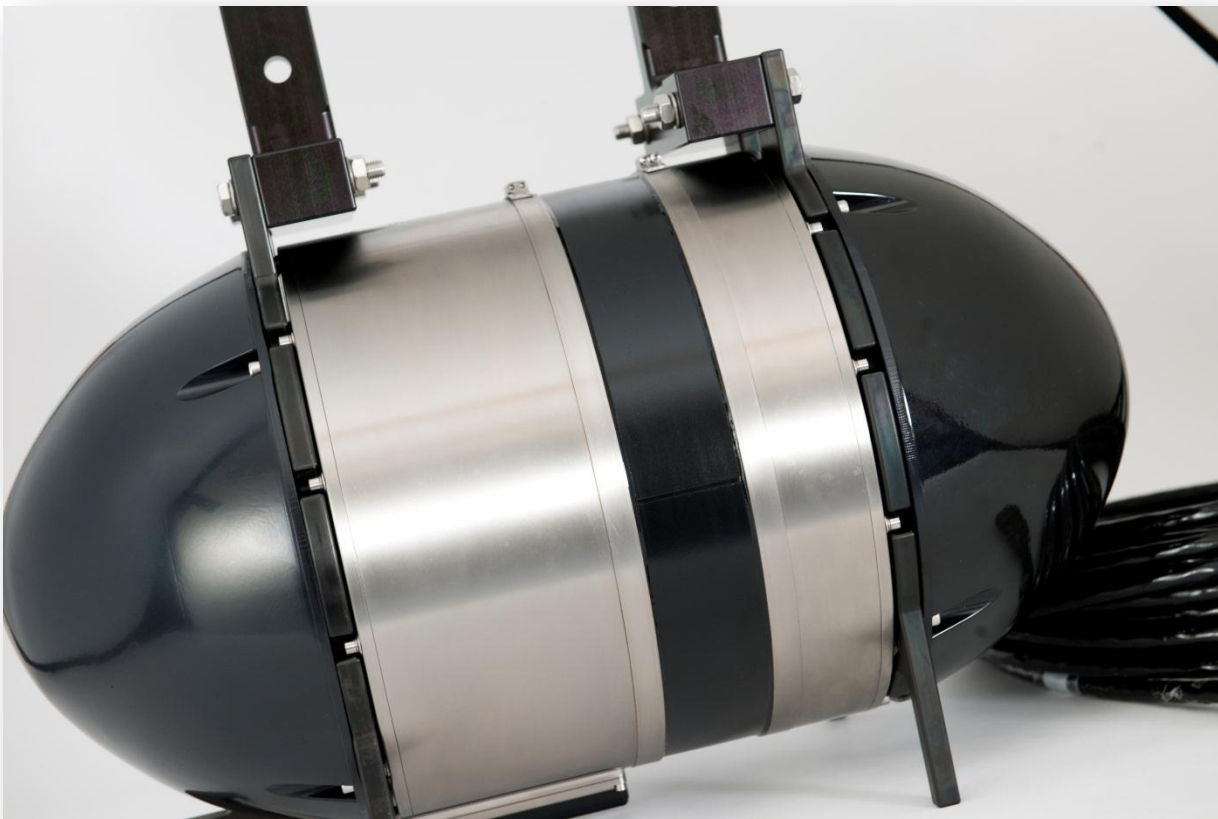


SeaBat 7101-Flow Product & Test Description

multibeam echo sounder



Introduction

The 7101, like the 8101 before it is a stalwart of the hydrographic survey world, bringing an unrivalled combination of robustness, portability and performance to a wide range of applications worldwide. Over 300 systems have been delivered since the initial release in 1995 and the 7101 has gained an enviable reputation.

The new 7101-Flow offers a specialised version of the 7101 specifically for surveys in sheltered areas such as dams, rivers, lakes, harbours where the effects of motion are limited. The systems consists of a standard 7101 with a motion sensor incorporated inside the sonar head enclosure.

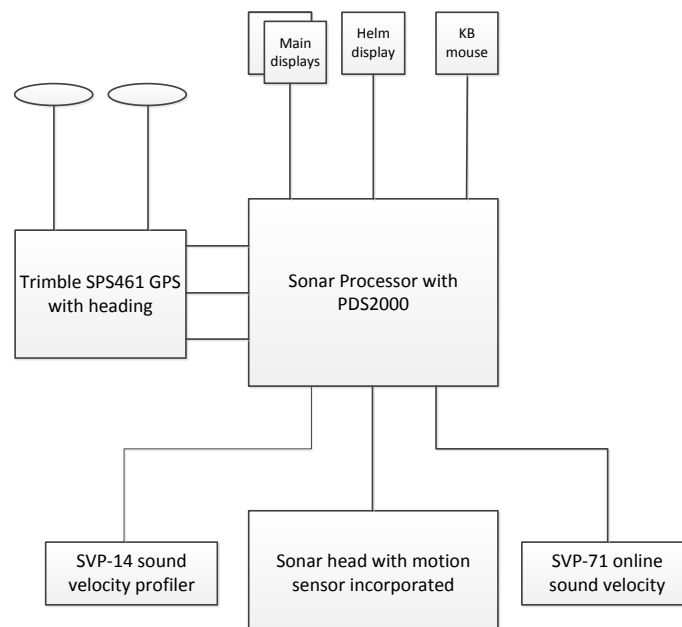
This configuration has several advantages:

