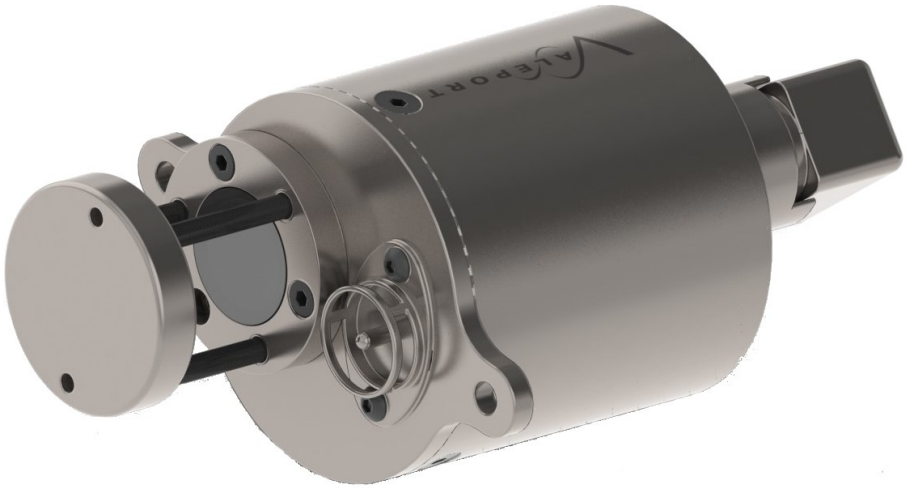
UV-SVP
Operating Manual



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Valeport Limited
St Peters Quay
Totnes
Devon, TQ9 5EW

United Kingdom

Tel: +44 1803 869292
e mail: sales@valeport.co.uk | support@valport.co.uk
Web: www.valeport.co.uk

As part of our policy of continuous development, we reserve the right to alter, without prior notice, all specifications, designs, prices and conditions of supply for all our equipment.

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1. EU Declaration of Conformity - CE Marking

EU Declaration of Conformity

CE Marking

Manufacturer:	Valeport Ltd
Address:	St Peter's Quay, Totnes, Devon, TQ9 5EW
Certification marking:	CE
Product Description:	UV-SVP, Sound Velocity Profiler.

We the manufacturer declare that the product **UV-SVP**, is in conformity with the following EU Directives and harmonised standard(s):

EMC Directive 2014/30/EU	**Standards**
EMC (Article 3.1b)	BS EN 61326-1:2013 (Basic Level)

RoHS Directive 2011/65/EU	**Standards**
Prevention (Article 4.1)	BS EN 50581:2012

Name:	Jason Horsell
Position	Development Engineer
Place of issue:	Valeport Ltd, Totnes, UK
Date of issue:	09th January 2018
Signature:	

Valeport Limited, St. Peter's Quay, Totnes, Devon, TQ9 5EW UK
Tel: +44 (0)1803 869292 Fax: +44 (0)1803 869293
E-mail: sales@valeport.co.uk Web: www.valeport.co.uk

VAT No: GB 165 8753 67 Registered in England No: 1950444

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Please note: Any changes or modifications to the product or accessories supplied, that are not authorised by Valeport Ltd, could void the CE compliance of the product and negate your authority to operate it. This product has demonstrated CE compliance under conditions that include the use of shielded cables. It is important that you use shielded cables compliant with the product's conformance, to protect from potential damage and reduce the possibility of interference to other electronic devices.

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2. Introduction

This manual covers the basic specifications, deployment and maintenance procedures for the UV-SVP. The instrument can be controlled by sending commands directly, using a suitable terminal emulation program such as Valeport Terminal or HyperTerminal.

The instrument is based on Valeport's existing "mini" sensor range and has been designed to be simple to use and maintain, as well as being small and lightweight for easy handling and deployment.

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3. Specifications

Dimensions:

Housing Ø	Mounting bulkhead Ø	Overall length	Weight in Air
63mm	90mm	139mm	0.726 Kg

Materials:

Part	Material
Main housing	Titanium
Sensor bulkhead	Titanium
Connector	Titanium SubConn MCBH6F Right Angle
Sound Velocity Sensor	Carbon Composite legs, Titanium Body, Ceramic Transducer behind polycarbonate window
Temperature sensor	Titanium
Pressure sensor	Hastelloy

Power:

External 9 – 28v DC input
0.36W (30mA @12v)

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Connection:

Standard is SubConn type MCBH6F titanium
Alternatives may be supplied on request
Wiring Information is in Section 4

Output:

Units are fitted with both RS232 and half-duplex RS485 communications as standard, selected by pin choice on the output connector. Protocol is 8 data bits, 1 stop bit, no parity, and no flow control.

