

DLW-1xxx

Mini Weather Station

User Manual



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Edited by Sunny Chiu

Warranty

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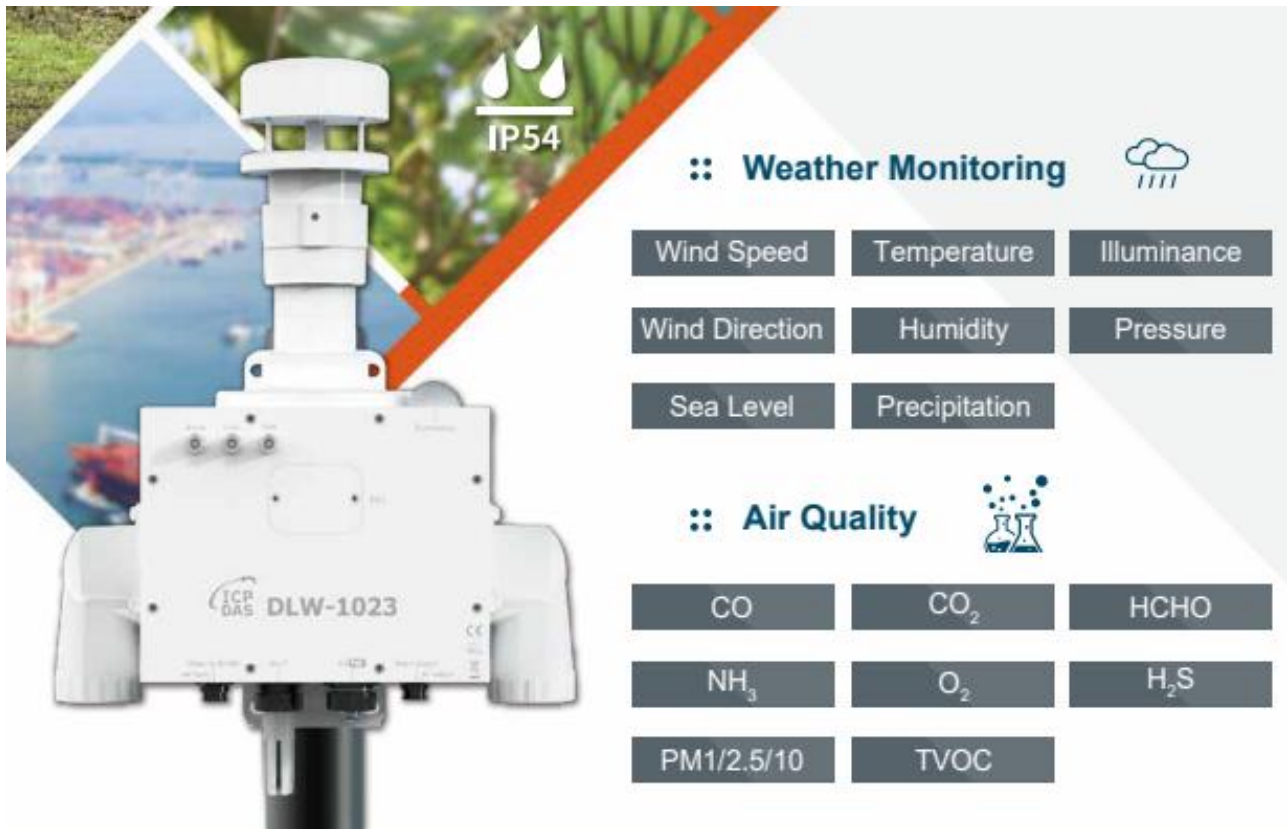
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1. Introduction

The DLW-1xxx series is a versatile mini weather station, which can be used to monitor and collect climate data and the amount of harmful substances in the air. In addition to monitoring real-time data, the DLW-1xxx also provides data logging function with more than 160000 downloadable records. It is really helpful for getting valuable information about the impact of these factors on the environment, farming, fishing and any other human economic activities through long-term observation and statistical analysis.

The DLW-1xxx 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-1xxx also measures PM1/2.5/10, CO, CO₂, O₂, NH₃, H₂S, TVOC, HCHO and more.



Real-time data on DLW-1xxx can be accessed 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 DLW-1xxx module.

Support of most popular industrial protocols such as DCON, Modbus RTU, and Modbus TCP are provided, as well as the emerging machine-to-machine (M2M)/IoT (Internet of Things) connectivity protocol-MQTT. The DLW-1xxx mini weather station can be connected via widely used communication interfaces including RS-485, Ethernet and PoE, meaning that the device can be easily integrated into existing HMI or SCADA systems, and is simple to maintain in a distributed control system.

The DLW-1xxx is designed for industrial applications in harsh environment that provides IP54 grade protection approval. There is also a waterproof connector for RS-485 and Ethernet (supports PoE), to ensure that the device will work in extreme conditions.

■ **Compact 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 can help sufficient air flow to be maintained to mix the air evenly, which enables the measurement to be more precise or close to its actual value.

■ **Ingress 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. Waterproof industrial connectors for RS-485 and Ethernet (with PoE support) are also provided to ensure that the device works properly in extreme environment.

■ **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.

Characteristics

- Real-time measurement of outdoor weather information and hazardous gas detection
- Provides data logger function for the long-term recording of measurement values
- Includes RS-485/Ethernet/PoE communication interfaces
- Supports the DCON, Modbus RTU, Modbus TCP, and MQTT protocols
- Relay output for audible/visual alarm or security equipment control
- Molding in one, can be matched with straight/horizontal rod body, easy to install.
- Integrate the WISE controller, set alarm notifications to keep you Informed
- Combining with the ExoWISE, simple logic control settings
- Wide operating temperature range of -20 ~ 50°C
- RoHS compliant with no Halogen

Features

■ Built-in Web Server

With the built-in Web server, users can easily log in to the DLW-1xxx via a standard web browser to monitor the data and configure the settings without installing any software in the terminal. The web server is available on the Ethernet interface only.

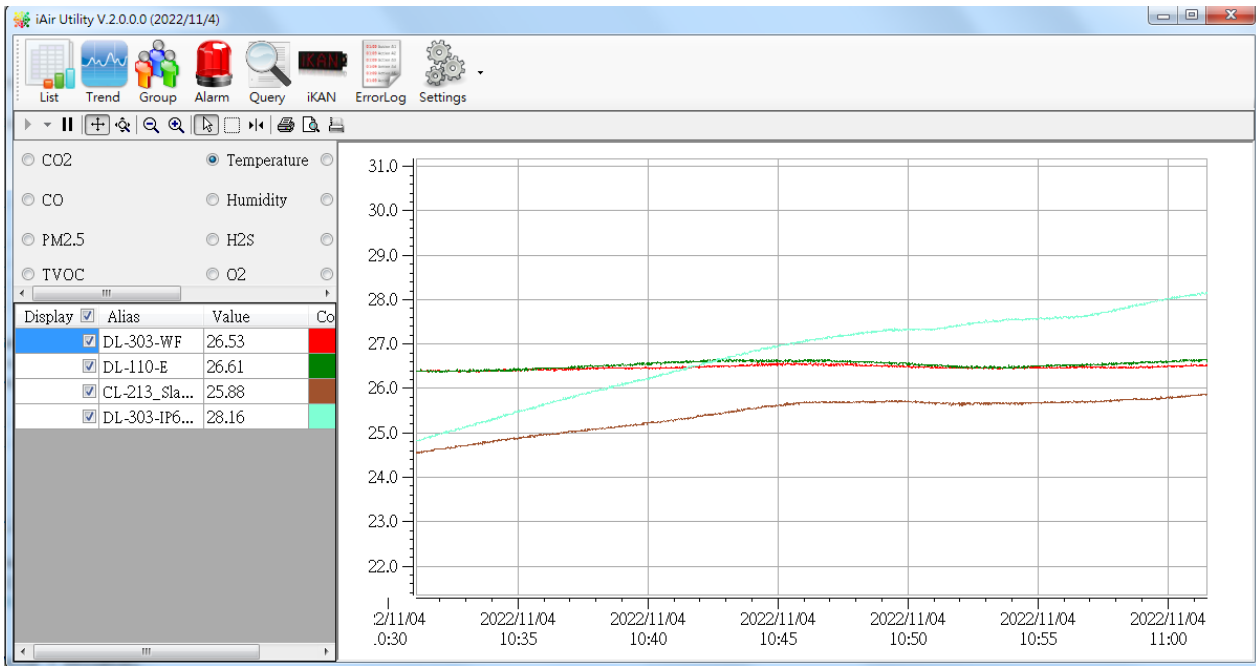
■ Get Real-time Data Anywhere and Anytime

iAir app for iOS or Android phones or tablets is free and easy to install, it can obtain the real-time data from DLW-1xxx over a network anytime and anywhere. The iAir app can link to the DLW-1xxx by specifying IP addresses or by searching all the modules connected on the same Ethernet segment.



Free Data Logging Software

The iAir Utility can be used to configure the modules, monitor real-time data, log alarm events and show the run chart. It also allows you to organize DLW-1xxx modules into groups for more convenient view and management. The log data can be downloaded and exported to a .CSV file for being imported into any industry-standard software or spread sheet for analysis.



Easy integration with SCADA software

With providing widely used communication interfaces including RS-485, Ethernet and PoE, as well as supporting multiple protocols such as DCON, Modbus RTU, Modbus TCP and MQTT, the DLW-1xxx can be excellently integrated into a variety of PLC/HMI/SCADA automation systems.

Alarm

The alarm function with customizable high alarm limit and low alarm limit values of each detection object can be independently enabled or disabled according to the usage scenario. The alarm LED on the front case of the DLW-1xxx will turn red during the alarm reaction, and a relay associated with that alarm will stay on, it can be used to turn on an alarm, light, sounder, or safety device.

The DLW-1xxx has 4 relay output channels (DO0 ~ DO3), each of them is associated with the alarm status of specified detection objects of which the alarm function is enabled. The table below shows the 4 relays of DLW-1xxx series module and their related detection objects.

Model	DO0	DO1	DO2	DO3
DLW-1023	Wind Speed/ Wind Direction	Pressure/ Altitude	Illuminance	CO/CO ₂ /Humidity/ Temperature/ Dew Point/ Particulate Matter
DLW-1100	Wind Speed/ Wind Direction	Pressure/ Altitude	Precipitation Intensity/ Accumulated Precipitation	Illuminance/ Humidity/ Temperature/ Dew Point
DLW-1120	Wind Speed/ Wind Direction	Pressure/ Altitude	Precipitation Intensity/ Accumulated Precipitation	Illuminance/ Humidity/ Temperature/ Dew Point/ Particulate Matter
DLW-1200	Wind Speed/ Wind Direction	Humidity	Temperature	Dew Point
DLW-1243	Wind Speed/ Wind Direction	CO	CO ₂	NH ₃ /Humidity/ Temperature/ Dew Point

■ Automatic Baseline Correction

The built-in ABC algorithm makes the CO₂ sensor on the DLW-1xxx maintenance-free. The ABC algorithm constantly keeps track of the lowest reading of CO₂ level and slowly corrects it as the expected fresh air value of 400 ppm.

The ABC algorithm is not suitable for locations where CO₂ concentrations will not fall to background levels, such as greenhouses or 24-hour factories. It is recommended to disable the ABC function during normal operation of the DLW-1xxx module.

■ Easy Wiring

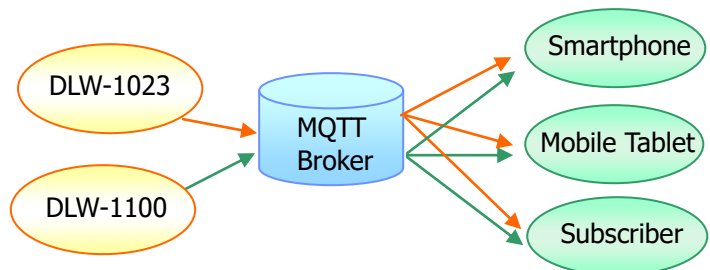
Support for RS-485, Ethernet and Power over Ethernet (PoE) interfaces for users to choose the appropriate one to meet the field requirements.

■ Power over Ethernet (PoE)

The DLW-1xxx features true IEEE802.3af-compliant (classification, Class 1) PoE technology that allows both power and data to be carried over a single Ethernet cable. PoE provides a unified power system, as well as backup provisions for critical building functions, without any additional cables, outlets or connections. It can reduce the power supply wiring and maintenance costs, and improve system scalability.

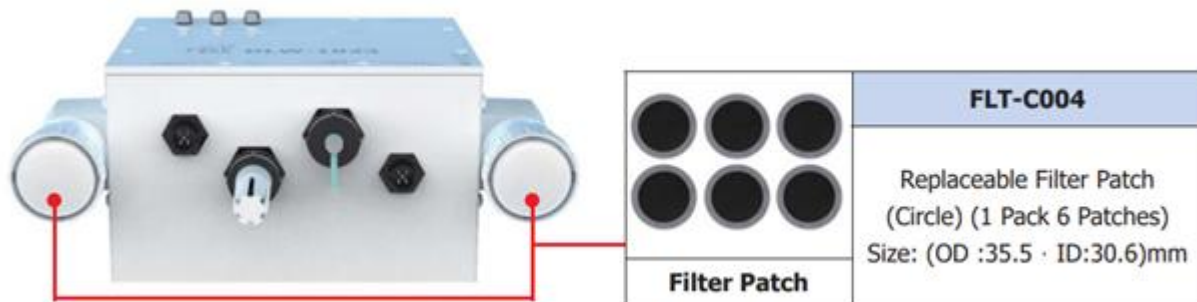
■ Support for MQTT protocol

MQTT is a protocol designed for the efficient exchange of real-time data with sensor and mobile devices. It runs over TCP/IP and is in widest use on the "machine-to-machine" (M2M) and "Internet of Things" applications today



■ Replaceable Filter Patch (FLT-C004)

Generally, the PM2.5 measuring sensor on the market is usually installed in outdoor applications. Because the outdoor air is quite dusty, the measuring channel of PM2.5 sensor is easily clogged by aerosol, resulting in continued alarms for the heavy concentration. Due to the error data from the clogged sensor, this module is returned to the factory for repair. Downtime during the repair period often causes significant cost and losses. In order to solve this problem, the DLW-1xxx comes with two replaceable patches, FLT-C004, which makes it easy for users to replace them without uninstall the devices. Cost of repair and time can be reduced by this innovated mechanical design.



Applications

■ 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-1xxx 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.



■ Large scale farming

The DLW-1xxx 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.

2. Hardware

2.1 Specifications

Model		DLW-1000	DLW-1100	DLW-10XX	DLW-11XX
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			
Sensor					
Weather Monitoring	Wind Speed	Yes			
	Wind Direction	Yes			
	Precipitation	-	Yes		Yes
	Particulates	-		Yes	
	Illuminance	Yes			
	Pressure	Yes			
	Altitude	Yes			
	RH/T	Yes			
Gas Monitoring	CO, CO ₂ , HCHO, TVOC, NH ₃ , H ₂ S, O ₂	-		Yes	
System					
Alarm	Weather Monitoring	Wind Speed, Wind Direction, Pressure, Illuminance, Altitude, RH/T, Precipitation		Wind Speed, Wind Direction, Pressure, Illuminance, Altitude, RH/T, Precipitation, Particulates	
	Gas Monitoring			CO, CO ₂ , HCHO, TVOC, NH ₃ , H ₂ S, O ₂	
Real Time Clock		Yes			
Data Logger		Yes			
Relay Output		PhotoMOS Relay, Form Ax4, SPST 100VDC@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	1.10 W Max	3.33 W Max
Consumption	Non-PoE	0.88 W Max	3.01 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)		190 x 134 x 389 (W x L x H)	288 x 122 x 389 (W x L x H)
Weight		2.26 KG	2.45 KG
Ingress Protection Rating		IP67	IP54
Environment			
Operating Temperature		-20 to +50°C	
Storage Temperature		-30 to +75°C	
Humidity		10% to 90% RH, Non-condensing	

Model		DLW-1200	DLW-1300	DLW-12XX	DLW-13XX
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			
Sensor					
Weather Monitoring	Wind Speed	Yes			
	Wind Direction	Yes			
	Precipitation	-			
	Particulates	-		Yes	
	Illuminance	-			
	Pressure	-	Yes	-	Yes
	Altitude	-	Yes	-	Yes
	RH/T	Yes			
Gas Monitoring	CO, CO ₂ , HCHO, TVOC, NH ₃ , H ₂ S, O ₂	-		Yes	
System					
Alarm	Weather Monitoring	Wind Speed, Wind Direction, Pressure, Altitude, RH/T,		Wind Speed, Wind Direction, Pressure, Altitude, RH/T, Particulates	
	Gas Monitoring	-		CO, CO ₂ , HCHO, TVOC, NH ₃ , H ₂ S, O ₂	
Real Time Clock		Yes			
Data Logger		Yes			
Relay Output		Photo MOS Relay, Form Ax4,SPST 100VDC@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	1.10 W Max	3.33 W Max
Consumption	Non-PoE	0.88 W Max	3.01 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)		190 x 134 x 389 (W x L x H)	288 x 122 x 389 (W x L x H)
Weight		2.26 KG	2.45 KG
Ingress Protection Rating		IP67	IP54
Environment			
Operating Temperature		-20 to +50°C	
Storage Temperature		-30 to +75°C	
Humidity		10% to 90% RH, Non-condensing	

■ Weather sensor 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
Altitude	-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 sec	20 secs	5 years

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

Gas sensor specifications

Gas Sensor	Range	Accuracy	Resolution	Response Time	Warn-up Time	Life Time
CO	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
HCHO	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

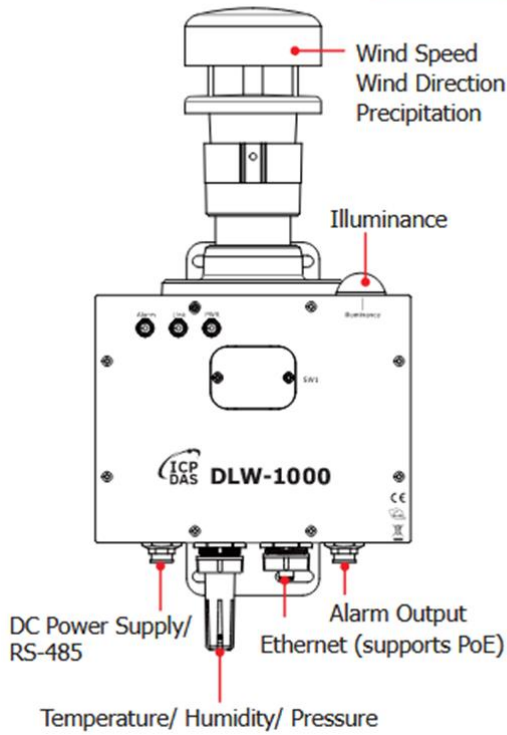
Maximum number of records

Model	Max. Records	Model	Max. Records	Model	Max. Records	Model	Max. Records
DLW-1023	160000	DLW-1100	270000	DLW-1200	540000		
		DLW-1120	160000	DLW-1243	380000		

2.2 Appearance

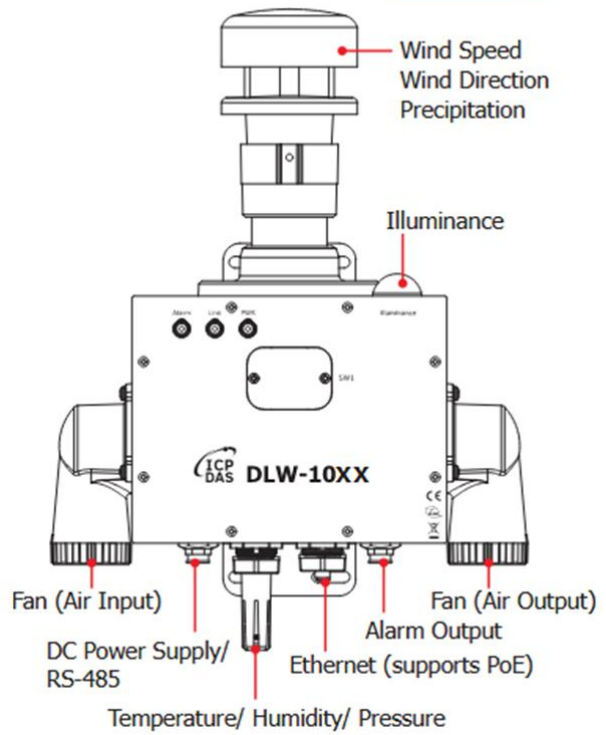
DLW-1000/DLW-1100

Type: A **A**



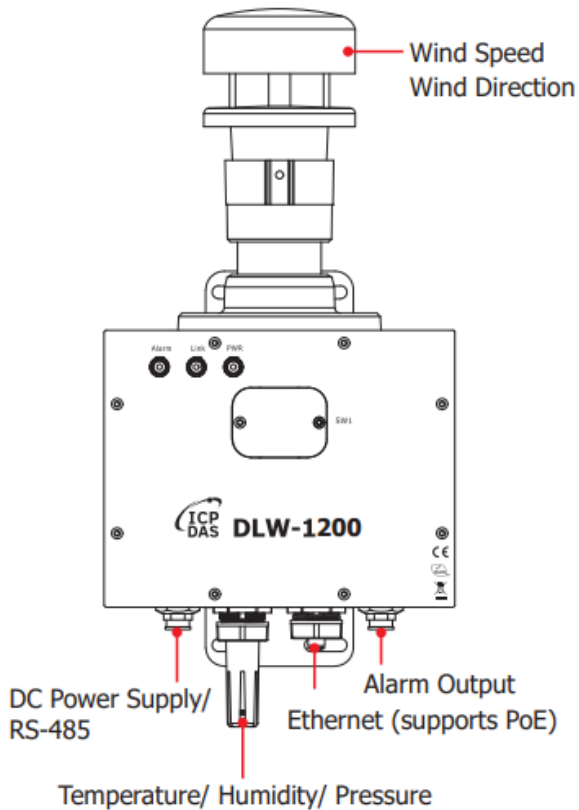
DLW-10XX/DLW-11XX

Type: B **B**



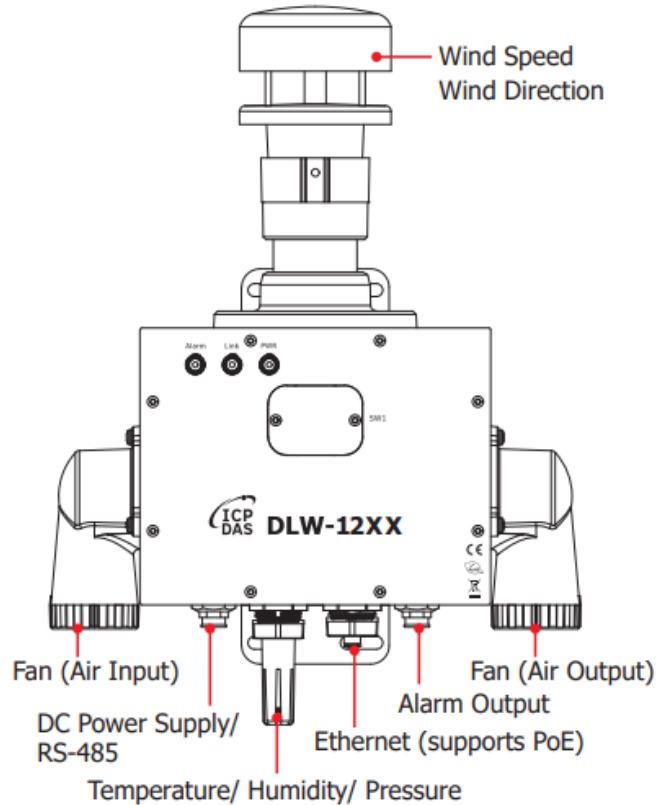
DLW-1200/DLW-1300

Type: C **C**



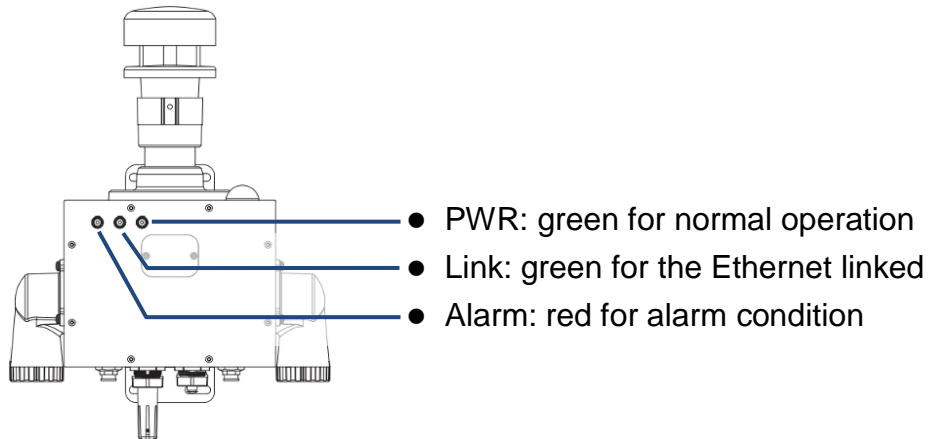
DLW-12xx/DLW-13xx

Type: D **D**



LED Indicators

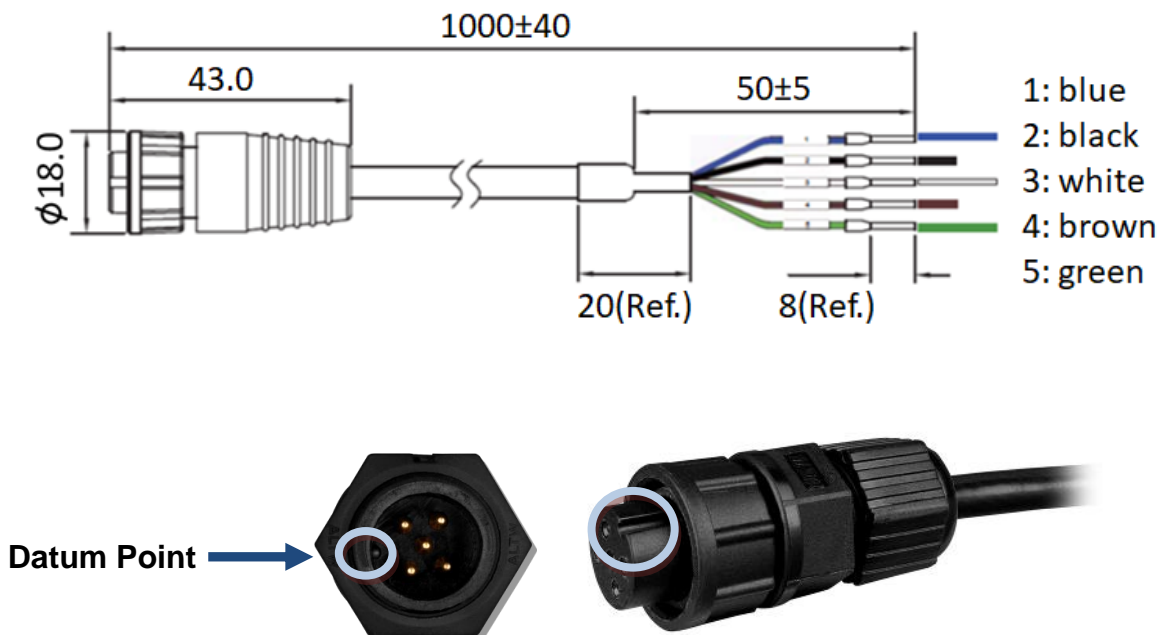
The three LED indicators on the front are:



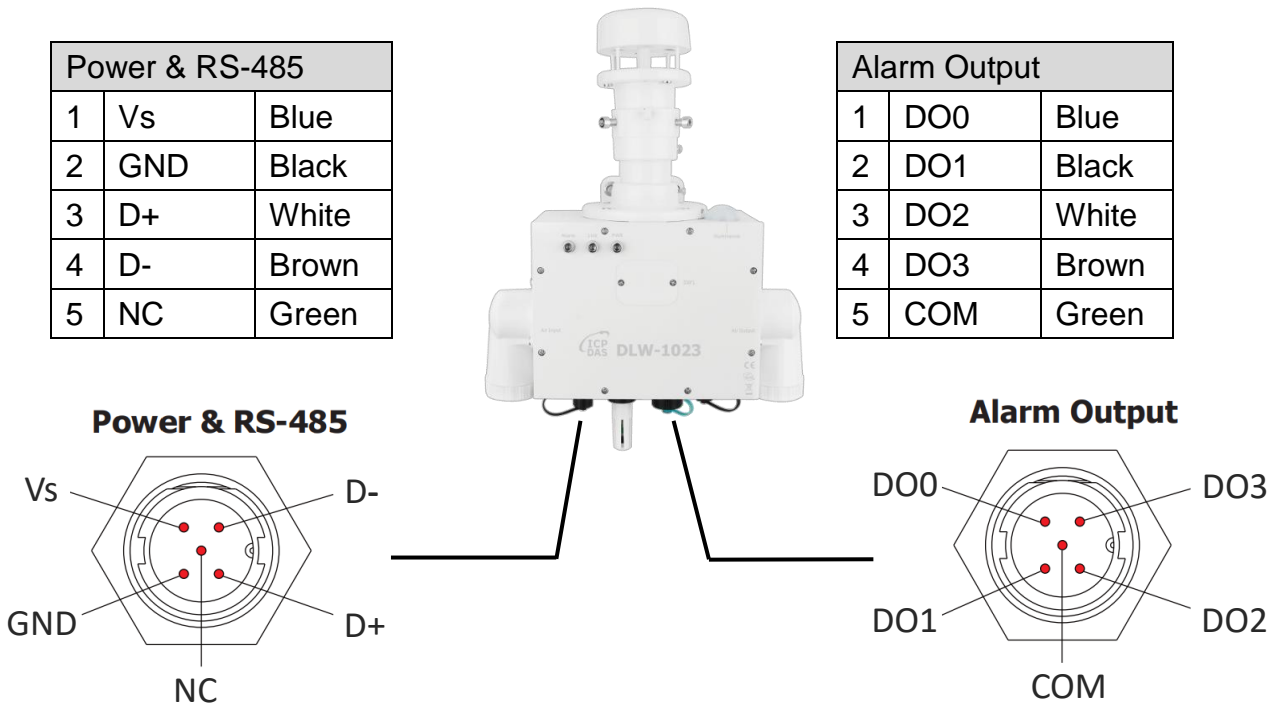
PoE/ non-PoE Ethernet port

The Ethernet port can be used to connect to a PoE switch or a non-PoE switch.

Standard Accessories

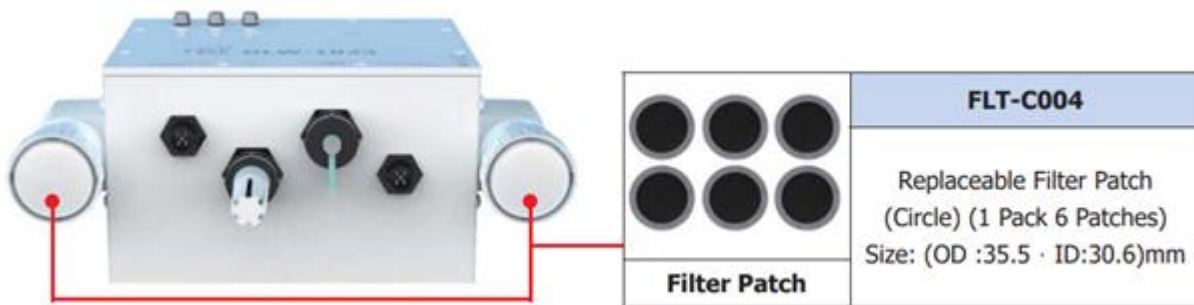


■ Pin Assignments



■ Dust Filter Hood

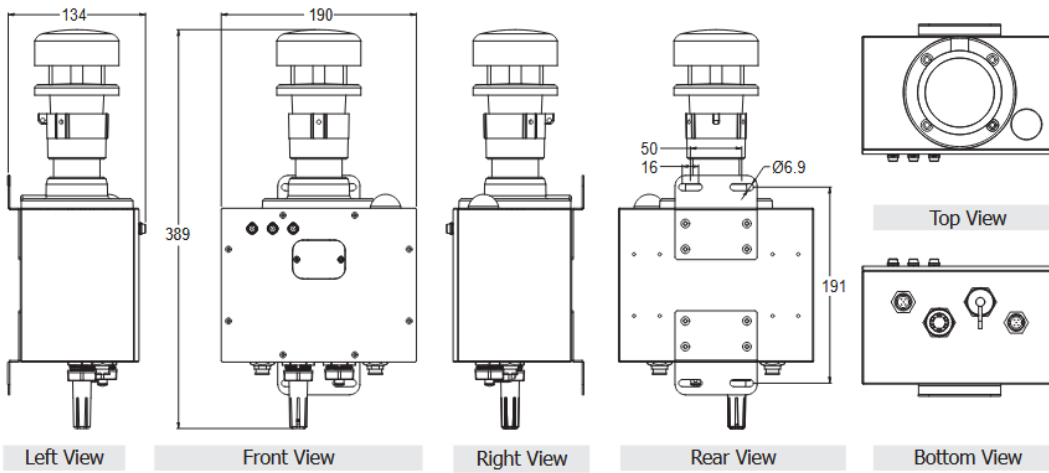
The DLW-1xxx mini weather station is equipped with two filter hoods. In the back side of the hood, a customized patch is provided to prevent the PM2.5 sensor from being clogged by aerosol. During regular maintenance, users just need to replace the filter by themselves. This design can significantly reduce the cost and time of repairs.



2.3 Dimensions (unit: mm)

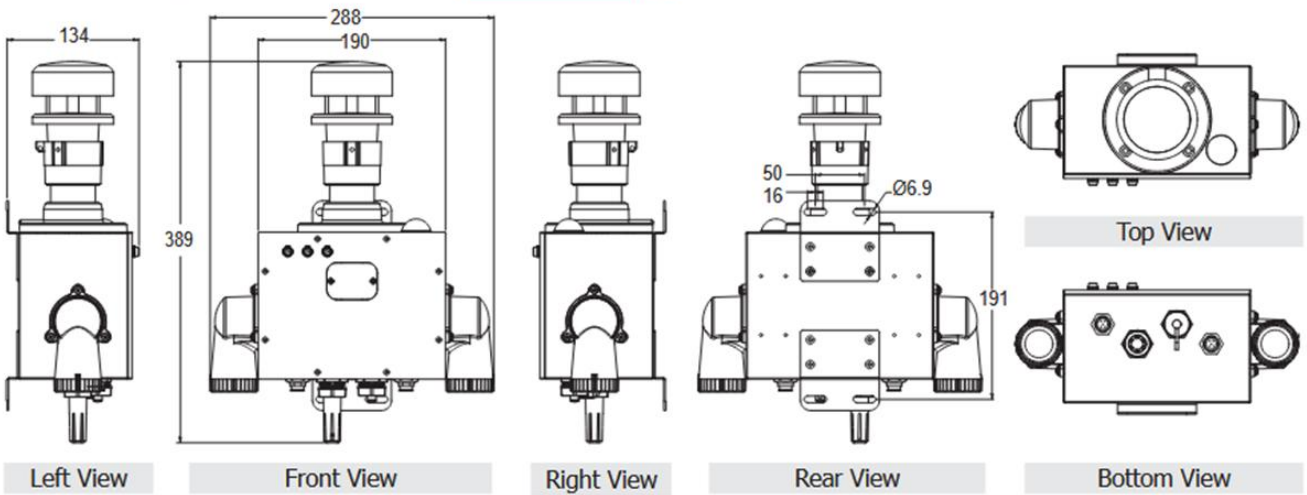
DLW-1000/DLW-1100

Type: A **A**



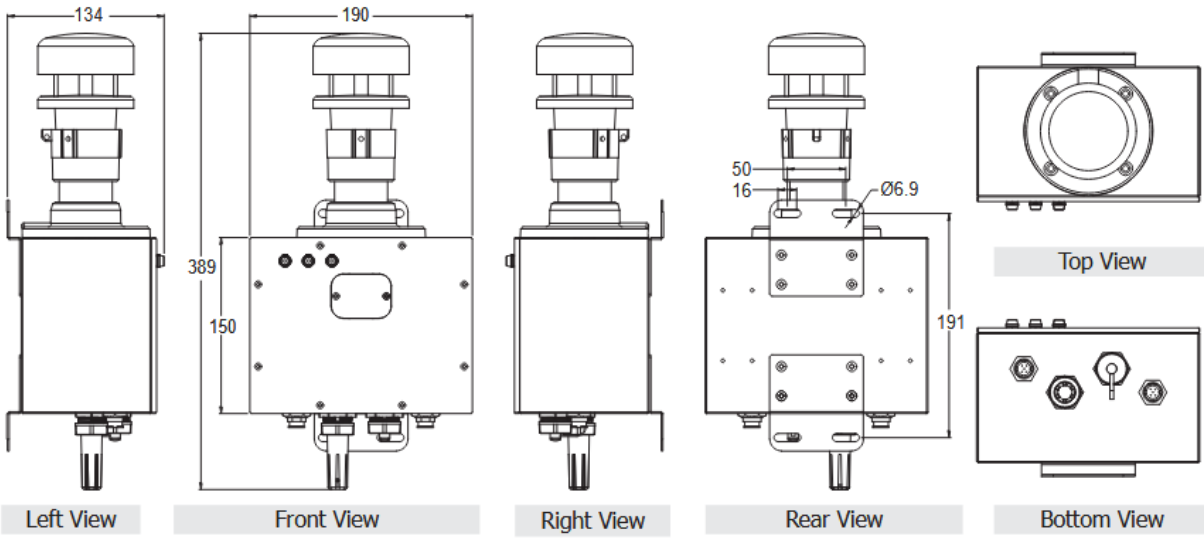
DLW-10XX/DLW-11XX

Type: B **B**



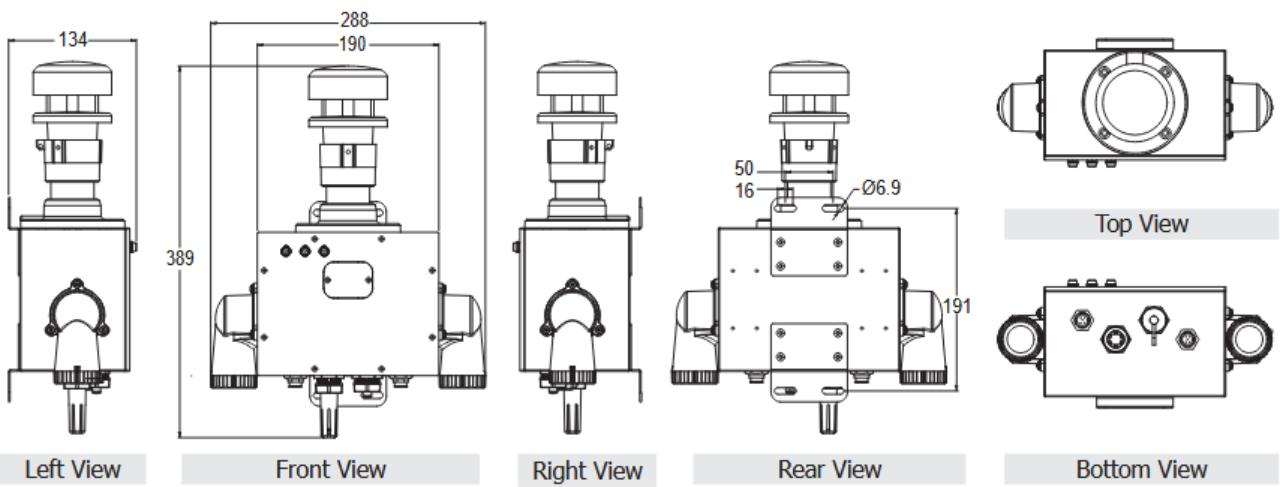
DLW-1200/DLW-1300

Type: C 



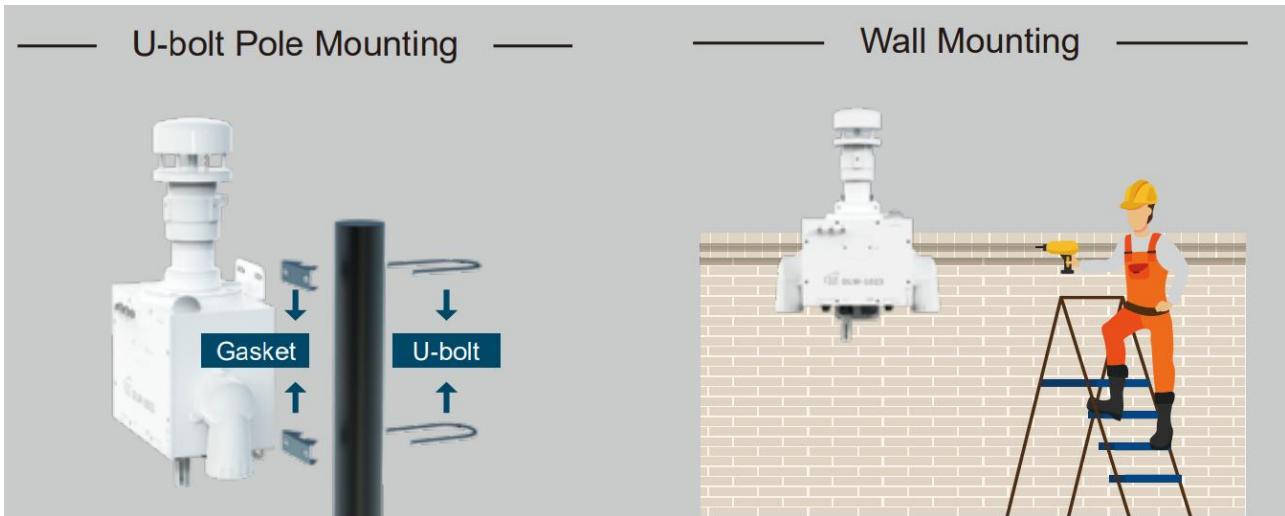
DLW-12xx/DLW-13xx

Type: D 



2.4 Mounting the DLW-1xxx

The DLW-1xxx mini weather station supports U-bolt pole mounting and wall mounting.

