Osprey$^{32\text{-}BRG}$

32 Channel Rugged Static Bridge DAQ

Connect | Condition | Acquire

Key Features

- 32 Voltage & Bridge Conditioned Channels in 2U Form Factor
- 32-bit ADC, >125dB SNR, 1Hz-1kHz Sample Rates
- 24-bit Secondary ADC for 5-wire Kulite Temperature support
- Gigabit Ethernet Connectivity
- Conduction Cooled, Milled Unibody Chassis
- Multi-unit Synchronisation (GPS, IRIG, LVDS, IEEE-1588)
- 9-36V dc & PoE++ Power Options

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Introduction

Osprey is a series of rugged 32 channel steady-state / Low Transient data acquisition modules designed to provide a world class, highly flexible solution for low bandwidth data measurement.

The Osprey V2 features gigabit Ethernet connections, allowing control from remote laptops or PCs, as well as data streaming for monitoring / archiving.

Osprey V2 is designed to operate in extreme environments, operating at altitudes to 60,000ft (20,000m), in temperatures from –55 to 80°C, and humidity to 100% RH at measurement uncertainties of < +/-0.05%.of reading.

Osprey V2 has proven itself worldwide in numerous applications such as rocket and industrial engine development testing.

The Osprey$^{32\text{-}BRG}$ supports Voltage and Bridge (1/4, 1/2 and Full) inputs directly via IP668 capable Lemo 8-pin connectors. The unit also supports direct sensor temperature measurements from Kulite 5-wire sensors with full data integration in HGL's network packet format and software.

The Osprey$^{2\text{-}BRG}$ is supplied as standard with both IEEE-1588 and IRIG A/B support for synchronising the unit with external devices to +/-20ns accuracy. A GPS receiver can be specified as an optional addition.

Multiple power options are provided as standard, including Power over Ethernet (PoE++) to the latest IEEE802.3bt standard (HGL can also supply matching Power Injector units), 9-36V dc and wide range mains via external adaptors (100-250V ac 50/60Hz unit supplied).

All communications with the unit is achieved via Ethernet through the rear RJ45 ports. HGL can supply software support from an API, Windows DLL, LabView driver through to fully featured measurement systems.

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Hardware Overview

Unibody Chassis

Rugged, milled aluminium housing for use in close proximity to the test article. External cooling fins are milled into the body to aid in heat dissipation. All internal PCBs mounted to thermal pads integrated into the chassis,

Independent Inputs

32CH

Equipped with 32 iindividual channels
One Sigma-delta ADC per channel.
Multiple Conditioning Options.
Simultaneous Sampling.
>125 dB SNR.

Connector Compatibility

Standard options available are BNC, Fischer LEMO, or 15-way D-Type. HGL can also provide customer specific connectors on request.

No Moving Parts

All components are securely mounted internally directly to the unibody chassis. No fans. No rotating storage. Solid State electronics.

Buffered Analogue Outputs

Buffered outputs from the conditioning cards (one output per 8 channels)

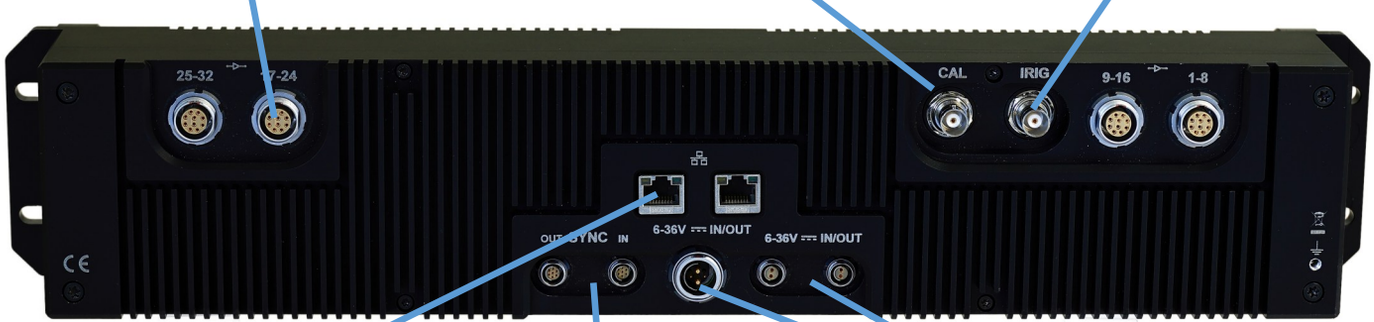
Calibration

Osprey facilitates quick on-board correction with the use of standard bench signal generators/multi-meters.

