Shenzhen JUNTRY TECH CO., LTD

We specialize in intelligent ultrasonic bottom-mounted level gauges, oil level sensors and PLC, serving as a provider of industrial measurement and control solutions. Driven by technological innovation to fuel industrial upgrading, we deliver precise and reliable measurement & control technical support to clients.

J10D1A Ultrasonic Fuel Consumption Meter

Precisely Control Every Drop of Fuel

Intelligent Monitoring Core • Multi-parameter Data Acquisition • Industrial Grade Protection

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01 Product Overview: Precisely Control Every Drop of Fuel

Core Value Proposition

Accurate Measurement
Millimeter-level measurement accuracy provides reliable data support for fuel consumption accounting and cost control.

Non-destructive Installation
No damage to the fuel tank structure, the installation process is safe and fast, without affecting the normal use of the vehicle.

Real-time Monitoring
Monitor fuel level changes throughout the day, detect fuel theft, leakage, and abnormal consumption in a timely manner.

System-wide Integration
Adapts to multiple media such as diesel and gasoline, and seamlessly interfaces with GPS/GPRS terminals and management platforms.

Industrial-grade Protection
IP66 high protection level, suitable for a wide temperature range of -40°C to +85°C, and can work outdoors for a long time without user maintenance.

Addressing Core Industry Pain Points

Low Efficiency of Manual Management
Traditional manual recording methods are inefficient, time-consuming, and labor-intensive, making it difficult to form accurate fuel consumption statistics and reports.

Fuel Asset Security Risks
Lack of real-time monitoring means that fuel theft, oil leakage, and other behaviors cannot be detected in a timely manner, resulting in economic losses.

Data Silos with No Value
Data is scattered across different devices, lacking a unified management and analysis system, and cannot provide a basis for decision-making.

High Risk of Traditional Installation
Invasive sensors require drilling and installation, which may damage the fuel tank structure and pose safety hazards and maintenance difficulties.

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01 Product Overview: Summary of Product Advantages

J10D1A Ultrasonic Fuel Consumption Sensor
Industrial-grade product design concept, compact and durable structure.

High Precision Measurement

High precision design, high sampling rate, can accurately reflect the slight changes in fuel level, and can be widely used in various fuel consumption monitoring scenarios.

Multi-signal Output Compatibility

It supports analog voltage, PWM frequency and RS485 digital signal output, and can be compatible with various monitoring systems and industrial equipment.

Non-contact Installation

The probe is installed on the outside of the fuel tank without drilling, avoiding oil pollution and safety hazards, and the installation process is simple and fast.

Industrial-grade High Reliability

IP66 protection level, can work in a wide temperature range of -40°C to +85°C, adapt to harsh working environments, and ensure stable operation for a long time.

Fast and Efficient Installation

No professional tools are required, and it can be quickly installed with a dedicated strong magnet or special glue, which is convenient and fast.

Intelligent Visual Diagnosis

The built-in status indicator light and echo intensity output facilitate installation, debugging, and fault diagnosis, and the working status and fault information can be viewed intuitively.

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02 Technical Specifications: Solid Guarantee of Excellent Performance

Electrical Parameter Configuration

Wide Voltage Input
Adapts to various vehicle and industrial equipment power supplies, with a voltage range of 9-36V, ensuring stable operation under different voltage conditions.

Low Power Consumption Design
The signal output current is extremely small, only 1mA, which does not affect the stability of the vehicle power supply system and reduces energy loss.

Low Standby Power Consumption
The maximum loss current is only 100mA, which saves energy during long-term operation and is suitable for battery-powered equipment.

Continuous Power Failure Protection
Built-in button battery maintains clock circuit operation during power off, ensuring time accuracy and preventing data loss.

Environmental Adaptability

Ultra-wide Temperature Range
Stably works at -40°C to +80°C. Custom high-temperature versions are available for special industrial needs.

IP66 Protection
Dustproof and waterproof, withstands high-pressure water flushing and harsh conditions, ideal for outdoor and industrial use.

1 Meter Water Resistance
Tested to 1m depth, suitable for vehicle fuel tanks and medium/small storage tanks, meeting various liquid level needs.

