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Easytrak Nexus 2 USBL System, Model EZT-2691



Key features

- Bi-directional Sigma 2 Spread Spectrum acoustics
- Improved positioning accuracy and stability
- Multi-Fire optimised beacon refresh rate
- MIL Specification EMC
- MIL Specification Environmental
- 16 target tracking
- Geographical navigation overlays
- EasyCal 2 embedded calibration tool with AutoCal Wizard
- Data telemetry options

Easytrak Nexus 2 Overview

Easytrak Nexus 2 is the next generation of advanced USBL positioning and tracking system that incorporates Sigma 2 Spread Spectrum technology to provide a secure acoustic link. By incorporating aae Sigma 2 technology the wide bandwidth transmissions reduce its susceptibility to interference and enables precise, reliable positioning over an extended operational range.

The MIL grade Easytrak Nexus 2 determines the position of dynamic subsea targets through the transmission and reception of acoustic signals between the submerged transceiver and the target beacon. Positions can be geographically referenced with chart overlays and internally logged for a complete solution

Nexus 2 Technical Specification

EASYTRAK NEXUS CONSOLE, MODEL EZT-2691

Code: EZT-2691 is under U.K. Export Control ML9a1

Dimensions	19" Rack mount. 3U 483 x 132.5 x 441.5 mm
Weight	10 kg
Mounting	Chamberlain D466VD-450 Slide
Power requirements	210 – 240 VAC RMS. 2 A RMS, (Following boot.) 7 A Max Peak to Peak Inrush upon transceiver initialisation Power on system boot
Connections to Transceiver	Rear-panel connector for EZT-2686 Transceiver
Built-in PC	Intel i5 running embedded Windows 7 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 NMEA; $GPGGA, $GPVTG, $GPTLL, Pseudo $GPGGA, Pseudo $GPRMC KLEIN 3000 (Quick set) Multiple outputs available
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
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	Pulse: Positive 12 V pulse 4.4 ms long
USB	3 ports available
Ethernet	Rear panel standard RJ45 jack
Audio	Audible activity indicator

Nexus 2 Technical Specification

TRANSCEIVER, TYPE EZT-2686 & EZT-2780

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

Material	316 Stainless Steel
Weight in air/water	2686: 16 kg / 11 kg 2780: 20 kg / 15 kg
Dimensions	2686: 152 mm Ø x 432 mm 2780: 200 mm Ø x 432 mm
Temperature	Operating: -10 °C to +40 °C Storage: -20 °C to +50 °C
Depth rating	30 m
Electrical supply	48 V DC
Depth sensor (Pressure Sensor)	5 bar, accuracy 0.25% between -10 °C to +40 °C
Temperature sensor	1° resolution between -10 °C and + 40 °C
Frequency band (MF)	18 – 32 kHz
Tracking beam pattern	2686: 180° 2780: 170° calibrated acoustic coverage, optimum performance within 150°
Transmitter	Variable, typical max 192 dB re 1µPa at 1 m
Compatible transponders	aae Sigma 3, Sigma 2, Sigma 1 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	>2 Hz refresh rate. Internally set or external key
System	Externally assessed for immunity and emissions; conforms to 89/336/EEC. RoHS compliant
Cable length	150 m max

Transceiver Performance

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 > 20 dB rel.1 µPa in a controlled test environment.

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
EZT-2686-N	EZT-2691	180°	0.25° DRMS	0.45%	0.5°	1.49%	0.45%	995 m	0.01 m	No
EZT-2686-C	EZT-2691	180°	0.25° DRMS	0.45%	0.5°	1.49%	0.45%	2000 m	0.01 m	Yes
EZT-2780-N	EZT-2691	150°	0.07° DRMS	0.12%	0.5°	1.17%	0.45%	995 m	0.01 m	No
EZT-2780-C	EZT-2691	150°	0.07° DRMS	0.12%	0.5°	1.17%	0.45%	4000 m	0.01 m	Yes

TRANSCEIVER CABLE, CODE: EZT-MC-50

Code: EZT-MC-50 is under U.K. Export Control ML9a1

Diameter	12.8 mm nominal
Colour	Yellow
Length	50 m standard length
Connectors	Supplied
SWL	20 kg. Allows transducer to be deployed from cable

ELECTRO MAGNETIC IMMUNITY (EMI)

MIL STD 461D tests	CE101, CE102, RE101, RE102, CS101, CS114, RS101, RS103 to an upper limit of 1GHz

ENVIRONMENTAL SPECIFICATION

High Temp Test (MIL-STD-810F. METHOD 501.4)	Storage: 43 °C Operational: 30 °C
Low Temp Test (MIL-STD-810F. METHOD 502.4)	Storage: –20 °C Operational: 0 °C
Humidity Test (MIL-STD-810F. METHOD 507.4)	

VIBRATION DEF STAN 00-35 Part 3: Issue 4

M1: General Purpose Vibration Test: Deployed or installed in surface ships: Sine sweep
M1: General Purpose Vibration Test: Deployed or installed in surface ships: Sine dwell

Test Type	Region	Amplitude (mm pk)	Frequency (Hz)	Duration (mins)
Sine Sweep	Upper deck, Protected Compartment and Hull	0.125	5 to 33	60
Sine Dwell	All	1.250	14	20
		0.300	23	20
		0.125	33	20

SHOCK DEF STAN 00-35 Part 3: Issue 4

M7: Shock Testing for Warship Equipment & Armament Stores: Classical Shock Pulse
NCUE – Classical Shock Pulse

	Vertical	Lateral	Longitudinal
Pulse Shape	Half Sine		
Pulse Width	10 ms		
Acceleration	45 g	25 g	25 g
Duration	1 shock in each direction of each orientation (6 in total)		

See operational specification for testing methodology.

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