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*We reserve the right to change the information in this manual without prior notice.

Slim Industrial IEEE 802.11 a/b/g/n/ac Wireless AP/Client/Gateway

DVW-W01I2-E1 Series User Manual

DVW 2.4 GHz/5 GHz

www.deltaww.com

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Delta Industrial Wireless DVW-W01I2-E1 Series User Manual

Revision History

Version	Revision	Date
1st	The first version was published.	2020/01/22

Delta Industrial Wireless DVW-W01I2-E1 Series User Manual

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Chapter 1 Product introduction

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About this Manual

This manual contains information about **DVW-W01I2-E1** series. When using Delta DVW series product in China, please refer to Delta official website with model name **DVW-W01I2-E1** or contact our nearest branch offices or distributors for further information.

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates radio frequency signal and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

---Reorient or relocate the receiving antenna.

---Increase the separation between the equipment and receiver.

---Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

---Consult the dealer or an experienced radio/TV technician for help.

CE Declaration of Conformity

In accordance with the Directives 2004/108/EC*, 2014/30/EU, 2006/95/EC*, 2014/35/EU and 1999/5/EC. The test record, data evaluation and DX-2100RW-WW configurations represented herein are true and accurate under the standards herein specified.

EN 301 511 V9.0.2 (2003-3)
Test Items:
Radiated spurious emissions – MS allocated channel (Clause 4.2.16)
Radiated spurious emissions – MS in idle mode (Clause 4.2.17)
EN 301 908-1 V7.1.1 (2015-03)
EN 301 489-1 V1.9.2 (2011-09)
EN 301 489-7 V1.3.1 (2005-11)
EN 301 489-24 V1.5.1 (2010-10)

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1.1 Overview

Delta's industrial wireless DVW-W01I2-E1 series features Ethernet port, RS-232 and RS-485, supports standard MODBUS protocol for executing and controlling data transmission with operating devices. DVW-W01I2-E1 supports fast-roaming solution especially suitable for clients in wireless environment to quickly switch connection from one AP to another for continuous roaming experience and applications, such as automatic storage system or autonomous carriers.

1.1.1 High performance wireless technology

- 10/100/1000/Base-T
- Auto detects transmission speed
- Auto-MDI/MDI-X
- 802.11 a/b/g/n/ac, up to 866 Mbps
- Supports fast roaming (personal network)

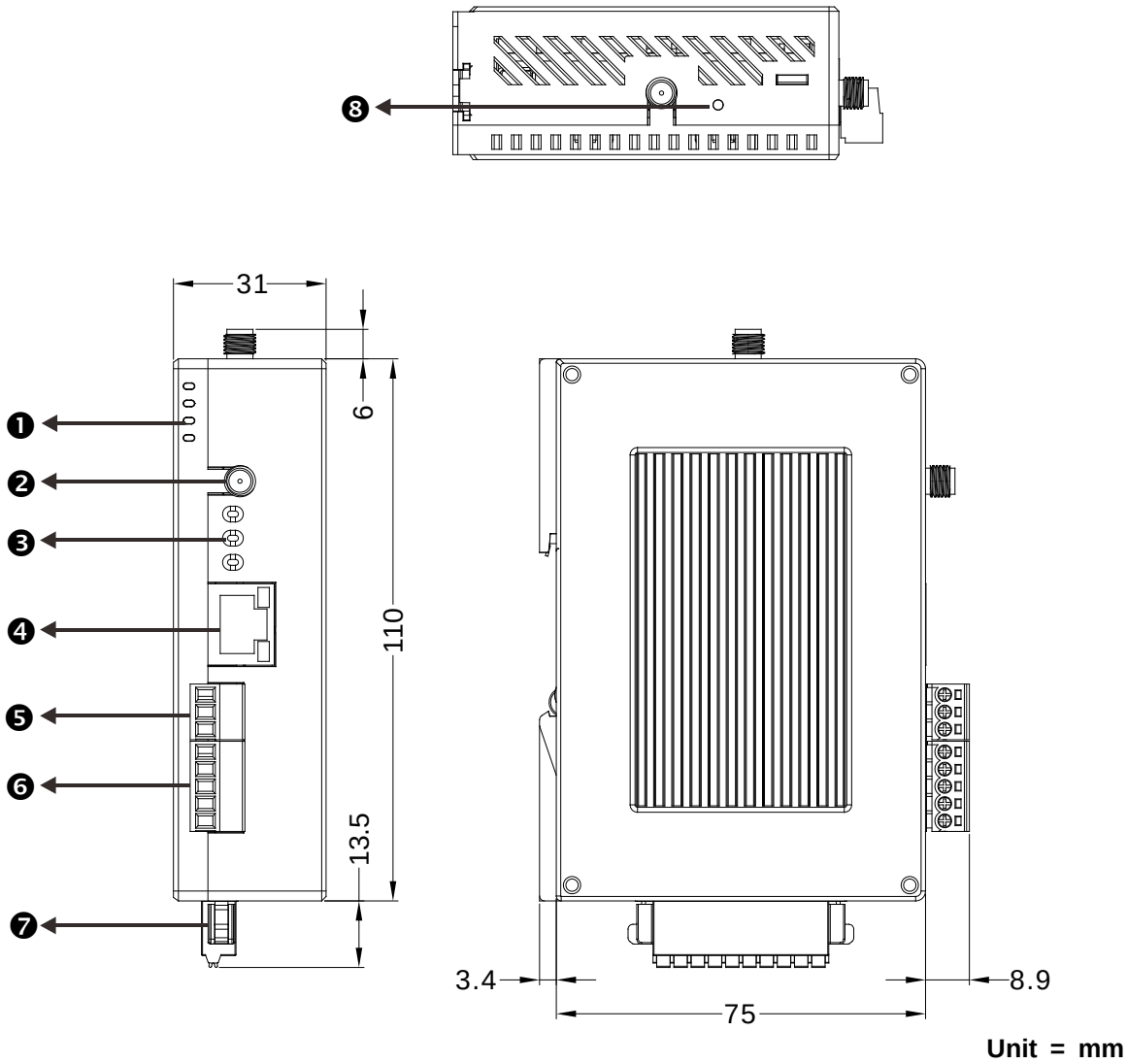
1.1.2 Good reliability and design optimization

- Redundant dual DC power input
- One set of digital input (DI)
- One set of alarm output (DO)

1.1.3 Robust design for industrial hardware

- Operating temperature: -10~60℃
- Storage temperature: -40~85℃
- Humidity: 5%~95% (non-condensing)
- Metal case: IP40

1.1.4 Product profile and dimensions



Unit = mm

No	Description
1	LED indicator
2	Antenna socket
3	Signal strength
4	Ethernet port
5	RS-485 port
6	RS-232 port
7	Power terminal
8	Reset button

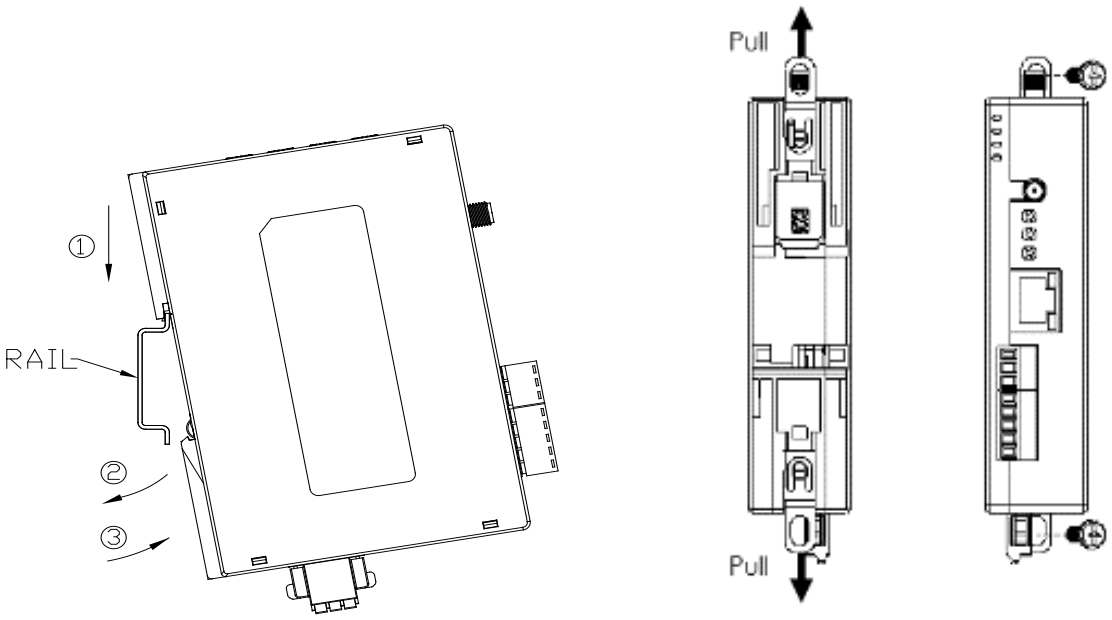
1.2 LED indicator

LED	Color	Status	Description
PWR1/PWR2	Green	On	The device is powered up
		Off	The device is not powered up
RS-232	Green	Blinking	Data transmission
		Off	No data transmission
RS-485	Green	Blinking	Data transmission
		Off	No data transmission
DI/ALARM	Red	On	Closed relay
		Off	Disconnect relay
	Green	On	Valid digital input (DI)
		Off	No digital input (DI)
		Blinking	Relay closed and DI occurs simultaneously
Signal light	Green	On	Lighting 1-3 lights based on signal strength
		Off	No network signal

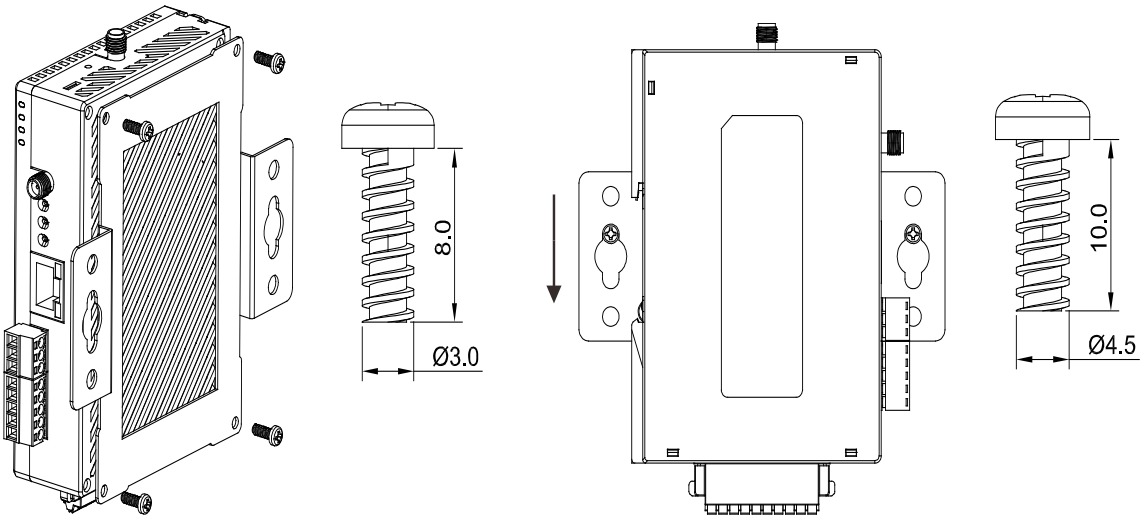
1.3 Installation

1.3.1 DIN-rail mounting

Attach the back trench of the device to the mounting rail in arrow ① direction and push the device against the rail in arrow ② direction. To disassemble, first push down the device in arrow ① direction and follow arrow ③ direction to push out the device.



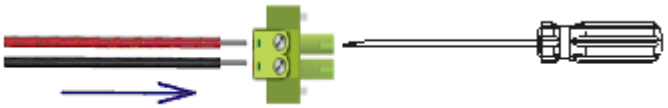
1.3.2 Wall mounting



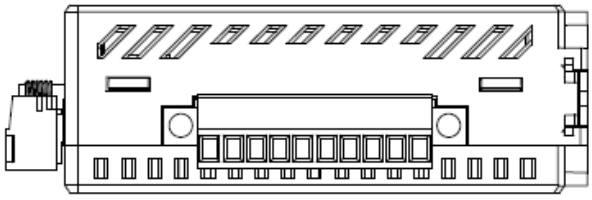
1.3.3 Wiring the redundant power input

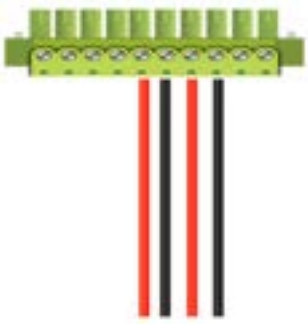
The DVW-W01I2-E1 is equipped with one to two sets of DC input (PWR1 / PWR2). Both sets of DC input can be connected to a wide range of power sources (12 to 48VDC). When one power source fails, the other source can work as a backup to ensure that the machine operates normally.

Step 1: Detach the terminal block from DVW-W01I2-E1 and insert the negative and positive DC wires into the terminal block. Make sure that the positive DC wire is connected to V1+ or V2+, and that the negative DC wire is connected to 0V.
Step 2: To prevent the loose DC wires, tighten the wire clamp screws on the terminal block with the flat-blade screwdriver.



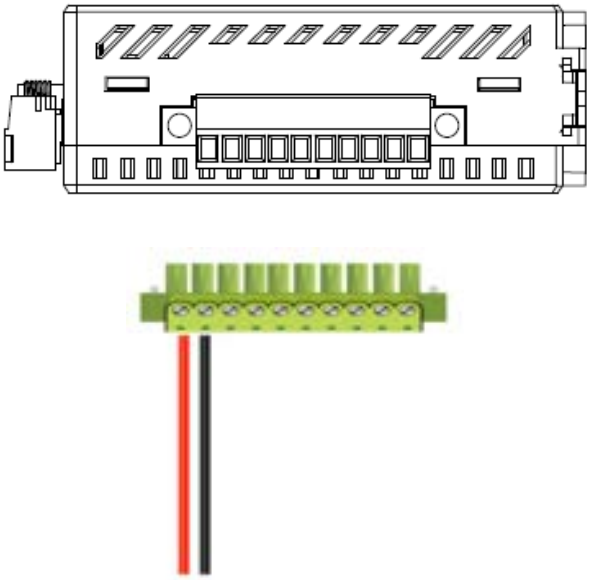
Note: Please use copper wire 60/75ºC, AWG 28-14; screw torque is 2.2kgf-cm (1.91 in-lbs)





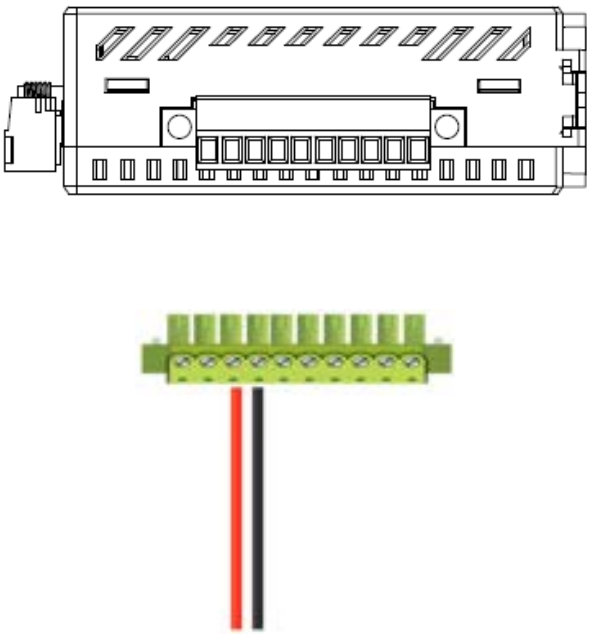
1.3.4 Wiring the alarm contact

The DVW-W01I2-E1 is equipped with one to two sets of alarm output. The alarm contact is a dry relay. Under normal mode of operation, the contact is in “OPEN” circuit; when one of the two power sources fails or communication is interrupted, the contact will change to a “CLOSED” circuit. The relay can be connected up to 1A/24VDC power source.



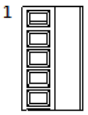
1.3.5 Wiring the digital input

The DVW-W01I2-E1 is equipped with one to two sets of digital input. When input voltage is between 0 to 5V, the state of DI is OFF; input voltage between 11 to 30V, the state of DI is ON. The maximum input current is 6mA.

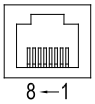
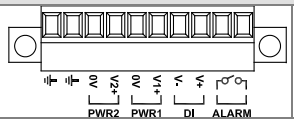
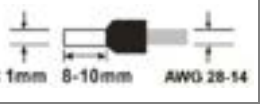


1.3.6 Pin definition

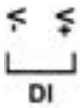
RS-232 & RS485

Pin no.	RS-232		Pin no.	RS-485	
1	RX		1	D+	
2	TX		2	D-	
3	SG		3	SG	
4	RTS				
5	CTS				

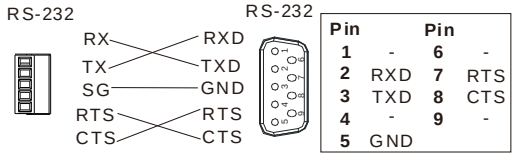
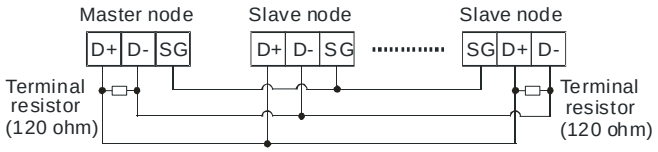
Ethernet port (RJ45) & power input

Ethernet port (RJ45)									Power input
1	TX+	2	TX-	3	RX+	4	N/C		
5	N/C	6	RX-	7	N/C	8	N/C		

Interface

Category	Terminal	Explanation	
Power		Power ground where two grounds interconnect	
		Power 1	● Input voltage: DC 12V~24V, +/- 20%; ● Power consumption in normal operation: 2.5W; ● Reverse voltage protect; ● Dual redundant power supply, the device will automatically match to the higher voltage side and disconnect from the lower voltage side
		Power 2	
I/O		DI: ● Input type: DC (sourcing or sinking) ● Input current: 24V：5ma ● Max. input frequency: 1KHZ ● Input impedance: 5.6K	
		DO: Contact rating: DC24V: 2A, AC125V: 0.5A, AC220V: 0.2A	
ANT1		Wi-Fi antenna, external thread connector (male) Internal diameter: 4.45mm External diameter (thread excluded): 5.32mm External diameter: 6.26mm	
RST		Press less than 3 seconds: restart the device Press longer than 6 seconds: restore to default	

1.3.7 Wiring

RS-232	RS-485
	

1.4 Package checklist

The package contains the following accessories:

- Delta industrial wireless DVW-W01I2-E1 series x1
- Instruction sheet x1
- SMA antenna x 2
- Wall mount metal accessory x1
- Screws x4

Attention

Each released DVW-W01I2-E1 contains accessories that are listed above. When you receive the product, please open the package and check for any missing or broken accessories. For any enquiries, do contact our local distributors.

MEMO

2

Chapter 2 User Interface and Application

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2.1 Configuration

Before using DVW-W01I02-E1 series, please pay attention to the following item preparation.

No	Item	Description
1	PC	Contains Windows operating system and web browsers.
2	Power supply	Supports 12-48V with output power larger than 2.5W.
3	Cable	Includes 5 types of twisted pair as communication cables of DVW-W01I02-E1.

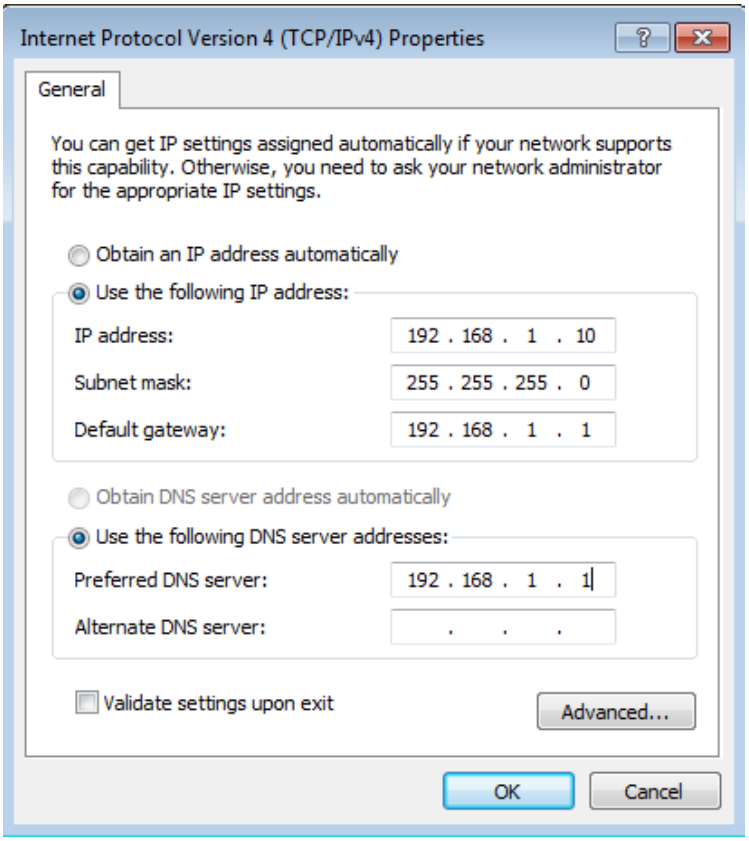
2.2 Connection and access settings

1. The DVW-W01I02-E1 series and PC connects to RJ45 port through using web-based Ethernet for parameter settings.

2. When PC and DVW device connection is complete, continue configuring the PC's IP address.

1) Click the start button, then click the control panel to open network connection.
2) In Network and Sharing Center, check the network connections.
3) Right-click the connection for modification, then click Attribute. When the UAC appears as a reminder, please type in the user password for confirmation.
4) Click Network. Under this option, select Internet Protocol Version 4 (TCP / IPv4) or Internet Protocol Version 6 (TCP / IPv6), then click Attribute.

5) Manually configure the local IP address. Since the default IP address is 192.168.1.5 for router settings, the subnet masks is 255.255.255.0, therefore, the local IP on PC can be set anywhere between 192.168.1.1 to 254 excluding 192.168.1.5 and with no repeating IPs. We setup the IP address as 192.168.1.10, the default gateway is 192.168.1.5, select an available DNS address or configuring to 192.168.1.5.



6) Open browser (e.g. IE) then type in default IP address **192.168.1.5** and click enter. The following log-in page appears for users to enter the correct username and password (Default setting: admin/password).

- ☐ **Username:** admin
- ☐ **Password:** password

2.3 IEXplorer

IEXplorer can search for DVW-W01I2-E1 products to help you understand the basics of your device.

2.3.1 Device connection and detection

After starting IEXplorer, it will automatically search the list of supported IEXplorer devices on the network. The device name, model, IP address,

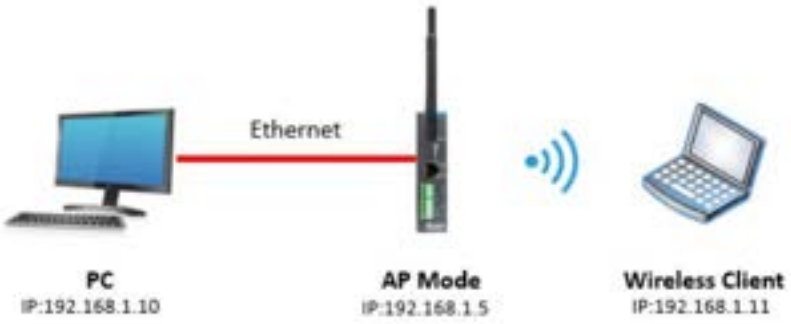
MAC address, firmware version, serial number, users can easily and quickly know the information of those devices and devices on the network. Also use the mouse to connect

Tap the device name on the list to open the device's settings webpage (only DVS, DVW devices are supported).

2.4 General configurations

2.4.1 AP mode setup

In AP mode, the access point serves as intermediate point between devices for wired or wireless connection and data transmission.

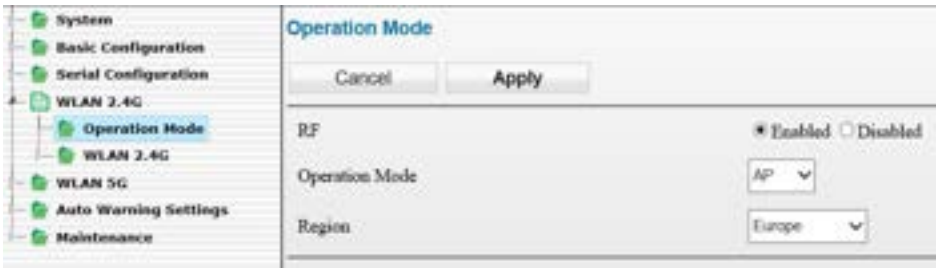


Configuration procedures

1. Set all IP addresses in the same segment.

2. Log in the DVW wireless device page on the PC, the default IP is 192.168.1.5. Username and password by default is admin/password.

3. From WLAN2.4G listed on the menu, select Operation Mode, choose AP mode and click Apply.



4. Select Basic Configuration and setup SSID name as well as WPA2-PSK for security mode (recommended), then click Apply.

5. For wireless client, search for DVW SSID (SlimWiFi_B4F8) in the AP list and click to complete on-line data transmission via wireless connection.

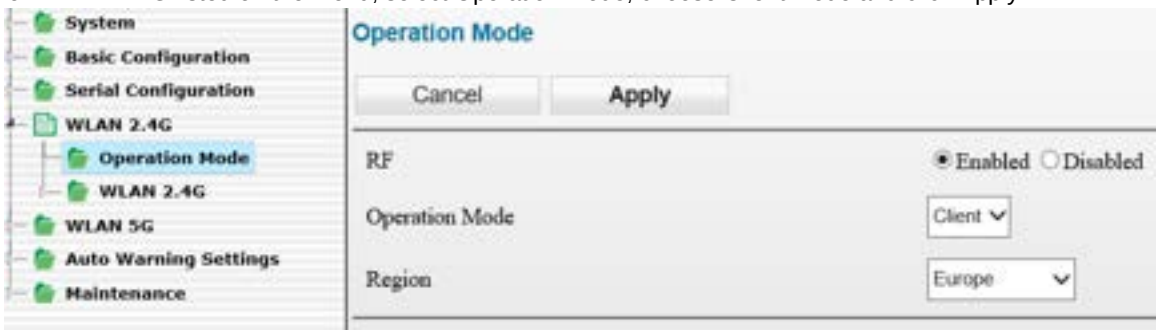
2.4.2 Client mode setup

When users have two DVW devices, one uses AP mode and the other as client mode, both are combined via wireless connection. However, only LAN connection can be used in client mode but not wireless devices or connections.

