



# Artic Smart Energy Management Solution





# Smart Home Energy Management Solution

Enable Home Energy Management from Electric Usage to Water Usage

## Household Energy Facilities

<b>Product Review</b>				
	Charging Pile	Breaker	HVAC	Electricity Meter
<b>Water</b>				
	Socket	Lighting	Large Home Appliance	Small Home Appliance
	Water Valve Controller	Irrigation Controller	Water Pump	Water Meter
<b>Gas</b>				
	Gas Water Heater	Gas Meter		

## Smart Household Energy Management Solution

<b>Smart Device Ecosystem</b>	
<b>Energy Saving App Dashboard</b>	
<b>Energy Management IoT PaaS Platform</b>	

## Smart Household Energy Usage

	<b>Smart Electric Usage</b>
	<b>Smart Water Usage</b>
	<b>Smart Gas Usage</b>



# Smart Energy Product Catalog

## Industry Control

Circuit Breaker | Dual-power Switch | Edge Gateway | Frequency Converter | Time Relay



## Power Supply

Inverter | UPS Power supply | Energy storage power supply | Battery pack | Power Bank | Charging station | Power Adapter | Power Cable



## Instrumentation

Electric meter | Water meter | Gas meter | Calorimeter | Collector | Gas monitor | Anemometer | Water Flow Meter | Illuminometer



## Valve, Pump, and Flow control

E-controller | Irrigator | Water Pump | Heat Pump | Manipulator





# **Smart Gas**

## **Empower Accurate Quantification and Safety Management**





# Smart Gas Industry Pain Points

## Difficulties in meter reading, charging, and payment

- Traditional manual meter reading: low efficiency and high cost.
- The current IC gas meters have problems such as stability of data transmission, high power consumption, and inconsistent meter manufacture specifications.
- Fee payment: offline payment is inefficient and often delayed.

## Gas supply and safety

- Corrosion and gas leak may occur in the process of gas transmission and distribution in the pipeline network, which cause resource waste and benefit loss of gas companies
- Lack of monitoring methods and O&M scheduling capability for pipeline network problems such as excessive pressure and temperature

## Optimizing energy efficiency

- Using step pricing to facilitate energy conservation and emission reduction, traditional gas meters are difficult to achieve complex price billing, frequent price adjustments and accurate metering

**Smart Gas Empowers Accurate Quantification and Safety Management**

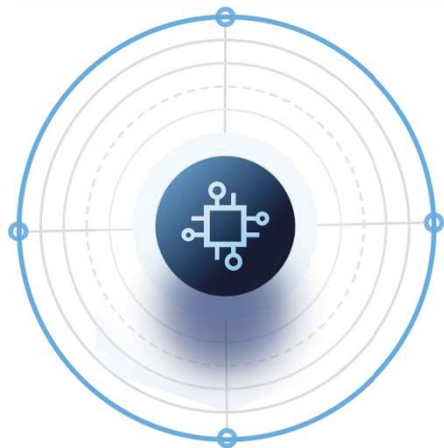




# Smart Gas

## Remote Monitor and Data Management

Remote Monitor  
and Data Management



Bill  
Management

Alarm Record

Safety and Gas Distribution

### Accurate Gas Usage Calculation and Flexible Statistics Settings

- Visualized total gas consumption, daily and monthly gas consumption
- Flexible selection of data reporting period (hourly/weekly/monthly)
- Flexible setting of data freezing time points