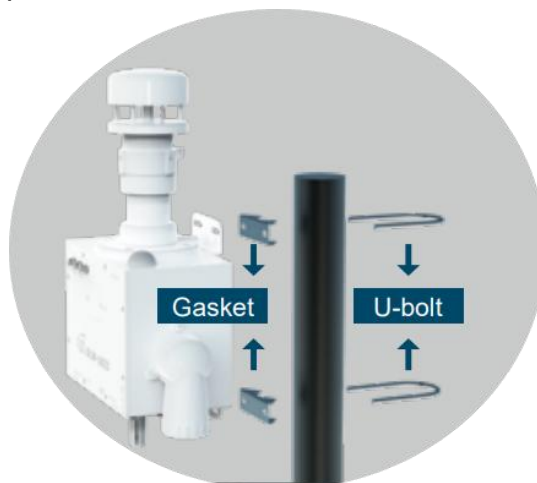


■ Mounting considerations for wind applications

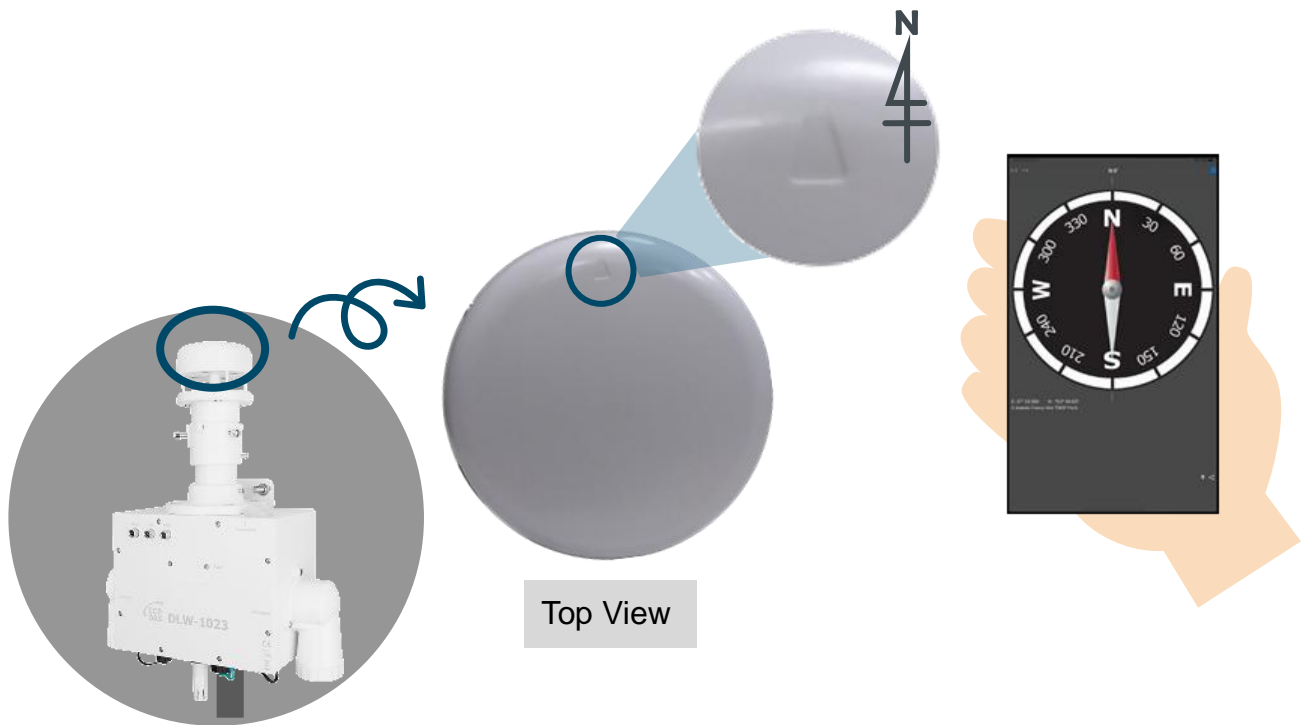
A north arrow is marked at the top of the DLW-1xxx with wind sensor. In wind direction measurement applications, the north arrow should be correctly aligned with true north to obtain meaningful data.

Wind direction is typically reported in degrees, and describes the direction from which the wind emanates. A direction of 0 degrees is due north, while 180 degrees is due south. A direction of 270 degrees would indicate a wind blowing in from the west. Ideally sensors should be mounted on the prevailing wind side of the site.

When mounting the DLW-1xxx, first use the included U-bolt (4SIVW0000205) to fasten the DLW-1xxx securely on a pole or rod.



With the help of an accessible compass or the compass on your phone, rotate the mounting pole until the north arrow at the top of the DLW-1xxx is pointed towards the North.



Once the DLW-1xxx is properly oriented, secure the mounting pole and make sure the DLW-1xxx and the pole do not shake.

Note

- Always check the installation to ensure the wind sensor is not affected by other equipment operating locally, which may not conform to current standards, e.g. radio/radar transmitters, boat engines, generators etc.
- Avoid mounting in the plane of any radar scanner – a vertical separation of at least 2m should be achieved.
- Avoid turbulence caused by surrounding structures that will affect the accuracy of the wind sensor such as trees, masts and buildings.
- If dust is deposited on the sensor housing, it can be wiped gently with a cloth coated with a (biodegradable) soft lotion. Do not use dissolved reagents.
- If snow or ice is accumulated on the surface of the sensor, allow it to melt slowly and naturally. Never use tools to force it away.

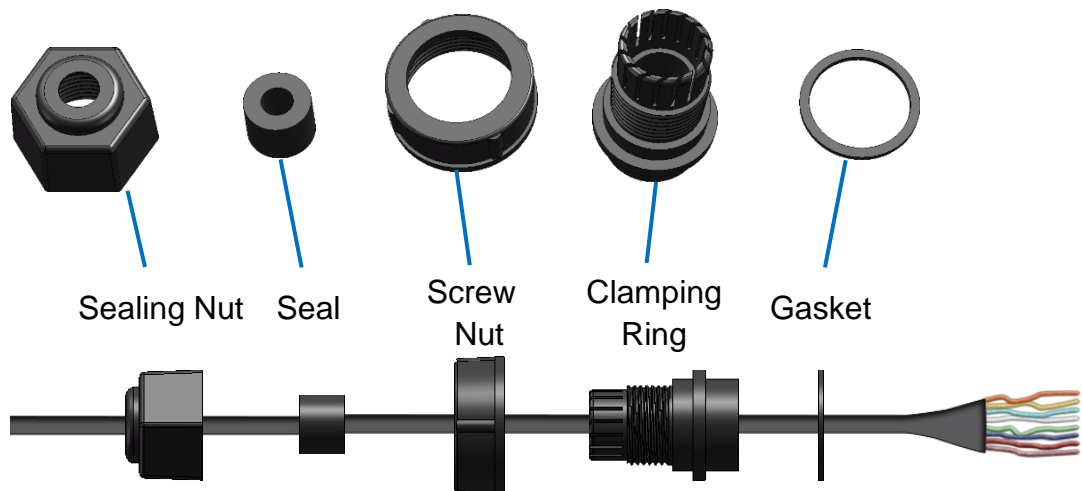
2.5 RJ-45 waterproof connector assembly

The 4SASO-0001 accessory included in DLW-1xxx package can effectively protect the connection points from weather, dust, dirt and sun damage.

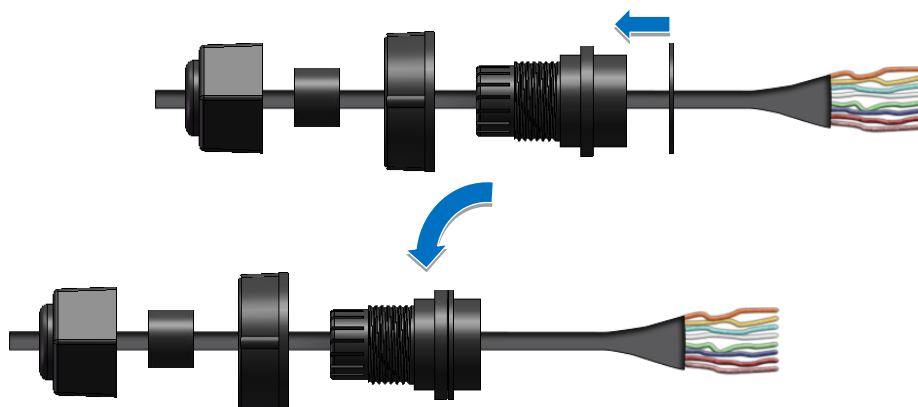
1. Remove the RJ-45 connector from the RJ-45 cable.



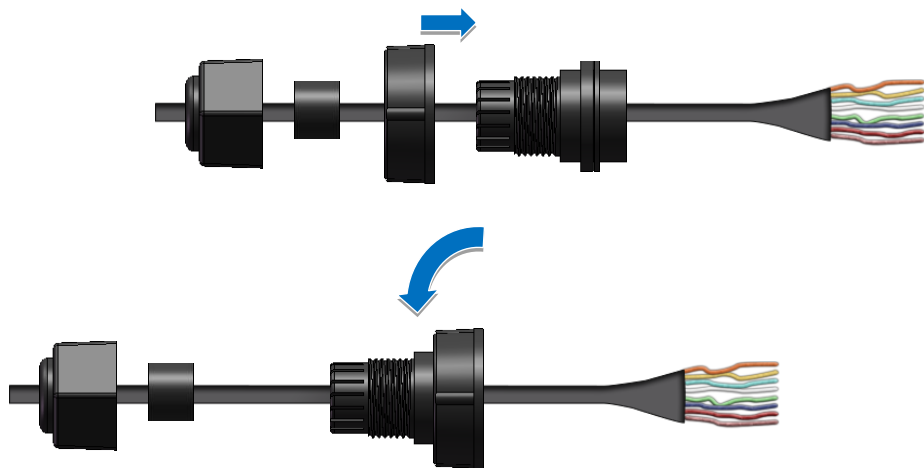
2. Feed the end of the RJ-45 cable through the **Sealing Nut**, **Seal**, **Screw Nut**, **Clamping Ring** and **Gasket**



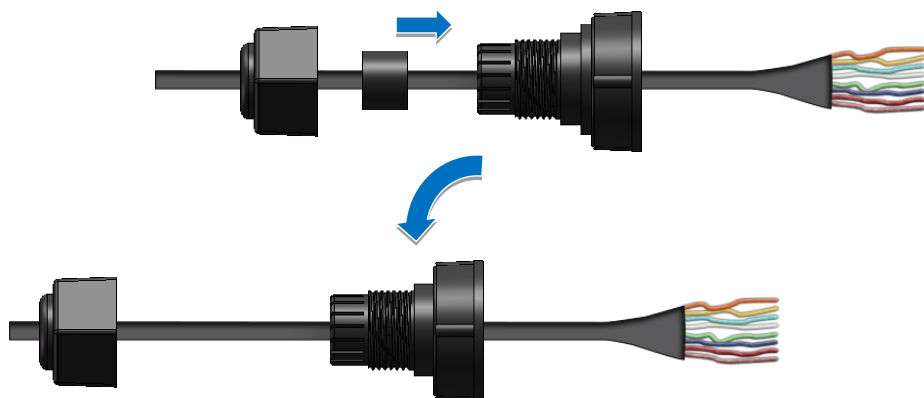
3. Wrap the **Gasket** around the **Clamping Ring**



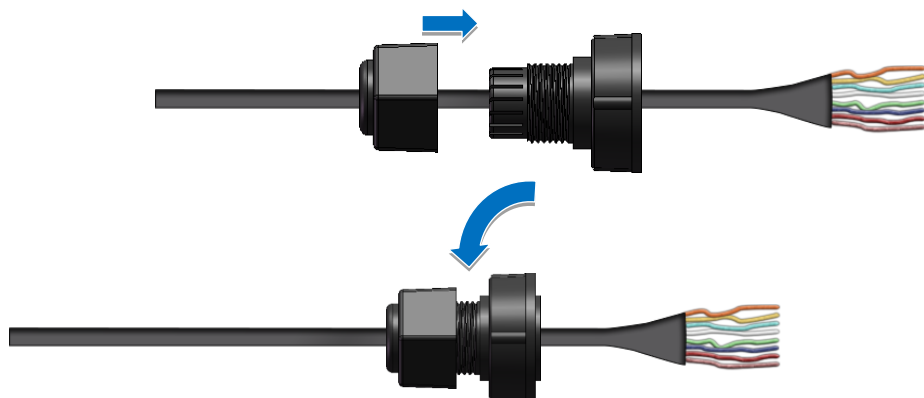
4. Wrap the **Screw Nut** around the **Clamping Ring**



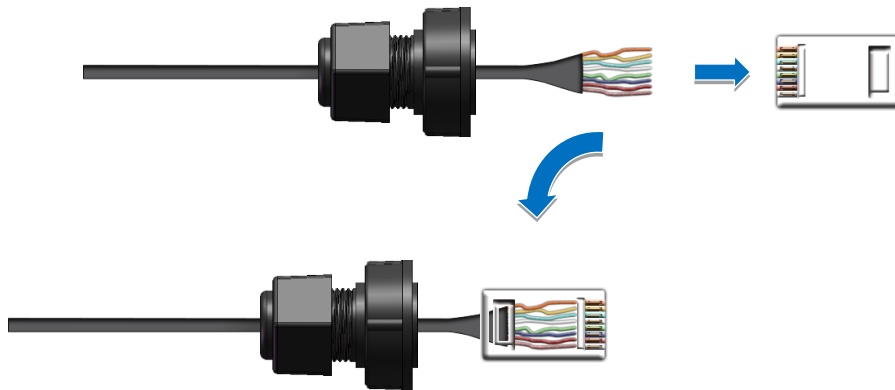
5. Insert the **Seal** into the **Clamping Ring**



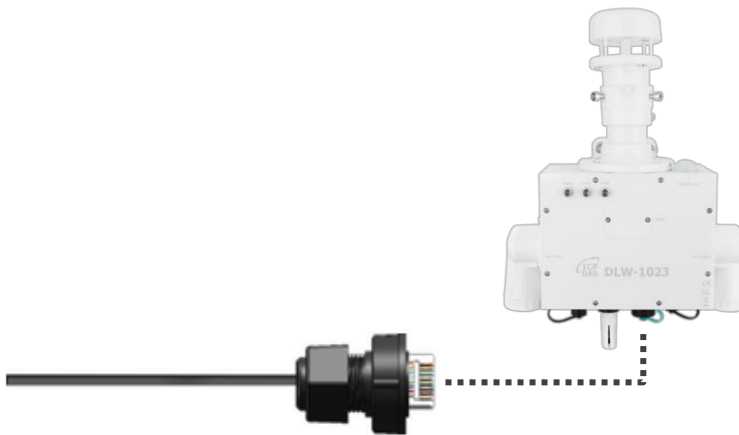
6. Push the **Sealing Nut** forward and Hand-tighten it to seal the assembly



7. Insert the RJ-45 cable into the RJ-45 connector



8. Insert the Ethernet cable and screw the waterproof connector into the receptacle



2.6 Cabling for Power and Network

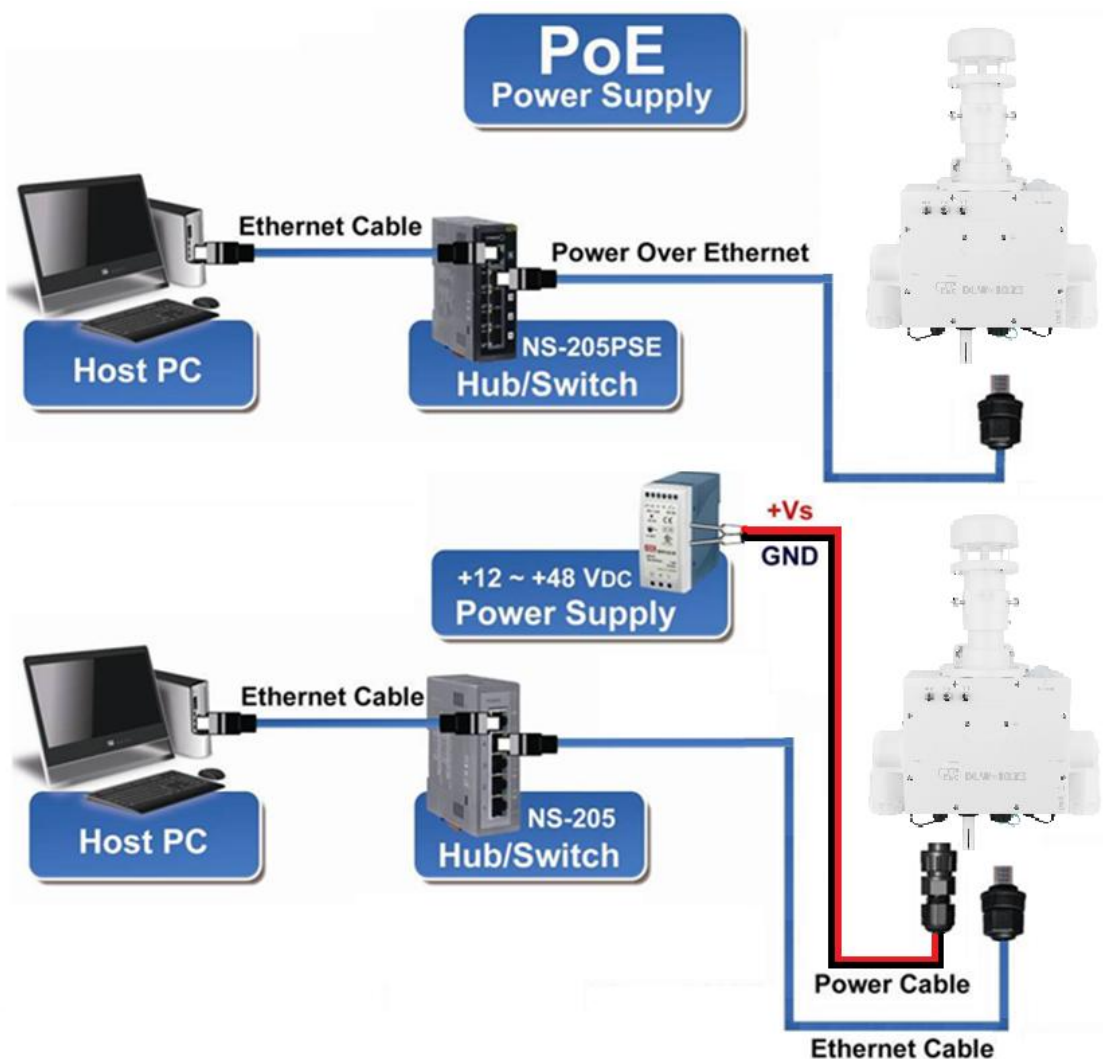


Note

- Do not install the DLW-1xxx near a vent, a ventilation fan or a door where the air flows faster. Also avoid putting the module on a desktop below the nose and mouth to prevent incorrect measurement.
- Avoid installing in locations where the temperature is below -20°C or above 80°C .
- Avoid installing in locations near a strong electromagnetic field.

Connecting the DLW-1xxx with a PC or a Android device via Ethernet

The DLW-1xxx mini weather station can connect to a PoE network without a power source or connect to a non-PoE network. When using the **Search** function in iAir App on Android or iOS mobile devices, these mobile devices need to connect to the same Wi-Fi network as the DLW-1xxx. Similarly to using the Search function in iAir Utility running on Windows, the DLW-1xxx and the host PC need to connect on the same network, too.



The iAir App and iAir Utility search the DLW-1xxx by broadcast, therefore only the DLW-1xxx on the same network can be searched out. It means that the host PC, Android devices and the DLW-1xxx must have the same broadcast address.

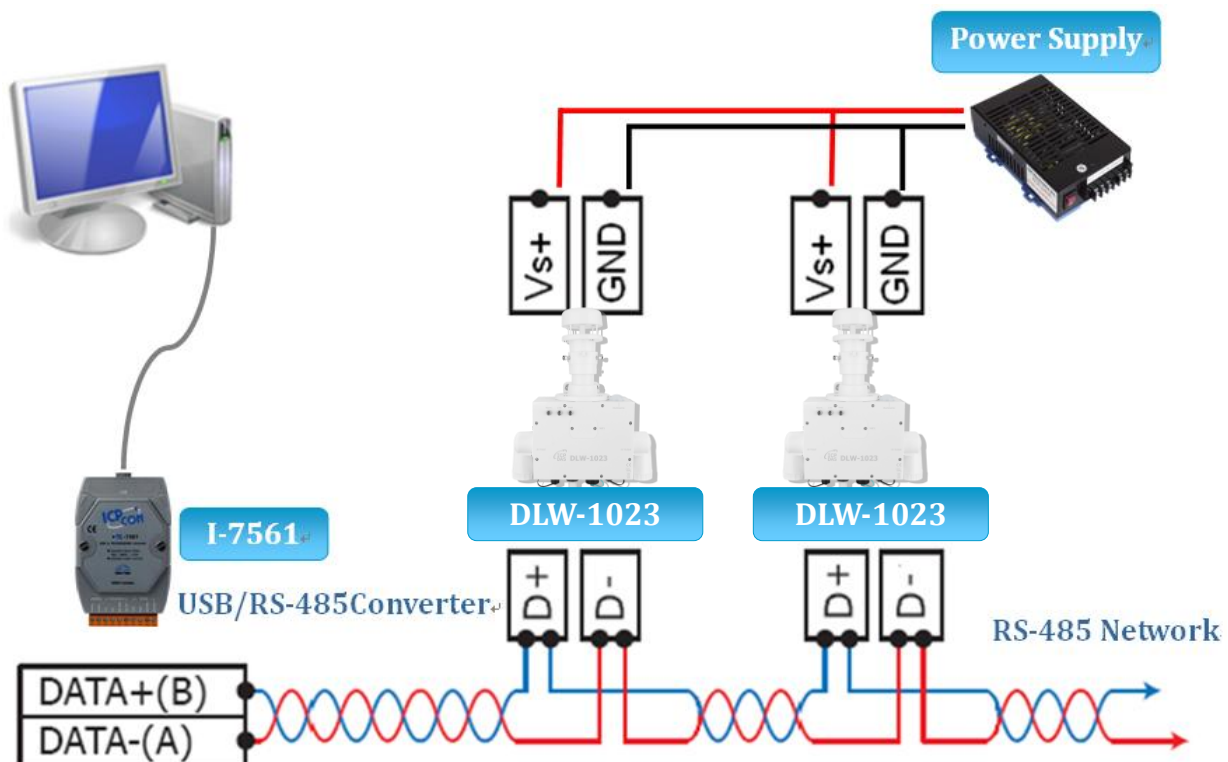
The broadcast address for an IPv4 device can be obtained by performing a bitwise OR operation between the bit complement of the subnet mask and the IP address for a device. In other words, take the device's IP address, and set to '1' any bit positions which hold a '0' in the subnet mask.

For example, in an entire IPv4 subnet, the host PC or the Android device uses the private IP address space 172.16.0.0/12 and subnet mask address 255.240.0.0, the broadcast address is $172.16.0.0 \mid 0.15.255.255 = 172.31.255.255$. Only the DLW-1xxx which has the same broadcast address could be searched out in the iAir App or iAir Utility.

Please contact with your network administrator to make sure that the DLW-1xxx is connected to the same network as your Android devices or PC.

Connecting the DLW-1xxx with a PC via RS-485 network

The DLW-1xxx mini weather station can connect to the PC through a RS-485 network with power input requirement of +12 ~ +48 V_{DC}.



3. Configuration via Web Browser

The DLW-1xxx mini weather station has a built-in web server that provides simple web pages for remote monitoring real-time data and configuring the module with a standard browser. In order to visit the web page in the DLW-1xxx, the factory default IP address (192.168.255.1), Subnet Mask (255.255.0.0) and Gateway (192.168.0.1) need be set to available addresses in your network. Please refer to the next section to set the network parameters for your new DLW-1xxx.

3.1. Setting the IP address for the DLW-1xxx module

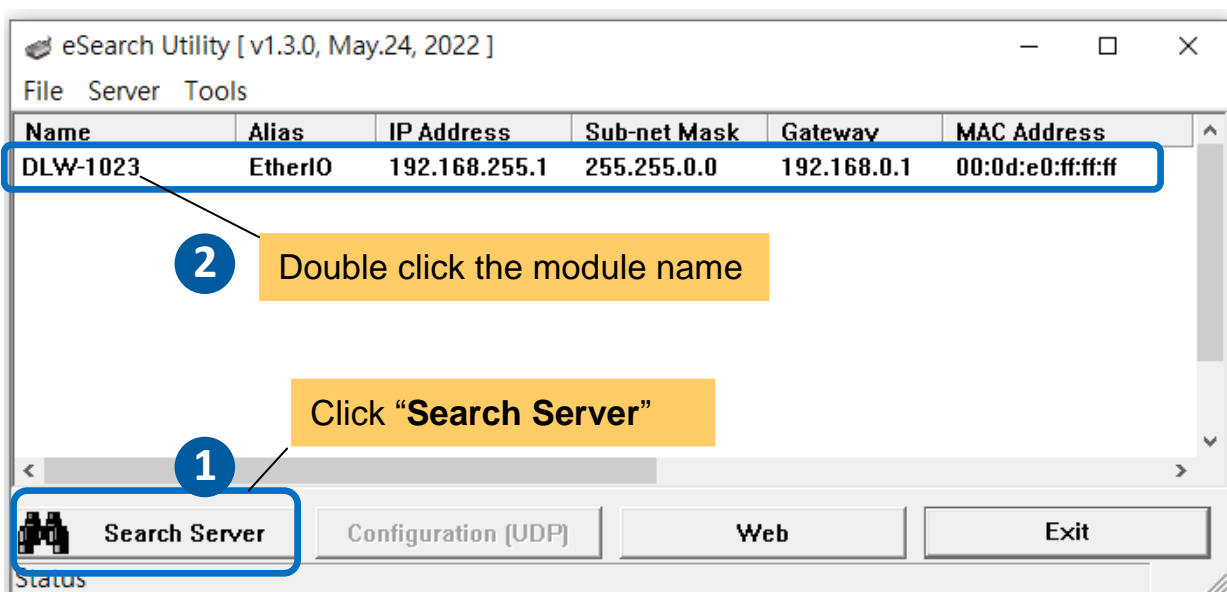
eSearch Utility is designed to search out the DLW-1xxx connected on the same network as the host PC, it supports Linux and Windows operating systems.

eSearch Utility can be downloaded from

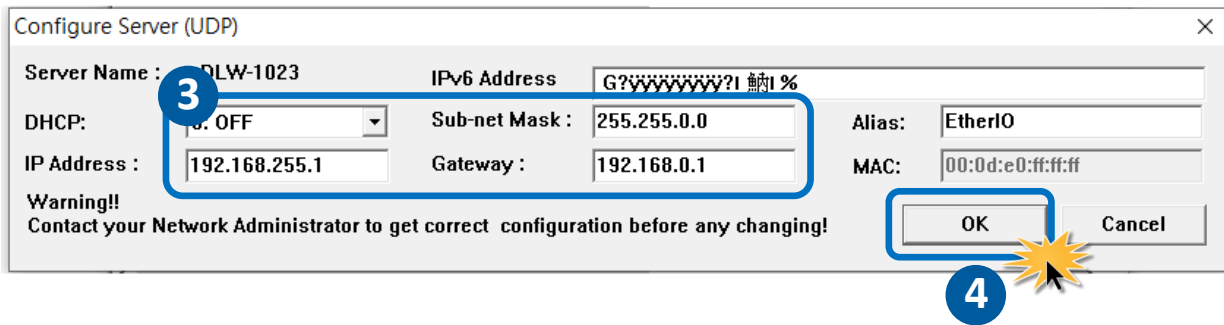
<https://www.icpdas.com/en/download/index.php?nation=US&kw=eSearch>

Before running eSearch Utility, turn off firewall on the PC; connect the DLW-1xxx to the same network as the PC, and power on the module.

1. Launch eSearch.exe, click the **Search Server** button to search the DLW-1xxx connected on the network, the modules searched out will be listed as below.
2. Double click the module name in the search list.



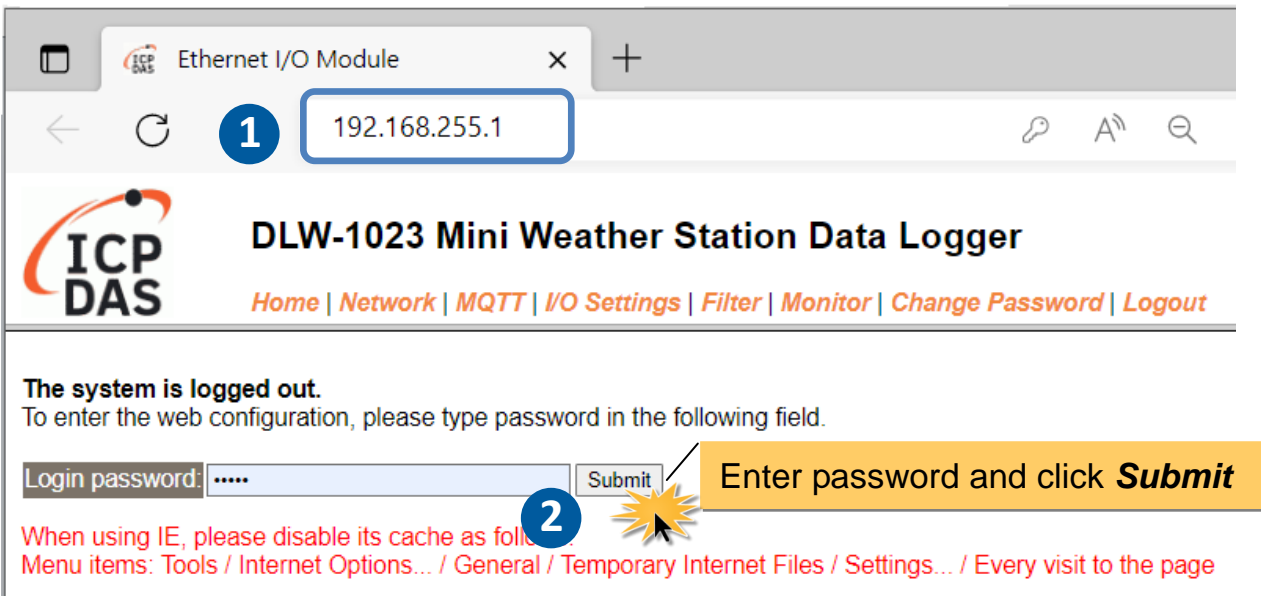
3. Set available IP Address, Sub-net Mask, Gateway (designated by your network administrator) and alias, then click the **OK** button.



4. Click the **Search Server** button again to search the DLW-1xxx module, make sure that the new IP settings take effect, and then close the eSearch.exe.

3.2. Logging into the DLW-1xxx

1. Enter the IP address for your DLW-1xxx in the address bar of a web browser.
2. Type the Login password, and click the **Submit** button.
(The default Login password is **Admin**, case sensitive.)



3.3 Home

After logging into the module, the first page is **Home** where the basic configuration of the DLW-1xxx, real-time data and the alarm status of every sensor are displayed clearly. You can control relay output here. The content on this page varies according to the sensor type on the module.

DLW-1023 Mini Weather Station Data Logger

Home | Network | MQTT | I/O Settings | Filter | Monitor | Change Password | Logout

Status & Configuration

Model Name	DLW-1023	Alias Name	EtherIO
Firmware Version	B5.2 [Aug. 29, 2022]	MAC Address	00-0D-E0-FF-FF-FF
IP Address	192.168.255.1	TCP Port Timeout (Socket Watchdog, Seconds)	180
Initial Switch	ON	System Timeout (Network Watchdog, Seconds)	0

Sensor Readings

Type	Value	Low Latched	High Latched
Wind Speed	1.39 m/s	1.27 m/s	1.63 m/s
Wind Direction	336 °	331 °	343 °
Air Pressure	1007.5 hPa	1007.5 hPa	1007.7 hPa
CO	0 ppm	0 ppm	0 ppm
CO ₂	690 ppm	688 ppm	695 ppm
PM2.5	4 ug/m ³	1 ug/m ³	6 ug/m ³
Relative Humidity	72.3%	72.2%	72.7%
Temperature	22.2 °C	22.1 °C	22.2 °C
Dew Point	17.0 °C	16.9 °C	17.1 °C
PM1.0	4 ug/m ³	1 ug/m ³	5 ug/m ³
PM10	6 ug/m ³	2 ug/m ³	8 ug/m ³
Particle Count (0.3 - 0.5um)	1556	1349	1932
Particle Count (0.5 - 1.0um)	2528	1805	2734
Particle Count (1.0 - 2.5um)	704	357	716
Particle Count (2.5 - 5.0um)	78	0	78
Particle Count (5.0 - 7.5um)	0	0	0
Particle Count (7.5 - 10.0um)	0	0	0
Ambient Light	6831 lux	51 lux	6863 lux
Altitude	46.3 m	45.2 m	46.5 m

Clear Low Latched Clear High Latched

In the **Sensor Readings** field, the real-time value, the minimum (Low Latched) and maximum (High Latched) recorded values for each sensor are shown in the table. Clicking the **Clear Low Latched** or **Clear High Latched** button can reset the latched data to current value to latch new value again.

Alarm

Type	Alarm Mode	Low Alarm Limit	High Alarm Limit	Low Alarm Status	High Alarm Status
Wind Speed	Disabled		100.00 m/s		Off
Wind Direction	Disabled	0 °	360 °	Off	Off
Air Pressure	Disabled	0.-1 hPa	0.-1 hPa	Off	Off
CO	Disabled		-1 ppm		Off
CO ₂	Disabled		-1 ppm		Off
PM2.5	Disabled		-1 ug/m ³		Off
Relative Humidity	Disabled	0.0%	100.0%	Off	Off
Temperature	Disabled	0.0 °C	100.0 °C	Off	Off
Dew Point	Disabled	0.0 °C	100.0 °C	Off	Off
PM1.0	Disabled		-1 ug/m ³		Off
PM10	Disabled		-1 ug/m ³		Off
Particle Count (0.3 - 0.5um)	Disabled		-1		Off
Particle Count (0.5 - 1.0um)	Disabled		-1		Off
Particle Count (1.0 - 2.5um)	Disabled		-1		Off
Particle Count (2.5 - 5.0um)	Disabled		-1		Off
Particle Count (5.0 - 7.5um)	Disabled		-1		Off
Particle Count (7.5 - 10.0um)	Disabled		-1		Off
Ambient Light	Disabled	-1	-1	Off	Off
Altitude	Disabled	-0.1 m	-0.1 m	Off	Off

Clear Latched Alarm



In the **Alarm** field, the settings for alarm including enable/disable mode, high alarm limit, low alarm limit and the high/low alarm status for every monitoring object are listed in the table. Clicking the **Clear Latched Alarm** button can clear the latched alarm status.

Digital Output

DO0		
DO1		
DO2		
DO3		

In the **Digital Output** field, the output statuses of the 4 relays are listed as shown in above figure. Clicking the relevant power (on / off) icon can change the relay output status. These 4 relays are able to link with the high/low alarm event of different sensors to turn on alarm devices or security equipments when an alarm event occurs. Once the alarm of a sensor is enabled, the relay associated with will not be controlled on web page or by Modbus command.

Take DLW-1023 as an example, when alarm mode of wind direction and temperature are enabled, the power icons for **DO0** and **DO3** are hidden to disable manual operation.

DO0		Alarm output of wind speed or wind direction
DO1		DO1 is off
DO2		DO2 is on
DO3		Alarm output of particulate matter, ambient light, relative humidity, temperature or dew point

Association table between DO and sensing objects

Model	DO0	DO1	DO2	DO3
DLW-1023	Wind speed or wind direction	Air pressure or altitude	Ambient light	CO, CO2, particulate matter, relative humidity, temperature or dew point
DLW-1100	Wind speed or wind direction	Air pressure or altitude	Precipitation intensity or accumulated precipitation	Ambient light, relative humidity, temperature or dew point
DLW-1120	Wind speed or wind direction	Air pressure or altitude	Precipitation intensity or accumulated precipitation	Particulate matter, ambient light, relative humidity, temperature or dew point
DLW-1200	Wind speed or wind direction	Relative humidity	Temperature	Dew point
DLW-1243	Wind speed or wind direction	CO	CO2	NH3, relative humidity, temperature or dew point

The field at the bottom of the page shows the system date, time (RTC) and online time since the module is powered on. The **Device Online Time** can be used to identify whether the module has been restarted or not.

RTC

Date	2022-10-18	Time	10:56:06
------	------------	------	----------

Device Online Time

Device Online Time	0 Days, 00H:27M:05S
--------------------	---------------------

3.4 Network

The networks parameters can be modified on this page including DHCP enabled/disabled, IP/Subnet Mask/Gateway addresses, the port number and the NetID for Modbus TCP communication. Remember to click the **Update Settings** button to apply new parameters.

IP Address Configuration

IP Address	
Address Type	DHCP ▾
Static IP Address	255 . 255 . 255 . 255
Subnet Mask	0 . 0 . 0 . 0
Default Gateway	0 . 0 . 0 . 0
MAC Address	00-0D-E0-FF-FF-FF (Format: FF-FF-FF-FF-FF-FF)
Modbus TCP Slave	
Local Modbus TCP port	502 (Default= 502)
Local Modbus NetID	1 (Default= 1) Enable ▾ (Default= Enable)
Update Settings	

General Settings

Ethernet Speed	Auto ▾ (Auto=10/100 Mbps Auto-negotiation)
System Timeout (Network Watchdog)	0 (30 ~ 65535 s, Default= 0, Disable= 0) Action:Reboot
TCP Timeout	180 (5 ~ 65535 s, Default= 180, Disable= 0) Action:Cut-off
UDP Configuration	Enable ▾ (Enable/Disable the UDP Configuration, Enable=default.)
Web Auto-logout	10 (1 ~ 65535 minutes, Default= 10, Disable= 0)
Alias Name	EtherIO (Max. 30 chars, part of the MQTT topic name)
Update Settings	

Item	Description	Default
System Timeout (Network Watchdog)	Sets the timeout for rebooting a DLW-1xxx when it is abnormal or failure to communicate. Range: 30 ~ 65535 (second) 0 = Disable	0 (Disable)
TCP Timeout	Sets the timeout for disconnecting a TCP connection when a DLW-1xxx does not receive data coming from the Ethernet port. Range: 5 ~ 65535 (second) 0 = Disable	180
Web Auto-logout	Sets the inactivity timeout for logout the web server if there is no operation accessed through the web interface over the inactivity timeout period.	10

	Range: 1 ~ 65535 (minute) 0 = Disable	
Alias Name	Sets an alias name for easy to identify a DLW-1xxx. The maximum length is 30 characters.	EtherIO

Restore Factory Defaults

Restore all options to their factory default states	Restore Defaults
Forced Reboot	Reboot

On the **Restore Factory Defaults** section, the **Reboot** button is used to restart the DLW-1xxx (remotely). After pressing the button, wait about 2 seconds and reload the page, log into the module again to go back to the web interface.

Clicking the **Restore Defaults** button can restore the module to factory defaults. The following items will be reset to factory values as shown in the table below.

Item	Factory Default
IP address type	Static IP
Static IP	192.168.255.1
Default gateway	192.168.0.1
Subnet Mask	255.255.0.0
MAC address	Factory MAC address
Modbus TCP port	502
Modbus TCP NetID	ID = 1, Status = Enabled
System Timeout	0 (disabled)
TCP Timeout	180 seconds
Web auto logout	10 minutes
Alias name	EtherIO
Accessible IP	Disabled

Firmware Update

<p>If the remote firmware update is failed, then the traditional firmware update (on-site) is required to make the module working again.</p> <p>Step 1: Refer to firmware update manual first. Step 2: Run eSearch Utility to prepare and wait for update. Step 3: Click the [Update] button to reboot the module and start update. Step 4: Configure the module again.</p>	Update
--	--------

The **Update** button is used to update firmware for DLW-1xxx. For details regarding the firmware update, please refer to the section 7. FAQ - [Q10: How to download firmware into a DLW-1xxx?](#)

3.5 MQTT

MQTT is an extremely simple and lightweight publish/subscribe messaging protocol designed for constrained devices and low-bandwidth, high-latency or unreliable networks.

