



DLW-2000 Series

Mini weather station can measure weather information and air quality with PoE Dasiy Chain

Features

- Real-time measurement of outdoor weather information and hazardous gas detection.
- Molding in one, can be matched with straight/ horizontal rod body, easy to install.
- Provide RS-485 and Ethernet (PoE) communication interfaces.
- Support Modbus RTU/TCP, MQTT communication protocols.
- Built-in PoE daisy chain design reduces wiring costs.
- Can be integrated with the WISE controller to set alarm notifications to keep you informed.



Introduction

✳️ **Adopt innovative hardware design:**

➡️ **Mini Automated Surface Observation Area:**

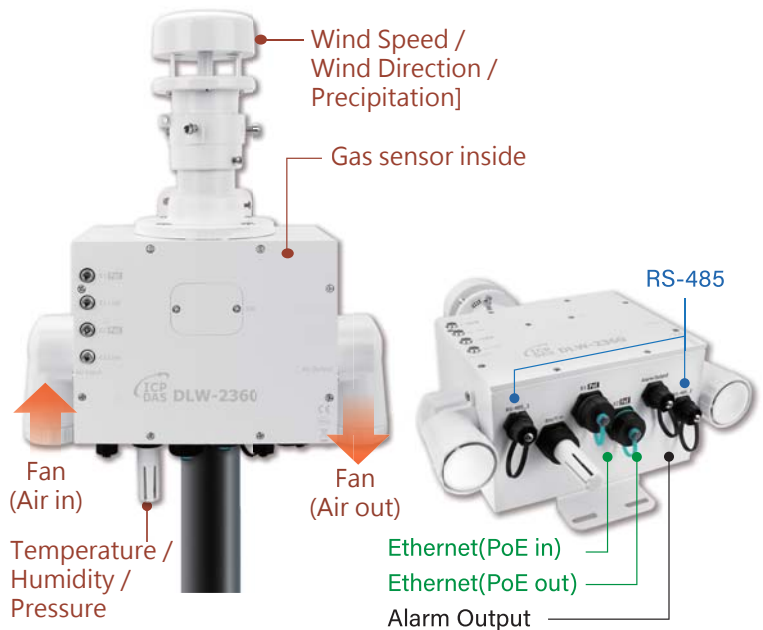
Concentrate air/dust pollution sensors on the circuit board to actively monitor various air quality values.

➡️ **Positive and Negative Pressure Ventilation System :**

Active ventilation can create a pressure difference inside and outside the module, generating air disturbances to evenly mix the air and ensure more accurate readings.

➡️ **IP Protection Rating :**

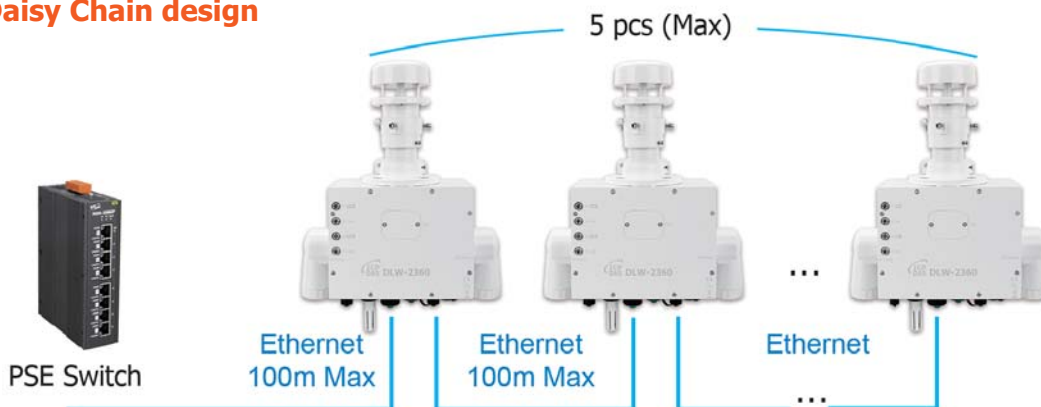
The system has an IP54 rating for the fan intake and output, which can withstand water ingress from a low angle during a storm. There is also a waterproof connector for RS-485 and Ethernet (supports PoE), to ensure the device will work in extreme conditions.



➡️ Replaceable Filter Patch

The intake and output filters are replaceable. The 45ppi filter sponge prevents dust particles and cotton wool from entering, thereby extending the life of the gas sensor chips. It is only necessary to replace the filter patch by yourself during regular maintenance, which significantly reduces the repair times.

■ PoE Daisy Chain design



The DLW-2000 series has a built-in two-port Ethernet switch to implement daisy-chain topology. The cabling is much easier and the total costs of cable and switch are significantly reduced.

