



Smart Grid

## Transmission Line Inspection Robot

The Robot uses dual spectral imaging units, edge computing power modules, and high-precision positioning modules to realize remote monitoring of the operating status of important equipment, one-click access to key sites, intelligent perception of the surrounding conditions of sections, and defect alarm of infrastructure.



### - Functions



Inspection of poles, insulators, fixtures, wires and other targets.



Equipped with a deicing operation module and able to remove ground ice.



Equipped with coating operation module, with line insulation coating, anti-icing coating and other coating functions.



Equipped with split-strand repair module, which has the function of line split-strand repair.



Able to go up and down the tower and cross the tower.



Equipped with fire breathing and cutting devices, and able to remove foreign objects.

Battery Life	8h	Wind Resistance	Level 6
Climbing Angle	≥45°	Obstacle Crossing Ability	Cross the shock hammer, connecting pipe, bridge hardware.
Maximum Speed	1.2m/s	Operation Capability	With extensible interface, equipped with different operation tools.

## Transmission Line De-icing Robot

With large torque power module, adaptive compression mechanism, multi-mode deicing device, and low-temperature energy module, the Robot can effectively remove the ground ice covering of the transmission line, filling the gap of non-deicing means of the ground wire.



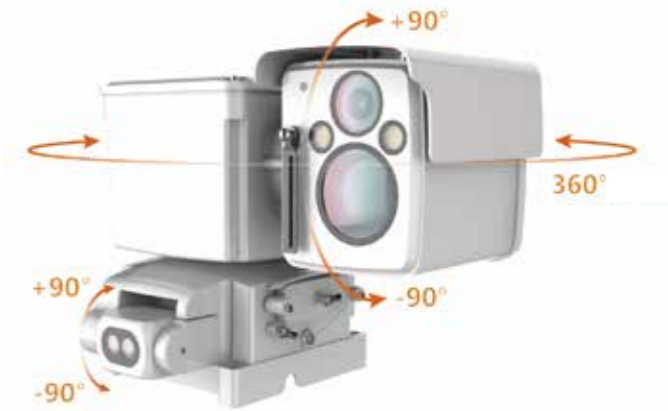
### - Functions

Automatically going up and down the tower	Remove snow glaze	Remove rime	Remove glaze freezing	Support long-distance remote control operation	Wind-proof

Climbing Angle	≥35°	Ice Grinding Speed	10cm/s for ice ≤10mm
Battery Life (Ice Clamping)	500m	Ice Shoveling Speed	10cm/s for ice ≤15mm
Battery Life (Ice Shoveling&Grinding)	1000m	Ice Clamping Speed	5cm/s for ice ≤20mm

## Transmission Line Intelligent Monitoring Device

It adopts high-definition image unit, including modules like side operation, remote communication and low-power hardware to realize online monitoring and intelligent early warning of tensioning clamp, guide ground, channel and other targets, and then promote intelligent and digital operation and maintenance of power supply.



### - Functions

Anti-external damage monitoring	Hill-fire monitoring	Conductor ice monitoring	Abnormal detection of wires, poles, insulators and fixtures	Monitoring of tower foundation and surrounding geological environment	Conductor dancing, sag state monitoring

Battery Life	7/24	IP Level	IP67
Visible Light Resolution	16 million Pixels	Relative Humidity	0~100%
IR Resolution	2 million pixels (night vision)	Applicable Temperature	-20~70°C

# UAV System

The UAV System adopts the combination of the robot nest and the UAV. The UAV conducts autonomous inspection along the predetermined route, carries out fine hover and takes photos of each inspection point., Carrying out energy supplement, data upload and intelligent analysis, and help the intelligent operation and digital operation of the power industry.



