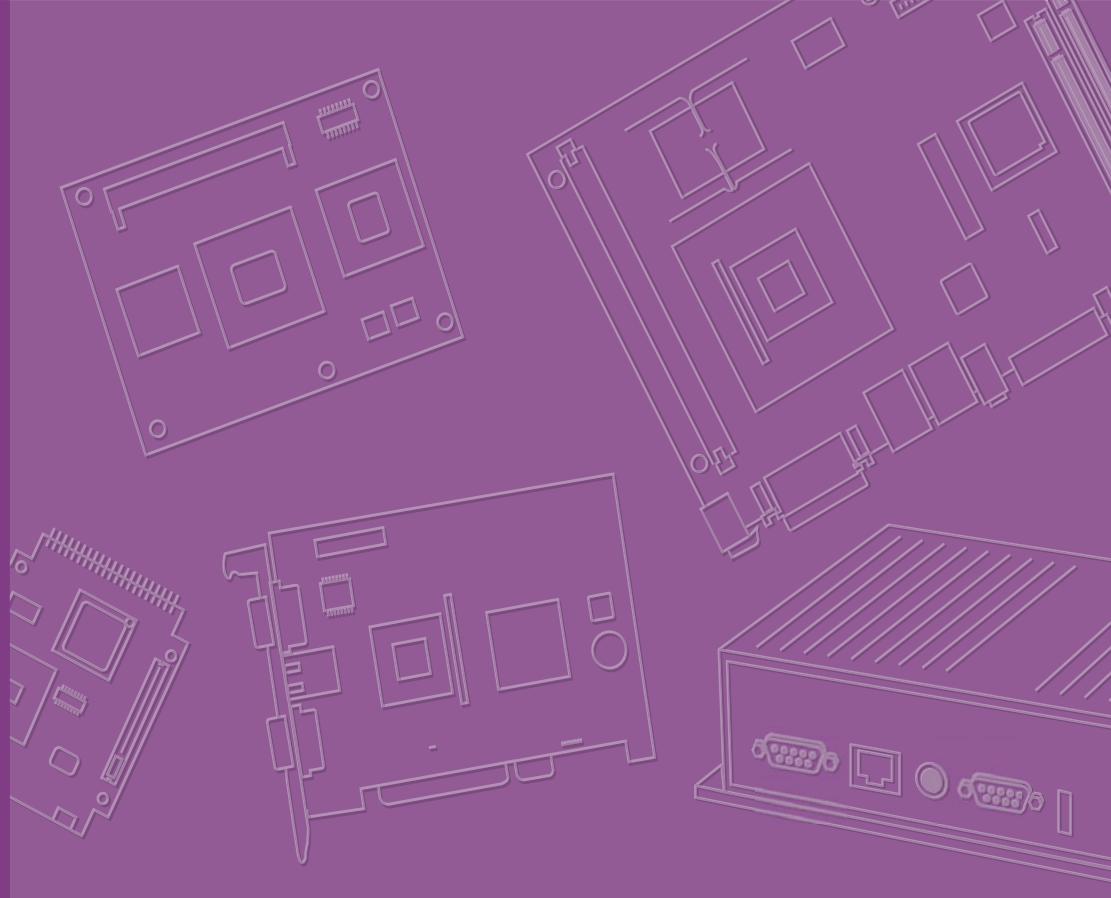


User Manual



EPD Device EPD-023 System Solution

Wireless ePaper Display Solution

ADVANTECH

Enabling an Intelligent Planet

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Product Warranty (2 years)

Advantech warrants to you, 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 which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which 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 of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

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 you get 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 an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

FCC Class B

Note: 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 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.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the 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.

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 be fixed to US operation channels only.

USER MANUAL OF THE END PRODUCT:

In the user manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied.

The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

If the labelling area is small than the palm of the hand, then additional FCC part 15.19 statement is required to be available in the user manual: 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.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: M82-EPD-023 ".

If the labelling 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.

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。

Technical Support and Assistance

1. Visit the Advantech website at <http://support.advantech.com> where you can find the latest information about the product.
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 you call:
 - 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 setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

- EPD-023 System Device

Ordering Information

Part No.	Description
EPD-023B2AG-NTC02	2.9" Wireless ePaper displays system solution in 2.4G
EPD-023B2AG-NTC12	EPD-023B2AG-NTC02 for 50 pcs solution kit
EPD-023B2AG-NTC22	EPD-023B2AG-NTC02 for 100 pcs solution kit
EPD-023B2AG-NTC32	EPD-023B2AG-NTC02 for 500 pcs solution kit
EPD-023B2AG-NTC42	EPD-023B2AG-NTC02 for 3000 pcs solution kit

Optional Accessories

Part No.	Description
1760002692-01	4 pcs CR2450 battery

Safety Instructions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it 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. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. 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 by transient overvoltage.
12. Never pour any 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 one of the following situations arises, get the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment does not work well, or you cannot get it to work according to the user's manual.
 - The equipment has been dropped and damaged.
 - The equipment has obvious signs of breakage.
15. Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.
 - replacement of a battery with an incorrect type that can defeat a safeguard (for example, in the case of some lithium battery types);
 - disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, that can result in an explosion;
 - leaving a battery in an extremely high temperature surrounding environment that can result in an explosion or the leakage of flammable liquid or gas;
 - a battery subjected to extremely low air pressure that may result in an explosion or the leakage of flammable liquid or gas.

DISCLAIMER: This set of instructions is given according to IEC 704-1. 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 dû 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

Product Overview

1.1 Introduction

EPD-023 is the ePaper device which support ultra low power 2.4GHz RF wireless protocol integrated with 2.9" EPD in ARM Cortex-M3 processor. The device can support hospital, pharmacy, factory, warehouse and retail application. With optimization on the power consumption and device management, your applications with low data rate requirement can be achieved years battery lifetime and thousand devices connection. Advantech EPD-023 provide multi interface for application control which is highly integrated with EPD driver and low power consumption system. EPD-023 can auto join and binding the network group with IoT Gateway (WISE-3610Z) and Router (WISE-3240). Data can be quickly and easily acquired and transformed into a different format to communicate with ePaper Manager Server (ARK-2250L). System integration and application provider can focus on application development and system management.

The main features of EPD-023 are:

- ARM Cortex-M3 Core Processor
- Support IEEE 802.15.4 / 2.4 G networks
- 2.9" e-Paper panel display
- Great for Low Consumption, achieved years battery life time
- Rich I/O control with 3 button & 3 LED
- Support temperature 0 ~ 50 °C
- High Performance integrated system with RTOS
- Support over-the-air upgrade (OTA)
- Available solution kit for various applications easy deploys.

1.2 Specifications

Computing System	MCU	TI 32-bit ARM Cortex-M3 Processor
	Memory	RAM 28KB
Display	Screen Size	79 x 36.7 mm
	Resolution	296 x 128 pixels
Storage	Internal	Flash: 128 KB
	External	SPI Flash: 512KB
Network	Standard	IEEE 802.15.4
	Frequency Band	2.4-GHz
	Channels	11~26
	Channel Separation	5MHz
	Transmit Power	-21dBm~ +5dBm
	Receiver Sensitivity	-100dBm
	RF Data Rate	250 Kbps
	Function	End node
	Antenna	On-board Antenna
Interface	LED x3 Function Key x3	
Power	Battery	CR2450 x4

	Operational Temperature	B/W: 0 ~ 50 °C
Environment	Non-Operational Temp.	-25 ~ 60 °C
	Operating Humidity	5 ~ 80% Relative Humidity, non-condensing
Physical Characteristics	Dimensions	100 x 47 x17.9 mm
	Weight	80g
Operating System	RTOS	

Note! The image for EPD need to follow below instruction.



1. Image need to set as 296 x 128 pixels, do not resize it after complete the image which will cause toothed border
2. 24 bits / BMP format for EPD-023
3. Black: (0,0,0) / White (255, 255, 255)

1.3 System implementation

EPD device can be applied to different application and system integrator can control the RESTful API to build up different scenario

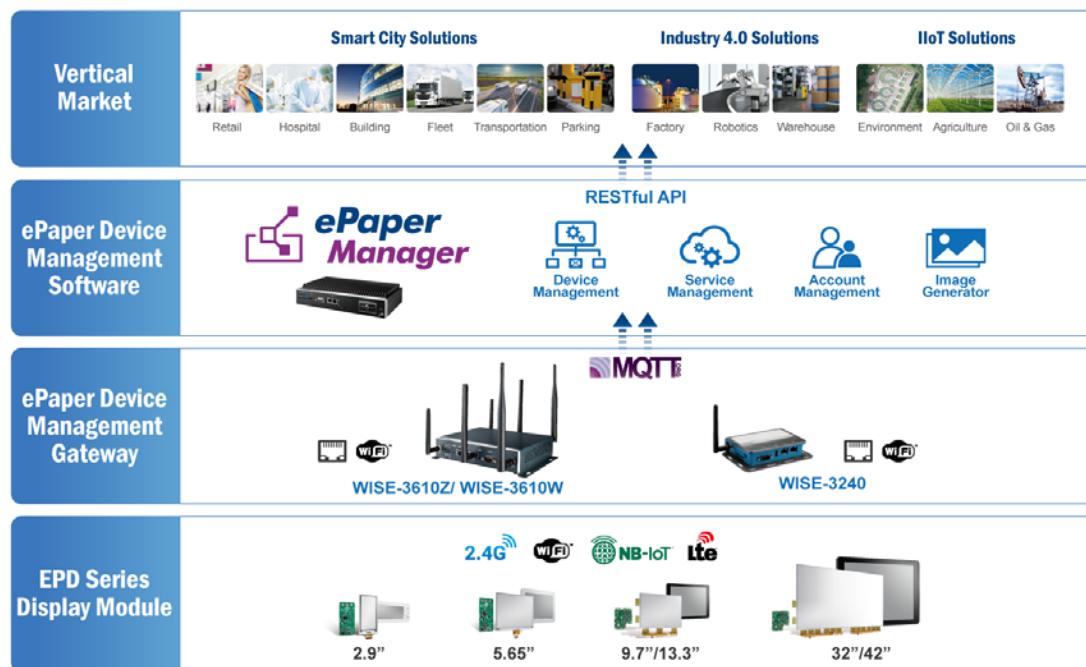
1.3.1 Advantech EPD-023 & ePaper Manager Solution

Wireless EPD System consists of ePaper Manager, Gateway, Router and EPD device.

- The ePaper manager on ARK2250L provides Web GUI to manage the wireless EPD system.
- The Gateway (WISE-3610Z) are responsible for communication between ePaper manager and EPD device.
- The Router (built-in WISE-3610Z) can extend wireless range of Gateway.
- The EPD device is a device with ePaper, EPD controller and wireless connectivity.

Advantech provides the total solution for development to select the different architecture according to the end customer's system requirement.

From below system architecture, EPD-023 is at the end node of the system. Developer can apply Advantech WISE-3610Z /3240 to connect to ePaper manager which is installed in Advantech Embedded Computer /ARK2250L. There are multi-function RESTful API open on ePaper Manager for developer to integrate with vertical market application. E.g. Retail, smart warehouse, factory, hospital and transportation.



