



## Shallow Water Bathymetry Sonar

The Klein HydroChart 3500 is a professional bathymetry sonar for shallow water operation with exceptional performance at an extremely competitive price.



The HydroChart 3500 system was developed using our latest proprietary “wideband technology.” The HydroChart 3500 provides unrivalled range and resolution performance in a compact, lightweight system that is easy to install, set up and operate. The system produces data that exceeds international survey standards (IHO-SP-44, special order), and when combined with our proven uncertainty model, allows for automated/intelligent data processing.

The HydroChart 3500 includes a sonar head unit, Topside Interconnect Unit (TIU) with deck cable and SonarPro® data acquisition software. The sonar head unit consists of dual transducer arrays together with a Subsea Electronics Unit (SEU), housed in a lightweight frame assembly. Optionally, the SEU can be outfitted with a surface sound velocimeter and Motion Reference Unit (MRU).

The SEU includes transmit/receive and signal processing electronics that combine time-synchronized complex stave samples, surface sound velocity and ping trigger timing with time-synchronized motion data.

The SEU accepts 1 PPS from either the GPS navigation or a time reference unit. Together with an NMEA time sentence via either RS-232 or Ethernet, the pulse provides a timing reference to merge position and vessel motion with ping data.

### KEY FEATURES

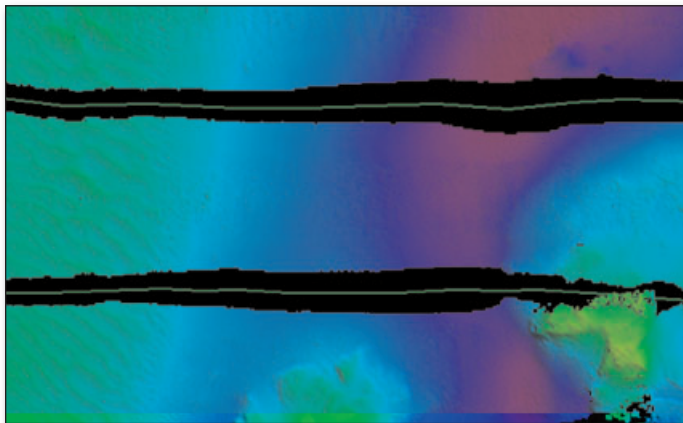
- Co-registered and geo-referenced IHO-quality swath bathymetry with high-resolution side scan imagery
- Bathymetry coverage up to 12 times the water depth or altitude
- Support for an optional sound velocity sensor to provide surface sound velocity measurements
- Support for various Motion Reference Units (MRUs), gyro-heading sensors and navigation equipment
- Easy-to-use graphical user interface (GUI) – operates with our SonarPro for enhanced operator control, data acquisition and display of both bathymetry and side scan data
- Output data is compatible with most third-party post-processing software
- L-3 Klein has developed sonar uncertainty model interfaces with Combined Uncertainty Bathymetric Estimator (CUBE) to provide automatic sounding data processing
- Compact and lightweight



## HydroChart 3500 Specifications

SYSTEM SPECIFICATIONS	
Deployment Method	Over the side (hull-mount option)
Max Water Depth	50 m
Frequency	455 kHz
Pulse Technology	Wideband FM Chirp (1, 2, 4, 8 ms)
Bathymetry Coverage	10 to 12 times water depth
Bathymetry Across Track	5.0 cm
Bathymetry Along-Track Resolution	0.4°
Side Scan Swath Coverage (2x range)	300 m
Side Scan Across-Track Resolution	1.5 cm
Side Scan Along-Track Resolution	0.21°
Construction	High-grade aluminum (6061-T6) with hardcoat anodize

SONAR HEAD AND TOPSIDE INTERCONNECT UNITS		
	Sonar Head Unit	TIU
Length	37.2 in. (94.5 cm)	10 in. (25.4 cm)
Width	11.0 in. (27.9 cm)	8 in. (20.3 cm)
Height	10.9 in. (27.7 cm)	4.5 in. (11.4 cm)
Weight (in air)	50.0 lb. (22.7 kg)	3.2 lb. (1.5 kg)
Power	120/240 VAC, 50/60 Hz – 30 watts	
Splashproof		To IP-67 with waterproof connectors



### APPLICATIONS

- Shallow water hydrographic survey
- Geophysical survey
- Port and harbor security
- Dredging and salvage operations
- Rapid littoral area assessment

The Topside Interconnect Unit (TIU) is a small, lightweight IP-67-rated enclosure that handles the power and data interconnects.



The complete system operates on 120/240 VAC or 12 VDC via a separate power inverter. The HydroChart 3500 system can be run from a customer-owned or optional PC/laptop using the L-3 Klein-developed SonarPro software. SonarPro provides an intuitive, easy-to-use, yet powerful system interface for data acquisition.

### SYSTEM COMPONENTS

- Sonar head unit
- TIU with deck cable
- SonarPro data acquisition software

### OPTIONS

- Reusable carrying case
- Global positioning system
- SonarPro workstation / laptop
- Motion reference unit
- Surface sound velocimeter
- Post-processing software
- Custom hull-mount kit

HydroChart data uncertainty validation conducted in Portsmouth, NH with support from the National Oceanic and Atmospheric Administration (NOAA) and the Center for Coastal and Ocean Mapping (CCOM) using Caris processing software.

1 m resolution, swath angle processing;  
Depth ranges from 0 to 23 m;  
Wind speed: 7 m/s

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