



Easytrak - Applied Acoustics

File Windows Help

Map Scale = 100 Mode=Gated

Easytrak Nexus

055.8°

818812.4E

5837402.4N

100m 200m 300m 400m

Barge 1

(Beacon 2) 190.1°, 322.8m

Measurement

Cancel Measure

Range 326.9m

Bearing 102.9°

Beacon Editor

General Visuals Data

Tracking On

Description Diver 1 Interval 1.5

Target Type Diver Depth Mode Acoustic

Beacon Type Responder Depth 12

VOS Range 1500 m/s

Channel Selector

Type TEST

Channel 6/6 (TEST1)

Apply Cancel Changes

Event Log 3

All Clear Log

Time	Description
12:22:51	Measure End point - Barge 1
12:22:49	Measure Start point - Diver 1
12:21:48	Beacon 2 - Out of gate

Waypoint Editor

Description	Easting (m)	Northing (m)	Visible
Barge 1	819062.4	5837154.0	<input checked="" type="checkbox"/>
*			<input type="checkbox"/>

Beacon Data

Description	X	Y	Z	SRng	HDist	Brng	Visible
Diver 1	818743.7m	5837226.9m	12.0m	188.8m	188.4m	201.4°	<input checked="" type="checkbox"/>
Beacon 2	818756.0m	5837084.5m	4.3m	322.9m	322.8m	190.1°	<input checked="" type="checkbox"/>

Gating & Smoothing

Gating

Horiz. Distance 20.0 m

Slant Range 10.0 m

Velocity 10.0 m/s

Auto Gate

Smoothing

Low Med High

Apply

Vessel Monitor

Heading: 055.8°

Pitch: 1.3°

Roll: -1.5°

Fix: 1303

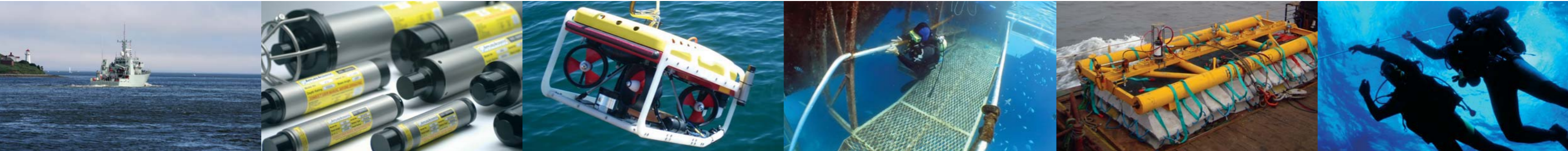
Easting: 818812.4m

Northing: 5837402.4m

GPS Status: Valid DGPS

Latitude: 52.592922°N

Longitude: 1.707810°E



: Secure Acoustic Spread Spectrum Technology

: Digital Data Telemetry

: Ten Target Tracking

: Improved Range Stability

Easytrak Nexus is the next generation subsea tracking system from Applied Acoustics. Now incorporating Spread Spectrum Technology to provide a secure acoustic link, Nexus represents our most advanced Ultra Short Baseline (USBL) positioning and tracking system. As with all Easytrak systems, Nexus combines its high accuracy performance with versatility and ease of operation.

Easytrak Nexus determines the position of dynamic subsea targets through the transmission and reception of acoustic signals between the submerged transceiver to the target beacon. By incorporating Spread Spectrum Technology, the frequency of the transmitted signal is able to be varied, reducing its susceptibility to interference and enabling the calculation of accurate positioning information. Spread Spectrum Technology also rejects unwanted reflected signals that have made operating in challenging locations such as ports or harbours difficult in the past.

Fully Integrated

At the heart of the system is the Nexus Command Console, a powerful 2U rack mounted processor with direct connection to the system's Transceiver. Though the Transceiver has integral pitch, roll and heading sensors, serial ports on the Console allow the additional interface with external reference units for higher accuracy. External data from Gyros, VRU's and GPS/DGPS, is captured and combined on the immediate detection of an acoustic signal, and forwarded to the navigation computer as an

AAE data string or in an industry standard format. Further ports connect to the display monitor, keyboard and mouse and to the ship's Ethernet.

Flexibility

As with other Easytrak systems Nexus works with a variety of underwater targets and beacon types including Pingers, Responders, Release and Positioning Transponders, both in traditional 'tone-burst' and Spread Spectrum modes. These new Spread Spectrum (SS) Beacons include an enhanced 1000 Series with depth telemetry option and a Bi-directional Spread Spectrum version for improved range stability. With low-power consumption the bi-directional Spread Spectrum beacons can be connected to peripheral devices subsea to send back digital data, for example current flow or heading, as well as simultaneously being used as navigation transponders.

