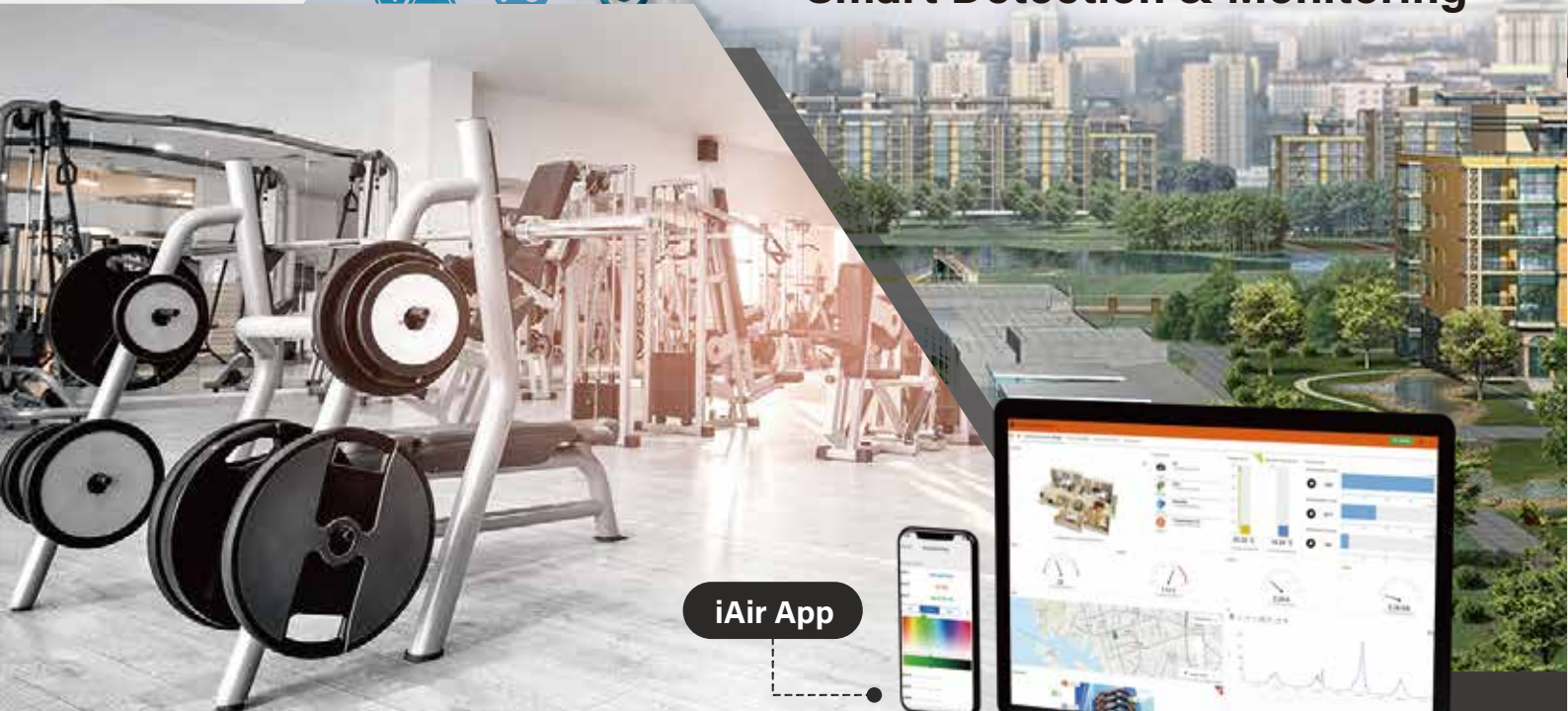




## Data Visualization of Air Quality Smart Detection & Monitoring



iAir App

ICP DAS's Cloud Monitoring System

IoTstar Dashboard Service

# DL-300 Series

# Industrial Gas Sensor



DL-300-IP65 Series  
DL-310-IP65 Series



DL-300 Series  
(Basic , Wi-Fi)

- ✦ Easy to install and operate
- ✦ Support temperature, humidity, air pressure, and sea level monitoring
- ✦ Support multi-gas monitoring
- ✦ Support wired/wireless communication interfaces (RS-485/Ethernet/PoE/Wi-Fi)
- ✦ Buzzer & Relay Output for Audible/Visual Alarm
- ✦ IP65 Degree of Protection



Smart Detection &  
Data Visualization



Easy On-site  
Installation



All-weather  
Remote Monitoring



Display Multilingual  
Messages

## Product Description

All modules of the DL-300 series (including the IP65 series) can record information about CO, CO<sub>2</sub>, temperature, humidity, air pressure, sea level, dew point, etc., 24/7. The modules support various communication protocols and interfaces, including RS-485, Ethernet, PoE, and Wi-Fi. The series are equipped with a 2.8" LCD touch screen and an IP65 enclosure and perform the real-time warning function.

