

Connect | Condition | Acquire

Key Features

- Ultra portable, standalone acquisition unit
- Eight 24-bit analogue inputs
- Intuitive setup and interface
- 10.4" Capacitive touchscreen display
- Real-time monitoring and analysis
- Ethernet / Wi-Fi connectivity
- Up to 4 hours battery life

Portable Real-time Data Acquisition Unit

Introduction

The HGL Firefly is the perfect companion for any engineer on the move. This all-in-one portable unit is capable of fulfilling many of your portable data acquisition needs by combining a powerful tablet-type computer with eight independent channels of high performance data acquisition.

As standard, the Firefly is supplied in a rugged milled aluminium chassis providing a high degree of protection against the everyday hazards found when testing in industrial environments. Weighing in at just 3.8kg, it can easily be carried as hand baggage to any location across the world, and once on location provides a complete acquisition, monitoring and analysis solution in one package.

Connect

On-board Battery

With the external supply disconnected the Firefly reverts to using the internal rechargeable 90Wh battery, which provides up to 4hrs of continuous use.

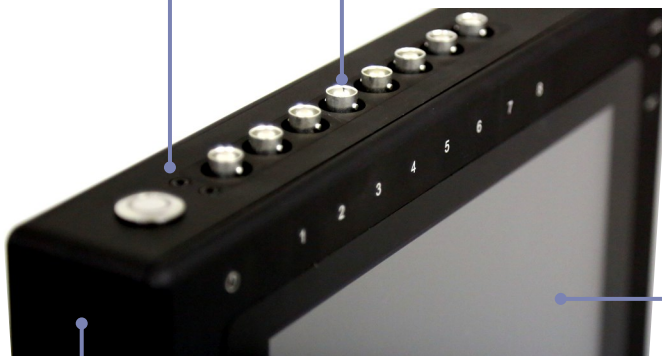


Input Channels

Equipped with eight independent 24-bit analogue input channels the Firefly can host a variety of input types. These input channels can be provided with connectivity for BNC, 8-pin Fischer plugs, or 15-way D-type connectors.

Touchscreen

The 10.4" high resolution capacitive touch screen provides the user with the convenience of operating the system without the need for a mouse and keyboard.



Processing Power

The Firefly is supplied, as standard, with a powerful Intel i5 processor, providing all the processing power necessary to acquire data at a very high sampling rate (200KHz) and to down-sample individual or multiple channels. There is the option to upgrade the processor to an Intel i7 for applications which require it.



Portable Real-time Data Acquisition Unit

Connect

Data Storage

The firefly has an internal 250Gb SSD for storing the acquired data, and with the USB ports this can be expanded to much greater volumes using USB connected external media .



USB Connectivity

Two USB Ports provide the user with the flexibility of using additional Windows compatible peripherals with the system.



Display Output Port

When required the Firefly can be hooked up to a larger screen using the mini display port. A valuable feature for reviewing complex data sets, or for when data needs to be shared with a wider audience.



Remote Access

Using the wired Ethernet, WiFi or optional GSM interface users can remotely operate the acquisition software and access the data stored on the SSD drive.



Synchronisation

The Firefly is intended to be used as a single standalone unit, however it can be synchronised with other HGL systems via LVDS or by optional GPS or IRIG sync boards, All these synchronisation solutions ensure that there is no more than 100ns phase offset between and two units.



Signal Conditioning

The firefly comes as standard with IEPE (1408) signal conditioning which provides AC/DC coupling, 1x, 10x, and 100x gain. A number of other signal conditioning options are available, making the Firefly compatible with almost all industry standard input signal types.



Software Overview

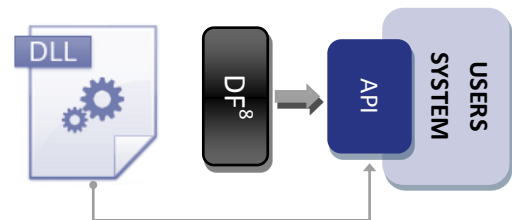
HGL Dynamics provides multiple software platforms for Dragonfly Acquisition modules; these range from low level Network APIs, Windows DLL, LabVIEW™ Drivers, Single Instrument Applications (Apps), and full Measurement System software. This flexibility allows users to choose the best platform for their particular applications and / or increases the utilisation of the hardware for multiple uses.