The Publish-Subscribe messaging pattern requires a message broker. The broker is responsible for distributing messages to interested clients based on the topic of a message. Now the MQTT Version 3.1.1 becomes an OASIS standard, it is an ideal protocol for communicating with connected devices in the emerging "machine-to-machine" (M2M) and "Internet of Things" applications, and for mobile applications where bandwidth and battery power are at a premium.

Connectivity Settings

MQTT	Disable ▾
Broker	<input checked="" type="radio"/> IP <input type="text" value="255"/> . <input type="text" value="255"/> . <input type="text" value="255"/> . <input type="text" value="255"/> <input type="radio"/> Host Name
Broker Port	<input type="text" value="1883"/> (Default= 1883)
Client Identifier	<input type="text" value="DLW-1023_FFFFFFF"/>
Alias Name	<input type="text" value="EtherIO"/> (Max. 30 chars, part of the topic name)
User Name	<input type="text"/> (Max. 63 chars)
Password	<input type="text"/> (Max. 63 chars)
Reconnection Interval	<input type="text" value="10"/> (5 ~ 65535 s, Default= 10)
Keep Alive Interval	<input type="text" value="20"/> (5 ~ 65535 s, Default= 20)
<input type="button" value="Update Settings"/>	

Enter the IP address and port number for the MQTT broker and click the **Update Settings** button to save the parameters, the MQTT function can be disabled and there are more settings for user name, password, reconnection interval and keep alive interval.

Last Will Settings

Last Will and Testament	<input type="checkbox"/>
Topic	<input type="text"/> (Max. 30 chars)
Message	<input type="text"/> (Max. 30 chars)
QoS	0 - At most once ▼
Retained	<input type="checkbox"/>
<input type="button" value="Update Settings"/>	

In MQTT, the Last Will and Testament (LWT) feature is used to notify other clients about an ungracefully disconnected client. A DLW-1xxx can register an offline message (LWT) to the broker. The LWT message will be delivered to all clients who subscribe to the offline topic if the DLW-1xxx disconnects unexpectedly.

- Last Will and Testament: Tick the option to enable the Last Will and Testament function.
- Topic: The topic name of the last will.
- Message: The message of the last will.
- QoS: The QoS of the last will message.
- Retained: Tick the option to retain the last will message when it is published.



DLW-1023 Mini Weather Station Data Logger

[Home](#) | [Network](#) | [MQTT](#) | [IO Settings](#) | [Filter](#) | [Monitor](#) | [Change Password](#) | [Logout](#)

Publication Settings

Cycle	<input type="text" value="1000"/> (400 ~ 65500 ms, in 10 ms step, Default= 1000)
Module Topic Name	<input type="text" value="EtherIO/"/> (Max. 255 chars)
Wind Speed Sub Topic Name	<input type="text" value="WindSpeed"/> (Max. 63 chars) Enable ▼
Wind Direction Sub Topic Name	<input type="text" value="WindDir"/> (Max. 63 chars) Enable ▼
Air Pressure Sub Topic Name	<input type="text" value="RH"/> (Max. 63 chars) Enable ▼
CO Sub Topic Name	<input type="text" value="TC"/> (Max. 63 chars) Enable ▼
CO ₂ Sub Topic Name	<input type="text" value="TF"/> (Max. 63 chars) Enable ▼
PM2.5 Sub Topic Name	<input type="text" value="DC"/> (Max. 63 chars) Enable ▼
Relative Humidity Sub Topic Name	<input type="text" value="DF"/> (Max. 63 chars) Enable ▼
Temperature (°C) Sub Topic Name	<input type="text" value="Info"/> (Max. 63 chars) Enable ▼
<input type="button" value="Update Settings"/>	

On the **Publication Settings** section, the content in the table varies according to the sensor supported on the module. Here you can individually enable or disable MQTT communication for each item, as well as set their sub topic names.

Temperature (°F) Sub Topic Name	N/A (Max. 63 chars) Disable ▾
Dew Point (°C) Sub Topic Name	N/A (Max. 63 chars) Disable ▾
Dew Point (°F) Sub Topic Name	N/A (Max. 63 chars) Disable ▾
PM1.0 Sub Topic Name	N/A (Max. 63 chars) Disable ▾
PM10 Sub Topic Name	N/A (Max. 63 chars) Disable ▾
Particle Count (0.3 - 0.5um) Sub Topic Name	N/A (Max. 63 chars) Disable ▾
Particle Count (0.5 - 1.0um) Sub Topic Name	N/A (Max. 63 chars) Disable ▾
Particle Count (1.0 - 2.5um) Sub Topic Name	N/A (Max. 63 chars) Disable ▾
Update Settings	

Particle Count (2.5 - 5.0um) Sub Topic Name	N/A (Max. 63 chars) Disable ▾
Particle Count (5.0 - 7.5um) Sub Topic Name	N/A (Max. 63 chars) Disable ▾
Particle Count (7.5 - 10.0um) Sub Topic Name	N/A (Max. 63 chars) Disable ▾
Ambient Light Sub Topic Name	N/A (Max. 63 chars) Disable ▾
Altitude Sub Topic Name	N/A (Max. 63 chars) Disable ▾
All Information Sub Topic Name	N/A (Max. 63 chars) Disable ▾
Update Settings	

- **Cycle:** sets the time period for update the publish messages in millisecond.
- **Publication Topic Format:** The publication topic is composed of **Module Topic Name** and **Sub Topic Name**.

For example, since the module topic name is “**EtherIO/**” and the sub topic name for wind speed is set to “**WindSpeed**”, the Publication Topic Name for wind speed is

EtherIO/WindSpeed

- **Module Topic Name:** sets the module topic name.
- Wind speed/ Wind direction/ Air pressure/ CO/ CO₂/ PM2.5/ Relative Humidity/ Temperature (°C)/ Temperature (°F)/ Dew Point (°C)/ Dew Point (°F) PM1/ PM10/ Particle Count (0.3 – 10.0um) **Sub Topic Name:** sets the sub topic name for each item.
- **All Information Sub Topic Name:** The sub-topic name of the publication topic for all information. The following is an example of a received message that contains all the measurement information on a module:

```

{
  "ModuleName": "DLW-1023",
  "MacAddress": "000DE0FFFFFD",
  "CO2": "700",
  "Humidity": "59.2",
  "TemperatureC ": "17.1",
  "TemperatureF": "62.8",
  "DewPointC": "11.9",
  "DewPointF ": "53.4",
  "AlarmStatus": "Off"
}

```

An MQTT client receives a message by subscribing to the message topic from the MQTT broker. In the case of obtaining the data of wind speed, the MQTT client subscribes to the topic as below

EtherIO/WindSpeed

Subscription Settings

DO0 Sub Topic Name	<input type="text" value="DO0"/>	(Max. 63 chars)
DO1 Sub Topic Name	<input type="text" value="DO1"/>	(Max. 63 chars)
DO2 Sub Topic Name	<input type="text" value="DO2"/>	(Max. 63 chars)
DO3 Sub Topic Name	<input type="text" value="DO3"/>	(Max. 63 chars)
<input type="button" value="Update Settings"/>		

Enter the topic name for subscribing a DO control message in the relevant field and click the **Update Settings** button to change the topic name. An MQTT message published with the content "1/0", "ON/OFF", "On/Off" or "on/off" to a DO topic can remotely control the DO.



Note

The control function of a DO will be invalid when the alarm mode of a sensor associated with the DO is enabled. During the enable period, the DO will stay on when the alarm event occurs; it can be used to turn on audible/visual alarm or security equipment.

3.6 I/O Settings

Temperature

Scale	°C ▼
<input type="button" value="Update Settings"/>	

Users can change the temperature unit to Fahrenheit or Celsius in this field.

CO₂ Automatic Baseline Correction

Mode	Disabled ▼
<input type="button" value="Update Settings"/>	

To Enable/Disable the CO₂ Automatic Baseline Correction function. It is supported on the module which provides CO₂ sensor only.

Altitude

Sea Level Pressure (hPa)	1013.25	(Default = 1013.25 hPa)
Saved to EEPROM	<input type="checkbox"/>	
<input type="button" value="Update Settings"/>		

Q & A

Q: What is ABC (Automatic Baseline Correction)?

A: ABC stands for the Automatic Baseline Correction which is used to adjust a shifted baseline to the carbon dioxide level in fresh air. In case of normal indoor application, the carbon dioxide level drops to nearly outside air where there are no human, green plants or anything to elevate the carbon dioxide levels on weekday evenings or weekends, the ABC algorithm constantly keeps track of the lowest reading and slowly corrects it as the expected value in fresh air typically around 400 ppm.

Q: Why I need to enable the ABC?

A: When the CO₂ concentration detected in a period time of unoccupied space is greater than the base value of 400ppm, enable the ABC function to adjust the baseline. Be careful that the ABC will not work if a space is constantly occupied such as a hospital, 24-hr factory, 24-hr store, green house or other applications where CO₂ levels may be elevated at all times.

Offset

Wind Speed (m/s)	<input type="text" value="0.00"/>
Wind Direction (°)	<input type="text" value="0"/>
Air Pressure (hPa)	<input type="text" value="-0.1"/>
CO (ppm)	<input type="text" value="-1"/>
CO ₂ (ppm)	<input type="text" value="-1"/>
PM2.5 (ug/m ³)	<input type="text" value="-1"/>
Relative Humidity (%)	<input type="text" value="0.0"/>
Temperature (°C)	<input type="text" value="0.0"/>
PM1.0 (ug/m ³)	<input type="text" value="-1"/>
PM10 (ug/m ³)	<input type="text" value="-1"/>
Ambient Light (lux)	<input type="text" value="-1"/>
Altitude (m)	<input type="text" value="-0.1"/>
<input type="button" value="Update Settings"/>	

Enter the offset values for every monitoring in the relevant field if necessary, and then click the **Update Settings** button for changes to take effect.

Alarm Configuration

Type	Alarm Mode	Low Alarm Limit	High Alarm Limit
Wind Speed	<input type="button" value="Momentary"/> ▼	<input type="text"/>	<input type="text" value="100.00"/>
Wind Direction	<input type="button" value="Momentary"/> ▼	<input type="text" value="0"/>	<input type="text" value="360"/>
Air Pressure	<input type="button" value="Disabled"/> ▼	<input type="text" value="300.0"/>	<input type="text" value="1200.0"/>
Precipitation Intensity	<input type="button" value="Disabled"/> ▼	<input type="text"/>	<input type="text" value="100.00"/>
Accumulated Precipitation	<input type="button" value="Disabled"/> ▼	<input type="text"/>	<input type="text" value="0.0"/>
PM2.5	<input type="button" value="Disabled"/> ▼	<input type="text"/>	<input type="text" value="500"/>
Relative Humidity	<input type="button" value="Disabled"/> ▼	<input type="text" value="0.0"/>	<input type="text" value="100.0"/>
Temperature	<input type="button" value="Disabled"/> ▼	<input type="text" value="0.0"/>	<input type="text" value="100.0"/>
Dew Point	<input type="button" value="Disabled"/> ▼	<input type="text" value="0.0"/>	<input type="text" value="100.0"/>
PM1.0	<input type="button" value="Disabled"/> ▼	<input type="text"/>	<input type="text" value="500"/>
PM10	<input type="button" value="Disabled"/> ▼	<input type="text"/>	<input type="text" value="500"/>
Particle Count (0.3 - 0.5um)	<input type="button" value="Disabled"/> ▼	<input type="text"/>	<input type="text" value="500"/>
Particle Count (0.5 - 1.0um)	<input type="button" value="Momentary"/> ▼	<input type="text"/>	<input type="text" value="500"/>
Particle Count (1.0 - 2.5um)	<input type="button" value="Disabled"/> ▼	<input type="text"/>	<input type="text" value="500"/>
Particle Count (2.5 - 5.0um)	<input type="button" value="Disabled"/> ▼	<input type="text"/>	<input type="text" value="500"/>
Particle Count (5.0 - 7.5um)	<input type="button" value="Disabled"/> ▼	<input type="text"/>	<input type="text" value="500"/>
Particle Count (7.5 - 10.0um)	<input type="button" value="Disabled"/> ▼	<input type="text"/>	<input type="text" value="500"/>
Ambient Light	<input type="button" value="Disabled"/> ▼	<input type="text" value="0"/>	<input type="text" value="200000"/>
Altitude	<input type="button" value="Disabled"/> ▼	<input type="text" value="-50.0"/>	<input type="text" value="9000.0"/>
<input type="button" value="Update Settings"/>			

Here you can enable or disable alarm mode of a monitoring object and set the values for its High/Low alarm limit. Remember to click **Update Settings** for changes to take effect.

Item	Description	Default
Alarm Mode	<ul style="list-style-type: none"> - Disabled: Disables alarm function. - Momentary: If a measurement value of a monitoring object is greater than its preset high alarm limit or less than the low alarm limit, an alarm event is activated until the measurement value returns within the limits. (Or lower than the high alarm limit only if low alarm is not available.) The Alarm LED turns red, and the corresponding relay turns on during the alarm period. - Latched: If a measurement value is greater than its preset high alarm limit or less than the low alarm limit, the alarm is activated. The Alarm LED turns red, and the corresponding relay turns on for the alarm event. Even though the measurement value returns within the limits, the alarm stays on (latched); the Alarm LED keeps red, and the relay keeps on until the alarm is manually cleared by an operator. 	Disabled
Low Alarm Limit	Sets the low alarm limit conditions for your measurement objects.	
High Alarm Limit	Sets the high alarm limit conditions for your measurement objects.	

Digital Output

Channel	Power On Value	Safe Value
DO0	On ▾	Off ▾
DO1	On ▾	Off ▾
DO2	On ▾	Off ▾
DO3	On ▾	Off ▾
Host Watchdog Timeout (seconds)	0 (5 to 65535 Seconds, Default= 0, Disable= 0)	
Update Settings		

Here you can set the **Power On Value** and **Safe Value** for the relay output, and the Host Watchdog Timeout for RS-485 communication. If the **Host Watchdog Timeout** is set to a value greater than or equal to 5, the Host Watchdog function is enabled. The timeout event will be activated when the host does not send a clear timer command within the Host Watchdog timeout period. The relays turn to the status set by Safe Value in this timeout event. The settings for Power On Value and Safe Value are unavailable when the **Alarm Mode** of corresponding monitoring object is enabled.

RTC

Year	2019	(2000 to 2159)
Month	12	(1 to 12)
Date	24	(1 to 31)
Hour	15	(0 to 23)
Minute	20	(0 to 59)
Second	58	(0 to 59)
Update Settings		

The system time is set by entering value in the relevant field in the RTC section. All the settings take effect after clicking the **Update Settings** button.

Data Logger

Status	Stopped	
Change Logging	Stop ▾	
Overwrite on Full	No ▾	
Sampling Interval - Hour	0	(0 to 24)
Sampling Interval - Minute	0	(0 to 59)
Sampling Interval - Second	10	(0 to 59)
Period Start - Year	2014	(2000 to 2159)
Period Start - Month	6	(1 to 12)
Period Start - Date	1	(1 to 31)
Period Start - Hour	0	(0 to 23)
Period Start - Minute	0	(0 to 59)
Period Start - Second	0	(0 to 59)
Period End - Year	2014	(2000 to 2159)
Period End - Month	6	(1 to 12)
Period End - Date	2	(1 to 31)
Period End - Hour	0	(0 to 23)
Period End - Minute	0	(0 to 59)
Period End - Second	0	(0 to 59)
Update Settings		

The following table shows the settings for data logger. All the settings take effect after clicking the **Update Settings** button.

Item	Description	Default
Status	<ul style="list-style-type: none"> - Running: the data logger is running - Stopped: the data logger is stopped 	
Change Logging	Sets the mode for data logger <ul style="list-style-type: none"> - Stop: stops the data logger - Run: continues logging data - Period: logs data during a given time period 	Stop
Overwrite on Full	Sets whether to overwrite old data by new ones when the memory for data storage is full. (Over the upper limit of storage capacity.) <ul style="list-style-type: none"> - No: discards the new data (default) - Yes: overwrites the old data by new ones 	No
Sampling Interval	Sets the time interval for logging data. It is valid for both Run mode and Period mode. <ul style="list-style-type: none"> - Sampling Interval – Hour: sets the hour for log interval - Sampling Interval – Minute: set the minute for log interval - Sampling Interval – Second: sets the second for log interval 	10 (s)
Period Start	Sets the start time for Period mode.	
Period End	Sets the stop time for Period mode	

Reset data logger to empty	<input type="button" value="Reset Data Logger"/>
-----------------------------------	--

Click the **Reset Data Logger** button to clear the data in data storage memory.

3.7 Filter

For limiting the devices to access the DLW-1xxx, users can specify particular devices by setting their IP addresses on this page. When the addresses are 0.0.0.0 from IP1 to IP5, all the devices can access the mini weather station. Once any IP is set in the **Accessible IP List**, only the device whose IP address is saved in the list can access the module.

■ Set accessible IP

1. Select the radio button for **Add** ____ . ____ . ____ . ____ **To The List** and type the IP address for the accessible device in the following text box.
2. Click the **Submit** button to apply the setting without restarting.

If a IP needs be saved for working after repowered, check the **Save to Flash** checkbox before clicking the **submit** button.

Accessible IP List	IP Address
IP1	0.0.0.0
IP2	0.0.0.0
IP3	0.0.0.0
IP4	0.0.0.0
IP5	0.0.0.0

Add [] . [] . [] . [] To The List
 Delete IP# []
 Delete ALL
 Save to Flash

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10.1.0.31/filter.html

■ Delete IP setting

1. Select the **Delete IP#** radio button and enter the IP number from 1 to 5 which you would like to delete it, or click the **Delete All** radio button to delete all the IP.
2. Check the **Save to Flash** checkbox.
3. Click the **Submit** button to make the delete operation take effect.

3.8 Monitor

The IP address of connecting host(s) will be displayed on this page. Users can confirm which device is connecting to the DLW-1xxx and get the number of available connections on the mini weather station side.

Current Connection Status:

Server Mode	Server
Connected IP1:	10.0.11.3
IP2:	0.0.0.0
IP3:	0.0.0.0
IP4:	0.0.0.0
IP5:	0.0.0.0
IP6:	0.0.0.0
Available Connections:	31

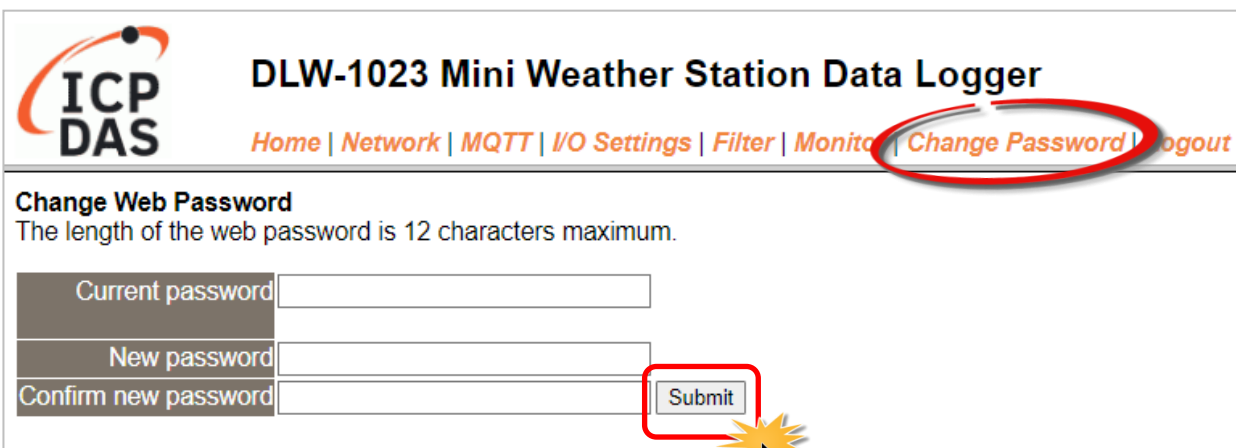
3.9 Change Password

On this page users can change the passwords for logging into the DLW-1xxx.

■ Change Web Password

The default password is **Admin**. It is case-sensitive, can be up to 12 characters in length, and consists of upper or lower case alphabetic (a-Z) and the numbers (0-9).

To change the password, fill the current password and your new password into the relevant fields and click the **Submit** button for the new setting to take effect.



ICP DAS DLW-1023 Mini Weather Station Data Logger

[Home](#) | [Network](#) | [MQTT](#) | [I/O Settings](#) | [Filter](#) | [Monitor](#) | [Change Password](#) | [Logout](#)

Change Web Password
The length of the web password is 12 characters maximum.

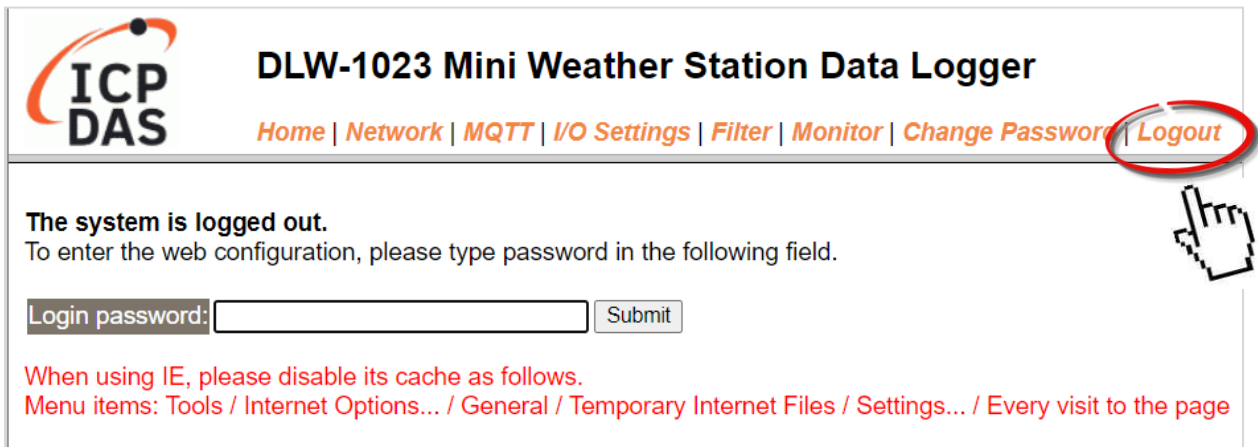
Current password

New password

Confirm new password

3.10 Logout

Click the **Logout** on any page to log out the module.



The screenshot shows the web interface for the DLW-1023 Mini Weather Station Data Logger. At the top left is the ICP DAS logo. To its right is the title "DLW-1023 Mini Weather Station Data Logger". Below the title is a navigation menu with links: Home | Network | MQTT | I/O Settings | Filter | Monitor | Change Password | Logout. The "Logout" link is circled in red, and a hand cursor icon is pointing at it. Below the navigation menu, the text reads "The system is logged out." followed by "To enter the web configuration, please type password in the following field." There is a text input field labeled "Login password:" and a "Submit" button. At the bottom, there is a red note: "When using IE, please disable its cache as follows. Menu items: Tools / Internet Options... / General / Temporary Internet Files / Settings... / Every visit to the page".

4. Configuration via RS-485

- The factory default settings for RS-485 communication
 - Address: 1
 - Protocol: Modbus/RTU
 - Baudrate: 9600
 - Parity: N,8,1
 - Response Delay (ms): 0



Note

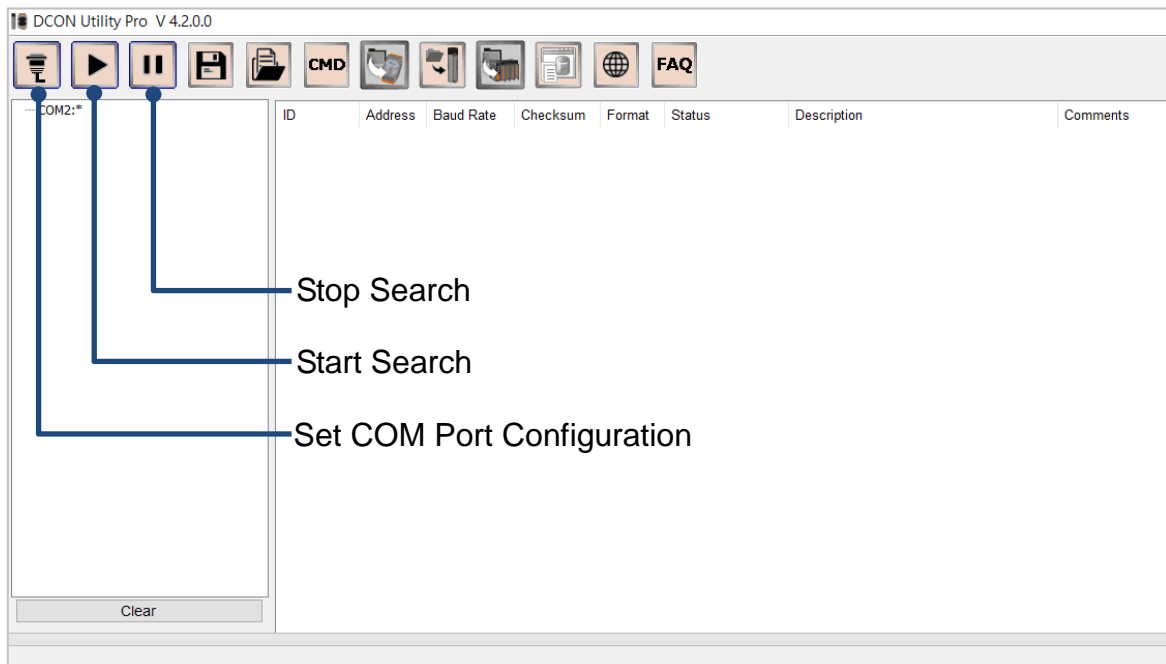
If multiple DLW-1xxx mini weather stations are connected to the same RS-485 network, each of them needs to be set with a unique RS-485 address. More than one module having the same address will cause communication failure.

■ Testing RS-485 Communication

DCON Utility Pro is a toolkit that helps users easily to search, configure and test I/O modules via the serial port (RS-232/485) or Ethernet port (using virtual com port) on Windows PC. You can download it from

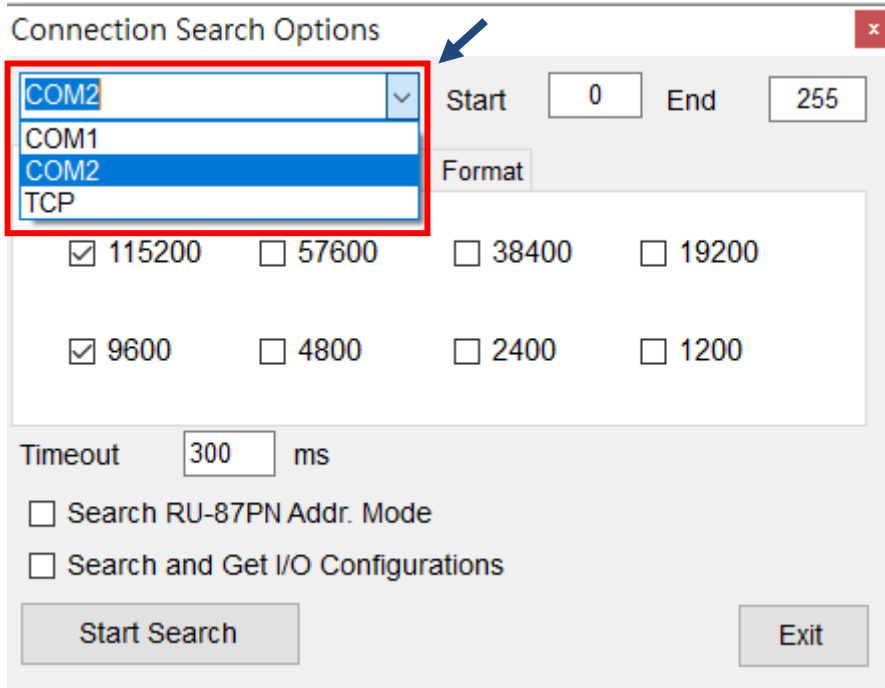
[https://www.icpdas.com/en/download/index.php?root=&model=&kw=DCON Utility](https://www.icpdas.com/en/download/index.php?root=&model=&kw=DCON%20Utility)

1. Install the DCON Utility Pro and Launch the DCON_Utility_Pro.exe.



2. Click the icon  to configure the COM port.

3. Select the **COM Port** number used to connect the DLW-1xxx.



Connection Search Options

COM2 Start 0 End 255

Format

115200 57600 38400 19200

9600 4800 2400 1200

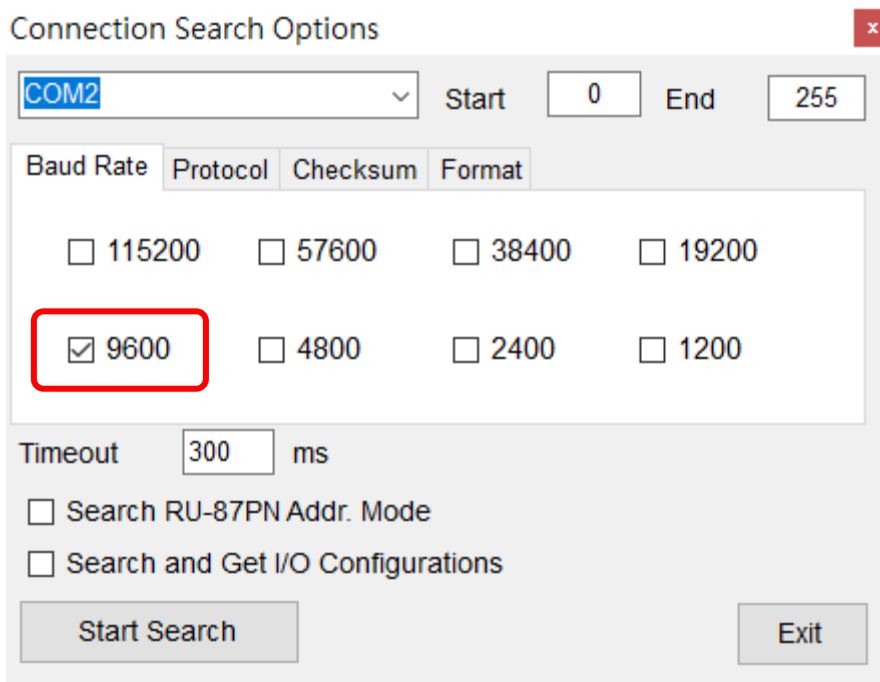
Timeout 300 ms

Search RU-87PN Addr. Mode

Search and Get I/O Configurations

Start Search Exit

4. The **Baud Rate** is factory default to 9600 bps, make sure the baud rate setting in the DLW-1xxx is checked.



Connection Search Options

COM2 Start 0 End 255

Baud Rate Protocol Checksum Format

115200 57600 38400 19200

9600 4800 2400 1200

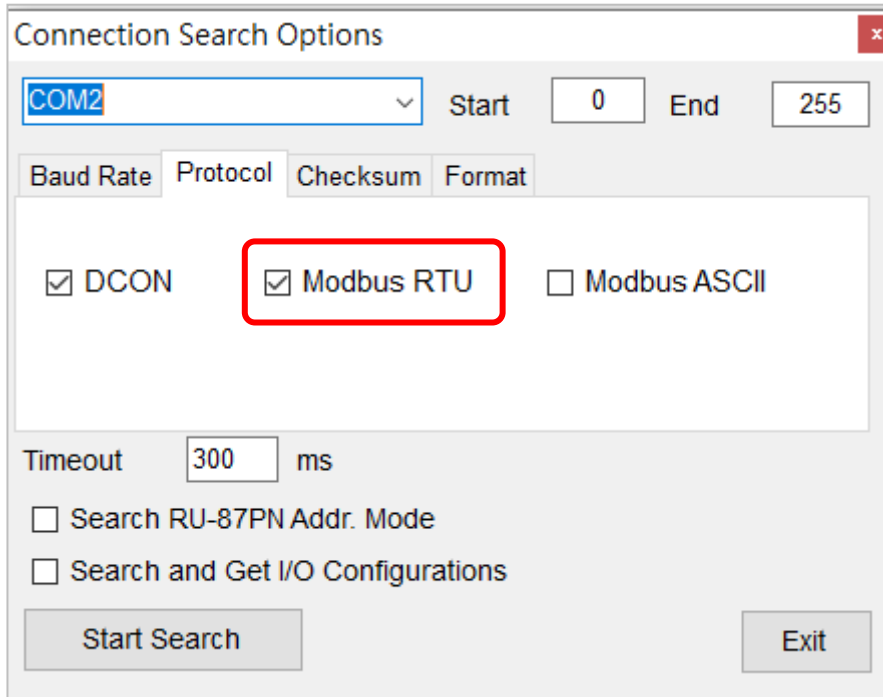
Timeout 300 ms

Search RU-87PN Addr. Mode

Search and Get I/O Configurations

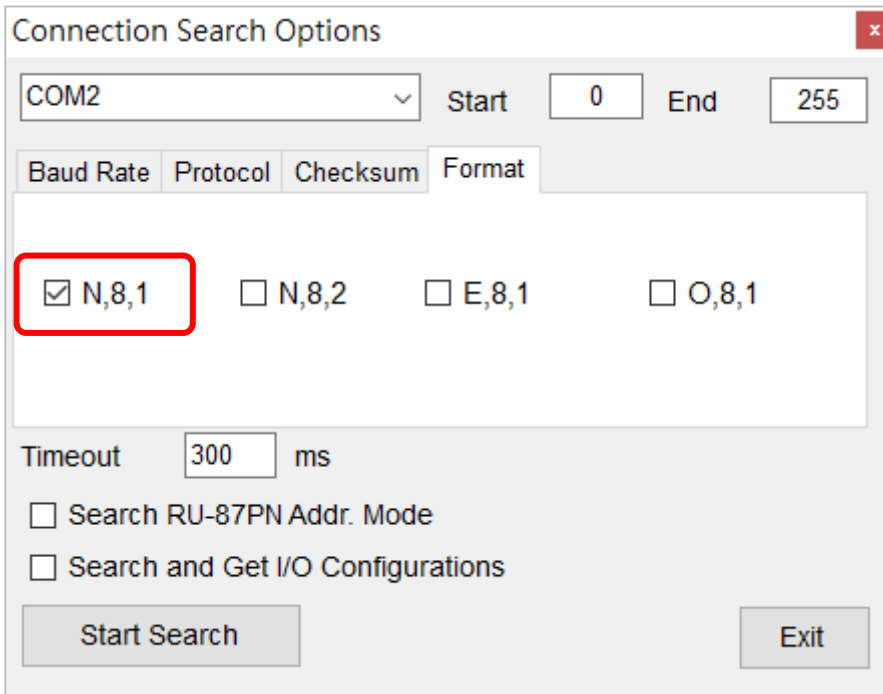
Start Search Exit

5. Select the **Protocol** tab and check the protocol that is used in the module.
(The factory default is Modbus RTU ◦)



The screenshot shows the 'Connection Search Options' dialog box with the 'Protocol' tab selected. The 'COM2' port is selected in the dropdown menu. The 'Start' field is set to 0 and the 'End' field is set to 255. Under the 'Protocol' tab, the 'Modbus RTU' checkbox is checked and highlighted with a red box. Other options include 'DCON' (checked) and 'Modbus ASCII' (unchecked). The 'Timeout' is set to 300 ms. There are two unchecked checkboxes: 'Search RU-87PN Addr. Mode' and 'Search and Get I/O Configurations'. At the bottom, there are 'Start Search' and 'Exit' buttons.

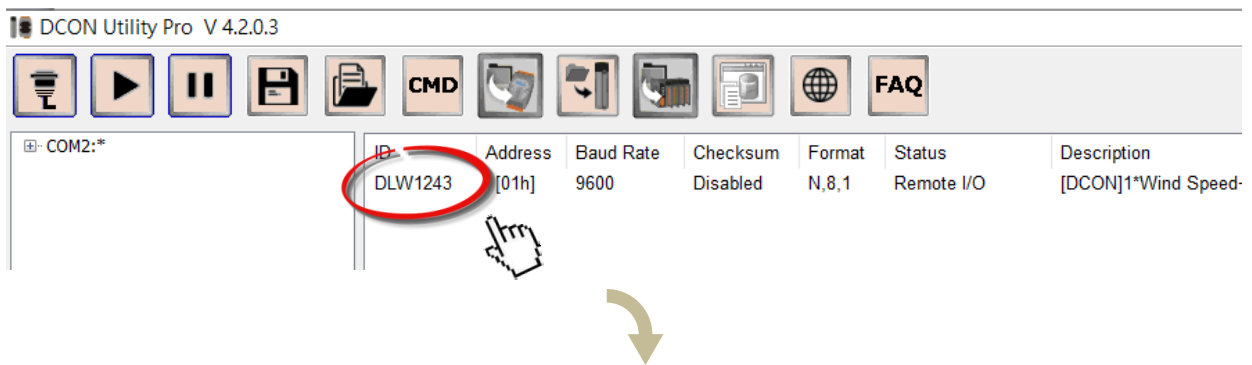
6. Select the **Format** tab and check the parity that is used in the module.



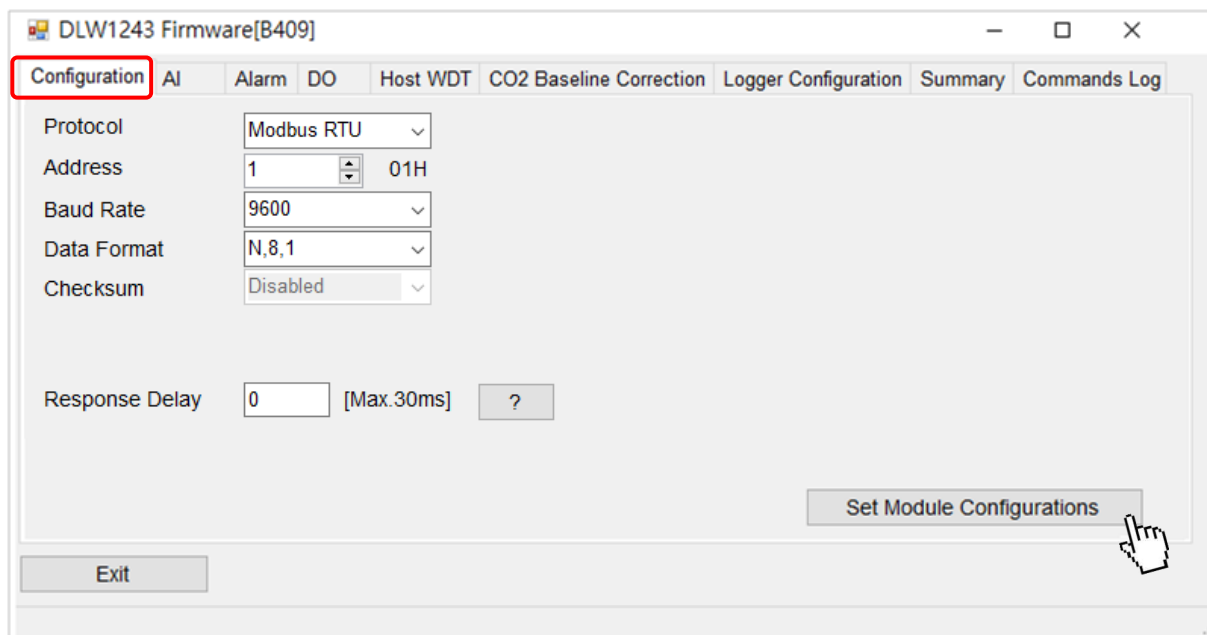
The screenshot shows the 'Connection Search Options' dialog box with the 'Format' tab selected. The 'COM2' port is selected in the dropdown menu. The 'Start' field is set to 0 and the 'End' field is set to 255. Under the 'Format' tab, the 'N,8,1' checkbox is checked and highlighted with a red box. Other options include 'N,8,2' (unchecked), 'E,8,1' (unchecked), and 'O,8,1' (unchecked). The 'Timeout' is set to 300 ms. There are two unchecked checkboxes: 'Search RU-87PN Addr. Mode' and 'Search and Get I/O Configurations'. At the bottom, there are 'Start Search' and 'Exit' buttons.

