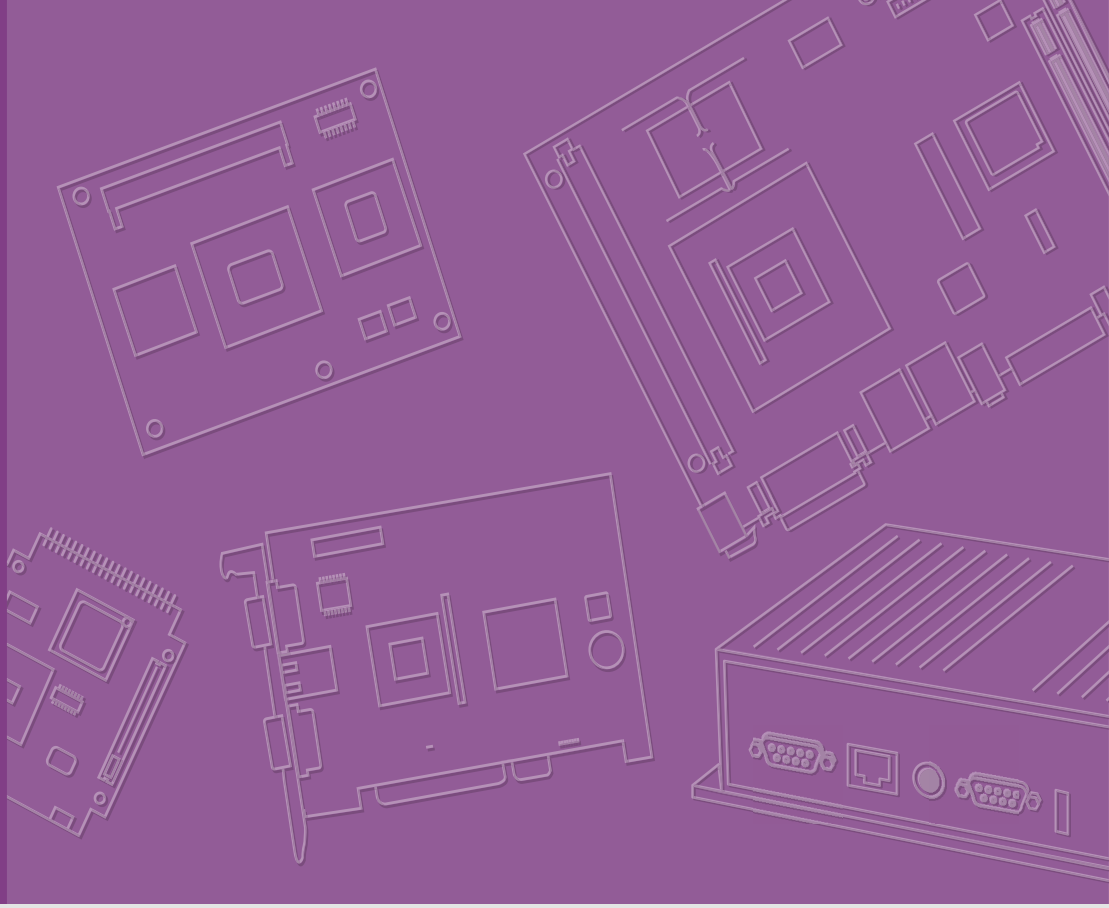

User Manual

EPD-770

Wireless ePaper Solution Suite

ADVANTECH

Enabling an Intelligent Planet

Copyright

Acknowledgments

Part No. 2006077000 Edition 1

July 2023

Product Warranty (2 years)

Advantech warrants the original purchaser that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product to be defective, follow the steps outlined below.

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages displayed when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain a return merchandise authorization (RMA) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and a proof-of-purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof-of-purchase date are not eligible for warranty service.
5. Write the RMA number clearly on the outside of the package and ship the package prepaid to your dealer.

Declaration of Conformity

FCC Class B

This equipment has been tested and found to comply with the limits for a Class B 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, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, 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 assistance.

IMPORTANT NOTE

FOR MOBILE DEVICE USAGE (>20cm/low power)

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

FOR COUNTRY CODE SELECTION USAGE (WLAN DEVICES)

Note: The country code selection is for non-US model only and is not available to all US model. Per FCC regulation, all Wi-Fi product marketed in US must fixed to US operation channels only.

LABEL OF THE END PRODUCT

Host Model Name EPD-770 The final end product must be labeled in a visible area with the following “FCC ID: M82-EPD-770”.

If the labeling area is larger than the palm of the hand, then the following FCC part 15.19 statement has to also be available on the label: This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

OEM Integration Instructions

This device is intended only for OEM integrators under the following conditions. The module can be used to installation in other host. The antenna must be installed such that 20 cm is maintained between the antenna and users, and the transmitter module may not be colocated with any other transmit or antenna. The module shall be only used with the integral antenna(s) that has been originally tested and certified with this module. As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirement with this module installed (for example, digital device emission, PC peripheral requirements, etc.)

NCC

低功率電波輻射性電機管理辦法

- 第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。
- 第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

模組認證：

1. 本模組於取得認證後將依規定於模組本體標示審驗合格標籤。
2. 系統廠商應於平台上標示 「本產品內含射頻模組：CCAH09LP0190T1 XXXyyyLPDzzzz-x」字樣。

Technical Support and Assistance

1. Visit the Advantech website at www.advantech.com/support to obtain the latest product information.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before calling:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Packing List

Before system installation, check that the items listed below are included and in good condition. If any item does not accord with the list, contact your dealer immediately.

- EPD-770 EPD device

Model Name	Part Number	Description
EPD-770	EPD-770-102	1. EPD-770 system device with WIFI /LAN 2. M Cable USB-A 4P(M)/Waterproof 5P 60CM 3. 2pcs of 2.4G Wi-Fi Antenna 1751000018-01 Dipole Ant.2.4+5G SMA/M-R AP BLK 109 hexagonal

Ordering Information

Model Name	Part Number	Description
EPD-770	EPD-770-102	13.3"B x2pcs IP66 w/o battery

Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
8. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
12. Never pour liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If any of the following occurs, have the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated the equipment.
    - The equipment has been exposed to moisture.
    - The equipment is malfunctioning, or does not operate according to the user manual.
    - The equipment has been dropped and damaged.
    - The equipment shows obvious signs of breakage.

DISCLAIMER: These instructions are provided according to IEC 704-1 standards. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Consignes de Sécurité

1. Lisez attentivement ces instructions de sécurité.
2. Conservez ce manuel de l'utilisateur pour référence ultérieure.
3. Débranchez cet appareil de toute prise secteur avant le nettoyage Utilisez un chiffon humide. N'utilisez pas de détergents liquides ni en spray pour le nettoyage
4. Pour les équipements enfichables, la prise de courant doit être située à proximité de l'équipement et doit être facilement accessible.
5. Gardez cet équipement à l'abri de l'humidité.
6. Placez cet équipement sur une surface fiable lors de son installation
7. Les ouvertures de l'enceinte sont destinées à la convection de l'air. Protégez le matériel contre la surchauffe. NE COUVREZ PAS LES OUVERTURES.
8. Assurez-vous que la tension de la source d'alimentation est correcte avant de connecter l'équipement à la prise de courant.
9. Placez le cordon d'alimentation de sorte que personne ne puisse marcher dessus. Ne placez aucun objet sur le cordon
10. Toutes les mises en garde et avertissements sur l'équipement doivent être notés
11. Si l'équipement n'est pas utilisé pendant une longue période, débranchez-le de la source d'alimentation pour éviter tout dommage d? à une surtension transitoire
12. Ne jamais verser de liquide dans une ouverture sous peine de provoquer un incendie ou un choc électrique
13. Ne jamais ouvrir l'appareil.Pour des raisons de sécurité, cet équipement ne doit être ouvert que par du personnel qualifié
14. Si l'une des situations suivantes se produit, faites vérifier l'équipement par le personnel de service:
    - Le cordon d'alimentation ou la fiche est endommagé.
    - Un liquide a pénétré dans l'appareil.
    - L'équipement a été exposé à l'humidité.
    - L'équipement ne fonctionne pas bien ou vous ne pouvez pas le faire fonctionner conformément au manuel d'utilisation.
    - Equipment L'équipement est tombé et a été endommagé.
    - Equipment L'équipement présente des signes évidents de rupture.

AVERTISSEMENT: Cet ensemble d'instructions est donné conformément à la norme CEI 704-1. Advantech décline toute responsabilité quant à l'exactitude des déclarations contenues dans le.

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Chapter 1

Introduction

1.1 Introduction

EPD-770 can support hospital, factory, smart city and retail applications with optimized power consumption and device management. The application layer can easily acquire data and communicate with ePaper devices through the ePaper manager server. The system integrator can focus on their application development with the EPD total solution.

The main features of EPD-770 are below:

- IP66 water & dust proof
- Solution with ARK DeviceOn/ePaper server

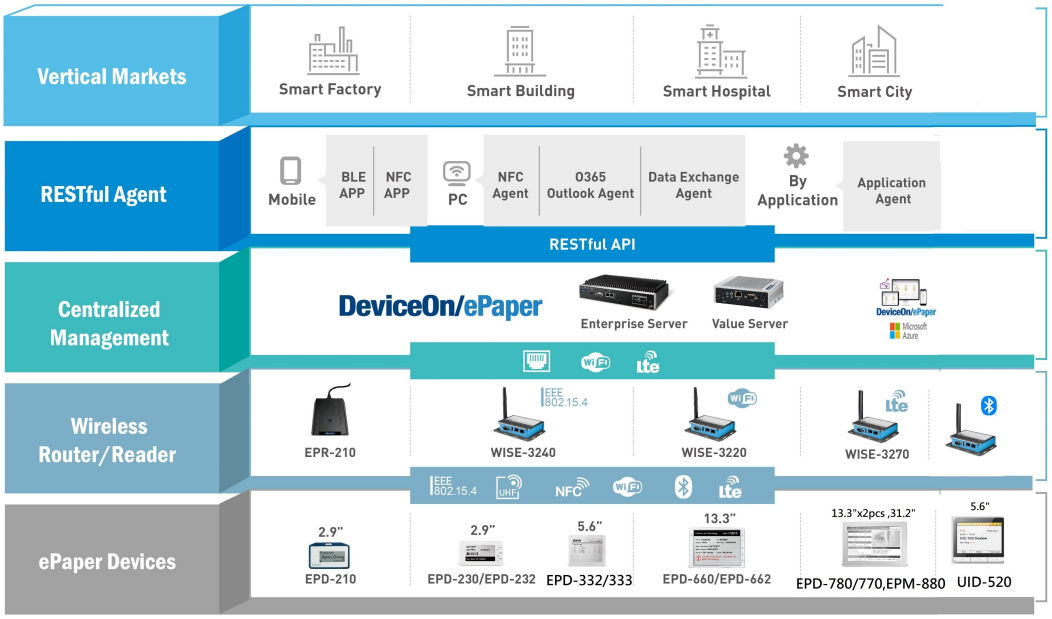
1.2 Specifications

Table 1.1: Specifications

ePaper Display	Screen Size	582.8 mm x 234.8 mm
	Resolution	1600 x 1200 pixels x 2 pcs.
	Color	16 gray level
System I/O	WAN	1pc (M12 type)
	LAN	1pc (M12 type)
	Power	12V/3A (M12 type)
Environment	Operational Temperature	-15~65°C (5~149°F) (B/W)
	Non-Operational Temp.	-25~70°C (-25~70°F) (B/W)
	Operating Humidity	5~85% relative humidity, non-condensing
Housing Mechanical	Material Type	IP66
	Dimension	682.8 mm x 334.8mm x 69 mm
	Weight	11 kg
EPD and Cover Glas	Lamination OCA	UV cut & explosion-proof glass
	IK Level	IK08
Power	12V /3A	

1.3 System Structure

Advantech provides a total solution for system integrators who need to design different applications according to the end customer's system requirements.



1.3.1 Advantech EPD-770 Solution Structure

The EPD-770 Epaper device can be adapted to different applications and system integrators enable RESTful API to fit the end user's required scenario. There are multi-functional RESTful APIs available on DeviceOn/ePaper for developer integration in vertical applications. E.g. Smart transportation and outdoor public signs.

EPD-770 includes 2 pieces of 13.3" e-Paper display; an EPD controller and connectivity solution. The EPD-770 offers LTE/Wi-Fi/WAN interfaces to connect back to DeviceOn/ePaper.

Chapter 2

Hardware Specifications

2.1 Hardware Specifications

EPD-770 is directly designed for end users to mount on the wall. The EPD-770 device includes an ePaper display panel, control board, housing, and an optional accessory-mounting bracket.

2.1.1 ePaper Display Panel

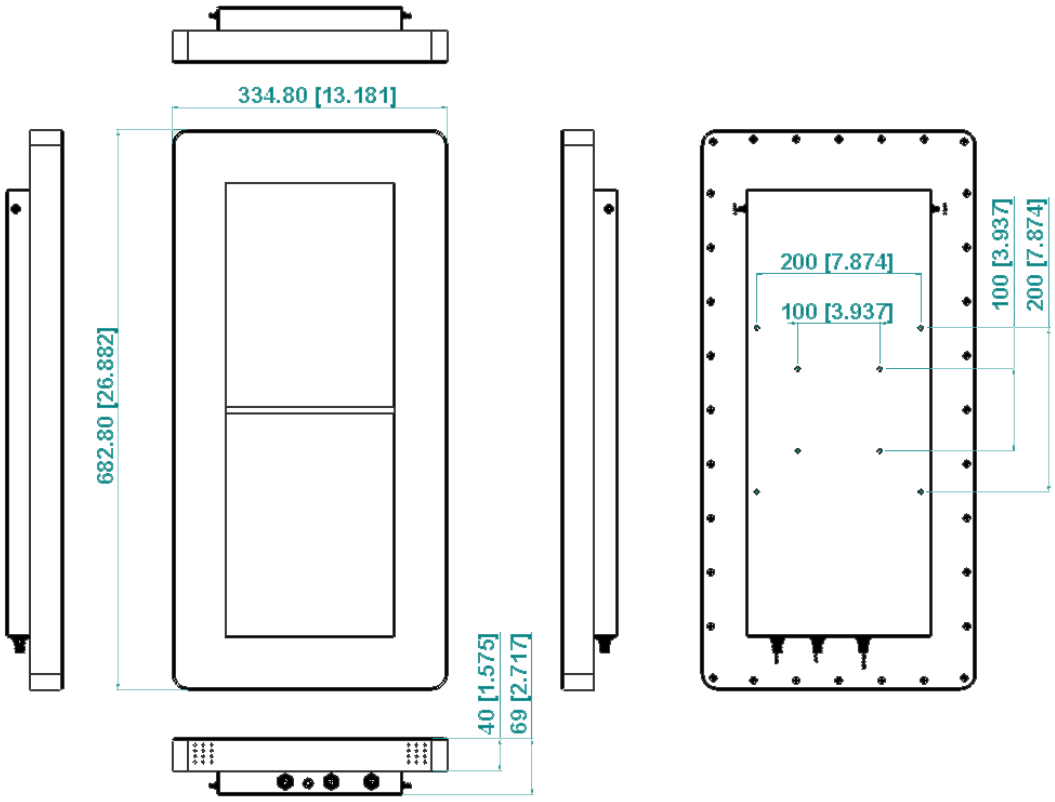
- Panel Size: 285.8 mm x 213.65 mm x2 pieces
- Panel PN: 968DD00022 operation temperature range: -15°C to +65°C for black and white.
- Panel inspection criteria refers to Eink CAS & Inspection standard document.

Note! *E Ink recommend conditions for storage:*

- *Temperature: 20 +-10°C.*
- *Humidity: 60%RH+-10%RH, non-condensing.*

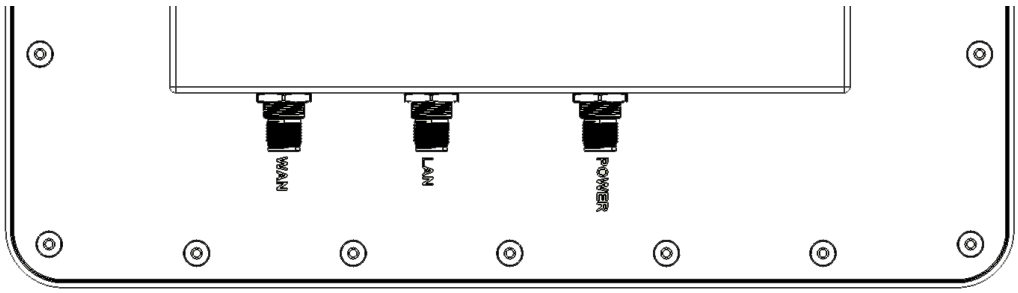
2.2 ID Dimension

2.2.1 ID for with/without Button Version



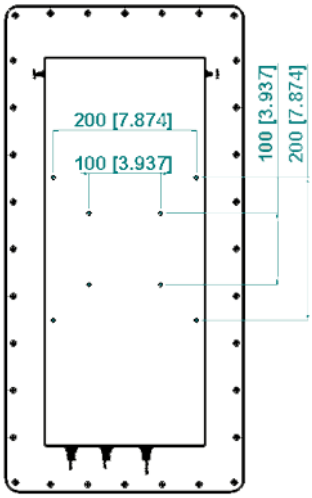
2.2.2 Cable Indicator Design

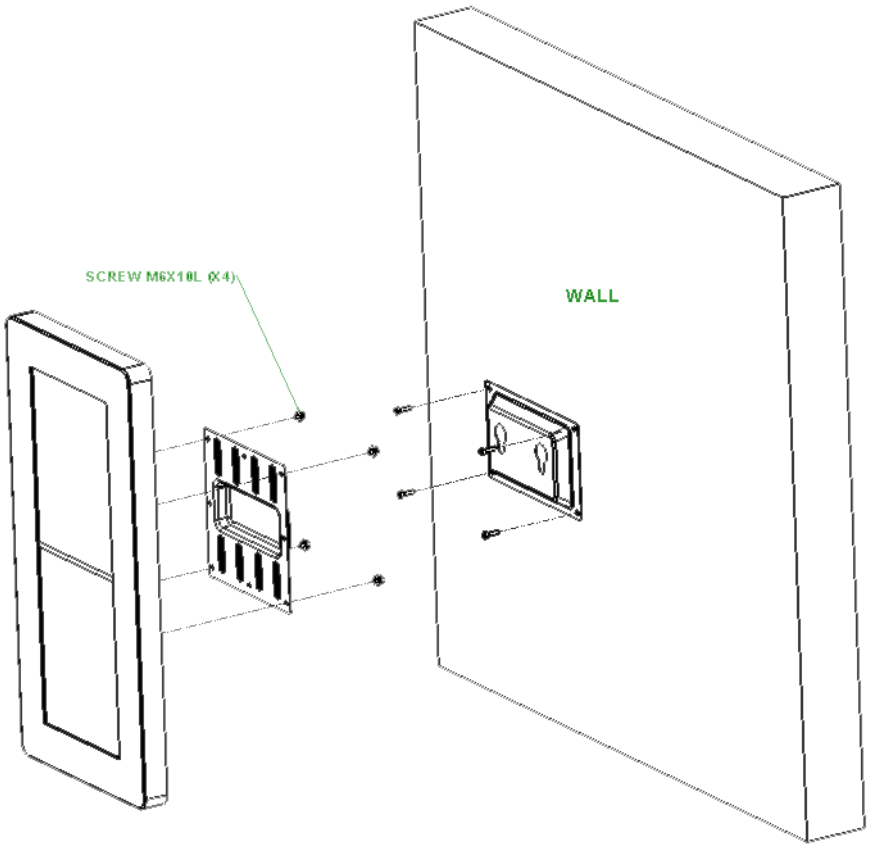
- White printing
- Icon image: “POWER” & “SIGNAL”



