



# InterOcean systems, inc.

## UNDERWATER WINCHES



### CABLE HANDLING & CONTROL SYSTEMS for VERTICAL PROFILING APPLICATIONS

- FULLY AUTOMATED SYSTEM
- LONG TERM DEPLOYMENT
- 300M DEPLOYMENT DEPTH
- UNDERWATER MATEABLE

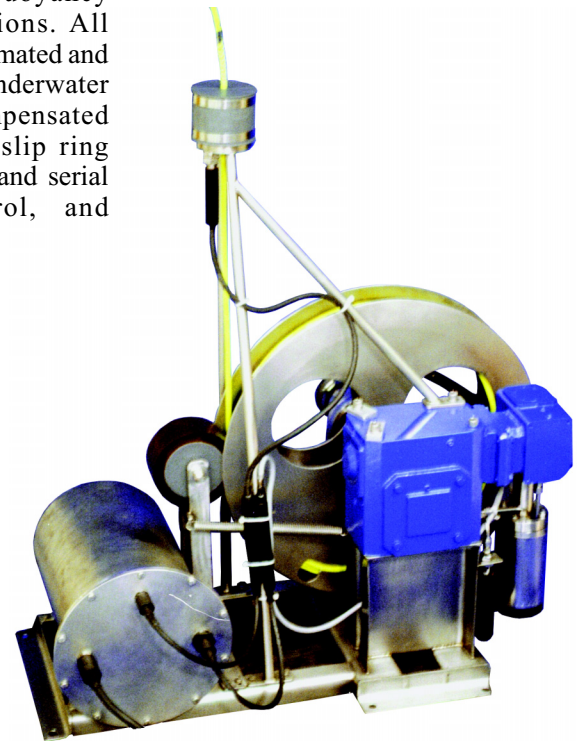
InterOcean's line of underwater winches are designed for use in any vertical profiling application. They are available separately (as a modular component), or as part of a complete InterOcean Vertical Profiling System (VPS). These rugged vertical profiling winches are offered in a range of sizes, with a variety of capabilities, for integration within an underwater ocean observatory or as an autonomous stand-alone system. VPS winches are configured for either integral or autonomous applications. The "Integral" VPS configuration is intended for operation within a cabled underwater network, with external power supplied by the network. The "Autonomous" configuration is a stand-alone system using a self-contained power source located on or near the winch foundation. The customer may specify power source and duration of deployment. Alternatively, IOS can provide the appropriately sized power source for the demands of the system deployment (e.g. one-year, autonomous operation). VPS winches are sized and rated for deployment in coastal regions in water depths down to 300M, or may be installed on moored subsurface buoyancy platforms in deep water applications. All InterOcean VPS winches are fully automated and feature stainless steel construction, underwater mateable connectors, pressure compensated (oil-filled) components, premium slip ring assemblies, regulated power systems and serial interface for diagnostic, control, and command functions.



**VERTICAL PROFILING SYSTEM**  
*Integral VPS* system photo featuring: InterOcean model VPS25-1 U/W Winch, S4VP3 Oceanographic Multi-Parameter Data Collection System, & Sub-Surface Telemetry Buoyancy unit.

#### **The INTEROCEAN LEGACY**

InterOcean continues to build upon decades of experience designing and fabricating cable handling & control systems, instruments and underwater equipment. We've supplied hundreds of marine duty winches with drive system output power from fractional to 500 horsepower. Unique winch designs include umbilical handling systems for deployment & recovery of manned one-atmosphere diving suits; deployment & retrieval of acoustic arrays; underwater Linear Traction Units (LTU); and other mission critical applications. With research, industrial, and military winches deployed on vessels worldwide, InterOcean offers a proven line of standard and custom design winches – for applications above, & below, the water surface.



#### **VERTICAL PROFILING WINCH** **IOS MODEL VPS25-1 (*Integral*)**

Designed for simple 'plug & play' incorporation into any underwater observatory. This model operates on 48 VDC and is designed for 1 Year Deployments in 2 knot currents at 35m depth. Also available in *autonomous* configuration with self-contained 1-year power supply.



**InterOcean systems, inc.**

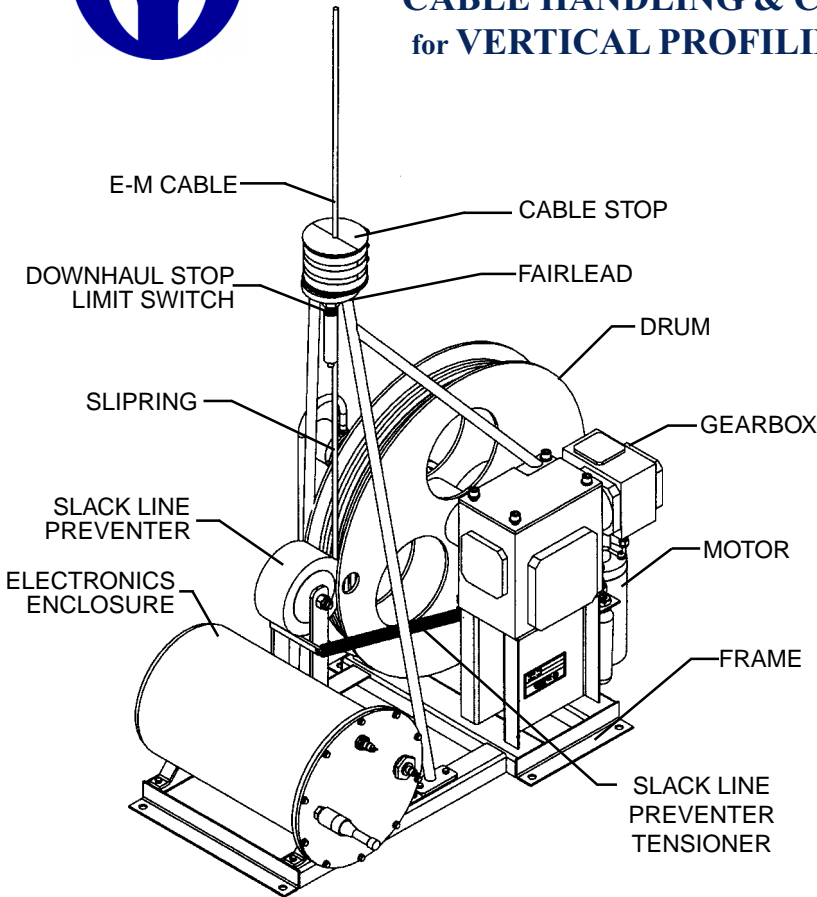
3540 Aero Court San Diego, CA 92123 USA tel (858)565-8400 fax (858)268-9695 sales@interoceansystems.com