## - Functions

Task Management	Intelligent Flying	Report Generation	Real-Time Monitoring	AI Analysis	Defect Management
After the task is created, the real-time picture, flight status, power and other information of the UAV can be viewed.	Judging whether the current operating environment is safety, the UAV independently plans the efficient flight path and automatically avoids obstacles.	Combined with manual experience and equipment standards, the system carries out intelligent data analysis in man-machine collaborative way to form detailed operation results analysis report.	Using digital twin real-time 3D monitoring, it freely observes the flying attitude position and the first-view flight picture, and control the UAV in real time.	The system automatically identifies and analyzes the results of high credibility, and delivers them to manual verification to form an analysis report.	The defect management system shows all kinds of defects and their changes flexibly and quickly.

Battery Life	55min	Maximum Resistance to Wind Speed	Level 7
Working Temperature	-20°C~50°C		

# Outdoor Wheeled Substation Inspection Robot

By integrating autonomous navigation and positioning, non-contact detection, multi-sensor, backend big data analysis, the Robot can realize meter reading, switch position identification, IR temperature measurement at different heights, as well as intelligent assessment and active warning of anomalies and safety of the working environment in the station.



## - Functions

Visible Light Recognition	IR Temperature Measurement	Sound Detection	Gas Detection	Remote Control Intercom	Autonomous Operation
Reliable meter reading and switch status identification.	Different heating types of fault point identification and early warning.	Record and analyze device noise alarms.	Support detection and alarm of different toxic and harmful gases.	The Robot can be remotely controlled in the backend to view the real-time picture and voice intercom.	Multiple security protection, 3D laser positioning and navigation, off-line working, autonomous charging, autonomous inspection.

Maximum obstacle height	50mm	Climbing Performance	20°
Battery life	≥8h	Positioning Accuracy	±10mm
IR Temperature Measurement Accuracy	±2°C or 2%	Meter Reading Error	<5%

## Tracked Substation Inspection Robot for Harsh Environment

The Robot is the first of its kind in China, suitable for inspection in the ice and snow environment in the extreme cold area of -40°C. The robot adopts a track chassis, equipped with various cold-resistant sensors and components, combined with special software algorithms, to meet the requirements of accurate detection, so as to ensure the continuous and stable operation.



### - Functions

Inspection Under Extremely Cold Environment	Visible Light Recognition	IR Temperature Measurement	Environment Detection	Remote Control Intercom	Autonomous Operation
In normal operation under -40°C, adapts to positioning and navigation under snow and ice.	Image recognition technology to achieve reliable meter reading and switch status recognition.	Low temperature IR correction technology achieves accurate temperature measurement in extremely cold environment.	Supports the detection and alarm of environmental device noise and different toxic and harmful gases.	Support remote robot control, real-time screen view and voice intercom.	Multiple security protection, 3D laser positioning and navigation, off-line work, autonomous charging, autonomous inspection.

Climbing Angle	≥20°, 150mm steps are available	Battery Life	≥6h (-40°C~-25°C) ≥8h (-25°C~+50°C)
Positioning Accuracy	±10mm	Maximum Speed	1m/s
IR Temperature Measurement Accuracy	±2°C或2%	Meter Reading Error	<5%

## Indoor Wheeled Substation Inspection Robot

The Robot is miniaturized and lightweight with modular design, integrates trackless navigation, intelligent image recognition and analysis to realize efficient information processing, and can be widely used in all kinds of equipment inspection operations in indoor environment.



### - Functions

Visible Light Recognition	IR Temperature Measurement	Environment Detection	Partial Discharge Detection	Remote Control Intercom	Autonomous Operation
Reliable meter reading and switch status identification.	Equipped with high precision IR thermal imager, it can recognize and warn the equipment overheating fault.	Detection and alarm of environmental device noise and different toxic and harmful gases.	Non-contact ultra-high frequency detection method is used to detect the partial discharge of patrol equipment efficiently.	The Robot can be remotely controlled in the backend to view the real-time picture and voice intercom.	Multiple security protection, laser positioning and navigation, off-line work, autonomous charging, autonomous inspection.

