



SEA-BIRD GPCTD & WETLabs PUCK :



***New sensors for GLIDERS,
sources of error and
integration***



EMS : ¿WHO are WE ?

Oceanographic Engineers with experience in :

- **Operational oceanography**
- **System integration and engineering**
- **Instruments, sensors, systems**
- **Vehicles, platforms, buoys, ships**
- **Cables, connectors, housings, electronics**
- **Customer support**
- **Tech and commercial reps**

www.ems-sistemas.com



EMS S.L. / S.A.R.L.: ¿WHO are WE ?

Offices / Companies in Barcelona and Paris

Exclusive REPS for Spain, France of :

***Sea-Bird, WETLabs, Turner Designs,
Biospherical, Chelsea, Sequoia, DA,
Technicap, OSIL, ISE, DOE, Link-Quest,
DSPL, VideoRay, Bluefin, Liquid Robotics,
FLOTEC, Falmat, SOSI, Subconn,
ATLAS Hydrographic, Ocean Science,
Paroscientific***

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¿Our mission and vision?

Relevant Advanced Technical Solutions for :

- **Marine and Aquatic Research**
 - **Monitoring of the Marine Environment**
 - **Underwater exploration**
-
- **Long-term customer satisfaction**
 - **Scientific and technical expertise**
 - **Up-Front, Leading-Edge, Innovation**



¿Our customers?

Marine Research and Exploration

**Spain, France, Portugal,
Growing : INTERNATIONAL !**

- **Monitoring and Research Agencies**
- **Universities, Institutes, ORGs**
- **Offshore and Survey**
- **Industry**



