



DLW-1000 Series

Mini weather station can measure weather information and air quality

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
- Can be integrated with the WISE controller to set alarm notifications to keep you informed
- Combining with the ExoWISE, simple logic control settings



Introduction

Mini Automated Surface Observation Area:

The minimized sensors of gas/powder pollution are placed on PCB to help monitor the air quality index to identify the source of the contamination.

Positive and Negative Pressure Ventilation System:

Active ventilation produces the pressure difference between the inside and outside of the module, which causes airflow, creates turbulence, mixes the air evenly, and makes the data precise.

IP Protection Rating:

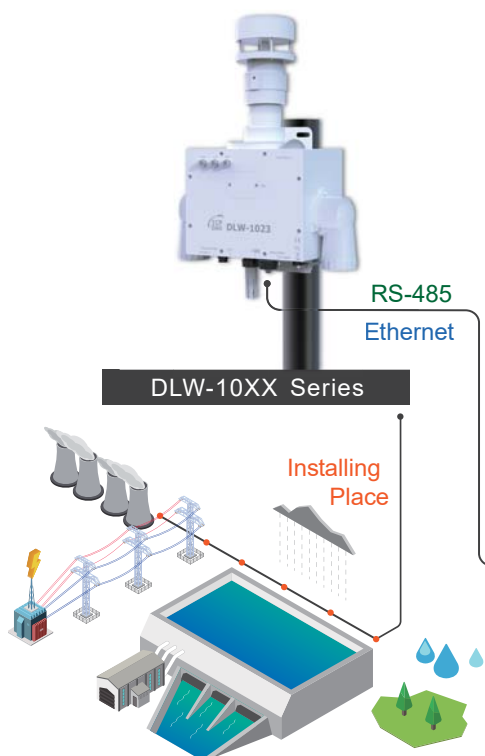
The system has an IP54 rating for the fan intake and output, which can withstand water ingress from a low angle during a storm. There is also a waterproof connector for RS-485 and Ethernet (supports PoE), to ensure the device will work in extreme conditions.

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.

Applications

Outdoor Weather Information Visualization Solution



Visualization Dashboard for Intelligent Monitoring



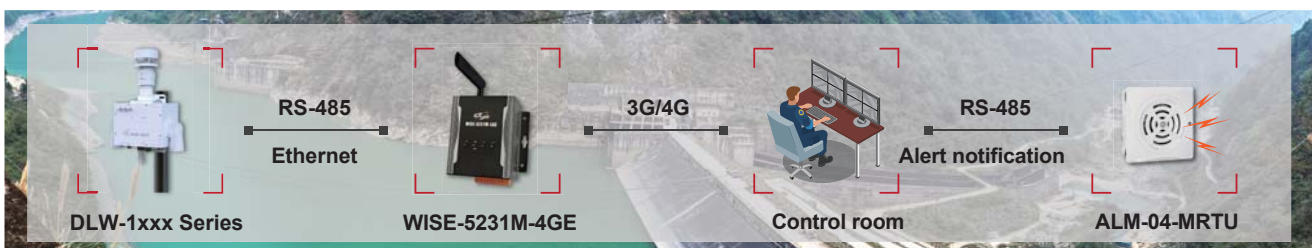
• Combination of the IoT & agricultural technology

The minimized sensors of gas/powder pollution are placed on PCB to help monitor the air quality index to identify the source of the Smart greenhouses maintain the best growing conditions for plants through accurate data collection and a greenhouse temperature control system combined with an IoT system that automatically controls light, temperature, watering and CO₂ levels. In addition to providing gas and weather data for the green house IoT system , the DLW-1000 can be connected with PM-3133, a smart power meter that collects energy data, analyzes greenhouse energy consumption, and sends the data back to the control center via WISE-5231M-4GE, which realizes the combination between the IoT and agricultural technology.



• Data Management Solution for Multiple Stations

In India, since many tributaries of the Indus River Basin are separated by mountains, combined with a large territory of the country and poor communication infrastructure in some areas, domestic and industrial water use directly rely on pumping stations. Taking pumping stations in the drainage basin as a basis, ICP DAS uses WISE-5231M-4GE, equipped with edge computing and remote maintenance functions, to collect information on water quality, flow rate, water level, and valve monitoring status in the pumping stations. Data can be sent back to the control center in Mumbai through the 4G, and users can simultaneously and remotely monitor and maintain their equipment. Besides this, adding a DLW-1000 to pumping stations enables users to notice climate changes in advance; coupled with the real-time data, the controlling center can evacuate the village before a heavy rainfall.



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

As marine transportation plays a critical role in international trade, marine affairs and ports have become indicators of productivity. For example, the Greenport Impact Assessment considers the air quality of a port in real-time. The monitored parameters are exhaust emissions from ships, machinery, and vehicles fueled by diesel or heavy fuel oil. The industrial DLW-1000 from ICP DAS can measure wind speed, wind direction, precipitation, illuminance, and collect data on H₂S, NO_x, and PM_{2.5}. We can implement air pollution reduction policies in commercial ports to improve air quality by combining weather data and A IS in adjacent seas surrounding Taiwan.

