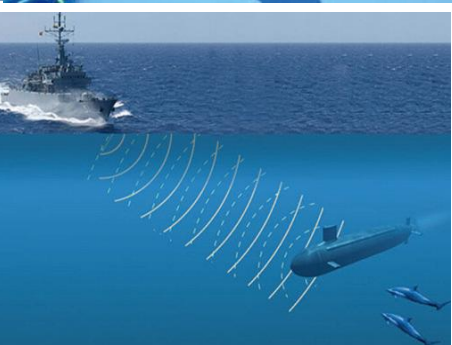
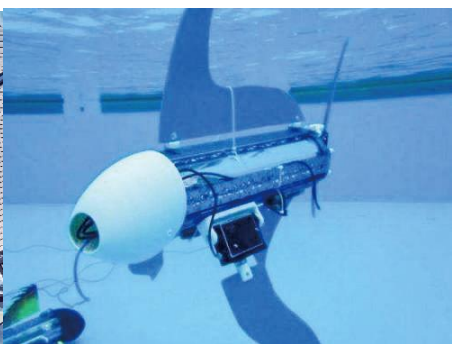




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产品宣传手册

PRODUCT BROCHURE



INNOVATE
COOPERATION
WIN-WIN

西安凯兴物联科技股份有限公司

XI'AN KACISE OPTRONICS TECH CO., LTD

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Introduction

KWD100 Handheld Depth Sounder

Based on the principle of ultrasonic ranging, it can realize underwater ranging and underwater depth measurement. The characteristics of this product are that it can use the transducer attached to the machine for depth measurement; it can also be powered externally, communicate externally, and mount various ranging sensors of the company to perform corresponding ranging work. It can read the signal status of the transducer and sensor to facilitate relevant judgment.



Technical Specifications

Handheld depth sounder	
Range	0.7~100m
Weight measurement accuracy	±0.5% (maximum range)
Communication	USB-MODBUS protocol
Emission angle	3.6° ±10%
Power supply	18650 rechargeable lithium battery
Ambient temperature	-20℃<.C<60℃
Probe cable	3-core shielded cable
Probe connection	3-core aviation plug connection
Display	LCD display
Handheld host computer	
External power supply	DC12V-25.6v 100MA
Mounted sensor connection	4-pin aviation plug connection
Mounted sensor range	Depending on the sensor mileage
Display	LCD display

Application Fields



Detect large gaps in trees



Detect whether trees have hollows or cracks



Detect water depth



Measure water depth

KWD200 Ultrasonic Underwater Communications Sensor

Introduction

This product mainly uses ultrasonic waves to achieve underwater communication.

It is used for underwater unmanned submersible communication, underwater short command transmission, marine sensor network transmission, and marine environment monitoring network transmission.

Product Features

- Power supply: battery ($12V \pm 10\%$)
- Communication distance: 100m
- Pressure resistance: 100m water depth
- Working temperature: $0^{\circ}\text{C} \sim 60^{\circ}\text{C}$ (no freezing)
- Protection grade: IP68
- Case material: ABS



Technical Specifications

Communication distance	50 meters, 100 meters
Underwater acoustic communication rate	96bps
Response rate	3 seconds
Send information	1-12 characters
Bit error rate	$\leq 8\%$ (related to the test environment)
Communication method	RS485, MODBUS protocol
Voltage resistance	100 meters water depth
Usage environment	Water depth greater than 2 meters, away from motors and frequency conversion equipment
Power supply	Battery ($12V \pm 10\%$), receiving power 0.9W/transmitting power 5W
Protection level	IP68
Operating temperature	Working temperature: $0^{\circ}\text{C} + 60^{\circ}\text{C}$
Interface thread size	M33*1.5
Storage requirements	Storage environment temperature: $-20 \sim +60^{\circ}\text{C}$; Storage environment pressure: normal pressure; Storage environment humidity: $\leq 90\% \text{RH}$ (non-condensing); Other requirements: No corrosive liquid, gas or steam in the environment, no vibration.
Wiring definition	Red: 12V+ Green: 12V- White: 485A Yellow: 485B
Usage precautions	During the test wiring process, the 485 line cannot touch and short-circuit the power line. If the short-circuit burns out, the product cannot be repaired.

Application Fields



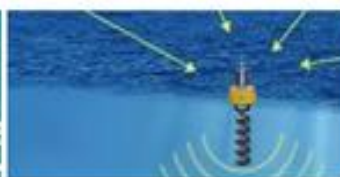
Remote controlled
underwater drone filming



Remote controlled
underwater robot search



Remote control underwater
robot grabbing objects



Underwater obstacle
avoidance

KWD300 Ultrasonic Noise Detection Sensor

Introduction

Mainly used for underwater environmental noise detection. Can be used for fish and shrimp eating sounds, dolphin sounds, underwater noise, ship noise monitoring, etc.