Baud rate is factory set to 19200. User may choose between 2400, 4800, 9600, 19200, 38400, 57600, 115200. (Note that fast data rates may not be possible with low baud rates). Continuous output at 1, 2, 4 or 8Hz

Performance:

Sensor		
Sound Velocity	Range	1375 – 1900m/s
	Accuracy	±0.02m/s
	Resolution	0.001m/s
	Frequency	2.5 MHz
Pressure	Range	10, 20, 30, 50, 100, 200 or 300Bar
	Accuracy	±0.01% range
	Resolution	0.001% range
Temperature	Range	-5 to +35°C
	Accuracy	±0.01°C
	Resolution	0.001°C

Certain features of the sensors used in the "mini" range are designed specifically to enable high quality data to be delivered:

Carbon Composite Rods:
The carbon composite material used for the sensor spacer rods has been specifically selected to provide 3 features:
a) Excellent corrosion resistance
b) Very high strength
c) Virtually zero coefficient of thermal expansion
This last point is particularly important; accurate sound velocity measurement relies on measuring the time taken for a pulse of sound to travel a known distance. The material selected does not measurably expand over the operating temperatures of the instrument, ensuring the highest possible accuracy at all times.

Digital Sampling Technique:

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Enables a timing resolution of 1/100th of a nanosecond, equivalent to about 0.5mm/sec speed of sound on a 25mm path sensor, or 0.125mm/sec on a 100mm sensor. In practice, the output is restricted to 1mm/sec resolution.
Linear sensor performance allows easy calibration.

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4. Data Requests

The instrument responds to a series of text commands that are detailed below for those users who wish to interface the UV-SVP to other systems.

This list is not comprehensive, but will allow the standard functions of the instrument to be accessed.

For more detailed information, please contact Valeport Ltd.

Notes

- All commands must be confirmed using "Carriage Return" or "Enter" on the keyboard, with the exception of the "Stop" command (#).
- All commands are echoed back by the instrument as they are typed

Code	Followed By	Operation
#		Interrupts instrument when running
M	rate<CR>	Performs continuous measurement at set rate. M1 = 1 Hz M2 = 2 Hz M4 = 4 Hz M8 = 8 Hz
S	<CR>	Returns a single reading
#001	;address<CR>	Sets the 485 address
#002	<CR>	Returns the address
#004	<CR>	Read header info
#005	;ON<CR> or ;OFF<CR>	Turns ON or OFF address mode
#006	<CR>	Returns ON or OFF for address mode
#009	;<CR> or ;VALUE<CR>	Sets the tare value in systems with pressure fitted. ;<CR> = Makes device take a reading to use as tare. ;VALUE<CR> = User entered value in units as set by #018 command.
#010	<CR>	Returns the tare value
#011	;ON<CR> or ;OFF<CR>	Turns Tare function ON/OFF
#012	<CR>	Reads Tare mode
#018	;Pressure units<CR>	Set to either 0 – dBar 1 – Metres 2 – Feet
#019	<CR>	Read pressure units
#026	;valeport_separator<CR>	Sets the Valeport output string separator (1 char)
#027	<CR>	Returns the Valeport output string separator
#028	<CR>	Set the unit into run mode
#029	<CR>	Read run mode
#032	<CR>	Returns the software version number.

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Code	Followed By	Operation
#034	<CR>	Returns the units serial number
#039	;ModeValue<CR>	Set mode without putting unit into run mode Where M1 = 1 Hz continuous output M2 = 2 Hz continuous output M4 = 4 Hz continuous output M8 = 8 Hz continuous output M16 = 16 Hz continuous output
#040	<CR>	Read operating mode.
#042	;ON or OFF	Enable/disable leading separator
#043	<CR>	Read leading separator (on or off)
#044	;ON or OFF	Enable/disable trailing separator
#045	<CR>	Read trailing separator (on or off)
#059	;baud_rate<CR>	Sets the units baud rate 2400,4800,9600,19200,38400;57600;115200
#083	;0 or 1 or 2 or 3	Setup the pressure output format Where 0=not fitted, 1=PPPP.P, 2=PPP.PP, 3=PP.PPP
#084	<CR>	Returns the set pressure range
#091	;ON<CR> or ;OFF<CR>	Sets startup mode. OFF=No readings at startup, ON=Readings at last rate at startup
#102	;ON or OFF<CR>	Sets 485 mode
#103	<CR>	Sends 485 mode

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5. Output Format

Real time data follows the format described below.

Use #091 to control whether the instrument starts sampling as soon as power is applied or waits a for command.