Obstacle Height	40mm (no lifting version)	Positioning Accuracy	±10mm
Battery Life	≥5h	Maximum Speed	0.6m/s
Minimum Turning Radius	Rotation in Place	Lifting Height	≥1200mm

# Rail-mounted Inspection Robot

The Robot is able to do track power supply walking, multi-stage lifting and lifting of the head, and multi-sensor detection. It is suitable for the scenes of narrow indoor space and poor road condition, and can replace the manual inspection of station buildings for 7\*24 hours.



## - Functions

Visible Light Recognition	IR Temperature Measurement	Environment Detection	Partial Discharge Detection	Remote Control Intercom	Continuous Work
Reliable meter reading and switch status recognition	Equipped with high precision IR thermal imager to realize the identification and early warning of equipment overheating fault.	Supports the detection and alarm of environmental device noise and different toxic and harmful gases.	Carried out by means of ground wave, ultrasonic wave and UHF to detect the partial discharge.	Support remote robot control, real-time screen view, voice intercom.	Track power supply, carrier communication, uninterrupted operation.

Battery Life	7/24 (sliding line) ≥5h (lithium battery)	Maximum Speed	1m/s
Positioning Accuracy	≤±10mm	Maximum Lifting Height	1600mm
Communication Method	24V DC carrier and wireless Wi-Fi	Minimum Turning Radius	300mm

# Switchgear Manipulation Robot

The Robot integrates many intelligent detection and autonomous operation technologies. It can assist inspection personnel to complete the emergency switching and routine switching operation tasks of the switch cabinet, and also supports intelligent inspection operation, realizing the integration of inspection operation.



## - Functions

Switching Operation	Check Protection Device Information	Mechanical Switch On and Off	Intelligent Inspection	Autonomous Operation	Safety Inspection
Through the switching operation, circuit breaker to achieve the operation - hot standby - cold standby - line maintenance state switching.	Through the robot key, the real-time screen can be viewed.	The Robot can realize mechanical switch on and off at the first time to avoid the expansion of the accident and personnel injury.	Visible light recognition, IR temperature measurement, partial discharge detection and gas detection	Support operation target intelligent identification and positioning, and the intelligent drive and detection of the hand tool, realize the multi-source signal decision.	The Robot and its arms support multiple safety protection, the robot can work off-line, autonomous charging, autonomous patrol, and intelligent operation.

Battery Life	≥5h	Torque	≥200Nm
Maximum manipulation height	2200mm	Meter Reading Error	<5%
Manipulation positioning accuracy	±0.5mm	IR Temperature Measurement Accuracy	±2°C or 2%

# Thermal Image Monitoring Device

It provides passive wireless fixed monitoring and solutions for the IR temperature measurement of outdoor power scenes, and realizes the interconnection of products from end to cloud through the IOT security encryption communication technology recognized by the power industry, and realizes the online cluster sharing of individual equipment.



## - Functions

Accurate Recognition of IR Targets	Intelligent Diagnosis	Intelligent Ledger Management	Passive Wireless	Online Working	Encrypted Communication
AI image analysis is used to accurately identify multiple temperature measurement targets in IR images.	Intelligent analysis and diagnosis are carried out according to DL/T 664-2016 IR Diagnostic Application Specification for Live Equipment.	The device is automatically named to improve efficiency and reduce manual workload.	Built-in special lithium battery and solar charging, wireless data transmission, easy deployment.	It can be connected to PMS3.0 system to realize online work and real-time data synchronization.	Power industry certified IOT secure encrypted communications.

Resolution	640*480	Minimum Focal Length	0.3m
Temperature measurement accuracy	±2°C or 2%	Weight	≤1.2kg
Temperature Range	-10°C~+410°C	Battery Life	≥2h

# Online DGA Monitoring System

It is a precision equipment integrating control, measurement and analysis. It is mainly used to online monitor the content and growth rate of fault characteristic gas (H<sub>2</sub>、CO、CO<sub>2</sub>、CH<sub>4</sub>、C<sub>2</sub>H<sub>4</sub>、C<sub>2</sub>H<sub>2</sub>、C<sub>2</sub>H<sub>6</sub>) and dissolved water (optional) dissolved in oil of oil-immersed high pressure equipment such as transformers and reactors, and early forecast device hidden danger information through fault diagnosis expert system to avoid equipment accidents and reduce heavy losses.