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 Dragonfly Acquisition Module; for Microsoft Windows users this provides a simpler method to access all the functions of the hardware.



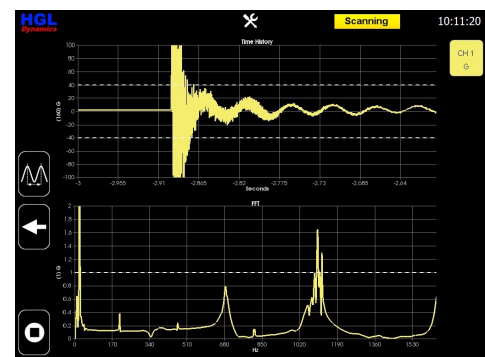
LabVIEW Driver

HGL can provide a LabVIEW driver for the Dragonfly Acquisition Module; this driver allows full access to the functionality of the hardware, and is available for the Microsoft Windows Operating System.

Single Instrument Apps

HGL has developed a number of Single Instrument Apps, primarily for its Firefly system. These apps can be operated on a Dragonfly + Laptop / PC system equally well. The Apps are intended to provide a family of simple, easy to use applications which turn the Firefly / Dragonfly into a single instrument, examples include:

- FFT Analyser
- Oscilloscope
- Chart Recorder
- Rotating Machinery Analyser
- Trim Balance
- Power Dip & Rise (requires isolation amplifier hardware)



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.

Software Overview

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 alarm 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



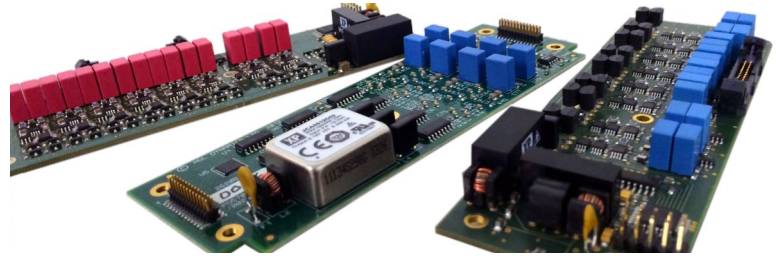
Prolonged or large-scale data acquisition generates a lot of data, 10's and 100's TBytes are not unusual for large enterprises. Data is expensive to collect and the functionality to efficiently store and retrieve legacy data is essential for in-service investigations, product development etc.

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.

Measure

Signal Conditioning

The Firefly can be fitted with a wide range of internal signal conditioning cards which further extend the Firefly's capabilities. Single or multiple conditioning functions are possible depending on card choice. HGL has designed a set of conditioning cards that fulfil most industry standard requirements. However more cards are developed as customers requirements change. The signal conditioning options currently available for the Firefly are:



- FE-1404-DFY: Voltage, IEPE, and Proximeter Probe conditioning card
- FE-1407-IA: 4-Channel High voltage isolation amplifier
- FE-1408-APC: All-purpose conditioning card including Voltage, IEPE, Bridge, Dynamic Strain, and Charge. On-board sensor health check and buffered dual analogue outputs.
- FE-1409-DFY: Voltage and IEPE (ICP) multi-range conditioning card. On board sensor healthcheck and buffered analogue outputs
- FE-1410-BRG / DYN: Voltage & Bridge Only and IEPE & Dynamic Strain only variants of FE-1408-APC card
- FE-1411-MIC: Voltage, IEPE & 200V Excited Microphone Conditioning
- HGL-HiZ: AC/DC Voltage only conditioning with gain

| Cond. Card | Voltage | | IEPE | Bridge | Dynamic | Charge | Temperature | Proximeter Probe | Speed |
|-------------|---------|----|-------------|------------------------|-----------------------|--------|----------------|------------------|-------|
| | AC | DC | Accel / Mic | Strain (¼, ½, full) | Strain (SG, Press) | Accel | Therm. & PT100 | | |
| FE-1404-DFY | ✓ | ✓ | ✓ | | | | | ✓ | ✓ |
| FE-1407-IA | ✓ | ✓ | | | | | | | ✓ |
| FE-1408-APC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓# | | ✓ |
| FE-1409-DFY | ✓ | ✓ | ✓ | | | | | | ✓ |
| FE-1410-BRG | ✓ | ✓ | | ✓ | | ✓ | ✓# | | ✓ |
| FE-1410-DYN | ✓ | | ✓ | | ✓ | ✓ | | | ✓ |
| FE-1411-MIC | ✓ | ✓ | ✓ | | | ✓ | | | ✓ |
| HGL-HiZ | ✓ | ✓ | | | | | | | ✓ |