• Large scale farming

The DLW-1000 can collect data on temperature, humidity, precipitation, illumination, gas, wind direction and speed. The collected data helps to analyze the problem of planting, seedling, irrigation, fertilization of plants, protection from pests and diseases, and also helps to set up the traceability system to improve the quality of the crop. Meanwhile, the edge controller WISE-5231M-4GE, combined with the data acquisition monitoring module M-7000, can collect data from environmental sensors in remote areas where communication is poor. The combination of WISE-5231M-4GE and M-7000 integrates collection, transformation, and management of environmental data to demonstrate the convenience that smart farming brings.

• Industrial exhaust emissions monitoring

As the global trend of ESG becomes more and more popular, to find a balance between energy and environmental protection, ICP DAS suggests strict control of exhaust emissions, together with the measurement and assessment of air quality. The DLW-1000 can be easily installed and used anywhere, for example, in smoke stacks with a height of 50 or 100m, as well as in storage tanks for raw materials in the petrochemical industry. In addition to temperature, humidity, pressure, illuminance, precipitation, wind direction and speed, the DLW-1000 also measures PM1/2.5/10, CO, CO₂, O₂, NH₃, H₂S, TVOC, HCHO and more. Combining the DLW-1000 with the edge controller WISE-5231M-4GE, you can perform logic control, data collection and transmission, device management, and problem reporting wirelessly.

■ System Specifications

Model		DLW-10XX/DLW-11XX/DLW-12XX/DLW-13XX		DLW-1000/DLW-1100/DLW-1200/DLW-1300	
COM Ports					
Ports		1 x RS-485			
Baud Rate		1200 ~ 115200 bps			
Protocol		Modbus RTU			
Ethernet					
Ports		10/100 Base-TX, 8-Pin RJ-45 x1			
Security		Password and IP Filter			
Protocol		Modbus TCP and MQTT			
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)		Weather Monitoring (Wind Speed, Wind Direction, Pressure, Illuminance, Sea Level, RH/T, Precipitation)	
Real Time Clock		Yes			
Data Logger		Yes			
Relay Output		PhotoMOS Relay, Form A x 4, SPST 100 VDC@1A			
CPU Module					
Watchdog Timer		Yes, Module, Communication (Programmable)			
Power					
Powered from Terminal Block		+12 to +48 VDC			
Powered from PoE		IEEE 802.3af, Class 1 (48 V)			
Power	PoE	3.33 W Max		1.10 W Max	
Consumption	Non-PoE	3.01 W Max		0.88 W Max	
LED Indicators					
Status	PWR	Green for normal operation			
	Link	Green for the Ethernet-linked			
	Alarm	Red for an alarm condition			
Mechanical					
Installation		U-bolt or Wall Mounting			
Dimensions (mm)		288 x 122 x 389 (W x L x H)		190 x 134 x 389 (W x L x H)	
Weight		2.45 kg		2.26 kg	
Ingress Protection Rating		IP54		IP67	
Environment					
Operating Temperature		-20 to +50°C			
Storage Temperature		-30 to +75°C			
Humidity		10% to 90% RH, Non-condensing			