## - Detection Index

Detection Parameter	Detection Range (μL/L)	Error Requirement
H <sub>2</sub>	2~20	±2μL/L or ±30%
	20~1000	±30%
C <sub>2</sub> H <sub>2</sub>	0.2~5	±0.2μL/L or ±30%
	5~10	±30%
	10~50	±20%
CH <sub>4</sub> 、C <sub>2</sub> H <sub>6</sub> 、C <sub>2</sub> H <sub>4</sub>	0.5~10	±0.5μL/L or ±30%
	10~150	±30%
CO	25~100	±25μL/L or ±30%
	100~1500	±30%
CO <sub>2</sub>	25~100	±25μL/L or ±30%
	100~7500	±30%
C <sub>1</sub> +C <sub>2</sub>	2-10	±2μL/L or ±30%
	10-150	±30%
	150-500	±20%

## Substation Remote Intelligent Inspection System



Through the inspection intelligent analysis host, the remote intelligent inspection system integrates data signals such as robots, drones, cameras, and voicing monitoring devices, and has functions such as data acquisition, automatic inspection, intelligent analysis, real-time monitoring, etc., which can realize the comprehensive perception of equipment status in the station, one-key turn-back operation, and intelligent main-auxiliary linkage.

### - Functions

Data Acquisition & Analysis	Task Management	Inspection Monitoring	Intelligent Connection	Ledger Management	3D Interaction
Support the data collection of inspection related devices and analyze and compare the data to achieve abnormal alarms and early warnings.	Set and display local tasks and video identification tasks.	Support inspection task and result query, inspection screen and other data real-time view.	When the system receives the connection signal, it accurately responds to generate inspection tasks, displays the monitoring screen in real time, and views the review results.	Support all kinds of robots, fixed video and other equipment ledger management.	Supports display of inspection tasks, exception alarms, and space measurement in 3D scenarios.

## Substation Video Online Monitoring Device

The device is an integrated platform monitoring device with two-way channels. The device can not only monitor the size of the two-way channel from a fixed angle, but also monitor and identify key device such as transformers, wires, and hardware in detail, and carry out trend analysis according to the identified objects, greatly improving the inspection efficiency of the platform variable area.



### - Functions

Intelligent Capture	Intelligent Diagnosis	Multi-task Mode	Intelligent Power Management	Intelligent Netflow Management	Secure location
Support intelligent capture and retain abnormal situations.	Ability to assess the health of the device in the monitored station area.	Intelligently switch operation mode according to site conditions to meet operation requirements.	It can preview OSD battery status in real time.	Carry out edge processing of data information, and upload processing results to reduce netflow usage.	Support GPS&positioning system.

Resolution	1920*1080	Video Compression Bit Rate	32 Kbps~16 Mbps
Sensor Type	1/2.8" progressive Scan CMOS	Wireless System	LTE-TDD/LTE-FDD/TD-SCDMA/WCDMA
Video Compression Standard	H.265/H.264/MJPEG	IP Level	IP66, TVS 6000V anti-lightning&anti-surge.

## Distribution Live Robot

It is one of the important means to realize the continuous distribution. It is flexible and efficient, safe and reliable, and easy to use. With intelligent control system as the core, the robot can realize remote operation and man-machine collaboration, and can meet the tasks such as live connection and disconnection of drainage lines of overhead lines of distribution network.



### - Functions

Wiring Operation	Line Breaking Operation	Install the Ground Ring	Add Bird Repellent	Install Fault Indication	Pruning
The robot can perform branch wiring for the main line with multiple wire paths.	The robot can break the multi-diameter branch line.	The robot can quickly install the multi-diameter ground ring.	Equipped with various types of bird repellents for the linear tower and the tensioning tower cross arm.	Equipped with live fault indicators for various wire diameters.	The robot can prune the surrounding branches along the live line.