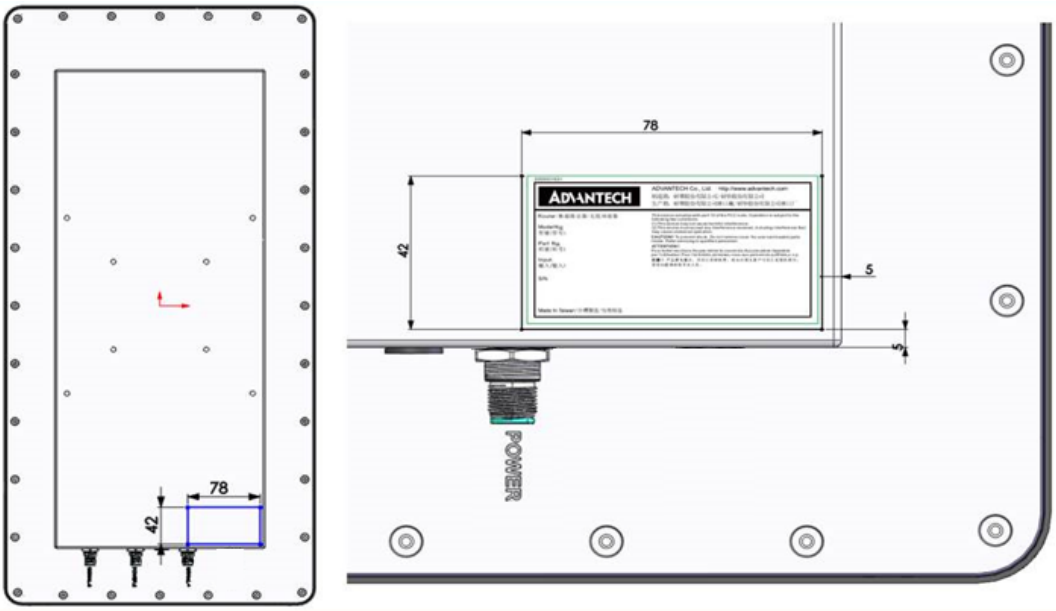
2.2.3 Mounting Hole Design

- VESA MOUNT: 100mm x 100mm/200mm x 200mm
- SCREW: M6X10L





2.2.4 Label Design



Chapter 3

System Architecture and Configuration

3.1 System Architecture

Table 3.1: System Architecture			
No	Device	OS	Version
1	ARK-1123H / ARK-2250L with DeviceOn/ePaper	Ubuntu	18.04
2	EPD-770	NA	NA

1. One ARK-1123H can support 20pcs EPD-770
2. One ARK-2250L can support 500pcs EPD-770
3. DeviceOn/ePaper installed on ARK
   - DeviceOn/ePaper can perform EPD device actions and control EPD series devices
   - Device can periodically report status back to DeviceOn/ePaper.
4. EPD Device: 1pc EPD-770 consists of 2 pcs 13.3” ePaper which be control by Deviceon/ePaper through below connection and User may choose following option:
   - WAN: EPD-770 can be connected via Ethernet cable to join local network
   - Wi-Fi: EPD-770 can be connected through local Wi-Fi AP.
   - LTE: EPD-770 can be connected through LTE after SIM card plug-in

3.2 System Configuration & WEB GUI Login

Below is the configuration list. Users may use a computer to connect to EPD-770 through LAN port.

Table 3.2: Configuration List	
Category	Function
Status	Overview
	System log
	Kernel log
	Processes
	Real-time graphic
System	System
	Administration
	Backup/Flash Firmware
	Reboot
Security	Remote Management
Network	Ethernet
	Wi-Fi
	Diagnostics
Cellular	Status
	Configuration
DeviceOn/ePaper	Device on-boarding
Logout	

3.3 WEB Login & Network Configuration

1. Once connected to the LAN port, users can start configuration with the following steps.
2. To access WEB GUI, paste http://192.168.1.1 into the browser tool
3. The default WEB GUI login username and password:
   Username: root
   Password: ePaper

Figure 3.1 WEB Login

4. Users can setup network configurations

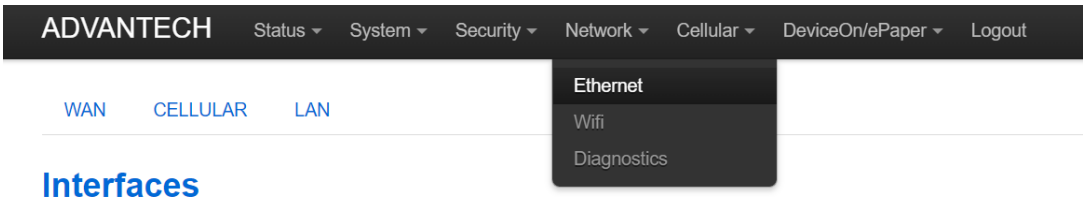


Figure 3.2 Network Configuration

3.3.1 WAN Configuration

1. Visit ***Network*** → ***Ethernet***
2. Select ***WAN*** → ***Edit***.

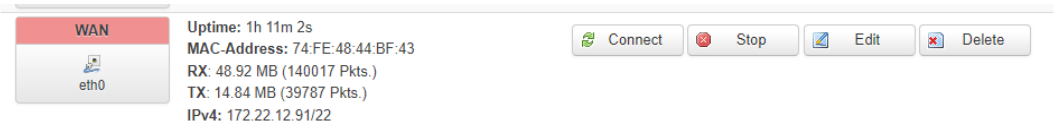


Figure 3.3 WAN Edited

3. Select ***General Setup*** → ***Protocol***.

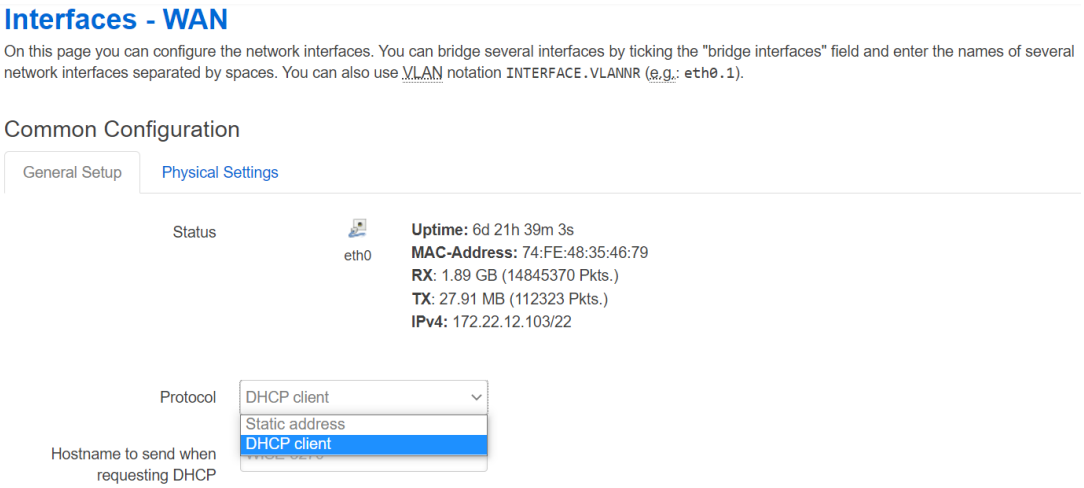


Figure 3.4 Protocol Setup

3.3.1.1 Static Address

When a user chooses a static address, the router will activate a static IP provided by the Ethernet WAN port. Users need to configure the related IPv4 address, the IPv4 netmask, the IPv4 router, and the DNS servers.

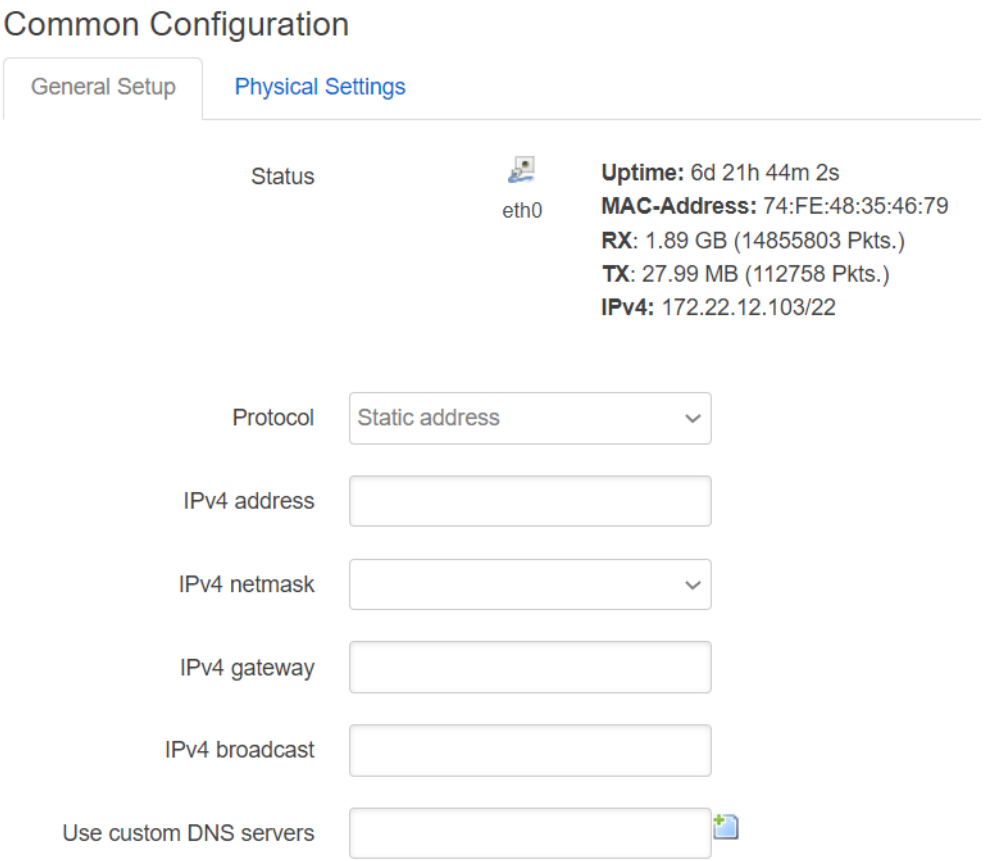


Figure 3.5 Setup Static Address

3.3.1.2 Select -> DHCP Client.

The DHCP server setup-related settings are displayed below:

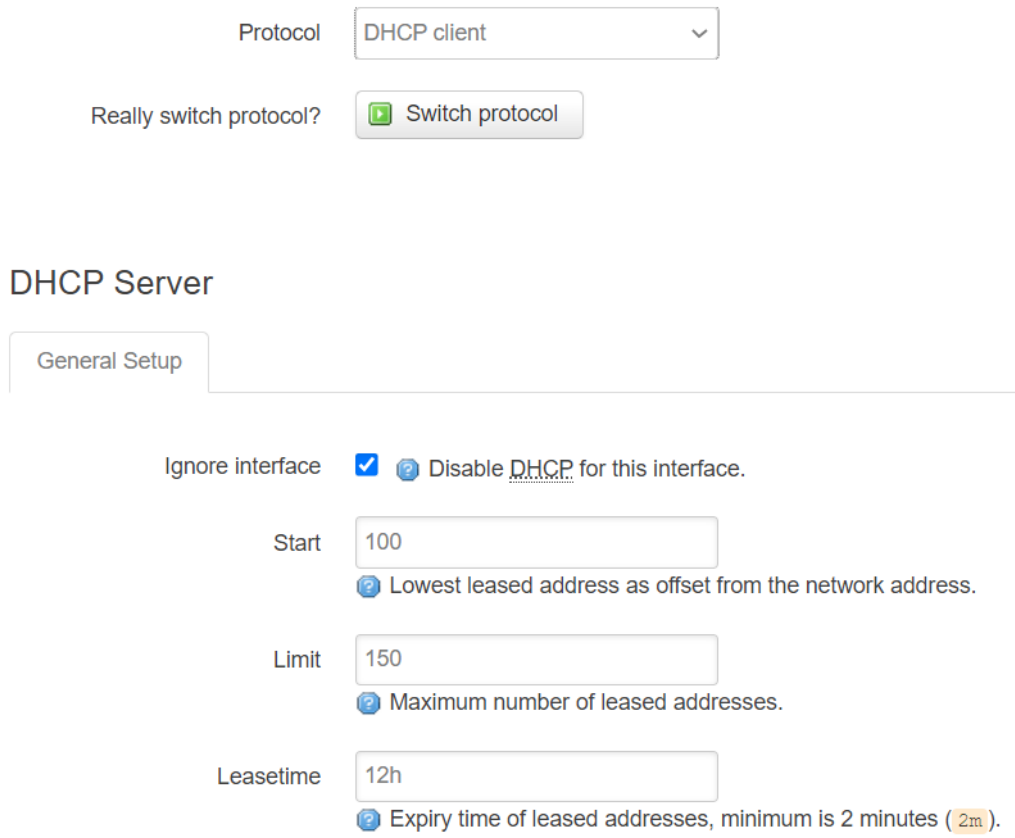


Figure 3.6 Select -> DHCP Client

3.3.2 WIFI Configuration

Visit ***Network*** → ***WI-FI*** to check WI-FI function status.

- **Wireless Overview**
  It will show 2.4Ghz Wi-Fi SSID. The **Edit** button directs to a detailed Wi-Fi settings page.
- **Associated Stations**
  It will display the associated Wi-Fi hotspot, including 2.4Ghz stations.

Figure 3.7 Wi-Fi Settings for Access Point and Hotspot Mode

- To setup EPD-770 up-link to a 2.4GHz Wi-Fi network, make it function as a Wi-Fi hotspot. This results in WISE-3200's WAN port receiving an IP from up-link Network via DHCP protocol.

1. Click ***Scan***. EPD-770 will start scan via a 2.4GHz frequency and list the available Wi-Fi networks to join.

Figure 3.8 Step2_Click Scan

2. Click ***Join Network***. After scanning, users can choose to connect to access points.

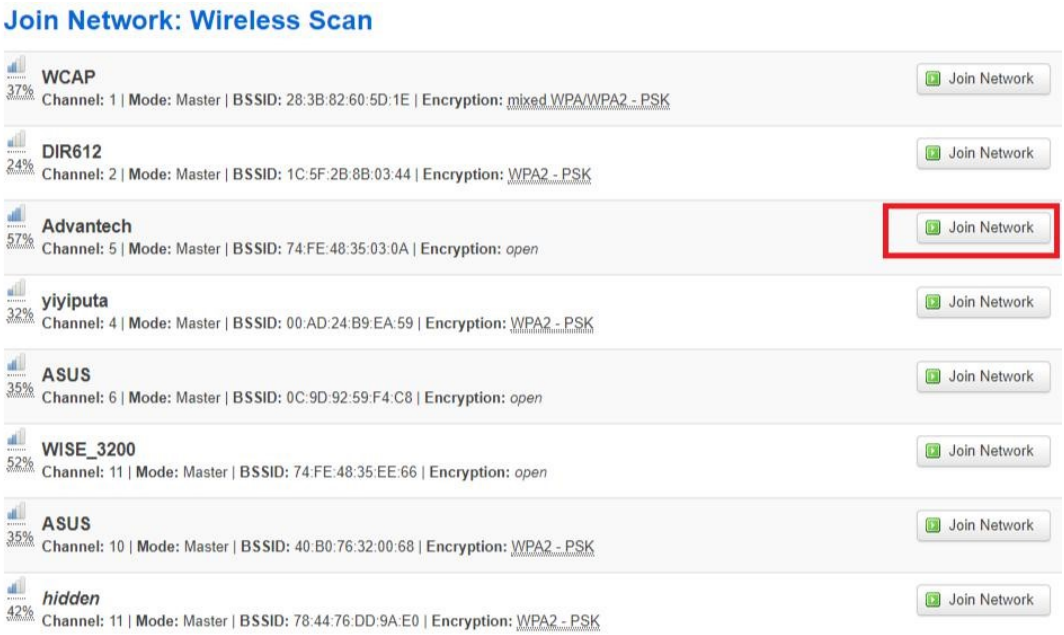


Figure 3.9 Step3_Click Join Network

3. Modify join network settings for WPA passphrase. Input the password to connect to secure networks.

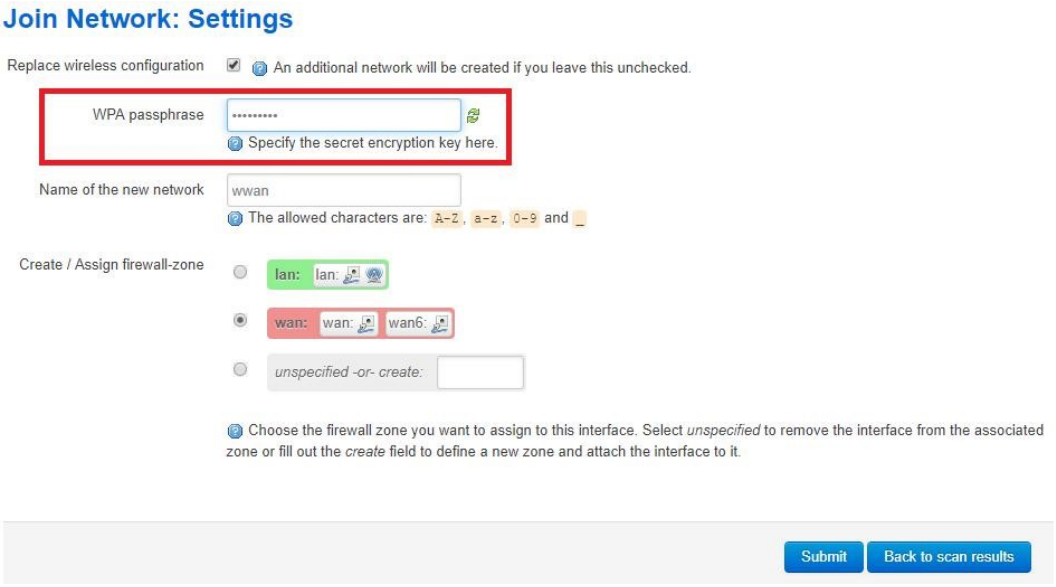


Figure 3.10 Step4_Modify Join Network Settings

4. After completing the above settings, EPD-770 connection mode changes in the client.

3.4 Cellular Configuration

Only the EPD-770-103 model features a cellular configuration. It displays information for the LTE module and the system status.

