DL-1000 series

PM1/2.5/10/CO/CO_2/HCHO/TVOC/NH_3/H_2S/
SO_2/O_2/Pressure/Temperature/Humidity/
Dew Point Data Logger Module

Features

- Able to record particle concentration and various gas concentrations
- Non-dispersive Infrared (NDIR) CO_2 Sensor
- Up to 180,000 records with date and time stamps
- Web-based Configuration Interface
- Simple and Powerful Software Utility, iOS APP and Android App Included
- Supports the DCON, Modbus RTU/TCP, and MQTT Protocols
- Includes RS-485/Ethernet (PoE) Communication Interfaces
- Relay Output for Audible/Visual Alarm or IAQ Device Control
- Includes redundant power inputs: PoE and DC input
- IP 43 Protection Approval

Introduction

The DL-1000 can measure the concentration of particles in the air and various gas concentrations related to human health can also be measured. In addition, DL-1000 can record data and send alarm when concentration is too high.

- **Particles** :
  Concentration of particles(PM1, PN2.5, PM10), particle count (0.3μm, 0.5μm, 1μm, 2.5μm, 5μm, 10μm)
- **Concentration of various gas** :
  CO/ CO_2/ O_2/ HCHO/ TVOC/ NH_3/ H_2S/ SO_2

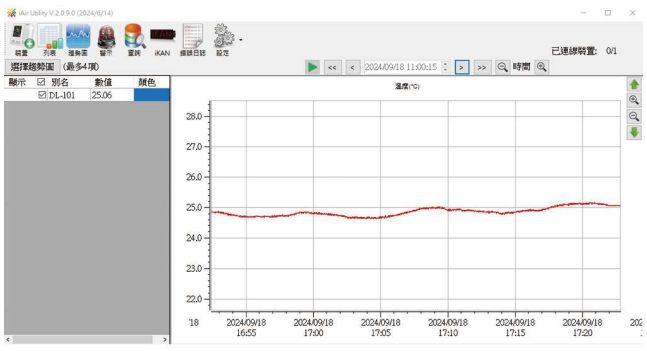
DL-1000 stores up to 180,000 downloadable records, including date and time stamps. Real-time data can be accessed from the DL-1000 series Data Logger from anywhere and at any time using the free Windows software, the iOS App or the Android App, as long as they are connected to the same local network as the Data Logger. The DL-1000 series Data Logger can be connected via widely used communication interfaces including RS-485, Ethernet and meaning that the device can be easily integrated into existing HMI or SCADA systems, and is easy to be maintained in a distributed control system. The DL-1000 series is designed for industrial applications in harsh environments that provides IP43 protection rating. The rugged RJ-45 ensures tight, robust connections, and guarantees reliable operation, even for applications that are subject to high vibration and shock.

Multi-platform Remote Access Software

Real-time data from the DL-1000 Data Logger can be accessed from anywhere and at any time using the iAir Utility, the iOS or Android App, or via a regular web browser, as long as they are connected to the same local network as the Data Logger

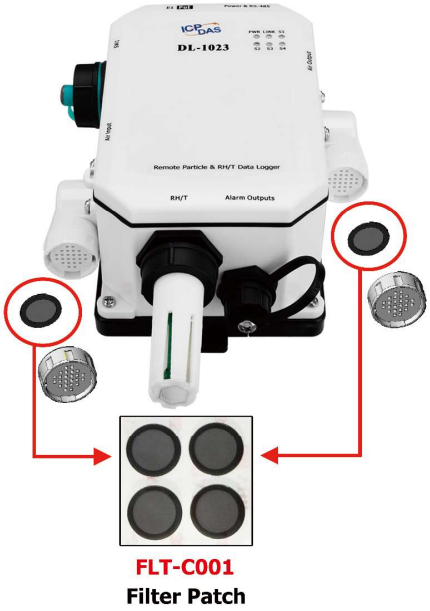
Simple and powerful utility

The iAir Utility can be used to configure the modules, monitor real-time data, group DL-1000 modules so that the status of distribution groups can be viewed and managed. The utility also allows the log data to be downloaded and exported to a .CSV file that can then be imported into any industry-standard software or spread sheet for analysis.