Adaptive Wire Range	70mm <sup>2</sup> 、95mm <sup>2</sup> 、150mm <sup>2</sup> 、185mm <sup>2</sup>	Single-phase Wiring Working Time	≤25min
Adaptive Lead Range	50mm <sup>2</sup> ~150mm <sup>2</sup>	Single-phase Line Break Time	≤15min

## Digital Supervisor for Construction Work

The robot realizes the safety control of operators and the construction process quality verification of the distribution room, distribution engineering, cable engineering and other scenes, which can effectively alleviate the management contradiction of "multiple and wide distribution points and insufficient supervision", and lays the foundation for further improving the power safety construction and optimizing the power construction environment.



### - Functions

Intelligent Supervision	Real-time Video Recognition	Communication	GPS Positioning	Human-computer Interaction	Easy to Deploy
Through intelligent decision to achieve the on-site personnel, equipment, process quality management.	Through edge computing and image analysis algorithms, real-time tracking, recognition and warning of field targets are realized.	Support 4G/5G, Bluetooth, Wi-Fi communication.	The GPS positioning system is used to realize the real-time location of the site.	Equipped with high fidelity screen, sound and light alarm system, to achieve man-machine interaction of supervision and control information.	Lightweight design, compact and portable for rapid deployment in the field.

Edge Computing	21TOPS	Battery Life	≥5.5小时
Weight	≤12kg	Display Screen	7 "high fidelity
Camera	120° field of view angle, 800W pixels	Zoom Camera	400W pixels, 30x optical zoom





# Rail Transit

## Rollingstock Undercarriage Robot

The Robot runs in the trench and complete the detection task of the bottom and side of the train instead of manual work. The Robot protects human to work in a difficult field environment, reduces labor cost, improves maintenance quality, timely and comprehensively eliminates train operation safety risks.



### - Functions

Undercarriage Inspection	Identification of Side Defects	Intelligent Location and Alarm of Defect Point	Backend Management System	Autonomous Positioning and Navigation	Autonomous Transport and Charging
Identify position defects of bolts, pins, pipelines, nameplates, vents, keyhole covers, cable ties, temperature labels, oil levels, valves, etc.	Position defects such as side running parts, side bogies, vehicle wheels and side surface defects can be identified.	Accurately locate defect points, mark defective parts, and send abnormal pictures automatically.	Carrying out real-time monitoring and processing on the running state of the robot, inspection tasks, linkage alarm and so on.	The robot adopts autonomous navigation and autonomous positioning.	The Robot transfer through the lifting platform or slope in different channels, and automatically charge back to the charging pile when the operation is completed

Weight	≤220kg	Speed	1m/s
Battery Life	≥5h	Navigation Mode	Laser Navigation
Climbing Performance	≥15°	Movement Performance	4WIS4WID

## Railway Inspection Robot

The Robot is able to assist human to complete the night inspection task of the line, especially heavy tasks, difficult detection parts encountered in the traditional manual inspection. The robot highly reduces the labour cost, improve the efficiency and quality, and the safety risks are eliminated timely and comprehensively.



### - Functions

Fastener Detection	Clearance Detection	Ballast and Foreign Object Detection	Rail Surface Detection	Rail Profile/Wear Detection	Track Geometry Parameter Detection
Real-time analysis of missing, displacement, fracture and other defects of fasteners, and mark the location of the defective fasteners.	Detects clearance and automatically records the location of clearance points according to mileage information.	In the process of operation, the robot can automatically identifies whether there are structural problems in the ballast (such as crack, water accumulation, churning and mud, etc., and automatically identifies foreign bodies in the ballast).	Detects the surface damage of the rail in real time during operation, such as abrasion, peeling and falling blocks.	Dynamic and static detection of rail vertical wear, side wear, comprehensive wear, continuous dynamic and static detection, data can be checked and analyzed, automatic mileage corresponding.	Detects the track gauge, horizontal displacement, elevation, triangle pit, etc. in real time, and makes the judgment and send the alarm information.