Industrial-grade product design and manufacturing ensure that the product maintains high precision, stability, and reliability in harsh environments, and can operate continuously for a long time.

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02 Technical Specifications: Output Interfaces and Signals

Half-duplex 485 Interface (2 channels)

Interface 1 is for external device communication and parameter configuration. Interface 2 outputs real-time ultrasonic echo signals for upper computer analysis and debugging.

Echo Analog Output (0.3V - 9.6V)

Debug mode reflects echo strength for calibration; test mode voltage linearly corresponds to fuel level, adapting to analog acquisition systems.

PWM Pulse Output (500-1500Hz)

Output frequency is linearly proportional to fuel level. It has strong anti-interference ability, suitable for industrial monitoring scenarios.

Wide Voltage Input (DC 12/24V)

Supports 12V/24V DC power supply with over-voltage, over-current and reverse connection protection for reliable operation.

Engine Ignition Signal Detection

Collects ignition pulse signals to identify vehicle status, enabling working condition linkage monitoring and automatic compensation.

Safe Grounding Design (GND)

Equipped with independent power and signal ground to suppress EMI, ensure signal accuracy and provide electrical safety protection.

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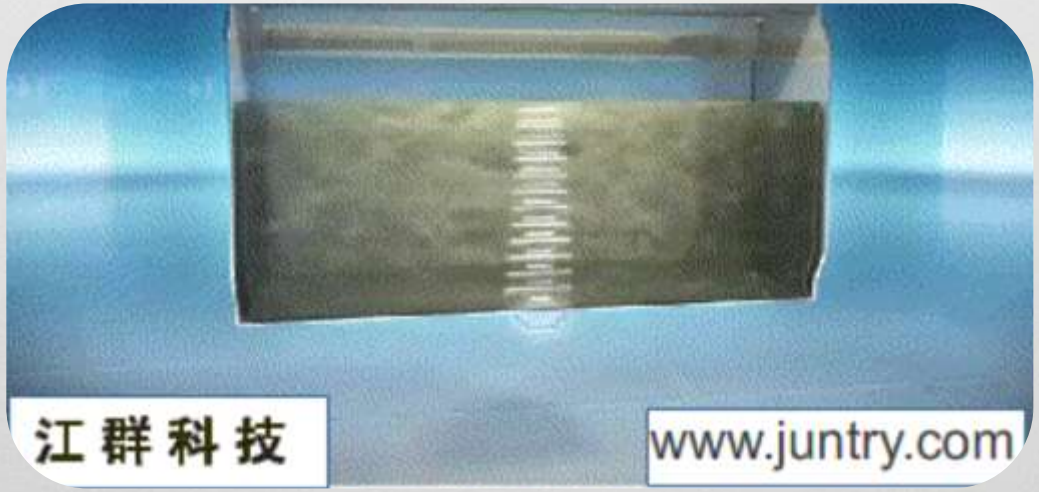
03 Working Principle: Core Technology of Intelligent Perception



Based on the principle of ultrasonic ranging, by measuring the time difference between "emission and reception", the distance from the probe to the oil surface is accurately calculated, and then the current oil level height is obtained. The technology is mature and reliable, and has been widely used in industrial measurement and control fields.

01Signal Emission
The ultrasonic probe installed on the outside of the fuel tank bottom emits a beam of high-frequency ultrasonic waves towards the inside of the fuel tank.

02Transmission and Reflection
The ultrasonic waves pass through the fuel tank wall and liquid, and are reflected when they reach the oil surface.

03Echo Reception
The probe receives the echo signal reflected from the oil surface, and converts the acoustic signal into an electrical signal.

04Time Difference Calculation
The device accurately measures the time difference (Δt) from emission to reception of the echo, which is the key to ensuring measurement accuracy.

05Distance Conversion
According to the propagation speed (v) of ultrasonic waves in the liquid, calculate the distance ($d = v * \Delta t / 2$) from the probe to the oil surface.

06Oil Level Calculation
Subtract the measured distance from the preset total height of the fuel tank to get the current oil level height, and output it through the corresponding signal.

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03 Working Principle: Intelligent Status Indication and Flexible Configuration

01 Intelligent Status Indication

Red Power Indicator
The red light is always on to indicate that the device is powered on, providing a clear power status prompt and facilitating quick troubleshooting.