DLW-1



0 : Wind Speed, Wind Direction,
RH/T, Pressure, illuminance,
Sea Level

2 : PM1/2.5/10+Particle
3 : PM1/2.5/10+Particle+CO+CO₂
4 : NH₃
5 : O₂

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

DLW-10XX Series	Sensor												
	Weather Monitoring				Particulates	Gas Monitoring							
	Wind Speed Wind Direction Temperature Humidity	Pressure Sea Level	Illuminance	Precipitation	PM1 PM2.5 PM10 Particle	CO	CO ₂	HCHO	TVOC	NH ₃	H ₂ S	O ₂	Mechanical
DLW-1000	√	√	√	-	-	-	-	-	-	-	-	-	A
DLW-1001				-	-	√	-	-	-	-	-	-	B
DLW-1002				-	-	-	√	-	-	-	-	-	
DLW-1003				-	-	√	√	-	-	-	-	-	
DLW-1004				-	-	-	-	√	√	-	-	-	
DLW-1005				-	-	-	-	-	-	√	-	-	
DLW-1006				-	-	-	-	-	-	-	√	-	
DLW-1007				-	-	-	-	√	-	-	-	-	
DLW-1008				-	-	-	-	-	√	-	-	-	
DLW-1020				-	√	-	-	-	-	-	-	-	
DLW-1021				-	√	√	-	-	-	-	-	-	
DLW-1022				-	√	-	√	-	-	-	-	-	
DLW-1023				-	√	√	√	-	-	-	-	-	
DLW-1024				-	√	-	-	√	√	-	-	-	
DLW-1025				-	√	-	-	-	-	√	-	-	
DLW-1026				-	√	-	-	-	-	-	√	-	
DLW-1027				-	√	-	-	√	-	-	-	-	
DLW-1028				-	√	-	-	-	√	-	-	-	
DLW-1034				-	√	√	√	√	√	-	-	-	
DLW-1035				-	√	√	√	-	-	√	-	-	
DLW-1036				-	√	√	√	-	-	-	√	-	
DLW-1037				-	√	√	√	√	-	-	-	-	
DLW-1038				-	√	√	√	-	√	-	-	-	
DLW-1041				-	-	√	-	-	-	√	-	-	
DLW-1042				-	-	-	√	-	-	√	-	-	
DLW-1043				-	-	√	√	-	-	√	-	-	
DLW-1044				-	-	-	-	√	√	√	-	-	
DLW-1046				-	-	-	-	-	-	√	√	-	
DLW-1047				-	-	-	-	√	-	√	-	-	
DLW-1048				-	-	-	-	-	√	√	-	-	
DLW-1050				-	-	-	-	-	-	-	-	√	
DLW-1051				-	-	√	-	-	-	-	-	√	
DLW-1052				-	-	-	√	-	-	-	-	√	
DLW-1053				-	-	√	√	-	-	-	-	√	
DLW-1054				-	-	-	-	√	√	-	-	√	
DLW-1055				-	-	-	-	-	-	√	-	√	
DLW-1056				-	-	-	-	-	-	-	√	√	
DLW-1057				-	-	-	-	√	-	-	-	√	
DLW-1058				-	-	-	-	-	√	-	-	√	

DLW-1



1 : Wind Speed, Wind Direction,
RH/T, Pressure, illuminance,
Sea Level, Precipitation



2 : PM1/2.5/10+Particle
3 : PM1/2.5/10+Particle+CO+CO₂
4 : NH₃
5 : O₂



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

DLW-11XX Series	Sensor												
	Weather Monitoring				Particulates	Gas Monitoring							
	Wind Speed Wind Direction Temperature Humidity	Pressure Sea Level	Illuminance	Precipitation	PM1 PM2.5 PM10 Particle	CO	CO ₂	HCHO	TVOC	NH ₃	H ₂ S	O ₂	Mechanical
DLW-1100	√	√	√	√	-	-	-	-	-	-	-	-	A
DLW-1101					-	√	-	-	-	-	-	-	B
DLW-1102					-	-	√	-	-	-	-	-	
DLW-1103					-	√	√	-	-	-	-	-	
DLW-1104					-	-	-	√	√	-	-	-	
DLW-1105					-	-	-	-	-	√	-	-	
DLW-1106					-	-	-	-	-	-	√	-	
DLW-1107					-	-	-	√	-	-	-	-	
DLW-1108					-	-	-	-	√	-	-	-	
DLW-1120					√	-	-	-	-	-	-	-	
DLW-1121					√	√	-	-	-	-	-	-	
DLW-1122					√	-	√	-	-	-	-	-	
DLW-1123					√	√	√	-	-	-	-	-	
DLW-1124					√	-	-	√	√	-	-	-	
DLW-1125					√	-	-	-	-	√	-	-	
DLW-1126					√	-	-	-	-	-	√	-	
DLW-1127					√	-	-	√	-	-	-	-	
DLW-1128					√	-	-	-	√	-	-	-	
DLW-1134					√	√	√	√	√	-	-	-	
DLW-1135					√	√	√	-	-	√	-	-	
DLW-1136					√	√	√	-	-	-	√	-	
DLW-1137					√	√	√	√	-	-	-	-	
DLW-1138					√	√	√	-	√	-	-	-	
DLW-1141					-	√	-	-	-	√	-	-	
DLW-1142					-	-	√	-	-	√	-	-	
DLW-1143					-	√	√	-	-	√	-	-	
DLW-1144					-	-	-	√	√	√	-	-	
DLW-1146					-	-	-	-	-	√	√	-	
DLW-1147					-	-	-	√	-	√	-	-	
DLW-1148					-	-	-	-	√	√	-	-	
DLW-1150					-	-	-	-	-	-	-	√	
DLW-1151					-	√	-	-	-	-	-	√	
DLW-1152					-	-	√	-	-	-	-	√	
DLW-1153					-	√	√	-	-	-	-	√	
DLW-1154					-	-	-	√	√	-	-	√	
DLW-1155					-	-	-	-	-	√	-	√	
DLW-1156					-	-	-	-	-	-	√	√	
DLW-1157					-	-	-	√	-	-	-	√	
DLW-1158					-	-	-	-	√	-	-	√	

