

DAS System Specifications

System

1. The system shall be able to operate autonomously (without operator intervention) for 1 to 2 months.
2. The system shall be deployable from the research vessel R/V David Packard or a similarly equipped ship. The package's desired deployability weight is 300 lbs (wet weight).
3. Maximum dry weight of package 2000 lbs. Limited by an expected working load of cable.
4. Maximum size (limited by A-frame height).
5. The fiber optic cable must lie flat such that it is mechanically coupled to the seafloor. Or, sufficient bend radius to couple to a terrain with given characteristics.
6. The system shall record data during significant seafloor events such as a sediment flow.
7. The system shall resolve seismic waves with a frequency range of 0 - 20 Hz.
8. The system shall resolve seismic waves with a spatial resolution of 5 meters.
9. The system shall be deployable to depths of 1000 meters (for the initial design).
- 10.

Mechanical

1. The DAS instrument and related electronics shall fit into a Titanium spherical pressure housing; ID: TBD, inch; OD: 17 inch (see mechanical drawing)
2. The DAS system must be mounted robustly enough to withstand deployment and recovery. Any issues with optics in the DAS unit with linear acceleration (<4g), vibration?
3. The DAS system shall be capable of operating in any orientation to Earth's gravity field.
4. The DAS system shall be capable of operating at likely temperatures on the seafloor 2 deg C (in 5-15% humidity non-condensing environment). (Required).
5. The optical interface to the Sintela DAS shall be through the same type of fiber connector used to terminate the MARS optical cable (TBD, probably SC). (Desirable).
6. (Desired)

Electrical

1. The system shall operate from the existing battery design for 17" pressure housings. Desired voltage range = 24V - 32 V.
2. The available energy of the system shall be limited to 30 kWh.
3. The system shall be capable of shutting down gracefully in case the energy from batteries is depleted before recovery.
4. Maximum allowed RTC drift 2 sec per month of deployment. Baseline: 1 sec/month=0.4 PPM. (Required).

Software

1. The user shall be able to set the instrument in "deployment mode" via an Ethernet connection (Required).
2. Ability to adjust no-motions/ recording threshold when deployed (Desired).

3. The user shall be able to connect with the system while deployed via Ethernet and retrieve instrument status (Required) and data (Desired).
4. The instrument shall record data to non-volatile memory. (Required).
5. The instrument shall possess the storage necessary for all data to be saved when triggered and recording close to continuously. (Desired).
6. The system shall support user applications that can alter the attributes of the primary Sintela application during deployment (Desired).
 - a. The attributes specified via the primary interface.
- 7.