7. Click the **Start Search**  icon.

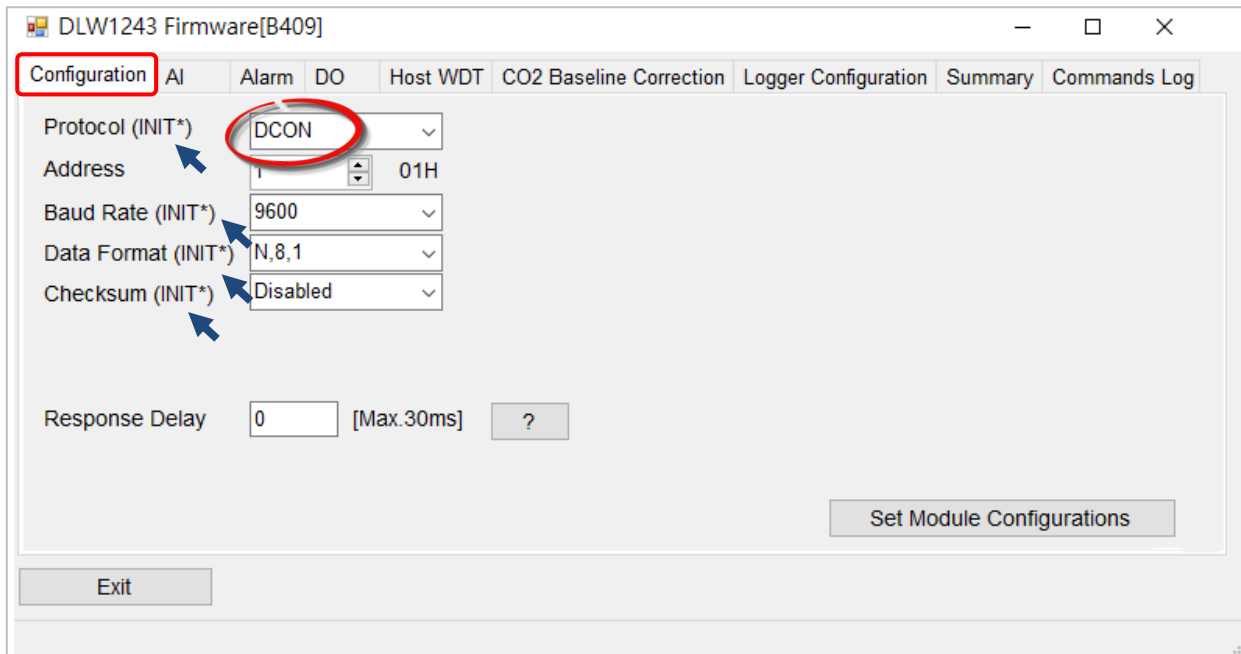
8. The model name(s) of the searched module(s) will be listed on the left pane as below. Click the module name to open the configuration window.



The RS-485 communication protocol of the DLW-1xxx is Modbus RTU by default. If you need to modify communication parameters such as Baud Rate or Data Format, you can select the desired options on the Configuration page, and then click the **Set Module Configuration** button to make the settings take effect.



If the DLW-1xxx is using DCON protocol, you must first set the INIT dip switch to ON position before modifying communication parameters or changing the protocol to Modbus RTU. After the configuration is completed, the INIT dip switch needs be restored to OFF. Restart the DLW-1xxx to make the changes take effect.



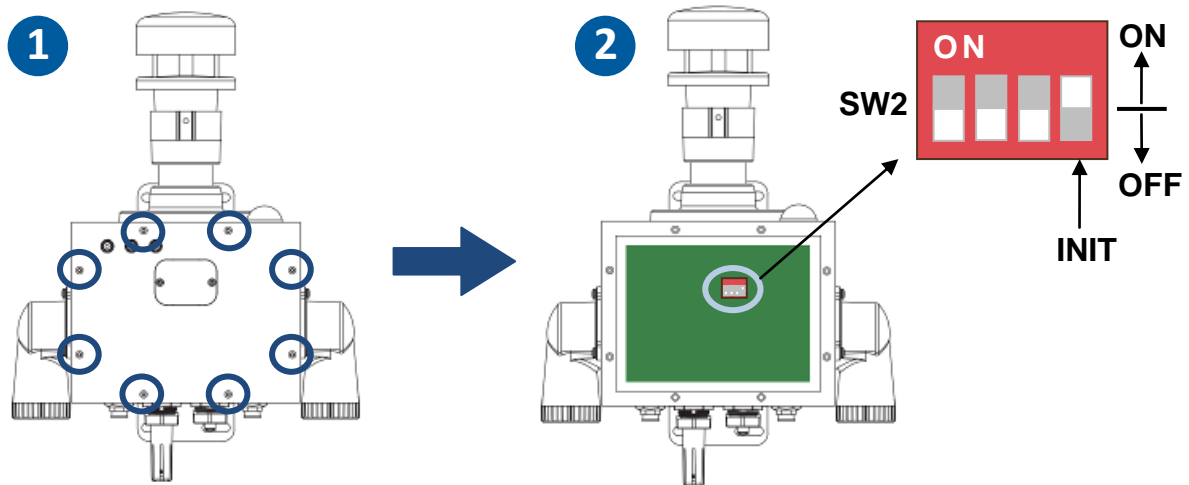
Note

The "(INIT*)" marked at the end of Protocol, Baud Rate, Data Format and Checksum parameters means that the INIT dip switch needs be set in ON position when you modify any of those items. After the configuration finished, restore the INIT dip switch to OFF position and power cycle the module again to make changes take effect.

■ How to set the INIT switch?

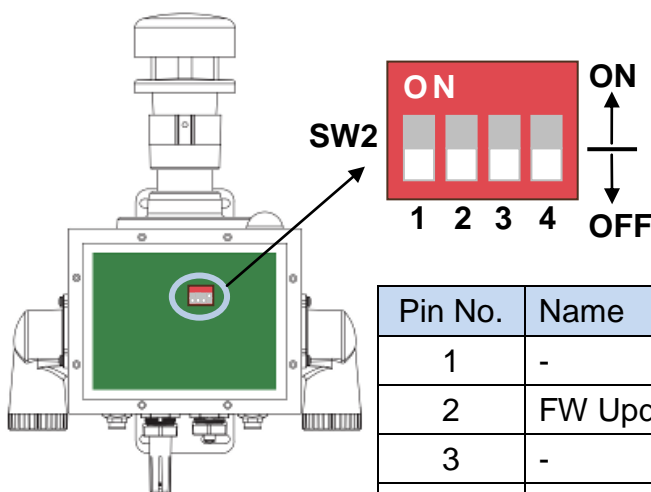
The INIT dip switch is positioned on the PCB board inside the DLW-1xxx, please follow the steps below to configure INIT status.

1. Loosen the screws (x8) and remove the front cover.
2. Set the INIT dip switch to ON (up position) or OFF (down position).



■ SW2 DIP switch

All the 4 dip switches are put in OFF (down position) by default. When a DLW-1xxx is functioning normally, keep the 4 dip switches in off state. Except you need to change the communication configuration or update the firmware.



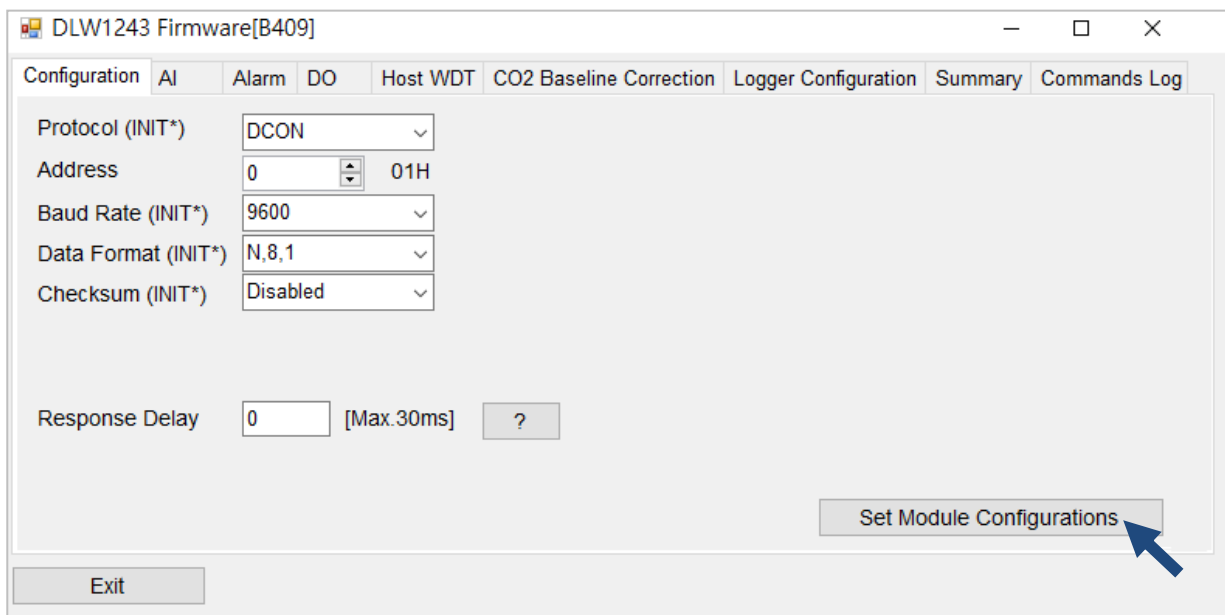
Pin No.	Name	Description
1	-	Reserved
2	FW Update	ON for updating firmware
3	-	Reserved
4	INIT	ON for using the factory default settings for communication

■ INIT mode

In case of the parameters are lost to communicate with the DLW-1xx module, while the module cannot be searched using DCON Utility Pro, users can set the INIT dip switch to ON position and power-cycle the module.



When a DLW-1xxx module is powered-on with the INIT in ON position, the protocol is DCON, address is 0, Baud Rate is 9600 bps, Parity is set to N/8/1 and Checksum is disabled. At this point, DCON Utility Pro can be used to search and connect to the DLW module to reset the parameters.



AI

The AI page provides an overview of the real time data on the module, the offset value for every sensor and their High/Low alarm status. You can adjust the offset value to make the reading more consistent with the actual situation. Clicking the relevant **Clear** button can clear the High/Low alarm status.

Wind/CO/CO₂/NH₃ level

The screenshot shows the 'AI' page of the DLW1243 Firmware. The page is divided into several sections: 'Wind/CO/CO₂/NH₃ level', 'Humidity, Temperature and Dew point', 'Sensor Offset Adjustment', and 'Alarm Status'. The 'Wind/CO/CO₂/NH₃ level' section displays real-time data for Wind, CO (ppm), CO₂ (ppm), and NH₃ (ppm), along with offset adjustment controls. The 'Humidity, Temperature and Dew point' section displays data for Humidity (%), Temperature (°C and °F), and Dew Point (°C and °F), also with offset adjustment controls. The 'Sensor Offset Adjustment' section shows radio buttons for 'Degree of' adjustment (10 or 1). The 'Alarm Status' section shows 'Low Alarm' and 'High Alarm' status for each sensor, with 'Clear' buttons to reset the status. An 'Exit' button is located at the bottom left.

Sensor	Value	Offset	Low Alarm	High Alarm
Wind	000.00	000.00		Clear
Wind	70	000.00	Clear	Clear
CO (ppm)	0	-00001.		Clear
CO ₂ (ppm)	989	-00001.		Clear
NH ₃ (ppm)	12	-001.00		Clear
Humidity (%)	074.33	000.00	Clear	Clear
Temperature °C	023.28	000.00	Clear	Clear
Temperature °F	073.90		Clear	Clear
Dew Point °C	018.45		Clear	Clear
Dew Point °F	065.21		Clear	Clear

Humidity
Temperature and
Dew point

Sensor Offset Adjustment

Alarm Status

Alarm

The Alarm page shows the alarm mode and High/Low limit value for each sensor on the module. You can change the configuration here; remember to click the **Set Alarm Configuration** button for the new settings to take effect.

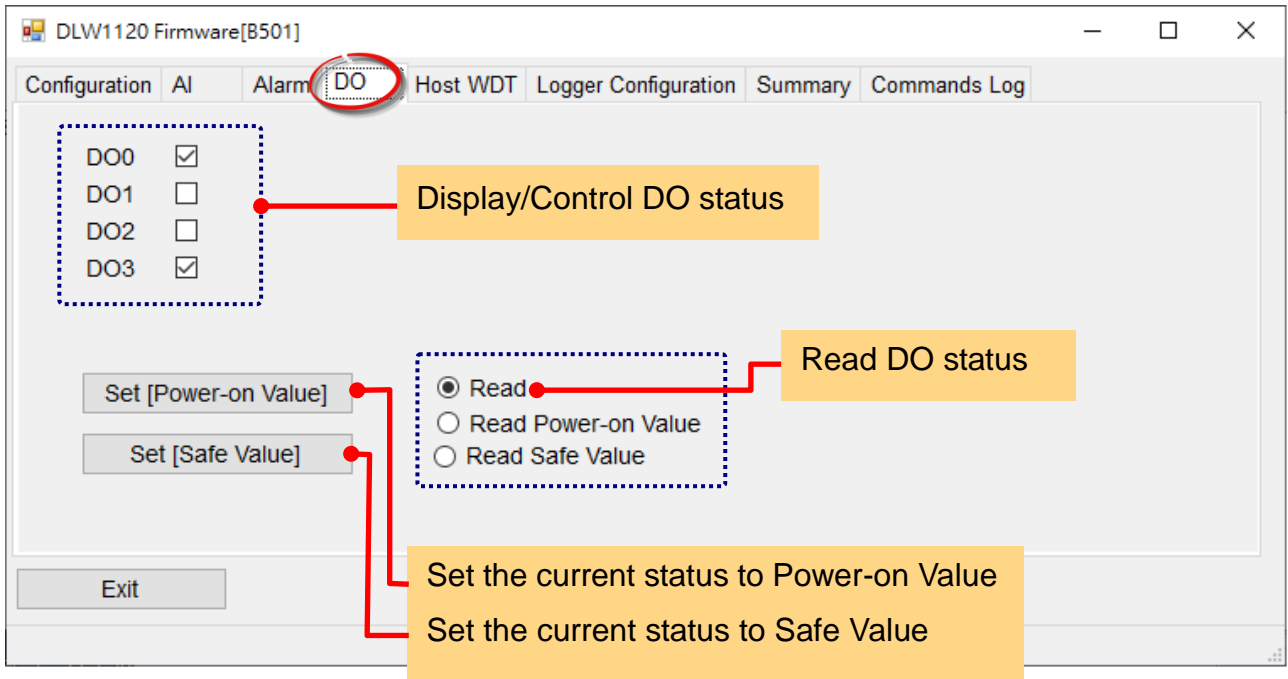
	Alarm Mode	Low Limit	High Limit	
Wind Speed (0.1m/s)	Disable		100	
Wind Direction (degree)	Disable	0	360	
CO (ppm)	Disable		-1	0 ~ 1000 ppm
CO2 (ppm)	Disable		-1	0 ~ 9999 ppm
NH3 (ppm)	Disable		-1	0 ~ 1000 ppm
Humidity (%)	Disable	0	100	
Temperature (C)	Disable	0	100	
Temperature (F)	Disable	32	212	
Dew Point Temperature	Disable	0	100	
Dew Point Temperature	Disable	32	212	

Exit

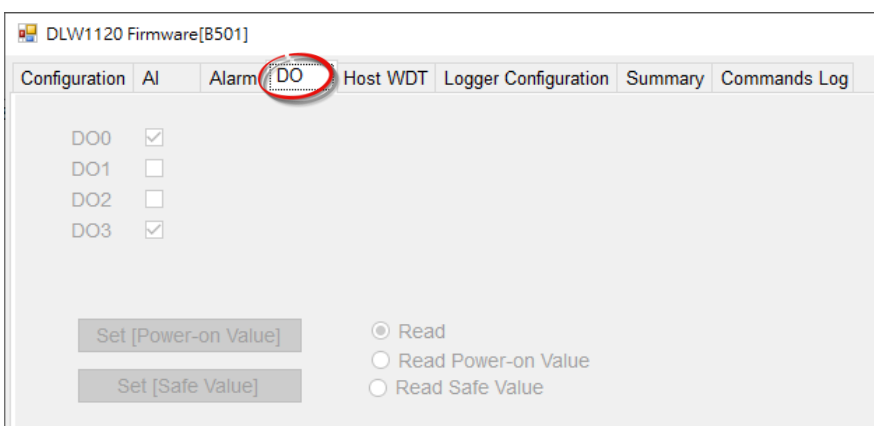
Set Alarm Configurations

DO

On this DO page, you can control the relay status simply by clicking the relevant checkbox. Adding a check mark can turn on the relay, while removing a check mark can turn off the relay. You can set power-on and safe values here.



Once the alarm mode of any sensor is **not Disabled**, the 4 relays cannot be controlled manually. The functions on the page will be disabled because the relays are linked with the alarm state for controlling alerting devices.



■ Host Watchdog

Host Watchdog is a software function designed to monitor the RS-485 communication status between the DLW-1xxx and the host after being enabled. If the host PC does not send DCON command “~**” or Modbus message within the WDT Timeout period, the Host Watchdog will announce the timeout error and turn the relay output to Safe value to prevent unintended operation during alarm period.

For modules using the DCON protocol, users can send the command “~AA1” to clear the WDT timeout status and regain DO control. For modules using the Modbus protocol, users can enable the option to directly control DO without clearing the timeout status. To enable this option, set Modbus register 00260 to 1, or check the **Enable Output When WDT Timeout** checkbox on the Host WDT page.

DLW1120 Firmware[B503]

Configuration AI Alarm DO **Host WDT** Logger Configuration Summary Commands Log

Enable WDT Enable Output When WDT Timeout

WDT Timeout
(0.1 ~ 25.5 sec)

You can use the following steps to test the Host Watchdog function of a module which is using DCON protocol:

1. Set the value for **WDT Timeout** period, check the **Enable WDT** checkbox and click the **Set Timer** button to enable the Host Watchdog function.
2. Check the **Auto Send Host OK** checkbox to send the “~**” command.
3. Uncheck the **Auto Send Host OK** checkbox to stop sending ~** command, the Host watchdog timeout will occur and relay will turn to Safe value.
4. Click the **Reset WDT Status** button to clear the timeout status.
5. Uncheck the **Enable WDT** checkbox to disable the Host watchdog function

DLW1243 Firmware[B409]

Configuration | AI | Alarm | DO | **Host WDT** | O2 Baseline Correction | Logger Configuration | Summary | Commands Log

Enable WDT Auto Send Host OK

WDT Timeout
(0.1 ~ 25.5 sec)



Note

If the alarm mode of a sensor associated with the relay is enabled, the relay will not turn to Safe value. It is linked to the alarm status during the enable period; it can be used to turn on the sound/light alarm or safety facility when alarm occurs.

■ Logger Configuration

The logging function of the DLW-1xxx is disabled by default. Before starting to log data, you can configure the time and parameters of the logging function on the **Logger Configuration** page. Recording interval needs be set carefully to avoid the pitfalls of ending up with an overwhelming amount of logged data. Fill in the required parameters and click the **Apply** button to make the settings take effect.

Set date and time

Set logging parameters

DLW1243 Firmware[B409]

Configuration AI Alarm DO Host WDT CO2 Baseline Correction **Logger Configuration** Summary

Real Time Year: 2022, Month: 11, Day: 02, Hour: 11, Minute: 13, Second: 08

Log Status: Stop

Log Command: 0: Stop

Overwrite Option: 0: No Continue writing when data logger is full

Sample Period Hour: 00, Minute: 00, Second: 10

Start Logger Time Year: 2022, Month: 11, Day: 02, Hour: 15, Minute: 00, Second: 00

End Logger Time Year: 2022, Month: 11, Day: 03, Hour: 15, Minute: 00, Second: 00

Apply

Exit

Item	Description
Real Time	Sets the system time of the DLW-1xxx module.
Log Status	Displays the data logging function status.
Log Command	Starts/stops logging function and sets the logging mode.
Overwrite Option	Sets the overwrite mode when the logging space is full. Yes means to overwrite old data, while No means to stop log data.
Sample Period	Sets the log interval. The shorter the interval, the shorter the total time that data can be recorded.
Start Logger Time	Sets the start time of Run in period mode.
End Logger Time	Sets the end time of Run in period mode.

5. Monitoring via Mobile Devices

The iAir app can be used to monitor real-time data on the DLW-1xxx anywhere and anytime without any complicated configuration. As long as connecting your mobile phone or tablet to the network of the DLW-1xxx module, the iAir App can search for all DLW-1xxx modules in the same network domain through Wi-Fi and read the data instantly.

Use keywords such as “iAir”, “ICPDAS”, or “ICP DAS” to search for iAir app and download it for free on Google Play or Apple Store.

If a DLW-1xxx cannot be searched in the iAir app, please contact with your network administrator to make sure that the module and your mobile devices are on the same network. It means that they have the same broadcast address.



6. Utility to Get/Manage Data Log

iAir Utility is a convenient, easy-to-use management utility running on Windows platform that allows users to monitor the real-time data and trend chart from DLW-1xxx on the Ethernet. You can use iAir Utility to organize DLW-1xxx modules into groups for more convenient view and management, download the logged data with timestamp from a DLW-1xxx and export the data to *.csv files for performing statistical analysis in Excel.

Download the iAir Utility from:

[https://www.icpdas.com/en/download/index.php?nation=US&kw=iAir Utility](https://www.icpdas.com/en/download/index.php?nation=US&kw=iAir%20Utility)

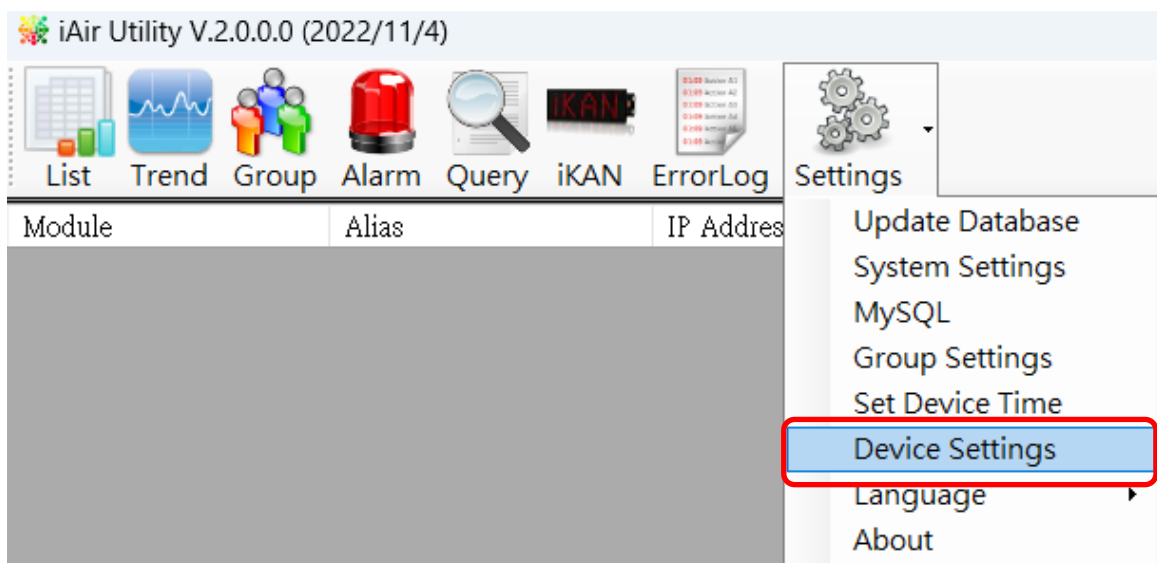
1. Run the iAir_utility_setup_vxxx.exe, the default install location is C:\ICPDAS\ iAir_UTILITY\iAir Utility

2. Open the iAir Utility by double clicking the iAir Utility shortcut on desktop.



3. Search out the DLW-1xxx on the Ethernet and set the configuration.

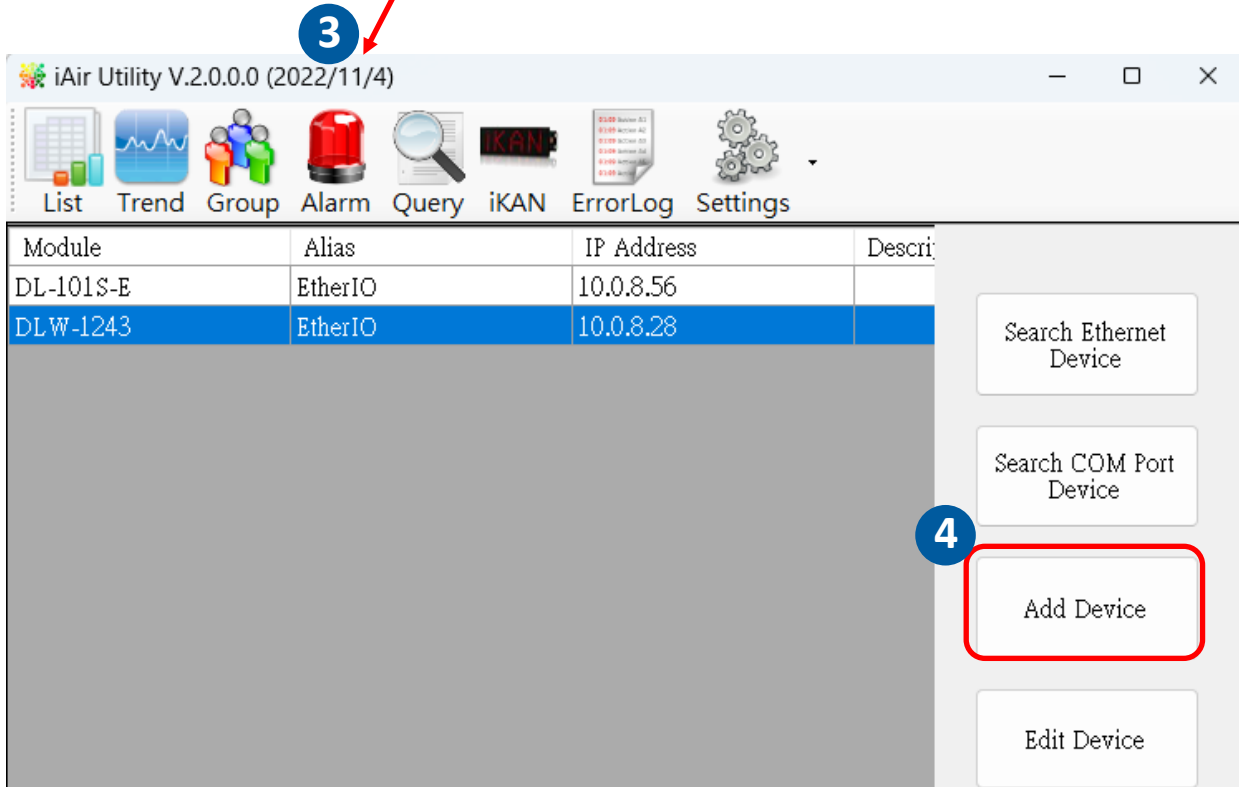
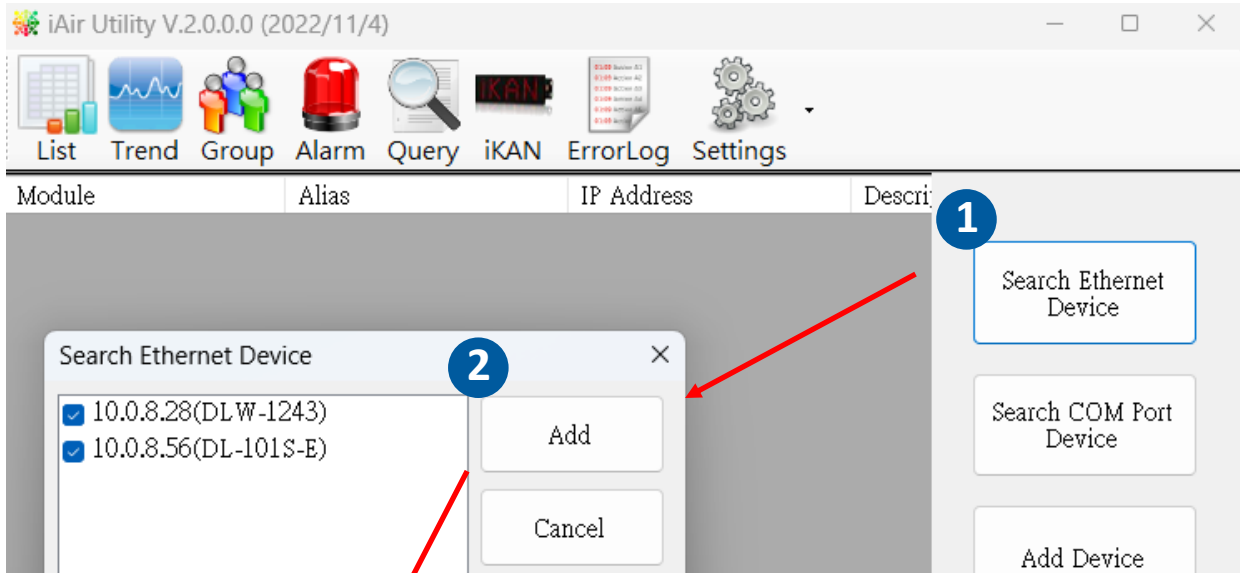
3-1. Select the **Device Settings** option on the *Settings* menu.



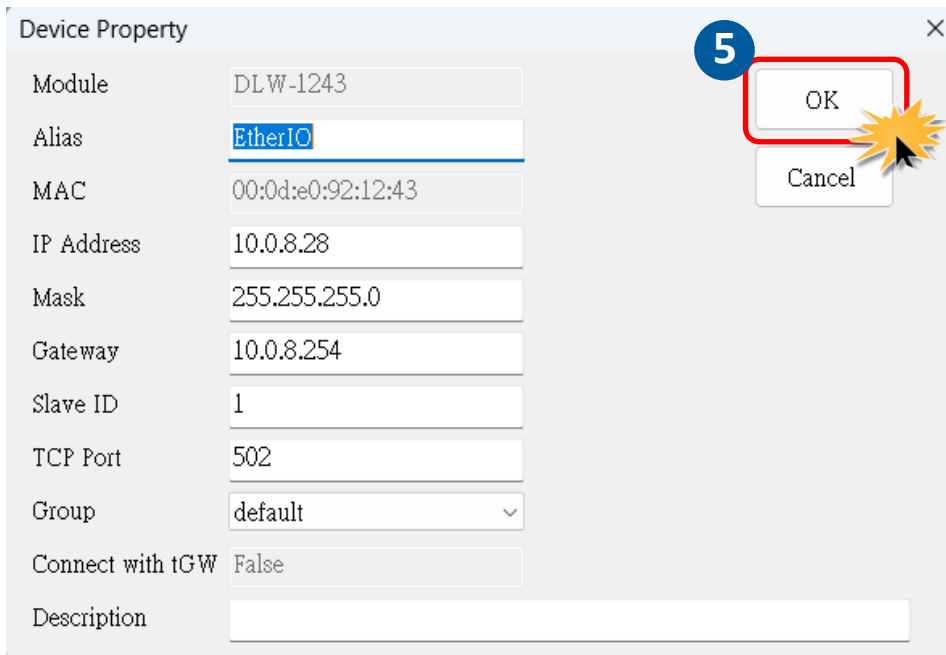
3-2. Click the **Search Ethernet Device** button to search the DLW-1xxx modules.

3-3. Check the checkbox next to the desired module and click the **Add** button to add the module in the utility.

3-4. Highlight a module and click the **Add Device** button to configure it.



3-5. Set the configuration in the relevant field, and click the **OK** button.



Device Property

Module	DLW-1243
Alias	EtherIO
MAC	00:0d:e0:92:12:43
IP Address	10.0.8.28
Mask	255.255.255.0
Gateway	10.0.8.254
Slave ID	1
TCP Port	502
Group	default
Connect with tGW	False
Description	

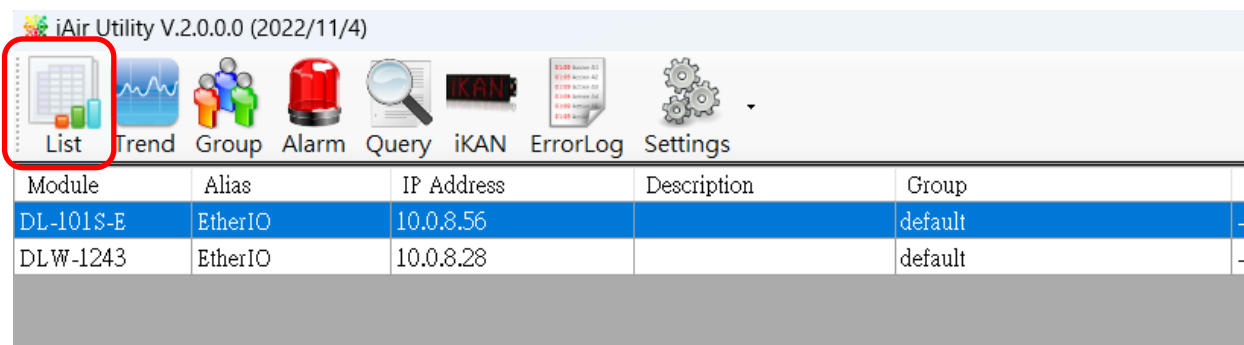


Note

Consult your network administrator before making changes to IP Address/ Mask Address/ Gateway.

4. Get real-time data, trend chart and alarm event.

4-1. Click the **List** icon to obtain the real-time data. It also lists the connect status, group information and IP address for every DLW-1xxx module.

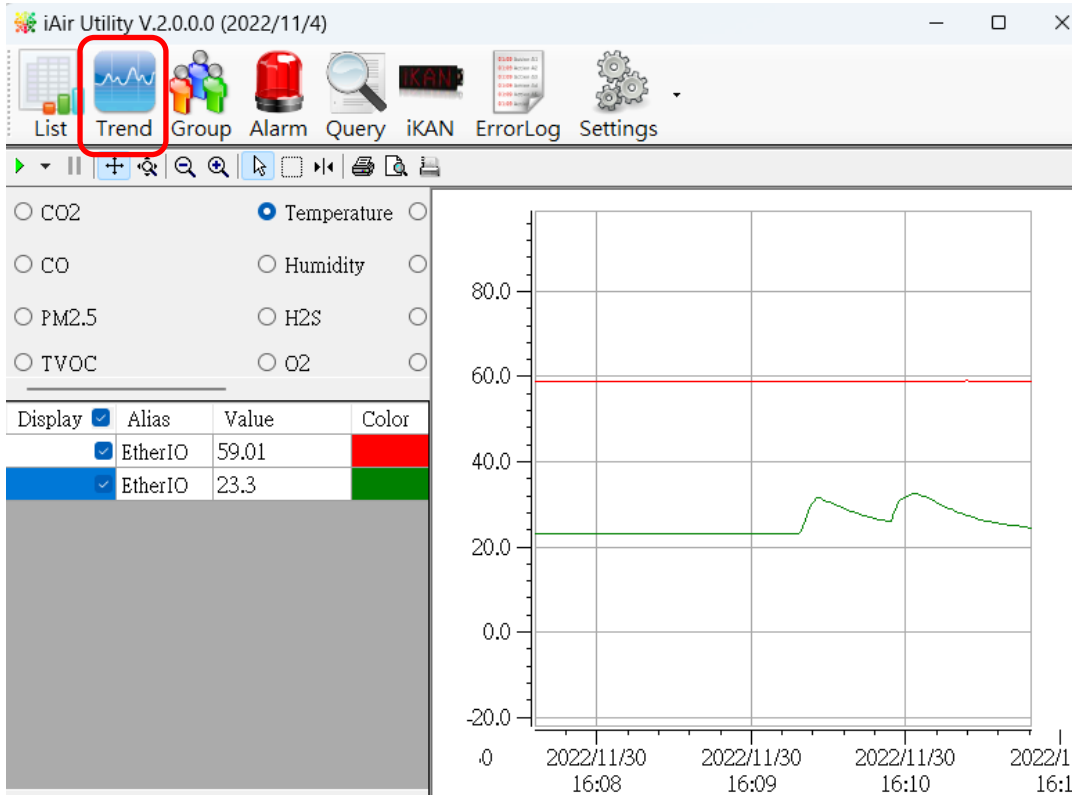


iAir Utility V.2.0.0.0 (2022/11/4)

List Trend Group Alarm Query iKAN ErrorLog Settings

Module	Alias	IP Address	Description	Group
DL-101S-E	EtherIO	10.0.8.56		default
DLW-1243	EtherIO	10.0.8.28		default

4-2. Click the **Trend** icon to display the trend chart. Users can select the radio button for monitoring one measurement object on different modules, and then check or uncheck the checkbox for a DLW-1xxx to display or hide its curve. Drag and drop the trend chart can move it to display the data out of the chart.



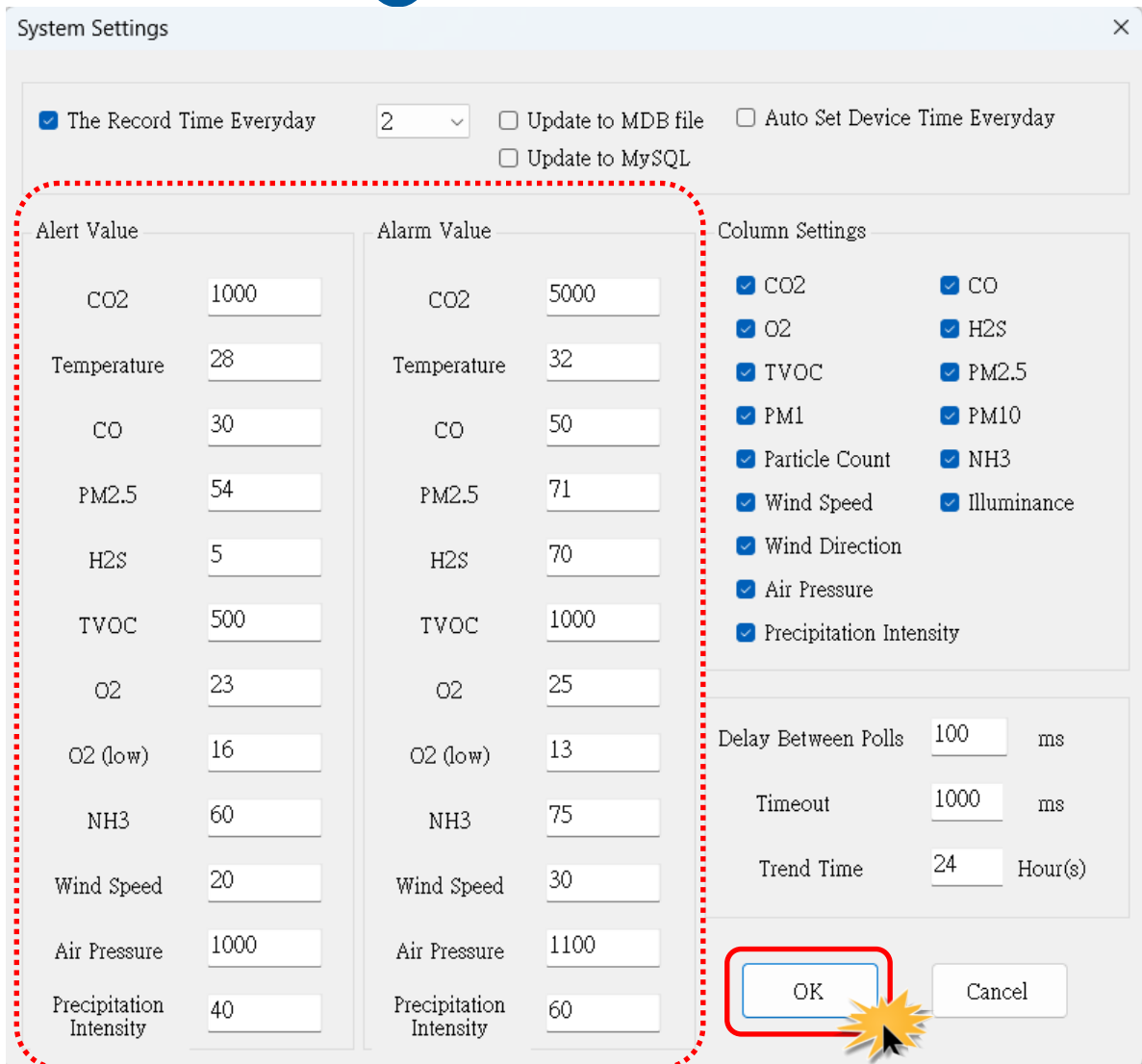
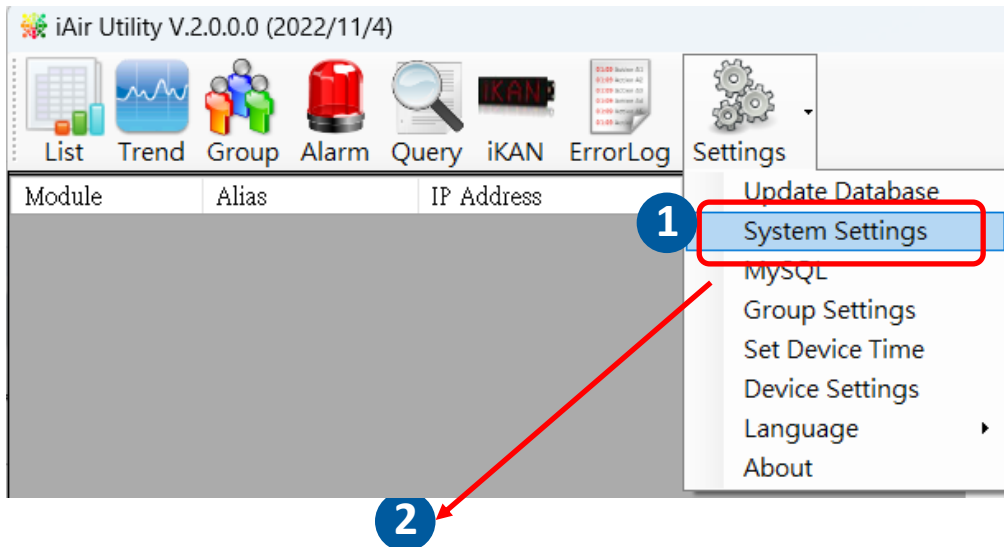
4-3. Click the **Alarm** icon to review the alarm events.

