

Product Introduction

ICP DAS's Mini Weather Station adopts innovative hard

-ware design

Compact Automated Surface Observation Area:

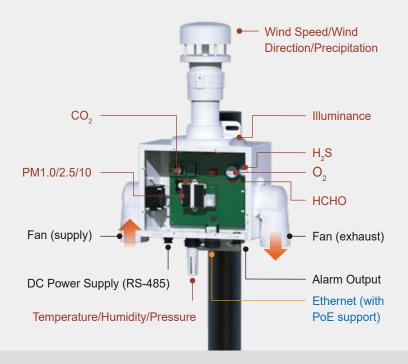
Air pollution sensors are miniaturized and placed on the PCB to help monitor and analyze the air quality index to determine the source of pollution.

Positive and Negative Pressure Ventilation System:

Active ventilation can create a difference in air pressure between inside and outside the module to mix the air evenly by creating air turbulence. This mode can improve the accuracy of the obtained values.

Ingress Protection Rating:

The supply and exhaust fans have IP54 rated design, which can effectively resist low-angle reverse irrigation under strong wind and rain. Waterproof, protective connectors for RS-485 and Ethernet (with PoE support) are also provided to ensure the normal operation of the device in extreme environments.



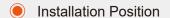


Replaceable Filter Patch

The supply and exhaust fans have replaceable filters, namely, 45 PPI filter patches, which can prevent large particles of dust and other contaminants from entering the interior of the mini station, thereby effectively extending the life of its gas sensor chips. During regular maintenance, customers only need to replace the fan filter by themselves, significantly reducing the cost and time of repairs.

Outdoor Weather Data Visualization Solution





RS-485

Ethernet





Visualization Dashboard for Smart Monitoring



Mini Weather Station **DLW-1XXX Series**







ALM-04-MRTU

iCAM-ZMR8422X **HD IP Camera**

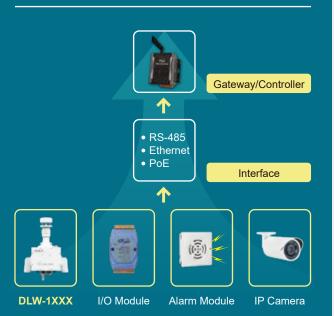
MP3 Alarm Module

M-7000 Series I/O Module

IIoT Edge Controller WISE-5231M-4GE

Design

your Mini Weather Station



Various Choices

The DLW-1XXX mini weather station is highly integrated, and supports an Ethernet interface and the most common industrial communication protocols Modbus RTU/TCP. It can also be used with a variety of environmental sensors for data collection or remote I/O modules to monitor on-site conditions and meet the needs of different applications.

The DLW-1XXX mini weather station can be additionally equipped with a physical network bridge or WISE-5231M-4GE IIoT edge controller according to the communication needs of customers. In addition to providing simple logic control, it also supports the function of 3G/4G wireless communication. In areas with poor communication, such as outlying islands, remote areas, and meteorological observation stations, weather data can be collected using the DLW-1XXX mini weather station, allowing the control center to monitor the conditions of remote or specific areas in real-time.



