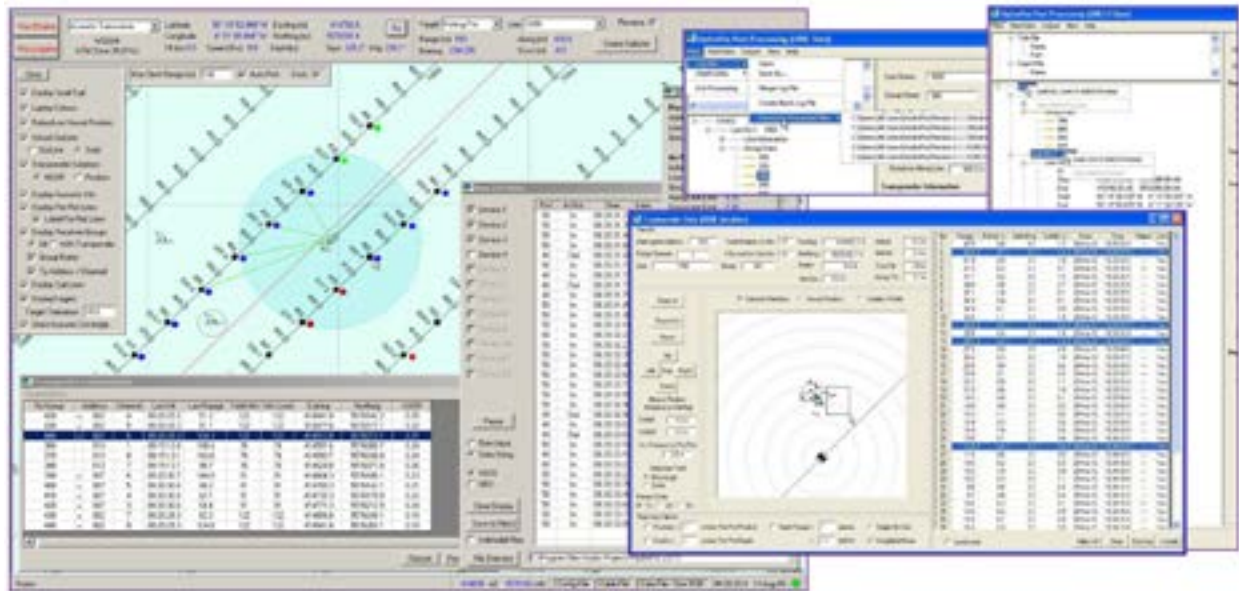Sonardyne

HydroPos seismic version 3

HydroPos version 3 is a software programme that works with Sonardyne's Ultra Short Baseline (USBL) MiniRanger 2 (HF) and Ranger 2 (MF) systems as well as the Transition Zone Transceiver (TZT – MF & HF). It enables multiple transponder locations to be tracked automatically selecting the transponders to be interrogated as the vessel sails along the deployed seismic receiver cables or nodes.

Specifications

Product	HydroPos seismic version 3
Country of origin	UK
Manufacturer	Sonardyne International Ltd

Key features

- Automatically selects the transponders for integration
- Provides a remote Helmsman's display to aid navigation
- Accepts pre-plot line data in OGP P190 and SEG SPS formats

- Internal simulation mode to facilitate training prior to joining the vessel
- Works with Sonardyne MiniRanger 2 (HF) or Ranger 2 (MF) USBL systems & the Transition Zone Transceiver (TZT – HF & MF)

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HydroPos is designed to run on Microsoft Windows® 10. A minimum screen resolution of 1024 x 768 is recommended.

The programme has three distinct operational modes: acquisition, cable deployment & processing. Licences can be purchased to enable operation in any combination of these modes

For USBL operations, a unique position for the transponder is recorded for each interrogation cycle and the selection of the individual acoustic positions to derive the final processed solution can be carried out in real-time.

The TZT however provides a single range to the transponder for each interrogation and only indicative positions are derived during acquisition. The range data are then post-processed to derive a final Least Squares position for each receiver.