### DL-300 Series

Basic

RS-485+Ethernet/PoE

- Power Input
- Ethernet Connection Status
- Alarm

LED Indicators



2.8" LCD Touch Screen

### DL-300-WF Series

Wi-Fi

- Power Input
- Ethernet Connection Status
- Alarm

LED Indicators



2.8" LCD Touch Screen



Built-in Wi-Fi Antenna

### DL-300-IP65 Series

DL-310-IP65 Series

Provide air pressure & sea level measurement

Power Input & RS-485

PoE/Ethernet

DIP Switch

CO<sub>2</sub> Input

PhotoMos Relay Output



CO<sub>2</sub> Output

2.8" LCD Touch Screen

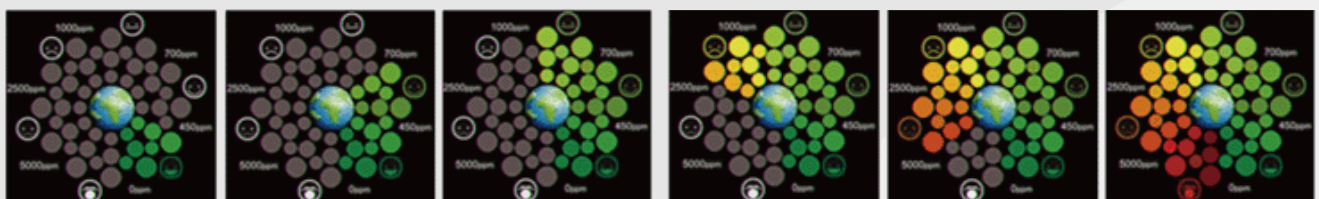
Temperature & Humidity & Air Pressure Sensor

High Sensitivity, Dust Resistance, Accurate Data

### LCD Touch Screen with High Clarity

All DL-300 series modules are equipped with a 2.8" LCD touch screen that displays a colorful chart, clearly indicating the value and concentration of temperature/humidity/air pressure/CO/CO<sub>2</sub>.

(Illustrated with CO<sub>2</sub>)



Safe

Warning

Danger

0 ————— 450 ————— 700 ————— 1000 ————— 5000(PPM)

### Support Various Communication Protocols and Interfaces

All DL-300 series modules support various industrial communication protocols, including DCON, Modbus RTU, Modbus TCP, and MQTT protocols. In addition, the DL-300 series, DL-300-IP65 series, and DL-310-IP65 series data loggers have commonly used interfaces, such as RS-485, Ethernet, PoE, and Wi-Fi, for connections. Therefore, the product series can be seamlessly integrated with HMI or SCADA and easily maintained in a distributed control system.

### PoE

All DL-300 series modules provide a Power over Ethernet (PoE) function that complies with the IEEE 802.3af standard, and support safety mechanisms such as short circuit protection, overvoltage protection, and overcurrent protection. Also, these modules are easy to install, greatly saving wiring time and installation costs of power cables. i.e., reducing the overall costs.

## :: Gas Detection



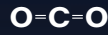
Temperature



Humidity



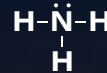
CO



CO<sub>2</sub>



H<sub>2</sub>S



NH<sub>3</sub>



HCHO



TVOC

### ● Buzzer & Relay Output for Audible/Visual Alarm

All DL-300 series modules have a built-in buzzer and relay. When the detected data show anomalies, the modules immediately send alarm notifications to inform the right personnel in real time.