- No need to install a separate motion sensor with cables, power supplies
- No need for calibration – once installed and calibrated once there is no requirement to further calibrate for roll or pitch
- No messy interfaces – a simple, clean installation
- Available as an upgrade to 7101 systems (not 210° configuration)



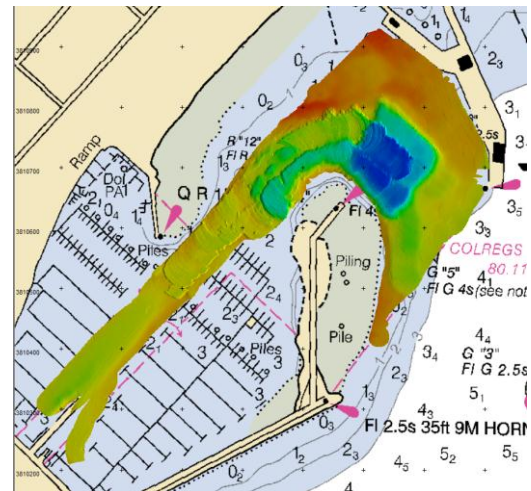
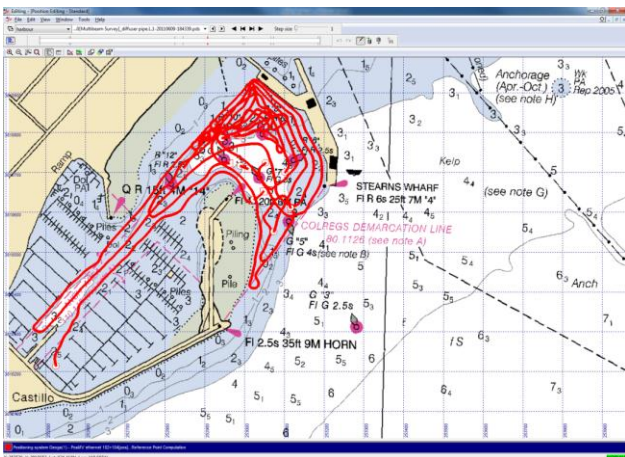
The motion sensor provides heave, pitch and roll data to the sonar processor on which is run the data acquisition software, in this case PDS2000. The motion sensor data is also used for real-time roll stabilisation to maximise performance.

This configuration provides an extremely simple and easy-to-install system on any vessel of opportunity and allows users to be out and collecting data extremely quickly with a fast installation & no need to calibrate.

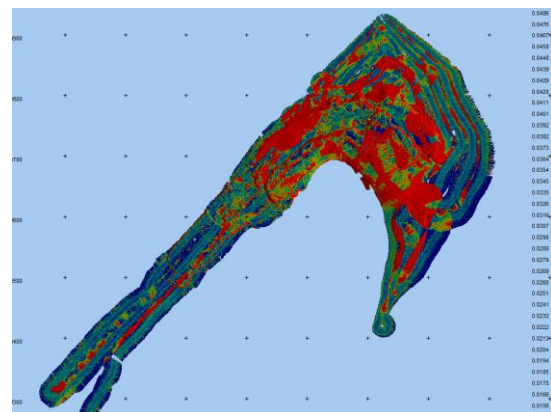
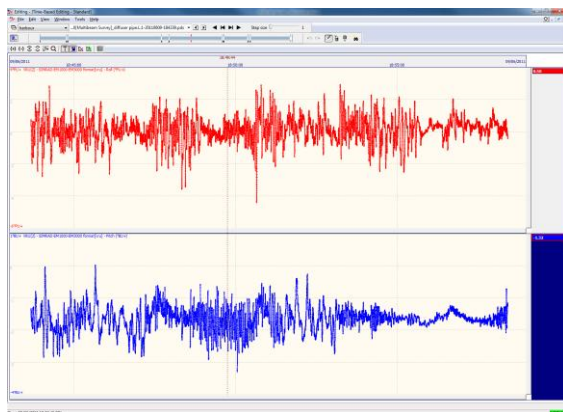


These tests were performed in Santa Barbara, California in June 2011 using a 7101-ER (Extended Range) system mounted on a 30ft survey vessel. A general purpose survey was carried out in the harbour where the water depth varies from 1m to approximately 9m. The system was operated throughout in autopilot and with roll stabilisation ON. A RTK Virtual Reference Station was used for positioning.