Chapter 2

**EPD-023 Network
Specification**

2.1 System Architecture

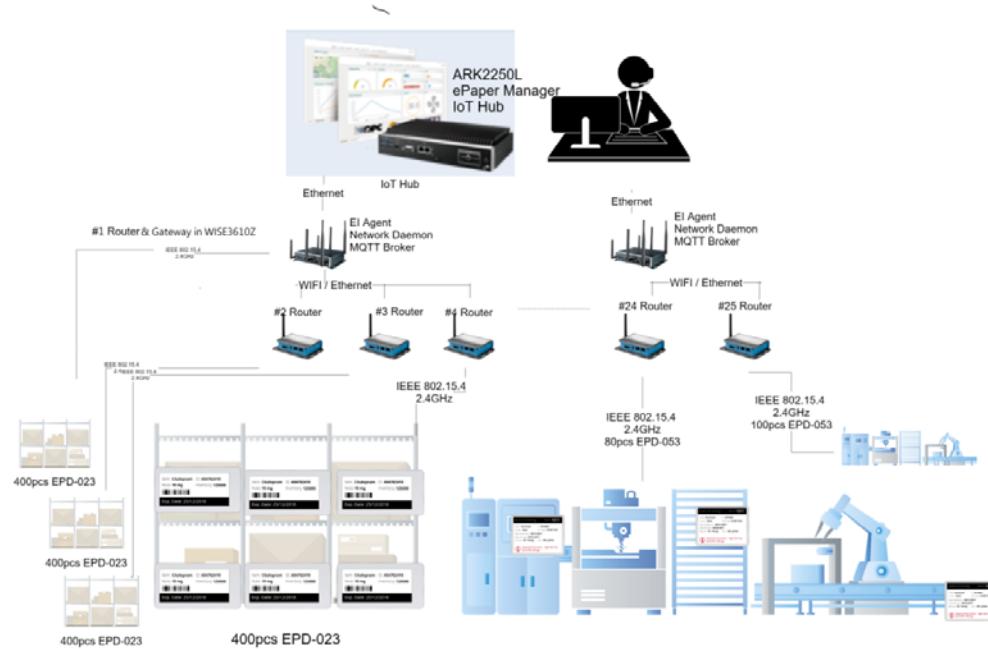


Figure 2.1 EPD-023 Network Topology

2.1.1 System Environment

No	Device1	OS	Version
1	ARK 2250L/ePaper manager	WIN7, WIN10 (2019,Q3) 64 bit,	V1.0.0
2	WISE Gateway: 3610Z	OpenWRT	V1.0.0
4	WISE Router: WISE3240	OpenWRT	V1.0.0
6	EPD Device CC2650	TI RTOS	V1.0.0

2.2 System Specification

1. One Single network can be built by WISE-3610Z or WISE-3240.
2. One WISE-3610Z can support up to 400 EPD devices in one channel.
3. One WISE-3240 can support up to 400 EPD devices in one channel.
4. Support 11 channels in this system.
5. Support up to 10000 EPD devices in one system by 25 pcs routers.
6. System support white list to join the system from ePaper manager.
7. Support changeable encrypted key

2.2.1 ePaper Manager

- GUI to operate the system, EPD device and gateway.
- Through RESTful API, the external system can operate the whole system as below list:
 - 1.ePaper manager can perform WISE Gateway actions and control WISE Gateway.
 - 2.ePaper manager can perform WISE Router actions and control WISE Router.
 - 3.ePaper manager can perform EPD device actions and control EPD series device.
 - 4.ePaper manager can import EPD device list which can be the white list to join the network.
 - 5.ePaper manager can deliver the image/Firmware to EPD device through WISE Gateway.
 - 6.Device can periodical report status back to ePaper manager.

2.2.2 WISE Gateway (WISE-3610Z)

- 1) Support MQTT broker Server.
- 2) Execute EPD-Gateway actions from ePaper manager.
- 3) Wireless control router and EPD device.

2.2.3 WISE Router (Built-in WISE-3610Z or WISE-3240)

- Transfer command to control EPD device.
- Wireless control EPD device.

2.2.4 EPD Device

- Device can join router when the correspondent LQI value can be detected and qualified.
- Support router re-scan: if EPD device keep join fail after 2 mins and EPD device will start look for new router.
- Support report status every 1 mins after device join network.
- Support sending data request every 20 secs after device join network.
- Support emergency and event status report every 1 mins after join network
 - Battery status report
 - Hardware mal-funciton report for panel error and external-flash error
 - exception handling: image CRC failing
- Tag power consumption: Battery CR2450 x 4 pcs
 - 1)Use EPD-023 to transfer image from gateway to EPD device in 25 degree environment and the battery life time is for 35000 times image flash.
- Support multi-image storage.
 - Full size image: EPD-023: 20 pages in total. The first 3 pages is mapping to the 3 buttons. (refer to #3.2) Rest 17 pages can be controlled from ePaper manager directly, if application would like have different user scenario.
 - Support de-compression in tag side.
- Support to execute device actions from router.

2.3 System Network Specification

- Physical transmission data rate 250 Kbps
- Network join performance
 - a.1 pcs EPD device join network in 6 secs.
 - b.400 pcs EPD device join network in 30 minutes by 1 host WISE-1840 on WISE-3610Z
- Data transfer Performance from Gateway
 - Update 400pcs EPD-023 in 1 hours
 - 2 way communication
 - Communication with encrypted AES128

Note! The performance will be adjusted according the environmental limitation.

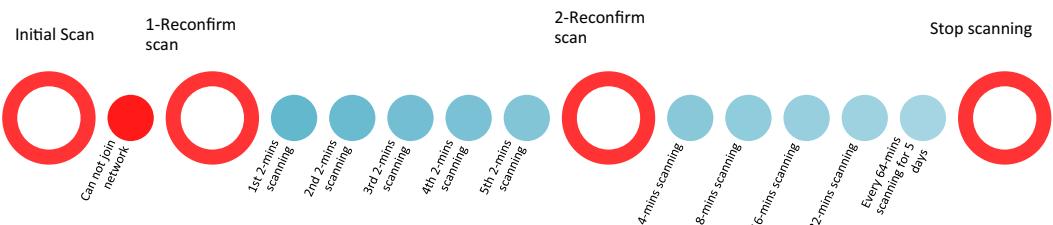


2.4 EPD System-Initial Flow in Device side

This section will explain how the end device to join, register and communicate with the gateway and router. User may know and understand what performance can be reach in our specification. Indeed, user may change some parameter to fit their user scenario.

2.4.1 Tag Scan for Router

- **Initial scan:** EPD device scan each available channel. If EPD device still can't find the router after 2 mins, it will change the status to "lost connect".
- **Reconfirm scan:** The EPD device will start scan channel to look for another router every 2 mins. If EPD device still can't find the router after 5 times, it will change Scan channel frequency from 2, 4, 8, 16, 32, 64, 64, 64, 64.....mins. And then the device will move to deep sleep mode after scanning for 5 days.
- **Stop scan and deep sleep:** If EPD device still can't find the router finally, it will stop RF Scanning and back to deep sleep until the button of the Tag has been pressed. Then tag will start the scanning from the beginning.



2.4.2 Registration

- Router
 - Router Power on
 - System get cache file and set GW cmd
 - Router connect to gateway
- EPD Device
 - Default setting for shipping: Support 11 channel.
 - Power on auto check if there is router exist and ask to join the network.
 - Router permit join if the EPD device is in the white list
 - EPD device join the network

2.4.3 Status report

- Router (WISE-3610Z or WIS-3240) will report status every 1 mins
- EPD device will report status every 1 mins

2.4.4 Execute actions Cmd

- Router will receive action command from gateway in real-time .
- EPD device send data request every 20 secs from sleep mode to router to check if there is any action command.
- EPD device will send back the ACK turn result if the action command is executed.

2.4.5 Firmware update

- WISE-1840 network control card in Router will receive FW upgrade command from router in real-time and execute automatically. System will reboot after FW upgrade complete.
- EPD device send data request every 20 secs from sleep mode to router to check if there is any action command. EPD device receive FW upgrade command if there is FW upgrade action. After upgrade, EPD device will re-register network.

2.5 White List mechanism

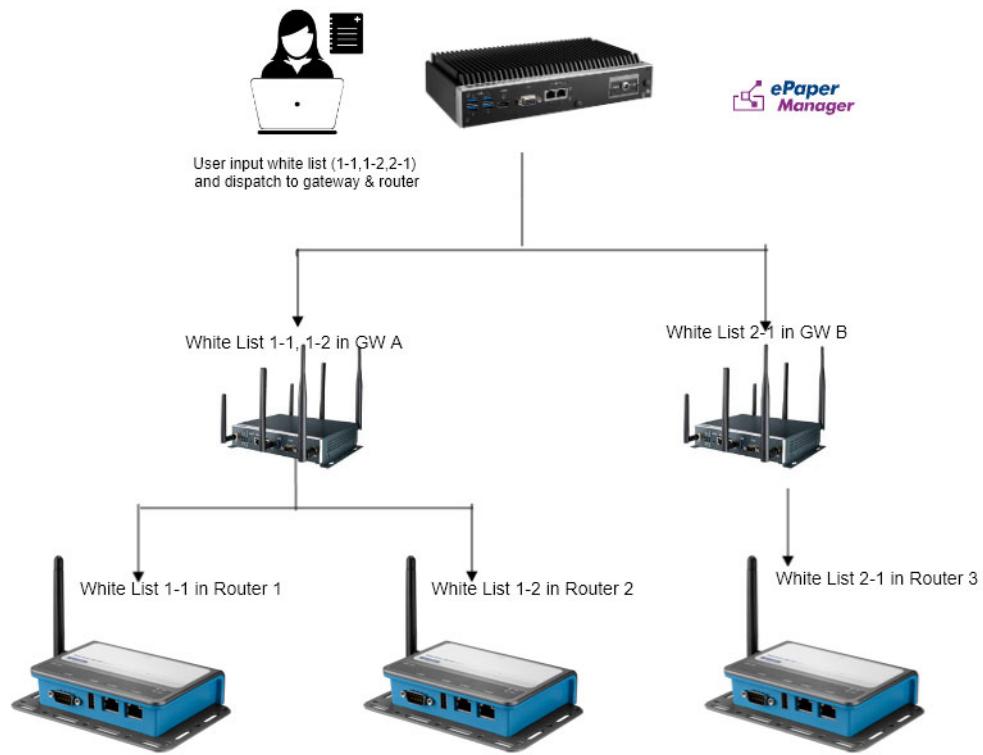
Before import white list, user need to setup router channel which can provide optimal performance. User can setup the channel from ePaper manager and the router channel is from channel: 11 13 14 15 20 21 22 23 24 25 26. If channel has not been set, all the router will be set in the default channel 15.

- (1). When user receive all goods, it comes with the EPD device list which is white list. User need to import the list from ePaper manager.
- (2).ePaper manager can dispatch the list to the connected system daemon in Gateway.
- (3) EPD device can auto join the network after the white list properly setup in ePaper manager and Gateway.

Note!

Normally, deployed people need to detect what channel of 2.4G wi-fi has been used in the application field. we need to avoid to use the same channel distribution.





2.6 Secure key mechanism

Advantech EPD-023 provides user to change secure key when data exchange between devices. User can setup the new secure key from ePaper manager and the gateway will start pass the new key to connected device. As long as the key has been changed, the device could not been operated in original system which has the different secure key in setting.

- Data communication is encrypted by AES128
- User can defined 128 bit secure key
- Gateway exchange key devices automatically

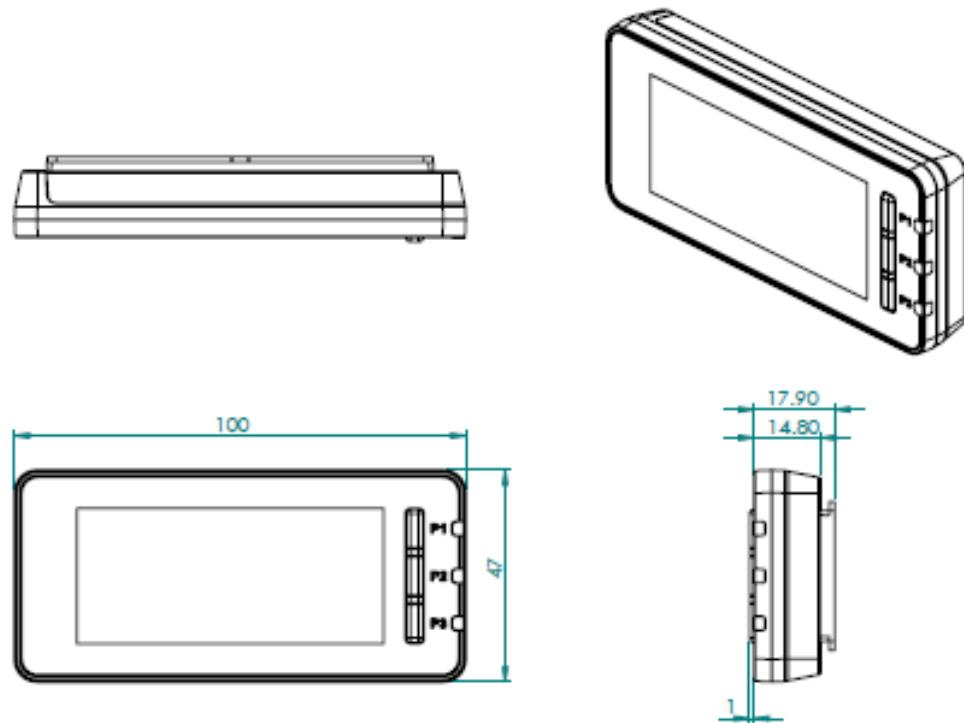
Chapter 3

Hardware Specification

3.1 SYSTEM Specification

EPD-023 is design for customer directly installed in the application side.