### ● Ingress Protection (IP) Rating Design

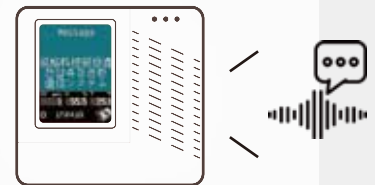
All DL-300-IP65/DL-310-IP65 series modules have IP65 rated design - protection against water ingress caused by heavy rain and strong winds - specially designed for industrial applications in harsh environments.

### ● Up to 450,000 Records with Dates and Timestamps

All DL-300 series data loggers can record the data on CO, CO<sub>2</sub>, HCHO, TVOC, NH<sub>3</sub>, H<sub>2</sub>S, temperature, humidity, and dew point with dates and timestamps. Up to 450,000 downloadable records can be stored, sufficient for nearly 312-day data on environmental information. (Calculation based on one record per minute)

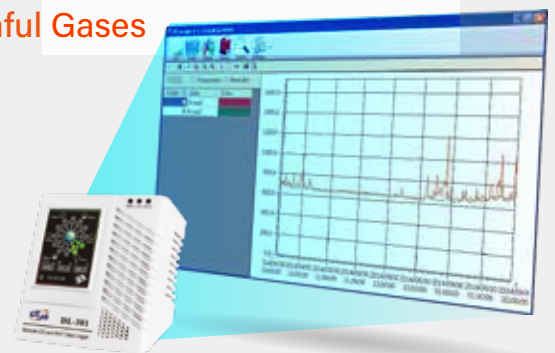
### ● Display Multilingual Messages

All DL-300 series modules support UTF-8 with multiple languages available and are capable of displaying task reminders on the screen for the on-site personnel. The messages can be pre-configured remotely via Modbus commands, a web-based interface, or a mobile app.



### ● 24/7 All-weather Monitoring : Visualizing Data on Harmful Gases

The DL-300 series modules can be used with iAir Utility - a free ICP DAS software to use grouping for multiple DL-300 series, DL-300-IP65 series, and DL-310-IP65 series modules, enabling convenient data search, management, and monitoring. Besides, CSV files can be exported for remote management personnel to manage the data easily.



### ● Access Real-time Data on Mobile Phones

Users can access real-time data monitored by the DL-300 series modules anywhere and anytime, overcoming time and space constraints. In addition, users can also send messages to the DL-300 series, DL-300-IP65 series, and DL-310-IP65 series modules to remotely display assigned tasks on the screen for the on-site personnel. Search "ICP DAS" or "iAir" on Google Play or App Store or scan the QR Code for installation.



iAir by ICPDAS  
Industrial Air Quality App



▲ iOS



▲ Android





## Smart Parking Garages - Monitoring Air Quality in Underground Enclosed Spaces

Air pollutants produced by vehicle exhausts tend to accumulate in underground enclosed parking garages. Although air quality can be improved by periodically turning on/off the supply and exhaust fans, this can often be ineffective. ICP DAS' s DL-303-IP65 industrial gas sensors and CL-213-E indoor air quality data loggers can detect temperature, humidity, CO, CO<sub>2</sub>, and PM2.5 in the environment. When the readings exceed the set value, exhaust fans can be activated. Conversely, when the readings fall below the set value, exhaust fans can be turned off to reduce unnecessary power consumption. Also, the real-time data can be displayed on the iKAN series industrial LED display, helping the management personnel monitor and control the air quality accurately.



## Smart Gyms - Building Comfortable Workout Spaces

In indoor environments, such as gyms, the DL-307 series industrial gas sensors can detect environmental variables - temperature, humidity, and HCHO. The CL-213-E indoor air quality data loggers can also be installed to collect information about CO, CO<sub>2</sub>, and PM2.5. In the shower rooms and swimming pools, the iSN-104 liquid leak detection modules can be added to monitor liquid leakage. The iSN-104 modules can integrate with the WISE-5231M-4GE edge controllers, allowing the management personnel to configure logic controls. According to the on-site environmental data, the controller triggers various devices, such as ventilation and alarm devices with a lighting feature.



