HUMS | TEST | AVIONICS | SKY CONNECT | ASPIRE | CVFDR

DIAGNOSTIC SOLUTIONS INTERNATIONAL LLC

DIAGNOSTIC SOLUTIONS INTERNATIONAL LLC IS THE PREMIERE Honeywell HUMS Technology Licensee and Global Master Distributor, specializing in HUMS, RT&B Analyzers, Avionics, Sky Connect, Aspire In-Flight Connectivity (IFC), and REVOLUTION "REVO" CVFDR products.

DSI is a veteran owned small business registered with the Small Business Administration and Central Contracting.

With over 300 years of combined experience, DSI is the Premiere Source for HUMS, RT&B Balance Analyzers, CVFDR, AVIONICS, SKY CONNECT & ASPIRE products. DSI offers an extensive knowledge base and expertise, yielding reduced down time, repair costs, and reactive maintenance. We specialize in providing on-site technical support of more than 1,000 aircraft, training, and health and usage monitoring system data management and analysis.

Our diverse line of Honeywell Chadwick Helmuth aircraft balancing and vibration monitoring products, coupled with our experienced and strategically placed staff, provides a single point of entry for all of our customers' HUMS needs, to include hardware, software, customer support, engineering and field support, system design and implementation, training, condition based maintenance (CBM), and data management and analysis services.

DSI specializes in Honeywell Chadwick Helmuth HUMS. We offer our experience and specialized aptitudes in helicopter rotor track and balance, propeller balance, aircraft and engine component balance, vibration analysis, engine performance qualification, and HUMS data management and analysis.

We have decades of experience relevant to the usage and operation of the Honeywell Chadwick Helmuth Carry-On VXP, On-Board VXP, EVXP, AIMS, Vibrex™ 2000 Plus, VMS II, 8500 C Plus, FasTrak™, Strobex, accelerometers, velocimeters, photocells, magnetic pickups, calibrators, tab tools, Smart Chart™ technologies, VibraLog™, VibReview™, VibDAS™, etc.

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HUMS / PORTABLE CARRY-ON

FOR HELICOPTERS, FIXED WING AIRCRAFT, UNMANNED AIR VEHICLES AND GROUND VEHICLES

ALL OF THE HUMS / TEST PRODUCTS ARE FOCUSED ON THE COLLECTION, PROCESSING, AND INTERPRETATION OF DATA GENERATED BY THE VARIOUS COMPONENTS WITHIN AN AIRCRAFT'S DRIVE TRAIN, INCLUDING ENGINES, GEARBOXES, SHAFTS, FANS, ROTOR SYSTEMS AND OTHER DYNAMIC COMPONENTS. IN ALL CASES, VIBRATION SPECTRA CAN BE VIEWED IN THE FIELD AT THE ENGINE, WITHIN THE TEST CELL OR ANY OTHER PLATFORM LOCATION TO ALLOW FOR A MORE DETAILED ANALYSIS BY ANY SKILLED TECHNICIAN.

PORTABLE CARRY-ON VXP

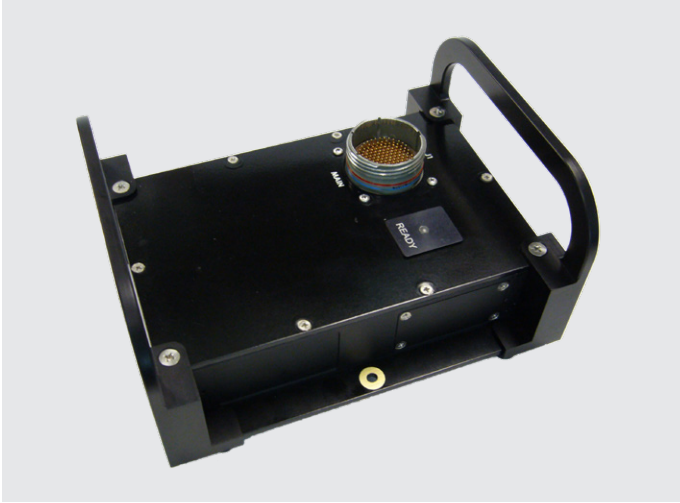
The VXP System consists of the VXP Acquisition Unit (AU), VXP Display Unit (DU), software, and associated carry-on kit and sensors. VXP software is divided into two major systems, the Operational Program which resides permanently in EPROM memory of the VXP AU and the support software that resides on the VXP DU, such as VXP Display Program, Vib Review™ trending software, and the VibraLog™ advanced predictive maintenance software.

- All data is date time stamped and can be correlated to other aircraft data systems
- Interfaces to a wide range of sensor types
- Interfaces to the optional FasTrak™ Optical Tracker for Main Rotor blade tracking
- Uses the latest signal conditioning, digital signal processing data conversion, and memory technology
- Expansion connector allows quick single cable connection to pre-wired aircraft
- Full-color graphics give excellent Track Trend Plots, Polar Plots and solution/option displays
- Shows all vibration limit exceedances instantly

ZTE

The ZTE is an easy-to-operate tool for performing helicopter rotor smoothing, engine performance checks, component balancing, vibration analysis. The ZTE's accurate airspeed accelerometer algorithms set it apart from other smoothing solutions.