The screenshot shows the iAir Utility software interface. The 'Alarm' icon in the top toolbar is highlighted with a red box. Below the toolbar, there is a table displaying alarm events. The table has four columns: 'Alias', 'IP Address', 'Alarm', and 'Temperature(°C)'. The table shows multiple entries for 'EtherIO' with IP address 10.0.8.28, all with the alarm message 'Temperature is over Alarm ...' and various temperature values ranging from 27.86 to 34.08.

Alias	IP Address	Alarm	Temperature(°C)
EtherIO	10.0.8.28	Temperature is normal at ti...	27.86
EtherIO	10.0.8.28	Temperature is over Alarm ...	34.08
EtherIO	10.0.8.28	Temperature is over Alarm ...	34.05
EtherIO	10.0.8.28	Temperature is over Alarm ...	33.80
EtherIO	10.0.8.28	Temperature is over Alarm ...	33.75
EtherIO	10.0.8.28	Temperature is over Alarm ...	33.64
EtherIO	10.0.8.28	Temperature is over Alarm ...	33.57
EtherIO	10.0.8.28	Temperature is over Alarm ...	33.47
EtherIO	10.0.8.28	Temperature is over Alarm ...	33.35
EtherIO	10.0.8.28	Temperature is over Alarm ...	33.17

4-4. Modify the event condition.

Select the **System Settings** on the **Settings** menu.



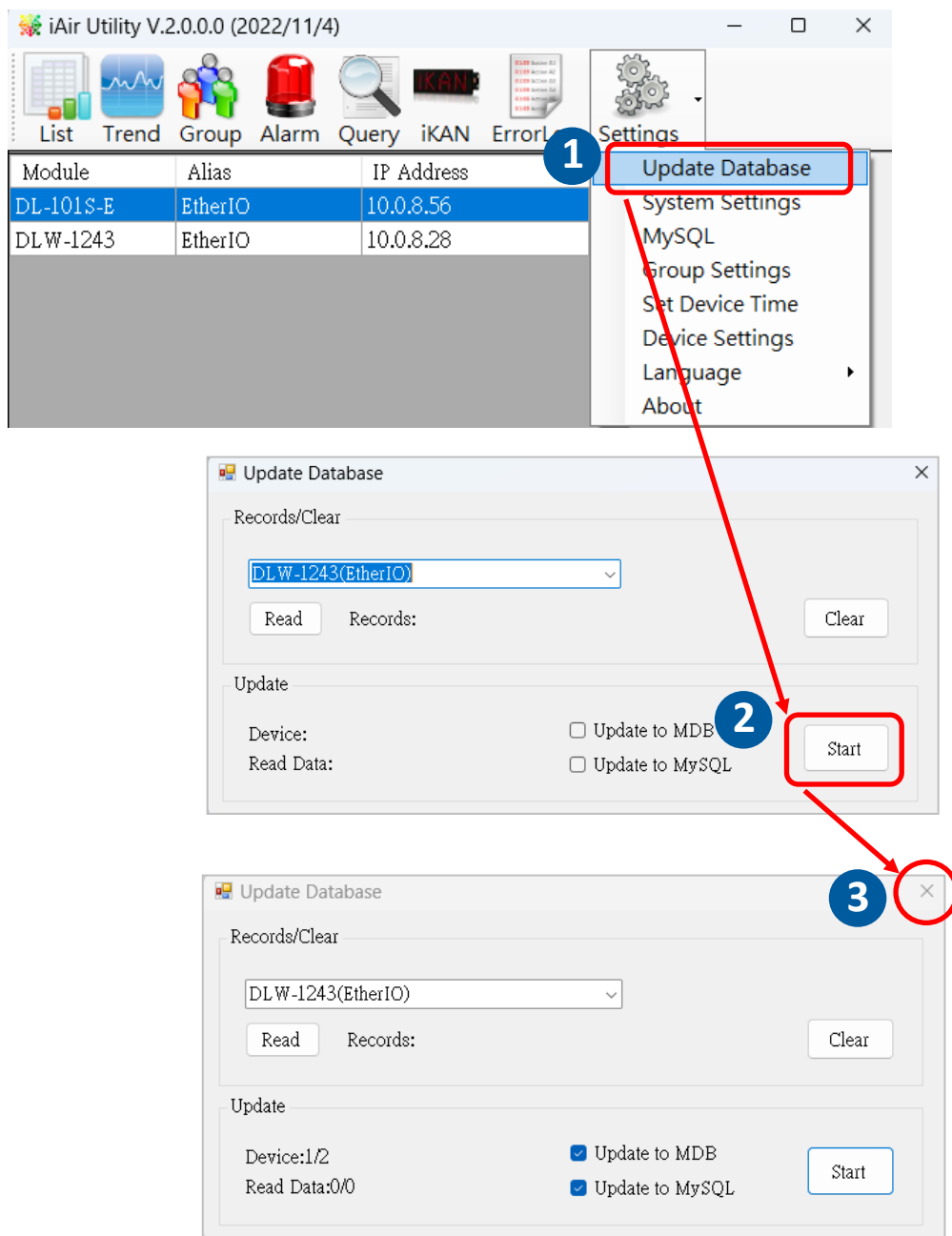
Enter the High/Low alarm value for the desired measurement objects and check the **The Record Time Everyday** checkbox to schedule automatic daily report generation at the time set in the dropdown menu. Click the **OK** button to complete the settings.

5. Download logged data in a DLW-1xxx and export the data

5.1. Select **Update Database** on the Settings menu

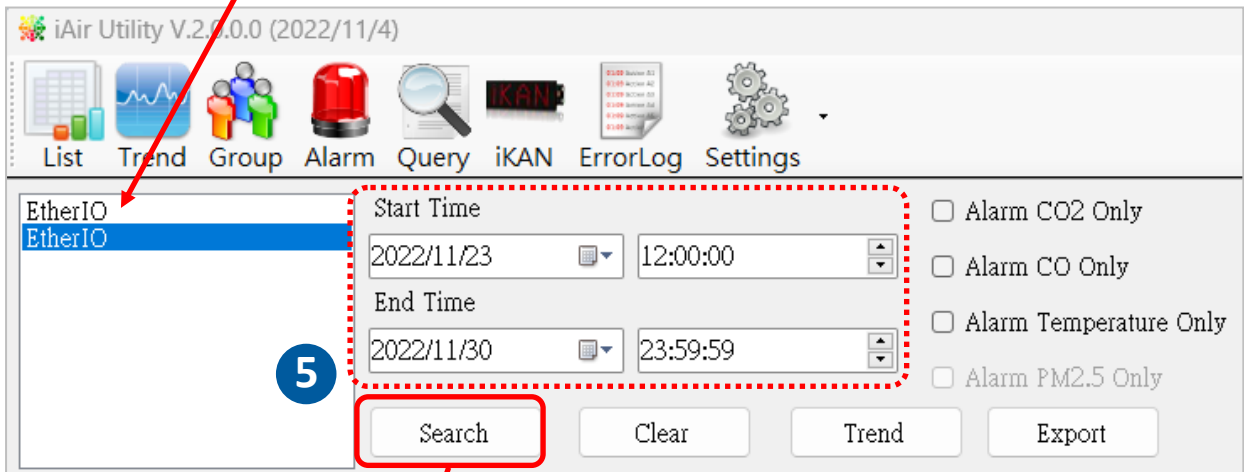
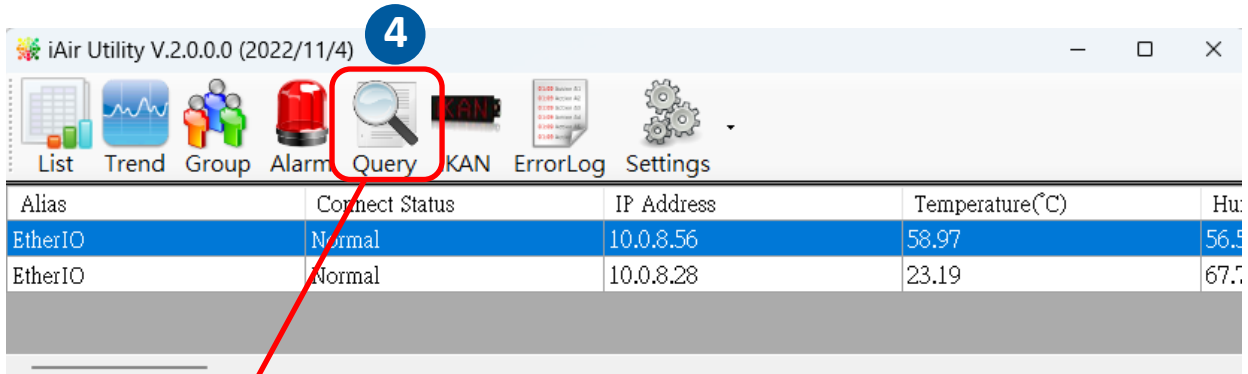
5.2. Click the **Start** button to download the data in DLW-1xxx modules.

5.3. Click the close icon to exit the download procedure when all data are downloaded.



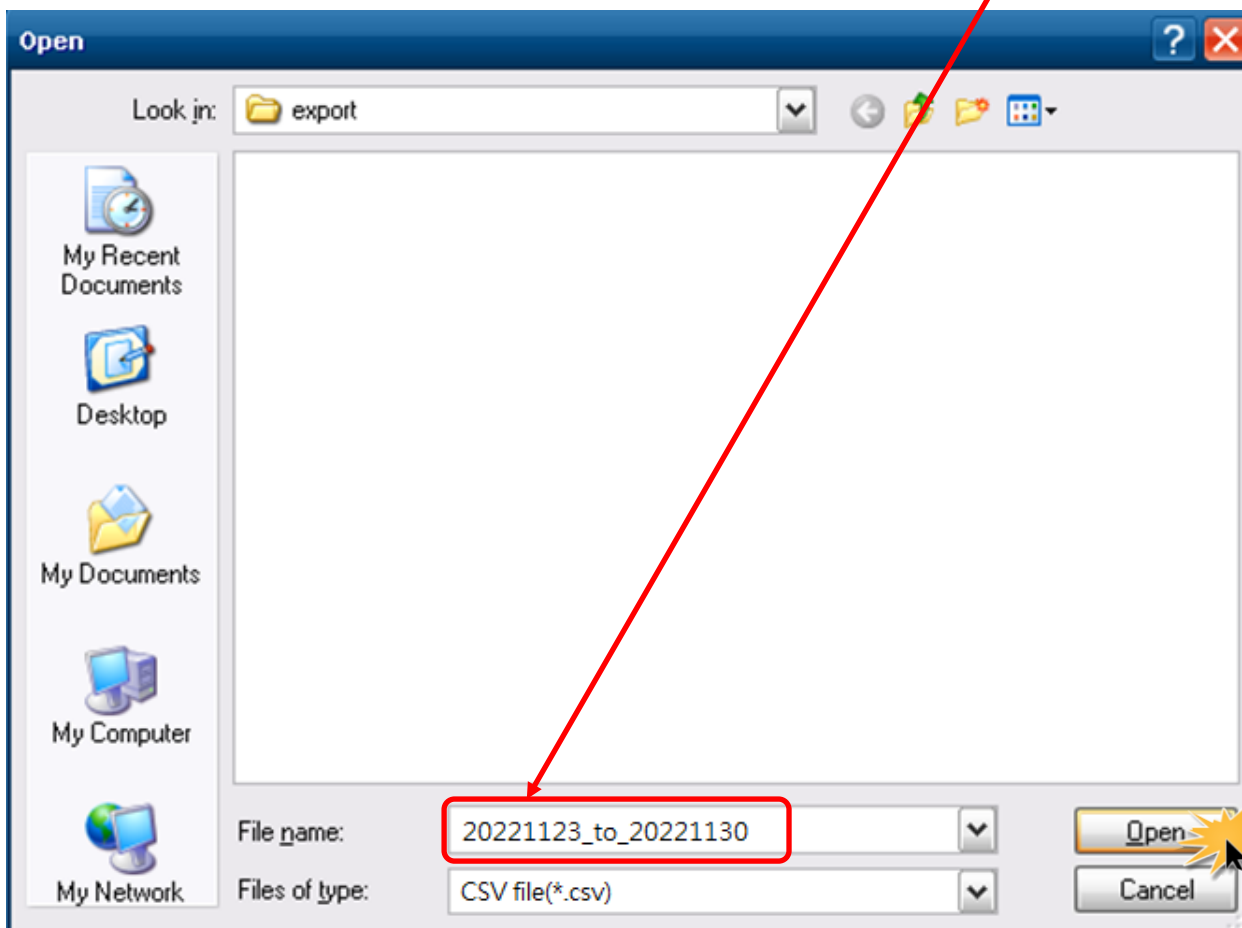
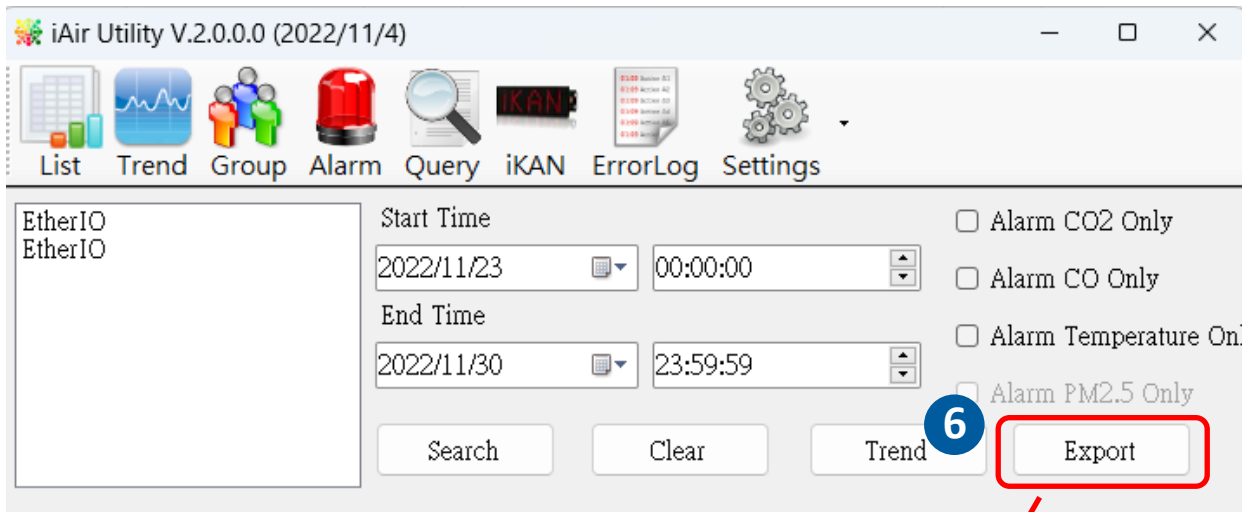
5.4. Click the **Query** icon.

5.5. Highlight the desired module, set the **Start Time** and **End Time**, and then click the **Search** button. The data in the time period will be listed as the following example.



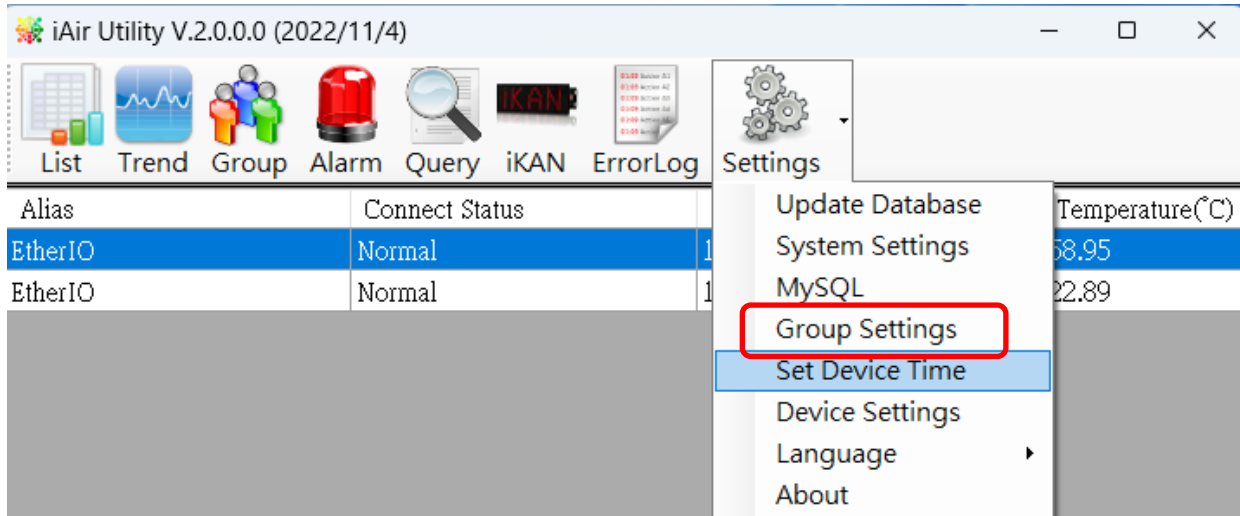
Time	Humidity	Temperature
2022/11/25 ...	67.85	23.19
2022/11/25 ...	66.72	23.42
2022/11/25 ...	67.29	23.7
2022/11/25 ...	65.07	23.92
2022/11/25 ...	64.83	24.13
2022/11/25 ...	64.34	24.32

5.6. Click the **Export** button to export the searched data in *.csv files for performing statistical analysis in Excel.

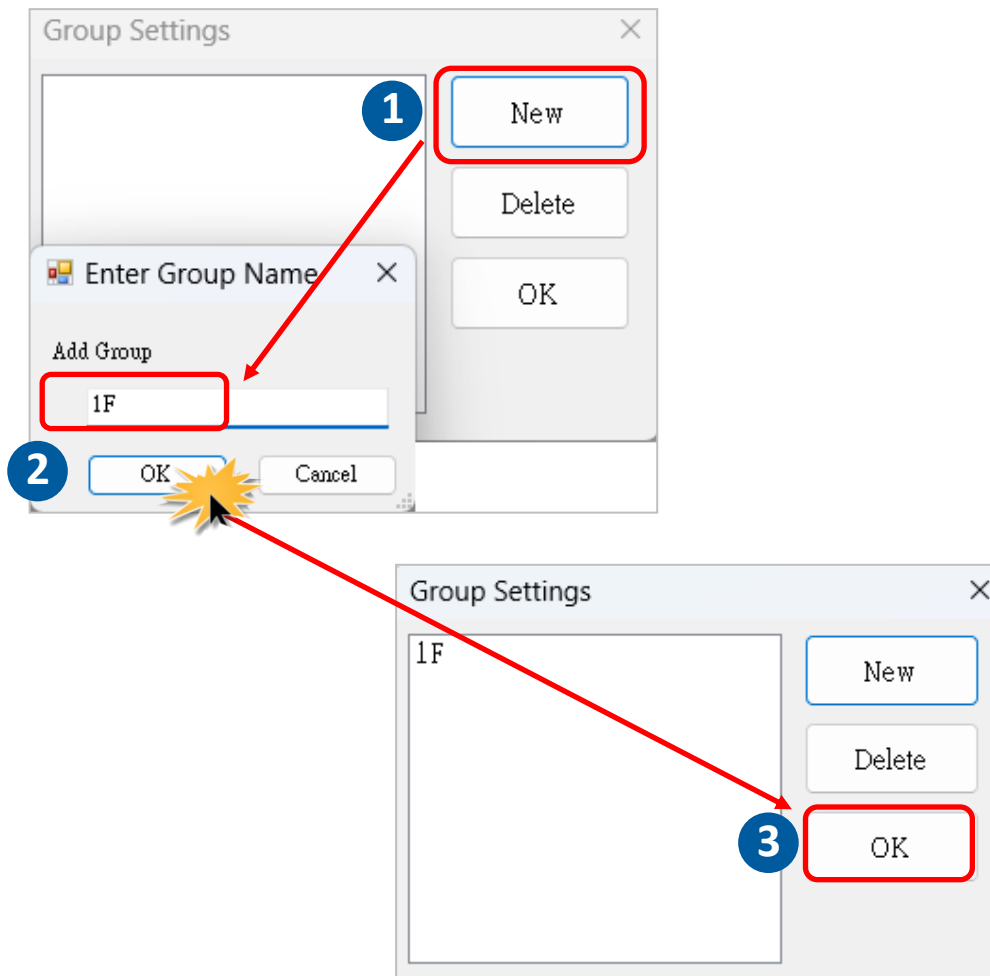


6. Group the devices by location or users

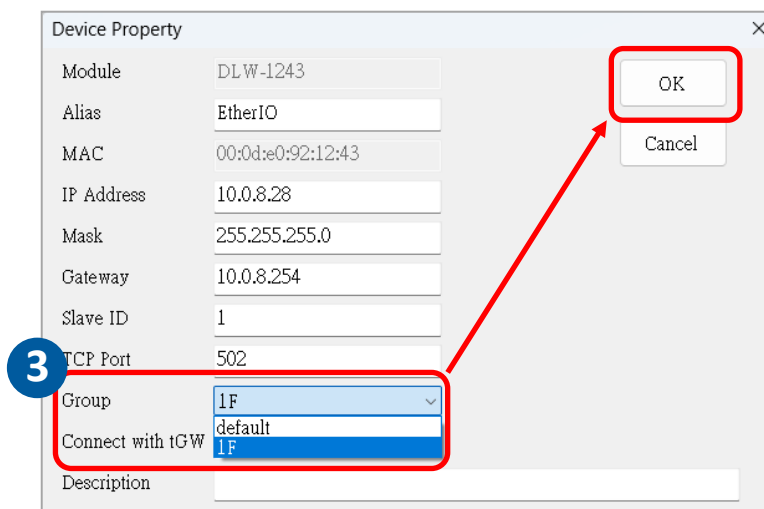
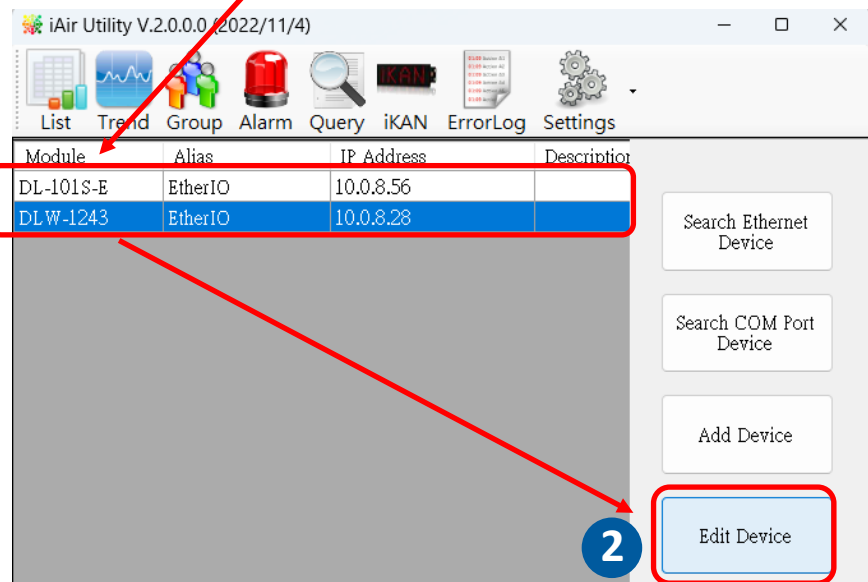
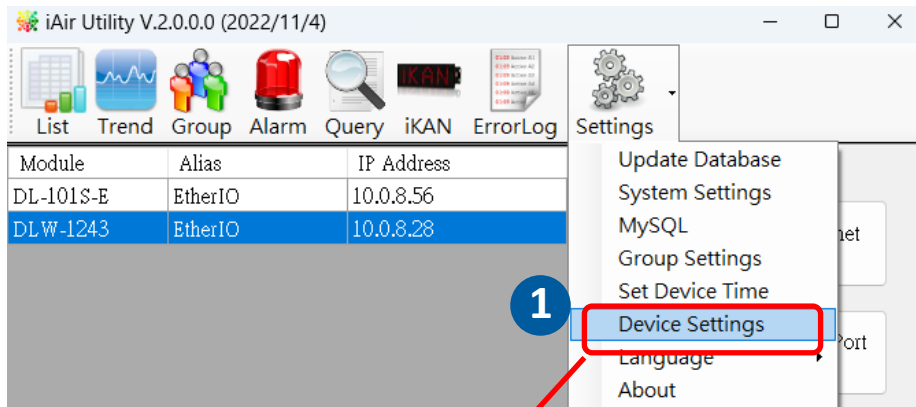
6.1. Select **Group Settings** on the Settings menu.



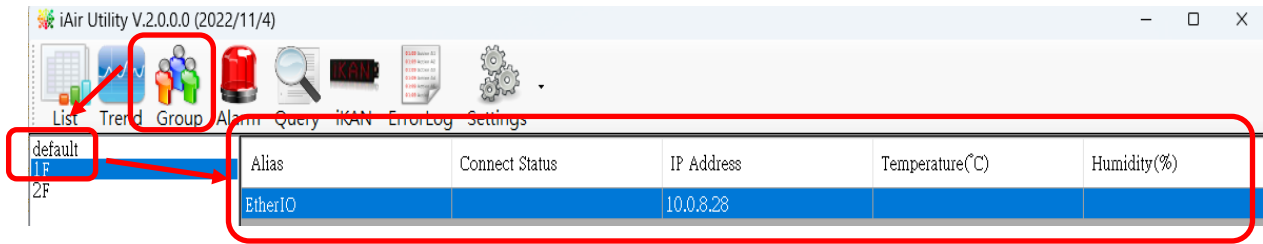
6.2 Click the **New** button, enter the group name and click the **OK** button in the pop-up box, and then click the **OK** button in the **Group Settings** box.



- 6-3. Select **Device Settings** on the Settings menu; highlight the desired device and click the **Edit Device** button, select the group name for the module and click the **OK** button in the pop-up Device Property box to complete the setting.



6-4. Monitor the group data by clicking the **Group** icon and then clicking group name.



7. FAQ

Q1: What is ABC (Automatic Baseline Correction)?

A: ABC stands for the Automatic Baseline Correction which is used to adjust a shifted baseline to the carbon dioxide level in fresh air. After the ABC function is enabled, the DLW-1xxx module will automatically adjust the lowest value measured in the environment as the average CO₂ level in the atmosphere of 400ppm.

Q2: Why I need to enable the ABC?

A: It is not recommended to enable the ABC adjustment function for daily use, unless the data distortion is monitored for a long time. When the ABC function is enabled, care must be taken that carbon dioxide cannot be continuously generated to cause the concentration to become high enough to affect the environmental background value.

Q3: Is the ABC function enabled by default?

A3: No, the ABC is disabled by default in a DLW-1xxx module to prevent the baseline from being adjusted to an incorrect value.

Q4: What to do when the ABC is no work?

A4: When the ABC is no work regarding baseline correction, the DLW-1xxx needs be returned to ICP DAS.

Q5: How to set a new password?

A5: Enter the IP address for your DLW-1xxx in the address bar of a web browser and go to the **Change Password** page, fill the current password and new password in the relevant fields and then press the **Submit** button for change password.

The password is case-sensitive, can be up to 12 characters in length, and consists of upper or lower case alphabetic (a-Z) and the numbers (0-9).

The screenshot shows the web interface for the DLW-1023 Mini Weather Station Data Logger. At the top left is the ICP DAS logo. The title is "DLW-1023 Mini Weather Station Data Logger". A navigation menu includes "Home", "Network", "MQTT", "I/O Settings", "Filter", "Monitor", "Change Password", and "Logout". The "Change Password" link is highlighted with a red box. Below the navigation is a form titled "Change Web Password" with the instruction "The length of the web password is 12 characters maximum." The form contains three input fields: "Current password", "New password", and "Confirm new password", followed by a "Submit" button. A red box highlights the entire form area, and a red arrow points from the "Change Password" link to the form. A mouse cursor is visible over the "Submit" button.

Q6: How to cancel a password?

A6: Go to the **Change Password** page, fill the current password and keep the **New password** and **Confirm new password** fields “empty”, then click the **Submit** button to complete the operation.

Q7: How to set the Accessible IP?

A7: Enter the IP address for your DLW-1xxx in the address bar of a web browser and go to the **Filter** page, select the radio button next to **Add _____.____.____.____ To The List** and fill in the IP for a device which is allowed to access the DLW-1xxx, and click **submit**.

Check the **Save to Flash** checkbox before clicking the **submit** button can store the IP settings after the power cycle. Once any IP address is stored in the list, only the device whose IP address is present in the list can access the DLW-1xxx.

Accessible IP Settings

Accessible IP List	IP Address
IP1	0.0.0.0
IP2	0.0.0.0
IP3	0.0.0.0
IP4	0.0.0.0
IP5	0.0.0.0

Add [] . [] . [] . [] To The List
 Delete IP# []
 Delete ALL
 Save to Flash

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Q8: How to delete the Accessible IP settings?

A8: On the **Filter** page, select the **Delete IP#** radio button and enter the IP number to delete it, or select the **Delete All** radio button to delete all IP settings, and then click **submit**.

Checking the **Save to Flash** checkbox before clicking the **submit** button can save the IP setting after the power cycle.

Accessible IP Settings

Accessible IP List	IP Address
IP1	0.0.0.0
IP2	0.0.0.0
IP3	0.0.0.0
IP4	0.0.0.0
IP5	0.0.0.0

Add [] . [] . [] . [] To The List
 Delete IP# []
 Delete ALL
 Save to Flash

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Q9: How to clear the data logged in a DLW-1xxx?

A9: Enter the IP address for the module in the address bar of a web browser and go to the **I/O Settings** page, click the **Reset Data Logger** button at the bottom of the page.



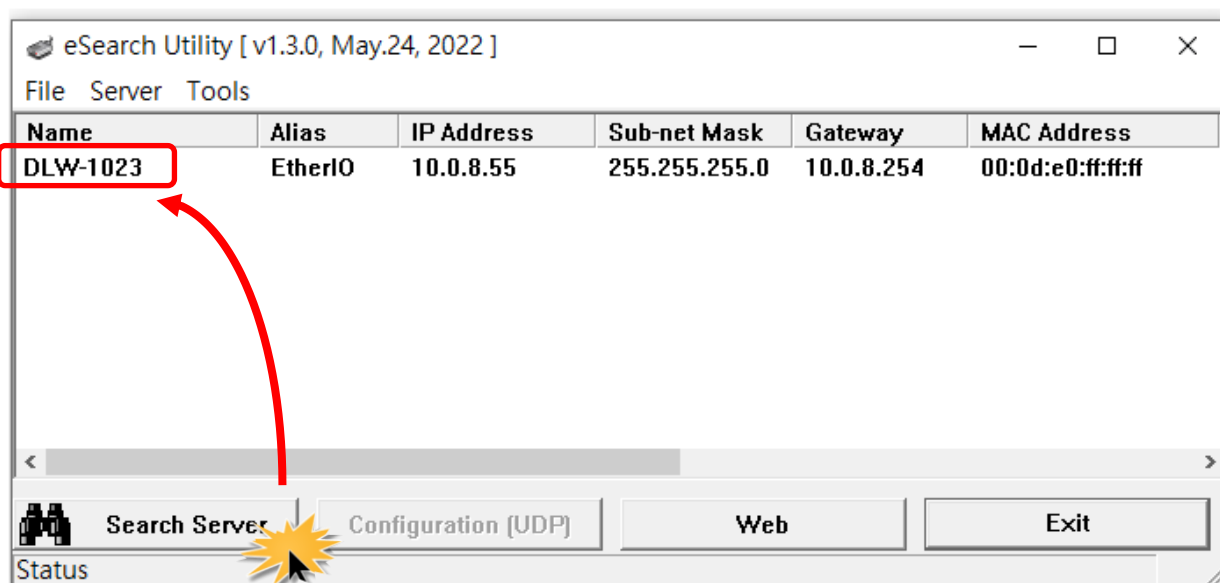
Q10: How to download firmware into a DLW-1xxx?

A10: To update the Firmware for your DLW-1xxx module, connect DLW-1xxx and PC in the same network. Note that there should be only one network card in the PC.

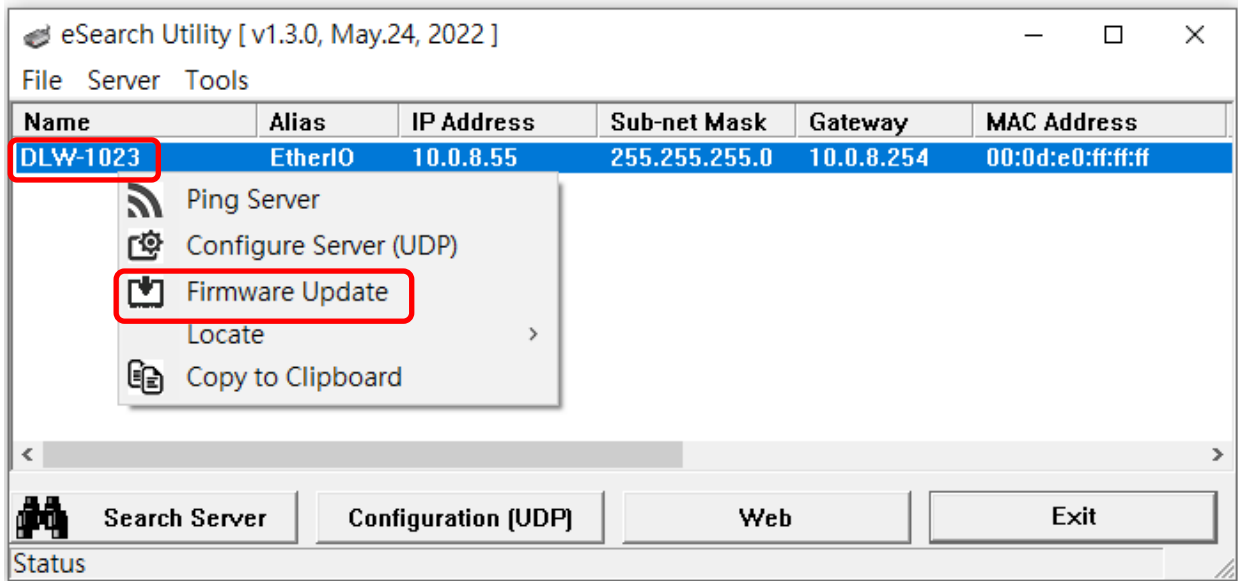
Download and install the eSearch utility.

<https://www.icpdas.com/en/download/index.php?nation=US&kw=eSearch>

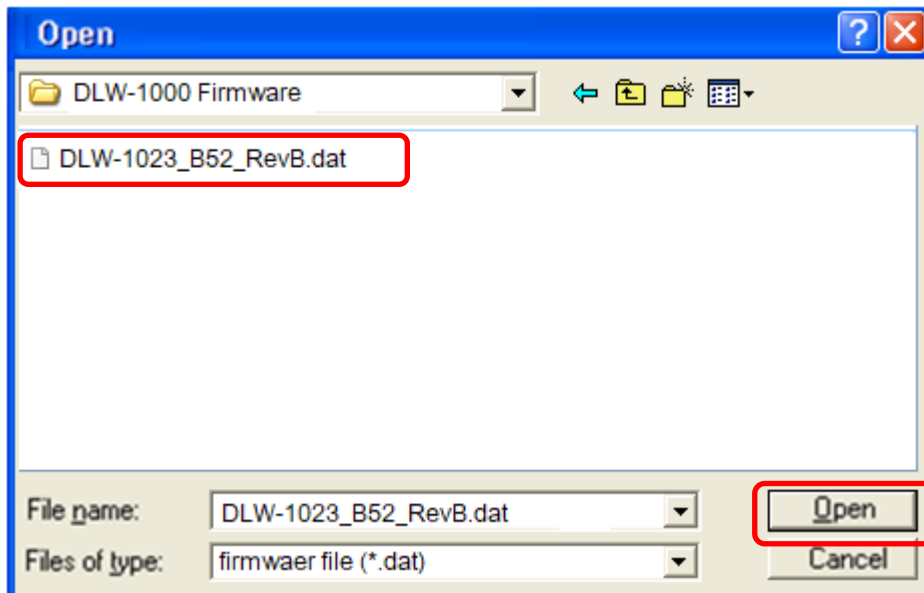
1. Run the eSearch utility. Click on the **Search Server** button and wait the model name for the DLW-1xxx module is present in the pane.



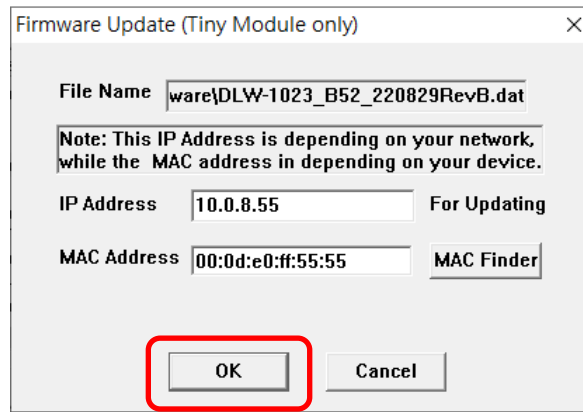
2. Right click the module name then select **Firmware Update**.



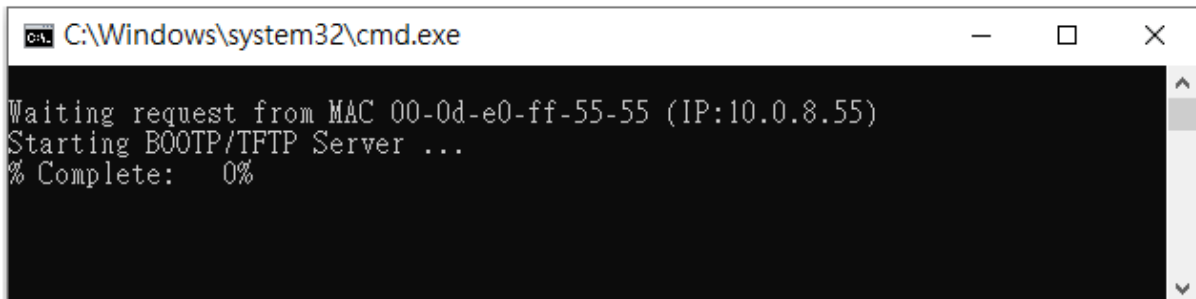
3. Select the firmware file and click the Open button.



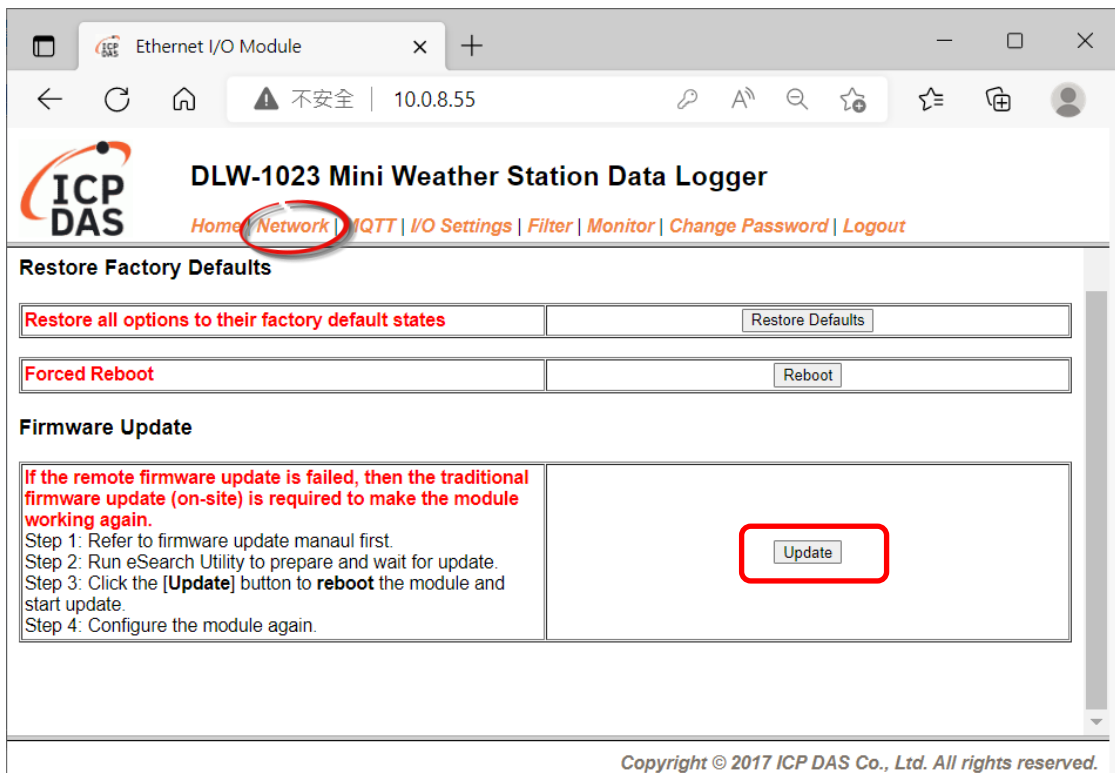
4. Make sure the IP address and MAC address are correct. Click on the OK button.



