

DeepTow 2000

GeoAcoustics Deep Tow Survey Suite



KONGSBERG

2000 m Depth Rated Combined Sub-Bottom Profiler and Side Scan System

Description

The GeoAcoustics Deep Tow 2000 provides a flexible suite of seabed survey tools to suit all deep water survey requirements. The modular system can include any combination of data from dual frequency side scan sonar, Chirp profiler, magnetometer, towfish tracking and towfish pitch, roll, heading and depth, all rated to a working depth of 2000 metres integrated into a single easy to deploy, rugged towfish. At the heart of the system is the Telemetry Interface Unit, which allows power, signal, and control for all towfish systems to be multiplexed down a single co-axial tow cable up to a length of 10 km.



System Components

Telemetry System

The Deep Tow 2000 Telemetry System allows operation of the system over a single co-axial cable. At the surface the Telemetry Interface Unit (Model TL2001) provides power and trigger signals to the towfish sub-systems and de-multiplexes the sensor data. On the towfish the Telemetry Subsea Unit (Model TL2002) provides power and a trigger source for the subsea systems as well as multiplexing data and transmitting it to the surface. The system works over a 10 km long by 14 mm diameter cable with high tolerance of cable leakage, which makes it work reliably and helps to keep its through-life-costs to a minimum.

Towfish

The Model 136SS fish allows for stable, noise-free towing in high seas and at speeds up to 12 knots. The rugged body and fibreglass cowling, provides protection of the integrated systems and will stand up to the punishment encountered in

Features

- 2000 m depth rating
- Reliable operation over 10 km coax cable using telemetry
- Side Scan, Sub-Bottom Profiler, Magnetometer data from a single towfish
- Optional 3500 m depth rating

harsh conditions.

Towfish attitude package

The integrated system provides high accurate values of towfish heading, pitch, roll and depth.

Side Scan Sonar

The proven GeoAcoustics Dual Frequency Side Scan Sonar system is the ideal tool for seabed feature mapping. The operating frequency can be switched between 110 to 410kHz. It offers high quality results in and easy to use reliable package.

GeoChirp II

The GeoAcoustics GeoChirp II sub-bottom profiler uses frequency modulated signals and signal compression and digital signal processing (DSP) techniques to achieve deep sub-surface penetration

while maintaining high resolution. Source signals can be selected, depending on the survey task from a bandwidth of 1.5 to 13 kHz including pinger waveforms.

Magnetometer

The Deep Tow 2000 system interfaces to a range of customary magnetometers.

Towfish tracking

An ultra-short baseline (USBL) responder can be fitted to the towfish, with power and the trigger signal to the responder being provided by the Telemetry Subsea Unit. It has a range of up to 8000 m..

General

Deck Unit

- Power requirement: 90–250 VAC switchable, 50–60Hz,
- Temperature: Storage: -20 to 75°C
Operating: 0 to 50°C
- Humidity: 10% to 95% RH, non-condensing.

Telemetry System

General

- Power output to tow 350 VDC \pm 3 VDC.
- Telemetry: High tolerance to cable attenuation and leakage. Greater reach and generally more robust than competing digital links.
- Telemetry Frequencies: 220–236 kHz (up) 430–446 kHz (down).
- Max cable length: 10 km of 11 mm diameter armoured coaxial cable.
- Cable: Rochester A302799 or equivalent.
- Safety features: Shutdown if greater than 2 mA leakage between screen and armour
Safety interlock.

Interfaces

- Side Scan Sonar: DC power and signal/trigger interface.
- GeoChirp II: DC power and signal/trigger interface.
- Motion Sensors: Depth, heading, pitch, roll.
- Magnetometer: Isolated 32 VDC PSU and RS232.
- Posidonia USBL: Isolated PSU, RS232 and trigger.

GeoChirp II

- Frequency Range: 1.5 to 13 kHz programmable
- Power Output: 10 W to > 4 kW user programmable
- Source Level: up to 205dB \pm 3dB re 1 μ Pa@1m

- Pulse Length: Typically 32 ms, programmable sweeps (or user defined pings)
- Pulse Shading: Full amplitude control
- Pulse Repetition Rate: 4 pulses per second maximum for 32ms chirp sweep 10 pulses per second for pinger waveforms
- Trigger: push button control for trigger source, trigger rate and divider, with 7 segment displays
- Protection: Open and short circuit protected
- Efficiency: Greater than 90%
- Beam Width: 55° at 3.5kHz.
40° at 5.0kHz.
30° at 7.0kHz
(4 Transducers)
- Trigger: Isolated TTL
- Control Interface: Isolated RS232 bi-directional (3 wire)
- Transmit Transducers: 4 x T135 Wideband
- Hydrophone: Standard Chirp hydrophone tail.

Dual Frequency Side Scan

- Frequency: 114/410kHz \pm 1%.
- Power output: 3.0 kW/2.5 kW pulse \pm 20%.
- Pulse Length: 167 μ sec/88 μ sec \pm 1%.
- Pulse repetition rate: 20 pulses per second maximum.
- Source level: 223 \pm 3dB re 1 μ Pa@ 1m
- Beamwidth: 114 kHz - 50° by 1°
410 kHz - 40° by 0.3°
- Sensitivity: -190dB re 1V/ μ Pa
- Depression angle: 10° \pm 1° down
- Protection: Open and short circuit protected.
- Efficiency: Greater than 80%.
- Dynamic range: Gain: adjustable over 60dB range.

- TVG: -20 to +20dB maximum.
- AGC: -34dB maximum.
- Key out: 0.6ms CMOS/TTL compatible.

Towfish

- Weight: 265kg
- Length: 1.4m
- Height: 0.45m
- Width: 0.45m

Attitude Package

- Heading Accuracy: \pm 0.5°
- Heading Resolution: 0.1°
- Pitch Accuracy: \pm 0.2°
- Pitch Resolution: 0.1°
- Roll Accuracy: \pm 0.2°
- Roll Resolution: 0.1°
- Depth Accuracy: \pm 1% of full scale or \pm 2m
- Depth Resolution: 0.1 m

MG020212

KONGSBERG GEOACOUSTICS Ltd is engaged in continuous development of its products, and reserves the right to alter the specifications without further notice

KONGSBERG GEOACOUSTICS Ltd

Shuttleworth Close
Gapton Hall Industrial Estate
Great Yarmouth NR31 0NQ
United Kingdom

Telephone +44 1493 600666
www.km.kongsberg.com/geoacoustics
km.geoacoustics.sales@kongsberg.com