



DV_{bot}

HD version

Detailed system description





1 System overview

DVbot, a 300 msw depth-rated miniROV with larger inspection ROV capabilities.

DVbot system main components:

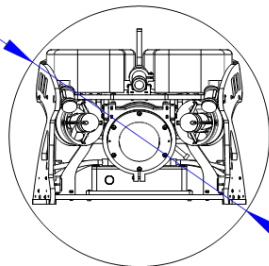
- Remotely Operated Vehicle (ROV)
 - Hand portable – 24 kg
 - 1 x dome camera Full HD 1080p
 - 1 x external bullet camera (Option)
 - 2 x powerful dimmable LED spot lights
 - 6 thrusters : 4 horizontal vectored – 2 vertical
 - Multi sensors : heading – depth – water temperature
 - Survey suite ready: altimeter, multi-beam sonar, acoustic camera, etc.
- Umbilical (300 m)
- Surface control unit (SCU) with 15" video display and overlay
- Shipping and transportation boxes
- Numerous options

2 DVbot System specifications

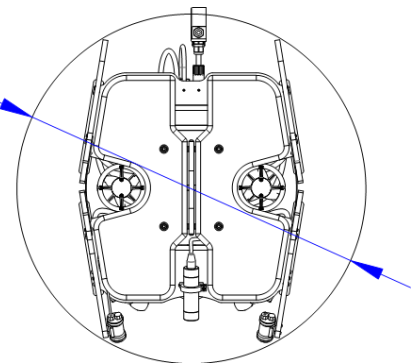
2.1 Vehicle

Depth rating	300 msw / 1000 ft
Size (L. W. H. in mm)	597mm, 450mm, 314mm

∅550



∅700



Weight in air (standard configuration)	24 kg
Weight in water (standard configuration)	neutral
Payload (standard configuration)	4 kg. For larger payload, additional buoyancy can be provided



Materials

Frame	PEHD (Polyethylene – High Density)
Buoyancy	Micro cells syntactic foam
Electronic pod	Anodized aluminium
Junction box	Body: POM-C (Polyoxymethylene) Flanges: Anodized Aluminium

Operating T° range 0°C to 42°C (water)

2.2 Thrusters

Number of thrusters	4 vectored in horizontal plane, 2 in vertical plane (all identical)
Thruster type	Potted DC brushless motor, 76 mm propeller in nozzle
Output (12 volts)	7.8 lbf (3.55 kgf) forward 6.6 lbf (3.00 kgf) backward
ROV bolard output	12kgf (standard version without payload)

2.3 Video & Lights

Number of cameras 2 (1 standard + 1 option)

Both cameras cannot be displayed at the same time on the surface control unit display (manual selection).

Camera 1 (main)	High Definition HD 1080p – Tilt HD Color camera under dome
Focus	Fixed
Zoom	N/A
Resolution	1920 x 1080 pixels (Full HD)
Sensitivity	0.001 lux
Tilt angle	+ 80° / - 80°

Camera 2 (Option)	rear camera (HD camera)
Focus	Fixed
Zoom	N/A
Resolution	1920 x 1080 pixels (Full HD)
Sensitivity	0.001 lux

**Lights**

Number of lights	2
Type of lights	LED dimmable
Power	15 watts 1200 lumens unit.
Color T°	6200 °k – Daylight white
Beam angle	135°
Dimmer	0 - 100 %

In standard configuration, DVbot ROV is fitted with two LED spot lights.

A set of 4 Led lights can be supplied to be fitted on the vehicle. Two control knobs on the SCU allow controlling the two sets of two lights independently.

2.4 Embedded sensors

Heading:	Electronic tilt compensated compass
	Resolution 0.1°
	Accuracy better than 2% after calibration
Depth	Range 0-30 bar – resolution 30cm
Temperature	Water temperature, CCU Internal temperature
Water ingress	Sensor in CCU and Power Junction box

2.5 Payload interface

DVbot system is add-ons ready:

2 external payloads can be added on the ROV (12Vdc available on the Payload bulkhead connectors + 2 dedicated twisted pairs for RS485 or VDSL link)



2.6 Surface Control Unit [SCU]



Customized, rugged, watertight (IP64 open / IP 65 closed) and shock proof box (Polypropylene).

Size L. 607mm, W. 475mm, H. 275mm

Weight 25 kg

The surface Control unit allows to power supply the vehicle and to control it.

Vehicle control Three axis joystick for thrusters control (X-Y-RZ motions)
One axis joystick for Z motion
Push buttons for auto functions (Heading, Depth, Altitude)

Camera control Camera selection
One axis joystick for Tilt up and down

Lights control Dimmer 0 to 100%

Video display 15" Colour LCD daylight readable located in the lid (1000 cd/m²)

HDMI video output For external additional HDMI video monitor or other accessories (option – not supplied)

USB port One For Maintenance and One for Data Transfer / Recording



Overlay system

Alphanumeric display of navigation and vehicle parameters:

- Compass heading
- Depth
- Water temperature
- Altitude (if altimeter is fitted on the vehicle)
- Auto pilot functions status
- Umbilical turns counter
- Date and time
- Alarm status
- Customized string text

The SCU includes an internal DVR - Digital Video Recorder. The AVI files can be upload through TCP link by connecting an external PC on the Ethernet port.