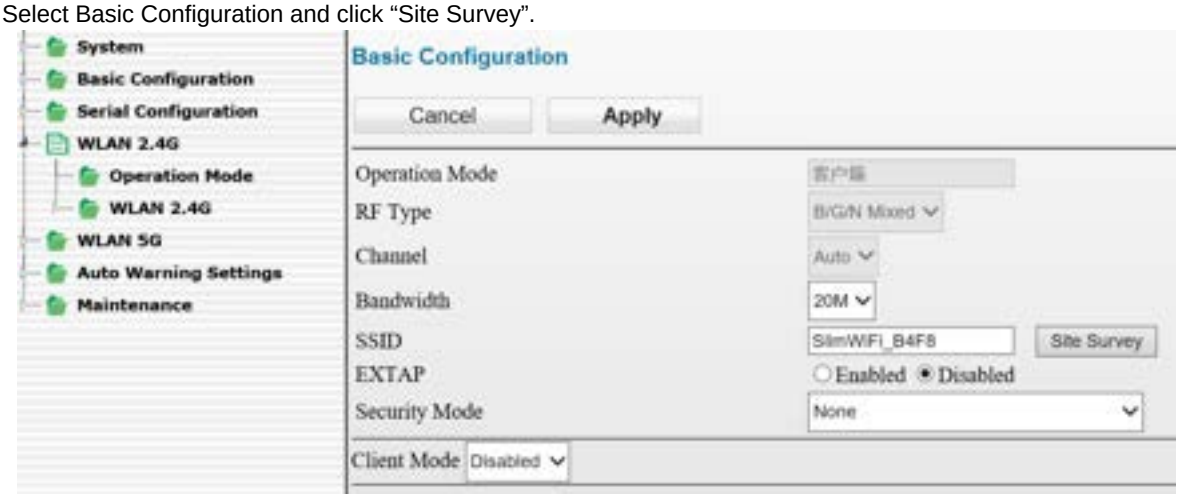
Configuration procedures

1. Set all IP addresses in the same segment.
2. AP mode: please refer to section 2.3.1.
3. Client mode: Log in the wireless client device page on PC through default IP setting 192.168.1.6. Username and password by default is admin/password.

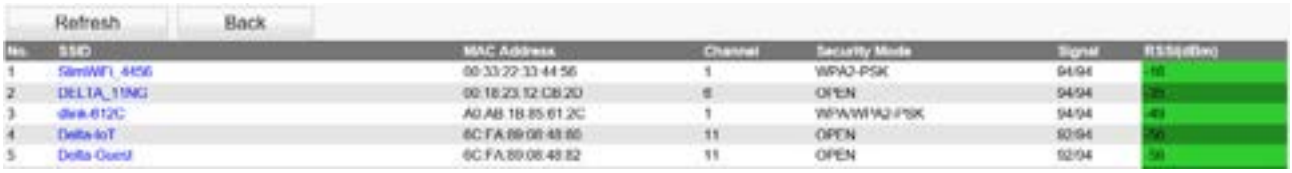
4. From WLAN2.4G listed on the menu, select Operation Mode, choose Client mode and click Apply.



5. Select Basic Configuration and click “Site Survey”.

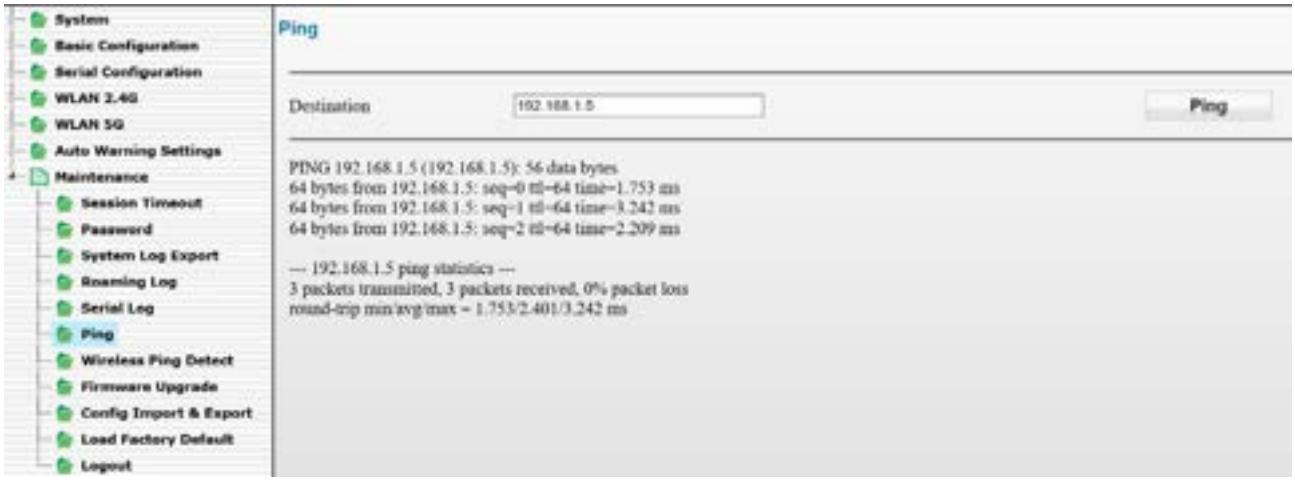


6. Select the configured AP SSID (e.g. SlimWiFi_4456). When SSID cannot be found, please click “Refresh”.



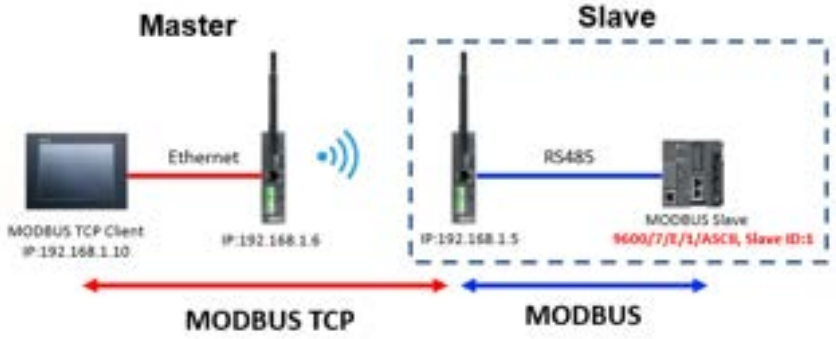
7. Type in the password for AP setting and click APPly to complete Client and AP connection.

8. When connection is complete, select Ping under Maintenance. Then, type in destination IP to test the connection. For successful connection, the AP Ping response time appears. (See below)



2.4.3 MODBUS Slave Gateway

This function is that the MODBUS protocol on the serial port can be converted into MODBUS TCP protocol through the DVW gateway function, and data exchange can be performed with the MODBUS TCP Client device through wireless transmission. The following is a setting example.



Configuration procedures

- **WiFi wireless configuration**
  1. Set all IP addresses in the same segment.
  2. Configure the DVW to be in AP+Client mode. For details, see 2.3.1 AP Mode Configuration. 2.3.2 Client Mode Configuration.

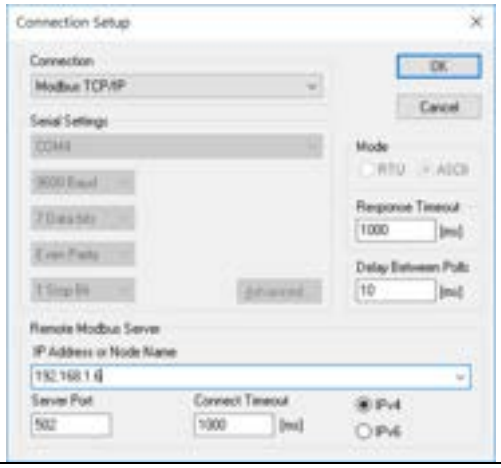
- **Device Configuration**
  1. Set the RS485 of the PLC to MODBUS Slave mode, 9600/7/E/1/ASCII, Slave ID: 1, and connect to the DVW serial port.
  2. Set the HMI to MODBUS TCP Client, IP: 192.168.1.10

- **MODBUS Slave gateway configuration**
  1. The PC logs into the DVW IP 192.168.1.5 device web interface.
  2. Click Serial Configuration > MODBUS Gateway in the menu.
     - MODBUS gateway function: Select MODBUS ASCII Slave.

Note:
The DVW gateway configuration is determined by the serial port. For example, if the PLC is Slave, the DVW gateway must be set to MODBUS Slave.

     - RS485 : 9600/7/E/1
     - Slave ID mapping: Slave ID range 1-20, Map ID range 1-20, external Slave ID: 1 can be mapped to the serial port Slave ID: 1

3. The HMI is set to MODBUS TCP Client, the MODBUS TCP Server IP address is specified as DVW IP 192.168.1.6, and the Slave ID is set to 1. The Map ID of the gateway is directed to the mapped Slave ID 1, which can complete the connection for data exchange.



Slave ID mapping description
This function works when DVW uses RS232/RS485 at the same time and ID is 1-20. You can use Slave ID mapping and set the following Slave ID mapping table to map from the external Master's MODBUS TCP ID to all Slave devices under the serial port
For example**:**
1. The Master needs to exchange data with the RS232 Slave ID20, and must use 40 in the MODBUS TCP ID.

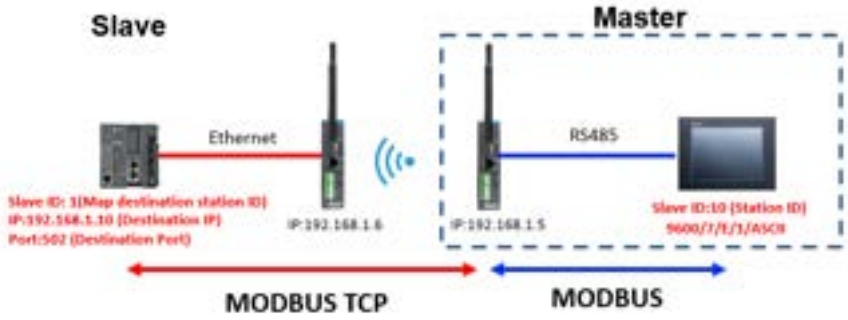
2. The Master needs to exchange data with RS485 Slave ID1, and must use 1 in MODBUS TCP ID.

3. The Slave ID mapping table is set as follows

	Slave ID Range		Map ID Range	
	DVW serial port Slave ID range setting		Slave ID range of external MODBUS TCP Client connection, corresponding to Slave ID range	
RS485	1	20	1	20
RS232	1	20	20	40

2.4.4 MODBUS Master Gateway

This function is that the MODBUS protocol on the serial port can be converted into MODBUS TCP protocol through the DVW gateway function, and data exchange can be performed with the MODBUS TCP Server device through wireless transmission. The following is a setting example.



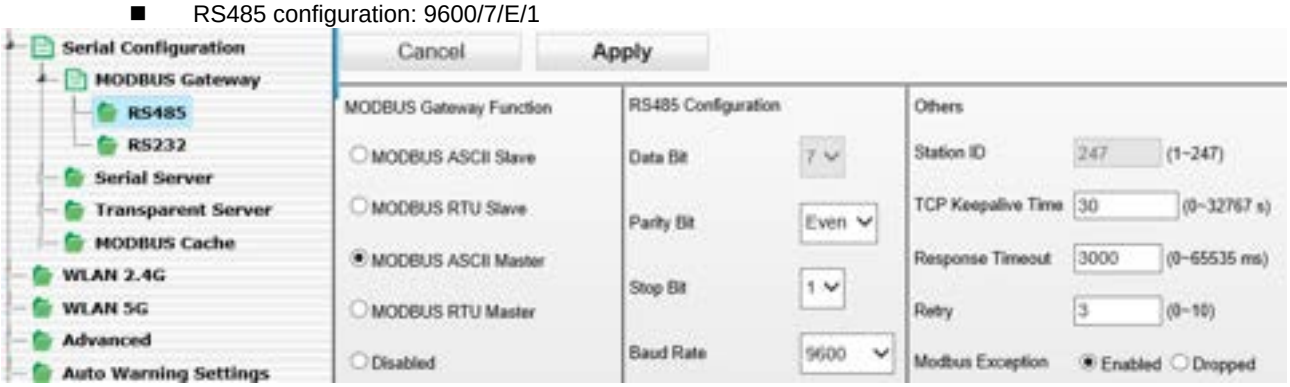
Configuration procedures

- **WiFi wireless configuration**
  1. Set all IP addresses in the same segment.
  2. Configure the DVW to be in AP+Client mode. For details, see 2.3.1 AP Mode Configuration. 2.3.2 Client Mode Configuration.

- **Device Configuration**
  1. Set the RS485 of the HMI to MODBUS Master Mode, 9600/7/E/1/ASCII, Slave ID: 1, and connect to the DVW serial port.
  2. Set the PLC to MODBUS TCP Server, IP address 192.168.1.10, port 502.

- **MODBUS Master Gateway Configuration**
  1. PC login DVW IP: 192.168.1.5 device web interface.
  2. Click Serial Configuration > MODBUS Gateway in the menu.
     - MODBUS gateway function: Select MODBUS ASCII Master.

- RS485 configuration: 9600/7/E/1



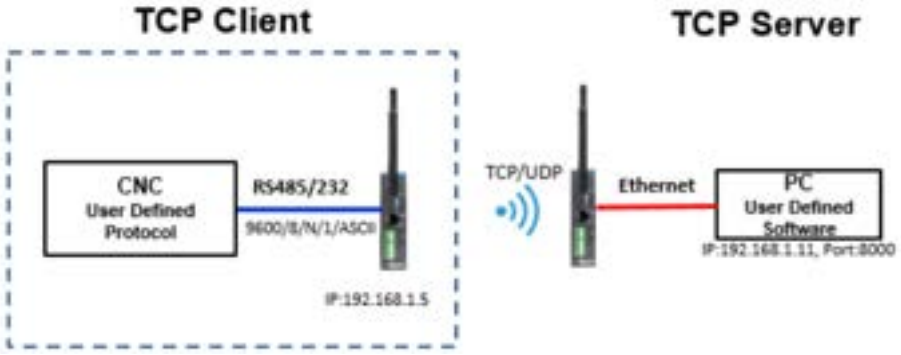
- Forwarding table settings:
  1. Station ID: 10 (Slave ID of Master)
  2. Map destination slave ID: 1 (Slave device Slave ID)
  3. Destination IP: 192.168.1.10 (IP address of the slave device)
  4. Destination TCP port: 502

No.	Enabled	Station ID	Map destination station ID	Destination IP	Destination Port
1	☑	10	1	192.168.1.10	502
2	☐				502
3	☐				502
4	☐				502
5	☐				502

3. Enable data exchange on the HMI side, and you can start data exchange with the remote PLC through the WiFi wireless network.

2.4.5 Serial Server (TCP/UDP Client)

The function is that when DVW is used as the TCP/UDP Client, the DVW serial port data can be wrapped into TCP/UDP packets and forwarded to the remote TCP server device, which can be used for any serial port custom protocol. The following example shows that the TCP client uses the RS485 serial port to perform data exchange with the remote TCP server.



Configuration procedures

- **WiFi wireless configuration**
  1. Set all IP addresses in the same segment.
  2. Configure the DVW to be in AP+Client mode. For details, see 2.3.1 AP Mode Configuration. 2.3.2 Client Mode Configuration.

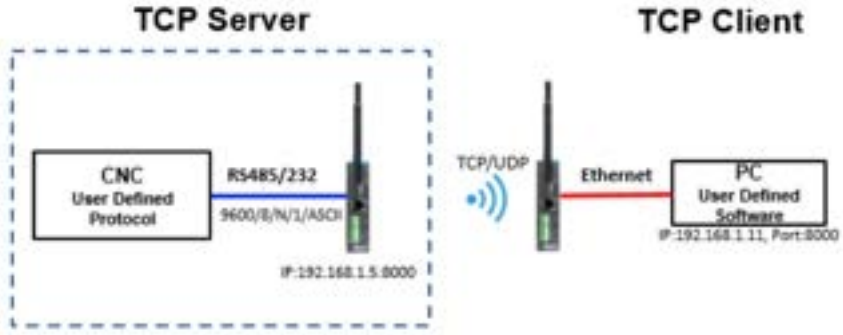
- **Device Configuration**
  1. Set the RS485 port of the TCP client device to 9600/8/N/1/ASCII and connect the DVW serial port.
  2. Connect the TCP server device to another DVW by using the network route and configure the IP network segment to be in the same network segment as the TCP client.

- **Serial server configuration**
  1. PC login DVW IP: 192.168.1.5 device web interface.
  2. Click Serial Configuration > Serial Server > RS485 on the menu
     - Mode : TCP client
     - RS485 setting: 9600/8/N/1/ACSII, which needs to be the same as the serial port device
     - Destination IP address/port: 192.168.1.11/8000

  3. The serial port device sends data to the RS-485, and the TCP server receives the data.

2.4.6 Transparent (TCP Server)

The function is that when DVW is used as the TCP/UDP server, the DVW serial data can be wrapped into TCP/UDP packets and forwarded to the remote TCP client device, which can be used for any serial port custom protocol. The following example shows an example of how the TCP server uses the RS485 serial port and the remote TCP client for data exchange.

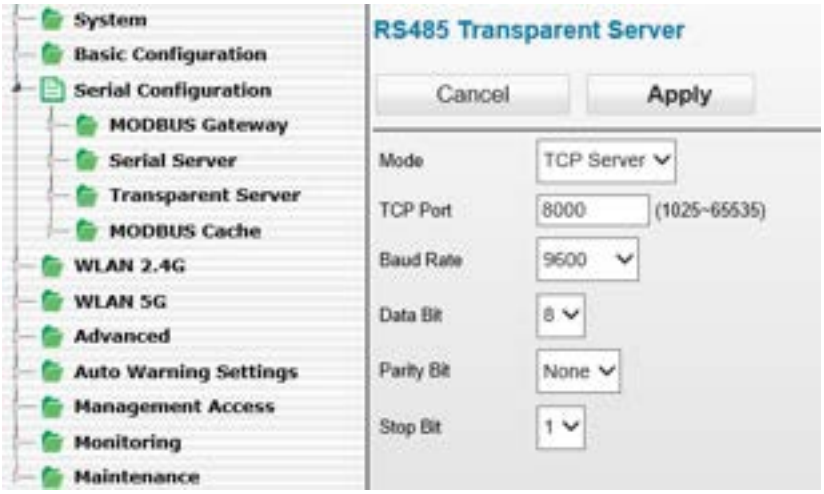


Configuration procedures

- **WiFi wireless configuration**
  1. Set all IP addresses in the same segment.
  2. Configure the DVW to be in AP+Client mode. For details, see 2.3.1 AP Mode Configuration. 2.3.2 Client Mode Configuration.

- **Device Configuration**
  1. Set the TCP client device IP to 192.168.1.11 and the port to 8000 and connect to DVW with Ethernet port.
  2. Connect the TCP server device to the other DVW with a serial port and configure it to 9600/8/N/1, and set the DVW IP to 192.168.1.5.
- **Transparent configuration**
  1. PC login DVW IP: 192.168.1.5 device web interface.
  2. Click Serial Configuration > Serial Server > RS485 on the menu
     - Mode : TCP server
     - TCP port : 8000

- RS485 communication format: 9600/8/N/1



3. The TCP client device needs to set the TCP server IP address 192.168.1.5 and port: 8000 to transfer the data to the DVW to connect to the serial device.

2.4.7 Serial server (TCP client) + Transparent (TCP server)

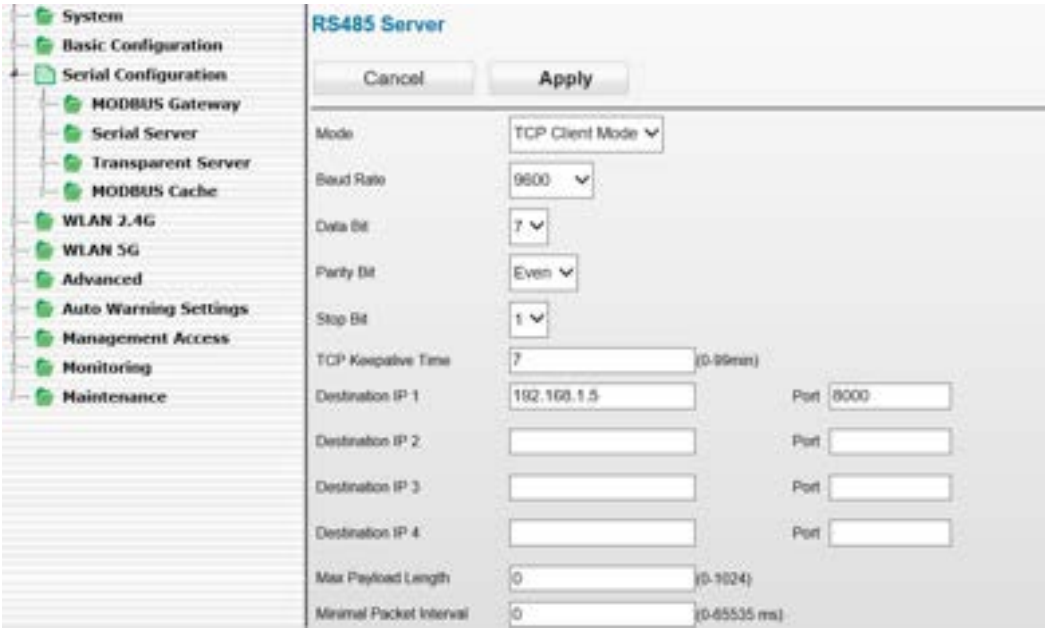
Two DVWs can be used to set the serial port server (TCP client) and transparent transmission (TCP server) for data exchange and can be used for any serial port custom protocol. The following describes an example of how the TCP server uses the RS485 serial port to encapsulate the TCP packet and the remote TCP client connection.

Configuration procedures

- **WiFi wireless configuration**
  1. Set all IP addresses in the same segment.
  2. Configure the DVW to be in AP+Client mode. For details, see 2.3.1 AP Mode Configuration. 2.3.2 Client Mode Configuration.

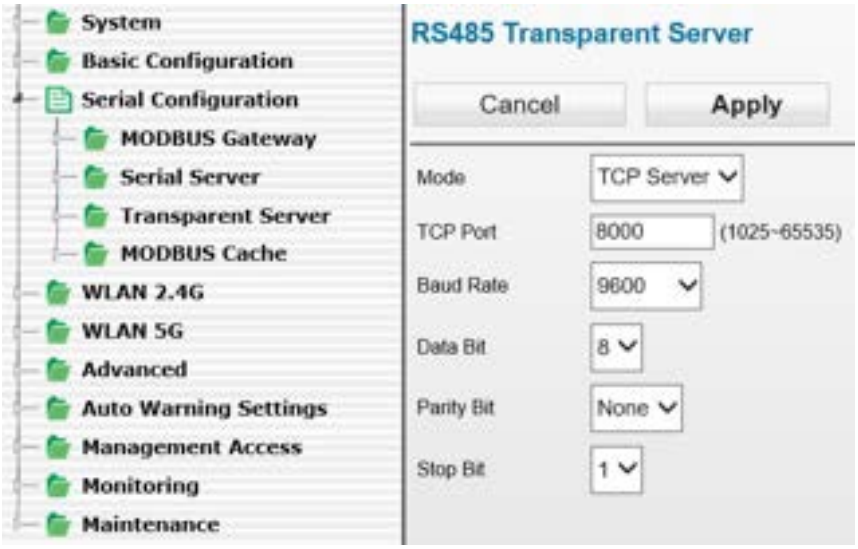
- **Device Configuration**
  1. Connect the TCP client device's serial port to the DVW and configure it as 9600/7 / E / 1 / ASCII
  2. Connect the serial port of the TCP server device to the DVW and configure it as 9600/7 / E / 1 / ASCII

- **TCP client (serial server) configuration**
  1. PC login DVW IP: 192.168.1.6 device web interface.
  2. Click Serial Configuration > Serial Server > RS485 on the menu
     - Mode: TCP client mode
     - RS485 communication format: 9600/7 / E / 1
     - Destination IP address: 192.168.1.6, port: 8000



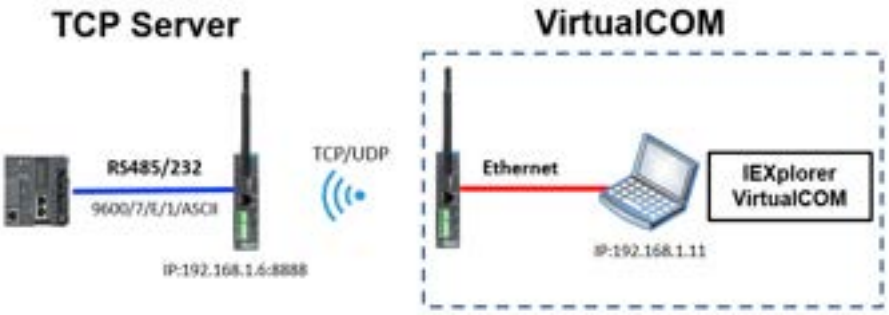
- **Transparent configuration**
  1. PC login DVW IP: 192.168.1.5 device web interface.
  2. Click Serial Configuration > Serial Server > RS485 on the menu
     - Mode : TCP server
     - TCP port : 8000

- RS485 communication format: 9600/8/N/1



2.4.8 Virtual COM

In Virtual COM mode, DVW series can establish a network connection between the host computer and serial device. When the application on host computer doesn't provide serial interface to connect with serial device, then Virtual COM mode can solve this problem and establish a Virtual COM connection on Ethernet interface.



Configuration procedures

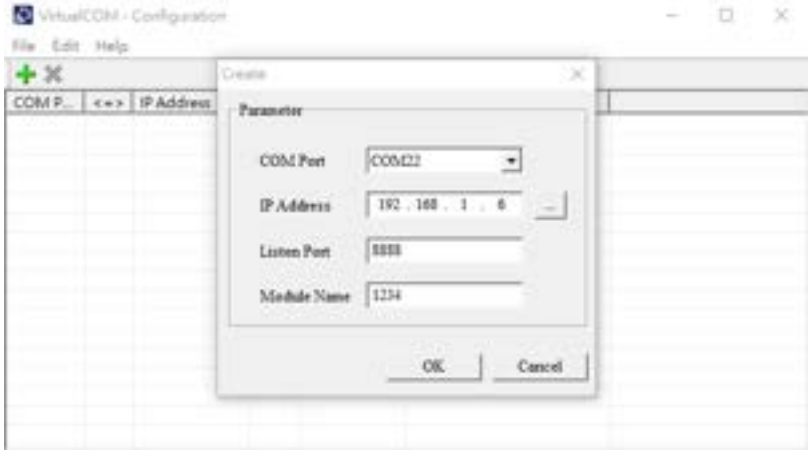
- **WiFi wireless configuration**
  1. Set all IP addresses in the same segment.
  2. Configure the DVW to be in AP+Client mode. For details, see 2.3.1 AP Mode Configuration. 2.3.2 Client Mode Configuration.