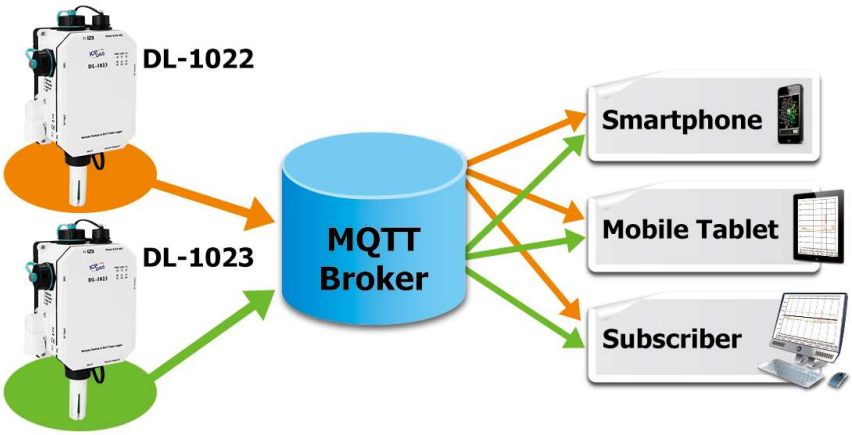


➲ Replaceable Filter Patch (FLT-C001)

The windshield filter of DL-1000 is replaceable and with replaceable patches, which makes it easy for user to replace by themselves. Commercially available sensors are easily affected by dust when used outdoors, which may result in continuous alarm readings and the inability to correctly measure ambient gases. They need to be sent back to the original factory for repair, which increases costs and downtime. ICP DAS's design allows users to easily replace the filter, reducing maintenance costs and time caused by dust blockage.



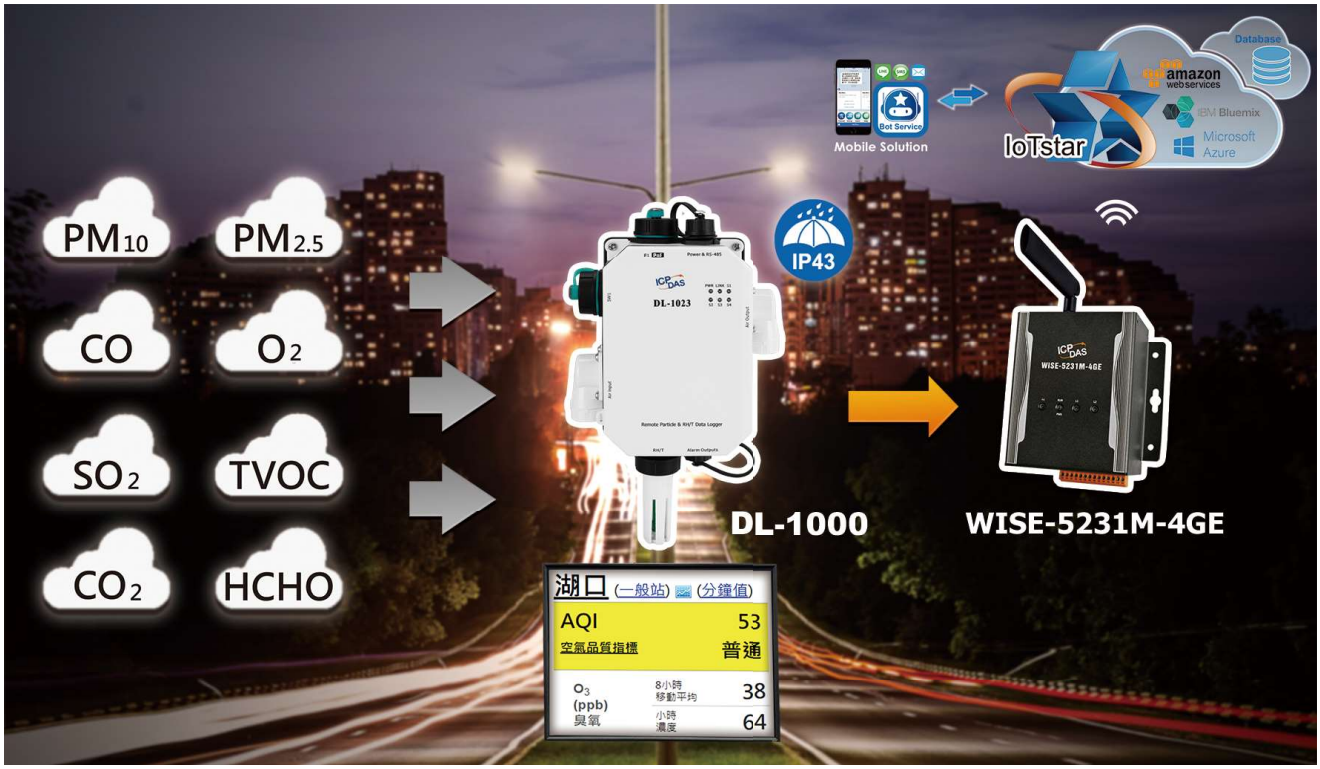
➲ Supports the MQTT Protocol for IoT Applications