DLW-1



2 : Wind Speed,
Wind Direction,
RH/T



2 : PM1/2.5/10+Particle
3 : PM1/2.5/10+Particle+CO+CO₂
4 : NH₃
5 : O₂



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

DLW-12XX Series	Sensor												
	Weather Monitoring				Particulates	Gas Monitoring							
	Wind Speed Wind Direction Temperature Humidity	Pressure Sea Level	Illuminance	Precipitation	PM1 PM2.5 PM10 Particle	CO	CO ₂	HCHO	TVOC	NH ₃	H ₂ S	O ₂	Mechanical
DLW-1200	√	-	-	-	-	-	-	-	-	-	-	-	C
DLW-1201		-	-	-	-	√	-	-	-	-	-	-	D
DLW-1202		-	-	-	-	-	√	-	-	-	-	-	
DLW-1203		-	-	-	-	√	√	-	-	-	-	-	
DLW-1204		-	-	-	-	-	-	√	√	-	-	-	
DLW-1205		-	-	-	-	-	-	-	-	√	-	-	
DLW-1206		-	-	-	-	-	-	-	-	-	√	-	
DLW-1207		-	-	-	-	-	-	√	-	-	-	-	
DLW-1208		-	-	-	-	-	-	-	√	-	-	-	
DLW-1220		-	-	-	√	-	-	-	-	-	-	-	
DLW-1221		-	-	-	√	√	-	-	-	-	-	-	
DLW-1222		-	-	-	√	-	√	-	-	-	-	-	
DLW-1223		-	-	-	√	√	√	-	-	-	-	-	
DLW-1224		-	-	-	√	-	-	√	√	-	-	-	
DLW-1225		-	-	-	√	-	-	-	-	√	-	-	
DLW-1226		-	-	-	√	-	-	-	-	-	√	-	
DLW-1227		-	-	-	√	-	-	√	-	-	-	-	
DLW-1228		-	-	-	√	-	-	-	√	-	-	-	
DLW-1234		-	-	-	√	√	√	√	√	-	-	-	
DLW-1235		-	-	-	√	√	√	-	-	√	-	-	
DLW-1236		-	-	-	√	√	√	-	-	-	√	-	
DLW-1237		-	-	-	√	√	√	√	-	-	-	-	
DLW-1238		-	-	-	√	√	√	-	√	-	-	-	
DLW-1241		-	-	-	-	√	-	-	-	√	-	-	
DLW-1242		-	-	-	-	-	√	-	-	√	-	-	
DLW-1243		-	-	-	-	√	√	-	-	√	-	-	
DLW-1244		-	-	-	-	-	-	√	√	√	-	-	
DLW-1246		-	-	-	-	-	-	-	-	√	√	-	
DLW-1247		-	-	-	-	-	-	√	-	√	-	-	
DLW-1248		-	-	-	-	-	-	-	√	√	-	-	
DLW-1250		-	-	-	-	-	-	-	-	-	-	√	
DLW-1251		-	-	-	-	√	-	-	-	-	-	√	
DLW-1252		-	-	-	-	-	√	-	-	-	-	√	
DLW-1253		-	-	-	-	√	√	-	-	-	-	√	
DLW-1254		-	-	-	-	-	-	√	√	-	-	√	
DLW-1255		-	-	-	-	-	-	-	-	√	-	√	
DLW-1256		-	-	-	-	-	-	-	-	-	√	√	
DLW-1257		-	-	-	-	-	-	√	-	-	-	√	
DLW-1258		-	-	-	-	-	-	-	√	-	-	√	

DLW-1



3 : Wind Speed,
Wind Direction,
Sea Level,
RH/T, Pressure,



2 : PM1/2.5/10+Particle
3 : PM1/2.5/10+Particle+CO+CO₂
4 : NH₃
5 : O₂



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

DLW-13XX Series	Sensor												
	Weather Monitoring				Particulates	Gas Monitoring							
	Wind Speed Wind Direction Temperature Humidity	Pressure Sea Level	Illuminance	Precipitation	PM1 PM2.5 PM10 Particle	CO	CO ₂	HCHO	TVOC	NH ₃	H ₂ S	O ₂	Mechanical
DLW-1300	√	√	-	-	-	-	-	-	-	-	-	-	C
DLW-1301			-	-	-	√	-	-	-	-	-	-	D
DLW-1302			-	-	-	-	√	-	-	-	-	-	
DLW-1303			-	-	-	√	√	-	-	-	-	-	
DLW-1304			-	-	-	-	-	√	√	-	-	-	
DLW-1305			-	-	-	-	-	-	-	√	-	-	
DLW-1306			-	-	-	-	-	-	-	-	√	-	
DLW-1307			-	-	-	-	-	√	-	-	-	-	
DLW-1308			-	-	-	-	-	-	√	-	-	-	
DLW-1320			-	-	√	-	-	-	-	-	-	-	
DLW-1321			-	-	√	√	-	-	-	-	-	-	
DLW-1322			-	-	√	-	√	-	-	-	-	-	
DLW-1323			-	-	√	√	√	-	-	-	-	-	
DLW-1324			-	-	√	-	-	√	√	-	-	-	
DLW-1325			-	-	√	-	-	-	-	√	-	-	
DLW-1326			-	-	√	-	-	-	-	-	√	-	
DLW-1327			-	-	√	-	-	√	-	-	-	-	
DLW-1328			-	-	√	-	-	-	√	-	-	-	
DLW-1334			-	-	√	√	√	√	√	-	-	-	
DLW-1335			-	-	√	√	√	-	-	√	-	-	
DLW-1336			-	-	√	√	√	-	-	-	√	-	
DLW-1337			-	-	√	√	√	√	-	-	-	-	
DLW-1338			-	-	√	√	√	-	√	-	-	-	
DLW-1341			-	-	-	√	-	-	-	√	-	-	
DLW-1342			-	-	-	-	√	-	-	√	-	-	
DLW-1343			-	-	-	√	√	-	-	√	-	-	
DLW-1344			-	-	-	-	-	√	√	√	-	-	
DLW-1346			-	-	-	-	-	-	-	√	√	-	
DLW-1347			-	-	-	-	-	√	-	√	-	-	
DLW-1348			-	-	-	-	-	-	√	√	-	-	
DLW-1350			-	-	-	-	-	-	-	-	-	√	
DLW-1351			-	-	-	√	-	-	-	-	-	√	
DLW-1352			-	-	-	-	√	-	-	-	-	√	
DLW-1353			-	-	-	√	√	-	-	-	-	√	
DLW-1354			-	-	-	-	-	√	√	-	-	√	
DLW-1355			-	-	-	-	-	-	-	√	-	√	
DLW-1356			-	-	-	-	-	-	-	-	√	√	
DLW-1357			-	-	-	-	-	√	-	-	-	√	
DLW-1358			-	-	-	-	-	-	√	-	-	√	