- **Device Configuration**
  1. Connect the TCP Server device's serial port to the DVW and configure it as 9600/7 / E / 1 / ASCII

- **TCP client (serial server) configuration**
  1. PC login DVW IP: 192.168.1.6 device web interface.
  2. Click Serial Configuration > Serial Server > RS485 on the menu
     - Mode: TCP Server mode
     - RS485 communication format: 9600 / 7 / E / 1
     - TCP port: 8888

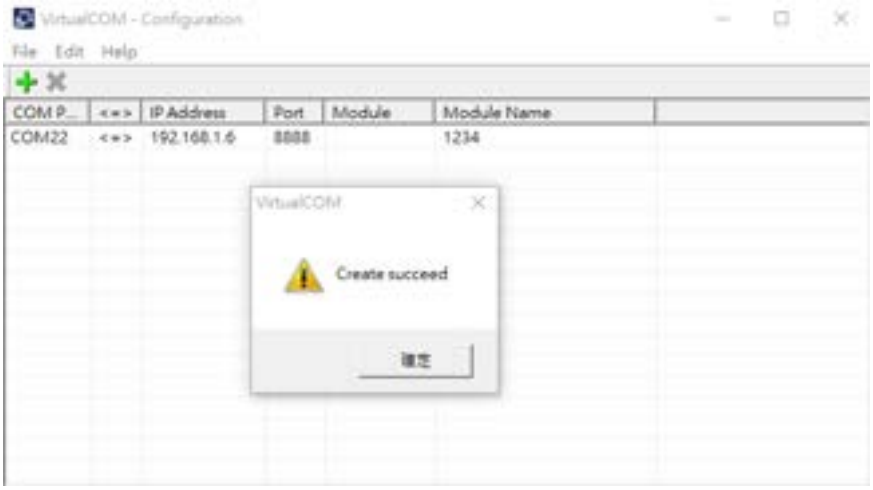
- **VirtualCOM configuration**
  1. Use IEXplorer to establish a virtual COM port on the PC
     - COM Port: COM22 (Select a COM port that has not been used)
     - IP Address: 192.168.1.6
     - Listen Port: 8888

- Module Name:1234 (Any name)

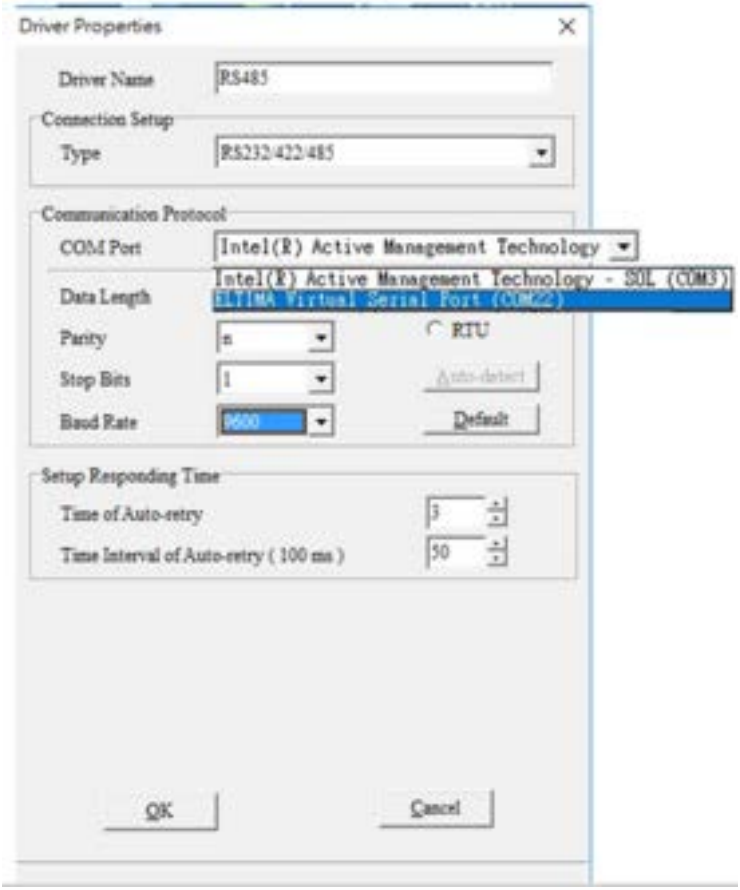


2

2. Press O33K, you can successfully establish the virtual serial port COM22

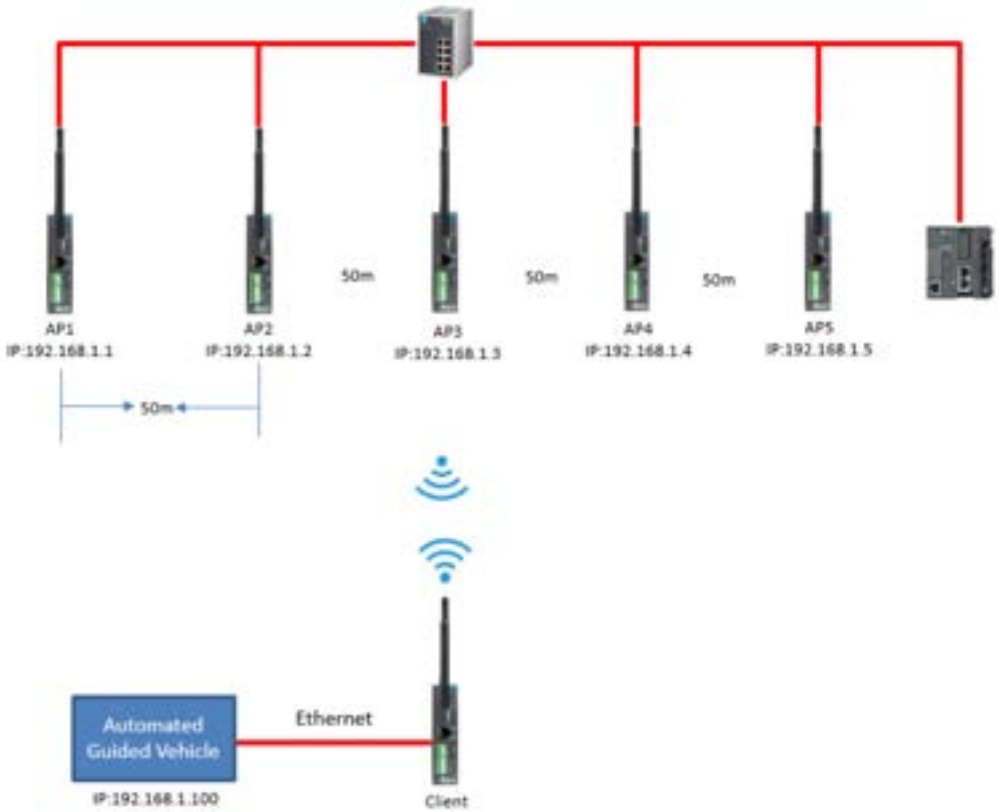


3. Use Delta PLC tool ISPSoft to set the created virtual serial port ELTIMA Virtual Serial Port (COM22) in the communication port, and upload and download from this communication port.



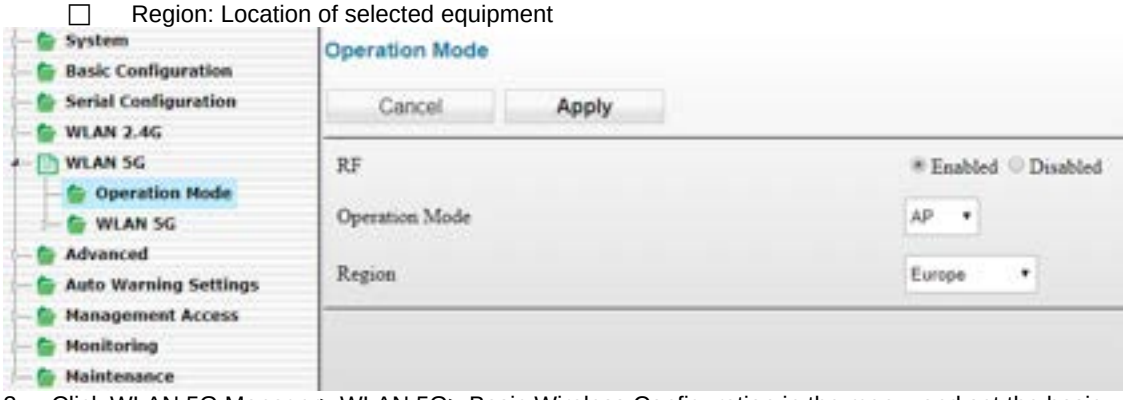
2.4.9 Wi-Fi Roaming (One Roaming)

The DVW Client supports roaming between multiple APs. It uses Delta One Roaming technology to quickly switch wireless networks between different APs to maintain uninterrupted communication between devices. This function is mainly used in AGV scenes. The following is a setting example.

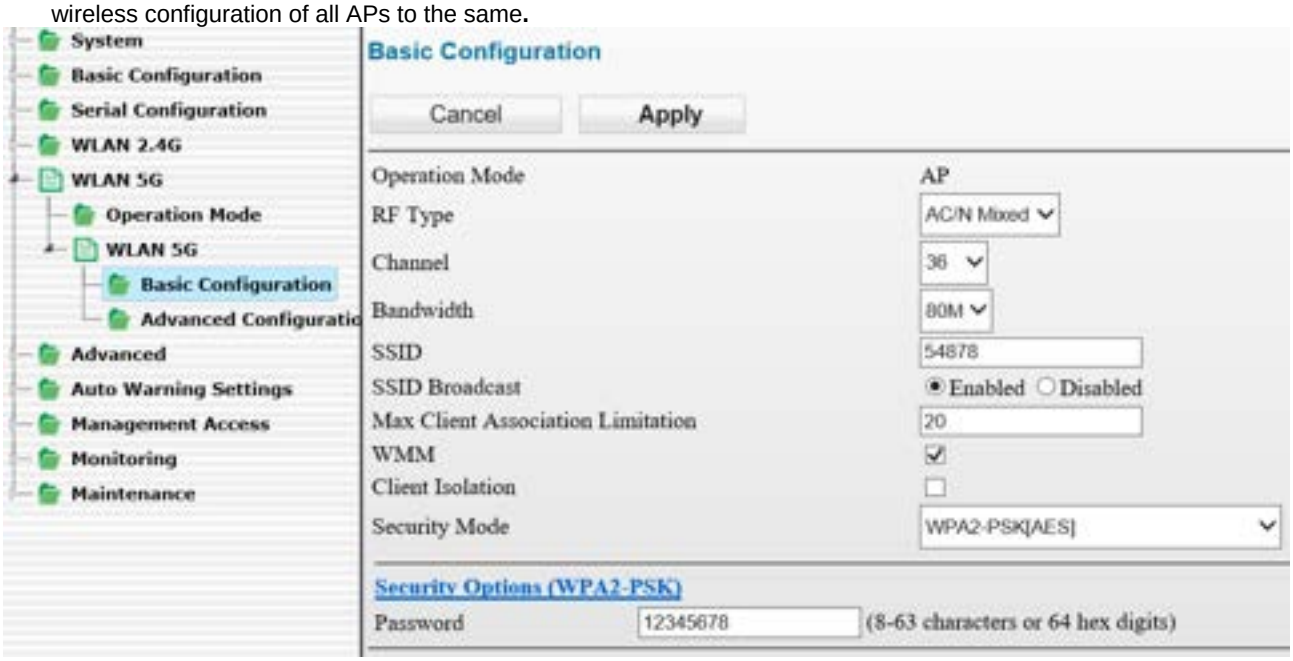


Configuration procedures

- **WiFi wireless configuration**
  - **AP Mode:**
    1. PC login DVW IP: 192.168.1.1 ~ 192.168.1.5 device web interface.
    2. Click WLAN 5G Manager> Operation Mode on the menu
       - ☐ RF: enabled
       - ☐ Operation mode: AP
       - ☐ Region: Location of selected equipment



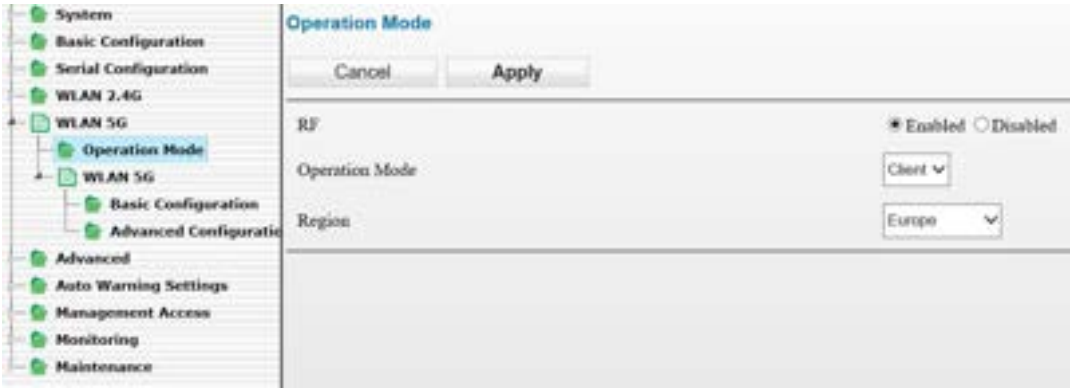
    3. Click WLAN 5G Manager> WLAN 5G> Basic Wireless Configuration in the menu, and set the basic wireless configuration of all APs to the same**.**



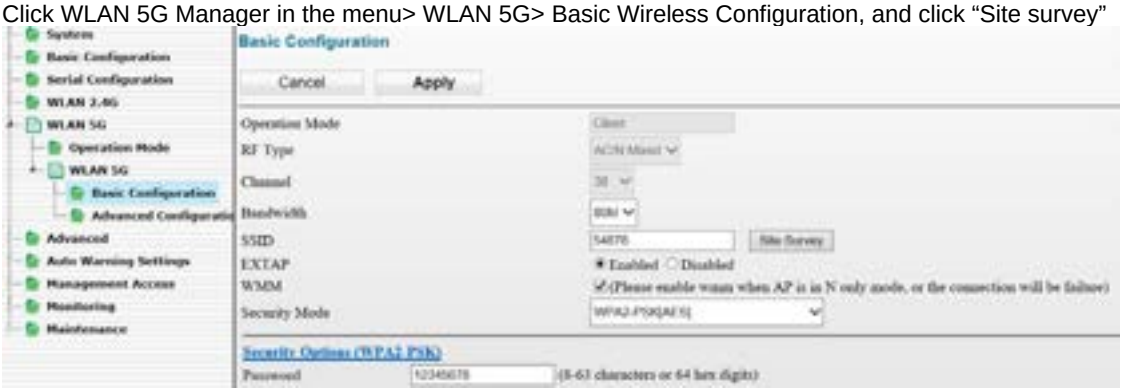
Note

- If each AP uses the same channel setting, it can achieve the best roaming switching speed of about 150ms, but if each AP uses different channels (up to three different channels are set), the roaming switching speed is about 320ms, but it can achieve AP signals without interference purpose.
- When the AP is set up in the factory, if the original standard antenna is used, the recommended distance between the AP and the AP should be less than 50m to achieve the best wireless coverage.

  - **Client mode:**
    1. PC login DVW IP: 192.168.1.6
    2. Click WLAN 5G Manager in the menu> Operation Mode
       - ☐ RF: Enable
       - ☐ Operation mode: Client mode
       - ☐ Region: Location of selected equipment

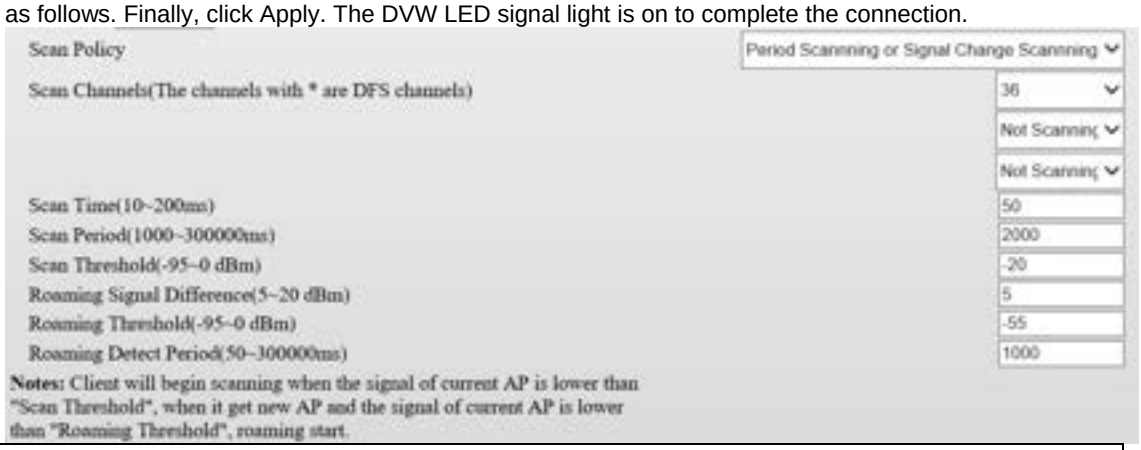


3. Click WLAN 5G Manager in the menu> WLAN 5G> Basic Wireless Configuration, and click “Site survey”



4. Click the SSID(54878) to be connected

5. Set the key and enable the roaming mode and roaming configuration. The recommended configuration is as follows. Finally, click Apply. The DVW LED signal light is on to complete the connection.



Note

- The system automatically sets the scanning channel to the channel of the AP you selected. If other APs are on the same channel, you do not need to set other scanning channels. If the channel of the AP is between 2-3 different channels, please select the working channel in the two drop-down boxes below. If there are more than 3 channels, directly change the first setting to automatic.
- The "roaming threshold" is set according to the method of step 2. The "scanning threshold" must be greater than the "roaming threshold", and the difference between the two is generally greater than or equal to the "roaming signal difference" value.
- Using a wireless network scanning tool, test the signal strength of each path near the midpoint between two APs. After recording the signal strength values of all the center points, you can calculate the average value. The value is the roaming threshold; if the value of each center point is very large, you may consider adjusting the location of the AP deployment, or removing factors that interfere with signal transmission, or replanning the path. The scanning tool can use wirelessmon.

3

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3.10.10 Load factory default 3-52
3.10.11 Log off 3-52

3.1 System

The main display focuses on DVW-W01I2-E1 series present system information and CPU status.

3.1.1 System configuration

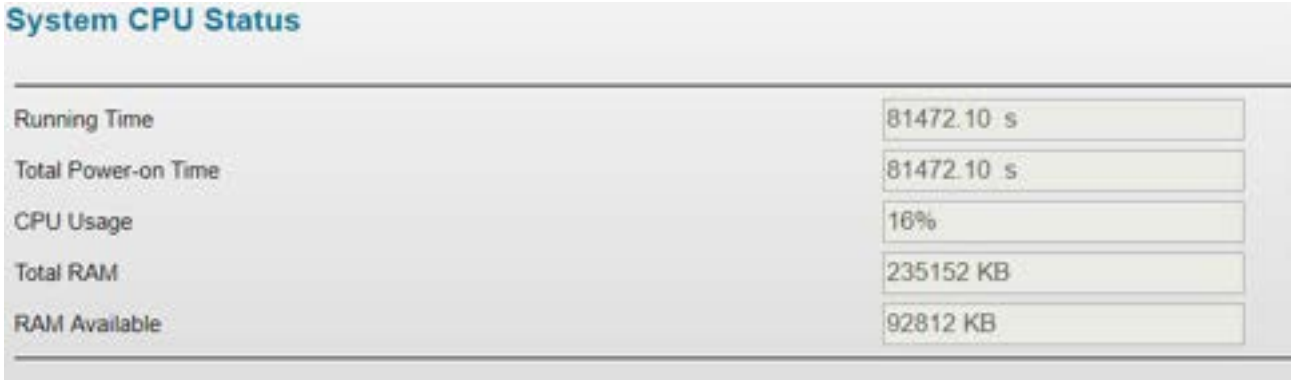
Displays information which can be categorized into three parts: System Configuration, Device Info and 802.11 Info.

System Configuration

System Configuration	
Model Name	DVW-W01I2-E1
Device Name	1111111
SN	DVWW100119027777
System Uptime	Thu Aug 15 06:40:57 UTC 2019
Firmware Version	1.02-20190814
Device Info	
MAC Address	00:33:22:33:44:55
IP Address	192.168.1.5
IP Subnet Mask	255.255.255.0
Gateway	
802.11 2.4G Info	
Status	Enabled
Country	Europe
Operation Mode	AP
Channel	1
RF Type	G/N Mixed
SSID	SlimWiFi_4456
802.11 5G Info	
Status	Enabled
Country	Europe
Operation Mode	Client - Connected 00:18:23:32:B4:F9
Channel	36
RF Type	AC/N Mixed
SSID	SlimWiFi_B4F9_5G
Seiral Information	
RS232 RX	0
RS232 TX	0
RS485 RX	0
RS485 TX	0

3.1.2 System CPU status

Displays system's present CPU status which includes running time, total power-on time, CPU usage, total RAM and RAM available. These status values are displayed in grey color and cannot be edited.



3.2 Basic configuration

The basic configuration allows users to perform maintenance and setup for DVW-W01I2-E1 series including system information and network.

3.2.1 System information

The configuration contains user-defined device name, location, description and contact information. Through this setup, users can easily and clearly identify each DVW-W01I2-E1 used on the network.

Description	Default value
Device name	
Users can define the device name	DVW-W01I2-E1
Device location	
Users can define the device location	Europe
Device description	
Users can provide detailed device description	Delta Dual-Band WiFi Router
Device contact information	
Users can input contact information of maintenance personnel.	NONE

3.2.2 Network configuration

Network configuration allows users to setup IP, IP address, IP subnet mask, gateway IP and primary DNS. There are several IP modes available for network configuration. Users can select modes from DHCP-Client, Static and DHCP-Server.

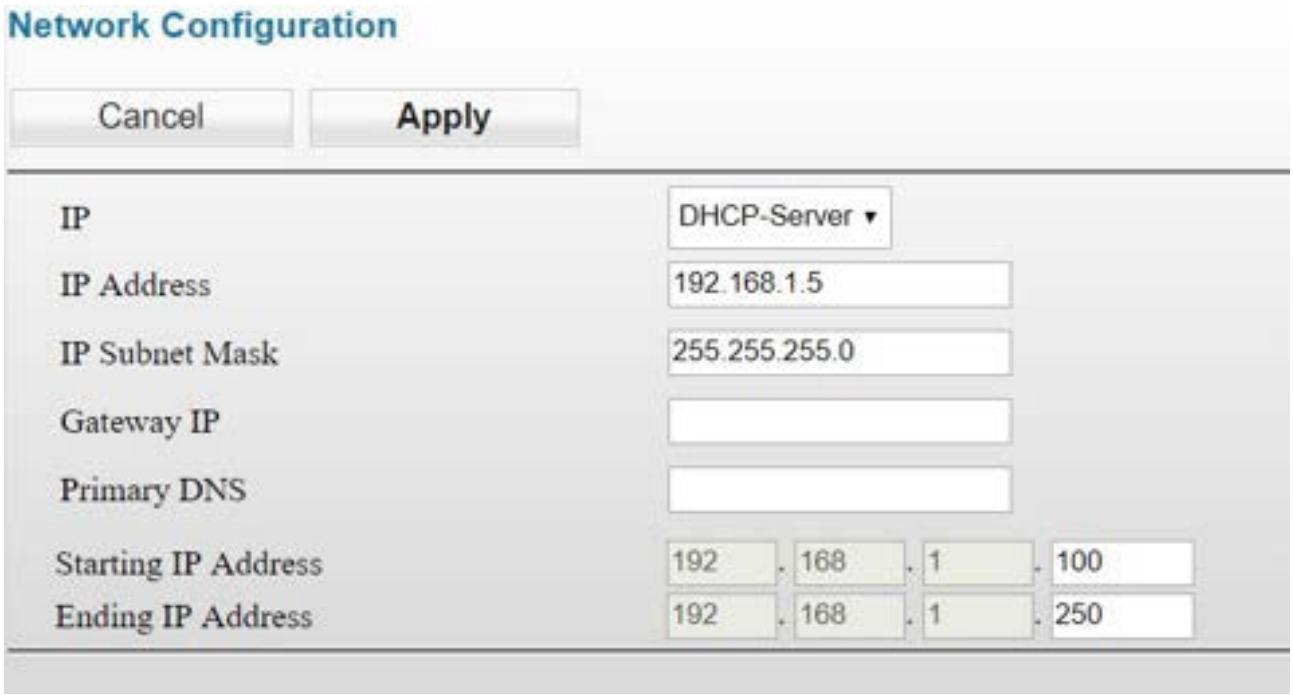
DHCP-Client:
Configure the network as DHCP-Client in DVW-W01I2-E1 series:

- When DHCP server is added for installment, DVW-W01I2-E1 will use the IP address assigned by DHCP server.
- When DHCP server is not added for installment, DVW-W01I2-E1 will auto-configure the IP address to 192.168.1.5 and the IP subnet mask to 255.255.255.0.

Static:
Users can define the device regarding IP, IP address, IP subnet mask, gateway IP and primary DNS.

DHCP-Server:

- When DHCP-Server is installed in DVW-W01I2-E1, DHCP-Server and BOOTP-Server are both enabled and exist in this mode. The IP address is auto-configured to 192.168.1.5 and the IP subnet mask to 255.255.255.0. When end user devices and clients request for IP address, DVW-W01I2-E1 will assign a set of dynamic IP address.
- The gateway IP address provided by DHCP server address pool is from 192.168.1.100 to 192.168.1.250, users are allowed to configure the starting and ending of the IP address pool.



Description	Default value
IP	
Allows different mode configuration, options include DHCP-Client, Static and DHCP-Server DHCP-Client: DVW-W01I2-E1 will use the IP setting from the DHCP-Server. Static: Manually setup the IP address DHCP-Server: DHCP-Server and BOOTP-Server are both enabled and exist in this mode, the DVW-W01I2-E1 will assign a set of dynamic IP address to the end-user device.	Static

Description	Default value
IP address	
Configure IP address and identify DVW-W01I2-E1 series in TCP/IP network.	192.168.1.5
IP subnet mask	
Set the IP subnet mask of router LAN ports. (Example: 255.0.0.0 is Type A address; 255.255.0.0 is Type B address; 255.255.255.0 is Type C adderss)	255.255.255.0
Gateway IP	
Connect DVW-W01I2-E1 to WAN IP gateway.	
Primary DNS	
Connect DVW-W01I2-E1 to primary DNS in WAN configuration that translates domain names into IP addresses.	1 day
Starting IP address	
The starting IP address provided by DHCP server address pool.	192.168.1.100
Ending IP address	
The ending IP address provided by DHCP server address pool.	192.168.1.250

3.3 Serial configuration

DVW-W01I2-E1 contains MODBUS gateway, serial server and transparent transmission functions. The MODBUS gateway function allows data to be transferred from MODBUS to Ethernet and vice versa. While serial server and serial port transparent transmission modules can provide real-time networking to access serial devices at any time or locations.

3.3.1 MODBUS gateway

MODBUS gateaway allows DVW device to perform format conversion and data transfer. (Convert Modbus RTU/ASCII to Modbus TCP).

3.3.1.1 RS-485 gateway

- **MODBUS ASCII / RTU Slave**

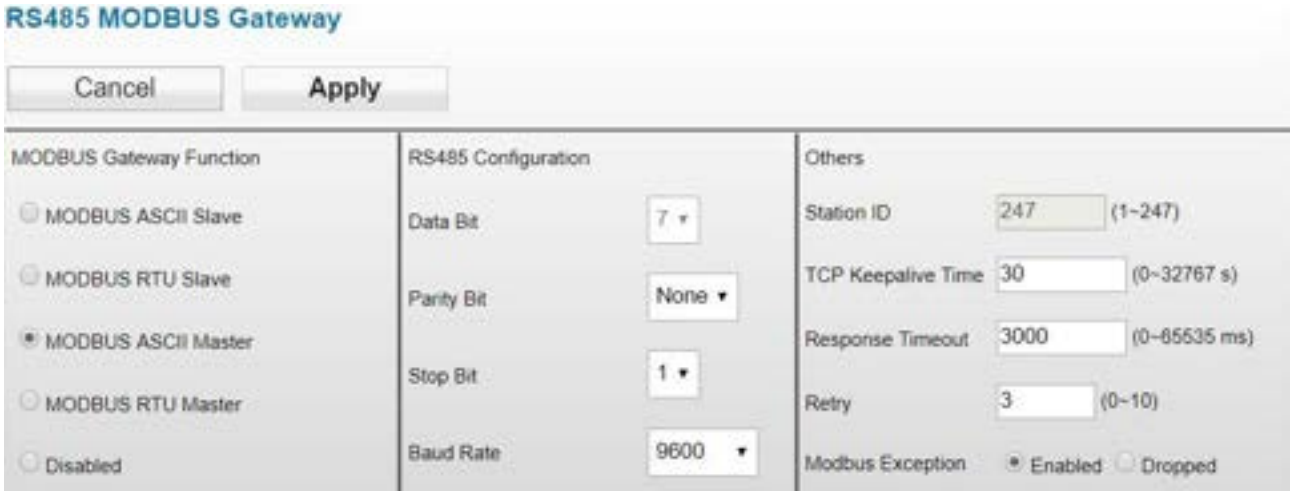
In this mode, the DVW series serve as MODBUS TCP server. When the device receives client's MODBUS request, it is packed into MODBUS ASCII/RTU protocol and corresponding serial ports can be confirmed base on the map ID. Also, MODBUS ASCII/RTU master can forward request to slave through DVW series.