During acquisition, survey sensor data such as GPS and Gyro as well as the Sonardyne Transceiver can be interfaced via serial ports or Ethernet connectivity. Geodetic support is included for the standard Coordinate Reference Systems used during worldwide survey operations.

The intended locations for the seismic receivers can be imported from IOGP P1, SEG SPS format files or via a user definable CSV file. The distribution of the 7915 or TZ transponders can easily be added either by "hand" or, if operating in deployment mode, automatically if a Sonardyne RFiD reader is included in the suite of survey sensors.

During cable deployment with a USBL system, as the Transponder is deployed, it is automatically added to the active tracking list and the Transponder can then be monitored as it is deployed through the water column

During acquisition, a maximum interrogation range can be set by the user. In shallow water, while the systems can acquire acoustic ranges up to 1000 m, the longer acoustic ranges are often affected by seabed or sea-surface reflections and these data are often rejected during processing. Setting an appropriate ranging window helps in ensuring that only potentially useable ranges are requested but a faster cycle time can be achieved. This optimises not only the number of acoustic ranges recorded for each individual transponder but also the spatial distribution of the ranges improving the final solution.

As the vessel sails over the deployed Transponders, the system automatically detects which ones are within this useable acoustic window and then automatically programmes the transceiver to acquire ranges from these Transponders. During USBL operations the user can also specify the maximum number of Transponders to be tracked. This is useful during deployment to assist in focussing the positioning on the touch-down point for a receiver and acquiring the as-deployed position for the previous Transponder.

Occasionally, additional data maybe required at the end of a normal acquisition run, perhaps if a particular Transponder is shielded from the Transceiver due to the attitude of the cable on the seabed. The user can easily select a subset of the deployed Transponders to acquire additional acoustic data either specifying the Transponder IDs or by identifying them on the graphical display.

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During acquisition or deployment, a helmsman display, operating on an independent PC can monitor the vessel position relative to the intended sail path or deployment route. Multiple helmsman displays can be installed, the displays establish a connection with the primary HydroPos PC automatically using the vessel's internal network.

All the data relevant to the survey operations, Geodetic configuration, vessel offsets, raw data and processed solutions are contained within a single user selectable logging file (.LOG). This allows the data to be easily archived or sent to another location for processing ensuring that all acquisition parameters are recoverable.

Processing: All data can be reprocessed to ensure the best quality solution is achieved for each Transponder location. No data is deleted and only flagged for inclusion or exclusion from the final solution. As a result, the data can be reprocessed many times without any loss of data. During processing, filters can be applied such as minimum or maximum range. A batch processing tool allows multiple transponders to be processed as part of a single processing operation. Data sets can be combined by importing data from multiple log files to derive a final solution.

Once a final solution is achieved the data can be exported in a variety of industry standard formats such as P1/90 and SPS or the user can define an export format. The raw data can be exported as an IOGP P2/94 format or CSV for import into third party QC applications..

Range Only Processing: The speed of sound can be edited during processing and can be applied to all ranges or groups of ranges. This is a useful feature if the survey area has areas of freshwater egress, or the raw data is acquired at different times. The final solution is derived from a Least Squares adjustment of the recorded ranges. The Z component can either be a user defined fixed depth or the transponder depth can be solved as part of the solution.

USBL processing: The speed of sound at the transceiver is critical in deriving the azimuth of the returning waveform and hence is part of the raw computation process. This cannot be edited in post-processing and hence the value used during data acquisition needs to be as accurate as possible.

When running in simulation mode, users have complete control of the full application with the only limitation being that no 'live' data can be received. The example data files supplied with the HydroPos installation, revert to their original state when opened so the data can be processed multiple times for training purposes.

Ordering information

610-0138 – TZT Acquisition & Post Processing
610-0137 – TZT Acquisition, Deployment & Post Processing
610-0140 – TZT Post Processing
610-0139 – TZT Deployment
610-0136 – USBL Acquisition & Post Processing
610-0135 – USBL Acquisition, Deployment & Post Processing
610-0141 – USBL Post Processing