

Combination CTD/ Sound Velocity Profiler

Model SVXtra



Valeport's world beating
Sound Velocity Profiler,
combined with CTD sensors
to also give Salinity and
Density data.

FEATURES

- True Sound Velocity measurement
- Utilises Valeport's proprietary digital sound speed sensor
- Self Recording and/or Direct Reading
- Ideal for profiling and fixed mooring
- Titanium body
- Fast Response PRT temperature sensor
- Time and depth triggering
- DataLog 400™ Windows based operating software
- Programmable sampling regime
- 8 Mbyte memory (upgradeable to 32 Mbyte)
- Sealed electronics module not exposed during battery changes
- Rated to 5000m
- True synchronous sampling up to 8Hz
- Calculates Salinity & Density data
- Optional resonant quartz pressure sensor
- 3 year warranty

INTRODUCTION

Are you torn between using a sound velocity profiler to get the best sound speed data you can, but also needing the salinity and density data you get from a CTD? The answer is simple - use both!

The SVXtra uses a combination of Valeport's world beating "time of flight" sound velocity technology and proven Conductivity, Temperature and Pressure sensors to give the best of both worlds. State of the art DSP technology makes Valeport's sound velocity data the most accurate in the world - however, the standard Model 650 sound velocity profiler is restricted to measuring sound speed, temperature and pressure data. Adding a conductivity cell to this system allows the instrument to use the industry standard PSS78 and

EOS80 equations to also calculate Salinity and Density parameters.

The SVXtra also takes advantage of Valeport's very latest modular sensor technology, to give truly synchronised sampling - all data points are measured at exactly the same time, at a frequency of up to 8Hz, to give unsurpassed profile quality.

APPLICATIONS

- Oceanographic Studies
- Hydrographic Surveys
- Dredging Operations
- Seismic Operations
- Swath Sonar/Echosounder Calibration
- Coastal and Estuary Surveys
- Education
- Marine and Environmental Studies
- Military Applications

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DESCRIPTION

Sensors

The SVXtra is fitted with the following sensors as standard:

- Valeport "time of flight" sound velocity sensor, the most accurate sound speed sensor in the world.
- Valeport pressure balanced conductivity cell.
- Strain gauge pressure sensor.
- Fast response PRT temperature sensor.

The following parameters are calculated by the instrument:

- Density Anomaly Gamma - using the standard EOS80 equation. Value is given as difference between measured density and density of pure water (1000kg/m³).
- Salinity - using the PSS78 equation. Units are equivalent to parts per thousand.

The following sensor may be fitted as an option:

- Resonant Quartz pressure sensor - fitted in place of strain gauge pressure sensor, for superior performance. Accuracy is $\pm 0.01\%$ FS.

Data Acquisition

Scan Rate: 1, 2, 4 or 8 Hz synchronous sampling.

Sample Modes

Continuous Sampling: Sampling at a fixed rate until interrupted.

Trip Sampling: Typically used for profiling, where data is sampled at regular pressure increments.

Burst Sampling: Ideal for long term deployments. Instrument takes a series of samples, then sleeps for a set length of time before waking up and repeating the process. Power is conserved during sleep mode. Standard Deviation and data averaging are available in this mode.

Conditional Sampling: Output from a selected sensor is monitored at regular intervals. When it reaches a trigger level, full sampling occurs until data from the selected sensor falls (or rises) back past the trigger level.

Switch On

By insertion of switch plug in self-recording mode, or via power or software control in real time mode.

Data Recording

The Model SVXtra is fitted with 8 Mbyte memory as standard. This is upgradeable in 8 Mbyte steps to a maximum of 32 Mbyte.

Each fitted parameter uses 2 bytes of memory per record, apart from sound velocity which uses 4 bytes (resonant quartz pressure sensor, if fitted, also uses 4 bytes). A standard instrument therefore uses 10 bytes per record (in continuous or burst mode). 8 Mbyte memory will therefore hold over 830,000 complete records. Note that in Trip sampling mode, each record also has a 6 byte time stamp, reducing capacity to approximately 520,000 records.

Power

The unit uses the following currents at 12v:

Running: 60mA
Sleep: 0.4mA

The Model SVXtra is fitted with 8 x 1.5v alkaline D cells, which have a nominal capacity of 13.5Ah, (10.8Ah effective). Battery life would therefore be approximately 180 hours in continuous use. Using a burst regime of 10 seconds every 10 minutes, this could be extended to about 230 days.

The Model SVXtra will also accept 8 x 3.6v Lithium D cells, which will further extend life by a factor of approximately 2.5 times. An external supply of 9 to 30vDC may also be used.

Communications

RS232, RS485 and RS422 communications are all fitted as standard, chosen by pin selection on the connector. Maximum baud rate is 115,200 for RS232, or 57,600 for RS485 & RS422.

RS232 communications may be used directly with a standard PC comm port, over cable lengths up to 200m. RS485 and RS422 communications may be used with up to 1500m cable lengths, but will require a surface adaptor set to interface to PC.

As an option, an FSK modem adaptor can be fitted to the instrument, allowing two wire communications over 6000m cable.

Software

All Valeport's 400 series instruments, including the Model SVXtra are supplied with DataLog 400 Windows based PC software. The software allows full sampling setup, and extraction of recorded data. In addition it features several display modes for both real time and recorded data, including tabular and graphical formats.

ORDERING

0650007 SVXtra Combination SVP/CTD, with 8Mbyte memory. Supplied with deployment frame, 3m communications lead, DataLog 400 software, manual and transit case.

0400002 8 Mbyte memory upgrade (max 32 Mbyte)

0400015 Upgrade to resonant quartz pressure sensor (specify range)

0400005 FSK modem adaptor (and instrument pcb)

0400029 RS485 communications adaptor

0400030 RS422 communications adaptor

SPECIFICATION

Parameter	Type	Range	Accuracy	Resolution	Response time
Conductivity	Pressure balanced inductive coils	0.1 to 60 mS/cm	± 0.01 mS/cm	0.003 mS/cm	100 ms
Speed of Sound	Time of flight	1400 to 1600 m/s	± 0.05 m/s (± 0.03 m/s rms)	0.001 m/s	Single pulse. Maximum time of flight is 145 μ s.
Temperature	Fast response PRT	-5 to +35 °C	± 0.01 °C	0.002 °C	100ms (60ms without guard)
Pressure	Strain Gauge	5000dBar	$\pm 0.1\%$ FS	0.005%FS	20 ms
Pressure (Option)	Resonant Quartz	Quartzonix to 700psi, Digiquartz to 10,000psi	$\pm 0.1\%$ FS	0.001% at 8Hz	Measures for 20ms @ 8Hz
Salinity	Derived (PSS 78)		± 0.02 PSU	0.003PSU	
Density Anomaly Gamma	Derived (EOS80)		± 0.0 .6kg.m ³	0.01kg/m ³	

PHYSICAL SPECIFICATIONS

Body Dimensions: 590mm long x 210mm \varnothing (max) (including sensor guard and suspension spar)

Weight in air: 15kg

Weight in water: 8kg

Material: Titanium main body.

Depth rating: 5000m (dependent on sensor selection)

Shipping Size: 65 x 58 x 25cm

Shipping Weight: 30kg

Valeport manufactures a wide range of oceanographic and hydrometric instruments including self-recording and direct reading multi-parameter current meters, sound velocity probes, CTD probes, wave recorders, tide gauges, open channel flow meters, water and plankton samplers, winches, sinker weights, connectors and accessories.

VALEPORT 

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