3.1.1 ID Dimension



3.1.2 Battery installation

1. Connect power connector into the board connector.



2. Put the battery back to housing.



3. Put back the back cover.



4. Screw on and completed.



3.2 Device LED Button Behavior

3.2.1 EPD-023 Button behavior is as below

item	Status	Action	Result
1	SW1 (P1) no press	Press button for 0.5 sec and release button	Refresh EPD to Page 1
2	SW2(P2) no press	Press button for 0.5 sec and release button	Refresh EPD to Page 2
3	SW3 (P3)no press	Press button for 0.5 sec and release button	Refresh EPD to Page 3
4	Press SW1(P1) & SW3(P3)	step1: Long press buttons (SW1 & SW3) when LED1,LED2 and LED3 off step2: LED2 flash (0.5 sec toggle LED2) after hold SW1& SW3 for 5 sec step3: LED2 on after hold SW1 & SW3 for 10 sec step4: Release SW1 & SW3 keys then LED2 off	Reset to default and reboot Note: All the image and setting in device will be deleted.
5	If device lost connection, press either SW1\SW\SW3	Press button and release button	Leave sleep mode and try to connect network

3.2.2 EPD-023 LED behavior is as below

Remote Control Command From Gateway

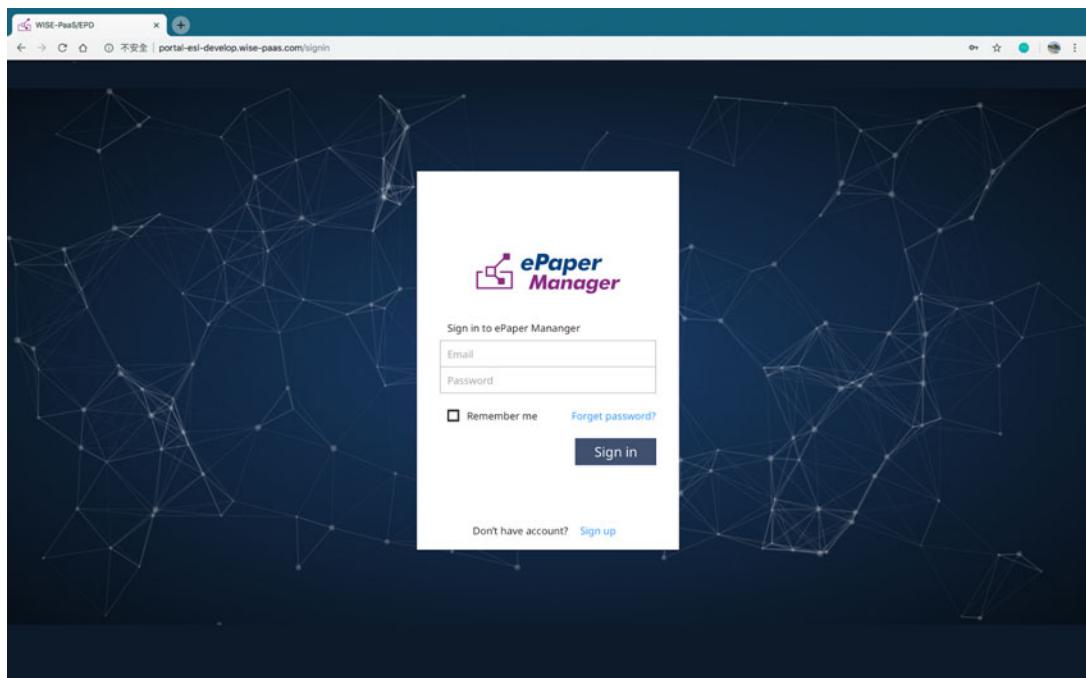
Item	Status	Action	Result
1	LED1	Remote Control by ePaper Manager API (ePaper Manager)	On/Off/Blink
2	LED2	Remote Control by ePaper Manager API	On/Off /Blink
3	LED3	Remote Control by ePaper Manager API	On/Off/Blink

Chapter 4

EPD-023 in ePaper
Manager

4.1 EPD-023 with ePaper Manager Solution

Previously, we have go through EPD-023 function as an end device. To build up a solution, we need a gateway to connect to our CMS: ePaper manager. Indeed, ePaper Manager provides complete solution to help you import tag data, design tag templates and manage tags easily. Thus, this user manual will lead you to build up a total solution system.



Moreover, ePaper Manager provides complete solution to help you easily import device data, design device templates and manage device. The main feature lists are as below.

Table 4.1: ePaper manager main feature list

Item	Name	Description
1	Overview	System dashboard
2	EPD controller	Control & Manage EPD device and association with target
3	Item Data	Group Management
4	Device list	Target Product Data & Import
5	Template	EPD image design and generation
6	White list setting	EPD white list
7	OTA	Firmware upgrade
8	Setting	User account management
9	Document	Online document

4.2 Preparation

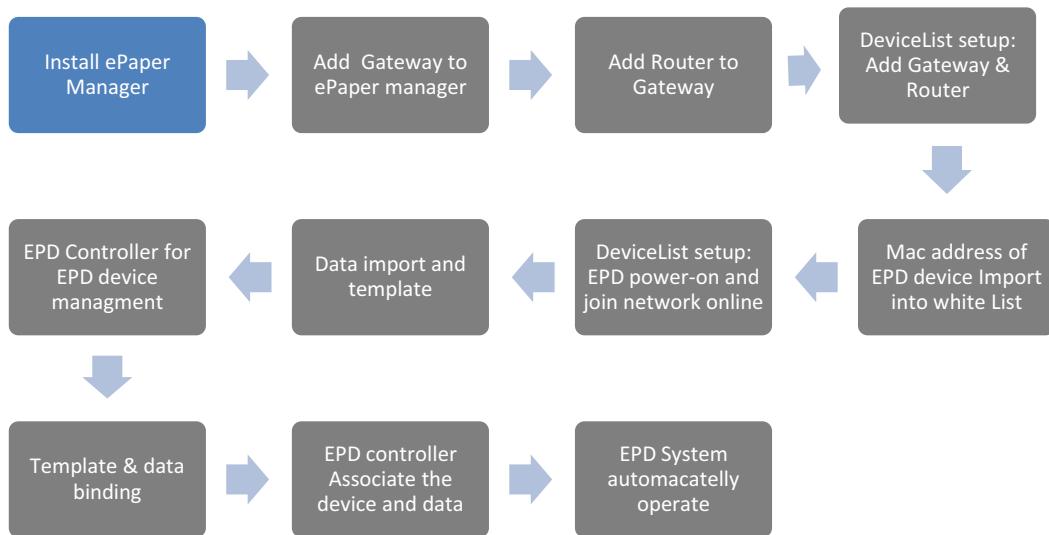
4.2.1 Hardware Component List

1. Advantech Embedded Computer: ARK-2250L
2. Advantech IoT Gateway : WISE-3610Z & Advantech EPD devices.

4.2.2 Software Component List

1. Window7 Professional version for ARK2250L
Below window firewall need to setup for ePaper manager service
AMQP: 5672
AMQP/SSL: 5671
HTTP: 8080
MQTT: 1883
MQTT/SSL: 8883
2. ePaper Manager Installation & License on ARK2250L
3. 500 connection License on ARK2250L.

4.2.3 ePaper manager setup on ARK

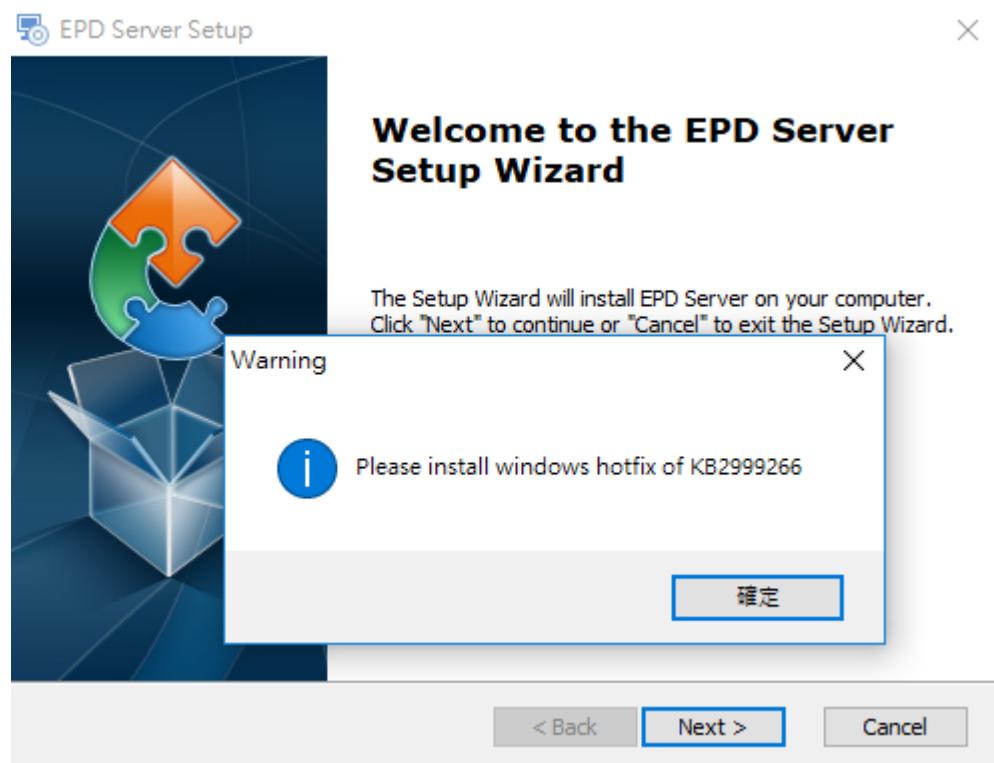


1. First, you will need to install ePaper manager on ARK-2250L

ePaper Manager Installation

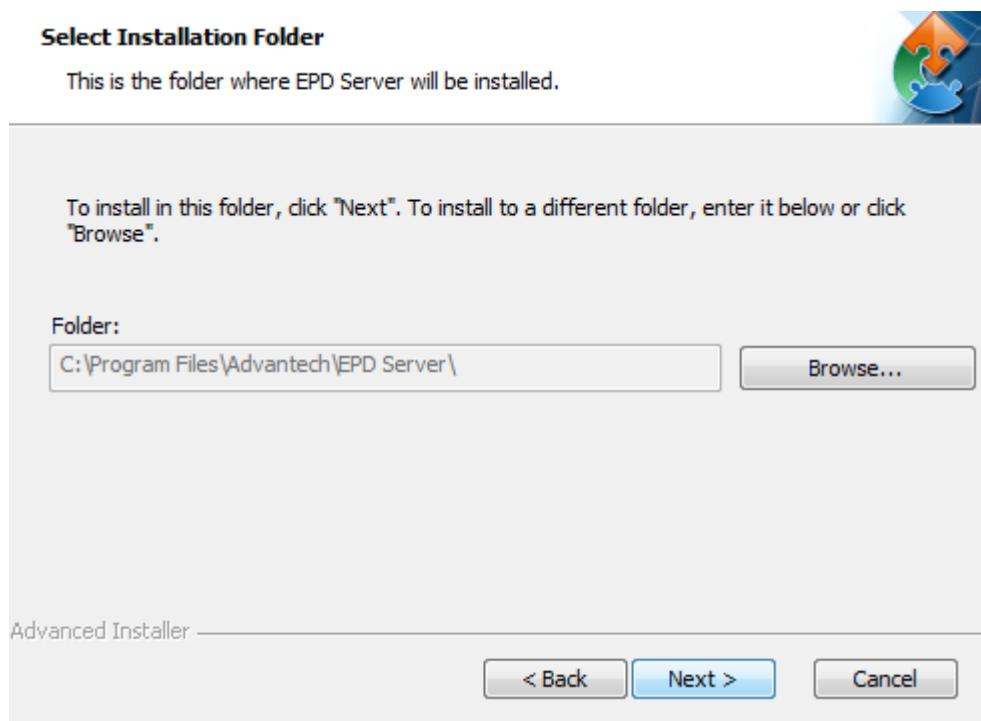
Double click the **EPD ServerSetup_1.0.0.exe** file to start installation process on the server computer.