7101-Flow survey in Santa Barbara harbour

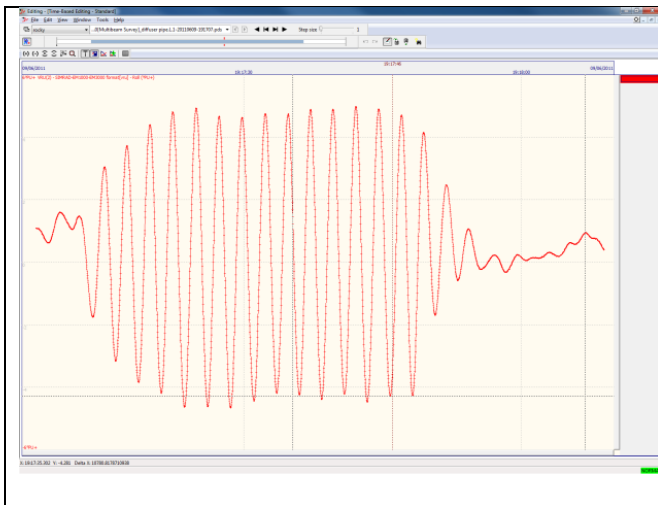


As normal in a small harbour the area is quite sheltered and during this survey typical pitch (blue) & roll (red) values were $\pm 2^\circ$. The standard deviation over the area varies between 1cm & approximately 5cm.

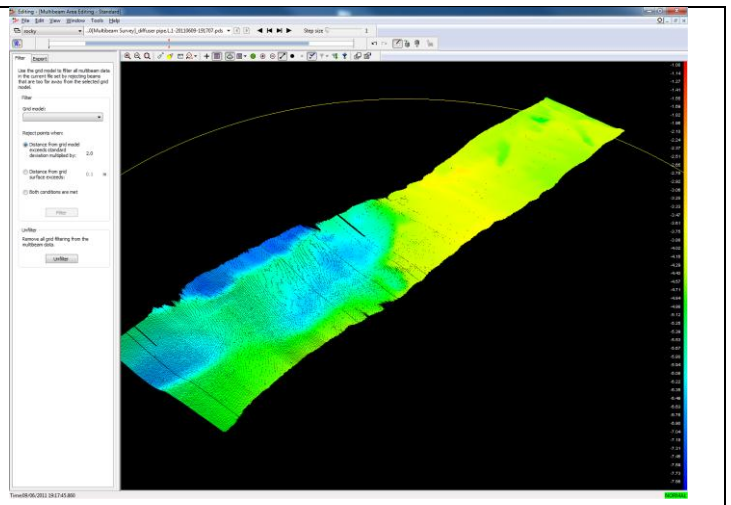


In order to test capabilities under higher roll conditions, roll of approximately $\pm 4^\circ$ was induced along a short line.

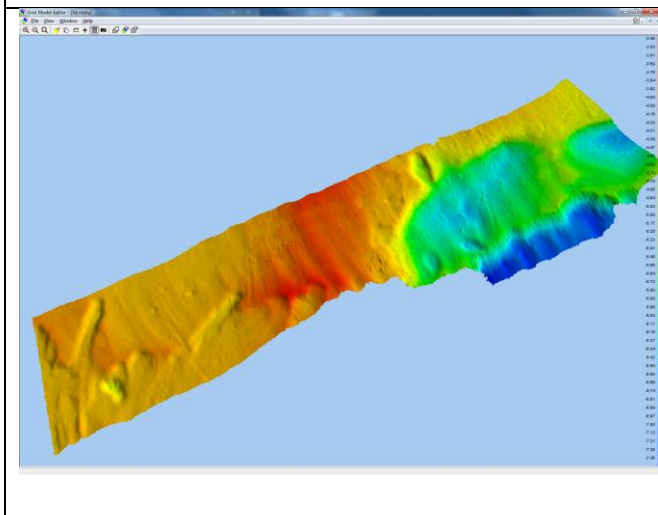
The data from that line shows no indication of roll artifact



