KLV metadata)
- MPEG4
- RTP M-JPEG
- KLV metadata to MISB standards
- Settings Flexibility
- Metadata on VBI lines over analog

HD Video

Providing a range of solutions to meet demand for HD video capabilities. OEM board specific.

- 1080p/30 on SLA-3000
- 720p on SLA-1500
- Adaptors for HD block cameras, HDSDI, HDMI

Video + Snapshot Recording

Onboard recording on SLA/SLE-1500. Interface board SD card for SLA/SLE-3000.
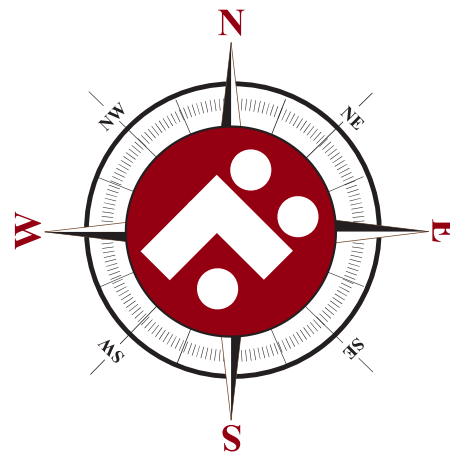
- Full resolution snapshot recording
- Snapshots with EXIF data
- Full pixel depth data .PNG snapshots with metadata (for radiometric data access)
- Telemetry data recording

The *SLAnding Aid* supports autonomous landing operations by tracking an easy to place landing pattern.

The tracker provides pattern position, range, and angle to the vehicle landing logic, supporting a wide range of landing scenarios.

✓ Supports flexible approach ranges and angles

✓ Detection of people in landing zone

✓ Independent of GPS - Enables accurate landing in GPS-denied environments

✓ Replaces expensive laser based ranging systems. Inherently eye safe

✓ Integration of telemetry data to Autopilot to provide autonomous guidance:
  • Piccolo and PixHawk Integrations Complete
  • Customer Autopilot integration supported with full example code / no NRE

✓ Runs on both **SLA-1500** and **SLA-3000** video processors

Patents pending for both the pattern tracker and safety zone detection functions

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APPLICATION FOCUSED TOOLBOXES

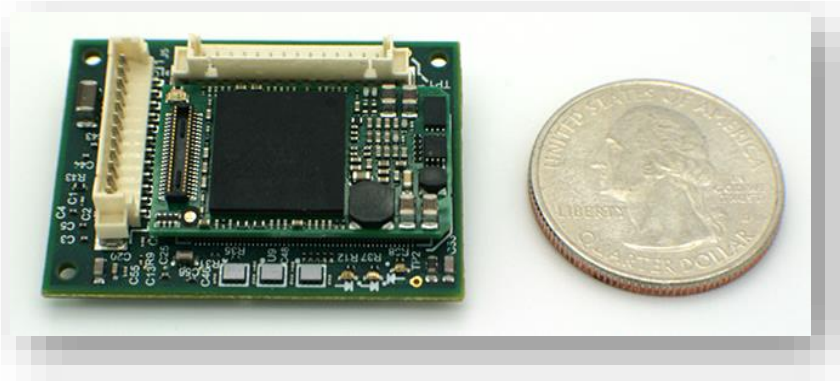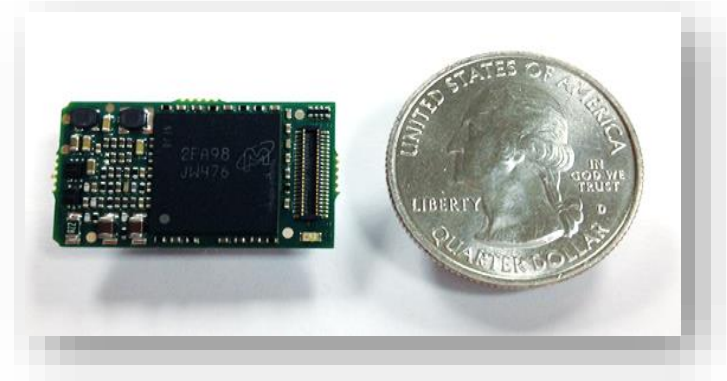| Application	Toolbox: Value Adding Functions
Airborne Surveillance (Mil, Law enforcement, Border, Search and Rescue, etc.)	• Gimbal Control • Stabilization • Scene Steering / Object Tracking • Detection Algorithms • Auto-landing
Natural Resources (Fire, Wildlife, Mapping)	• Gimbal Control • Detection / Scene Steering / Tracking • Full Pixel Depth Snapshot Recording • Auto-landing
Agriculture (Multi-spectral imaging)	• Full Pixel Depth Snapshot Recording • NDVI based detection (in work) • Auto-landing
Infrastructure Inspection	• Full Pixel Depth Snapshot Recording • Multispectral presentation • Detection Algorithms • Auto-landing

