



APPLIED ACOUSTICS

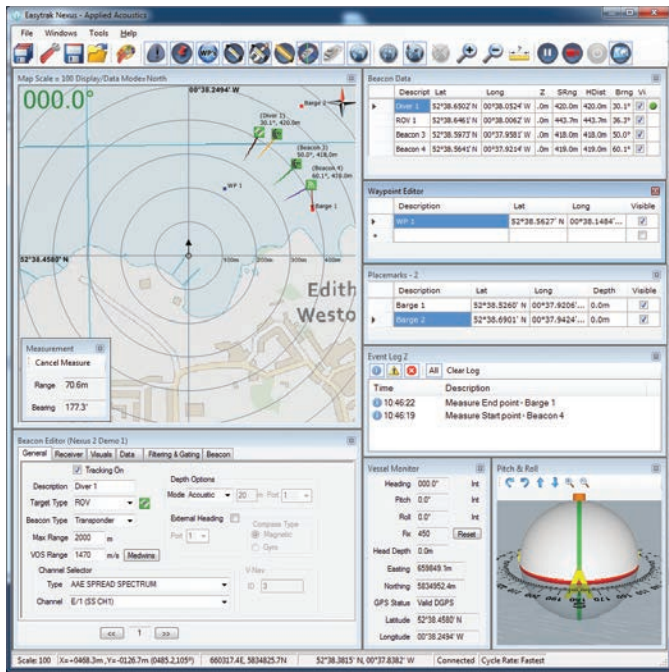
Underwater Technology

An AAE Technologies Group Company



Nexus 2 Advanced USBL Systems

www.appliedacoustics.com



Applied Acoustics' Nexus 2 is the second generation of digital USBL system designed as a highly advanced positioning and tracking system that is quick to deploy and straightforward to operate. Featuring AAE Sigma 2 acoustic protocols, the Nexus 2's digital Spread Spectrum transmissions provide a secure acoustic link with very low susceptibility to interference, enabling precise and reliable positioning over an extended operational range.

Able to determine the positions of up to 16 dynamic subsea targets simultaneously, Nexus 2 is ideal for many deep or extremely shallow water applications where multiple assets are to be tracked. These operations can include UXO surveys utilising several magnetometers or sidescan sonars, diving operations, and for use at offshore worksites where several vehicles may be in use concurrently. The long range capability and exceptional accuracy specifications make Nexus 2 particularly effective for long layback towed applications.

Nexus 2 Advanced USBL For precise subsea positioning

Key features

- Bi-directional Sigma 2 Spread Spectrum acoustics
- Optimised beacon refresh rate
- 16 target tracking
- Geographical navigation overlays
- EasyCal 2 embedded calibration tool with AutoCal Wizard
- Data telemetry options
- Common interrogate frequency
- Sound velocity profile upload facility



The system features a choice of transceivers - directional or hemispherical - and enhancements to the design of these have helped to create an extremely accurate USBL system, boasting positioning accuracies of up to 0.12% of slant range and a calculated bearing resolution of 0.01 degrees. Optimum system performance is delivered when used in conjunction with Applied Acoustics' Sigma 2 enabled 1100, 1200A or 1300A series transponders, however versatility is assured due to its compatibility with legacy products and transponders from third party manufacturers.

Embedded as standard within each Nexus 2 system are a comprehensive range of software features and survey tools such as the EchoPLOT geo-referenced graphical overlay function and EasyCal 2 calibration tool with AutoCal Wizard. These features are provided to ensure swift and easy set to work procedures, saving valuable time and project costs. Remote support software is also embedded giving Applied Acoustics' Support Team the ability to monitor operations and assist with diagnostics from anywhere in the world, and the Nexus 2 recording/playback function allows tracking missions to be reviewed in any PC with Nexus Demo App installed.



Technical Specification

EASYTRAK NEXUS 2 CONSOLE, MODEL 2692

Provides DC power, high speed digital communications to the transceiver with an embedded graphical navigation interface. Supplied with monitor, keyboard and mouse.

