



- Modular design consists of a core sample processor (ESP) that hosts analytical models.
- Core ESP is the primary interface between the environment and a set of DNA and antibody-based sample processing technologies applied onboard the sampler in real-time.
- Samples can be archived for a variety of analyses after the instrument is returned to a laboratory.
- For more information about this sampler, see the ESP pages at mclanelabs.com.

Environmental Sample Processor

Application:

The Environmental Sample Processor (ESP) provides *in situ* collection and analysis of water samples from the subsurface ocean. An electromechanical fluidics system, the ESP collects discrete water samples, concentrate microorganisms or particles. Automatic application of molecular probes identifies microorganisms and their gene products. Remotely retrieves and analyzes data in near real-time.

Sample schedule options:

ESP scheduler controls event frequency. Various phases can be programmed with different protocols and sampling parameters depending on target organisms and reagents deployed with the system. Standard SHA deployments perform up to 44 phases for deployments lasting up to 3 months.

Expandable capabilities:

Expandable capabilities allow integration and control of secondary analytical modules for parallel processing of collected samples.

Customized hardware and software:

Currently supports the Satlantic ISUS nutrient sampler and the SBE 16plus CTD. Collects contextual sensor data according to scheduling options. Open platform allows for full customization of molecular probe technologies and processes, providing a framework for custom probe development and deployment.

Deployment:

Optional aluminum ESP pressure housing rated to 50 meters depth for high energy, subsurface ocean deployments (dynamic damping of wave energy and surface currents required for these conditions). Deployments at various depths are possible depending on the accompanying instrument housing.

Environmental Sample Processor Specifications

DIMENSIONS:

Core: 82cm H x 56cm Diameter

Pressure Housing: 94.6cm H x 64.8cm Diameter

**WEIGHT IN AIR
(APPROX):**

Core and Pressure Housing: 102.1kg bouyant

**WEIGHT IN SEAWATER
(APPROX):**

Core and Pressure Housing: 150kg bouyant

METHODOLOGY:

Assay Molecular Methods: Sandwich hybridization (SHA) and
Immunosorbent assays (cELISA)

Puck Capacity: 132 pucks (up to 44 phases)

CONTROLLER:

Power: 10-16VDC

OPERATIONS:

Maximum depth: 50m with optional Pressure Housing

Operating temperature: 4° to 29° C (reagent dependent)

Maximum deployment time: 3 months