



DL-1000 Series Industrial AirBox



PM10

PM1

PM2.5

CO/CO2

HCHO

H2S

TVOC

Power and RS-485 Input
PoE/Ethernet



LED Indicator Power
Ethernet Connect
S1~S4

Particle/Gas Output

Particle/Gas Input

Alarm Relay Output

Temperature and Humidity Sensor



- Measures particulate matter (PM1/PM2.5/PM10/ Particles) and detects hazardous gas (CO/ CO2/ HCHO/ NH3, etc.) on a real-time basis

- Supports Industrial Communication Protocols, (such as DCON, Modbus RTU/TCP, and MQTT)

- Supports General Communication Interfaces, (such as RS-485, Ethernet (PoE), Bluetooth, and Wi-Fi)

- Replaceable filter patches

- Integrates with 3G/4G controllers such as the WISE-5231M-4GE : transmits alarm events and historical data back to the control center via a wireless connection

Introduction

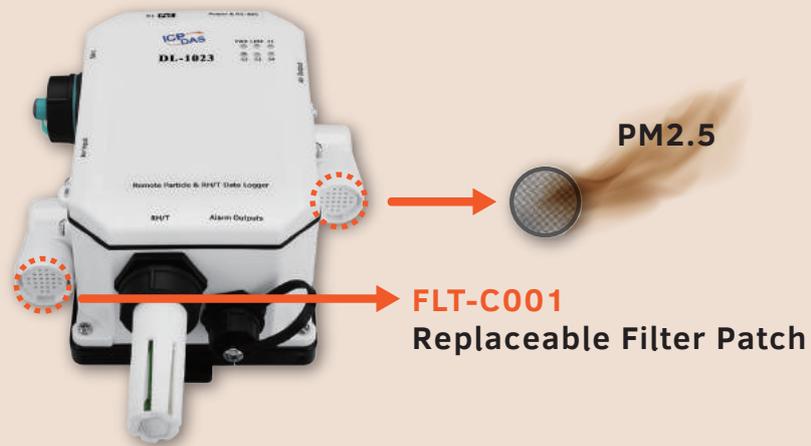
The DL-1000 series of devices is applicable to detection applications in both indoor and outdoor environments. In addition to the humidity detection, they can be used to detect gas concentration that may affect the human body twenty-four hours a day, seven days a week such as CO, CO₂, and HCHO. Moreover, they can detect particulate matter as well. (0.3µm, 0.5µm, 1µm, 2.5µm, 5µm, and 10µm)

Installing a DL-1000 series module in an industrial environment is easy. With the advantages of a communication network, they are able to integrate information that can be swiftly sent to a central controller system. The checking and recording of statistics can be performed via a computer or a smart phone in real time. Notification of alarm events can be immediately sent to the person responsible if the air quality or the number of particles is beyond the default values. Therefore, these responsible personnel can then evacuate people from dangerous places and handle emergency situations.

