



Powerful | Practical | Precise

Key Features

- Ultimate in Portable Vibration Measurement
- 6 axis Gyro / Accelerometers, Pressure & Temperature Sensors
- GPS receiver with INS system
- External Push-button for Distance Marking
- 9+ Hours Recording Time (NiMh Batteries)
- On-board Storage (SD Cards to 128GB)

Introduction

Pegasus represents the ultimate in handheld / portable measurement equipment for a wide variety of applications. The Pegasus range includes 2, 4 and 5 channel analogue acquisition models and the Ride Quality (RQ) model described in this flyer which includes a 6 axis Gyro / Accelerometer system together with a GPS receiver with internal INS capability.

The Pegasus^{RQ} model is intended for vehicular ride quality measurement, automotive, railborne, shipborne or even aeronautic. The unit makes use of internal MEMS transducers for the main acceleration / rotation sensors, a GPS receiver for position information (where possible) and a combination of an Inertial Navigation System (INS) and user push-button for situations where GPS information is not receivable.

Pegasus also includes on-board storage, using SD card technology, up to 128 GBytes which represents many days of recording time for the MEMS and GPS sensors at rates of 200+Hz. A USB connection provides the ability to configure the unit, operate in tethered mode, and upload data when attached to a PC. Data captured on the SD card can also be uploaded quickly if required via a separate USB to SD converter.

Power is supplied by 4 on-board AA cells either Alkaline (4+ hours) or NiMh rechargeable (9+ hours).

The built-in 3.5" / 4.3" touchscreen provides a modern user experience when configuring or acquiring data; and uniquely for a unit this size it also provides monitoring displays.

Application

The ultra compact Pegasus chassis with all sensors internally mounted, is ideal for vehicular ride quality applications for trains, planes and automobiles where space is at a premium

The built-in MEMS 3 axis Accelerometer and 3 axis Gyro provides full 3D measurement of vibration / shock at same rates up to 400Hz.



The inclusion of GPS together with the Accelerometers and Gyros allows for mixed mode navigation to be achieved where position location is important for rough track / roadway identification purposes. The combination of the two methods allows position to be determined even when in tunnels or in city locations where GPS reception is compromised.

Additionally an Operators Event button can be connected to the Pegasus to enable Start, Stop and Manual distance marking, events to be added simply without having to touch the unit.

HGL can provide a WiFi enabled unit, which allows use within distributed applications such as Satellite or Artwork Transportation.



Handheld Vehicle Ride Quality Measurement

Practical

Compact Design

Pocket Sized 130 x 75 x 30mm
Lightweight <300g

GPS & User Button

Rugged

Milled Aluminium Chassis
BNC Protection
SD Card Protection

Environmental Sensors

Built-in 6 Axis Accel / Gyro

- Screen Orientation
- Environment Measures

Built-in Temperature Sensor

Familiar Controls

3.5" / 4.3" Capacitive Touch LCD
Single Control Button



Operating Stand

The Pegasus unit can be operated hand-held, in a pocket, resting on a surface; however, for best accuracy HGL recommends the use of its milled Aluminium stand which adds more weight (1kg) for stability, three levelling feet and a bubble level indicator.

Additionally the stand has cut-outs that allow it to be used to calibrate the unit (shown later).

Bubble Meter

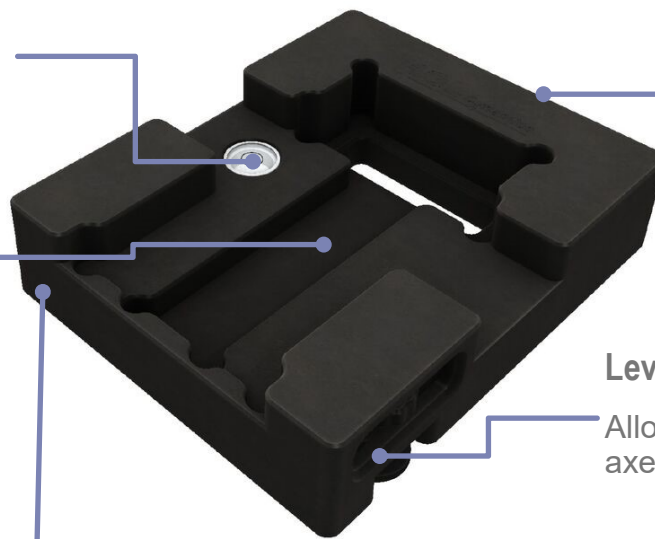
Provides X-Y level indication

Mounting Cut-outs

Allow Pegasus to be mounted in three Orientations

Levelling Feet (3)

