


FISHROS INTELLIGENCE

FN1

Smart Inspection Robot Dog

 Mapping & Nav

 Auto Inspection

 Remote Control

 Intercom

 Smart AI

Quadruped Intelligent Inspection Platform

Quadruped Intelligent Inspection Platform

Product Manual V1.0

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CHAPTER 01

Introduction

FN1

Full knowledge of the product positioning of the FN1 smart patrol robot dog.

Version selection, hardware composition and software system architecture

PRODUCT POSITIONING

Product positioning and version selection

Product positioning

Quadruped Intelligent Inspection Based on advanced four-foot robotic technology, integrate 3D laser radar, AI visual, voice Core technologies, such as interaction, provide autonomous, intelligent and reliable inspection solutions for industries.



Park/Factory



Property/subdistricts



Higher education/scientific research



Subway station



Political Affairs Centre



Airroom/data centre

Selection Recommendations

- Limited budget/first attempt: selection of FN1-AIR to meet basic inspection needs
- Professional inspection/complicated environment: selection of FN1-Pro, full functional experience
- Higher education research/second development: recommended FN1-Pro, improved functionality

Version Comparison

FN1-Air

Standard version

- ✓ Basic Map Navigation
- ✓ AI Visual Recognition
- ✓ Independent inspection mission
- ✓ Voice Intercom
- ✓ Remote monitoring