Signal/Level Indicator (Green)
In measurement mode, it flashes when the oil level is lower than 30mm; in debugging mode, the faster the flashing frequency, the stronger the echo signal, which is convenient for on-site debugging.

Low Battery Alarm (Yellow)
The yellow light flashes to indicate that the voltage of the internal button battery is lower than 1.5V, reminding the user to replace it in time to avoid data loss caused by power failure.

02 Flexible Configuration and Mode Switching

Installation Debugging Mode
Used to select the best probe position during installation, quickly find the position with the strongest signal through the indicator light and analog voltage, and ensure measurement accuracy.

Normal Test Mode
The normal working mode, which outputs the oil level signal in real time, and can be directly connected to the monitoring system for data acquisition and analysis.

Customizable Maximum Level
The maximum measuring oil level can be set through the dip switch to match the actual fuel tank height, improving measurement accuracy and adaptability.

Clock Power Supply Option
You can choose whether to enable the internal battery to power the clock, which is suitable for independent working or linked with GPS/GPRS terminals in different scenarios.

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04 Application Fields: Widely Applicable Liquid Level Monitoring Solutions

Transportation Industry

Commercial vehicle fleet management, construction machinery monitoring, ship and railway oil monitoring, providing accurate fuel consumption data and improving transportation efficiency.

Energy and Chemical Industry

Liquid level measurement in oil depots/refineries, fuel level detection in unattended base generator sets, ensuring production safety and stable operation of equipment.

Industry and Manufacturing

Raw material liquid level measurement in the food and beverage industry, storage tank liquid level monitoring in the chemical industry, realizing automated production process control and material management.

General Liquid Level Measurement

It can accurately measure the liquid level of any liquid with known sound speed in closed or open containers, and the application range is extremely wide, meeting the customized needs of various industries.

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04 Application Fields: Scenario Display

Smart Logistics Transportation

For logistics and transportation fleets, it provides accurate fuel consumption monitoring, realizes real-time tracking of fuel quantity, prevents fuel theft, optimizes driving behavior, and reduces operating costs.

Construction Machinery Operations

Used in construction machinery such as excavators, it monitors fuel level changes in real time under complex working conditions, ensures sufficient fuel for equipment, and improves construction efficiency and equipment utilization.

Energy Storage Management

For oil depots and chemical storage tanks, it conducts accurate liquid level measurement, realizes intelligent inventory management and automated control, and ensures the safety and stability of the storage system.

Communication Base Station O&M

For unattended communication base stations and signal tower generator sets, it monitors the fuel level of the generator set in real time, ensures that the generator can be started in time when the power is off, and ensures the continuous and stable operation of the communication signal.

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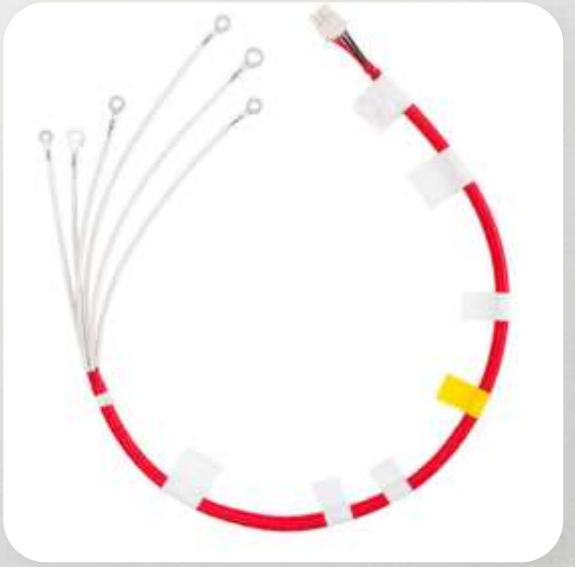
05 System Connection: Standard Configuration and Optional Accessories

Industrial-grade Ultrasonic Probe

Industrial-grade design, stable and reliable performance, suitable for long-term use in harsh industrial environments.



Special Industrial Connection Cable

High-quality cable material, anti-interference and wear-resistant, ensuring stable signal transmission and long service life.