Applications

Smart Agriculture/Irrigation - Air Quality Monitoring and Environmental Management

The integration of IoT and agriculture has gradually become a significant trend. The DLW series micro weather stations can collect various agricultural-related environmental data, such as temperature, humidity, precipitation, illumination, wind speed, wind direction, and various gas data. When combined with the WISE-5231M-4GE edge controller and the M-7000 series I/O modules, it enables to activate relevant irrigation and lighting equipment in response to environmental changes, addressing issues related to planting, seedling, irrigation, fertilization, and protection from pests and diseases, while improving the quality of the crop.

Mini Weather Station DLW Series (DLW-2360) is connected via **RS-485** to the **IIoT Edge Controller WISE-5231M-4GE**. The controller is also connected via **RS-485** to two **M-7000 Series** I/O modules. These modules control **Soil Sensor**, **Light**, and **Sprinkler**.



Air quality and weather data collecting solution for marine affairs and ports

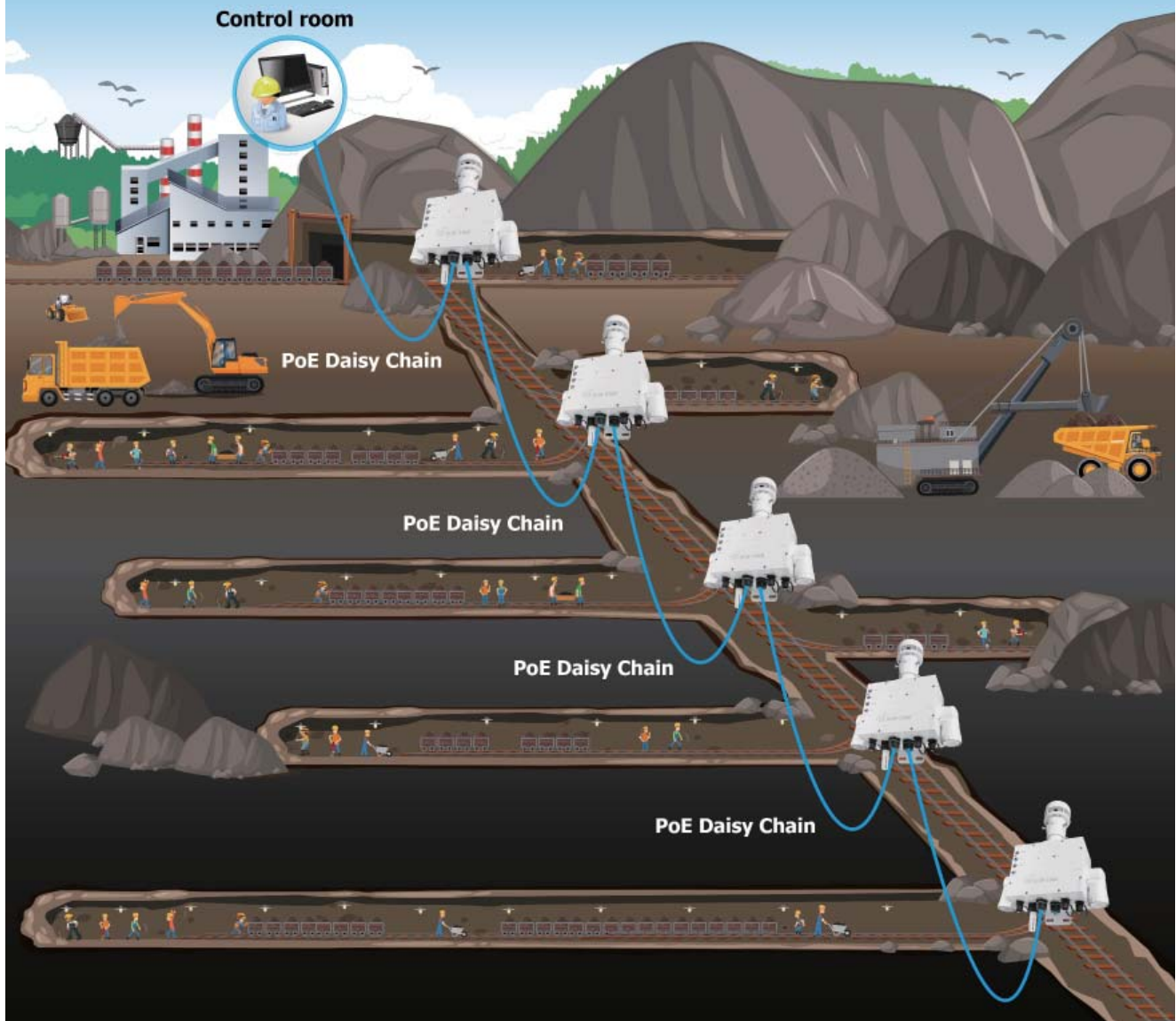
As a crucial hub for international trade, maritime and port operations are increasingly included as productivity indicators. Notably, the current international push for green port evaluations uses air quality as one of its assessment criteria. Emissions from various vessels, machinery, and vehicles that use diesel and heavy oil must be considered in these evaluations. The industrial-grade DLW series micro weather station can measure wind speed, wind direction, precipitation, illumination, and collect data on H₂S, NO_x, and PM_{2.5}—key metrics emphasized by port authorities. Collect data to improve air quality in port areas and promote policies for reducing air pollution in commercial ports.