DLW-1XXX Standard Specifications

■ Wind Speed : 0 ~ 40 m/s

Wind Direction : 0 ~ 359 °Pressure : 300 ~ 1200 hPa

■ Precipitation: 0 ~ 100 mm/hr

■ Sea Level : -50 ~ 9000 m

■ Temperature : -40°C ~ 80 °C

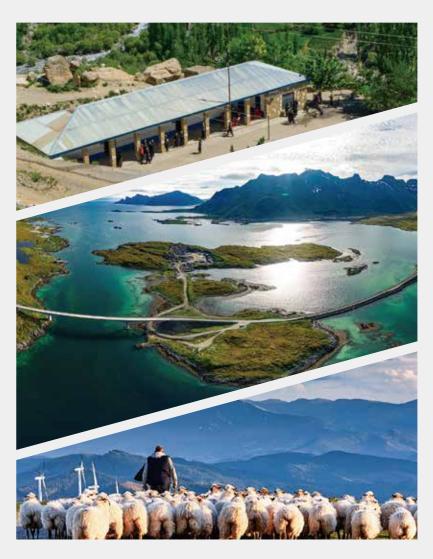
■ Humidity : 0 ~ 100 %

■ Illuminance : 0 ~ 20,0000 Lux

■ PM1.0/2.5/10 : 0 ~ 500µg/m³

Gas Sensor Optional Specifications

- CO
- CO₂
- HCHO
- TVOC
- NH₃
- H₂S
- \blacksquare O_2



There are various poisonous chemicals in dark places without enough sunlight and with poor ventilation, such as underground mines. When working in such places, safety hazards can arise, such as an explosion of biogas, lack of oxygen, the appearance of carbon monoxide CO, carbon dioxide CO₂, ammonia NH₃ and many others. The ICP DAS's mini weather station DLW-1243 not only provides meteorological data monitoring, but also can track data on toxic gases such as CO, CO₂, and NH₃. The mini weather station can also be used with the IIoT edge controller WISE-5231M-4GE. When the content of toxic gas exceeds the set value, equipment such as ventilation and light alarm will be started immediately. The exhaust fan is used to remove harmful gases, and fresh air will be supplied to the underground mine through other pipes to ensure good air circulation and reduce accidents.



Smart greenhouses in the Netherlands collect data through an IoT system that automatically adjusts lighting, temperature, water supply, and carbon dioxide levels to maintain the best growing conditions. ICP DAS's DLW-1XXX mini weather station can be used together with the WISE-5231M-4GE IIoT edge controller to execute logic control. When the DLW-1XXX mini weather station detects that the temperature inside the greenhouse exceeds the normal range, the WISE -5231M -4GE IIoT edge controller will activate the water valve to adjust the temperature. For instance, if the temperature is too high, the water will run down along the greenhouse glass roof, absorbing the excess heat, then the heated water will be stored in the outside water tank. When the temperature is too low, the heated water will be returned to the greenhouse. This method can save 50% of energy consumption. Heating, humidification, and other systems can help if necessary.





As an important hub of international trade, maritime affairs and ports are gradually being included as one of the productivity indicators. For example, the current international assessment of green ports is based on real-time air quality in ports. Exhaust gases emitted by ships, diesel fuel, and fuel oil used by machines and vehicles will be considered in the assessment as well.

The industrial-grade DLW-1XXX mini weather station from ICP DAS can not only measure wind speed, wind direction, precipitation, and provide illumination data, but also can help to collect relevant H₂S, NOx, and PM2.5 data, which the Port Authority pays the most close attention. Thus making it possible to improve air quality and promote policies to reduce air pollution in commercial ports.

As the Covid-19 pandemic broke out, people's awareness of public environmental safety has risen. When tourists visit crowded public places such as resorts or recreation areas, they begin to pay attention to relevant air quality information. ICP DAS's DLW-1XXX mini weather station can monitor the meteorological and air quality data, for example, temperature, humidity, CO, CO2, HCHO, negative air ions concentration, and PM1/2.5/10. The DLW-1XXX can be used together with ICP DAS's WISE-5231M-4GE IIoT edge controller and iKAN series industrial LED display to show the data that helps management personnel to control and ensure the safety of tourists.

Industrial Exhaust Emissions Monitoring

With the rise of the ESG concept, achieving a balance between energy and environmental protection has become a major challenge faced by businesses. With intelligent technology, the DLW-1XXX mini weather station can measure a variety of air pollution data, helping users to control exhaust emissions in accordance with the standards set by the Environmental Protection Administration (EPA) and other competent authorities.

The DLW-1XXX mini weather station can be easily installed and used anywhere, such as in smokestacks 50 or 100 meters high, as well as raw material storage tanks in the petrochemical industry. Besides measuring temperature, humidity, atmospheric pressure, illuminance, precipitation, wind direction and speed, it can also provide various air quality parameters, such as PM1/2.5/10, CO, CO₂, O₂, NH₃, H₂S, TVOC, HCHO, and others.