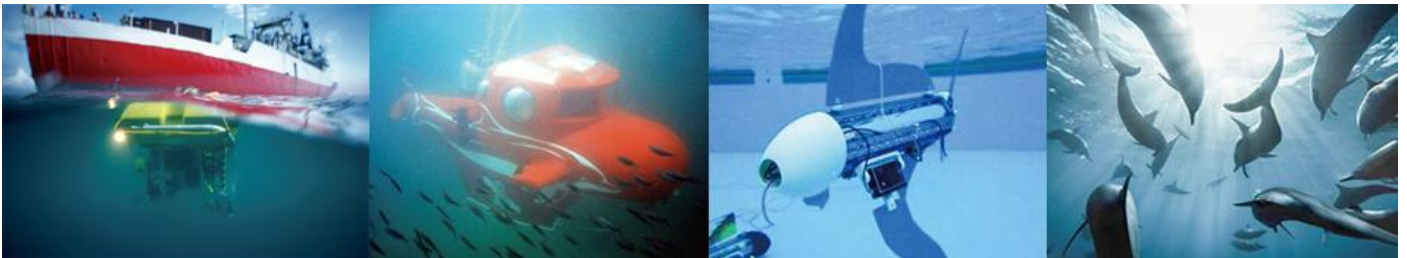
Divided into 3 frequency bands: 1~20KHz, 1~40KHz, 1~60KHz.



Technical Specifications

Power supply	9VDC~36VDC
Resolution	10mW
Ambient temperature	-5℃~60℃
Protection level	1P68
Probe cable	4-core shielded cable
Digital output	RS485
Analog output	Sine wave (sampled to signal amplified 10 times and amplified 100 times for output)

Application Fields



Ship noise monitoring

Underwater fish and shrimp feeding sound

Underwater noise monitoring

Dolphin sound monitoring

KWD400 360-Degree Scanning Sonar

Introduction

The 360-degree scanning sonar is completely sealed and can be immersed in water for a long time. The host computer software can display the surrounding environment map and test the distance value. The range can be selected according to the on-site environment.



Technical Specifications

Product name	360-degree scanning sonar
Range	0.25~10m
Accuracy	±0.5%FS
Operating voltage	24Vdc±10% (recommended power supply current 1.5A or above)
Power consumption	≤12W
Digital output	RS485 host computer imaging
Operating temperature	-20~60℃
Storage temperature	-40~80℃
Operating pressure	1 standard atmospheric pressure
Installation method	bracket hoisting
Protection level	IP68
Quality	≤2000g
Casing material	stainless steel + rubber
Wire length	standard 5 meters (other line lengths need to be customized)

Application Fields



Detect large gaps in trees



Detect whether trees have hollows or cracks



Detect water depth



Measure water depth

KWD510 M26 Hydrophone

Introduction

Able to maintain high accuracy and high sensitivity in environments with large changes in temperature and pressure, this hydrophone provides two types of preamplifiers and is widely used in noise monitoring caused by liquid flow and fluctuations. Threaded connection for easy installation.



Technical Specifications

Product name	M26 Hydrophone
Power supply	6Vdc~13Vdc
Power consumption	≤ 150 mW
Output mode	Analog output (sampled to signal amplified 10 times and 100 times)
Ambient temperature	-45℃~85℃
Protection level	IP68
Sensor cable	4-core shielded cable
Cable length	2 meters

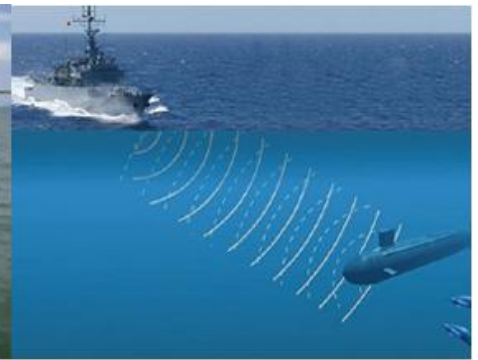
Application Fields



Noise generated by liquid flow in water pipes to determine leak points



Detect whether trees have hollows or cracks



Detect water depth

Introduction

Able to maintain high accuracy and high sensitivity in environments with large changes in temperature and pressure, this hydrophone provides two types of preamplifiers and is widely used in noise monitoring caused by liquid flow and fluctuations. Threaded connection for easy installation.



