iSN-201 Series User Manual

Warranty

All products manufactured by ICP DAS are under warranty regarding defective materials for a period of one year, beginning from the date of delivery to the original purchaser.

Warning

ICP DAS assumes no liability for any damage resulting from the use of this product. ICP DAS reserves the right to change this manual at any time without notice. The information furnished by ICP DAS is believed to be accurate and reliable. However, no responsibility is assumed by ICP DAS for its use, or for any infringements of patents or other rights of third parties resulting from its use.

Copyright

Trademarks

Names are used for identification purposes only and may be registered trademarks of their respective companies.

Contact Us

If you have any problems, please feel free to contact us by email at: service@icpdas.com.

Table of Contents

1. Introduction

The iSN-201 series modules a lux, temperature and humidity sensor for measuring indoor illumination、temperature and humidity . A wide range of interface connections can be selected to suit individual needs, including RS-485/ Ethernet/ Bluetooth/ Wi-Fi models, and the various models provide support for the DCON and Modbus RTU/TCP protocols, and can be easily integrated into existing HMI/SCADA/central control systems.

The screw-free quick-connect connector and the DIP and rotary switches make the modules easy to install, repair, and maintain. The casing of each module is made from UL94-V2 rated fireproof material, and the white minimalist exterior design ensures that it easy to match with interior decoration.

The iSN-201 series contains RS-485, Ethernet and PoE communication interfaces, the most common communication interfaces in industrial network. With additional Wi-Fi interface, the iSN-201-WF provides a WLAN connection which makes an easy way to incorporate wireless connectivity into monitoring and control systems.

The iSN-201-WF modules are complied with IEEE 802.11b/g/n standard from 2.4~2.5 GHz. It can be used to provide up to 11 Mbps for IEEE 802.11b and 54 Mbps for IEEE 802.11g to connect to your wireless LAN.

2. Hardware Information

2.1. Specifications

| Model	iSN-201-E	iSN-201-BLE	iSN-201-WF
Lux Sensor			
Measurement Range	0 to 20000 Lux		
Resolution	1 Lux		
Accuracy	±5%		
Temperature			
Measurement Range	-40 ~ +120°C		
Fire Alarm	65°C (Programmable)		
Resolution	0.01°C		
Accuracy	± 0.5°C		
Relative Humidity			
Range	0 to 100% RH		
Resolution	0.01% RH		
Accuracy	± 5% RH		
Relay Output			
Channel	1		
Type	Power Relay, Form C		
Max. Load Current	NO: 10 A @ 250 VAC NC: 6 A @ 250 VAC		
Load Wattage	Incandescent Bulb: 1500 W Max.; Fluorescent Lamp 300 W Max.		

Model	iSN-201-E	iSN-201-BLE	iSN-201-WF
Communication			
Node Address	Hardware: 96 to 127 / Software:1 to 255		
Protocol	DCON, Modbus RTU, Modbus TCP, MQTT		
Wireless interface	-	Bluetooth	Wi-Fi
Standard Supported	-	BT 4.0	IEEE 802.11 b/g/n
Wireless Mode	-	Slave	Infrastructure/ Limited AP
Wireless Security	-	AES 128	WEP, WPA, WPA2
Transmission Range	-	20 M(LOS)	50 M(LOS)
LED Display			
System LED Indictor	1 LED as Power/Communication Indicator		
I/O LED Indicator	1 LED as Alarm Indicator		
EMS Protection			
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal, ±8 kV Air for Random Point		
EFT (IEC 61000-4-4)	±4 kV for Power Line		
Power Requirements			
Reverse Polarity Protection	Yes		
Powered from Terminal Block	+10 to +48 VDC		
Powered from PoE	Yes, IEEE 802.3af, Class1		
Consumption	2 W	2.3 W	2.3 W
Mechanical			
Installation	Ceiling mounting		
Protection Class	IP20		
Dimensions (D x H)	Ø 150 mm x 53 mm		
Environment			
Operating Temperature	0 to +75°C		
Storage Temperature	-30 to +80°C		
Humidity	10 to 90% RH, Non-condensing		

2.2. Appearance

Front

Rear

SW1-	ON	OFF
1	DCON	Modbus
2	SW Config	HW Config
3	High Node	Low Node
4	INIT	RUN
5~10	Reserved	
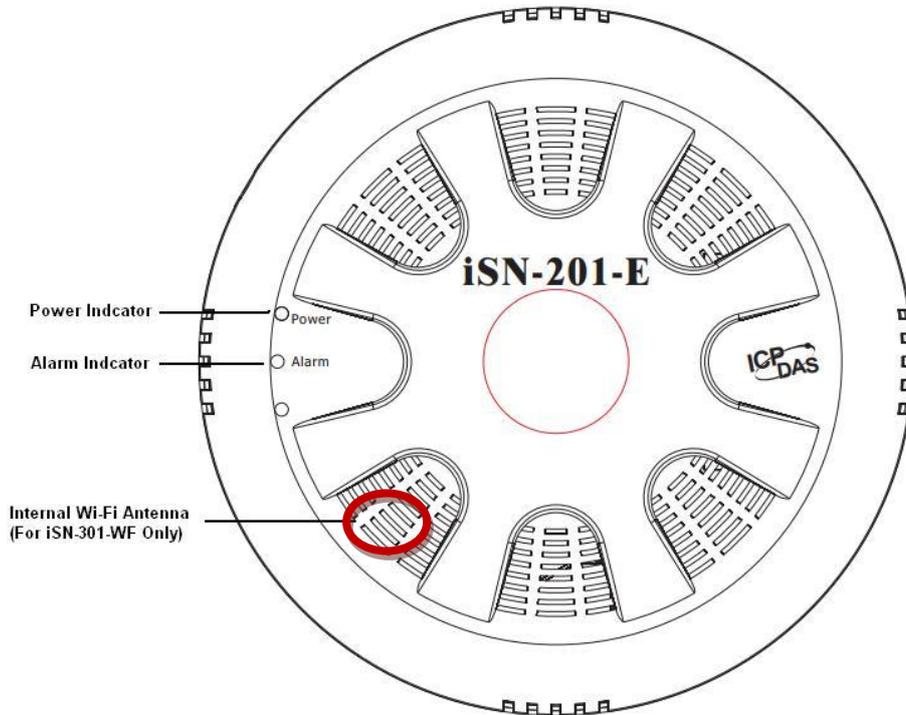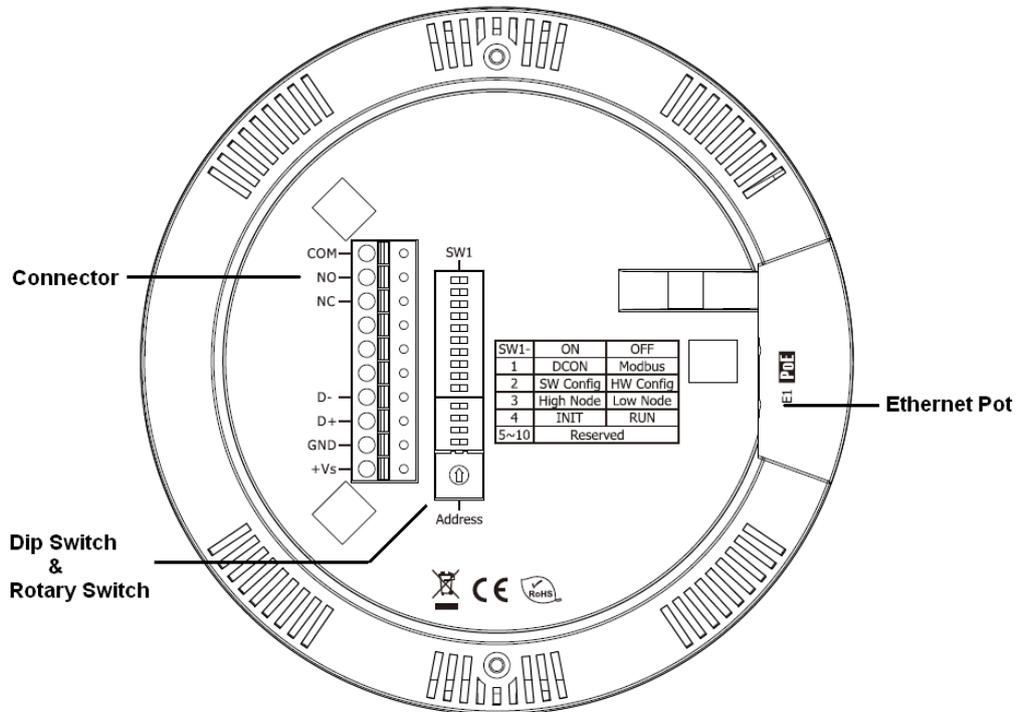
2.3. Pin Assignments

iSN-201	Pin	Description
	COM	Relay's Common Contact
	N.O	Relay's Normally Open Contact
	N.C	Relay's Normally Closed Contact
	N/A	
	N/A	
	N/A	
	D-	RS-485 Serial Communication Interface
	D+	
	GND	Ground
	+VS	Power Input (+10 to +48 VDC)
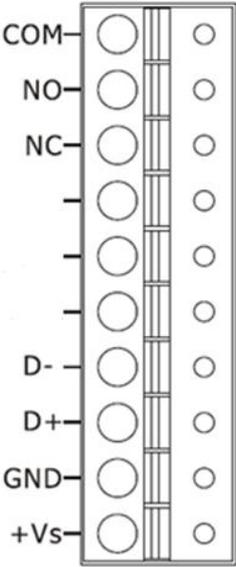
2.4. Wiring Connections
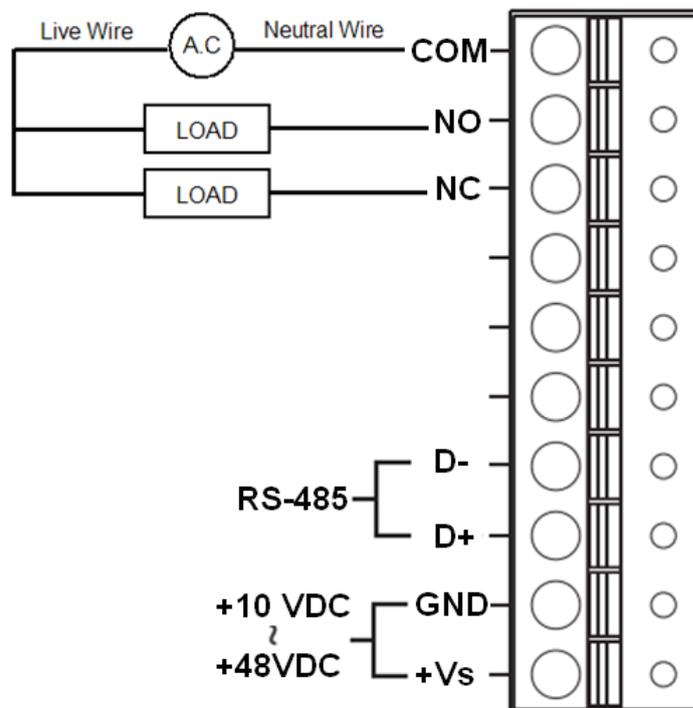
2.5. Hardware Configuration

DIP switches located on the rear side of the iSN-201 series module allow for configuration options. The switches are numbered 1 through 10 and can be set to ON or OFF. All the configuration will only take effect when the SW1 DIP[2] is set to OFF(Hardware) position. Following is more information on the DIP switch settings.
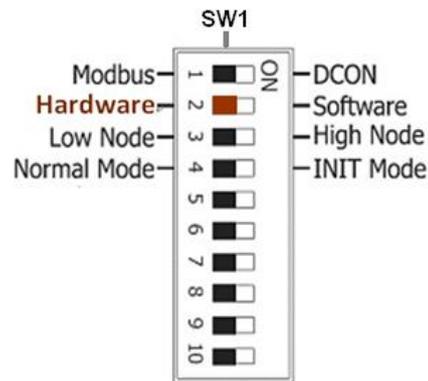

|	
DIP [1]	**Protocol:** Used to specify the communication protocol to be used by the module ON: DCON OFF: Modbus RTU (default)
DIP [2]	**Configuration:** Used to specify the configuration settings for the module ON: Configure the module using DCON/Modbus commands (Software) OFF: Configure the module via DIP switch (Hardware, default)
DIP [3]	**Address:** Used to specify the module address when DIP [2] is set to OFF ON: Use rotary switch positions 0 to F for node addresses 96 to 111 OFF: Use rotary switch positions 0 to F for node addresses 112 to 127 (default)
DIP [4]	**Mode:** Used to specify the operating mode ON: Operating in INIT mode OFF: Operating in Normal mode (default)

