PRAKLA-SEISMOS GMBH

HYDRODATA

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General Features

HYDRODATA is a fast realtime data acquisition and processing system developed by PRAKLA-SEISMOS for use in the field of offshore survey navigation and operation. Due to its rugged mechanical construction and to the reliability of the electronics the equipment runs perfectly even under extraordinary environmental conditions. The relatively small physical dimensions allow proper installation on almost every survey vessel.

HYDRODATA is capable of handling output data of various radio navigation systems accepting both digital or analog information. As hardware and software are composed of single modules, a large flexibility in realisation of individual customer needs is achieved.

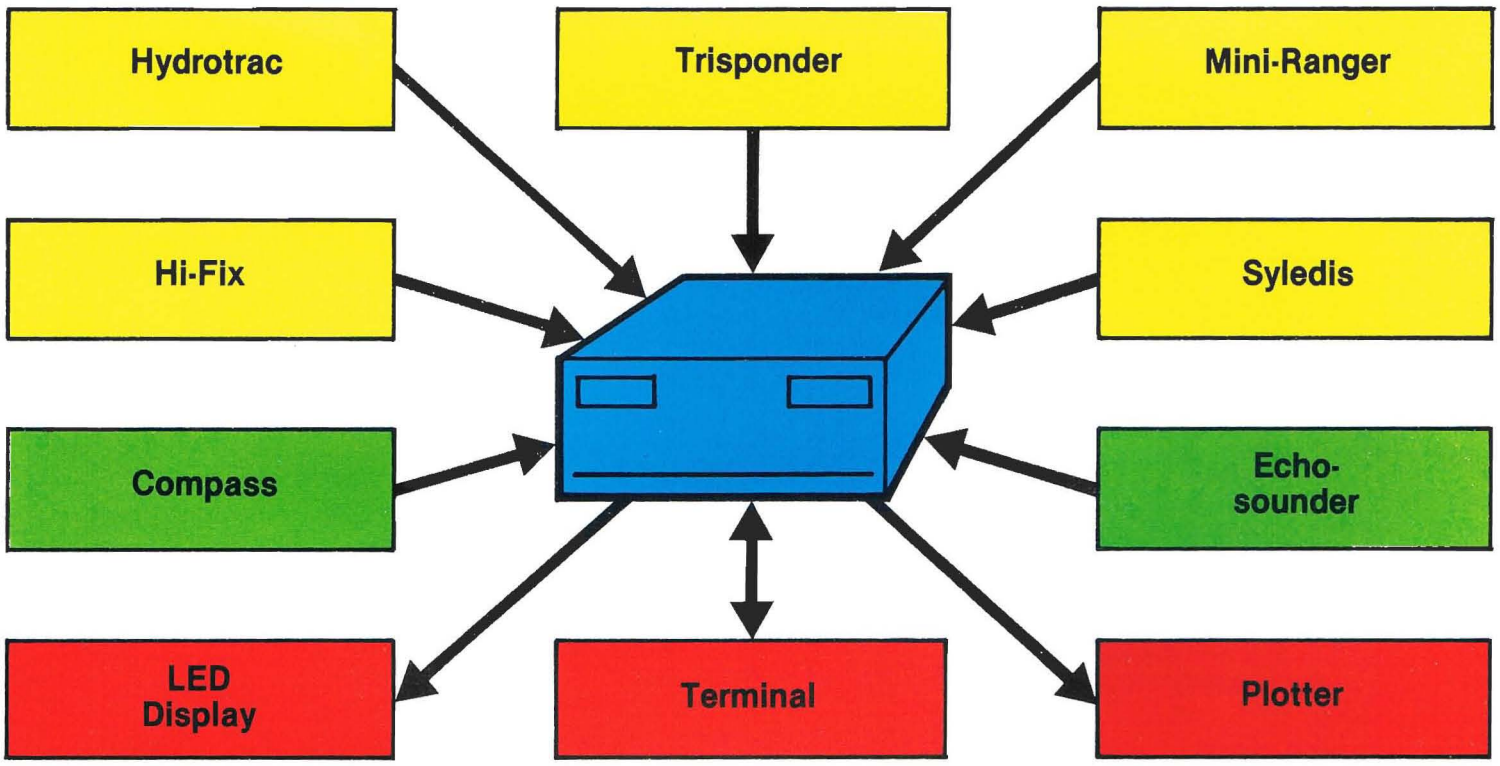
Basically the equipment consists of five major units:

- The navigation and data processor
- The Texas Instruments KSR 783 teletype machine
- The Hewlett-Packard 7220 A 4 colour x-y trackplotter (7221 C 8 colour plotter optional)
- The Qantex model 2200 double drive cassette unit
- The data display box

optional:

- CRT display (colour optional)
- Disc units for program development etc.
- Flatbed plotter for sea-charts
- Other peripherals on request

Schematic Diagram HYDRODATA



The schematic diagram shows the functional relations in principle. The main advantage of Hydrodata is the high calculation speed due to the LSI 11/23 central processor unit together with a fast hardware arithmetical chip and to the highly sophisticated modular software structure designed under the special aspects of realtime applications. Thus calculating the actual position based on the maximum of 8 simultaneously obtained radio navigation raw data sets requires only less than 400 msec including a reliability check individual for all input channels.