- Achieve maintenance manual specifications in as few as 3 flights—1 or 2 measuring flights and 1 to verify
- Increases aircraft operational availability and readiness and enhances safety
- Can configure to each specific helicopter type
- Flexible and cost-effective for multi-platform and mixed helicopter and fixed-wing propeller operators
- ZTE's easy-to-understand maintenance actions can be displayed on any PC, including the optional Panasonic Toughbook®, using the Personal Computer – Ground-Based System (PC-GBS) software
- All cables, brackets and sensors from the RADS-AT™/ Aviation Vibration Analyzer (AVA) are fully compatible with the new Test Elite



THE ENHANCED VIBREX™ 2000 PLUS (EV2K+) IS A VIBRATION ANALYSIS AND BALANCING TOOL THAT RAPIDLY AND ACCURATELY ACQUIRES AIRCRAFT AND ENGINE VIBRATION DATA. IT USES THAT DATA TO CALCULATE BALANCE SOLUTIONS AND TO ANALYZE AIRCRAFT VIBRATION LEVELS.

ENHANCED VIBREX™ 2000 PLUS (EV2K+)

A cost-effective balancer/analyzer for fixed-wing propeller balancing or helicopter rotor track and balance with superior performance, the EV2K+ is a vibration analysis and balancing tool that rapidly and accurately acquires and analyzes aircraft and engine vibration data. It uses that data to calculate balance solutions and to analyze aircraft vibration levels across a broad frequency range.

- Acquires accurate fixed-wing and helicopter vibration readings
- Allows you to balance the propellers or blades using the integrated display – without the use of paper charts
- Can use any of the 150 available Honeywell or factory paper charts
- Capable of balancing shafts and blowers
- A complete balancing tool
- Provides an overview of rotor and drive train and engines with component frequencies of 600,000 rpm or less, and balance speeds below 30,000 rpm
- Propeller Balance enhancements to allow management of specific propeller configurations
- Track helicopter rotor blades with proven FasTrak® technology

FP/N:901-17840-1 FIXED WING SOFTWARE INCLUDED

- Aerospatiale / Aeritalia
  - ATR42 / 72
- Antonov
  - AN32
- Beechcraft
  - King Air, 1900D, Bonanza
- British Aerospace
  - BAEJ32, BAE146
- Britten-Norman
  - BN-2T
- Canadair
  - CL-215T, CL-415
- Cessna
  - Caravan III, Conquest
- Construcciones Aeronáuticas SA (CASA)
  - C-212, C-295, CN-235
- de Havilland Canada
  - DHC-4, DHC-5, DHC-6, DHC-7, DHC-8 (Dash 8)
- Dornier
  - DO228, DO328
- Embraer
  - EMB 120, T27 Tucano
- Korea Aerospace Industries
  - KT-1
- Lockheed Martin
  - C-130J
- Pilatus
  - PC-6, PC-7, PC-9, PC-12
- Piper Aircraft
  - Cheyenne
- Saab
  - 340
- Short Brothers
  - 312, Tucano
- Swearingen Fairchild Aircraft
  - Swearingen Merlin

FP/N:901-17840 HELICOPTER SOFTWARE INCLUDED

- Agusta Westland / Leonardo S.p.A.
  - A109E Power, A119, AW139
- Airbus
  - AS332, AS350B, AS350B1, AS355, AS365, BK117, BO105, EC120, EC130, EC135, EC145,
  - EC155, NH90
- Bell
  - BL206B, BL206L, BL212, BL427, OH58A/C, UH1H
- Enstrom
  - Enstromx80
- MD Helicopters
  - MD-500C / OH6A, MD500D/E, MD520N
- Robinson
  - R22, R44, R66
- Sikorsky
  - S61
- Schweizer
  - SW300

HUMS ON-BOARD

ON-BOARD VIBRATION MONITORING SYSTEM/HUMS | Selected by various OEMs, customers and military operators, all of our on-board systems are focused on the collection, processing and interpretation of data generated by the various components within an aircraft's drive train, including engines, gearboxes, shafts, fans, rotor systems, and other dynamic components. Collected data can be viewed at the aircraft, within the test cell or any other platform location by the maintainer. Hardware and software is available for more detailed analysis off-wing.

HUMS ON-BOARD VXP

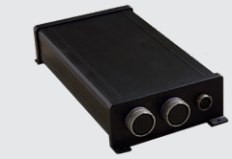
Honeywell's Health Monitoring Systems have a firm track record. As one of the most advanced HUMS products available, it represents the merging of an on-board system with our industry-proven ground-based carry-on products technology.

- Fully certified and available via U.S. FAA, EASA, and Transport Canada STC's
- Meets the current regulatory requirements
- Designed with provisions to support future HUMS functions
- Interfaces to hardwired vibration and tachometer sensors located throughout the aircraft
- Interfaces to optional carry-on equipment such as the FasTrak™ Optical Tracker for Main Rotor blade tracking
- We provide an application organization that has broad experience in conducting VXP installation support and training on the majority of aircraft types
- VXP STC's exist on a wide variety of aircraft types

The 1239, VXP and EVXP HUMS option are offered as standard options for S76C+/C++ helicopters used in offshore missions. The VXP has been installed and certified on multiple helicopter types and It has been accepted by the customers around the world due to its high level of integration & performance.