For instance, RS-232 serial port slave ID setting range is 1-20, map ID setting range 1-20; while RS-485 serial port slave ID setting range is 1-20 and map ID setting range is 21-40. When users request reading PLC station number 6 data connected via RS-232 through MODBUS network port, the map ID needs to be configured to 6; when reading PLC station number 6 data connected via RS-485 through MODBUS network port, the map ID needs to be configured to 26.

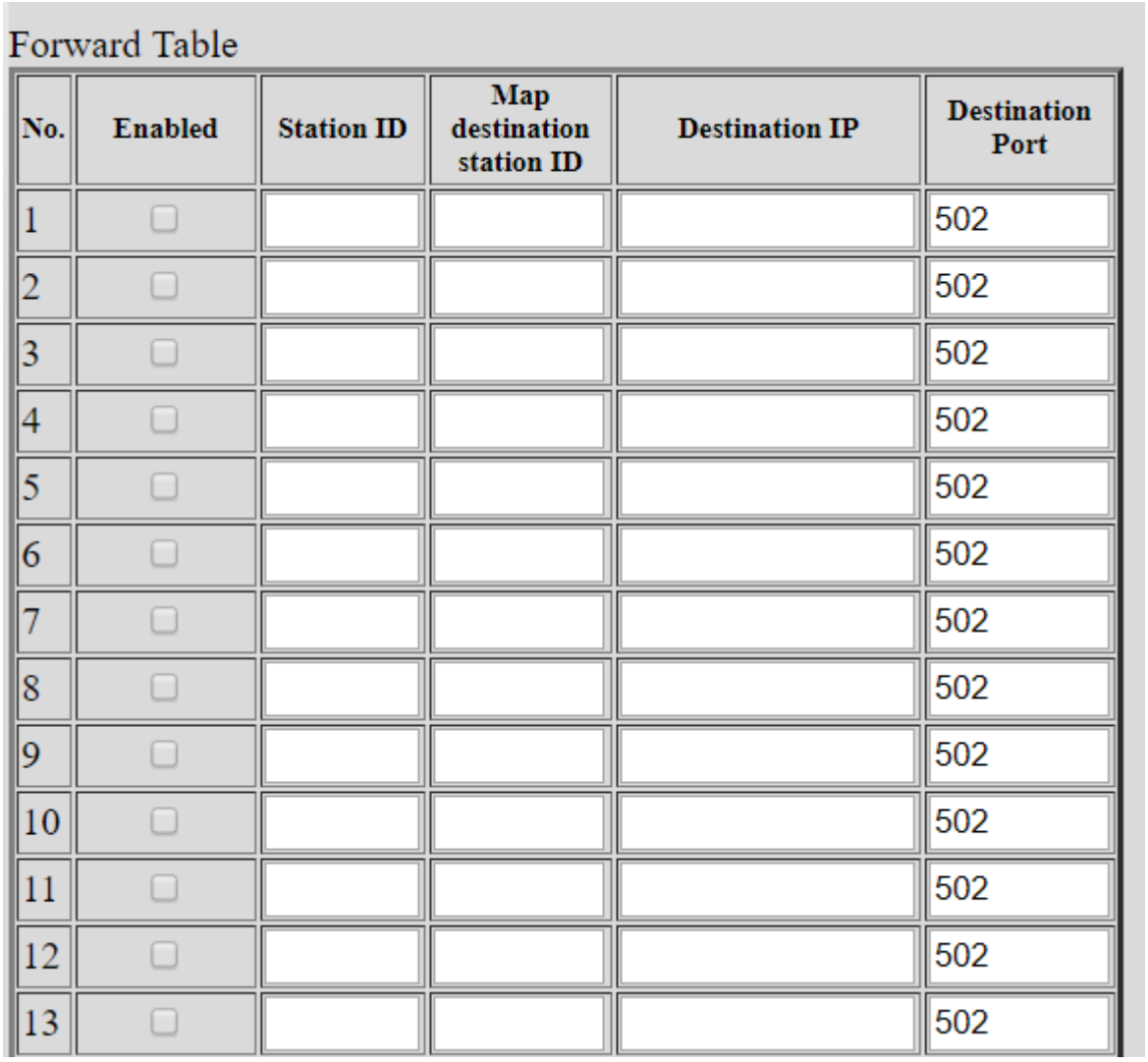
Attention
For RS-232 and RS-485, the configured map ID range cannot have repeated regions, because the system forwards the request to serial ports base on the network port of the map ID in the request data.

- **MODBUS ASCII / RTU Master**

In this mode, the DVW series serve as MODBUS ASCII/RTU Slave. When the device receives master's MODBUS request, it is packed into MODBUS TCP protocol base on the station ID and the corresponding relationship from the forward table. Also, MODBUS TCP client can forward request to the server through DVW series.


RS485 MODBUS Gateway
Cancel
Apply
MODBUS Gateway Function
MODBUS ASCII Slave
MODBUS RTU Slave
MODBUS ASCII Master
MODBUS RTU Master
Disabled
RS485 Configuration
Data Bit
7
Parity Bit
None
Stop Bit
1
Baud Rate
9600
Others
Station ID
247
(1~247)
TCP Keepalive Time
30
(0~32767 s)
Response Timeout
3000
(0~65535 ms)
Retry
3
(0~10)
Modbus Exception
Enabled
Dropped

MODBUS Gateway Function
MODBUS ASCII Slave
MODBUS RTU Slave
MODBUS ASCII Master
MODBUS RTU Master
Disabled
RS485 Configuration
Data Bit
8
Parity Bit
None
Stop Bit
1
Baud Rate
9600
Others
Station ID
247
(1~247)
TCP Keepalive Time
30
(0~32767 s)
Response Timeout
3000
(0~65535 ms)
Retry
3
(0~10)
Modbus Exception
Enabled
Dropped



Forward Table

No.	Enabled	Station ID	Map destination station ID	Destination IP	Destination Port
1	☐				502
2	☐				502
3	☐				502
4	☐				502
5	☐				502
6	☐				502
7	☐				502
8	☐				502
9	☐				502
10	☐				502
11	☐				502
12	☐				502
13	☐				502

Description		Default value
Operation mode		
Select the roles and operating agreement for present network and serial ports via following options: 1. **MODBUS ASCII Slave**: The network port for DVW device operates in MODBUS TCP Server mode, the RS-485 serial port operates in MODBUS ASCII master mode. 2. **MODBUS RTU Slave**: The network port for DVW device operates in MODBUS TCP Server mode, the RS-485 serial port operates in MODBUS RTU master mode. 3. **MODBUS ASCII Master**: The network port for DVW device operates in MODBUS TCP client mode, the RS-485 serial port operates in MODBUS ASCII slave mode. 4. **MODBUS RTU Master**: The network port for DVW device operates in MODBUS TCP client mode, the RS-485 serial port operates in MODBUS RTU slave mode.		Close
Configuring RS485	**Data bit**	
	Displays serial port data bit; the value is fixed to 7 in ASCII protocol, the value is fixed to 8 in RTU protocol.	N/A
	Parity bit	
	Configuring parity for serial port. Optional values include “none”, “odd” or “even”.	None
	Stop bit	

Description		Default value
	Configuring stop bit for serial port. Optional values include 1 or 2.	1
	Baud rate	
	Configuring baud rate for serial port. Optional values include 2400, 4800, 9600, 19200, 38400, 57600, 115200.	9600
Others	**Station ID**	
	Displays the station ID of the device. The station ID of RS-485 is 247.	N/A
	TCP keepalive time	
	Configure DVW device in idle TCP connection to setup TCP keep-alive time. When the time is “0”, the connection will stay open.	30
	Response timeout	
	DVW device waits for serial port response timeout.	3000
	Retry	
	Setup the number of retry when response time reaches timeout.	3
	MODBUS exception	
	When device reaches response timeout, exception code may be sent to client.	Enabled
Slave mode	**Mapping slave ID**	
	Setup slave ID mapping table. -- Slave ID range: Input actual station ID range. -- Map ID range: Input virtual ID range that can be identified by DVW device. Since MODBUS TCP does not contain actual serial port messages, therefore, we use different map ID section to determine each port. Requests need to be set within the map ID range in order to forward to the corresponding serial ports, the station ID will also be converted.	
Master mode-Forward table	**Enabled**	
	Set forward message to enable or not enable.	None
	Station ID	
	Assign the station ID received from the serial port.	None
	Map destination station ID	
	Set the corresponding destination station ID.	None
	Destination IP	
	Set the IP address of MODBUS TCP server.	None
	Destination TCP port	
	Set the interface for MODBUS TCP server.	502

3.3.1.2 RS-232 gateway

- **MODBUS ASCII / RTU Slave**

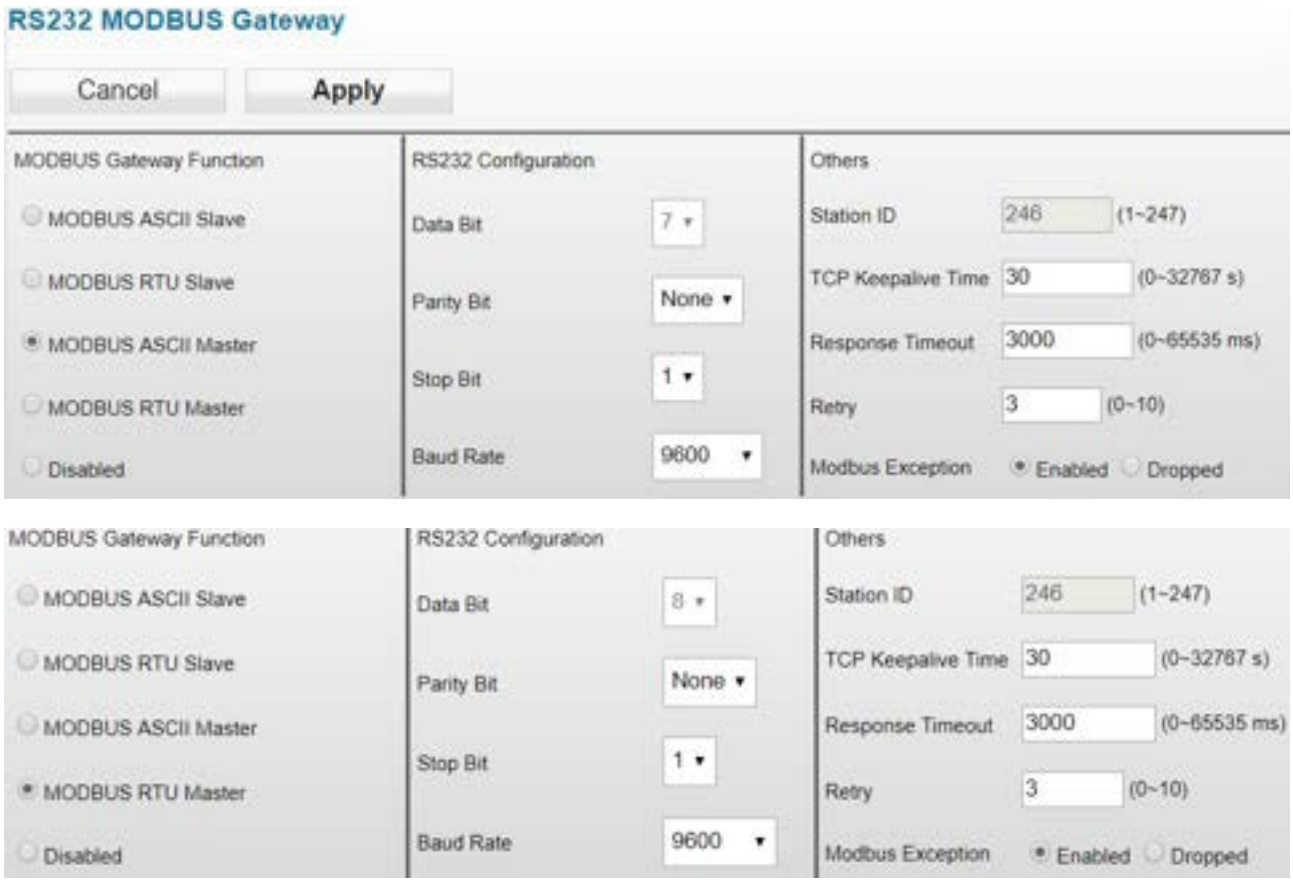
In this mode, the DVW series serve as MODBUS TCP server. When the device receives client’s MODBUS request, it is packed into MODBUS ASCII/RTU protocol and corresponding serial ports can be confirmed base on the map ID. Also, MODBUS ASCII/RTU master can forward request to slave through DVW series.

For instance, RS-232 serial port slave ID setting range is 1-20, map ID setting range 1-20; while RS-485 serial port slave ID setting range is 1-20 and map ID setting range is 21-40. When users request reading PLC station number 6 data connected via RS-232 through MODBUS network, the map ID needs to be configured to 6; when reading PLC station number 6 data connected via RS-485 through MODBUS network, the map ID needs to be configured to 26.

Attention
For RS-232 and RS-485, the configured map ID range cannot have repeated regions, because the system forwards the request to serial ports base on the network port of the map ID in the request data.

- **MODBUS ASCII / RTU Master**

In this mode, the DVW series serve as MODBUS ASCII/RTU Slave. When the device receives master's MODBUS request, it is packed into MODBUS TCP protocol base on the station ID and the corresponding relationship from the forward table. Also, MODBUS TCP client can forward request to the server through DVW series.



Forward Table

No.	Enabled	Station ID	Map destination station ID	Destination IP	Destination Port
1	☐				502
2	☐				502
3	☐				502
4	☐				502
5	☐				502
6	☐				502
7	☐				502

Description	Default value
Operation mode	
Select the roles and operating agreement for present network and serial ports via following options: **1. MODBUS ASCII Slave**: The network port for DVW device operates in MODBUS TCP Server mode, the RS-485 serial port operates in MODBUS ASCII master mode.	Close

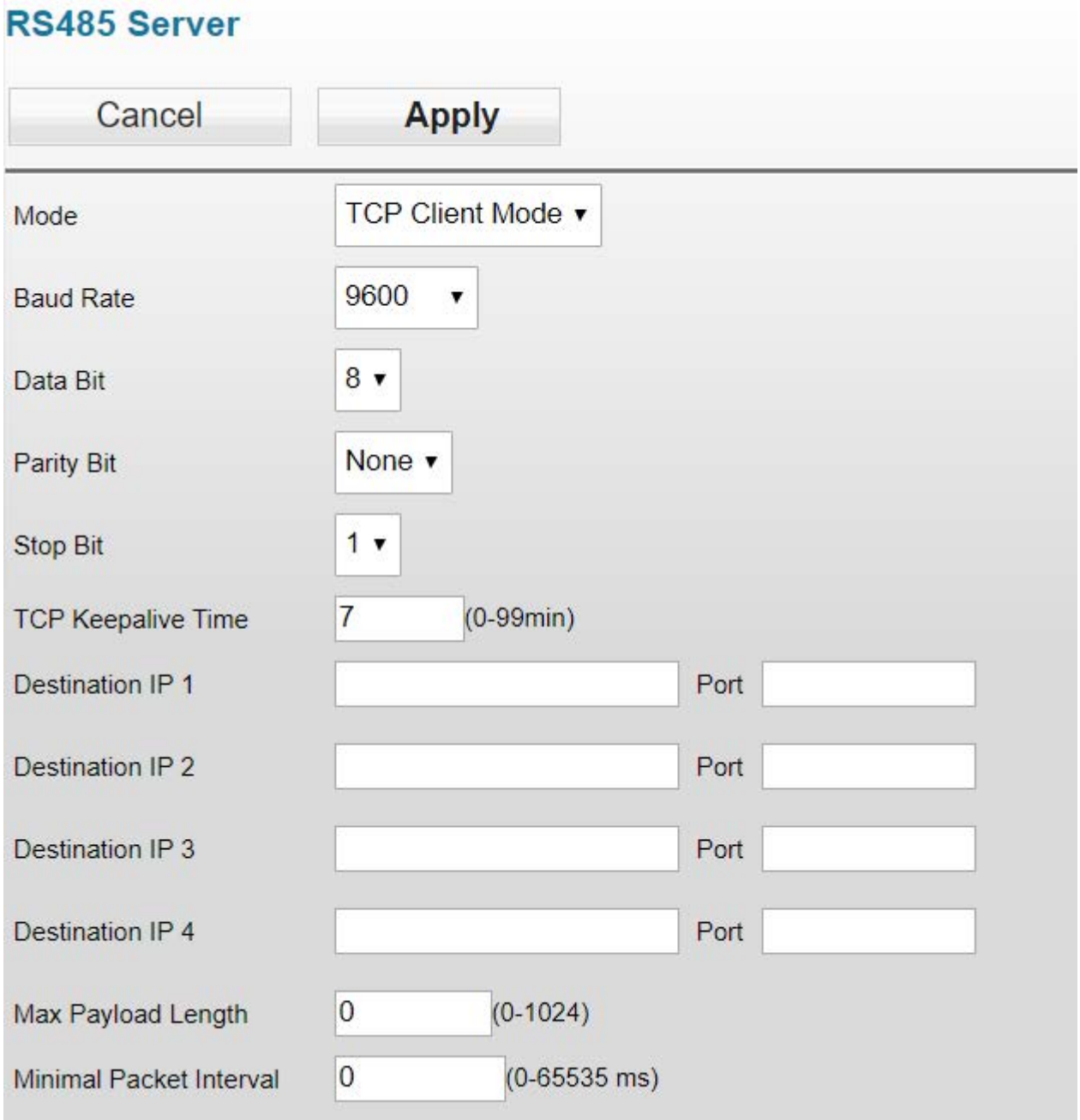
Description		Default value
2. **MODBUS RTU Slave**: The network port for DVW device operates in MODBUS TCP Server mode, the RS-485 serial port operates in MODBUS RTU master mode. 3. **MODBUS ASCII Master**: The network port for DVW device operates in MODBUS TCP client mode, the RS-485 serial port operates in MODBUS ASCII slave mode. 4. **MODBUS RTU Master**: The network port for DVW device operates in MODBUS TCP client mode, the RS-485 serial port operates in MODBUS RTU slave mode.		
Configuring RS485	**Data bit**	
	Displays serial port data bit; the value is fixed to 7 in ASCII protocol, the value is fixed to 8 in RTU protocol.	N/A
	Parity bit	
	Set parity bits for serial ports. Optional values include “none”, “odd” or “even”.	None
	Stop bit	
	Set stop bits for serial ports. Optional values include 1 or 2.	1
	Baud rate	
	Set baud rates for serial ports. Optional values include 2400, 4800, 9600, 19200, 38400, 57600, 115200.	9600
Others	**Station ID**	
	Displays the station ID of the device. The station ID of RS-485 is 247.	N/A
	TCP keepalive time	
	Configure DVW device in idle TCP connection to setup TCP keep-alive time. When the time is “0”, the connection will stay open.	30
	Response timeout	
	DVW device waits for serial port response timeout.	3000
	Retry	
	Set the number of retry when response time reaches timeout.	3
	MODBUS exception	
	When device reaches response timeout, exception code may be sent to client.	Enabled
Slave mode	**Mapping slave ID**	
	Set slave ID mapping table. -- Slave ID range: Input actual station ID range. -- Map ID range: Input virtual ID range that can be identified by DVW device. Since MODBUS TCP does not contain actual serial port messages, therefore, we use different map ID section to determine each port. Requests need to be set within the map ID range in order to forward to the corresponding serial ports, the station ID will also be converted.	
Master mode-Forward table	**Enabled**	
	Set forward message to enable or not enable.	None
	Station ID	
	Assign the station ID received from the serial port.	None
	Map destination station ID	
	Set the corresponding destination station ID.	None
	Destination IP	
	Set the IP address of MODBUS TCP server.	None
	Destination TCP port	
	Set the interface for MODBUS TCP server.	502

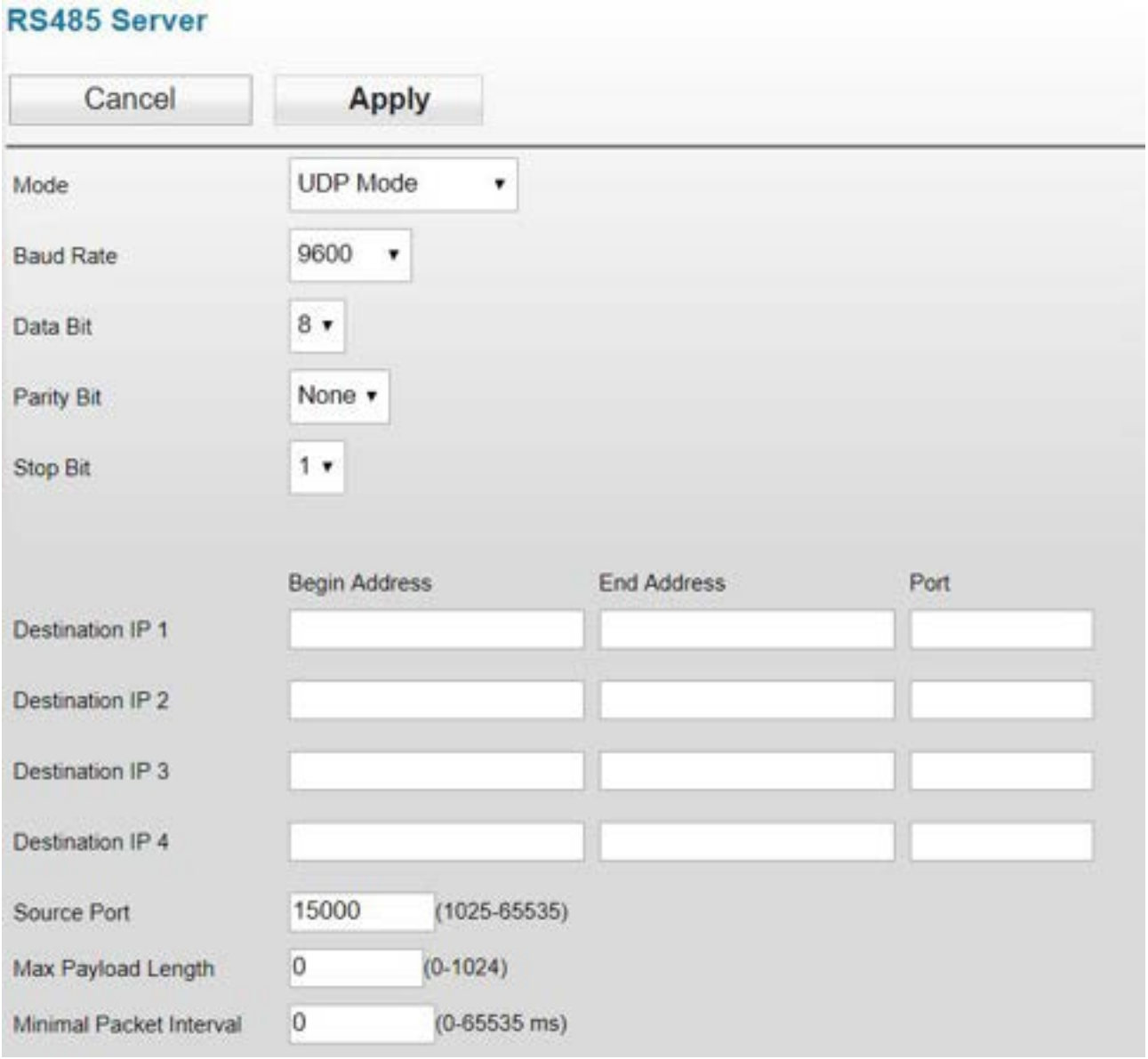
3.3.2 Serial server

The function allows DVW series to connect with the assigned server, while also pack serial port data into TCP/UDP and send it to the server for TCP or UDP client.

3.3.2.1 RS-485

In this mode, the DVW series is used as client's serial server of communication via TCP/UDP protocol which can transmit RS-485 data to the serial server.