External devices are controlled either by standard DEC interface boards or by special PRAKLA-SEISMOS manufactured boards partly equipped with own microprocessors in order to suspend the LSI 11/23 from time consuming I/0 handling.

The system is equipped with a 128 K words memory. Only about 64 K words are necessary to run Hydrodata in its basic version. The second half of memory storage space is reserved for further additional features and for special user demands.

The operator communicates interactively with the system via the KSR 783 teletype machine by a 1200 Baud serial standard RS 232 data line. Radio navigation raw data are transformed to geographical or plane coordinates from which in turn all necessary steering information for the helmsman are derived and displayed. On-line data storage is performed on DC 300 cassettes by the QANTEX dual drive unit with four tracks each. Data format and record length may be completely defined by the operator.

Specifications

In its basic version Hydrodata is designed to perform the following functions:

- Production of preplots with following features:
  - — plot of hyperbola charts
  - — plot of range charts
  - — plot of survey lines to be investigated for seismic and hydrographic work
  - — in all preplots areas of good navigation conditions are especially marked.
- Data acquisition and processing of radio navigation data of following systems:
  - — HI-FIX
  - — HYDROTRAC
  - — MAIN CHAIN
  - — TRISPONDER, TRISPONDER 540
  - — MINI-RANGER III and IV, supporting all options
  - — PULSE 8
  - — MAXIRAN
  - — SYLEDIS SR 3 and MR 3 in hyperbolic and range mode
  - — ARTEMIS
- Production of postplots with following features:
  - — charts in UTM or geographical coordinates
  - — presentation of the investigated survey lines, labeled in regular intervals by operator chosen significant data like time, water depth etc.
- Calculation of the actual position offering the results in either geographical or in plane coordinates. This calculation may be based on a maximum of 8 lines of position whereby all raw data inputs of above mentioned systems may be chosen and mixed arbitrarily.
- Reliability — check of the calculated results by permanently monitoring and analyzing the navigation raw data.
- Filtering if desired.
- Recording of the covered path by the x-y track plotter. The presentation occurs adapted to the preplot parameters.
- Drive of an optical left-right indicator showing deviations from a predetermined course.
- Drive of a display panel simultaneously showing a set of 3 operator selected data information usefull for controlling the survey. Selection is made out of 40 possible informations, for instance:
  actual position coordinates
  across track error
  distance to go etc.
- Program-, parameter- and measured data storage on DC 300 cassettes.

Hydrodata supports in particular

seismic work by **or** **hydrographic work by**

- Automatic initialisation of seismic shots in presettable time or distance intervalls
- Data storage of time, actual position, radio navigational input data, course angle offered by an external compass, water depth measured by echosounder at every seismic shot formatted according to SEG recommendations.
- Realtime processing of echo-sounder data in a fast sequence (200 msec min.).
- Possibility of simply scanning parallel survey lines by only defining the offset to a master line.

Other features may be added as needed.

Electrical and mechanical characteristics

Power supply may be layed out for 115/230 VAC operations or 24 VDC supply.

Care has been taken to protect the data processor unit from thermal and mechanical damage. Heat-extensive devices are cooled by means of powerful blowers. The electronics are mounted into a stable case made from profile-aluminium. This package in turn is embeded in a rugged frame which stands on proper shockmounts. Extensive practical tests have proven the instrument to be extremely shock and vibration resistant.

Technical Data

Environmental

Operating temperature:	5°—50° C
Humidity:	10 %—90 %

Physical Parameters (Data Processor)

Width:	483 mm (19")
Depth:	545 mm (21,4")
Height:	266 mm (10,5")
Weight:	28,5 kp

Power

115/220 VAC
optional 16—32 VDC
max. 240 VA

Electronics

CPU/Memory:	KDF 11—256 D 256 Kbytes
Interface board types:	DLV 11—J DEC quad serial interface DRV 11 DEC parallel interface Qantex interface for model 2200 Various PRAKLA-SEISMOS manufactured interfaces

Peripherals

Terminal:	Texas Instruments KSR 783
Dual drive cassette unit:	QANTEX model 2200 ANSI/ECMA compatible, with an unformated storage capacity of 5.6 Mbyte
Plotter:	HP 7220 C Graphics plotter
Data display:	3 columns of 8 digits each together with a rectangular LED light bar for quasi-analogue display of left-right deviation

Additional peripherals on request

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