FN1-Pro

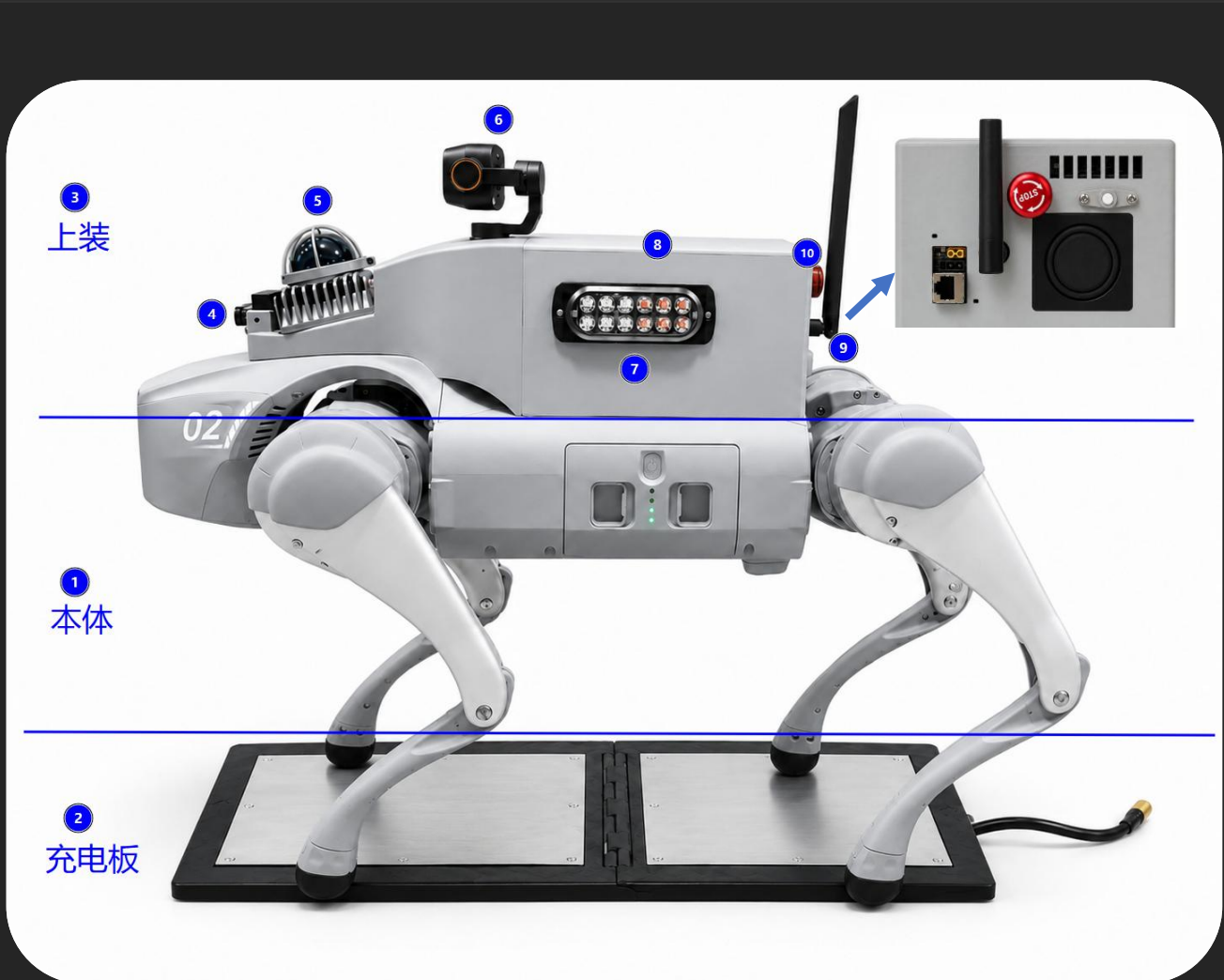
Professional edition

- ✓ Basic Map Navigation
- ✓ AI Visual Recognition
- ✓ Independent inspection mission
- ✓ Voice Intercom
- ✓ Remote monitoring
- ✓ Thermal
- ✓ High precision satellite positioning



HARDWARE COMPONENTS

Product appearance and hardware composition



Three hardware modules

1 Quadraple Body

High performance four-foot robot chassis to provide stable mobile platforms to support multi-terrain adaptation

2 Self-recharge boards


Specialized auto-chargers to support low-capacity automatic recharge and end-of-mission automatic recharge


3 Navigation Load


Integration of core sensors such as FishNaviBox, laser radar, cameras, clouds

List of navigation load components


 FishNaviBox


 Main camera


 Communications module

 4G antenna

 Laser radar

 Double Clouds

 Two open.

 Break button

SOFTWARE SYSTEM

Software System Architecture



Body System

Based on robot body + controller

Core Navigation Stack

3D LIDAR mapping, positioning, planning, avoidance

Task Management Stack

Task scheduling, dispatch, monitoring, handling

AI Vision Stack

13+ AI capabilities: analysis, detection, judgement

Voice Management Stack

Voice broadcast, AI interaction, intercom, alerts

Remote Management

Motion platform & management

Remote Operation

Real time control of mechanical dog movements, cloud-top shifts.

Light switch.

Route Management

Patrol site configuration, route planning, navigation

Point Settings

Task Scheduling

Inspection mission creation, dispatch, execution and condition

State monitoring

Map Mgmt

Map creation, editing, saving, switching and

3D visualization

Area Management

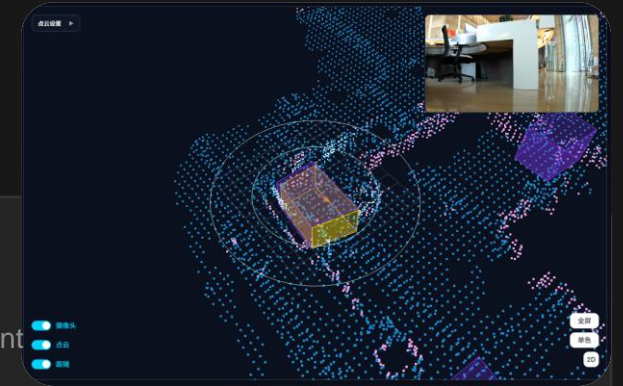
No-go, no-go, no-go, no-go.

Set

AI Recognition Module

AI model management, identification strategy configuration, results

Analysis



Different
Land
Group
Network
VPN

CHAPTER 02

Core Capabilities

It builds maps, guides, patrols, returns, takes over, alerts, expands.

Seven core competencies to build a complete smart inspection loop.

Automapping

Smart Navigator

Auto Recharge

Task Scheduling





AI Identification

Remote O&M

Voice Intercom

Autonomous Mapping & Navigation

Core technology

-  3D multi-line laser radar multi-source integration map
Advanced SLAM for high-precision 3D modeling
-  Real-time positioning and repositioning
Positioning accuracy $\pm 10\text{mm}$, relocalization $\geq 90\%$
-  Target point/routing navigation
Single-point, multi-point, route-following navigation
-  Dynamic asylum.
Real-time obstacle sensing, smart avoidance planning