NEW SENSORS for GLIDERS

**SBE GPCTD, WETLabs PUCK,
Turner Designs CYCLOPS :**

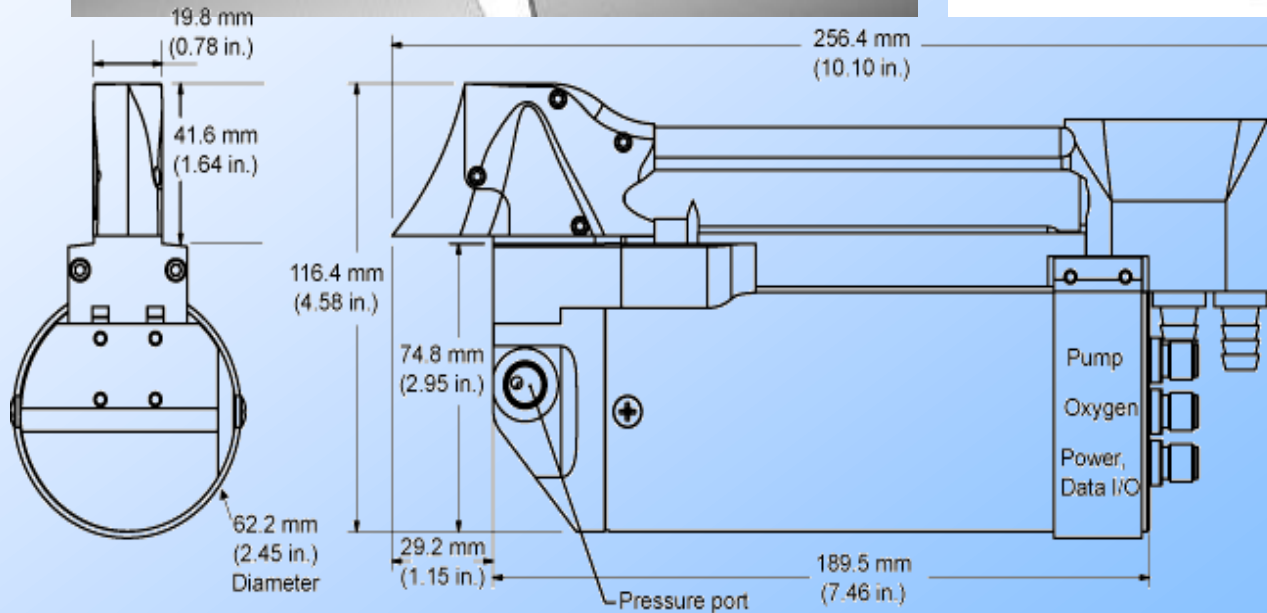
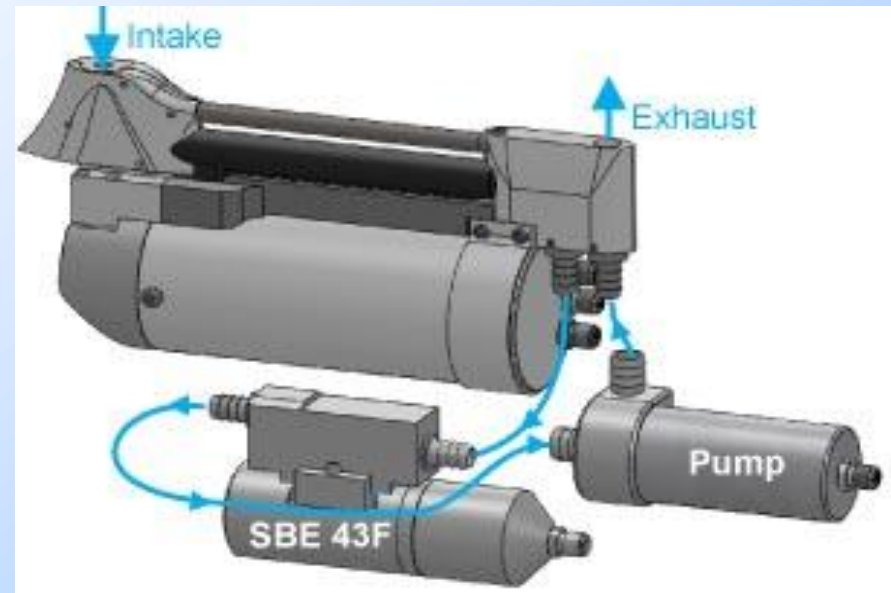
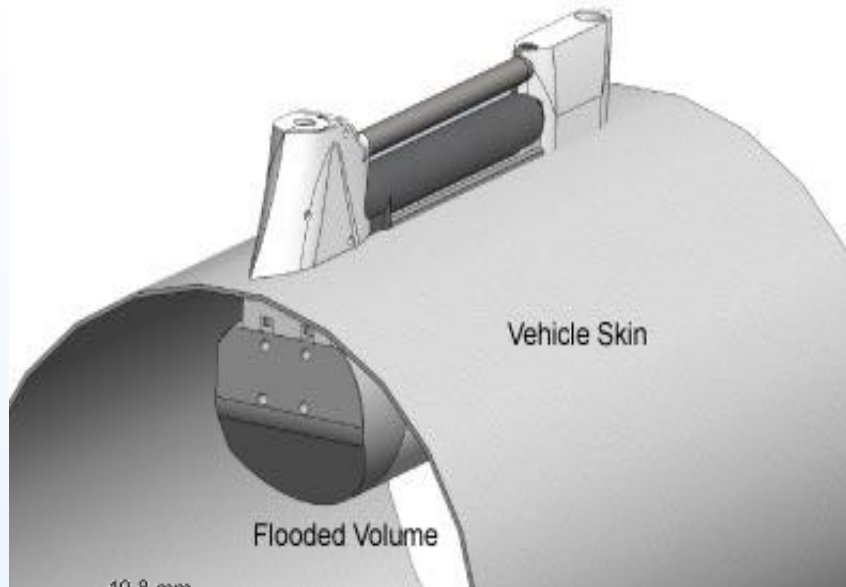
New PHILOSOPHY :

- **VEHICLE INDEPENDENT SENSORS**
 - **EASY / FAST RECAL**
 - **INTERCHANGEABLE**
- **BETTER / BEST POSSIBLE DATA**



NEW SENSORS for GLIDERS

SBE GPCTD





NEW SENSORS for GLIDERS

SBE GPCTD features :

- **Pumped & ducted CTP (optional DO SBE43F)**
- **350m (200g) and 1500m (400g) versions**
- **Antifouling cylinders**
- **Streamlined in- and out-take sail**
- **Argo-float CTD 'evolution' and experience**
- **Improved dynamic accuracy**
- **8-20V DC / 175mW @ 1Hz / 1 D cell = 114h**
- **4 sampling modes**
- **8 MB = 699000 samples of CTP @ 1Hz (194h),
559000 samples of CTPDO (155h)**



