



APPLIED ACOUSTICS
Underwater Technology



Easytrak - Applied Acoustics

File Windows Help

Map Scale = 100 Mode = Gated Display Ref : Gated

Easytrak Nexus

Beacon Editor

General Visuals Data

☒ Tracking On

Description: Diver 1 Interval: 1.5

Target Type: Diver Depth Mode: Acoustic

Beacon Type: Responder Depth: 12

VDS Range: 1500 m/s

Channel Selector

Type: TEST

Channel: 6/6 (TEST1)

<< 1 >>

Apply Cancel Changes

Event Log 3

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

Measurement

Cancel Measure

Range: 326.9m

Bearing: 102.9°

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 Gate Size: 20.0 m

☐ Slant Range Gate Size: 10.0 m

☐ Velocity Gate Size: 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

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Easytrak Nexus USBL System

- : **Bi-directional Spread Spectrum Acoustics**
- : **Digital Data Telemetry**
- : **Ten Target Tracking**
- : **Improved Range Stability**
- : **Embedded Calibration Software**

Easytrak Nexus is the latest 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. Aided by the inclusion of Kalman filtering, the signal architecture within Nexus systems 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. Whilst the Transceiver has integral pitch, roll and heading sensors, further 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. The system is completed by the inclusion of AAE's EasyCal calibration software, as standard. This allows the operator to carry out a full system calibration at the work site, without the need for a separate, and often expensive, additional software package.

Flexibility

As with other Easytrak systems, Nexus works with a variety of underwater targets and beacon types including Responders, Release and Positioning Transponders, both in traditional 'tone-burst' and Spread Spectrum modes. AAE's Spread Spectrum Beacon range includes an enhanced 1000 Series with depth telemetry option. 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 Spread Spectrum channels, Easytrak traditional tone-burst channels, or broadband and tone-burst channels operating in the same frequency range from other beacon manufacturers.





Technical Specification

EASYTRAK NEXUS CONSOLE, MODEL 2690

Dimensions	19" Rack mount. 2U. 482 x 88 x 345mm
Weight	5.4kg
Power requirements	90 – 250Vac at 250 VA maximum
Connection to Transceiver	Rear-panel connector for 2682 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 V1 and V2, TP-II2EC, TP-EC W/PR, Simrad 300P, Simrad 309, Simrad \$PSIMSSB, Pseudo \$GPRMC, NMEA \$GPGGA, NMEA \$GPVTG, NMEA \$GPTLL, Pseudo \$GPGGA, KLEIN 3000 (Quick set)
	Multiple outputs available
	Internal data logging and playback
Compass Input	TCM-2.X, SGB-HTDS, SGB-HTDt, \$HEHDT, \$HDHDM, \$HDHDT, \$HDH DG
VRU Input	TCM-2.X, \$HCXDR, TSS1
GPS / DGPS Input	NMEA; GLL, GGA, RMC
Target Heading Input	NMEA HDM, HDT, HDG, PNI TCM2
Target Depth Input	NMEA DBT, DBK, DBS, DPT, AAE
Time in	GPS Time synch
Responder Output	Positive 12V pulse 5ms long
USB	4 ports available
Ethernet	Rear panel standard RJ45 jack
Audio	Audible activity indicator

EASYTRAK TRANSCEIVER, TYPE 2682

(May be tilted by 20° for towfish tracking)

Material	Aluminium Silicon Bronze
Size	510mm long x 100mm diameter
Weight in air/water	13kg / 10kg
Depth Rating	50m
Depth Sensor (Pressure Sensor)	5 bar, accuracy 0.25% between -10° to +40° C
Temperature sensor	1° 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.

TRANSCEIVER CABLE

Diameter	12.8 mm nominal
Colour	Yellow
Length (xx)	20 – 60m standard lengths. 100m maximum length.
Connectors	Supplied
SWL	20kg. Allows Transceiver to be deployed from cable

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 and Responders. Digital Depth Transponders. AAE Release and Telemetry Beacons.
Interrogation Rate	Internally set or external key
Transmitter	Nominally 190 dB SPL
CE Marking	Externally assessed for immunity and emissions. Conforms to 89/336/EEC



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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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