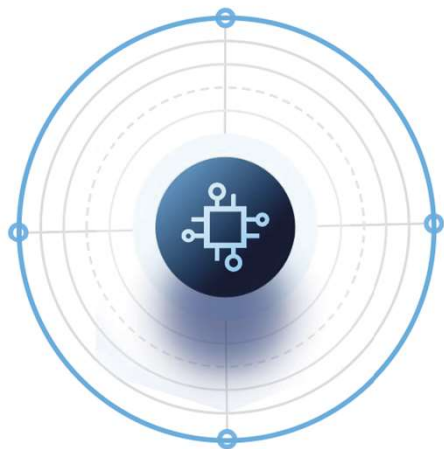




# Smart Gas

## Bill Management

Remote Monitor  
and Data Management



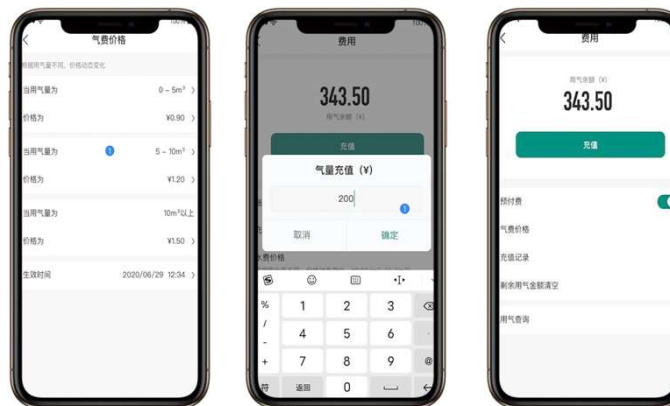
Bill  
Management

Alarm Record

Safety and Gas Distribution

### Rich Billing Features and Convenient Centralized Management

- Set step gas unit price, flexibly adapt to different regional regulations
- Prepaid bill and credit adding, support mainstream domestic and international payment methods
- Credit query and reset the remaining amount

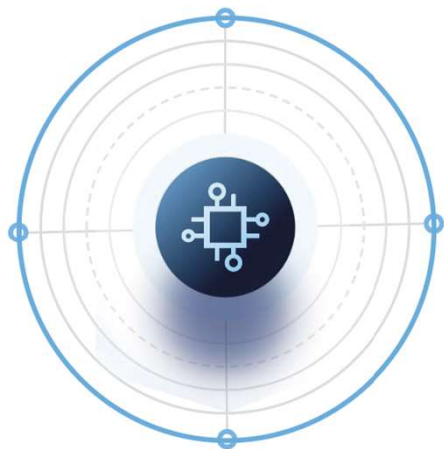




# Smart Gas

## Alarm Record

Remote Monitor  
and Data Management



Bill  
Management

Alarm Record

Safety and Gas Distribution

### Multiple Alarm Records, Guard Gas Safety

- Under-voltage protection: power supply voltage detection, reminder of insufficient battery power supply
- Strong magnetic induction: strong induction leads to magnetic components failure
- Valve status reminder: valve is not completely shut down
- Anti-dismantling reminder: identify unauthorized dismantling
- Abnormal gas detection alarm and other gas meter fault diagnosis
- Reminder of excessive gas consumption and arrears

