Dragonfly^8

Data Acquisition Module (FE-1409-DFY + Charge)

HGL Dynamics

Connect | Condition | Acquire

Key Features

- Rugged and Lightweight (< 2kg)
- 16/24 bit ADC, >114dB SNR, 5-256kHz Sample Rates
- Low power (6-36V d.c. 9W)
- Multi-unit Synchronisation (GPS, IRIG, LVDS, IEEE-1588)
- Modular Architecture, scalable to >1000 channels
- Voltage, IEPE and Charge Conditioning
- Environmentally rated to IP54 (with IP68 option)

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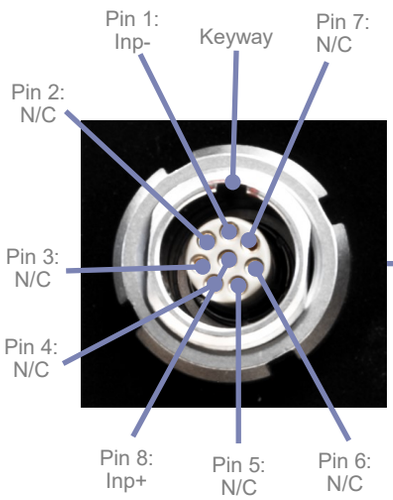
Connect



Independent Inputs

One ΣΔ ADC per Channel.
Simultaneous Sampling.
>114dB SNR.
Voltage, IEPE, SE and DIFF Charge Conditioning

Rugged Chassis

Extruded Aluminium shell.
Milled Aluminium end plates.

Scalable Channel Count

8-1024+ Channels.

Multiple Module Connection

T Slots on each side of the module.
Two modules can be connected using simple H Bar and four screws.

IEEE1588 Synchronisation

Both ports and internal switch are IEEE1588 compatible.

Adaptable Network Topologies

Internal Gigabit switch allows Daisy-Chain, Star or mixed topologies.

Power over Ethernet (PoE)

Marked port is 802.3at Type 1 (<12.95W) compliant.

Custom Area

Options include:

- GPS (Location, Position & Sync)
- GPRS / 3G (Data Output)
- 1-8 Digital Inputs
- SD Card (Storage)

Flexible Power

- 6-36 V DC (fully automotive compatible)
- Two ports allow Daisy-Chain, Star or mixed power topologies
- Full range power adapter (100 - 240V AC 50/60Hz) supplied with each module
- Dragonfly^{BAT} 99 Whr rechargeable battery module available for UPS/ untethered operation

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

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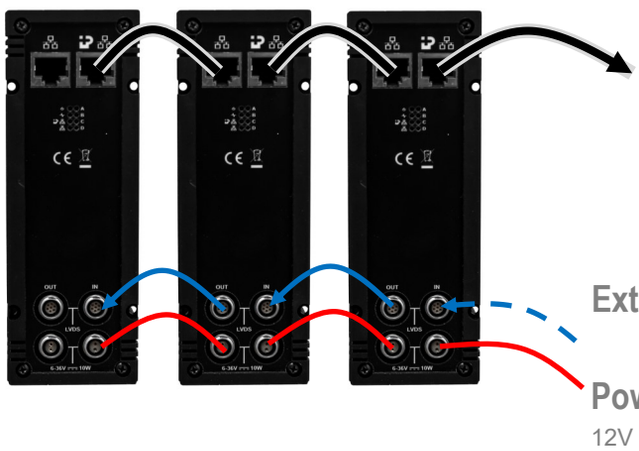
Multi-Connect

Multiple Dragonfly Systems

The Dragonfly system is designed to allow easy connection of multiple modules to form larger channel count systems. Three connection configurations are supported, Daisy-chain and Star, and Mixed.

Daisy Chain



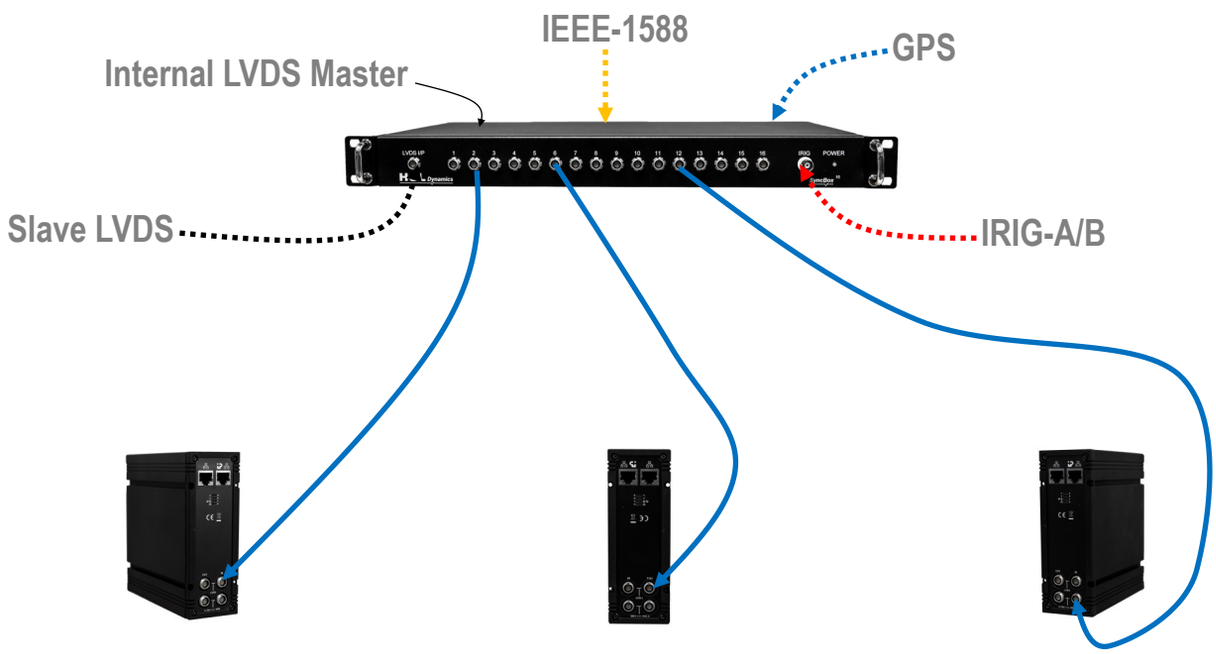
This mode allows Dragonfly Modules to be chained together for all three required connections (Ethernet, Power and Sync)