Customers can use the WISE-5231M-4GE IIoT edge controller to perform on-site logic control, alarm notification, data collection, device management, and wireless data transmission.





:: DLW-1XXX Mini Weather Station

Standard Specifications

Sensor Type	Range	Accuracy	Resolution	Response Time	Warm-up Time	Life Time
Wind Speed	0 ~ 40m/s	5%	0.01 m/s	-	-	-
Wind Direction	0 ~ 359°	<3°	1°	-	-	-
Pressure	300 ~ 1200 hPa	1 hPa	0.1 hPa	-	-	-
Precipitation	0 ~ 100mm/hr	± 10%	0.01 mm/hr	-	-	-
Sea Level	-50 ~ 9000 m	-	0.1 m	-	-	-
Temperature	-40°C ~ +80°C	± 0.5°C	0.1 °C	-	-	10 years
Humidity	0 ~ 100%	± 2%	0.1%	-	-	10 years
Illuminance	0 ~ 20,0000 Lux	± 5%	1 Lux	-	-	-
PM1.0/2.5/10(Note1)	0 ~ 500μg/m ³	± 10%	1 μg/m³	1 sec.	20 secs.	5 years

Note1: The filter patch (FLT-C004) can be replaced by yourself

:: DLW-1XXX Mini Weather Station

Gas Sensor Optional Specifications

Gas Sensor	Range	Accuracy	Resolution	Response Time	Warm-up Time	Life Time
СО	0 ~ 1000 ppm (Electrochemical)	± 5%	1 ppm	30 secs.	60 secs.	5 years
CO ₂	0 ~ 9999 ppm (NDIR)	± 3%	1 ppm	120 secs.	300 secs.	15 years
НСНО	0 ppb ~ 2000 ppb (Electrochemical)	± 10%	1 ppb	≤ 60 secs.	180 secs.	3 years
TVOC	0 ppb ~ 60000 ppb (MEMS Metal Oxide)	± 15%	1 ppb	60 secs.	180 secs.	5 years
NH ₃	0 ~ 100 ppm (Electrochemical)	± 5%	1 ppm	≤ 40 secs.	60 secs.	2 years
H ₂ S	0 ~ 100 ppm (Electrochemical)	± 5%	1 ppm	≤ 30 secs.	60 secs.	2 years
O ₂	0~25% (Luminescence for O ₂ sensor)	± 2%	0.01%	≤ 30 secs.(typical)	120 secs.	5 years

:: Related Products

On-site Environmental Monitoring Module

IIoT Edge Controller



iKAN Series

Industrial LED Display Supports multiple languages



iCAM-ZMR8422X

HD IP Camera Supports remote control from a smartphone



ALM-04-MRTU

MP3 Alert Module Supports RS-485 interface



WISE-5231M-4GE

IIoT Edge Controller Remote monitoring/ Alert notification

:: DLW-1XXX Mini Weather Station System Specifications

Model		DLW-10XX/DLW-11XX/DLW-12XX/DLW-13XX	DLW-1000/DLW-1100/DLW-1200/DLW-1300								
COM Ports											
Ports		1 x R	S-485								
Baud Rate		1200 ~ 11	15200 bps								
Protocol		Modbu	ıs 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,	Wind Speed, Wind Direction, Pressure, Illuminance, Sea Level, RH/T, Precipitation								
	Gas monitoring	CO, CO ₂ , HCHO, TVOC, NH ₃ , H ₂ S, O ₂	-								
Real Time Clo	ck	Yes									
Data Logger		Yes									
Relay Output		PhotoMOS Relay, Form A x 4, SPST 100 VDC @1A									
CPU Module											
Watchdog Tim	ner	Yes, Module, Communication (Programmable)									
Power											
	Terminal Block	+12 to +48 VDC									
Powered from	PoE	IEEE 802.3af,									
Power	PoE	3.33 W Max	1.10 W Max								
Consumption		3.01 W Max	0.88 W Max								
LED Indicators	S										
	PWR	Green for nor	mal operation								
Status	Link	Green for the I	Ethernet-linked								
	Alarm	Red for an al	arm condition								
Mechanical											
Installation			all 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 Protect	ction Rating	IP54	IP67								
Environment											
Operating Ten	-		+50°C								
Storage Temp	erature		-30 ∼ +75°C								
Humidity		10% ~ 90% RH, Non-condensing									