Indoor Air Quality Data Logger  
**CL-213-E**

Ethernet  
Modbus TCP



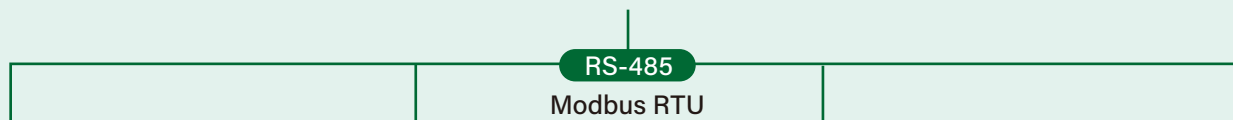
Edge Controller  
**WISE-5231M-4GE**



Alarm Notification



IloT Cloud  
Management Software



Alarm Siren  
**ALM-Horn-MRTU-BR**



Liquid Leak Detection Module  
**iSN-104**



Industrial Gas Sensor  
**DL-300-IP65**

Temp. **22°C**, RH **70%**

Industrial LED Display  
**iKAN-116**



## Smart Buildings - Monitoring Air Quality in Museums and Art Galleries

Artworks, cultural relics, and antiques in collection storage warehouses are susceptible to mold growth, color loss, corrosion, or deformation caused by environmental variables - temperature, humidity, lighting, and materials used for interior design. Due to large indoor spaces and a shortage of human resources, temperature & humidity control and management of the collection are concerns that need to be addressed. The DL-303-IP65 and DL-307-IP65, industrial gas sensors, can monitor indoor temperature, humidity, HCHO, and CO of various rooms in real time, and transmit the data to the WISE-5231M-4GE edge controller via RS-485 (Modbus RTU). The aggregated data are then sent back to the IoTstar IloT cloud management software in the control center via 4G wireless communication, enabling the right personnel to keep abreast of the indoor air quality at anytime. For integration, users can employ the iSN-104 liquid leak detection module and ALM-Horn-MRTU-BR alarm siren. In the event of liquid leakage, the WISE-5231M-4GE edge controller immediately triggers the alarm siren to alert on-site personnel to take action.