$\pm 10\text{mm}$

Positioning

$\geq 90\%$

Relocalization

3D

Real-time Mapping

Map Mgmt

导入地图 导入会创建新地图，不会覆盖原有地图 回电站 创建新地图

ID	地图名称	描述	环境类型	初始化方法	2D地图信息	3D地图信息	预设启动点	创建时间	操作
1	map_20 26033b- 204429		indoor	preset	分辨率: 0.05m 图像尺寸: 2001 x 2001 原点像素: [997, 1000]	纬度: 0 经度: 0	X: 0 Y: 0 Z: 0	Mon, 30 Mar 2026 12:44:31 GMT	T1 0 添加 删除 更多
2	26楼		indoor	preset	无2D地图信息	纬度: 0 经度: 0	X: 17.06870749482165 Y: -27.3308889110083 37 Z: 0.505294905738374 4	Wed, 01 Apr 2026 02:23:52 GMT	T1 0 添加 删除 更多

- ✓ Map creation and editing
- ✓ 3D visual presentation
- ✓ Multiple Map Save & Switch

Zone Rules



- Forbidden Zone
- Speed Zone
- Stop Zone

Auto Recharge

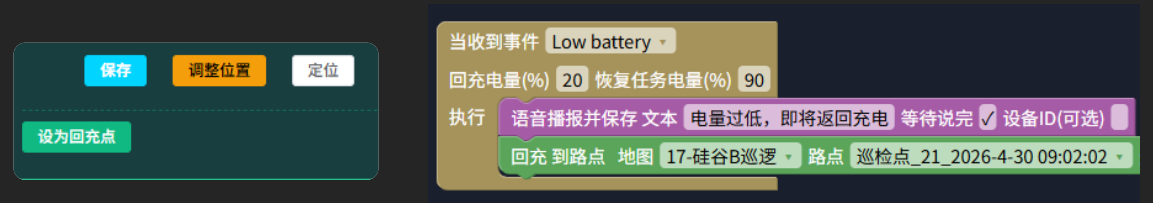
Auto-compensation process

- 1 Return Point Configuration**
Mark the charger position in the map, set the recharge path and policy
- 2 Low power trigger**
Automatically trigger a refill when power is below the set threshold and interrupts the current inspection
- 3 Autonomous Navigation Reload**
Mechanical dogs navigate autonomously to charge boards, precisely matching the charge point.
- 4 Auto Supplement**
Automatically resume inspection missions or remain on standby when charged

Border description

- Recharge success rate 95%. Automatically retry and report anomalies when failure
- Support automatic recharging after the end of the mission and maintain sufficient power
- Charge panels need to be installed in flat, dry and ventilated environments

Return point and low charge automatic configuration



Visible configuration recharging points, low voltage automatic recharging, and charging completes automatic commissioning.

Actual replay scene pictures



Mechanical dogs are autonomously navigating in the corridors to recharge panels for recharge.

INSPECTION TASK MANAGEMENT

Organization and reporting of inspection missions



Point Configuration

Mark check points on maps, set stop times, take photos, check content



Route Configuration

Link multiple dots into patrol routes, setting the order of execution, the number of cycles, the time



Planned tasks

Create a periodic inspection plan with time, frequency, duration, notifying party

Pattern

Rules

Tasking process

语音播报 文本 开始巡检 等待说完 设备ID(可选)

保存视频 来源 相机

导航到路点 地图 22-map_20260510_182744 路点 巡检点_1_2026-05-10 18:28:34 速度 0.7 避障 bypass 距离阈值 0.1 角度阈值 0.1

分析类型 拍照分析 来源 云台可见光

延迟(秒) 1 拍照张数 1 间隔(秒) 1

判断为是执行 语音播报 文本 检查完毕, 消防栓有杂物遮挡, 请注意 等待说完 设备ID(可选)

判断为否执行 语音播报 文本 检查完毕, 消防栓没有杂物遮挡 等待说完 设备ID(可选)

传给大模型的文本 消防栓是否有杂物, 先回答是否, 再给出理由

导航到路点 地图 22-map_20260510_182744 路点 巡检点_2_2026-05-10 18:28:55 速度 0.7 避障 bypass 距离阈值 0.1 角度阈值 0.1

分析类型 拍照分析 来源 云台可见光

延迟(秒) 1 拍照张数 1 间隔(秒) 1

判断为是执行 语音播报 文本 检查完毕, 消防栓有杂物遮挡, 请注意 等待说完 设备ID(可选)