2.6. Hardware Installation

Installation Instructions

1. Position the Mounting Plate in the desired location. Mark the positions of the two screw holes and a 10 mm hole, as indicated below.
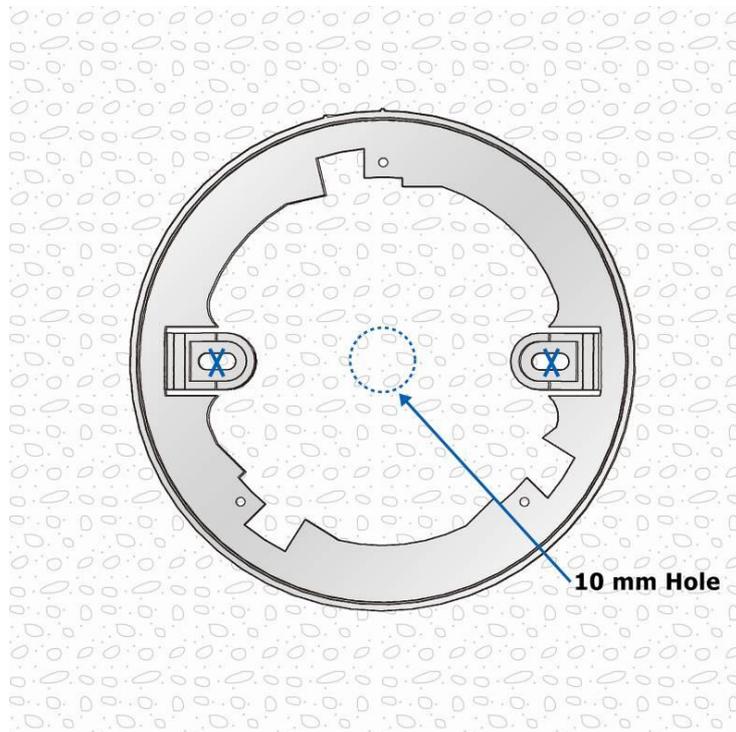
2. Secure the Mounting Plate to the ceiling using the M4x12 drywall screws and the optional octagonal box.
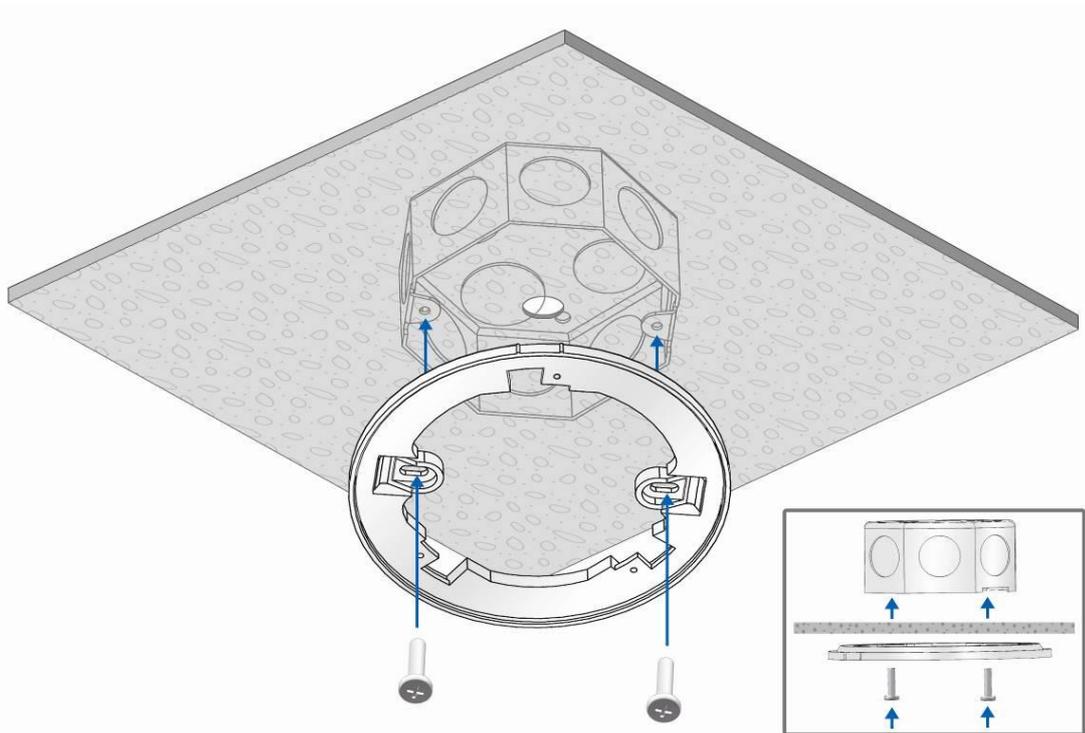
3. Feed the wires through the wiring hole.
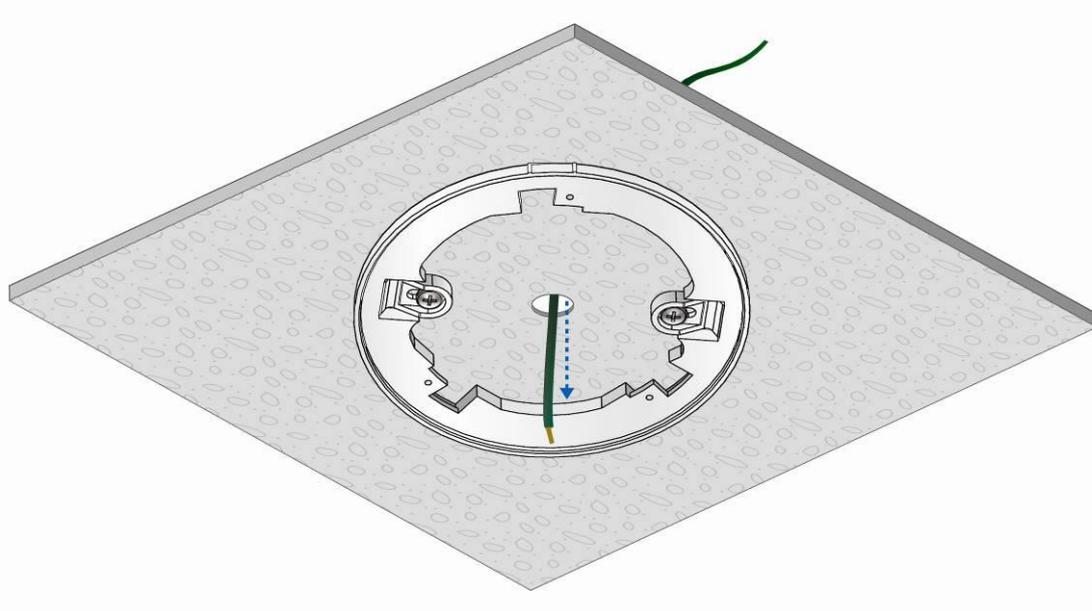
4. Connect all the wires to the appropriate locations on the connector.
5. Align the marks on the iSN-201 with the marks on the mounting Plate.
6. Rotate the iSN-201 clockwise until it locks into place.
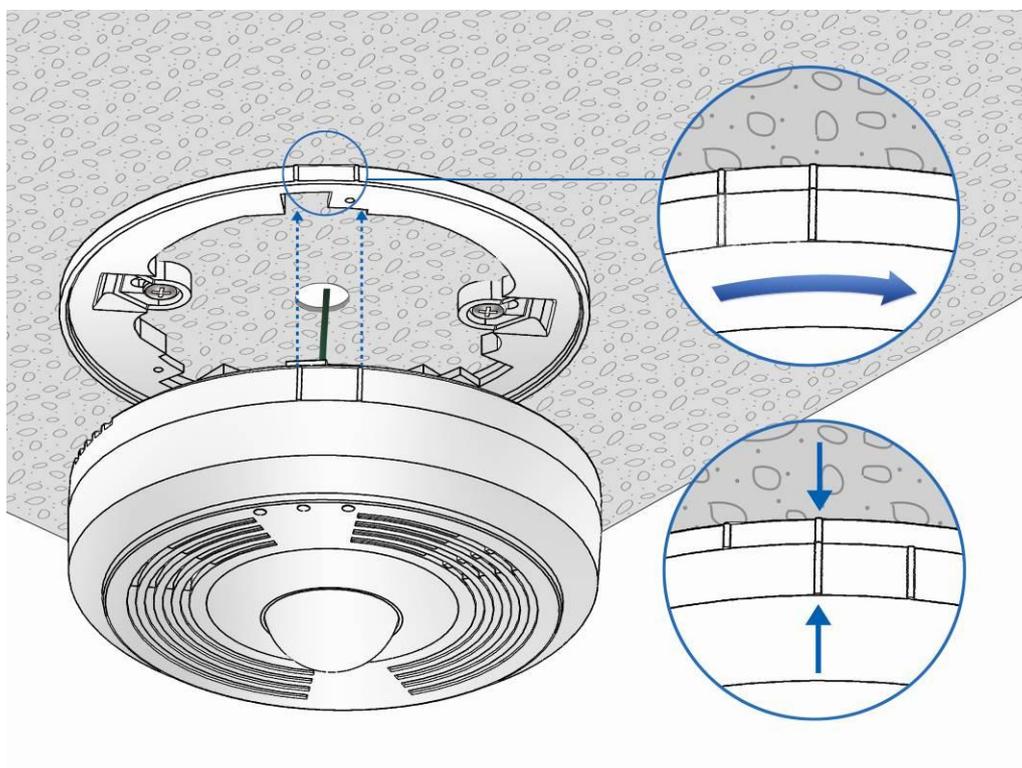
3. Configuration via Web Browser

3.1 Connecting the Power and the Host PC

Non-PoE

Hub/Switch

Ethernet Port

+Vs

GND

+10 to +48 VDC
Power Supply

PoE

PoE Hub/Switch

Ethernet Port

+12 to +48 VDC
Power Supply
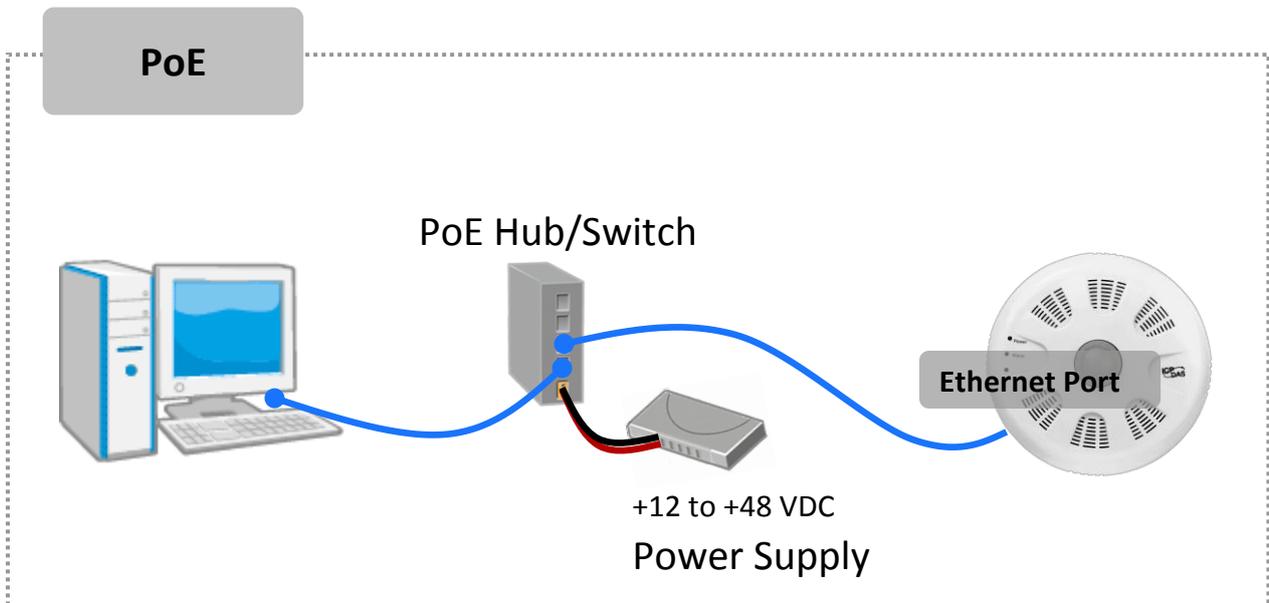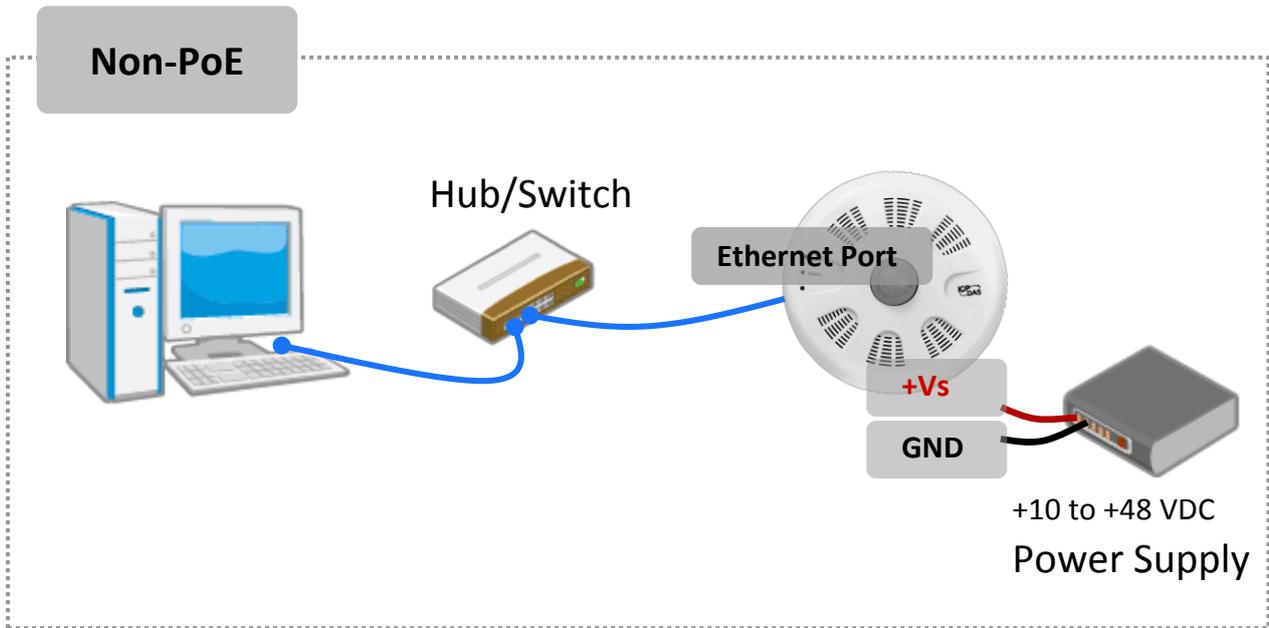
For connecting with PC via Wi-Fi

The iSN-201-WF logger can connect to the PC through Wi-Fi with power input requirement of +12 ~ +48 V_{DC}.