NEW SENSORS for GLIDERS

SBE GPCTD features :

- **4 sampling modes :**
 - Continuous Sampling
 - Fast Interval Sampling
 - Slow Interval Sampling (CTD only)
 - Spot Sampling
- **Specific SBE commands :**
 - RS232 / 9699 Baud (changeable)
 - XML format
 - Seaterm ...
 - OutputFormat = (0,1 or 2)



NEW SENSORS for GLIDERS

Vehicle / 'package'-induced errors / concepts :

- **Glider flight dynamics**
- **Boundary layers (old water contaminated by the vehicle)**
- **Wakes**
- **Recirculation, Bernoulli pressure diffs**
- **Flow rate independency**
- **Thermal mass error (C-cell placement)**
- **Bubbles and debris ingestion**
- **Constant pumped and ducted flow = superior dynamic accuracy**



NEW SENSORS for GLIDERS

WETLabs PUCK



- D 63 mm X L 50 mm / 20 g / 600m
- 7-15V DC / 80 mA / RS232 / 19200 Baud / 8Hz
- FL, FLNTU, BB (470, 532, 650 nm @ 117°)
- VSF (OBS @ 100, 125 and 150°)
- Triplet (3xFL, 1xFL+2xBB, 1xBB+2xFL)



NEW SENSORS for GLIDERS

WETLabs PUCK



FL available in :

**Cl-a, CDOM, PC, PE,
Uranine (Fluorescein), Rhodamine,
'custom'**



NEW SENSORS for GLIDERS

Turner Designs CYCLOPS C7



available in :

**Cl-a, CDOM, PC, PE,
Fluorescein, Rhodamine
Turbidity, Optical Brightness
Crude Oil , Refined Oil, BTEX,
custom (290-900nm)**



NEW SENSORS for GLIDERS

Turner Designs CYCLOPS C7

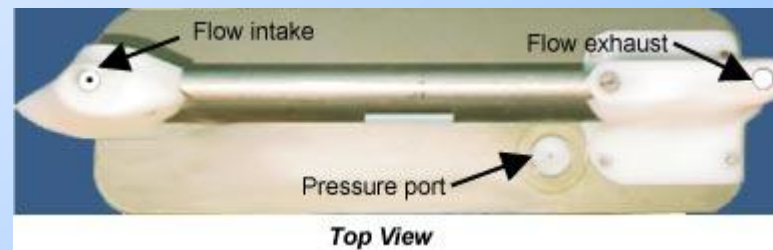
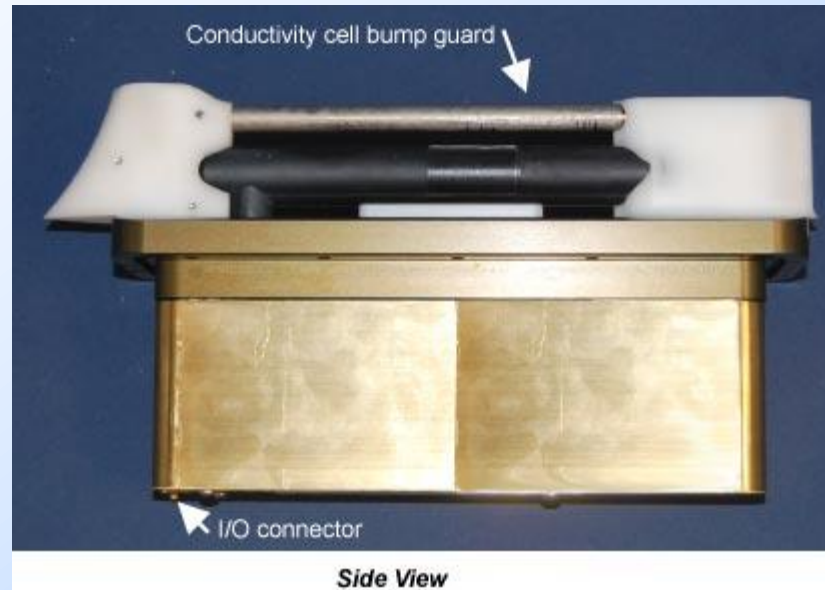
- D 22,3 mm X L 150 mm / 160g / 600m
- 3-15V DC / <300mW / analogue out
- Flow-through cap optional