IRIG (GPS Option) Synchronisation

Dedicated IRIG-A/B input for synchronization with external systems.

Optional GPS input for high precision synchronisation



Networking

- Command & Control Interface
- Gigabit data streaming
- IEEE-1588 Synchronisation

LVDS Synchronisation

- LVDS (Low Voltage Differential Signalling) Synchronisation Interface
- <10nS Unit to Unit
- 0-200m Unit to Unit cable lengths
- Daisy-Chain, Star or mixed topologies

DC Power

- 9-36V d.c.
- Slave output connectors for additional units

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HGL Dynamics

Specification

General

Dimensions (W x H x D):	485 x 89 x 60 mm
Weight:	2.5 kg (typical)
Supply Voltage:	9-36V V DC
	PoE++ (IEEE 802.3bt)
Power:	20 W (typical)

Environmental

Operating Temp.:	-55 to +80 °C
Operating Pressure:	<4.8 kPa (limit 24 hrs)
Storage Temp:	-55 to 100°C
Relative Humidity:	0-100% RH (IP68)

Input Configuration (with standard 1418 signal conditioning card)

Input Channels:	32
ADC Type:	Sigma-Delta
Quantization:	32-bit (plus 24-bit Aux ADC)
Input Ranges:	±10mV to ±10V in 1, 2, 5 steps*
DC Offset:	±0.01 mV
Input Coupling:	AC, DC *
Input Impedance:	>10MΩ
SNR:	>125 dB
Anti-aliasing:	<-130 dB
Sample Rate:	1Hz - 1kHz *
Frequency Response:	DC to 400Hz ± 0.01 dB
Dynamic Range:	140 dBFS / √Hz, 125 dB (broadband)
Inter-Channel Δ Phase:	< 20 nS (< 0.036° @ 1 kHz output signal)
Crosstalk:	< 100 dB @ 1 kHz
Distortion:	< -100 dB, 0 to 1 kHz
DC Linearity:	< 0.01%
Drift:	< 10 ppm/°C (with no correction applied)

Accuracy (%full scale)

Standard (10Hz 1V rms)
Voltage.: ±0.05%

Frequency Response (0-1kHz)
V ±0.01dB

Temperature Response (Calibrated)
All Types (-30 to +80°C): ±0.05%

Altitude Response
All Types (0 to 20,000m): ±0.05%

*Software configurable parameter

Synchronisation

LVDS:	±50 ns
LVDS (max distance)	200 m # (node to node)
IRIG A/B:	±1000 ns
IEEE-1588:	±20 ns
GPS (optional)	±50 ns

#If longer distances are require please contact HGL

Other Inputs (using any standard input)

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Software Options

HGL Dynamics provides multiple software platforms for Osprey Acquisition systems; these range from low level Network APIs, Windows® DLL, LabVIEW™ drivers, and full Measurement System software. This flexibility allows users to choose the best platform for their particular applications and / or increases the utilisation of the hardware for multiple uses.

External Integration Protocols

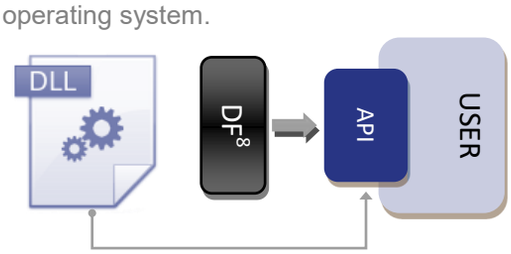
Integrating HGL's Software into a third party system has never been easier. HGL Dynamics offers multiple ways to communicate with the Acquisition Software suites. Communication options include DDS subscriber / publisher, OPC client / server and Modbus (over ethernet) client / server.