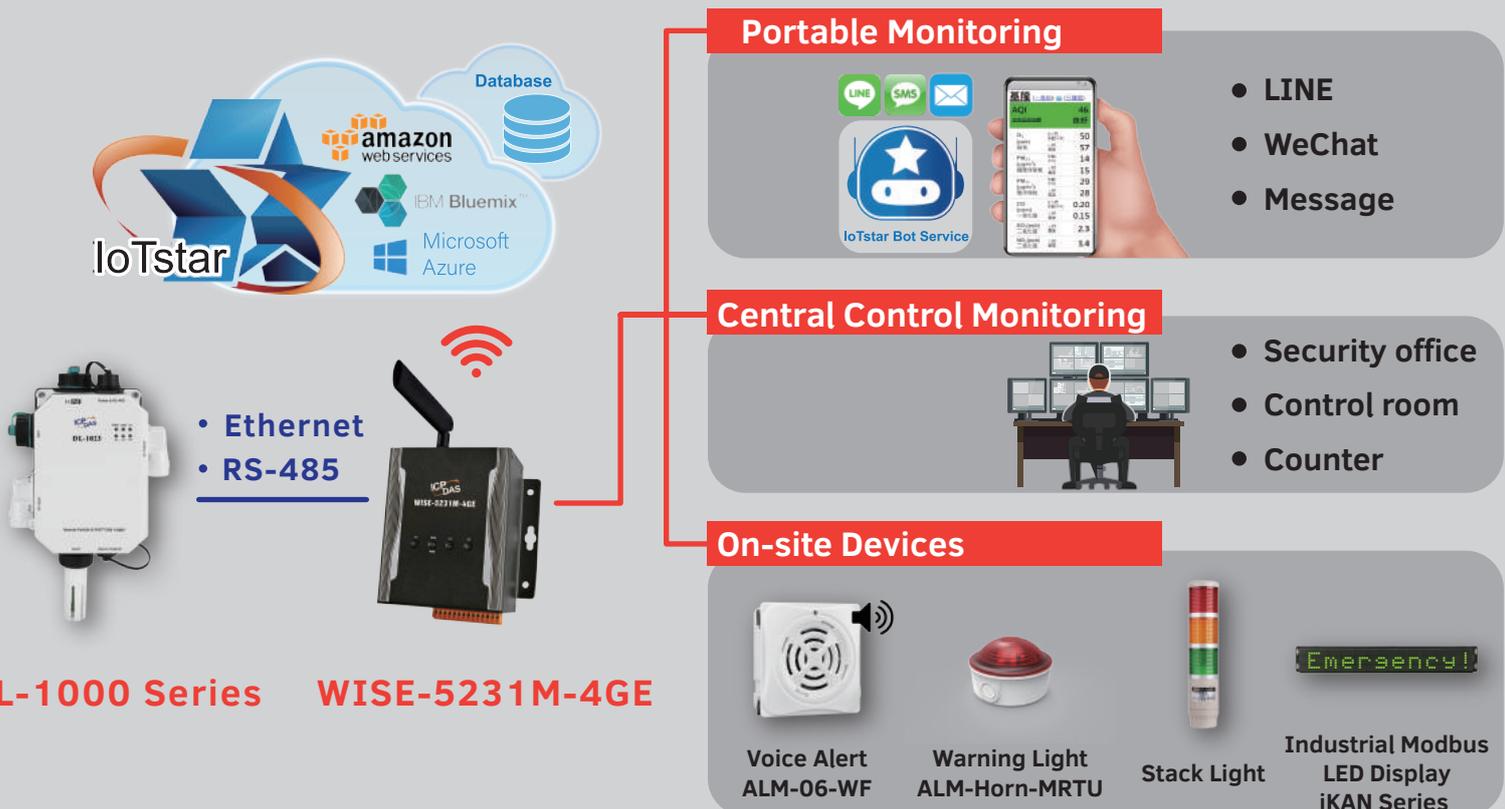
Replaceable Dustproof Filter

The filter patches installed inside the filter hood in the DL-1000 series modules are replaceable.

Since particles might become stuck inside a device, customers can replace the filter patch themselves to save more time and maintenance cost.



Real-time Warning in the Environment (System Architecture)



Applications



:: Effectively Control Particulate Matter in Clean Rooms

Particle control in the semiconductor and biotechnology industries are highly essential. Consequently, the air quality and the number of airborne particles should be strictly monitored. The **DL-1000 series module** is able to monitor particle matter and indoor humidity for people who work within a confined space.

This can not only make them feel more comfortable, but also add protection to the product quality.

Recommended Products



Voice Alert
ALM-06-WF



Industrial Airbox
DL-1000 Series



Industrial Modbus
LED Display
iKAN Series

:: Detection and Prevention of Excess Hazardous Gas in the Factory

The HCHO and H₂S produced by the manufacturing and petrochemical industry are often harmful to both the environment and the human body. If those gases are inhaled by workers for an extended period of time, they may become dizzy or suffer from headaches. The potential threat to internal



organs and the risk of being threatened by chronic diseases may rise if those gases enter the lungs or the blood vessels. To increase the safety of the workers, the installation of a **DL-1000 series module** is able to collect and record the gas levels, and assist management personnel to identify a solution to the design of the ventilation.

Recommended Products



Industrial Airbox
DL-1000 Series



Industrial Airbox
DL-300 Series

Applications



:: Environmental Safety Protection in Underground Construction

It is natural that decomposing organic substances will exist in underground area, or in area that have insufficient exposure to the sun, poorly ventilated areas, such as in a quarry, a sewer or a tunnel.

If personnel are working in these types of areas, there may be safety concerns, such as firedamp explosions, a lack of oxygen or carbon monoxide poisoning.

To increase their safety of these workers, a **DL-1000 series module** should be installed to detect the firedamp or other hazardous gases. The firedamp should then be evacuated once detected, and then the area should be infused with clean air to prevent occupational accidents.



