

UltraLab ULS Advanced Field

Sophisticated Ruggedized Remote Wave Measurements



A 4-channel UltraLab Advanced Field controller in its rugged Peli-Case, fit for numerous demanding wave measurement applications outdoor, offshore, in the field.

The UltraLab Advanced Field takes the well-established and proven General Acoustics Ultra Lab technology from the lab to the field.

The UltraLab ULS Advanced Field is designed for reliable and high resolution wave measurements onboard ships, (moving) platforms or fixed constructions. The system was developed as a mobile version of the General Acoustics' UltraLab Advanced: a high performance airborne ultrasonic distance measuring technology for towing tanks and hydraulic labs. It was ruggedized for field applications and features an integrated speed of sound correction and advanced signal processing. The operation is calibration free for straightforward plug and play application in the field.

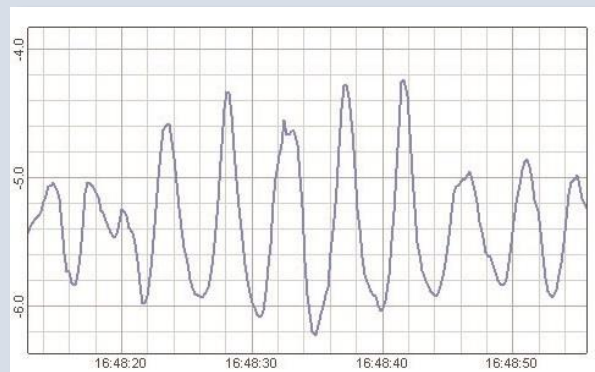
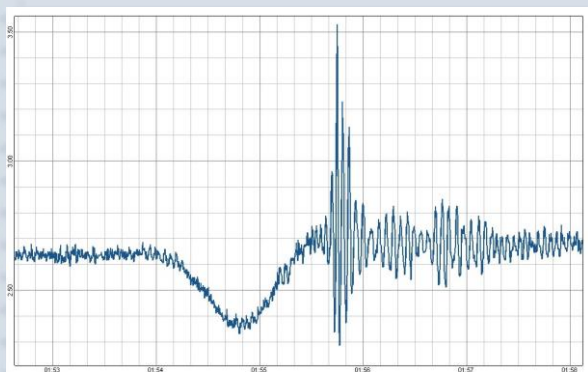
Up to 12 narrow beam sensors can be connected on 4 fully synchronized channels. 8 and 16 channel versions are available as well. A wide array of ultrasonic and radar sensor for different measurement ranges are available. This allows adaption to almost all kinds of wave situations. Measurements of steep and very fast waves, even in small grids, close to constructions or ship hulls are possible. The system is designed for unattended operation and stores months of data on the internal SDHC-card data logger if needed. Additionally, LAN, RS232 and trigger interfaces provide connectivity to external measurement systems. The direct readable ASCII output format can be easily imported to any processing tool.

These properties, in combination with its mobility, make the UltraLab ULS Advanced Field a versatile tool for a wide range of applications.

Applications

- Versatile measurement of all kind of waves and highly dynamic level changes
- High resolution wave measurements
- outdoors e.g. in large canals or offshore basins
- Fast analysis of waves/ wave fields
- Wave parameter estimation
- Measurement from ships, constructions or in large scale models
- Hydrological and environmental monitoring
- Storm tide, flood, tsunami detection
- Ship induced waves measurement
- Harbour management
- Hydrographic survey support
- Torrent monitoring
- Load determination for hydraulic engineering
- Temporary deployment
- Wake Wave pattern of ships and ship models

Exemplary Results



Two exemplary results showing different wave situations evaluated with an UltraLab Advanced field. A ship-induced wave at river Elbe, is shown on the left. The right plot shows a wave field captured at the north sea. The wave height in meters is plotted over time.

Specifications

- Number of channels: 4 channels, 8 or 16 channels optional
- Number of sensors: up to 12 General Acoustics USS sensors for 4 channels
- Measurement range: ultrasonic: up to 25m radar: up to 60m
- Resolution/Accuracy: 0.36 mm / 0.15% of measuring range
- Measuring rate: up to 100 Hz, depending on chosen measurement range
- Data logger: SD/SDHC-card up to 8 GB
- Power supply: 24 VDC (9-36VDC optional)
- Mobility/weight: Easy to carry and compact, approx. 12kg (controller, 1 sensor, REF-sensor cables)

Interfaces

- Direct readable ASCII data format (trigger stamped, CSV format)
- RS232 (115 kBaud)
- LAN/Ethernet (Virtual COM-Port server streams data to any LAN-PC)
- Trigger input for ext. sync (TTL, opto-isolated)

Scope of UltraLab Advanced Field System

- up to 12 UltraLab USS 60HF sensors (for standard 4-channel version)
- 1 Controller unit with fully synchronized but independent channels
- 1 Sensor REF-300 for precise sound velocity measurement
- Sensor connection cables
- Windows Software for real-time visualization, data logging, remote control and data export as well as a viewer tool for logged data