Air Quality Monitoring for Resorts and Amusement Parks

The **Mini Weather Station DLW Series** is connected via **RS-485** to the **IIoT Edge Controller WISE-5231M-4GE**. The controller is connected via **Ethernet** to the **Industrial LED Display iKAN-224**, which displays the **Temperature : 20.3°C**.

With the pandemic, public awareness of environmental safety has increased. Tourists visiting crowded public places like resorts or amusement parks are now more attentive to air quality information. The DLW series micro weather stations can measure weather information and air quality, such as temperature, humidity, CO, CO₂, HCHO, and PM_{2.5}. When combined with the WISE-5231M-4GE edge controller and the iKAN series industrial-grade LED displays, the data can be shown on screens for easy monitoring, ensuring the safety of visitors.

Air Quality Monitoring in Mines



In mining operations, air quality monitoring is crucial due to the presence of dust and harmful gases, which can have significant impacts on worker health. The DLW-2000 micro weather station effectively monitors various gas concentrations, including CO, CO₂, NH₃, O₂, SO₂, and particulates (PM₁/2.5/10). Its PoE Daisy Chain design offers convenient connectivity, simplifies line configuration and maintenance, reduces wiring costs and switch requirements, while enhancing network scalability. This allows for more effective management of air quality in mines, ensuring the safety of workers.

System Specifications

Model	DLW-2XXX	
COM Ports		
Ports	2 × RS-485 (1 × module communication , 1 × Sensor IO * reserved)	
Baud Rate	1200 ~ 115200 bps (module communication, 1×)	
Protocol	Modbus RTU (RS-485)	
Ethernet		
Port	10/100 Base-TX, 8-Pin RJ-45 × 2 (1 × PoE Input PD , 1 × PoE Output PSE)	
Security	Password and IP Filter	
Protocol	Modbus TCP (Ethernet) and MQTT	
PoE technology		
PoE Compliance	IEEE 802.3at	
PoE Pin Assignment	Ethernet 2 (PSE) : V+ (pin 1, 2), V-(pin 3, 6) , alternative A	
PoE Daisy Chain	Daisy Chain number of serial connections: 5 PCS (Max)	
System		
Alarm	Weather Monitoring (Wind Speed, Wind Direction, Pressure, Illuminance, Sea Level, RH/T, Precipitation), Particulates, Gas Monitoring (CO, CO ₂ , HCHO, TVOC, NH ₃ , H ₂ S, O ₂ , SO ₂ , CH ₄)	
Real Time Clock	Yes	
Data Logger	Yes	
Relay Output	PhotoMOS Relay, Form A × 4, SPST 100 V _{DC} @ 1A	
CPU Module		
Watchdog Timer	Yes, Module, Communication (Programmable)	
Power		
Powered from Terminal Block	+48 VDC	
Powered from PoE	Ethernet 1 (PD) : IEEE 802.3at, Class 4 (52 V)	
Power Consumption	PoE	4.8 W Max
	Non-PoE	4.4 W Max
LED Indicators		
Status	PWR (Green)	PoE 1 / PoE 2 normal operation
	Link (Green)	Ethernet 1 / Ethernet 2 - linked
Mechanical		
Installation	U-bolt or Wall Mounting	
Dimensions (mm)	288 × 130 × 389 (W × L × H)	
Weight	2.5 kg	
Ingress Protection Rating	IP54	
Environment		
Operating Temperature	-20 to +50°C	
Storage Temperature	-30 to +75°C	
Humidity	10% to 90% RH, Non-condensing	

DLW-2



- 0** : Wind Speed, Wind Direction, Pressure, illuminance, Sea Level, RH/T
- 1** : Wind Speed, Wind Direction, Pressure, illuminance, Sea Level, RH/T, Precipitation
- 2** : Wind Speed, Wind Direction, RH/T
- 3** : Wind Speed, Wind Direction, Pressure, Sea Level, RH/T
- 4** : Wind Speed, Wind Direction, RH/T, Precipitation, Solar Radiation