10.351 21.488 1506.739

- The data separator is a space (this may be altered if required)
- Leading and trailing spaces are enabled. (this can be altered if required)
- Data is presented in the order:
  - Pressure
  - Temperature
  - Sound Velocity
- Pressure data format is dependent on sensor range, and may be any of the following. Leading zeroes are included, so it is a fixed length string:
  - PPPP.P (e.g. 0123.4 dBar)
  - PPP.PP (e.g. 012.34 dBar)
  - PP.PPP (e.g. 12.345 dBar)
- The temperature data is given to 3 decimal places. Value is in °C and leading zeroes are included; signed if negative:
  - 21.456
  - 02.769
  - -01.174
- Sound Velocity is given in m/s, as a fixed length string with 3 decimal places. In air, the sensor reads 0000.000

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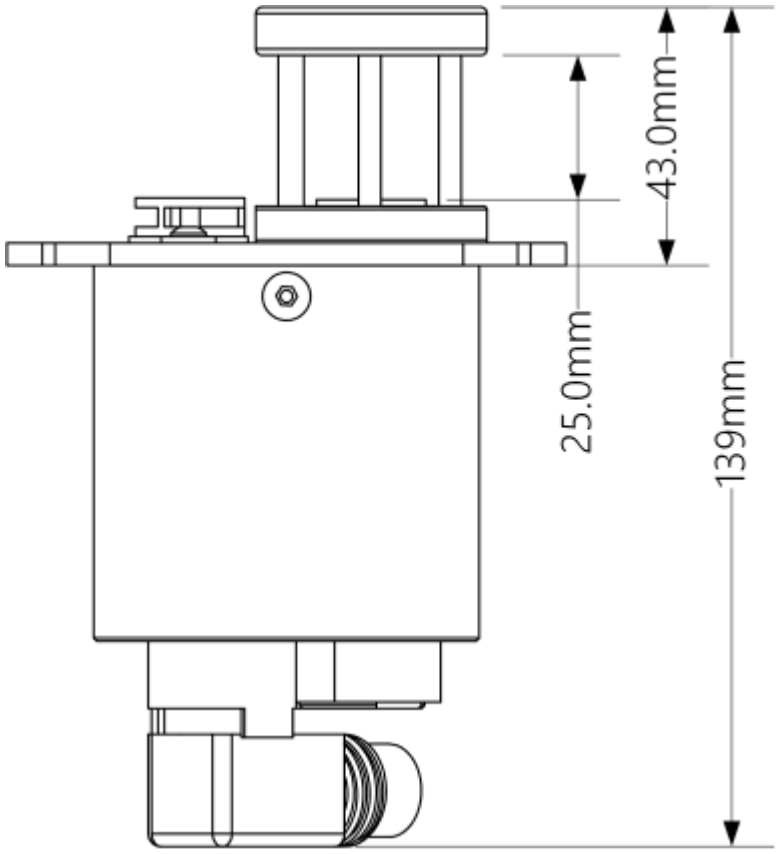
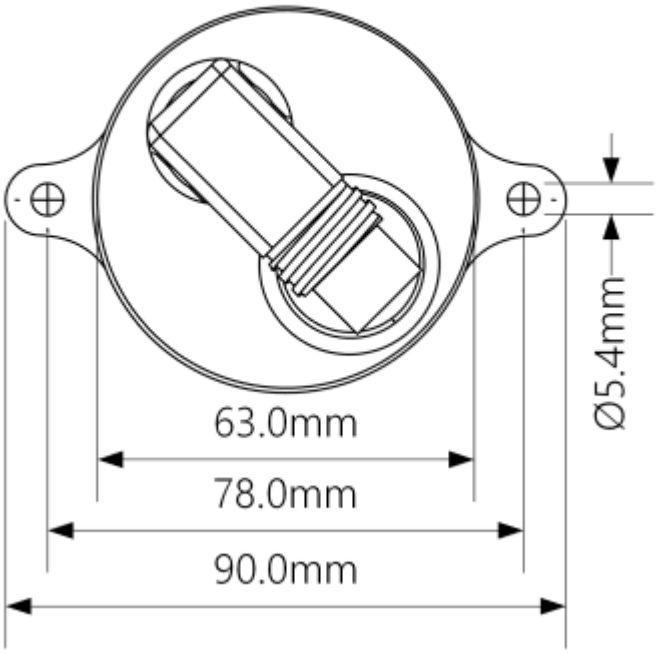
6. Dimensions





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7. Wiring Information

Wiring colours are correct at the time the manual was printed. However, it is advised that continuity checks are performed prior to all terminations.

Systems are supplied with a short (50cm) lead for splicing or testing

Subconn 6 pin male line (MCIL6M)		9 Way D Type	4mm Banana Plugs
Pin	Function	Pin	Pin
1	RS232 GND	5 (Link to 1,6,8,9)	
2	RS232 Tx (Out of sensor) or RS485A	2	
3	RS232 Rx (Into sensor) or RS485B	3	
4	+V		Red Plug
5	Link to Pin 1 for RS485. N/C for RS232		
6	Power GND		Black Plug

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