



Product Manual

IoT Fill-in Level Sensor

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1. General Overview

Meet Hive is a company possessing core competence in the IoT industry and the field of data science. As the industry leader in city management, enterprise IoT service, and other vertical application fields, it provides a full set of data intelligence solutions for the customers.

Meet Hive Smart IoT Sensor (hereinafter referred to as "Smart Sensor") is a set of enterprise tools that help waste recovery enterprises with cost reduction, revenue growth, and standard management. The Smart Sensor has two parts: the hardware part (a Meet Hive Smart IoT Sensor) and the software part. The basic functions of the Smart Sensor include monitoring the fill-in level of the recycling bin, detecting the theft of the waste bin, recording employees' work (exclusive for the administrator account), and planning the routes of garbage gathering and transportation (exclusive for the driver account)

2. Sensor Description

2.1 Smart Sensor

"Smart sensor" applies Time-of-Flight (TOF) ranging optical sensor with its core controlled by two chips. The data is measured every 5 minutes to ensure the timeliness and accuracy of the information. The product outer cover is made of PC+ABS material, which has high impact resistance, high heat resistance, and excellent aging resistance and weather resistance. Moreover, the product has a built-in high-performance lithium battery. Lab experiments show that its service life reaches up to 8 years.

2.2 Product Components



2.3 Technical Parameters

Power Supply	lithium battery
Size	77*77*36.5 mm
Weight	175g
Battery life	3 years + (Measure frequency such as every 5 minutes)
Battery Capacity	18,000 mAh
Measuring technique	Laser Probe
Measuring distance	2-200/400 cm Measuring Accuracy: 0.1cm
Measurement Frequency	Per 5 mins (From 10 times a second to every 5 minutes)
Operating Temperature	-40~80℃ Celsius
Material	PC+ABS

- Built-in communication chip and antenna. NB-IoT/2G/3G/4G/WIFI/Lora communication.
- PC+ABS materials shell, stable, and durable.
- European original probe assembly ensures high quality and reliability.
- Built-in high-performance power supply Super low component power consumption 8Y + operation (Laboratory environment).
- 3M mucilage glue for fixation to increase stability.

2.4 Product Model

Smart sensor (Top version)



Models of Hi sensor (top cover version)	Installation Position	Ranging	Functions	Network	Net weight	Size
Hive-D2-sim-top	The top cover of the bin	2m	/	2G/3G/4G	175g	75*75*36mm (Length*Width*Height)
Hive-D4-sim-top		4m	/			
Hive-Dx-sim-p-top		/	With GPS positioning			
Hive-Dx-sim-top-oversea		/	/			

Smart sensor (Side-wall version)



The side surface models of Hi sensor	Installation Position	Ranging	Functions	Network	Net weight	Size
Hive-D2-sim-side	The side surface of the bin	2m	/	2G/3G/4G	175g	73*73*44mm (Length*Width*Height)
Hive-D4-sim-side		4m	/			
Hive-Dx-sim-p-side		/	With GPS positioning			
Hive-Dx-sim-side-oversea		/	/			



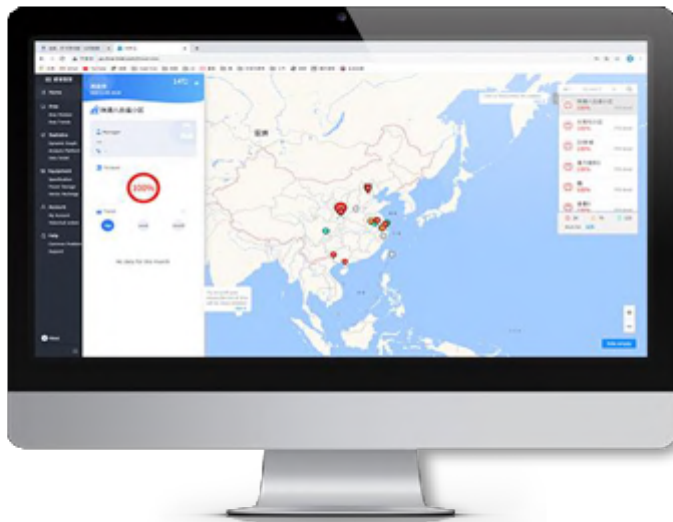
Smart sensor (Ceiling)

The In-Ceiling Models of Hi Sensor	Installation Position	Ranging	Functions	Network	Net weight	Size
Hive-D2-sim-suck	The ceiling of the bin	2m	/	2G/3G/4G	175g	75*75*36mm (Length*Width*Height)
Hive-D4-sim-suck		4m	/			
Hive-Dx-sim-p-suck		/	With GPS positioning			
Hive-Dx-sim-suck-oversea		/	/			

3. Platform Description

The Multi-dimensional analysis capability based on isomerous data endows Meet Hive with the capability to have insight into the vertical scenarios and provide complete industry solutions. Meet Hive establishes a data platform aligned with NB-IoT and AI with huge research efforts and a professional research team. The complete data analysis engine is capable of providing customized services such as data analysis, aid decision making, and intelligent management. The containerization of cloud service can provide real-time service across physical space swiftly. Also, the availability of zones deployed by us provides a strong guarantee to data.