Applications

➲ Intelligent Street Lighting in Smart City

DL-1000 series products, with standard industrial communication protocol Modbus RTU/TCP, can integrate with smart city to achieve outdoor air quality monitoring such as O_2, CO, CO_2, SO_2, TVOC, HCHO, and Particle Matter 1/2.5/10. Since these aerosol could accumulate around the sensor and would cause error record after using for a period of time, DL-1000 supports replaceable dust filter patches to easily change the patches inside the filter hood rather than uninstall the device.



Outdoor Mobile Air Quality Detection Application

In developed countries, the air quality detection, statistics and evaluation is in urgent need for improvement. In a vast area, it can only rely on the vehicle to move to record status of air quality in the area, and to extract the off-line data and send it back. ICP DAS's DL-1000 series can integrate with our 3G/ 4G controllers to transmit data back to the control center wirelessly.

Factory Gas Detection Application

In some factories, H_2S is one of the harmful gases. Since the colorless and odorless are two characteristics quite hard to find or feel, sometimes the workers inside the factory get injured inevitably. Joint liability from the injury brings the company massive fines.

DL-1026 H_2S detector module can be put on the spot. It is equipped with standard industrial protocols and with high flexibility to integrate information from devices and transmit it back to the control center. When the concentration of gas is too high, DL-1026 can also send alarm signals to inform relative personnel to evacuate people there.

DL-1 X X X - X

Pressure Sensor

0 : -
1 : Pressure

Particle Matter Sensor

2 : PM1/2.5/10 + Particle Count
3 : PM1/2.5/10 + Particle Count + CO + CO2
5 : O_2

Types of Gas Sensor

0 : -
1 : CO
2 : CO_2
3 : CO+CO_2
4 : HCHO + TVOC
5 : NH_3
6 : H_2S
7 : HCHO
8 : TVOC
9 : SO_2

Communication

☐ : Ethernet/PoE
WF : Wi-Fi

※ Any related customized needs, please contact our sales team.

DL-10xx Series		Type of Sensor											Communication
		Particle	Gas Sensor										
Basic Type	Wi-Fi	PM1, PM2.5, PM10 +Particle Count	CO	CO_2	O_2	HCHO	NH_3	H_2S	TVOC	SO_2	T&RH	Pressure	
DL-1020	DL-1020-WF	√	-	-	-	-	-	-	-	-	√	-	Basic type: RS-485 + Ethernet/PoE WF type: Wi-Fi + RS-485 + Ethernet/PoE
DL-1021	DL-1021-WF		√	-	-	-	-	-	-	-			
DL-1022	DL-1022-WF		-	√	-	-	-	-	-	-			
DL-1023	DL-1023-WF		√	√	-	-	-	-	-	-			
DL-1025	DL-1025-WF		-	-	-	-	√	-	-	-			
DL-1028	DL-1028-WF		-	-	-	-	-	-	√	-			
DL-1029	DL-1029-WF		-	-	-	-	-	-	-	√			
DL-1034	DL-1034-WF		√	√	-	√	-	-	√	-			
DL-1038	DL-1038-WF		√	√	-	-	-	-	√	-			
DL-1050	DL-1050-WF	-	-	-	√	-	-	-	-	-			
DL-1052	DL-1052-WF		-	√	√	-	-	-	-	-			

System Specifications

Power	Powered from Terminal Block		+8 to +48 VDC
	Powered from PoE		IEEE 802.3af, Class 1 (48 V)
	Power Consumption	PoE	3.6 W MAX
		Non-PoE	3.4 W MAX
System	Alarm		PM1/PM2.5/PM10/O_2/CO/CO_2/HCHO/TVOC/NH_3/H_2S/Pressure/SO_2/RH/Temperature
	Real Time Clock		Yes
	Data Logger **(Note1)**		Yes, up to 180,000 records
	Relay Output		PhotoMos Relay × 4, 100 VDC @ 1 A
LED Indicators	PWR		Green for normal operation
	Link		Green for the Ethernet-linked
	S1 ~ S4		Red for an alarm condition
Environment	Operating Temperature		-20 to +50°C
	Storage Temperature		-30 to +75°C
	Humidity		10 to 90% RH, Non-condensing
	Protection Rating		IP43
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)
Mechanical	Installation		DIN-Rail or Wall Mounting
	Dimensions (W x L x H)		130 × 211 × 70 (W × L × H)