Follow the instructions in the setup wizard.

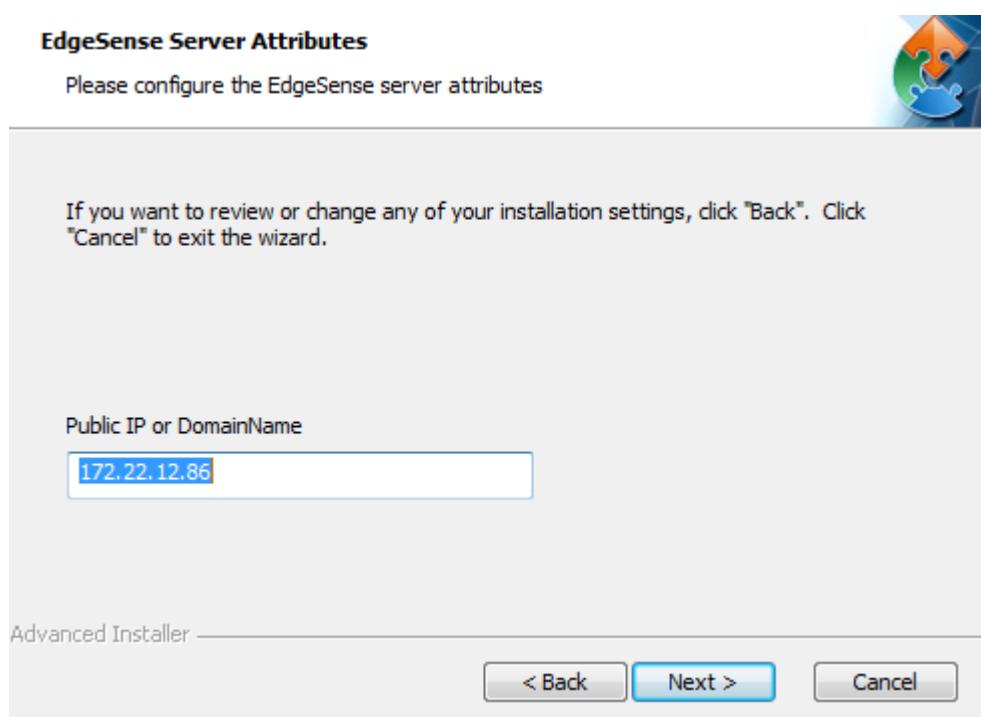


Windows hotfix of KB2999266 is required to run this software. Please download one from Microsoft website and execute it. (<https://www.microsoft.com/zh-TW/download/confirmation.aspx?id=49093>).

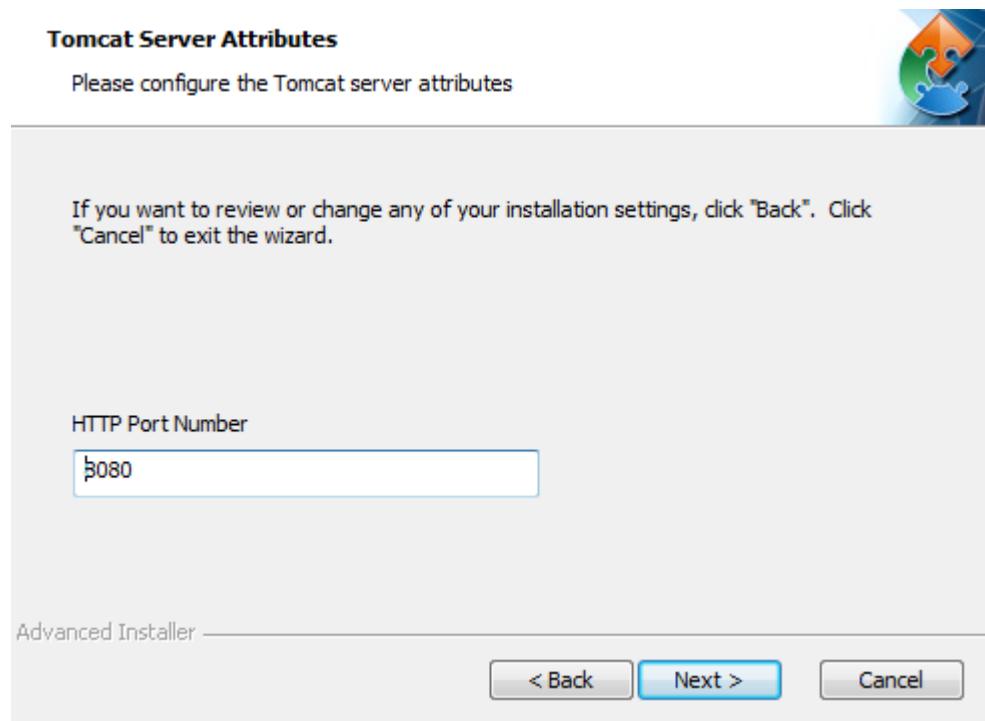
Microsoft Visual C++ 2015 Redistributable Update 3
(<https://www.microsoft.com/en-us/download/details.aspx?id=53840>)



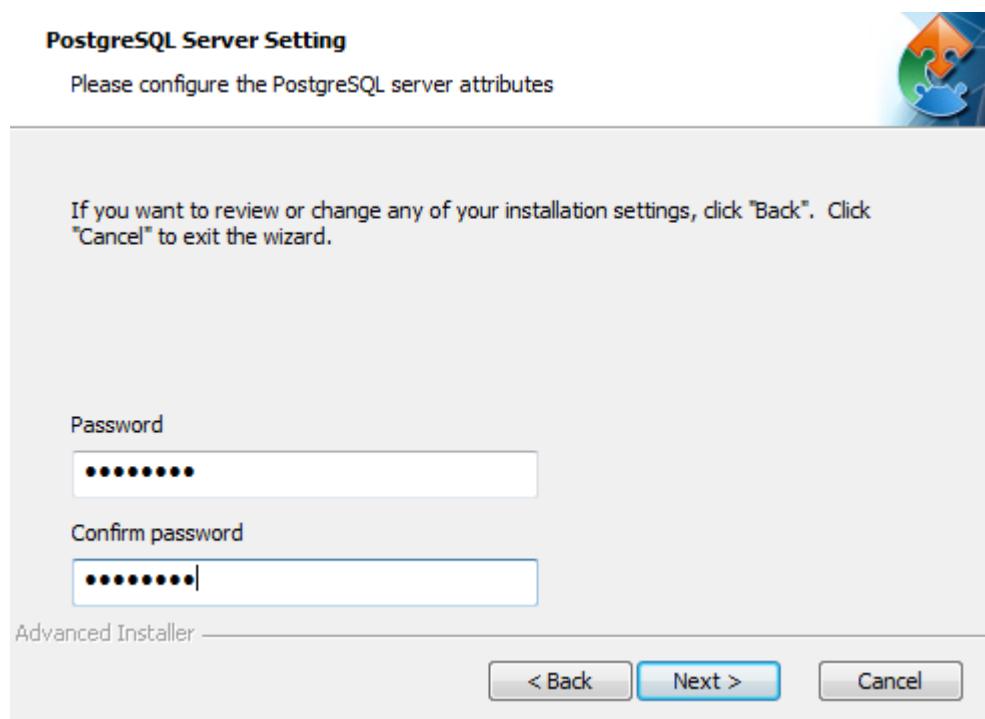
Please click the next button if no need to change the default installation path.



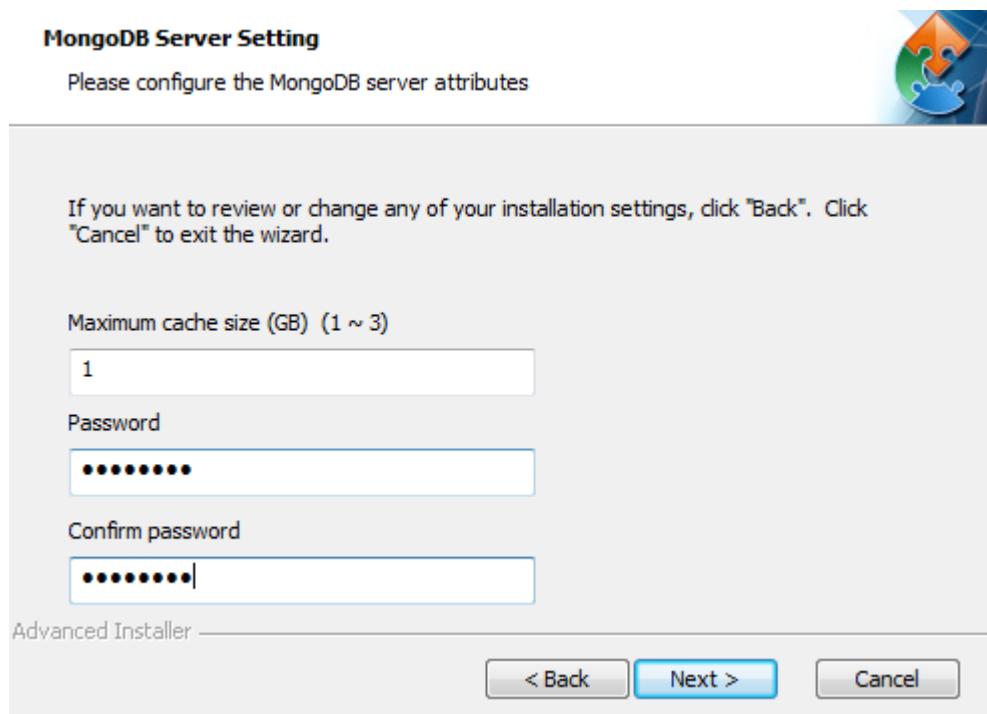
Please check your public IP or domain name and fill it.



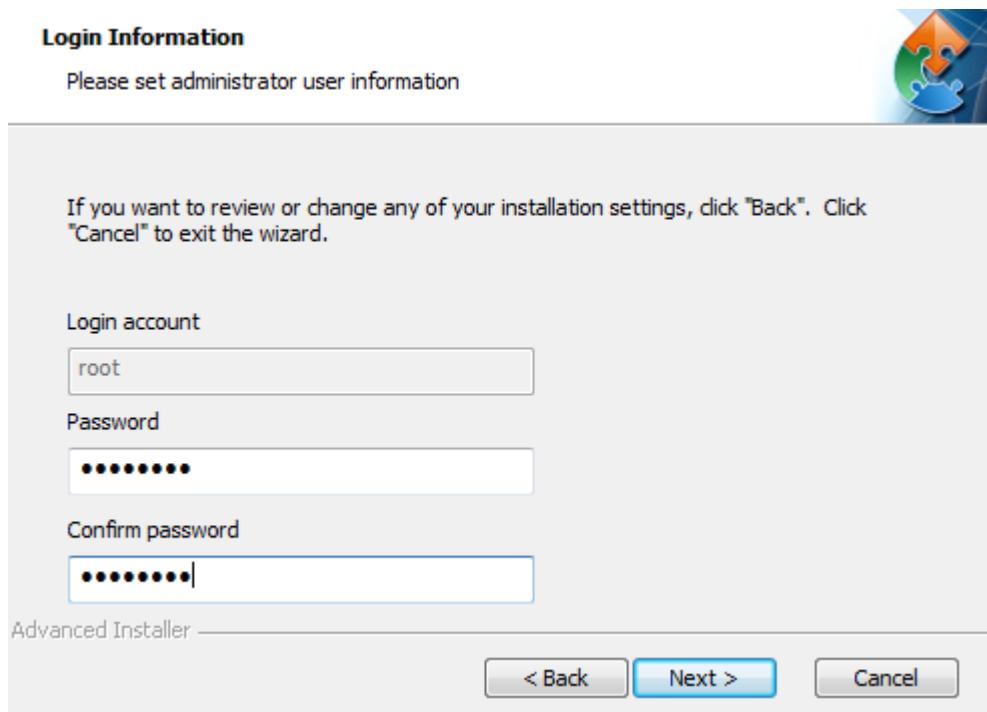
Please change the port number if need.



