

Multi-Parameter Logger with CTD

Model 606+



A multi-parameter logger, based on Valeport's Model 606 CTD. The modular nature of the electronics allows a variety of additional sensors to be added, and the instrument can be configured for conditional sampling.

FEATURES

- Conditional Sampling
- Continuous, Burst or Profile sampling
- Water bottle triggering
- True synchronised sampling at up to 8HZ
- Ideal for profiling and fixed mooring installation
- Pressure balanced inductive conductivity sensor
- Fast Response PRT Temperature Sensor
- Modular electronics allows addition of multiple extra sensors
- Time and down/up depth triggering
- Valeport DataLog 400™ Windows based user software
- Programmable sampling regime
- Data direct to PC
- 8Mbyte memory (upgradeable to 32Mbyte)
- Sealed electronics module not exposed during battery changes
- 5000m depth rating
- Long cable lengths
- 3 Year Warranty
- Direct computation of Speed of Sound using a choice of industry standard formulae
- Direct computation of Salinity & Density
- Self Recording and/or Direct Reading
- Titanium housing
- Optional resonant quartz pressure sensor
- Delay Start function

APPLICATIONS

- Oceanographic studies
- Hydrographic surveys
- Coastal and Estuary surveys
- Education
- Marine and Environmental studies

INTRODUCTION

The Model 606+ is a logical development of Valeport's Model 606 CTD. Taking advantage of the modular microprocessor technology used in Valeport's newest products, the 606+ can be fitted with Dissolved Oxygen, pH, Redox (ORP), & Turbidity sensors in the standard housing, in addition to the standard CTD sensors, with further connectors for an external fluorometer, PAR sensor or water bottle trigger output.

The Model 606+ also features true synchronised sampling - rather than sampling each sensor in sequence as in other similar instruments, the Model 606+ samples every sensor at exactly the same time, at up to 8Hz. This ensures that all data points gathered during a profile are collected at exactly the same depth. The Model 606+ can also be configured for conditional sampling, whereby full data sampling can be triggered by data monitored from any one sensor.

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DESCRIPTION

System Overview

The Model 606+ utilises Valeport's latest "400 series" modular sensor technology. The basic principle is to use a core electronics package, and then add a small microprocessor to interface each individual sensor. The core electronics consists of a power control board, a main microprocessor, and memory and communications boards. This system automatically detects whichever sensors are fitted, and controls the sampling regime of each sensor.

Aside from the fact that each sensor and interface board are thus fully calibrated modules in their own right, this system also allows full central control of each sensor, and results in features unique to the Valeport product. Such features include true synchronised sampling, where each sensor is sampled at exactly the same instant rather than in sequence, and a highly configurable Conditional Sampling regime whereby data sampling is only triggered by the readings from any individual sensor.

The Model 606+ may be fitted with a range of sensors as described below. We have deliberately limited the number of sensors available to the Model 606+ in order to allow standardisation of system housings. However, the capacity of the 400 series system is much greater than this - up to 20 individual interface boards may be fitted, some interfacing to 2 or 3 different sensors. If your application cannot be met by the range of sensors available on the Model 606+, please refer to the Midas 400 Customised Data Acquisition System, which may be fitted with any number or combination of sensors up to the maximum capacity of the 400 series electronics.

Standard Sensors

Conductivity: The conductivity cell fitted to the Valeport Model 606+ is pressure balanced to eliminate the effect of cell volume changes at depth.

Pressure: The Model 606+ uses a strain gauge transducer, accurate to 0.1%FS. Choose 100, 500, 3000 or 5000dBar range.

Temperature: The Model 606+ 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.

Additional Sensors

Each additional sensor is supplied complete with its own small microprocessor pcb, containing all calibration information for that sensor. The Model 606+ housing has enough space to allow the following additional sensors to be fitted:

- Turbidity: bulkhead mounted sensor
- Any two sensors from Group A below
- Any two sensors from Group B below.
- In addition, the standard strain gauge pressure sensor may be exchanged for a resonant quartz pressure sensor (0.01%FS accuracy).

Group A: Bulkhead Sensors

Dissolved Oxygen: High accuracy, high stability, fast response, pressure balanced DO sensor.

pH: Pressure balanced pH sensor

Redox (ORP): Pressure balanced Redox sensor

Combined pH/ Redox: Single pressure balanced sensor measuring both pH and Redox

Group B: Remote Sensors

Fluorometer: Choose from Seapoint Sensors Chlorophyll, Rhodamine or Fluorescein sensors, or Chelsea Instruments Minitracka II Chlorophyll, Rhodamine or Nephelometer sensors. All supplied with 1m pigtail. Other types available on request.

PAR: Photosynthetically Active Radiation sensor on 1 m pigtail.

Water Bottle Trigger: Internal pcb & 1m flylead for interface to water bottle triggering mechanism (not supplied). Contact Valeport for details of trigger output.

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.

Water Bottle Trigger: A trigger pulse is output either at regular time intervals, on the basis of data from any sensor passing a trip level, or by manual control through software in real time. A record of when triggering has occurred is stored with the data file.

