

# IIoT Smart Environmental Monitoring



Mini Weather Station



Compact Temperature & Humidity Sensing Module



Cybersecurity Gas Sensing Module



Multiple Communication Interfaces



Temperature, Humidity, Multi-Gas, and Weather Monitoring



IP65/IP66 Water & Dust Protection



# Temperature & Humidity Sensing

## DL-10 Series

## Compact Type



- ✓ **Small-Sized** 3cm x 2.5cm x 2cm
- ✓ **Magnetic Mount** for Easy Installation



Model	Temp.	Humidity	Atmospheric Pressure	Interface	Protocol	Power Consumption
DL-10	●	Accuracy 3%RH	-	RS-485	Modbus RTU	10 ~ 30 VDC
DL-11	●		●			

## DL-100 Series

## IP65 Type

- ✓ **IP65 or Higher**, Suitable for Harsh Environments



Mode	DL-100T M485S	DL-100T M485PS	DL-100T MS-ZT	DL-100S -E	DL-101S -E	DL-101S -WF	DL-101S -LRS	DL-102S -LRS	DL-110S -E	DL-111S -WF	DL-120-E
Temperature	●	●	●	●	●	●	●	●	●	●	-
Humidity	Accuracy 3%RH	Accuracy 1%RH	Accuracy 3%RH	Accuracy 3%RH	Accuracy 3%RH	Accuracy 3%RH	Accuracy 3%RH	●	●	●	-
Illuminance	-	-	-	-	-	-	-	-	●	●	●
Atmospheric Pressure	-	-	-	-	-	-	-	●	-	-	-
Altitude	-	-	-	-	-	-	-	●	-	-	-
Interface	RS-485		Zigbee	Ethernet		Wi-Fi	LoRa		· RS-485 · Ethernet	Wi-Fi	· RS-485 · Ethernet
Protocol	Modbus RTU			· Modbus TCP · MQTT		Modbus TCP	Modbus TCP (Via a Gateway)		· DCON · Modbus RTU/TCP · MQTT	· Modbus TCP · HTTP	· DCON · Modbus RTU/TCP · MQTT
Power Consumption	10~30 VDC			PoE	· PoE · 12~48 VDC	9~48 VDC	12~48 VDC		· PoE · 12~48 VDC	9~48 VDC	· PoE · 12~48 VDC
Water & Dust Ingress Protection	IP66			IP66		IP67	IP65		IP65	IP67	IP65
DO	-			-	2	2	2		-	2	-
LCD	●			●		●	●		-	-	-

## iSN-200 Series

## Indoor Type

- ✓ **Illuminance, Temperature and Humidity**
- ✓ **Suitable for Indoor Use**



# Gas, Temp. & Humidity Sensing

## DLS-1000/DL-1000 Series

## Cybersecurity Type/Standard Type



- ✓ Multi-Gas, Temperature & Humidity Monitoring
- ✓ Fan-Assisted Gas Channel Design
- ✓ Replaceable Filter



DLS-1000



DL-1000

	DLS-1000 (Cybersecurity Type)	DL-1000 (Standard Type)
Modbus	Modbus UDP/TCP/TLS	Modbus RTU/TCP
MQTT	TLS, Username/Password, and Certificate Authority	Username/Password
LwM2M	Username/Password and Certificate Authority	-
Web	http/https/RESTful API	http
Encrypted Transmission	TLS	-
Real-Time Communication	LINE、Telegram、Facebook Messenger、WhatsApp	-
Support for Other Protocols	OPC UA、SNMP	DCON
DDoS Protection	Yes	-

## DL-300 Series

## LCD Type



- ✓ Multi-Gas, Temperature and Humidity Monitoring
- ✓ Resistive 2.8" **Color Touchscreen**
- ✓ Visual Interface for Temperature, Humidity, and Gas Concentration



## CL Series

## Indoor Type



### CL-200 Series

- ✓ Multi-Gas, Temperature and Humidity Monitoring
- ✓ Replaceable Filter



### CL-2S Series

- ✓ **Smoke**, Temperature and Humidity Monitoring
- ✓ 70 dB Alarm
- ✓ Industrial Design Patent