K Installation Method

U-bolt Pole Mounting Wall Mounting





0 : Wind Speed, Wind Direction, 2 : PM1/2.5/10+Particle RH/T, Pressure, Illuminance, Sea Level

5: NH₃ 1:CO 3: PM1/2.5/10+CO+CO₂+Particle 2: CO₂ 6: H₂S 3 : CO+CO₂ 7 : HCHO

4: NH₃ 5 : O₂ 4 : HCHO+TVOC 8: TVOC

	Sensor												
DLW-10XX			Gas	Monite	oring			Particulates	W	leather	Monitorir	ng	
Series	со	CO ₂	нсно	TVOC	NH ₃	H ₂ S	O ₂	PM1, PM2.5, PM10 Particle	Wind Speed Wind Direction Temperature Humidity	Pressure / Sea Level		Precipitation	Mechanical
DLW-1000	-	-	-	-	-	-	-	-					Α
DLW-1001	٧	-	-	-	-	-	-	-					
DLW-1002	-	٧	-	-	-	-	-	-					
DLW-1003	٧	٧	-	-	-	_	-	-					
DLW-1004	-	-	٧	٧	-	-	-	-					
DLW-1005	-	-	-	-	٧	-	-	-					
DLW-1006	-	-	-	-	-	٧	-	-					
DLW-1007	-	-	٧	-	-	-	-	-					
DLW-1008	-	-	-	٧	-	-	-	-					
DLW-1020	-	-	-	-	-	-	-	٧					
DLW-1021	٧	-	-	-	-	-	-	٧					
DLW-1022	-	٧	-	-	-	-	-	٧					
DLW-1023	٧	٧	-	-	-	-	-	٧					
DLW-1024	-	-	٧	٧	-	-	-	٧					
DLW-1025	-	-	-	-	٧	-	-	٧					
DLW-1026	-	-	-	-	-	٧	-	٧					
DLW-1027	-	-	٧	-	-	-	-	٧					
DLW-1028	-	-	-	٧	-	-	-	٧					
DLW-1034	٧	٧	٧	٧	-	-	-	٧					
DLW-1035	٧	٧	-	-	٧	-	-	٧	٧	٧	٧	-	В
DLW-1036	٧	٧	-	-	-	٧	-	٧					
DLW-1037	٧	٧	٧	-	-	-	-	٧	-				
DLW-1038	٧	٧	-	٧	-	-	-	٧					
DLW-1041	٧	-	-	-	٧	-	-	-					
DLW-1042	-	٧	-	-	٧	-	-	-					
DLW-1043	٧	٧	-	-	٧	-	-	-	-				
DLW-1044	-	-	٧	٧	٧	-	-	-					
DLW-1046	-	-	-	-	٧	٧	-	-	_				
DLW-1047	-	-	٧	-	٧	-	-	-					
DLW-1048	-	-	-	٧	٧	-	-	-					
DLW-1050	-	-	-	-	-	-	٧	-					
DLW-1051	٧	-	-	-	-	-	٧	-	_				
DLW-1052	-	٧	-	-	-	-	٧	-	_				
DLW-1053	٧	٧	-	-	-	-	٧	-					
DLW-1054	-	-	٧	٧	-	-	٧	-					
DLW-1055	-	-	-	-	٧	-	٧	-					
DLW-1056	-	-	-	-	-	٧	٧	-					
DLW-1057	-	-	٧	-	-	-	٧	-					
DLW-1058	-	-	_	٧	-	-	٧	-					



