SROD

ROBOTICS

Piepsonar(Andorid) Introduction

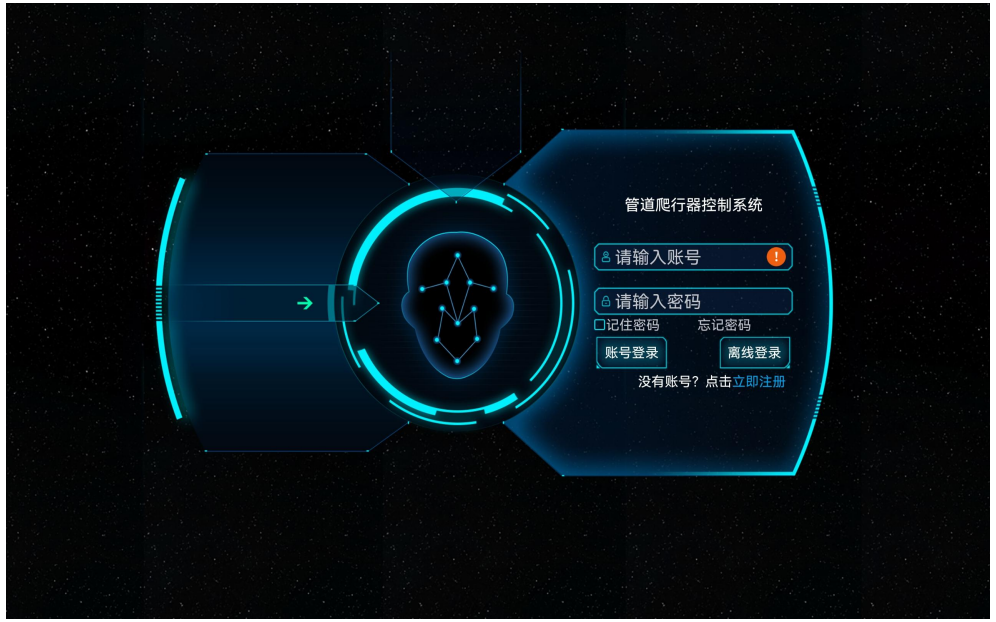
1、Pipesonar Overview

Name: Pipesonar
System: Android
Tablet Model: Huawei MatePAD 11
Compatible with Submersible Devices: S450 & S3831D