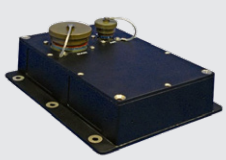
VXP FEATURES

- Crisp, sunlight readable, active-matrix color display
- Easy to use touch screen interface
- Fast six channel simultaneous data acquisition
- Expanded Smart Chart™ capabilities for balancing and analysis procedures
- Comprehensive input capabilities with 48 vibration, 6 photocell/mag, FasTrak™ and accessory channels
- Portable, on-board, commercial and military configurations available
- Performance of 75 kHz frequency range, resolution to 51,200 lines and >90 dB dynamic range
- Instant feedback of maintenance actions with on-aircraft printer
- Clear on-screen help with graphics and troubleshooting procedures.



HUMS ON-BOARD VXP

HUMS MODEL 1209



HUMS MODEL 1134

HUMS MODEL 1239

HUMS MODEL EVXP

HUMS 1134 / 1239

The 1239 Modern Signal Processing Unit (MSPU) provides field-proven design and delivers specific OEM-recommended maintenance actions to maintainers for rotor smoothing, engines and the entire drive train. Advanced engine diagnostics and automated engine performance calculations, such as Max Power Check (MPC) and Health Indicator Test (HIT), round out this feature rich system.

The system connects to most commercial off-the-shelf flight data recorders providing operators with crash survivable data storage. Based on the highly successful, combat proven 1209 MSPU, the models 1134/1239 are advanced health and usage monitoring systems (HUMS) featuring field programmable gate arrays (FPGA).

HUMS/SKY CONNECT INTERFACE

- Provides over-the-air notification of potential HUMS exceedances
- Timely off-load of HUMS data at next destination
- Fully integrated with Model 1239 HUMS system via ARINC 429 bus to Tracker III
- Provides additional exceedance information beyond a simple discrete notification (SW support for Tracker III shipping Q1 2013)
- HUMS systems with a discrete output can be interfaced to a Tracker III
- Interface with VXP

SKY CONNECT TRACKER 3 ADVANCED SYSTEM

MANAGE YOUR FLEET WITH A COMPLETE IRIDIUM® SATELLITE TRACKING AND COMMUNICATIONS SOLUTION. THE SINGLE BEST SOLUTION TO MAXIMIZE SAFETY AND EFFICIENCY FOR DEMANDING MISSIONS IS WITH THE INDUSTRY'S ONLY COMPLETE TRACKING AND COMMUNICATIONS SYSTEM THAT HELPS YOU ACTIVELY MANAGE YOUR FLEET.

TEXT & TALK

Designed for crews with a busy workload, the Sky Connect system easily accommodates any operational scenario with its talk and text capabilities.

Sky Connect text messaging provides the easiest and quickest way for pilots and dispatchers to communicate simple messages to one another.

The prestored messages with data fields and full telephone keypad make text messaging with the MMU-II™ an excellent way to communicate up-to-date, accurate information.

Messages sent to the aircraft by the dispatcher are displayed immediately and all messages received during the flight can be recalled. When equipped with the MMU-II, the Sky Connect system can also include a voice telephone.

The system provides a headset-level interface tied into the aircraft audio panel and supports over 500 prestored phone numbers with names for easy use.

TOTAL SITUATIONAL AWARENESS

Sky Connect Tracking System enables any equipped aircraft in the world to be tracked in real time via the Iridium satellite network.

The lightweight transceiver LRU sends encrypted GPS-based position reports at automated intervals to authorized control centers using secure data protocols.

The Sky Connect Map web-based software displays the aircraft location, GPS flight plan, crew status and weather overlays on topographical maps for full situational awareness.

Text messages from the aircraft are displayed on the mapping screen so dispatchers can stay organized and fleets can be managed effectively.

For integrated operations, Sky Connect offers a versatile architecture of interfaces and inputs that work with any aircraft situational display software.

DESIGNED FOR MISSION BASED OPERATIONS

- Off Shore Oil
- Air Ambulance
- Fire Patrol & Air Tankers
- Law Enforcement/Police
- Drug Interdiction / Eradication
- Executive Air Taxi / Charter
- Coastal & Border Patrol
- Search and Rescue Operators

| MMU-II™ MISSION MANAGEMENT UNIT

SEND/RECEIVE TEXT MESSAGES AND VOICE CALLS USING A FULL TELEPHONE KEYPAD AND A BRIGHT TWO-LINE DISPLAY

The smallest cockpit dialer available, with highly customized options for prestored messages, forms and phone numbers. The keypad adds a great deal of functionality for text messaging, such as direct number and fast letter entry.

