

Carousel Auto Fire Module

AFM

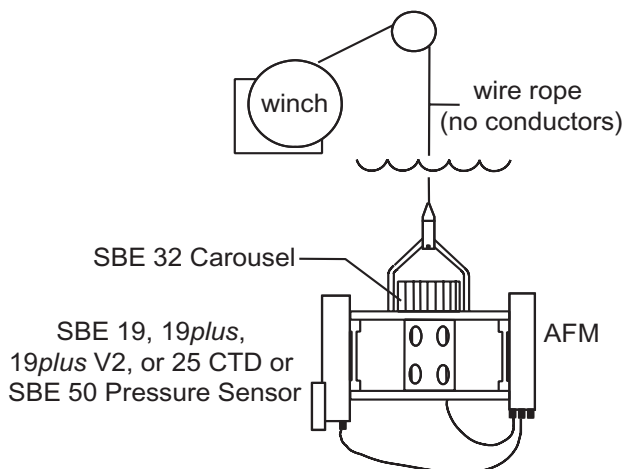


The Carousel Auto-Fire Module (AFM) allows the Carousel Water Sampler (SBE 32, 32C, or 32SC) to operate autonomously on non-conducting cables. The AFM includes a microprocessor, solid-state memory, RS-232 interface, and battery power that supply the operating voltage, logic, and control commands to operate the Carousel.

When the Carousel is used without a CTD, the AFM fires bottles at pre-defined intervals of elapsed time after receipt of the *Arm* command. The point at which samples are taken can be determined (approximately) by monitoring cable length paid out and elapsed time. The AFM records bottle number, date, time, and firing confirmation for each bottle fired. At the end of a cast, the bottle data (.afm) file is uploaded from the AFM.

When the Carousel is used with a CTD (SBE 19, 19*plus*, or 19*plus* V2 SEACAT Profiler or SBE 25 SEALOGGER CTD) or **SBE 50 Pressure Sensor**, the AFM:

- Monitors the pressure data recorded by the CTD (or transmitted by the SBE 50) in real-time,
- Fires bottles at pre-defined pressures (depths), on upcast, downcast, or when the Carousel is stationary for a specified period of time, and
- Records bottle number, date and time, firing confirmation, and five scans of CTD or SBE 50 data in AFM memory for each bottle fired



Setup, checkout, and data extraction are performed (without opening the housing) with our SeatermAF terminal program. At the end of a cast, CTD data is uploaded from the CTD (through the AFM) and bottle data is uploaded from the AFM. SBE Data Processing's Data Conversion module converts the raw CTD data and creates a .cnv CTD data file and .ros bottle data file.

Firmware upgrades can be downloaded through the AFM's communications port by the user, without opening the housing.

MECHANICAL

The AFM has an anodized aluminum housing rated to 6800 meters (22,300 feet). Bulkhead connectors for the CTD, Carousel, and Data I/O (RS-232) are mounted on the housing end cap. The AFM is typically installed on the Carousel, using the same mounting bracket used to mount a SEACAT, and hangs vertically between the upper and lower adapter plates.

BATTERY ENDURANCE

The AFM is powered by 9 alkaline D-size cells, which provide approximately 60 hours of operation. Optionally, the AFM can be powered by rechargeable NiMH or Ni-Cad batteries. Battery endurance is predominantly a function of the amount of time the AFM is powered up and armed; the number of bottles fired has little impact.

SOFTWARE

The AFM is supplied with a powerful Windows 2000/XP software package, SEASOFT® V2, which includes:

- **SeatermAF** — terminal program for easy communication and data retrieval.
- **SBE Data Processing** — modules for calculation, display, and plotting of temperature, conductivity, pressure, auxiliary sensor data, and derived variables such as salinity and sound velocity.



