



# INSIGHT - INtegrated SHARP Imagery Gigabit etHernet Tool

For in-field troubleshooting and testing of SHARP pod subsystems



The INtegrated SHARP Imagery Gigabit etHernet Tool (INSIGHT) is stand-alone hardware designed for testing and troubleshooting subsystems of the Shared Reconnaissance Pod (SHARP), including the sensor, the digital storage system (DSS), Common Data Link (CDL), and the Advanced Reconnaissance Compression Hardware (ARCH) suite –SHARP’s data compression system. INSIGHT can simulate sensor imagery as well as capture raw camera raster, NITF, and compressed DSS and CDL data. Incoming sensor data can be analyzed for valid format and timing. Additionally, data can be stored on INSIGHT for download to a host computer for further analysis. INSIGHT can connect directly to SHARP pod connectors to provide in-field analysis without the need to remove the subsystems from the pod.



## Features

- Housed in a stand-alone chassis, AC powered
- All connectors are MIL circular to match existing SHARP pin-outs
- High speed Gigabit Ethernet interface for rapid data flow

## Inputs

- Sensor LVDS raster data
- Sensor LVDS NITF data
- DSS data and control
- CDL

## Outputs

- LVDS raster data
- LVDS NITF data
- DSS data and control
- CDL

## User Interfaces

- Gigabit Ethernet (data flow and command/control)
- RS-232 (diagnostics)

## Internal Memory Capacities

- FLASH memory for processor code, FPGA code, simulation and comparison data
- 512 MB SDRAM memory for storage of uncompressed raster data
- 64 MB SDRAM memory for NITF storage
- 128 MB SDRAM memory for storage of compressed and compare DSS data
- 128 MB SDRAM memory for storage of compressed and compare CDL data

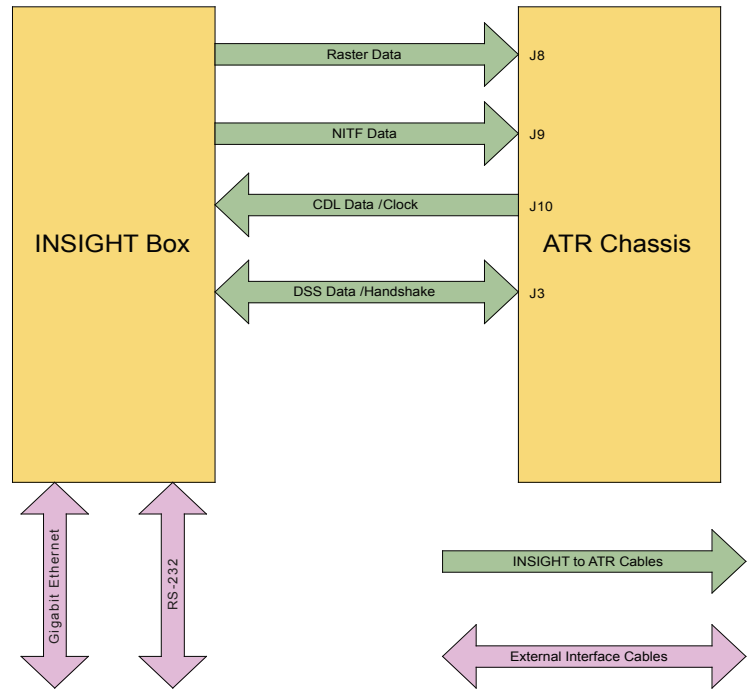
## Benefits and Features for SHARP

- Testing of ARCH suites in preparation for deployment
- Testing of installed ARCH suites without removal from the SHARP pod
- Verification of sensor data and signal timing
- Simultaneous storage of raw sensor data and associated ARCH compressed output
- Can be used in the field to troubleshoot and maintain SHARP pods

## Test Configurations

### ARCH Test Configuration

In this configuration, INSIGHT can simulate sensor imagery for ARCH and capture the resultant compressed ARCH output, aiding ARCH acceptance testing, as well as fault isolation. Raster and NITF data are loaded into INSIGHT memory from internal FLASH memory or from a host computer via gigabit ethernet. INSIGHT simulates sensor data with adjustable timing of clock frequency and handshake parameters. Resulting compressed data can be stored in INSIGHT memory for download to host computer. Compressed data can also be compared on the fly to expected data and flagged for errors. All ARCH modes including DSS playback to CDL can be exercised. This configuration can be used to test ARCH suites without removal from a SHARP pod.



### SHARP Test Configuration

INSIGHT is able to capture raw camera raster and NITF data as well as the resultant compressed DSS and CDL data by placing INSIGHT in series between the SHARP pod and the ATR chassis. The camera-to-ARCH interface can be analyzed for timing or other logical problems. Short bursts (up to 512MB) of raw camera data can be stored for upload to the host computer for analysis. DSS data can be played back to the host computer via gigabit Ethernet either directly or through the CDL interface. This configuration can be used to isolate pod problems to a particular subsystem (camera, ARCH, DSS, CDL) without having to remove any of the subsystems from the pod.