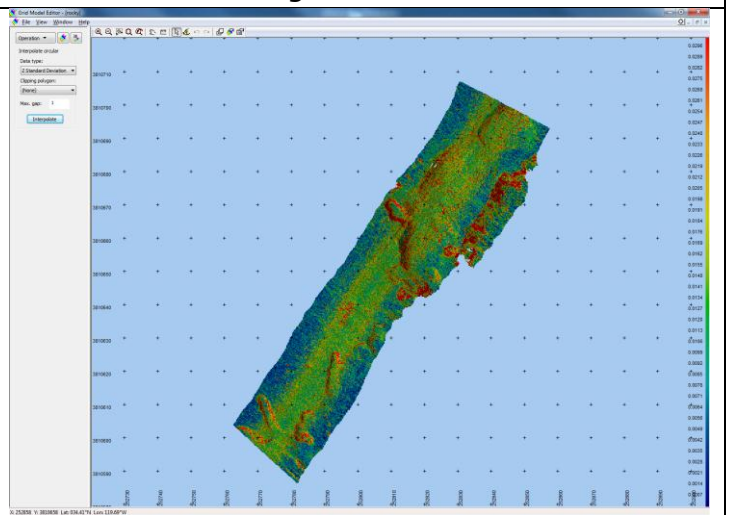
Point data



Model gridded at 0.2m



Model gridded at 0.2m



Standard deviation (red is 3cm, blue 0cm)

The 7101-Flow is a full hydrographic survey system with all sensors required and consists of:

Item	Qty	Note
7101-Flow		
SeaBat ALU 150 deg 7101 stick sonar head with motion sensor incorporated	1	ER is available as an option Ti is available as an option
7101 aluminium mounting bracket with fairings	1	
25m cable	1	25m is max cable length
7101 sonar processor with PDS2000 version 060 pre-installed	1	Includes online & offline
21" Colour monitors	2	Main displays
19" Colour monitor	1	Helm display
Trimble SPS461 DGPS	1	Provides position, time, heading
GPS antennae with 15m cables	2	Includes beacon receiver
SVP-70 online SV probe	1	With 25m cable
SVP-15T SV profiler	1	
Operator manuals	Set	
Shipping cases	Set	

Upgrade 8101 to 7101-Flow	Qty	Notes
Install motion sensor in customer sonar head	1	150° heads only.
7101 sonar processor with PDS2000 version 060 pre-installed	1	Includes online & offline
7101 aluminium mounting bracket with fairings	1	
New 25m cable	1	25m is max cable length
21" Colour monitors	2	Main displays
19" Colour monitor	1	Helm display
Trimble SPS461 DGPS	1	Provides position, time, heading
GPS antennae with 15m cables	2	Includes beacon receiver
SVP-70 online SV probe	1	With 25m cable
SVP-15T SV profiler	1	
Operator manuals	Set	
Shipping cases	Set	

Opt	Options	Notes
001	Upgrade to PDS2000 v90	Includes CUBE processing
002	Upgrade to location RTK GPS (X/Y 10cm, Z 1cm)	Does not include radios
003	Upgrade to precise RTK GPS (X/Y/Z 1cm)	Does not include radios
004	No acquisition software installed	User can install their own preferred software
005	No GPS equipment	See notes
006	ER projector replaces stick	Applies to new systems only
007	Titanium sonar head replaces ALU	Applies to new systems only
008	Spare 25m modified cable	
009	No mounting bracket/fairings kit	
010	No SVP-70	
011	No SVP-15T	

Notes:

1. An external motion sensor may be used if conditions require higher dynamic accuracy sensors.
2. Upgrade prices do NOT include any remedial work required on customer systems. An incoming inspection will be made on all equipment and a quotation issued for any work required prior to upgrade taking place.
3. RESON recommend the use of the proposed integrated sensor package and will only guarantee performance when used with these sensors. However, should customers wish to use alternative sensors the recommended minimum specifications are:
 - **Position & time**
 - DGPS or better, NMEA GGA sentence, >10Hz, RS232, RJ45 connector
 - 1PPS 5usec to 100msec, positive polarity, >5V, BNC connector
 - NMEA ZDA sentence, 1Hz
 - **Heading**
 - <0.1° RMS, NMEA HDT sentence, >10Hz, RS232, RJ45 connector
 - **Sound velocity**
 - <0.25m/s NMEA sentence, 1Hz, RS232, RJ45 connector

Due to the impractical nature of testing all sensor combinations, RESON cannot guarantee compatibility of specific sensors.

Conclusion

The 7101-Flow offers a unique solution to those requiring a robust and well-proven tool for IHO compliant surveys in sheltered areas such as harbours, rivers, lakes and dams. The highly integrated hardware allows fast mobilisation and removes the need for calibration, thus saving valuable time and making operations more profitable.

The 7101-Flow is available with integrated PDS2000 software or customers can install their own preferred software on the sonar processor.

Available for immediate delivery, the 7101-Flow is an extremely cost-effective way to perform sheltered area surveys.

There are several factors that can have a significant effect on acoustic performance. For this reason, product performance estimates are indicative of standardized conditions for temperature, salinity, bottom type or target strength, sound velocity, installation type, and assume no affect from adverse environmental conditions such as wind, precipitation, sea state, ambient or traffic noise, refraction, temporal changes or other surface effects.

To determine actual in-situ performance predictions requires a site or vessel survey and environmental measurements with performance modelling based on the resulting measurements. Costs for this survey may be quoted as part of a contract or independently.