



EASYTRAK PYXIS



APPLIED ACOUSTICS
Underwater Technology

An AAE Technologies Group Company

Easytrak Pyxis

Fused INS + USBL

The Easytrak Pyxis USBL takes the best of Applied Acoustic Engineering's USBL technology and combines it with a highly advanced inertial navigation system (INS) from one of the most respected names in the industry, to create a state of the art, inertially aided Ultra Short Baseline system capable of accurate subsea tracking with survey grade performance.

The high precision combination of AAE's Sigma 2 acoustic protocols and SBG Systems' OEM version of the Navsight Apogee INS brings together two leading names in the field of marine technology, resulting in AAE's most accurate and long range positioning system, providing many time, cost and performance benefits to global survey operators.

As a tightly coupled, factory fitted package, Easytrak Pyxis is a calibration free system able to immediately operate from any vessel as soon as the work site has been reached. The MEMS based INS does not fall under ITAR regulations, and the range restricted option means the whole system can be shipped unhindered and without export control to almost anywhere in the world.

Available with omni-directional and directional transceiver options, and boasting an accuracy of up to 0.1% of slant range, the versatility and enhanced capabilities of Easytrak Pyxis will see it become a common feature on the survey vessels of the world.

Key features:

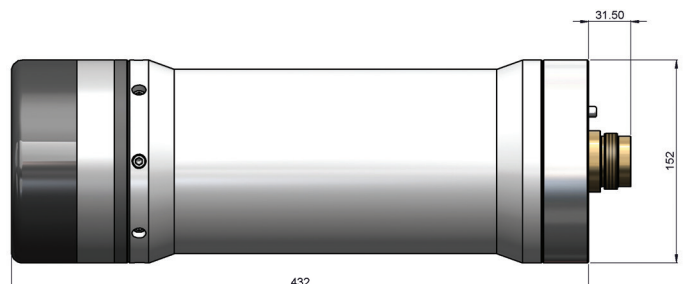
- ⦿ Fused INS + USBL
- ⦿ Survey grade ITAR free INS
- ⦿ Vessel calibration free
- ⦿ Directional and omni-directional options

Technical Specification

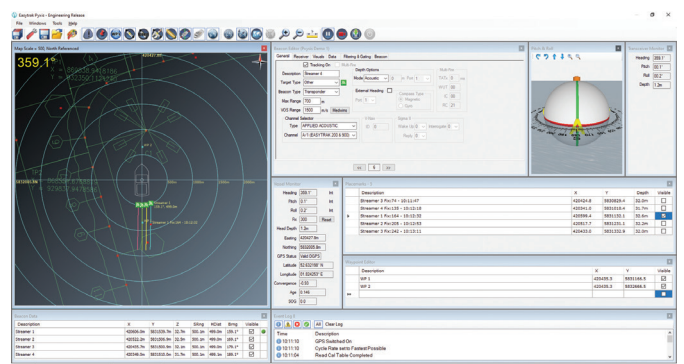
EASYTRAK PYXIS CONSOLE, MODEL 3690

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

Dimensions	19" Rack mount. 3U
Weight	7.5kg
Power requirements	90 – 250 Vac
Connection to transceiver	Rear panel connector for 3700 Series transceivers
Built-in PC	Industrial i5 board running embedded Win 10, 64GB HD
Temperature	Operating: -10° to +40°C Storage: -20° to +50°C
Front panel indicators	LED indicators for power and system status
Serial communications	2 x RS232/RS485 External Input port 3 x Individual INS Data Out ports 2 x Positional Data Out ports
GNSS Antenna	2 x TNC connection 2 x GNSS Antenna 2 x 25m Antenna Cable
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.
INS Data Output	SBG spec MNEA, ASCII, BINARY, TSS, SIMRAD
INS Aiding	2 x GNSS, RTCM
Ext Compass Input	SGB-HTDS, SGB-HTDt, NMEA HDT,HDM, HDG
Ext VRU Input	\$HCXDR, TSS1
Ext GNSS 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
Responder Output	4 x Positive 12V pulse 5ms long, BNC
NAV IN	External Trigger, BNC
USB	4 ports available, 2 on front panel
PPS	5v Pulse
Ethernet	2 x 1 Gbps standard RJ45 jack, ethernet UDP Data Port



Pyxis Transceiver, type 3781



EASYTRAK PYXIS TRANSCEIVER, TYPE 3781

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

EZT-3781-N Range limited, non-export controlled model.
EZT-3781-C Export controlled model.

