Electromagnetic Current Meter

Model 808

FEATURES

- Self Recording and/or Direct Reading
- Discus EM sensor [annular and spherical options]
- Flux gate compass
- Continuous and burst sampling
- Optional Conductivity, Temperature, Pressure, Pitch/Roll sensors
- Optional built in auxiliary sensor port
- Fast Response PRT Temperature sensor
- Pressure balanced inductive conductivity sensor
- Valeport EMLog™ Windows based user software
- Programmable sampling regime
- Data direct to PC
- Direct computation of Salinity, Speed of Sound and Density
- Large 1 Mbyte memory option
- Sealed electronics module not exposed during battery changes
- Long cable lengths
- 3 Year Warranty
- Stainless Steel or Acetal Housing

APPLICATIONS

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

INTRODUCTION

The Model 808 self recording electromagnetic current meter represents an amalgamation of two proven Valeport technologies. Many years of experience in the design and production of electromagnetic flow sensors have resulted in a stable, highly accurate meter. When coupled with data acquisition and processing technology developed from the renowned Model 308 current meter and 600 Series CTD, the result is a versatile, easy to use instrument, ideal for use by oceanographers, hydrographers and surveyors who require a solid state, multi-parameter current meter.

VALEPORT

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TECHNICAL DETAILS

Standard Sensors
Speed: Current speed is measured by a Valeport 11cm discus electromagnetic sensor, coupled with 802 series electronics. This sensor gives the best overall compromise between accuracy and durability, allowing the instrument to be used in depths up to 3000m. Alternative sensor shapes can be used to suit different applications – please consult the Model 802 data sheet for details. The 802 series electronics use Digital Signal Processing for excellent reproducibility and accuracy.
Direction: Measured by a Valeport gimballed flux gate compass.

Optional Sensors
Pitch/Roll: The Model 808 is designed to be deployed vertically, but in fast flows on a non fixed deployment, streaming is likely. The unit can therefore be fitted with a two axis inclinometer to measure this effect.
Conductivity: An inherent problem with inductive coil conductivity sensors is the change in cell volume at very high pressures. The cell fitted to the Model 808 eliminates this effect by using a pressure balancing system to ensure that the pressure outside the sensor is matched by that inside the sensor.
Pressure: The Model 808 uses a strain gauge transducer, accurate to 0.1%FS. The sensor is rated for use to 3000m as standard, with other options available for shallower work.
Temperature: The Model 808 can be fitted with either a standard Platinum Resistance Thermometer (PRT), a highly accurate sensor suitable for fixed deployments, or a fast response PRT which combines this high accuracy with the ability to respond to rapid changes in temperature.

Auxiliary: The Model 808 can be fitted with a single external connector to interface to an auxiliary analogue sensor. The channel will take an input range of 0-5v, and can supply up to 12vDC. Typical applications include turbidity sensors and fluorometers.

Data Acquisition
Scan Rate: The unit works on a basic 2 second (0.5Hz) sampling regime, over which a vector average of the current is calculated from the flow and direction readings. The user is required to set a sample rate for all additional sensors, and an overall average period for these readings. Data is output and logged at the end of every average period only.
Switch On: By flashing LED connector cap in self recording mode, or by power and software control in direct reading mode.
Sample Modes: Time (continuous sampling), Burst (configurable length and frequency).

Data Recording
128Kbyte standard memory, giving over 8,500 records of Speed, Direction, Pitch/Roll, Conductivity, Temperature, and Pressure records (more if fewer parameters are fitted). This is equivalent to over 80 days at 10 minute averaging. A separate file is created for each deployment, each containing header information including setup, calibration, and user defined site information. A 1Mbyte memory option is also available.

Power
The unit uses 8 x 1.5v "D" cells, which will last for about 40 hours in continuous use. This can be extended by using Burst Mode (e.g. 20 second burst every 10 minutes gives over 1 month's life). Alternatively, external power (11.5 to 25 vDC) can be used.

Communications
RS232: Setup and data extraction, and for direct reading to PC over up to 100m cable.
RS485: Direct reading to PC over cable lengths up to 1500m (requires additional adaptor) and factory modification.

Software
Valeport's EMLog™ Windows™ based software allows setup of all parameters, and extraction of recorded data. In addition, it features several display modes for both recorded and real time data, including both tabular and graphical formats. If the optional parameters of Conductivity, Temperature and Pressure are fitted, the software also displays the calculated parameters of Salinity, Speed of Sound and Density Anomaly.

ORDERING

0808001: Self recording / Direct reading electromagnetic current meter, fitted with 128Kbyte memory, flux gate compass, and an 11cm discus sensor, measuring speed and direction only. Supplied with Y lead (meter to power / RS232), EMLog™ Windows™ software, accessories and transit case.
0808002: Pitch and Roll sensor.
0300003: Strain Gauge Pressure sensor.
0300041: Pressure balanced Conductivity sensor assembly.
0300042: Fast response PRT Temperature sensor.
0300004: Standard response PRT Temperature sensor.
0808006: Auxiliary channel accepting a 0–5v input.

SENSOR SPECIFICATIONS

Parameter	Type	Range	Accuracy	Resolution	Response time
Current Speed	Valeport 11cm discus EM	± 5m/s	± 1% +5mm/s	0.001m/s	125 ms
Current Direction	Valeport gimballed flux gate compass	0 to 360° (up to 20° gimbal)	± 1°	0.25°	100 ms
Conductivity	Pressure balanced inductive coils	0.1 to 60 mS/cm	± 0.05 mS/cm	0.003 mS/cm	100 ms
Temperature	Slow PRT	-5 to +35 °C	± 0.02 °C	0.002 °C	250 ms
Temperature [optional]	Fast PRT	-5 to +35 °C	± 0.02 °C	0.002 °C	100 ms (60 ms without guard)
Pressure	Strain Gauge	100, 500, 1000, 2000 or 3000dBar	± 0.1%FS	0.005%FS	20 ms
Pitch/Roll	Capacitive Bubble	± 30°	± 1°	0.25°	100 ms
Auxiliary		0 to 5v	± 1mV	0.25mV	
Salinity	Derived (SAL78)		± 0.07 PSU	0.003 PSU	
Speed of Sound	Derived (user selectable formula)		± 0.25m/s	0.02m/s	
Density Anomaly Gamma	Derived (EOS80)		± 0.06 kg/m3	0.01 kg/m3	

PHYSICAL SPECIFICATIONS
Body Dimensions: 1000mm long x 118mm ∅
Cage Dimensions: 1240mm long x 300mm x 200mm
Weight in air (in cage): 24kg (acetal),35kg (st. steel)
Weight in water (in cage): 14kg (acetal), 25kg (st. steel)
Material: Acetal and Stainless Steel 316
Depth Rating: 1000m (acetal),3000m (stainless steel)
Shipping Case Size: 1300mm x 280mm x 380mm
Shipping Weight: 36kg (acetal), 47kg (st.steel)

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

VALEPORT

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