



## : Technical Specification

### Easytrak Nexus

Easytrak Nexus is an advanced Ultra Short Baseline (USBL) positioning and tracking system which incorporates Spread Spectrum Technology to provide a secure acoustic link. It determines the position of dynamic subsea targets through the transmission and reception of acoustic signals between the submerged transceiver and the target beacon.

By incorporating Spread Spectrum Technology, the wide bandwidth transmissions reduce its susceptibility to interference and enables more accurate positioning. Spread Spectrum Technology is also better at rejecting unwanted reflected signals which improves operations in challenging locations such as ports and harbours.

#### Key Features

- : Secure Acoustic Spread Spectrum Technology
- : Ten Target Tracking
- : Wide range of beacons including tone burst and Spread Spectrum models
- : Integral pitch, roll and heading sensor
- : Easy to use interface



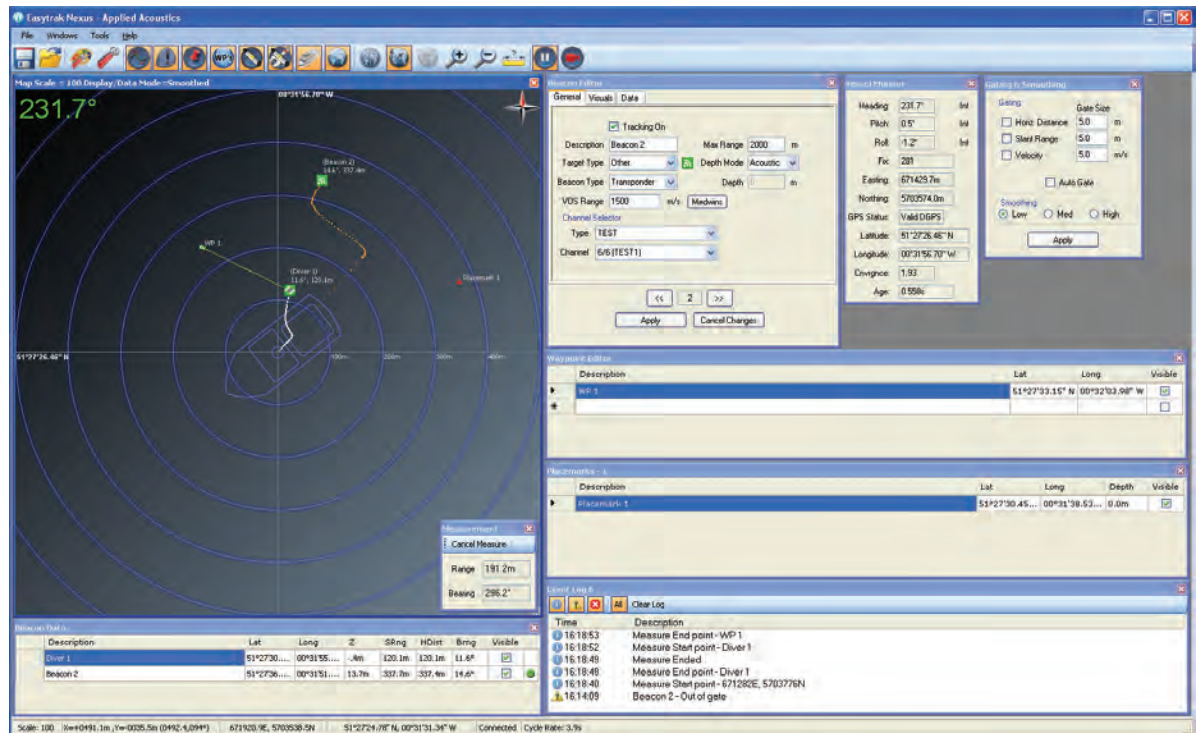
Easytrak Nexus Command Console

**Applied Acoustic Engineering Ltd**  
Marine House, Marine Park  
Gapton Hall Road  
Great Yarmouth NR31 0NB  
United Kingdom

- T** +44(0)1493 440355
- F** +44(0)1493 440720
- E** [general@appliedacoustics.com](mailto:general@appliedacoustics.com)
- W** [www.appliedacoustics.com](http://www.appliedacoustics.com)

## EASYTRAK NEXUS SYSTEM

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. Although the Transceiver has integral pitch, roll and heading sensors, serial ports on the Console provide an interface to external reference units for higher accuracy. All motion and GPS/DGPS data is captured at the point of signal detection to minimise latency effects and once processed is displayed on the screen or forwarded to a navigation computer (as an AAE data string or another industry standard format). Further ports connect to the display monitor, keyboard and mouse and to the ship's Ethernet.



Like 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 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 subsea devices to send back digital data, for example, current flow or heading, as well as simultaneously being used as navigation transponders.

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.

### The Easytrak Nexus System Configuration consists of :-

- Nexus Console : 2U rack-mountable.
- Cable : To connect Console to Transceiver.
- In-water Transceiver : Transducer and electronics which tracks the beacon.
- Monitor, keyboard and mouse

### Optional Items

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

### **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 ,SGB-HTDS, SGB-HTDt, \$HEHDT, \$HDHDM, \$HDHDT, \$HDHDG
VRU Input	TCM-2.X, \$HCXDR, TSS1
GPS / DGPS Input	NMEA; GLL, GGA, RMC
Responder Output	Positive 12v pulse 10mS long.
USB	4 ports available
Ethernet	Rear panel standard RJ45 jack.
Audio	Audible activity indicator.

### **EASYTRAK NEXUS Transceiver Model 2681**

---

(May be tilted 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 (Acoustic accuracy excluding heading errors)	0.60° drms. 1.0% of slant range
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

## TRANSCEIVER CABLE

---

Diameter	12.8 mm nominal
Length (xx)	20 - 60 metre standard lengths 100 metres maximum length
Colour	Yellow
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