Note1: DL-1038 Data Logger up to 160,000 records

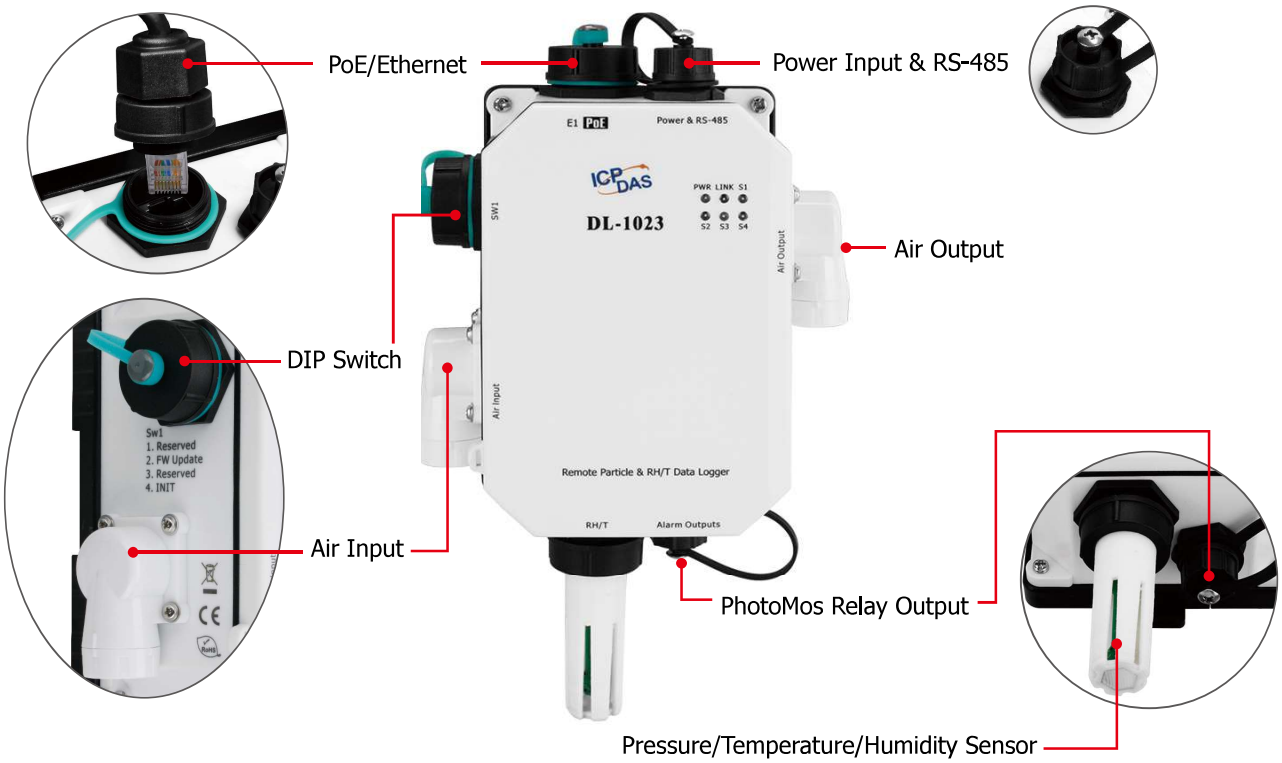
I/O Specifications

Type of Sensor	Range	Resolution	Accuracy	Response Time	Warm-up Time	Life Time
PM1/PM2.5/PM10 (Note)	0 ~ 1000 ug/m3 (Laser Type)	1μg/m3	±10 %	1 seconds	20 seconds	5 years
CO	0 ~ 1000 pm (Electrochemical)	1 ppm	±5 %	30 seconds	60 seconds	5 years
CO_2	0 ~ 9999 ppm (NDIR)	1 ppm	±3 %	120 seconds	300 seconds	15 years
HCH0	0 ~ 2000 ppb (Electrochemical)	1 ppb	-	≤60 seconds	180 seconds	3 years
TVOC	0 ~ 60000 ppb (MEMS Metal Oxide)	1 ppb	±15%	60 seconds	180 seconds	5 years
NH_3	0 ~ 100 ppm (Electrochemical)	1 ppm	±5%	< 40 seconds	60 seconds	2 years
H_2S	0 ~ 200 ppm (Electrochemical)	0.1 ppm	±5%	30 seconds	60 seconds	5 years
O_2	0 ~ 25 % (Luminescence for O2 sensor)	0.01%	±2%	< 30 seconds	120 seconds	5 years
SO_2	0 ~ 20 ppm (Electrochemical)	0.1 ppm	±5%	30 seconds	60 seconds	5 years