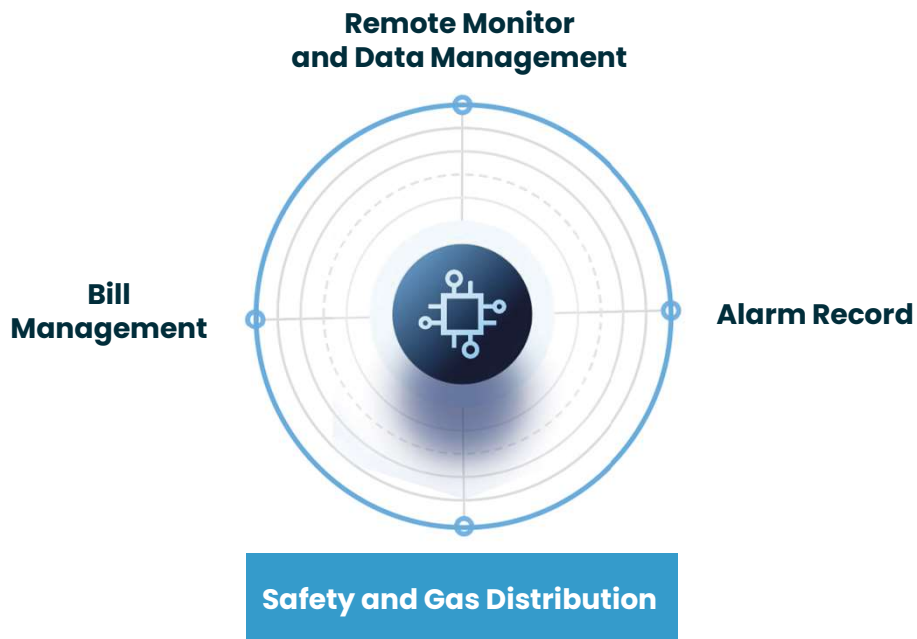






# Smart Gas

## Safety and Gas Distribution



### Built-in Safety Self-check and Protection Capability

- Built-in cleaning valve switch, regularly open and close the valve to prevent the lack of lubrication of the components which lead to seizure
- Temperature compensation: expandable temperature monitoring, high temperature warning, and gas metering algorithm for temperature compensation

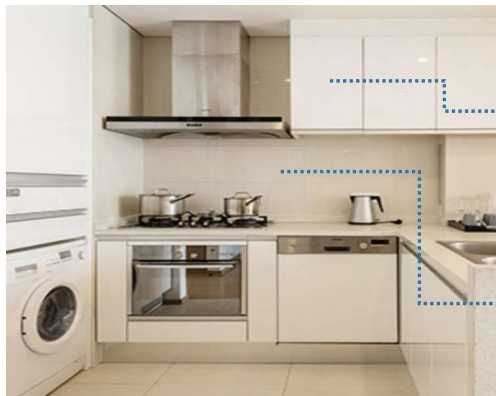
### Enable Gas Pipeline Operation and Maintenance

- Instantaneous flow: monitor instantaneous flow, accurately assist pipeline operation and maintenance and city gas distribution
- Working pressure: monitor pipeline pressure, alarm in time for abnormalities, and empower B-side managers



# Smart Gas Meter Solution

## ENERGY METERING

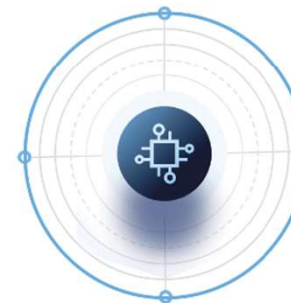


Gas Meter



Gas Detector

Remote Monitor  
and Data Management



Bill  
Management

Alarm Record

Safety and Gas Distribution



## Enable Gas Pipeline Operation and Maintenance

- Instantaneous flow: monitor instantaneous flow, accurately assist pipeline operation and maintenance and city gas distribution
- Working pressure: monitor pipeline pressure, alarm in time for abnormalities, and empower B-side managers

## Accurate Gas Usage Calculation and Flexible Statistics Settings

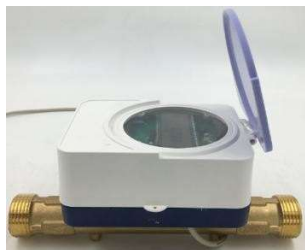
- Visualized total gas consumption, daily and monthly gas consumption and report export

## Built-in Safety Self-check and Protection Capability

- Built-in cleaning valve switch, regularly open and close the valve to prevent the lack of lubrication of the components which lead to seizure
- Temperature compensation: expandable

## Rich Billing Features and Convenient Centralized Management

- Set step gas unit price, flexibly adapt to different regional regulations



**Ultrasonic Water Meter**

**Communication protocol**

1. Zigbee or NB-IoT

**Product features**

1. Water metering: Measure the water velocity through the ultrasonic flowmeter, to achieve forward and reverse metering
2. Valve (optional), which can be used for controlling the device in combination with the bill
3. Components with no mechanical contacts, low pressure drop, and long service life
4. Automality detection, backward-Flow and overflow alarms

**Product Specifications:**

1. Powered by lithium battery, adapted to the pipe diameter DN15/20/25/32/40
2. NB-IoT: Different module models for different frequency bands in different regions.