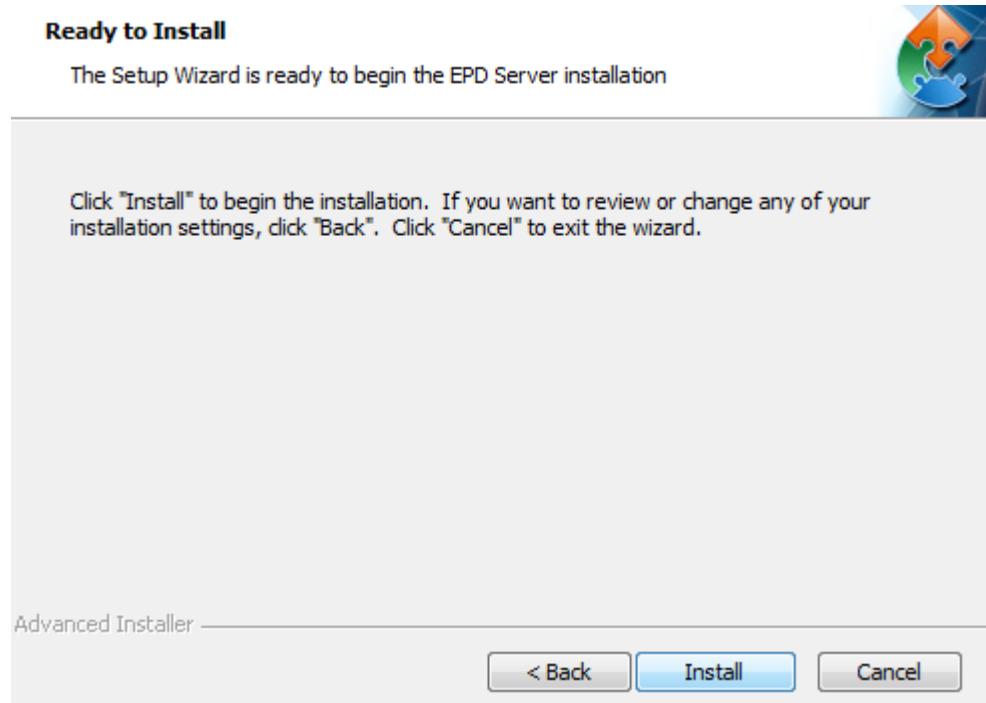
Please fill in the password and confirm password for PostgreSQL database.



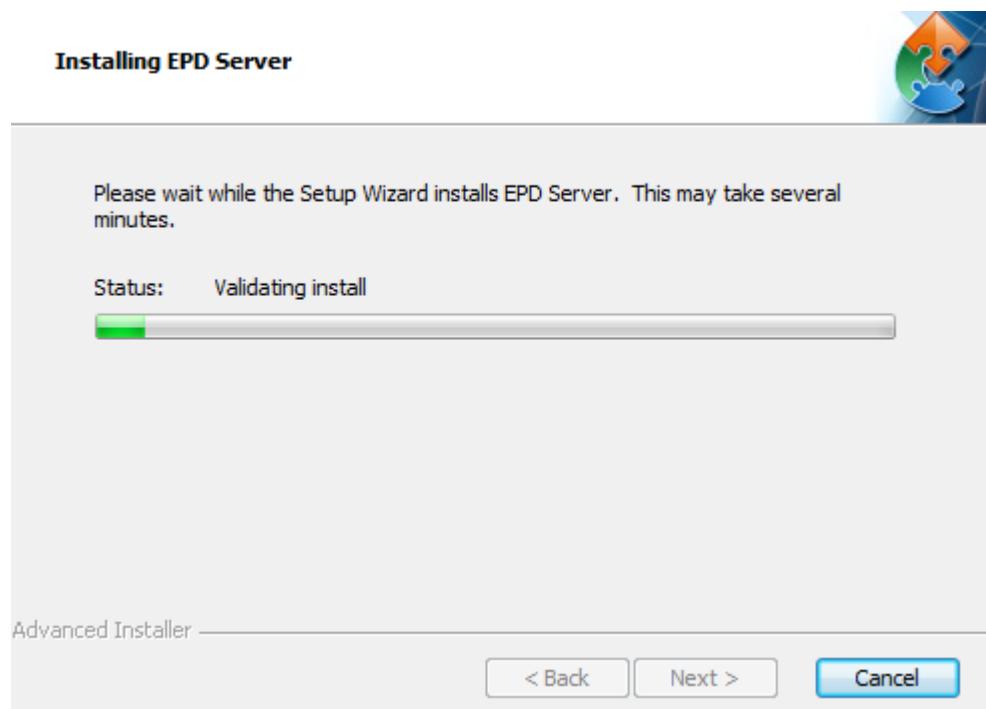
Please fill in the password and confirm password for PostgreSQL database.



Please fill in the password and confirm password for MongoDB database.



Please click the install button to start installation.

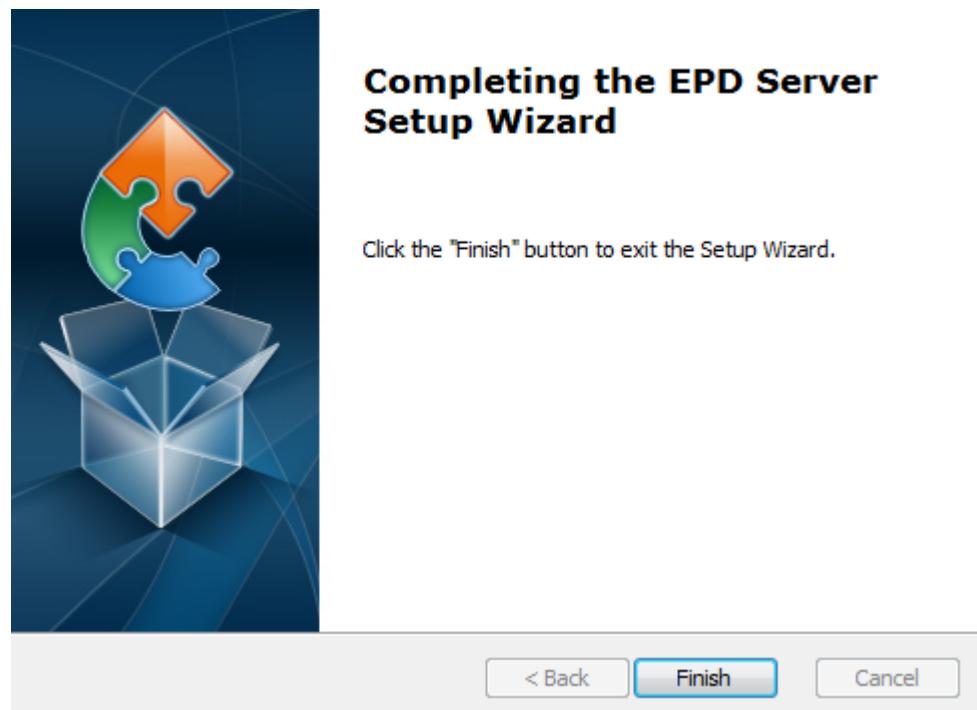




Please allow to access the installation of erl.exe.

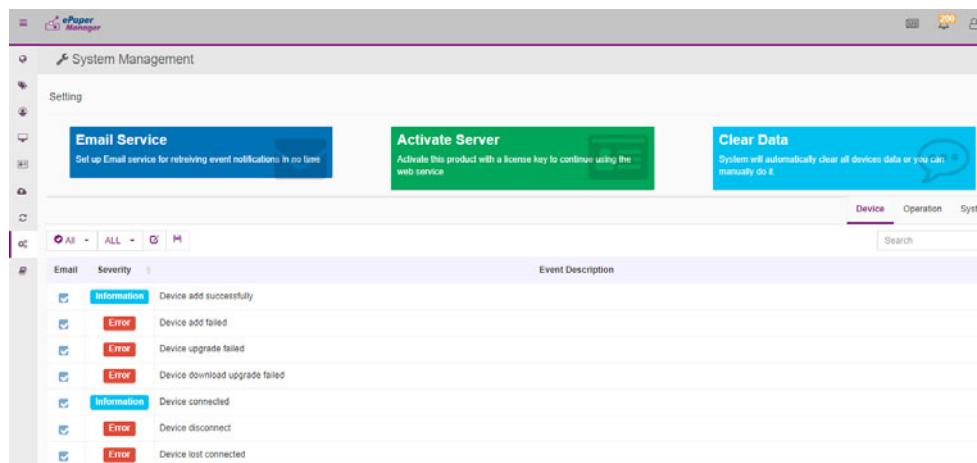


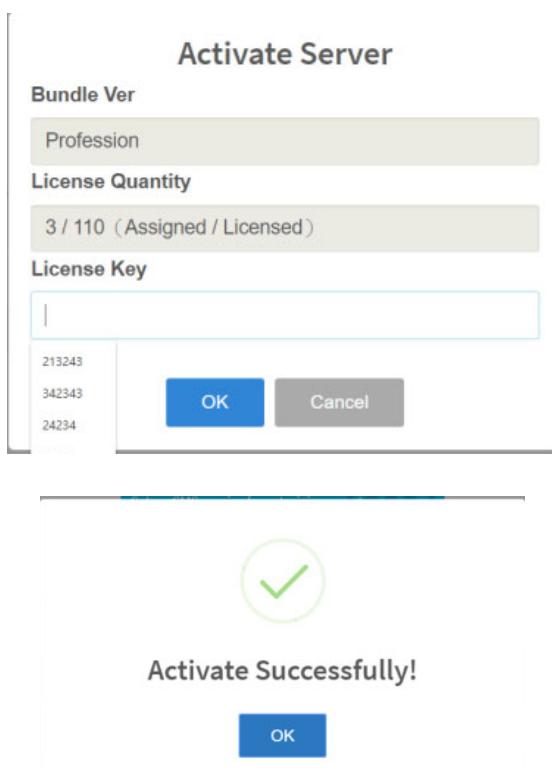
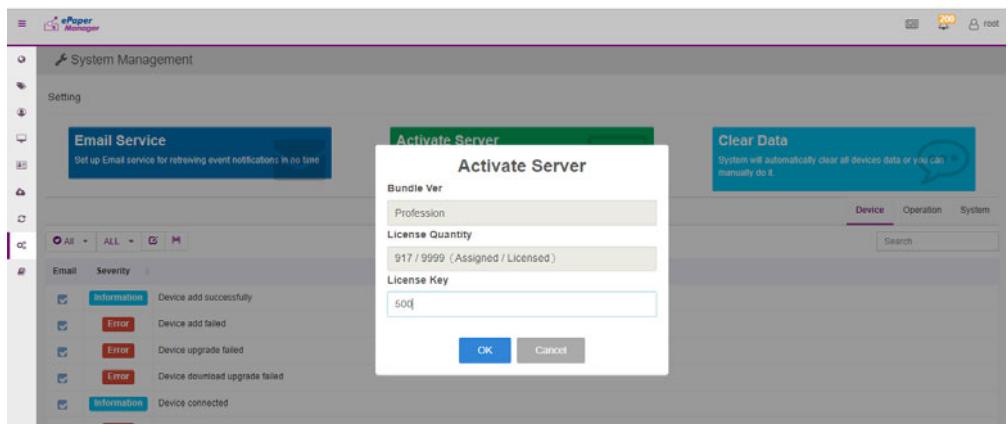
Please allow to access the installation of epmd.exe.



Click the Finish button to exit the Setup Wizard.