[WWW.INTEROCEANSYSTEMS.COM](http://WWW.INTEROCEANSYSTEMS.COM)



# UNDERWATER WINCHES

CABLE HANDLING & CONTROL SYSTEMS  
for VERTICAL PROFILING APPLICATIONS



### Common Specifications

Winch Cable: Type 1: Polyurethane Jacket, one fiber optic line plus DC power lines (18 AWG).  
Type 2: Polyurethane Jacket, 2 pair shielded (24 AWG) plus DC power lines (18 AWG).

Interfaces:  
• Power Input: 48 VDC.  
• Winch Control: ASCII commands for winch pay-out, pay-in and stop (applies to integral VPS only).

Options:  
• Winch Platform Video Camera with pan, tilt, and zoom  
• Winch Sensor connections – for parametric measurements at the seafloor.

UW WINCH MODEL	Service Depth (meters)	Cable Speed (m/min)	Motor Power (HP)	Recommended Net Buoyancy (kg/lb)	Max. Power Consumption (watts)	Cable Dia. Break Strength Cable Type	Max. Ocean Current
VPS25-1 (Integral)	25	5	0.6	68/150	145	9mm (0.35") 2,000 lbs Type 1	1.5 m/s (3 knots)
VPS25-2 (Autonomous)	25	5	0.6	68/150	145	9mm (0.35") 2,000 lbs Type 2	
VPS100-1	100	10	2	150/330	640	9mm (0.35") 2,000 lbs Type 1	1 m/s (2 knots)
VPS100-2	100	10	2	150/330	750	13mm (0.50") 10,000 lbs Type 2	
VPS200-1	200	10	1	68/150	350	9mm (0.35") 2,000 lbs Type 1	1 m/s (2 knots)
VPS200-2	200	10	1	68/150	360	13mm (0.50") 10,000 lbs Type 2	
VPS300-1	300	10	2	150/330	670	9mm (0.35") 2,000 lbs Type 1	
VPS300-2	300	10	2	150/330	730	13mm (0.50") 10,000 lbs Type 2	

Specifications are subject to change without notice.

Notes: Service Depth is based on motor horsepower and winch cable capacity. Autonomous winches are designed to bring the Sub-Surface buoy to the surface. Maximum Power Consumption for pay-in at maximum ocean current.

### Features:

#### Construction

- 316L Stainless Steel (drum, frame, motor, electronics enclosure).

#### Motor

- DC brushless, submersible motor.
- Stainless steel housing.
- Filled with mixture of water and anti-freeze, and pressure compensated.
- Operation to -10 deg C.

#### Gear Reduction

- Two stage worm-gear reducer.
- Oil-filled and pressure compensated.

#### Braking

- Provided by worm gears — no external braking required.

#### Winch (EM) Cable

- Polyurethane jacket for low drag and low weight.
- Internal Kevlar braid strength member for mechanical strength while reducing overall diameter and drag.

#### Electronics Enclosure

- Contains motor controller and drive command processor — optional system processor is available.
- InterOcean-built digital processor accepts remote ASCII commands for motor controller (RS-485 interface).
- Single power input for motor, motor controller and sensors.
- Power to sensor electronics in the profiling sensor package is provided through the slip-ring.

#### Slip-Ring

- Water-proof and pressure compensated.
- Provides transmission of power and communications to profiling sensor package.

#### Operation

- Winch operation can be controlled from a shore base station or automatically by the optional system processor.
- Feedback for sensor package positioning is provided by a pressure sensor in the sensor profiling package — this method provides accurate positioning relative to the surface regardless of water current variations.
- A water-proof limit switch in the fairlead signals the drive command processor to stop the motor.
- Cable Stop on cable is fail-safe mode for stopping winch (via over load current shut off) should the limit switch fail.

### Design Criteria:

Vertical profiling applications and underwater environments vary greatly. There are a number of elements that influence the winch design attributes best suited for each user's unique requirements. Factors to consider when selecting the proper winch design include Deployment Depth, Ambient Conditions (i.e. Current Max. / Avg.), Profiling/ Retrieval Speed, Buoyancy & Tilt of Payload, Source of Power, etc.

*Please phone InterOcean for application assistance, and permit us to recommend the optimal underwater winch solution for your system deployment needs.*



**InterOcean systems, inc.**

3540 Aero Court San Diego, CA 92123 USA tel (858)565-8400 fax (858)268-9695 sales@interoceansystems.com

[WWW.INTEROCEANSYSTEMS.COM](http://WWW.INTEROCEANSYSTEMS.COM)