Material	Stainless steel as standard
Weight in air	15.5kg
Dimensions	152mm Ø x 432mm
Temperature	Operating: -10° to +40°C Storage: -20° to +50°C
Depth rating	30m
Electrical supply	48Vdc (from console)
Depth sensor (Pressure sensor)	5 bar, accuracy 0.25% between -10° to +40° C
Temperature sensor	1° resolution between -10° and +40° C
Cable	50m standard (20-100m options). 12.8mm Ø

ACCURACY/PERFORMANCE

Accuracy is based on the correct speed of sound being entered, no ray bending and an acceptable S/N ratio.

Position accuracy	0.45% of slant range, acoustic repeatability 0.25° DRMS at > 10° depression angle
Range resolution	Calculated to 0.01m resolution
Max range	Up to 2000m, range limited version available (995m)
Frequency band (MF)	18 - 32 kHz
Tracking beam pattern	180°
Transmitter	Variable, typical max 192dB re 1µPa at 1m
Beacon types	AAE Sigma 1, Sigma 2 Digital spread spectrum and MiQ telemetry. AAE V-NAV channels. HPR 400 channels 1100, 1000, 1300A Series Beacons. Digital depth transponders, AAE Release Beacons.
Interrogation rate	>2Hz refresh rate. Internally set or external key (NAV IN). Multi-Fire up to 10 common interrogate beacons

Integrated Navsight Apogee INS

	RTK (Real Time Kinetic)	PPK (Post Processed Kinetic)
Roll / Pitch over 360°	0.008° rms	0.005° rms
Heading 2m / 4m (baseline)	0.04 / 0.025° rms	0.02 / 0.02° rms
Position x, y / altitude (z)	0.01m / 0.02m	0.01m / 0.02m

5cm Heave, 2cm Delayed Heave

Options:
Post-processing with Qinertia PPK

EASYTRAK PYXIS TRANSCEIVER, TYPE 3780

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

EZT-3780-N Range limited, non-export controlled model.
EZT-3780-C Export controlled model.

Material	Stainless steel as standard
Weight in air	20.0kg
Dimensions	200mm Ø reducing to 152mm Ø x 432mm
Temperature	Operating: -10° to +40°C Storage: -20° to +50°C
Depth rating	30m
Electrical supply	48Vdc (from console)
Depth sensor (Pressure sensor)	5 bar, accuracy 0.25% between -10° to +40° C
Temperature sensor	1° resolution between -10° and +40° C
Cable	50m standard (20-100m options). 12.8mm Ø

ACCURACY/PERFORMANCE

Accuracy is based on the correct speed of sound being entered, no ray bending and an acceptable S/N ratio.

Position accuracy	0.1% of slant range, acoustic repeatability 0.07° DRMS at > 20° depression angle
Range resolution	Calculated to 0.01m resolution
Max range	Up to 3000m, range limited version available (995m)
Frequency band (MF)	18 - 32 kHz
Tracking beam pattern	150°
Transmitter	Variable, typical max 192dB re 1µPa at 1m
Beacon types	AAE Sigma 1, Sigma 2 Digital spread spectrum and MiQ telemetry. AAE V-NAV channels. HPR 400 channels 1100, 1000, 1300A Series Beacons. Digital depth transponders, AAE Release Beacons.
Interrogation rate	>2Hz refresh rate. Internally set or external key (NAV IN). Multi-Fire up to 10 common interrogate beacons

Integrated Navsight Apogee INS

	RTK (Real Time Kinetic)	PPK (Post Processed Kinetic)
Roll / Pitch over 360°	0.008° rms	0.005° rms
Heading 2m / 4m (baseline)	0.04 / 0.025° rms	0.02 / 0.02° rms
Position x, y / altitude (z)	0.01m / 0.02m	0.01m / 0.02m

5cm Heave, 2cm Delayed Heave

Options:
Post-processing with Qinertia PPK

TRANSCIVER PERFORMANCE									
Transceiver Model	Console Model	Beam Pattern	Acoustic Precision Degrees	Acoustic % Slant Range	INS Precision	Position Stability % Range	Max Range	Range Resolution	UK Export Control
3781 - N	EZT-3790	180°	0.25°DRMS	0.45%	0.025° H 0.008° P&R	0.49%	995m	0.01m	No
3781 - C	EZT-3790	180°	0.25°DRMS	0.45%	0.025° HDG 0.008° P&R	0.49%	2000m	0.01m	Yes
3780 - N	EZT-3790	150°	0.07° DRMS	0.12%	0.025° HDG 0.008° P&R	0.12%	995m	0.01m	No
3780 - C	EZT-3790	150°	0.07° DRMS	0.12%	0.025° HDG 0.008° P&R	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.

Specification subject to change without notice.
Applied Acoustic Engineering Ltd September 2020.