Dimensions	19" Rack mount. 2U, 482 x 88 x 345mm
Weight	5.4kg
Power requirements	90 to 250 Vac at 250 VA maximum
Connection to transceiver	Rear panel connector for 2686 Transceiver
Built-in PC.	Industrial i3 board running embedded Win 7, 32GB HD
Temperature	Operating: -10° to +40°C Storage: -20° to +50°C
Front panel indicators	LED indicators for power and serial status
Serial communications	4 x RS-232 External Input Port. 3 x Data Out Ports
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
Compass Input	SGB-HTDS, SGB-HTDt, NMEA HDT, HDM, HDG
VRU Input	TCM-2.X, \$HCXDR, TSS1
GPS / DGPS Input	NMEA; GLL, GGA, RMC Geo Referenced Graphical Overlay. GeoTiff, DXF
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	6 ports available, 2 on front panel
Ethernet	2 x 1Gbps standard RJ45 jack. Ethernet UDP Data Port
Audio	Audible activity indicator

TRANSCEIVER, TYPE 2686 AND 2780 SPECIFICATIONS

Factory calibrated multi-element transceiver head complete with integral AHRS, depth sensor and temperature sensor.

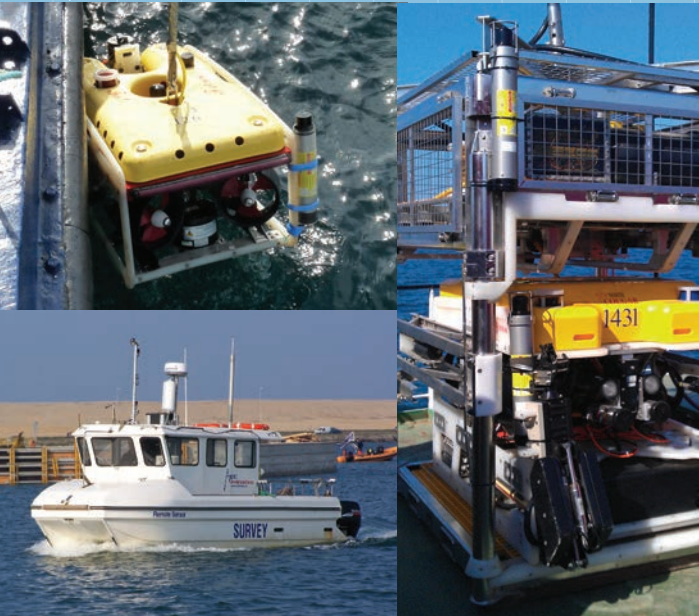
Material	Aluminium silicon bronze
Weight in air/water	2686 16kg/11kg 2780 21kg/15kg
Dimensions	2686 152mm Ø x 432mm 2780 200mmØ x 432mm
Temperature	Operating: -10° to +40°C Storage: -20° to +50°C
Depth rating	30m
Electrical supply	48Vdc
Depth sensor (Pressure Sensor)	5 bar, accuracy 0.25% between -10° to +40° C
Temperature sensor	1° resolution between -10° and +40° C
Frequency band (MF) Transmitter	18 - 32 kHz Variable, typical max 192dB re 1µPa at 1m
Compatible transponders	AAE Sigma 1, Sigma 2 Digital Spread Spectrum and AAE Tone channels. AAE V-NAV channels. HPR 400 channels 1100, 1000, 1200A, 1300A Series Beacons, Digital Depth Transponders, AAE Release and Telemetry Beacons.
Interrogation rate System	>2Hz refresh rate. Internally set or external key Externally assessed for immunity and emissions; conforms to 89/336/EEC. RoHS compliant
Cable length	Max 150m

TRANSCEIVER PERFORMANCE

Transceiver	Console	Beam Pattern	Acoustic Precision Degrees	Acoustic % Slant range	Internal AHRS Precision	Acoustic +Internal AHRS %	Acoustic +External AHRS %	Max Range	Range Resolution	UK Export Control
2686 - N	EZT-2692	180°	0.25° DRMS	0.45%	0.5°	1.49%	0.45%	995m	0.01m	No
2686 - C	EZT-2692	180°	0.25° DRMS	0.45%	0.5°	1.49%	0.45%	2000m	0.01m	Yes
2780 - N	EZT-2692	150°	0.07° DRMS	0.12%	0.5°	1.17%	0.12%	995m	0.01m	No
2780 - C	EZT-2692	150°	0.07° DRMS	0.12%	0.5°	1.17%	0.12%	3000m	0.01m	Yes

Accuracy is based on the correct speed of sound being entered, no ray bending and an acceptable S/N ratio
Position repeatability, calibrated and measured with SNR > 20dB rel. 1µPa in a controlled test environment.

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.



APPLIED ACOUSTICS
Underwater Technology
An AAE Technologies Group Company

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
W www.appliedacoustics.com