- 2** : PM1/2.5/10+Particle
- 3** : PM1/2.5/10+Particle+CO+CO₂
- 4** : NH₃
- 5** : PM1/2.5/10+Particle+CO+CO₂+NH₃+O₂+H₂S
- 6** : PM1/2.5/10+Particle+CO+CO₂+NH₃+O₂+SO₂

- 1** : CO
- 2** : CO₂
- 3** : CO+CO₂
- 4** : HCHO+TVOC
- 5** : NH₃
- 6** : H₂S
- 7** : O₂
- 8** : SO₂

Related product models and series

※ Any related customized needs, please contact our sales team

DLW-2000 Series	Type of Sensor																Sensor I/O	Mechanical	
	Weather Monitoring					Solar Radiation	Particulates		Gas Monitoring										Sound Level Meter
	Wind Speed	Wind Direction	Pressure	Illuminance	Precipitation		PM1	PM2.5	CO	CO ₂	HCHO	TVOC	NH ₃	H ₂ S	O ₂	SO ₂			
DLW-2069-01	√	√	√	-	-	√	√	√	-	-	√	√	√	√	√	-	-	B	
DLW-2360	√	√	-	-	-	√	√	√	-	-	√	-	√	√	-	-	-	D	
DLW-2122/S01	√	-	-	√	-	√	-	√	-	-	-	-	-	-	-	-	√		

If you have any customized requirements, please contact us.

I/O Specifications

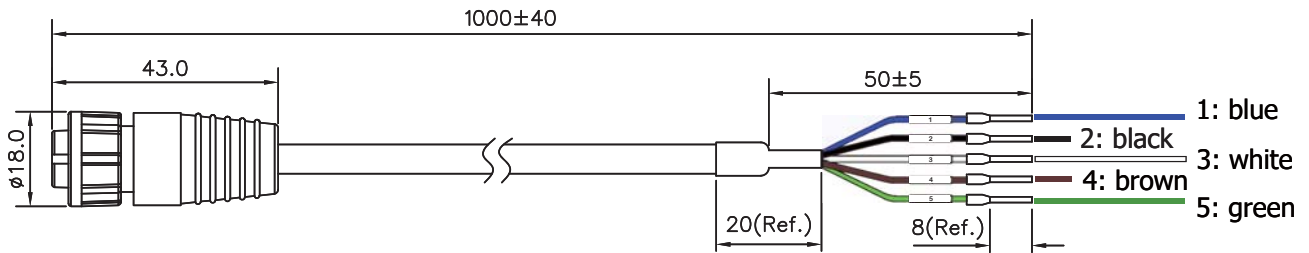
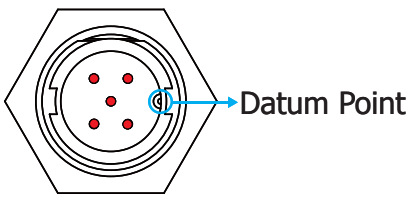
Mini Weather Station(Standard Specifications)						
Type of Sensor	Range	Accuracy	Resolution	Response Time	Warn-up Time	Life Time
Wind Speed	0 ~ 40 m/s	5%	0.01 m/s	-	-	10 years
Wind Direction	0 ~ 359°	<3°	1°	-	-	10 years
Pressure	300 ~ 1200 hPa	1 hPa	0.1 hPa	-	-	10 years
Precipitation	0 ~ 100 mm/hr	±10%	0.01 mm/hr	-	-	10 years
Sea Level	-50 ~ 9000 m	-	0.1 m	-	-	10 years
Temperature	-40 ~ +80°C	±0.5°C	0.1°C	-	-	10 years
Humidity	0 ~ 100%	±5%	0.1%	-	-	10 years
Illuminance	0 ~ 200,000 Lux	±5%	1 Lux	-	-	10 years
PM1.0/2.5/10 (Note1)	0 ~ 1000 µg/m ³	±10%	1 µg/m ³	1 seconds	20 seconds	5 years
Solar Radiation	0 ~ 2000 W/m ²	±5%	0.1 W/m ²	-	-	10 years