The iSN-201-WF device can be configured as station mode, such that the PC/Laptop can be connected through Wi-Fi AP.

The iSN-201-WF device can be configured as AP mode, such that the PC/Laptop can be connected through Wi-Fi directly. Only one device is allowed to be connected to the iSN-201-WF module in AP mode.

A tip for connecting the wire to the connector

1. Use the blade of the flat-head screwdriver to push down the wire clamp.

2. While holding the screwdriver in place, insert the wire into the terminal block.

3. Release the screwdriver.

1.2 cm
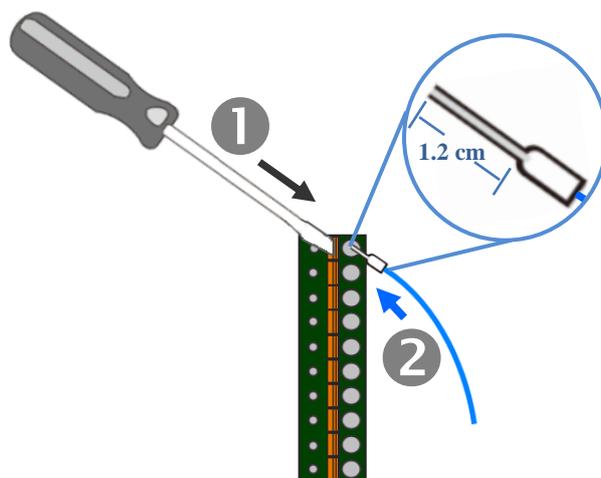
A tip for removing the wire from the connector

1. Use the blade of the flat-head screwdriver to push down the wire clamp.

2. While holding the screwdriver in place, remove the wire from the terminal block.

3. Release the screwdriver.
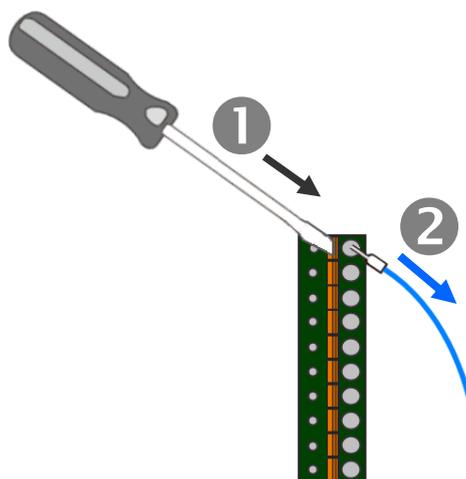
3.2. Network Configuration

### Step 1: Get the eSearch Utility

Download the eSearch Utility from

http://ftp.icpdas.com/pub/cd/iiot/utility/esearch/

Step 2: Install the eSearch utility
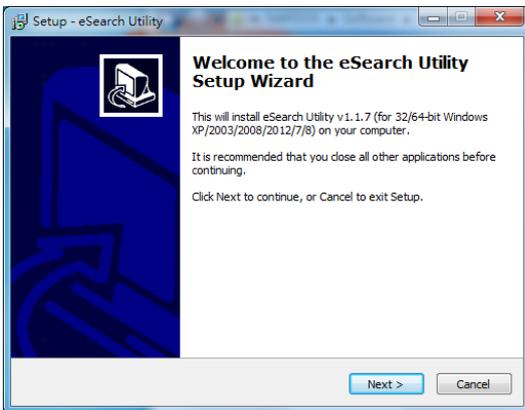
After the installation has been completed, a new short cut for the eSearch Utility will be displayed on your desktop.

Step 3: Search the iSN-201 series module on the Ethernet

Launch eSearch Utility and click the "Search Servers" button to search for the iSN-201 module
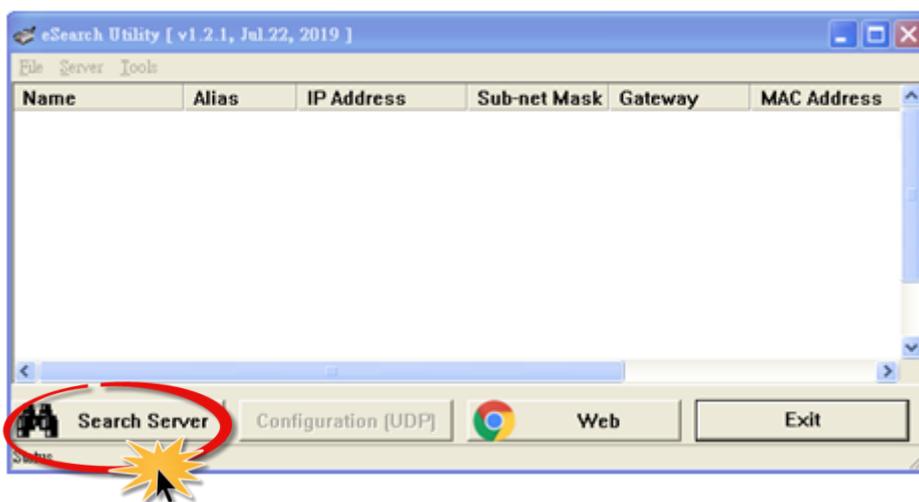
Step 4: Double-click the name of the module to open the "Configure Server (UDP)" dialog box

Factory Default Settings:

IP	192.168.255.1
Gateway	192.168.0.1
Mask	255.255.0.0
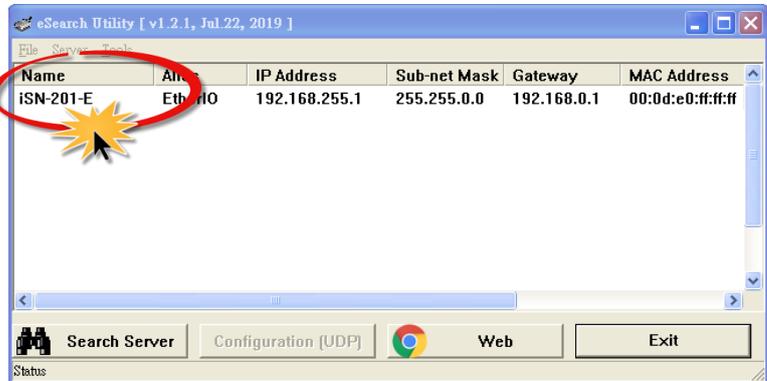
Step 5: Assign a new IP address

Enter valid **IP Address, Subnet Mask** and **Gateway** for your network, and then click the **"OK"** button. The new settings for the iSN-201 module will take effect within 2 seconds. If the correct network configuration information is unknown, contact the Network Administrator to obtain the relevant details.
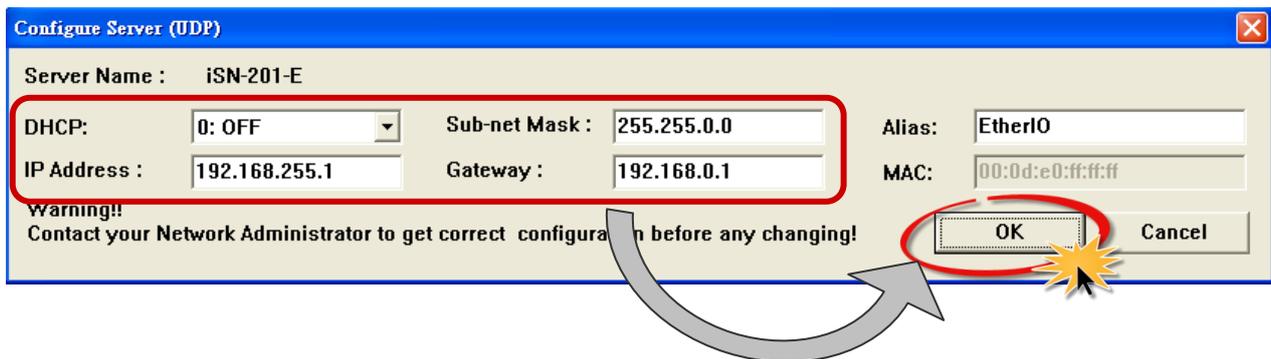
Step 6: Wait for 2 seconds and then click the "Search Servers" button again to ensure that the iSN-201 module is operating correctly using the new configuration
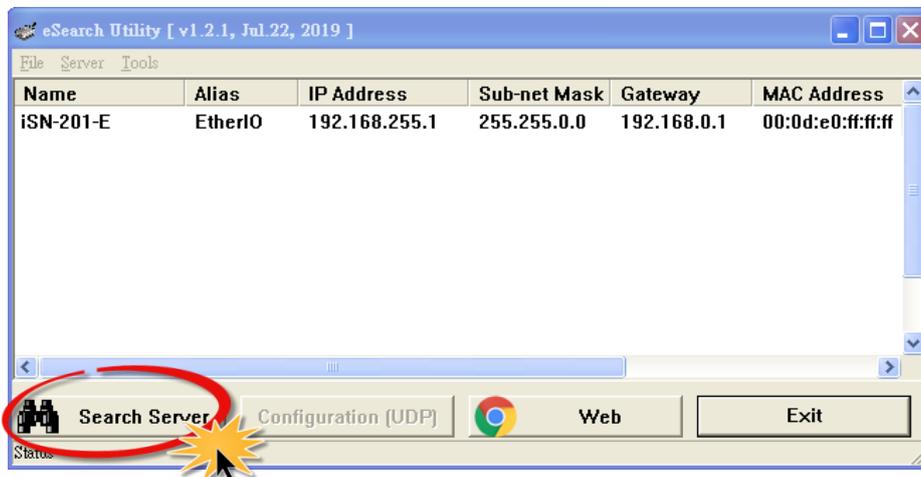
3.3. Logging into the iSN-201

Step 1: Open a new browser windows

Open a standard web browser. For example, Mozilla Firefox, Google Chrome and Internet Explorer are reliable and popular internet browsers that can be used to configure the iSN-201 module.

⚠️ *If you intend to use Internet Explorer, ensure that the cache to functions is disabled in order to avoid browser access errors. Detailed information how to do this can be found in "FAQ_General_001: How to avoid a browser access error that causes a blank page to be displayed when using Internet Explorer".*

Step 2: Enter the new IP address for the iSN-201 and press the Enter key
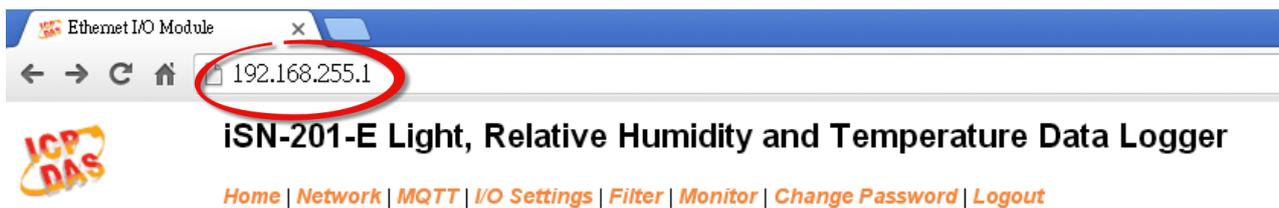
Step 3: Enter the password to login to the web interface

Enter the password in the login password field (default is "**Admin**"), and then click the **"Submit"** button to enter the configuration web page.
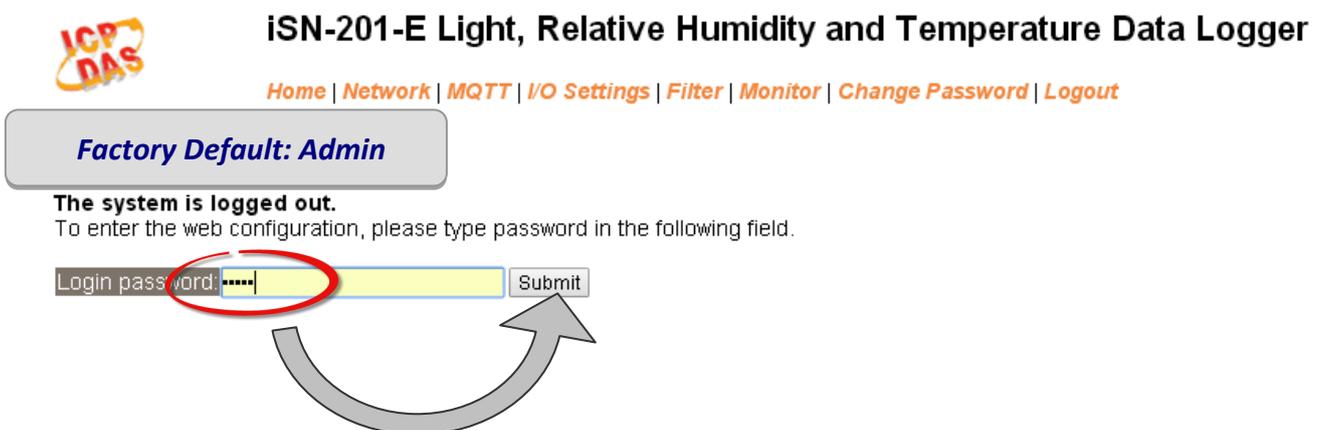
3.4. Home

The first page displayed is Home, it shows the main *Status & Configuration* page.

This section provides basic information related to the iSN-201 series module including the Model Name, Firmware version, IP Address, Initial Switch position, Alias Name, MAC Address, and the TCP Port and System Timeout values. If the firmware for the iSN-201 module is updated, you can check the version information here.