The following functions are available on the SCU :

- Auto heading
- Auto Depth
- Auto Altitude if altimeter sensor is present (proposed as option).

The SCU case includes the Power supply unit and the permanent insulation controller for the operator protection.

Power requirement	110-230VAC - 50-60 hz – 2 kw
Recommended generator Inverter	Power \geq 3.5 kVA



2.7 Umbilical

Diameter	11 mm
Weight in air	0.085 kg/m
Standard length	300 m (up to 500m in option)
Working load	1000 N (nom.)
Breaking strength	2500 N (max.)
Minimum bending radius	100mm
Outer sheath	Polyurethane (PUR).

The Umbilical is neutrally buoyant in fresh water and slightly positively buoyant in salt water

Umbilical termination is equipped with one power and one data connector.



2.8 Manual reel

Manual reel (standard maximum capacity 300m : 500m capacity as option) with slip ring and 5 meters deck lead to Surface Control Unit in its transportation box

Umbilical length >300m : On demand

Manual reel for Umbilical length >300m : On demand





3 OPTIONS

Different options can be proposed such as **USBL** acoustic positioning, **imaging sonar**, 2 function **manipulator** and its skid, **multibeam** sonar, **3D laser** sensor....

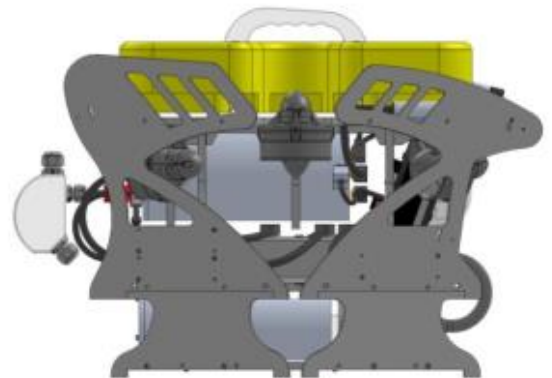
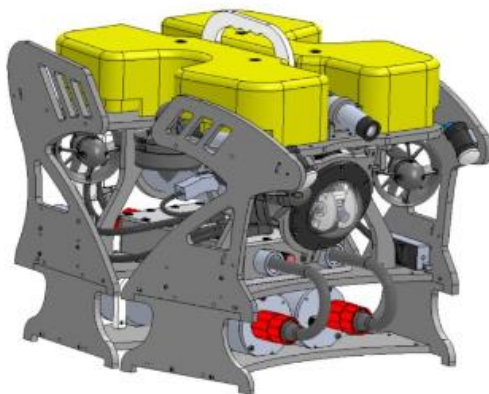
Option : Altimeter:

An altimeter can be installed on the DVbot. If installed the Auto Altitude function can be used (this function can also be used with the Auto Heading function).

Option : Battery operated DVbot:

DVbot can be battery powered (self-powered mode - no power transmission in the umbilical). Only data are transmitted between the SCU and the ROV.

In the battery powered configuration, DVbot is equipped with an onboard battery pack fitted in a dedicated skid and a specific Power junction box.



Embedded battery (2 U/W pods are installed on the ROV) :

- Battery type : Li-Fe-PO4, or Li-ion
- Each battery pack in each pod is equipped with a BMS (Battery Management System).

The Surface Control Unit power supply is provided by a battery pack in order to get rid of external power supply (no generator, no topside power source).

DVbot battery powered system allows an endurance of 2 hours.



4 MANUALS

Operation & Maintenance manual is supplied with our DVbot.

5 SHIPPING AND STORAGE CASES

Shock resistant, waterproof Copolymer case. (including wheels)