Note1 : The filter patch (FLT-C004) is replaceable

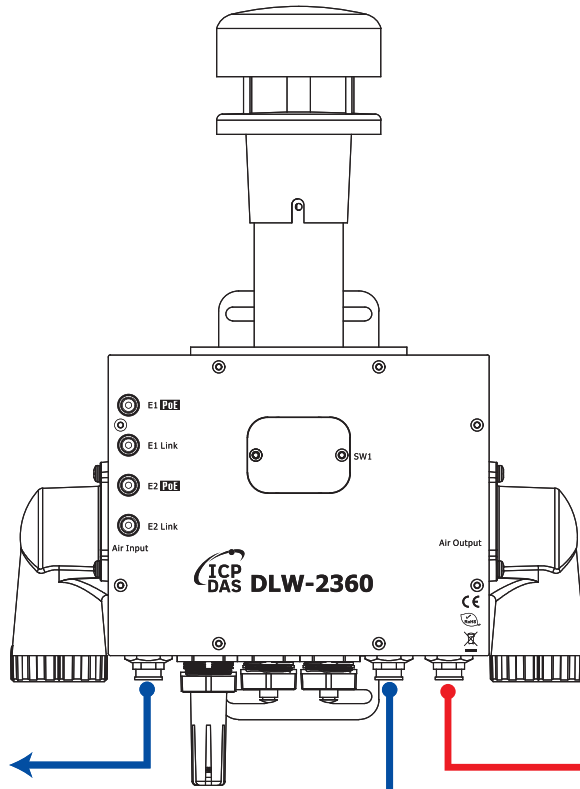
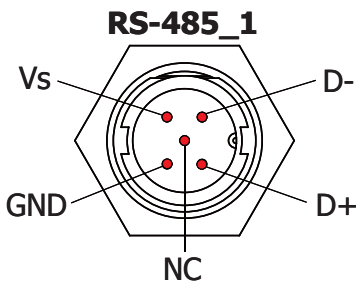
Mini Weather Station(Gas Sensor Optional Specifications)						
Gas Sensor	Range	Accuracy	Resolution	Response Time	Warn-up Time	Life Time
CO	0 ~ 1000 ppm (Electrochemical)	±5%	1 ppm	30 seconds	60 seconds	5 years
CO ₂	0 ~ 9999 ppm (NDIR)	±3%	1 ppm	120 seconds	300 seconds	15 years
HCHO	0 ppb ~ 2000 ppb (Electrochemical)	±10%	1 ppb	≤ 60 seconds	180 seconds	3 years
TVOC	0 ppb ~ 60000 ppb (MEMS Metal Oxide)	±15%	1 ppb	60 seconds	180seconds	5 years
NH ₃	0 ~ 100 ppm (Electrochemical)	±5%	1 ppm	< 40 seconds	60 seconds	2 years
H ₂ S	0 ~ 100 ppm (Electrochemical)	±5%	1 ppm	< 30 seconds	60seconds	2 years
O ₂	0 ~ 25% (Luminescence for O ₂ sensor)	±2%	0.01%	< 30 seconds	120 seconds	5 years
SO ₂	0 ~ 20 ppm (Electrochemical)	±5%	0.1 ppm	< 40 seconds	60seconds	5 years
CH ₄	0 ~ 100 % (Catalytic Oxidation)	0.1 %	±5%	< 20 seconds	15 seconds	2 years

Sensor I/O						
Sensor Type	Range	Accuracy	Resolution	Response Time	Protection	Life Time
Sound Level Meter	Measuring Rang: 30 ~ 130 dB Frequency Rang: 20 ~ 12.5KHz	±0.5 dB	0.1dB	≤ 3s	IP54	10 years