NEW SENSORS for GLIDERS

INTEGRATION : Slocum

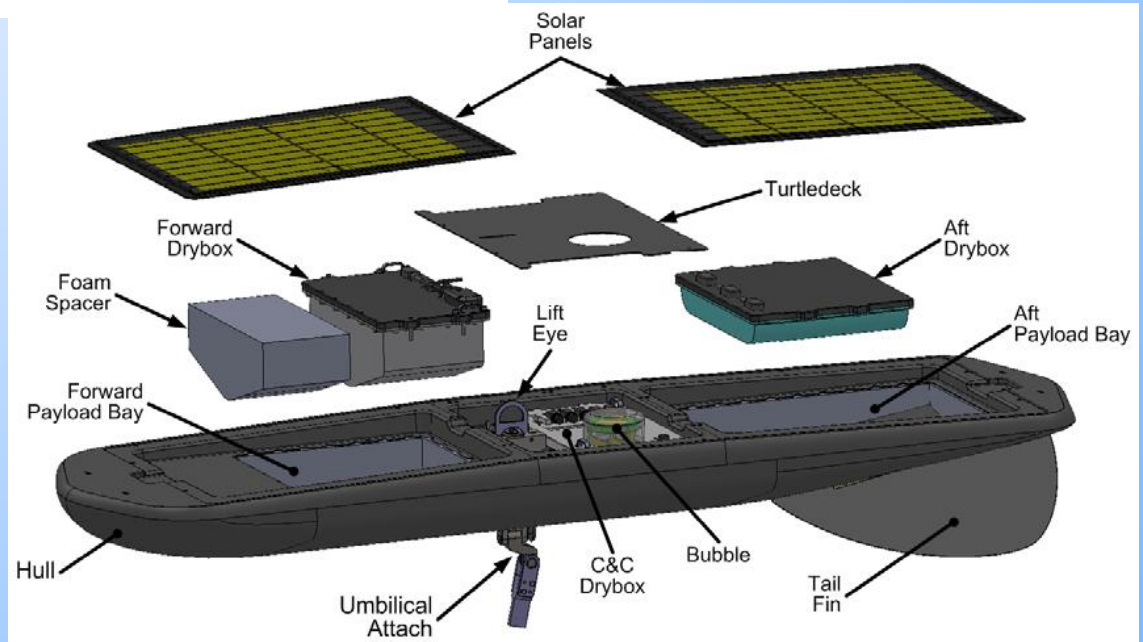
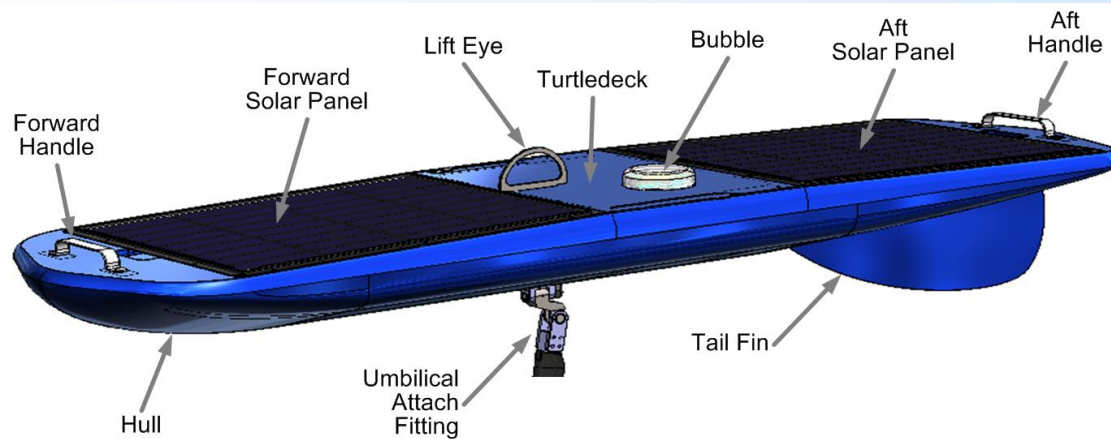