3.1 Analytic Management Platform



Analytic platform



Manager app



Driver app

Meet Hive's innovative smart waste management combines the analytic software, providing real-time data analytics that supports decision-making.

3.2 Waste Management

The analytic management platform tells the data of the container's fill-in level and status, telling users which waste container is collected as well as the collection time.



City Dashboard

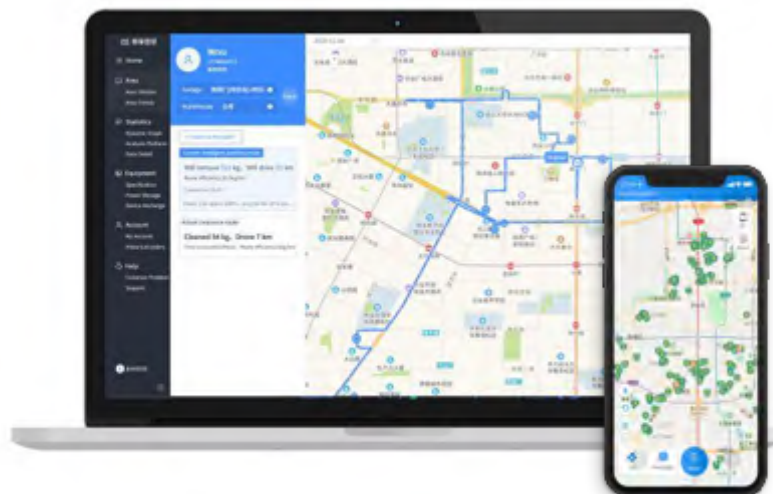
Present for customers' clearance management which shows the carbon reduction, energy consumption and corresponding economic value created, offer the client intuitive and convenient overall satisfaction.

Analyses dynamic

Dynamically present the volume of trash in real time

3.3 Rout Planning

Route plans for trash collecting and transportation. In our route planning algorithm, variables such as the capacity of the sanitation trucks, the fill-in conditions of the waste bins near the planned route, garages, and locations of warehouses are considered.



3.4 Features

- Route planning of trash gathering and transportation
- Monitor the fill-in level and status of the recycling bin
- Analyses dynamic
- Customize the platform
- Monitor the battery life in real-time
- City dashboard, the overall interface that Meet Hive presents for customers'

clearance management which shows the carbon reduction, energy consumption, and corresponding economic value created, offer the client intuitive and convenient overall satisfaction.

4. Why choose us

4.1 Higher Measurement Accuracy

Typical sensors used for distance measurement are optical sensors. The right form shows the advantages and disadvantages when optical sensors and ultrasonic sensors are compared.

4.2 Flexible Measurement Frequency to Realize the Real-time Monitoring

The default measurement frequency for the product is once every 5 minutes. The measurement frequency of the laser probe can be set to adapt to the measurement of different liquid fill-in level changes and improve the real-time accuracy, and the measuring medium is not limited to ordinary liquid, oil, viscous matter, etc.

4.3 Real-time Tracking and Automatically Alarm

Real-time tracking of the transportation, storage, and delivery of biochemical waste. If there is any abnormality, it will alarm automatically on the management platform.

Actively intervene in the access of densely populated areas to show the flow of people in the form of numbers or percentages. The high-risk warning will be triggered if the set value is exceeded, which can be used for Epidemic Surveillance and Containment.

4.4 Prevent Waste Loss

The waste in the container has its value to the owners, the real-time monitoring can detect and warn drastic changes in the container's fill-in level in a short period.

4.5 BTS+GPS Dual Positioning

Dual positioning increases positioning accuracy for containers, vehicles, and dustmen. With the measurement and feedback of the real-time fill-in level, we can grasp the data information and give the processing solution more accurately.

4.6 Function Extension and Integration Solutions

Garbage identification, classification, and analysis, API data compatibility, Smart accessories, SMS/phone alarm notification, Human traffic statistics monitoring (Epidemic Surveillance and Containment Solution), IoT application of extended, Parking management, Intercom unified command system, Customization of customer requirements,

4.7 Data Can Be Stored for More than 72 Hours

When the network is in bad condition, the data cannot be sent to the cloud server in time. It can still be stored in the sensor for more than 72 hours until the communication network is restored and sent back in one time.