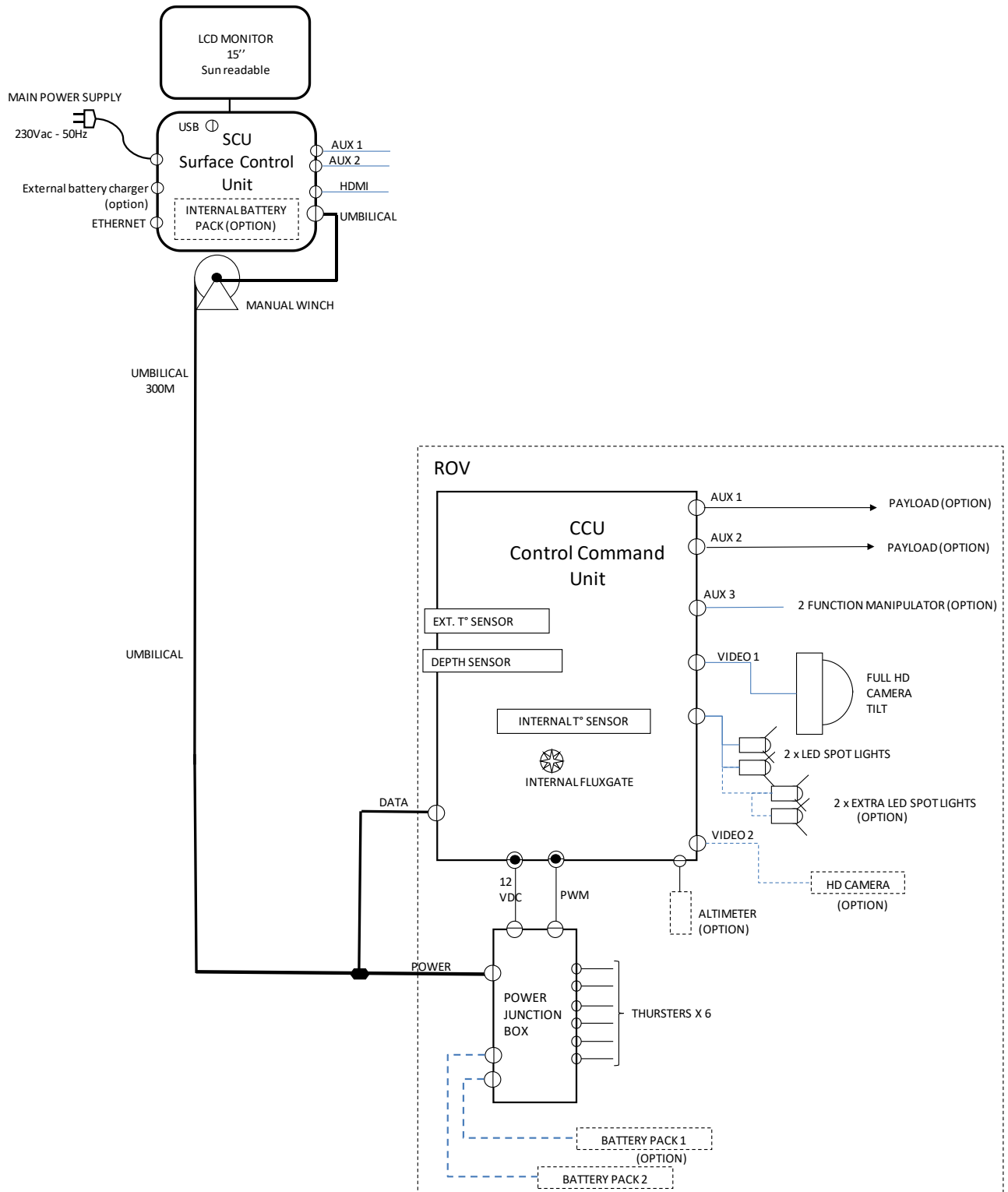
Quantity 2 or 3 if umbilical manual reel (option)

Dimension of the shipping cases : 585 x 810 x 480 mm





6 SYSTEM BLOCK DIAGRAM





DVbot system description	Standard	Option
300 m /1000 ft depth rated vehicle	X	
2 x Transportation and shipping cases for DVbot	X	
[SCU] Surface Control Unit in rugged watertight case c/w 15" LCD video monitor (1000 cd/m ²)	X	
Neutrally buoyant Umbilical	300m	Up to 500m
Manual reel (max. capacity 300 m) c/w 5 m deck cable + Transportation case for umbilical and manual reel	X	
Manual reel (max. capacity 500 m) c/w 5 m deck cable		X
Depth sensor	X	
Heading sensor	X	
Water Temperature sensor	X	
Internal temperature sensor (vehicle CCU)	X	
Digital colour camera (HD – 1080P) in +/- 80° tilt mechanism under dome	X	
Digital Colour (HD – 1080P) camera (Front and rear)		X
Video overlay (embedded in Surface Control Unit)	X	
Set of 2 dimmable 1200 Lumens spot LED light	X	
Set of 4 dimmable 1200 Lumens LED lights (c/w electrical harness)		X
Altimeter + Auto altitude function		X
Two Functions manipulator with skid		X
Tooling skid		X
Removable watertight battery pack + associated junction box & skid + battery pack for SCU.		X
Multibeam 2D sonar 2D		X
Obstacle avoidance sonar (360°)		X
USBL underwater positioning system		X
Cathodic protection measurement system		X
NDT Thickness gauge (ROV mountable)		X
3D laser sensor		X
Complete ballast set	X	
Comprehensive spare parts kit		X
Operation & Maintenance Manual	X	