判断为否执行 语音播报 文本 检查完毕, 消防栓没有杂物遮挡 等待说完 设备ID(可选)

传给大模型的文本 消防栓是否有杂物, 先回答是否, 再给出理由

导航到路点 地图 22-map_20260510_182744 路点 巡检点_4_2026-05-10 18:30:03 速度 0.7 避障 bypass 距离阈值 0.1 角度阈值 0.1

分析类型 拍照分析 来源 云台可见光

延迟(秒) 1 拍照张数 1 间隔(秒) 1

判断为是执行 语音播报 文本 休息区有人 等待说完 设备ID(可选)

判断为否执行 语音播报 文本 休息区没人 等待说完 设备ID(可选)

传给大模型的文本 休息区是否有人, 先回答是否, 再给出理由

导航到路点 地图 22-map_20260510_182744 路点 巡检点_5_2026-05-10 18:31:21 速度 0.7 避障 bypass 距离阈值 0.1 角度阈值 0.1

停止背景音乐

保存报告

Visualize the inspection process to support condition judgement, recycle execution, anomalies



Drag and Drag Organization
Auto Execute
Auto Generate
Analytical reports

Examples of analytical reports

#1 2026-05-11 16:10:24
判断 是
Prompt 防火门是否关闭, 你只能回答是或者否
LLM 是

#2 2026-05-11 16:11:00
判断 是
Prompt 休息区是否有人, 你只能回答是或者否
LLM 是

#3 2026-05-11 16:11:24
判断 是
Prompt 玻璃门是否关闭, 你只能回答是或者否
LLM 是

#4 2026-05-11 16:13:23
判断 否
Prompt 安全出口标识是否被大面积遮挡, 你只能回答是或者否
LLM 否

#5 2026-05-11 16:13:45
判断 是
Prompt 防火门是否关闭, 你只能回答是或者否
LLM 是

#6 2026-05-11 16:14:55
判断 否
Prompt 有车辆违停吗, 你只能回答是或者否
LLM 否

Automatically generate inspection reports with detection results, anomalies, recommendations for disposal



Manage closed loops

Configure, execute, record, query, complete inspection management closed loop

Organization

Implementation

Records

Question

AI Recognition

Strong AI identification and analysis capability



The smoke is burning.
Early fire warning



Leak Detection
Detects ground water accumulatic



Light status
Lighting equipment detection



Trash Overflow
Trash bin status monitoring



Station occupancy
Garage status monitoring



More Capabilities
Simple language command is complete.

分析类型 拍照分析 来源 云台可见光

延迟(秒) 1 拍摄张数 1 间隔(秒) 1

判断为是执行 HTTP请求方法 GET URL http://113.46.31.22/api/v1/calbback/ai/result

请求体 {id:"1",result":0,msg:"消防栓有杂物遮挡"}

请求头(JSON) {"key":"3fde56fac8db7cdf6"}

语音播报 文本 检查完毕,消防栓有杂物遮挡,请注意 等待说完 设备ID(可选)

判断为否执行 语音播报 文本 检查完毕,消防栓没有杂物遮挡 等待说完 设备ID(可选)

传给大模型的文本 消防栓是否有杂物,先回答是否,再给出理由



#1 2026-05-10 18:57:31

判断 是

Prompt 消防栓是否有杂物,先回答是否,再给出理由

LLM 是。

理由:消防栓顶部及侧面覆盖有白色布状物(疑似塑料布或遮盖物),且其周围草地上散落少量枯叶和杂物;根据《消防法》及消防安全管理规范,消防栓周边1.5米范围内应保持无遮挡、无障碍物,确保紧急情况下能快速操作使用。当前布料遮盖可能影响阀门开启与水带连接,构成安全隐患,属于“有杂物”情形。



LLM Yes. Reason: Fire embolism top Covered with white cloth (Suspected plastic/cover), And there's a small amount of dead in the grass.

Leaves and miscellaneous items; under the Fire Act

& fire safety regulations,

Hydrant nearby. 1.5 meters range should be clear

Blocking, barrier-free, ensuring urgenc

for quick access. When

The front fabric mask may affect the valve opening.

connects to hose, safety risk exists, classified as "blocked".