MMU-II Capabilities:

- 500 prestored phone numbers with names
- 200 prestored text messages and mini forms
- Two-line, 32-character display
- Full DTMF telephone keypad
- Keypad text entry
- Remote configuration
- WiFi interface
- Optional NVG/NVIS compatibility

| SKY CONNECT TRACKER III & ANTENNA

SMALL & POWERFUL | New technology has made it possible to increase Tracker III's communications capabilities while also integrating the previously separate ARINC 429 converter unit. Tracker III is an enhancement of its robust predecessor, significantly more capability within virtually the same form factor:

- Flight Data Monitoring
- 512 Parameters Recordable
- 256 Parameters Alertable
- Data off-loading
- Internal Cellular Data Radio
- Wi-Fi (external dongle)
- Iridium PTT (Push-To-Talk)
- Text and Voice Connectivity
- Real time fleet Tracking
- Dual-channels enables tracking and voice concurrently
- 3-Axis Accelerometer
- Upgraded GPS + GNSS
- Drop-in Upgrades for earlier Sky Connect Trackers
- Meets 2018 Air Ambulance Mandate
- Easy Swap-out LRU design
- Internal Power Unit for Shutdown Reporting
- Capacitor Based Uninterruptable Power Supply (UPS) provides over 1 min of function
- No batteries- no maintenance issues

Data Reporting:

- Enhanced Systems Alerting
  - Flight Data Thresholds
  - HUMS
  - Emergency Conditions
  - Geofence Excursions
- Vehicle ID
- Vehicle Status (Internal + 429 + discretes)
- Coordinate Location
- Report Date & Times
- Vehicle Track, Speed, Alt
- High Resolution Position Collection
- GPS Status And Failover
- GPS Flight Plan and Flight Plan Changes
- Bidirectional Messaging

| SKY CONNECT MAP AND ALERTS MANAGER

CUSTOMIZABLE & FLEXIBLE

MAPS | Sky Connect Tracker Map enables total situational awareness using multi- layer high resolution maps compatible with more software interfaces than any other system of its kind.

Map Capabilities:

- Highly Configurable
- Customizable by User
- Fleet History Reports
- Extensive Weather Products
- Aeronautical, Oil & Gas, Satellite Maps
- User-Loadable Overlays

| MISSION COMMUNICATIONS TERMINAL (MCT)

Telephony

- 99+ pre-programmed numbers
- Alphanumeric labelling

Text Messaging

- 99+ pre-programmed text messages
- Scrollable in-bound messages
- iPad app & API coming in 2020

Switched Alerting

- Emergency (guarded, 2-sec latch)
- Code (2-sec latch)
- Position (non-latch, immediate)

Ambient Audio Recording

- Cockpit environment
- Up to 25 hours internal storage
- Secure USB retrieval

Push-To-Talk

- Up to 12 Talk groups
- PTT on-panel or standard a/c PTT

Other Features

- 12 Discrete inputs
- Up to 3 dialers per aircraft
- LED graphical display
- NVIS compatible
- USB Power – 5V 1.5A

COCKPIT VOICE & FLIGHT DATA RECORDER

REVO 200 CVFDR

The REVOLUTION Recorder Series 200 (REVO 200 CVFDR) meet all EUROCAE ED-112A requirements for all aircraft classes in CVFDR or standalone FDR or CVR requirements, including 25 hour cockpit audio and datalink/CPDLC.

Standard digital recording interfaces include:

- ARINC717 (auto rate detection up to 2,048 wps)
- ARINC429 (4 channels, automatic rate)
- ARINC825 (single channel)
- RS422/485 (single channel)
- 10/100 Ethernet (3 ports) (e.g. for video recording)

No specialist GSE tools are required for download with an internal web server and standard modular ethernet jack able to connect to a standard portable computer. A restricted-access custom aircraft interface cable can be used to support download of CVR audio data without need for removal from the aircraft and subsequent recertification. A standard Internal TPM 2.0 security chip also enhances cyber security when connected to other ethernet based aircraft systems.

The unit incorporates dual redundant 28VDC power inputs as well as internal Recorder Independent Power.

REVO 250LW CVFDR

The REVOLUTION Lightweight Recorder Series 250 (REVO 250LW CVFDR) is designed for the emerging Advanced Air Mobility industry, meeting all stringent EUROCAE ED-112A crash survivability requirements for Flight Data Recorders and Cockpit Voice Recorders when fitted without an underwater locator beacon for ultra low SWaP (size, weight and power) at a price point of an ED-155 recorder.

With standard 16 gigabyte storage, the recording durations vastly exceed the ED-112A standards of 25 hours for data and video.

Interfaces include:

- ARINC717 (auto rate detection up to 2,048 wps)
- ARINC429 (4 channels, automatic rate)
- ARINC825 (dual or single channel)
- RS422/485 (dual or single channel)
- 10/100 Ethernet (2 ports) (e.g. for video recording or telemetry/maintenance interfaces)
- 4 channel ED-112A compliant high quality audio

| AIRCRAFT PERSONALITY MODULE

The Aircraft Personality Module (APM) series 400-900-XX is a low cost, hermetically sealed configuration module intended to simplify configuration management and related logistics of acquisition and signal conversion systems by decoupling installation and application specific configuration from the host line replaceable unit (LRU).

Traditional acquisition or signal conversion systems with a multitude of independent LRUs would require separate configuration loads and part numbers for each LRU – potentially adding significant inventory and spares burden.

The APM is intended to be permanently installed within the aircraft wiring harness and to work in conjunction with any of the Adaptive Aerospace acquisition and signal conversion product lines (e.g. MAU or RDC) to allow a single common and generic host LRU to be configured automatically.

A single integral two wire twisted pair cable is used to both power the APM from the host LRU as well as for transmission of data.

Memory sizes range from 8 to 128 kilobytes of redundant and ECC protected configuration data.

