FastCAT CTD Sensor

SBE 49

SUMMARY

- Conductivity, Temperature, and Pressure, at 16 Hz (16 samples/second).
- Pump-controlled, T-C ducted low to minimize salinity spiking.
- RS-232 serial interface, no memory or batteries — intended for use on vehicles that can supply power and acquire data.
- Unique flow path, pumping regimen, and (optional) expendable anti-foulant devices, for maximum bio-fouling protection.
- Depths to 250 meters (plastic housing) or 7000 meters (titanium housing).

DESCRIPTION

The SBE 49 FastCAT is an integrated CTD sensor intended for use as a modular component in towed vehicles, ROVs, AUVs, or other autonomous platforms that can supply DC power and acquire serial data. FastCAT's pump-controlled / TC-ducted flow feature minimizes salinity spiking, and its 16 Hz sampling provides very high spatial resolution of oceanographic structures and gradients.

FastCAT's temperature thermistor and conductivity cell are the same as used in our premium 911*plus* CTD system. The strain-gauge pressure sensor is offered in eight full scale ranges from 20 to 7000 dbars. Sophisticated interface circuitry provides very high resolution and accuracy.

FastCAT is an easy-to-use, light, and compact instrument ruggedly made of titanium and other low-maintenance (plastic) materials; it is well suited to even the smallest vehicle. There are straightforward commands for continuous (full rate or averaged) or single sample acquisition. EEPROM-stored calibration coefficients permit data output in ASCII engineering units (degrees C, Siemens/m, decibars, Salinity [PSU], and sound velocity [m/sec]), or the user can select raw data output if desired.

FastCAT must be externally powered, and its RS-232C data logged or telemetered by the vehicle to which it is mounted. As FastCAT does not support auxiliary sensors, where such sensors are required the user's vehicle must be equipped to acquire their signals independently.

SAMPLING MODES

FastCAT has two sampling modes:

- **Autonomous sampling** – FastCAT runs continuously, sampling at sixteen scans per second (16 Hz). It can be set to average up to 255 samples, transmitting only the averaged data. Programmable real-time processing (aligning, filtering, and correcting for conductivity cell thermal mass effects) provides high quality data for applications where post-processing is not feasible. FastCAT can be programmed to begin autonomous sampling when power is applied or on command.
- **Polled sampling** – On command, FastCAT takes one sample and transmits the data.

CONFIGURATION

A standard FastCAT is supplied with titanium housing for depths to 7000 meters, strain-gauge pressure sensor, internal pump and T-C Duct, and XSG 4-pin I/O bulkhead connector. FastCAT options include:

- Plastic housing for depths to 250 meters
- MCBH Micro connector in lieu of XSG
- Expendable anti-foulant devices

SOFTWARE

FastCAT is supplied with a powerful Win 2000/XP software package, SEASOFT© V2. SEASOFT's modular programs include:

- SEATERM — terminal program for instrument setup and data display.
- Seasave — real-time data acquisition and display.
- SBE Data Processing — filtering, aligning, averaging, and plotting of CTD data and derived variables.

Sea-Bird Electronics, Inc.
13431 NE 20th Street, Bellevue, Washington 98005 USA
Website: www.seabird.com

E-mail: seabird@seabird.com
Telephone: +1 425-643-9866
Fax: +1 425-643-9954

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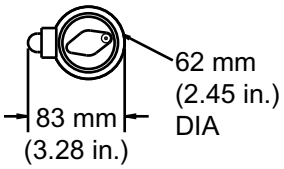
SPECIFICATIONS

Measurement Range

Temperature	-5 to +35 °C
Conductivity	0 to 9 S/m
Pressure	0 to 20 / 100 / 350 / 600 / 1000 / 2000 / 3500 / 7000 meters

Initial Accuracy

Temperature	0.002 °C
Conductivity	0.0003 S/m
Pressure	0.1% of full scale range



Typical Stability (*per month*)

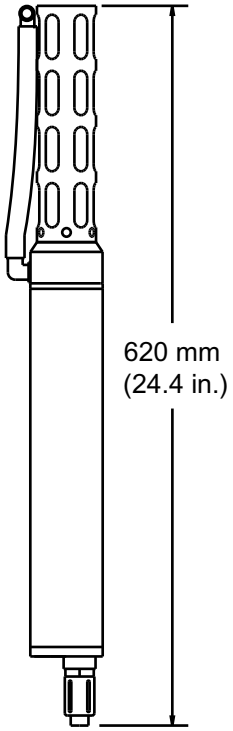
Temperature	0.0002 °C per month
Conductivity	0.0003 S/m per month
Pressure	0.05% of full scale range per year

Resolution

Temperature	0.0001 °C
Conductivity	0.00005 S/m (oceanic waters; resolves 0.4 ppm in salinity) 0.00007 S/m (high salinity waters; resolves 0.4 ppm in salinity) 0.00001 S/m (fresh waters; resolves 0.1 ppm in salinity)
Pressure	0.002% of full scale range

Calibration

Temperature	+1 to +32 °C
Conductivity	0 to 9 S/m; physical calibration over 2.6 to 6 S/m, plus zero conductivity (air)
Pressure	Ambient to full scale range in 5 steps



Power Requirements

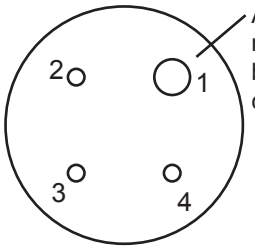
Input power	0.75 Amps at 9-24 VDC
Turn-on transient	750 mA
Sampling and transmitting (includes pump)	350 mA at 9 V 285 mA at 12 V 180 mA at 19 V

Housing Material and Depth Rating

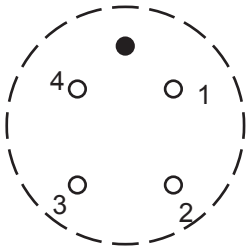
Standard	3AL/2.5V Titanium, 7000 meters (22,900 feet)
Optional	Plastic, 250 meters (820 feet)

Weight

Standard titanium housing –	
In air	2.7 kg (6 lbs)
In water	1.4 kg (3 lbs)
Optional plastic housing –	
In air	1.8 kg (4 lbs)
In water	0.5 kg (1 lb)



Standard Connector
XSG-4-BCL-HP-SS



Optional MCBH Connector
MCBH-4MP (WB), TI
(3/8" length base, 1/2-20 thread)

Pin	Description
1	Ground
2	RS-232C Receive from computer
3	RS-232C Transmit to computer
4	Power (9-24 VDC)

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