



Video Processing

The Video Processing Software provides a suite of video functions that are key in a wide variety of ISR applications. The processing software has two pricing tiers, SLA and SLE. SLA provides processing with gimbal control and SLE processes the video only. With these software and hardware options, SightLine provides tailorable, powerful solutions.

Video Stabilization and Roll Correction

The starting point for all video ISR functions, frame to frame registration provides dramatically improved video, improving the user experience.

- Remove high frequency jitter (frame to frame movement). Excellent for removing jitter up to ½ FOV
- Critical where gimbal roll/nod configurations are used
- For applications where correction of platform roll motion is desired (aerostats, mast/tower mounted, UAS)
- Integrators can feed video roll commands to counteract known platform rotation

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 provides a powerful, intuitive gimbal feedback based on the entire scene
- Advanced image analysis and motion estimation isolate tracked objects from background for robust tracks
- Persistent tracking when view of tracked object is temporarily blocked.
- Acquisition Assist and Intelligent Assist update track boxes for improved tracking
- Tracker-Only options on 1500 hardware provide full tracker functionality at a lower price point (with limitations on other functions possible)

Telemetry Data

Tracker functions and MTI provide low latency track location data needed for gimbal pointing.

- Telemetry rates up to 30 Hz
- Pixel space feedback for accurate gimbal pointing
- Data from object tracking, scene steering, and detection

Video Encoding with KLV Metadata and Connectivity

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

- H.264/MPEG4/M-JPEG encoding, MPEG2 TS/RTP encapsulation
- KLV metadata is generated in accordance with MISB standards (0102.10, 0601.7, 0603.2, 0604.3, and 0903.3)
- User can insert pre-formatted (or custom) KLV data into video stream, or direct from NMEA output of GPS receivers
- Controllable video compression frame rate, and down sampling to meet bandwidth requirements with best possible imagery and system flexibility
- Metadata on VBI lines for KLV over analog links
- Connectivity: UDP, TCP, and RTSP connectivity, unicast, multicast, broadcast

HD Video

Meet demand for HD video capabilities.

- 1080P/59.94 processing/encoding with SLA-3000
- 720p processing/encoding with SLA-1500
- Adaptors for HD cameras, HDSDI, HDMI, Camera Link, LVDS, etc.

Landing Aid

Supports landing operations by automatically detecting and tracking a landing pattern. Providing pattern position, range, and angle to the vehicle landing logic.

- Scalable landing pattern supports landing operations over a wide variety of ranges and approach angles
- Independent of GPS, enables accurate landing in GPS-denied environments
- Autopilot interfaces to simplify system integration
- Sample code for PixHawk (PX4 and APM) and Piccolo available

Detection Algorithms

Real time detection algorithms provide important situational awareness information and aid in tracker initialization.

- Real-time onboard MTI provides fast feedback which is essential for effective track initialization on moving objects. MTI modes:
 - SV Mode: Identification of multiple (up to 5) trackable vehicle-type moving objects provides simple track selection method
 - SA Mode: Identification of multiple (up to 100) very small moving targets from an aerial camera
 - ST Mode: Moving object detection from fixed, low angle camera systems
- Anomaly detection mode finds unique colors within a scene
- Radiometric detection to find objects in a defined temperature range independent of motion

Video / Snapshot Recording

Onboard recording on 1500-OEM. Interface board SD card for 3000-OEM.

- H.264 video to local SD card or remote FTP
- Full resolution snapshot recording. JPEG snapshots with EXIF data
- Full pixel depth data PNG snapshots with metadata (for radiometric data access)
- Telemetry data recording

Video Enhancement and Overlays

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

- Contrast Limited Adaptive Histogram Equalization (CLAHE) and Local Area Processing (LAP) brings out hard to see (low contrast) features
- De-Noising of video. Edge sharpening
- OSD support to add text, shapes, and custom reticle overlays
- Customer logo watermark placement
- False color schemes
- Extended 14 bit-depth processing
- Digital Pan, Tilt, Zoom, and Rotation
- Temperature data from radiometric cameras

Multi Camera Video Presentation

Flexible display options for optimized presentation, transmission and display of multiple video streams.

- Full screen (switched video); Picture in Picture (selectable PiP window location); Split screen
- Image blending: Multi-spectral inputs can be blended into a single image with false color to bring out the best of each spectral image

Focus Telemetry

Telemetric focus function available independent of tracking telemetry.

- Focus telemetry for autofocus implementations
- Full autofocus functionality for a range of IR lens assemblies and EO block cameras