APPLIED ACOUSTICS
Underwater Technology

: Technical Specification

Easytrak

Easytrak is an Ultra Short Baseline (USBL) underwater positioning and tracking system centred on a multi-element, single transducer that transmits and receives acoustic signals to dynamic subsea targets, from which range, bearing and depth information can be determined.

Developed to meet the ever increasing demands for a highly efficient location device which is truly portable, straightforward to use and extremely stable, Easytrak offers a multitude of benefits for a wide range of marine positioning applications which include diver, ROV, AUV and towfish tracking, instrumentation positioning and release.

Easytrak has rapidly developed a sound reputation for use in commercial, military and environmental research situations where both accuracy and versatility are stipulated.

Key Features

- : Accurate and stable
- : Lightweight and truly portable
- : Easy to operate
- : Tracks on the horizontal
- : Approved for military use

Easytrak Portable

2650 Easytrak Portable

Easytrak Portable consists of a yellow marine-grade splash proof console containing all the electronics for the USBL system including receive amplifiers, transmitter, digital signal processing and navigation computer and display. A built in power supply allows operation away from an AC power supply for 3 to 4 hours.

The user interface consists of a number of illuminated keys on the panel, plus on-screen information from the bright TFT display.Transmit and receive LED's are further visual confirmation. Audio monitoring of signals is also available via an integral loudspeaker or headphone jack. Serial connectors allow the integration of a GPS receiver, external motion sensors, gyrocompass and a data-out port for use with navigation packages. Also included are an Ethernet port, allowing a remote user PC to display the tracking data, plus a USB mouse port.

The TFT display consists of two parts; an auto-scaling Position Display and an area for data to be read and entered, the Text Panel. The Position Display can be shown with polar or rectangular scaling with colour coded targets to indicate signal strength. Operation is menu-driven and operates on a Windows CE platform with default settings pre-programmed.

2661 Easytrak Lite

Easytrak Lite incorporates all of the features of the Easytrak Portable system, but has been designed for a more permanent installation in a vessel's Operations Room or dry laboratory. The main transmit and receive electronics power supply and digital signal processing (DSP) hardware are all fitted within a 2U rackmount enclosure for connection to a laptop or desktop PC. Connection is by serial cable (via supplied usb adapter), with the system software provided on CD.

The operational performance is identical to the Portable unit, the only additional requirement being a suitable PC with a 1.2 GHz processor running Windows XP. This configuration eliminates the need for the integral keyboard and display screen, thereby reducing the system cost to the end user.

Easytrak Transducers

The ETM902C is a rugged transducer designed for deployment from moon-pool, gate valve or over the side of a vessel. Designed to be specifically small and relatively heavy, the transducer is ideal when deployed on a cable. At just 100mm in diameter, each unit uses multiple receive transducer elements and one transmit element along with receive amplifiers. This innovative design configuration allows accurate range and bearing calculations, both at depth and along a horizontal path.

The ETM902C transducer has a built-in pitch and roll sensor to compensate for vessel movement as well as a magnetic compass for heading calculations. It also has transducer calibration information stored inside, so that on connection Easytrak, either the Portable or the Lite, can upload the calibration parameters of the transducer to ensure optimal accuracy in minimum time.

MODEL 2650 PORTABLE

Dimensions	400 x 330 x 190 mm
Weight air/water	6 kg / floats on water
IP Rating	Sealed when closed - IP67. Splash proof - IP65 rated when open
Serial Communications	3+ 1 RS-232
Power requirements	90 – 250 VAC at 80 VA. DC options
Audio Output	0.5 watt into internal loudspeaker or headphones
Battery Life	3 - 4 hours from built-in battery pack
Display	Colour TFT VGA display
Keypad	21 key membrane keypad with backlight
Ethernet	Allows optional remote monitoring software to be run on separate PC
USB	Connects to a USB mouse

MODEL 2661 LITE

Size	19” Rackmount . 2U. 482 x 88 x 345mm
Serial communications	RS-232. USB to RS-232 adaptors available
Power requirements	90 – 250 VAC at 50 VA
PC requirements (minimum)	1.2 GHz running Windows XP. USB or up to 3 x RS-232 port. Colour display, 1024 x 768. CD Rom drive.

DATA FORMATS

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 (Lite only)
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
Sync. Input	TTL type 5 volt pulse. Triggers on rising edge
Responder Output	Positive 12v pulse 10mS long

TRANSDUCER OPTIONS

(Aluminium-Bronze transducer. May be tilted by 20 degrees for towfish tracking)

Transducer; ETM902 & ETM902C	375 mm long x 100 mm diameter
Weight in air/water	9.5kg / 7 kg
Depth Rating	50 metres

(Note: ETM902C has compass fitted)

TRANSDUCER CABLE EZT-DC xx

Diameter	12.8 mm nominal
Colour	Yellow
Length (xx)	20 – 60 metres standard lengths available
Connectors	Supplied. Connects ETM transducers to 2650/2660 Easytrak systems
SWL	20 kg (Allows transducer to be deployed from cable)

Easytrak Lite

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 standard	1.40º drms. 2.5% of slant range
Position accuracy (high accuracy system)	0.60º drms. 1.0% of slant range
(Acoustic accuracy excluding heading errors)	
Bearing Resolution	0.1º displayed. Internally calculated to 0.01º
Heading sensor accuracy	0.8º rms standard; +/- 0.1 degree resolution/repeatability
Pitch/Roll sensor accuracy	+/- 0.20º rms +/- 0.1º resolution/repeatability
Channels	4 channels displayed from 134 stored
Frequency Band (MF)	Reception 22 - 32 kHz
	Transmission 17 – 26 kHz
Tracking Beam Pattern	> Hemispherical
Beacon Types	Transponders, Responders and Pingers
Interrogation Rate	0.5 – 30 seconds or external key
Transmit Power	178/185/190 dB software controlled.
CE Marking	Externally assessed for immunity and emissions; conforms to 89/336/EEC

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