Temperature	-20 ~ +50°C	0.1°C	±0.6°C	-	-	10 years
Relative Humidity	0 ~ 100 % (Non-condensing)	0.1% (Non-condensing)	±5% (Non-condensing)	-	-	10 years
Dew Point	Calculated using temperature and relative humidity	0.1°C	-	-	-	-
Pressure	300 ~ 1200 hpa	0.1 hPa	1 hPa	-	-	10 years

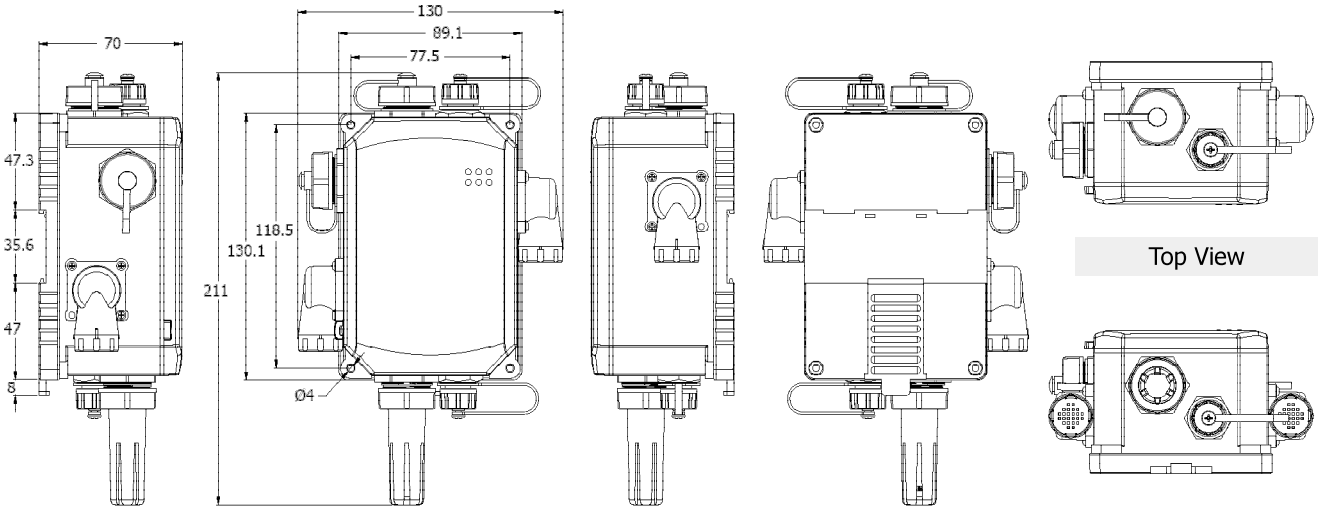
Note: The filter patch (FLT-C001) by replaceable

Particle Count	
Sizes	0.3um, 0.5um, 1um , 2.5um, 5um, 10um

Appearance

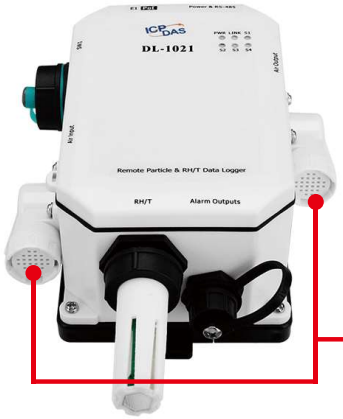


Dimensions (Units: mm)



Left View | Front View | Right View | Rear View | Top View | Bottom View

Accessories



	FLT-C001
Filter Patch	Replaceable Filter Patch (Circle) (1 Pack 4 Patches) (RoHS) Size: (OD :16, ID:12) mm

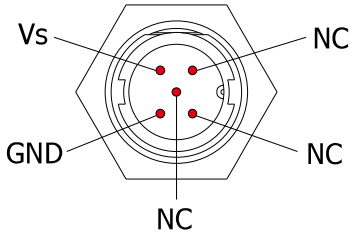
1 × 4SASO-0001	2 × CA-05BFFM-LL7A01
IP67, RJ45 Plug	**IP67, 1M Waterproof Cable**
for Ethernet	for Power & RS-485, Alarm Output