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

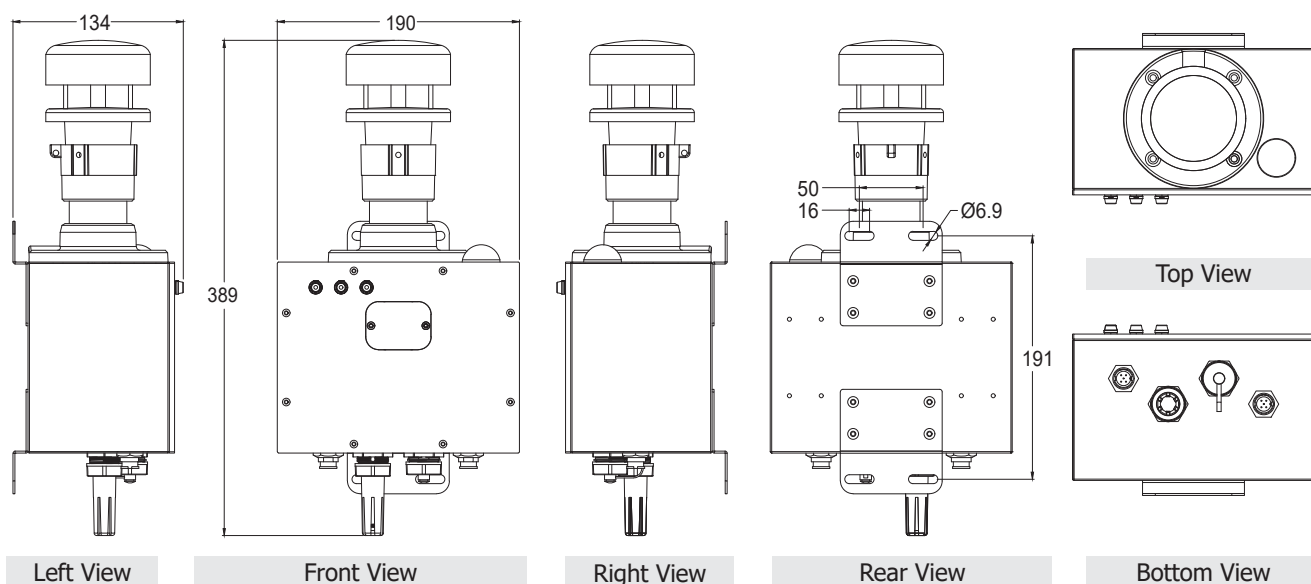
Note1 : The filter patch (FLT-C004) is replaceable

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	180 seconds	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	60 seconds	2 years
O ₂	0 ~ 25% (Luminescence for O2 sensor)	±2%	0.01%	< 30 seconds (typical)	120 seconds	5 years

Dimensions (Units: mm)