APM units can be supplied pre-configured with a customer or vendor allocated part number, or alternatively field loaded during installation with low cost field programming kits.

| QUICK ACCESS RECORDER (QAR)

The quick access recorder (QAR) is an extremely small LRU able to be acquire, process and store data from multiple sources in a readily accessible location.

The QAR automatically records to two independent storage mediums, a removable SD/SDHC memory card (up to 256 gigabytes), as well as an internal 4 gigabyte NAND SLC grade memory chip.

Data retrieval is through either removal of the SD card or an internal 4G LTE Cellular modem which can automatically upload recorded data to the cloud on aircraft touch down. The cellular module supports global frequency bands and incorporates an internal MIMO antenna array with no need for external antennas.

An optional weight-on-wheels signal prevents any RF transmission via hardware interlocks to prevent transmission in flight where applicable due to regional NAA requirement. To address cyber security considerations the QAR incorporates both high strength RSA 2048 bit and AES 256 bit encryption, supported with a TPM 2.0 security device. The QAR can also function as a ethernet to secure cellular communication bridge.

MASTER ACQUISITION UNIT (MAU)

The Master Acquisition Unit (MAU) series features an internal back plane with up to eight interchangeable cards to support rapid customisation and configuration for various applications.

The unit supports a dual channel configuration with redundant acquisition cards and redundant processing used to support higher integrity applications.

FPGA based processing coupled with high speed analog front ends allows both digital (e.g. ARINC-429) and analog (e.g. Synchro) signals to be measured with the same pins in different applications.

Total I/O capability is determined by exact card configurations and pin availability, e.g.

Expansion capabilities via internal daughter cards include:

- Differential (input): 48 channels
- Single Ended (input): 96 channels
- Transcievers: 6 channels
- Discrete Outputs: 2 channels
- Auxiliary Outputs: 4 protected 28VDC

REMOTE DATA CONCENTRATOR (RDC)

The Remote Data Concentrator (RDC) series is a miniature hermetically sealed acquisition unit, useful for installation in harsh and remote locations to both simplify wiring harness design and improve signal fidelity by measuring input signals close to the source. Captive fasteners are included to minimize risks of FOD.

FPGA based processing coupled with high speed analog front ends allows both digital (e.g. ARINC-429) and analog (e.g. Synchro) signals to be measured with the same pins in different applications.

Primary output capability is through a high speed ARINC-429 bus.

Total input capability is determined by exact signal selection and pin availability, e.g.

- Differential (input): 11 channels
- Single Ended (input): 22 channels
- Output transcievers:2 channels
- Auxiliary Outputs: 1 protected 28VDC

ASPIRE™ 200 INFLIGHT CONNECTIVITY

HONEYWELL ASPIRE™ 200 SATCOM SYSTEM ALLOWS PASSENGERS AND CREW TO BE CONNECTED DURING FLIGHT, REDUCES WORKLOAD & SENDS REAL-TIME DATA QUICKLY TO AND FROM THE AIRCRAFT

The Aspire 200 satellite communications system offers a broad range of connectivity options to suit a wide variety of requirements. These systems operate on the Inmarsat I-4 satellite network, which has worldwide coverage. With the recently certified high data rate (HDR) upgrade, incorporating a long-burst interleaver, it is now ideal for helicopter operations – especially those on critical emergency medical or SAR missions.

The system is designed with common interfaces that provide flexible installation options and ease of upgrade to further increase the system's capabilities.

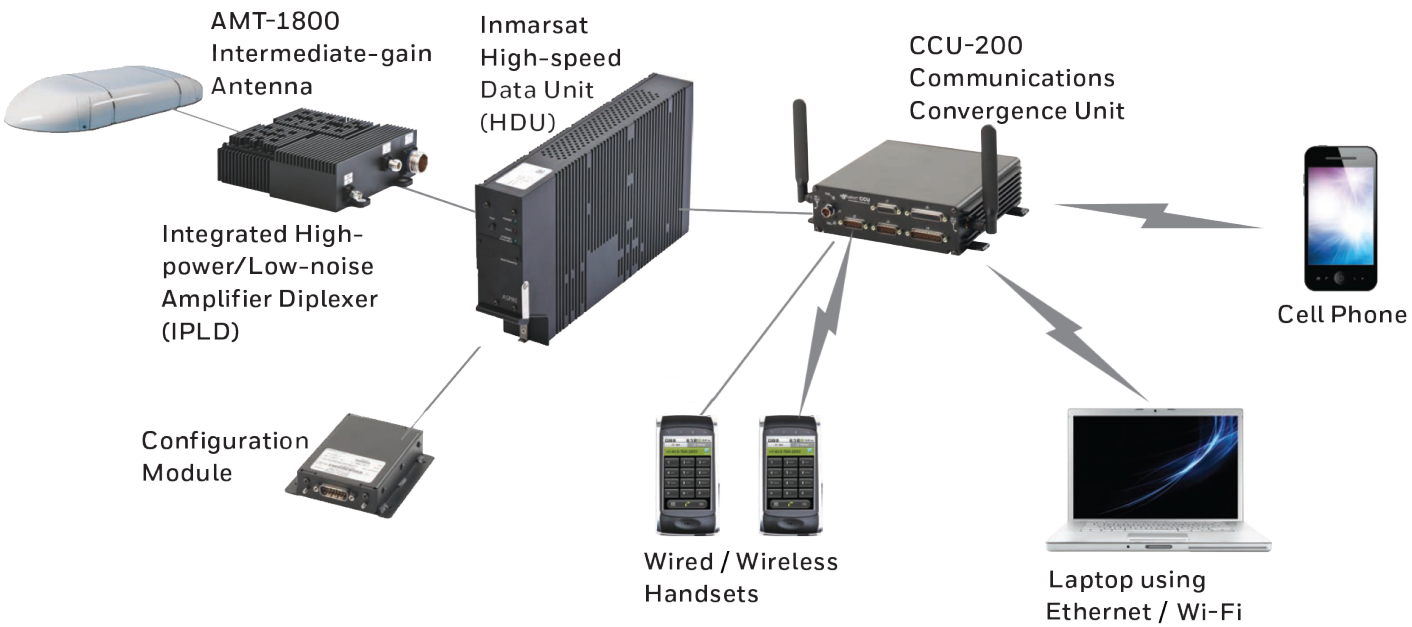
The Aspire 200 System with HDR can transmit more data, faster than any other Lband system. No matter what your mission or the area of your operations, Aspire 200 System provides a high-speed data connection that is always on.