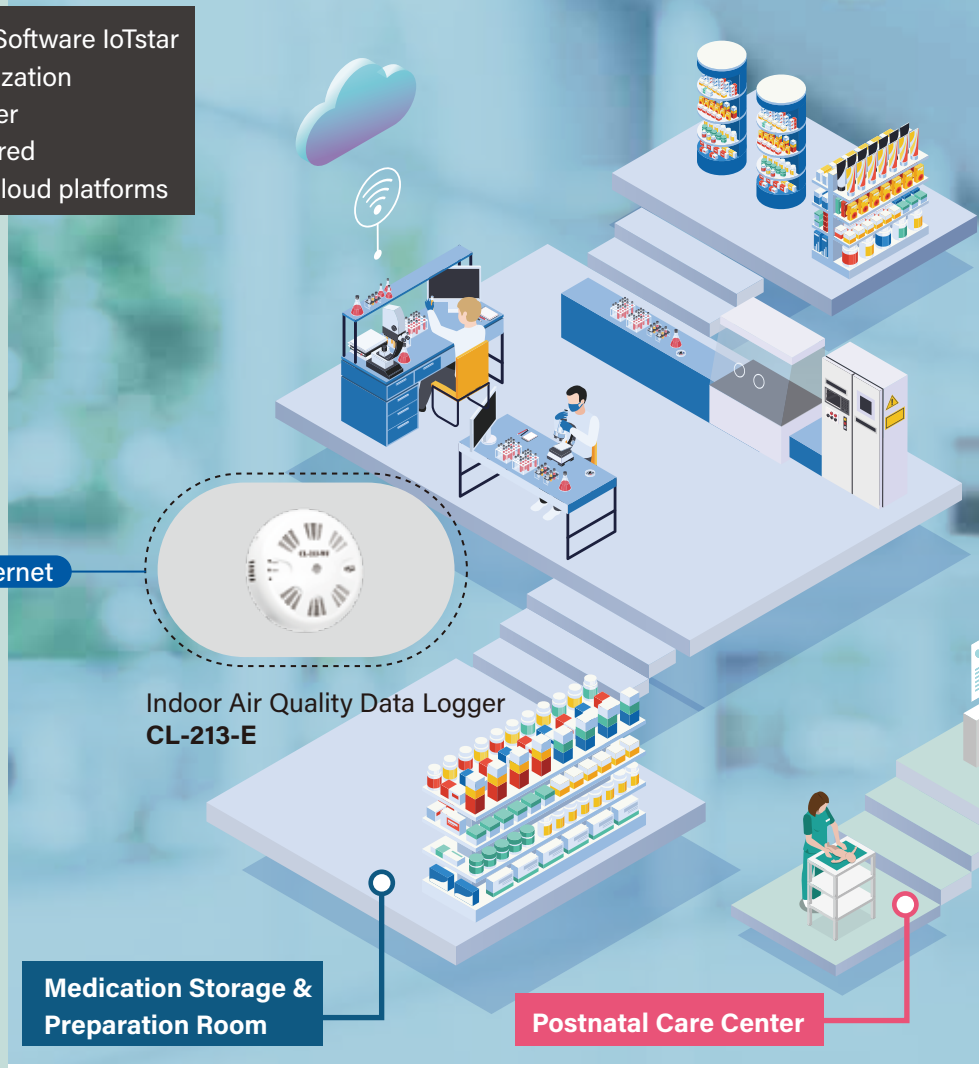
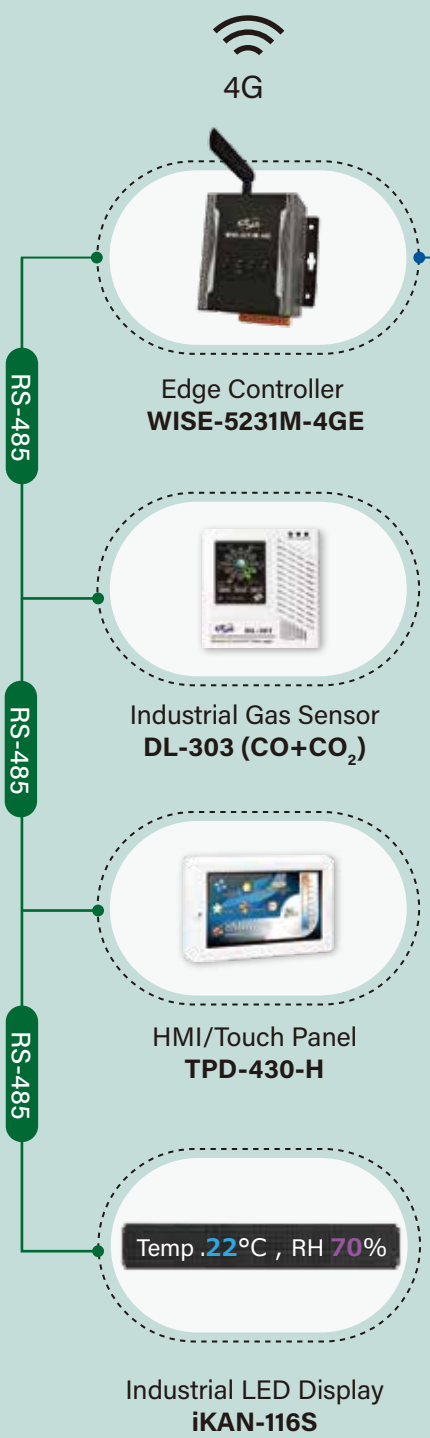


# Smart Environmental Monitoring Solution

Integrating the DL-300 series industrial gas sensors, WISE edge controllers, and IoTstar IIoT cloud management software enables remote data management & visualization. The DL-300 series can be divided into two series - the wired series supporting RS-485 & Ethernet/PoE, and the wireless series supporting Bluetooth/Wi-Fi - for users to choose from based on their needs. When the DL-300 series detect an anomaly in air quality data, the WISE edge controller automatically sends alarm notifications to management personnel via email, SMS, LINE, etc., keeping staff posted.



- IIoT Cloud Management Software IoTstar
- Cloud-based Data Visualization
  - Operate via a web browser
  - No programming is required
  - Install on public/private cloud platforms



## Smart Healthcare - Environmental Monitoring Utilized at Hospitals

Environmental variables can easily take their toll on medical devices and medications. Thus, temperature & humidity in medical device rooms and medication storage & preparation rooms in patient wards should be strictly monitored. The DL-303 industrial gas sensors and the CL-213-E indoor air quality data loggers measure temperature, humidity, CO, CO<sub>2</sub>, and PM2.5. The data acquired are transmitted to WISE-5231M-4GE edge controllers through RS-485 and Ethernet, respectively, and then to the IoTstar IIoT cloud management software in the control center for data visualization. At the same time, the data can be displayed on the TPD-430-H HMI touch screen and the iKAN-116S industrial LED display, enabling hospital staff to access real-time & on-site data conveniently.