DLW-1000/DLW-1100

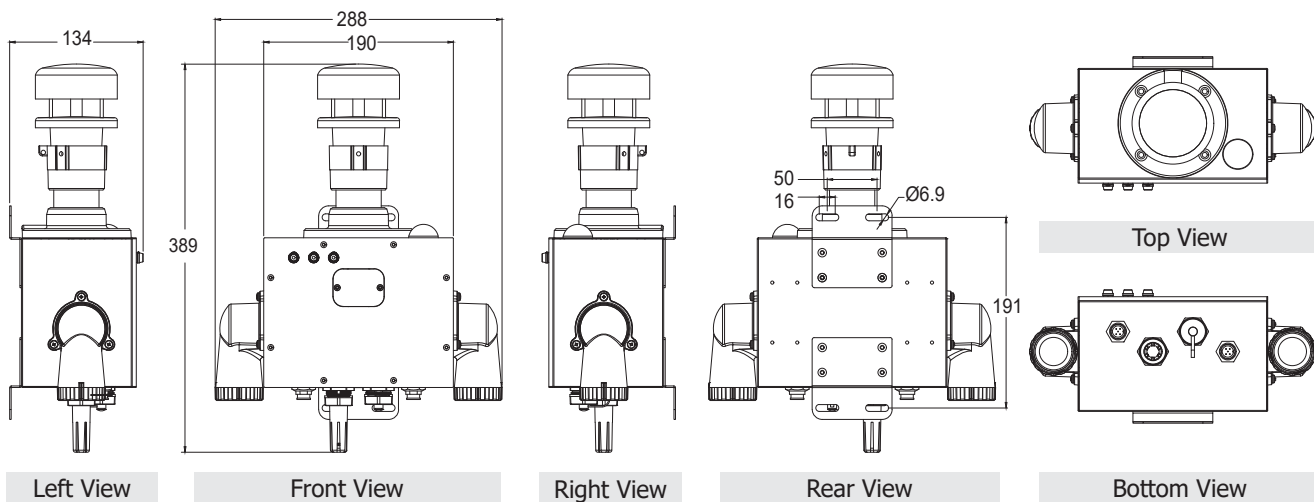
Type: A / A



■ Dimensions (Units: mm)