Status & Configuration

Model Name	iSN-201-E	Alias Name	EtherIO
Firmware Version	B4.2 [Dec.10, 2018]	MAC Address	00-0D-E0-FF-FF-FF
IP Address	10.1.0.51	TCP Port Timeout (Socket Watchdog, Seconds)	180
Initial Switch	ON	System Timeout (Network Watchdog, Seconds)	0

3.5. Network

Clicking the *Network* tab to go to the page allowing you to verify the current settings, configure the IP Address and general parameters, and restore the default settings for the iSN-201 module, each of which will be described in more detail below.

Network and Miscellaneous Settings

Model Name	iSN-201-E	Alias Name	EtherIO
Firmware Version	B4.2 [Dec.10, 2018]	MAC Address	00-0D-E0-FF-FF-FF
IP Address	10.1.0.51	TCP Port Timeout (Socket Watchdog, Seconds)	180
Initial Switch	ON	System Timeout (Network Watchdog, Seconds)	0

3.5.1. IP Address Configuration

IP Address Configuration

IP Address	
Address Type	Static IP ▼
Static IP Address	192 . 168 . 255 . 1
Subnet Mask	255 . 255 . 0 . 0
Default Gateway	192 . 168 . 0 . 1
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	

The following table provides an overview of the parameters contained in the *IP Address Configuration* section:

Item	Description
Address Type	**Static IP:** If there is no DHCP server installed in your network, you can configure the network settings manually. Refer to Section "*Manual Configuration*" below for more details.
	DHCP: Dynamic Host Configuration Protocol (DHCP) is a network application protocol that automatically assigns an IP address to each device. Refer to Section "*DHCP Configuration*" below for more details.
Static IP Address	Each iSN-201 module connected to the network must have its own unique IP address. This parameter is used to assign a specific IP address if there is no DHCP server on the network.
Subnet Mask	This parameter is used to assign the subnet mask for the iSN-201 module. The subnet mask indicates which portion of the IP address is used to identify the local network or subnet.
Default Gateway	This parameter is used to assign the IP Address of the Gateway to the iSN-201 module. A Gateway (or router) is a device that is used to connect an individual network to one or more additional networks.
MAC Address	This parameter is used to set the User-defined MAC address, which must be in the format FF-FF-FF-FF-FF-FF.

| Modbus TCP Slave	
Local Modbus TCP port	This parameter is used to set the local port for Modbus communication. The default value is 502.
Local Modbus NetID	This parameter is used to set the Network ID for Modbus communication. The default value is 1.
	Enable option: the NetID will be checked when the iSN-201 module receives a Modbus command for identifying if to respond to this command. Disable option: the NetID will not be checked when the iSN-201 module receives a Modbus command. The iSN-201 module will respond to every command it receives.
Update Settings	Click this button to save the revised settings to the iSN-201 module.

DHCP Configuration

DHCP configuration is very easy to perform. If a DHCP server is connected to you network, network addresses will be dynamically configured after the following setting:

Step 1: Select "**DHCP**" from the **Address Type** drop-down menu
Step 2: Click the "**Update Settings**" button to complete the configuration

IP Address Configuration

IP Address		
Address Type	DHCP ▼	
Static IP Address	192 . 168 . 255 . 1	
Subnet Mask	255 . 255 . 0 . 0	
Default Gateway	192 . 168 . 0 . 1	
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	

Manual Configuration

When using manual configuration, the network settings should be assigned as follows:

Step 1: Select "**Static IP**" from the **Address Type** drop-down menu
Step 2: Enter the relevant details in the respective network settings fields.
Step 3: Click the "**Update Settings**" button to complete the configuration

IP Address Configuration

IP Address		
Address Type	Static IP ▼	
Static IP Address	192 . 168 . 255 . 1	
Subnet Mask	255 . 255 . 0 . 0	
Default Gateway	192 . 168 . 0 . 1	
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	

3.5.2. General 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	

The following table provides an overview of the parameters contained in the *General Settings* section:

| Item	Description
Ethernet Speed	This parameter is used to set the Ethernet speed. The default value is Auto (Auto = 10/100 Mbps Auto-negotiation).
System Timeout (Network Watchdog)	This parameter is used to configure the system timeout value. If there is no activity on the network for a certain period of time, the system will be rebooted based on the configured system timeout value.
TCP Timeout (Seconds)	This parameter is used to configure the TCP timeout value. If Modbus TCP communication is idle for a certain period of time, the system will cut off the connection.
UDP Configuration	This parameter is used to enable or disable UDP configuration function.
Web Auto-logout	This parameter is used to configure the automatic logout value. If there is no activity on the web server for a certain period of time, the current user account will automatically logged out.
Alias Name	This parameter is used to assign an alias name for each iSN-201 module to assist with easy identification.
Update Settings	Click this button to save the revised settings to the iSN-201 module.

3.5.3. Restore Factory Defaults

After performing the following operation, items will be restored to factory default settings as below:

Factory Default Settings	
IP Address	192.168.255.1
Gateway Address	192.168.0.1
Subnet Mask	255.255.0.0

Step 1: Click the **"Restore Defaults"** button to reset the configuration.
Step 2: Click the **"OK"** button in the message dialog box.
Step 3: Refer to step 3 and step 4 in Section "**3.2. Network Configuration**", to check whether the settings are restored to factory defaults.
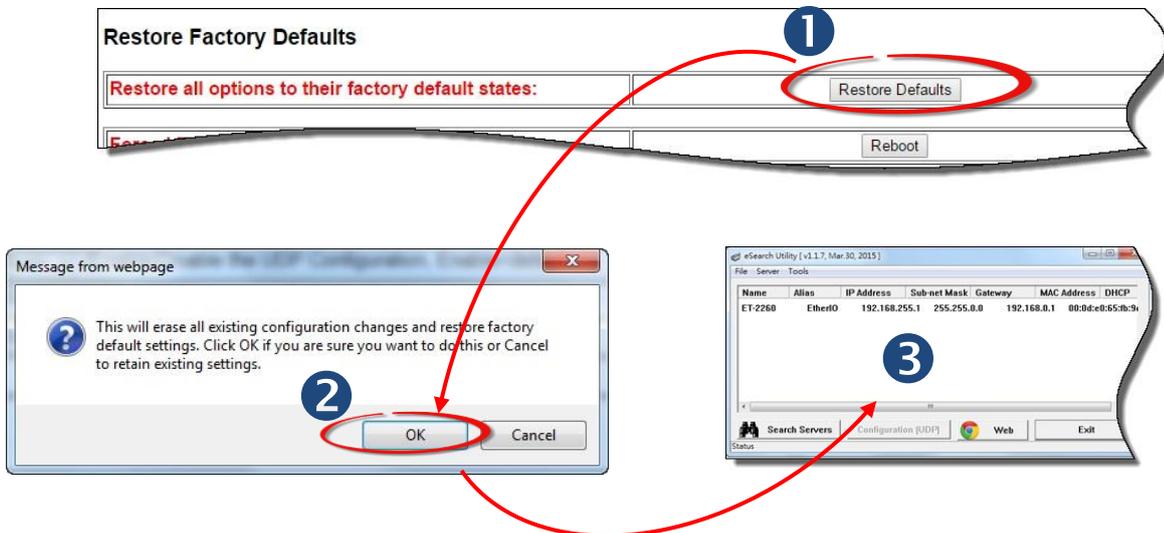
3.5.4. Forced Reboot

The **Forced Reboot** function can be used to force the iSN-201 module to reboot or to remotely reboot the device. After the iSN-201 module has rebooted, the original login screen will be displayed and your Login Password will be requested.
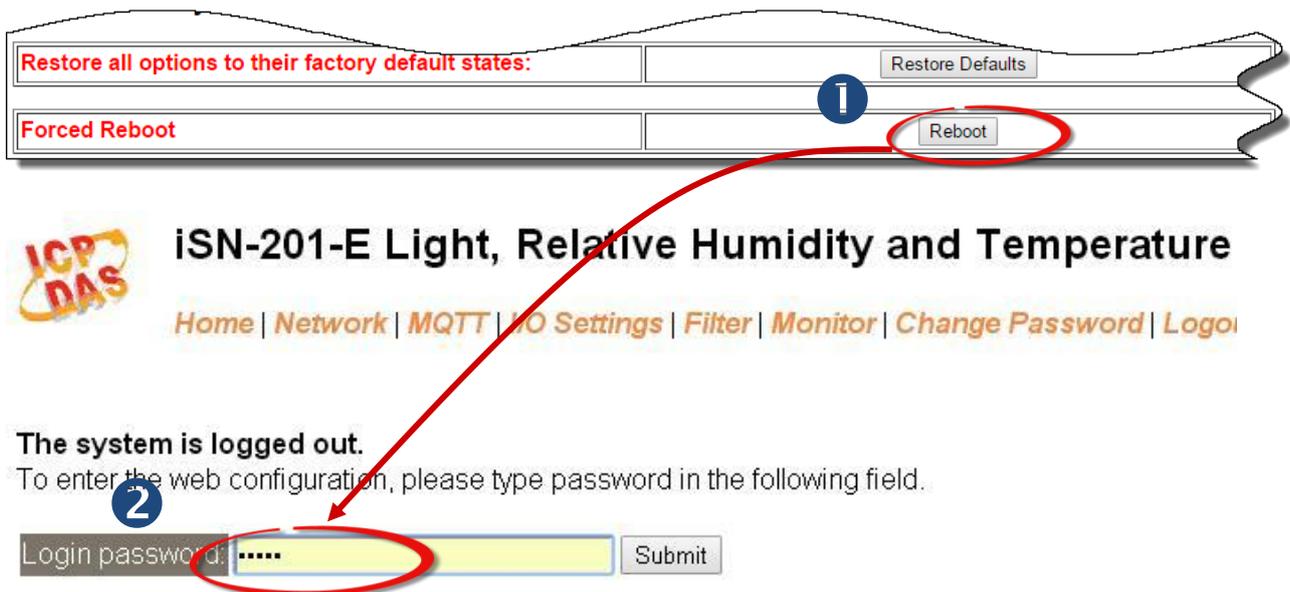
3.5.5. Firmware Update

Click the Update button and then select the firmware file to update the firmware.

The firmware can be obtained from web site:

http://ftp.icpdas.com/pub/cd/iiot/isn/isn-201/

3.6. MQTT

iSN-201-E Light, Relative Humidity and Temperature Data Logger

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

Network and Miscellaneous Settings

Model Name	iSN-201-E	Alias Name	EtherIO
Firmware Version	B4.2 [Dec.10, 2018]	MAC Address	00-0D-E0-FF-FF-FF
IP Address	10.1.0.51	TCP Port Timeout (Socket Watchdog, Seconds)	180
Initial Switch	ON	System Timeout (Network Watchdog, Seconds)	0

MQTT stands for MQ Telemetry Transport, it is a publish/subscribe, extremely simple and lightweight 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	⦿ IP 192 . 168 . 255 . 10 ◯ Host Name
Broker Port	1883 (Default= 1883)
Client Identifier	iSN-201-E_FFFFFF
Alias Name	EtherIO (Max. 30 chars, part of the topic name)
User Name	(Max. 63 chars)
Password	(Max. 63 chars)
Reconnection Interval	10 (5 ~ 65535 s, Default= 10)
Keep Alive Interval	20 (5 ~ 65535 s, Default= 20)
	Update Settings

Input the IP address and port number for the MQTT broker and click on the **Update Settings** button to save the parameters.

Last Will Settings

Last Will and Testament	☐
Topic	[ ] (Max. 30 chars)
Message	[ ] (Max. 30 chars)
QoS	0 - At most once ▼
Retained	☐
	Update Settings

The MQTT Last Will and Testament (LWT) feature is used to notify other clients about an ungracefully disconnected client. A iSN-201-E can register an offline message (LWT) to the broker. The LWT message will be deliver to all clients who subscribe to the offline topic if the iSN-201-E disconnects unexpectedly.

Publication Settings

Cycle	1000 (400 ~ 65500 ms, in 10 ms step, Default= 1000)
Publication Topic Format	(Module Topic Name)(Sub Topic Name) ▼
Module Topic Name	EtherIO/ (Max. 255 chars)
Relative Humidity Sub Topic Name	RH (Max. 63 chars) / Enable ▼
Temperature (°C) Sub Topic Name	TC (Max. 63 chars) / Enable ▼
Temperature (°F) Sub Topic Name	TF (Max. 63 chars) / Enable ▼
Dew Point (°C) Sub Topic Name	DC (Max. 63 chars) / Enable ▼
Dew Point (°F) Sub Topic Name	DF (Max. 63 chars) / Enable ▼
Ambient Light Sub Topic Name	Info (Max. 63 chars) / Disable ▼
All Information Sub Topic Name	Info (Max. 63 chars) / Disable ▼
	Update Settings

- Cycle: sets the time period for update the publish messages in millisecond.
- Module Topic Name: sets the module topic name.
- Ambient Light/ Relative Humidity/ Temperature (°C)/ Temperature (°F)/ Dew Point (°C)/ Dew Point (°F) Sub Topic Name: sets the sub topic name for each item.

A MQTT client subscribes the messages form a MQTT broker by specifying the topic name as

Module Topic Name + Sub Topic Name

For example, to subscribe the Ambient Light level in this case, a MQTT client subscribes the topic name from a MQTT broker as

EtherIO/ Ambient Light

Subscription Settings

Subscription Topic Format	(Module Topic Name)(Sub Topic Name) ▼	
DO0 Sub Topic Name	DO	(Max. 63 chars)
	Update Settings	

If a MQTT control message is published to topic name: "Module Topic Name + DO0 Sub Topic Name " for a iSN-201-E logger, the logger will follow the MQTT message described to set the Relay Output.