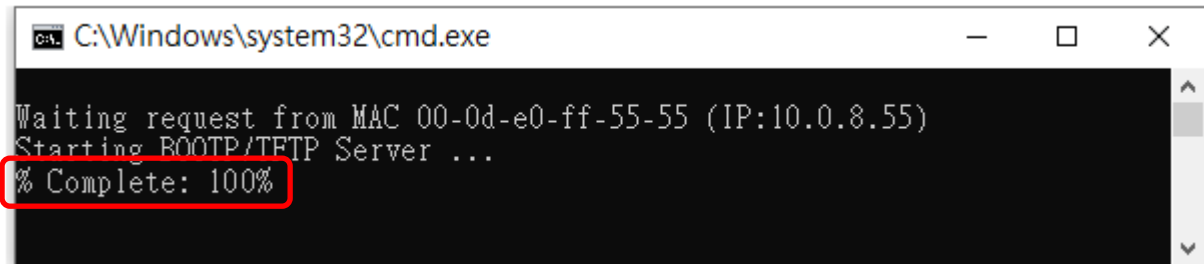
A command prompt window will be displayed to show the progress.



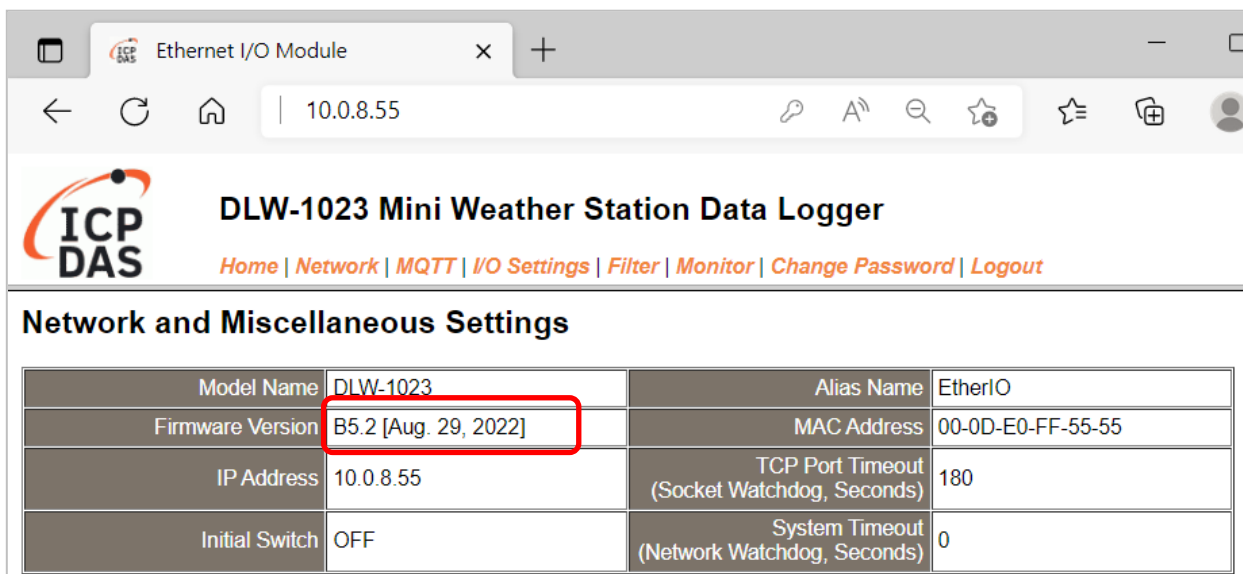
5. Log in to the DLW-1xxx web interface. Click the **Update** button in the **Firmware Update** section on the Network page.



When “% Complete: 100%” is shown in the command prompt window, the update is finished. You can close the window.



6. Refresh the DLW-1xxx web page and check the firmware version.



Appendix A: DCON Command Sets

The DCON protocol consists of commands sent by a PC host and responses transmitted by a remote I/O module. Each module has a unique ID number that is used for addressing purposes. The DCON commands start with a delimiter character, followed by a 2-character module ID (hexadecimal), the command characters, and end with a CR character.

DCON Format	Delimiter	Module ID	Command	[CHKSUM]	CR
Example	\$	01	I	-	[CR]

Only the addressed module will execute the command and response the result. The format of a response string is similar to a command. It starts with a delimiter character, followed by a 2-character module address (hexadecimal), the requested data, and end with a CR character.

Response	Delimiter	Module ID	Data	[CHKSUM]	CR
Example	!	01	0	-	[CR]

Delimiter: define the type of command or response. Commonly used characters include “~”, “\$”, “@”, “%”, “!”, “?” and “>”.

Module ID: the RS-485 address of the DLW-1xxx module.

Command/Response: varies depending on the definition of each command.

CHKSUM: A 2-character hexadecimal checksum code. If checksum is disabled, there is no need to add the CHKSUM.

The letters of checksum are limited to uppercase letters. Checksum is calculated with sum of the ASCII code of all the characters (except [CR]) in a command or response string, and then perform a masking operation on the sum with 0xFFh. It can be said to only take the last two characters.

Take the “\$012(CR)” command as an example:

1. Sum of the ASCII code of each character in the string
= “\$” + “0” + “1” + “2” = 24h + 30h + 31h + 32h = B7h
2. The checksum is B7h, that is, [CHKSUM] = “B7”
3. Command string with [CHKSUM] = \$012B7(CR)

A-1. DLW-1023 DCON Command Sets

Command	Description
\$AAF	Reads firmware version
\$AAI	Reads INIT status Response: !AA0 -> INIT dip switch is in the 'OFF' position !AA1 -> INIT dip switch is in the 'ON' position
\$AAM	Reads module name
\$AAP	Reads Modbus RTU/DCON protocol Response: !AA0 -> DCON !AA1 -> Modbus RTU
\$AAPN	Sets Modbus RTU/DCON protocol N-> 0: DCON, 1: Modbus RTU
\$AA2	Reads configuration
\$AA5	Reads reset status !AA1: first read after power on, !AA0: others
#AA	Reads all analog inputs Response: >(wind speed in 0.01 m/s) (wind direction in degree) (air pressure in 0.1hPa) (CO in ppm) (CO ₂ in ppm) (PM2.5 in 1 ug/m ³) (relative humidity in 0.01%) (temperature in 0.01°C) (temperature in 0.01°F) (dew point temperature in 0.01°C) (dew point temperature in 0.01°F) (PM1.0 in 1 ug/m ³) (PM10 in 1 ug/m ³) (particle count 0.3 - 0.5um) (particle count 0.5 - 1.0um) (particle count 1.0 - 2.5um) (particle count 2.5 - 5.0um) (particle count 5.0 - 7.5um) (particle count 7.5 - 10um) (ambient light in lux) (altitude in 0.1m)
#AANN	Reads Channel Analog Input, NN= 0 to 20 in 2-digit hex format NN= 00 for wind speed in 0.01m/s, 01 for wind direction in degree, 02 for air pressure in 0.1hPa, 03 for CO in ppm, 04 for CO ₂ in ppm, 05 for PM2.5 in 1 ug/m ³ , 06 for relative humidity in 0.01%,

	<p>07 for temperature in 0.01°C, 08 for temperature in 0.01°F, 09 for dew point temperature in 0.01°C, 0A for dew point temperature in 0.01°F, 0B for PM1.0 in 1 ug/m3, 0C for PM10 in 1 ug/m3, 0D for particle count 0.3 - 0.5um, 0E for particle count 0.5 - 1.0um, 0F for particle count 1.0 - 2.5um, 10 for particle count 2.5 - 5.0um, 11 for particle count 5.0 - 7.5um, 12 for particle count 7.5 - 10um, 13 for ambient light in lux, 14 for altitude in 0.1m.</p>																				
%AANNTTCCFF	<p>Sets configuration AA : current address, NN: new address, TT : 00, CC: new baud rate</p> <p>Bits 5:0 Baud rate, 0x03 ~ 0x0A</p> <table border="1" data-bbox="571 1167 1163 1402"> <thead> <tr> <th>Code</th> <th>Baud rate</th> <th>Code</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr> <td>0x03</td> <td>1200</td> <td>0x07</td> <td>19200</td> </tr> <tr> <td>0x04</td> <td>2400</td> <td>0x08</td> <td>38400</td> </tr> <tr> <td>0x05</td> <td>4800</td> <td>0x09</td> <td>57600</td> </tr> <tr> <td>0x06</td> <td>9600</td> <td>0x0A</td> <td>115200</td> </tr> </tbody> </table> <p>Bits 7:6 00: no parity, 1 stop bit 01: no parity, 2 stop bits 10: even parity, 1 stop bit 11: odd parity, 1 stop bit</p> <p>FF: data format Bit 6 0: checksum disabled, 1: checksum enabled</p>	Code	Baud rate	Code	Baud rate	0x03	1200	0x07	19200	0x04	2400	0x08	38400	0x05	4800	0x09	57600	0x06	9600	0x0A	115200
Code	Baud rate	Code	Baud rate																		
0x03	1200	0x07	19200																		
0x04	2400	0x08	38400																		
0x05	4800	0x09	57600																		
0x06	9600	0x0A	115200																		

Command	Description
@AAABC	Reads status of the automatic baseline correction Response: !AAN, N=0: disabled, 1: enabled
@AAABCN	Sets the automatic baseline correction N->0: disabled, 1: enabled
@AAAO	Reads altitude offset
@AAAO(data)	Sets altitude offset, data in format of -1000.0. ~ +1000.0
@AACH	Clears all high latched analog inputs to the current values
@AACHNN	Clears channel high latched analog input to the current value, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AACHCNN	Clears high latched alarm of a channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AACL	Clears all low latched analog inputs to the current values
@AACLNN	Clears channel low latched analog input to the current value, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AACLCNN	Clears low latched alarm of a channel, NN = 1 to 20 in 2-digit hex format ^{*1} .
@AADACNN	Disables AI alarm of a channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AADI	Reads DO Response: !AA0000, O: 0 ~ F, DO value in hex format
@AADLB	Reads the start time for period logging mode Response: !AAyyyymmddhhmmss
@AADLByyyymmddhhmmss	Sets the start time for period logging mode yyyy: year, 2000 to 2199, mm: month, 01 to 12, dd: date, 01 to 31, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLC	Reads the data log mode Response !AAh, 0: stop, 1: run, 2: run in period mode
@AADLCh	Sets the data log mode, h->0: stop, 1: run, 2: run in period mode
@AADLE	Reads the end time for period logging mode Response: !AAyyyymmddhhmmss

Command	Description
@AADLEyyyymmdd dhmmss	Sets the end time for period logging mode yyyy: year, 2000 to 2199, mm: month, 01 to 12, dd: date, 01 to 31, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLN	Reads the number of log records in the module Response !AAhhhhhhh, hhhhhhh in hex format
@AADLO	Reads the overwrite mode for whether to overwrite existing data when the storage space is full. Response !AAh, 0: stop logging when full, 1: overwrite
@AADLOh	Sets the overwriting mode when the storage space is full h->0: stop logging when full, 1: overwrite
@AADLP	Reads the time interval for recording data Response !AAhmmss, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLPhmmss	Sets the time interval for recording data
@AADLS	Reads logging status of the data logger Response !AAhh, hh in hex format, 00: stopped, 01: running, others: error
@AADO0V	Sets DO, V-> 0 ~ F DO value in hex format, bit 0 for DO0, bit 1 for DO1, etc
@AAEATCNN	Enables AI alarm of a channel, NN = 0 to 20 in 2-digit hex format ^{*1} . T -> M: momentary alarm, L: latched alarm
@AAHI(data)CNN	Sets high alarm limit of an AI channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AAHO	Reads humidity offset
@AAHO(data)	Sets humidity offset, data in format of -100.00 ~ +100.00
@AALO(data)CNN	Sets low alarm limit of an AI channel, NN = 1 to 20 in 2-digit hex format ^{*1} .
@AALO	Reads ambient light offset
@AALO(data)	Sets ambient light offset, data in format of -010000 ~ +010000

Command	Description
@AAPO	Reads PM2.5 offset
@AAPO(data)	Sets PM2.5 offset, data in format of -00100. ~ +00100.
@AAP1O	Reads PM1.0 offset
@AAP1O(data)	Sets PM1.0 offset, data in format of -00100. ~ +00100.
@AAP10O	Reads PM10 offset
@AAP10O(data)	Sets PM10 offset, data in format of -00100. ~ +00100.
@AAPSO	Reads air pressure offset
@AAPSO(data)	Sets air pressure offset, data in format of -1000.0 ~ +1000.0
@AARACNN	Reads AI alarm enabled/disabled status of one AI channel, NN = 0 to 20 in 2-digit hex format ^{*1} . Response !AAN, N -> 0: disabled, 1: momentary, 2: latched
@AARAO	Reads AI alarm status Response !AAHHHHHLLLLLL
@AARH	Reads high latched values of all analog input channels
@AARHNN	Reads high latched value of one AI channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AARHCNN	Reads high alarm limit of one AI channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AARL	Reads low latched values of all analog input channels
@AARLNN	Reads low latched value of one AI channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AARLCNN	Reads low alarm limit of one AI channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AART	Reads RTC data Response !AAYYMMDDHHMMSS
@AARTYYMMDD HHMMSS	Sets RTC data
@AASP	Reads sea level pressure
@AASP(data)	Sets sea level pressure, data in format of 0800.00 ~ 1260.00, not saved to nonvolatile memory.

Command	Description
@AASPS	Saves sea level pressure to nonvolatile memory
@AATO	Reads temperature offset in 0.01°C
@AATO(data)	Sets temperature offset in 0.01°C, -100.00 ~ +100.00
@AAWDO	Reads wind direction offset in degree
@AAWDO(data)	Sets wind direction offset in degree, -00360. ~ +00360.
@AAWSO	Reads wind speed offset in 0.01m/s
@AAWSO(data)	Sets wind speed offset in 0.01m/s, -100.00 ~ +100.00
~**	Clears host watchdog timeout counter
~AA0	Reads host watchdog status
~AA1	Clears host watchdog timeout status
~AA2	Reads host watchdog enable/disable status and timeout value
~AA3ETT	Enables/disables host watchdog and set timeout value E-> 0: disable host watchdog, 1: enable host watchdog TT: host watchdog timeout in 0.1s in hex format
~AA4	Reads DO power on and safe value
~AA50P0S	Sets DO power on and safe value P-> 0 ~ F: power on value in hex format S-> 0 ~ F: safe value in hex format
~AARD	Reads response delay time in ms in hex format
~AARDVV	Sets response delay time in ms, VV in hex format, 00 - 1E
*1: NN = 0 to 20 in 2-digit hex format, Note that channels 0, 3, 4, 5, 11, 12, 13, 14, 15, 16, 17 and 18 are not available to low alarm.	
00 for wind speed in 0.01m/s, 01 for wind direction in degree, 02 for air pressure in 0.1hPa, 03 for CO in ppm, 04 for CO ₂ in ppm, 05 for PM2.5 in 1 ug/m ³ , 06 for relative humidity in 0.01%, 07 for temperature in 0.01°C, 08 for temperature in 0.01°F, 09 for dew point temperature in 0.01°C, 0A for dew point temperature in 0.01°F	0B for PM1.0 in 1 ug/m ³ , 0C for PM10 in 1 ug/m ³ , 0D for particle count 0.3 - 0.5um, 0E for particle count 0.5 - 1.0um, 0F for particle count 1.0 - 2.5um, 10 for particle count 2.5 - 5.0um, 11 for particle count 5.0 - 7.5um, 12 for particle count 7.5 - 10um, 13 for ambient light in lux, 14 for altitude in 0.1m.

A-2. DLW-1100 DCON Command Sets

Command	Description
\$AAF	Reads firmware version
\$AAI	Reads INIT status Response: !AA0 -> INIT dip switch is in the 'OFF' position !AA1 -> INIT dip switch is in the 'ON' position
\$AAM	Reads module name
\$AAP	Reads Modbus RTU/DCON protocol Response: !AA0 -> DCON !AA1 -> Modbus RTU
\$AAPN	Sets Modbus RTU/DCON protocol N-> 0: DCON, 1: Modbus RTU
\$AA2	Reads configuration
\$AA5	Reads reset status !AA1: first after power on, !AA0: others
#AA	Reads all analog inputs Response: >(wind speed in 0.01 m/s) (wind direction in degree) (air pressure in 0.1hPa) (precipitation intensity in 0.01mm/h) (accumulated precipitation in 0.1mm) (relative humidity in 0.01%) (temperature in 0.01°C) (temperature in 0.01°F) (dew point temperature in 0.01°C) (dew point temperature in 0.01°F) (ambient light in lux) (altitude in 0.1m)
#AAN	Reads Channel Analog Input, N= 0 to 11 in hex format N= 0 for wind speed in 0.01m/s, 1 for wind direction in degree, 2 for air pressure in 0.1hPa, 3 for precipitation intensity in 0.01mm/h, 4 for accumulated precipitation in 0.1m, 5 for relative humidity in 0.01%, 6 for temperature in 0.01°C, 7 for temperature in 0.01°F, 8 for dew point temperature in 0.01°C, 9 for dew point temperature in 0.01°F,

	A for ambient light in lux, B for altitude in 0.1m,																				
%AANNTTCCFF	Sets configuration AA : current address, NN: new address, TT : 00, CC: new baud rate Bits 5:0 Baud rate, 0x03 ~ 0x0A <table border="1"> <thead> <tr> <th>Code</th> <th>Baud rate</th> <th>Code</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr> <td>0x03</td> <td>1200</td> <td>0x07</td> <td>19200</td> </tr> <tr> <td>0x04</td> <td>2400</td> <td>0x08</td> <td>38400</td> </tr> <tr> <td>0x05</td> <td>4800</td> <td>0x09</td> <td>57600</td> </tr> <tr> <td>0x06</td> <td>9600</td> <td>0x0A</td> <td>115200</td> </tr> </tbody> </table> Bits 7:6 00: no parity, 1 stop bit 01: no parity, 2 stop bits 10: even parity, 1 stop bit 11: odd parity, 1 stop bit FF: data format Bit 6 0: checksum disabled, 1: checksum enabled	Code	Baud rate	Code	Baud rate	0x03	1200	0x07	19200	0x04	2400	0x08	38400	0x05	4800	0x09	57600	0x06	9600	0x0A	115200
Code	Baud rate	Code	Baud rate																		
0x03	1200	0x07	19200																		
0x04	2400	0x08	38400																		
0x05	4800	0x09	57600																		
0x06	9600	0x0A	115200																		
@AAAO	Reads altitude offset																				
@AAAO(data)	Sets altitude offset, data in format of -1000.0 ~ +1000.0																				
@AACH	Clears all high latched analog inputs to the current values																				
@AACHN	Clears channel high latched analog input to the current value, N = 0 to 11 in hex format ^{*1} .																				
@AACHCN	Clears high latched alarm of a channel, N = 0 to 11 in hex format ^{*1} .																				
@AACL	Clears all low latched analog inputs to the current values																				
@AACLN	Clears channel low latched analog input to the current value, N = 0 to 11 in hex format ^{*1} .																				
@AACL CN	Clears low latched alarm of a channel, N = 1 to 11 in hex format ^{*1} .																				
@AADACN	Disables AI alarm of a channel, N = 0 to 11 in hex format ^{*1} .																				
@AADI	Reads DO Response: !AA00O00, O: 0 ~ F, DO value in hex format																				

Command	Description
@AADLB	Reads the start time for period logging mode Response: !AAyyyymmddhhmmss
@AADLByyyymmddhhmmss	Sets the start time for period logging mode yyyy: year, 2000 to 2199, mm: month, 01 to 12, dd: date, 01 to 31, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLC	Reads the data log mode Response !AAh, 0: stop, 1: run, 2: run in period mode
@AADLCh	Sets the data log mode, h-> 0: stop, 1: run, 2: run in period mode
@AADLE	Reads the end time for period logging mode Response: !AAyyyymmddhhmmss
@AADLEyyyymmddhhmmss	Sets the end time for period logging mode yyyy: year, 2000 to 2199, mm: month, 01 to 12, dd: date, 01 to 31, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLN	Reads the number of log records in the module Response !AAhhhhhhhh, hhhhhhhh in hex format
@AADLO	Reads the overwrite mode for whether to overwrite existing data when the storage space is full. Response !AAh, 0: stop logging when full, 1: overwrite
@AADLOh	Sets the overwriting mode when the storage space is full h->0: stop logging when full, 1: overwrite
@AADLP	Reads the time interval for recording data Response !AAhhmmss, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLPhmmss	Sets the time interval for recording data
@AADLS	Reads logging status of the module Response !AAhh, hh in hex format, 00: stopped, 01: running, others: error

Command	Description
@AADO0V	Sets DO, V-> 0 ~ F DO value in hex format, bit 0 for DO0, bit 1 for DO1 and so on.
@AAEATCN	Enables AI alarm of a channel, N = 0 to 11 in hex format ^{*1} . T -> M: momentary alarm, L: latched alarm
@AAHI(data)CN	Sets high alarm limit of an AI channel, N = 0 to 11 in hex format ^{*1} .
@AAHO	Reads humidity offset
@AAHO(data)	Sets humidity offset, data in format of -100.00 ~ +100.00
@AALO(data)CN	Sets low alarm limit of an AI channel, N = 1 to 11 in hex format ^{*1} .
@AALO	Reads ambient light offset
@AALO(data)	Sets ambient light offset, data in format of -010000 ~ +010000
@AAPAO	Reads accumulated precipitation offset
@AAPAO(data)	Sets accumulated precipitation offset, data in format of -1000.0 ~ +1000.0
@AAPIO	Reads precipitation intensity offset
@AAPIO(data)	Sets precipitation intensity offset, data in format of -100.00 ~ +100.00
@AAPSO	Reads air pressure offset
@AAPSO(data)	Sets air pressure offset, data in format of -1000.0 ~ +1000.0
@AARACN	Reads AI alarm enabled/disabled status of a channel, N = 0 to 11 in hex format ^{*1} . Response !AAN, N -> 0: disabled, 1: momentary, 2: latched
@AARAO	Reads AI alarm status Response !AAHHHHHLLLLLL
@AARH	Reads high latched values of all analog input channels
@AARHN	Reads high latched value of an analog input channel, N = 0 to 11 in hex format ^{*1} .
@AARHCN	Reads high alarm limit of an analog input channel, N = 0 to 11 in hex format ^{*1} .
@AARL	Reads low latched values of all analog input channels
@AARLN	Reads low latched value of an analog input channel, N = 0 to 11 in hex format ^{*1} .

Command	Description
@AARLCN	Reads low alarm limit of an analog input channel, N = 0 to 11 in hex format ^{*1} .
@AART	Reads RTC data Response !AAYMMDDHHMMSS
@AARTYYMMDD HHMMSS	Sets RTC data
@AASP	Reads sea level pressure
@AASP(data)	Sets sea level pressure, data in format of 0800.00 ~ 1260.00, not saved to nonvolatile memory.
@AASPS	Saves sea level pressure to nonvolatile memory
@AATO	Reads temperature offset in 0.01°C
@AATO(data)	Sets temperature offset in 0.01°C, -100.00 ~ +100.00
@AAWDO	Reads wind direction offset in degree
@AAWDO(data)	Sets wind direction offset in degree, -00360. ~ +00360.
@AAWSO	Reads wind speed offset in 0.01m/s
@AAWSO(data)	Sets wind speed offset in 0.01m/s, -100.00 ~ +100.00
~**	Clears host watchdog timeout counter
~AA0	Reads host watchdog status
~AA1	Clears host watchdog timeout status
~AA2	Reads host watchdog enable/disable status and timeout value
~AA3ETT	Enables/disables host watchdog and set timeout value E-> 0: disable host watchdog, 1: enable host watchdog TT: host watchdog timeout in 0.1s in hex format
~AA4	Reads DO power on and safe value
~AA50P0S	Sets DO power on and safe value P-> 0 ~ F: power on value in hex format S-> 0 ~ F: safe value in hex format
~AARD	Reads response delay time in ms in hex format
~AARDVV	Sets response delay time in ms, VV in hex format, 00 - 1E

***1:** N = 0 to 11 in hex format, **Note that channel 0, 3 and 4 are not available to low alarm.**

- 0 for wind speed in 0.01m/s,
- 1 for wind direction in degree,
- 2 for air pressure in 0.1hPa,
- 3 for precipitation intensity in 0.01mm/h,
- 4 for accumulated precipitation in 0.1m,
- 5 for relative humidity in 0.01%,
- 6 for temperature in 0.01°C,
- 7 for temperature in 0.01°F,
- 8 for dew point temperature in 0.01°C,
- 9 for dew point temperature in 0.01°F,
- A for ambient light in lux,
- B for altitude in 0.1m.

A-3. DLW-1120 DCON Command Sets

Command	Description
\$AAF	Reads firmware version
\$AAI	Reads INIT status Response: !AA0 -> INIT dip switch is in the 'OFF' position !AA1 -> INIT dip switch is in the 'ON' position
\$AAM	Reads module name
\$AAP	Reads Modbus RTU/DCON protocol Response: !AA0 -> DCON !AA1 -> Modbus RTU
\$AAPN	Sets Modbus RTU/DCON protocol N-> 0: DCON, 1: Modbus RTU
\$AA2	Reads configuration
\$AA5	Reads reset status !AA1: first after power on, !AA0: others
#AA	Reads all analog inputs Response: >(wind speed in 0.01 m/s) (wind direction in degree) (air pressure in 0.1hPa) (precipitation intensity in 0.01mm/h) (accumulated precipitation in 0.1mm) (PM2.5 in 1 ug/m ³) (relative humidity in 0.01%) (temperature in 0.01°C) (temperature in 0.01°F) (dew point temperature in 0.01°C) (dew point temperature in 0.01°F) (PM1.0 in 1 ug/m ³) (PM10 in 1 ug/m ³) (particle count 0.3 - 0.5um) (particle count 0.5 - 1.0um) (particle count 1.0 - 2.5um) (particle count 2.5 - 5.0um) (particle count 5.0 - 7.5um) (particle count 7.5 - 10um) (ambient light in lux) (altitude in 0.1m)
#AANN	Reads Channel Analog Input, N= 0 to 20 in 2-digit hex format ^{*1} NN= 00 for wind speed in 0.01m/s, 01 for wind direction in degree, 02 for air pressure in 0.1hPa, 03 for precipitation intensity in 0.01mm/h, 04 for accumulated precipitation in 0.1m, 05 for PM2.5 in 1 ug/m ³ ,

	<p>06 for relative humidity in 0.01%, 07 for temperature in 0.01°C, 08 for temperature in 0.01°F, 09 for dew point temperature in 0.01°C, 0A for dew point temperature in 0.01°F, 0B for PM1.0 in 1 ug/m3, 0C for PM10 in 1 ug/m3, 0D for particle count 0.3 - 0.5um, 0E for particle count 0.5 - 1.0um, 0F for particle count 1.0 - 2.5um, 10 for particle count 2.5 - 5.0um, 11 for particle count 5.0 - 7.5um, 12 for particle count 7.5 - 10um, 13 for ambient light in lux, 14 for altitude in 0.1m.</p>																				
%AANNTTCCFF	<p>Sets configuration AA : current address, NN: new address, TT : 00, CC: new baud rate Bits 5:0 Baud rate, 0x03 ~ 0x0A</p> <table border="1"> <thead> <tr> <th>Code</th> <th>Baud rate</th> <th>Code</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr> <td>0x03</td> <td>1200</td> <td>0x07</td> <td>19200</td> </tr> <tr> <td>0x04</td> <td>2400</td> <td>0x08</td> <td>38400</td> </tr> <tr> <td>0x05</td> <td>4800</td> <td>0x09</td> <td>57600</td> </tr> <tr> <td>0x06</td> <td>9600</td> <td>0x0A</td> <td>115200</td> </tr> </tbody> </table> <p>Bits 7:6 00: no parity, 1 stop bit 01: no parity, 2 stop bits 10: even parity, 1 stop bit 11: odd parity, 1 stop bit FF: data format Bit 6 0: checksum disabled, 1: checksum enabled</p>	Code	Baud rate	Code	Baud rate	0x03	1200	0x07	19200	0x04	2400	0x08	38400	0x05	4800	0x09	57600	0x06	9600	0x0A	115200
Code	Baud rate	Code	Baud rate																		
0x03	1200	0x07	19200																		
0x04	2400	0x08	38400																		
0x05	4800	0x09	57600																		
0x06	9600	0x0A	115200																		
@AAAO	Reads altitude offset																				
@AAAO(data)	Sets altitude offset, data in format of -1000.0 ~ +1000.0																				

Command	Description
@AACH	Clears all high latched analog inputs to the current values
@AACHNN	Clears channel high latched analog input to the current value, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AACHCNN	Clears high latched alarm of a channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AACL	Clears all low latched analog inputs to the current values
@AACLNN	Clears channel low latched analog input to the current value, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AACLCNN	Clears low latched alarm of a channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AADACNN	Disables AI alarm of a channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AADI	Reads DO Response: !AA0000, O: 0 ~ F, DO value in hex format
@AADLB	Reads the start time for period logging mode Response: !AAyyyymmddhhmmss
@AADLByyyyymmddhhmmss	Sets the start time for period logging mode yyyy: year, 2000 to 2199, mm: month, 01 to 12, dd: date, 01 to 31, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLC	Reads the data log mode Response !AAh, 0: stop, 1: run, 2: run in period mode
@AADLCh	Sets the data log mode, h-> 0: stop, 1: run, 2: run in period mode
@AADLE	Reads the end time for period logging mode Response: !AAyyyymmddhhmmss
@AADLEyyyymmddhhmmss	Sets the end time for period logging mode yyyy: year, 2000 to 2199, mm: month, 01 to 12, dd: date, 01 to 31, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLN	Reads the number of log records in the module Response !AAhhhhhhhh, hhhhhhhh in hex format

Command	Description
@AADLO	Reads the overwrite mode for whether to overwrite existing data when the storage space is full. Response !AAh, 0: stop logging when full, 1: overwrite
@AADLOh	Sets the overwriting mode when the storage space is full h->0: stop logging when full, 1: overwrite
@AADLP	Reads the time interval for recording data Response !AAhmmss, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLPhmmss	Sets the time interval for recording data
@AADLS	Reads logging status of the module Response !AAhh, hh in hex format, 00: stopped, 01: running, others: error
@AADO0V	Sets DO, V-> 0 ~ F DO value in hex format, bit 0 for DO0, bit 1 for DO1 and so on.
@AAEATCNN	Enables AI alarm of a channel, NN = 0 to 20 in 2-digit hex format ^{*1} . T -> M: momentary alarm, L: latched alarm
@AAHI(data)CNN	Sets high alarm limit of an AI channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AAHO	Reads humidity offset
@AAHO(data)	Sets humidity offset, data in format of -100.00 ~ +100.00
@AALO(data)CNN	Sets low alarm limit of an AI channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AALO	Reads ambient light offset
@AALO(data)	Sets ambient light offset, data in format of -010000 ~ +010000
@AAPO	Reads PM2.5 offset
@AAPO(data)	Sets PM2.5 offset, data in format of -00100. ~ +00100.
@AAP1O	Reads PM1.0 offset
@AAP1O(data)	Sets PM1.0 offset, data in format of -00100. ~ +00100.
@AAP1OO	Reads PM10 offset

Command	Description
@AAP10O(data)	Sets PM10 offset, data in format of -00100. ~ +00100.
@AAPAO	Reads accumulated precipitation offset
@AAPAO(data)	Sets accumulated precipitation offset, data in format of -1000.0 ~ +1000.0
@AAPIO	Reads precipitation intensity offset
@AAPIO(data)	Sets precipitation intensity offset, data in format of -100.00 ~ +100.00
@AAPSO	Reads air pressure offset
@AAPSO(data)	Sets air pressure offset, data in format of -1000.0 ~ +1000.0
@AARACNN	Reads AI alarm enabled/disabled status of a channel, NN = 0 to 20 in 2-digit hex format ^{*1} . Response !AAN, N -> 0: disabled, 1: momentary, 2: latched
@AARAO	Reads AI alarm status Response !AAHHHHHLLLLLL
@AARH	Reads high latched values of all analog input channels
@AARHNN	Reads high latched value of an analog input channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AARHCNN	Reads high alarm limit of an analog input channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AARL	Reads low latched values of all analog input channels
@AARLNN	Reads low latched value of an analog input channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AARLCNN	Reads low alarm limit of an analog input channel, NN = 0 to 20 in 2-digit hex format ^{*1} .
@AART	Reads RTC data Response !AAYMMDDHHMMSS
@AARTYYMMDD HHMMSS	Sets RTC data
@AASP	Reads sea level pressure
@AASP(data)	Sets sea level pressure, data in format of 0800.00 ~ 1260.00, not saved to nonvolatile memory.

Command	Description																						
@AASPS	Saves sea level pressure to nonvolatile memory																						
@AATO	Reads temperature offset in 0.01°C																						
@AATO(data)	Sets temperature offset in 0.01°C, -100.00 ~ +100.00																						
@AAWDO	Reads wind direction offset in degree																						
@AAWDO(data)	Sets wind direction offset in degree, -00360. ~ +00360.																						
@AAWSO	Reads wind speed offset in 0.01m/s																						
@AAWSO(data)	Sets wind speed offset in 0.01m/s, -100.00 ~ +100.00																						
~**	Clears host watchdog timeout counter																						
~AA0	Reads host watchdog status																						
~AA1	Clears host watchdog timeout status																						
~AA2	Reads host watchdog enable/disable status and timeout value																						
~AA3ETT	Enables/disables host watchdog and set timeout value E-> 0: disable host watchdog, 1: enable host watchdog TT: host watchdog timeout in 0.1s in hex format																						
~AA4	Reads DO power on and safe value																						
~AA50P0S	Sets DO power on and safe value P-> 0 ~ F: power on value in hex format S-> 0 ~ F: safe value in hex format																						
~AARD	Reads response delay time in ms in hex format																						
~AARDVV	Sets response delay time in ms, VV in hex format, 00 - 1E																						
<p>*1: NN = 0 to 20 in 2-digit hex format, Note that channel 00, 03, 04, 05, 0B, 0C, 0D, 0E, 0F, 10, 11 and 12 are not available to low alarm.</p> <table> <tbody> <tr> <td>00 for wind speed in 0.01m/s,</td> <td>0B for PM1.0 in 1 ug/m³,</td> </tr> <tr> <td>01 for wind direction in degree,</td> <td>0C for PM10 in 1 ug/m³,</td> </tr> <tr> <td>02 for air pressure in 0.1hPa,</td> <td>0D for particle count 0.3 - 0.5um,</td> </tr> <tr> <td>03 for precipitation intensity in 0.01mm/h,</td> <td>0E for particle count 0.5 - 1.0um,</td> </tr> <tr> <td>04 for accumulated precipitation in 0.1m,</td> <td>0F for particle count 1.0 - 2.5um,</td> </tr> <tr> <td>05 for PM2.5 in 1 ug/m³,</td> <td>10 for particle count 2.5 - 5.0um,</td> </tr> <tr> <td>06 for relative humidity in 0.01%,</td> <td>11 for particle count 5.0 - 7.5um,</td> </tr> <tr> <td>07 for temperature in 0.01°C,</td> <td>12 for particle count 7.5 - 10um,</td> </tr> <tr> <td>08 for temperature in 0.01°F,</td> <td>13 for ambient light in lux,</td> </tr> <tr> <td>09 for dew point temperature in 0.01°C,</td> <td>14 for altitude in 0.1m.</td> </tr> <tr> <td>0A for dew point temperature in 0.01°F,</td> <td></td> </tr> </tbody> </table>		00 for wind speed in 0.01m/s,	0B for PM1.0 in 1 ug/m ³ ,	01 for wind direction in degree,	0C for PM10 in 1 ug/m ³ ,	02 for air pressure in 0.1hPa,	0D for particle count 0.3 - 0.5um,	03 for precipitation intensity in 0.01mm/h,	0E for particle count 0.5 - 1.0um,	04 for accumulated precipitation in 0.1m,	0F for particle count 1.0 - 2.5um,	05 for PM2.5 in 1 ug/m ³ ,	10 for particle count 2.5 - 5.0um,	06 for relative humidity in 0.01%,	11 for particle count 5.0 - 7.5um,	07 for temperature in 0.01°C,	12 for particle count 7.5 - 10um,	08 for temperature in 0.01°F,	13 for ambient light in lux,	09 for dew point temperature in 0.01°C,	14 for altitude in 0.1m.	0A for dew point temperature in 0.01°F,	
00 for wind speed in 0.01m/s,	0B for PM1.0 in 1 ug/m ³ ,																						
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08 for temperature in 0.01°F,	13 for ambient light in lux,																						
09 for dew point temperature in 0.01°C,	14 for altitude in 0.1m.																						
0A for dew point temperature in 0.01°F,																							

A-4. DLW-1200 DCON Command Sets

Command	Description
\$AAF	Reads firmware version
\$AAI	Reads INIT status Response: !AA0 -> INIT dip switch is in the 'OFF' position !AA1 -> INIT dip switch is in the 'ON' position
\$AAM	Reads module name
\$AAP	Reads Modbus RTU/DCON protocol Response: !AA0 -> DCON !AA1 -> Modbus RTU
\$AAPN	Sets Modbus RTU/DCON protocol N-> 0: DCON, 1: Modbus RTU
\$AA2	Reads configuration
\$AA5	Reads reset status !AA1: first after power on, !AA0: others
#AA	Reads all analog inputs Response: >(wind speed in 0.01 m/s) (wind direction in degree) (relative humidity in 0.01%)(temperature in 0.01°C)(temperature in 0.01°F) (dew point temperature in 0.01°C)(dew point temperature in 0.01°F)
#AAN	Reads Channel Analog Input N= 0 for wind speed in 0.01 m/s, 1 for wind direction in degree, 2 for relative humidity in 0.01%, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F,
%AANNTTCCFF	Sets configuration AA : current address, NN: new address, TT : 00, CC: new baud rate Bits 5:0

	<p>Baud rate, 0x03 ~ 0x0A</p> <table border="1"> <thead> <tr> <th>Code</th> <th>Baud rate</th> <th>Code</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr> <td>0x03</td> <td>1200</td> <td>0x07</td> <td>19200</td> </tr> <tr> <td>0x04</td> <td>2400</td> <td>0x08</td> <td>38400</td> </tr> <tr> <td>0x05</td> <td>4800</td> <td>0x09</td> <td>57600</td> </tr> <tr> <td>0x06</td> <td>9600</td> <td>0x0A</td> <td>115200</td> </tr> </tbody> </table> <p>Bits 7:6 00: no parity, 1 stop bit 01: no parity, 2 stop bits 10: even parity, 1 stop bit 11: odd parity, 1 stop bit FF: data format Bit 6 0: checksum disabled, 1: checksum enabled</p>	Code	Baud rate	Code	Baud rate	0x03	1200	0x07	19200	0x04	2400	0x08	38400	0x05	4800	0x09	57600	0x06	9600	0x0A	115200
Code	Baud rate	Code	Baud rate																		
0x03	1200	0x07	19200																		
0x04	2400	0x08	38400																		
0x05	4800	0x09	57600																		
0x06	9600	0x0A	115200																		
@AACH	Clears all high latched analog inputs to the current values																				
@AACHN	Clears channel high latched analog input to the current value, N= 0 for wind speed, 1 for wind direction, 2 for relative humidity, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F.																				
@AACHCN	Clears high latched alarm of a channel, N= 0 for wind speed, 1 for wind direction, 2 for relative humidity, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F.																				
@AACL	Clears all low latched analog inputs to the current values																				

Command	Description
@AACLN	Clears channel low latched analog input to the current value, N = 0 for wind speed, 1 for wind direction, 2 for relative humidity, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F.
@AACLCN	Clears low latched alarm of a channel, N = 0 for wind speed, 1 for wind direction, 2 for relative humidity, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F.
@AADACN	Disables AI alarm of a channel, N = 0 for wind speed, 1 for wind direction, 2 for relative humidity, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F.
@AADI	Reads DO Response: !AA00000, O: 0 ~ F, DO value in hex format
@AADLB	Reads the start time for period logging mode Response: !AAyyyymmddhhmmss
@AADLByyyymmddhhmmss	Sets the start time for period logging mode yyyy: year, 2000 to 2199, mm: month, 01 to 12, dd: date, 01 to 31, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLC	Reads the data log mode Response !AAh, 0: stop, 1: run, 2: run in period mode

Command	Description
@AADLCh	Sets the data log mode, h-> 0: stop, 1: run, 2: run in period mode
@AADLE	Reads the end time for period logging mode Response: !AAyyyymmddhhmmss
@AADLEyyyymmddhhmmss	Sets the end time for period logging mode yyyy: year, 2000 to 2199, mm: month, 01 to 12, dd: date, 01 to 31, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLN	Reads the number of log records in the module Response !AAhhhhhhhh, hhhhhhhh in hex format
@AADLO	Reads the overwrite mode for whether to overwrite existing data when the storage space is full. Response !AAh, 0: stop logging when full, 1: overwrite
@AADLOh	Sets the overwriting mode when the storage space is full h->0: stop logging when full, 1: overwrite
@AADLP	Reads the time interval for recording data Response !AAhhmmss, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLPPhmmss	Sets the time interval for recording data
@AADLS	Reads logging status of the module Response !AAhh, hh in hex format, 00: stopped, 01: running, others: error
@AADO0V	Sets DO, V-> 0 ~ F DO value in hex format, bit 0 for DO0, bit 1 for DO1 and so on.