Industrial Gas Sensor  
DL-300 Series

- PoE
- Ethernet
- Wi-Fi
- RS-485



Edge Controller  
WISE-5231M-4GE

4G



Alarm Notification

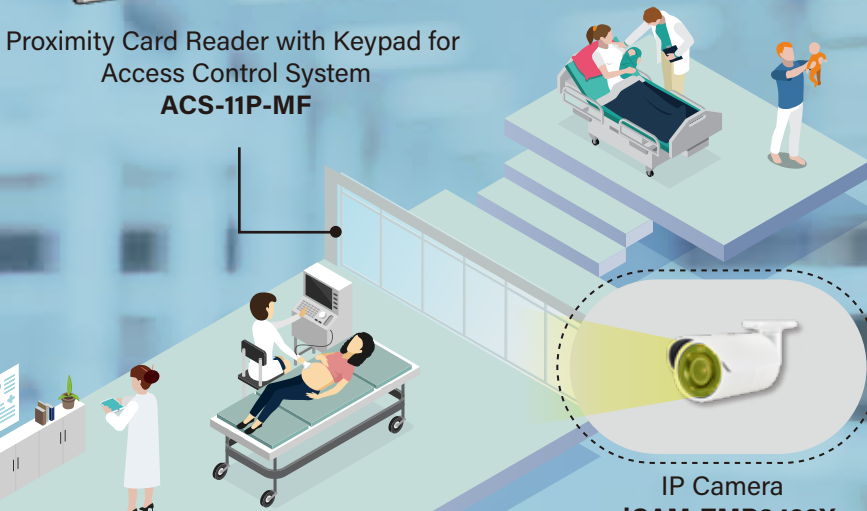


IIoT Cloud  
Management Software

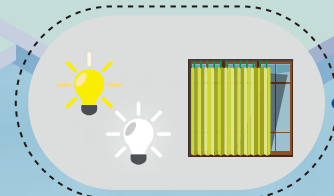
The access control of visitors and staff can be enabled with the ACS-11P-MF proximity card reader with a keypad. The ACS-11P-MF can be integrated with the iCAM-ZMR8422X auto focus IR bullet IP camera to take on-site pictures in the event of an emergency, thereby providing a safe and conducive postnatal care environment.



Proximity Card Reader with Keypad for  
Access Control System  
ACS-11P-MF



IP Camera  
iCAM-ZMR8422X



Warm / Cool White Light,  
Motorized Curtain

Relay Output



PoE Ethernet I/O Module  
PET-7060



Report



Dashboard



Warning Message



4G



Edge Controller  
WISE-5231M-4GE



PoE Ethernet I/O Module  
NSM-208PSE-24V



Industrial Gas Sensor  
DL-303 (CO+CO<sub>2</sub>)



Industrial Gas Sensor  
DL-304 (HCHO+TVOC)

## Smart Living - Building a Conducive Postnatal Care Center

In addition to postpartum nutrition, one must attach great importance to the room environment. Environmental variables such as indoor temperature, humidity, CO, CO<sub>2</sub>, HCHO, and TVOC can have an impact on maternal physical & mental health. The DL-303 and DL-304 industrial gas sensors can be installed to detect environmental data in real time while connecting to the NSM-208PSE-24V PoE (PSE) Ethernet switch via Ethernet. The data will be sent from the switch to the WISE-5231M-4GE edge controller, and then via 4G to the IoTstar - an IIoT cloud management software - in the control center. When an anomaly in air quality data is detected, LINE messages can be sent to the management personnel in real time via IoTstar Bot Service. In addition, the PET-7060 PoE Ethernet I/O module can be used with the WISE-5231M-4GE edge controller to adjust light colors and pull the curtains.



With the rise of a new era of agriculture, long-term monitoring of temperature, humidity, and CO<sub>2</sub> concentration is required for cultivating mushrooms in greenhouses. One of the critical factors in mushroom growth is high levels of humidity. However, most traditional equipment is incapable of operating in this environment for a long time. The DL-302-IP65 industrial gas sensors can monitor CO<sub>2</sub> concentration, temperature, and humidity in greenhouses from -20°C to +50°C in real time. The sensor data are transmitted to the WISE-5231M-4GE edge controller via the NS-205 Ethernet switch through Ethernet. Then, the edge controller will send the real-time data to the control center via 4G. It overcomes constraints in mushroom production and labor deployment and increases agricultural productivity and output. In this way, businesses are moving towards a new generation of farming - high efficiency, high productivity, safety, and low operational risks.