1: Wind Speed, Wind Direction, 2: PM1/2.5/10+Particle RH/T, Pressure, Illuminance, Sea Level, Precipitation

3: PM1/2.5/10+CO+CO₂+Particle

4: NH₃

5 : O₂

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

4 : HCHO+TVOC 8: TVOC

	Sensor												
DLW-11XX			Gas	Monite	oring			Particulates	W	eather	Monitorir	ng	
Series	со	CO ₂		TVOC	NH ₃	H ₂ S	O ₂	PM1, PM2.5, PM10 Particle	Wind Speed	Pressure		Precipitation	Mechanical
DLW-1100	-	-	-	-	-	-	-	-					A
DLW-1101	٧	-	-	-	-	-	-	-					
DLW-1102	-	٧	-	-	-	-	-	-					
DLW-1103	٧	٧	-	-	-	-	-	-					
DLW-1104	-	-	٧	٧	-	-	-	-					
DLW-1105	-	-	-	-	٧	-	-	-					
DLW-1106	-	-	-	-	-	٧	-	-					
DLW-1107	-	-	٧	-	-	-	-	-					
DLW-1108	-	-	-	٧	-	-	-	-					
DLW-1120	-	-	-	-	-	-	-	٧					
DLW-1121	٧	-	-	-	-	-	-	٧					
DLW-1122	-	٧	-	-	-	-	-	٧					
DLW-1123	٧	٧	-	-	-	-	-	٧					
DLW-1124	-	-	٧	٧	-	-	-	٧					
DLW-1125	-	-	-	-	٧	-	-	٧					
DLW-1126	-	-	-	-	-	٧	-	٧					
DLW-1127	-	-	٧	-	-	-	-	٧					
DLW-1128	-	-	-	٧	-	-	-	٧					
DLW-1134	٧	٧	٧	٧	-	-	-	٧					
DLW-1135	٧	٧	-	-	٧	-	-	٧	V	٧	٧	٧	В
DLW-1136	٧	٧	-	-	-	٧	-	٧					
DLW-1137	٧	٧	٧	-	-	-	-	٧					
DLW-1138	٧	٧	-	٧	-	-	-	٧					
DLW-1141	٧	-	-	-	٧	-	-	-					
DLW-1142	-	٧	-	-	٧	-	-	-					
DLW-1143	٧	٧	-	-	٧	-	-	-					
DLW-1144	-	-	٧	٧	٧	-	-	-					
DLW-1146	-	-	-	-	٧	٧	-	-					
DLW-1147	-	-	٧	-	٧	-	-	-					
DLW-1148	-	-	-	٧	٧	-	-	-					
DLW-1150	-	-	-	-	-	-	٧	-					
DLW-1151	٧	-	-	-	-	-	٧	-					
DLW-1152	-	٧	-	-	-	-	٧	-					
DLW-1153	٧	٧	-	-	-	-	٧	-					
DLW-1154	-	-	٧	٧	-	-	٧	-					
DLW-1155	-	-	-	-	٧	-	٧	-					
DLW-1156	-	-	-	-	-	٧	٧	-					
DLW-1157	-	-	٧	-	-	-	٧	-					
DLW-1158	-	-	-	٧	-	-	٧	-					