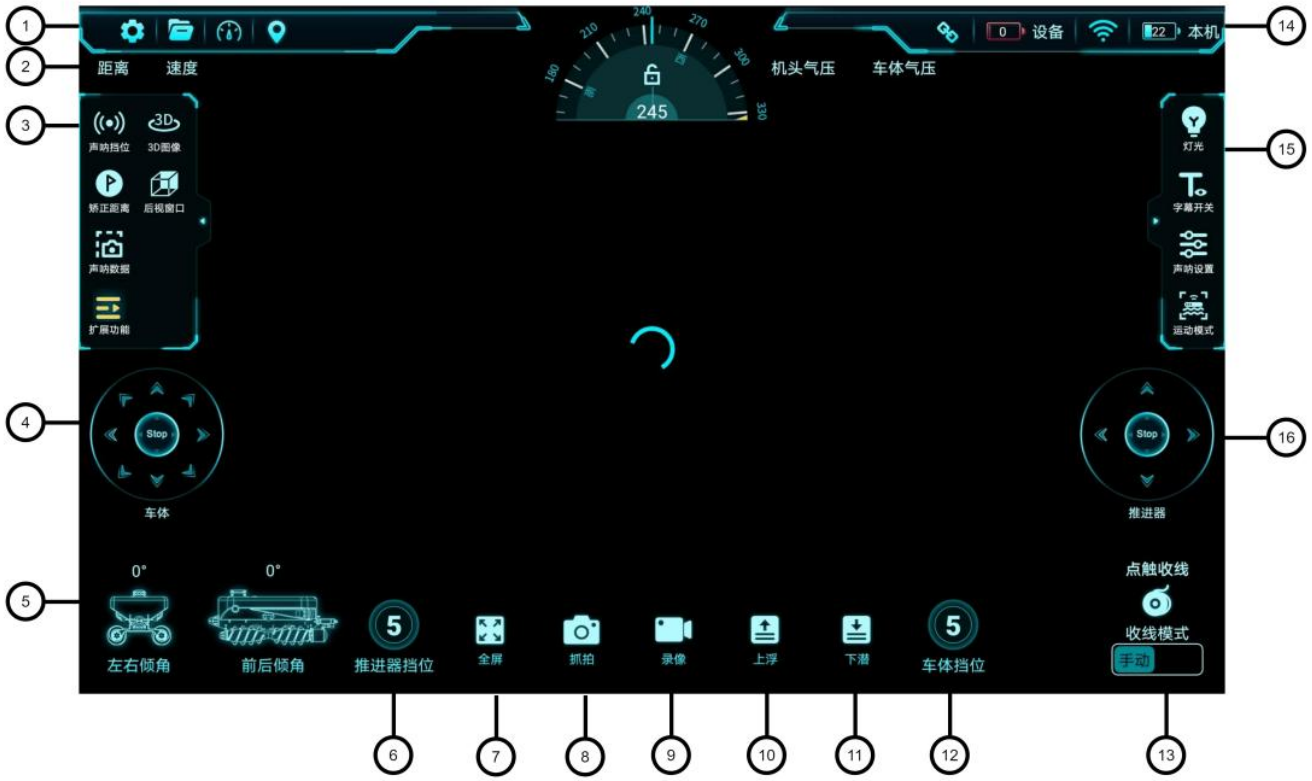
The software is designed to adapt to the scenario of powering sonar detection robots and all-terrain robot devices. It operates through a human-computer interface deployed on an Android tablet platform. The software enables controlling the movement of the powered sonar robot within the pipeline and transmitting the collected internal images of the pipeline in real-time to the tablet for live monitoring via cables. When monitoring the pipeline images, if any damage or blockage is detected, it can be recorded by video or photo to facilitate maintenance and repair. Alternatively, defects can be located and analyzed in terms of size using the 2D or 3D images captured by the powered sonar robot. On the display interface of the control tablet, the status of the device can be monitored at any time, including parameters such as tilt angle, air pressure, distance, speed, date, and other relevant information. The tablet can also store and export videos, images, and files through the software. Pipesonar software is an extremely practical, easy-to-operate, and feature-rich pipeline inspection device.

2、Product Use

1. After turning on the power switch of the cable reel, pull up the emergency stop switch, and then turn on the switch on the robot body.
2. Turn on the tablet power switch, click on "Settings", enable WLAN, and select the wireless repeater's WiFi name for connection.
Wireless repeater WiFi name: SD6150A-XX; Initial password: 12345678
3. Click on  to enter the operation control software interface of the robot.
4. After entering the software, click "Offline Login" on the login interface to enter the software's operation interface.



3、Main Function Operations (Red for All-Terrain, Blue for Sonar)



(1) Top Function Bar (Left)
(2) Data Display Area
(3) Left Function Area
(4) Robot Control Wheel
(5) Robot Status
(6) Propeller Control
(7) Full Screen Display
(8) Take Photo
(9) Record Video
(10) Robot Submerge
(11) Robot Surface
(12) Robot Gear Control
(13) Cable Reel Mode Control
(14) Top Function Bar (Right)
(15) Right Function Area
(16) Propeller Control Area

3.1 Top Function Bar

Settings: 
Click to enter the "Settings" interface.

File Management: 
Click to enter the "File Management", where you can view videos recorded by the operating system and photos taken

Data Dashboard: 
Click to expand the data dashboard, displaying various data provided by sensors, including robot pressure, underwater depth, heading angle, pitch angle, etc. Due to differences in devices and sensors, some data may vary depending on actual display conditions.

Location: 
Turning on the GPS location displays the device's latitude and longitude

Robot Battery : 

Check the current battery status of the robot and the detection settings

WiFi Connection: 
Click to enter the WiFi connection interface, allowing the tablet device to connect to the corresponding WiFi of the cable reel

3.2 Data Display Area 

In this area, you can view information such as distance in centimeters, robot speed, and head pressure.