**Photoelectric Direct Reading Water Meter**

**Communication protocol**

1. NB-IoT

**Product features**

1. Photoelectric metering module inside, sampling precision to 0.1m<sup>3</sup>
2. Tiny size, flexible installation
3. Built-in lithium battery, super low power consumption design, report once a day for 6 years
4. Report cumulative water consumption and battery status, and communication cycle can be set

**Product Specifications:**

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# Case Study

## Gas Company

### Customer Needs & Challenges

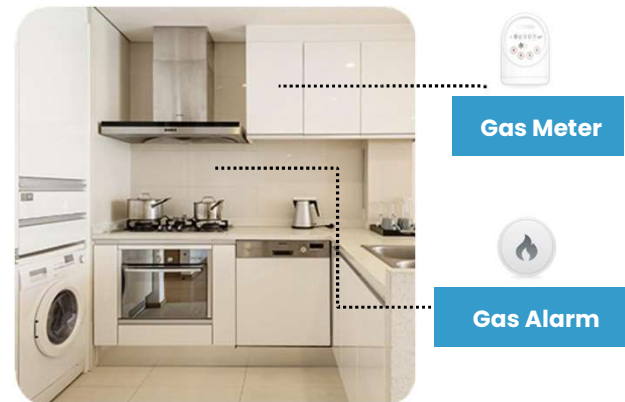
- ① All IoT device vendors comply with the same standards to integrate with the IoT platform.
- ② All connected devices can be managed and monitored in one platform precisely and efficiently.
- ③ Enable consumers to access gas services using a unified mobile app and mini program.
- ④ Leverage big data analytics to drive business values and monetize traffic and data.
- ⑤ Implement linkage between alarms and gas meters for leakage detection and alerts.

### Solutions

- ① The Cube solution helps the customer to implement digital transformation with the goal of 'One IoT Platform, One System, One Standard'. Standardization makes it possible for contractors or vendors to connect to the IoT platform with the same standards. This overcomes data integration challenges. On the consumer side, improve gas safety with leakage detection and alerts and enable remote gas readings and billing.

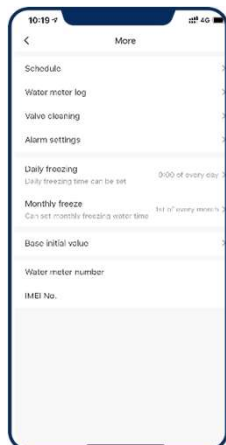
### Customer Value

- ① A device management platform oversees all connected devices, helping to increase efficiency and reduce cost.
- ② Deploy service capabilities across branches and subsidiaries to maximize efficiency within the organization.
- ③ Tear down data silos with data integration to make the best of data assets and prepare for the future.
- ④ Improve consumer experience with safe and convenient gas services and hence monetize mobile traffic.





# Smart Water Meter Solution



## Water Monitoring & Insight

- Monitor water use by year, month and day
- Spot usage trends
- In combination with other smart devices, break down water use by individual household appliances and water fixtures such as irrigation, showers, washing machine and swimming pool

## Remote Control

- Remotely control water meter valve

## 24/7 Water Leak Detection

- Monitor the security of the home's entire water system by identifying leaks as small as a drop
- Push notification when detect leaks

## Water Bill & Conservation Management

- Display water bill by month and day
- Support prepaid
- Support conservation goals setting and overuse reminder and to encourage saving water and money