2. You will get a register from our sales package. You will need to enable the key after installation of ePaper manager.

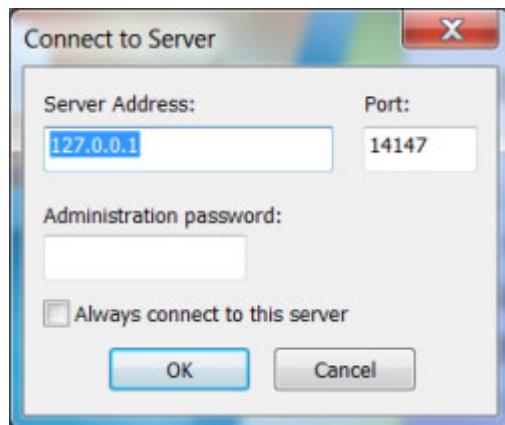




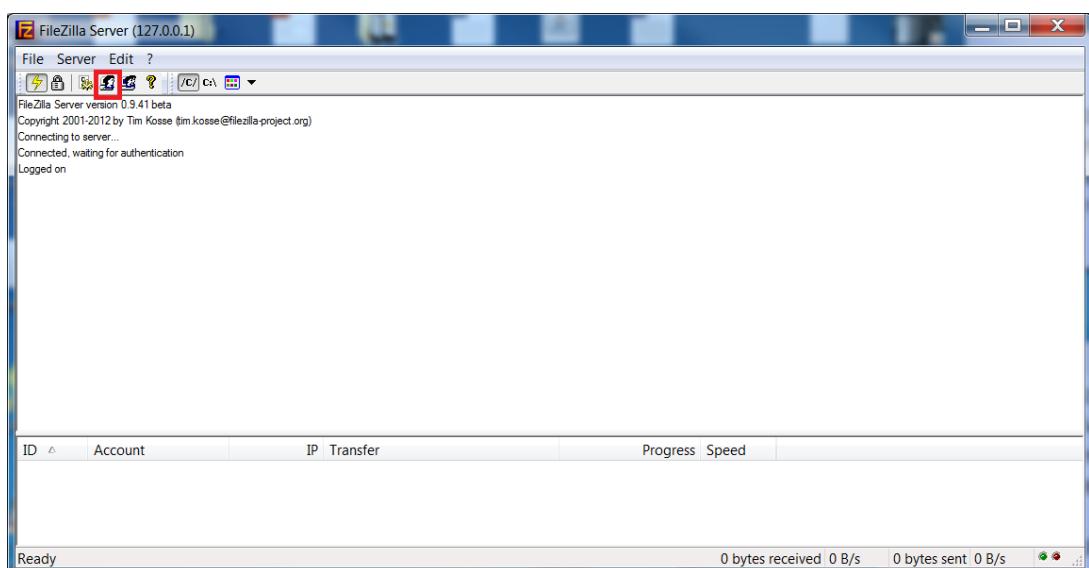
4.2.3.1 How to configure your FTP server

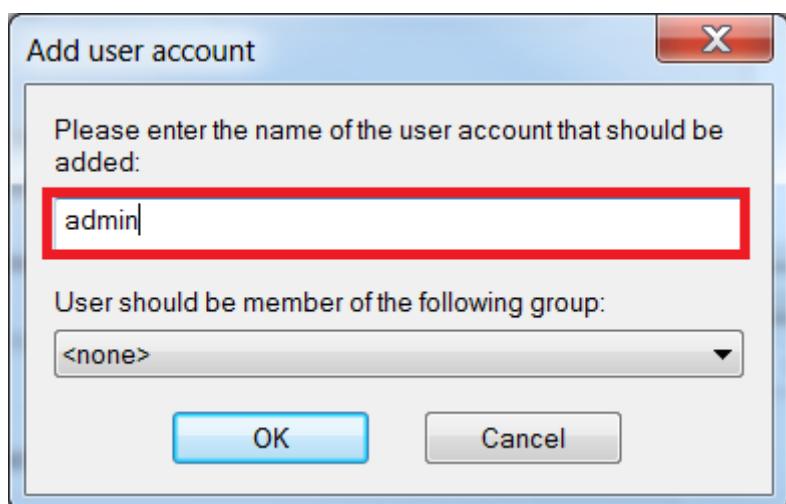
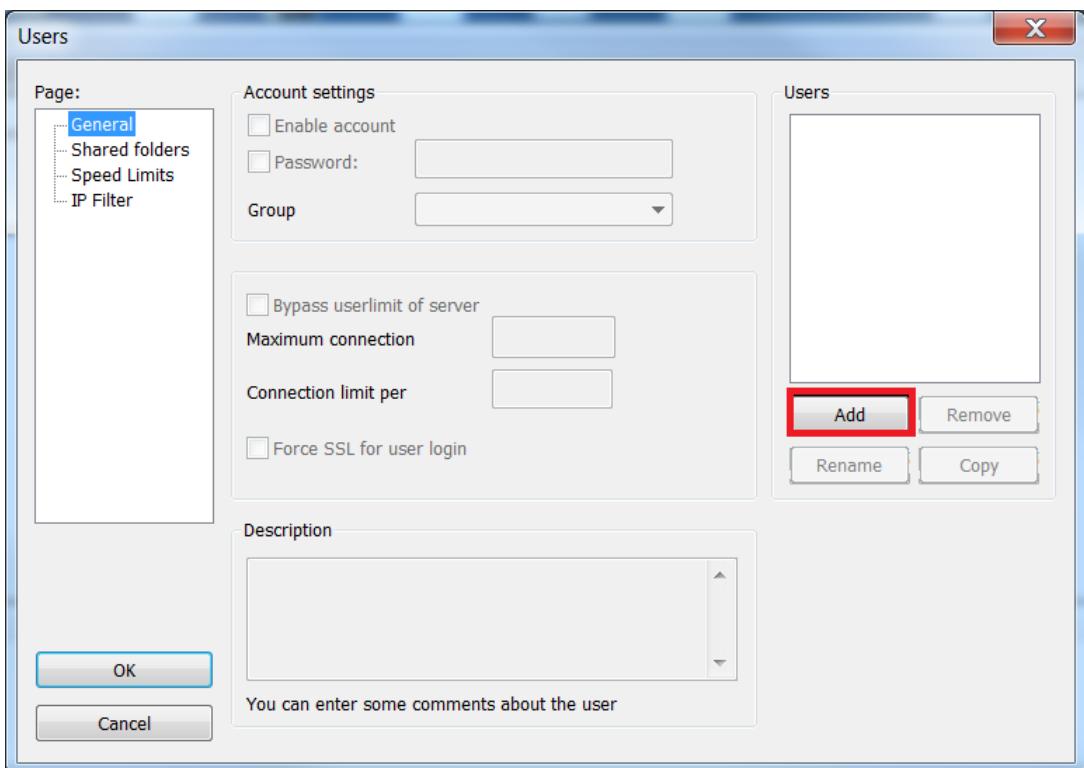
Before you start transmit image to EPD or Firmware upgrade. You need to setup an FTP server on the server. After you receive server: ARK2250L , it should have installed the FTP Server. Click the startup icon to launch the Filezilla Server.