3.4.1 Status

After users insert a SIM card into the slot in the EPD-770, LTE module information and SIM card connection status will be displayed. Users can check the connection status using the diagnostic tool.

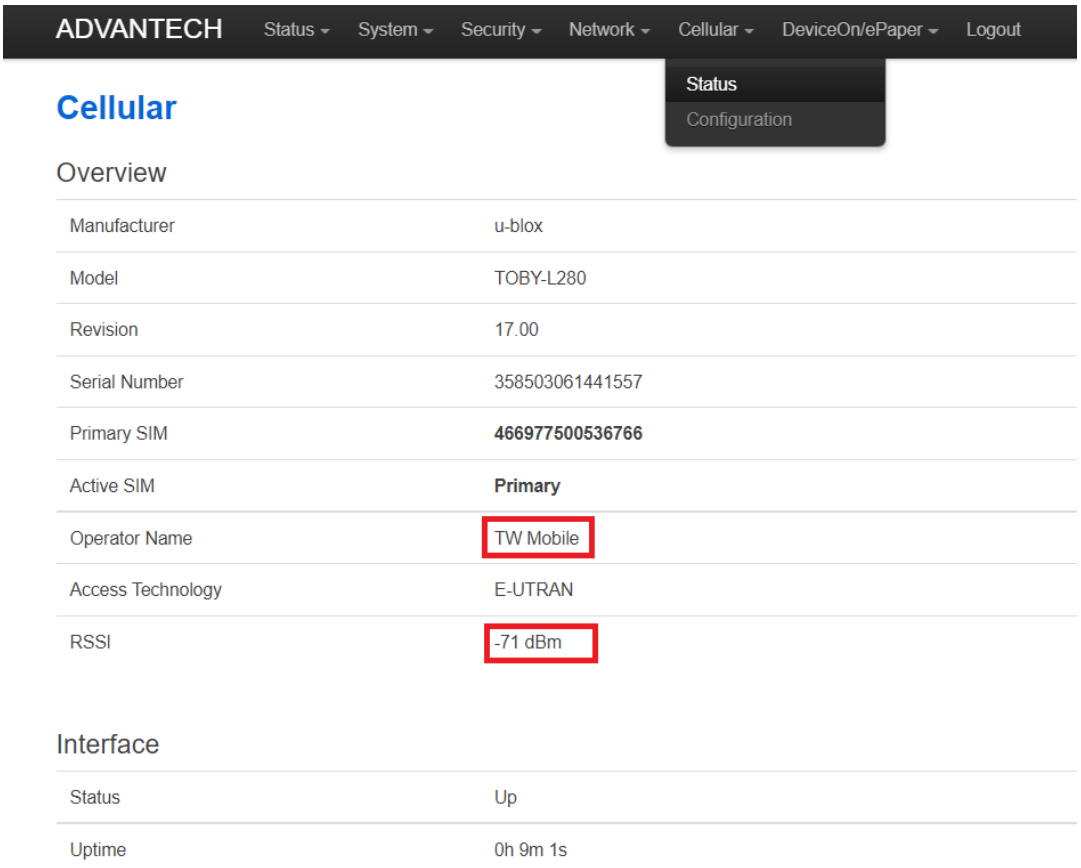


Figure 3.11 Status of EPD-770 Configuration

3.4.2 Configuration

1. **General page:** This option should not be changed.

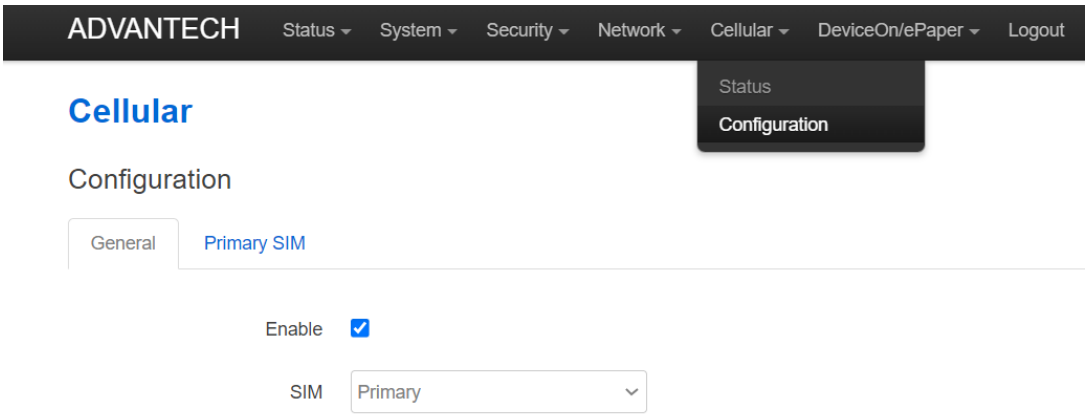


Figure 3.12 Cellular Configuration

2. **Primary SIM page:** Users should change the APN value to that of a local telecom SIM card. The SIM card pin code depends on user settings.
3. This will auto-connect to the Internet after the user enters SIM card information and clicks on save & apply.
   Available options are detailed below:
   - PIN: The PIN code is determined by local telecom services and has varying values.
   - PUK: The personal unblocking key (PUK) is used to unlock the system if users enter an incorrect PIN more than three times. In these cases, the SIM card will be locked at the same time. Users can contact the telecom operator to get a set of PUKs. Users then enter them into the correct field and unlock the system.
   - APN: User should get the APN from the SIM card's local telecom provider.
   - USER: Users should get the username from the SIM card's local telecom provider.
   - PASS: User should get the password from the SIM card's local telecom provider.
   - Operator Selection Mode: This option suggests using Auto-select unless the user knows how to configure options

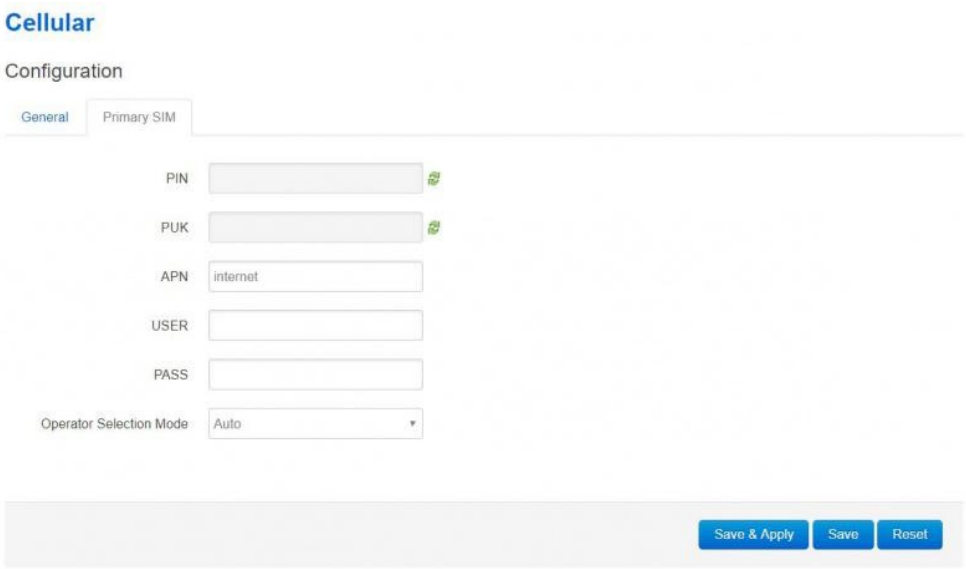


Figure 3.13 Primary SIM Page of Cellular Configuration

3.5 System

1. Visit ***System*** → ***System*** to manage the hostname and time settings of the router.

- **Local Time**
  This displays the time of the router.
- **Hostname**
  Hostname of a specific router.
- **Timezone**
  Timezone settings for the router.
- **Enable NTP client**
  To enable/disable SNTP client function.
- **NTP server candidates**
  Router will perform time synchronization with SNTP server configurations here.

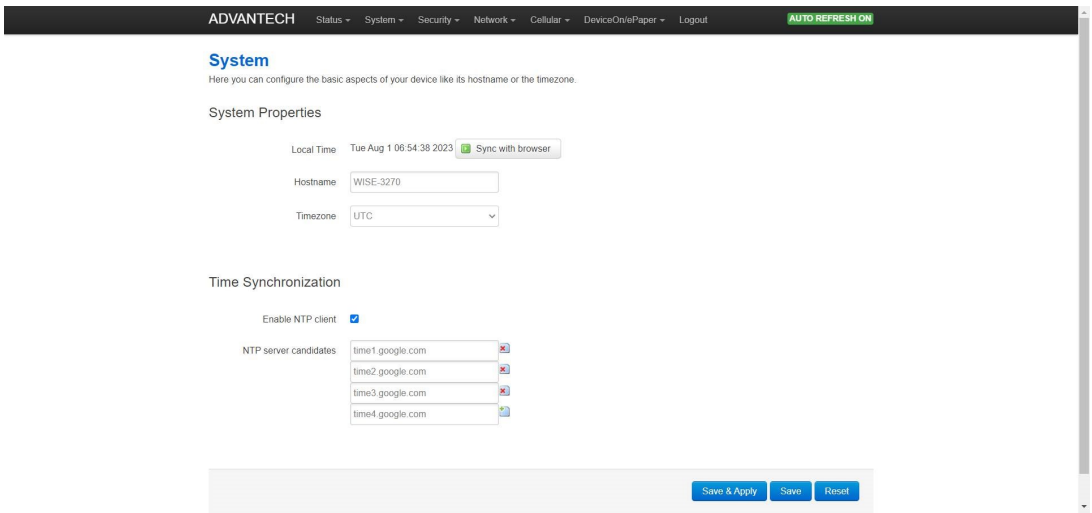


Figure 3.14 System

3.5.1 Administration

Visit ***System*** → ***Administration*** to change the router password.

- **Old Password**
  Input the original password to authenticate a password change.
- **Password and Confirmation**
  Input the new password twice to confirm a password change.

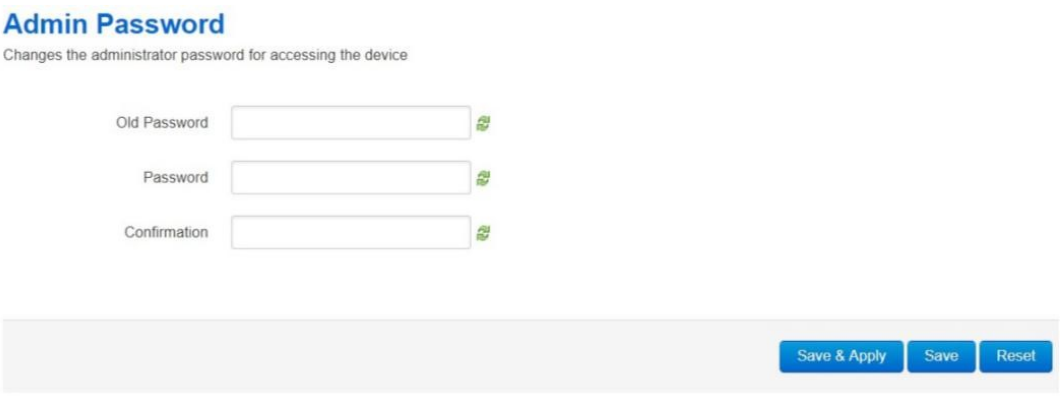


Figure 3.15 Administration

3.5.2 Backup / Flash Firmware

Visit ***System*** → ***Backup / Flash Firmware*** to manage router configuration files and perform firmware upgrades.

- **Generate archive**
  This is used to backup configuration files to a host PC
- **Perform reset**
  After performing a factory reset, all router configurations will be reset to factory defaults.
- **Upload archive**
  To restore configuration from host PC to the router

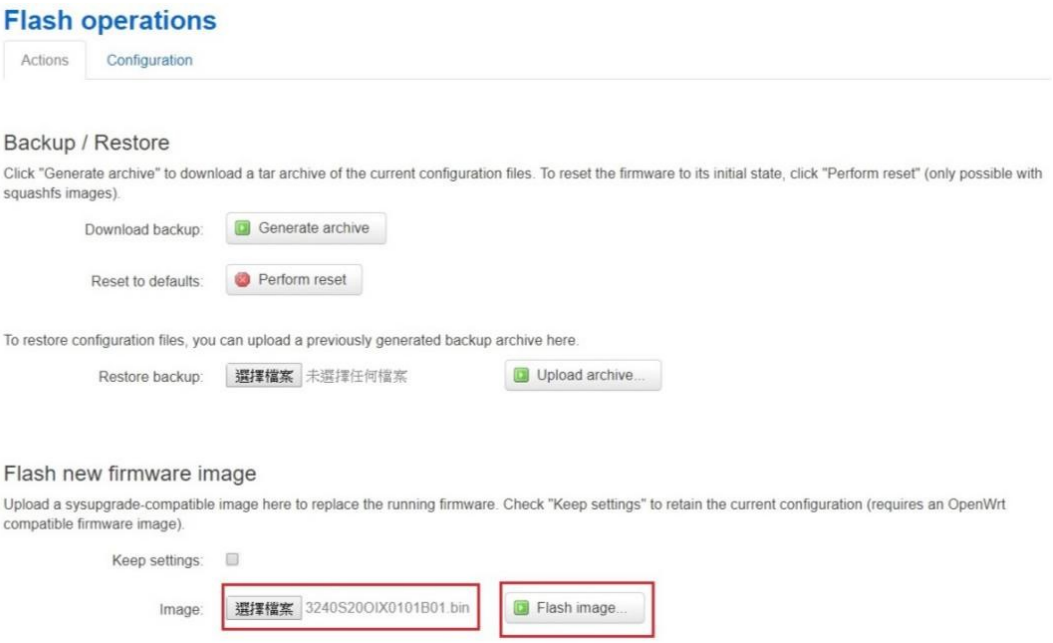


Figure 3.16 Backup / Flash Firmware

- **Keep settings**
  Users can choose to perform firmware upgrades without resetting the configurations. For formal use, we advise against the keeping of settings as new functions may need to load new settings.
- **Flash image**
  To upgrade firmware, please select the upgraded firmware and press the “flash image” button.
- **Flash firmware-verify**
  After selecting the flash image, the router will compute the MD5CHECKSUM for checking, and ask the user to proceed or cancel.

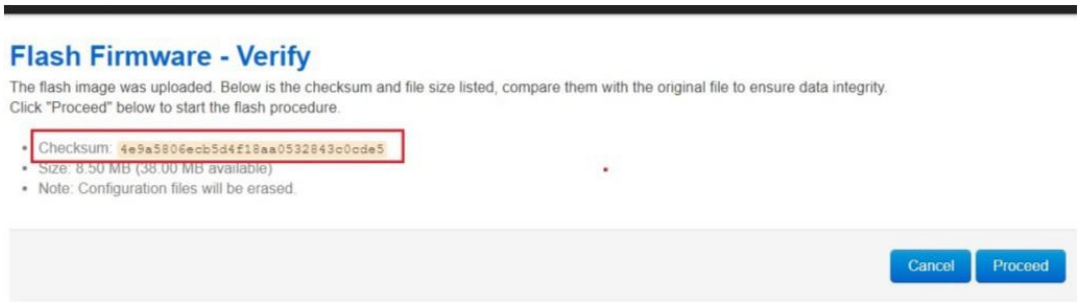


Figure 3.17 Flash Firmware-Verify

3.5.3 Reboot

Press ‘perform reboot’ to initiate rebooting.

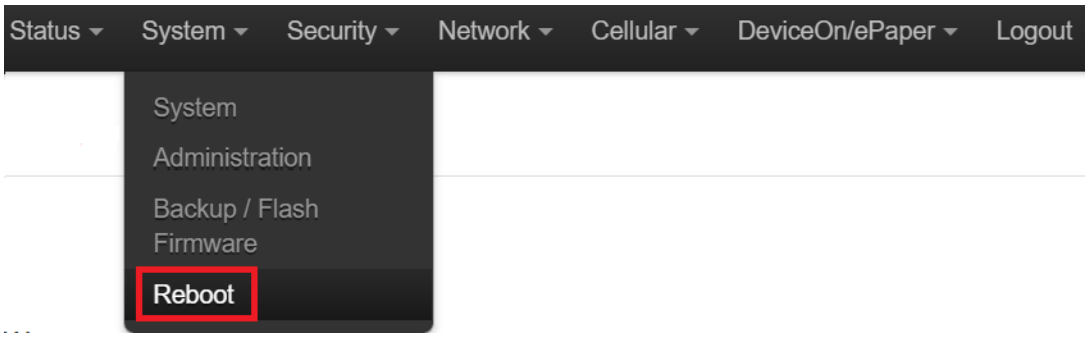


Figure 3.18 Reboot

3.5.4 Remote Management

Visit ***Security → Remote Management***

- **3.12.1.1 HTTP / Port 80 (HTTPS / Port 443, SSH / Port 22, MQTT / Port 1883)**
  This is used to enable/disable port access from the WAN zone interface. The WAN zone interface includes an Ethernet WAN and a 4G module. After enabling the port on the WAN interface, the external host can access related services by running a router.

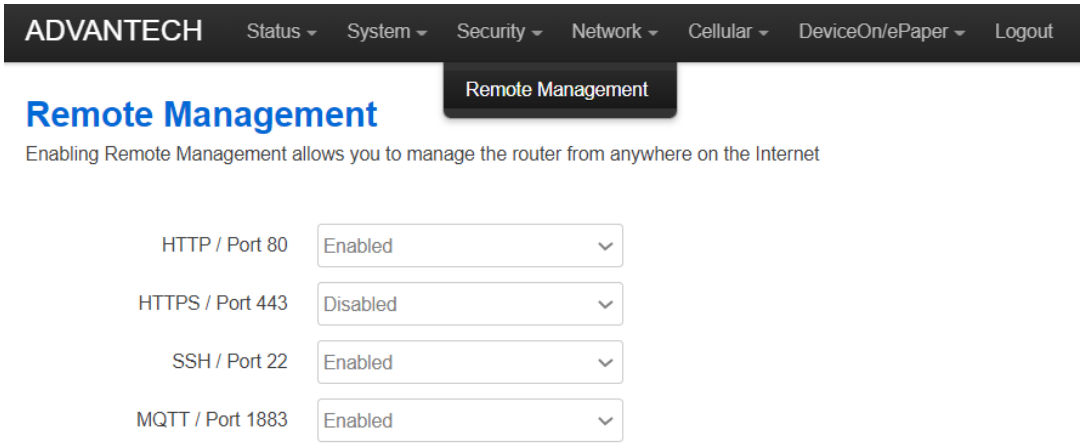


Figure 3.19 Remote Management

3.6 Wi-Fi Configuration

Visit ***Network*** → ***WI-FI*** to set a wireless Interface. Scan another Wi-Fi router in your environment or set up Wi-Fi AP mode. Default setting is Wi-Fi AP mode.