External system connection

Support for voice interaction, voice alarms, worksheet interface, automated closed loops for identification, alarm and processing

REMOTE OPERATION & MAINTENANCE

Remote transport and manipulation

Core functions

Image Return

Support live video feed and real-time video feed, multiple perspective switching, clear flow of quality

Voice Intercom

Remote shouting and two-way dialogue to support real-time voice interaction and broadcast notifications

Remote control

Real-time control of mechanical dog movements, cloud table shifts, light switches in support of mission interruption and call return

Off-site network

Support for cross-site transportation and integrated management of multi-site equipment to reduce transportation costs

Remote Control Interface



Integrated control panel: cloud control, light control, video return, voice-talking integrated operations

I'm talking to you.

AI Voice Interactivity



Smart Dialogue

AI dialogue capacity based on large language models to support natural language interaction, answer questions, implement directives



Remote Shouting

Transporters can use the backstage to speak to the scene to support one-way broadcasts and two-way conversations



Voice broadcast

Automatically broadcast mission status, unusual alarms, security alerts during inspection.



External system connection

Support for docking with security systems, worksheets, voice trigger alerts and worksheet creation

★ Technical advantages

- Large model driven, understanding strong, responding to natural flow
- Support multiple rounds of dialogue with context understood correctly
- Low delay response, good real time interactive experience.
- Support custom voice commands and broadcast content

Ground station application



Mechanical dogs on patrol at subway stations, interacting with passengers through voice-to-mouth, providing guidance services

Application value



Remote passenger service

Instead of manual patrols



Security alarm

Real-time voice alert



Information

Autonotification Bulletin



Human collaboration

Upgrading service experience

CHAPTER 03

Apply scene Case

7+ sites in parks, factories, subway stations, residential districts, colleges, etc.

Provide mature landing cases and landscape solutions

APPLICATION SCENARIOS

Apply scene at a glance



Park/Factory

Security patrols, intrusion detection, vehicle management

Air

Pro



Subway station

Station inspection, passenger traffic testing, fire control.

Air

Pro



Residential

Fire tunnel inspection, night security.

Air

Pro



Higher education

Navigation demonstrations, AI experiments, hands-on courses

Air

Pro



Political Affairs Centre

Lobby patrols, equipment monitoring, security patrols

Air

Pro



Pavilion/business

Navigation services, security patrols, customer flow analysis

Air

Pro



Urban Park

Facilities inspections, security inspections, environmental monitoring

Air

Pro




More scenes


Supporting customization development in ongoing outreach


Air


Pro


Campus & Factory Security


 Universal capacity

 Scheduled Patrol
Auto-execute patrol tasks at set times

 Intrusion Detection
AI detects illegal intrusion, alerts & records

 Vehicle Detection
Detects illegal parking, maintains order


 Remote Shouting
Remote calls are removed when anomalies are detected, supporting a two-way conversation.


 I'm gonna call the cops.
Audio-visual alarms deter violations

 Value

In lieu of traditional manual patrols, 7 x 24-hour round-the-clock patrols to reduce manpower costs by over 60 per cent and enhance security

Response speed

 Landing cases

 The Grand Silicon Valley Park in the mountains
Hofer City, Anhui Province

Scale of deployment 1x FN1-Pro

Inspection scope Park main road, building inside, office perimeter

Inspection frequency Four regular inspections per day + random checks at random


Identification capability Personnel testing, vehicle parking, intrusion detection


Application efficiency 80 per cent reduction in parking violations and 70 per cent reduction in security response time




SUBWAY & TRANSPORTATION HUB

Subway stations and transport hubs


 Universal capacity

 Station patrol.


Timely inspection of facilities, gates, ATM, screens and side gates to ensure proper operation of facilities

 Passenger flow testing


Real-time monitoring of passenger flow density, early warning of congestion risk, assistive guidance

 Fire inspection

Checking fire bolts, fire extinguishers, fire doors and ensuring that fire passages are open

 Fire hazard.

Thermal imaging identified the fire in the trash can and reported it in time for disposal.


 The vendor's got it.

A.I. ID'd the vendors. Voice warning.

 Value

Upgrade of security management at subway stations, reduction of manual inspection costs, 24-hour uninterrupted surveillance, passengers

Increased security by 50%.

 Landing cases



The subway station in the East Side of the Uttar Pradesh.

Hofer City, Anhui Province

Scale of deployment 1x FN1-Pro

Inspection scope Stations, stations, entrances

Inspection frequency Six regular inspections a day

Identification capabilities Customer flow detection, fire inspection, fire alarm hazard, vendors taking over.

