The Klein HydroChart 3500 is a lightweight, low-cost, wide-swath, professional shallow-water underwater survey mapping instrument that supports IHO SP-44 Special Order quality bathymetric survey data collection and co-registered dual-frequency with high-resolution side scan sonar imagery for navigational charting, dredging and engineering support, habitat characterization, and various other shallow water mapping applications.

Our HydroChart 3500 is delivered completely pre-calibrated with pitch, roll, heave, heading and sound velocity compensation from sensors mounted within the Sonar Head Unit (SHU).
**Key Features:**
- Co-registered and geo-referenced IHO-quality swath bathymetry with dual frequency high-resolution side scan imagery
- Bathymetry coverage including Nadir up to 12X the water depth or altitude
- Supports an optional sound velocity sensor, providing surface sound velocity measurements
- Supports various Motion Reference Units (MRUs), gyro-heading sensors and navigation equipment, or option to include Klein Motion Sensor (KMS)
- 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 compatible with most third-party post-processing software
- Klein has developed a real-time computed sonar uncertainty for interface with Combined Uncertainty Bathymetric Estimator (CUBE) to provide semi-automatic data processing of soundings
- AC (110/220, 50 to 60 Hz) or 24 VDC input power
- Compact, lightweight and portable

**Applications:**
- Shallow water hydrographic survey
- Geophysical survey
- Port and harbor security
- Dredging and salvage operations
- Rapid littoral area assessment
- Shallow water habitat mapping

**Optional Towfish Accessories:**
- Interface to various external third-party motion sensors
- 10 m, 20 m, or 50 m cable option
- SHU-integrated motion sensor
- SHU-integrated heading sensor
- SHU-integrated sound velocity sensor
- Sound velocity profiler
- Semi-rugged laptop
- Rackmount PC
- Rugged and waterproof reusable shipping container with wheels
- On-site training
- Factory training
- Pre-calibration and patch test (when purchased with SVS, MRU and heading sensors)

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**Shallow Estuary - Harbor Approach.**

Bathymetry displayed in Triton Perspective software with co-registered side scan overlay, without manual editing.

(images courtesy of GBT Offshore)
The Klein HydroChart 3500 Side Scan Swath Bathymetry Sonar System comes complete and pre-calibrated with pitch, roll, heave, heading, and sound velocity compensation from sensors mounted within the faired pole-mountable Sonar Head Unit (SHU).

A single polyurethane-jacketed, Kevlar®-reinforced, multi-conductor deck cable connects the pole-mounted SHU to the splashproof Topside Interconnect Unit (TIU).

Through the TIU, data output from the SHU are synchronized by a 1 PPS signal and/or serial National Marine Electronics Association (NMEA) data output from a GPS/GNSS navigation system. All resultant survey data are time-synchronized and combined into a stream of output through one Ethernet cable to a Windows-based laptop/computer for recording in Klein SonarPro® and/or third-party survey software.

This is a portable shallow-water survey system that can be easily deployed from a pole configuration or customized for hull mounting.

The complete system is the only side scan bathymetry sonar that supports IHO SP-44 requirements, for Special Order Surveys, which can be verified using Klein’s real-time computed sonar uncertainty values — Be Certain with Klein. The sonar has proven capable of supporting Special Order survey requirements to more than 6X water depth, per side (port + starboard combined swath of 12X water depth).

**Sonar Head Unit (SHU):**

The HydroChart 3500 Sonar Head Unit (SHU) is a pole-mounted, lightweight (50 lb), swath bathymetry and side scan acoustic imaging survey package containing all sensors within a rigid-frame assembly and protected within a faired housing.

The SHU includes transducers that are comprised of combined 455 kHz bathymetry and side scan arrays and a dedicated 900 kHz side scan array, together with a sound velocimeter, heading sensor, heave, pitch and roll motion reference unit (MRU).

**Topside Interconnect Unit (TIU):**

The HydroChart 3500 Topside Interconnect Unit (TIU) is a very small and lightweight, IP-67-rated (splashproof) enclosure, which manages all power and data connections from the topside to the SHU. The complete system is powered through 120/240 VAC or 24 VDC, drawing less than 30 Watts of power.

The HydroChart 3500 is operated from a PC or laptop (Klein or customer-provided).

Klein SonarPro® software is included with the system and available for download and distribution through Klein's website. SonarPro® provides an intuitive, real-time, easy-to-use, yet powerful system interface for complete survey planning, mapping, data acquisition, targeting, measurement, reprocessing and review.
## HYDROCHART 3500

**SHALLOW WATER SWATH BATHYMETRY AND SIDE SCAN SONAR**

### Specifications:

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### Sonar Head Unit (SHU) Specifications

The Hydrochart 3500 Sonar Head Unit (SHU) is a pole-mounted, lightweight, swath bathymetry and side scan acoustic imaging hydrographic survey package containing all sensors within a compact, rigid-frame assembly and protected within a fairlead housing.

| **Length** | 37.2 in (94.5 cm) |
| **Width**  | 11.0 in (27.9 cm)  |
| **Height** | 10.9 in (27.2 cm)  |
| **Weight (in air)** | 50.0 lb (22.7 kg) |

### Topside Interconnect Unit (TIU) Specifications

The Topside Interconnect Unit (TIU) is a compact and lightweight, IP-67-rated (splashproof) enclosure, which manages all power and data connections using Klein SonarPro® or various third-party software. The Hydrochart 3500 is operated from a PC or laptop (Klein or customer provided). The Klein SonarPro® software is included with the system and available for download and distribution through our website.

| **Length** | 10 in (25.4 cm) |
| **Width**  | 8 in (20.3 cm)  |
| **Height** | 4.5 in (11.4 cm) |
| **Weight (in air)** | 3.2 lb (1.5 kg) |
| **Power**  | 120/240 VAC or 50 to 60 Hz or 24 VDC < 30 Watts |
| **Splashproof** | IP-67 rated |

Klein Marine Systems' HydroChart 3500 Sonar System with Integrated Motion, Heading and Sound Velocity Sensors.

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