

# Sound Velocity Profiler

*Model 650 Mk2*



The latest version of Valeport's Sound Velocity Profiler, featuring faster sampling and lower power consumption. Still the most accurate sound velocity profiler in the world.

## 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
- 8Mbyte memory (upgradeable to 32Mbyte)
- Sealed electronics module not exposed during battery changes
- Rated to 5000m
- True synchronous sampling up to 8Hz
- 3 year warranty

## INTRODUCTION

Valeport's Model 650 Sound Velocity Profiler quickly became an industry favourite, combining the highest quality sound velocity data with standard Valeport properties of reliability and rugged construction.

The Mk2 version continues to use the digital "time of flight" sound velocity sensor, and also includes Valeport's very latest modular sensor technology for lower power consumption and faster sampling. A significant improvement is that each sensor is sampled at exactly the same instant to give absolutely synchronous data. This fact,

combined with the unsurpassed accuracy and resolution of the data, means that there is no more accurate instrument for obtaining sound velocity profiles.

## APPLICATIONS

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

# Sound Velocity Profiler

Model 650 Mk2

## DESCRIPTION

### Sensors

**Sound Velocity:** The Model 650Mk2 is fitted with Valeport's own digital "time of flight" sound velocity sensor, giving mm/s resolution and unsurpassed accuracy. The sensor is temperature and pressure compensated.

**Pressure:** The Model 650 uses a strain gauge transducer, accurate to 0.1%FS. The sensor is rated for use to 5000m as standard, with other ranges available for shallower work.

**Temperature:** The Model 650 benefits from a very fast response Platinum Resistance Thermometer (PRT) temperature sensor, making it particularly suitable for profiling use, but maintaining a high level of accuracy.

### Power

The unit uses the following currents at 12v:  
Running: 50mA  
Sleep: 0.4mA

In continuous use (including profiling), 8 x 1.5v alkaline C cells, giving approx 5.5Ah will last for about 110 hours. For long term deployments, this can be extended by using Burst Mode (e.g. 10 second burst every 10 minutes gives about 140 days life). Alternatively external power in the range of 9 to 30v DC can be used.

## SPECIFICATION

Parameter	Type	Range	Accuracy	Resolution	Response time
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 145µs.
Temperature	Fast response PRT	-5 to +35 °C	± 0.01 °C	0.002 °C	100ms (60ms without guard)
Pressure	Strain Gauge	5000dBar	± 0.1%FS	0.005%FS	20 ms

### PHYSICAL SPECIFICATIONS

**Body Dimensions:** 88mm Ø x 665mm long  
**Cage Dimensions:** 750mm long x 140mm x 120mm

**Weight in air (in cage):** 11.5kg  
**Weight in water (in cage):** 8.5kg  
**Material:** Titanium housing, stainless steel frame

**Depth Rating:** 5000m  
**Shipping Size:** 160mm x 460mm x 1020mm  
**Shipping Weight:** 26kg

### Data Acquisition

**Scan Rate:** 1, 2, 4 or 8Hz.

**Switch On:** The unit is switched on by insertion of a switch connector cap. Red LED indicates unit is on. In direct reading use, unit is switched on by power and software control.

### Sample Modes:

- Continuous sampling.
- Burst sampling (configurable frequency, duration and interval).
- Trip sampling (on any parameter, typically pressure for profiling).
- Conditional sampling (only sample if a particular parameter reaches a certain level).

True synchronous sampling means that data from all sensors is sampled at exactly the same instant, not in sequence.

### Data Recording

Each parameter uses 2 bytes per record (except sound velocity which uses 4 bytes). The standard 8 Mbyte memory will therefore hold over 1 million complete records (approx 600,000 records in profiling mode, where each record has a 6 byte time stamp). A separate file is created for each deployment.

The memory can be increased in 8 Mbyte steps to a maximum of 32 Mbyte.

### Communication

RS232, RS485 and RS422 fitted as standard (chosen by pin selection on

connector). Use RS232 for cables lengths up to 200m, or RS485/422 for cable lengths up to 1500m (requires additional adaptor for interface to PC software).

An FSK modem option is available for two wire communications up to 6000m.

### Software

Valeport's new DataLog 400™ Windows based software allows full sampling set up, and extraction of recorded data. In addition, it features several display modes for both recorded and real time data, including tabular and graphical formats.

## ORDERING

- 0650003** Model 650 Mk2 Sound Velocity Profiler, supplied with deployment frame, 3m communications lead, DataLog 400 software, manual and transit case.
- 0400002** 8 Mbyte memory upgrade (max 32 Mbyte)
- 0400005** FSK modem adaptor (and instrument pcb)
- 0400029** RS485 communications adaptor
- 0400030** RS422 communications adaptor



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 Limited  
Townstal Industrial Estate  
Dartmouth, Devon TQ6 9LX  
United Kingdom  
Tel: +44 (0)1803 834031  
Fax: +44 (0)1803 834320  
e-mail: sales@valeport.co.uk  
Web Site: <http://www.valeport.co.uk>