CTD only, integral pump, cal max depth 10m



NEW SENSORS for GLIDERS

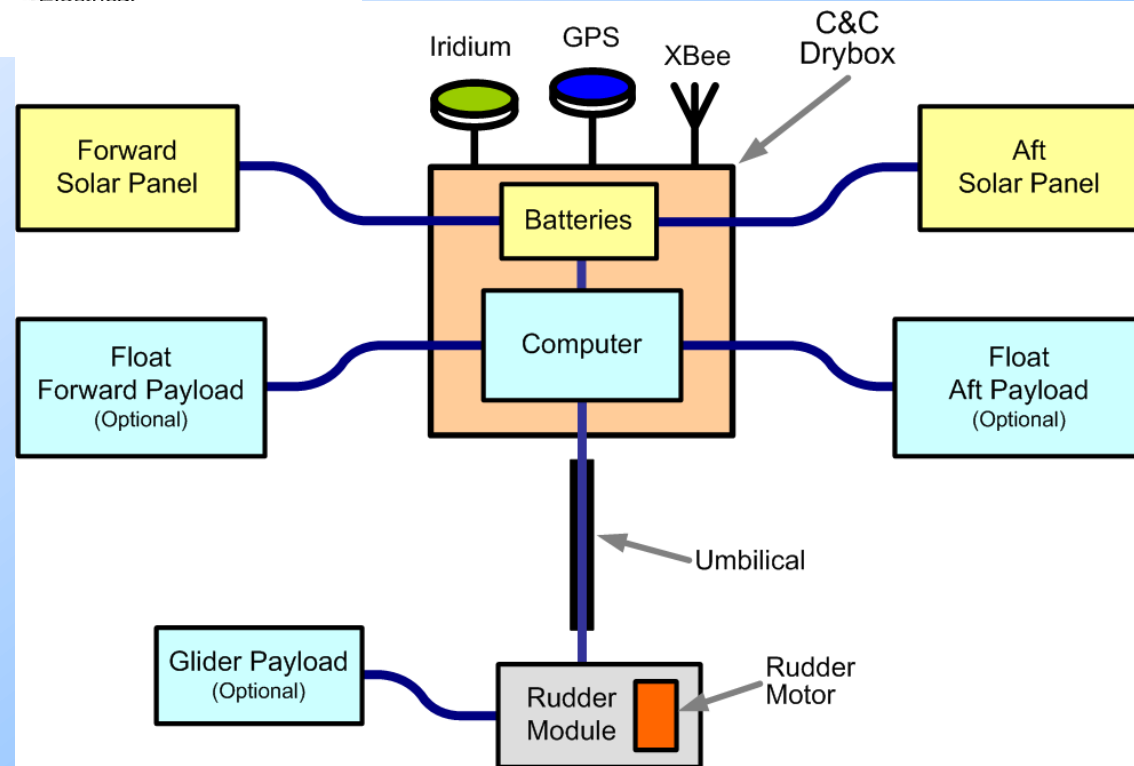
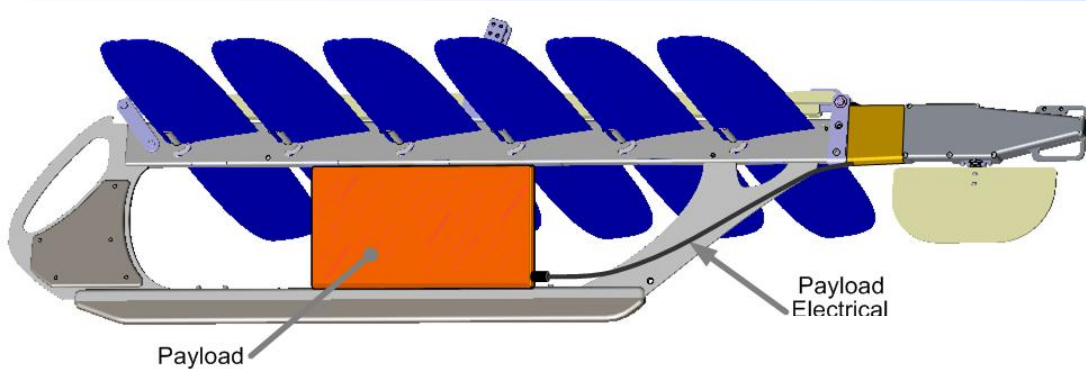
INTEGRATION : Wave-Glider