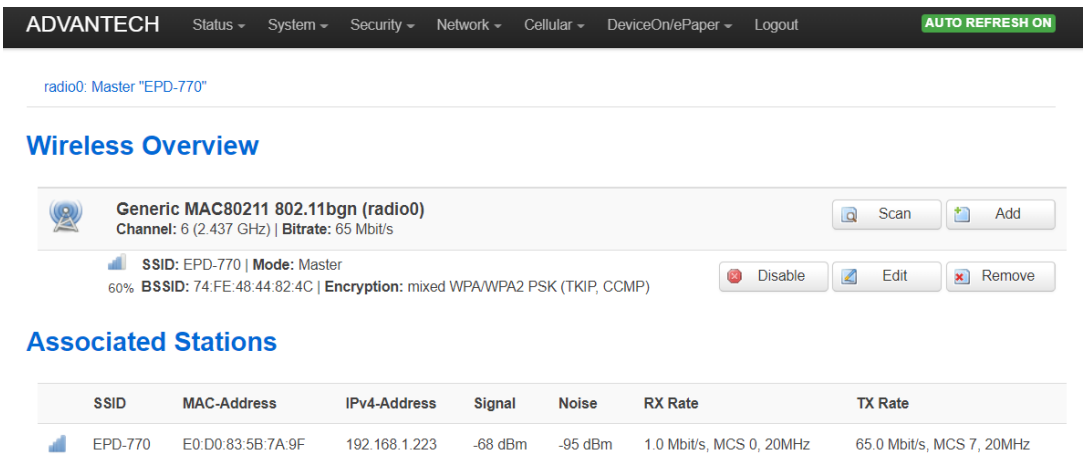


Figure 3.20 Wi-Fi Configuration

3.6.1 Wi-Fi Configuration: General Setup

- **Edit Wi-FI AP mode**
  The user can edit Wi-Fi AP parameter.
- **Wireless network is enabled**
  To enable/disable the Wi-Fi SSID.

- **Channel**
  Users can choose the desired channel or leave it on auto to automatically select channels.
- **Transmit Power**
  The maximum power is 20dBm mapped to 100%. Users can choose to lower the transmission power.
- **ESSID**
  The SSID is for this wireless interfaces.
- **Mode**
  Users can configure this SSID to be AP, Client or WDS-AP, WDS-Client
- **Hide ESSID**
  Users can choose to hide SSID explored by clients.

Step 1. Click the "Edit" button.

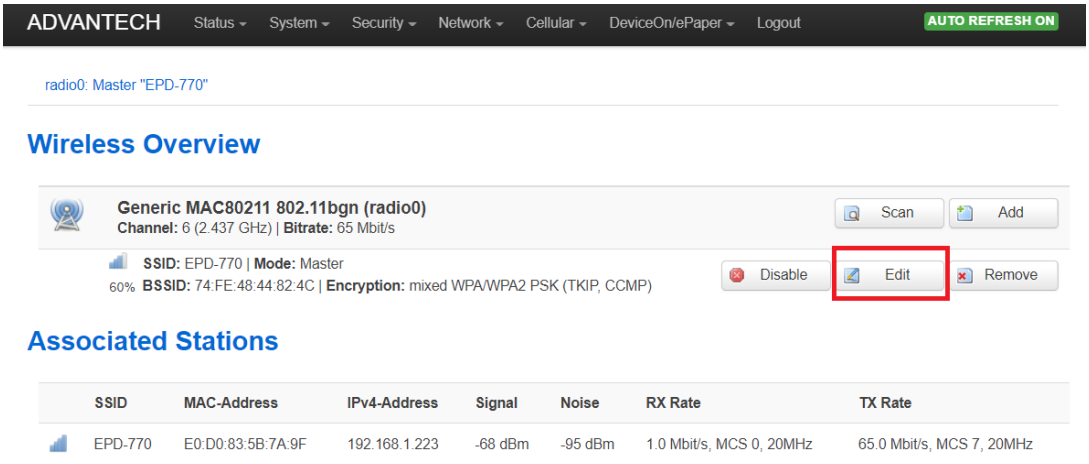


Figure 3.21 Step1_Click "Edit" button

Step 2. Change "channel", "Transmit Power".

* Note: Transmit power will follow the certification testing result.

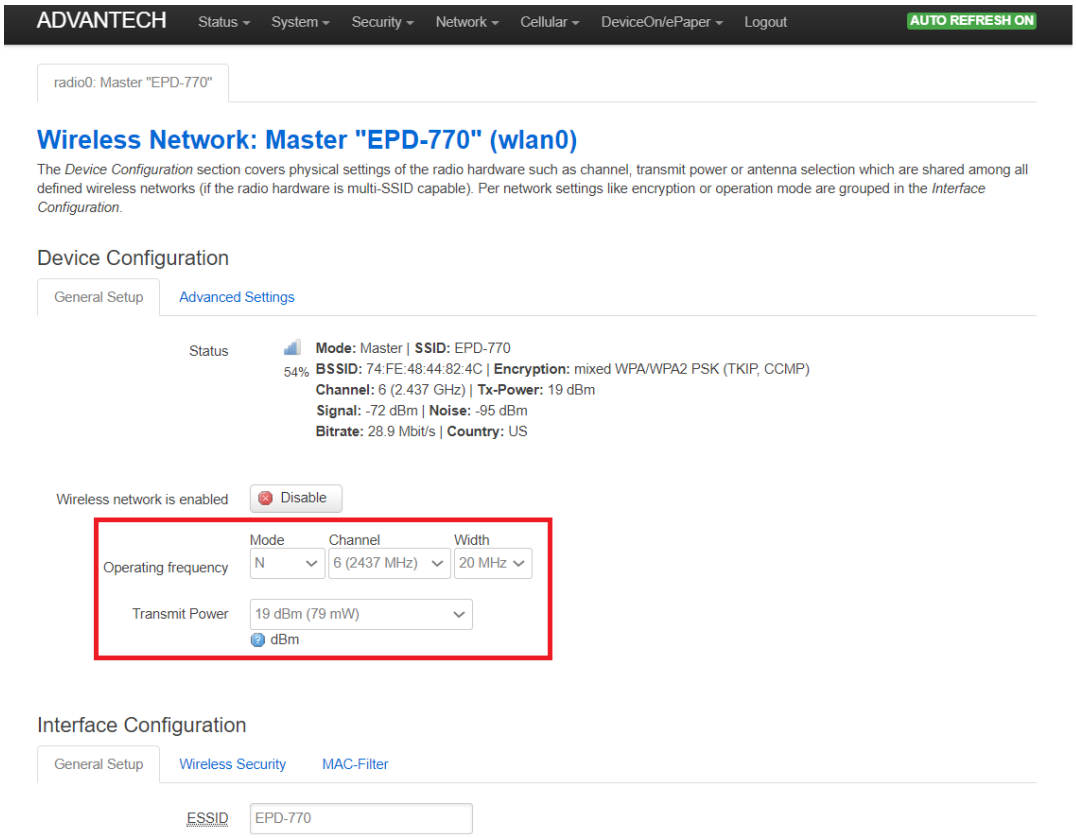


Figure 3.22 Step2_Change "Channel", "Transmit Power"

Step 3. Change SSID, the network setting to LAN, and click "Wireless Security."

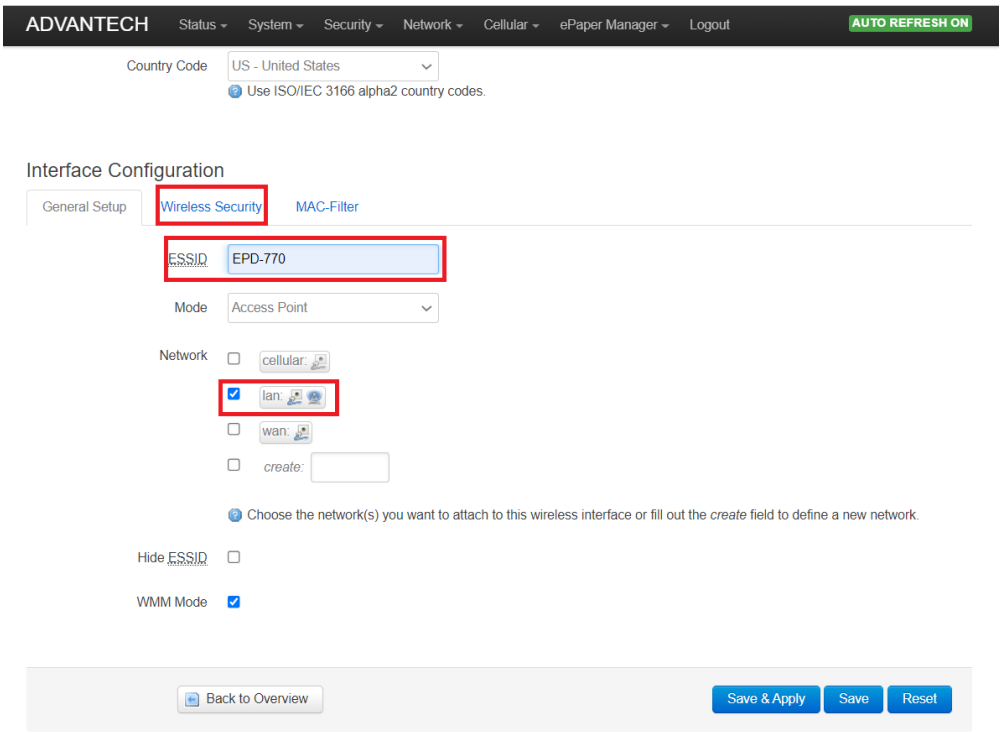


Figure 3.23 Step3_Change SSID, Network Setting, and Wireless Security

Step 4. The encryption should be set as WPA-PSK and the string length of the key must be more than 8

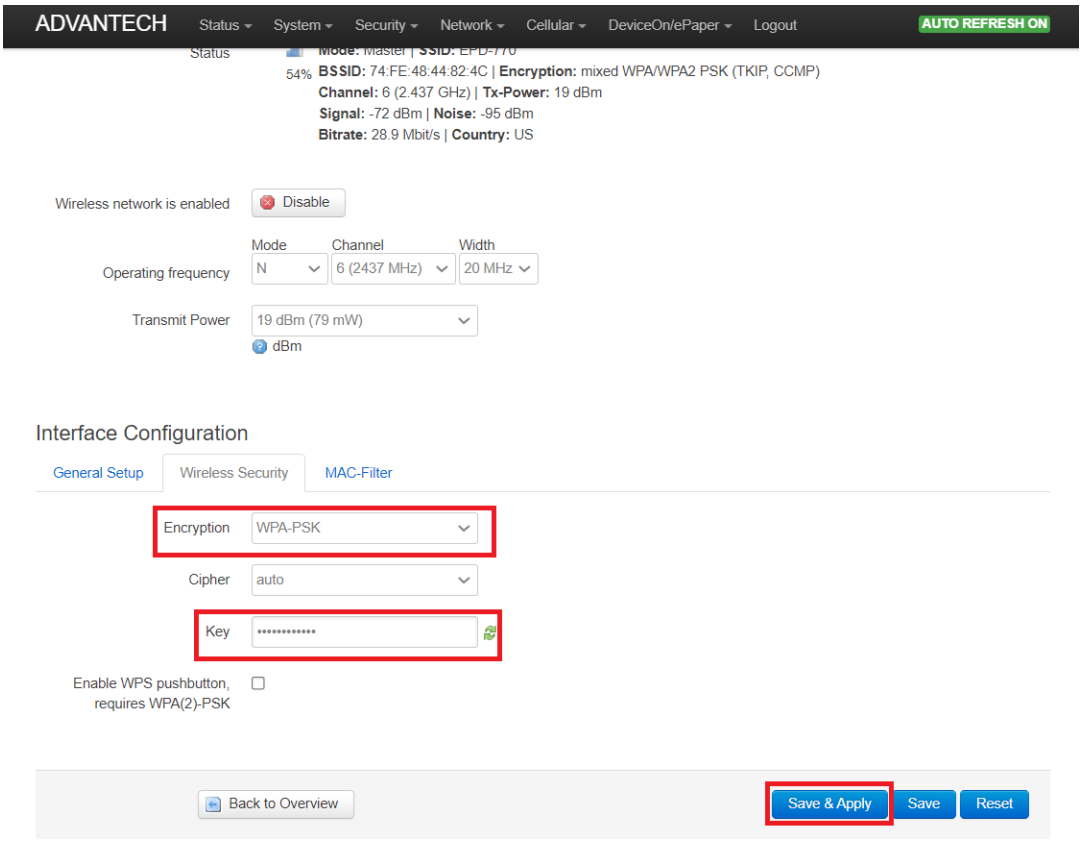


Figure 3.24 Step4_Setup for Encryption and Key

3.6.2 Wi-Fi Configuration: Advanced Setup

Visit ***Network → Wi-Fi → Edit Button → Device Configuration → Advanced Settings tab*** to check or modify advanced settings for the device.

- **Mode**
  This is the operating mode for Wi-Fi interfaces. It supports auto, 802.11b,802.11b+g, 802.11g, 802.11g+n and, 802.11n for 2.4Ghz bands.

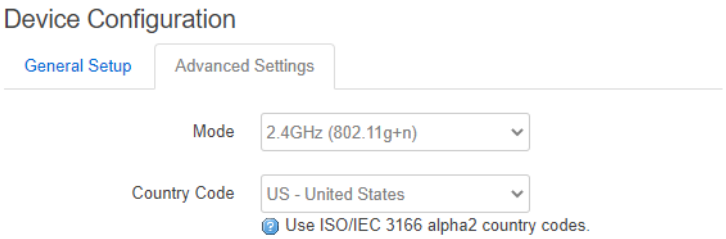


Figure 3.25 Wi-Fi Configuration_Advanced Setup

3.6.3 Wireless Security

Visit ***Network → Wi-Fi → Edit Button → Interface Configuration → Wireless Security tab*** to check or modify security settings of the interface level.

Figure 3.26 Wireless Security

- **Encryption**
  The Wi-Fi security settings support no encryption, WEP open system, WEP shared key, WPA-PSK, WPA2-PSK, and WPA-PSK/WPA2-PSK mixed mode
- **Cipher / Key**
  This is the cipher method and key value for WPA-PSK, WPA2-PSK, and WPA-PSK/WPA2-PSK mixed mode. The cipher method supports auto, Force CCMP(AES), Force GCMP , Force TKIP and CCMP(AES).

3.6.4 MAC Filter

Visit ***Network → WI-FI → Edit Button → Interface Configuration → MAC Filter tab*** to check or modify Wi-Fi hotspot MAC filter settings for the interface level.

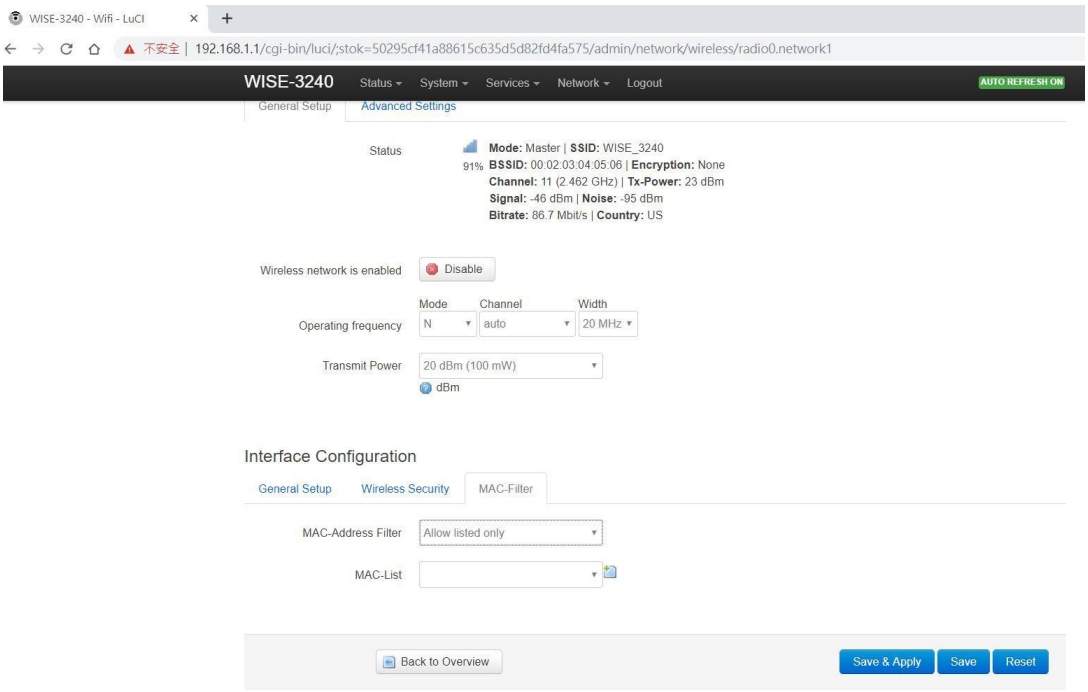


Figure 3.27 MAC Filter

- **MAC Address Filter**
  This chip-level MAC filter is used to drop hotspot traffic. It supports disable as default, allow listed only (white list), and allow all except listed (black list).
- **MAC List**
  To choose the MAC addresses to list.

3.6.5 Diagnostics

Visit ***Network*** → ***Diagnostics***

Ping, Traceroute and Nslookup diagnostics tools.

