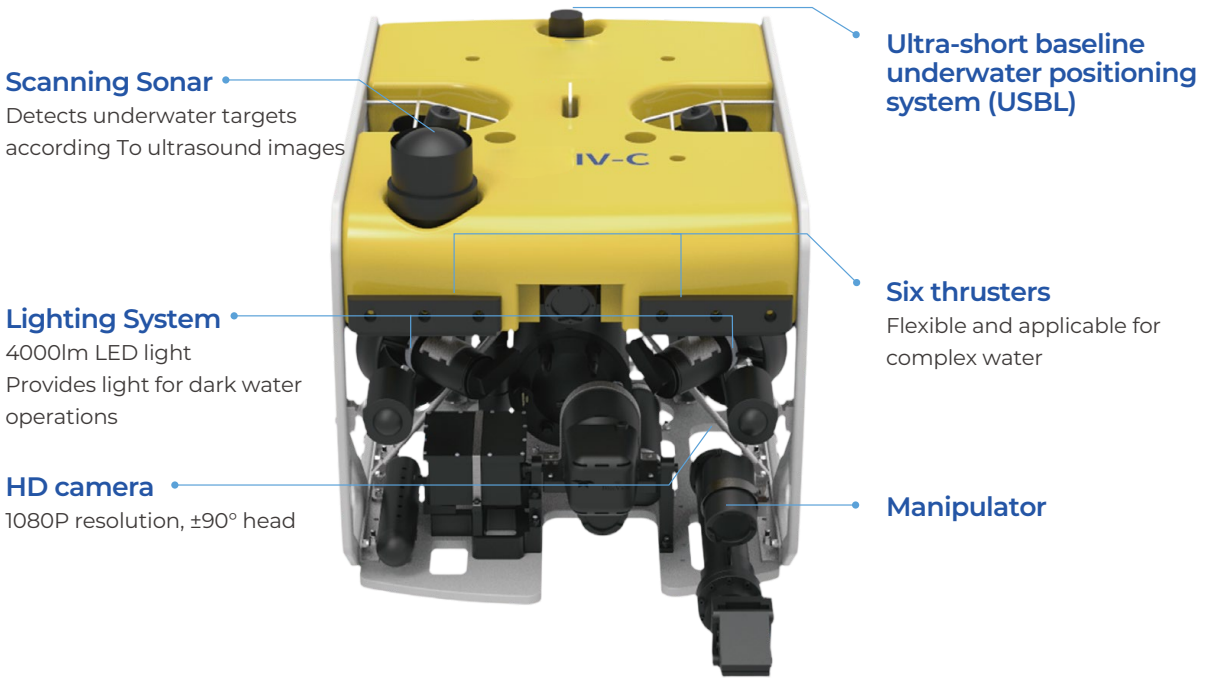
IV-C ROV

APPLICATION

- Superior power performance, adaptable to complex water conditions
- High-end configuration, strong detection ability
- Multi-mission payload, wide adaptability
- Strong commonality, can be use in sea or lake

OVERVIEW

Compared with IV-C ROV has more advanced configurations and stronger expandability, and it has accumulated rich application cases in rescue and salvage, water conservancy and hydropower, ocean ranch, marine scientific research, and other fields, with high reliability and trusted by customers.



PRODUCT FEATURES

Powerful performance

Six thruster adaptable to complex water conditions

Multi-mission payload, wide adaptability

Various sensors and manipulators can be equipped to meet different customer needs.

navigation system. Strong commonality, can be use in sea or lake

Vector layout, balanced force in all directions.

Strong detection ability

Sonar System: multibeam image, single beam scanning, side scanning

Optical System: 1920 x 1080, illumination down to 1/1000th of a degree

Camera System: 2.8mm fixed focus, ±90° head

Illumination system: 4000lm x 2 LED lamps, adjustable brightness

Navigation System: DVL Doppler rangefinder, INS inertial navigation system, USBL ultra-short baseline underwater positioning system, GNSS global satellite navigation system.

APPLICATION

Emergency Rescue

Water conservation and hydropower

Environmental Monitoring

Security and Safety

Scientific Research

Aquaculture

Transport

Offshore Wind Power

APPLICATIONS

Emergency Rescue

01 ROV successfully delivered to Hong Kong Fire Services Department

In April 2019, ROV won the trust of Hong Kong Fire Services Department (HKFSD) by its excellent anti-current capability, strong detection, movement and expansion capabilities, highly modular design, and high-quality and rigorous service.

Before that, the Hong Kong Fire Services Department had spent two years to investigate underwater robots.

02 Joint Search and Rescue Exercise on the Mainline of the Yangtze River

2On 15 November 2019, Chongqing Municipal People's Government and the Ministry of Transport jointly hosted a joint search and rescue exercise on the waterways of the Yangtze River. Simulated accidents such as two ships colliding, people falling into the water in danger, ships catching fire, and fuel oil overflowing.

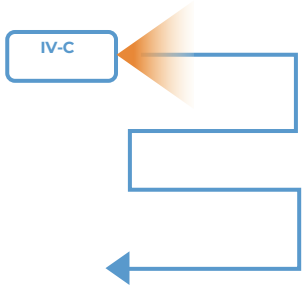
The ROV was involved in the salvage of the wreck. The ROV verified the location of the suspected caisson and completed the task.