Application efficiency Security hazards detection rate increased by 90 per cent and manual inspection costs reduced by 65 per cent



Residential and property inspection

Universal capacity

Fire escape patrol.

Check if the fire escape is occupied and make sure the life route is clear.

The electric car is out of control.

Identification of parking irregularities in the building lanes and elevator hall electric cars, and timely alarm.

Trash Overflow

Monitor the fullness of the trash can and alert for timely clean-up

Night security

Night time inspections, infrared thermal imaging monitoring, security of small areas

Value

Improve property management efficiency, reduce labour costs by 50 per cent, increase owner satisfaction by 40 per cent and build intellectual security

Community

Landing cases

It's a residential block.

Hofer City, Anhui Province

Scale of deployment **1x FN1-Pro**

Inspection scope **The main road, the garage, the fire escape.**

Inspection frequency **3 regular inspections per day + 2 at night**

Identification capabilities **Electric car violation, garbage spill, fire safety.**

Application effect **95 per cent reduction in access to fire routes and 60 per cent reduction in property complaints**



UNIVERSITY & RESEARCH

University science and teaching demonstration

Universal capacity

Navigation Demonstration

Demonstrating autonomous navigational technologies such as maps, path planning, dynamic barriers

Task Presentation

Show the whole process of mapping, executing, generating reports

Second class.

Provide complete secondary development interfaces to support students in programming practices

AI Experiment

Support for AI model training, visual recognition experiment, voice interactive development

Practical courses

Complete teaching materials, experimental guides, curriculum cases

Landing cases

Wuhan University

For robotics course teaching, AI visual experiments, autonomous navigation research

Shenzhen University of Technology

For practical training in intelligent manufacturing, robot programming.

Anhui Agricultural University

For school inspections and security education

Value

Provision of advanced robotic teaching platforms for higher education institutions to develop the technological capabilities of students in the front lines of AI, robotics, networking, etc.

Teaching resources support



Teaching packages



Experimental guidance



Example code



Video tutorial

MORE SCENARIOS

More scenes and landing principles



Political Affairs Centre

Lobby patrols, equipment monitoring, security patrols,

Service Guidance

Air

Pro



Pavilion/business

Guide service, security check, customer flow analysis,

Facilities monitoring

Air

Pro



Park Orientation

Auto-direction, speech, route,
Information

Air

Pro



Urban Park

Facilities inspections, security inspections, environmental monitoring,

Emergency guidance

Air

Pro

7 Site Landing Principles

1

Clear target for inspection.

Clear definition of the purpose, scope, frequency of inspections to avoid blind deployment

2

Environmental adaptation assessment

Assessment of site level, light conditions, network coverage, human flow

3

Rational planning of routes

Optimal patrol route according to site characteristics, covering key areas

4

AI Capability Match

Select a suitable AI-ID capability based on scene needs to avoid overconfiguration

5

Network security

Ensure that WiFi/4G network coverage ensures real-time data return

6

Training of personnel

Training of transport staff in system operations, anomaly handling

7

Continuous optimization

Continuous optimization of the inspection strategy based on running data to improve efficiency

CHAPTER 04

Technology

Parameters

Detailed hardware specifications, systematic performance indicators

Data support for technical assessment and programme design

（行走/站立/转向）+动
作识别，作为建图导

航控制，自动回充必备，匹配
自定义回充算法

支持多传感器接入、多
任务并行，AI边缘计算能力

支持视觉+实时 SLAM 定
位，核心感知传感器

支持实时画面，为后

尺寸约70cm×31cm×4
10kg)；速度0~3.7m/s

接口 XT30/XT30PB2+2；
料：304不锈钢；尺寸：

供电：12~48V；网口：5
核心内置 3D GPU 6TOPS

支持水平 360°、垂直 -7°
率，100m 截止距离；点

2cm@10m，角度精度<
主动抗干扰，内置 IMU，

人建图、定位、避障和巡
支持 640×480 / 1280×

口，支持 UVC 通信协议

HARDWARE SPECIFICATIONS (PART 1)

Hardware Parameters (up)

Robot Body Specs

Dimensions	About 70 cm x 31 cm x 40 cm
Weight	About 10kg (excluding loading)
Payload	Maximum support for 3kg loading
Speed	0~3.7m/s
Obstacle	Maximum crossing 10 cm.
Slope	Maximum slope angle 30°