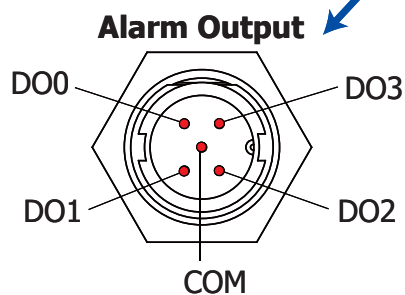
Pin Assignments



RS-485_1	
1-Blue	Vs
2-Black	GND
3-White	D+
4-Brown	D-
5-Green	NC



Sensor I/O	
Sensor Type	Length
Sound Level Meter	1.4 m

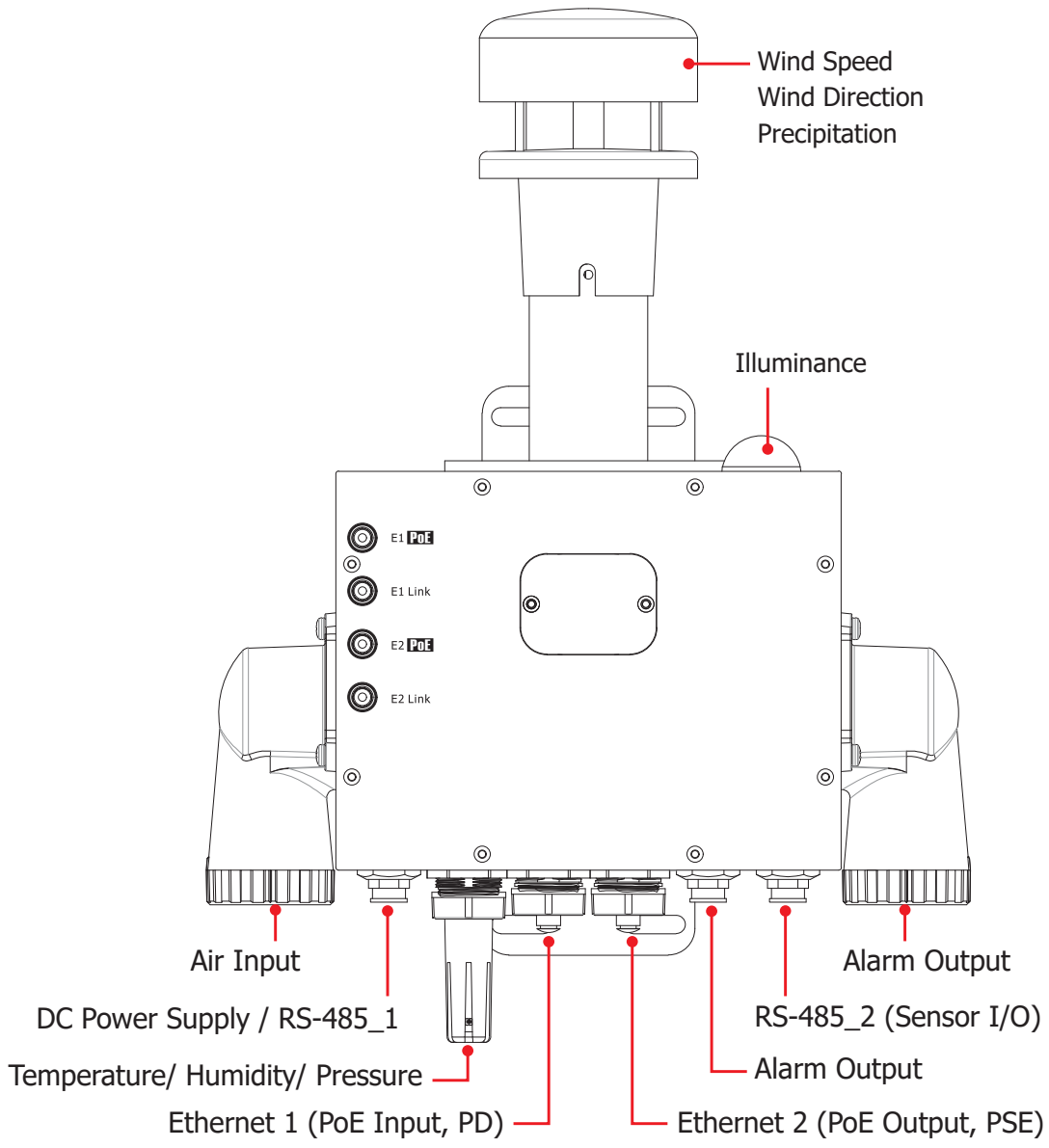
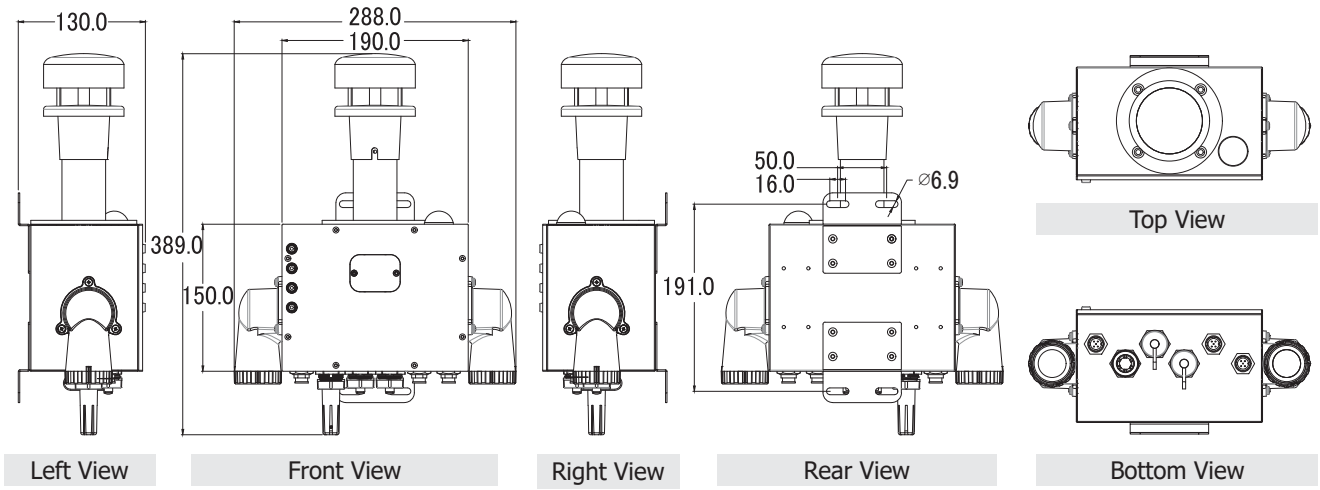