Not for life safety applications



### CL-20A-C Series

- ✓ **Methane** Monitoring
- ✓ 85 dB Alarm
- ✓ CAN Bus Communication

Not for life safety applications



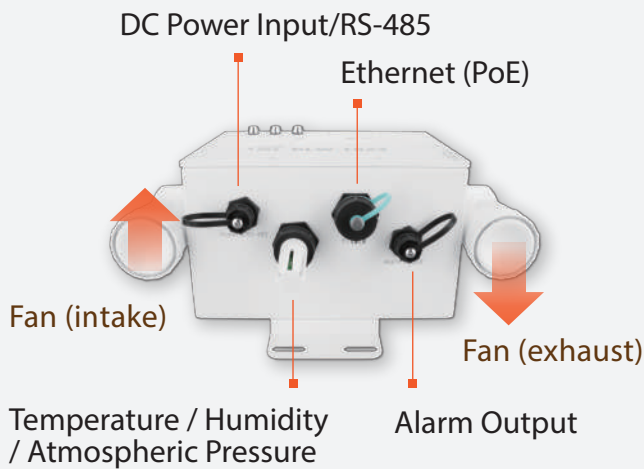
# Mini Weather Station

# DLW Series

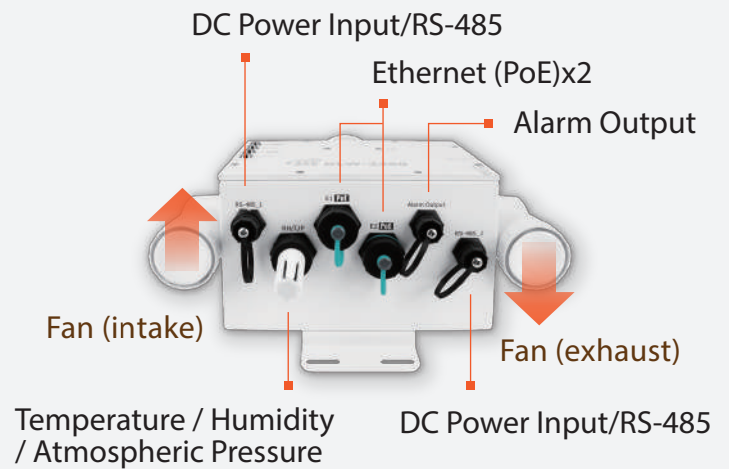


- ✓ Meteorological Data and Gas Monitoring
- ✓ Up to IP67 Protection
- ✓ Fan-Assisted Gas Channel Design
- ✓ Replaceable Filter