3.2 Left/Right Function Bar

Distance Correction: 

Zeroing: Used to set the zero point of the line collecting robot meter. Click to reset the distance meter to zero。
Distance Calibration: Used to set the initial distance value of the line collecting vehicle. Click to set the initial distance valu

Defogging: 

Click to activate the defogging of the camera. Click again to deactivate. It will automatically turn off after 60 seconds. It is recommended to use the defogging before inspecting culverts。

Rearview Camera: 

Click to open the rearview camera. To use this function for the first time, you need to enable the floating window permission of the tablet itself.

Sonar Gear: 

Click to select the detection gear of the sonar, divided into nine gears: 0.25M, 0.5M, 0.75M, 1M, 2M, 3M, 4M, 5M, and 6M. Adjust the gear flexibly according to the different requirements of the detected pipeline diameter

Sonar Settings: 

Pulse Length Setting: Adjust the pulse length of the deep sonar, ranging from 10 to 1000μs.
The pulse length of the sonar refers to the duration of the pulse signal sent by the sonar transmitter. In the sonar system, the sonar transmitter emits a series of pulse signals, which propagate in the water and interact with target objects. By receiving the echo signals and measuring their time delay, the sonar can calculate the distance between the target object and the sonar.
The pulse length has an important impact on the performance and measurement accuracy of the sonar. A longer pulse length can provide higher energy and a longer measurement range, but it can also result in lower measurement resolution, and vice versa.

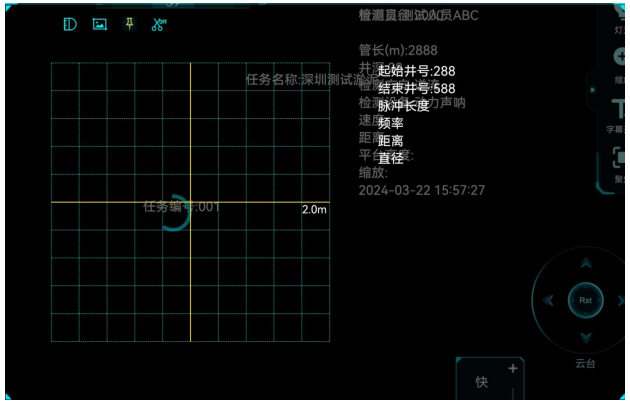
Sonar Frequency Setting: 1.750~2.925Mhz
The main function of sonar frequency setting: Detection Range: Sonar frequency affects the characteristics of sound propagation in water. Generally, lower frequencies can propagate longer distances in water because they have longer wavelengths, which can better overcome water absorption and scattering. However, sonars with lower frequencies have lower resolution and are difficult to distinguish details of target objects. Higher frequencies can provide higher resolution but shorter propagation distances.

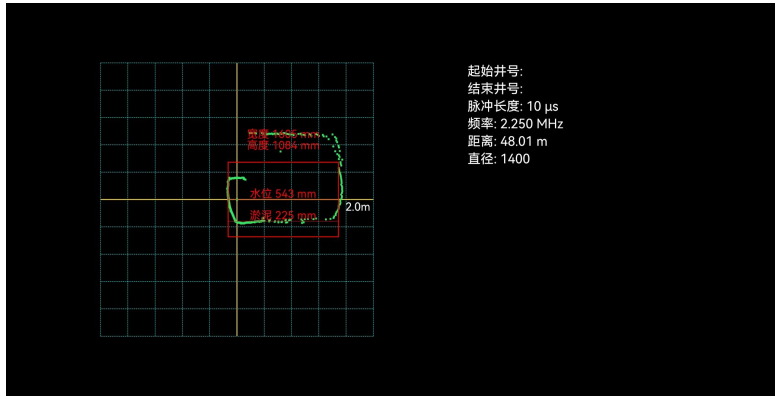
Sonar Gain Setting: 0-40dB.
Sonar gain setting is an important parameter in the sonar system, which plays a crucial role in the reception and processing of sonar signals. Sonar gain refers to the process of amplifying the received echo signals to enhance signal strength.