Recommended Products



Voice Alert
ALM-06-WF



Industrial Airbox
DL-1000 Series



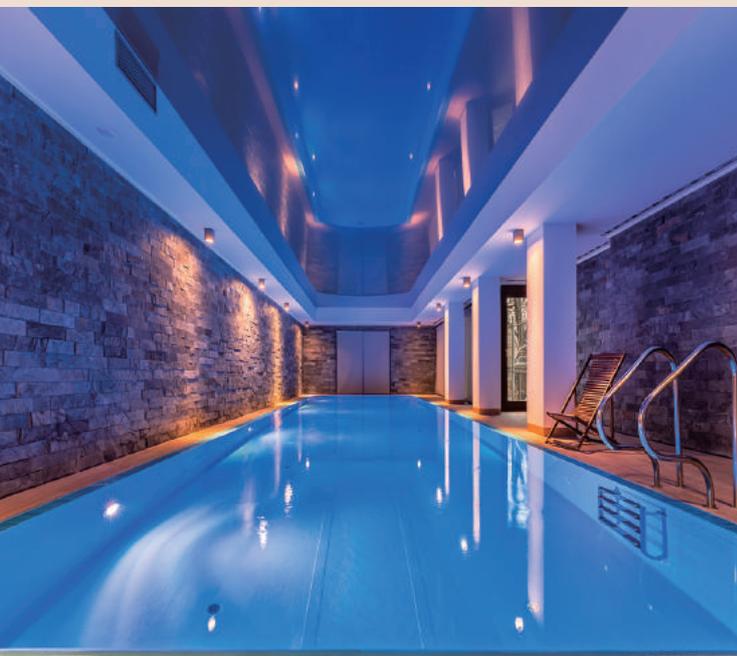
Industrial Airbox
DL-300 Series

:: TVOC Monitoring on Indoor Heated Warm Swimming Pool

Heated indoor swimming pools should not be ignored because the majority of inspections and decontaminations are performed manually. In order to maintain the designated water temperature, windows and doors are usually closed. However, the TVOC, CO₂, and the humidity will increase if the

staff cannot distinguish that the TOVC is above the standard levels, meaning that they may suffer from a lack of oxygen, a sore throat, or vomiting, etc.

A **DL-1000 series module** is able to transmit data back to the management room so that the on-site environment can be controlled in real-time.



Recommended Products



Industrial Airbox
DL-1000 Series



Industrial Airbox
DL-300 Series



:: Environment Monitoring at Medical Facilities and Schools

It is easier for both the elderly people and children to suffer from diseases that affect the respiratory system.

Consequently, it is important to maintain the air quality in places such as nursing homes, hospitals, kindergartens, and schools. Given that these places are generally densely populated, a **DL-1000 series module** can be installed indoors.

The humidity and PM 2.5 levels can also be monitored if these devices are installed both indoors and outdoors. This means that you can be aware whether or not it is suitable to go outside for outdoor activities (e.g., walking, outdoor sports, or gatherings) by checking the environmental conditions.

Recommended Products



Industrial Modbus
LED Display
iKAN Series



Industrial Airbox
DL-1000 Series



Industrial Airbox
DL-300 Series



Industrial Airbox
DL-100 Series



Industrial Airbox
DL-10

:: Home Care Safety

It is said that the easiest place to be neglected in our daily life is the bathroom because traditional gas water heaters in Taiwan are often installed either indoors or on a confined balcony.

People tend to close their windows and doors in winter, but that may lead to a reduced supply of oxygen if they inhale carbon monoxide in these types of confined places. The symptoms might be mild, such becoming unconscious, or maybe severe, causing death.

A **DL-1000 series module** can be installed to help detect carbon monoxide so that it is quickly detected, an alarm can be activated to prevent accidents from occurring.



