



Smart Visual Detection System



Technical Description

The SVDS Generation 2 camera system consists of: High-Definition Video (HDV) and Long-Wave Infrared (LWIR) thermal imaging camera pair, with on-board processing and storage. Each unit is housed robustly for maritime use. Various configuration options can be available to ensure optimal visual coverage and range up to 360 degrees.

General

- Internal hardware can be customised for bespoke models at client request and expense (May lead to longer lead times)
- Optional mounting systems
- Portable system deployed in hard case
- Marinised housing
- Hydrophobic glass
- PTU Operating Temperature: -30°C to 70°C
- Supply voltage AC 110-240V
- Power consumption: 50W During Active Operation/Max 135W
- Onboard GPU image processing 32GB on system storage
- Onboard 4TB back-up storage.
- Networked removable storage up to 100TB
- Wi-Fi & satellite connectivity available on request
- GigE data transfer through ethernet

RGB Camera: Standard RGB camera

- Sensor: 1/2.3 CMOS SONY IMX392
- Resolution: 2.4MP
- Array Size: 1920x1080
- Pixel Size: 3.45µm x 3.45µm
- Dynamic Range: 48dB
- Shutter Type: Global Shutter
- HFOV: 18°

Thermal

- Thermal sensitivity: <40mK
- Pixel Pitch: 12 µm
- Full Frame Rate: 60 Hz
- Array size: 640 x 512
- f-number: 1.0
- Spectral Range: Long-wave Infrared; 7.5 µm – 14 µm
- Scene Dynamic Range: to 140°C (high) to 500°C (low)
- HFOV: 18°

Software

- Industry Standard Network Protocols (TCP, RTSP, FTP)
- Live video streaming in H.264 with metadata.
- Local data storage
- Continuous logging
- PTU control and auto scan
- Auto-upload to network storage using FTP
- Option to Export early AI response data
- Mysticetus software compatibility (Can be added on request from client, may extend lead times)

Meta data: Detection Data, Time and date (UTC), GPS (long, lat)

System Set Up

Seiche recommends SVDS Generation 2 be installed onboard by Seiche Field Technicians in conjunction with the vessel crew. For optimal 360-degree coverage, the system would include 3 Generation 2 dual-camera units, each monitoring a 120-degree area. One unit overlooks the stern, the other two cover the port and starboard area around the bow of the vessel. Additional cameras may be required if obstructions in the camera view.

Further Development

- Image stabilisation using horizon detection.
- User interface allowing for:
 - Zoom
 - Image Capture
 - Entering/modifying configuration parameters such as camera height and mitigation zone radius.
- Graphics on image to demarcate the specified mitigation zone on the sea surface.
- Range estimation.
- Automated Detection system to identify marine mammals and other objects/targets of interest.



Figure 1: Seiche Smart Visual Detection System (SVDS) Generation 2 Camera