3.2 Left/Right Function Bar

Sonar Data：

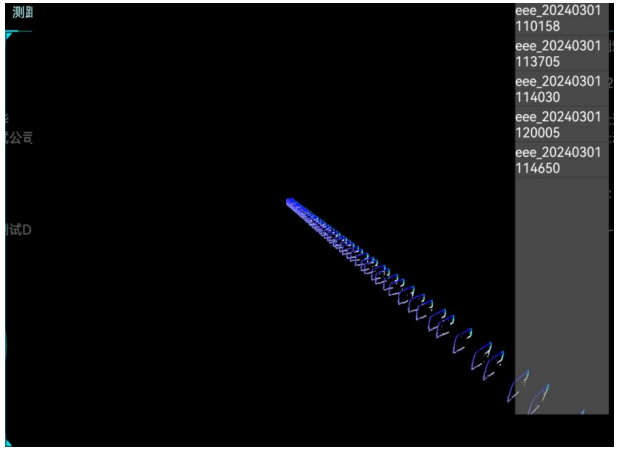
Click to view the 2D image generated by the sonar.
The four functions from left to right are: **ruler, screenshot, fixed window, automatic screenshot.**
After opening the ruler function, it can present the following effects based on the actual detection situation of the sonar.
This window can be zoomed in and moved by double-finger interaction, and can be fixed in size and position through the fixed window function.
After opening the automatic screenshot function, the sonar data can be automatically captured and screenshot every 1M/2M/3M/5M of forward movement





3D Image：

After opening this function, you can view the 3D image of the pipeline captured by the sonar. It can be rotated 360 degrees and zoomed in for viewing.



Operating Mode：(applicable to S3831D)

In the operating mode, mainly two modes, floating and suspending, are used underwater.
Floating: In the floating mode, diving refers to the downward movement of the powered sonar to increase the depth, while surfacing refers to the upward movement of the powered sonar to decrease the depth. These two modes are usually used to change the depth of the powered sonar during tasks.
Suspending Mode: The suspending mode refers to keeping the powered sonar at a specific depth in the water while maintaining a stable position relative to the water surface, without significant rising or falling. This mode is usually used for underwater tasks.

3.3 Subtitle Switch

Through this function, you can edit and set the subtitle watermark by selecting the subtitles you want to display. After clicking "Next," you can flexibly adjust the position of the subtitles in the video by freely dragging and dropping them.