2: Wind Speed, Wind Direction, 2: PM1/2.5/10+Particle

RH/T

3: PM1/2.5/10+CO+CO₂+Particle

4: NH₃

5: O₂

5: NH₃ 1:CO 2: CO₂ 6: H₂S 7 : HCHO

3 : CO+CO₂ 4 : HCHO+TVOC 8: TVOC

								Sensor					
DLW-12XX			Gas	Monit	oring			Particulates	W	eather	Monitorir	ng	
Series	СО	CO ₂		TVOC		H ₂ S	O ₂	PM1, PM2.5, PM10 Particle	Wind Speed	Pressure		Precipitation	Mechanical
DLW-1200	-	-	-	-	-	-	-	-					С
DLW-1201	٧	-	-	-	-	-	-	-					
DLW-1202	-	٧	-	-	-	-	-	-					
DLW-1203	٧	٧	-	-	-	-	-	-					
DLW-1204	-	-	٧	٧	-	-	-	-					
DLW-1205	-	-	-	-	٧	-	-	-					
DLW-1206	-	-	-	-	-	٧	-	-					
DLW-1207	-	-	٧	-	-	-	-	-					
DLW-1208	-	-	-	٧	-	-	-	-					
DLW-1220	-	-	-	-	-	-	-	٧					
DLW-1221	٧	-	-	-	-	-	-	٧					
DLW-1222	-	٧	-	-	-	-	-	٧					
DLW-1223	٧	٧	-	-	-	-	-	٧					
DLW-1224	-	-	٧	٧	-	-	-	٧					
DLW-1225	-	-	-	-	٧	-	-	٧					
DLW-1226	-	-	-	-	-	٧	-	٧					
DLW-1227	-	-	٧	-	-	-	-	٧					
DLW-1228	-	-	-	٧	-	-	-	٧					
DLW-1234	٧	٧	٧	٧	-	-	-	٧					
DLW-1235	٧	٧	-	-	٧	-	-	٧	V	-	-	-	D
DLW-1236	٧	٧	-	-	-	٧	-	٧					
DLW-1237	٧	٧	٧	-	-	-	-	٧					
DLW-1238	٧	٧	-	٧	-	-	-	٧					
DLW-1241	٧	-	-	-	٧	-	-	-					
DLW-1242	-	٧	-	-	٧	-	-	-					
DLW-1243	٧	٧	-	-	٧	-	-	-					
DLW-1244	-	-	٧	٧	٧	-	-	-					
DLW-1246	-	-	-	-	٧	٧	-	-					
DLW-1247	-	-	٧	-	٧	-	-	-					
DLW-1248	-	-	-	٧	٧	-	-	-					
DLW-1250	-	-	-	-	-	-	٧	-					
DLW-1251	٧	-	-	-	-	-	٧	-					
DLW-1252	-	٧	-	-	-	-	٧	-					
DLW-1253	٧	٧	-	-	-	-	٧	-					
DLW-1254	-	-	٧	٧	-	-	٧	-					
DLW-1255	-	-	-	-	٧	-	٧	-					
DLW-1256	-	-	-	-	-	٧	٧	-					
DLW-1257	-	-	٧	-	-	-	٧	-					
DLW-1258	-	-	_	٧	-	_	٧	-					







3: Wind Speed, Wind Direction, 2: PM1/2.5/10+Particle RH/T, Pressure, Sea Level

3: PM1/2.5/10+CO+CO₂+Particle 2: CO₂

1:CO

6: H₂S 7 : HCHO

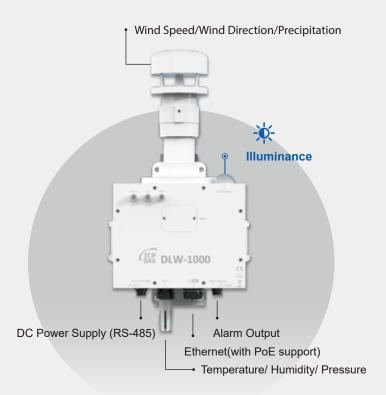
5: NH₃

8:TVOC

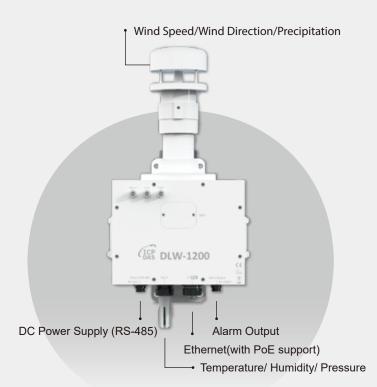
4: NH ₃	3 : CO+CO ₂
5 : O ₂	4 : HCHO+TVOC