NEW SENSORS for GLIDERS

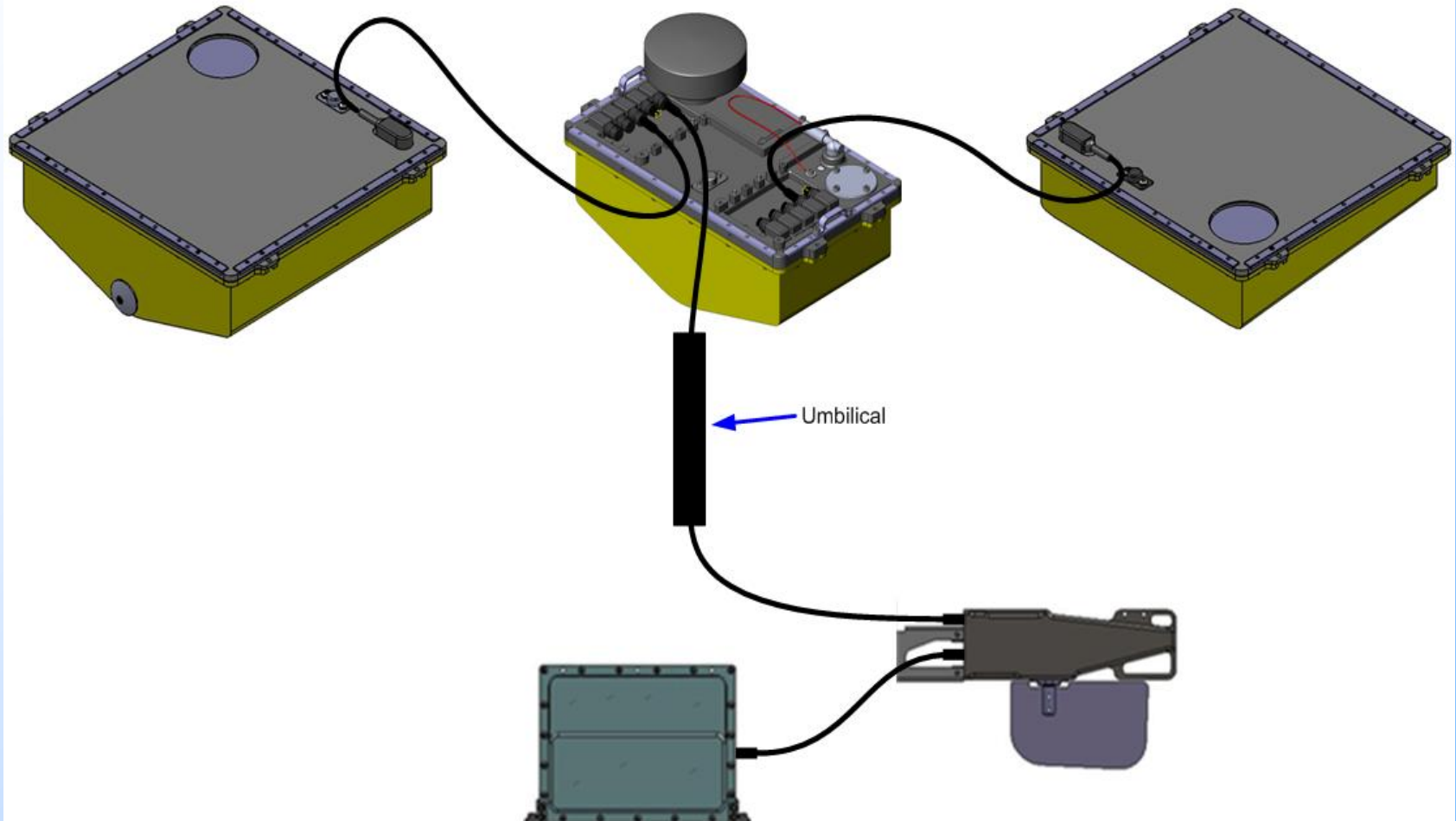
INTEGRATION : Wave-Glider





NEW SENSORS for GLIDERS

INTEGRATION : Wave-Glider





NEW SENSORS for GLIDERS

INTEGRATION





NEW SENSORS for GLIDERS
Local INTEGRATION SUPPORT from
EMS Barcelona (shops, facilities)
principals in the US, glider manufacturers

GPCTD DEMO UNIT AVAILABLE

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