Weight	≤120kg	IP Level	IP55
Moving Scope	≥20km	Battery Life	≥4h
Maximum Speed	5km/h	Working Temperature	-20~45°C

## Dual-Track Rail Ultrasonic Flaw Detector

It is suitable for urban rail, common rail, freight rail, high-speed rail and other in-service rail track, all-weather automatic rail defect detection, with industrial ultrasonic flaw detection as the main, optical detection as the auxiliary, to achieve rapid non-destructive and integrity assessment of rail in the maintenance period.



### - Functions

Foreign Object Detection	Rail Internal Detection	Rail Defect Analysis and Evaluation
Visual detection of foreign body	Rail head, waist, bottom and other parts of the rail defects detection.	Intelligent analysis and evaluation of rail defects.







Load Capacity	4 Persons	Detection Speed	15km/h
Display Mode	A/B Scanning	Battery Life	4h or 60km
Climbing Performance	33‰	No. of Channels	9 One Side, 18 Both Sides

# Rigid Catenary Intelligent Inspection Robot

The Robot is mainly applied in urban rail transit. Running on the busbar of rigid catenary, the Robot is capable of autonomous movement, detection and analysis, high-precision measurement of the width of rigid catenary contact surface, wear allowance and off-wear angle, identification and positioning of surface damage defects such as wire drawing on the surface of the contact line, analysis results and real-time display, real-time storage and export reports.



## - Functions

 <b>Contact Line Wear Measurement</b>	 <b>Contact Surface Defect Detection</b>	 <b>Fast On and Off the Rails</b>	 <b>Remote Control</b>	 <b>Report Export</b>	 <b>Distance Location</b>
By combining high precision measurement algorithm with data acquisition module, measurement of contact surface width, wear allowance and off-wear angle can be realized.	Deep learning technology is used to identify the possible defects on the surface of contact line, such as wire drawing and flash burning.	The robot can be put into orbit and deorbit at any position of the busbar, which is simple and convenient.	The Robot is controlled remotely by a handheld terminal, and functions such as remote wireless control, real-time task delivery and real-time result feedback are realized.	Automatically generates an inspection result report, including task information, detection results, and mileage information.	The inspection process accurately locates the busbar position of the robot, and automatically records the detection result for the convenience of review and reinspection.

Charging Time	1.5h	Working Temperature	-10°C~40°C
Weight	15kg	Moving Mode	Autonomous Moving
Size	500*250*300mm	Battery Life	2h(single battery)



## Explosion-proof Wheeled Inspection Robot

The Robot solves various problems in daily inspection of oil and gas plants, reduces inspection work intensity, improves work efficiency, inspection quality and safety, and stores and analyzes inspection data structurally to effectively eliminate security risks and effectively guarantee production and operation safety of oil and gas plants.



### - Functions

Laser Autonomous Navigation & Positioning	Data Analysis & Diagnosis	Device Status Identification	Combustible & Toxic Gas Detection	Meter Reading Recognition	Autonomous Charging
Able to move autonomously in the preset area.	Collect information display, storage, query, and provide cause analysis and solution for device defects or faults.	Real-time monitoring of robot inspection status and automatic statistics of failure rate.	Equipped with a gas sensor that can detect the concentration of methane, toxic and harmful gases to determine whether there is a leak.	Quickly generating meter transcription tasks, and the inspection contents include all corresponding meters.	Return to charge autonomously when the battery is low.

Model	SHIR-3000EX	Working Temperature	-20°C~60°C
Weight	≤270kg	Operating Humidity	10%RH~90%RH (Non-condensation)
Drive Mode	Explosion-proof four-wheel differential	Battery Life	≥6h
Operating Speed	1m/s	Safety Protection	Anti-collision, anti-fall, equipment self-test.
Navigation Mode	Trackless autonomous positioning navigation.	IP Level	IP65

## Drone for Industrial Tank

With the goal of accurate measurement and rapid assisted manual inspection, Dronefinch integrates the precision of the new generation of NDT detection technology and the flexibility of the flying robot to achieve regular wall thickness detection of special equipment (tank).