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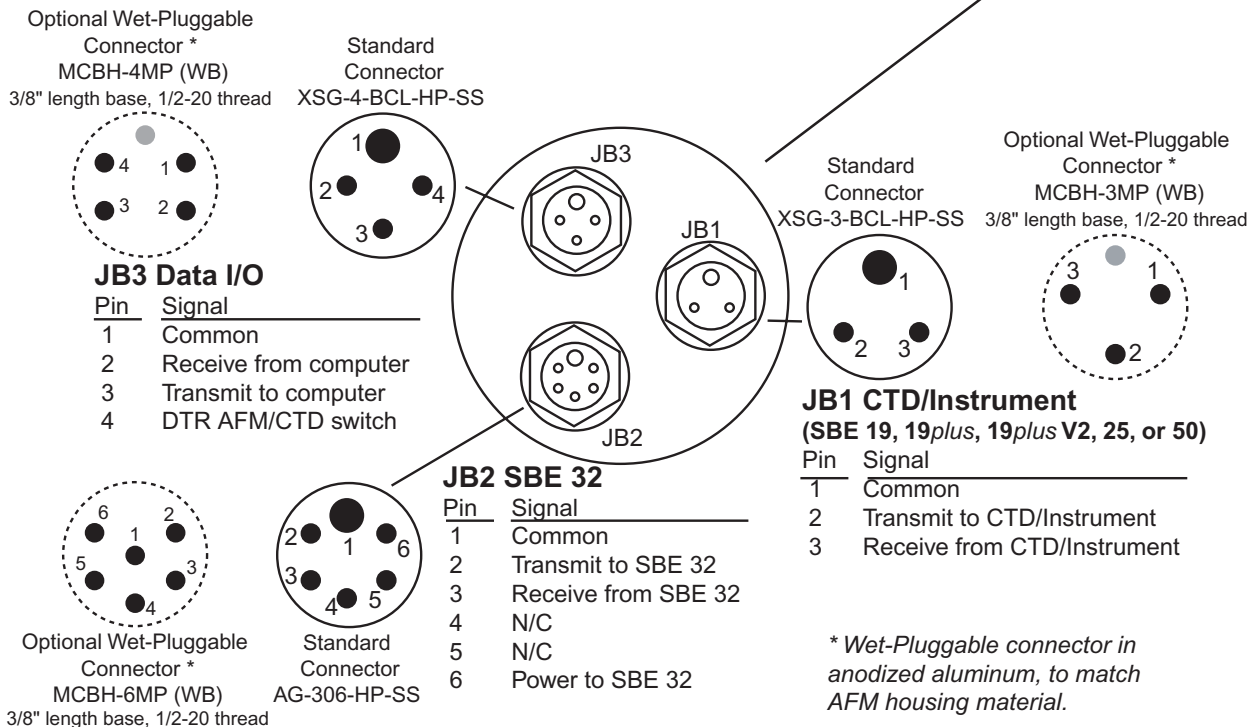
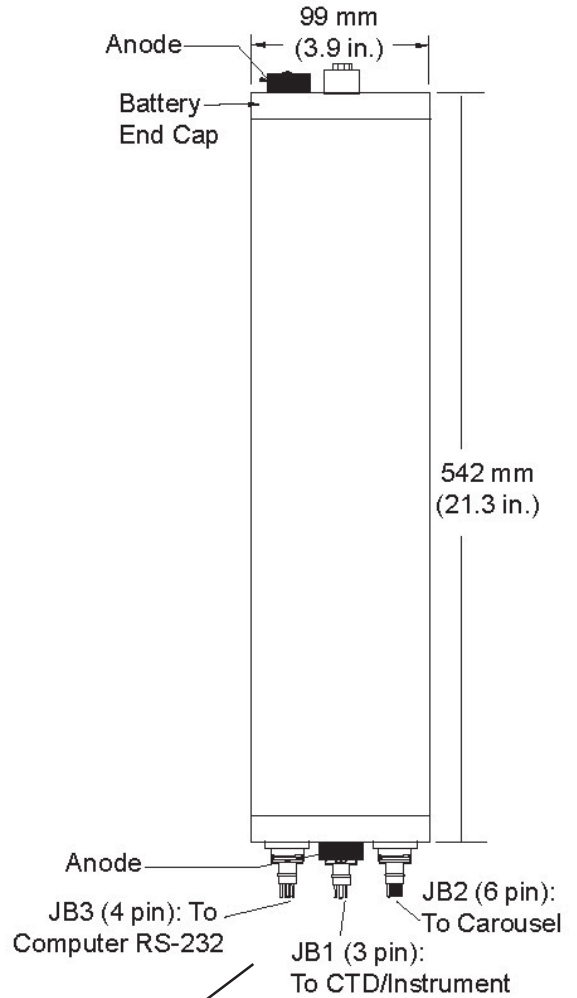
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SPECIFICATIONS

Memory	64K byte static RAM memory
Data Storage	Memory space for 1 cast (24 bottles maximum). AFM memory records for each bottle fired: — (if used with a CTD) Bottle sequence and number, date and time, firing confirmation, battery voltage, scan number of first of 5 CTD scans, and 5 scans of CTD data — (if used without a CTD) Bottle sequence and number, date and time, firing confirmation, and battery voltage
Real-Time Clock	32,768 Hz TCXO accurate to ± 1 minute/year
Internal Batteries	
Standard:	9 alkaline D-size batteries (Duracell MN1300, LR20)
Optional:	rechargeable 9-cell NiMH or Ni-Cad battery pack
Current	
Quiescent Current:	30 microamps
Operating Current:	Not armed - 3 milliamps Armed, Carousel capacitor charged - 160 milliamps Armed, Carousel capacitor charging - 300 milliamps
Battery Endurance	Approximately 60 hours for alkalines, 45 hours for NiMH, and 25 hours for Ni-Cads
Materials	Anodized aluminum housing rated at 6800 meters (22,300 feet), with zinc anode protection

Weight	
In air:	8.1 kg (18 lbs)
In water:	4.1 kg (9 lbs)



* Wet-Pluggable connector in anodized aluminum, to match AFM housing material.