1. Start the FTP Server.

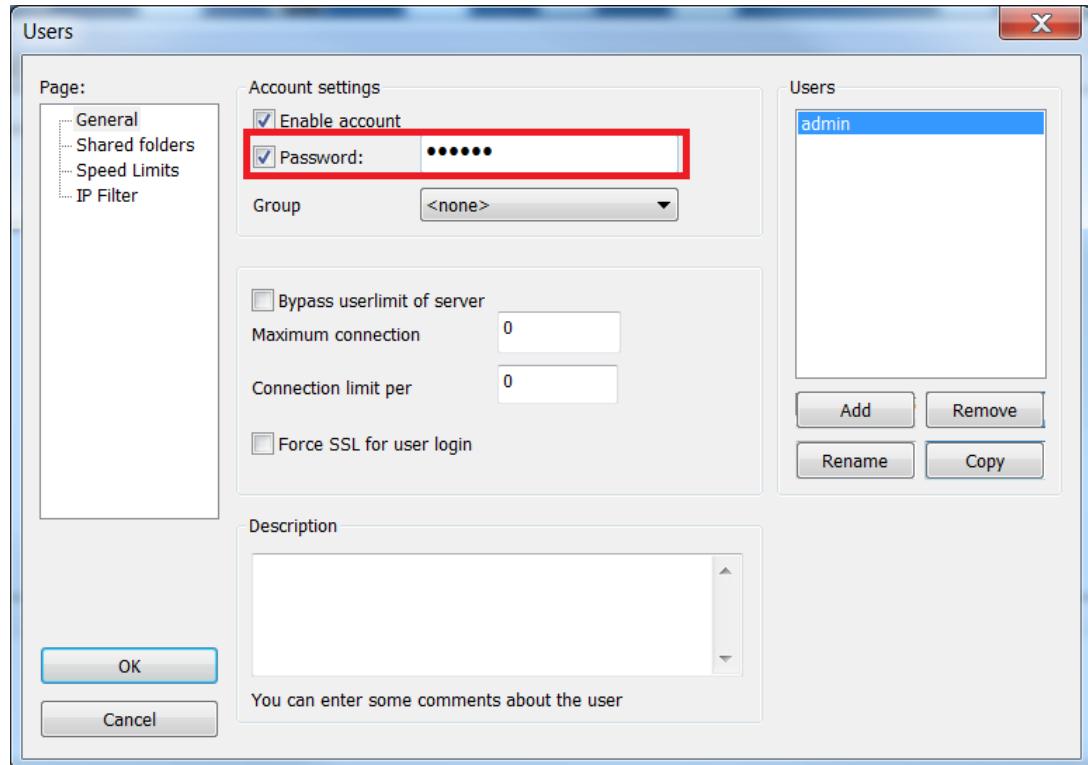


2. Add user account.

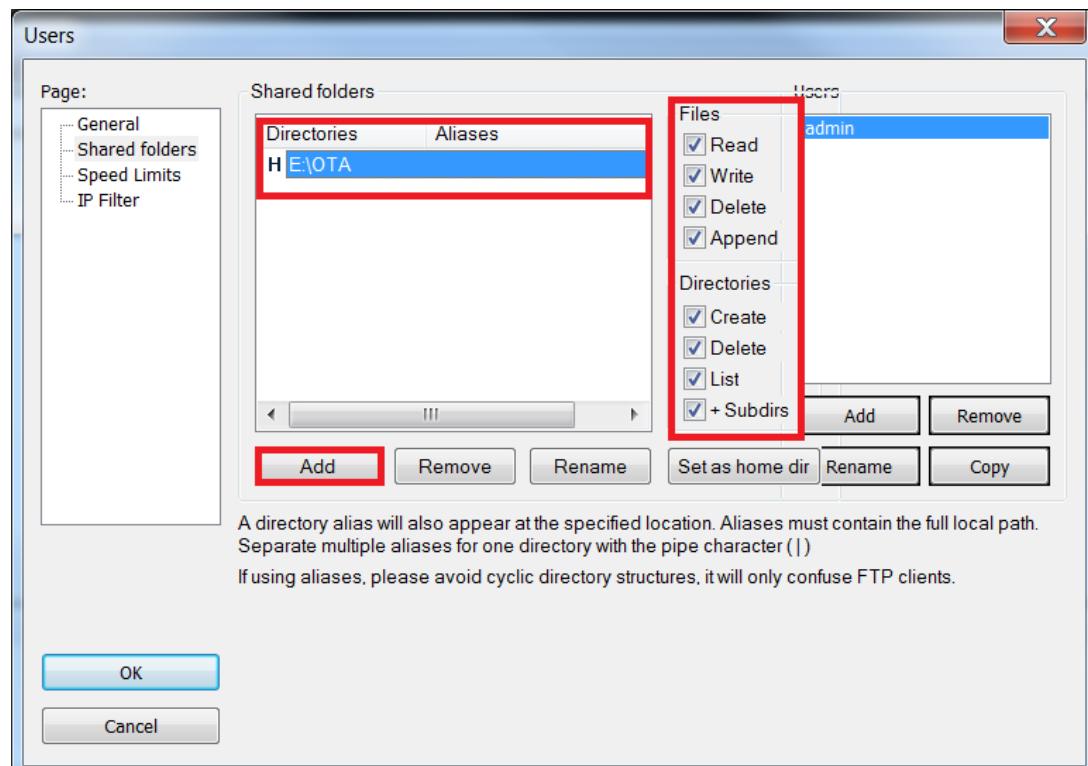




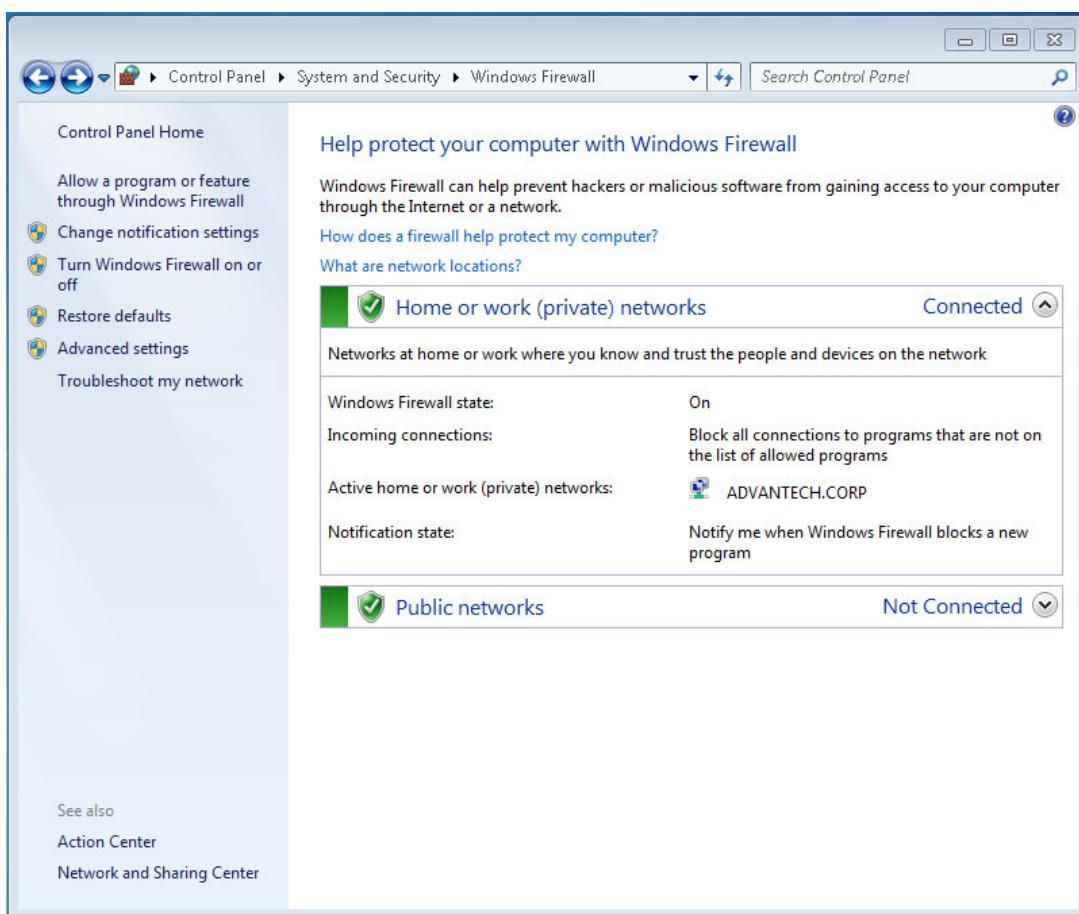
3. Add password for user. (Don't use "@" symbol in password)



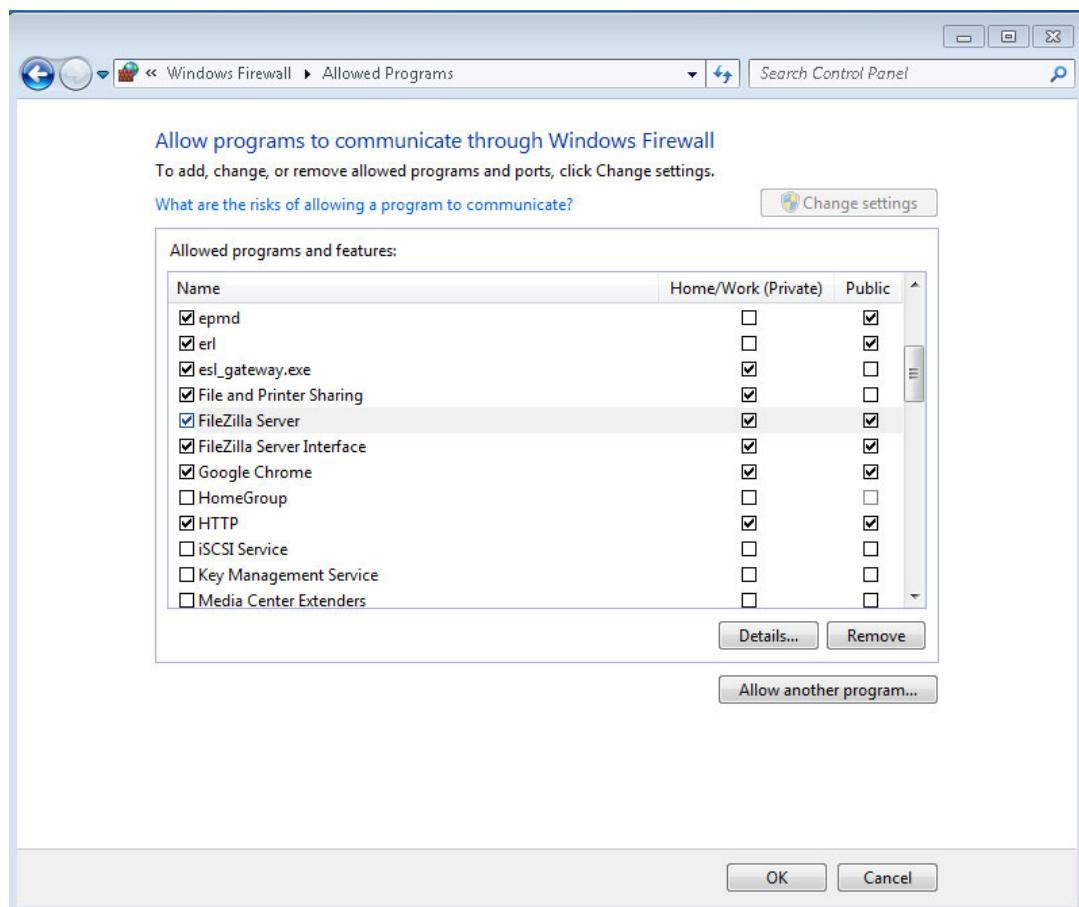
4. Add the Shared folders and set the property of the directories and files. Add the FTP Server to OTA Storage. You should make shure that the Shared folders is available.



5. Open Windows firewall setting and click allow a program or feature through Windows firewall.

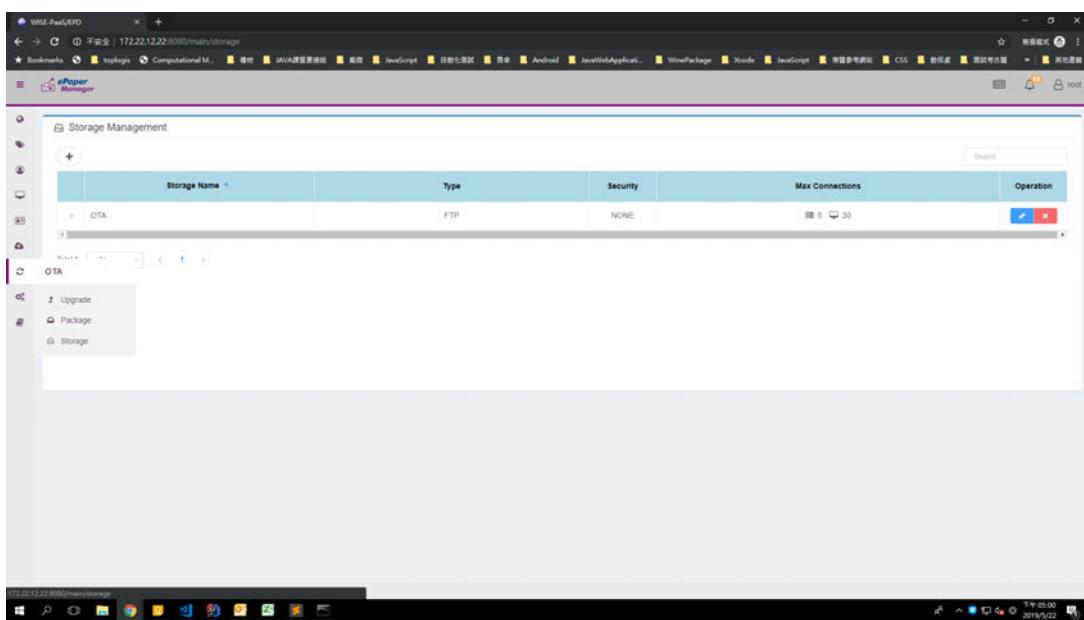


6. Make sure to allow FileZilla Server and FileZilla Server Interface to pass the Windows firewall.

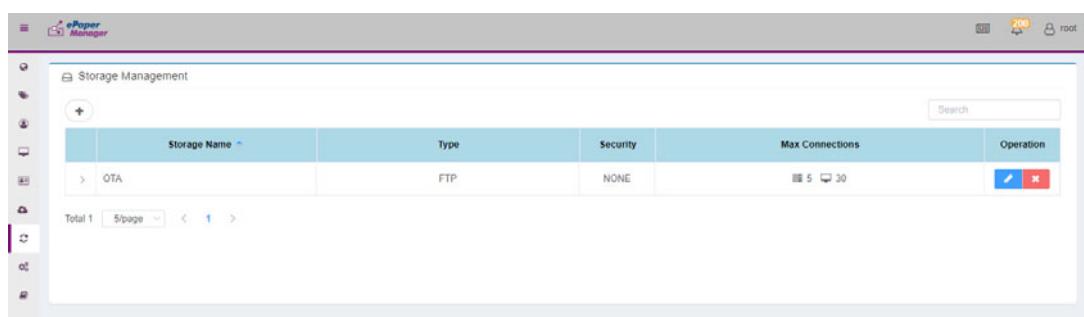


4.2.3.2 How to configure your FTP server on ePaper manager

1. Click Storage button to add a FTP storage for OTA and image delivery



2. Click Add (+) button on the left-upper corner. Select the FTP option.



3. Finish the configuration form and click Confirm.

The screenshot shows the 'Edit FTP Storage' configuration form. It includes fields for 'Storage' (set to 'OTA'), 'Name' (empty), 'Security' (set to 'NONE'), 'Domain' (set to '172.22.12.22'), 'Port' (set to '21'), and 'Account' (set to 'admin'). The 'Confirm' button is highlighted in blue at the bottom right.