Allows Adjustment of X-Y axes orientation



Handheld Vehicle Ride Quality Measurement

Powerful

Easy Access

Replace Batteries & SD Card in < 10s
Secure Slide-lock Catch

Processing Power

ARM CPU for Control / Display

Flexible Power Options

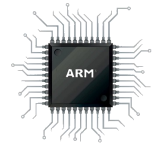
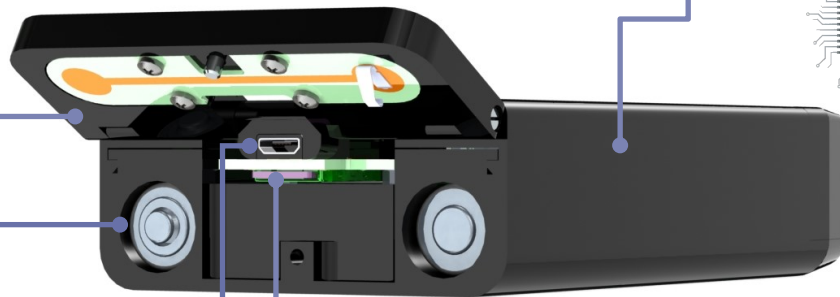
On-board 4 x AA Batteries

- Alkaline: 4+ Operating Hours
- NiMH: 9+ Operating Hours

USB for Tethered Operation / Charging
Wind / Solar Options via USB

On-board Data Storage

SD Card up to 128GByte
10+ Days Record Time



Precise

General

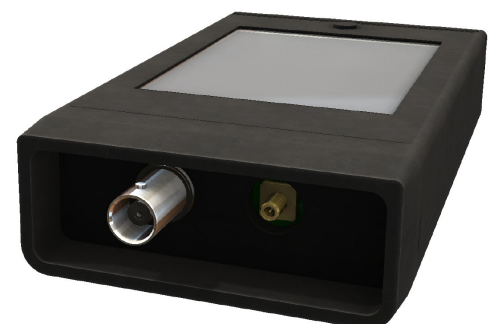
Dimensions (W x H x D):	130 x 75 x 30mm
Weight:	300 g
Supply Voltage:	5.0 V DC (USB)
Power:	1.2 W (typical)

Environmental

Operating Temp.:	-20 to 70°C
Storage Temp.:	-30 to 80°C
Relative Humidity:	< 90% RH non condensing

Input Configuration

Input Channels:	3 x Accelerometer, 3 x Gyro, 1 x Temperature, 1 x Pressure, 1 x Humidity
ADC Type:	MEMS
Quantization:	16-bit
Input Ranges:	+/- 2, 4, 8, 16g @ +/-0.05%/°C (Accelerometers) +/- 250, 500, 2000 degs/sec @ +/-2% (Gyro) 10-1200mbar @0.5% (Pressure) -40 to +85°C @ +/-0.8°C(Temperature)
GPS:	GPS, Galileo, GLONASS compliant SMA Antenna Connection
Push-button	BNC / Lemo 2-pin
Sample Rate:	200Hz
Frequency Response:	DC to >100Hz 0.14—10Hz Filtered



Handheld Vehicle Ride Quality Measurement

Calibration

The Pegasus unit is intended for use in applications that require accuracy and precision whilst remaining portable and able to be used in many environments. Additionally MEMS transducers are not renowned for their inherent accuracy and stability, predominantly because of their small size and nature.

Pegasus overcomes these issues through the provision of a simple to perform calibration process which removes offsets and trims gains of the three acceleration and gyro axes simply using gravitational force.

The key to the process is the HGL Pegasus Stand mentioned above which allows the Pegasus unit to be placed in the stand in each orientation (3D x 2) for a few seconds. The built-in software assesses the stability of the unit and once satisfied takes a number of readings which are then combined together at the end to provide accurate calibrations approaching 1% to be achieved quickly whilst onsite.

Calibration information is stored within the FLASH memory of the Pegasus unit and is applied to all data recorded following the calibration. The calibration process takes about 30 seconds to complete (for a competent user) and as MEMS devices are susceptible to pressure and temperature changes it is suggested that calibration is performed immediately prior to important tests if the +/-1% level is required. Where the base level +/-2% level is sufficient (MEMS manufacture) then calibration can be performed at longer intervals (usually yearly).

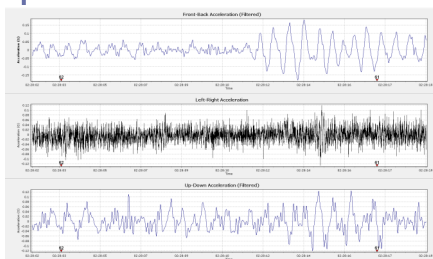


Software

Pegasus is supplied with dedicated measurement firmware on-board the unit which provides all the functions required to configure, calibrate and acquire data. Firmware revisions are available from time to time and these can be simply imported via the SD card.

Full unit indicators are provided before and during recording such as full sensor instantaneous values, GPS lock, time and position information, battery charge state and firmware revision levels.

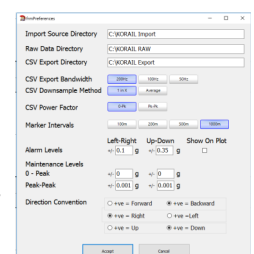
The main recording screen provides either a simple numeric indication of filtered vibration in the Left-Right and Up-Down directions or a graphical line chart of vibration in all three axes.



A companion PC Windows (7/10) application is also provided which can be used for a variety of tasks, including remote control, data extraction and software update (via USB cable) or for data post-processing / export

HGL can provide customised Firmware / PC software for specific applications, and additionally the Pegasus data format is provided as a published OPEN format for

customers who wish to develop their own software.



Handheld Vehicle Ride Quality Measurement

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 Pegasus 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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