

Doppler Volume Sampler (DVS) FAQs

1. What's the biggest difference between a DVS and a Workhorse?

Both are profilers, but DVS is built on a newer generation of electronics that will allow communication without necessarily interrupting the sampling program of a deployed DVS. For example, if you have an inductive communication link with a deployed DVS you can query the DVS for its last measurement, or even tell it to take additional measurements, all without interfering with it taking the next pre-programmed measurement. For a Workhorse, to accomplish this you would need to interrupt the program to communicate with it, then redeploy it when ready.

2. "Sheer's the point", or why deploy a profiler where I would ordinarily deploy a single point current meter?

For many reasons, but primarily because any deployment of single point current meters implicitly assumes that the single measurement is representative of a larger area, or at a minimum assumes that the true vertical current profile varies linearly between the measurement locations. Profiling over a short range near each instrument provides an additional check on the accuracy of this assumption.

3. What is a "sample"?

In order to achieve an accurate measurement in as little time as possible, DVS utilizes a new mode wherein it will ping asynchronously on all sensors as rapidly as possible for one full second. This one second measurement is termed a "sample" and it will consist of as many pings as can be made in that one second – assuring a measurement accuracy of better than 1 cm/s with each sample. In regions where the environment is changing significantly from second to second (i.e. near the surface) the DVS can average multiple samples into an ensemble.

4. What kind of communications does DVS support?

The DVS is equipped at the factory to have either an Inductive Modem Module (IMM) link from Sea-Bird Electronics (SBE) or a RS232/RS422 serial communications link. The IMM allows a user to inductively communicate to the DVS through a jacketed mooring wire to take advantage of the capability of DVS to communicate without interrupting data acquisition.

5. What type of mooring hardware can RDI supply?

We supply optional mooring clamps that are keyed to the instrument housing in order to mount the DVS to the mooring line in a repeatable way. The clamps are designed to secure the DVS to mooring lines of diameter ranging from 1/2 to 3/4 inch.

6. Why use a vane?

Moored instruments have been known to be damaged and/or report biased measurements when exposed to the severe strumming that can occur in a mooring line exposed to strong currents. The vane is designed to physically dampen the movement of the instrument to both protect it from physical damage and to reduce the potential for bias.

7. How was the 0.005°C accuracy specification for the optional high resolution thermistor determined?

Thermistor assemblies and electronic boards are delivered from Sea-Bird Electronics (SBE) as matched sets calibrated at SBE's facilities to an accuracy of 0.001 °C. However, these sensors must be handled and assembled at RDI, which can introduce an error of up to 0.002°C. Lastly, SBE's history shows that this sensor will drift no more than 0.002°C in a ten year time frame. Our specification of 0.005°C comes from summing these potential errors.