Figure 3.28 Diagnostics

3.6.6 DeviceOn/ePaper

1. Login to Deviceon/ePaper and click “Device On-boarding”:

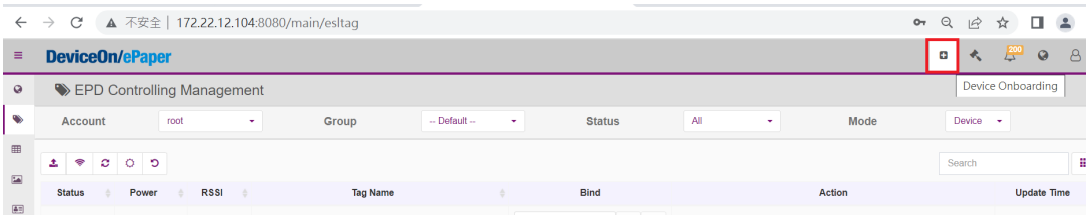


Figure 3.29 Device Onboarding

2. Copy “Connection URL”, “Username” and “Password” settings.

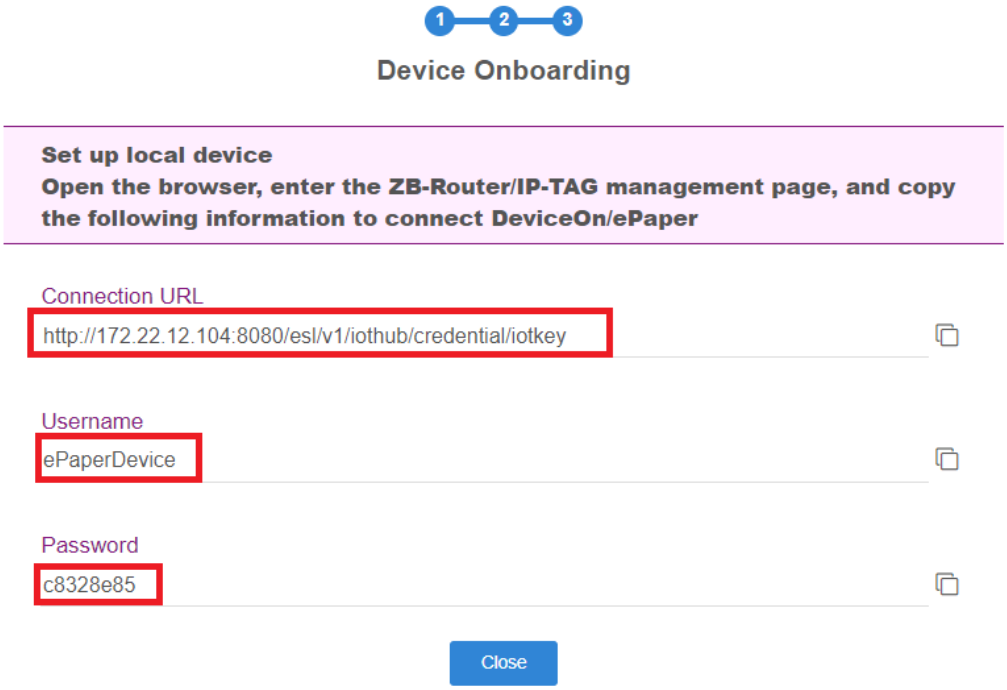


Figure 3.30 Device Onboarding Setting

3. Visit DeviceOn/ePaper → Device Onboarding

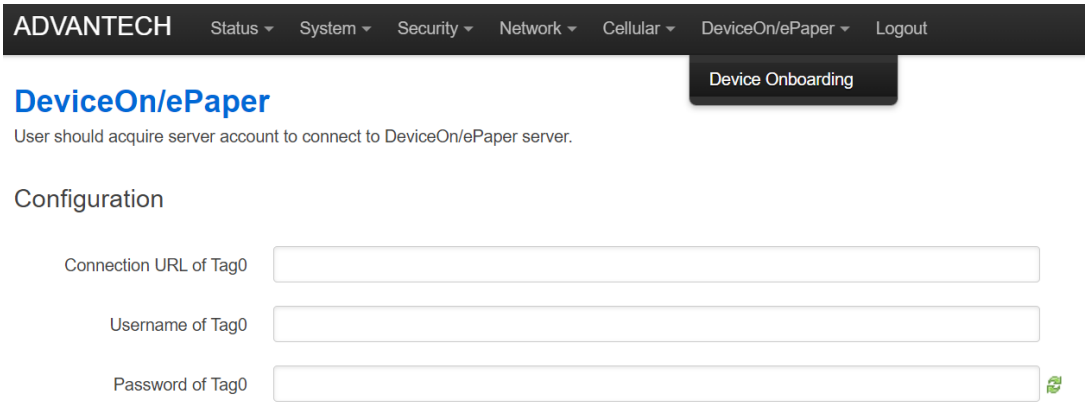


Figure 3.31 Fill out below information from DeviceOn/ePaper server

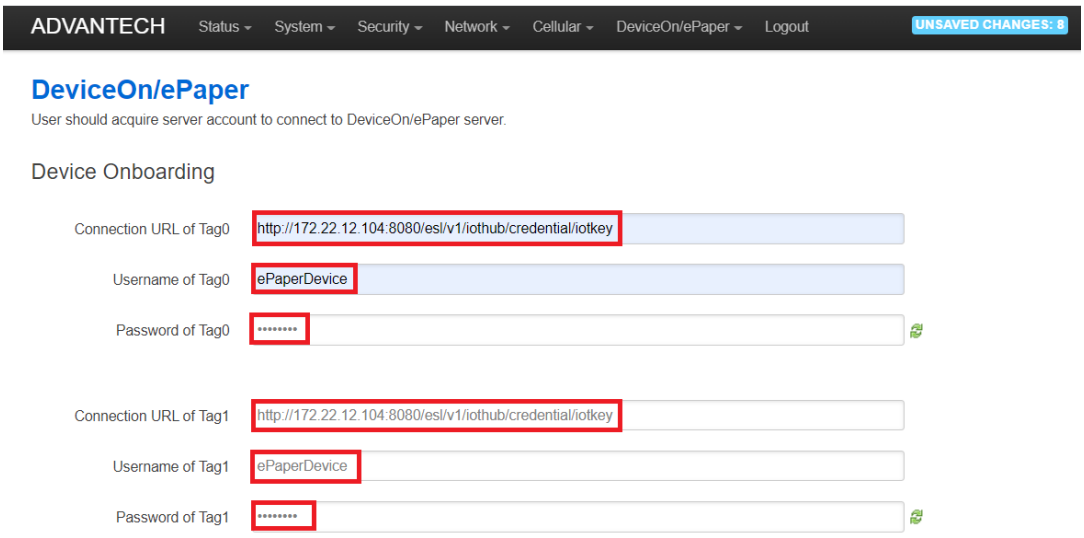


Figure 3.32 Device Onboarding Setting on EPD-770

Chapter 4

EPD-770 in DeviceOn/ ePaper

4.1 EPD-770 with DeviceOn/ePaper Solution

After completing the hardware establishment of the EPD device, system settings is the next step. DeviceOn/ePaper provides a total solution for end users to import EPD data, design EPD templates, and manage EPD devices easily.

Table 4.1: DeviceOn/ePaper Main Feature List		
1	Overview	System dashboard
2	EPD controller	Control & Manage EPD device and association with target
3	Item Data	Dynamic data management for EPD device
4	Gallery	Dynamic image management for EPD device
5	Device list	Router/EPD devices management & import
6	Template	EPD image design and generation
7	White list setting	EPD white list
8	OTA	Firmware upgrade
9	Setting	System management including user account, device group, server activation, and email notify
10	Document	Online document and the testing tool for RESTful API

4.2 Preparation

4.2.1 Hardware Component List

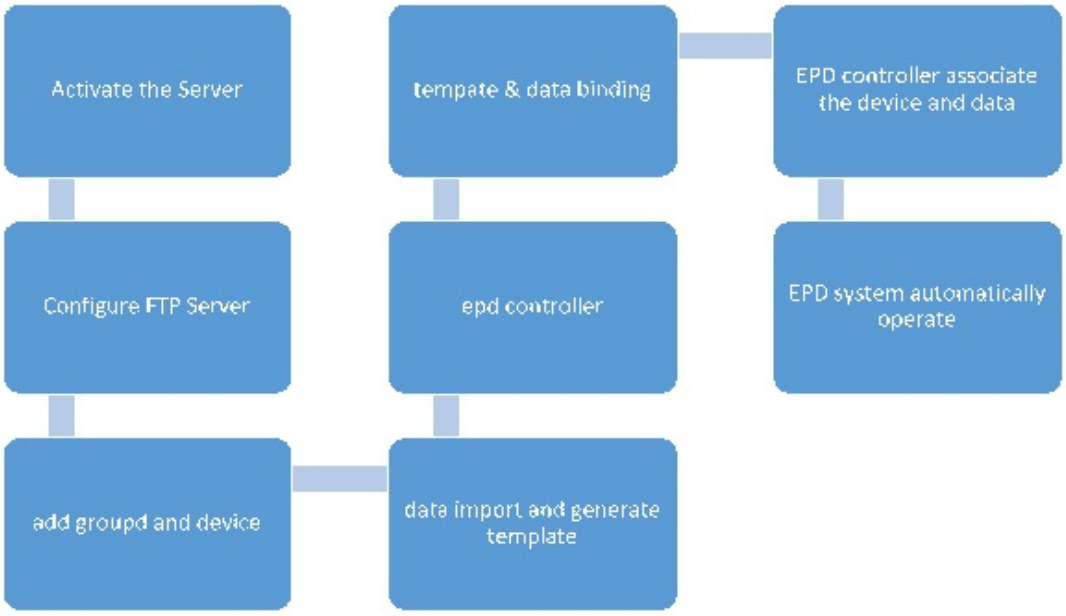
1. Advantech embedded computer: ARK1123H
2. Advantech EPD devices

4.2.2 Software Component List

1. DeviceOn/ePaper installation & license on ARK-1123H / ARK-2250L
2. 500 connection licenses on ARK1123H
3. Recommended browser: Chrome version 75.0.3770.100 (official version) (64-bit)

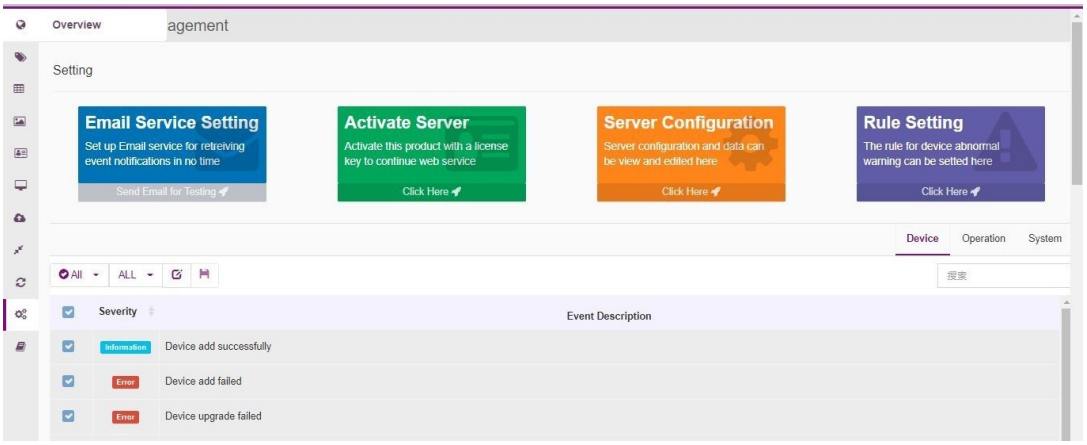
4.2.3 DeviceOn/ePaper Setup on ARK

The following diagram demonstrates the process of ePaper Manager operations.

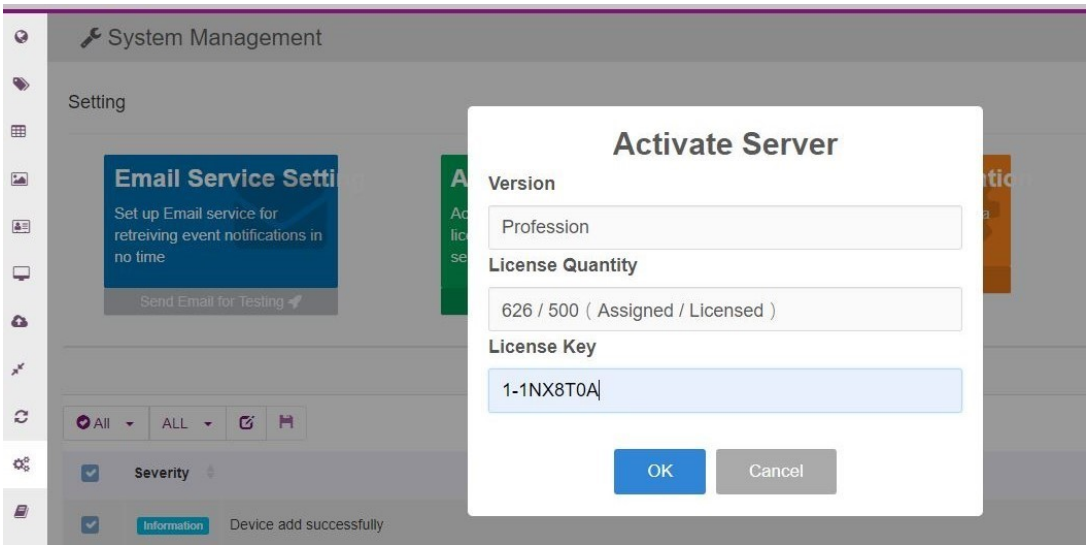


4.2.3.1 Activate the Server

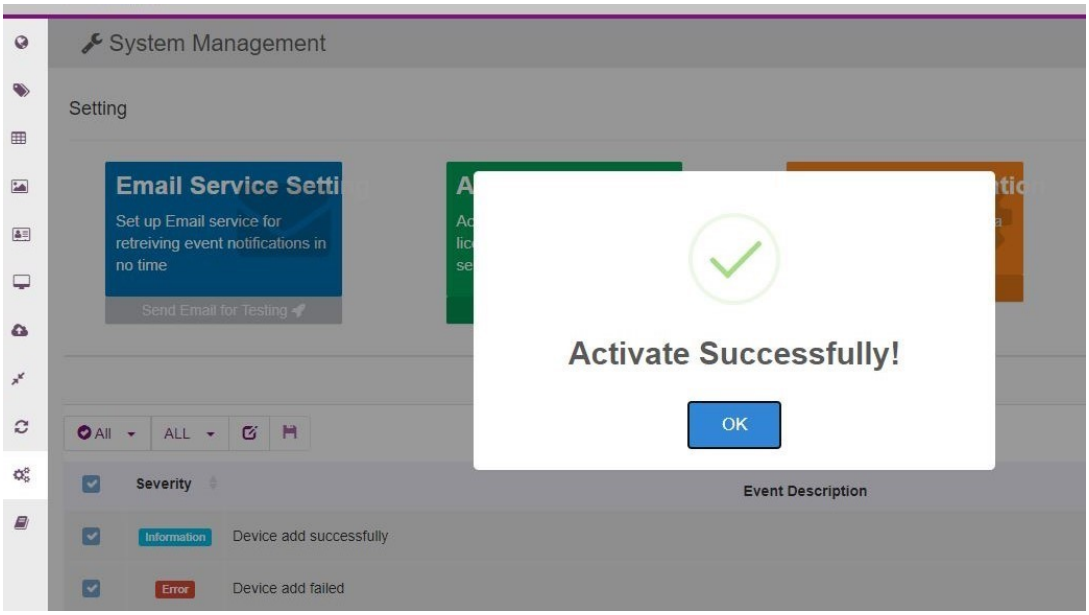
1. Please click “**System**” in “**Setting**” on DeviceOn/ePaper.



2. Click “**Activate Server**” and enter the license key provided in the sales package.

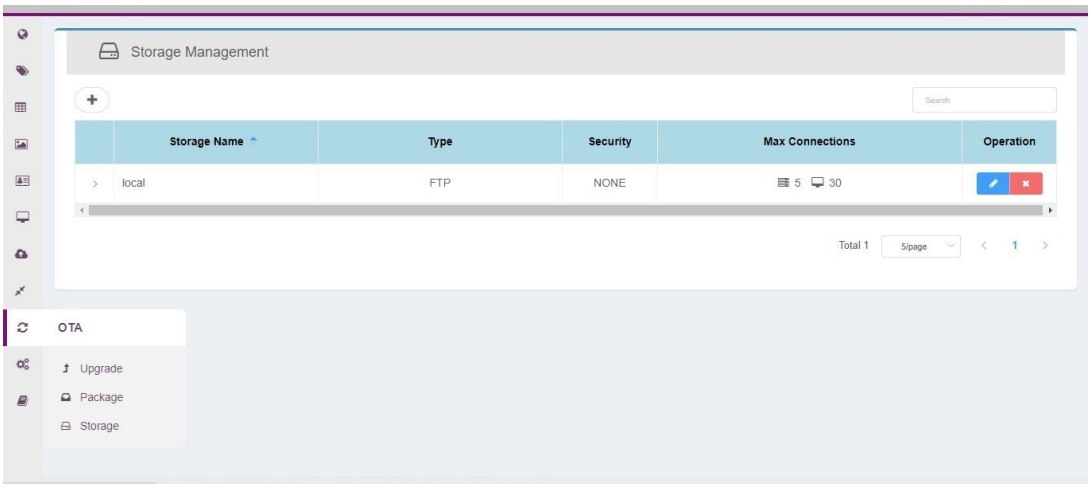


3. Then the system will show “**Activate Successfully**”.

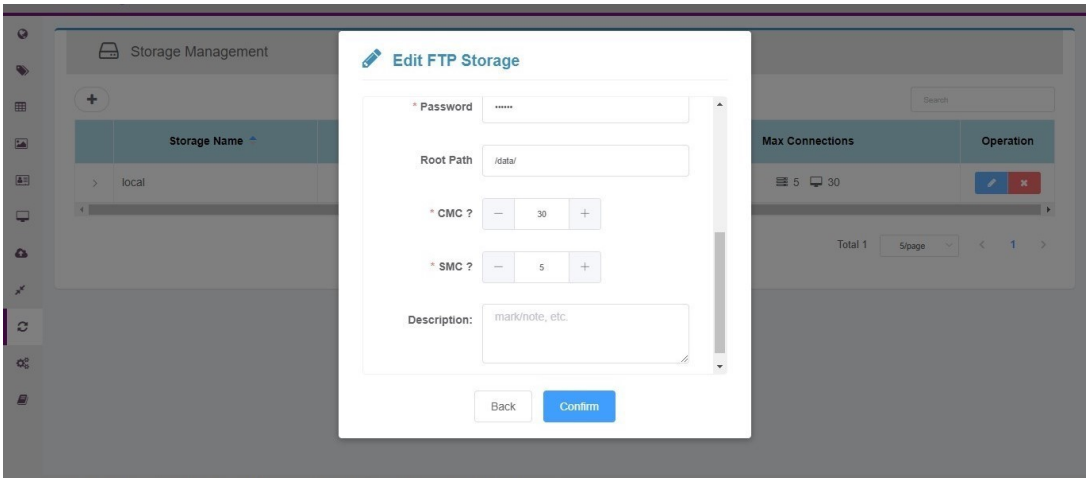


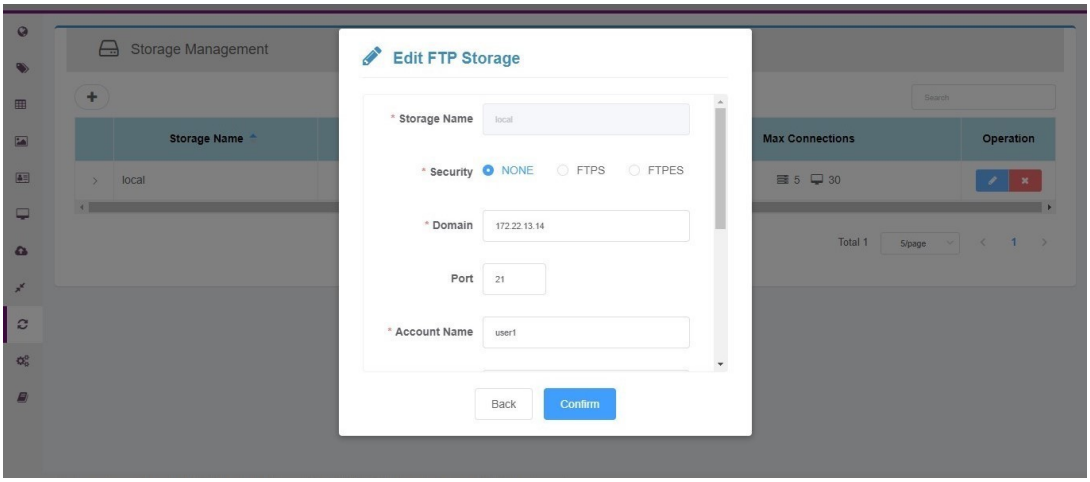
4.2.3.2 How to Configure Your FTP Server on DeviceOn/ePaper