3.7. I/O Settings

Temperature

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

Alarm Configuration

Type	Alarm Mode	Low Alarm Limit	High Alarm Limit	Beep On Alarm
Relative Humidity	Disabled ▼	0.0	100.0	Disabled ▼
Temperature	Disabled ▼	-50.0	100.0	Disabled ▼
Dew Point	Disabled ▼	-50.0	100.0	Disabled ▼
Ambient Light	Disabled ▼	-1	-1	Disabled ▼
Beep On Alarm Time	30	(0: beep off, 1 to 250: beep on alarm time in seconds, 251: beep on alarm continuously)		
	Update Settings			

All the settings take effect after clicking the *Update Settings* button.

Item	Description	Default
Alarm Mode	- **Disabled**: Disables alarm function. - **Momentary**: If a measurement value higher than the High Alarm Limit or lower than the Low Alarm Limit, the alarm occurs until the measurement value is within a range from Low Alarm Limit to High Alarm Limit. (For Ambient Light level, until the measurement value is lower than the High Alarm Limit.) The Alarm LED turns red, and the relay turns to on for every alarm event, and a sound alarm beeps as the setting in *Beep on Alarm Time* for Ambient Light high limit alarm events during the alarm stage.	Disabled

	- Latched: If a measurement value higher than the High Alarm Limit or lower than the Low Alarm Limit, the alarm occurs. The Alarm LED turns red, the relay turns to on for every alarm event, and a sound alarm beeps as the setting in *Beep on Alarm Time* for Ambient Light high limit alarm events. Even though the alarm event is not presented, the alarm status is latched; the Alarm LED keeps red, and the relay keeps on and the sound alarm keeps beeping if it is set to beeping continuously.	
Low Alarm Limit	Sets the Low alarm limit conditions for Ambient Light/ Relative Humidity/ Temperature/ Dew Point.	
High Alarm Limit	Sets the High alarm limit conditions for Ambient Light /Relative Humidity/ Temperature/ Dew Point.	
Beep On Alarm	Enable/disable beep on alarm for PM2.5 / Ambient Light /Temp /RH /Dew point	
Beep On Alarm Time	Sets the time for beeping alarm. Range: 1 ~ 250 (unit: second) 0 = disable the beeping alarm 251 = continue the beeping alarm without stop	30

Digital Output

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

Set the *Power On Value* and *Safe Value* for the relay output, and the *Host Watchdog Timeout* timer for RS-485 communication; if a host does not send a command over the setting time, the Host Watchdog timeout occurs and the relay outputs the status set for Safe value. The settings for Power On Value and Safe Value are unavailable when any one setting in the *Alarm Mode* is enabled.

3.8. Filter

Clicking the **Filter** tab to go to the **Filter Settings** page where you can configure the IP Filter for the iSN-201 module, which will be described in more detail below.

3.8.1. Filter Settings

The *Filter Settings* page is used to query or edit the IP Filter List for the iSN-201 module. The IP filter list restricts the access of incoming packets based on the IP header. If one or more IP addresses are saved to the IP Filter table, only Clients whose IP address is specified in the IP Filter List will be able to access the iSN-201 module.

The following table provides an overview of the parameters contained in the IP Address Configuration section:

Item	Description
Add "IP" to the List	This parameter is used to add an IP address to the IP filter List.
Delete IP # "number"	This parameter is used to delete IP# address from the IP filter List.
Delete All	This parameter is used to delete all IP address current contained in the IP filter List.
Save to Flash	This parameter is used to save the updated IP filter List to the flash memory. Check the checkbox before clicking the Submit button of you wish to store the most recent list.
Submit	Click this button to save the revised settings to iSN-201 module.

3.9. Monitor

After clicking the **Monitor** tab, the Current Connection Status page will be displayed showing detailed information regarding the current status of the serial port connection settings for the iSN-201 module.

Current Connection Status:

Server Mode	Server
Connected 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
IP6:	0.0.0.0
Available Connections:	32

3.10. Change Password

To change the p default password:

Step 1: Go to the *Change Password* page by clicking the *Change Password* tab.
Step 2: Enter the old password in the textbox next to **"Current password"**. (Default: **Admin**)
Step 3: Enter a new password in the textbox next to **"New password"**.
Step 4: Re-enter the new password in textbox next to **"Confirm new password"**.
Step 5: Click the "**Submit**" button to update the password.

3.11. Logout

Clicking the *Logout* tab will immediately log you out from the system and return you to the login page.

3.12. Wi-Fi (for iSN-201-WF only)

For iSN-201-WF module, the Wi-Fi related parameters can be set via the Wi-Fi page. This page including Wi-Fi Status and Wi-Fi Settings, each of which will be described in more detail below.

3.12.1. Wi-Fi Status

The following table provides an overview of the parameters contained in the Wi-Fi Status section:

Item	Description
Connection Status	The Wi-Fi connection status of the iSN-201-WF device.
Signal Strength	The Wi-Fi signal strength of the iSN-201-WF device in station mode. It can be High, Medium, Low, or Not Connected.
MAC Address	The MAC address of the Wi-Fi interface of the iSN-201-WF device.
IP Address	The IP address of the Wi-Fi interface of the iSN-201-WF device.
Update Wi-Fi Status	Click this button to update the Wi-Fi status of the iSN-201-WF device.

3.12.2. Wi-Fi Settings

Wi-Fi Settings	Current	New
Mode	Station	[Station ▼] Default: AP
Wireless Security	WPA/WPA2, *************	[WPA/WPA2 ▼] Password: [••••••••••••] (Max. 63 chars)
DHCP Server (AP Mode)	On, 192.168.255.2	[On ▼] Start IP:[192].[168].[255].[2]
Wi-Fi Channel (AP Mode)	11	[11 ▼]
IP Address Type (Station Mode)	DHCP	[DHCP ▼]
IP Address	192.168.0.100	[192].[168].[255].[1]
Subnet Mask	0.0.0.0	[255].[255].[0].[0]
Gateway	192.168.0.1	[192].[168].[255].[254]
SSID	WR841NV13	[WR841NV13] (Max. 32 chars)
Modbus TCP port	502	[502] (Default= 502)
		[Update Settings]

The column of Current shows the current Wi-Fi settings.   You can change the settings by changing the column of New. The following table provides an overview of the parameters contained in the Wi-Fi Settings section:

Item	Description
Mode	This parameter is used to specify the Wi-Fi mode of the iSN-201-WF device. It can be station or AP. For AP mode, only one device can be connected.
Wireless Security	This parameter is used to specify which security protocol is used to secure wireless computer network. It can be open, WEP, or WPA/WPA2. It is recommended to use WPA/WPA2 if possible.
DHCP Server (AP Mode)	This parameter is used to specify whether to turn on the DHCP server function. It is only available to the AP mode.
Wi-Fi Channel (AP Mode)	This parameter is used to specify which channel is used for Wi-Fi transmission. It can be 1 to 11. It is only available to the AP mode.
IP Address Type (Station Mode)	This parameter is only available to the station mode and it can be Static IP or DHCP. If DHCP is supported by the AP you would like to connect, then DHCP should be selected. Otherwise, select Static IP and the following three parameters IP Address, Subnet Mask and Gateway should be set, too.

IP Address	Each iSN-201-WF device connected to the Wi-Fi network must have its own unique IP address. This parameter is used to assign a specific IP address.
Subnet Mask	This parameter is used to assign the subnet mask for the iSN-201-WF device. The subnet mask indicates which portion of the IP address is used to identify the local network or subnet.
Gateway	This parameter is used to assign the IP address of the gateway to be used by the iSN-201-WF device. A gateway (or router) is a device that is used to connect an individual network to one or more additional networks.
SSID	This parameter is used to specify the Service Set Identifier. For station mode, specify the SSID of the AP you would like to connect. For AP mode, the SSID will be used by the device to be connected.
Modbus TCP Port	This parameter is used to set the local port of the Wi-Fi interface to be used by the Modbus slave device. The default value is 502.
Update Settings	Click this button to save the revised settings to the iSN-201-WF device.

The following table provides an overview of the factory default Wi-Fi settings:

Factory Default Wi-Fi Settings	
Mode	AP
Wireless Security	WPA/WPA2, "00000000"
DHCP Server (AP Mode)	DHCP Server on, start IP: 192.168.255.2
Wi-Fi Channel (AP Mode)	11
IP Address	192.168.255.1
Gateway Address	192.168.255.254
Subnet Mask	255.255.0.0
SSID	iSN-201-WF
Modbus TCP Port	502

4. Configuration via Wi-Fi

The factory default settings for Wi-Fi communication of the iSN-201-WF are as follows.

- Mode: AP
- Wireless Security: WPA/WPA2, "00000000"
- DHCP Server (AP Mode): DHCP Server on, start IP: 192.168.255.2
- Wi-Fi Channel (AP Mode): 11
- IP Address: 192.168.255.1
- Gateway Address: 192.168.255.254
- Subnet Mask: 255.255.0.0
- SSID: iSN-201-WF
- Modbus TCP Port: 502

The Wi-Fi IIOT Utility is provided to configure and test the iSN-201-WF module through the Wi-Fi interface.

4.1. Building the Wi-Fi Connection

1. Install Wi-Fi IIOT Utility
   The installation file location of the Wi-Fi IIOT Utility is at:
   http://ftp.icpdas.com/pub/cd/iiot/utility/

2. Search and Find the Module
   Click on the search button to find the modules via the Wi-Fi interface.
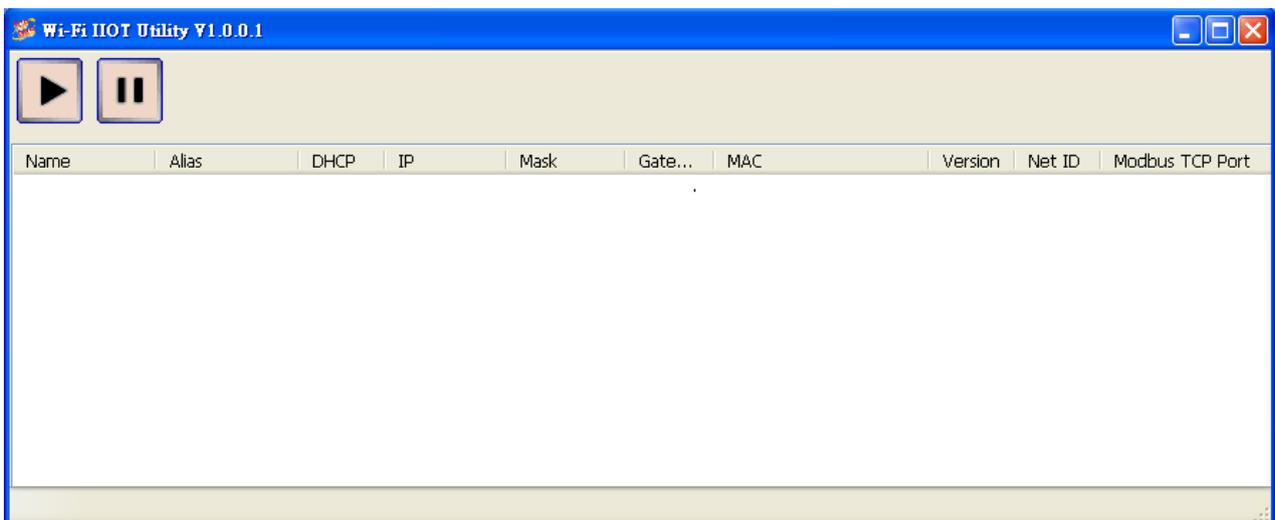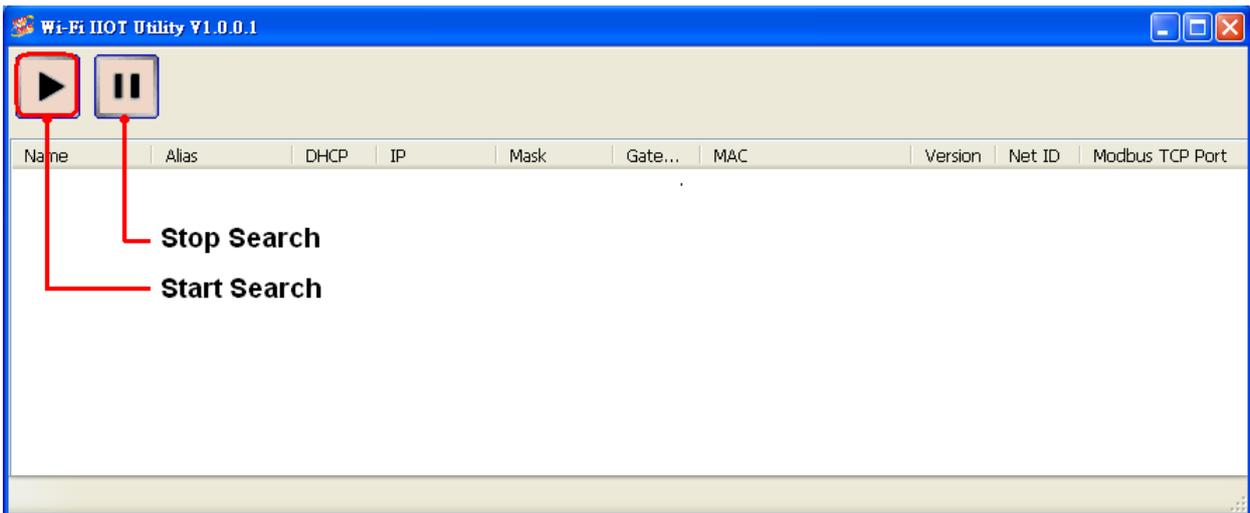
3. Select the Wi-Fi network interface and click on the **OK** button.
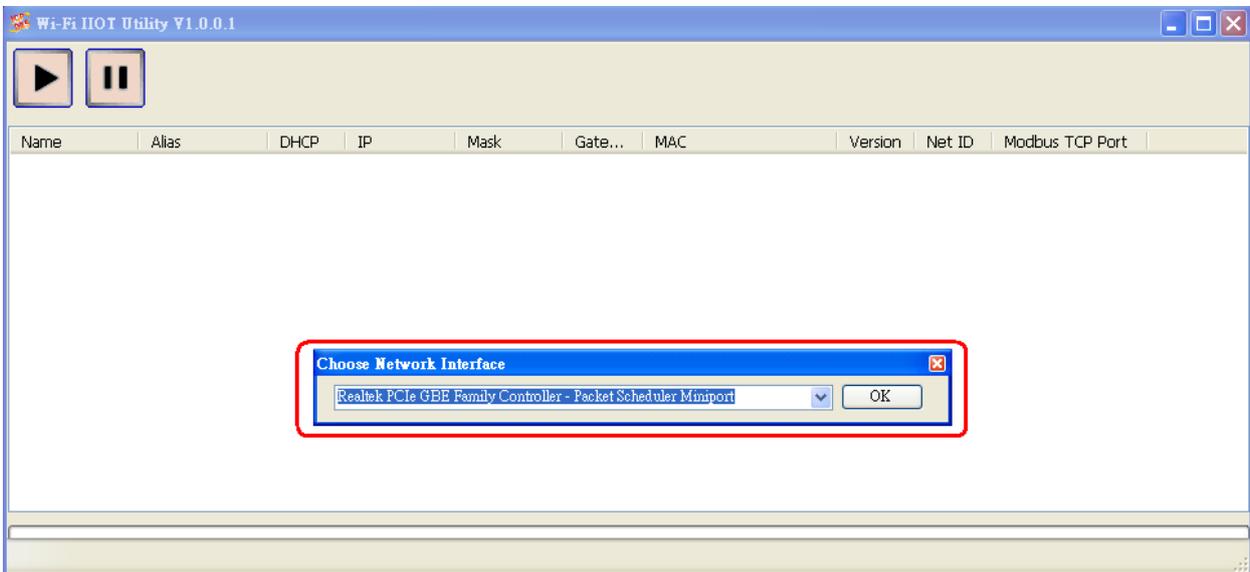
4. When the module is found, click on the module name to enter the configuration form.
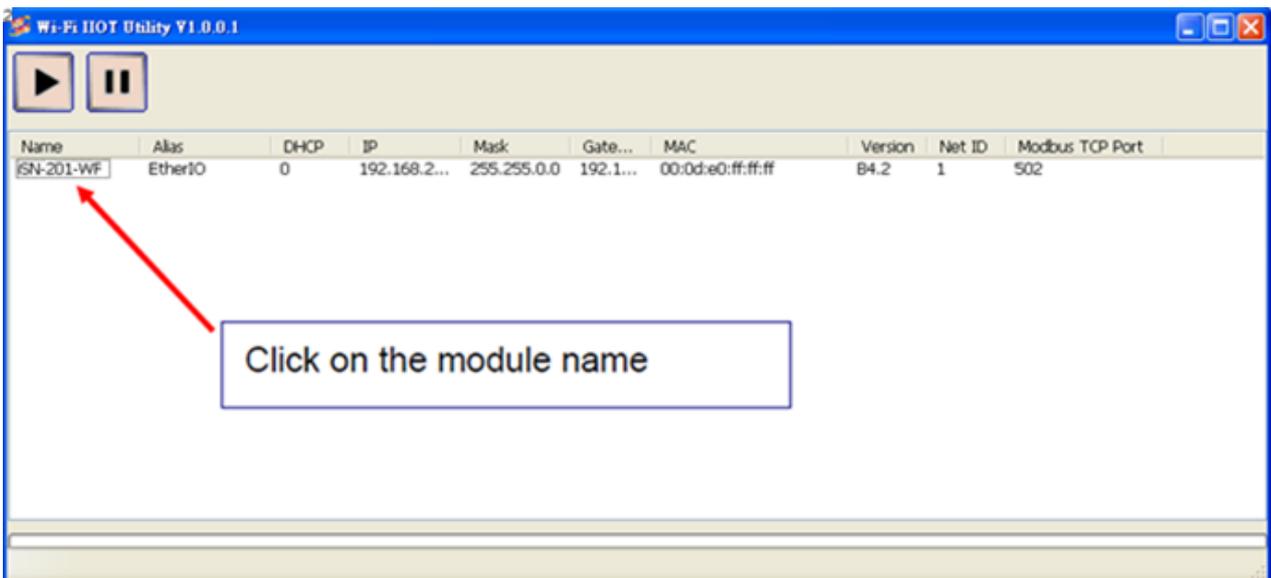
4.2. Configuring the Wi-Fi Settings

