

Helmet Mounted Imaging System - HMIS



picture shows example configuration

HMIS Overview

Coastguard and Civilian Search and Rescue (SAR) Helicopters are tasked with the recovery of survivors and casualties from the sea, mountain and other difficult or inaccessible locations. Search and Rescue missions are difficult to carry out at the best of times, and especially difficult over unknown terrain in the dark or during inclement weather.

Cockpit systems that reduce pilot workload and improve pilot situational awareness can save lives when appropriately integrated into the aircraft.

Pilot Situational Awareness System

A2TECH have developed a Pilot Situational Awareness System (PSAS) to help SAR helicopter pilots to complete their missions in degraded and obstructed visual environments, lowering their pilot workload. The PSAS is based on A2TECH's modular Helmet Mounted Imaging System (HMIS) architecture. The system seeks to provide

helicopter pilots an accurate depiction of the outside world by combining various technologies — visual sensors, aircraft position sensors and high-tech displays. It enables the pilot to see through the "crewman or winchman eye's" and guide and hold the helicopter over the optimum rescue point while watching over the rescue zone. To improve performance in these areas, the PSAS system displays an augmented visual scene to the pilot that includes up to three separate image sources from an electro optical, IR or NV 1:1 FoV sensor, and overlaid aircraft position symbology.

Pilot Situational Awareness System enhances:

- SAR Winning Operations
- Aerial Work Cargo Hook Operations



MMIS-20-D Interface

The interface allows easy HMIS command & control integration of A2TECH's multi-sensor gimbal system for single pilot operations using a visually coupled system made up of a helmet-mounted display system (HMIS), a head tracker (HMIS-HT) and a slewable MMIS-20-D camera platform. As the pilot's head turns, the head tracker information will be used to drive the MMIS-20-D sensor platform or/and searchlight and provide view point orientation for the sensor systems and the aircraft position symbol generator.

On request, other slewable camera platforms can be easily interfaced to the HMIS.

CANAerospace Control Interface

As standard on all A2TECH products, the CANaerospace command & control protocol allow plug & play connectivity for local or remote control. CANaerospace is an extremely lightweight protocol/data format definition which was designed for the highly reliable communication of microcomputer-based systems in airborne application via CAN (Controller Area Network).

Driven by
CAN
Aerospace

HMIS Product Specifications

Helmet General Specifications

The base unit for all A2TECH's Helmet Mounted Imaging Systems are provided by Alpha Eagle Helmet Systems. The Alpha Eagle is designed for use in helicopters and fixed wing, non-ejection seat aircrafts.

The helmet features a strong, ultra light construction made from epoxy resin aramid and carbon fibre achieving the ultimate combination of light weight and high protection.

Major Advantages

- Reduces pilot workload by displaying real-time imagery and overlaid aircraft position symbology at eye level
- Single compact control unit drives pilot, copilot and winchman helmet systems
- System can be installed on any type of civil and governative helicopter
- System Control is through the pilot's HOCAS and through a leg-wearable HMIS-Control Panel
- Future-Proof and "bus-friendly" through the use of COTS architecture and the CANaerospace protocol

General Specifications HMIS

- System Type: Helmet Mounted Imaging System
- Power Supply: 12 VDC to 36 VDC
- Power Consumption: max. 150W
- Operating Temp.: -20°C to +60°C
- Control: HOCAS or Leg Control Panel (LCP)

Winchman Helmet Assembly

- Daylight color CCD tube camera
- Night Vision Intesified CCD tube camera
- LWIR Thermal Imager tube camera
- Single Quick-Disconnect Connector

Pilot Helmet Assembly

- See-through full-color AMOLED display
- Display FoV 28° @ 800 x 600 pixel
- Head-tracker option ready
- Single Quick-Disconnect Connector

Head-Tracker Specifications

- Axis coverage: Azimuth & Elevation
- Angular coverage: Azimuth: +/- 110°
Elevation: +20° / -45°
- Static accuracy: 0.75° RMS
- Resolution: 0.1°
- Co-Pilot interface optional

Electronic Units:

- HMIS-VCU: Visual Control Unit
- HMIS-APSG: Aircraft Position Symbol Generator

HMIS Add-Ons Modules:

- SDVR - Solid State Digital Video Recorder



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