Recommended Products



Industrial Airbox
DL-1000 Series

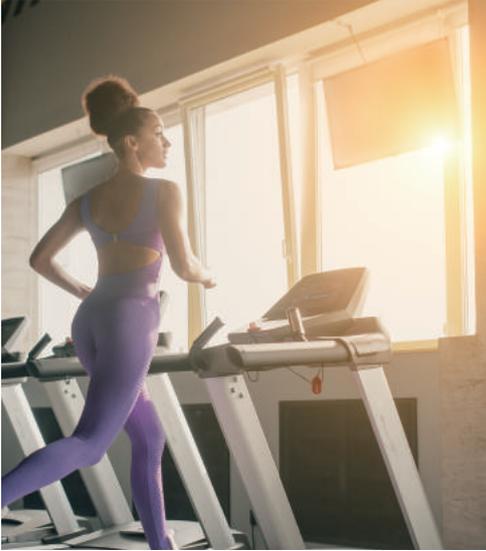


Industrial Airbox
DL-300 Series



Gas Leakage
Monitoring

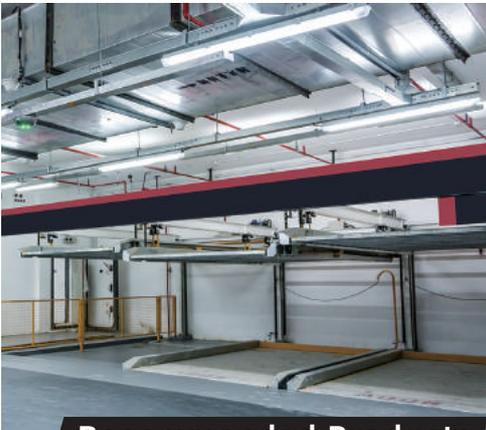
Applications



:: Gas Concentration Warnings for Confined Places

When public places, such as a gym and a shopping mall, are crowded with people during rush hour, the PM 2.5 and the CO₂ released from the human body often causes the CO₂ levels to exceed acceptable standards in situations where there is poor ventilation. Moreover, carpets, or fitness equipment may also release hazardous substances, such as HCHO.

The **DL-1000 series module** can be configured to issue an alert if the CO₂ level exceeds the default value. Combine with the central air conditioning that is designed to maintain air quality, they can help provide an excellent space for exercising and shopping.



:: Environmental Monitoring for Underground Parking

The underground parking is a confined space, meaning that air pollutants generated by the cars in the parking lot may remain in the indoor environment. Studies have shown that the air pollutants in the underground parking include NO₂, CO₂, and CO. By installing a **DL-1000 series module** and activating the air conditioning will lower the hazardous gas levels and ensure that the parking space is safe.

Recommended Products



Industrial Airbox
DL-1000 Series



Industrial Airbox
DL-300 Series



IIoT Edge Controller
WISE-5231M-4GE

Related Product Introduction

Environment Monitoring Modules



DL-10 Series

- Magnet type
- Temperature/Humidity
- General Machine Room Monitoring



DL-100 Series

- LCD Display
- Temperature/Humidity/Dew Point
- IP66 Water and Dustproof
- Applicable to Severe Environment Monitoring



DL-300 Series

- Color LCD Touch Pad
- Measures CO/CO₂/HCHO Concentration
- Temperature/Humidity/Illumination
- Applicable to Indoor Environment Monitoring

IIoT Edge Controller



WISE-5231M-4GE

- Built-in IF-THEN-ELSE Logic Engine
- Remote Monitoring Notification

Product line

DL-10



Partical Matter
Senor



Types of Gas
Sensor

-



Communication

DL-1000 Series			Types of Sensor			Communication	
Basic Type	Bluetooth	Wi-Fi	Particle	Gas Sensor	T & RH		Basic Type: RS-485 + Ethernet/PoE Bluetooth Type: Bluetooth + RS-485 + Ethernet/PoE Wi-Fi Type: Wi-Fi + RS-485 + Ethernet/PoE
DL-1020	DL-1020-BLE	DL-1020-WF	PM1 PM2.5 PM10 Particle (Number of particles): 0.3µm, 0.5µm, 1µm, 2.5µm, 5µm, 10µm)	-	YES	YES	
DL-1021	DL-1021-BLE	DL-1021-WF		CO			
DL-1022	DL-1022-BLE	DL-1022-WF		CO2			
DL-1023	DL-1023-BLE	DL-1023-WF		CO + CO2			
DL-1024	DL-1024-BLE	DL-1024-WF		HCHO + TVOC			
DL-1025	DL-1025-BLE	DL-1025-WF		NH3			
DL-1026	DL-1026-BLE	DL-1026-WF		H2S			
DL-1027	DL-1027-BLE	DL-1027-WF		HCHO			
DL-1028	DL-1028-BLE	DL-1028-WF		TVOC			