In the Configuration form, you can change the Wi-Fi related settings.   Click on the Set Module Configurations button to save the changes to the module.
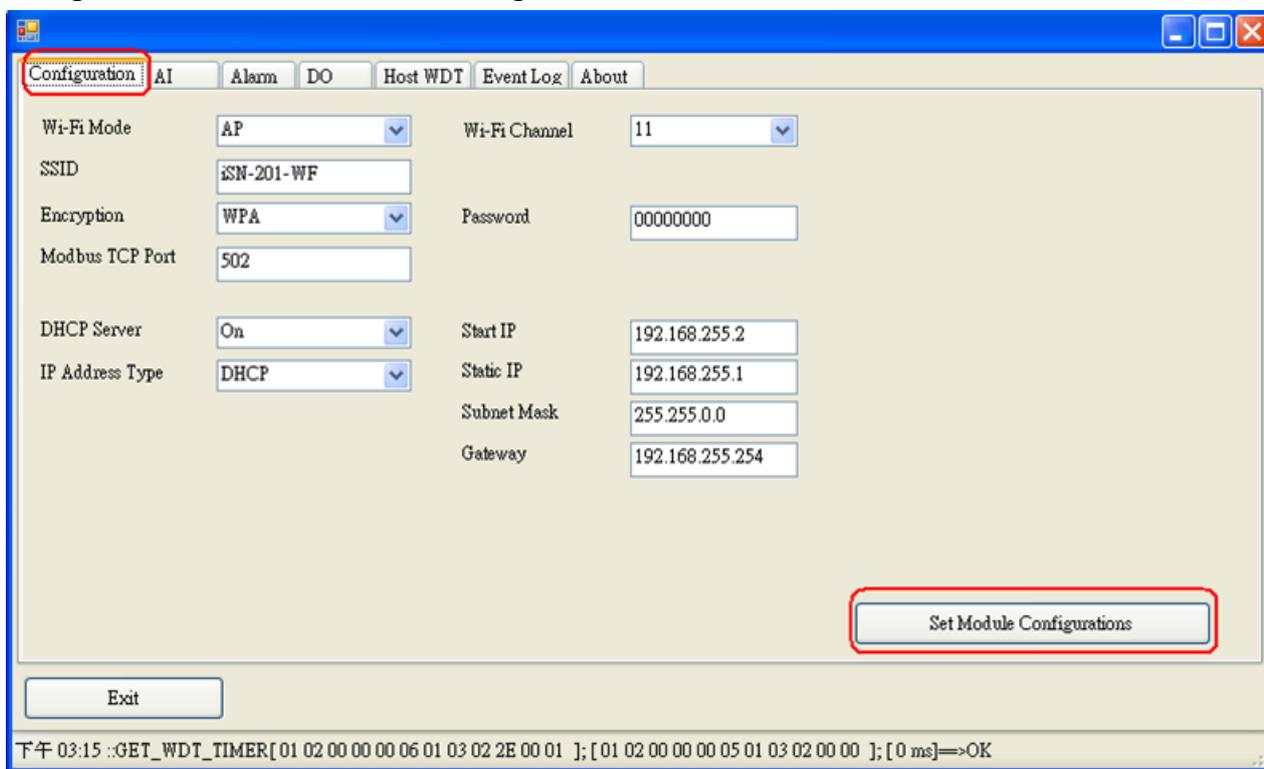
The followings show the detailed description of each setting.

Item	Description
WiFi Mode	This parameter is used to specify the Wi-Fi mode of the SL device. It can be Station or AP. For AP mode, only one device can be connected.
SSID	This parameter is used to specify the Service Set Identifier. For station mode, specify the SSID of the AP you would like to connect. For AP mode, the SSID will be used by the device to be connected.
Encryption	This parameter is used to specify which security protocol is used to secure wireless computer network. It can be open, WEP, or WPA. It is recommended to use WPA if possible.
Modbus TCP Port	This parameter is used to set the local port of the Wi-Fi interface to be used by the Modbus slave device. The default value is 502.
DHCP Server	This parameter is used to specify whether to turn on the DHCP server function. It is only available to the AP mode.

IP Address Type	This parameter is only available to the station mode and it can be Static or DHCP. If DHCP is supported by the AP you would like to connect, then DHCP should be selected. Otherwise, select Static and the following three parameters Static IP, Subnet Mask and Gateway should be set, too.
WiFi Channel	This parameter is used to specify which channel is used for Wi-Fi transmission. It can be 1 to 11. It is only available to the AP mode.
Static IP	Each SL device connected to the Wi-Fi network must have its own unique IP address. This parameter is used to assign a specific IP address.
Subnet Mask	This parameter is used to assign the subnet mask for the SL device. The subnet mask indicates which portion of the IP address is used to identify the local network or subnet.
Gateway	This parameter is used to assign the IP address of the gateway to be used by the SL device. A gateway (or router) is a device that is used to connect an individual network to one or more additional networks.

In the AI Status form, you can configure the Ambient Light settings, temperature alarm settings .
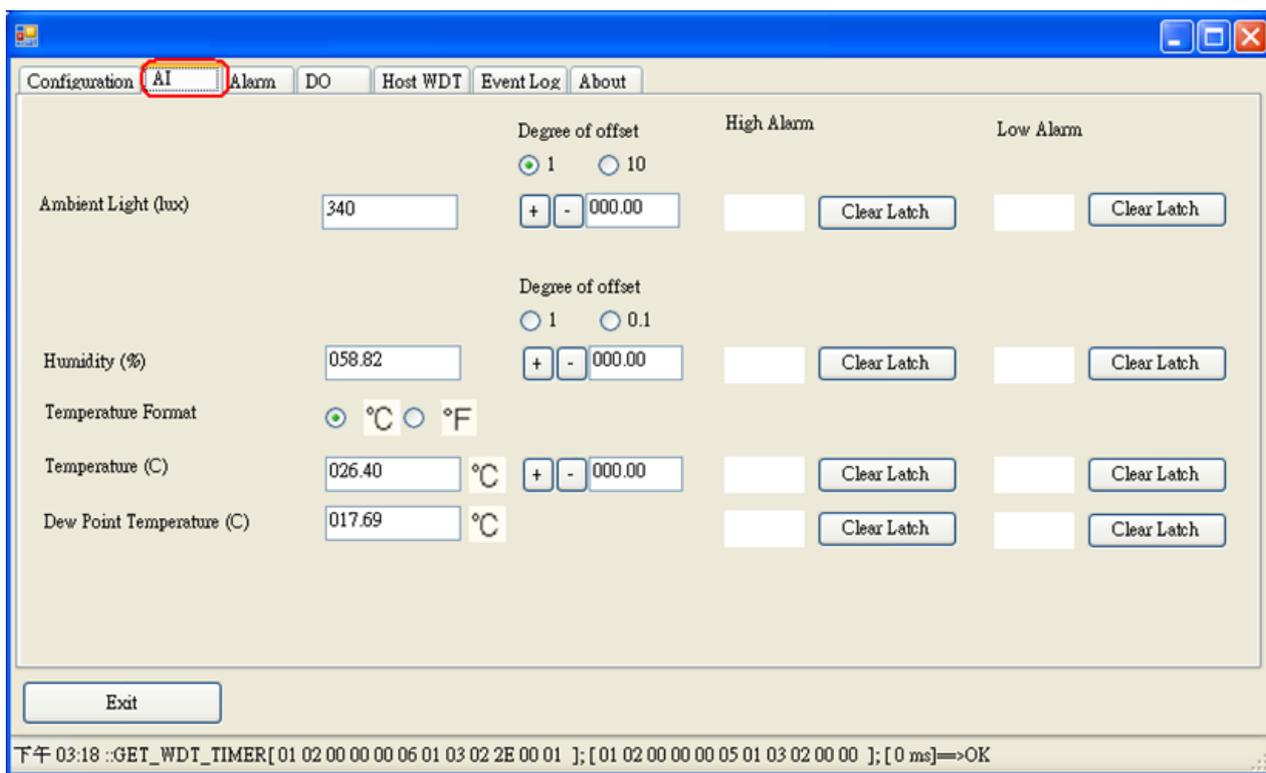
The followings show the detailed description of each setting

Item	Description
Ambient Light(lux)	This parameter is sensor readings ambient light
High Alarm Limit	Sets the High alarm limit conditions for Ambient Light (unit 1 lux)
Relative Humidity	This parameter is sensor readings relative humidity
Temperature	This parameter is sensor readings temperature
High Alarm Limit	Sets the High alarm limit conditions for Temperature (unit 0.1℃)

In the In the Alarm Status form, you can configure the Ambient Light settings, temperature alarm settings .

