

ULTRASONIC INTELLIGENT SENSORS

Advanced LPHP Subsea 3D Vibration Monitor

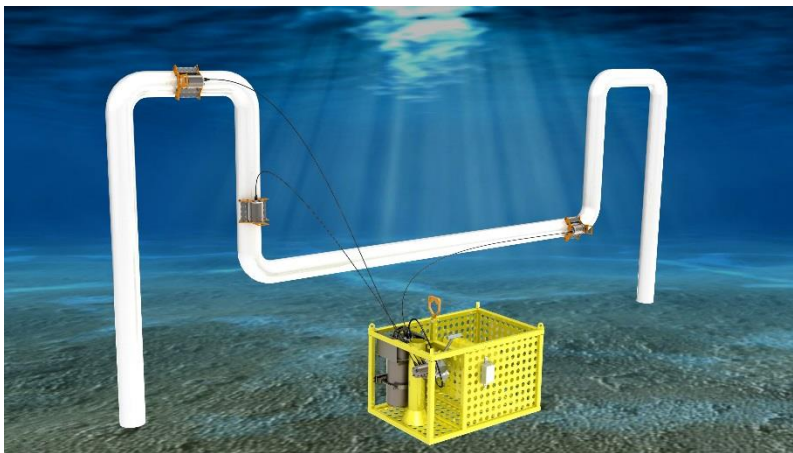


ClampOn 3D Vibration Monitor, Low Power High Performance (LPHP)

To accurately monitor vibration in complex subsea pipework, multiple measurement locations are required. The different modes are measured to gain knowledge of the forces in play; hence, a system of several vibration monitors must be installed at different locations on the pipework. A datalogger communicates with each of the vibration monitors, and synchronizes the measurements by its onboard, real time clock. This allows for complete motion tracking/phase relation of pipework sections, such as well jumpers, flex loops, and other unsupported lines. As an alternative to battery and datalogger, the instruments can be directly interfaced through the ROV power and coms, or by direct cable to surface when the water depth is less than 400 meters.



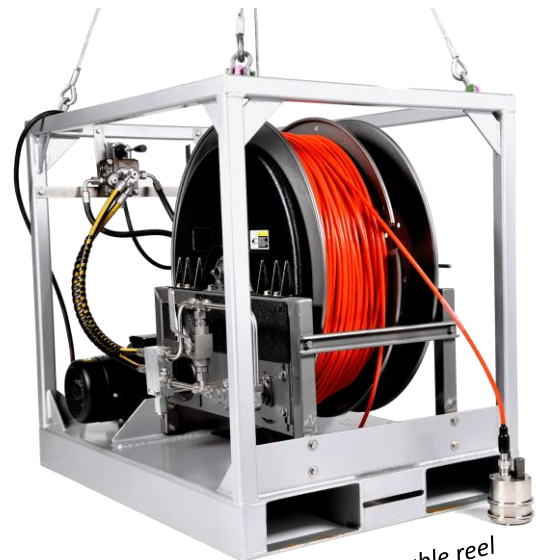
Basket with Battery, datalogger and 3off LPHP Vibration monitors



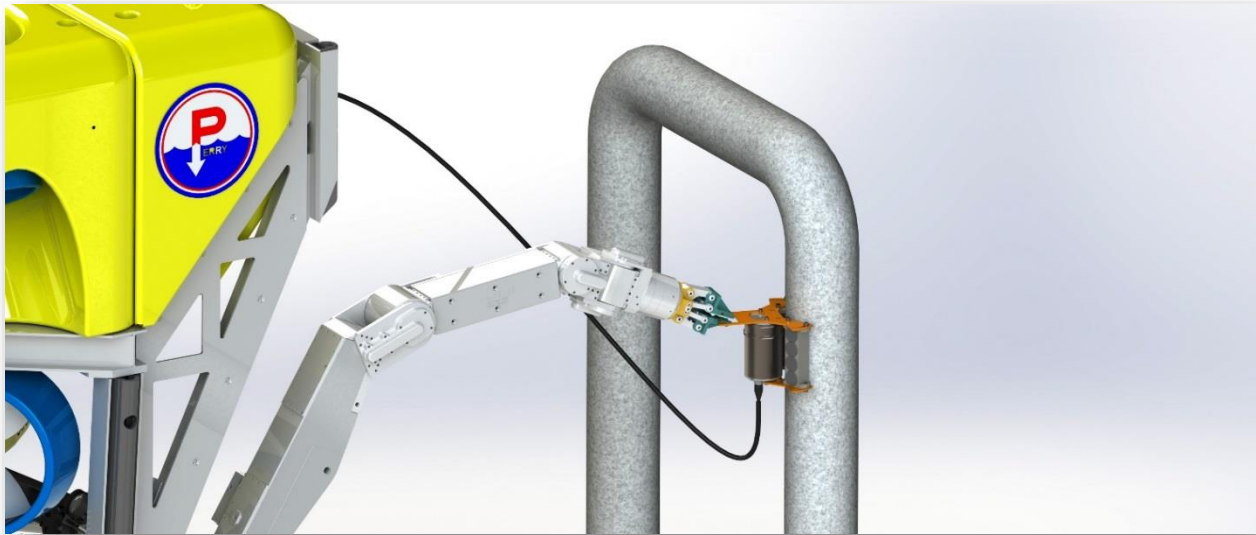
Vibration monitors installed by magnetic fixture on well jumper

- Phase relation
- 16ch Multichannel system
- 3-axial gyroscope
- 3-axial magnetometer/compass
- Up to 10 years battery/deployment life
- Wireless data offloading (third party)
- Direct interface to ROV
- Local indication
- Direct cable to surface vessel

For short inspection type monitoring tasks, single or multiple instruments can be interfaced directly with topside PC in water depths less than 400 meters, using our 500-meter electrohydraulic cable reel, providing real time data. Alternatively, instruments can be directly interfaced through the ROV communication link on its serial interface. These solutions are typically used to map out the vibration force during well start-up and short campaigns. For long time monitoring the data-logger set-up is better suited as equipment can be installed and left.



500 meter cable reel



Vibration monitor being installed using magnetic fixture, directly interfaced with ROV

OUTLINE SPECIFICATIONS

Cable reel

- Cable 500 meter 2 pair 9,3mm OD
- Supply voltage 3Phase 230 or 400 AC
- Weight 180 Kg
- Dimensions L:1150*W:750*H:950mm

ROV interface

- Voltage 9-36Vdc
- Signal interface RS485
- Connector type Depending on ROV system/type

Basket (multichannel logger)

- Battery 350Ah primary Lithium or 54Ah chargeable Ni-MH
- Design depth 3000 meters
- Local indication Dual colour led
- On/off Scheduling and optional ROV switch
- Data logger / Controller 128GB storage
- Weight ~120kg (depending on configuration)
- Dimensions L:1095*W:745*H:940mm

Instrument*

- Measurement principle MEMS accelerometers, gyroscope and magnetometer
- Frequency range 0 Hz to 6000Hz
- Signal interface RS485
- Power consumption 0,1W

*See datasheet for further details