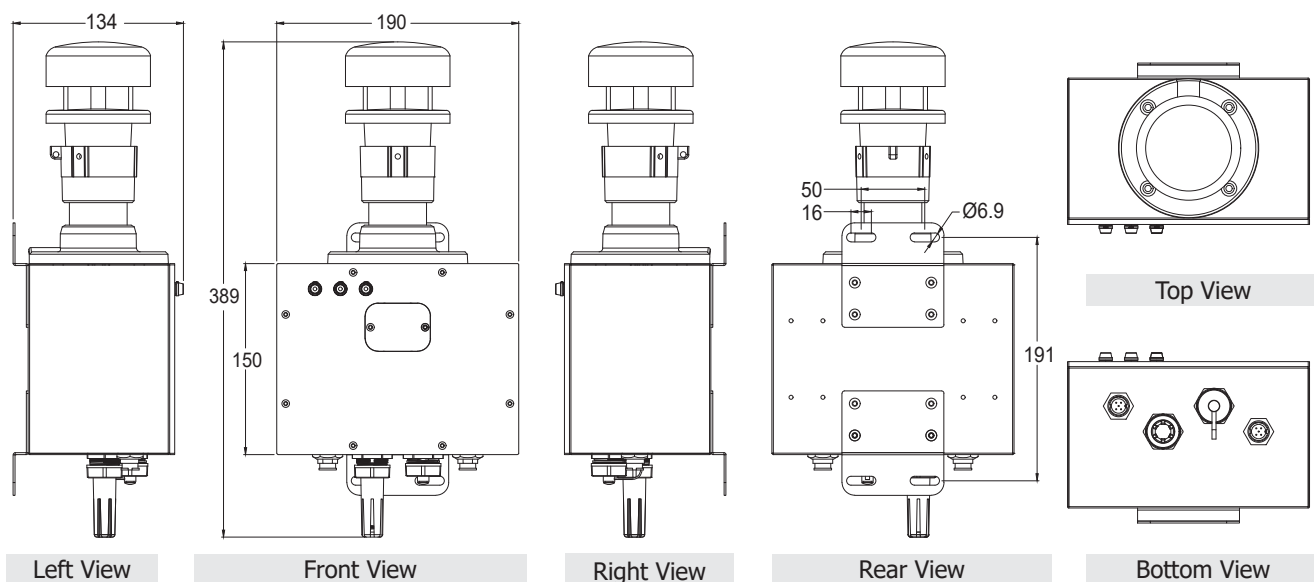
DLW-10XX/DLW-11XX

Type: B **B**



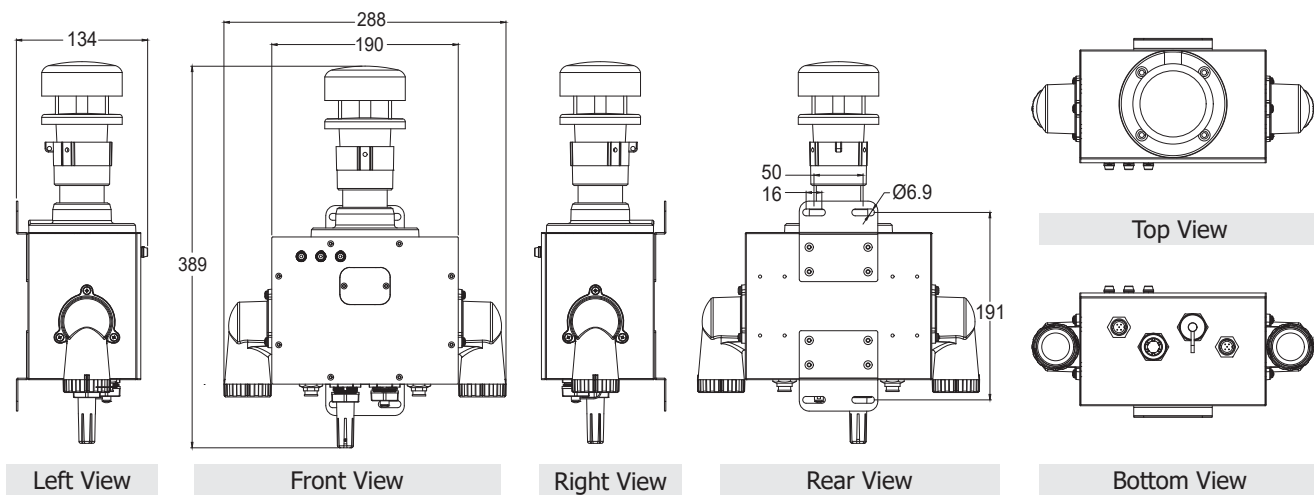
DLW-1200/DLW-1300

Type: C **C**



DLW-12xx/DLW-13xx

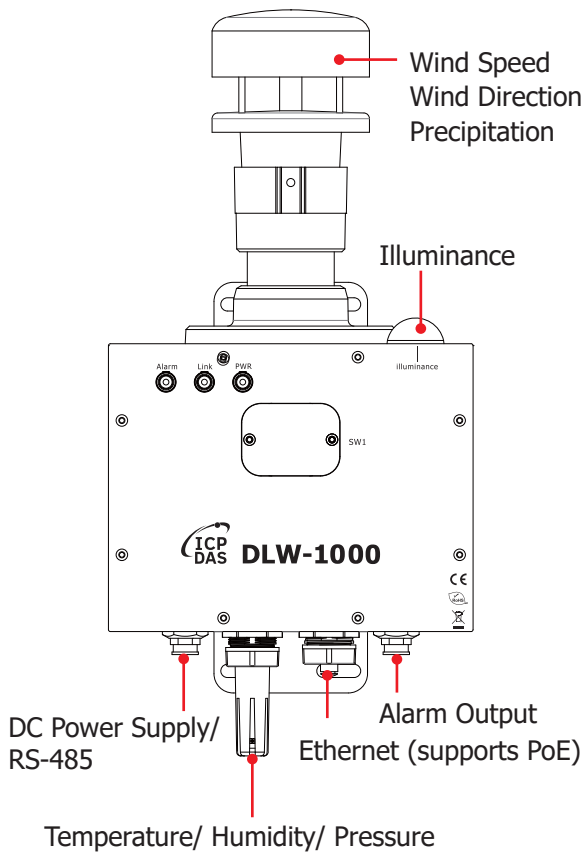
Type: D **D**



Appearance

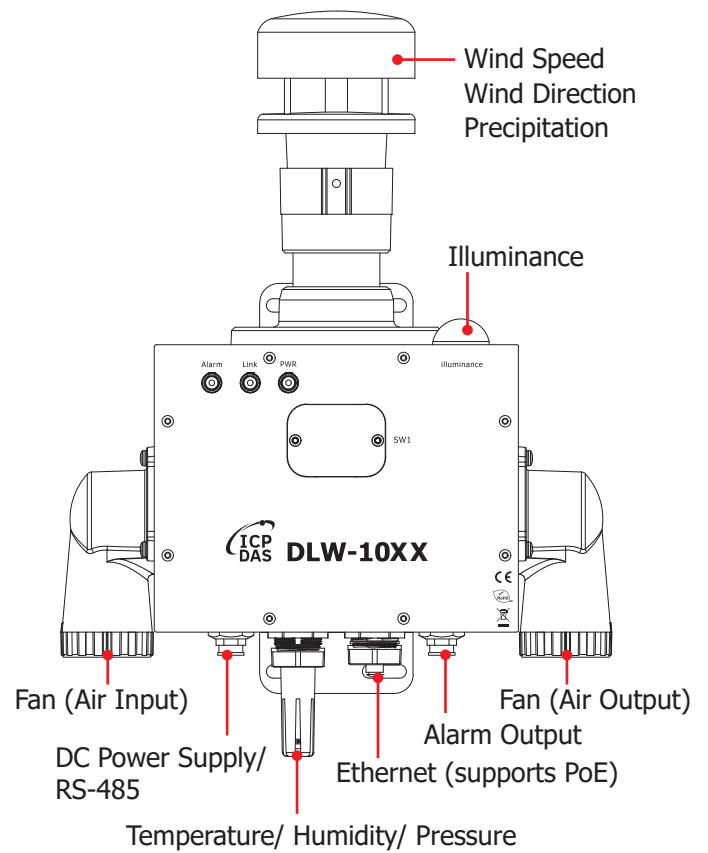
DLW-1000/DLW-1100

Type: A **A**



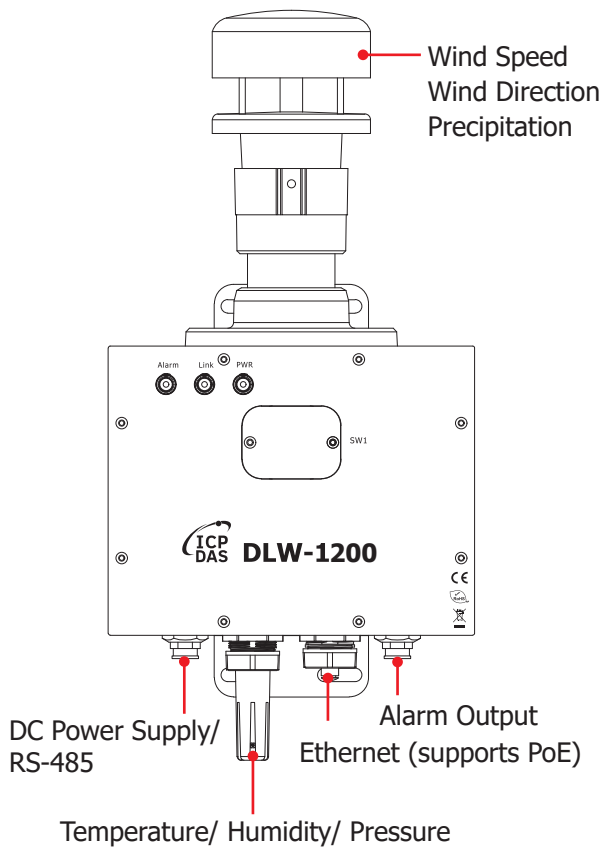