01 Standard Configuration List (Out of the box)

Including: 1 x J10D1A ultrasonic fuel consumption meter host, 1 x high-sensitivity ultrasonic probe and 6-meter cable, 1 x power input and signal output integrated cable (1m), 2 x sealing caps.

02 Optional Accessories (Customized selection)

Including: 5-meter extension cable (total length 11m), downloader (reader/writer), special strong magnet for probe installation, downloader with extension cable, 485 port connection cable, etc. Choose according to actual needs.

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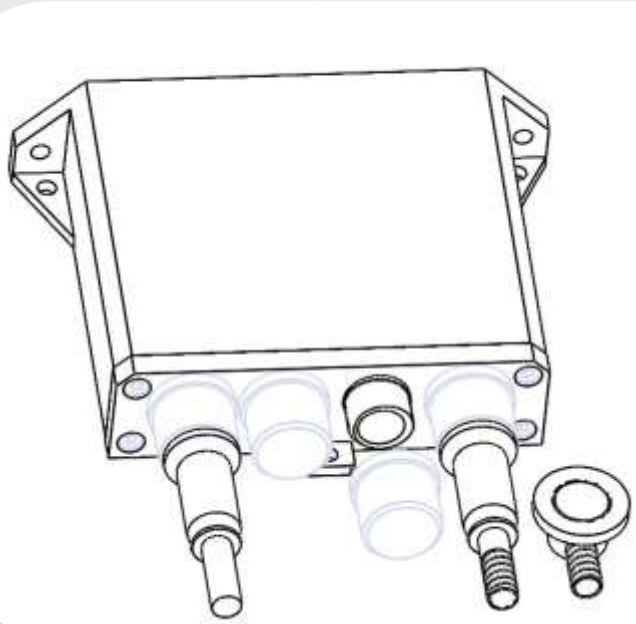
05 System Connection: Integration with GPS/GPRS Terminal System



The J10D1A can be seamlessly integrated with mainstream GPS/GPRS terminal devices, realizing remote fuel consumption monitoring and data management. Through the connection of the terminal, real-time fuel level data, historical consumption records and equipment status can be transmitted to the cloud platform, providing data support for the fleet's digital transformation.

Analog Interface: Simple adaptation, fast deployment

Supports 0.3-9.6V analog voltage output and 500-1500Hz PWM frequency output, which can be directly connected to the analog input port of the GPS terminal, with simple wiring and fast commissioning.

Digital Interface: Industrial standard, stable and reliable

Using the 485 interface and dedicated communication protocol for connection, it can achieve two-way data transmission, with higher data stability and stronger anti-interference ability, suitable for complex industrial environments.

Configuration Point: Fuel tank capacity calibration

If you need to convert the oil level value (mm) into the actual volume (liters), you need to calibrate the corresponding relationship between the fuel tank height and capacity on the GPS platform to ensure the accuracy of the data output.

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06 Installation and Commissioning: Simple and Fast Deployment Process

01 / Pre-installation Preparation

Site and Environment Confirmation
Park the vehicle on a flat ground to ensure that the parallelism between the fuel tank oil surface and the bottom surface is not more than 2 degrees, providing a stable measurement environment.

Fuel Quantity Preparation
Add about 2/3 of the fuel to the fuel tank to obtain a stable oil surface, avoid the influence of too low or too high oil level on the debugging effect, and ensure the accuracy of debugging.

Preparation of Tools List
Prepare tools such as voltmeter, cable ties, sandpaper/scraper, acoustic glue (purchased separately), magnet (purchased separately), etc.

02 / Six Steps for Probe Installation

01 Position Selection
Select 4-5 candidate installation positions at the bottom of the fuel tank, close to the center and without obstacles, to ensure the smooth propagation of ultrasonic waves.

02 Surface Treatment
Remove dirt, polish off paint and oxide layers to expose the metal body, ensure good acoustic coupling effect, and improve signal strength.

03 Debugging Mode
Set the dip switch SW1-1 to "1", power off and restart to enter the debugging mode, and prepare for signal testing.

04 Signal Test
Apply coupling agent, attach the probe to the candidate positions in turn, and select the position with the strongest signal.