Technical Specifications

Product name	M42 & M45 Hydrophone
Sensitivity	$\geq -166.5\text{dB}$ Vre: $1\text{V}/\mu\text{Pascal}$
Response frequency range	20Hz-20KHz
Power supply	6-13V DC
Power consumption	$\leq 150\text{ mW}$
Output signal	Analog output, (deep integration to signal amplification 10 times (20dB) and 100 times (40dB))
Material	Metal
Static pressure bearing	68Bar (1000psi)
Connection method	Clamp-type locking, clamp width $\leq 12\text{mm}$
Protection level	IP68
Weight	$\leq 600\text{g}$, including 2m additional cable
Connecting cable	Low noise four-core shielded cable 2m
Overall length	80mm, 88mm

Application Fields



Noise generated by liquid flow in water pipes to determine leak points



Detect whether trees have hollows or cracks



Detect water depth

Introduction

KUS-W33 Patch-Type Underwater Ranging Sensor

Underwater distance measurement, underwater obstacle avoidance, external liquid level measurement



Technical Specifications

Product name	KUS-W33 Patch-Type Underwater Ranging Sensor
Power supply	10.8VDC~26VDC
Range	0.1~8m
Measurement accuracy	1%~3%(maximum range)
Emission angle	4.6°±0.5°
Communications	ModBus-RS485 standard protocol
Ambient temperature	-20℃~60℃
Protection level	IP68
Maximum operating depth	50m~150m
Probe cable	4-core shielded cable

Application Fields



Attach to the bottom of a water tank to measure the water level



Attach to the bottom of a car to measure the gasoline and diesel levels in the tank.



Used for close-range ranging of pool cleaning robots.



Used for ranging and obstacle avoidance of underwater robots.

KUS-W33 Underwater Obstacle Avoidance Sensor

Introduction

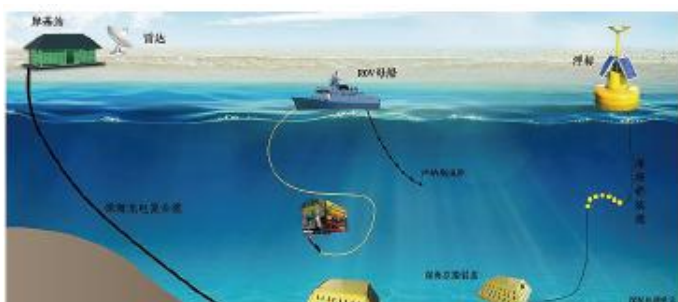
Underwater distance measurement, underwater obstacle avoidance, cylinder, box exterior water level detection.



Technical Specifications

Product name	KUS-W33 Underwater Obstacle Avoidance Sensor
Measurement accuracy	±0.5% (maximum range)
Dimensions	φ33mm*h50mm
Communications	ModBus-RS485 standard protocol
Power supply	10.8 VDC to 26 VDC
Ambient temperature	-20°C to 60°C
Protection level	IP68, withstand voltage 150m
Probe cable	4-core shielded cable

Application Fields



Underwater distance measurement



Underwater robot obstacle avoidance



ROV obstacle avoidance



Measuring distance between people in a swimming pool

KUS-W36 Underwater Obstacle Avoidance Sensor

Introduction

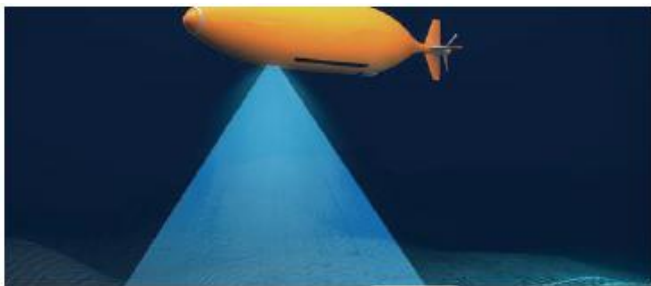
Underwater distance measurement, underwater obstacle avoidance, cylinder, box exterior water level detection