# Smart Water

## Cover Whole-ecosystem Management

### Water Supply

Efficient management, leakage control and scheduling optimization



### Community & Property

Data display, revenue and expenditure management, service optimization



### Wide Coverage

Apartments, commercial buildings, industry, and agriculture



Landscape Greening

Residential Water Consumption

Commerce & Office

Industry & Agriculture



Irrigator



Valve Controller



Meter



Flood Sensor



Flow Meter



Collector

WATER MONITORING

DATA STATISTICS

REMOTE CONTROL

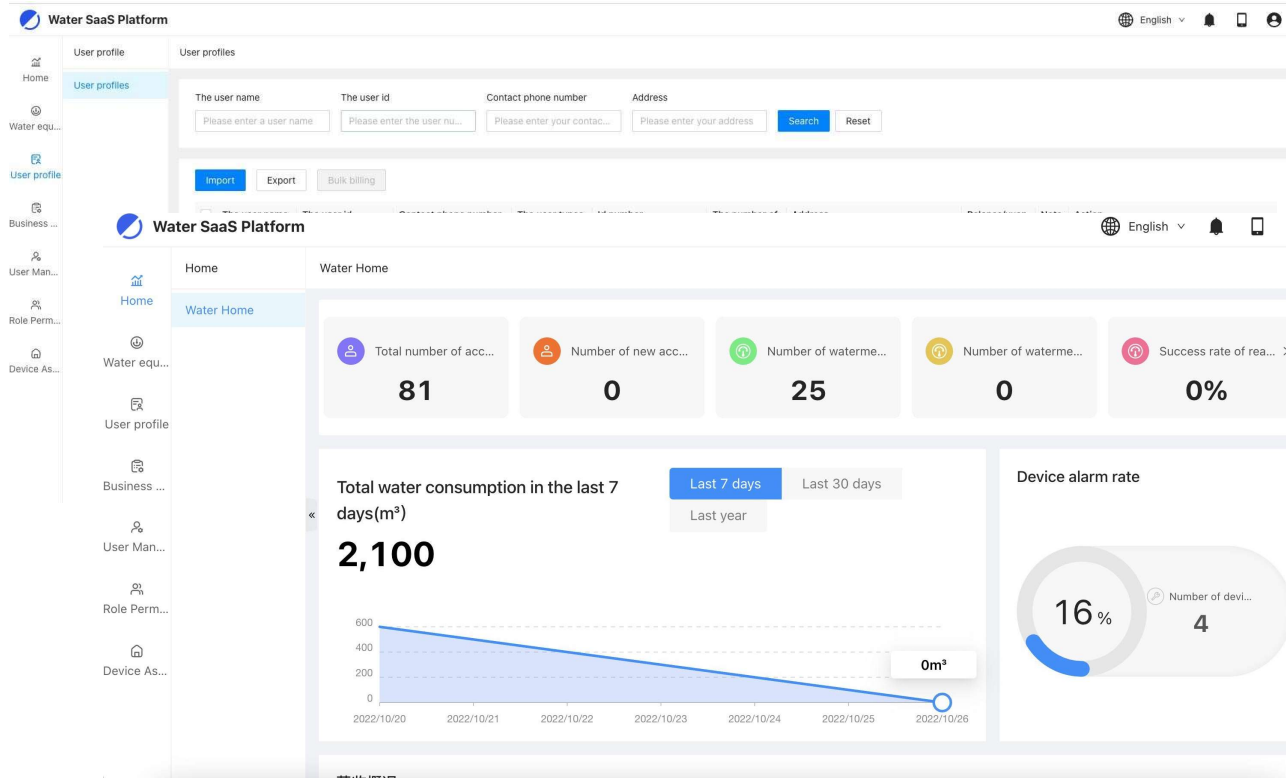
SMART IRRIGATION

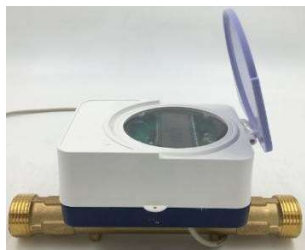




# SaaS Solution

## Smart Water Management





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2. NB-IoT: Different module models for different frequency bands in different regions.





# Smart Electricity Meter Solution



## Remote Control

- Users can remotely control the opening or closing of the smart circuit breaker in the app panel or on the SaaS platform

## Power Monitoring

- High-precision measurement of electrical data such as electricity consumption, voltage, current, power, and frequency.
- Based on visualized data, users can easily view electricity consumption in specific scenarios and check the power grid quality

## Self check and alert

- A total of 13 types of alerts, including overvoltage, undervoltage, overcurrent, and non-conformity are supported, ensuring electrical safety.