4.8 Improve Operation and Collection Efficiency

Meet Hive's smart fill-in sensor with its management platform monitors waste containers fill level and status in real-time, avoids the overflowing of the containers, the weak delivery rate and lack of information, and improving the waste-collecting efficiency up to 50%.

4.9 Environmental Beneficial

The traditional current wasting collection methods are constantly making pollution caused by waste trucks, fuel costs, and overflowing trash. Meet Hive is committed to decreasing traffic congestion, prevent unsanitary container overflows, and offer the most innovative smart waste management solutions with less CO₂, noise, traffic, and unnecessary consumption.

4.10 Full Transparency

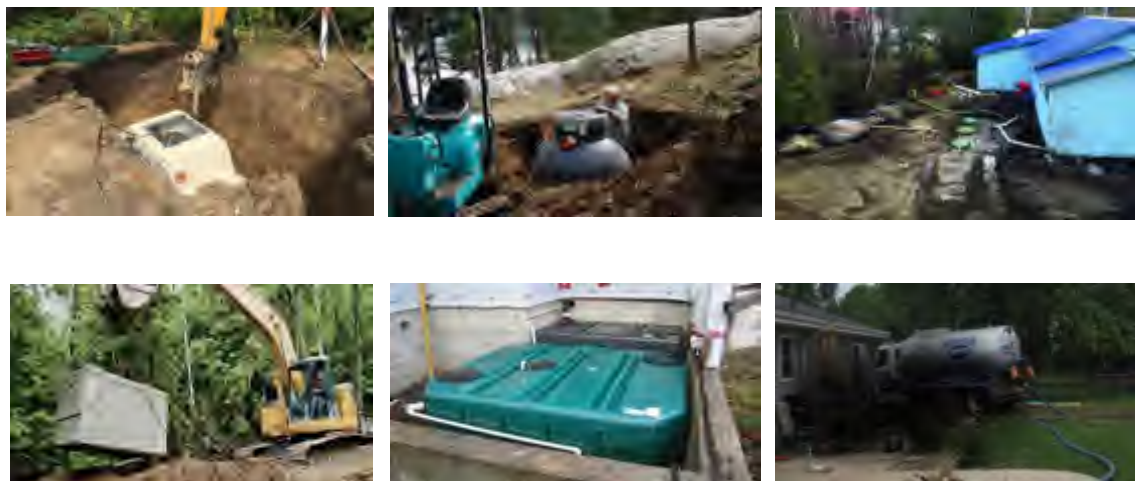
The IoT connects the smart fill-in sensor on the container with the database, making it possible to access data anytime, anywhere, using a tablet, phone, or laptop. The transparency and real-time data let the companies make decisions with more references.

5. Solutions

Smart sensor has been proven to be a very effective technology for numerous monitoring applications, like water, air, waste pollution treatment, epidemic surveillance and containment, the generating energy from secondary raw and waste materials, etc.

Meet Hive provides innovative smart waste management solutions with its smart sensor and systems, which allows to increase recycling, reduce overall environmental impact, and shrink the costs.

5.1 Building and Domestic Wastewater Treatment



5.1.1 Challenges

Wastewater treatment is such an urgent problem we are all facing today. The constantly deteriorating waster environment makes it urgent to find new approaches and technologies to achieve sustainable management of waste systems.

5.1.2 Solution

The use of IoT smart senor presents the technology in the management and monitoring of water fill-in levels.

The analytic management platform provides real-time data analytics that supports decision-making.

5.1.3 Results

The smart sensor deployments in the water distribution systems allow end-users to detect pollution events and adverse trends in near real-time. Therefore, the private or public entities in charge of water quality monitoring and management will be able to act more efficiently and effectively tackling the problems detected, reacting to the problems more quickly, and minimizing the negative environmental impact.

5.2 Waste Liquid Treatment



Waste Oil (Including
Edible Oil and Lubricating)



Laboratory Waste
Liquid



Laboratory Waste Liquid



Polyethylene Waste



Alkali residue Waste
Liquid



Ammonium Bicarbonate

5.2.1 Challenges

The managing of the waste liquid has been a significant challenge for businesses. The effective way to deal with hazardous and non-hazardous liquid caused by the manufacturing or production system has become a huge challenge in front of us today.

5.2.2 Solutions

Waste liquid, like Waste Oil, Laboratory Waste Liquid, Urea Waste Liquid, Polyethylene Waste, Butanol Waste Liquid, Chloroform Waste Liquid, Ammonium Bicarbonate, Asphalt, Electroplating Waste Liquid, Rainwater, Printing and Dyeing Waste, Coal Mine Waste Liquid, etc.

The use of IoT smart sensor presents the technology in the management and monitoring of the waste liquid.

The analytic management platform provides real-time data analytics that supports decision-making.