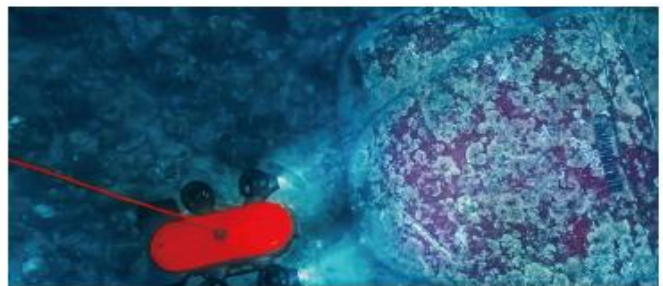
Technical Specifications

Product name	KUS-W36 Underwater Obstacle Avoidance Sensor
Measurement accuracy	±0.5% (maximum range)
Communications	ModBus-RS485 standard protocol
Power supply	10.8 VDC to 26 VDC
Ambient temperature	-20°C to 60°C
Protection level	IP68 rated, withstand voltage up to 150m
Probe cable	4-core shielded cable
Interface	Aviation plug connector or direct-connect cable

Application Fields



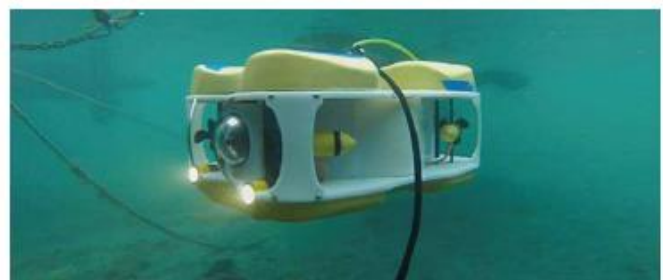
Detecting the height from the hull to the bottom of the water



Obstacle avoidance during underwater robot operations



Underwater detection and obstacle avoidance



Distance measurement for underwater robots

KUS-W50 Underwater Obstacle Avoidance Sensor

Introduction

Underwater ranging, underwater obstacle avoidance.



Technical Specifications

Product name	KUS-W50 Underwater Obstacle Avoidance Sensor
Measurement accuracy	±0.5% (maximum range)
Communications	ModBus-RS485 standard protocol
Power supply	10.8 VDC to 26 VDC
Ambient temperature	-20°C to 60°C
Protection level	IP68 rated, withstand voltage up to 150m
Probe cable	4-core shielded cable
Interface	Aviation plug connector or direct-connect cable

Application Fields



China's offshore water depth survey



Underwater ROV navigation and obstacle avoidance



Underwater machine obstacle avoidance



Underwater operation robot

KUS-W80 Underwater Obstacle Avoidance Sensor

Introduction

Underwater ranging, underwater obstacle avoidance.



Technical Specifications

Product name	KUS-W80 Underwater Obstacle Avoidance Sensor
Measurement accuracy	±0.5% (maximum range)
Dimensions	φ80mm x H70mm + M32 x 30mm thread
Communications	ModBus-RS485 standard protocol
Power supply	10.8 VDC to 26 VDC
Ambient temperature	-20°C < 60°C
Protection level	IP68, withstand voltage 150m
Probe cable	4-core shielded cable
Interface	Aviation plug connector or direct outlet

Application Fields



Underwater obstacle avoidance



Underwater terrain obstacle avoidance



Underwater ranging



Underwater robot obstacle avoidance

KUS-W80 Underwater Ultrasonic Spectrum Analyzer

Introduction

The sensor stores detected data in an internal chip and communicates with a host computer via RS485.



Technical Specifications

Product name	KUS-W80 Underwater Ultrasonic Spectrum Analyzer
Power supply	10.8VDC to 26VDC
Communications	RS485
Measurement range	0.2 to 10m
Ambient temperature	-20°C to 60°C
Protection level	IP68
Maximum operating depth	50 to 150m
Interface	Aviation plug connector or direct cable
Probe cable	4-core shielded cable

Application Fields



To show the original signal in water to R&D personnel

Introduction

Four-Beam Underwater Obstacle Avoidance Sensor

Underwater ranging and underwater obstacle avoidance.



Technical Specifications

Product name	Four-Beam Underwater Obstacle Avoidance Sensor
Blind zone	15cm
Measurement accuracy	±0.5% (maximum range)
Communication	TTL communication, ModBus-RS485 protocol
Range	3m
Power supply	10.8 VDC to 26VDC
Ambient temperature	-20°C < 60°C
Protection level	Probe IP68, water pressure resistant to 150m
Interface	Aviation plug connector or direct cable outlet
Probe cable	4-core shielded cable

Application Fields



Underwater robot navigation



Underwater vehicle multi-directional obstacle avoidance



Used for underwater robot salvage



Underwater filming

Introduction

Five-Beam Underwater Obstacle Avoidance Sensor

Integrated transducers in five directions emit ultrasonic waves for distance measurement, suitable for underwater robots, obstacle avoidance, and submersibles.