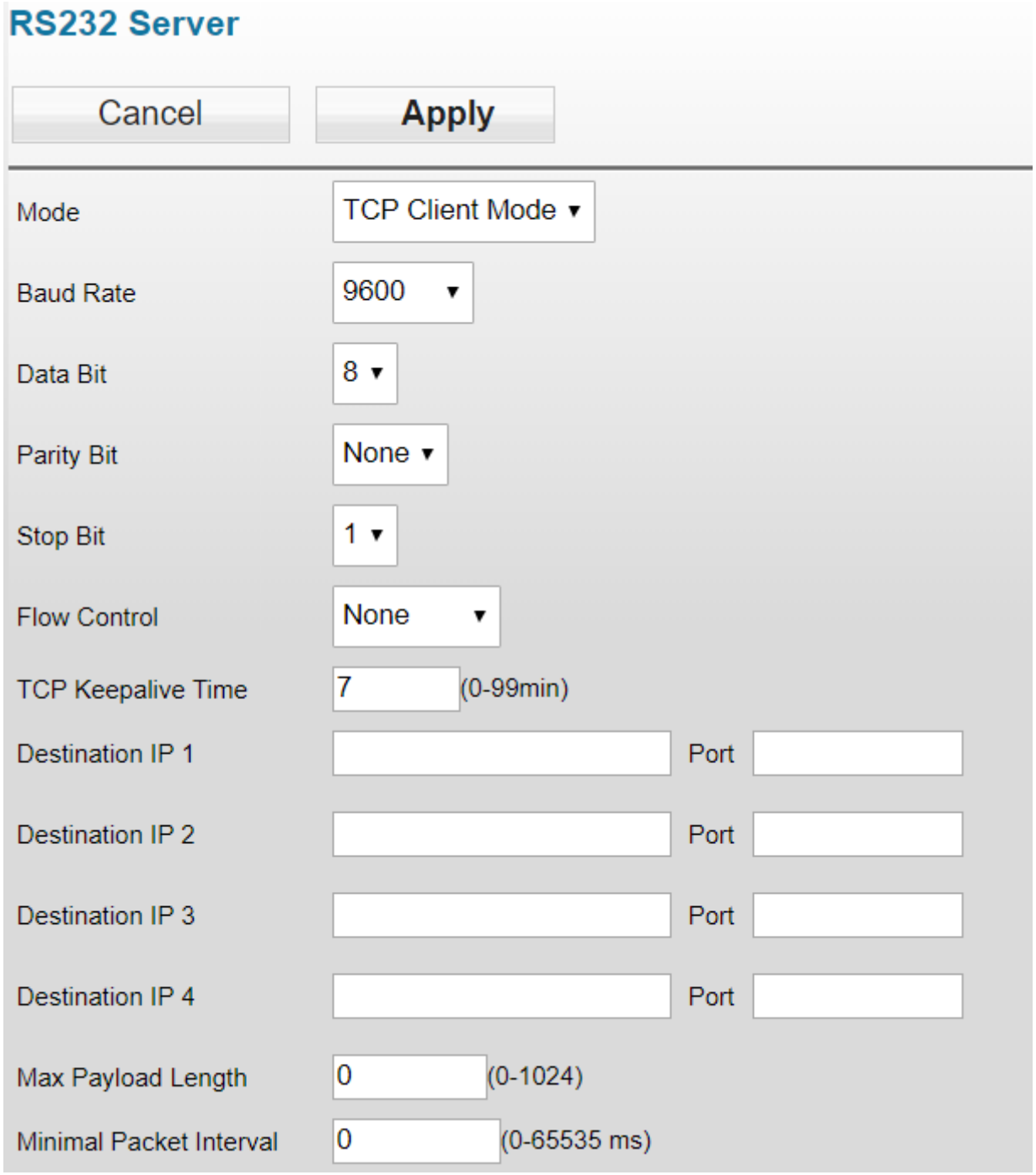


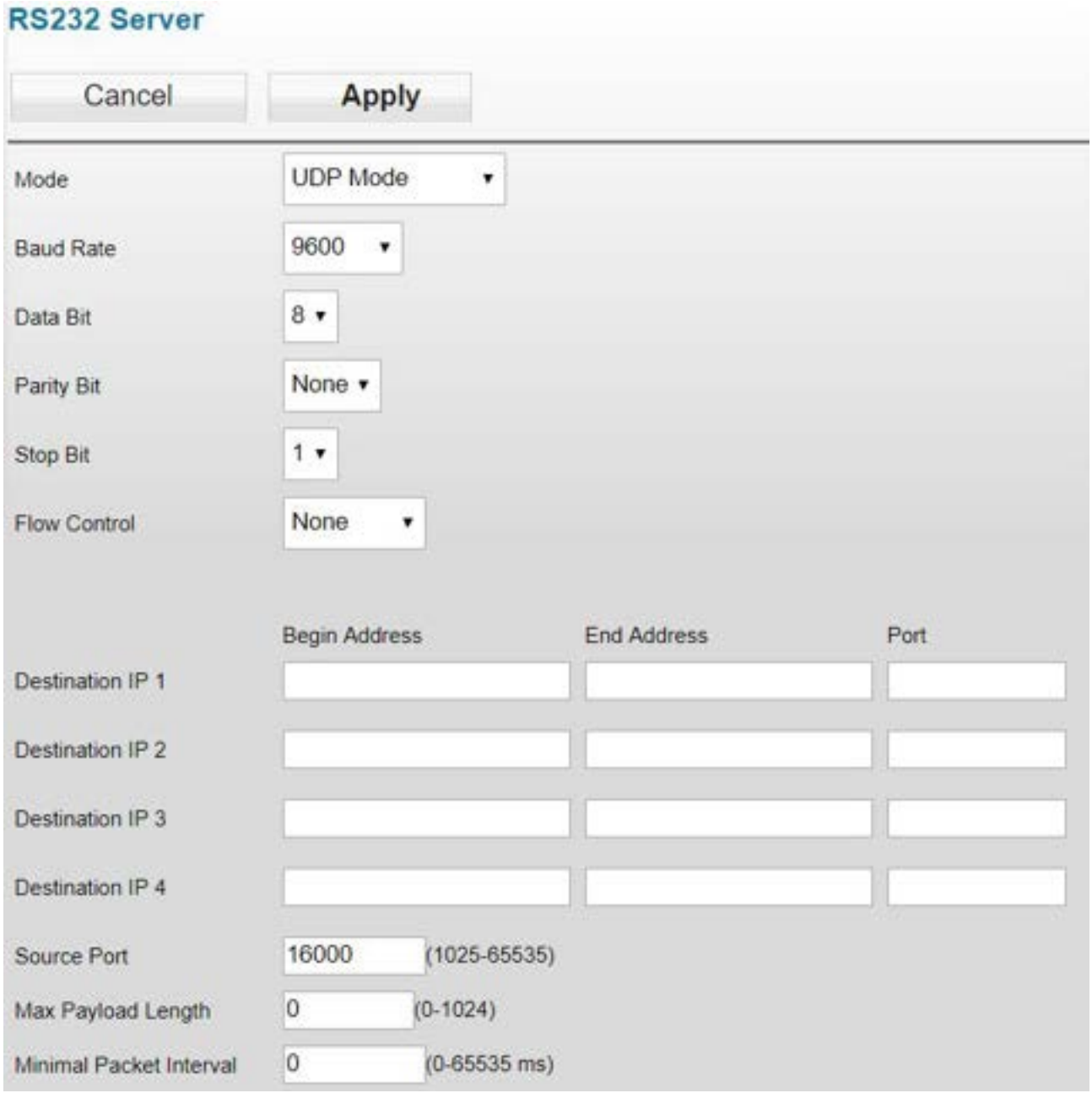
Description		Default value
Operation mode		
Select the current operating serial port default to “Close”, other options include: 1. **TCP mode:** serve as client’s serial server of communication via TCP protocol. 2. **UDP mode:** serve as client’s serial server of communication via UDP protocol.		Close
Serial communication parameters	**Baud rate**	
	Set baud rates for serial ports. Optional values include 2400, 4800, 9600, 19200, 38400, 57600, 115200.	9600
	Data bit	
	Set data bits for serial ports. Optional values include 7 or 8.	8
	Parity bit	
	Set parity bits for serial ports. Optional values include “none”, “odd” or “even”.	None
	Stop bit	
	Set stop bits for serial ports. Optional values include 1 or 2.	1
TCP mode	**TCP keepalive time**	
	Configure idle time of TCP to auto-close TCP connection. Optional values from 0 to 99 minutes. 0: TCP connection will not be closed due to idle (always open)	7

	Description	Default value
	1~99: When idle time reaches setting value, TCP connection is closed.	
	Destination IP and port	
	Set connected serial server IP range and port, the IPand port cannot have the same configuration. Max. 4 serial servers for simultaneous connection.	None
	Max. payload length	
	Set the waiting length of cumulative data for data packet transmission, the range is 0 to 1024 byte; set 0 for immediate data transmission.	0
	Minimal packet interval	
	Set the waiting time to forcing data packet transmission, the range is 0 to 65535 ms; set 0 to permanently avoid forcing of transmission; For data transmission, set range is between 1 to 65535 when the time reaches setting value or cumulative data length reaches the setting length.	0
UDP mode	**Destination IP and port**	
	Set the connected serial server IP and ports. Maximum of 4 serial servers for simultaneous connection in UDP. Each server IP range supports up to 99 IP address, meaning the max. number of IP between starting and ending IP is 99. The IP and ports cannot have the same configuration.	None
	Source port	
	Set monitoring source port.	15000
	Max. payload length	
	Set the waiting length of cumulative data for data packet transmission, the range is 0 to 1024 byte; set 0 for immediate data transmission.	0
	Minimal packet interval	
	Set the waiting time to forcing data packet transmission, the range is 0 to 65535 ms; set 0 to permanently avoid forcing of transmission; For data transmission, set range is between 1 to 65535 when the time reaches setting value or cumulative data length reaches the setting length.	0

3.3.2.2 RS-232

In this mode, the DVW series is used as client's serial server of communication via TCP/UDP protocol which can transmit RS-232 data to the serial server.


RS232 Server
Cancel
Apply
Mode
TCP Client Mode
Baud Rate
9600
Data Bit
8
Parity Bit
None
Stop Bit
1
Flow Control
None
TCP Keepalive Time
7
(0-99min)
Destination IP 1
Port
Destination IP 2
Port
Destination IP 3
Port
Destination IP 4
Port
Max Payload Length
0
(0-1024)
Minimal Packet Interval
0
(0-65535 ms)



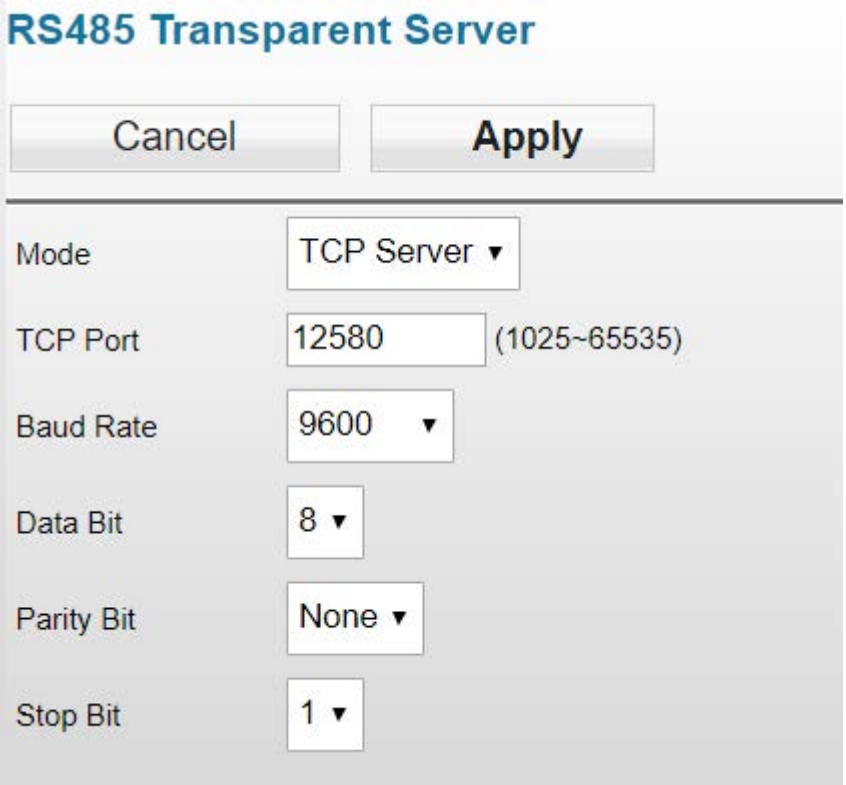
Description		Default value
Operation mode		
Select the present operating serial port default to “Close”, other options include: **1. TCP mode:** serve as client’s serial server of communication via TCP protocol. **2. UDP mode:** serve as client’s serial server of communication via UDP protocol.		Close
Serial communication parameters	**Baud rate**	
	Set baud rates for serial ports. Selected values include 2400, 4800, 9600, 19200, 38400, 57600, 115200.	9600
	Data bit	
	Set data bits for serial ports. Optional values include 7 or 8.	8
	Parity bit	
	Set parity bits for serial ports. Optional values include “none”, “odd” or “even”.	None
	Stop bit	
	Set stop bits for serial ports. Optional values include 1 or 2.	1

	Description	Default value
	Flow Control	
	Set types of flow control. Optional values include “XON/XOFF”, “RTS/CTS”.	None
TCP mode	**TCP keepalive time**	
	Configure idle time of TCP to auto-close TCP connection. Optional values from 0 to 99 minutes. 0: TCP connection will not be closed due to idle (always open) 1~99: When idle time reaches setting value, TCP connection is closed.	7
	Destination IP and port	
	Set connected serial server IP range and port, the IPand port cannot have the same configuration. Max. 4 serial servers for simultaneous connection.	None
	Max. payload length	
	Set the waiting length of cumulative data for data packet transmission, the range is 0 to 1024 byte; set 0 for immediate data transmission.	0
	Minimal packet interval	
	Set the waiting time to forcing data packet transmission, the range is 0 to 65535 ms; set 0 to permanently avoid forcing of transmission; For data transmission, set range is between 1 to 65535 when the time reaches setting value or cumulative data length reaches the setting length.	0
UDP mode	**Destination IP and port**	
	Set the connected serial server IP and ports. Maximum of 4 serial servers for simultaneous connection in UDP. Each server IP range supports up to 99 IP address, meaning the max. number of IP between starting and ending IP is 99. The IP and ports cannot have the same configuration.	None
	Source port	
	Set monitoring source port.	16000
	Max. payload length	
	Set the waiting length of cumulative data for data packet transmission, the range is 0 to 1024 byte; set 0 for immediate data transmission.	0
	Minimal packet interval	
	Set the waiting time to forcing data packet transmission, the range is 0 to 65535 ms; set 0 to permanently avoid forcing of transmission; For data transmission, set range is between 1 to 65535 when the time reaches setting value or cumulative data length reaches the setting length.	0

3.3.3 Transparent server

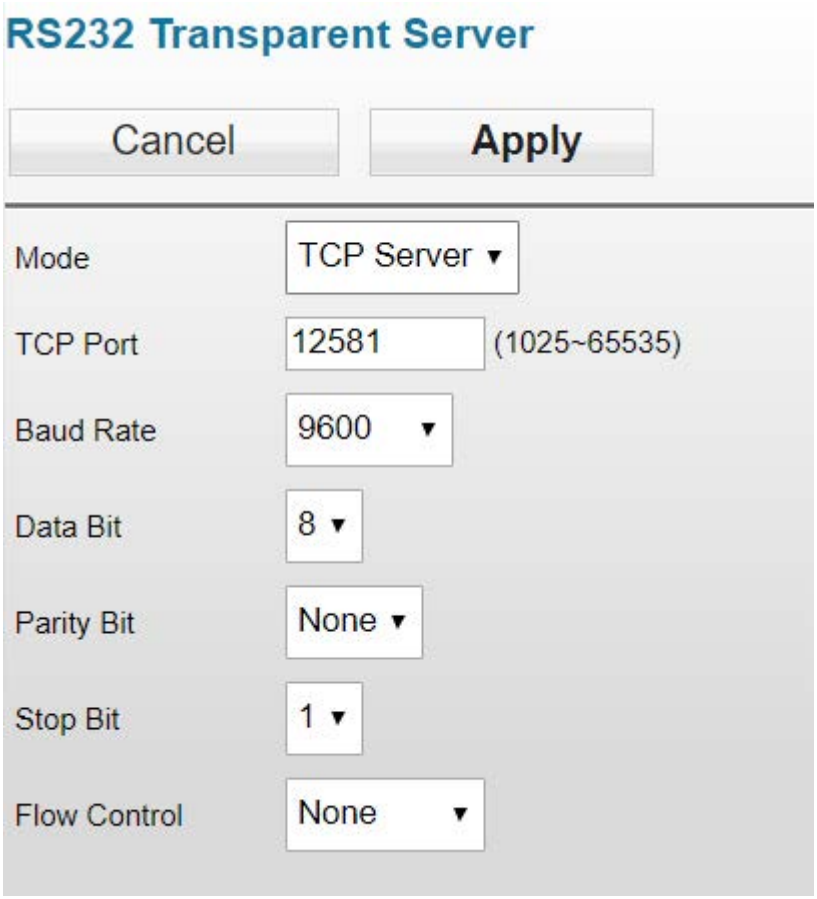
In this mode, the DVW device serves as TCP servers that receives data packet from assigned ports and transmits to RS-485 or RS-232 serial ports without any processing.

3.3.3.1 RS-485 transparent server



Description	Default value
Operation mode	
Select present operating serial port mode from the following options: **1. TCP server:** as TCP server, create connection once receive client host request then client host and DVW device can start data transmission. **2. Close:** close transparent server function.	Close
TCP port	
Set the port for TCP Server monitoring data packet.	12580
Baud rate	
Set baud rates for serial ports. Optional values include 2400, 4800, 9600, 19200, 38400, 57600, 115200.	9600
Data bit	
Set data bits for serial ports. Optional values include 7 or 8.	8
Parity bit	
Set parity bits for serial ports. Optional values include “nonel”, “odd”or “even”.	None
Stop bit	
Set stop bits for serial ports. Optional values include 1or 2.	1

3.3.3.2 RS-232 transparent server



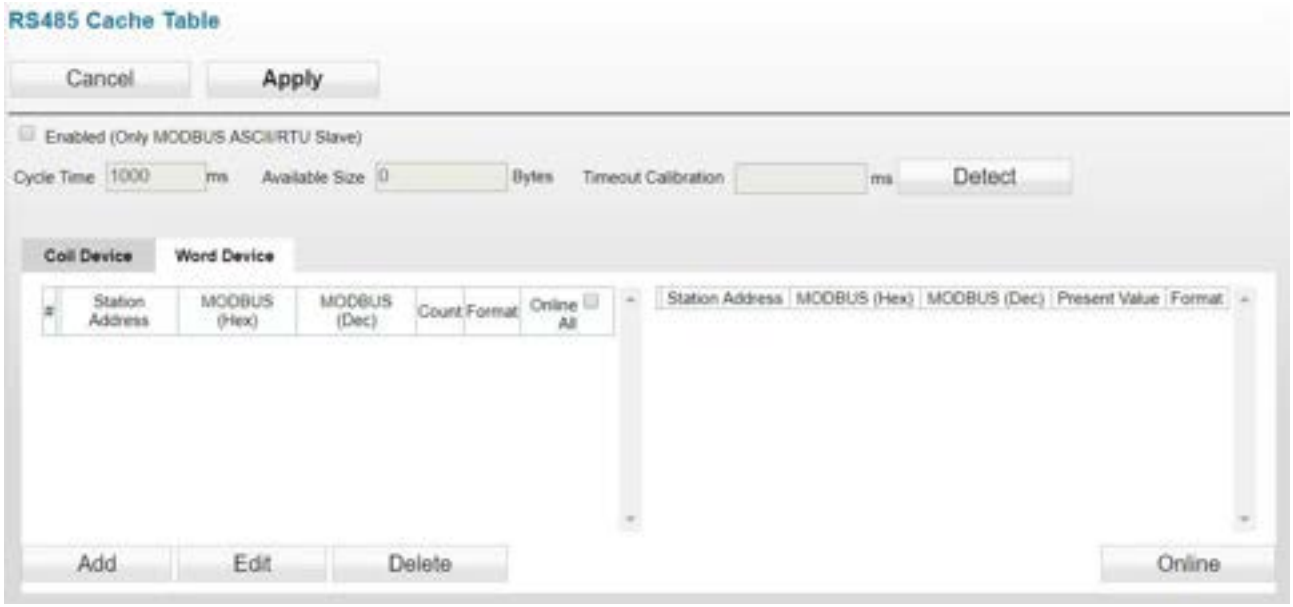
Description	Default value
Operation mode	
Select present operating serial port mode from the following options: **1. TCP server:** as TCP server, create connection once receive client host request then client host and DVW device can start data transmission. 2. **Close:** close transparent server function.	Close
TCP port	
Set the port for TCP Server monitoring data packet.	12581
Baud rate	
Set baud rates for serial ports. Optional values include 2400, 4800, 9600, 19200, 38400, 57600, 115200.	9600
Data bit	
Set data bits for serial ports. Optional values include 7 or 8.	8
Parity bit	
Set parity bits for serial ports. Optional values include “None”, “odd”or “even”.	None
Stop bit	
Set stop bits for serial ports. Optional values include 1or 2.	1
Flow control	
Set types of flow control. Optional values include “XON/XOFF”, “RTS/CTS”.	None

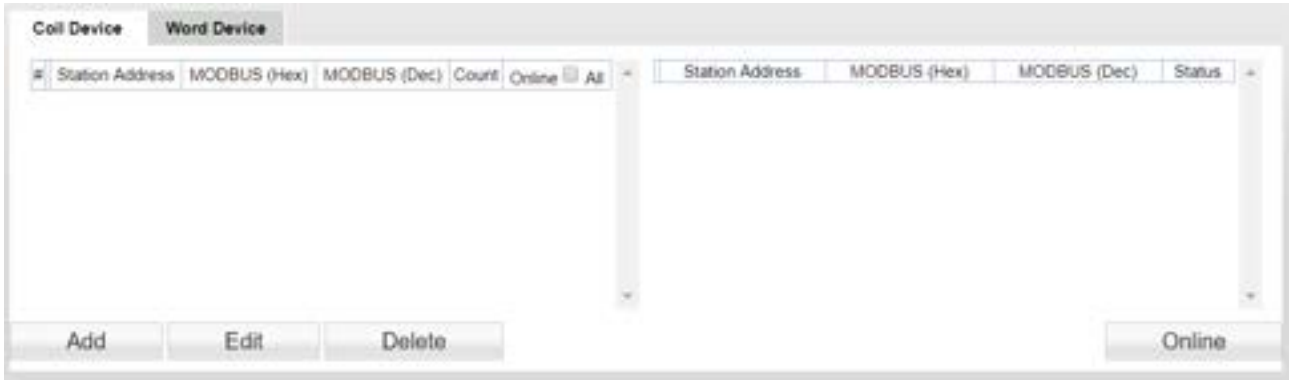
3.3.4 MODBUS cache table

Since the transmission speed of Ethernet interface is faster than that of serial ports, therefore, when Ethernet devices send requests to serial devices, more time is required for waiting serial port data. MODBUS cache table provides PLCs with relevant configuration information (e.g. station ID, MODBUS IP). The DVW device can send request to receive serial port device data based on prior MODBUS cache table. When Ethernet devices requests for transmission to DVW device, DVW can immediately respond to data. Because DVW has already receive the data in advance, so it does not need to transfer the requests to serial devices and the function can also be used in MODBUS ASCII/RTU slave mode.

3.3.4.1 RS-485 cache table

On the left part of the cache table page displays information regarding configuration; click **Online** and data read based on configuration messages are shown on the right.





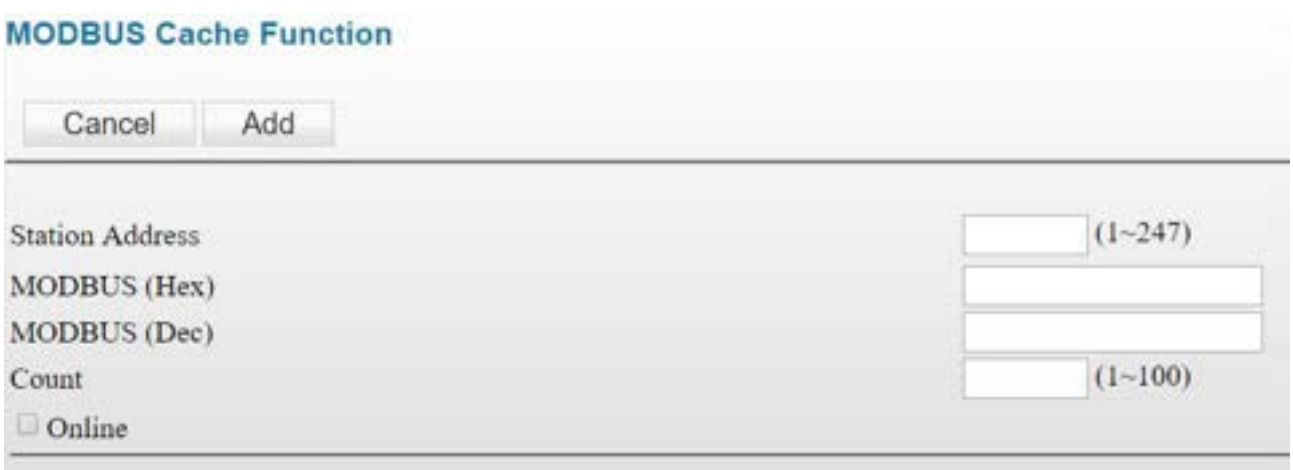
Explanation	Default value
Enabled	
Set MODBUS cache function to enable or not enable.	Not checked
Cycle time	
Set the time for sending requests to serial devices.	1000
Available size	
Displays the available data size for monitoing.	
Timeout calibration	

Explanation	Default value
Calibrate the response timeout. When users click **Detect**, the DVW device will use the MODBUS cache table for communication.	
Add	
Add a configuration message (up to 100 messages).	
Edit	
Edit selected configuration messages.	
Delete	
Delete assigned configuration messages.	
Online	
When clicked, real-time values gathered for relevant addresses are shown on the right section of the page.	

Word device	
Item	**Explanation**
Station address	The device station ID.
MODBUS (Hex)	MODBUS in hexadecimal values
MODBUS (Dec)	MODBUS in decimal values
Present value	MODBUS present value.
Format	Hexadecimal or decimal format.

Coil device	
Item	**Explanation**
Station address	The device station ID.
MODBUS (Hex)	MODBUS in hexadecimal values
MODBUS (Dec)	MODBUS in decimal values
Status	Values of MODBUS.

To add/ edit a configuration (see below):

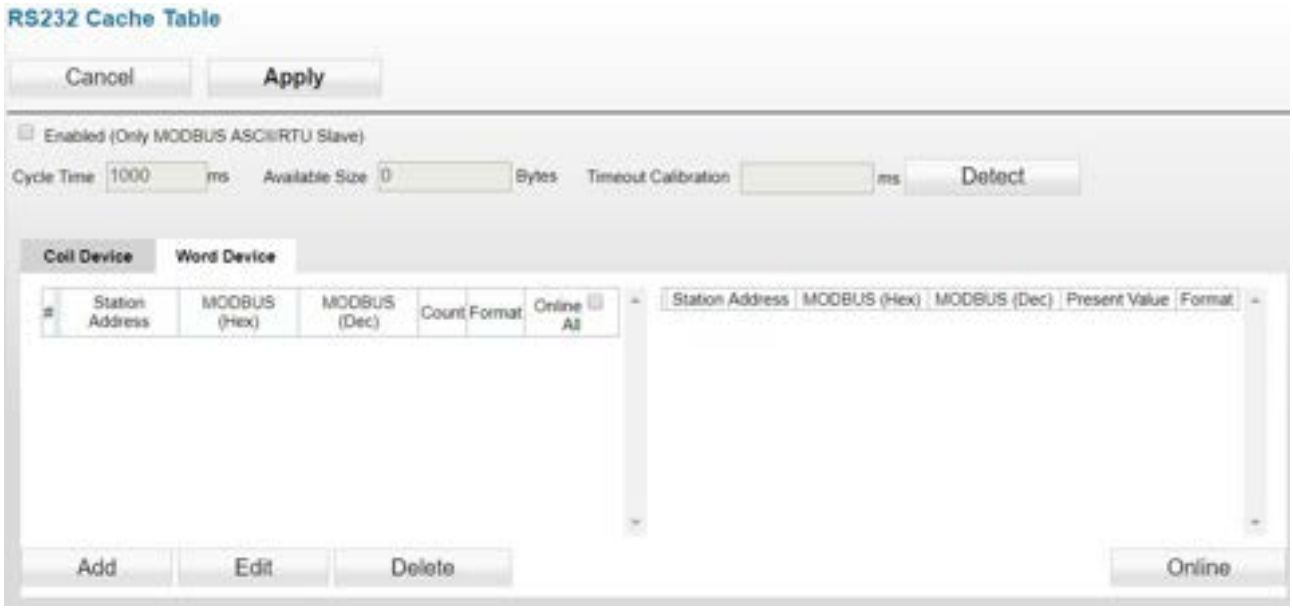


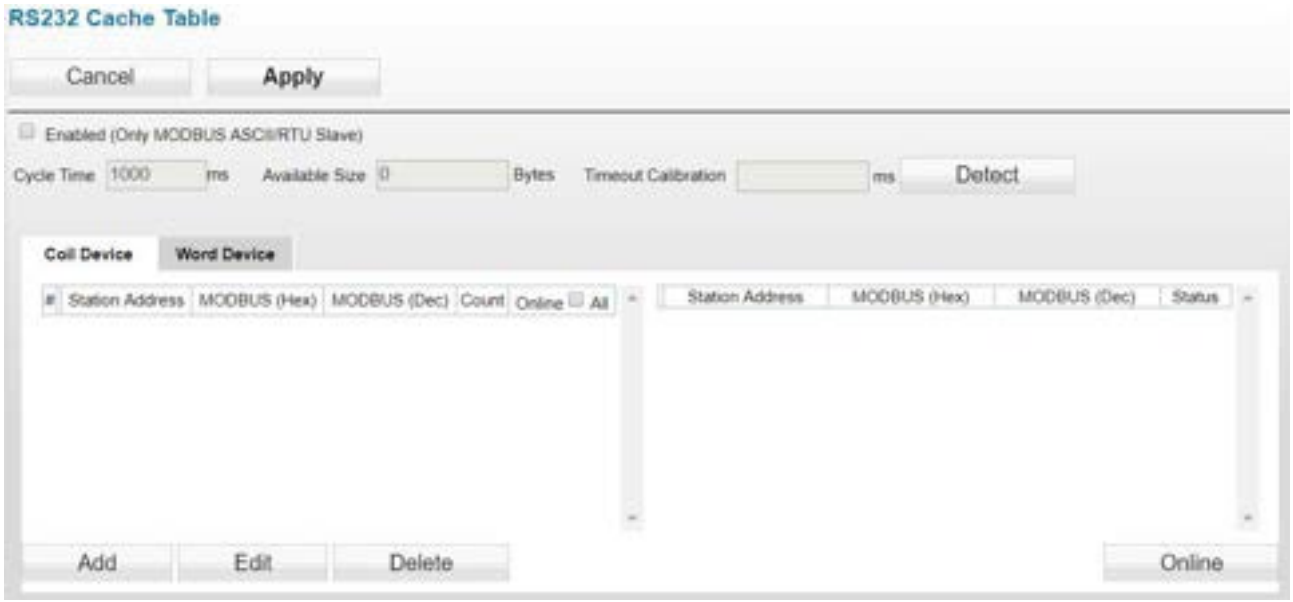
Explanation	Default value
Station address	
The device station ID.	None
MODBUS (Hex)	
MODBUS in hexadecimal values.	None
MODBUS (Dec)	
MODBUS in decimal values	None
Count	
Starting from MODBUS address and connecting to monitored data size.	None

Explanation	Default value
Format	
Set format to Hex, Dec, Bin (hexadecimal, decimal, binary). When add or edit coil device types, format is not required.	Hex
Online	
Set or not to set data display on MODBUS monitoring table.	Not checked

3.3.4.2 RS-232 cache table

On the left part of the cache table page displays information regarding configuration; click **Online** and data read based on configuration messages are shown on the right.