5.2.3 Results

The innovative core technology of smart sensor presents its supreme capabilities in monitoring and management with the disposal of the waste liquid, which largely decreases or even prevents pollutions. Also, Meet Hive's hi-tech allows to improve the work efficiency, save the cost by 50%.

5.3 Waste Recycling Treatment



Alloy



Glass



On-ferrous Metal



Paper



Plastic



Rare Metal

5.3.1 Challenges

Each year we dump a massive 2.12 billion tons of waste on the planet. Recycling is a key component of modern waste reduction.

Meet Hive's innovative smart waste management uses artificial intelligence, IoT, machine learning, and sensor monitoring, makes it possible for modernized waste recycling.

5.3.2 Solutions

The use of IoT smart sensor presents the technology in the management, monitoring, and sorting of waste.

The analytic management platform provides real-time data analytics that supports decision-making.

5.3.3 Results

Environmental beneficial, save energy. By using IoT technology it's possible to manage the waste by collecting data from the smart sensor, sorting the waste, and reuse it.

6. Quality Assurance and Warranty

6.1 Quality Assurance for Products

Meet Hive is manufactured and inspected under the EU quality system standards.

6.2 Limited Warranty

6.2.1 Scale of Warranty: Smart sensor

6.2.2 Refund, Exchange, Warranty at No Charge Within 7

Days:

Within 7 days (including the 7th day) of purchasing the device, you may request a refund at one time according to the invoicing prize or ask for an exchange for a new device of the same type and size if there comes any no artificial damage, or you can choose to repair at no charge.

6.2.3 Exchange, Warranty at No Charge Within 15 Days :

Within 8 to 15 days (including the 15th day) of purchasing the device, you may request an exchange for a new device of the same type and size if there comes any no artificial damage, or you can choose to repair at no charge.

6.2.4 Warranty for a Year:

Within a year from the date of purchasing, Meet Hive will provide free repair and maintenance service if there comes any no artificial damage. The start date of the warranty shall be subject to the date the invoice or the receipt of the purchased equipment is issued if the last day of the validity of the warranty is a legal holiday, the next day of the holiday shall be the last day of validity.

6.2.5 Guarantee on Maintenance and Quality:

- 1) If the whole device is exchanged under warranty (Accessories not included), the warranty period of the exchanged product shall be recalculated according to the "Three Guarantees".
- 2) Parts or accessories exchanged outside the warranty conditions enjoy a 90 days' warranty (Service centers authorized by Meet Hive will fully explain this part to consumers).

6.2.6 The Following Circumstances are Excluded from

Warranty :

- 1) Damage caused in transit for an exchange or maintenance.
- 2) Damage caused by any attempt that's unauthorized by Meet Hive to modify, disassemble, or repair the device.
- 3) Damage caused by accident or artificial factors. Such as liquid inflow, smashing, working under inappropriate voltage, over squashed, deformation of the motherboard, etc.
- 4) Faults and damage caused by failing to install, operate, repair, maintain the device under the instructions given.

- 5) The model of the device does not conform to the warranty certificate or the certificate is altered.
- 6) The warranty is already invalid.
- 7) Faults and damage caused by inevitable factors (Fire, earthquake, flood, etc)

6.2.7 Guidance for Services of Refund, Exchange, and

Repair:

- 1) Before a request for a refund, exchange, or repair, make sure the following contents are met:

	The device is in good condition	The pack is in good condition	The gifts can be returned(If given)
Refund	√	√	√
Exchange	√	√	
Repair	√		

- 2) Before sending for repair, please record the information of the device in advance for its next installation.
- 3) During the repair, the product shall be examined professionally by the service center authorized by Meet Hive. The service center will determine the appropriate maintenance plan for the device if it's confirmed to be a bad one. For products still in the validity of the warranty, within the validity of the three guarantees, the consumers shall enjoy the rights of refund, exchange, and repair. If the consumer requests an exchange, the exchanged devices with faults belong to Meet Hive. For those products without faults, they will be returned as what they were.
- 4) Service centers of Meet Hive will charge consumers for extra fees if the device sent failed to meet the requirements of the warranty policy terms and conditions, the reason will be stated on the invoice and the receipt attached.

6.2.8 Important Statement:

- 1) The clauses above are only applicable for products sold in the People's Republic of China (Hong Kong, Macao, Taiwan not included).
- 2) Devices of special types can enjoy the warranty policy among Hong Kong, Macao, and Taiwan, the criteria for defining the specific types are subject to the official announcement.

3) Our company does not take any responsibility for any additional guarantees made by the sellers to consumers.



Meet hive Intelligence corporation limited

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Address

Qinjin Business Building, No.47 Lenan Road, Beilin District, Xi'an, Shaanxi Province

<https://www.hive-intel.com/>