SMART VISUAL DETECTION SYSTEM

Smart Visual Detection System

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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 up to 360 degrees.

General

- Internal hardware can be customised for bespoke models at client request and expense (May lead to longer lead times)
- Rail mounting system as standard with bespoke mounting systems on request
- Portable system deployed in hard case
- Marinised housing
- Hydrophobic glass
- PTU Operating Temperature: -30°C to 70°C
- Supply voltage 240VAC
- Power consumption: 50W During Active
- Operation/Max 135W
- Onboard GPU image processing with 4TB system storage
- 48TB networked removable storage
- 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: 23°

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.265 with metadata.
- Digital zoom
- Image capture
- Range estimation in the RGB image
- Local data storage
- Continuous logging
- PTU control and auto scan
- Auto-upload to network storage using FTP
- Early AI thermal detection logging of marine mammals, watercraft, birds and general obstacles
- Video meta data includes: AI Detections, 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 over the port and starboard area around the bow of the vessel. Additional cameras may be required if obstructions in the camera view.

Further Development

- Shoreside Operations: Fully-remote, secure, multi-camera connectivity
- AI detection alerts
- Activity timeline review
- Range estimation in the thermal image

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