**Smart Indoor Livestock Farms - Monitoring Harmful Gases on Pig Farms**

NH<sub>3</sub> and H<sub>2</sub>S are the most harmful gases to animal growth and immunity. The DL-305-IP65 and DL-306-IP65 industrial gas sensors can monitor the concentration of NH<sub>3</sub>, H<sub>2</sub>S, temperature, and humidity on pig farms in real time. The sensor data are transmitted to the WISE-5231M-4GE edge controller via the NS-205 Ethernet switch through Ethernet. When an anomaly in data is detected, the edge controller will activate ventilation systems, heating lamps, etc., to adjust the environmental variables of the pigpen. These capabilities significantly reduce the impact of environmental temperature and harmful gases on pig health. Besides, the iKAN-116 industrial LED display can be used to show environmental data, keeping staff updated on air quality in real time.

# DL-3



**Meteorological Monitoring**

- 0** : Temperature, Humidity
- 1** : Temperature, Humidity, Air Pressure, Sea Level



**Harmful Gas Monitoring**

- 1** : CO
- 2** : CO<sub>2</sub>
- 3** : CO+CO<sub>2</sub>
- 4** : HCHO+TVOC
- 5** : NH<sub>3</sub>
- 6** : H<sub>2</sub>S
- 7** : HCHO
- 8** : TVOC




**Communication**



- Nil : Basic**  
(RS-485+Ethernet/PoE)
- WF : Basic+Wi-Fi**  
(RS-485+Ethernet/PoE +Wi-Fi)





**IP Rating**

- IP65** :  
Water & Dust Resistant

DL-300 Series	Models		Sensors			
	RS-485+Ethernet/PoE	Wi-Fi	Harmful Gases	Temperature&Humidity	IP Rating	
	DL-301	DL-301-WF	CO	Yes	IP 30	
	DL-302	DL-302-WF	CO <sub>2</sub>			
	DL-303	DL-303-WF	CO+CO <sub>2</sub>			
	DL-304	DL-304-WF	HCHO + TVOC			
	DL-305	DL-305-WF	NH <sub>3</sub>			
	DL-306	DL-306-WF	H <sub>2</sub> S			
	DL-307	DL-307-WF	HCHO			
	DL-308	DL-308-WF	TVOC			

DL-300-IP65 Series	Models		Sensors			
	RS-485+Ethernet/PoE	Wi-Fi	Harmful Gases	Temperature&Humidity	IP Rating	
 	DL-301-IP65	DL-301-WF-IP65	CO	Yes	IP 65	
	DL-302-IP65	DL-302-WF-IP65	CO <sub>2</sub>			
	DL-303-IP65	DL-303-WF-IP65	CO+CO <sub>2</sub>			
	DL-304-IP65	DL-304-WF-IP65	HCHO + TVOC			
	DL-305-IP65	DL-305-WF-IP65	NH <sub>3</sub>			
	DL-306-IP65	DL-306-WF-IP65	H <sub>2</sub> S			
	DL-307-IP65	DL-307-WF-IP65	HCHO			
	DL-308-IP65	DL-308-WF-IP65	TVOC			

DL-310-IP65 Series	Models		Sensors				
	RS-485+Ethernet/PoE	Wi-Fi	Harmful Gases	Air Pressure	Sea Level	T&H	IP Rating
 	DL-311-IP65	DL-311-WF-IP65	CO	Yes	Yes	Yes	IP 65
	DL-312-IP65	DL-312-WF-IP65	CO <sub>2</sub>				
	DL-313-IP65	DL-313-WF-IP65	CO+CO <sub>2</sub>				
	DL-314-IP65	DL-314-WF-IP65	HCHO + TVOC				
	DL-315-IP65	DL-315-WF-IP65	NH <sub>3</sub>				
	DL-316-IP65	DL-316-WF-IP65	H <sub>2</sub> S				
	DL-317-IP65	DL-317-WF-IP65	HCHO				
	DL-318-IP65	DL-318-WF-IP65	TVOC				