HIGH DATA RATE (HDR) S/W UPGRADE

The HDR software upgrade is used to enhance Inmarsat Lband services. The upgrade to SwiftBroadband channels provides up to 650 Kbps per channel compared to the previous maximum data rate of 432 Kbps. This low cost solution for increasing cabin performance also reduces the effects of rotor blockage, an ideal solution for adding high speed data to helicopters. The HDR software upgrade may be installed by a qualified user or the terminal can be returned to Honeywell for upgrade at an additional cost.

ENHANCE SYSTEM PERFORMANCE WITH AN OPTIONAL CNX-250 NETWORK ACCELERATOR

The CNX-250 Cabin Gateway is a multi-port network router with a data accelerator module that acts as the communications hub for all aircraft data links. The appliance increases the number of network users, the strength of encryption and the speed (data acceleration) of a Satcom or ATG system. The CNX-250 provides a single cabin network based on Ethernet that supports high-speed data and VoIP communications and is scalable to support future growth and system expansion.



| ASPIRE™ 200 SATCOM SYSTEMS FOR HELICOPTERS

ALLOWS PASSENGERS AND CREW TO BE CONNECTED DURING FLIGHT, REDUCES WORKLOAD AND SENDS REAL-TIME DATA QUICKLY TO AND FROM THE AIRCRAFT

Helicopter missions require constant connectivity for passengers and crew, both voice and data. When you're beyond line of sight or beyond VHF coverage area, you need dependable, reliable high-speed data connectivity. In challenging environments, low latency voice, real-time data transfer and aircraft tracking empower pilots to complete their missions successfully and safely.

Honeywell is responding to these challenges with our Aspire™ 200 Satcom System for Helicopters. The Aspire 200 satellite communications system offers a broad range of connectivity options to suit a wide variety of requirements. These systems operate on the Inmarsat I-4 satellite network, which has worldwide coverage. With the recently certified high data rate (HDR) upgrade, incorporating a long—burst interleaver, it is now ideal for helicopter operations—especially those on critical emergency medical or SAR missions.

The system is designed with common interfaces that provide flexible installation options and ease of upgrade to further increase the system's capabilities.

Honeywell's performance is unmatched and unparalleled. The Aspire 200 System with HDR can transmit more data, faster than any other L-band system. No matter what your mission—EMS, Law Enforcement, Oil and Gas, Search and Rescue, VIP—or the area of your operations, Aspire 200 System provides a high-speed data connection that is always on.

| HIGH DATA RATE (HDR) S/W UPGRADE

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VIBRATION DATA ANALYSIS SOFTWARE (VIBDAS™)

VIBDAS™ IS DIAGNOSTIC SOLUTIONS INTERNATIONAL'S OWN DATA MANAGEMENT & ANALYSIS TOOL

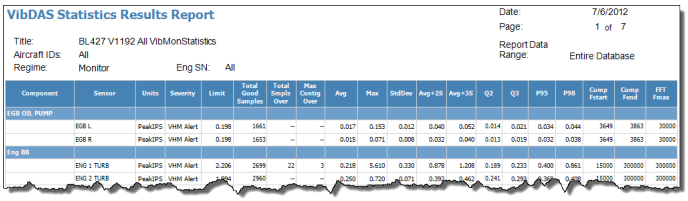
The Vibration Data Analysis Software (VibDAS™) automates the entire process from data upload to generating event (vibration and parameter exceedance) reports. VibDAS™ condenses the inherent abundance of data that HUMS systems produce into digestible summaries for the customer.