Inter-node distancs can be 100m or greater (using switches), although synchronisation delays can become an issue over long distances (5.6nS per meter).

Star

Star configurations are ideal for situations where Power Over Ethernet (POE) can be used and where close synchronisation over large distances are required.

Networks are simple to configure for Star operation by simply using any (POE capable) Gigabit Network Switch. The LVDS Sync (if IEEE-1588 is not used) requires the use of the HGL Dragonfly Sync Box (pictured below) which can provide up to 16 precisely synchronised LVDS outputs from a single GPS, IRIG, IEEE-1588 or Internal LVDS source.



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Condition

Signal Conditioning—FE-1409-DFY + Charge

The Fylde FE-1409-DFY is the follow -up to the popular FE-1402-DFY Voltage & IEPE Conditioner Card.

Together with the HGL SE / DIFF Charge Front Panel the conditioning provides Voltage, IEPE, SE and Diff Charge conditioning in one compact package.

The card is fully compatible with V4 and later HGL Dragonfly cards and is compatible with HGL Hawk software from V3.9 onwards.

Description

A highly integrated multi-use board set comprising FE-1409-DFY and HGL Charge Front Panel card, includes Diffferential and Single Ended Charge capability, Voltage and IEPE conditioning with TEST capability fo a complete measurement solution to suit a wide range of transducer and gauge applications.

Specification

IEPE Supply	Up to 8 channels	4mA nom. @20V Compliance TEDS Compatible
CHARGE	Up to 8 channeks	Differential and Single Ended
	Level max	25,000pC pk
	Protection	+/-20V continuous, 100V transient
	Frequency Response	1Hz to >20kHz –3dB
Differential Charge	Sensitivity	0.2mV/pC +/-1% (programmable to 200mV/pC)
	Noise	<40uV pk rto
Single Ended Charge	Sensitivity	0.qmV/pC +/-1% (programmable to q00mV/pC)
	Noise	<20uV pk rto
AMPLIFIER	8 identical amplifiers	Low Noise differential AC/DC switchable
Input	Impedance	2MOhm differential
	Coupling	DC or AC 0.16Hz (-3dB)
	Signal / Protection	+/-10V max / +/-30V max continuous input / ground
	Calibration	Individual inputs selectable onto common Cal Bus
	Monitor	Differential Reporting of up to +/-24V input levels
	CMR	>70dB AC Coupled, >100dB DC coupled (@ 1000x gain)
	Noise	<15uV pk-pk DC-100kHz Measurement Bandwidth
Gain	Programmable	x0.5, x1, x2, x5, x10, x20, x50, x100 & x200
	Accuracy	+/-0.25% T.C. <25ppm/^{o}C, G>100 –50ppm +/-25ppm
	Linearity	Better than 0.01% (to +/-10V / 1kHz)
ENVIRONMENT	Supply	12V DC 10W Max
	Temp. Range	-25^{o}C to 70^{o}C operating

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Specification

General

Dimensions (W x H x D):	140 x 100 x 150 mm
Weight:	0.8 kg (typical)
Supply Voltage:	6 - 36 V DC
Power:	9.0 W (typical)

Environmental

Operating Temp.:	-25 to 70°C
Storage Temp:	-40 to 85°C
Relative Humidity:	< 90% RH non condensing

Input Configuration (with FE-1408-APC conditioning card)

Input Channels:	8
ADC Type:	Sigma-Delta
Quantization:	24-bit / 16-bit*
Input Ranges:	±20, 10, 5, 2, 1, 0.5, 0.2, 0.1, 0.05*
DC Offset:	±0.15 mV
Input Coupling:	AC, DC *
Input Impedance:	>2 MΩ Differential
SNR:	>114 dB
Anti-aliasing:	<-100 dB
Sample Rate:	5 - 256 kHz *
Frequency Response:	DC to >100 kHz ±0.1 dB
Dynamic Range:	140 dBFS / √Hz, 114 dB (broadband)
Inter-Channel Δ Phase:	< 20 nS (< 0.36° @ 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:	< 0.075%
Drift:	< 100 ppm/°C (with no correction applied)

*Software configurable parameter

Synchronisation

LVDS:	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

Other Inputs (using any standard input)

IRIG-A and IRIG-B
Audio Voice Annotation
Tachometer

Package Details

Portable Acquisition Module
(8, 16, 32, 48+ Channels)

ACE-1 & ACE-3 Cables
(Power & Sync)

Full Range Power Supply

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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 Dragonfly[8] 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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