### - Functions

Aerial Work	Accurate Measurement	Multiclass Detection	Quick Deployment	Real-time Data Return	Safe Operation
Instead of the traditional manual measurement scheme, avoid the erection of scaffolding during measurement, effectively reduce workload and improve work efficiency.	The wall adaptive probe accurately fits the measurement surface, reducing the interference to the measurement during flight operations.	It can measure the thickness of the storage and delivery tank, inspect the height instrument, nameplate and appearance defect of the field equipment.	Quick loading structure; Multi-stage cascade design, easy to carry and deploy.	The measured data is transmitted to the terminal in real time through wireless link for display and storage.	Industrial drones avoid obstacles in real time, and can work safely in complex industrial sites.

Battery Life	≥40 minutes	Maximum Wind Speed	15 m/s (7wind)
Thickness Range	1.0~200.0mm	Working Temperature	-20°C~40°C
Camera Resolution	2000million zoom camera 1200million wide Angle camera	On-board Memory	24GB
Thermal Imaging Resolution	640*512@30Hz	Thickness Measurement Object	Alloy steel, stainless steel, carbon steel, cast steel, aluminum, titanium, copper and other conductor materials.
Laser Range	3m-1200m		

# Shenlong No.1

With strong load capacity, it is suitable for carrying underwater manipulators for rescue and salvage work, and its strong movement ability can quickly transport emergency firefighting materials in operating waters. The motion control modes such as fixed depth and fixed navigation make the operation of Shenzhigu-I more simple and convenient, and greatly improve the response speed in emergency situations. At the same time, with online image enhancement and real-time target recognition camera system, Shenzhuba-I can obtain underwater images more clearly, which is convenient for monitoring and delineating effective targets.



## - Product Features

<b>Deep Working</b>	<b>Super Load</b>	<b>Vision Algorithm</b>	<b>Professional Design</b>	<b>Easy to Operate</b>

Size	675*500*445mm	Load Capacity	8kg
Weight	≤42kg	Speed	1.5m/s
Pressure Depth	350m	Number of Thrusters	4+2(horizontal + vertical)
Frame Material	PP+ High strength carbon fiber resistant to seawater corrosion.	PTZ	Independent head, precise control of the head tilt, ±90° pitch
Power Supply	External cable power supply load		

# 3D Sonar

It is a high-resolution real-time 3D sonar that uses phased array technology to generate more than 16,000 synchronous beams to form 3D sonar images. When monitoring underwater activities, the 3D images can remain clear and accurate even when the monitoring target and sonar move independently of each other, so that the observer can immediately obtain the underwater 3D environment during operation. In mapping and inspection tasks, pulse geometry enables a target to be seen multiple times while passing through it only once, and each view is obtained from a different Angle. This enables complex seafloor structures to be mapped with a level of confidence and detail far beyond anything that can be achieved by using alternative methods, giving users an intuitive and easy-to-interpret image.



## - Product Features

<b>3D HD</b>	<b>Real-time Image</b>	<b>Deep Water Working</b>
It can generate 3D images by multi-angle scanning of objects under water.	The data acquisition process can be real-time imaging and present the dynamic picture of underwater objects.	Able to work in 300 meters underwater environment.

Size	232*300*147mm	Minimum Detection Range	1m
Weight	15kg (air) , 8kg (water)	Maximum Detection Range	100m
Frequency	375kHz	Range Resolution	3cm
Work Loss	48V, 5A	Maximum Working Depth	300m
Covering Angle	50°*50°	Beam Number	128*128

# Underwater Helicopter

It is an underwater inspection equipment suitable for daily inspection, famous for its excellent underwater motion operation ability, after the construction of the base station can complete underwater daily inspection, data real-time transfer to the background. The equipment can be equipped with sonar and underwater cameras, through optical and acoustic dual channel imaging, suitable for different environments, to ensure the quality of detection.