Command	Description
@AAEATCN	Enables AI alarm of a channel, N = 0 for wind speed, 1 for wind direction, 2 for relative humidity, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F. T -> M: momentary alarm, L: latched alarm
@AAHI(data)CN	Sets high alarm limit of an AI channel, N = 0 for wind speed in 0.01 m/s, 1 for wind direction in degree, 2 for relative humidity in 0.01%, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F.
@AAHO	Reads humidity offset
@AAHO(data)	Sets humidity offset, data in format of -100.00 ~ +100.00
@AALO(data)CN	Sets low alarm limit of an AI channel, N = 1 for wind direction in degree, 2 for relative humidity in 0.01%, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F.
@AARACN	Reads AI alarm enabled/disabled status of a channel, N = 0 for wind speed, 1 for wind direction, 2 for relative humidity, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F. Response : !AAN, N -> 0: disabled, 1: momentary, 2: latched

Command	Description
@AARAO	Reads AI alarm status Response !AAHLL
@AARH	Reads high latched values of all analog input channels
@AARHN	Reads high latched value of an analog input channel, N = 0 for wind speed in 0.01 m/s, 1 for wind direction in degree, 2 for relative humidity in 0.01%, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F.
@AARHCN	Reads high alarm limit of an analog input channel, N = 0 for wind speed in 0.01 m/s, 1 for wind direction in degree, 2 for relative humidity in 0.01%, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F.
@AARL	Reads low latched values of all analog input channels
@AARLN	Reads low latched value of an analog input channel, N = 1 for wind direction in degree, 2 for relative humidity in 0.01%, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F.
@AARLCN	Reads low alarm limit of an analog input channel, N = 1 for wind direction in degree, 2 for relative humidity in 0.01%, 3 for temperature in 0.01°C, 4 for temperature in 0.01°F, 5 for dew point temperature in 0.01°C, 6 for dew point temperature in 0.01°F.

Command	Description
@AART	Reads RTC data Response !AAYMMDDHHMMSS
@AARTYYMMDD HHMMSS	Sets RTC data
@AATO	Reads temperature offset in 0.01°C
@AATO(data)	Sets temperature offset in 0.01°C, -100.00 ~ +100.00
@AAWDO	Reads wind direction offset in degree
@AAWDO(data)	Sets wind direction offset in degree, -00360. ~ +00360.
@AAWSO	Reads wind speed offset in 0.01m/s
@AAWSO(data)	Sets wind speed offset in 0.01m/s, -100.00 ~ +100.00
~**	Clears host watchdog timeout counter
~AA0	Reads host watchdog status
~AA1	Clears host watchdog timeout status
~AA2	Reads host watchdog enable/disable status and timeout value
~AA3ETT	Enables/disables host watchdog and set timeout value E-> 0: disable host watchdog, 1: enable host watchdog TT: host watchdog timeout in 0.1s in hex format
~AA4	Reads DO power on and safe value
~AA50P0S	Sets DO power on and safe value P-> 0 ~ F: power on value in hex format S-> 0 ~ F: safe value in hex format
~AARD	Reads response delay time in ms in hex format
~AARDVV	Sets response delay time in ms, VV in hex format, 00 - 1E

A-5. DLW-1243 DCON Command Sets

Command	Description
\$AAF	Reads firmware version
\$AAI	Reads INIT status Response: !AA0 -> INIT dip switch is in the 'OFF' position !AA1 -> INIT dip switch is in the 'ON' position
\$AAM	Reads module name
\$AAP	Reads Modbus RTU/DCON protocol Response: !AA0 -> DCON !AA1 -> Modbus RTU
\$AAPN	Sets Modbus RTU/DCON protocol N-> 0: DCON, 1: Modbus RTU
\$AA2	Reads configuration
\$AA5	Reads reset status !AA1: first after power on, !AA0: others
#AA	Reads all analog inputs Response: >(wind speed in 0.01 m/s) (wind direction in degree)(CO in ppm) (CO ₂ in ppm) (NH ₃ in ppm) (relative humidity in 0.01%)(temperature in 0.01°C)(temperature in 0.01°F) (dew point temperature in 0.01°C)(dew point temperature in 0.01°F)
#AAN	Reads Channel Analog Input, N= 0 to 9 N= 0 for wind speed in 0.01m/s, 1 for wind direction in degree, 2 for CO in ppm, 3 for CO ₂ in ppm,, 4 for NH ₃ in ppm, 5 for relative humidity in 0.01%, 6 for temperature in 0.01°C, 7 for temperature in 0.01°F, 8 for dew point temperature in 0.01°C, 9 for dew point temperature in 0.01°F.

Command	Description																				
%AANNTTCCFF	<p>Sets configuration</p> <p>AA : current address, NN: new address, TT : 00, CC: new baud rate</p> <p>Bits 5:0 Baud rate, 0x03 ~ 0x0A</p> <table border="1"> <thead> <tr> <th>Code</th> <th>Baud rate</th> <th>Code</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr> <td>0x03</td> <td>1200</td> <td>0x07</td> <td>19200</td> </tr> <tr> <td>0x04</td> <td>2400</td> <td>0x08</td> <td>38400</td> </tr> <tr> <td>0x05</td> <td>4800</td> <td>0x09</td> <td>57600</td> </tr> <tr> <td>0x06</td> <td>9600</td> <td>0x0A</td> <td>115200</td> </tr> </tbody> </table> <p>Bits 7:6 00: no parity, 1 stop bit 01: no parity, 2 stop bits 10: even parity, 1 stop bit 11: odd parity, 1 stop bit</p> <p>FF: data format Bit 6 0: checksum disabled, 1: checksum enabled</p>	Code	Baud rate	Code	Baud rate	0x03	1200	0x07	19200	0x04	2400	0x08	38400	0x05	4800	0x09	57600	0x06	9600	0x0A	115200
Code	Baud rate	Code	Baud rate																		
0x03	1200	0x07	19200																		
0x04	2400	0x08	38400																		
0x05	4800	0x09	57600																		
0x06	9600	0x0A	115200																		
@AAABC	<p>Reads status of the automatic baseline correction</p> <p>Response: !AAN, N=0: disabled, 1: enabled</p>																				
@AAABCN	<p>Sets the automatic baseline correction</p> <p>N->0: disabled, 1: enabled</p>																				
@AACH	<p>Clears all high latched analog inputs to the current values</p>																				
@AACHN	<p>Clears channel high latched analog input to the current value, N = 0 to 9^{*1}.</p>																				
@AACHCN	<p>Clears high latched alarm of a channel, N = 0 to 9^{*1}.</p>																				
@AAACL	<p>Clears all low latched analog inputs to the current values</p>																				
@AAACLN	<p>Clears channel low latched analog input to the current value, N = 0 to 9^{*1}.</p>																				
@AAACLCN	<p>Clears low latched alarm of a channel, N = 1 to 9^{*1}.</p>																				
@AAACO	<p>Reads CO offset</p>																				
@AAACO(data)	<p>Sets CO offset, data in format of -01000. ~ +01000.</p>																				

Command	Description
@AAC2	Reads CO ₂ offset
@AAC2(data)	Sets CO ₂ offset, data in format of -01000. ~ +01000.
@AADACN	Disables AI alarm of a channel, N = 0 to 9 ^{*1} .
@AADI	Reads DO Response: !AA00000, O: 0 ~ F, DO value in hex format
@AADLB	Reads the start time for period logging mode Response: !AAyyyymmddhhmmss
@AADLByyyymmddhhmmss	Sets the start time for period logging mode yyyy: year, 2000 to 2199, mm: month, 01 to 12, dd: date, 01 to 31, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLC	Reads the data log mode Response !AAh, 0: stop, 1: run, 2: run in period mode
@AADLCh	Sets the data log mode, h->0: stop, 1: run, 2: run in period mode
@AADLE	Reads the end time for period logging mode Response: !AAyyyymmddhhmmss
@AADLEyyyymmddhhmmss	Sets the end time for period logging mode yyyy: year, 2000 to 2199, mm: month, 01 to 12, dd: date, 01 to 31, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59
@AADLN	Reads the number of log records in the module Response !AAhhhhhhhh, hhhhhhhh in hex format
@AADLO	Reads the overwrite mode for whether to overwrite existing data when the storage space is full. Response !AAh, 0: stop logging when full, 1: overwrite
@AADLOh	Sets the overwriting mode when the storage space is full h->0: stop logging when full, 1: overwrite
@AADLP	Reads the time interval for recording data Response !AAhmmss, hh: hour, 0 to 24, mm: minute, 0 to 59, ss: second, 0 to 59

Command	Description
@AADLPhhmmss	Sets the time interval for recording data
@AADLS	Reads logging status of the data logger Response !AAhh, hh in hex format, 00: stopped, 01: running, others: error
@AADO0V	Sets DO, V-> 0 ~ F DO value in hex format, bit 0 for DO0, bit 1 for DO1, etc
@AAEATCN	Enables AI alarm of a channel, N = 0 to 9 ^{*1} . T -> M: momentary alarm, L: latched alarm
@AAHI(data)CN	Sets high alarm limit of an AI channel, N = 0 to 9 ^{*1} .
@AAHO	Reads humidity offset
@AAHO(data)	Sets humidity offset, data in format of -100.00 ~ +100.00
@AALO(data)CN	Sets low alarm limit of an AI channel, N = 1 to 9 ^{*1} .
@AANO	Reads NH ₃ offset
@AANO(data)	Sets NH ₃ offset, data in format of -01000. ~ +01000.
@AARACN	Reads AI alarm enabled/disabled status of one AI channel, N = 0 to 9 ^{*1} . Response !AAN, N -> 0: disabled, 1: momentary, 2: latched
@AARAO	Reads AI alarm status Response !AAHHHLLLL
@AARH	Reads high latched values of all analog input channels
@AARHN	Reads high latched value of one AI channel, N = 0 to 9 ^{*1} .
@AARHCN	Reads high alarm limit of one AI channel, N = 0 to 9 ^{*1} .
@AARL	Reads low latched values of all analog input channels
@AARLN	Reads low latched value of one AI channel, N = 0 to 9 ^{*1} .
@AARLCN	Reads low alarm limit of one AI channel, N = 0 to 9 ^{*1} .
@AART	Reads RTC data Response !AAYMMDDHHMMSS

Command	Description
@AARTYYMMDD HHMMSS	Sets RTC data
@AATO	Reads temperature offset in 0.01°C
@AATO(data)	Sets temperature offset in 0.01°C, -100.00 ~ +100.00
@AAWDO	Reads wind direction offset in degree
@AAWDO(data)	Sets wind direction offset in degree, -00360. ~ +00360.
@AAWSO	Reads wind speed offset in 0.01m/s
@AAWSO(data)	Sets wind speed offset in 0.01m/s, -100.00 ~ +100.00
~**	Clears host watchdog timeout counter
~AA0	Reads host watchdog status
~AA1	Clears host watchdog timeout status
~AA2	Reads host watchdog enable/disable status and timeout value
~AA3ETT	Enables/disables host watchdog and set timeout value E-> 0: disable host watchdog, 1: enable host watchdog TT: host watchdog timeout in 0.1s in hex format
~AA4	Reads DO power on and safe value
~AA50P0S	Sets DO power on and safe value P-> 0 ~ F: power on value in hex format S-> 0 ~ F: safe value in hex format
~AARD	Reads response delay time in ms in hex format
~AARDVV	Sets response delay time in ms, VV in hex format, 00 - 1E
*1: N = 0 to 9, Note that channels 0, 2, 3 and 4 are not available to low alarm.	
0 for wind speed in 0.01m/s, 1 for wind direction in degree, 2 for CO in ppm, 3 for CO ₂ in ppm, 4 for NH ₃ in ppm, 5 for relative humidity in 0.01%, 6 for temperature in 0.01°C, 7 for temperature in 0.01°F, 8 for dew point temperature in 0.01°C, 9 for dew point temperature in 0.01°F	

Appendix B: Modbus Master Tool

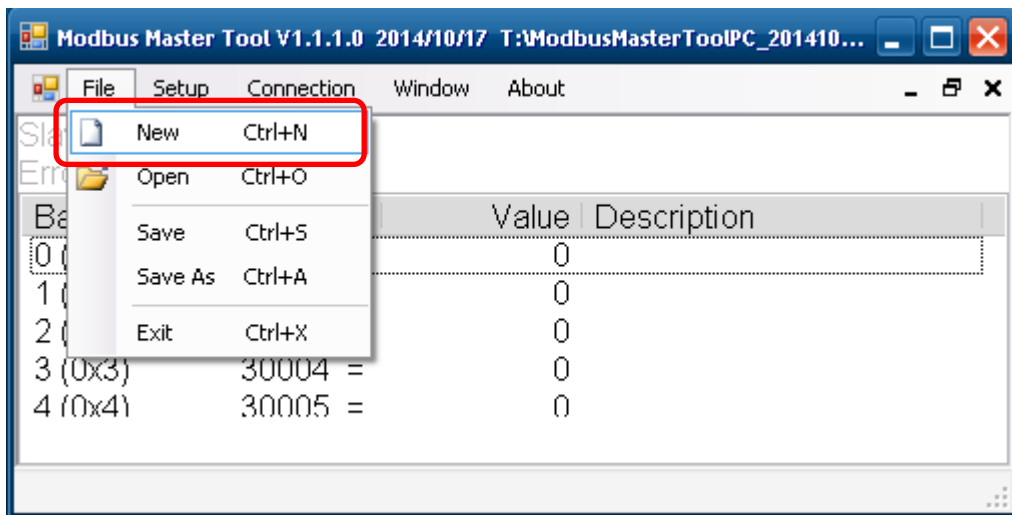
Modbus Master Tool is a free, easy-to-use tool for Modbus communication, it can be used to diagnose whether the wiring is correct.

Download and install the Modbus Master Tool (PC)

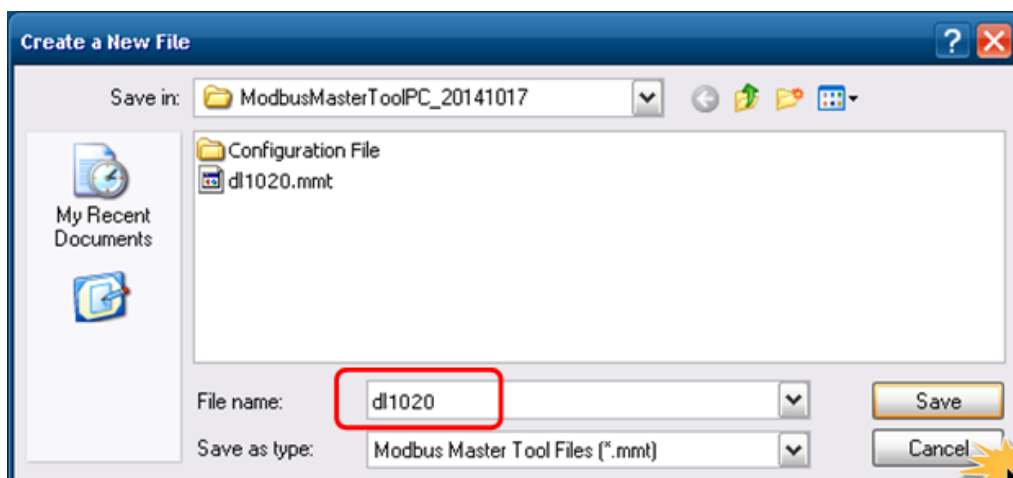
[https://www.icpdas.com/en/download/index.php?root=&kw=Modbus Master Tool](https://www.icpdas.com/en/download/index.php?root=&kw=Modbus%20Master%20Tool)

This section intends to guide the steps for creating the Modbus communication with DLW-1xxx.

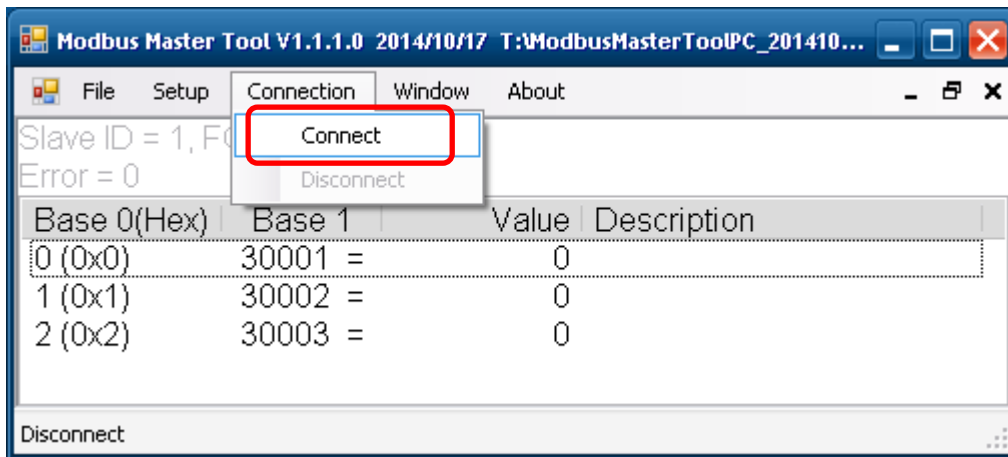
1. Launch the ModbusMasterToolPC.exe.
2. Select **New** in the File menu.



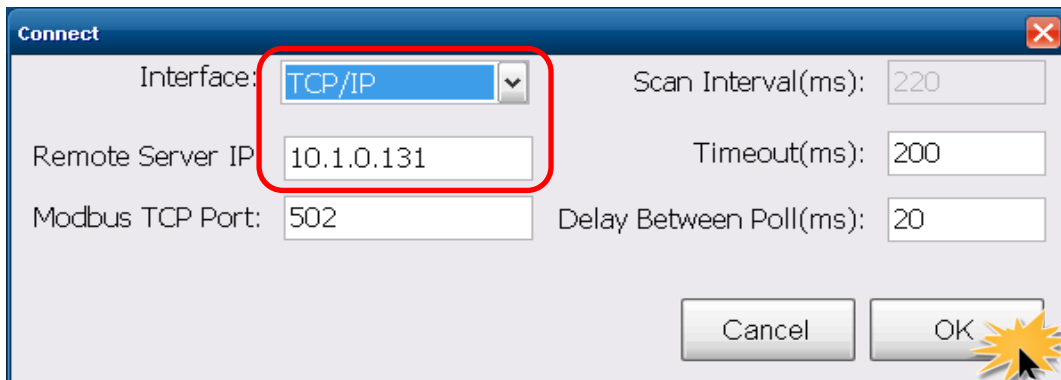
3. Enter a file name and click the **Save** button.



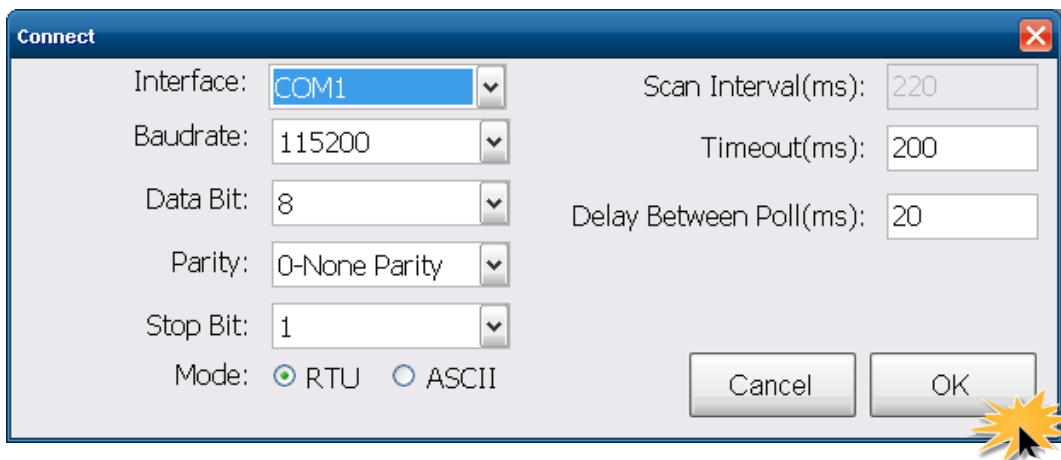
4. Select **Connect** in the Connection menu.



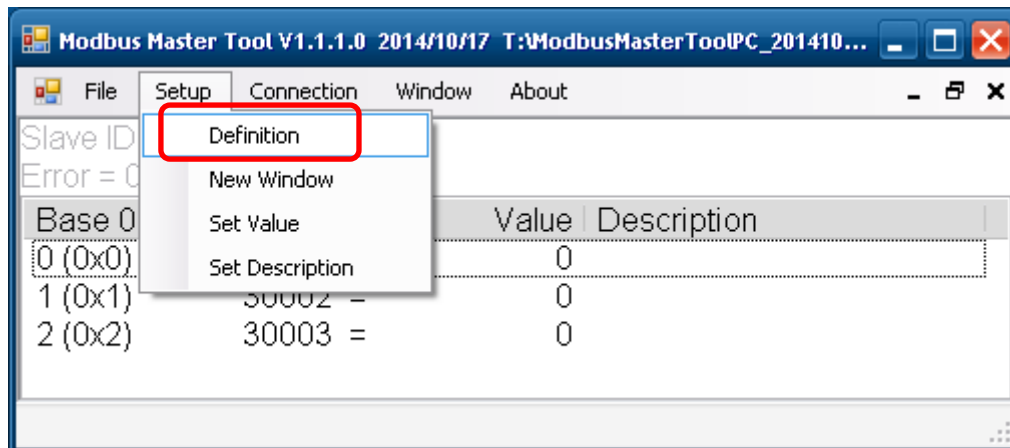
5. Select the communication interface. When using **TCP/IP** as the interface, input the IP for your DLW-1xxx and click the **OK** button.



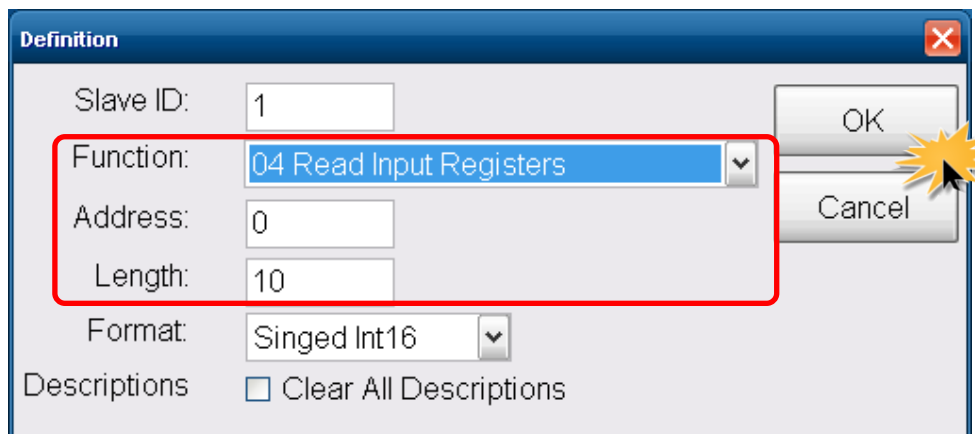
If RS-485 is used as the interface, select the **COM** port, check the **RTU** mode and click the **OK** button.



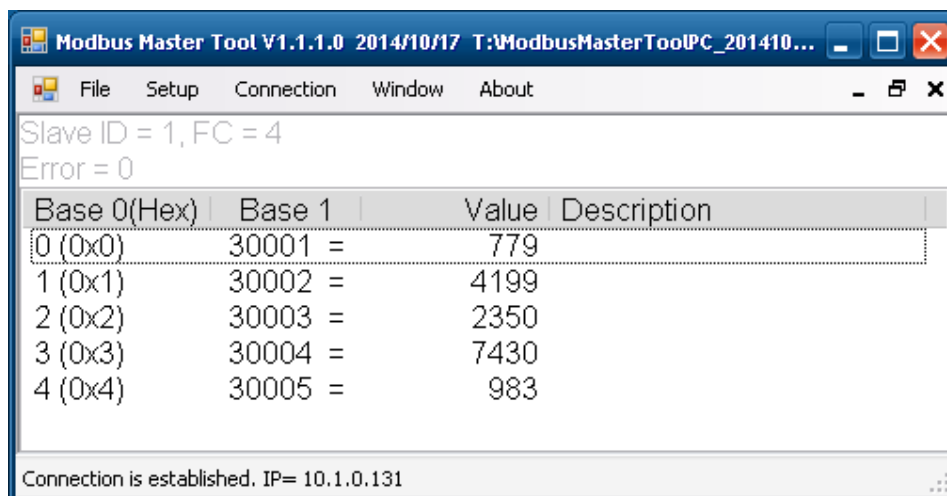
6. Select **Definition** in the Setup menu.



7. Select the Modbus function code, input the start address and length, and click on the **OK** button.

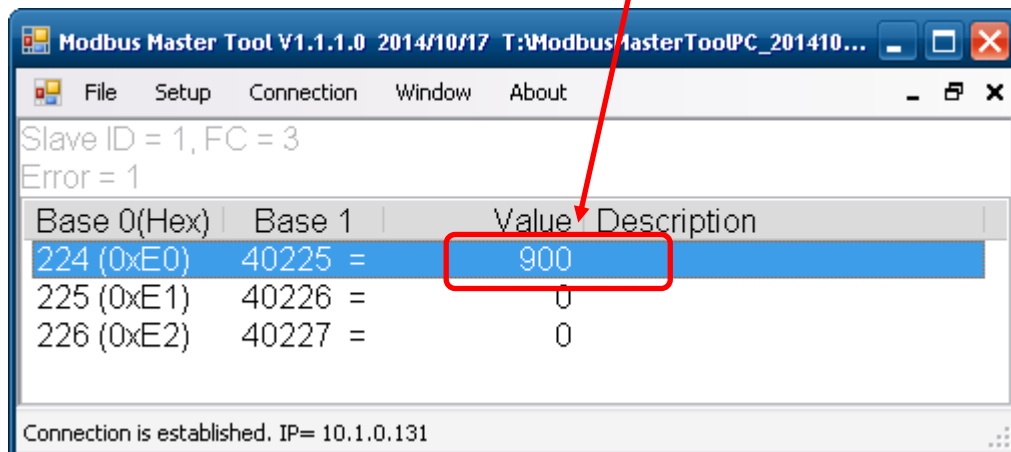
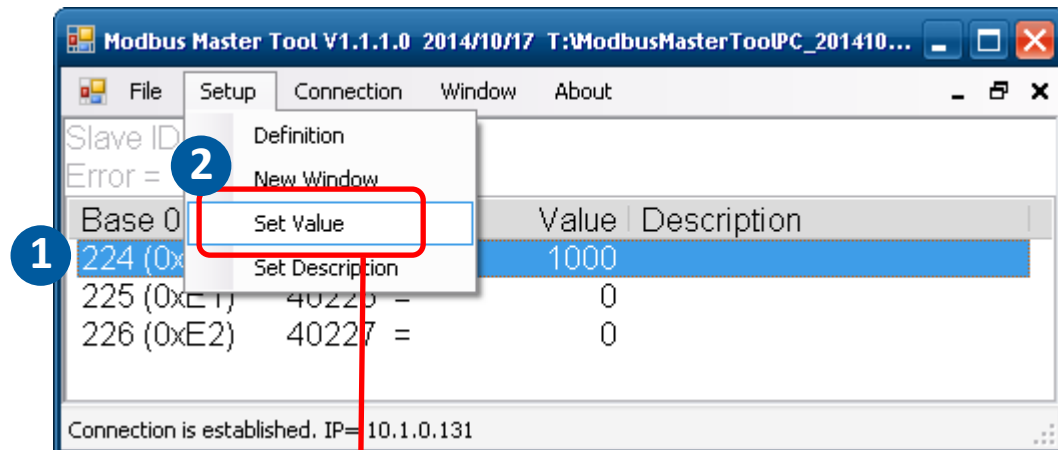


8. Read data.



9. Write data to Holding Register or Coil Status

1. Highlight the Modbus address in the Holding Register or Coil Status list
2. Select **Set Value** in the Setup menu.
3. Input the data in the Value text box and click the **OK** button



Appendix C: Modbus Address Table

C-1. DLW-1023 Modbus Address Mappings (Base 1)

Address	Description	R/W
30001 ~ 30023 40001 ~ 40023	Analog input value of channel from 0 to 22 ^{*1}	R
30162 40162	Firmware version in hex format Only for Modbus TCP protocol	R
40164	TCP disconnection timeout value, 5 to 65535 in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
40165	Module reset timeout value, from 30 to 65535 in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
30166 40166	Module reset status, 1: power-on, 2: watchdog, 3: software reset command Only for Modbus TCP protocol	R
40168	Ethernet host watchdog timeout value, 5 to 65535 in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
30169 40169	Ethernet host watchdog timeout count. Only for Modbus TCP protocol	R
30170 40170	Module name, 0x1023 Only for Modbus TCP protocol	R
40172	Modbus NetID Only for Modbus TCP protocol	R/W
40225 ~ 40247	High alarm limit of channel 0 to 22 ^{*1}	R/W
40258 ~ 40279	Low alarm limit of channel 1 to 22 ^{*1}	R/W
30301 40301	Number of the digital input channels Only for Modbus TCP protocol	R
30311 40311	Number of the digital output channels Only for Modbus TCP protocol	R
30321 40321	Number of the analog input channels Only for Modbus TCP protocol	R

Address	Description	R/W																				
30331	Number of the analog output channels	R																				
40331	Only for Modbus TCP protocol																					
40449	Wind speed offset in 0.01m/s	R/W																				
40450	Wind direction offset in degree	R/W																				
40451	Air pressure offset in 0.1hPa	R/W																				
40452	CO offset in ppm	R/W																				
40453	CO ₂ offset in ppm	R/W																				
40454	PM2.5 offset in 1 ug/m ³	R/W																				
40455	Relative humidity offset in 0.01%	R/W																				
40456	Temperature offset in 0.01°C	R/W																				
40460	PM1.0 offset in 1 ug/m ³	R/W																				
40461	PM10 offset in 1 ug/m ³	R/W																				
40468	Ambient light offset in lux	R/W																				
40470	Altitude offset in 0.1m	R/W																				
40481	Firmware version (low word)	R																				
40482	Firmware version (high word)	R																				
40483	Module name (low word), 0x1023	R																				
40484	Module name (high word), 0x4457	R																				
40485	RS-485 module address, 1 to 247 Only for Modbus RTU protocol	R/W																				
40486	RS-485 baud rate and parity settings Bits 5:0 Baud rate, valid range: 3 ~ 10 <table border="1" data-bbox="577 1507 1166 1738"> <thead> <tr> <th>Code</th> <th>Baud rate</th> <th>Code</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr> <td>0x03</td> <td>1200</td> <td>0x07</td> <td>19200</td> </tr> <tr> <td>0x04</td> <td>2400</td> <td>0x08</td> <td>38400</td> </tr> <tr> <td>0x05</td> <td>4800</td> <td>0x09</td> <td>57600</td> </tr> <tr> <td>0x06</td> <td>9600</td> <td>0x0A</td> <td>115200</td> </tr> </tbody> </table> Bits 7:6 00: no parity, 1 stop bit 01: no parity, 2 stop bit 10: even parity, 1 stop bit 11: odd parity , 1 stop bit Only for Modbus RTU protocol	Code	Baud rate	Code	Baud rate	0x03	1200	0x07	19200	0x04	2400	0x08	38400	0x05	4800	0x09	57600	0x06	9600	0x0A	115200	R/W
Code	Baud rate	Code	Baud rate																			
0x03	1200	0x07	19200																			
0x04	2400	0x08	38400																			
0x05	4800	0x09	57600																			
0x06	9600	0x0A	115200																			

Address	Description	R/W
40488	RS-485 response delay time in ms, valid range from 0 to 30 Only for Modbus RTU protocol	R/W
40489	RS-485 host watchdog timeout value, 0 ~ 255 in 0.1s Only for Modbus RTU protocol	R/W
40492	RS-485 host watchdog timeout count, write 0 to clear Only for Modbus RTU protocol	R/W
40496	Automatic baseline correction for CO ₂ measurement, 0: disable, 1:enable	R/W
40499	Low word of sea level pressure in 0.01hPa, default 101325. Write 1 to 00284 to save it to nonvolatile memory.	R/W
40500	High word of sea level pressure in 0.01hPa	R/W
30513 ~ 30535 40513 ~ 40535	High latched analog input value of channel 0 to 22 ^{*1}	R
30545 ~ 30567 40545 ~ 40567	Low latched analog input value of channel 0 to 22 ^{*1}	R
40865	RTC year, 2000 to 2159	R/W
40866	RTC month, 1 to 12	R/W
40867	RTC date, 1 to 31	R/W
40868	RTC hour, 0 to 23	R/W
40869	RTC minute, 0 to 59	R/W
40870	RTC second, 0 to 59	R/W
40871	Total number of log records, low word	R
40872	Total number of log records, high word	R
40873	The starting record to read log data, low word	R/W
40874	The starting record to read log data, high word	R/W
40875	The status of the data logging, 0: stopped, 1: running	R
40876	The data logger command, 0: stop, 1: run, 2: run in period mode	R/W
40877	Continue writing when data logger is full, 0: no, 1: yes	R/W
40878	Hour of the data logger sampling period, 0 ~ 24	R/W
40879	Minute of the data logger sampling period, 0 ~ 59	R/W

Address	Description	R/W
40880	Second of the data logger sampling period, 0 ~ 59	R/W
40881	Starting year when logging in period mode, 2000 ~ 2159	R/W
40882	Starting month when logging in period mode, 1 ~ 12	R/W
40883	Starting date when logging in period mode, 1 ~ 31	R/W
40884	Starting hour when logging in period mode, 0 ~ 23	R/W
40885	Starting minute when logging in period mode, 0 ~ 59	R/W
40886	Starting second when logging in period mode, 0 ~ 59	R/W
40887	Ending year when logging in period mode, 2000 ~ 2159	R/W
40888	Ending month when logging in period mode, 1 ~ 12	R/W
40889	Ending date when logging in period mode, 1 ~ 31	R/W
40890	Ending hour when logging in period mode, 0 ~ 23	R/W
40891	Ending minute when logging in period mode, 0 ~ 59	R/W
40892	Ending second when logging in period mode, 0 ~ 59	R/W

***1:** channel 0 ~ 22

- | | |
|--------------------------------------|--|
| 0: wind speed in 0.01m/s, | 11: PM1.0 in 1ug/m ³ , |
| 1: wind direction in degree, | 12: PM10 in 1ug/m ³ , |
| 2: air pressure in 0.1hPa, | 13: particle count (0.3 - 0.5um), |
| 3: CO in ppm, | 14: particle count (0.5 - 1.0um), |
| 4: CO ₂ in ppm, | 15: particle count (1.0 - 2.5um), |
| 5: PM2.5 in 1ug/m ³ , | 16: particle count (2.5 - 5.0um), |
| 6: relative humidity in 0.01%, | 17: particle count (5.0 - 7.5um), |
| 7: temperature in 0.01°C, | 18: particle count (7.5 - 10.0um) |
| 8: temperature in 0.01°F, | 19: low word of ambient light in lux, |
| 9: dew point temperature in 0.01°C, | 20: high word of ambient light in lux, |
| 10: dew point temperature in 0.01°F, | 21: low word of altitude in 0.1m, |
| | 22: high word of altitude in 0.1m. |

Note that channels 0, 3, 4, 5, 11, 12, 13, 14, 15, 16, 17 and 18 are not available to low alarm.

Address	Description	R/W
00001 ~ 00004	Digital output value of channel 0 to 3	R/W
00129 ~ 00132	Safe value of digital output channel 0 to 3	R/W
00161 ~ 00164	Power on value of digital output channel 0 to 3	R/W
00227	Write 1 to reload default TCP settings Only for Modbus TCP protocol	W
00234	Write 1 to reboot module Only for Modbus TCP protocol	W
00257	RS-485 Protocol, 0: DCON, 1: Modbus RTU Only for Modbus RTU protocol	R/W
00260	Modbus RTU host watchdog mode 0: same as I-7000 1: can use AO and DO command to clear host watchdog timeout status Only for Modbus RTU protocol	R/W
00261	RS-485 host watchdog mode, 1: enable, 0: disable. Only for Modbus RTU protocol	R/W
00270	Host watch dog timeout status, write 1 to clear host watch dog timeout status Only for Modbus RTU protocol	R/W
00273	Reset status, 1: first read after powered on, 0: not the first read after powered on Only for Modbus RTU protocol	R
00280	Write 1 to clear all high latched analog input values	W
00281	Write 1 to clear all low latched analog input values	W
00284	Write 1 to save sea level pressure, 40499 and 40500 to nonvolatile memory	W
00290 ~ 00309	Low alarm status of channel 1 to 20 ^{*2} . Write 1 to clear low latched alarm.	R/W
00193 ~ 00213	High alarm status of channel 0 to 20 ^{*2} . Write 1 to clear high latched alarm.	R/W
00321 ~ 00341	Enable/disable alarm of channel 0 to 20 ^{*2}	R/W
00353 ~ 00373	Alarm type, momentary or latched, of channel 0 to 20 ^{*2}	R/W
00385 ~ 00405	Write 1 to clear high latched analog input value of channel 0 to 20 ^{*2}	W

Address	Description	R/W																				
00417 ~ 00437	Write 1 to clear low latched analog input value of channel 0 to 20 ^{*2}	W																				
<p>^{*2}: channel 0 ~ 20</p> <table border="0"> <tr> <td>0: wind speed,</td> <td>11: PM1.0</td> </tr> <tr> <td>1: wind direction,</td> <td>12: PM10,</td> </tr> <tr> <td>2: air pressure,</td> <td>13: particle count (0.3 - 0.5um),</td> </tr> <tr> <td>3: CO,</td> <td>14: particle count (0.5 - 1.0um),</td> </tr> <tr> <td>4: CO₂,</td> <td>15: particle count (1.0 - 2.5um),</td> </tr> <tr> <td>5: PM2.5,</td> <td>16: particle count (2.5 - 5.0um),</td> </tr> <tr> <td>6: relative humidity,</td> <td>17: particle count (5.0 - 7.5um),</td> </tr> <tr> <td>7 and 8: temperature,</td> <td>18: particle count (7.5 - 10.0um),</td> </tr> <tr> <td>9 and 10: dew point temperature,</td> <td>19: ambient light,</td> </tr> <tr> <td></td> <td>20: altitude.</td> </tr> </table> <p>Note that channels 0, 3, 4, 5, 11, 12, 13, 14, 15, 16, 17 and 18 are not available to low alarm.</p>			0: wind speed,	11: PM1.0	1: wind direction,	12: PM10,	2: air pressure,	13: particle count (0.3 - 0.5um),	3: CO,	14: particle count (0.5 - 1.0um),	4: CO ₂ ,	15: particle count (1.0 - 2.5um),	5: PM2.5,	16: particle count (2.5 - 5.0um),	6: relative humidity,	17: particle count (5.0 - 7.5um),	7 and 8: temperature,	18: particle count (7.5 - 10.0um),	9 and 10: dew point temperature,	19: ambient light,		20: altitude.
0: wind speed,	11: PM1.0																					
1: wind direction,	12: PM10,																					
2: air pressure,	13: particle count (0.3 - 0.5um),																					
3: CO,	14: particle count (0.5 - 1.0um),																					
4: CO ₂ ,	15: particle count (1.0 - 2.5um),																					
5: PM2.5,	16: particle count (2.5 - 5.0um),																					
6: relative humidity,	17: particle count (5.0 - 7.5um),																					
7 and 8: temperature,	18: particle count (7.5 - 10.0um),																					
9 and 10: dew point temperature,	19: ambient light,																					
	20: altitude.																					