1. Click “**Storage**” in “**OTA**” and image delivery.

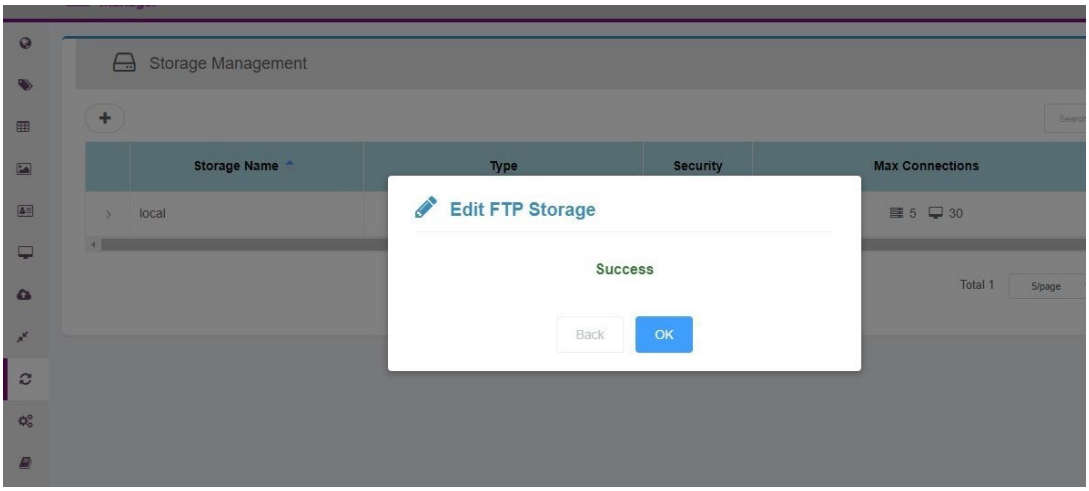


2. Click “**Edit**” to input the storage name, security, domain, port, and account name as shown below.
   Storage name: local [default]
   Security: NONE
   Domain: [Your Server IP]
   Port: 21
   Account name: user1 [default]
   Password:



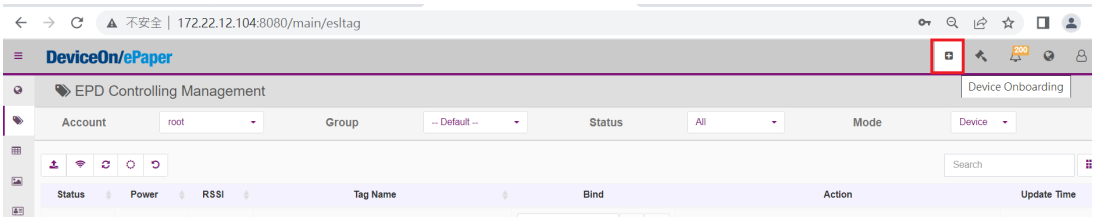


3. Scroll down to choose the figures of “**CMC**” and “**SMC**”, and click “**Confirm”**.
4. If successful, you will see “**Success**” and click “**OK**”.



4.3 Connect EPD-770 to DeviceOn/ePaper

1. Click "**Device Onboarding**" as follows



2. Copy "Connection URL", "Username" and "Password" settings shown on DeviceOn/ePaper as follows to EPD-770 as described as Section 3.7.4.

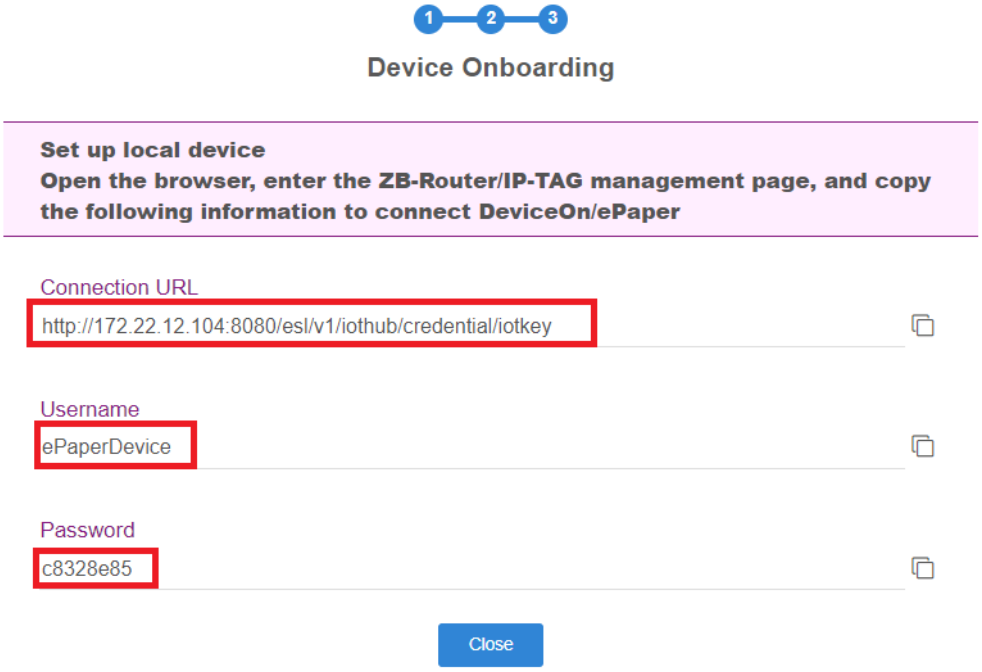
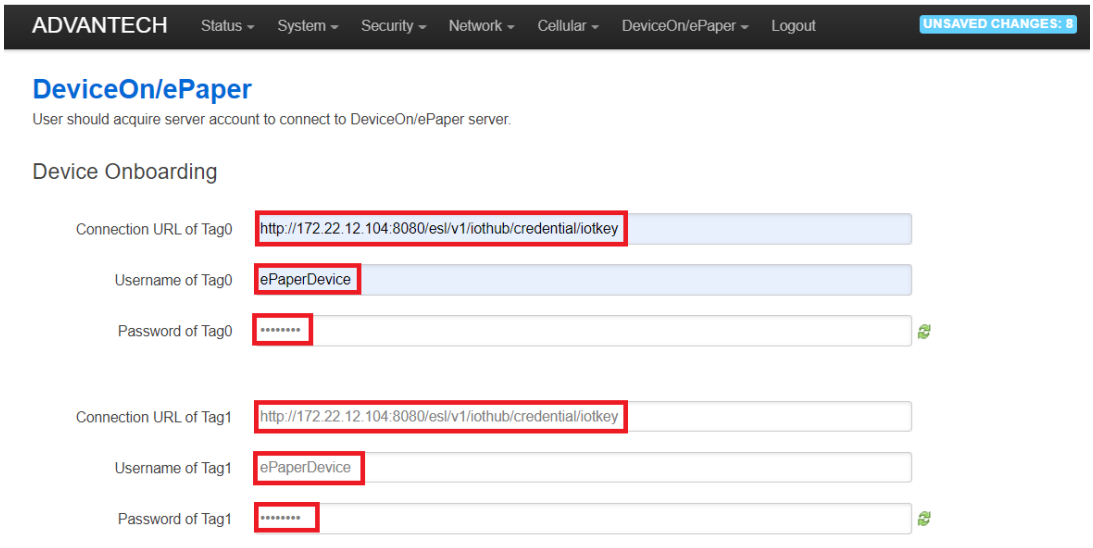


Figure 4.1 Device Onboarding Setting

3. Visit **EPD-770 over DeviceOn/ePaper → Device Onboarding**
   Please set following settings refer to above information from **Figure 4.3.2**



4.4 Integrate EPD APIs into Your System

We provide easy-to-use APIs to help you integrate into your own system. Below is a sample for you to observe it's very simple to integration into your system with our restful API.

The vertical application needs to send the API to DeviceOn/ePaper. A sample code shown below.

1. Our API in Javascript: setItemData to update data into DeviceOn/ePaper and DeviceOn/ePaper will help forward the data to EPD.

```
// update Item Data function
setItemData(){ var url = HOST
+ '/esl/v1/items'; var type = 'PUT';
var data = {
```

```
                "items": [ JSON.parse($('#log').val()) ]
            };
            console.log(data);

            api(url, type, data,
                function(res){ if(res && res.result)
            alert("Item Successfully Updated!");
        else     alert("Ajax request error!"); });
        }
```

2. User also can use our api: setSensorData to control EPD LED.

```
        // set LED light function
        setSensorData(){ var agentid =
        $('#agentid').val(); var plugin =
        $('#plugin').val(); var sensorId =
        $('#sensorId').val();
            var sensorValue = parseInt($('#sensor-
Value').val());
           var url = HOST + '/esl/v1/devicectrl/data'; var type
= 'POST'; var data = {agentId: agentid, plugin: plugin,
sensorIds: [{n: sensorId, v: sensorValue}]};
            api(url, type, data, function(res)
{   console.log(JSON.stringify(res));   if(res   &&   res.items   &&
res.items.length   >   0   &&   (res.items[0].statusCode   ===   202   ||
res.items[0].statusCode
=== 200)){        alert("Update Sensor Data Command Sended!")
            } else {     alert("Ajax
        request error!");        }
            });
        }
```

For more API, user may check next chapter.

4.4.1 EPD Data Update API

1. **Upload EPD Data.**

- path: /esl/v1/items
- method: POST
- header: Basic Authorization
- body parameters:
  - code: string
  - name (group name): string
  - content: JSON string

- body(example)
  { "items": [{ "code": "X001", "name": "John", "content: "{"name": "John","age": "18"}" }] }
- response(example)
  { "result": true }

2. **Upload EPD Data for a specific item group.**

- path: /esl/v1/items/name/{name}
- method: POST
- header: Basic Authorization
- body parameters:
  - code: string
  - name (group name): string
  - content: JSON string
- body(example)
  { "items": [{ "code": "X001", "name": "John", "content: "{"name": "John","age": "18"}" }] }
- response(example)
  { "result": true }

3. **Update EPD Data.**

- path: /esl/v1/items
- method: PUT
- header: Basic Authorization
- body parameters:
  - code: string
  - name (group name): string
  - content: JSON string
- body(example) (Notes: you have to give all content in body even if you only need to edit partial content)
  { "items": [{ "code": "X001", "name": "John", "content": "{"name": "John","age": "20"}" }] }
- response(example)
  { "result": true }

4. **Delete EPD Data.**

- path: /esl/v1/items
- method: DELETE
- header: Basic Authorization
- body parameters:
  - code: string
- body(example)
  { "items": [{ "code": "X001" }] }
- response(example)
  { "result": true }

5. **Get EPD Tag AgentID.**

- path: /esl/v1/tags/agentid
- method: GET
- header: Basic Authorization
- url parameter: itemcode=[ITEM CODE]

- response(example)
  { "agentid": "00000001-0000-0000-0012-4b001557aa72" }

6. **Get EPD Tag Status.**

- path: /esl/v1/tags/status
- method: GET
- header: Basic Authorization
- url parameter: ?agentid=[DEVICE AGENT ID]
- response(example) (Notes: all possible status are "sending command", "command timeout", "setting image", "set image okay", "set image error", "refreshing image", "refresh image okay", "refresh image error")
  { "status": "set image okey" }

7. **Set EPD Tag Binding.**

- path: /esl/v1/tags/setBinding
- method: POST
- header: Basic Authorization
- body parameters:
  - agentid: string
  - templatename: string
  - body(example) (Notes: you must provide "agentid" or "did" in body, and for other parameters as follows, you only need to give at least one: "tid or templatename", "iid or itemcode", "mid")
    { "agentid": "00000001-0000-0000-0012-4b001557a500", "templatename": "Abnormal-English" }
- response(example)
  { "result": true }

8. **Set EPD Tags Binding.**

- path: /esl/v1/tags/setBindings
- method: POST
- header: Basic Authorization
- body parameters:
  - agentid: string
  - templatename: string
  - body(example) (Notes: you must provide "agentid" or "did" in body, and for other parameters as follows, you only need to give at least one: "tid or templatename", "iid or itemcode", "mid")
    { "bindings": [{ "did": 32, "itemcode": "Stop0002", "templatename": "Bus Stop Demo Init" }, { "agentid": "00000001-0000-0000-0012-4b001557a682", "itemcode": "Stop0002", }] }
- response(example)
  { "result": true }

9. **Transmit Image.**

- path: /esl/v1/tags/setImage
- method: POST
- header: Basic Authorization
- body parameters:
  - agentid: string
  - refresh(optional, default: 1): number [available values: 1: Refresh after transmit, 0: Just store image to ESL tag memory]
  - page(optional, default: 0): number [available values: 0 ~ maxpagesize-1]

- body(example)
  { "agentid": "00000001-0000-0000-0012-4b001557aa72", "refresh": 1, "page": 0 }
- response(example)
  { "status": "setting image" }

10. **Transmit Image with Item Data.**

- path: /esl/v1/tags/setImageWithData
- method: POST
- header: Basic Authorization
- body parameters:
  - agentid: string
  - item: JSON
  - code: string
  - name (optional): string
  - content (optional): JSON string
  - refresh (optional, default: 1): number [available values: 1: Refresh after transmit, 0: Just store image to ESL tag memory]
  - page (optional, default: 0): number [available values: 0 ~ maxpagesize-1]
- body(example)
  { "agentid": "00000001-0000-0000-0012-4b001557aa72", "item": { "code": "Stop0001", "name": "Taipei 101", "content": "{\"Stop_Name\":\"Grand Hotel\", \"Route1 Name\":\"Test\"}" }, "refresh": 1, "page": 0 }
- response(example)
  { "itemStatus": "update item okay", "status": "set image okay" }

11. **Refresh Image.**

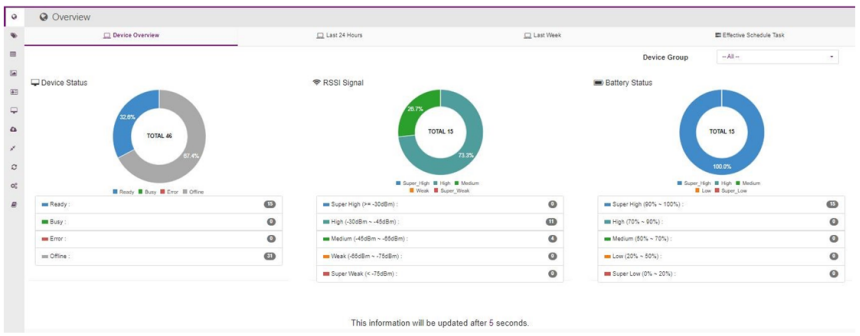
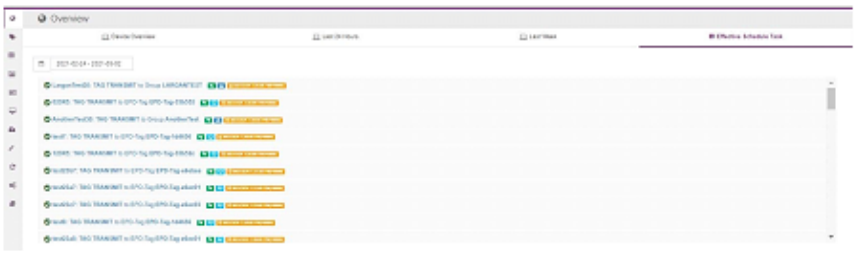
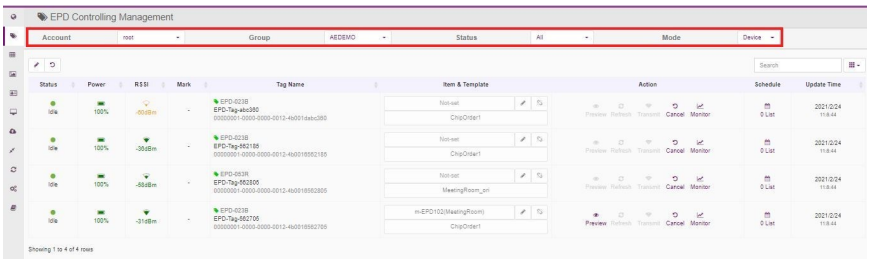
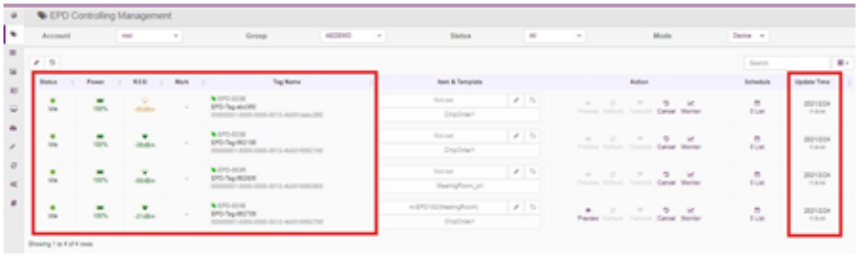
- path: /esl/v1/tags/refreshImage
- method: POST
- header: Basic Authorization
- body parameters:
  - agentid: string
  - page(optional, default: 0): number [available values: 0 ~ maxpagesize-1]
  - body(example)
    { "agentid": "00000001-0000-0000-0012-4b001557aa72", "page": 0 }
- response(example)
  "status": "refreshing image" }