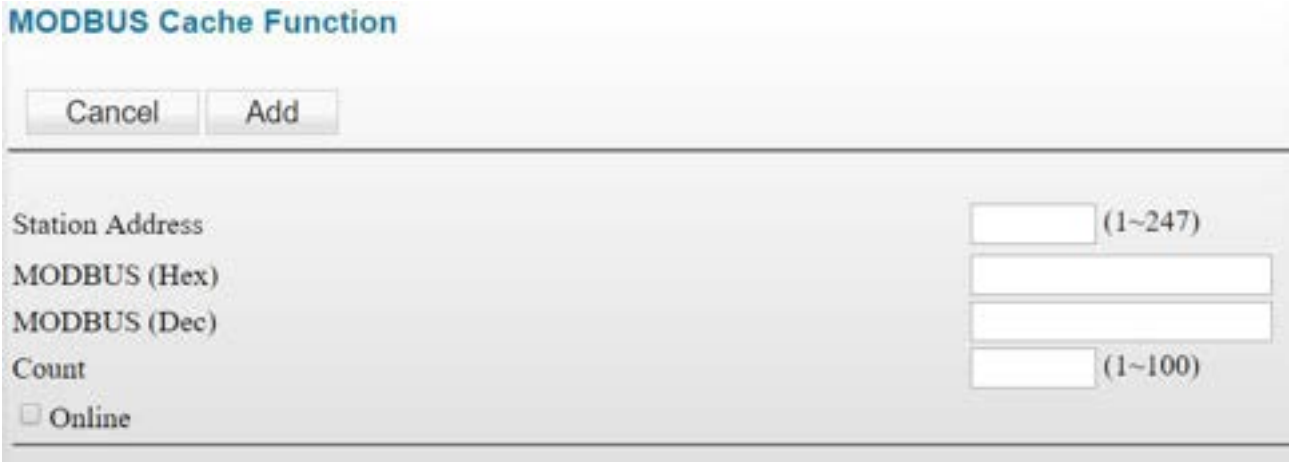
Explanation	Default value
Enabled	
Set MODBUS cache function to enable or not enable.	Not checked
Cycle time	
Set the time for sending requests to serial devices.	1000

Explanation	Default value
Available size	
Displays the available data size for monitoing.	
Timeout calibration	
Calibrate the response timeout. When users click **Detect**, the DVW device will use the MODBUS cache table for communication.	
Add	
Add a configuration message (up to 100 messages).	None
Edit	
Edit selected configuration messages.	None
Delete	
Delete assigned configuration messages.	None
Online	
When clicked, real-time values gathered for relevant addresses are shown on the right section of the page.	None

Word device	
Item	**Explanation**
Station address	The device station ID.
MODBUS (Hex)	MODBUS in hexadecimal values
MODBUS (Dec)	MODBUS in decimal values
Present value	MODBUS present value.
Format	Hexadecimal or decimal format.

Coil device	
Item	**Explanation**
Station address	The device station ID.
MODBUS (Hex)	MODBUS in hexadecimal values
MODBUS (Dec)	MODBUS in decimal values
Status	Values of MODBUS.

To add/ edit a configuration (see below):



Explanation	Default value
Station address	
The device station ID.	None
MODBUS (Hex)	
MODBUS in hexadecimal values.	None
MODBUS (Dec)	
MODBUS in decimal values	None

Explanation	Default value
Count	
Starting from MODBUS address and connecting to monitored data size.	None
Format	
Set format to Hex, Dec, Bin (hexadecimal, decimal, binary). When add or edit coil device types, format is not required.	Hex
Online	
Set or not to set data display on MODBUS monitoring table.	Not checked

3.4 WLAN management - 2.4G

The WLAN management focuses on configuring 2.4G WIFI operation mode and its corresponding parameters. Please refer to the manual for accurate configuration before setup.

3.4.1 Operation mode

DVW-W01I2-E1 provides 2 different WIFI operation modes including AP and client mode that allow users to easily configure wireless network environment. Please first set DVW-W01I2-E1 operation mode, then configure WLAN.

Description	Default value
RF	
To enable or disable wireless function.	Enabled
Operation mode	
Set wireless operation mode: ● AP mode: used as an intermediate point for wired and wireless devices connection, data transmission and more. ● Client mode: DVW-W02W2-E2 operating in client mode can perform wireless data transmission via AP.	AP
Region	
Show the country or region for the device	U.S

Attention
2.4G and 5G WIFI cannot operate in client mode simultaneously.

3.4.2 WLAN 2.4G

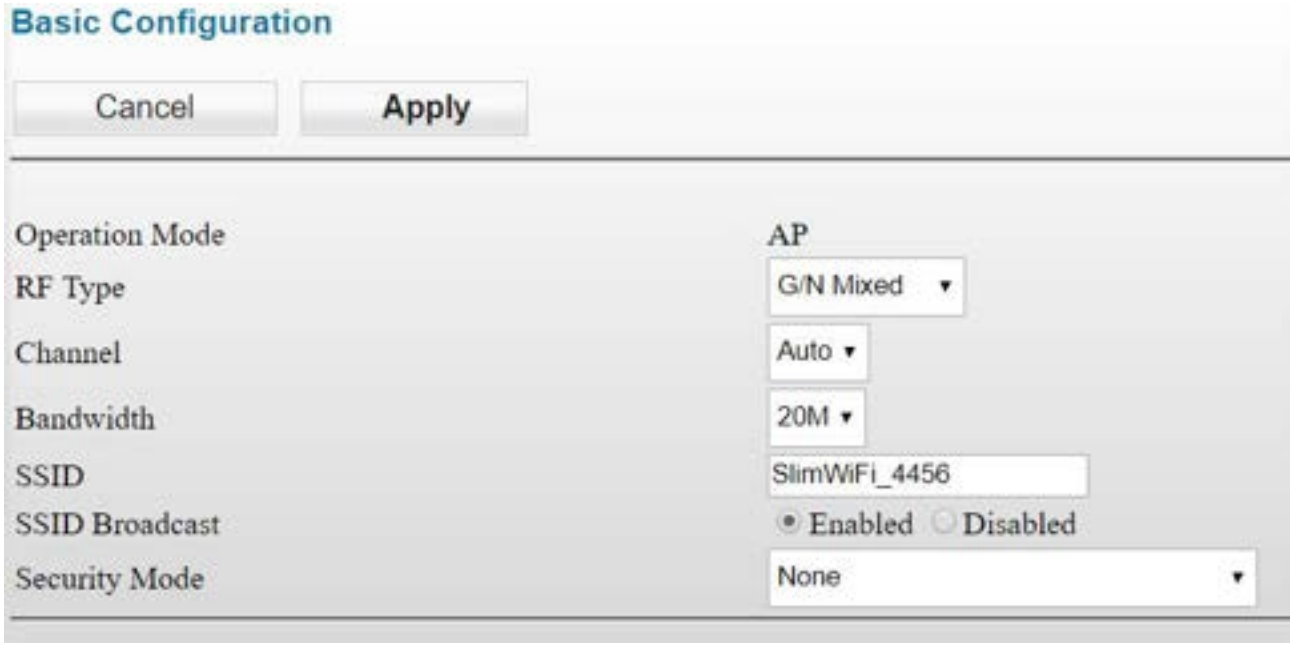
The setting page focuses on the basic and adanced configuration of 2.4G network in AP or client mode.

3.4.2.1 Basic configuration

The setting corresponds to operation mode. Different operation mode will have different basic configurations.

- **AP mode:**

In AP mode, users can add or edit WLAN basic configurations. For example, RF type, channel, SSID, SSID broadcast and security mode. Click **Apply** once configurations are completed.

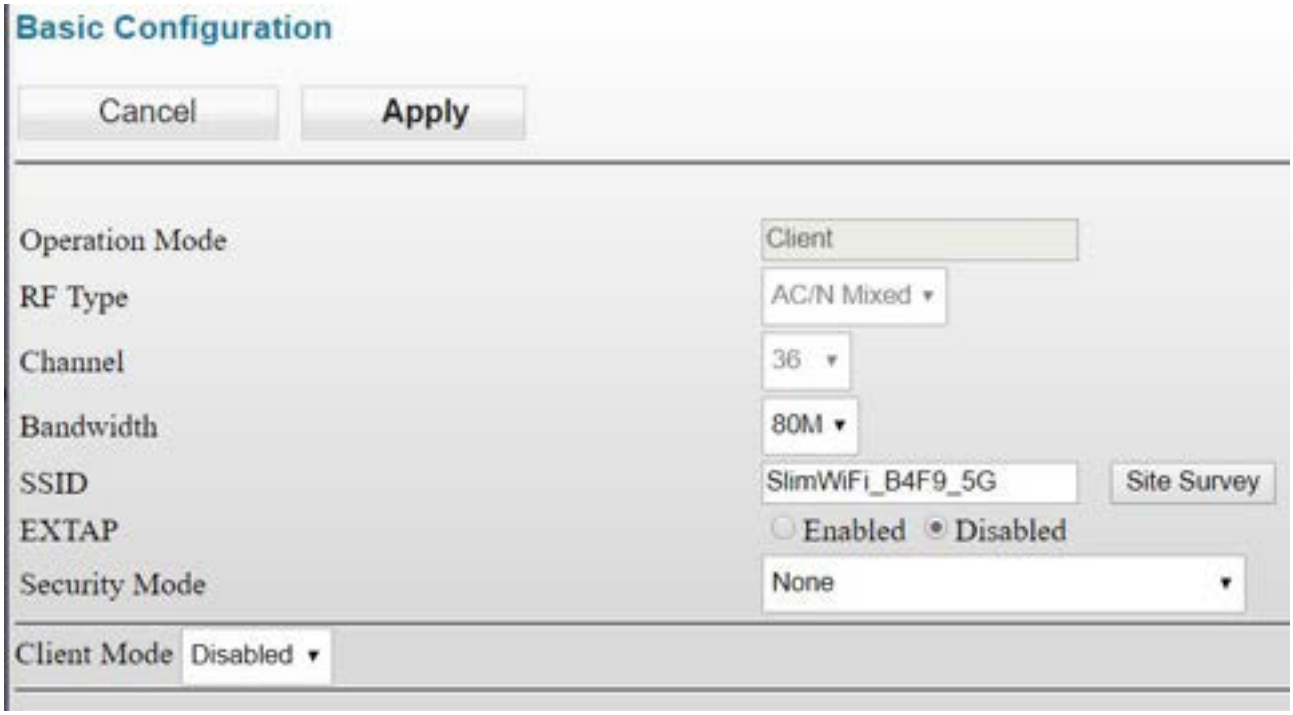


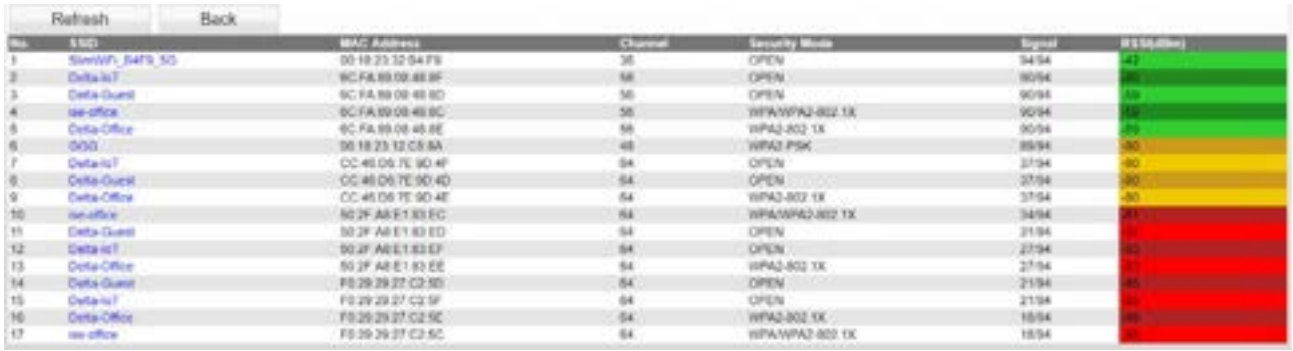
Description	Deault value
Operation mode	
Display present operation mode	
RF type	
Select from the following types: ● G: only supports IEEE 802.11g standard ● B/G Mixed: supports mixed mode IEEE 802.11b/g ● G/N Mixed: supports mixed mode IEEE 802.11g/n, but does not support 802.11b ● B/G/N Mixed: supports mixed mode IEEE 802.11b/g/n ● N Only: only supports 2.4GHz IEEE 802.11n standard	G/N Mixed
Channel	
Set AP operating channels from the following options: ● Auto ● 1-11	Auto
Bandwidth	
Set WIFI 2.4G with the following bandwidth options: ● 20MHz ● 40MHz 20MHz penetrability is better and contains long transmission distanace but is slower in speed.	20MHz
SSID	
Type the wireless device name that consists of 1-32 characters	“SlimWiFi_”+”MAC last 4 digits”
SSID broadcast	
Set enable or disable SSID broadcast	Enabled

Description	Deault value
Maximum number of client connections	
Set the maximum number of clients allowed to connect to this AP.	20
WMM	
After selecting this option, multimedia data is given priority during data transmission.	Check
Client isolation	
After selecting this option, clients connected to this AP cannot access each other.	Uncheck
Security mode	
Set AP operation security mode from the following options: ● None ● WPA2-PSK[AES] ● WPA-PSK[TKIP]+ WPA2-PSK[AES] For more security mode information, refer to section 3.4.2.2.	None

- **Client mode**

In client mode, click **Site Survey** and the existed network SSID will appear, then choose the matching SSID. For example, the matching SSID is configured to WEP or WPA/WPA2-PSK. Please enter the correct password then click **Apply** to connect with AP.

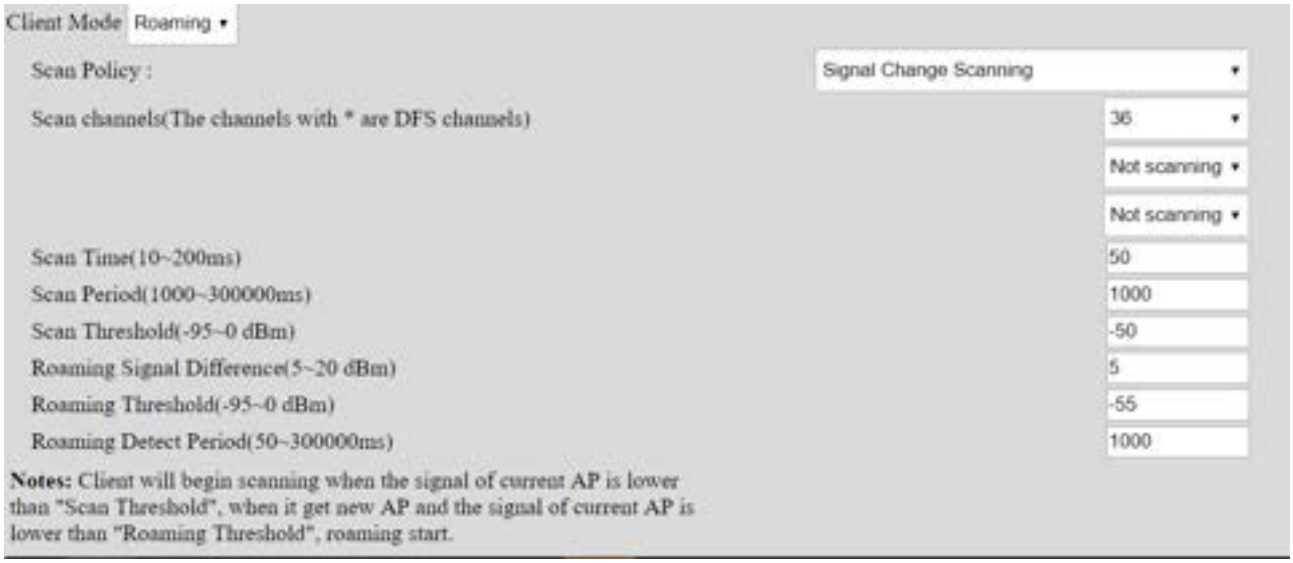




Description	Default value
EXTAP	
● Enabled: When EXTAP is enabled, client compatibility increases along with more compatible AP. ● Disabled: When EXTAP is disabled, recommend using the AP of DVW-W01I2-E1 for enhanced connection.	Disabled
Client mode	
● Disabled: Operation under normal WiFi client mode. ● Roaming: client support fast roaming protocol of personal level.	Disabled

Attention
In client mode, RF type and channel in gray background cannot be configured; while in AP mode, simultaneous configuration for RF type, channel and security mode begins once matching is successful.

Start roaming mode, the DVW devices support fast roaming protocol of personal level and can fulfill the need for fast switching APs in maintaining the operation under wireless application environment.



Description	Default value
Client Mode	
To enable or not enable fast roaming function.	Disabled
Scan channel	
To set fast roaming, DVW scans the assigned AP channels; when there are more channels that need to be determined, roaming speed is also more easily affected. ● Below are options in the first drop-down list: -- Auto: Scan all the channels and select an option without selecting the second and third drop-down lists. --The present AP channels in connection with DVW. ● Below are options in the second and third drop-down list: -- Not scanning: Scanning channels only from the previous drop-down list. -- Channel value: Select desired channels for scanning.	Present AP channel
Scan time	
When DVW scans for available APs, set the scan time for each channel.Setting range: 10~200ms.	50
Scan period	
Set the AP interval period for DVW scan. Setting range: 1000~300000ms。	1000

Description	Default value
Scan threshold	
Set the AP threshold once DVW is triggered for scanning, but only when the AP's transmission power connected to the present DVW is lower than the threshold value, the DVW will scan the available AP based on the scan period. Setting range: -95~0 dBm.	-50
Roaming signal difference	
Set DVW roaming signal difference which is a condition to execute DVW switching action. When the signal difference between present AP's transmission power in connection with DVW and the new AP is larger than the setting value, the DVW will switch to the new AP. Setting range: 5~20 dBm.	5
Roaming threshold	
Set DVW roaming threshold which is a condition for DVW to execute switch action.when the present AP's transmission power in connection with DVW is lower than the setting value, the DVW can switch to new AP. Setting range: -95~0 dBm.	-55
Roaming detect period	
Set DVW to detect whether the interval period of the two roaming conditions are satisfied; When both conditions are satisfied, the DVW can execute switching. Setting range: 50~300000ms.	50

3.4.2.2 Security mode

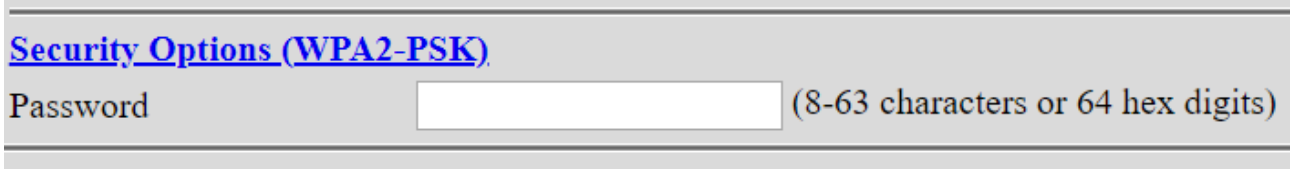
The device provides 5 standard security modes including none, WEP, WPA-PSK[TKIP], WPA2-PSK[AES] and WPA-PSK[TKIP] + WPA2-PSK[AES]. Users can set the security mode base on your own needs.

- **Security mode: None**

No security mode. When selecting this option, any client can connect to DVW-W02W2-E2 device without security mode.

- **Security mode: WPA/WPA2 Personal**

The WIFI alliance developed Wi-Fi Protected Access (WPA) and Wi-Fi Protected Access 2 (WPA2) to protect two securtiy protocols and security identifications in wireless network. The WPA/WPA2-Personal or so-called WPA / WPA-PSK (Pre-Shared Key) has two encryption methods including TKIP (Temporal Key Integrity Protocol) and AES (Advance Encryption System). TKIP can automatically create a new network password every few minutes which can prevent attackers from continuously collecting sufficient data in accessing your network. AES represents Advance Encryption System that encrypts 128-bit, 192-bit or 256-bit block and is considered the safest option for WIFI encryption.



Description	Default value
Security options	
● WPA2-PSK[AES]: Enable AES encryption method. ● WPA-PSK[TKIP]+ WPA2-PSK[AES]: Supports WPA-PSK and WPA2-PSK. Broadcast packets uses TKIP. For point-to-point transmission, WPA-PSK client uses TKIP and WPA2-PSK client uses AES.	None
Password	
Password phrase requires 8 to 63 ASCII characters or 64 hexadecimal digit.	None

3.4.2.3 Advanced configuration

The configuration provides users to execute advanced parameter settings based on different on-site wireless environment.

Description	Default value
Transmission power	
Set the transmission power. The transmission power gets stronger as setting value becomes higher and the influence range widens. Range option 1 to 20.	20
Beacon interval	
The beacon interval of a wireless broadcast, the unit is ms. When roaming is required, users can adjust to lower value for faster connection; adjust to higher value for power saving. Input range: 40-1000.	150

3.5 WLAN management - 5G

The WLAN management focuses on configuring 5G WIFI operation mode and its corresponding parameters. Please refer to the manual for accurate configuration before setup.

3.5.1 Operation mode

DVW-W01I2-E1 provides 2 different WIFI operation modes including AP and client mode that allow users to easily configure wireless network environment. Please first set DVW-W01I2-E1 operation mode, then configure WLAN.

Description	Default value

RF	
To enable or disable wireless function.	Enabled
Operation mode	
Set wireless operation mode: ● AP mode: used as an intermediate point for wired and wireless devices connection, data transmission and more. ● Client mode: DVW-W02W2-E2 operating in client mode can perform wireless data transmission via AP.	AP
Region	
Set the country or region for the device. The setting follows the different WLAN channels established by each country. Many countries have their own regulations on these channels, e.g. maximum power levels within these frequency ranges, countries or regions supported in total: China, Taiwan, U.S. and Europe.	Europe

Attention
2.4G and 5G WIFI cannot operate in client mode simultaneously.

3.5.2 WLAN 5G

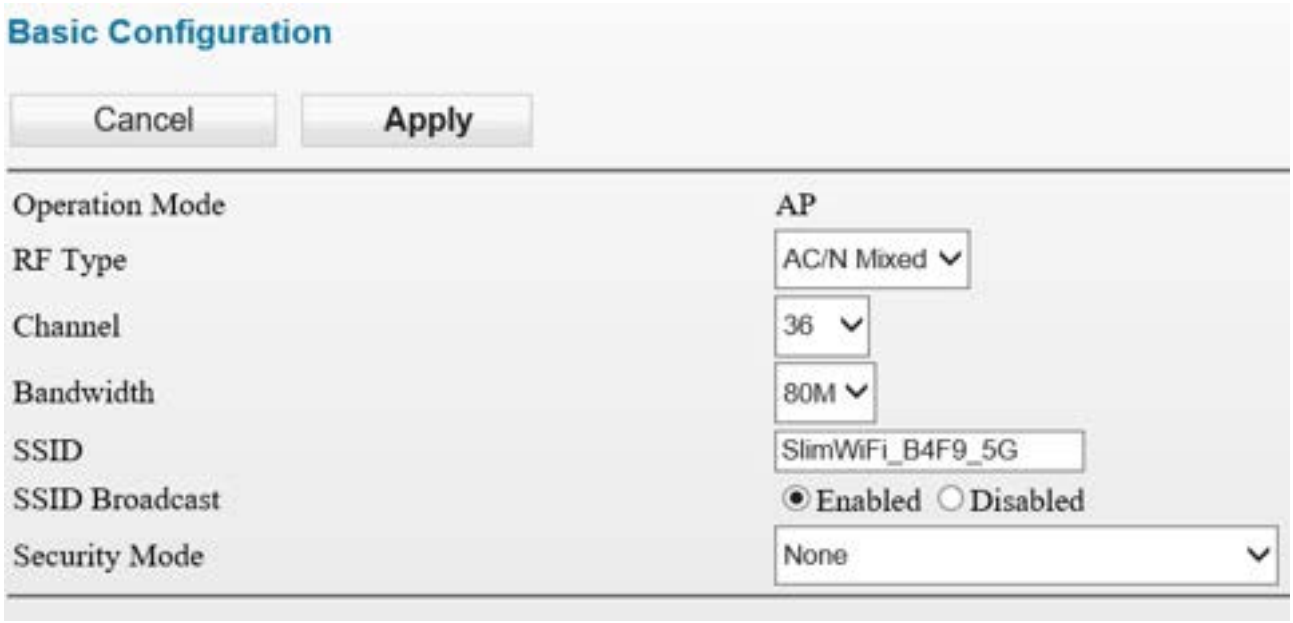
The setting page focuses on the basic and adanced configuration of 5G network in AP or client mode.

3.5.2.1 Basic configuration

The setting corresponds to operation mode. Different operation mode will have different basic configurations.

- **AP mode:**

In AP mode, users can add or edit WLAN basic configurations. For example, RF type, channel, SSID, SSID broadcast and security mode. Click **Apply** once configurations are completed.