3.3 Vehicle Gear

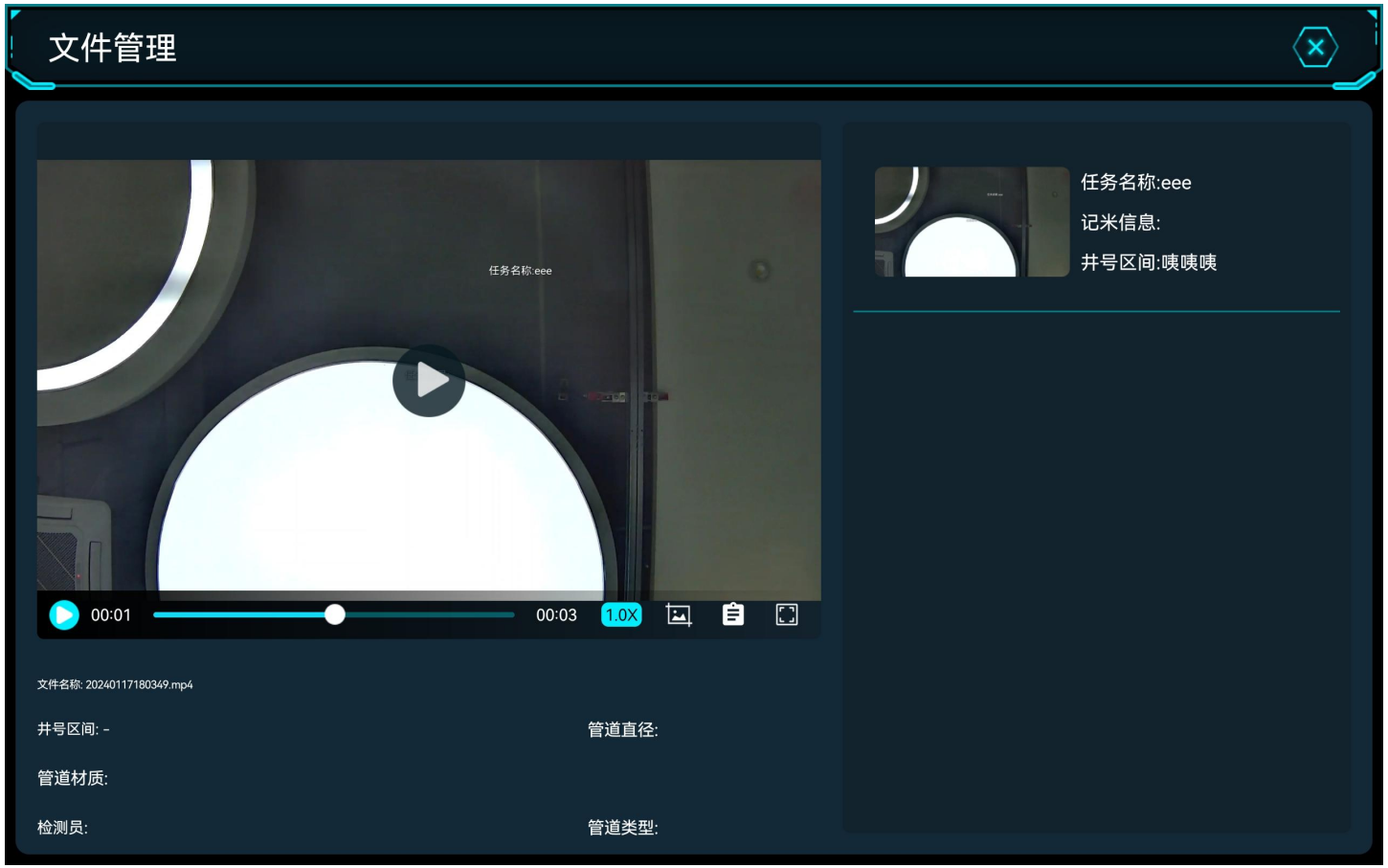
Frontview Camera Gear: Controls the horizontal rotation speed and rotation speed of the gimbal
Robot Gear: Controls the speed of straight travel and steering of the vehicle.

3.4 Control Wheel

Emergency Stop: Used to control the stop of the thrusters.
Left Push: Controls the thrusters to move and push to the left.
Right Push: Controls the thrusters to move and push to the right.
Forward Push: Controls the thrusters to move forward.
Backward Push: Controls the thrusters to move backward.

The control wheel is responsible for controlling the vehicle's movement.
Up: The robot moves forward (the cable reel automatically enters the unwinding state), press and hold for five seconds, then click the lock button to enter automatic cruise mode.
Down: The robot moves straight backward (the cable reel automatically enters the winding state), press and hold for five seconds, then click the lock button to enter automatic cruise mode.
Left: The robot drum moves laterally to the left.
Right: The robot drum moves laterally to the right.
Left Up: The robot drum rotates diagonally to the left front, enabling movement to the left front.
Right Up: The robot drum rotates diagonally to the right front, enabling movement to the right front.
Left Back: The robot drum rotates diagonally to the left rear, enabling movement to the left rear.
Right Back: The robot drum rotates diagonally to the right rear, enabling movement to the right rear.
STOP: Stops the movement of the robot and the cable reel.