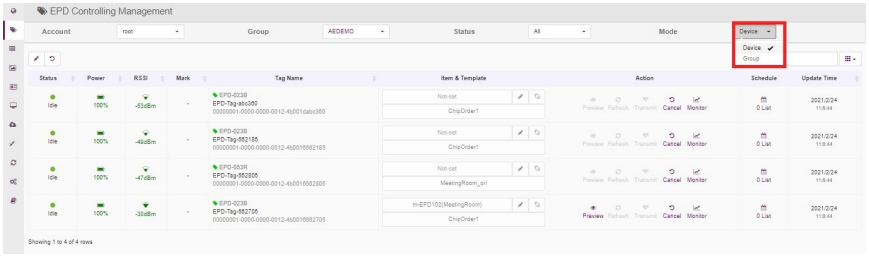
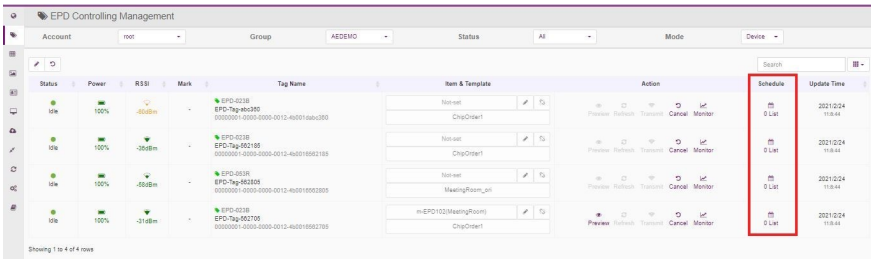
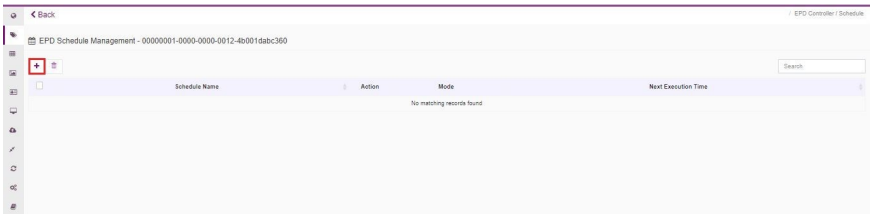
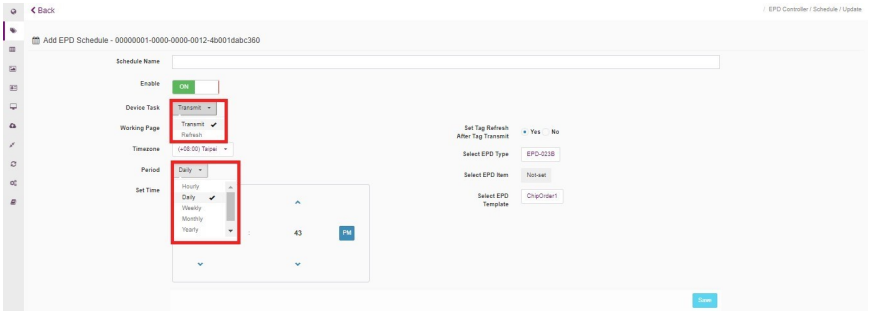
12. **Get Item.**

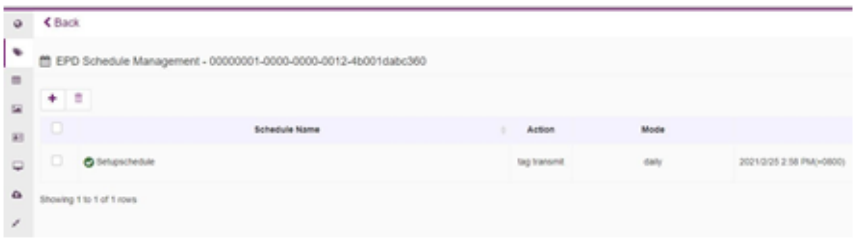
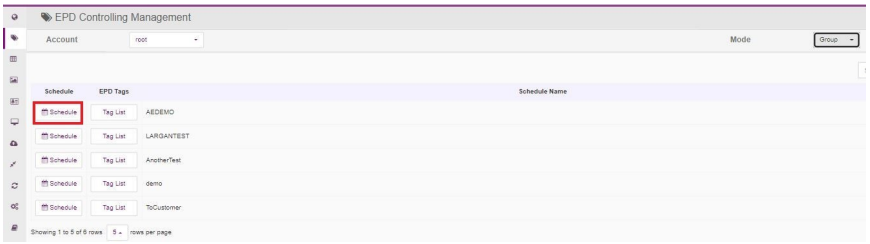
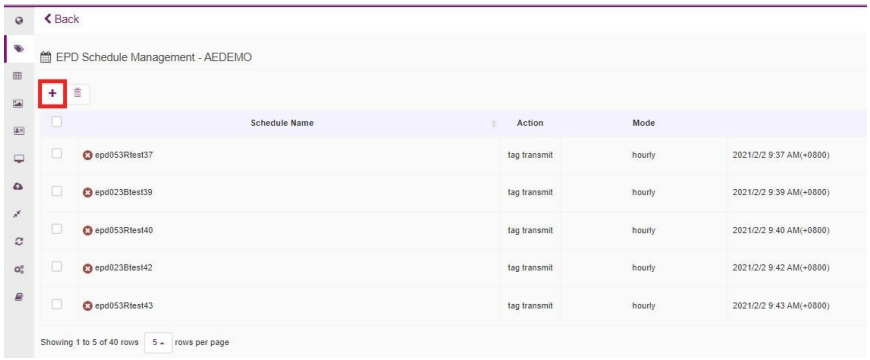
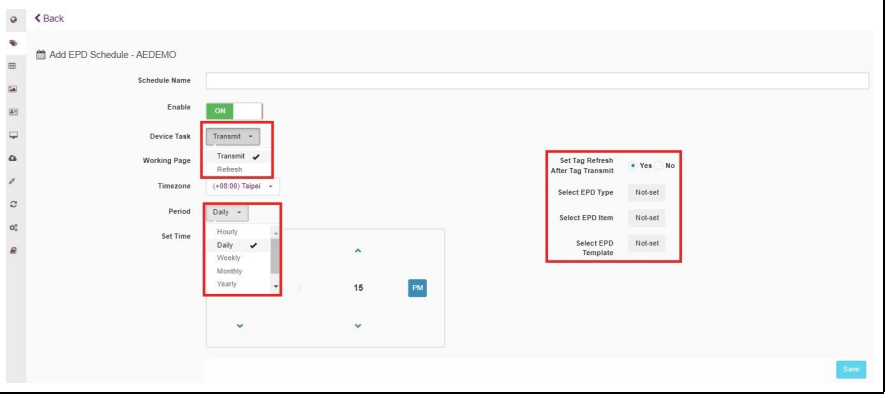
- path: /esl/v1/items/itemcode/{itemcode}
- method: GET
- header: Basic Authorization
- response(example)
  { "code": "Tag_00001", "iid": 243, "name": "RunCard", "content": "{\"Tag_Number\":\"Tag_00001\",\"Template_ID\":\"RunCard\",\"WokOrder\":\"YSI5001ZA\",\"PartNumber\":\"DLV8315-1J30000\",\"Qty\":\"20\",\"Station\":\"Assy\",\"NextStation\":\"BurnIn\",\"ArrivalTime\":\"5/22/18 9:11\",\"LeaveTime\":\"\",\"StayTime\":\"0\",\"Cautions\":\"\",\"Remark\":\"\"}" }
  Time\":\"5/22/18 9:11\",\"LeaveTime\":\"\",\"StayTime\":\"0\",\"Cautions\":\"\",\"Remark\":\"\"}" }

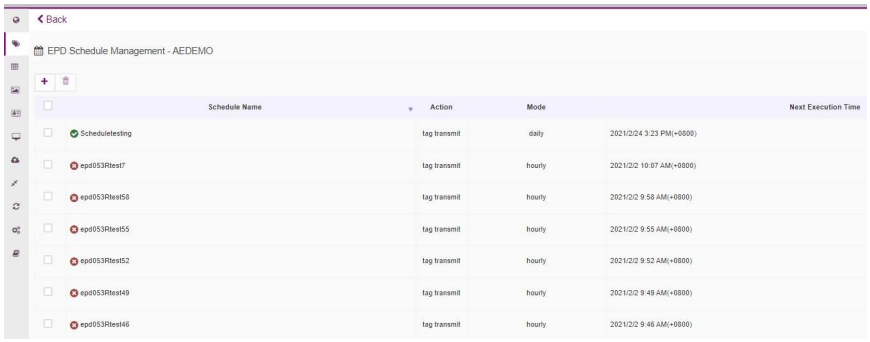
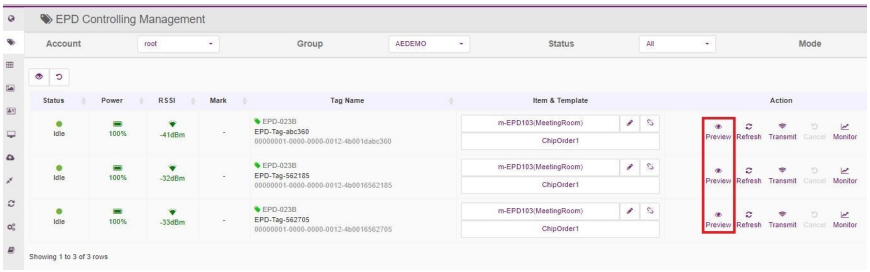
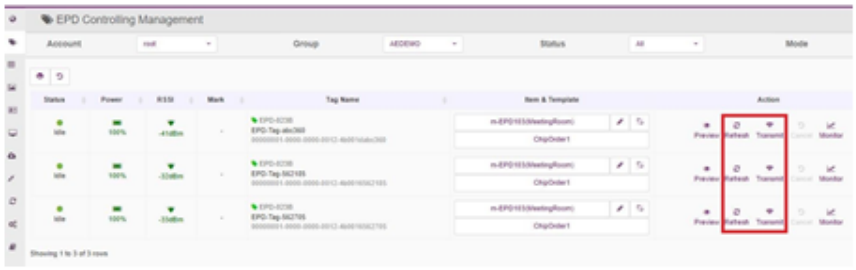
4.5 DeviceOn/ePaper Feature List

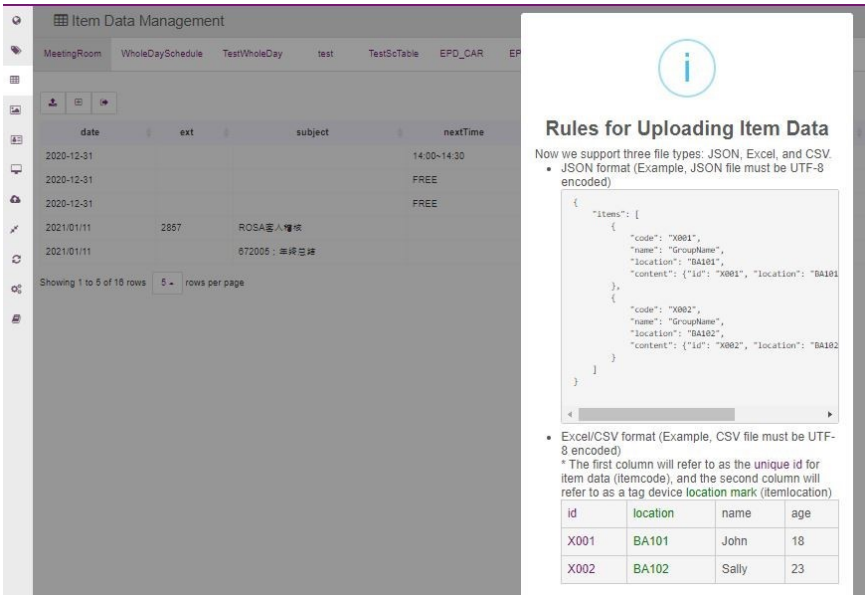
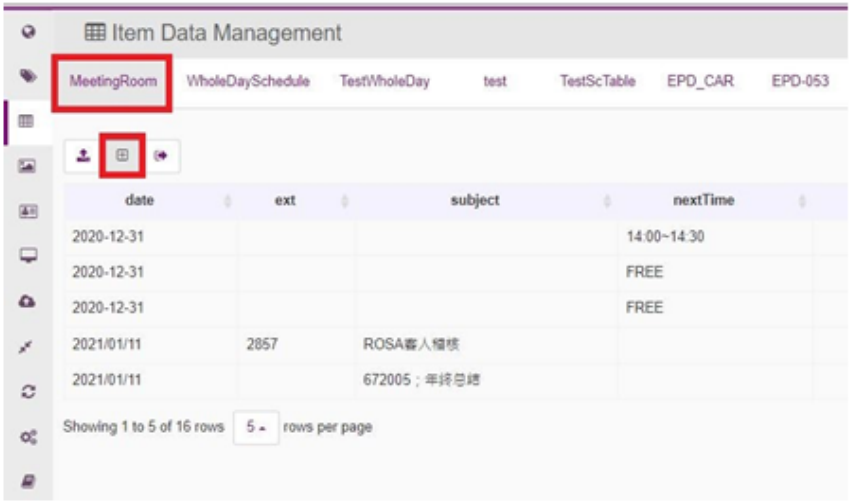
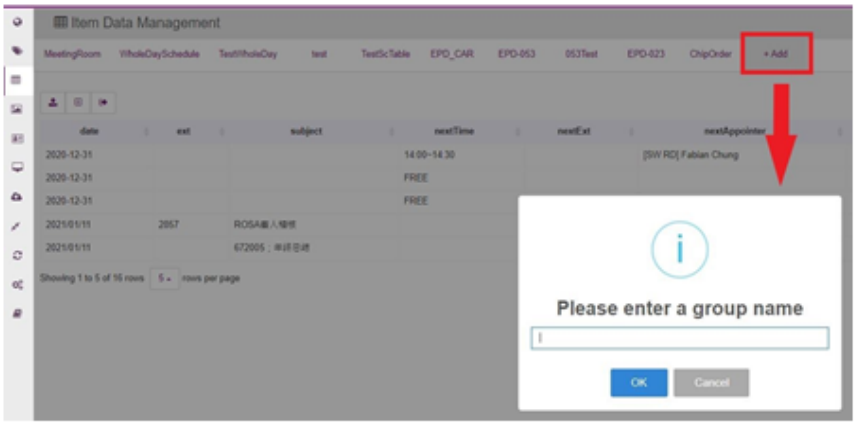
4.5.1 Component List

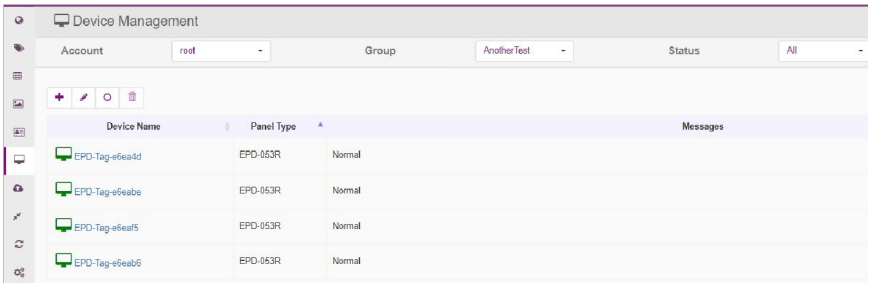
Dashboard	 1. Device status: Provide EPD device status in system. 2. Battery status: Show battery status on EPD device. 3. EPD Device: Show image update status.
	 4. Schedule task. Effective schedule task: User can select current schedule in the system.
EPD	EPD device search  Search criteria Account/Group/Connecting Status/EPD Device Mode
Controller	Properties  Name/Panel type/total page/Connecting status/Update Status

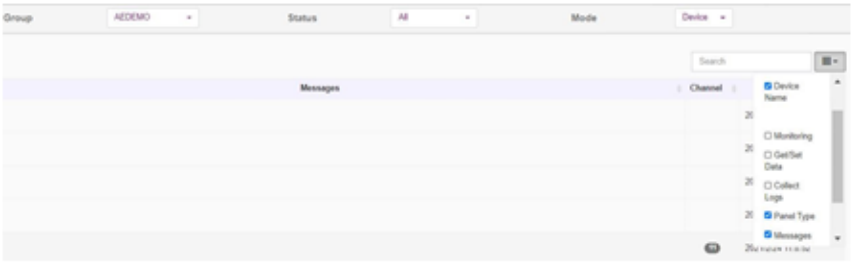
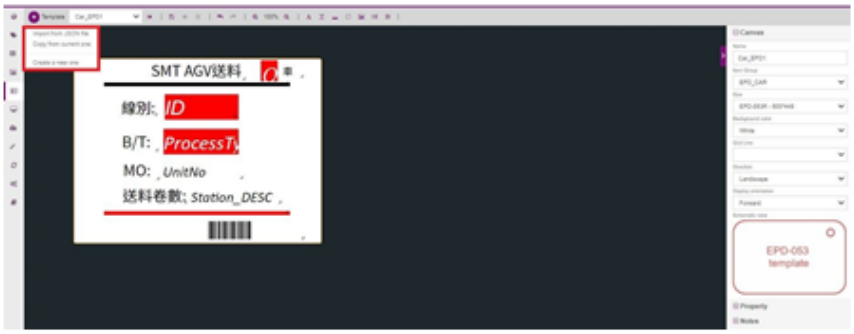
Action	**Schedule (the position in 4.5.1)** Initial Stage: Select the mode (device/group) for schedule setting. The device mode is demonstrated first.  *Device Mode* 1. Choose the desired item to schedule.  2. Click the “add” icon to for schedule making.  3. The user can setup transmit/refresh as the scheduling task daily/weekly/ monthly/yearly, and choose EPD type, item and template of schedule. 

Action	4. After the save is clicked, the arranged schedule will be added to the list. 
	Group Mode 1. Choose the desired group to make the schedule.  2. Click the “add” icon for schedule creation.  3. The user can setup transmit/refresh as the scheduling task daily/weekly/monthly/yearly, and choose EPD type, item and template of schedule. 

Action	4. After the save is clicked, the arranged schedule will be added in the list. 
	Preview  User can transmit image to the EPD device.
	Transmit  1. User can reflash the image on EPD device. 2. User can transmit image to EPD device. 3. If user has clicked "transmit" or "reflash" on the device, then the system keeps busy, not responding from device-side. User can click "reset" to cancel the execution.

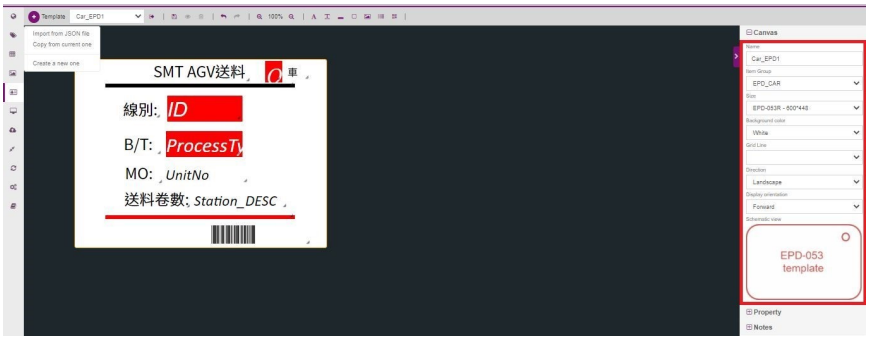
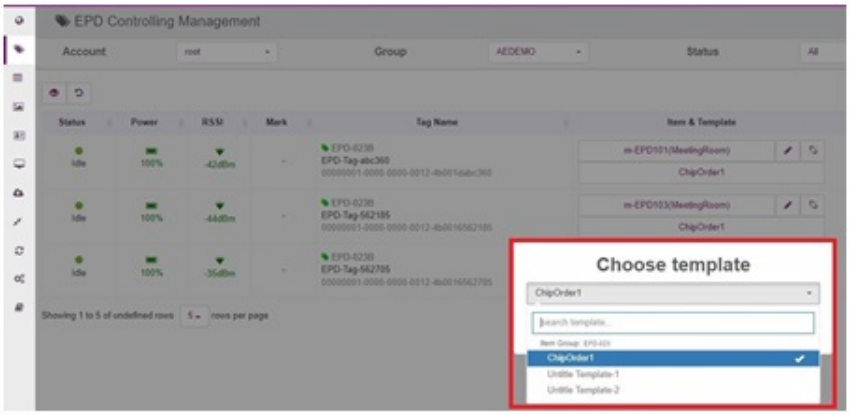
Item Data	Import ITEM Data  Support CSV, JASON Format Add new data into current item
	
	Working Group  1. User can perform different working groups in the same system. 2. User can add new group by clicking the “add” icon.