Some fully automated capabilities & features:

- Data management—file extraction, data validity and "cross-checking," database import and archiving, etc.
- Dynamic Data Structures—enables DSI to segregate aircraft type/model/series data using specific details and relationships
- Event Processing (aircraft advisories, faults, etc.)—event recognition techniques are used to quickly extract aircraft events and exploit valuable information contained in the submitted flight data
- Trending—detailed usage, engine performance, and vibration flight-averaged data is trended and can be used for aircraft/engine health monitoring and diagnostics
- Statistical Limit Generation and Analysis—facilitates a sound means of complementing OEM established limits, as well as derive new limits as applicable
- Gearbox Health Assessments—performed using multiple parameter comparisons to help quickly exploit issues that may be occurring or are imminent
- Unsurpassed Turnaround Time—automated feedback on submitted data in 4 hours or less (from time of post flight download and website uploading until output reports are sent) via email
- Empowers operators with valuable information in order to quickly identify potential problems and allow for improved safety
- Data collector integrity is evaluated and customers alerted to hardware issues which could generate false alarms, miss potential issues and/or degrade system potential - prevents unwarranted maintenance actions thus saving maintenance man-hours and dollars
- Aircraft Configurable—DSI can customize the tool to support new aircraft types, change the look and feel of reports and change the data management support to meet the customer's needs and expectations:
  - Aircraft tailoring for trend reports, usage reports, textual component relationship reports, etc.
  - Supports new aircraft configuration and limitation files that can be used to reconfigure onboard systems such as VXP and EVXP
  - Supports export of setup and limits files to other ground stations such as VibReview
  - Can be used to predict aircraft component failure so that sales and supply systems can be updated – "just in time" parts supply chain
  - Minimizes need for local users to stock pile spare parts for onboard system support
  - Can prepare reports and data documentation to help present issues to OEM's on component problems identified by onboard systems.

Statistical Analysis

- Facilitates a sound means of complementing OEM established limits, as well as derive new limits as applicable
- Statistical limits can be computed based upon individual aircraft or fleet data
- "What if" scenarios are possible by replaying old data against newly created limits
- Different on-board triggering limits and intervals can be simulated


VibDAS Statistics Results Report

Date: 7/6/2012
Page: 1 of 7

Title: BL427 V1192 All VibMonStatistics
Aircraft IDs: All
Regime: Monitor
Eng SN: All
Report Data Range: Entire Database

Component	Sensor	Units	Severity	Limit	Total Good Samples	Total Smpls Over	Max Contig Over	Avg	Max	StdDev	Avg+2S	Avg+3S	Q2	Q3	P95	P98	Comp Fstart	Comp Feed	FFT Fmax
EGB OIL PUMP																			
	EGB L	PeakIPS	VHM Alert	0.198	1661	--	--	0.017	0.153	0.012	0.040	0.052	0.014	0.021	0.034	0.044	3649	3863	30000
	EGB R	PeakIPS	VHM Alert	0.198	1653	--	--	0.015	0.071	0.008	0.032	0.040	0.013	0.019	0.032	0.038	3649	3863	30000
Eng BB																			
	ENG 1 TURB	PeakIPS	VHM Alert	2.206	2699	22	3	0.218	5.610	0.330	0.878	1.208	0.189	0.233	0.400	0.861	15000	300000	300000
	ENG 2 TURB	PeakIPS	VHM Alert	1.824	2960	--	--	0.250	0.720	0.071	0.392	0.463	0.241	0.293	0.508	0.658	15000	300000	300000

Auto Import & Data Management

- File extraction, data validity and "cross-checking," database import and archiving, etc.
- Auto-emailing report summarizing data processed

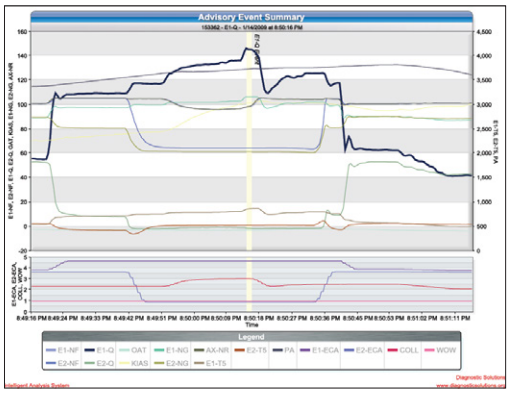
```
REPORT NAME: D2147(BL-427_Event_Report_07_03_2012)
    MODE        _TMS_               AC_CNT _LOGS_ EVENTS FAULTS
    Auto        BL427               6      22     51     256
    AC Locations Processed: CABGOC
    AC Ids Processed: 56051, 56037, 56053, 56062, 56046, 56050

REPORT NAME: D2148(BL-430_Event_Report_07_03_2012)
    MODE        _TMS_               AC_CNT _LOGS_ EVENTS FAULTS
    Auto        BL430               3      7      0      186
    AC Locations Processed: CABGOC
    AC Ids Processed: 49109, 49102, 49126
```

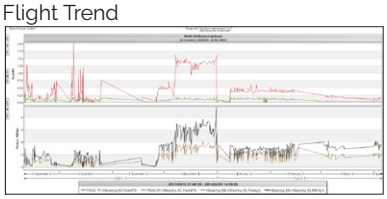
Trending

- Engine performance and vibration data is trended and can be used for aircraft/engine health monitoring and prognosis
  - Engine and flight parameter trending (as supported by on-board collection box, e.g. EVXP)
  - Vibration Data trends—Surrounding exceedance event, Flight-averaged trends, Detailed Vibration Monitor trends over long time periods (Months as apposed to hours)
- Capability of adding Usage trends if supported by collection box.