# Smart Braker Solution



## Leakage protection

- Self-check of power leakage

## Magnetic Latching relay

- 63A current supported

## Electricity operated

- Applicable to remote switches



## Remote Control

Users can remotely control the opening or closing of smart meters in the app panel or on the SaaS platform.

## Alert

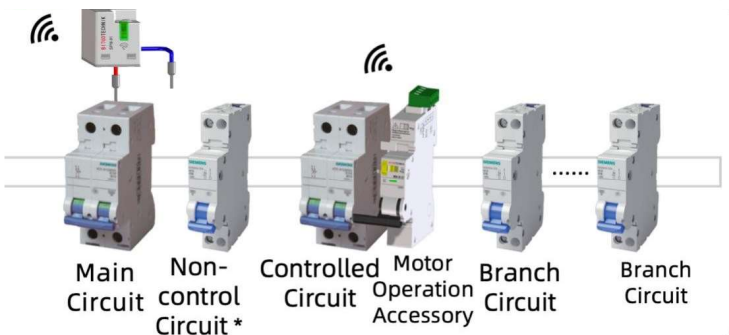
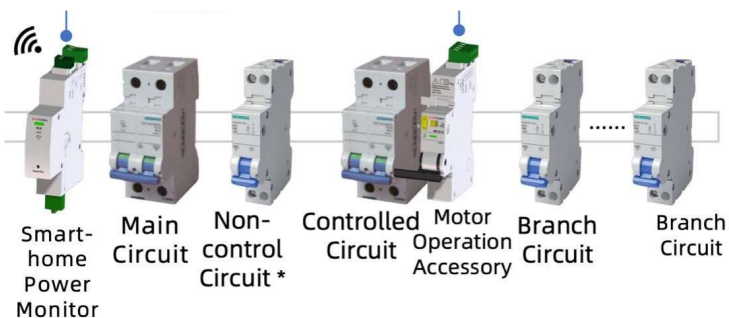
Support over/under voltage alarm, over current alarm, and missing items alarm, to ensure your electrical safety

## Statistics

High-precision measurement of electrical data such as electricity consumption, voltage, current, power, and frequency. Based on visualized data, users can view historical power consumption.



# Smart Power Monitor Solution





### Single-phase electric meter

#### Communication protocol

1. Wi-Fi or NB-IoT

#### Product features

1. Various types of alerts for electrical safety
2. Remote opening and closing
3. Cl 1.0 high-precision measurement and voltage, current, and power display
4. Applicable to single-phase power scenarios

#### Selling points:

1. Multi-protection
2. Electricity consumption measurement
3. CPA certificate



### Single-phase/three-phase guide-type electric meter

#### Communication protocol

1. Wi-Fi, Wi-Fi + Bluetooth, Zigbee, or NB-IoT

#### Product features

1. Various types of alerts for electrical safety
2. Remote and scheduled opening and closing
3. Cl 1.0 high-precision measurement and voltage, current, and power display
4. Support for prepayment management
5. Applicable to single-phase and three-phase power scenarios