Versatility

The rack-mounted Nexus has a built in PC running embedded Windows XP with a solid state HD. The positioning information is displayed on a separate monitor where activity of up to ten subsea targets within a specified operating area can be viewed. These targets can be beacons operating on Easytrak traditional tone-burst channels, Easytrak SS Channels or channels operating in the same frequency range from other sources.

SYSTEM CONFIGURATION

The Easytrak Nexus consists of:

Nexus Console	2U rack-mountable
Cable	To connect Console to Transceiver
In-water Transceiver	Transducer and electronics which tracks the beacon. It sends range and bearing data to the Nexus Console and also includes a Pitch, Roll and Heading Sensor.

Monitor, keyboard & mouse

OPTIONAL ITEMS

- Beacon to be tracked (or multiple beacons)
- Uninterruptible power-supply

Technical Specification

EASYTRAK NEXUS CONSOLE MODEL 2690

Dimensions	19" Rack mount. 2U. 482 x 88 x 345mm
Weight	5.4kg
Power requirements	90 – 250 VAC at 250 VA maximum
Connection to Transceiver	Rear-panel connector for 2681 Transceiver
Built-in PC	Intel Atom board running embedded Windows XP. Solid state hard disk
Front panel indicators	LED indicators for power and serial status
Serial Communications	5 x RS-232. Selectable Baud rates
Data Output	AAE format, TP-2EC TP-EC W/PR, Simrad 300P, Simrad 309 (binary) \$PSIMSSB, \$PSIMSNS (One string after the other for each fix) \$GPRMC (Suitable for Coda Octopus 460P and others) KLEIN 3000, \$GPGGA and \$GPVTG
Compass Input	TCM-2.X, \$GB-HTDS, \$GB-HTDt, \$HEHDT, \$HDHDM, \$HDHDT, \$HDHGD
VRU Input	TCM-2.X, \$HCXDR, TSS1
GPS / DGPS Input	NMEA; GLL, GGA, RMC
Responder Output	Positive 12v pulse 5 mS long
USB	4 ports available
Ethernet	Rear panel standard RJ45 jack
Audio	Audible activity indicator

EASYTRAK TRANSCIVER MODEL 2681

(May be tilted by 20 degrees for towfish tracking)

Material	Aluminium Silicon Bronze
Size	500 mm long x 100 mm diameter
Weight in air/water	11kg / 8.5 kg
Depth Rating	50 metres
Depth Sensor (Pressure Sensor)	5 bar, accuracy 0.25% between -10° to +40° C
Temperature sensor	1 degree resolution between - 10° and +40° C
Power requirements	Powered from Nexus Console
Transducer	Multi-element transducer head moulded in polyurethane
Receiver	24 bit receiver capable of detecting Spread Spectrum and tone burst signals.

ACCURACY/PERFORMANCE

(Accuracy is based on the correct speed of sound being entered, no ray bending and an acceptable S/N ratio)

Slant Range accuracy	10 cm (Accuracy dependent on correct speed of sound)
Position accuracy	0.60° drms. 1.0% of slant range (Acoustic accuracy excluding heading errors)
Bearing Resolution	0.1° displayed. Internally calculated to 0.01°
Heading sensor accuracy	0.5° rms standard; +/- 0.1° resolution/repeatability
Pitch/Roll sensor accuracy	+/- 0.20° rms +/- 0.1° resolution/repeatability
Frequency Band (MF)	Reception 22 - 30 kHz. Transmission 17 – 26 kHz.
Tracking Beam Pattern	> Hemispherical
Beacon Types	Transponders, Responders and Pingers. Digital Depth Transponders. AAE Release and Telemetry beacons.
Interrogation Rate	Internally set or external key
Transmitter	Nominally 190 dB SPL

TRANSDUCER CABLE

Diameter	12.8 mm nominal
Colour	Yellow
Length (xx)	20 – 60 metre standard lengths. 100 metres maximum length.
Connectors	Supplied
SWL	20 kg (Allows Transceiver to be deployed from cable)
System	Externally assessed for immunity and emissions; conforms to 89/336/EEC. RoHS compliant





With on-going research and development in cutting edge technology and acute awareness of current and future industry needs, our commitment to our customers is second to none. We are equally determined to aid and assist our customers worldwide with a network of partners, suppliers and overseas Support Centres. Together, we offer engineering excellence, trusted products and a first class professional service on a global scale.



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