DLW-10XX/DLW-11XX

Type: B **B**



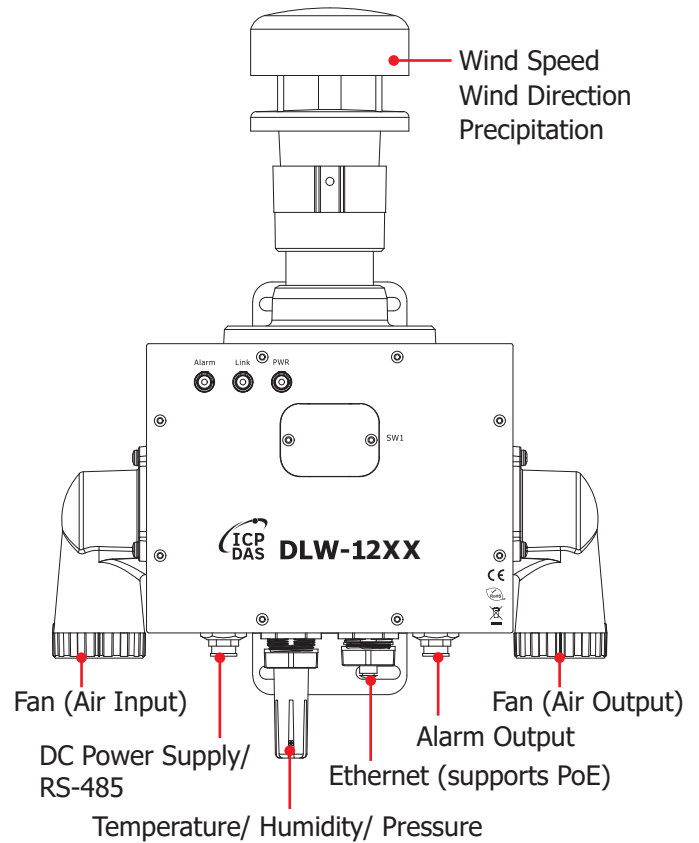
DLW-1200/DLW-1300

Type: C **C**



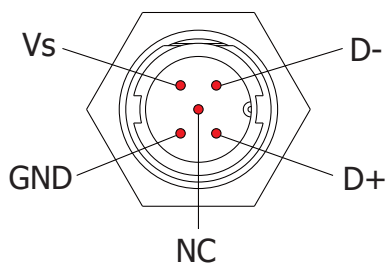
DLW-12xx/DLW-13xx

Type: D **D**

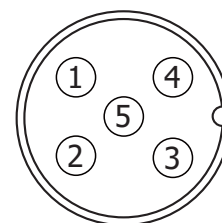
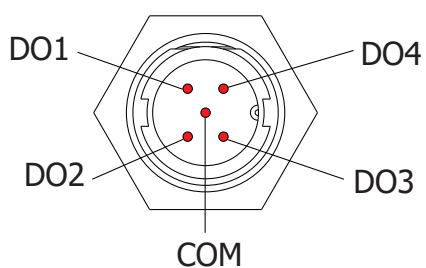


Pin Assignments

Power & RS-485



Alarm Output



Standard Accessories