#### Selling points

1. Multi-protection
2. Electricity consumption measurement
3. CE certificate

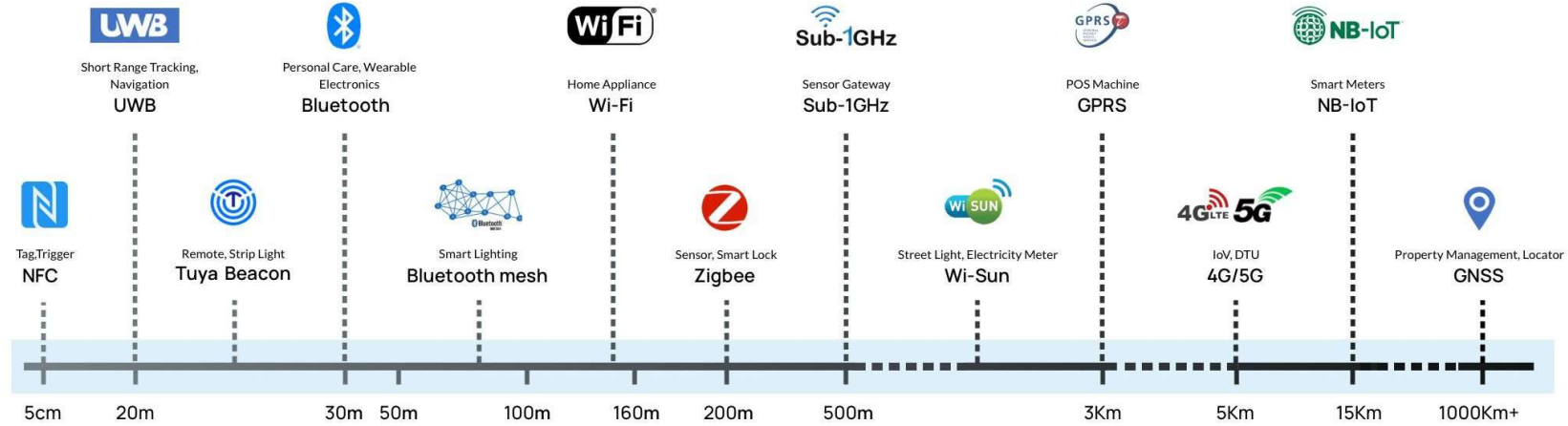


# Smart IoT PaaS Platform





# A wide Range of Protocol Options



**WiFi™**

**Contributor**

Joined the IoT workgroup

Tuya has launched 200+ Wi-Fi modules since the beginning of the partnership

**Bluetooth™**

**Participant**

Participated in the Smart Home workgroup and joined the standard establishment group

Tuya has launched 50+ Bluetooth modules since the beginning of the partnership

**csa** connectivity standards alliance

**Promoter**

Became a member of the Board of Directors to establish the Matter standard

70+ products have received the Zigbee 3.0 certification

**THREAD**

**Implementer**

Dedicated to the application and promotion of Matter over Thread

**fira** CONSORTIUM

**Adopter**

Facilitate the application and promotion of UWB technology in the IoT field



# Low-cost and Efficient Brand App

Support multiple languages

Connect and control smart products

### Personalized App Building

Create your smart app in 5 steps, support personalized building and customization

### APP update and shelf

Keep high frequency iteration of APP function, and provide update and shelf service to ensure your products never fall behind

### Rich advanced features

Including such as siri voice, scene intelligent recommendation, SMS phone notification and many other services to make your product more intelligent

### Multi-end control

Support operating your smart devices on pads, Apple Watch and other terminals, allowing for richer device usage scenarios



# Cross-platform Eco-connection

## Ecosystem Partners

With an in-house testing lab for Works With Alexa certification, Tuya could be your solution partner for IoT development.

Tuya Smart works with the Google Assistant for hands-free help around the house.

Microsoft now displays device smart-enabled by Tuya on its cloud platform, Azure.

Tuya is now Works With SmartThings (WWS1) certified to offer to advanced smart solutions via Samsung's SmartThings app.

Easily and securely control lights, doors, thermostats, and more devices smart-enabled by Tuya by using Siri.



Dual system  
cross-platform



Voice control



Remote control

Choose any one of the Tuya Smart or third-party platform apps to connect, and the device will also connect to the other app simultaneously (The App can achieve all the functions of the product, other App can achieve the standard functions of the platform)

In addition to using the App control, you can use Siri/Alexa/Nest voice control control

Remote control and status synchronization of devices via the App, without the need for a separate home hub

Remote control is partially unavailable on third-party platforms)





**Lighting your Smart Life.**



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