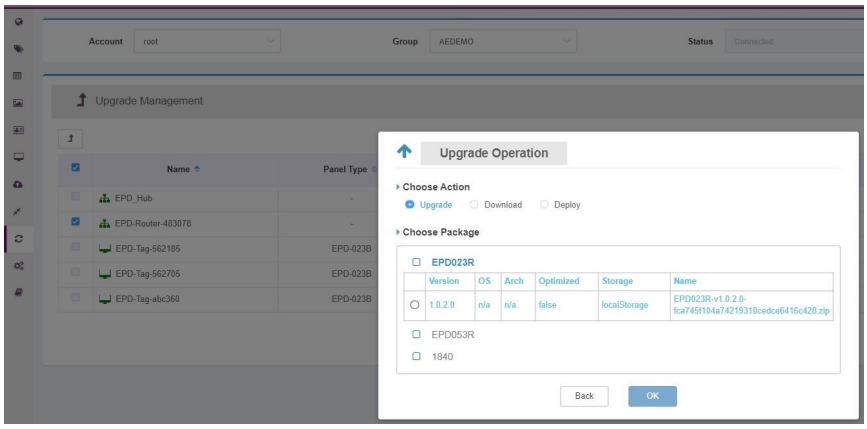
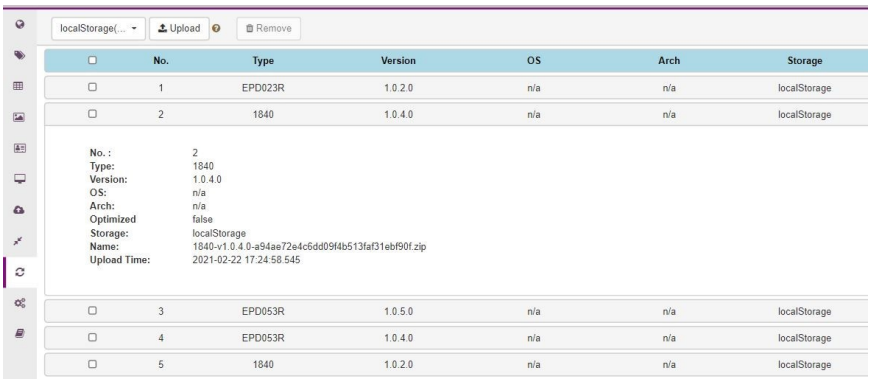
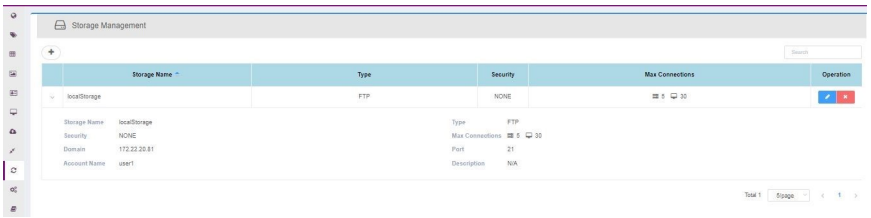
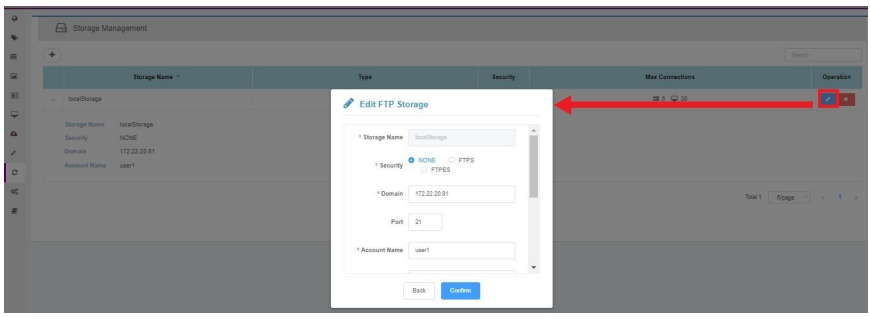
<table>
<tr><td rowspan="2">Device List</td><td>Device search including EPD device, router and hub.
 

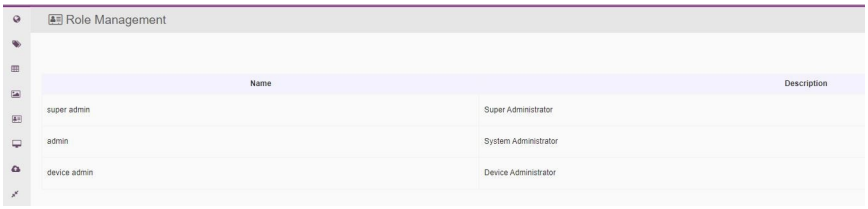
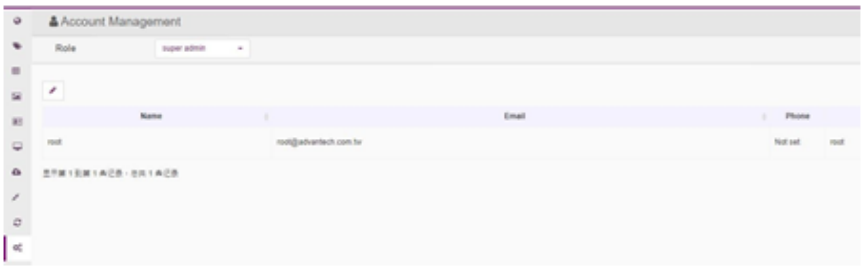
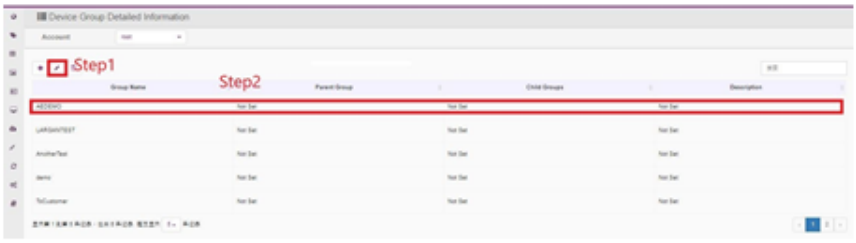
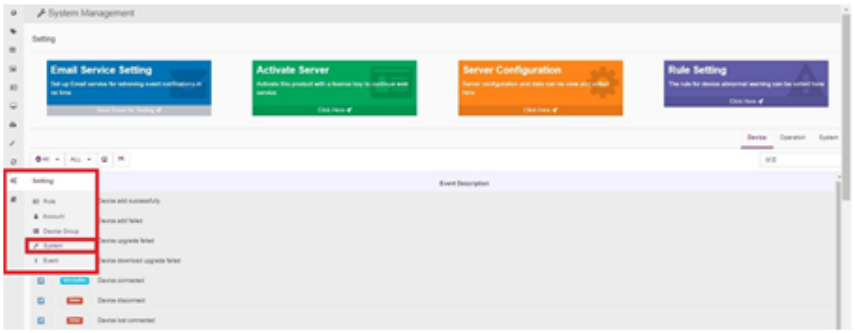
Search criteria
Account/group/connecting status/EPD device mode</td></tr>
<tr><td>Action
 
Remote control device:
1. Default column is name and status message.
2. User can click icon at the right to select more field: monitoring, get/set data, and more.</td></tr>
<tr><td rowspan="2">Template</td><td> 

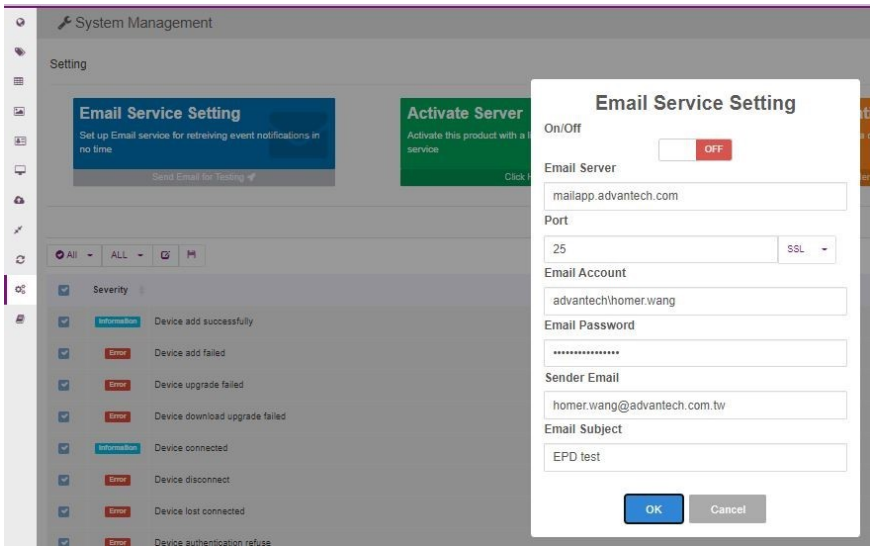
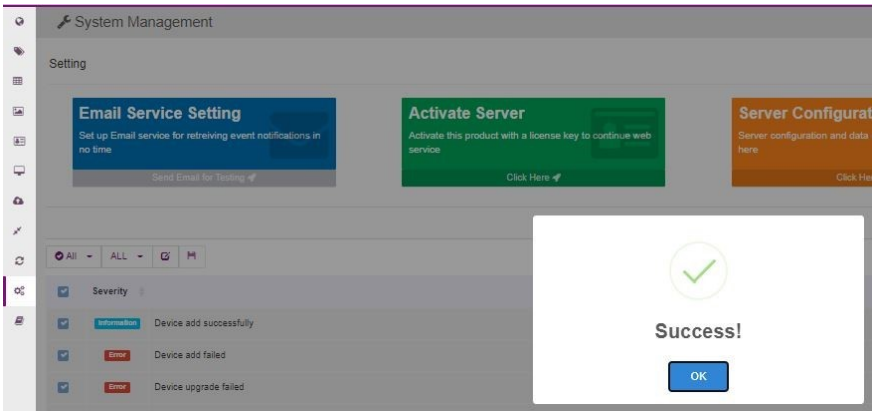
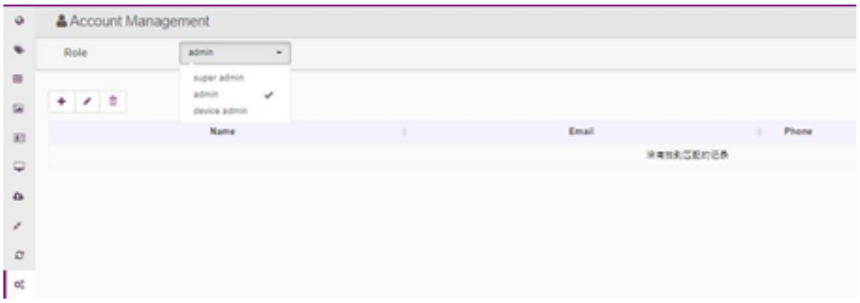
The user can create a new template, import from JSON file, or copy from current one.</td></tr>
<tr><td> 

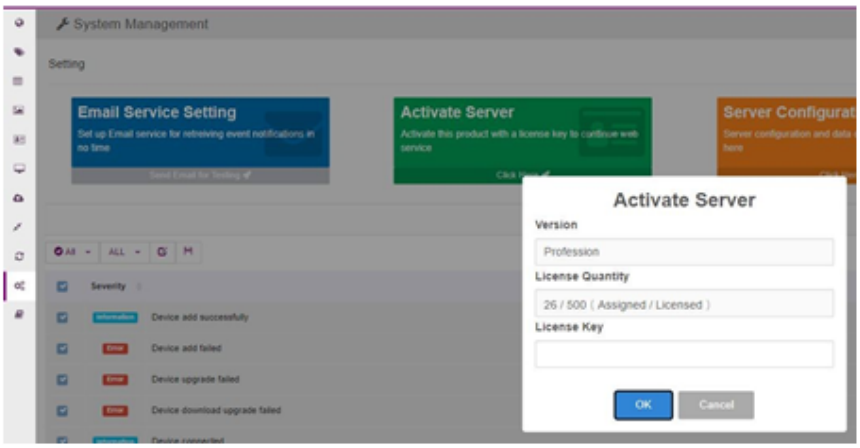
Provide image tool
Save/preview/delete/previous movement or next movement/z+oom in/ zoom out/dynamic or static text/shape/Image/barcode/QRcode</td></tr>
</table>

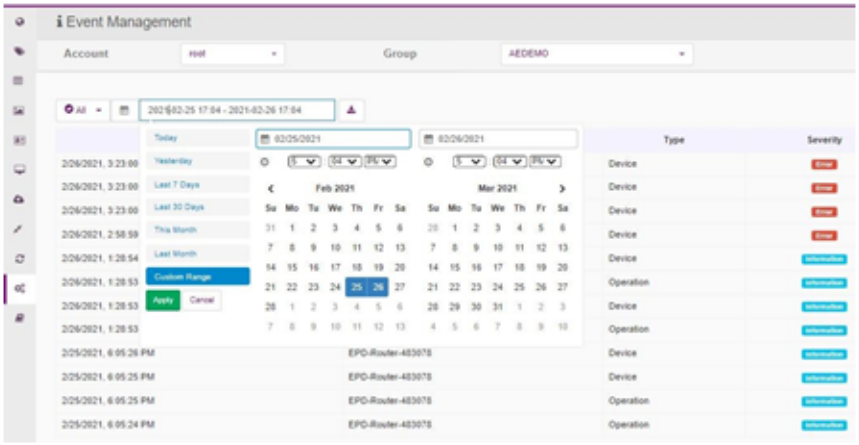
Template	User may save the template and then go to EPD controller to bind the template with EPD device.  Template name: users can enter the template name here Item group: users can select the created Item Group EPD size: users can choose 2.9", 5.6", 13.2", or 32" Background color: White/Black/Red Grid line: No/Yes Direction: Portrait/Landscape Display orientation: Forward/Reverse Schematic view
	 1. EPD controller should setup the binding template.
	 1. Select on component. 2. Right side shows the component properties. 3. Select the field “value” and drop down menu shows data field from item data.

OTA	Upgrade  Select upgrade device
	Package  File preparing for the upgrade
	Storage   FTP & file path setting

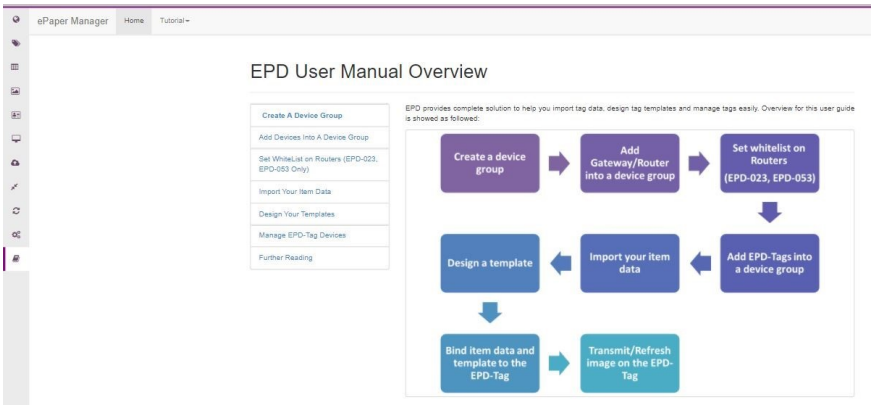
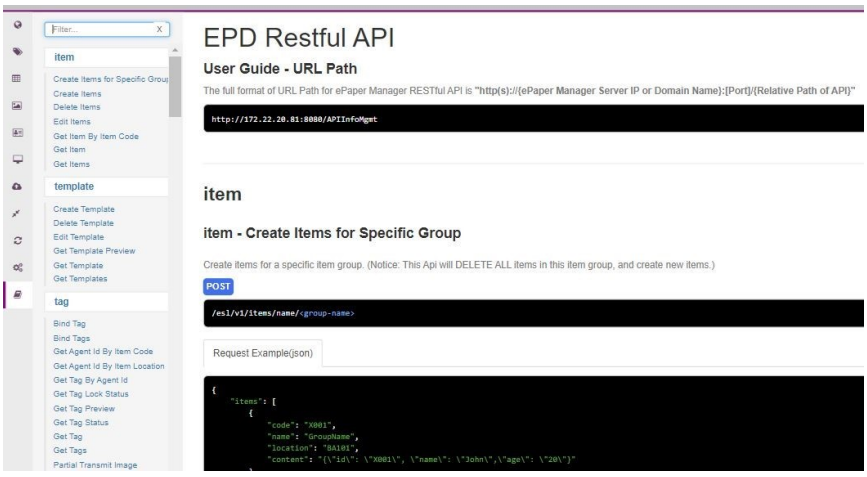
Setting	Role  Definition as below Super Admin: Super Administrator Admin: System Administrator Device Admin: Device Administrator
	Account & Group   Set the device into group.
	Email Service
	1. Click the system button under the setting list 

Setting	2. Click email service and fill in the following form.  3. Setting successfully.  4. Add an email account list for this service. Click the account button under the setting list. 
	5. Add an admin account. Click the save button. An email will be sent to this local user when an event occurs. 

<table>
<tr><td rowspan="2">Setting</td><td> 

Add an EPD connection number license.</td></tr>
<tr><td>Event
 

User can query the event by clicking the calendar.</td></tr>
</table>

Document	 ePaper Manager Home Tutorial EPD User Manual Overview Create A Device Group Add Devices Into A Device Group Set WhiteList on Routers (EPD-023, EPD-053 Only) Import Your Item Data Design Your Templates Manage EPD-Tag Devices Further Reading EPD provides complete solution to help you import tag data, design tag templates and manage tags easily. Overview for this user guide is showed as followed: Create a device group Add Gateway/Router into a device group Set whitelist on Routers (EPD-023, EPD-053) Add EPD-Tags into a device group Import your item data Design a template Bind item data and template to the EPD-Tag Transmit/Refresh image on the EPD-Tag  Filter... item Create Items for Specific Group Create Items Delete Items Edit Items Get Item By Item Code Get Item Get Items template Create Template Delete Template Edit Template Get Template Preview Get Template Get Templates tag Bind Tag Bind Tags Get Agent Id By Item Code Get Agent Id By Item Location Get Tag By Agent Id Get Tag Lock Status Get Tag Preview Get Tag Status Get Tag Get Tags Partial Transmit Image EPD Restful API User Guide - URL Path The full format of URL Path for ePaper Manager RESTful API is "http(s)://{ePaper Manager Server IP or Domain Name}:[Port]/{Relative Path of API}" http://172.22.20.81:8080/APIInfoMgmt item item - Create Items for Specific Group Create items for a specific item group. (Notice: This Api will DELETE ALL items in this item group, and create new items.) POST /esl/v1/items/name/<group-name> Request Example(json) { "items": [{ "code": "X001", "name": "GroupName", "location": "BA101", "content": "{\"id\": \"X001\", \"name\": \"John\",\"age\": \"20\"}"

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