03 Search and Rescue for Divers Lost in Panjiakou Reservoir, Tangshan, China

In September 2017, two divers from the international diving organization GUE were lost at Panjiakou Reservoir in Tangshan, Hebei province.

The incident occurred at a depth of 80 meters and very complex underwater conditions.The ROV scanned the images of the lost divers through a reciprocal search.

Roadmap for underwater robotic search



04 DADU River salvage in YAAN, SICHUAN Province, China

In December 2016, a car in Ya'an, Sichuan Province, was involved in a traffic accident and tumbled into the Dadu River with the car and people in it. The deepest part of the incident was 80 meters deep, and the technical team with the IV-C ROV
captured an image of the car at a depth of 56 meters, which provided localization information for the salvage.

Environmental Monitoring

Inspection of sewage discharge outlets around BOHAI Sea

In May 2019, the Ministry of Natural Resources started the BOHAI Sea Sewage Discharge activity. ‘Underwater robots are assisting in identifying hidden outfalls in areas that are not easy to observe, such as seafronts and bridges.

APPLICATIONS

Water conservation and hydropower

Underwater Dam Inspection at Gezhouba Dam

In April 2018, We brought its ROV IV C underwater robot to the Gezhouba Hydropower Station to carry out a hydroelectric power plant inspection.

During this process, rov was required to inspect the entire dam joints and the dam plane, and to eliminate potential safety hazards.

Scientific Research

Sansha Yongle Blue Hole Observation

The blue hole is a marvelous natural geological phenome-nonin the earth's oceans, which shows a dark blue color different from that of the surrounding waters and forms a huge deep hole on the seabed. The Sansha Yongle Blue Hole is located in the middle of Sansha City,Xisha Islands, and Yongle Atoll, with a water depth of 300.89 meters, which is the deepest in the world.

In May 2017, the technical team carried the IV-C to explore the Sansha Yongle Blue Hole. The 'ROV' reached the bottom of the hole along the wall and brought precious image data back.

Offshore Wind Power

ROV is used for underwater pile foundation monitoring of a wind power station in Fujian.

ROV can be used for monitoring in the later operation and maintenance of wind farms. In July 2018, ROV was used to monitor the underwater structure of a wind power station in Fujian.

Underwater anodes and tubing

Security

G20 Hangzhou Summit - West Lake Underwater Security

In September 2016, during the G20 HangzhouSummit, the ROV was used for underwater security and de-bombing inspections to check the underwater safety of the waters near the West Lake to ensure the normal conduct of the summit.

PRODUCT SPECIFICATION

Maximum Depth	375m
Dimensions	820mm × 580mm × 500mm(Length × Width × Height)
Weight	65kg (Without Payload)
Payload	13.3kg
Monitoring Sensors	Heading Sensor, Attitude Sensor, Depth Sensor Cabin Temperature Sensor, Cabin Humidity Sensor, and Cabin Temperature Sensor
Depth Sensor	1‰ , pressure resistant 300m
Observation System	Resolution: 1920 × 1080P can be switched to black and white mode, focal length: 2.8mm fixed focus.viewing angle:110°, light sensitivity: 0.001lux lluxmination: 4000lm x 2, PTZ: + 90 ° (simultaneous suspension of the camera, lighting and multi-beam imaging sonar. With real-time position feedback function)
Power System	Thruster layout: 4 horizontal + 2 vertical (with DC brushless magnetic coupled thruster) Thruster parameters: weight (in air) 1.9kg, size Φ158mmx216mm, maximum thrust 182N, single thruster power 1000W. Underwater thrust: 504N forward thrust for underwater robot when underwater about 0.5m. Power: Thruster working voltage 360VDC, non-battery powered. Thruster interface: Thruster interface mode: plug-in watertight connector. Condition monitoring: the thruster carries out real-time monitoring of voltage, current, temperature, feedback information, etc. and reports to the control system.
Control Box	Supply voltage: 220VAC; Industrnial control computer: i7 12700 processor 2.4GHz, memory capacity of 16GB DDR4, hard drive capacity of 1TB SSD, NVME interface;, P1000 graphics card 4GB of video memory, Windows 10 operating system.
Handheld Controller	The handheld controller is equipped with a main switch and a thruster switch to prevent misuse; it has ROV motion control, depth lock, lighting brightness adjustment, robot control, camera focus, camera zoom, PTZ tilt control, and work mode switching functions;
Control Software	Motion control: set different working modes according to different operation scenes, including deck mode, manual mode, and cruise mode. During sailing, it can select sailing modes such as automatic depth fixing, automatic heading fixing, automatic thrusting, etc. At the same time, it can set the motion speed, and the gear setting is ≥4, For abnormality monitoring issues, according to the configuration table of the system, each component has a corresponding software monitoring module for real-time monitoring, including communication links and data accuracy; For abnormal connection of the handheld controller, insulation abnormality, temperature abnormality of the electronic compartment, humidity abnormality of the electronic compartment, propulsion abnormality, and communication abnormality, interface alerts will be made and logs will be recorded according to the level.
Hand winch and cable	Material:Outer layer is made of special polyurethane high-strength composite material, inner Kevlar filing. Specification:Length 300m Breaking force:815kg(8000N) The winch is made of PP material, equipped with card lock, self damping system, self-locking cable deploy-mentand recovery.