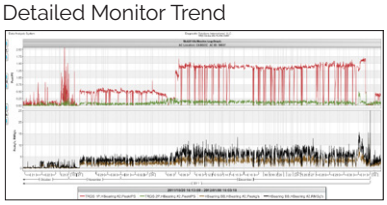
Engine Trend



Flight Trend

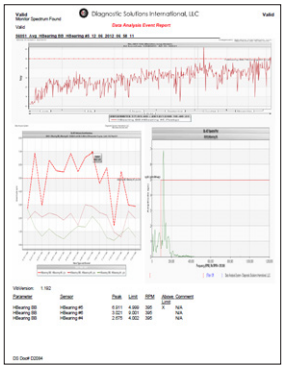


Detailed Monitor Trend



Event Processing (Aircraft Advisories, Faults, Etc.)

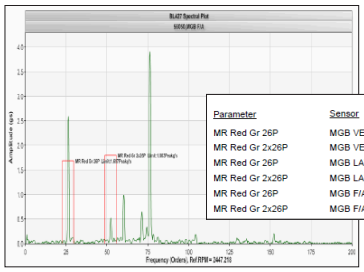
Event recognition techniques are used to quickly extract aircraft events and exploit valuable information contained in the submitted flight data.



- Flight average plot over time
- In-flight advisories (Alerts) correlated against sensor faults
- Supporting spectral data plotted in report along with event trend
- Supporting component data plotted with event (similar components, locations, etc.)
- Textual advisory analysis (1 per rev versus 2 per rev, high RPM, etc.)

Bearing & Gearbox Health Assessments

- Performs multiple parameter comparisons to help quickly exploit issues that may be occurring or imminent
- Detailed frequency bands around bearing frequencies analyzed and compared (e.g. 1 per rev versus 2 per rev, RMS broadband, etc.)
  - Report comments will indicate potential problems such as looseness, misalignment, etc.



Parameter	Sensor	Peak	Limit	RPM	Exceeded Limit	Comment
MR Red Gr 26P	MGB VERT	1.675	2.998	395		N/A
MR Red Gr 2x26P	MGB VERT	0.779	0.997	395		N/A
MR Red Gr 26P	MGB LAT	0.005	1.103	395		N/A
MR Red Gr 2x26P	MGB LAT	0.005	0.799	395		N/A
MR Red Gr 26P	MGB F/A	2.657	1.697	395	X	N/A
MR Red Gr 2x26P	MGB F/A	1.099	1.803	395		N/A

HUMS STC LIST		
HUMS MODEL	MAKE	MODEL
1134	Agusta	AW139
1134	Bell	B429
1209	Bell	212
1209	Bell	B412, B412EP
1239	Sikorsky	S-76C
EVXP	Agusta	A109E
EVXP	Sikorsky	S-76C POST 511v
VMS II	Bombardier	Dash-8 Series 100, 200, 300
VXP	Agusta	A109E
	Agusta Bell	AB139
	Airbus	BK117 C1 & C2 (EC-145 T1)
	Airbus	AS350 B1 & B2/H125
	Airbus	AS-365 N1/N2/N3
	Airbus	EC-135 P2
	Bell	206L-4
	Bell	212
	Bell	407
	Bell	412, 412CF, 412EP
	Bell	427
	Bell	430
	Sikorsky	S-61
	Sikorsky	S-76C POST 511
	Sikorsky	S-76A/C PRE 511

ONBOARD VIBRATION MONITORING SYSTEM/HUMS TECHNICAL SPECIFICATIONS				
	ONBOARD VXP	**MODEL 1209**	**MODEL 1134**	**MODEL 1239**
Accelerometers (Simultaneous Measurement)	26 (6)	36 (6)	24* (6)	48 (8)
Tachometers / Trackers	4 /4	8/2	5*/1	10/2
General Purpose Analog & Discrete In		8	32	48
General Purpose Discrete Out (Low/High)			0/2	16/4
Digital Communication USB CAN Ethernet RS232 / 422 / 485 1394 Firewire ARINC 429 Transmit/Receive MIL-STD-1553B Dual Redundant Buses		1	 1* 2 2 1 1/2 1 (OPTIONAL)	 2 1 4 4 1 2/4 4
Internal Storage (Standard /Optional)	512MB	128MB	512MB / 8GB	512MB / 8GB
Quick Access Recorder (Not Crash Survivable)	-	-	OPTIONAL	OPTIONAL
Dimensions: L X W X H Inches (With Mounting Plate) L X W X H Mm (With Mounting Plate)	 12.2 x 7.1 x 3.0 304 x 180 x 76	 3.0 x 5.75 x 7.575 76 x 146 x 192	 7.6 x 6.2 x 1.8 193 x 158 x 46	 8.8 x 4.7 x 2.5 224 x 119 x 64
Weight (W/O Mounting Plate)	6.2 lbs / 2.82 kg	4lbs 5oz / 1.95 kg	2.5 lb / 1.13 kg	4.0 lbs / 1.81 kg
Temperature (Degrees C)	-30 to +60	-20 to +55	-40 to +71	-40 to +71
Software: RTCA/DO-178B			LEVEL E	LEVEL D
Regulations: CAP-739 (FDM), HOMP/FOQA JAR-OPS3 CAP-753 (VHM)			 LIMITED YES YES	 YES YES YES

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