▲ Lightweight Underwater Robot



▲ Operational Underwater Vehicle

## - Product Features

<b>Full Turnaround/Free Takeoff and Landing</b>	<b>Water-dwelling</b>	<b>Equipment Loading</b>
6 propeller layout allows the helicopter to complete 360° travel in the water. It can complete fixed-point hovering, bottom flight, etc.	After the base station is installed, it can achieve permanent residence on the seabed and complete daily inspection.	Equipped with additional detection means such as sonar and underwater cameras, and can complete detection and inspection tasks for different detection environments.

	Lightweight Underwater Robot	Operational Underwater Vehicle
Size	0.6(D)*0.3m(H)	1.0(D)*0.8m(H)
Weight	30kg	200kg
Speed	≤1.5-2	≤2
Battery Life	≤2h,6h is being developed	≤2h
Working Depth	≤300m	≤1000m
Propeller Layout	4 vertical +2 horizontal	4 vertical +2 horizontal

# Application Cases



Sustation Inspection-Yancheng, Jiangsu



Transmission Line Inspection-Shaoxing, Zhejiang



Substation Air Inspection-Hengling, Shanxi



Substation Air Inspection-Shizuishan, Ningxia



Distribution Room Inspection-Zhenjiang, Jiangsu



Switchroom Inspection-Ningbo, Zhejiang



Sustation Inspection-Vietnam



Sustation Inspection-Mohe, Heilongjiang



Switchroom Inspection-Changjiahui, Chongqing



Switchroom Manipulation-Ningbo, Zhejiang



Transformer Detection-Zhejiang

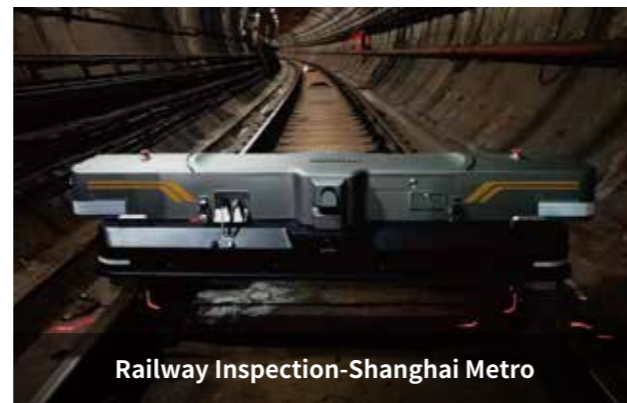


Hydropower Main Transformer Detection - Zao City, Hunan

# Application Cases



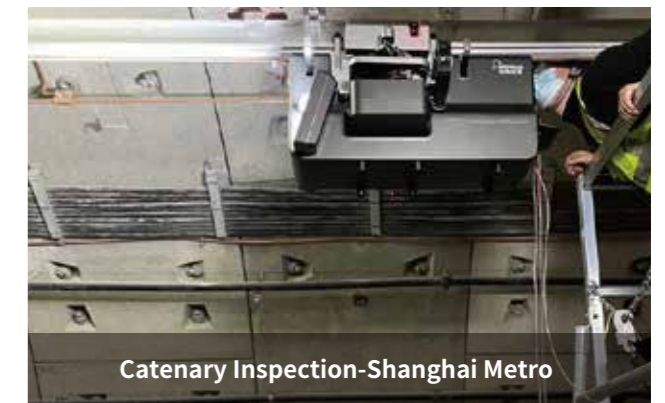
Railway Inspection-Hangzhou-Haining Intercity Railway



Railway Inspection-Shanghai Metro



Catenary Inspection-Shaoxing Metro



Catenary Inspection-Shanghai Metro



Railway Inspection-Guangzhou Metro



Railway Inspection-Hangzhou Metro



Rail Flaw Detection-Hangzhou-Haining Intercity Railway



Chemical Plant Tank Measurement - Qiandao Lake



Undercarriage Inspection-Tianjin Metro



Undercarriage Inspection-Shanghai Metro



Explosion-proof Inspection - Southwest Oil and Gas Field



Explosion-proof Inspection - Yunnan Zhaotong Aluminum Factory