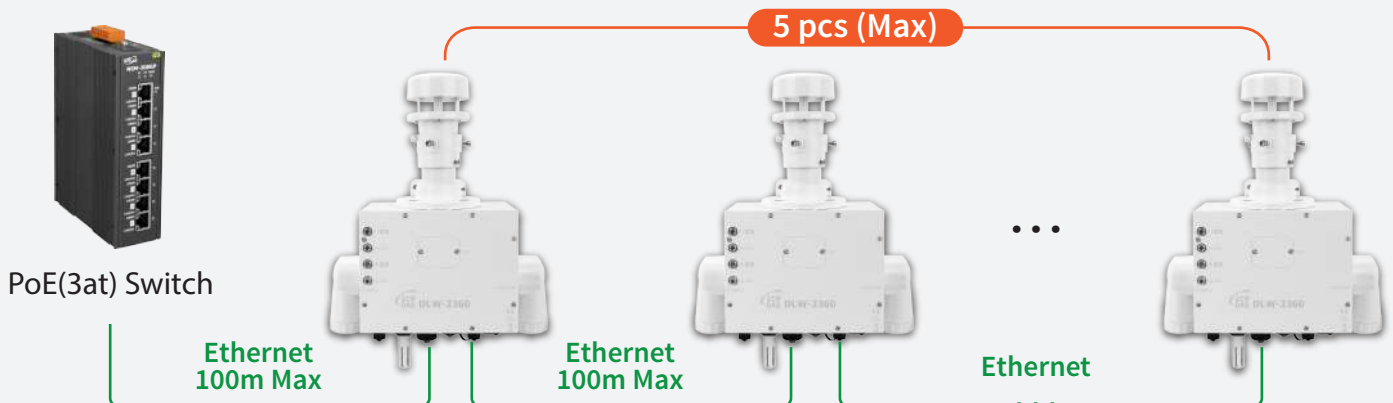
## DLW-1000 Series



## DLW-2000 Series



## DLW-2000 Series – Daisy-Chain PoE Design



## Mechanical Type

### Meteorological Monitoring Only



### With Gas Monitoring



# Environmental Monitoring Series – Specifications

Sensor Type		Range	Accuracy	Resolution	Response Time	Lifetime	
Wind Speed		0 ~ 40 m/s	5%	0.01 m/s	-	10 yrs	
Wind Direction		0 ~ 359°	< 3°	1			
Atmospheric Pressure		300 ~ 1,200 hPa	1 hPa	0.1 hPa			
Precipitation		0 ~ 100 mm/hr	± 10%	0.01 mm/hr			
Altitude		-50 ~ 9,000 m	-	0.1 m			
Temp.	DL-10 Series	-25°C ~ 75°C	± 0.5°C	0.1°C			
	CL-2S Series	-10°C ~ 60°C					
	Other	-20°C ~ 50°C					
Humidity		0 ~ 100%	± 5%	0.1%			
Illuminance		0 ~ 200,000 Lux		1 Lux			
PM1.0/2.5/10		0 ~ 1,000 µg/m <sup>3</sup>	± 10%	1 µg/m <sup>3</sup>	1 s	5 yrs	
Gas Sensor		Range	Accuracy	Resolution	Response Time	Warm-Up Time	Lifetime
Carbon Monoxide (CO)		0 ~ 1,000 ppm (Electrochemical)	± 5%	1 ppm	30 s	60 s	5 yrs
Carbon Dioxide (CO <sub>2</sub> )		0 ~ 9,999 ppm (NDIR)	± 3%	1 ppm	120 s	300 s	15 yrs
Formaldehyde (HCHO)		0 ppb ~ 2,000 ppb (Electrochemical)	± 10%	1 ppm	≤ 60 s	180 s	3 yrs
Total Volatile Organic Compounds (TVOC)		0 ppb ~ 60,000 ppb (MEMS Metal Oxide)	± 15%	1 ppm	60 s	180 s	5 yrs
Ammonia (NH <sub>3</sub> )		0 ~ 100 ppm (Electrochemical)	± 5%	1 ppm	< 40 s	60 s	2 yrs
Hydrogen Sulfide (H <sub>2</sub> S)		0 ~ 100 ppm (Electrochemical)	± 5%	1 ppm	< 30 s	60 s	2 yrs
Oxygen (O <sub>2</sub> )		0 ~ 25% (Luminescence for O <sub>2</sub> sensor)	± 2%	0.01%	< 30 s (typical)	120 s	5 yrs
Methane (CH <sub>4</sub> )		0 ~ 100 % (Catalytic Oixdation)	± 5%	1%	< 20 s	15 s	2 yrs
Sulfur Dioxide (SO <sub>2</sub> )		0 ~ 20 ppm (Electrochemical)	± 5%	0.1 ppm	< 40 s	60 s	5 yrs

Product	DL-10 Series	DL-100 Series	iSN-200 Series	CL-200 Series	CL-2S Series	DL-300 Series	DLS-1000 Series	DL-1000 Series	DLW Series
<b>Sensor</b>									
Temp. & Humidity	●	●	●	●	●	●	●	●	●
Atmospheric Pressure	●	● <sup>1</sup>							●
Illuminance		●	●						●
PM2.5/PM1/PM10				●			●	●	●
Carbon Monoxide				●		●	●	●	●
Carbon Dioxide				●		●	●	●	●
Ammonia				●		●	●	●	●
Hydrogen Sulfide				●		●	●	●	●
Formaldehyde				●		●	●	●	●
TVOC				●		●	●	●	●
Methane				●					●
Sulfur Dioxide							●	●	●
Oxygen							●	●	●
Smoke					●				●
Wind Speed / Altitude / Wind Direction / Precipitation									●
<b>Interface</b>									
RS-485	●	●	●	●	●	●	●	●	●
CAN									
Ethernet/PoE		●	●	●	●	●	●	●	●
Wi-Fi		●	●	●	●	●	●	●	
Zigbee		●							
LoRa		●			●				
<b>Protocol</b>									
DCON		●	●	●	●	●	●	●	
Modbus RTU	●	●	●	●	●	●	●	●	●
Modbus TCP		●	●	●	●	●	●	●	●
MQTT		●	●	●	●	●	●	●	●
OPC UA							●		
<b>Function</b>									
LCD Display		●				●			
Data Storage		●		●		●	●	●	●
Relay Output		●	●	●	●	●	●	●	●
Cybersecurity <sup>3</sup>		●	●	●	●	●	● <sup>2</sup>	●	●

1. LoRa Version    2. Cybersecurity Enhanced Version  
3. All Ethernet versions support blacklist/whitelist functions and password login  
\*All Wi-Fi versions support WEP, WPA, and WPA2