								5 : O ₂			4 : H0	CHO+TVOC	8 : TVOC
								Sensor					
DLW-13XX			Gas	Monite	oring			Particulates	V	leather	Monitorir	ng	
Series	со	CO ₂	нсно	TVOC	NH ₃	H ₂ S	O ₂	PM1, PM2.5, PM10 Particle	Wind Speed Wind Direction Temperature Humidity	Pressure / Sea Level		Precipitation	Mechanical
DLW-1300	-	-	-	-	-	-	-	-					С
DLW-1301	٧	-	-	-	-	-	-	-					
DLW-1302	-	٧	-	-	-	-	-	-					
DLW-1303	٧	٧	-	-	-	-	-	-					
DLW-1304	-	-	٧	٧	-	-	-	-					
DLW-1305	-	-	-	-	٧	-	-	-					
DLW-1306	-	-	-	-	-	٧	-	-					
DLW-1307	-	-	٧	-	-	-	-	-					
DLW-1308	-	-	-	٧	-	-	-	-					
DLW-1320	-	-	-	-	-	-	-	٧					
DLW-1321	٧	-	-	-	-	-	-	٧					
DLW-1322	-	٧	-	-	-	-	-	٧					
DLW-1323	٧	٧	-	-	-	-	-	٧					
DLW-1324	-	-	٧	٧	-	-	-	٧					
DLW-1325	-	-	-	-	٧	-	-	٧					
DLW-1326	-	-	-	-	-	٧	-	٧	_				
DLW-1327	-	-	٧	-	-	-	-	٧					
DLW-1328	-	-	-	٧	-	-	-	٧					
DLW-1334	٧	٧	٧	٧	-	-	-	٧					
DLW-1335	٧	٧	-	-	٧	-	-	V	V	٧	-	-	D
DLW-1336	٧	٧	-	-	-	٧	-	٧					
DLW-1337	٧	٧	٧	-	-	-	-	٧	_				
DLW-1338	٧	٧	-	٧	-	-	-	٧					
DLW-1341	٧	-	-	-	٧	-	-	-					
DLW-1342	-	٧	-	-	٧	-	-	-					
DLW-1343	٧	٧	-	-	٧	-	-	-	_				
DLW-1344	-	-	٧	٧	٧	-	-	-					
DLW-1346	-	-	-	-	٧	٧	-	-	_				
DLW-1347	-	-	٧	-	٧	-	-	-					
DLW-1348	-	-	-	٧	٧	-	-	-	_				
DLW-1350	-	-	-	-	-	-	٧	-					
DLW-1351	٧	-	-	-	-	-	٧	-	_				
DLW-1352	-	٧	-	-	-	-	٧	-					
DLW-1353	٧	٧	-	-	-	-	٧	-	_				
DLW-1354	-	-	٧	٧	-	-	٧	-					
DLW-1355	-	-	-	-	٧	-	٧	-					
DLW-1356	-	-	-	-	-	٧	٧	-					
DLW-1357	-	-	٧	-	-	-	٧	-					
DLW-1358	-	-	-	٧	-	-	٧	-					

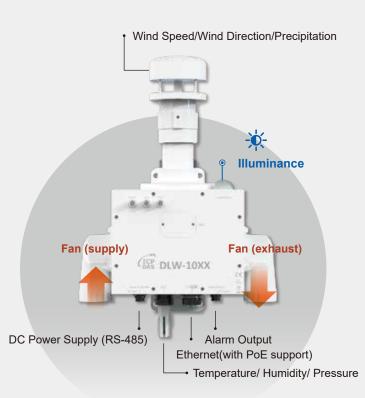
DLW-1000/DLW-1100 Type : A



DLW-1200/DLW-1300 Type : C



DLW-10xx/DLW-11xx Type : B



DLW-12xx/DLW-13xx Type: D