Technical Specifications

Product name	KUS-W80 Underwater Ultrasonic Spectrum Analyzer
Power supply	10.8VDC to 26VDC
Blind zone	<20cm
Measurement accuracy	±0.5% (maximum range)
Transmission direction	Orientation as per drawing
Communications	TTL communication, ModBus-RS485 protocol
Measurement range	>5m
Ambient temperature	-20°C to 60°C
Protection level	IP68, water pressure resistant up to 150m
Interface type	Aviation plug connector or direct cable outlet
Probe cable	4-core shielded cable

Application Fields



Underwater robot navigation



Underwater vehicle multi-directional obstacle avoidance



Used for underwater robot salvage



Underwater filming

Introduction

Six-Beam Underwater Obstacle Avoidance Sensor

Integrating six transducers with the circuit board can receive distance signals in six directions for underwater obstacle avoidance, underwater ranging, etc.



Technical Specifications

Product name	Six-Beam Underwater Obstacle Avoidance Sensor
Blind zone	20cm
Measurement accuracy	±0.5% (maximum range)
Communication	RS485 communication, ModBus-RS485 protocol
Range	20m
Power supply	10.8 VDC to 26 VDC
Ambient temperature	-20°C to 60°C
Protection level	IP68, water pressure resistant up to 150m
Interface	Aviation plug connector or direct cable outlet
Probe cable	4-core shielded cable

Application Fields



Drain pipe inner diameter detection



Underwater robot distance measurement



Underwater robot obstacle avoidance



Underwater short-range positioning

Eight-Beam Underwater Obstacle Avoidance Sensor

Introduction

The eight-beam underwater ultrasonic ranging sensor utilizes the principle of ultrasonic self-transmission and self-reception. Using a multi-transmission, one-reception round-robin test method implemented within the software, it can measure distance in multiple directions. This multi-directional linkage test enables underwater obstacle avoidance and ranging. The sensor stores detected data in internal chip registers and communicates with a host computer via the MODBUS protocol. Passive and active upload modes are adjustable.



Technical Specifications

General parameters	
Blind zone	≤200 mm
Detection range	0.2-10m
Electrical characteristics	
Operating voltage	10.8VDC-26.4VDC, reverse polarity protection
No-load current	30mA
Voltage drop	≤2.5V
Startup delay	<1000ms
Output characteristics	
Output type	RS485/TTL
Rated operating current	≤60mA (24V)
Accuracy	1%-3%
Environmental requirements	
Operating temperature	-20-60° C
Storage temperature	-20-60° C
Mechanical characteristics	
Output connection method	GX12 4-pin connector (aviation plug connection)
Sensor fixing screw	M6*20 (length adjusted according to bracket)
Protection level	IP68

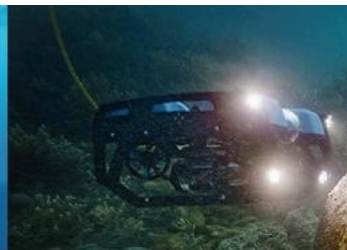
Application Fields



Underwater drone
terrain detection



Underwater drone
autonomous driving



Underwater drone
obstacle avoidance



Used for underwater
drone photography

Split-Type Ten-Beam Underwater Obstacle Avoidance Sensor

Introduction

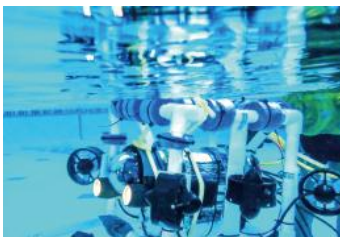
The ten-beam underwater ultrasonic ranging sensor utilizes the principle of ultrasonic self-transmission and self-reception. Using a multi-transmission, one-reception round-robin test method implemented within the software, it can measure distance in multiple directions. This multi-directional linkage test enables underwater obstacle avoidance and ranging. The sensor stores detected data in internal chip registers and communicates with a host computer via the MODBUS protocol. Passive and active upload modes are adjustable.



Technical Specifications

General parameters	
Detection range	0.2-10m
Electrical characteristics	
Operating voltage	10.8VDC-26.4VDC, reverse polarity protection
Output characteristics	
Output type	RS485/TTL
Rated operating current	≤100mA (24V)
Accuracy	1%-3%
Environmental requirements	
Operating temperature	-20-60° C
Storage temperature	-20-60° C

Application Fields



Underwater robot obstacle avoidance and ranging



Underwater ranging and obstacle avoidance for unmanned submersibles



Underwater machine obstacle avoidance



Underwater robot obstacle avoidance



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