Alarm Output	
1-Blue	DO0
2-Black	DO1
3-White	DO2
4-Brown	DO3
5-Green	COM

■ Dimensions (Units: mm)/Appearance

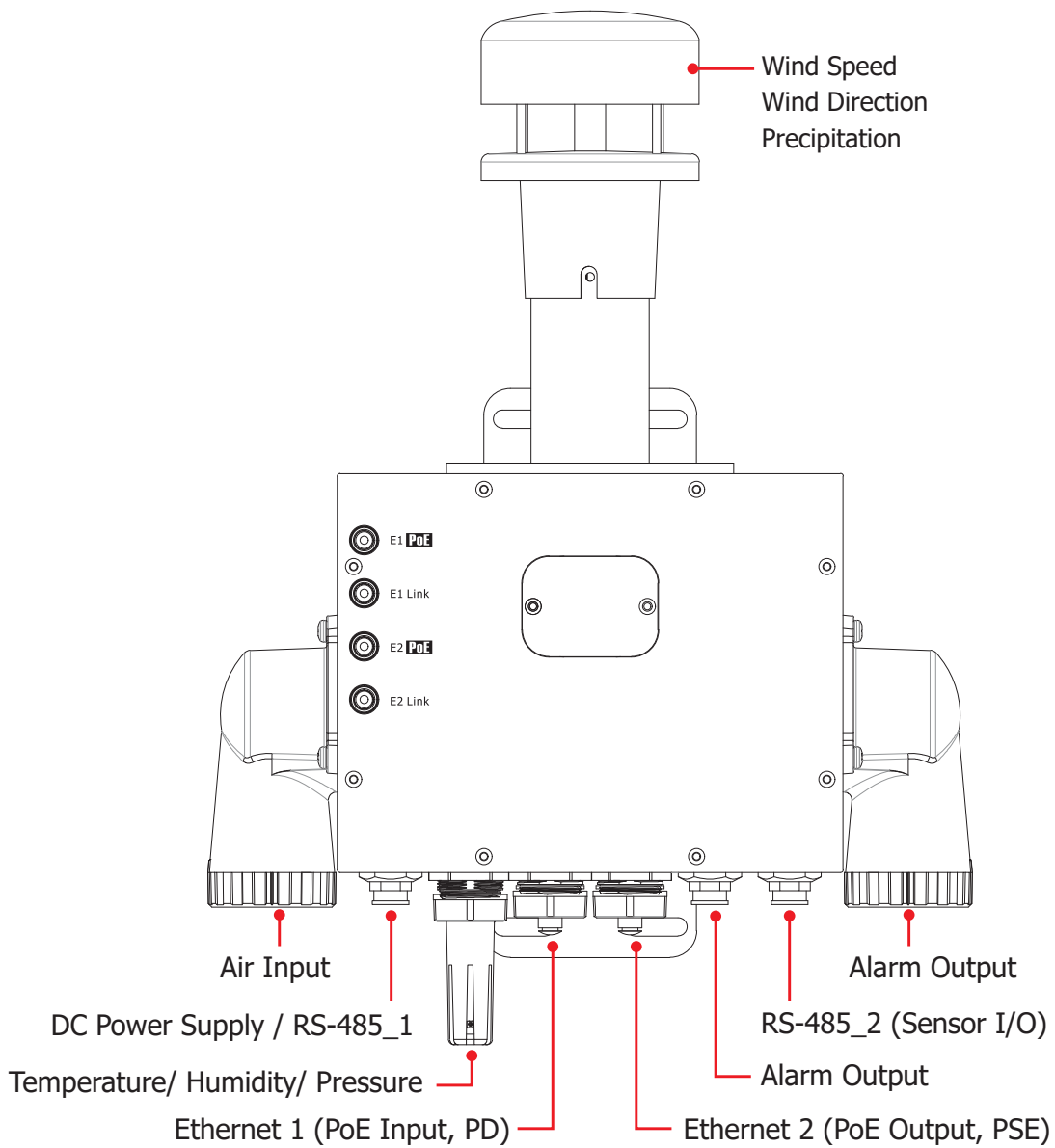
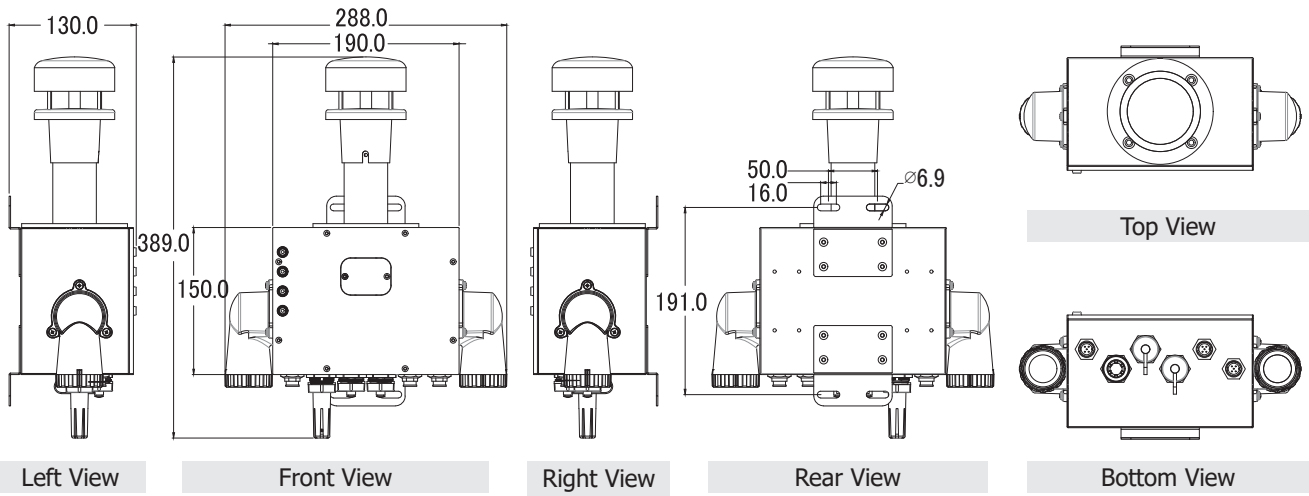
DLW-2069-01