Item	Description
Alarm Mode	- Disabled: Disables alarm function. - Momentary: If a measurement value higher than the High Alarm Limit or lower than the Low Alarm Limit, the alarm occurs until the measurement value is within a range from Low Alarm Limit to High Alarm Limit. - Latched: If a measurement value higher than the High Alarm Limit or lower than the Low Alarm Limit, the alarm occurs.
Ambient Light(lux)	This parameter is sensor readings ambient light
Relative Humidity	This parameter is sensor readings relative humidity
High Alarm Limit	Sets the High alarm limit conditions for Ambient Light/ Relative Humidity/ Temperature/ Dew Point.
Low Alarm Limit	Sets the Low alarm limit conditions for Ambient Light/ Relative Humidity/ Temperature/ Dew Point.
Alarm Buzzer On	Buzzer is active or inactive when

5. DCON Command Sets

Command	Description
$AAF	read firmware version

$AAI	read INIT status
	response:
	    !AA0 -> INIT short to GND
	    !AA1 -> else

$AAM	read module name

$AAP	Read Modbus RTU/DCON protocol
	response:
	    !AA0 -> DCON
	    !AA1 -> Modbus RTU

$AAPN	Set Modbus RTU/DCON protocol N-> 0: DCON, 1: Modbus RTU
$AA2	read configuration
$AA5	read reset status !AA1 first after power on, !AA0 others
#AA	Read All Analog Inputs response > (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)
#AAN	Read Channel Analog Input N = 0 for relative humidity in 0.01%, 1 for temperature in 0.01°C, 2 for temperature in 0.01°F, 3 for dew point temperature in 0.01°C, 4 for dew point temperature in 0.01°F, 5 for ambient light in lux
%AANNTTCCFF	set configuration, NN: new address, TT = 00, CC: new baud rate FF: data format
@AABA	Read beep on alarm time response !AAHH, HH in hex, 0: disabled, 1 ~ 250: beep on alarm time in seconds, 251: beep on alarm continuously
@AABAHH	Set beep on alarm time HH in hex, 0: disabled, 1 ~ 250: beep on alarm time in seconds, 251: beep on alarm continuously

Command	Description

@AABE	Read enable/disable beep on alarm
	response
	      !AAHH, HH in hex, bit 0 for channel 0, bit 1 for channel 1, etc, for
	      each bit, 0: disabled, 1: enabled

@AABEHH	Enable/disable beep on alarm HH in hex, , bit 0 for channel 0, bit 1 for channel 1, etc, for each bit, 0: disabled, 1: enabled
@AACH	Clear all high latched analog inputs to the current values
@AACHN	Clear channel high latched analog input to the current value, $N = 0$ for relative humidity, 1 for temperature in $0.01°C$, 2 for temperature in $0.01°F$, 3 for dew point temperature in $0.01°C$, 4 for dew point temperature in $0.01°F$, 5 for ambient light
@AACHCN	Clear high latched alarm of a channel, $N = 0$ for relative humidity, 1 for temperature in $0.01°C$, 2 for temperature in $0.01°F$, 3 for dew point temperature in $0.01°C$, 4 for dew point temperature in $0.01°F$, 5 for ambient light
@AACL	Clear all low latched analog inputs to the current values
@AACLN	Clear channel low latched analog input to the current value, $N = 0$ for relative humidity, 1 for temperature in $0.01°C$, 2 for temperature in $0.01°F$, 3 for dew point temperature in $0.01°C$, 4 for dew point temperature in $0.01°F$, 5 for ambient light
@AACLCN	Clear low latched alarm of a channel, $N = 0$ for relative humidity, 1 for temperature in $0.01°C$, 2 for temperature in $0.01°F$, 3 for dew point temperature in $0.01°C$, 4 for dew point temperature in $0.01°F$, 5 for ambient light
@AADACN	Disable AI alarm of a channel, $N = 0$ for relative humidity, 1 for temperature in $0.01°C$, 2 for temperature in $0.01°F$, 3 for dew point temperature in $0.01°C$, 4 for dew point temperature in $0.01°F$, 5 for ambient light
@AADI	read DO response !AA00O00
@AADO0V	set DO, V-> 0: off, 1: on
@AAEATCN	Enable AI alarm of a channel, $N = 0$ for relative humidity, 1 for temperature in $0.01°C$, 2 for temperature in $0.01°F$, 3 for dew point temperature in $0.01°C$, 4 for dew point temperature in $0.01°F$, 5 for ambient light T->M: momentary alarm, L: latched alarm

Command	Description
@AAHI(data)CN	Set high alarm limit of an AI channel, N = 0 for relative humidity, 1 for temperature in $0.01°C$, 2 for temperature in $0.01°F$, 3 for dew point temperature in $0.01°C$, 4 for dew point temperature in $0.01°F$, 5 for ambient light
@AAHO	Read humidity offset
@AAHO(data)	Set humidity offset, data in format of -100.00 ~ +100.00
@AALO	Read ambient light offset
@AALO(data)	Set ambient light offset, data in format of+000000 ~ +010000
@AALO(data)CN	Set low alarm limit of an AI channel, N = 0 for relative humidity, 1 for temperature in $0.01°C$, 2 for temperature in $0.01°F$, 3 for dew point temperature in $0.01°C$, 4 for dew point temperature in $0.01°F$, 5 for ambient light
@AARACN	Read AI alarm enabled/disabled status of a channel response 　　!AAN, N->0: disabled, 1: momentary, 2: latched
@AARAO	Read AI alarm status response 　　!AAHHLL
@AARH	Read all high latched values of analog input channels
@AARHN	Read channel high latched value of analog input
@AARHCN	Read high alarm limit of an AI channel
@AARL	Read all low latched values of analog input channels
@AARLN	Read channel low latched value of analog input
@AARLCN	Read low alarm limit of an AI channel
@AATO	Read temperature offset in $0.01°C$
@AATO(data)	Set temperature offset in $0.01°C$, -100.00 ~ +100.00
~**	clear host watchdog timeout counter
~AA0	read host watchdog status
~AA1	clear host watchdog timeout status
~AA2	read host watchdog enable/disable status and timeout value
~AA3ETT	enable/disable 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	read DO power on and safe value
~AA50P0S	set DO power on and safe value P-> 0: power on value off, 1: power on value on S-> 0: safe value off, 1: safe value on

Command	Description
~AARD	read response delay time in ms in hex format
~AARDVV	set response delay time in ms, VV in hex format, 00 - 1E

Baud Rate Setting (CC)

Bits 5:0

Baud rate, 0x03 ~ 0x0A

Code	0x03	0x04	0x05	0x06
Baud	1200	2400	4800	9600
Code	0x07	0x08	0x09	0x0A
Baud	19200	38400	57600	115200

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

Data Format Setting (FF)

Bit 6

    0: checksum disabled

    1: checksum enabled

Base Address: 96 (0x60)

DIP Switch	
1	Off: Modbus RTU, On: DCON
2	Off: hardware configuration, On: software configuration
3	On: rotary switch address added by 16
4	On: INIT

6. Modbus Address Mappings (Base 1)

Address	Description	Attribute
30001 ~ 30006 40001 ~ 40006	Analog input value of channel 0 to 5. channel 0: relative humidity in 0.01%, channel 1: temperature in 0.01°C, channel 2:temperature in 0.01°F, channel 3: dew point temperature in 0.01°C, channel 4: dew point temperature in 0.01°F, channel 5: ambient light in lux	R
40225 ~ 40230	High alarm limit of channel 0 to 5, channel 0: relative humidity in 0.01%, channel 1: temperature in 0.01°C, channel 2:temperature in 0.01°F, channel 3: dew point temperature in 0.01°C, channel 4: dew point temperature in 0.01°F, channel 5: ambient light in lux	R/W
40233 ~ 40238	Low alarm limit of channel 0 to 5, channel 0: relative humidity in 0.01%, channel 1: temperature in 0.01°C, channel 2:temperature in 0.01°F, channel 3: dew point temperature in 0.01°C, channel 4: dew point temperature in 0.01°F, channel 5: ambient light in lux	R/W
40272	Modbus NetID Only for Modbus TCP protocol	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
30352 40352	Firmware version in hex format Only for Modbus TCP protocol	R
40449	Relative humidity offset in 0.01%	R/W
40450	Temperature offset in 0.01°C	R/W
40454	Ambient light offset in lux	R/W
40481	Firmware version (low word)	R
40482	Firmware version (high word)	R
40483	Module name (low word), 0x0301	R
40484	Module name (high word), 0x534E	R
40485	RS-485 module address, 1 to 247 Only for Modbus RTU protocol	R/W

Address	Description	Attribute

40486	RS-485 baud rate and parity settings
	Bits 5:0
	Baud rate, valid range: 3 ~ 10
	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
		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
40497	Beep on alarm, 0: disable, 1 to 250: beep on alarm time in seconds, 251: beep on alarm continuously	R/W
30513 ~ 30518 40513 ~ 40518	High latched analog input value of channel 0 to 5	R
30545 ~ 30550 40545 ~ 40550	Low latched analog input value of channel 0 to 5	R
30556 40556	Module reset status, 1: power-on, 2: watchdog, 3: software reset command Only for Modbus TCP protocol	R
40558	Ethernet host watchdog timeout value, 5 to 65535, in second, 0 to disable. Only for Modbus TCP protocol	R/W
30559 40559	Ethernet host watchdog timeout count. Only for Modbus TCP protocol	R
30560 40560	Module name, 0x0301 Only for Modbus TCP protocol	R

Address	Description	Attribute
40564	TCP disconnection timeout value, 5 to 65535, in second, 0 to disable. Only for Modbus TCP protocol	R/W
40565	Module reset timeout value, 30 to 65535, in second, 0 to disable. Only for Modbus TCP protocol	R/W
Address	Description	Attribute
00001	Digital output value of channel 0	R/W
00129	Safe value of digital output channel 0	R/W
00161	Power on value of digital output channel 0	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
00262	Write 1 to play notification sound	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
00289 ~ 00294	Low alarm status of channel 0 to 5. Write 1 to clear low latched alarm.	R/W
00305 ~ 00310	High alarm status of channel 0 to 5. Write 1 to clear high latched alarm.	R/W
00321 ~ 00326	Enable/disable alarm of channel 0 to 5	R/W

Address	Description	Attribute
00337 ~ 00342	Alarm type, momentary or latched, of channel 0 to 5	R/W
00385 ~ 00390	Write 1 to clear high latched analog input value of channel 0 to 5	W
00417 ~ 00422	Write 1 to clear low latched analog input value of channel 0 to 5	W
00449 ~ 00454	Enable/disable beep on alarm for channel 0 to 5	R/W

Wi-Fi Related Modbus Address Mappings (Base 1)

Address	Description	Attribute
40642	This parameter is used to specify the Wi-Fi mode of the iSN-201-WF device. It can be 0 for station mode or 2 for AP mode. For AP mode, only one device can be connected.	R/W
40643	This parameter is used to specify which security protocol is used to secure wireless computer network. It can be 0 for open, 1 for WEP, or 2 for WPA/WPA2. It is recommended to use WPA/WPA2 if possible.	R/W
40644 ~ 40650	WEP password Byte 0: password length Byte 1 ~ 13: password	R/W
40651 ~ 40682	WPA/WPA2 password Byte 0: password length Byte 1 ~ 63: password	R/W
40688 ~ 40689	Each SL device connected to the Wi-Fi network must have its own unique IP address. This parameter is used to assign a specific IP address.	R/W
40690 ~ 40691	This parameter is used to assign the subnet mask for the DL-300-WF device. The subnet mask indicates which portion of the IP address is used to identify the local network or subnet.	R/W
40692 ~ 40693	This parameter is used to assign the IP address of the gateway to be used by the SL device. A gateway (or router) is a device that is used to connect an individual network to one or more additional networks.	R/W

Address	Description	Attribute
40694 ~ 40709	This parameter is used to specify the Service Set Identifier, SSID. For station mode, specify the SSID of the AP you would like to connect. For AP mode, the SSID will be used by the device to be connected.	R/W
40710	This parameter is used to specify which channel is used for Wi-Fi transmission. It can be 1 to 11. It is only available to the AP mode.	R/W
40711	This parameter is used to set the local port of the Wi-Fi interface to be used by the Modbus slave device. The default value is 502.	R/W
40715	Write 1 to let the new Wi-Fi settings take effect.	W
40716 ~ 40718	Wi-Fi module MAC address	R
40719	Firmware version of the Wi-Fi module	R
40720	Wi-Fi module status High byte 0: not configured 1: not connected 2: connected 3: reconnecting Low byte 0: not connected 1: high signal strength 2: medium signal strength 3: low signal strength	R

Appendix: FAQ

A. How to update the firmware via Ethernet

If the module is not functioning correctly (e.g. there is no response to a search request, or if the system LED is continuously displayed as either OFF or ON), download a new image of the firmware from the ICPDAS web site and then update the firmware.

The firmware of the iSN-201 Series module is located at:
http://ftp.icpdas.com/pub/cd/iiot/isn/isn-201/

To update the firmware for your iSN-201 Series module, connect the module and PC in the same sub-network.   Please note that there should be only one network card in the PC.