3、File Management



Pause

Capture

Full Screen

2倍 Playback Speed

Simplified Report

You can view captured defect images and brief information on the right side of the video。


2021-10-25 14:03
图片编辑
管段:
距离(m):
缺陷类型:
结构性缺陷
功能性缺陷
缺陷名称:
缺陷等级:
I
II
III
IV
V
缺陷长度(cm):
缺陷描述:
时钟表示:
取消
保存
Stop
Rst
90.0°
左右倾角
前后倾角
云台相位
上仰90°
抓拍
录像
镜头切换
全屏
车体相位
收线模式
自动
手动

4、Settings

Compatibility: Allows adjustment of the software's main interface for compatibility with different device models. It automatically switches upon connecting the corresponding device.

Preference Settings: Used to switch between operation joystick layouts. You can adjust preferences for left-hand or right-hand operation according to your needs.

Video Switch: Disconnects from the camera head.

4、Settings

Data Display: Used to configure the display of various data items on the main interface dashboard. Unwanted data can be deselected.

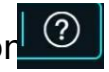
4、Settings

参数标定	测量低值	测量高值	标定低值	标定高值	报警低值	报警高值	限定低值	限定高值	参数A	参数B
机头气压	579	1525	0	20	0	21	3	21	0.02114164	-12.241014
车体气压	423	1243	0	20	3	21	3	21	0.02439024	-10.317073
前后倾角	0	87	0	90	-90	90	-90	90	1.03448275	0.0
左右倾角	-3	-87	0	90	-40	40	-45	45	-1.0714285	-3.2142857
记米信息	0	10691	0	10	0	100	0	120	9.35366195	0.0
航向角	0	0	0	0	0	0	0	0	0	0
水下深度	171	312	0	10	1	1500	0	2000	0.07092198	-12.127659

You can calibrate various parameters of the robot. For newly installed software or controllers, calibration is required before initial use (such as calibration of robot pressure, front and rear, left and right inclination angles, odometer, and platform height with electric lifting function of the robot). Generally, calibration has been performed at the factory, so it is not necessary to calibrate again.

To calibrate, select the data that needs to be calibrated, such as odometer information. Adjust the robot to the desired low value position. Click on the corresponding low value measurement data in the table, and there will be an obvious selection effect. Enter the calibration high value after the data stabilizes, wait for another 3-5 seconds, and then click on the value again to stop data collection. Repeat the same process for collecting high values. Once collected, input the corresponding calibration high value to complete the low-value calibration.

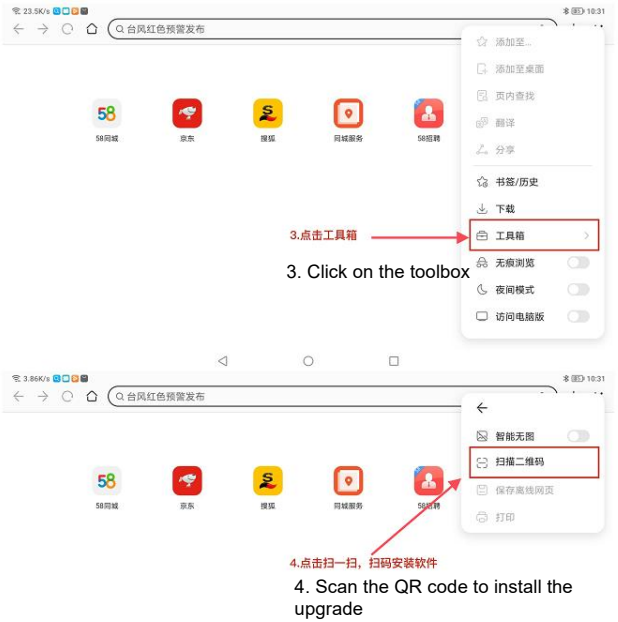
Click the "Save" button to save the page data after calibration.

Click on the "Calibration Tutorial" button  to access the parameter calibration tutorial function, where you can enter demonstration mode to see how to calibrate parameters.

。

5、Software Upgrade

Download Address



PC

Upgrade on Tablet

6、Others

It is recommended to activate the "Ring" mode in the tablet control center to facilitate the software in providing vibration feedback and voice prompts.

THANKS!

聚德精进　明慧求实

SROD ROBOTICS

施罗德工业集团

深圳市龙华区观澜街道1301号银星智界2号楼11楼

400-6088-029　www.srodcn.com