Specifications

Model	DL-1020	DL-1021	DL-1022	DL-1023	DL-1024	DL-1025	DL-1026	DL-1027	DL-1028	
Communication										
RS-485 Port	Baud Rate = 1200 ~ 115200 bps									
Ethernet Port	10/100 Base-TX, 8-Pin RJ-45 x1(Auto-negotiating, Auto-MDI/MDIX, LED indicators)									
Security	IP filter (whitelist) and Password (web)									
Protocol	Modbus/RTU(RS-485), Modbus TCP(Ethernet) and MQTT(Ethernet)									
Dual Watchdog	Yes, Module (2.3 sec), Communication (Programmable)									
Electrical										
Powered from Terminal Block	+12 to +48 VDC									
Powered from PoE	IEEE 802.3af, Class 1 (48 V)									
Power Consumption	PoE	2.0 W (Max.)	2.9 W (Max.)	3.0 W (Max.)	3.1 W (Max.)	2.0 W (Max.)	2.9 W (Max.)	2.9 W (Max.)	2.1 W (Max.)	2.0 W (Max.)
	Non-PoE	2.0 W (Max.)	2.7 W (Max.)	2.8 W (Max.)	2.8 W (Max.)	2.0 W (Max.)	3.0 W (Max.)	3.0 W (Max.)	2.1 W (Max.)	2.0 W (Max.)
Mechanical										
Intstallation	DIN-Rail or Wall Mounting									
Dimensions (L x W x H)	170 mm x 117 mm x 60 mm									
Environment										
Operating Temperature	-20 to +50°C									
Storage Temperature	-30 to +75°C									
Humidity	10 to 90% RH, Non-condensing									
Protection Class	IP43									

ICP DAS Catalogs & Brochures



Energy Management Solutions

- InduSoft SCADA
- Power Meter Concentrators
- Touch Screen PMCs
- Wise Multi-meters
- Voltmeters
- Wise Multi-circuit Meters
- Eight Channel RMS Input Modules
- Industrial Multi-meter Displays



Industrial IoT

Industrial IoT

- Cloud Management Software (IoTstar)
- IIoT Edge Controller (WISE-5231 Series)
- iCam Series
- Communication Sever (UA-5200 Series)
- MQTT I/O Module (MQ-7200 Series)
- Stack Light Monitoring Module (tSL Series)
- Gas Sensors (CL-200 Series)
- Temperature/ Humidity/ Illumination Sensors (DL Series)
- Passive Infrared Sensor (PIR Series)
- Liquid Leak Detection Module (iSN-101 Series)
- Vibration Sensor (AR/PET-7H16M Series)



Wireless Solution

Wireless Solutions

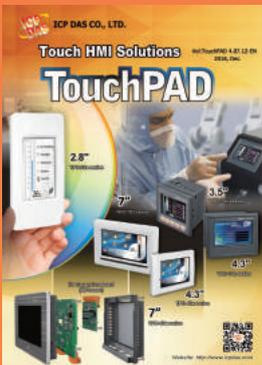
- WLAN Series
- Radio Modems
- 2G/3G/4G Products
- Zigbee Products
- Bluetooth LE Converters
- GPS Products
- Infrared Wireless Modules



Smart Building / Smart Home Automation

Smart Building / Smart Home Automation

- Video Intercom & Access Control
- Touch HMI-TouchPad Series
- Smart Light Control-LC/SC/DALI Series)
- Energy Saving-PM/PMC Series
- Environmental Sensor- DL/CL Series
- Motion Detector- PIR Series
- Wi-Fi Wireless- WF Series
- Infrared Wireless- IR Series
- Zigbee Wireless- ZT Series
- IIoT Server Management- Server & Concentrator
- Data Server- iDaSer Series
- LED Display- iKAN Series



TouchPAD HMI Solutions

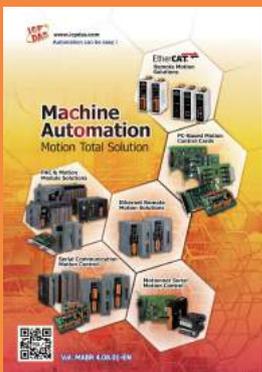
- TPD/VPD Product Series
- Video Intercom & Access Control Series
- TPD/VPD Application



IIoT Cloud Solution-UA SERIES

IIoT Cloud Solution-UA SERIES: IIoT Communication Server

- Built-in OPC UA Server Service
- Built-in MQTT Broker Service
- Support Logic Control IFTTT
- Support IIoT Cloud Platforms Connection and IoTstar Cloud Management
- IIoT Factory Application for MES
- Pumping Station IIoT Applications
- BA Smart Building IIoT Applications
- Robotic Arm Cooperation Application



Machine Automation Solutions

- Motionnet Solutions
- EtherCAT Motion Control Solutions
- Ethernet Motion Control Solutions
- Serial Communication Motion Control Solutions
- PC-based Motion Control Cards
- PAC Solutions-Motion Modules



Full Product Catalog 2018 - 2019

ICP DAS Product Catalog

- Programmable Automation Controller (PAC)
- Panel Products
- Remote I/O
- IIoT
- Industrial Communication
- Wireless Communication
- Motion Automation
- Energy Management
- DAQ Card
- Accessories



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