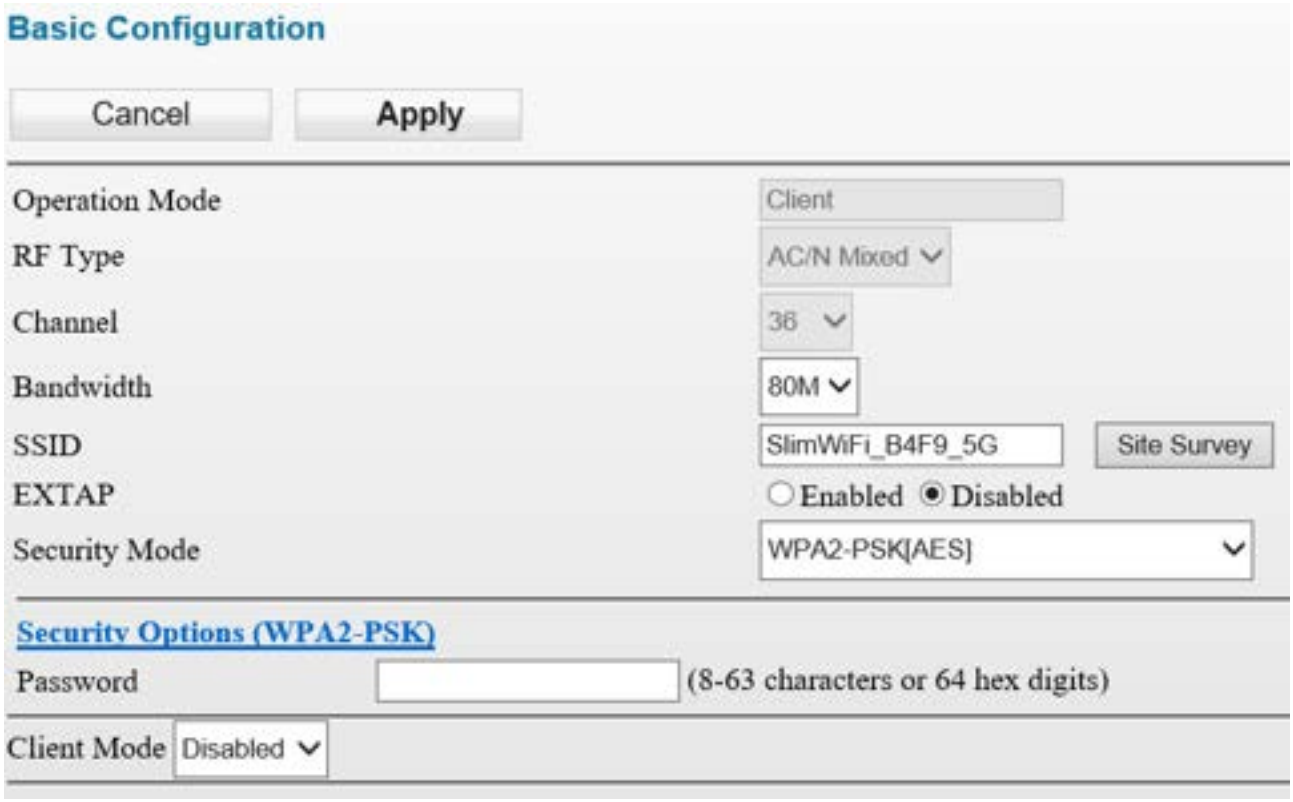


Description	Default value

Description	Default value
Operation mode	
Display present operation mode	
RF type	
Select from the following types: ● AC/N Mixed: only supports mixed mode IEEE 802.11ac/n ● A/N Mixed: supports mixed mode IEEE 802.11a/n ● N Only: only supports 5GHz IEEE 802.11n standard ● A: only supports 5GHz IEEE 802.11n standard	AC/N Mixed
Channel	
Set AP operating channels from the following options: ● 36/40/44/48/52/60/64/100/104/108/112/116/120/124/128/132/136/140	36
Bandwidth	
Set WIFI 5G with the following bandwidth options: ● 20MHz ● 40MHz ● 80MHz 20MHz penetrability is better and contains long transmission distanace but is slower in speed.	80MHz
SSID	
Type the wireless device name that consists of 1-32 characters	“SlimWiFi_”+”MAC last 4 digits”+”5G”
SSID broadcast	
Set enable or disable SSID broadcast	Enabled
Security mode	
Set AP operation security mode from the following options: ● None ● WPA2-PSK[AES] ● WPA-PSK[TKIP]+ WPA2-PSK[AES] For more security mode information, refer to section 3.4.2.2	None

- **Client mode**

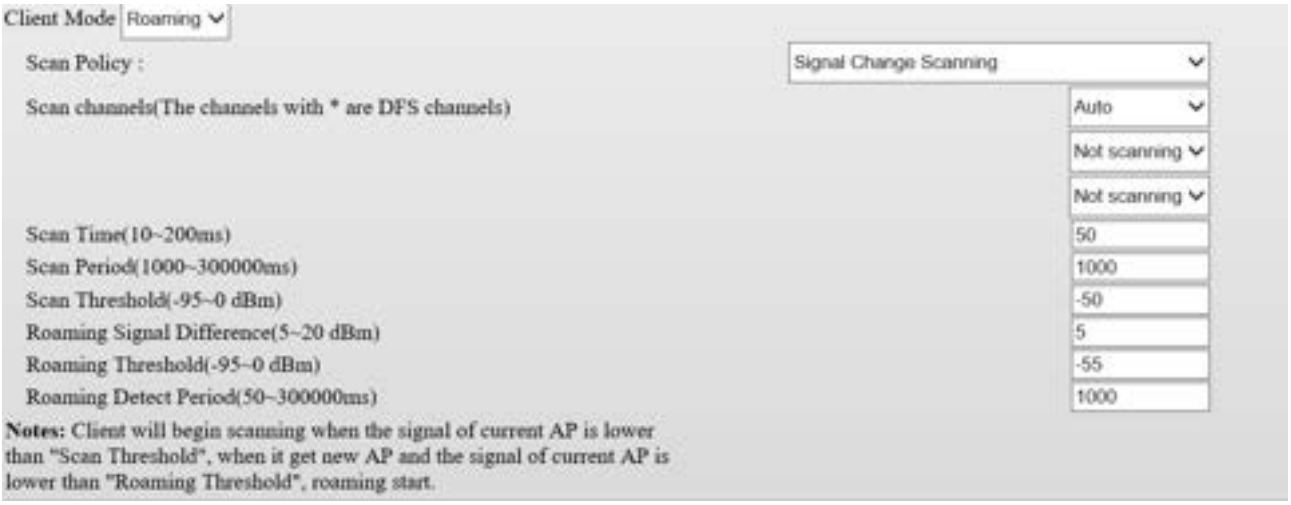
In client mode, click **Site Survey** and the existed network SSID will appear, then choose the matching SSID. For example, the matching SSID is configured to WEP or WPA/WPA2-PSK. Please enter the correct password then click **Apply** to connect with AP.



Description	Default value
EXTAP	
● Enabled: When EXTAP is enabled, client compatibility increases along with more compatible AP. ● Disabled: When EXTAP is disabled, recommend using the AP of DVW-W01I2-E1 for enhanced connection.	Disabled
Client mode	
● Disabled: Operation under normal WiFi client mode. ● Roaming: client support fast roaming protocol of personal level	Disabled

Attention
In client mode, RF type and channel in gray background cannot be configured; while in AP mode, simultaneous configuration for RF type, channel and security mode begins once matching is successful.

Start roaming mode, the DVW devices support fast roaming protocol of personal level and can fulfill the need for fast switching APs in maintaining the operation under wireless application environment.

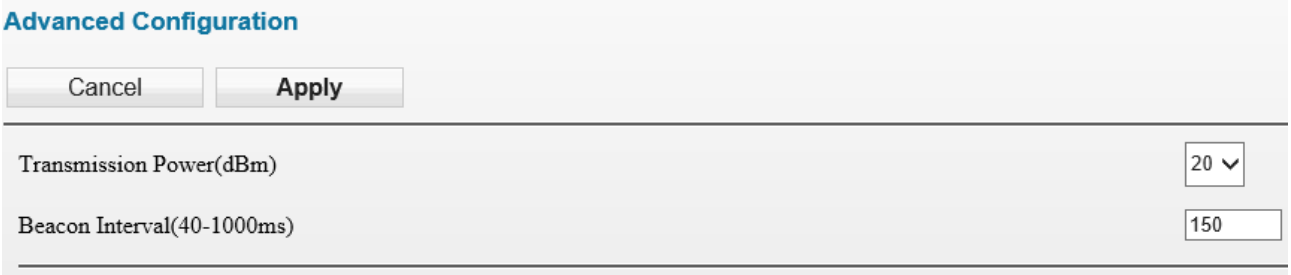


Description	Default value
Client Mode	
To enable or not enable fast roaming function.	Disabled
Scan channel	
Set DVW scan strategy, the system offers two options. ● Scan changing signals: When the signal of AP in connection with DVW is lower than scan threshold, once signal value changes and triggers DVW to scan for available AP; the AP signal information received provides DVW to determine in switching or not; the parameter of scan period is invalid under this mode. ● Periodic scanning or scan changing signals: When the signal of AP in connection with DVW is lower than scan threshold, the DVW is triggered according to scan period or changing signal values for available AP; the AP signal information received provides DVW to determine in switching or not	Scan changing signals
To set fast roaming, DVW scans the assigned AP channels; when there are more channels that need to be determined, roaming speed is also more easily affected. ● Below are options in the first drop-down list: -- Auto: Scan all the channels and select an option without selecting the second and third drop-down lists. --The present AP channels in connection with DVW. ● Below are options in the second and third drop-down list: -- Not scanning: Scanning channels only from the previous drop-down list. -- Channel value: Select desired channels for scanning.	Auto
Scan time	
When DVW scans for available APs, set the scan time for each channel.Setting range: 10~200ms.	50
Scan period	
Set the AP interval period for DVW scan. Setting range: 1000~300000ms。	1000
Scan threshold	
Set the AP threshold once DVW is triggered for scanning, but only when the AP's transmission power connected to the present DVW is lower than the threshold value, the DVW will scan the available AP based on the scan period. Setting range: -95~0 dBm.	-50
Roaming signal difference	
Set DVW roaming signal difference which is a condition for DVW to execute switch action. When the signal difference between present AP's transmission power in connection with DVW and the new AP is larger than the setting value, the DVW will switch to the new AP. Setting range: 5~20 dBm.	5

Description	Default value
Roaming threshold	
Set DVW roaming threshold which is a condition for DVW to execute switch action. When the present AP's transmission power in connection with DVW is lower than the setting value, the DVW can switch to new AP. Setting range: -95~0 dBm.	-55
Roaming detect period	
Set DVW to detect whether the interval period of the two roaming conditions are satisfied; when both conditions are satisfied, the DVW can execute switching. Setting range: 50~300000ms.	50

3.5.2.2 Advanced configuration

The configuration provides users to execute advanced parameter settings based on different on-site wireless environment.

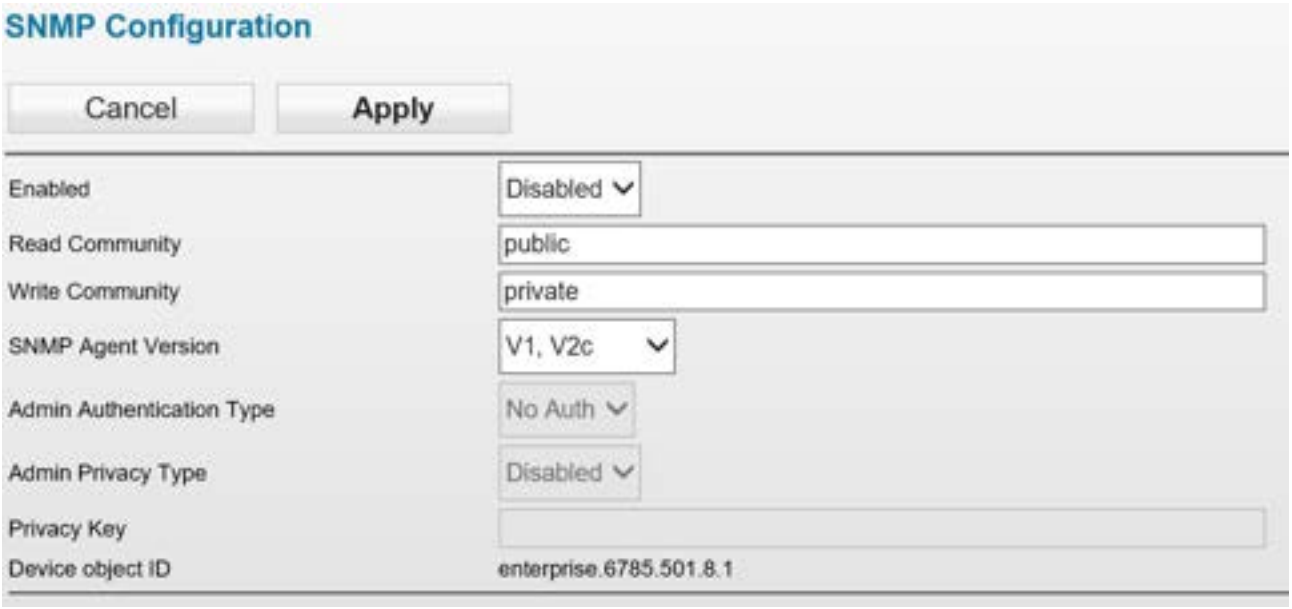


Description	Default value
Transmission power	
Set the transmission power. The transmission power gets stronger as setting value becomes higher and the influence range widens. Range option 1 to 20.	20
Beacon interval	
The beacon interval of a wireless broadcast, the unit is ms. When roaming is required, users can adjust to lower value for faster connection; adjust to higher value for power saving. Input range: 40-1000.	150

3.6 Advance

3.6.1 SNMP Configuration

Simple Network Management Protocol (SNMP) is an application protocol used for exchanging management information between network devices. SNMP is a member of the TCP/IP protocol suite. SNMP V1, V2 and V3 are supported on the Delta DVW series. When the SNMP protocol version is V1, V2c. the authentication type use a community string. When the SNMP protocol version is V3, then you need to specify the authentication type. If you have data encryption requirement, you can specify the privacy type.



Description	Factory Default
Enable	
Specify whether the SNMP agent is enabled.	None
Remote Management	
Specify whether remote user can manage DVW series by SNMP.	None
Read Community	
Input a community name for the device to be accessed with read-only permission.	Public
Write Community	
Input a community name for the device to be accessed with read/write permission.	Private
SNMP Agent Version	
Specify the SNMP version of the device.	V1, V2c
Admin Authentication Type	
Specify the admin authentication type to verify that the message is from a valid source. It works when SNMP agent version is “V1, V2c, V3” or “V3”. • **No Auth:** No Authentication. Only use admin account to access objects. • **MD5:** Use MD5 algorithms for authentication. • **SHA:** Use SHA algorithms for authentication.	No Auth
Admin Privacy Type	
Specify the data encryption type. It works when SNMP agent version is “V1, V2c, V3” or “V3”. • **Disable:** No data encryption. • **AES:** Use AES-based data encryption. • **DES:** Use DES-based data encryption.	Disabled
Privacy Key	
Input a data key for data encryption.	None
Device Object ID	
This field displays the Delta DVW series’s OID.	Fixed

3.6.2 Packet Control

DVW-W01I2-E1 has three built-in filters (MAC address filtering, IP protocol filtering, TCP / UDP port filtering). These are filters that can enhance the security and performance of the network.

3.6.2.1 Filter configuration

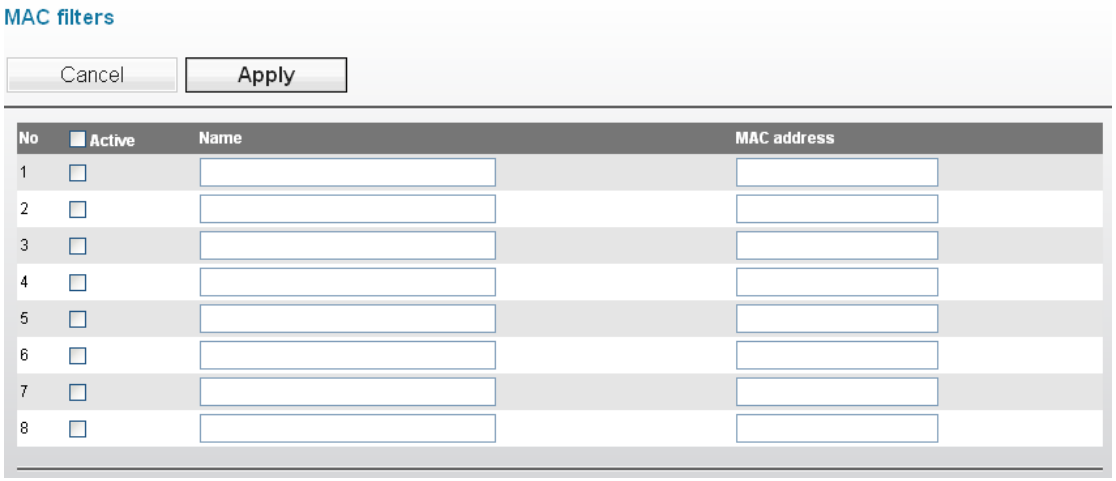
Settings of 3 filters, MAC filters, IP Protocol filters, and TCP/UDP port filters as well as the packet acceptance.

Description	Factory Default
Enable	
Specify whether the filter configuration is enabled. • **Enable:** Packet filter function is enabled. • **Disable:** Packet filter function is disabled. **The filter priority:** MAC filters > IP Protocol filters > TCP/UDP port filters	Disabled
Policy	
• **Drop:** All packets correspond with the list will be dropped. • **Accept:** Only the packets correspond with the list can be accepted.	Drop

Notice:
Before you enable the filter function, please notice the **Policy**:
Drop: If there is no data in the filter list, all packets are **accepted**.
Accept: If there is no data in the filter list, all packets are **dropped**.

3.6.2.2 MAC Filter

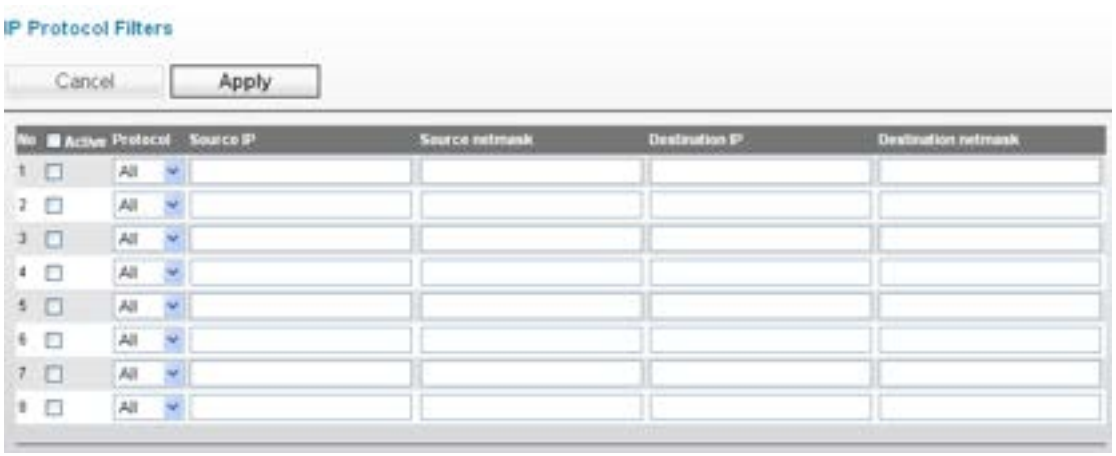
The MAC filter can accept or drop packets with specified MAC addresses. The MAC address can be configured up to 8 entries.



Notice:
Please check the Active check box for the entries which you want to specify and please remember to configure the policy in **Filter Configuration** page.

3.6.2.3 IP Protocol Filter

The IP Protocol filter can accept or drop packets with specified IP protocol and source/destination addresses. The policy can be configured up to 8 entries. DVW provides 3 IP protocols items: All, TCP, UDP and ICMP. The Source IP and Destination IP must be specified. You can specify an IP address or a range of IP addresses.



Example:

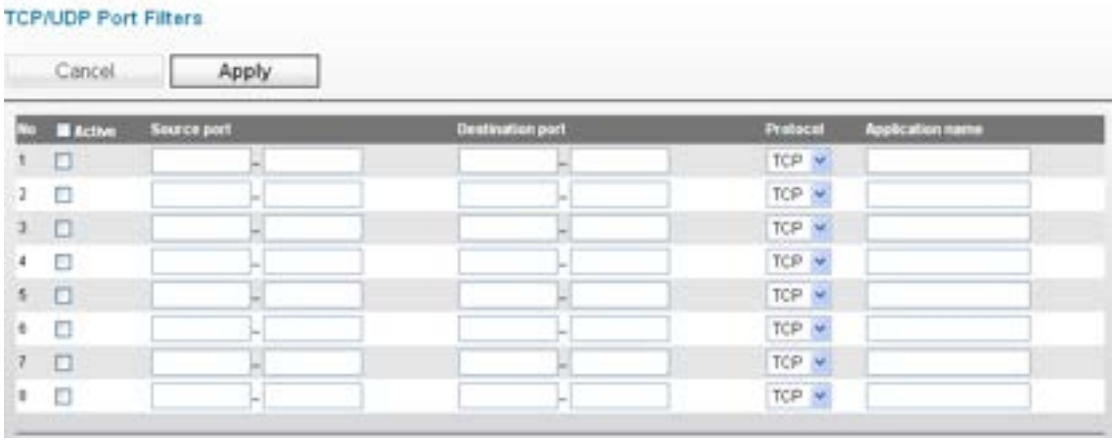
If the IP protocol filtering settings are as follows, and the policy configured by the filter is [Drop], all IP packets sent from 192.168.1.20 to 192.168.1.10 will be filtered and cannot be delivered.

Notice:
Please check the Active check box for the entries which you want to specify and please remember to configure the policy in **Filter Configuration** page.

3.6.2.4 TCP / UDP Port Filter

The TCP/UDP port filter can accept or drop packets with specified port and protocol. The policy can be configured up to 8 entries.

You can specify TCP or UDP protocol, and specify a single port or a range of port. If you want to specify a single port, you can leave blank in end port field; if you want to specify a range of port, the end port can't be larger than the start port.



Notice:
Please check the Active check box for the entries which you want to specify and please remember to configure the policy in **Filter Configuration** page.

3.7 Auto Warning Setting

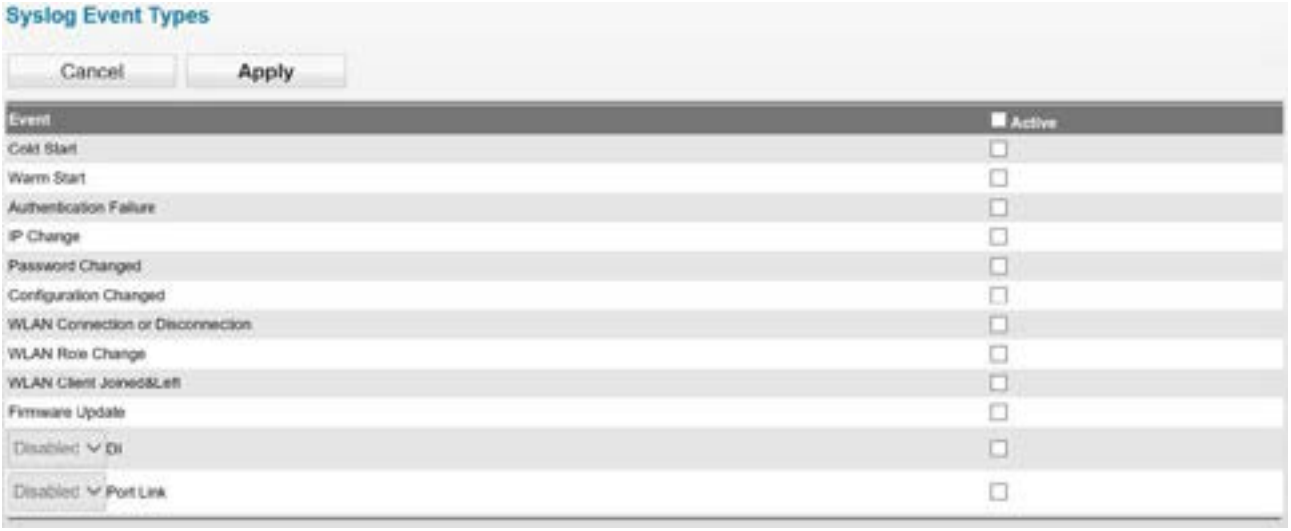
Industrial Ethernet devices in an industrial environment are very important. These devices usually need to work for a long time and are usually located at the end of the system. So if the Delta DVW seriess need to be maintained, it must provide some messages to the maintainer. Even when the maintainers or engineers do not stay in the control room, they still need to be informed the status of the devices. Delta DVW seriess provides different approaches to warn engineers automatically, such as log, E-mail, relay output and SNMP trap.

3.7.1 SysLog

Syslog function provides you to monitor the device. When faults, errors, configuration changes or specified events happen, this function can generate messages and forward the messages to a specified syslog server.

3.7.1.1 Syslog Event Types

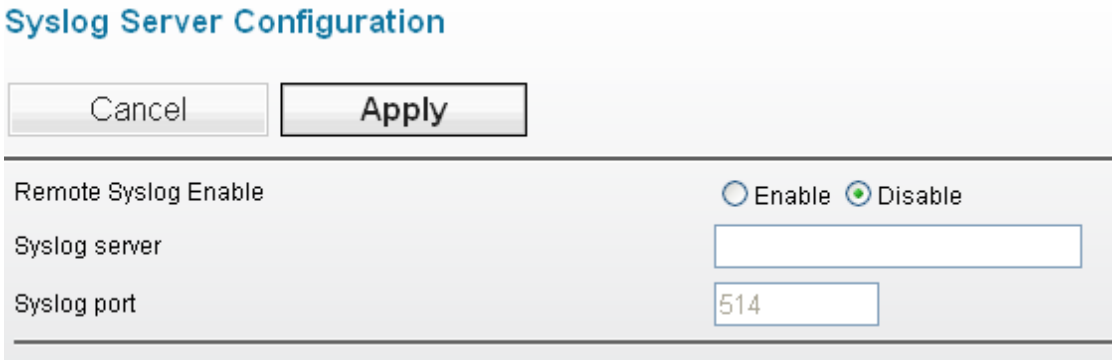
Please check the box to enable the event items. The default settings are disabled (unticked).



Description	Factory Default
Cold Start	
Power off and then power on to start the system.	Uncheck
Warm Start	
When the power is still on, restart the system.	Uncheck
Authentication Failure	
Log in failure (wrong ID / Password)	Uncheck
IP Changed	
Change the IP address of the DVW series.	Uncheck
Password Changed	
Change the login password.	Uncheck
Configuration Changed	
Any configuration of the DVW series changed.	Uncheck
WLAN Connection or Disconnection	
When in the Client mode, any wireless device joined or left.	Uncheck
WLAN Role Change	
Operation mode or configuration changed	Uncheck
WLAN Client Joined / Left	
When in the Client mode, any client end joined or left.	Uncheck
Firmware Update	
When updating firmware	Uncheck
DI (ON→OFF) or (OFF→ON)	
Trigger DI to **(ON→OFF) or (OFF→ON)**	Uncheck

3.7.1.2 Syslog Server Configuration

This function allows users to have the system log sent to the syslog server once there is any event occurs. DVW series can configure 1 syslog server and its transport layer protocol is UDP.



Description	Factory Default
Remote Syslog Enable	
Enable or disable the remote syslog function	Disabled
Syslog Server	
The IP address of the syslog server	None
Syslog Port	
Set up the local UDP port (the setups should be the same as the UDP port of the syslog server , ranging from 1-65535)	514

3.7.2 E-mail Alarm

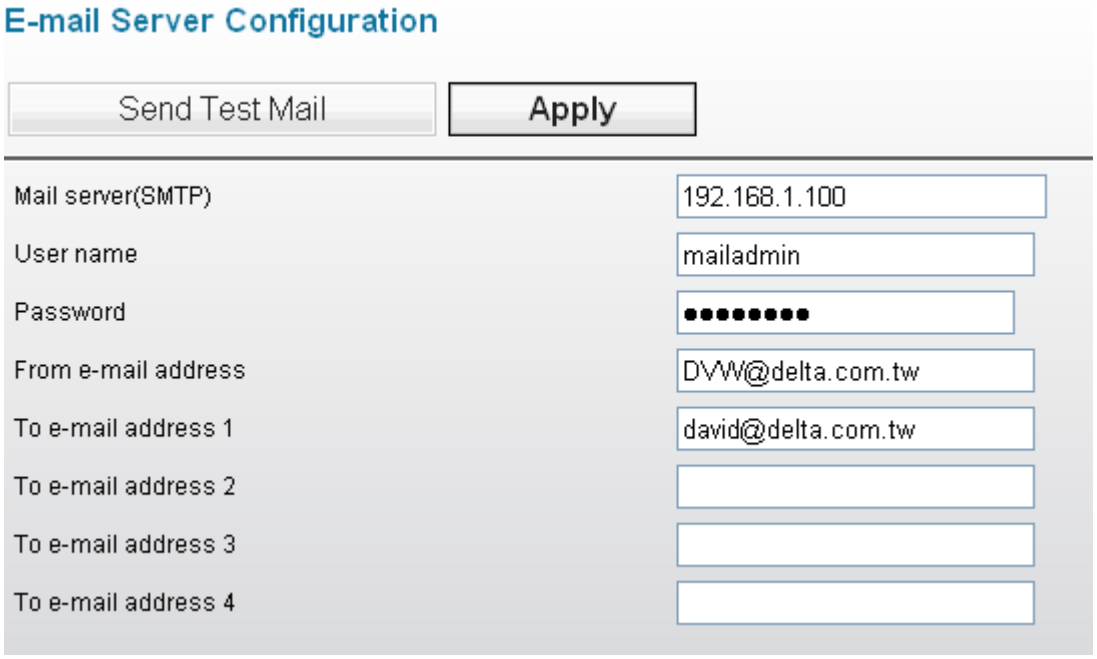
When malfunctions, errors, configuration changed, or other appointed events occurred, the system can create a warning and send the warning to the appointed email address.