Network API

All HGL Dynamics hardware modules are Ethernet connected to each other and their host PC(s); a fully documented Programmer's API is available for integrators / customers who wish to access the modules at this level or need to integrate the modules with a non-Windows operating system.

Microsoft Windows DLL

HGL provides (as standard) a Windows DLL with every Hummingbird Acquisition System; for Microsoft Windows users this provides a simpler method to access all the functions of the hardware.



LabVIEW™ Drivers

HGL has developed LabViEW™ Drivers for all of its Data Acquisition Front Ends including Osprey. The drivers allow full control, configuration and Data Transfer from one or more Acquisition Front Ends. It also allows full synchronisation between multiple units of the same type or across the HGL Dynamics family of Slow Speed, Dynamics and High Speeed Acquisition Front Ends.

Full Measurement System Software

For the past 15 years, HGL has providing a fully integrated, modular, network distributed Dynamics Measurement System; this software is intended for wide variety of applications and for systems ranging from small portable units to large multi-site systems with hundreds or thousands of channels.

The System comprises four main parts, Acquisition, Monitoring, Analysis and Data Management, and is focused on providing robust, flexible, fixed or mobile operation with ease of use as a primary consideration.

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Software Suites

Data Acquisition - Hawk

HGL's Hawk acquisition software provides everything a user needs to configure, calibrate and acquire data from the acquisition hardware. Full control and feedback of the system is provided by the Hawk GUI Client application; this provides an intuitive instrument-like interface that allows even novice users to operate large channel count systems, even from remote locations.

Real-Time Monitoring - Hawkeye

Hawkeye allows one or more users to monitor the signals being acquired in real-time (<0.1s latency).
Fully customisable displays such as FFTs, Waterfalls, Oscilloscopes, Numerical, Speed and Tracked-orders, Phase, Bode, Orbit, n^{th} Octave etc, provide a rich monitoring environment.
Hawkeye also provides Time, Frequency, Order and Phase domain alarming facilities for all channels simultaneously, with support for many different alarms types per channel. Hawkeye is also client / server based with the 'thin' Hawkeye Client allowing local or remote monitoring (performance dependent on network infrastructure).

Analysis - Aurora

Aurora provides an in-depth analysis tool for acquired data; this is usually required post-test, but can be operated simultaneously with testing if useful. Post-test analysis can pinpoint areas of interest / problems to be further investigated, and for this purpose Aurora provides a range of client / server based tools to analyse, investigate, mine, summarise and report on acquired data.
Multiple users can use Aurora simultaneously, and in common with HGL software portfolio access is via a network connected thin-client (Aurora Client) application, thus allowing both local and (potentially widely) remote users to access data simply and efficiently.

Data Storage & Archiving - Hercules

Prolonged or large-scale data acquisition generates a lot of data, 10's and 100's of TBytes are not unusual for large enterprises. Data is expensive to collect and the functionality to efficiently store and retrieve legacy data is essential for in-service investigations, product development etc.

HGL's Hercules software provides an integrated, low-cost, yet highly scalable and safe data management solution for any sized data acquisition operation. The key to the system's success is support for virtually any common media type (SD cards, HDD/SSDs, LTO tapes etc.) combined with a unique database architecture providing simple, yet highly efficient data storage information, and a client/server architecture which allows data to be managed across multiple remote sites from a single intuitive Graphical User Interface.

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Training

Training

HGL Dynamics offers a wide variety of training workshops and courses. Workshops are conducted at one of our global offices or at the client's site by our training team, all of whom have many years' of industry experience and knowledge.
Typical training courses include: Vibration Fundamentals, Signal Processing, Rotating Machinery, Advanced use of HGL Software and Analysing Large Datasets.

Information

About HGL Dynamics

HGL Dynamics is a world-leading supplier of services and high specification equipment for the integrated capture, monitoring, analysis, storage and management of high bandwidth data.

Purchasing & Availability

The HGL Dynamics Osprey^{32} Data Acquisition Module is now available for purchase or lease. Please contact one of our HGL Dynamics offices below for further information or to request a quote.

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