Switch On

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

Data Recording

The Model 606+ 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 (resonant quartz pressure sensor, if fitted, uses 4 bytes). A fully fitted system (CTD, turbidity, DO, pH/Redox, Fluorometer & PAR sensors) has 9 sensors, and will therefore use 18 bytes per record (in continuous or burst mode). 8 Mbyte memory will therefore hold over 450,000 complete records. Note that in Trip sampling mode, each record also has a 6 byte time stamp, reducing capacity to approximately 350,000 records.

Power

Power consumption naturally depends on the number of sensor fitted. Using the example system above, total power drain is up to 130mA at 12v when running, and 0.4mA in sleep mode.

The Model 606+ 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 80 hours in continuous use. Using a burst regime of 10 seconds every 10 minutes, this could be extended to about 120 days.

The Model 606+ 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.

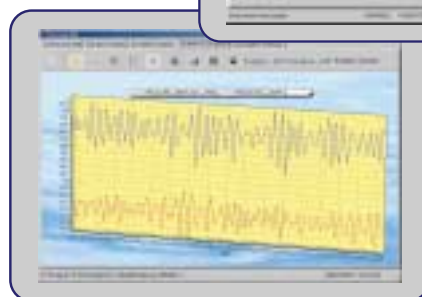
RS232 communications may be used directly with a standard PC comm port, over cable lengths up to 200m. RS485 and RS422 communications may be used with

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 606+ 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

0606002	Model 606+ Multiparameter instrument fitted with conductivity, temperature and strain gauge pressure sensors (specify range required). Supplied with 8Mbyte memory, sensor guard, 3m communications lead, DataLog 400 software, operating manual and transit case.	0400021B	Turbidity sensor
0400002	8Mbyte memory upgrade (max 32Mbyte)	0400017	DO sensor
0400015	Upgrade to resonant quartz pressure sensor (specify range)	0400018	pH sensor
		0400019	Redox (ORP) sensor
		0400020	Combined pH/Redox sensor
		0400023	Seapoint Fluorometer (specify type)
		0400024	Chelsea Minitracka II Fluorometer (specify type)
		0400025	PAR sensor
		0400026	Water Bottle Trigger output
		0400005	FSK communications option
		0400029	RS485 communications adaptor
		0400030	RS422 communications adaptor

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SPECIFICATION

Parameter	Type	Range	Accuracy	Resolution	Response Time	Comments
Conductivity	Pressure Balanced inductive coils	0.1 to 60mS/cm	±0.01mS/cm	0.003mS/cm	100ms	
Temperature	Fast PRT	-5 to +35°C	±0.005°C	0.002°C	100ms	
Pressure (standard)	Strain gauge	100, 500, 3000, 5000dBar	±0.1%FS	0.005%FS	20mS	
Pressure (option)	Resonant Quartz	variety to 10,000psi (7,000dBar)	±0.01%FS	0.001% at 8Hz	Measures for 20ms @ 8Hz	Quartzonix type to 700psi, Digiquartz type to 10,000psi
Turbidity	Seapoint	0 - 2000FTU (max)	linearity ±<2% to 750 FTU	0.005% FS	0.1s (63%)	Software selectable range, 25, 125, 500 or 2000 FTU
DO	Pressure Balanced Clark cell	0 - 16ml/l	±0.07ml/l	0.017ml/l	2s (63%) 20s (90%)	Stability <0.5% per day
pH	Pressure balanced Electrode	2-12	±0.05	0.01		Available as individual sensors or as a single combined sensor
Redox (ORP)	Pressure balanced Electrode	±1500mV	±1mV	0.08mV		
Fluorometer	Seapoint Chlorophyll	0.02 - 150µg/l (max)	±<0.03 µg/l RMS noise	0.005%FS	0.1s (63%)	Software selectable range, 5, 15, 50 or 150 µg/l
Fluorometer	Seapoint Rhodamine	0.02 - 150ppb (max)	±<0.03 ppb RMS noise	0.005%FS	0.1s (63%)	Software selectable range, 5, 15, 50 or 150 ppb
Fluorometer	Seapoint Fluorescein	0.02 - 150µg/l (max)	±<0.03 µg/l RMS noise	0.005%FS	0.1s (63%)	Software selectable range, 5, 15, 50 or 150 µg/l
Fluorometer	Chelsea Minitracka II Chlorophyll	0.03 - 100 µg/l	±0.01 µg/l RMS noise	0.01µg/l		
Fluorometer	Chelsea Minitracka II Rhodamine	0.03 - 100 µg/l	±0.01 µg/l RMS noise	0.01µg/l		
Fluorometer	Chelsea Minitracka II Nephelometer	0.04 - 100 FTU	±0.01 FTU RMS noise	0.01FTU		
PAR	Licor	0 - 10,000µmol/s/m ²	Linearity ±1% over range	0.5µmol/s/m ²	10µs	Stability <±2% per year

PHYSICAL SPECIFICATIONS

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

Material: Titanium main body. Assorted plastics for sensors.

Depth rating: 5000m (dependent on sensor selection)

Weight in air: 15kg
Weight in water: 8kg
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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