Download and install the eSearch utility.
http://ftp.icpdas.com/pub/cd/iiot/utility/esearch/

Run the eSearch utility. Click on the **Search Server** button and it should find the iSN-201 Series module.
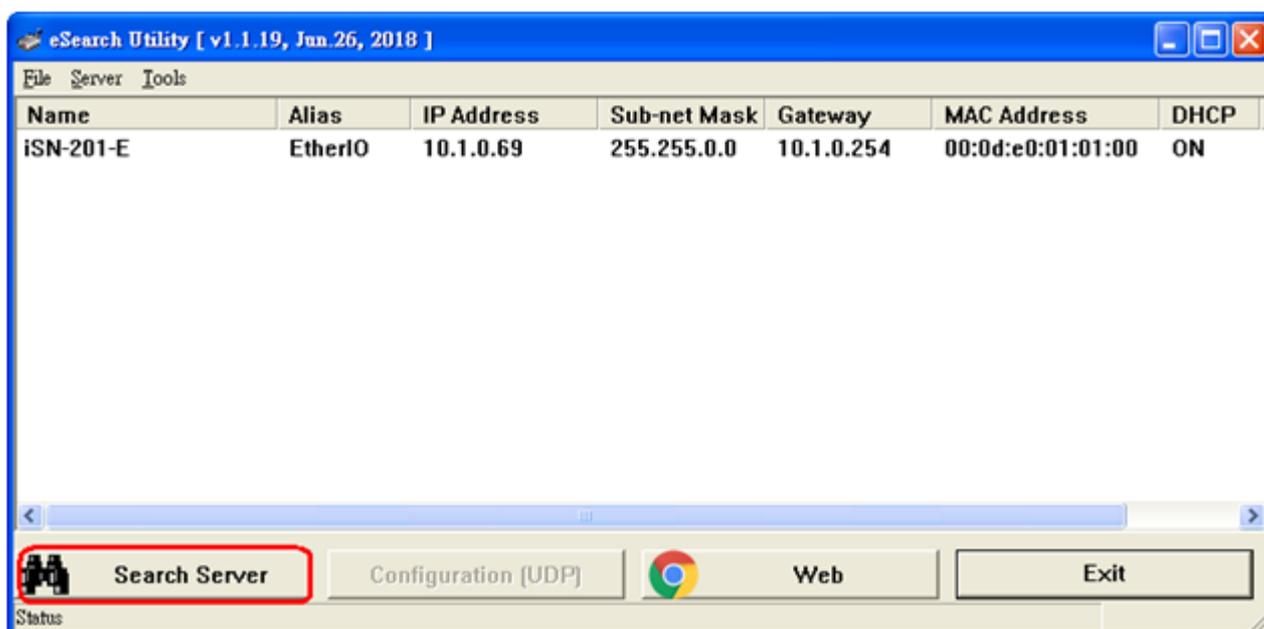
Right click on the iSN-201 **Series** module name then select **Firmware Update**.
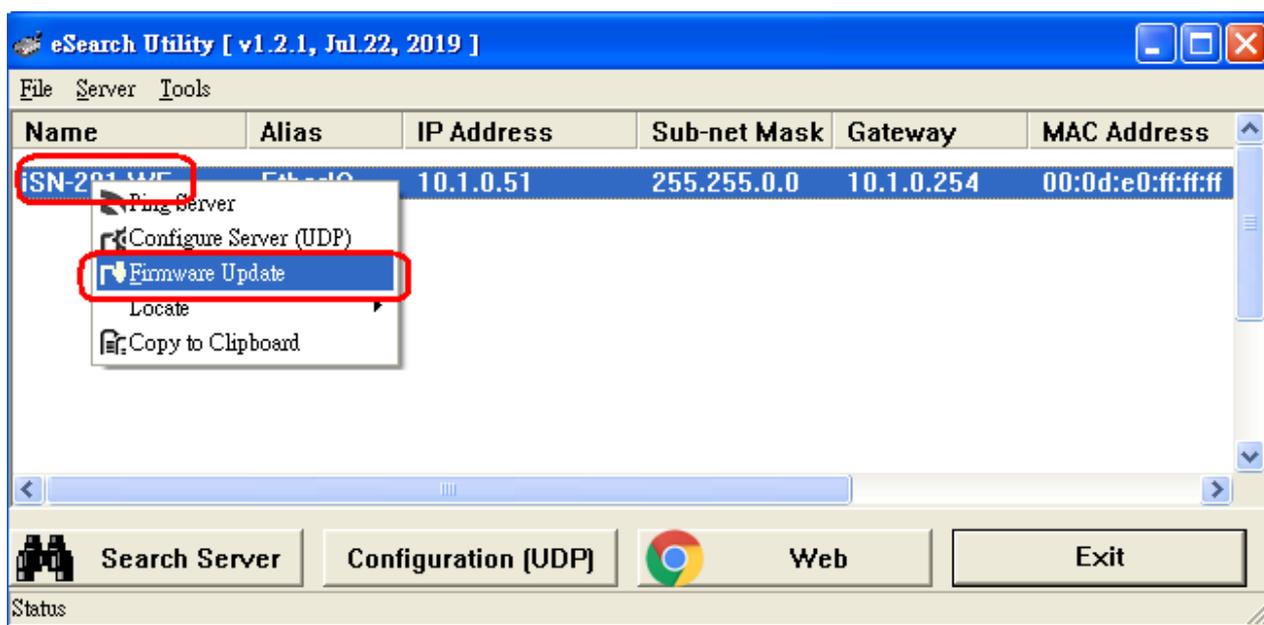
Select the firmware file and click on the **Open** button.
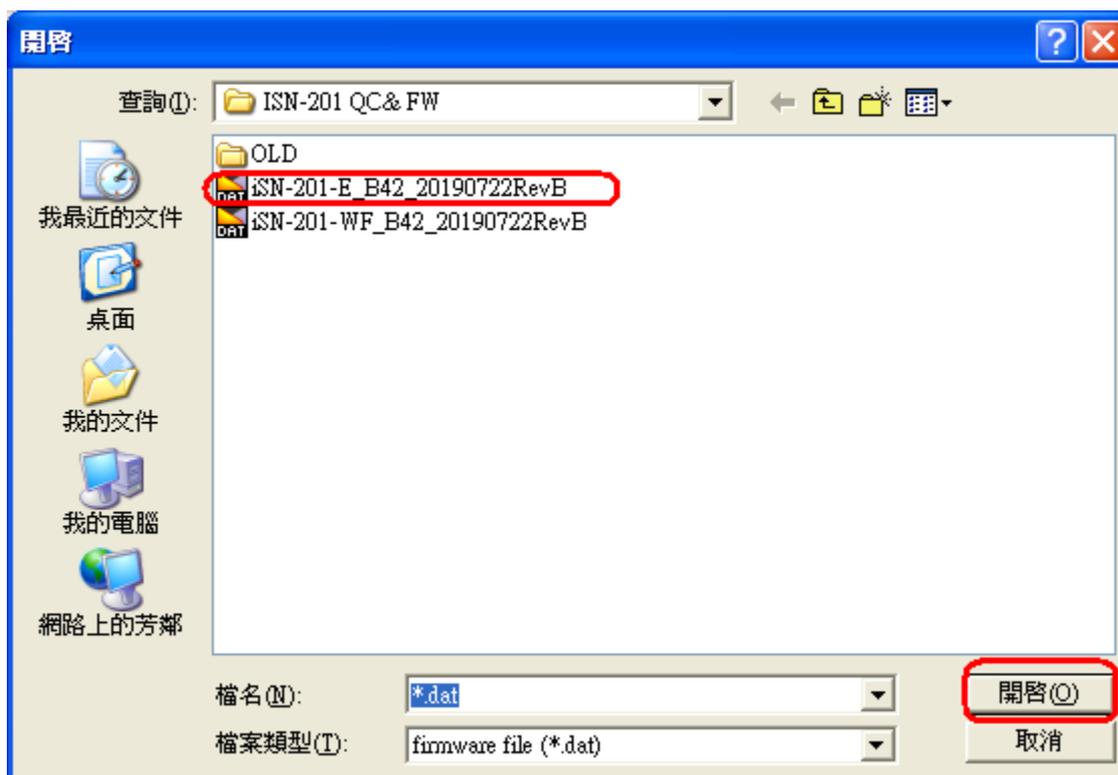
Make sure the IP address and MAC address are correct. Click on the **OK** button.
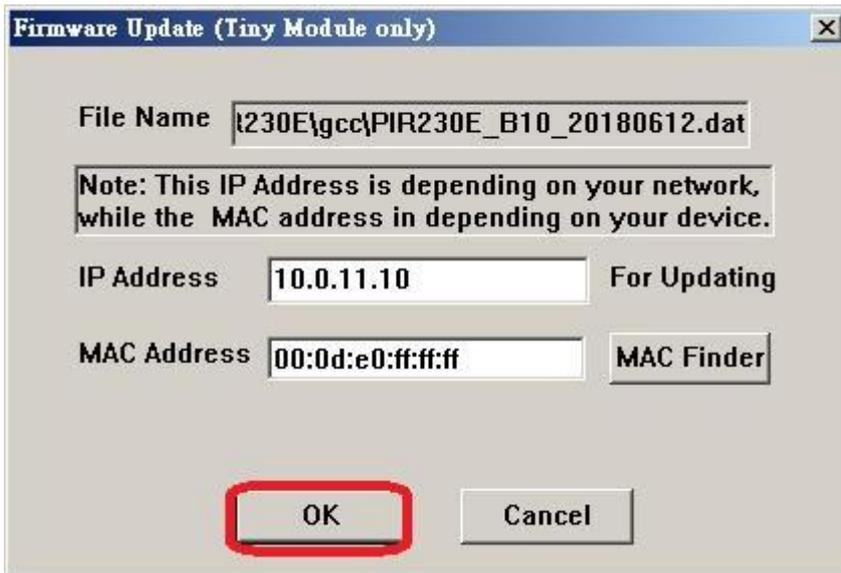
A command prompt window will be displayed to show the progress.
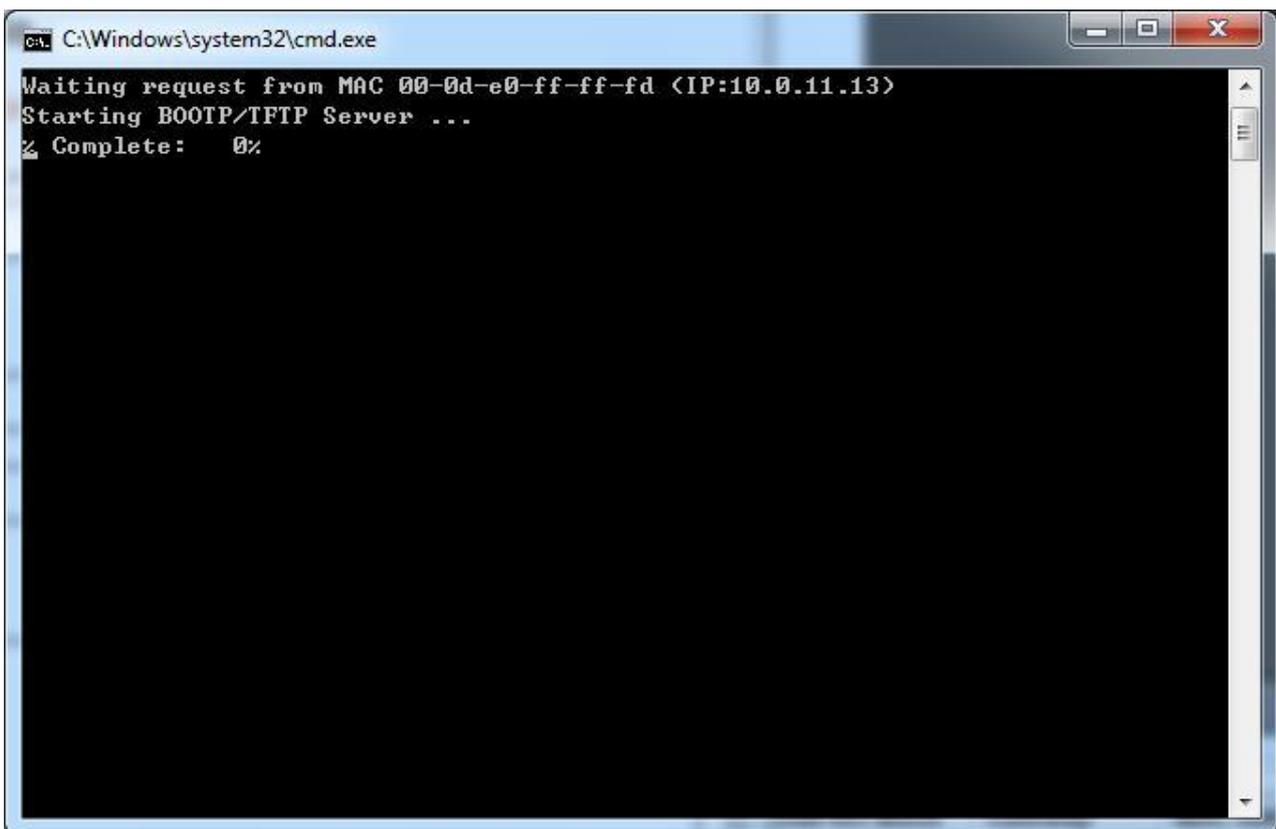
Log in the iSN-201 Series web page.   Click on the **Network** tab then click on the **Update** button.

When it shows "% Complete: 100%", the update is finished. You can close the command prompt window.

If the original firmware version is B1.0 and later, then you can re-log in the iSN-201 Series web page and check the firmware version.

iSN-201-E Light, Relative Humidity and Temperature Data Logger

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

Network and Miscellaneous Settings

Model Name	iSN-201-E	Alias Name	EtherIO
Firmware Version	B4.2 [Dec.10, 2018]	MAC Address	00-0D-E0-FF-FF-FF
IP Address	10.1.0.51	TCP Port Timeout (Socket Watchdog, Seconds)	180
Initial Switch	ON	System Timeout (Network Watchdog, Seconds)	0

For module with older firmware version, please proceed as follows.

Power off the iSN-201 Series module. Turn the INIT switch to ON position, then power on the iSN-201 Series module.
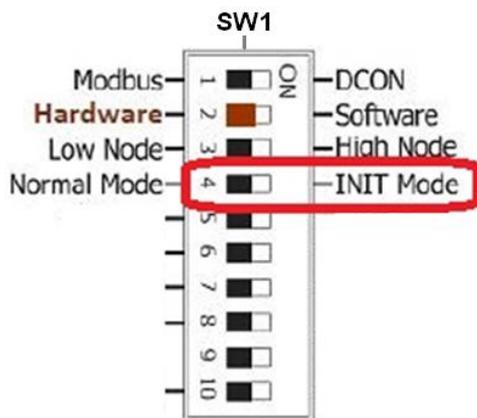
Run the eSearch utility to configure the network settings as shown in Section 3.2 Network Configuration.

Log in the iSN-201 Series web page. Click on the **Network** tab then click on the **Restore Defaults** button.

Turn the INIT switch to OFF position. Run the eSearch utility to configure the network settings as shown in Section 3.2 Network Configuration. Log in the iSN-201 Series web page to configure other settings