Charging Pad Specs

Interface	XT30 / XT30PB2+2
Max Current	15A
Material	304 stainless steel
Dimensions	500mm × 400mm

FishNaviBox Compute Unit

Power	12~48V Light Input
Ethernet	5 x 1000M Ethernet
GPU Power	Inline 3D GPU 6TOPS
Function	Local computing, sensor access, multi-source integration, light quantification of AI edge calculations

3D LiDAR Specs

FOV	360° horizontal, 7° vertical ~ 52° vertical
Range	100m Closing Distance
Points	200,000 points/s
Precision	2cm@10m
Protection	IP67 Water protection against dust
Function	High-precision environmental modelling + real-time SLAM positioning

HARDWARE SPECIFICATIONS (PART 2)

Hardware parameters (down) and system indicators

📷 Main Camera Specs

Resolution **640×480 / 1280×720 / 1920×1080**

Protocol **UVC**

Function Real-time images in front to provide image data for back-end AI identification

📶 Communication Specs

WiFi **2.4G/5G Double frequency**

4G/5G **Support mobile network access**

Function Remote communications, data return, cloud management

🔊 Audio-Visual Specs

Speaker **High-power speaker. Support for telephones.**

Mic **Array mic. Two-way talk.**

Lights **LED alert light for red/yellow/green**

📍 RRTK Parameters

Positioning **Centimetres (basic stations required)**

Function **High outdoor accuracy. Increase navigational accuracy.**

👁️ Dual-Camera Gimbal

Visible **High-resolution cameras, support day and night switching.**

Thermal **Thermal imaging cameras to support temperature detection**

Control **Support remote cloud table control, horizontal/vertical rotation**

📈 System Metrics

Positioning **±10mm**

Relocalization **≥90%**

Recharge Rate **≥95%**

CHAPTER 05

Secondary development

Connect to System

Open three interfacing systems to support six major interface scenarios

Provide complete technology options for developers and system integrators

Open interface and interface scene

HTTP API

RSTful-style interface to support map management, navigation control, task management, AI Identification etc.

Map class Navigation CTask Category

WebSocket

Real-time two-way communication to support real-time data transfer, status synchronization, remote control finger Command transfer.

Real-time data Status Sync

WebRTC

Live audio and video transmission to support live video, voice-talking, remote video Backhaul

Video StreamVoice flow

6 major pairing scenarios

Client screen

Show inspection data, equipment status, alarm information on the monitor screen in real time

Security platform

Integrated management and movement patrol robots linked to existing security systems

Property systems

Access to property management systems, automatically generate inspection reports and worksheets

Worksheet system

Unusual automatic creation of worksheets detected and sent to the responsible person for processing

Teaching of scientific research

Provide full development interfaces to universities to support scientific experiments and teaching

Movement control system

Connect to AGV/AMR to achieve multi-engineer synergetic operations

List of typical open capabilities

Map management, navigation control, task management, AI recognition, voice interaction, video feed, status queries

[View API documents](#)

CHAPTER 06

Delivery process and support

Standardized nine-step delivery process

From needs recognition to training delivery, professional security throughout the process

DELIVERY CONTENT & BOUNDARY

Delivery content and boundary

Standard delivery list

Hardware equipment

FN1 mechanical dog body, chargeboard, navigational load, accessories package

Software systems

Body system, remote management backstage, mobile APP

In situ debugging

Device installation, system configuration, functionality debugging, scenery adaptation

Training services

Operational training, maintenance training, secondary development training (Pro version)

Technical information

User 's handbook, API documents, teaching packages, illustrative codes

Project-based delivery list

Customized delivery programmes based on client needs, including additional AI model training, interface customization, system integration, etc.

Delivery of boundary confirmation item

Structure

Location of installation of equipment, chargeboard positioning, channel width requirements

Electrical

Power interfaces, chargeboard power, network wiring

Communications

WiFi coverage, 4G signals, network bandwidth requirements

Software

System version, functional module, interface privileges

Receiving and Inspection

Acceptance standards, test examples, delivery documents

STANDARD DELIVERY PROCESS

Standardized delivery process



Delivery Cycle

Standard delivery cycle 7-15 working days, project-based delivery based on needs assessment

Standard deliv 7-15 days

Project delivery: needs assessment