Type: B **B**



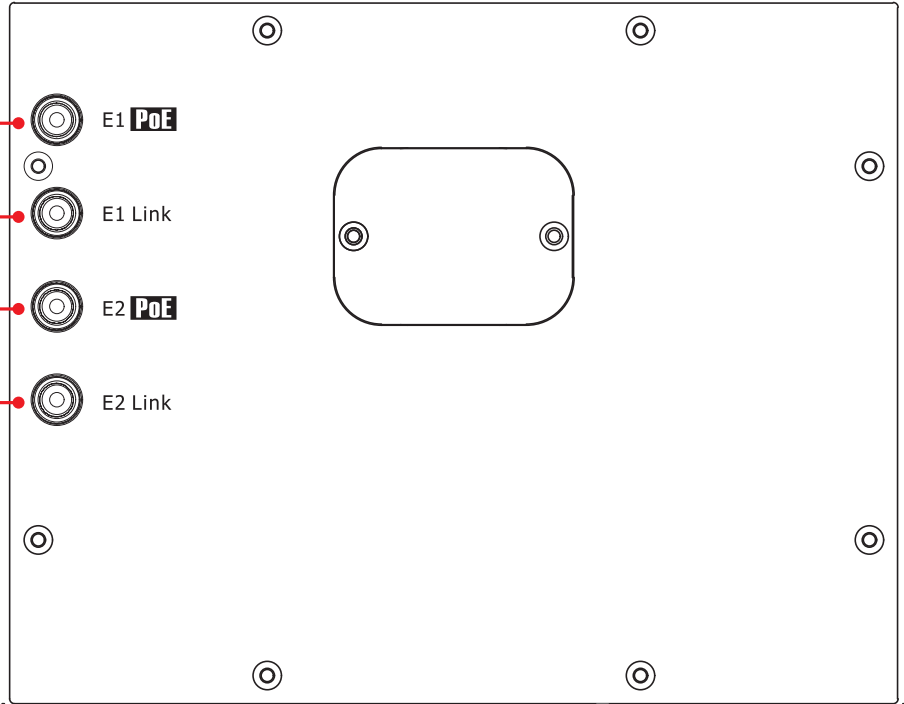
DLW-2360

Type: D



■ LED description

- Ethernet 1 (PoE) — E1 **PoE**
- Ethernet 1 (Link) — E1 Link
- Ethernet 2 (PoE) — E2 **PoE**
- Ethernet 2 (Link) — E2 Link



■ Standard Accessories

	CA-05BFFM-LL7A01 × 2
	for Power & RS-485, Alarm Output
1m waterproof line	

	4SASO-0001 × 2
	for Ethernet
IP67 RJ45 Plug	



	FLT-C004
	Replaceable Filter Patch (Circle) (1 Pack 6 Patches) Size: (OD :35.5 · ID:30.6) mm
Filter Patch	

	RS-485
	Sound Level Meter
Length 1.4 m	