3.7.2.1 Syslog Server Configuration

Please check the box to enable the event items you'd like to be notified. The default settings are disabled (unticked).

3.7.2.2 E-mail Server Configuration

The E-mail server parameters can be configured in this page. The maximum e-mail addresses which you can specify are 4. You can also send Test Mail to see if the email server configuration is complete.



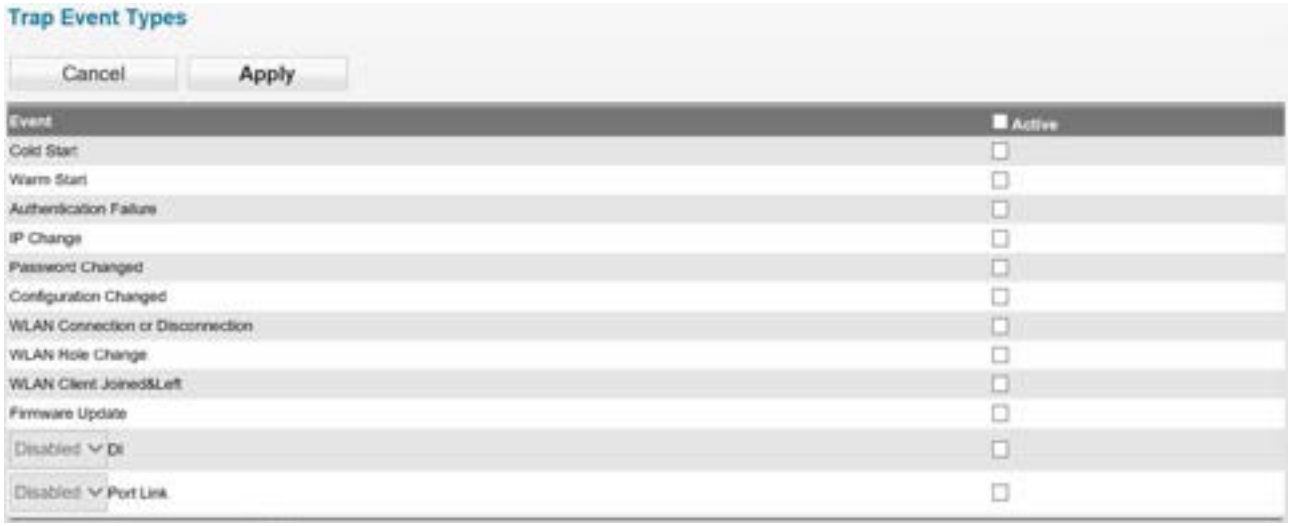
Description	Factory Default
Mail Server (SMTP)	
Set up the IP address or domain address of the syslog server (SMTP)	None
User Name / Password	
Set up the user name and the password for the syslog server	None
From Email Address	
Set up the administrator's email address; once the warning email is sent, this email address will be shown on the sender's section. Up to 63 characters can be inputted.	None
To Email Address 1 / 2 / 3 / 4	
Set up the receipt's email address; up to 63 characters can be inputted.	None

3.7.3 SNMP Trap

NMS (Network Management Station) usually manage and monitor many SNMP agents. If manager pre-configure the event, then the SNMP agents will send a message as a trap when the event has been triggered.

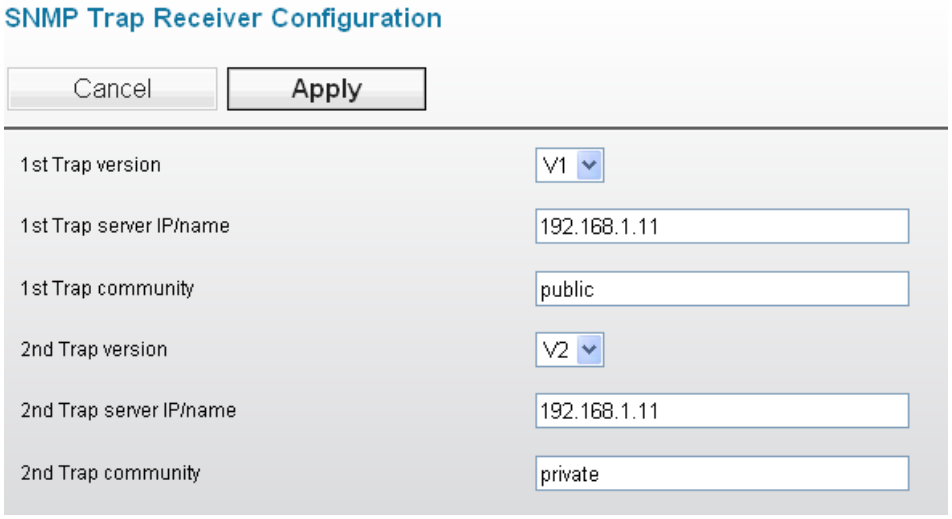
3.7.3.1 Trap Event Types

Please check the box to enable the event items you'd like to be notified. The default settings are disabled (unticked).



3.7.3.2 SNMP Trap Receiver Configuration

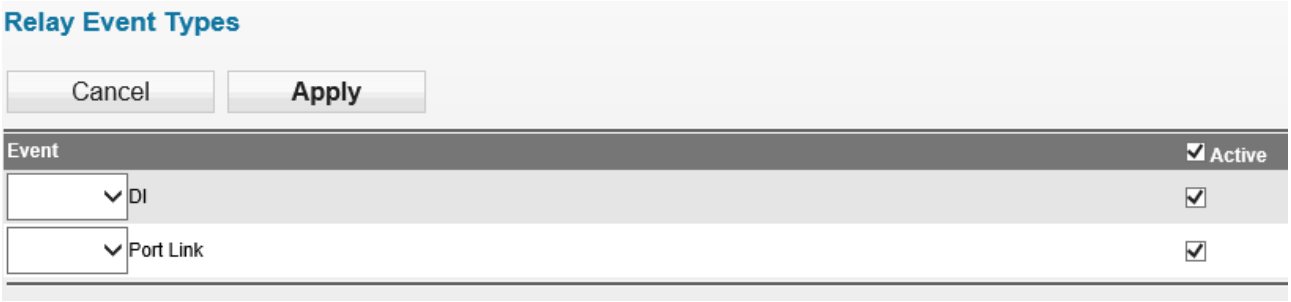
Users can set up the SNMP Trap receiver; SMIv1 MIBs (SNMPv1) and SMIv2 MIBs (SNMPv2c) are supported.



Description	Factory Default
1st/ 2nd Trap version	
Specify the SNMP trap version in SNMPv1 or SNMPv2.	V1
1st/ 2nd Trap server IP/name	
Enter the IP address or the name of SNMP Trap server in your network.	None
1st/ 2nd Trap community	
Input the community string for authentication.	None

3.7.4 Relay Alarm

The relay alarm is mainly used to monitor the specified event. When the event is triggered, the relay alarm (DO closed) is triggered, and at the same time, the indicator light is on.



3.7.4.1 Relay Event Types

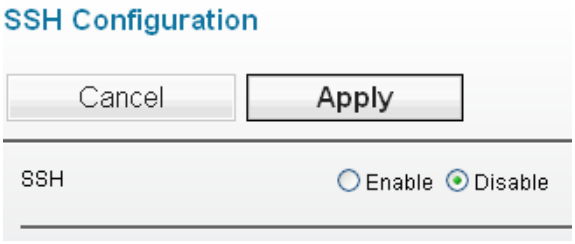
DVW defines two types of trigger events: DI and Port Link.

3.8 Management Access

Delta DVW series supports not only web interface to manage the device. You also can use CLI (Command Line Interface) to configure the DVW series by Secure Shell (SSH) and Telnet. For system security, we recommend that you set all access management settings to disabled if there is no need

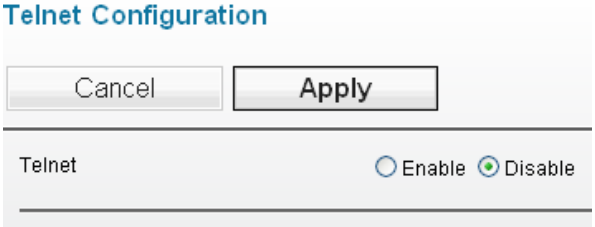
3.8.1 SSH Configuration

You can set whether to allow users to log in to the device using SSH.



3.8.2 Telnet Configuration

You can configure Telnet configuration in this page.



3.9 Monitoring

After the user sets the automatic alarm function, the monitoring function provides a detailed record of all occurrences. These include email, relay alarm table, trap alarm table, system log, network connection status, AP client list, DHCP client, serial port status, serial port statistics, serial port error, serial port log.

3.9.1 Email Alarm Table

When Email event has been triggered, this page displays the event and status.

E-mail alarm table

Index	Event	Status
1	Port 2 Link down	Fail
2	Power2(On-->Off)	Fail

Item	Description
Index	The index of the event.
Event	The event which has been triggered.
Status	The status of the event.

3.9.2 Relay Alarm Table

When relay event has been triggered, this page displays the event and status.

Relay alarm table

Index	Event	Relay
1	Power2 Off	V
2	Port 2 Link down	V

Item	Description
Index	The index of the event.
Event	The event which has been triggered.
Status	The status of the event.

3.9.3 Trap Alarm Table

When relay event has been triggered, this page displays the event and status.

Trap alarm table

Index	Event	Status
1	Port 2 Link down	Success
2	Power2(On-->Off)	Success

Item	Description
Index	The index of the event.
Event	The event which has been triggered.
Status	The status of the event.

3.9.4 Network Connection Status

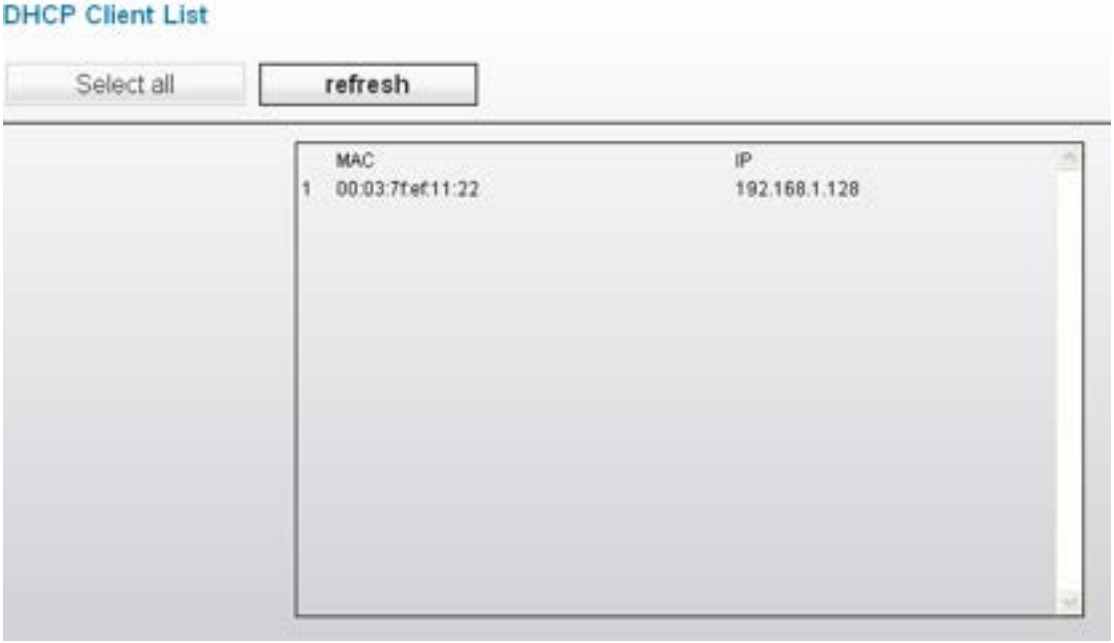
Network connection status page provides user to monitor the physical LAN port connection status.

3.9.5 AP Client List

AP Client List displays all wireless which associates with DVW series currently. The information includes IP Address, MAC Address and Device Name.

3.9.6 DHCP Client List

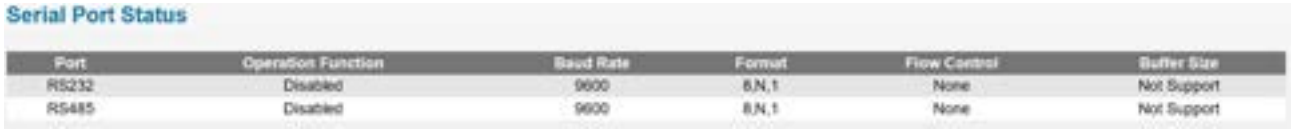
When the device starts DHCP-Server in [Network Configuration], this page displays a list of DHCP clients currently connected to the device. Click the refresh button to refresh the list.



Item	Description
Select All	Select all clients on the DHCP Client List.
Refresh	Refresh the DHCP Client List

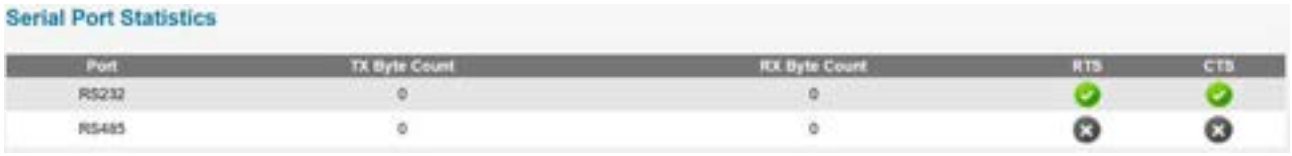
3.9.7 Serial Port Status

Display serial port status Provide port, interface, operation function, baud rate, format, flow control, buffer size.



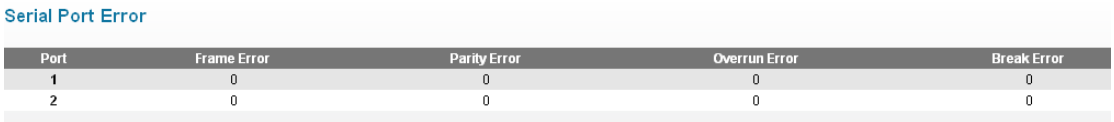
3.9.8 Serial Port Statistics

Serial Port Statistics page displays the number of serial Tx and Rx packet number and data transmission status for each serial port.



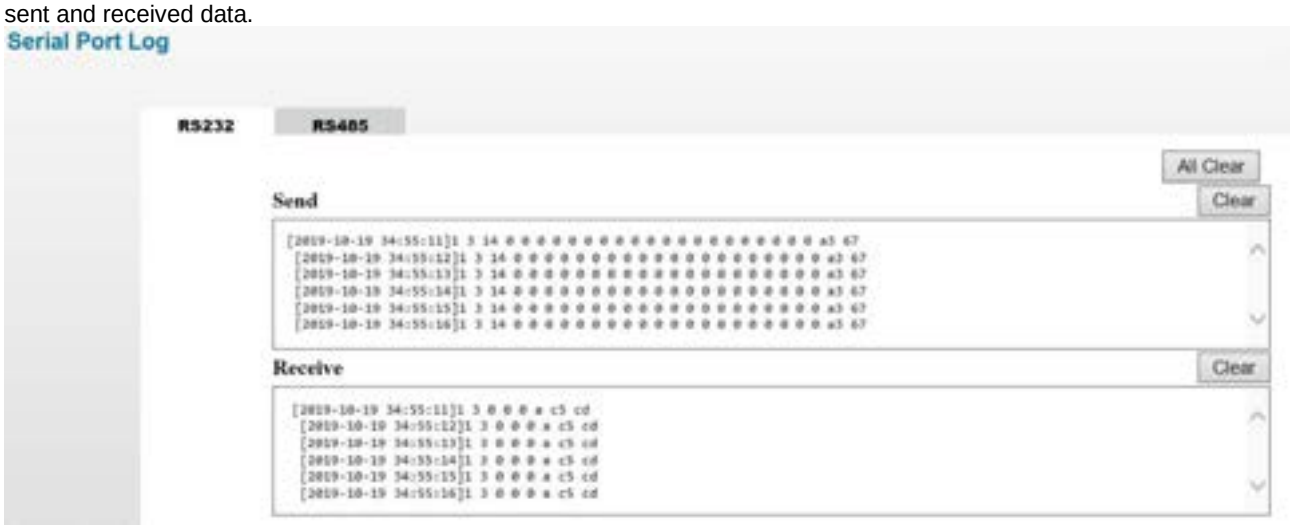
3.9.9 Serial Port Error

Serial Port Error page displays the current number of frame, parity, overrun and break errors for each port.



3.9.10 Serial Port Log

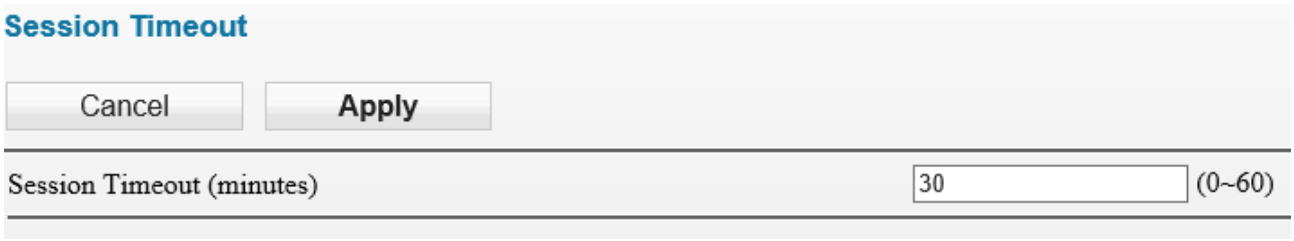
Serial Port Log page displays the logs of serial port. Users can choose to see contents of one single port or contents of the sent and received data.



3.10 Maintenance

3.10.1 Session timeout

Users can set session timeout but when the setting time is exceeded, it will auto log off the system and a message regarding the action is presented to users. We recommend configuring this function for enhanced system security.



Description	Default value
Session timeout	
Set the time for session timeout. ● Timeout setting range is 0 to 60 min. ● Set to 0 and session timeout will never occur.	30

3.10.2 Password

Users can change the password of DVW-W01I2-E1 log in page. To successfully configure a new set of password, users need to type in the old password.

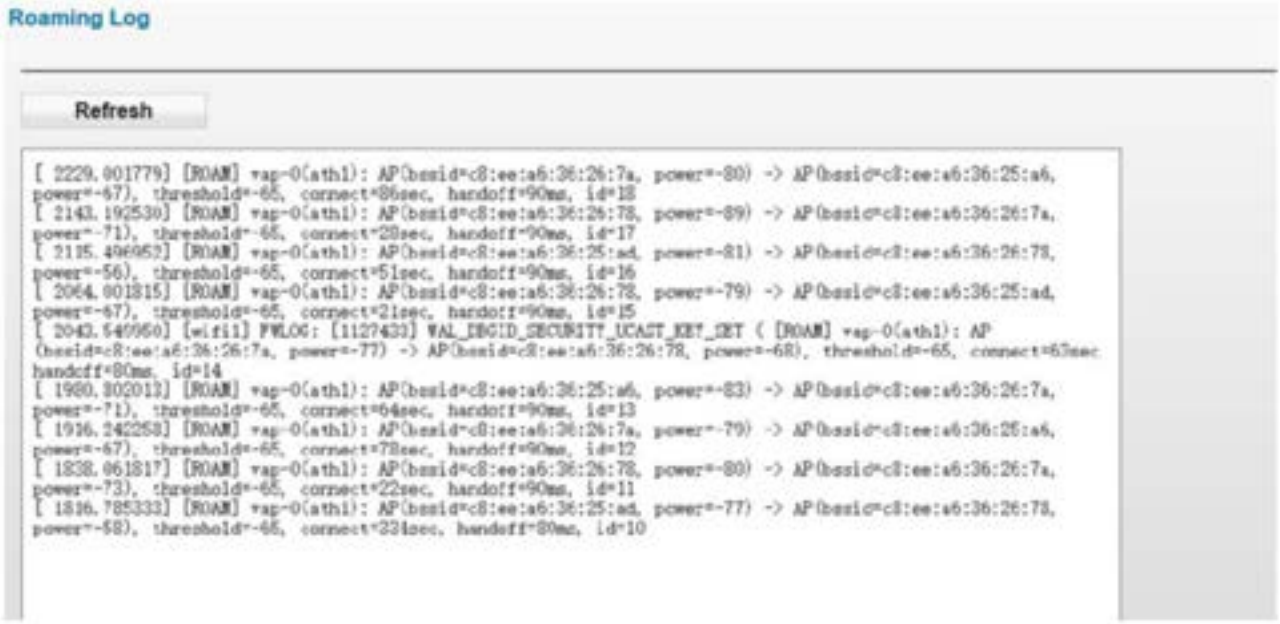
Description	Default value
Old password	
The current admin. password	
New password	
Set new admin. password	
Repeat new password	
Repeat the new password	

3.10.3 System log backup

The function allows documents derived from the logs to be stored in PCs or storage devices.

3.10.4 Roaming log

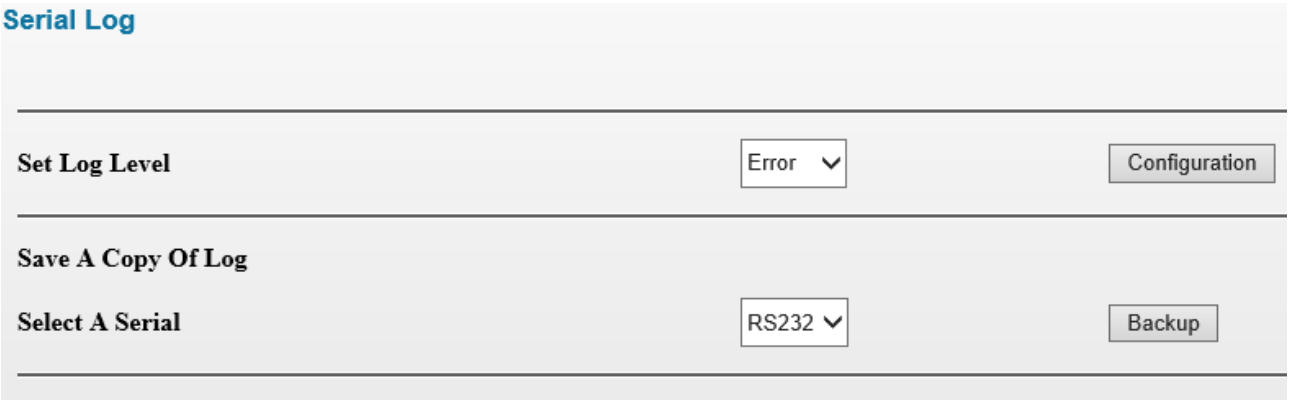
Roaming log function can record the device as WIFI station that quickly swich from one AP message to another including SSID in AP's source and transmission power as well as SSID in destination AP and transmission power.



Description	Default value
BSSID	
MAC in AP's source destination AP	N/A
Power	
RF power of AP	N/A
Threshold	
Switch threshold setting by users	N/A
Connect	
Previous AP connection time	N/A
Handoff	
The handoff time for switching to AP roaming	N/A
ID	
The number of times for roaming	N/A

3.10.5 Serial log

From selecting a serial, users can determine the assigned log level and serial logs.



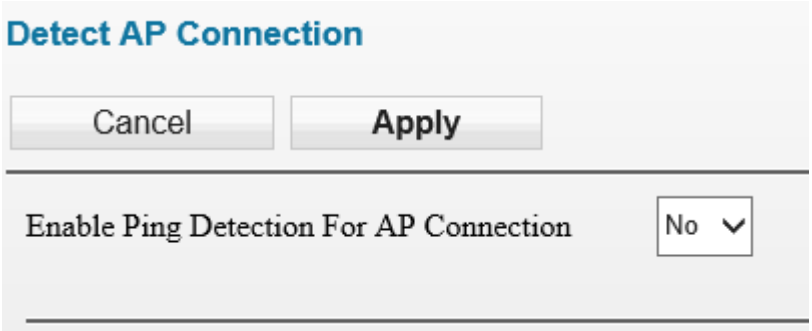
The image above shows the system can derive all log level as "Error" from RS232 serial logger. Users can click **Backup** button and download the logs in PCs.

3.10.6 Ping

Ping function can help admin to analyze network status. Type in the IP address to search for connection status.

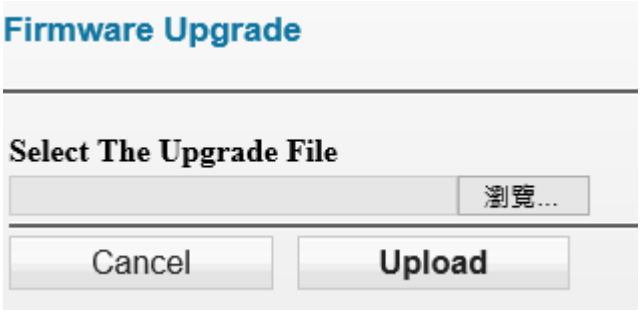
3.10.7 Ping detection

When users enable Ping detection for AP connection, the AP's IP address is usually configured so that when the number of Ping failure reaches the setting number, the system is bound to start WIFI reset.



3.10.8 Firmware upgrade

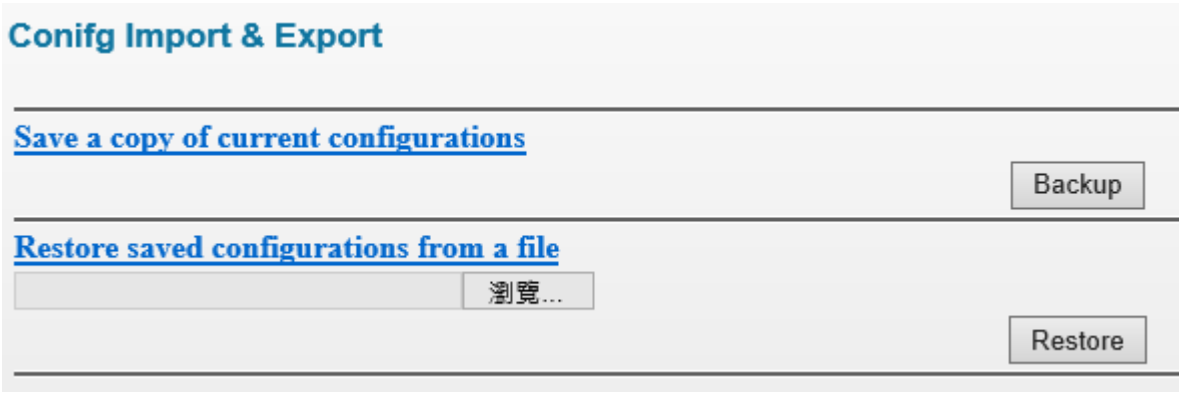
DVW-W01I2-E1 releases new upgraded firmware regularly to enhance product performance and include more functions. We strongly recommend users to do regular checkup and proceed firmware upgrade for your DVW-W01I2-E1 device. Please download the latest firmware document for our website.



3.10.9 Configuration Import & Export

The "**Backup**" button allows the documents derived from current configuration messages to store in your PCs or storage devices.

The "**Restore**" button can import the assigned document by users into the device.



3.10.10 Load factory default

When “Load” is clicked, the DVW-W01I2-E1 device restores the default values. In addition, the panel hardware contains RST button for devices to restore default settings.

3.10.11 Log off

Users can click **Log off** to exist the configuration page. When configuration and operating on the DVW-W01I2-E1 device is complete, we recommend to log off from your current account for security consideration. When Log off is clicked, the log-in page appears.