Portable Real-time Data Acquisition Unit

Specification

General

| | |
|-------------------------|-------------------|
| Dimensions (W x H x D): | 275 x 230 x 50 mm |
| Weight: | 3.8 kg (typical) |
| Supply Voltage: | 12 V DC |
| Power: | 30.0 W (typical) |

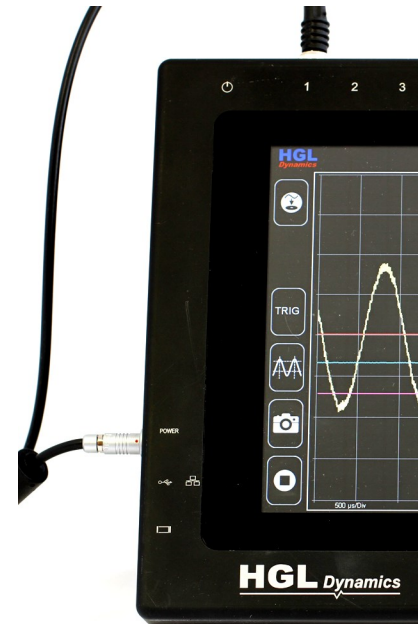
Computer

| | |
|------------|--|
| Processor: | Intel® Core™ i5 Dual Core 2.6GHz (min.) |
| Memory: | 4.0 Gb (min.) |
| Storage: | 250Gb SSD (min.) |
| Screen: | 10.4" Capacitive touch screen (1024x768) |

Input Configuration (with standard 1408 signal conditioning card)

| | |
|-------------------------------|---|
| Input Channels: | 8 |
| ADC Type: | Sigma-Delta |
| Quantization: | 24-bit / 16-bit |
| Input Ranges: | ± 10 V, ± 1 V, ± 0.1 V * |
| DC Offset: | $< \pm 0.15$ mV |
| Input Coupling: | AC, DC * |
| Input Impedance: | > 100 k Ω |
| SNR: | > 120 dB |
| Anti-aliasing: | < -100 dB |
| Sample Rate: | 5 - 256 kHz * |
| Frequency Response: | DC to > 100 kHz ± 0.017 dB |
| Dynamic Range: | 140 dBFS / $\sqrt{\text{Hz}}$, 114 dB (broadband) |
| Inter-Channel Δ Phase: | < 20 nS ($< 0.36^\circ$ @ 10 kHz output signal) |
| Crosstalk: | < 100 dB @ 5 kHz, < 95 dB @ 10 kHz, < 87 dB @ 20 kHz, < 82 dB @ 40 kHz, < 70 dB @ 100 kHz |
| Distortion: | < -80 dB, 0 to 80 kHz |
| DC Linearity: | $< 0.01\%$ |
| Drift: | < 25 ppm/ $^\circ\text{C}$ (with no correction applied) |

*Software configurable parameter



Synchronisation

| | |
|---------------------|-----------------------------------|
| LVDS (10MHz): | 10 ns per unit |
| LVDS (max distance) | 200 m [#] (node to node) |
| IRIG-A/B: | ± 100 ns |
| GPS: | < 5 ns |

[#]If longer distances are require please contact HGL

Environmental

| | |
|--------------------|--|
| Operating Temp.: | -25 to 70 $^\circ\text{C}$ (w/ conditioning) |
| Storage Temp.: | -40 to 85 $^\circ\text{C}$ |
| Relative Humidity: | $< 90\%$ RH non condensing |

Other Inputs (using any standard input)

IRIG-A and IRIG-B
Audio Voice Annotation
Tachometer

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 Firefly 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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FS72209



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