Optional products

Mode Name	NS-205-IP67	NS-208PSE-IP67	NS-208-IP67
Picture			
PoE	–	802.3af × 8	–
Input Voltage Range	+10 VDC ~ +30 VDC (1 kV Isolated)	+46 VDC ~ +53 VDC	+12 VDC ~ +53 VDC
Installation	Wall Mounting	Wall Mounting	
Dimensions (Unit: mm)	85 × 76 × 137 (W × L × H)	190 × 155 × 104 (W × L × H)	

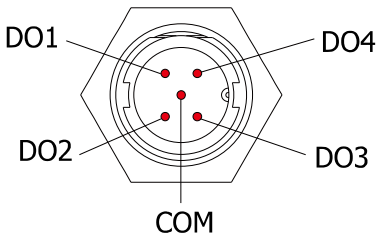
Pin Assignments

Power & RS-485

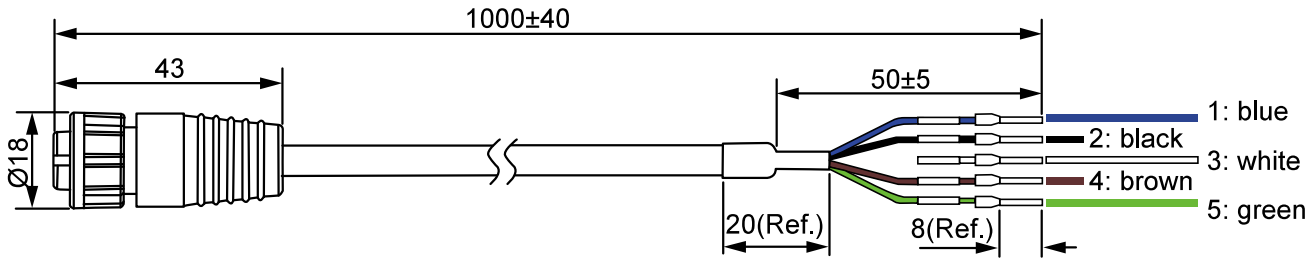


Power & RS-485	
1-Blue	Vs
2-Black	GND
3-White	D+
4-Brown	D-
5-Green	NC

Alarm Output



Alarm Output	
1-Blue	DO1
2-Black	DO2
3-White	DO3
4-Brown	DO4
5-Green	COM



Ordering Information

DL-1020 CR	Remote PM1/2.5/10/Temperature/Humidity/Dew Point Data Logger with Ethernet/RS-485 and PoE (RoHS)
DL-1021 CR	Remote PM1/2.5/10/CO/Temperature/Humidity/Dew Point Data Logger with Ethernet/RS-485 and PoE (RoHS)
DL-1022 CR	Remote PM1/2.5/10/CO_2/Temperature/Humidity/Dew Point Data Logger with Ethernet/RS-485 and PoE (RoHS)
DL-1023 CR	Remote PM1/2.5/10/CO/CO_2/Temperature/Humidity/Dew Point Data Logger with Ethernet/RS-485 and PoE (RoHS)
DL-1025 CR	Remote PM1/2.5/10/NH_3/Temperature/Humidity/Dew Point Data Logger with Ethernet/RS-485 and PoE (RoHS)
DL-1028 CR	Remote PM1/2.5/10/TVOC/Temperature/Humidity/Dew Point Data Logger with Ethernet/RS-485 and PoE (RoHS)
DL-1029 CR	Remote PM1/2.5/10/SO_2/Temperature/Humidity/Dew Point Data Logger with Ethernet/RS-485 and PoE (RoHS)
DL-1034 CR	Remote PM1/2.5/10/CO/CO_2/HCHO/TVOC/Temperature/Humidity/Dew Point Data Logger with Ethernet/ RS-485 and PoE (RoHS)
DL-1038 CR	Remote PM1/2.5/10/CO/CO_2/TVOC/Temperature/Humidity/Dew Point Data Logger with Ethernet/ RS-485 and PoE (RoHS)
DL-1050 CR	O_2/Temperature/Humidity/Dew Point Data Logger with Ethernet/RS-485 and PoE (RoHS)
DL-1052 CR	O_2/CO_2/Temperature/Humidity/Dew Point Data Logger with Ethernet/RS-485 and PoE (RoHS)