05 Probe Fixing
Apply acoustic glue, fix the probe, wait for it to harden (24h at room temp or 1h at 60°C), and ensure firm bonding.

06 Re-verification
After the glue hardens, enter the debugging mode again to confirm that the signal strength meets the requirements.

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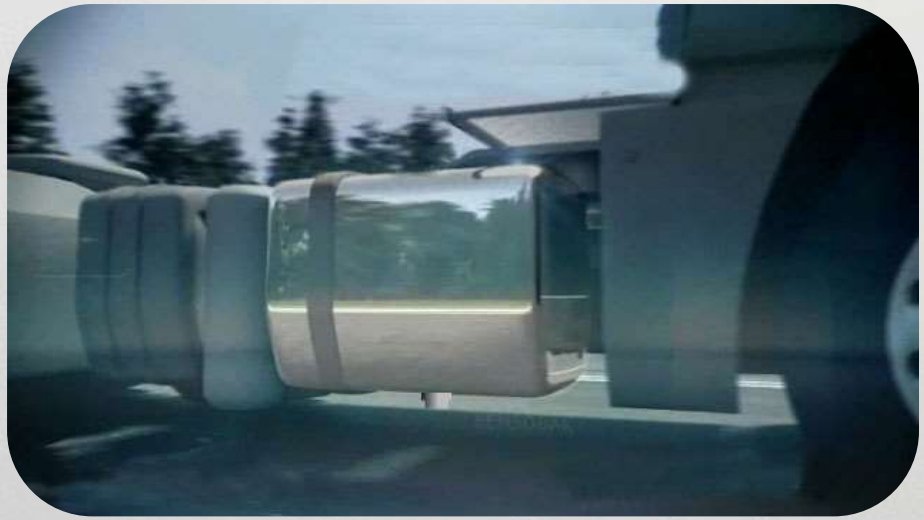
06 Installation and Commissioning: Host Installation and Wiring



The fuel tank is usually located under the vehicle chassis, with a complex structure and high vibration. It is necessary to choose a flat and firm position to install the probe to ensure the stability of the probe and avoid falling off during driving, which will affect the service life.

01 Host Fixing

Choose a suitable position and fix the host with 3M double-sided tape or screws. If working in autonomous mode, reserve space for the downloader interface for easy data reading and parameter setting.

02 Cable Connection

Connect the probe extension cable to the ultrasonic probe interface of the host, and confirm that the rubber sealing ring is in the correct position to ensure waterproof performance. Connect the power and output cables to the power multi-interface socket of the host.

03 Power Wiring

Connect the red wire (+12/24V) and black wire (GND) to the vehicle power supply. It is recommended to connect the ground wire to the vehicle main power switch to ensure safety and avoid power loss.

04 Mode Setting

Set the dip switch according to actual needs (such as maximum oil level, automatic mode, etc.), and cover it with a dustproof label to prevent dust and water from entering and affecting the use.

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Embrace the New Era of Intelligent Fuel Management

The J10D1A ultrasonic fuel consumption meter is an intelligent liquid level monitoring solution integrating high precision, safety, and reliability. Through advanced sensing technology and intelligent algorithms, it provides strong technical support for the digital transformation of enterprises.

Refined Cost Control

Realize refined fuel management, monitor every drop of fuel consumption, optimize driving behavior, reduce unnecessary fuel waste, and effectively reduce operating costs.

Fuel Asset Security Protection

Fully monitor the fuel tank status, identify fuel theft, leakage and other abnormal behaviors in a timely manner, ensure the safety of fuel assets, and avoid economic losses.

Digital Operation Intelligence

Connect to the cloud platform in real time through GPS/GPRS, realize remote monitoring and data analysis, optimize maintenance plans, and provide a solid data foundation for the digital transformation of the enterprise.

Immediately adopt J10D1A to start your intelligent fuel management journey!We provide professional technical support and perfect after-sales service to ensure your investment achieves maximum returns. For more product solutions and technical support, please visit the official website:**www.juntry.com**

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Contact Us

Shenzhen JUNTRY Technology Co., Ltd
Specialized in R\&D and manufacturing of liquid level transmitters, PLCs and industrial sensing equipment, we drive industrial upgrading through technological innovation

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