C-2. DLW-1100 Modbus Address Mappings (Base 1)

Address	Description	R/W
30001 ~ 30014 40001 ~ 40014	Analog input value of channel 0 to 13 ^{*1}	R
30162 40162	Firmware version in hex format Only for Modbus TCP protocol	R
40164	TCP disconnection timeout value, 5 to 65535, in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
40165	Module reset timeout value, 30 to 65535, in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
30166 40166	Module reset status, 1: power-on, 2: watchdog, 3: software reset command Only for Modbus TCP protocol	R
40168	Ethernet host watchdog timeout value, 5 to 65535, in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
30169 40169	Ethernet host watchdog timeout count. Only for Modbus TCP protocol	R
30170 40170	Module name, 0x1100 Only for Modbus TCP protocol	R
40172	Modbus NetID Only for Modbus TCP protocol	R/W
40225 ~ 40238	High alarm limit of channel 0 to 13 ^{*1}	R/W
40258 ~ 40270	Low alarm limit of channel 1 to 13 ^{*1}	R/W
30301 40301	Number of the digital input channels Only for Modbus TCP protocol	R
30311 40311	Number of the digital output channels Only for Modbus TCP protocol	R
30321 40321	Number of the analog input channels Only for Modbus TCP protocol	R
30331 40331	Number of the analog output channels Only for Modbus TCP protocol	R
40449	Wind speed offset in 0.01m/s	R/W

Address	Description	R/W																				
40450	Wind direction offset in degree	R/W																				
40451	Air pressure offset in 0.1hPa	R/W																				
40452	Precipitation intensity offset in 0.01mm/h	R/W																				
40453	Accumulated precipitation offset in 0.1mm	R/W																				
40454	Relative humidity offset in 0.01%	R/W																				
40455	Temperature offset in 0.01°C	R/W																				
40459	Ambient light offset in lux	R/W																				
40461	Altitude offset in 0.1m	R/W																				
40481	Firmware version (low word)	R																				
40482	Firmware version (high word)	R																				
40483	Module name (low word), 0x1100	R																				
40484	Module name (high word), 0x4457	R																				
40485	RS-485 module address, 1 to 247 Only for Modbus RTU protocol	R/W																				
40486	RS-485 baud rate and parity settings Bits 5:0 Baud rate, valid range: 3 ~ 10 <table border="1" data-bbox="523 1227 1115 1460"> <thead> <tr> <th>Code</th> <th>Baud rate</th> <th>Code</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr> <td>0x03</td> <td>1200</td> <td>0x07</td> <td>19200</td> </tr> <tr> <td>0x04</td> <td>2400</td> <td>0x08</td> <td>38400</td> </tr> <tr> <td>0x05</td> <td>4800</td> <td>0x09</td> <td>57600</td> </tr> <tr> <td>0x06</td> <td>9600</td> <td>0x0A</td> <td>115200</td> </tr> </tbody> </table> Bits 7:6 00: no parity, 1 stop bit 01: no parity, 2 stop bit 10: even parity, 1 stop bit 11: odd parity , 1 stop bit Only for Modbus RTU protocol	Code	Baud rate	Code	Baud rate	0x03	1200	0x07	19200	0x04	2400	0x08	38400	0x05	4800	0x09	57600	0x06	9600	0x0A	115200	R/W
Code	Baud rate	Code	Baud rate																			
0x03	1200	0x07	19200																			
0x04	2400	0x08	38400																			
0x05	4800	0x09	57600																			
0x06	9600	0x0A	115200																			
40488	RS-485 response delay time in ms, valid range, 0 ~ 30 Only for Modbus RTU protocol	R/W																				
40489	RS-485 host watchdog timeout value, 0 ~ 255, in 0.1s Only for Modbus RTU protocol	R/W																				

Address	Description	R/W
40492	RS-485 host watchdog timeout count, write 0 to clear Only for Modbus RTU protocol	R/W
40499	Low word of sea level pressure in 0.01hPa, default 101325. Write 1 to 00284 to save it to nonvolatile memory.	R/W
40500	High word of sea level pressure in 0.01hPa	R/W
30513 ~ 30526 40513 ~ 40526	High latched analog input value of channel 0 to 13 ^{*1}	R
30545 ~ 30558 40545 ~ 40558	Low latched analog input value of channel 0 to 13 ^{*1}	R
40865	RTC year, 2000 to 2159	R/W
40866	RTC month, 1 to 12	R/W
40867	RTC date, 1 to 31	R/W
40868	RTC hour, 0 to 23	R/W
40869	RTC minute, 0 to 59	R/W
40870	RTC second, 0 to 59	R/W
40871	Total number of log records, low word	R
40872	Total number of log records, high word	R
40873	The starting record to read log data, low word	R/W
40874	The starting record to read log data, high word	R/W
40875	The status of the data logging, 0: stopped, 1: running	R
40876	The data logger command, 0: stop, 1: run, 2: run in period mode	R/W
40877	Continue writing when data logger is full, 0: no, 1: yes	R/W
40878	Hour of the data logger sampling period, 0 ~ 24	R/W
40879	Minute of the data logger sampling period, 0 ~ 59	R/W
40880	Second of the data logger sampling period, 0 ~ 59	R/W
40881	Starting year when logging in period mode, 2000 ~ 2159	R/W
40882	Starting month when logging in period mode, 1 ~ 12	R/W
40883	Starting date when logging in period mode, 1 ~ 31	R/W
40884	Starting hour when logging in period mode, 0 ~ 23	R/W
40885	Starting minute when logging in period mode, 0 ~ 59	R/W

Address	Description	R/W														
40886	Starting second when logging in period mode, 0 ~ 59	R/W														
40887	Ending year when logging in period mode, 2000 ~ 2159	R/W														
40888	Ending month when logging in period mode, 1 ~ 12	R/W														
40889	Ending date when logging in period mode, 1 ~ 31	R/W														
40890	Ending hour when logging in period mode, 0 ~ 23	R/W														
40891	Ending minute when logging in period mode, 0 ~ 59	R/W														
40892	Ending second when logging in period mode, 0 ~ 59	R/W														
<p>*1: channel 0 ~ 13</p> <table> <tbody> <tr> <td>0: wind speed in 0.01m/s,</td> <td>7: temperature in 0.01°F,</td> </tr> <tr> <td>1: wind direction in degree,</td> <td>8: dew point temperature in 0.01°C,</td> </tr> <tr> <td>2: air pressure in 0.1hPa,</td> <td>9: dew point temperature in 0.01°F,</td> </tr> <tr> <td>3: precipitation intensity in 0.01mm/h,</td> <td>10: low word of ambient light in lux,</td> </tr> <tr> <td>4: accumulated precipitation in 0.1mm,</td> <td>11: high word of ambient light in lux,</td> </tr> <tr> <td>5: relative humidity in 0.01%,</td> <td>12: low word of altitude in 0.1m,</td> </tr> <tr> <td>6: temperature in 0.01°C,</td> <td>13: high word of altitude in 0.1m.</td> </tr> </tbody> </table> <p>Note that channels 0, 3 and 4 are not available to low alarm.</p>			0: wind speed in 0.01m/s,	7: temperature in 0.01°F,	1: wind direction in degree,	8: dew point temperature in 0.01°C,	2: air pressure in 0.1hPa,	9: dew point temperature in 0.01°F,	3: precipitation intensity in 0.01mm/h,	10: low word of ambient light in lux,	4: accumulated precipitation in 0.1mm,	11: high word of ambient light in lux,	5: relative humidity in 0.01%,	12: low word of altitude in 0.1m,	6: temperature in 0.01°C,	13: high word of altitude in 0.1m.
0: wind speed in 0.01m/s,	7: temperature in 0.01°F,															
1: wind direction in degree,	8: dew point temperature in 0.01°C,															
2: air pressure in 0.1hPa,	9: dew point temperature in 0.01°F,															
3: precipitation intensity in 0.01mm/h,	10: low word of ambient light in lux,															
4: accumulated precipitation in 0.1mm,	11: high word of ambient light in lux,															
5: relative humidity in 0.01%,	12: low word of altitude in 0.1m,															
6: temperature in 0.01°C,	13: high word of altitude in 0.1m.															

Address	Description	R/W
00001 ~ 00004	Digital output value of channel 0 to 3	R/W
00129 ~ 00132	Safe value of digital output channel 0 to 3	R/W
00161 ~ 00164	Power on value of digital output channel 0 to 3	R/W
00227	Write 1 to reload default TCP settings Only for Modbus TCP protocol	W
00234	Write 1 to reboot module Only for Modbus TCP protocol	W
00257	RS-485 Protocol, 0: DCON, 1: Modbus RTU Only for Modbus RTU protocol	R/W
00260	Modbus RTU host watchdog mode 0: same as I-7000 1: can use AO and DO command to clear host watchdog timeout status Only for Modbus RTU protocol	R/W

Address	Description	R/W										
00261	RS-485 host watchdog mode, 1: enable, 0: disable. Only for Modbus RTU protocol	R/W										
00270	Host watch dog timeout status, write 1 to clear host watch dog timeout status Only for Modbus RTU protocol	R/W										
00273	Reset status, 1: first read after powered on, 0: not the first read after powered on Only for Modbus RTU protocol	R										
00280	Write 1 to clear all high latched analog input values	W										
00281	Write 1 to clear all low latched analog input values	W										
00284	Write 1 to save sea level pressure, 40499 and 40500 to nonvolatile memory	W										
00290 ~ 00300	Low alarm status of channel 1 to 11 ^{*2} . Write 1 to clear low latched alarm.	R/W										
00193 ~ 00204	High alarm status of channel 0 to 11 ^{*2} . Write 1 to clear high latched alarm.	R/W										
00321 ~ 00332	Enable/disable alarm of channel 0 to 11 ^{*2}	R/W										
00353 ~ 00364	Alarm type, momentary or latched, of channel 0 to 11 ^{*2}	R/W										
00385 ~ 00396	Write 1 to clear high latched value of channel 0 to 11 ^{*2}	W										
00417 ~ 00428	Write 1 to clear low latched value of channel 0 to 11 ^{*2}	W										
<p>*2: channel 0 ~ 11</p> <table> <tbody> <tr> <td>0: wind speed,</td> <td>5: relative humidity,</td> </tr> <tr> <td>1: wind direction,</td> <td>6 and 7: temperature,</td> </tr> <tr> <td>2: air pressure,</td> <td>8 and 9: dew point temperature,</td> </tr> <tr> <td>3: precipitation intensity,</td> <td>10: ambient light</td> </tr> <tr> <td>4: accumulated precipitation,</td> <td>11: altitude.</td> </tr> </tbody> </table> <p>Note that channels 0, 3 and 4 are not available to low alarm.</p>			0: wind speed,	5: relative humidity,	1: wind direction,	6 and 7: temperature,	2: air pressure,	8 and 9: dew point temperature,	3: precipitation intensity,	10: ambient light	4: accumulated precipitation,	11: altitude.
0: wind speed,	5: relative humidity,											
1: wind direction,	6 and 7: temperature,											
2: air pressure,	8 and 9: dew point temperature,											
3: precipitation intensity,	10: ambient light											
4: accumulated precipitation,	11: altitude.											

C-3. DLW-1120 Modbus Address Mappings (Base 1)

Address	Description	R/W
30001 ~ 30023 40001 ~ 40023	Analog input value of channel 0 to 22 ^{*1}	R
30162 40162	Firmware version in hex format Only for Modbus TCP protocol	R
40164	TCP disconnection timeout value, 5 to 65535, in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
40165	Module reset timeout value, 30 to 65535, in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
30166 40166	Module reset status, 1: power-on, 2: watchdog, 3: software reset command Only for Modbus TCP protocol	R
40168	Ethernet host watchdog timeout value, 5 to 65535, in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
30169 40169	Ethernet host watchdog timeout count. Only for Modbus TCP protocol	R
30170 40170	Module name, 0x1120 Only for Modbus TCP protocol	R
40172	Modbus NetID Only for Modbus TCP protocol	R/W
40225 ~ 40247	High alarm limit of channel 0 to 22 ^{*1}	R/W
40258 ~ 40279	Low alarm limit of channel 1 to 22 ^{*1}	R/W
30301 40301	Number of the digital input channels Only for Modbus TCP protocol	R
30311 40311	Number of the digital output channels Only for Modbus TCP protocol	R
30321 40321	Number of the analog input channels Only for Modbus TCP protocol	R
30331 40331	Number of the analog output channels Only for Modbus TCP protocol	R
40449	Wind speed offset in 0.01m/s	R/W

Address	Description	R/W																				
40450	Wind direction offset in degree	R/W																				
40451	Air pressure offset in 0.1hPa	R/W																				
40452	Precipitation intensity offset in 0.01mm/h	R/W																				
40453	Accumulated precipitation offset in 0.1mm	R/W																				
40454	PM2.5 offset in 1 ug/m ³	R/W																				
40455	Relative humidity offset in 0.01%	R/W																				
40456	Temperature offset in 0.01°C	R/W																				
40460	PM1.0 offset in 1 ug/m ³	R/W																				
40461	PM10 offset in 1 ug/m ³	R/W																				
40468	Ambient light offset in lux	R/W																				
40470	Altitude offset in 0.1m	R/W																				
40481	Firmware version (low word)	R																				
40482	Firmware version (high word)	R																				
40483	Module name (low word), 0x1120	R																				
40484	Module name (high word), 0x4457	R																				
40485	RS-485 module address, 1 to 247 Only for Modbus RTU protocol	R/W																				
40486	RS-485 baud rate and parity settings Bits 5:0 Baud rate, valid range: 3 ~ 10 <table border="1" data-bbox="525 1400 1115 1635"> <thead> <tr> <th>Code</th> <th>Baud rate</th> <th>Code</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr> <td>0x03</td> <td>1200</td> <td>0x07</td> <td>19200</td> </tr> <tr> <td>0x04</td> <td>2400</td> <td>0x08</td> <td>38400</td> </tr> <tr> <td>0x05</td> <td>4800</td> <td>0x09</td> <td>57600</td> </tr> <tr> <td>0x06</td> <td>9600</td> <td>0x0A</td> <td>115200</td> </tr> </tbody> </table> Bits 7:6 00: no parity, 1 stop bit 01: no parity, 2 stop bit 10: even parity, 1 stop bit 11: odd parity , 1 stop bit Only for Modbus RTU protocol	Code	Baud rate	Code	Baud rate	0x03	1200	0x07	19200	0x04	2400	0x08	38400	0x05	4800	0x09	57600	0x06	9600	0x0A	115200	R/W
Code	Baud rate	Code	Baud rate																			
0x03	1200	0x07	19200																			
0x04	2400	0x08	38400																			
0x05	4800	0x09	57600																			
0x06	9600	0x0A	115200																			

Address	Description	R/W
40488	RS-485 response delay time in ms, valid range, 0 ~ 30 Only for Modbus RTU protocol	R/W
40489	RS-485 host watchdog timeout value, 0 ~ 255, in 0.1s Only for Modbus RTU protocol	R/W
40492	RS-485 host watchdog timeout count, write 0 to clear Only for Modbus RTU protocol	R/W
40499	Low word of sea level pressure in 0.01hPa, default 101325. Writes 1 to 00284 to save it to nonvolatile memory.	R/W
40500	High word of sea level pressure in 0.01hPa	R/W
30513 ~ 30535 40513 ~ 40535	High latched analog input value of channel 0 to 22 ^{*1}	R
30545 ~ 30567 40545 ~ 40567	Low latched analog input value of channel 0 to 22 ^{*1}	R
40865	RTC year, 2000 to 2159	R/W
40866	RTC month, 1 to 12	R/W
40867	RTC date, 1 to 31	R/W
40868	RTC hour, 0 to 23	R/W
40869	RTC minute, 0 to 59	R/W
40870	RTC second, 0 to 59	R/W
40871	Total number of log records, low word	R
40872	Total number of log records, high word	R
40873	The starting record to read log data, low word	R/W
40874	The starting record to read log data, high word	R/W
40875	The status of the data logging, 0: stopped, 1: running	R
40876	The data logger command, 0: stop, 1: run, 2: run in period mode	R/W
40877	Continue writing when data logger is full, 0: no, 1: yes	R/W
40878	Hour of the data logger sampling period, 0 ~ 24	R/W
40879	Minute of the data logger sampling period, 0 ~ 59	R/W
40880	Second of the data logger sampling period, 0 ~ 59	R/W
40881	Starting year when logging in period mode, 2000 ~ 2159	R/W
40882	Starting month when logging in period mode, 1 ~ 12	R/W

Address	Description	R/W																								
40883	Starting date when logging in period mode, 1 ~ 31	R/W																								
40884	Starting hour when logging in period mode, 0 ~ 23	R/W																								
40885	Starting minute when logging in period mode, 0 ~ 59	R/W																								
40886	Starting second when logging in period mode, 0 ~ 59	R/W																								
40887	Ending year when logging in period mode, 2000 ~ 2159	R/W																								
40888	Ending month when logging in period mode, 1 ~ 12	R/W																								
40889	Ending date when logging in period mode, 1 ~ 31	R/W																								
40890	Ending hour when logging in period mode, 0 ~ 23	R/W																								
40891	Ending minute when logging in period mode, 0 ~ 59	R/W																								
40892	Ending second when logging in period mode, 0 ~ 59	R/W																								
<p>*1: channel 0 ~ 22</p> <table> <tbody> <tr> <td>0: wind speed in 0.01m/s,</td> <td>12: PM10 in 1ug/m³,</td> </tr> <tr> <td>1: wind direction in degree,</td> <td>13: particle count (0.3 - 0.5um),</td> </tr> <tr> <td>2: air pressure in 0.1hPa,</td> <td>14: particle count (0.5 - 1.0um),</td> </tr> <tr> <td>3: precipitation intensity in 0.01mm/h,</td> <td>15: particle count (1.0 - 2.5um),</td> </tr> <tr> <td>4: accumulated precipitation in 0.1mm,</td> <td>16: particle count (2.5 - 5.0um),</td> </tr> <tr> <td>5: PM2.5 in 1ug/m³,</td> <td>17: particle count (5.0 - 7.5um),</td> </tr> <tr> <td>6: relative humidity in 0.01%,</td> <td>18: particle count (7.5 - 10.0um),</td> </tr> <tr> <td>7: temperature in 0.01°C</td> <td>19: low word of ambient light in lux,</td> </tr> <tr> <td>8: temperature in 0.01°F</td> <td>20: high word of ambient light in lux</td> </tr> <tr> <td>9: dew point temperature in 0.01°C</td> <td>21: low word of altitude in 0.1m</td> </tr> <tr> <td>10: dew point temperature in 0.01°F</td> <td>22: high word of altitude in 0.1m</td> </tr> <tr> <td>11: PM1.0 in 1ug/m³</td> <td></td> </tr> </tbody> </table> <p>Note that channels 0, 3, 4, 5, 11, 12, 13, 14, 15, 16, 17 and 18 are not available to low alarm.</p>			0: wind speed in 0.01m/s,	12: PM10 in 1ug/m ³ ,	1: wind direction in degree,	13: particle count (0.3 - 0.5um),	2: air pressure in 0.1hPa,	14: particle count (0.5 - 1.0um),	3: precipitation intensity in 0.01mm/h,	15: particle count (1.0 - 2.5um),	4: accumulated precipitation in 0.1mm,	16: particle count (2.5 - 5.0um),	5: PM2.5 in 1ug/m ³ ,	17: particle count (5.0 - 7.5um),	6: relative humidity in 0.01%,	18: particle count (7.5 - 10.0um),	7: temperature in 0.01°C	19: low word of ambient light in lux,	8: temperature in 0.01°F	20: high word of ambient light in lux	9: dew point temperature in 0.01°C	21: low word of altitude in 0.1m	10: dew point temperature in 0.01°F	22: high word of altitude in 0.1m	11: PM1.0 in 1ug/m ³	
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2: air pressure in 0.1hPa,	14: particle count (0.5 - 1.0um),																									
3: precipitation intensity in 0.01mm/h,	15: particle count (1.0 - 2.5um),																									
4: accumulated precipitation in 0.1mm,	16: particle count (2.5 - 5.0um),																									
5: PM2.5 in 1ug/m ³ ,	17: particle count (5.0 - 7.5um),																									
6: relative humidity in 0.01%,	18: particle count (7.5 - 10.0um),																									
7: temperature in 0.01°C	19: low word of ambient light in lux,																									
8: temperature in 0.01°F	20: high word of ambient light in lux																									
9: dew point temperature in 0.01°C	21: low word of altitude in 0.1m																									
10: dew point temperature in 0.01°F	22: high word of altitude in 0.1m																									
11: PM1.0 in 1ug/m ³																										

Address	Description	R/W
00001 ~ 00004	Digital output value of channel 0 to 3	R/W
00129 ~ 00132	Safe value of digital output channel 0 to 3	R/W
00161 ~ 00164	Power on value of digital output channel 0 to 3	R/W
00227	Write 1 to reload default TCP settings Only for Modbus TCP protocol	W
00234	Write 1 to reboot module Only for Modbus TCP protocol	W
00257	RS-485 Protocol, 0: DCON, 1: Modbus RTU Only for Modbus RTU protocol	R/W
00260	Modbus RTU host watchdog mode 0: same as I-7000 1: can use AO and DO command to clear host watchdog timeout status Only for Modbus RTU protocol	R/W
00261	RS-485 host watchdog mode, 1: enable, 0: disable. Only for Modbus RTU protocol	R/W
00270	Host watch dog timeout status, write 1 to clear host watch dog timeout status Only for Modbus RTU protocol	R/W
00273	Reset status, 1: first read after powered on, 0: not the first read after powered on Only for Modbus RTU protocol	R
00280	Write 1 to clear all high latched analog input values	W
00281	Write 1 to clear all low latched analog input values	W
00284	Write 1 to save sea level pressure, 40499 and 40500 to nonvolatile memory	W
00290 ~ 00309	Low alarm status of channel 1 to 20 ^{*2} . Write 1 to clear low latched alarm.	R/W
00193 ~ 00213	High alarm status of channel 0 to 20 ^{*2} . Write 1 to clear high latched alarm.	R/W
00321 ~ 00341	Enable/disable alarm of channel 0 to 20 ^{*2}	R/W
00353 ~ 00373	Alarm type, momentary or latched, of channel 0 to 20 ^{*2}	R/W
00385 ~ 00405	Write 1 to clear high latched analog input value of channel 0 to 20 ^{*2}	W

Address	Description	R/W																				
00417 ~ 00437	Write 1 to clear low latched analog input value of channel 0 to 20 ^{*2}	W																				
<p>*2: channel 0 ~ 20</p> <table border="0"> <tr> <td>0: wind speed,</td> <td>11: PM1.0,</td> </tr> <tr> <td>1: wind direction,</td> <td>12: PM10,</td> </tr> <tr> <td>2: air pressure,</td> <td>13: particle count (0.3 - 0.5um),</td> </tr> <tr> <td>3: precipitation intensity,</td> <td>14: particle count (0.5 - 1.0um),</td> </tr> <tr> <td>4: accumulated precipitation,</td> <td>15: particle count (1.0 - 2.5um),</td> </tr> <tr> <td>5: PM2.5,</td> <td>16: particle count (2.5 - 5.0um),</td> </tr> <tr> <td>6: relative humidity,</td> <td>17: particle count (5.0 - 7.5um),</td> </tr> <tr> <td>7 and 8: temperature,</td> <td>18: particle count (7.5 - 10.0um),</td> </tr> <tr> <td>9 and 10: dew point temperature,</td> <td>19: ambient light,</td> </tr> <tr> <td></td> <td>20: altitude</td> </tr> </table> <p>Note that channels 0, 3, 4, 5, 11, 12, 13, 14, 15, 16, 17 and 18 are not available to low alarm.</p>			0: wind speed,	11: PM1.0,	1: wind direction,	12: PM10,	2: air pressure,	13: particle count (0.3 - 0.5um),	3: precipitation intensity,	14: particle count (0.5 - 1.0um),	4: accumulated precipitation,	15: particle count (1.0 - 2.5um),	5: PM2.5,	16: particle count (2.5 - 5.0um),	6: relative humidity,	17: particle count (5.0 - 7.5um),	7 and 8: temperature,	18: particle count (7.5 - 10.0um),	9 and 10: dew point temperature,	19: ambient light,		20: altitude
0: wind speed,	11: PM1.0,																					
1: wind direction,	12: PM10,																					
2: air pressure,	13: particle count (0.3 - 0.5um),																					
3: precipitation intensity,	14: particle count (0.5 - 1.0um),																					
4: accumulated precipitation,	15: particle count (1.0 - 2.5um),																					
5: PM2.5,	16: particle count (2.5 - 5.0um),																					
6: relative humidity,	17: particle count (5.0 - 7.5um),																					
7 and 8: temperature,	18: particle count (7.5 - 10.0um),																					
9 and 10: dew point temperature,	19: ambient light,																					
	20: altitude																					

C-4. DLW-1200 Modbus Address Mappings (Base 1)

Address	Description	R/W
30001 ~ 30007 40001 ~ 40007	Analog input value of channel 0 to 6. 0: wind speed in 0.01m/s, 1: wind direction in degree, 2: relative humidity in 0.01%, 3: temperature in 0.01°C, 4:temperature in 0.01°F, 5: dew point temperature in 0.01°C, 6: dew point temperature in 0.01°F	R
30162 40162	Firmware version in hex format Only for Modbus TCP protocol	R
40164	TCP disconnection timeout value, 5 to 65535, in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
40165	Module reset timeout value, 30 to 65535, in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
30166 40166	Module reset status, 1: power-on, 2: watchdog, 3: software reset command Only for Modbus TCP protocol	R
40168	Ethernet host watchdog timeout value, 5 to 65535, in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
30169 40169	Ethernet host watchdog timeout count. Only for Modbus TCP protocol	R
30170 40170	Module name, 0x1200 Only for Modbus TCP protocol	R
40172	Modbus NetID Only for Modbus TCP protocol	R/W
40225 ~ 40231	High alarm limit of channel 0 to 6, 0: wind speed in 0.01m/s, 1: wind direction in degree, 2: relative humidity in 0.01%, 3: temperature in 0.01°C, 4:temperature in 0.01°F, 5: dew point temperature in 0.01°C,	R/W

	6: dew point temperature in 0.01°F.																					
40258 ~ 40263	Low alarm limit of channel 1 to 6, 1: wind direction in degree, 2: relative humidity in 0.01%, 3: temperature in 0.01°C, 4:temperature in 0.01°F, 5: dew point temperature in 0.01°C, 6: dew point temperature in 0.01°F.	R/W																				
30301 40301	Number of the digital input channels Only for Modbus TCP protocol	R																				
30311 40311	Number of the digital output channels Only for Modbus TCP protocol	R																				
30321 40321	Number of the analog input channels Only for Modbus TCP protocol	R																				
30331 40331	Number of the analog output channels Only for Modbus TCP protocol	R																				
40449	Wind speed offset in 0.01m/s	R/W																				
40450	Wind direction offset in degree	R/W																				
40451	Relative humidity offset in 0.01%	R/W																				
40452	Temperature offset in 0.01°C	R/W																				
40481	Firmware version (low word)	R																				
40482	Firmware version (high word)	R																				
40483	Module name (low word), 0x1200	R																				
40484	Module name (high word), 0x4457	R																				
40485	RS-485 module address, 1 to 247 Only for Modbus RTU protocol	R/W																				
40486	RS-485 baud rate and parity settings Bits 5:0 Baud rate, valid range: 3 ~ 10 <table border="1" data-bbox="525 1671 1115 1906"> <thead> <tr> <th>Code</th> <th>Baud rate</th> <th>Code</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr> <td>0x03</td> <td>1200</td> <td>0x07</td> <td>19200</td> </tr> <tr> <td>0x04</td> <td>2400</td> <td>0x08</td> <td>38400</td> </tr> <tr> <td>0x05</td> <td>4800</td> <td>0x09</td> <td>57600</td> </tr> <tr> <td>0x06</td> <td>9600</td> <td>0x0A</td> <td>115200</td> </tr> </tbody> </table>	Code	Baud rate	Code	Baud rate	0x03	1200	0x07	19200	0x04	2400	0x08	38400	0x05	4800	0x09	57600	0x06	9600	0x0A	115200	R/W
Code	Baud rate	Code	Baud rate																			
0x03	1200	0x07	19200																			
0x04	2400	0x08	38400																			
0x05	4800	0x09	57600																			
0x06	9600	0x0A	115200																			

Address	Description	R/W
	Bits 7:6 00: no parity, 1 stop bit 01: no parity, 2 stop bit 10: even parity, 1 stop bit 11: odd parity , 1 stop bit Only for Modbus RTU protocol	
40488	RS-485 response delay time in ms, valid range, 0 ~ 30 Only for Modbus RTU protocol	R/W
40489	RS-485 host watchdog timeout value, 0 ~ 255, in 0.1s Only for Modbus RTU protocol	R/W
40492	RS-485 host watchdog timeout count, write 0 to clear Only for Modbus RTU protocol	R/W
30513 ~ 30519 40513 ~ 40519	High latched analog input value of channel 0 to 6	R
30545 ~ 30551 40545 ~ 40551	Low latched analog input value of channel 0 to 6	R
40865	RTC year, 2000 to 2159	R/W
40866	RTC month, 1 to 12	R/W
40867	RTC date, 1 to 31	R/W
40868	RTC hour, 0 to 23	R/W
40869	RTC minute, 0 to 59	R/W
40870	RTC second, 0 to 59	R/W
40871	Total number of log records, low word	R
40872	Total number of log records, high word	R
40873	The starting record to read log data, low word	R/W
40874	The starting record to read log data, high word	R/W
40875	The status of the data logging, 0: stopped, 1: running	R
40876	The data logger command, 0: stop, 1: run, 2: run in period mode	R/W
40877	Continue writing when data logger is full, 0: no, 1: yes	R/W
40878	Hour of the data logger sampling period, 0 ~ 24	R/W
40879	Minute of the data logger sampling period, 0 ~ 59	R/W
40880	Second of the data logger sampling period, 0 ~ 59	R/W

Address	Description	R/W
40881	Starting year when logging in period mode, 2000 ~ 2159	R/W
40882	Starting month when logging in period mode, 1 ~ 12	R/W
40883	Starting date when logging in period mode, 1 ~ 31	R/W
40884	Starting hour when logging in period mode, 0 ~ 23	R/W
40885	Starting minute when logging in period mode, 0 ~ 59	R/W
40886	Starting second when logging in period mode, 0 ~ 59	R/W
40887	Ending year when logging in period mode, 2000 ~ 2159	R/W
40888	Ending month when logging in period mode, 1 ~ 12	R/W
40889	Ending date when logging in period mode, 1 ~ 31	R/W
40890	Ending hour when logging in period mode, 0 ~ 23	R/W
40891	Ending minute when logging in period mode, 0 ~ 59	R/W
40892	Ending second when logging in period mode, 0 ~ 59	R/W

Address	Description	R/W
00001 ~ 00004	Digital output value of channel 0 to 3	R/W
00129 ~ 00132	Safe value of digital output channel 0 to 3	R/W
00161 ~ 00164	Power on value of digital output channel 0 to 3	R/W
00227	Write 1 to reload default TCP settings Only for Modbus TCP protocol	W
00234	Write 1 to reboot module Only for Modbus TCP protocol	W
00257	RS-485 Protocol, 0: DCON, 1: Modbus RTU Only for Modbus RTU protocol	R/W
00260	Modbus RTU host watchdog mode 0: same as I-7000 1: can use AO and DO command to clear host watchdog timeout status Only for Modbus RTU protocol	R/W
00261	RS-485 host watchdog mode, 1: enable, 0: disable. Only for Modbus RTU protocol	R/W
00270	Host watch dog timeout status, write 1 to clear host watch dog timeout status Only for Modbus RTU protocol	R/W
00273	Reset status, 1: first read after powered on, 0: not the first read after powered on Only for Modbus RTU protocol	R
00280	Write 1 to clear all high latched analog input values	W
00281	Write 1 to clear all low latched analog input values	W
00290 ~ 00295	Low alarm status of channel 1 to 6. Write 1 to clear low latched alarm.	R/W
00193 ~ 00199	High alarm status of channel 0 to 6. Write 1 to clear high latched alarm.	R/W
00321 ~ 00327	Enable/disable alarm of channel 0 to 6	R/W
00353 ~ 00359	Alarm type, momentary or latched, of channel 0 to 6	R/W
00385 ~ 00391	Write 1 to clear high latched analog input value of channel 0 to 6	W
00417 ~ 00423	Write 1 to clear low latched analog input value of channel 0 to 6	W

C-5. DLW-1243 Modbus Address Mappings (Base 1)

Address	Description	R/W
30001 ~ 30010 40001 ~ 40010	Analog input value of channel 0 to 9 ^{*1}	R
30162 40162	Firmware version in hex format Only for Modbus TCP protocol	R
40164	TCP disconnection timeout value, 5 to 65535 in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
40165	Module reset timeout value, from 30 to 65535 in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
30166 40166	Module reset status, 1: power-on, 2: watchdog, 3: software reset command Only for Modbus TCP protocol	R
40168	Ethernet host watchdog timeout value, 5 to 65535 in seconds, 0 to disable. Only for Modbus TCP protocol	R/W
30169 40169	Ethernet host watchdog timeout count. Only for Modbus TCP protocol	R
30170 40170	Module name, 0x1243 Only for Modbus TCP protocol	R
40172	Modbus NetID Only for Modbus TCP protocol	R/W
40225 ~ 40234	High alarm limit of channel 0 to 9 ^{*1}	R/W
40258 ~ 40266	Low alarm limit of channel 1 to 9 ^{*1}	R/W
30301 40301	Number of the digital input channels Only for Modbus TCP protocol	R
30311 40311	Number of the digital output channels Only for Modbus TCP protocol	R
30321 40321	Number of the analog input channels Only for Modbus TCP protocol	R
30331 40331	Number of the analog output channels Only for Modbus TCP protocol	R
40449	Wind speed offset in 0.01m/s	R/W

Address	Description	R/W																				
40450	Wind direction offset in degree	R/W																				
40451	CO offset in ppm	R/W																				
40452	CO ₂ offset in ppm	R/W																				
40453	NH ₃ offset in ppm	R/W																				
40454	Relative humidity offset in 0.01%	R/W																				
40455	Temperature offset in 0.01°C	R/W																				
40481	Firmware version (low word)	R																				
40482	Firmware version (high word)	R																				
40483	Module name (low word), 0x1243	R																				
40484	Module name (high word), 0x4457	R																				
40485	RS-485 module address, 1 to 247 Only for Modbus RTU protocol	R/W																				
40486	RS-485 baud rate and parity settings Bits 5:0 Baud rate, valid range: 3 ~ 10 <table border="1" data-bbox="529 1115 1120 1348"> <thead> <tr> <th>Code</th> <th>Baud rate</th> <th>Code</th> <th>Baud rate</th> </tr> </thead> <tbody> <tr> <td>0x03</td> <td>1200</td> <td>0x07</td> <td>19200</td> </tr> <tr> <td>0x04</td> <td>2400</td> <td>0x08</td> <td>38400</td> </tr> <tr> <td>0x05</td> <td>4800</td> <td>0x09</td> <td>57600</td> </tr> <tr> <td>0x06</td> <td>9600</td> <td>0x0A</td> <td>115200</td> </tr> </tbody> </table> Bits 7:6 00: no parity, 1 stop bit 01: no parity, 2 stop bit 10: even parity, 1 stop bit 11: odd parity , 1 stop bit Only for Modbus RTU protocol	Code	Baud rate	Code	Baud rate	0x03	1200	0x07	19200	0x04	2400	0x08	38400	0x05	4800	0x09	57600	0x06	9600	0x0A	115200	R/W
Code	Baud rate	Code	Baud rate																			
0x03	1200	0x07	19200																			
0x04	2400	0x08	38400																			
0x05	4800	0x09	57600																			
0x06	9600	0x0A	115200																			
40488	RS-485 response delay time in ms, valid range from 0 to 30 Only for Modbus RTU protocol	R/W																				
40489	RS-485 host watchdog timeout value, 0 ~ 255 in 0.1s Only for Modbus RTU protocol	R/W																				
40492	RS-485 host watchdog timeout count, write 0 to clear Only for Modbus RTU protocol	R																				

Address	Description	R/W
40496	Automatic baseline correction for CO ₂ measurement, 0: disable, 1:enable	R/W
30513 ~ 30522 40513 ~ 40522	High latched analog input value of channel 0 to 9 ^{*1}	R/W
30545 ~ 30554 40545 ~ 40554	Low latched analog input value of channel 0 to 9 ^{*1}	R/W
40865	RTC year, 2000 to 2159	R/W
40866	RTC month, 1 to 12	R/W
40867	RTC date, 1 to 31	R/W
40868	RTC hour, 0 to 23	R/W
40869	RTC minute, 0 to 59	R/W
40870	RTC second, 0 to 59	R/W
40871	Total number of log records, low word	R
40872	Total number of log records, high word	R
40873	The starting record to read log data, low word	R/W
40874	The starting record to read log data, high word	R/W
40875	The status of the data logging, 0: stopped, 1: running	R
40876	The data logger command, 0: stop, 1: run, 2: run in period mode	R/W
40877	Continue writing when data logger is full, 0: no, 1: yes	R/W
40878	Hour of the data logger sampling period, 0 ~ 24	R/W
40879	Minute of the data logger sampling period, 0 ~ 59	R/W
40880	Second of the data logger sampling period, 0 ~ 59	R/W
40881	Starting year when logging in period mode, 2000 ~ 2159	R/W
40882	Starting month when logging in period mode, 1 ~ 12	R/W
40883	Starting date when logging in period mode, 1 ~ 31	R/W
40884	Starting hour when logging in period mode, 0 ~ 23	R/W
40885	Starting minute when logging in period mode, 0 ~ 59	R/W
40886	Starting second when logging in period mode, 0 ~ 59	R/W
40887	Ending year when logging in period mode, 2000 ~ 2159	R/W
40888	Ending month when logging in period mode, 1 ~ 12	R/W

Address	Description	R/W
40889	Ending date when logging in period mode, 1 ~ 31	R/W
40890	Ending hour when logging in period mode, 0 ~ 23	R/W
40891	Ending minute when logging in period mode, 0 ~ 59	R/W
40892	Ending second when logging in period mode, 0 ~ 59	R/W

Address	Description	R/W
00001 ~ 00004	Digital output value of channel 0 to 3	R/W
00129 ~ 00132	Safe value of digital output channel 0 to 3	R/W
00161 ~ 00164	Power on value of digital output channel 0 to 3	R/W
00227	Write 1 to reload default TCP settings Only for Modbus TCP protocol	W
00234	Write 1 to reboot module Only for Modbus TCP protocol	W
00257	RS-485 Protocol, 0: DCON, 1: Modbus RTU Only for Modbus RTU protocol	R/W
00260	Modbus RTU host watchdog mode 0: same as I-7000 1: can use AO and DO command to clear host watchdog timeout status Only for Modbus RTU protocol	R/W
00261	RS-485 host watchdog mode, 1: enable, 0: disable. Only for Modbus RTU protocol	R/W
00270	Host watch dog timeout status, write 1 to clear host watch dog timeout status Only for Modbus RTU protocol	R/W
00273	Reset status, 1: first read after powered on, 0: not the first read after powered on Only for Modbus RTU protocol	R
00280	Write 1 to clear all high latched analog input values	W
00281	Write 1 to clear all low latched analog input values	W
00290 ~ 00298	Low alarm status of channel 1 to 9 ^{*2} . Write 1 to clear low latched alarm.	R/W

Address	Description	R/W
00193 ~ 00202	High alarm status of channel 0 to 9 ^{*2} . Write 1 to clear high latched alarm.	R/W
00321 ~ 00330	Enable/disable alarm of channel 0 to 9 ^{*2}	R/W
00353 ~ 00362	Alarm type, momentary or latched, of channel 0 to 9 ^{*2}	R/W
00385 ~ 00394	Write 1 to clear high latched analog input value of channel 0 to 9 ^{*2}	W
00417 ~ 00426	Write 1 to clear low latched analog input value of channel 0 to 9 ^{*2}	W
<p>*1: channel 0 ~ 9, Note that channels 0, 2, 3 and 4 are not available to low alarm.</p> <ul style="list-style-type: none"> 0: wind speed in 0.01m/s, 1: wind direction in degree, 2: CO in ppm, 3: CO₂ in ppm, 4: NH₃ in ppm, 5: relative humidity in 0.01%, 6: temperature in 0.01°C, 7: temperature in 0.01°F 8: dew point temperature in 0.01°C 9: dew point temperature in 0.01°F 		
<p>*2: channel 0 ~ 9, Note that channels 0, 2, 3 and 4 are not available to low alarm.</p> <ul style="list-style-type: none"> 0: wind speed, 1: wind direction, 2: CO, 3: CO₂, 4: NH₃, 5: relative humidity, 6 and 7: temperature, 8 and 9: dew point temperature. 		

Revision History

Revision	Date	Description
1.0.0	2023/ 09	First released