SLE/SLA-1500-OEM

- Single Channel Processing
- Multiple Video Inputs w mux
  - 720p/30 digital video in
  - 2x Analog
- Small SWaP: 8g
- 1.0 x 1.5 in, 2W
- In Production

SLE/SLA-1500-SOM

- System-on-Module Integration onto Customer PCB
- *LogicPD* Torpedo SOM
- Lowest SWaP: Just 0.6 x 1.1 in
- Single Channel Processing
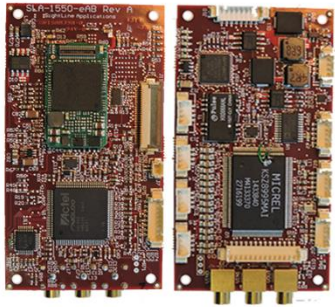- No NRE design support provided
- In Production

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SLE/SLA-3000-OEM

- Max performance option
- Multi channel solution
- HD Video input, 2 x streamed HD out
- All processing functions
- 3.5 x 2 in, 10W
- In Production

SLA-2000-OEM

- Four channel solution
- SD Video output
- Multi-camera gimbals
- PiP, Blending, etc.
- 3.4 x 3.9 in, 7W
- EXISTING PROGRAMS ONLY

SLA-1500-EAB

- 4 port Ethernet Switch
- 3 Serial Pass-Thru RS232
- 2 Analog Video IN + FFC digital
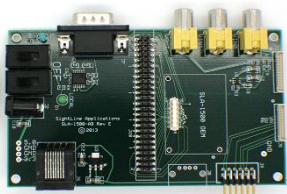- 1.6 x 3.0 in, 3W

SLA-1500-RAB

- Adaptor board to Microhard Radios
- *IPnDDL and pDDL (on adaptor board)*
- 1 Analog Video IN + FFC digital
- 1.6 x 2.03 in

SLA-1500-ENC

- Enclosure Option
- Standard interface connectors
- 1 Analog Video IN + FFC digital
- 2.4 x 2.1 x 1.0 in

Bench Interface Board

Camera Adaptors

Growing number of digital interface boards include:

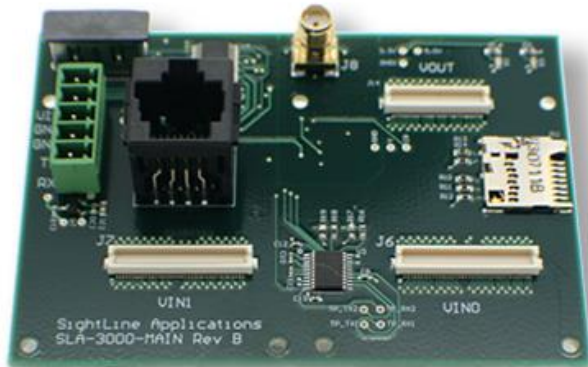Ribbon to Tau/Quark/Tamarisk

Hitachi Block

Sony / Tamron Block

HDMI

Also have: POE interface, CameraLink, Airborne Innovations GS/720, HDSDI (in work)

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SLA-3000-IO

- Bench / System Interface Board
- RJ45 Ethernet
- Alt Output Video (HDMI or analog or digital)
- Two input video slots
- Phoenix Block – DC in / RS232
- SD Card
- 2.4 x 3.5 in

Camera Adaptors

Growing number of digital interface boards include:

Ribbon to Tau/Quark/Tamarisk

Hitachi Block

Sony / Tamron Block

HDSDI In

Dual Analog In

HDSDI Out

Also have: CameraLink, Sony MA13x, HDMI

Camera / Video Format Input	SLE/SLA-1500	SLA-2000	SLE/SLA-3000
Analog (NTSC/PAL)	2	4	3
Parallel digital (to 1080p)	1	1	2
Sony FCB-EH6xxx, FCB-EH31xx and FCB-EV7xxxx	Yes		Yes
Tamron 10x block	Yes		Yes
Hitachi DI-SC120R	Yes		Yes
Camera Link	Yes		Yes
HD-SDI	In design		Yes
HDMI	Yes		Yes
FLIR Tau and Quark IR	Yes		Yes
DRS Tamarisk IR	Yes		Yes

Video Format Outputs	SLE/SLA-1500	SLA-2000	SLE/SLA-3000
Output Video Frame Size	720p	SD	1080p
Analog (NTSC/Video)	Yes	Yes	Yes
10/100 Ethernet (H.264, MJPEG)	720p	SD	1080p
Video Recording	720p		1080p
HD Frame JPEG /PNG Snapshots	1080p		1080p
Parallel digital (to 1080p)			Yes
HDSDI			Yes
HDMI			Yes

Contact Us:

- ✓ Email us at sales@sightlineapplications.com
- ✓ Call our technical sales team at +1 (541) 716-5137

Reference Materials:

- ✓ Our website: www.sightlineapplications.com provides information, video samples and documentation downloads (application notes, ICDs, drawings, etc)

- ✓ Watch sample videos on our page.