Automatic Infra Red Marine MAmmal Mitigation System (AIMMMS)

Attention:

Please note that the system is available upon request only, requiring an extended lead time prior to the desired deployment period. The system requires installation in Bremerhaven at the beginning of each season and cannot be shipped to other ports. Operation of the system requires training of a technically knowledgable expedition participant who supervises the associated computer (Operating system Linux). The system is not operated by the ship's crew. Forward requests for operations of the system to AWI-Logistics preferably 1 year ahead of expedition and need to discuss/agree on amount of data saved and transfer mode after expedition. Operation of the system shall be coordinated with the chief scientist (who in turn shall coordinate with the chief mate and electronics officer).

Summary

The thermographic camera (FIRST Navy) is mounted on a gimbal which is located on the platform ahead of the crow's nest and provides a 360°, 5-Hz video of thermal (Infrared) radiance in the LWIR band. Visual observation of the thermographic video on the computer screens allows spotting snow covered leads in the sea ice and marine mammals (including polar bears), both day and night. The 360° image usually extends from about 100m from the ship to the horizon, although the aft sector, an approximately 60° field of view, is blocked by the crow's nest itself.
The full live image stream is available in the scientific working room on the A-deck, while a approximately 45°segment with selectable bearing is displayed on a dimmable monitor on the bridge.

Manufacturer	Rheinmetall
Model	FIRST Navy mounted on gimbal
Serial No	0001 and 0002 (spare)
Type	Thermographic imaging/video system and whale detection assistance system

Contacts

Role	Name
Engineer in Charge	Olaf Boebel
Data Scientist	Michael Flau

Components

The system consists of:

- gimbal, forward of crow's nest
- IR sensor head (and spare sensor head) mounted on gimbal
- front end cables to junction box in crow's nest
- junction box in crow's nest (serving power junction, gimbal and IR sensor head)
- fiber optic cable leading from IR sensor head via crow's nest to A-deck
- junction box on A-deck (power supply for gimbal and IR sensor head)
- GigE Switch with SFP ports for Signal translation to Ethernet
- Ethernet cables to data-processing workstation
- Ethernet connection to bridge
- client computer for cropped image on bridge
- dimmable screen on bridge

Position

The system itself is located on the crow's nest, the junction box is in the scientific working room on A-Deck and the client computer with dimmable screen is installed on the bridge.

Data logging, storage and archiving

Logged parameters

Image only mode: no logged parameters

Recording mode (via Tashtego Software): timestamp, distance, bearing and snippet of detected events, user descision on detected events, raw image data

Central geographical ship's position and time standard
Time synchronising via NAS timer server.
Geographical ship's position: attached GPS unit planned for IR sensor head.

Rawdata storage on board
On hard disks of data-processing workstation, to be provided by user.

Data archiving on land
Not implemented, responsibility with respective user.

File format(s)	svmdb: Matlab; structure, fvi: image raw file
Calibration certificates	NO