* Storage	OTA
Name	
* Security	<input checked="" type="radio"/> NONE <input type="radio"/> FTPS <input type="radio"/> FTPES
* Domain	172.22.12.22
Port	21
* Account	admin

Storage Name: OTA

Security: NONE

Domain: [Your Server IP]

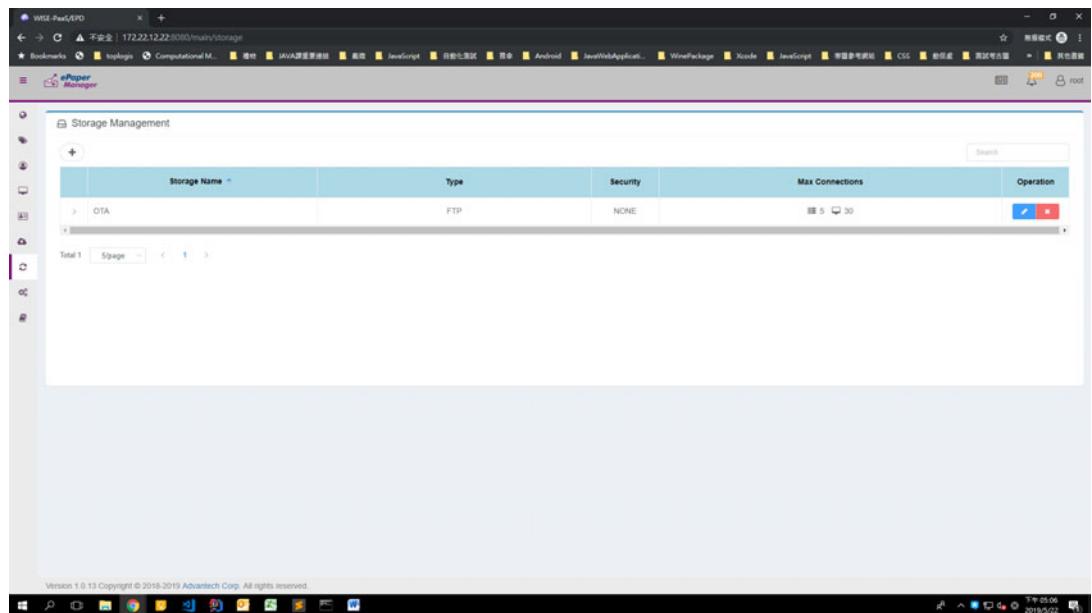
Port: 21

Account Name: [Your FTP account]

Password: [Your FTP password]

Root Path: [Your root path]

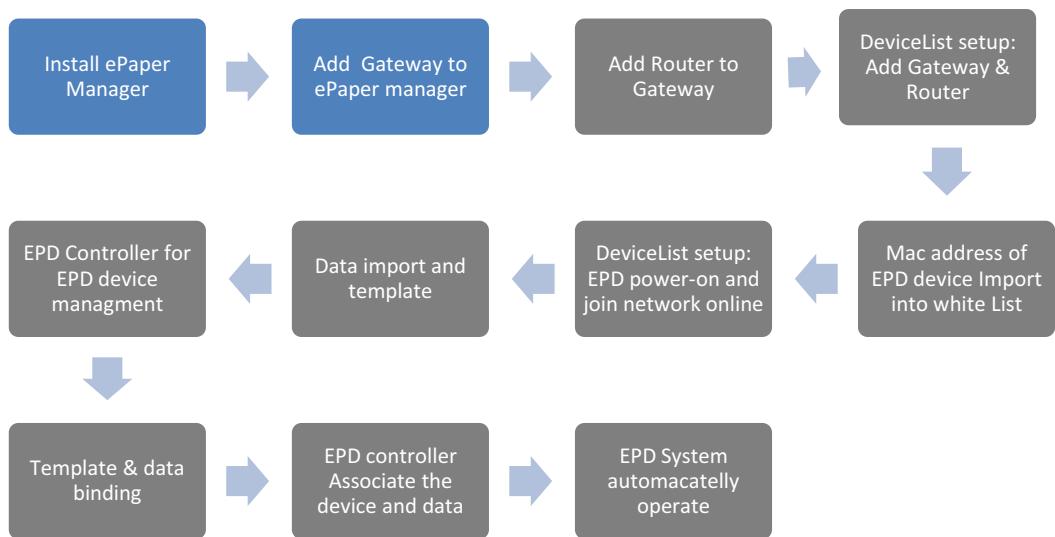
4. You will see an item in the Storage Management table.



Storage Name	Type	Security	Max Connections	Operation
OTA	FTP	NONE	5 30	 

5. Open the FTP port of the firewall in the OS.

4.2.4 WISE-3610Z setup and connect to ARK with ePaper manager

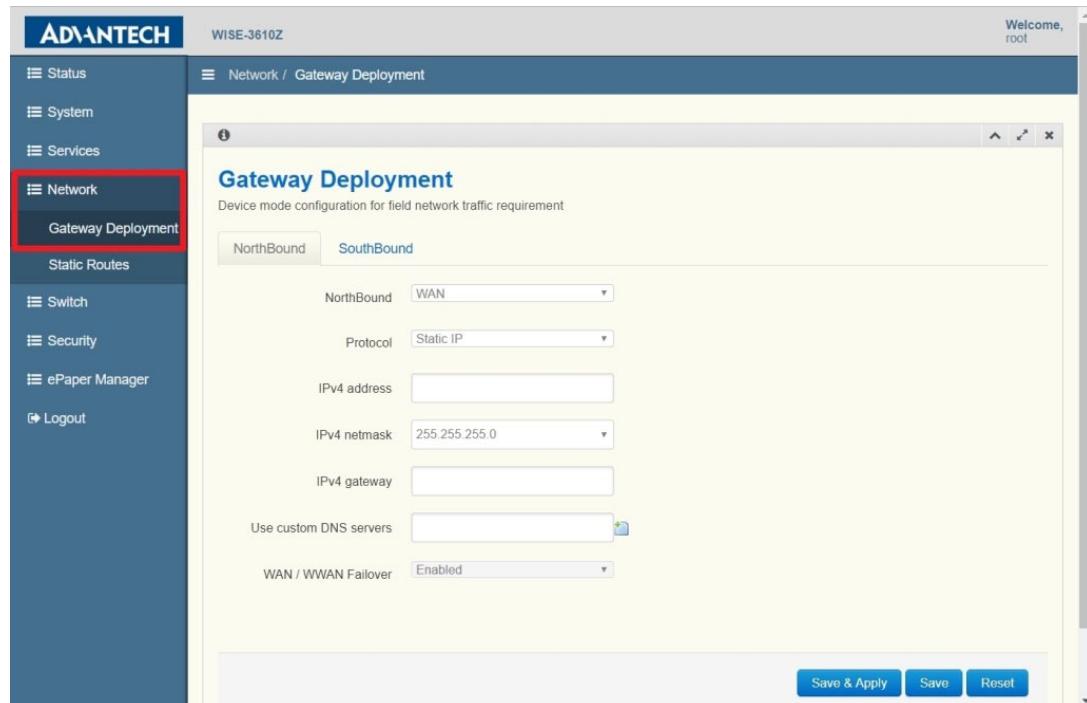


After completed the ePaper manager installation, you may start to configure Gateway: WISE-3610Z.

1. Power on WISE-3610Z
2. Open WISE-3610Z management web page: Open a web browser (Chrome is suggested) and enter the IP Address <http://192.168.1.1> or <http://advantech.local/>
3. Login: The default username and password are root and ePaper. Click the Login button to open the web-base configuration page.



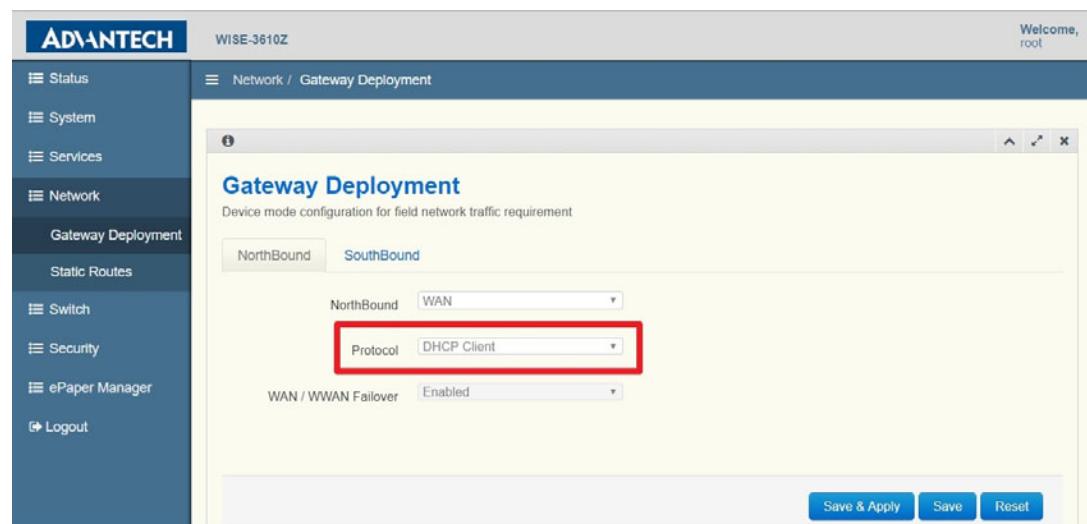
4. Build Networking Connection



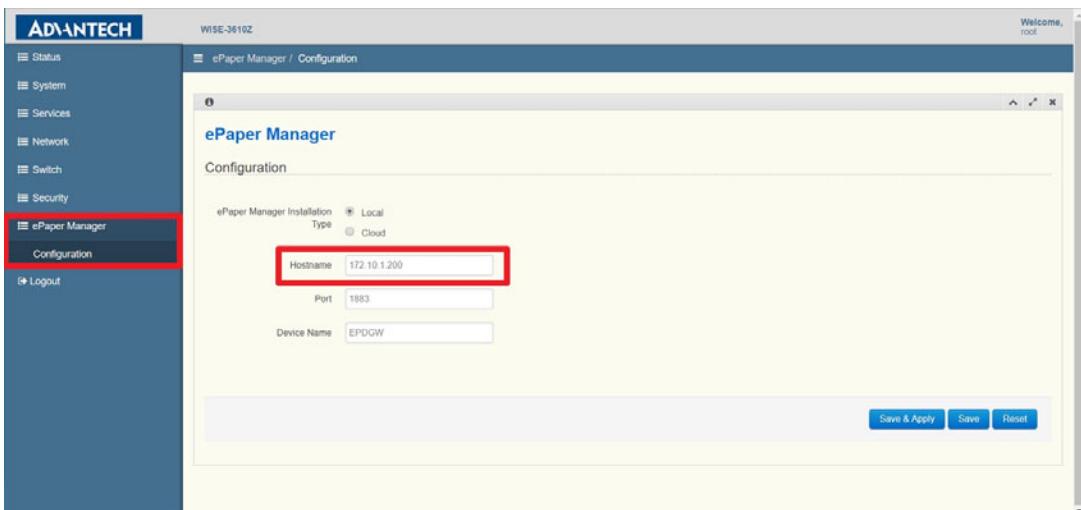
5. Ethernet WAN Backhaul Connection:

Connect Ethernet cable to exiting backhaul router and ISP cable modem or Internet service provider xDSL / FTTx modem.

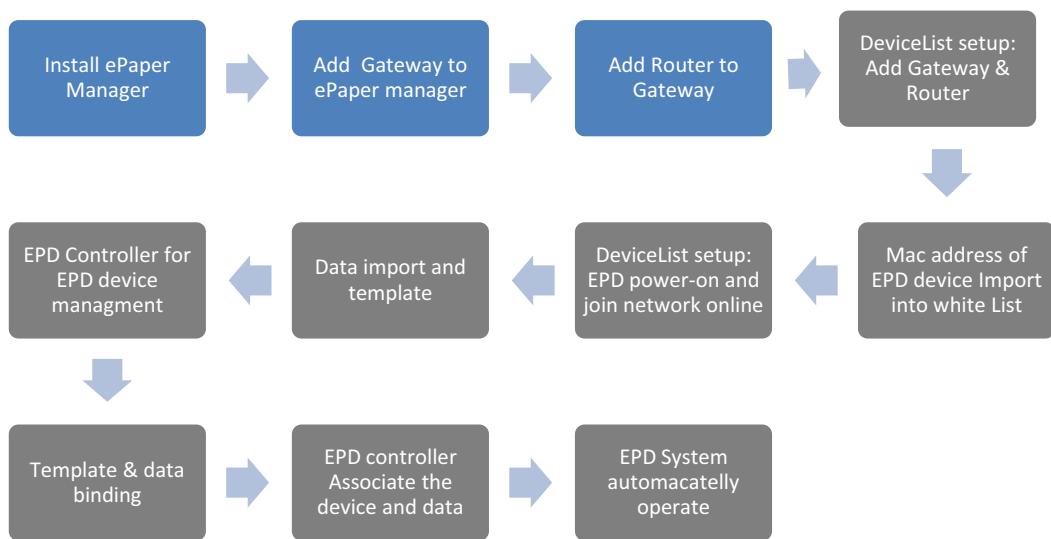
Select WAN for NorthBond backhaul Connection and choose Protocol > DHCP Client



6. Setup the ePaper management server IP as below page



4.2.5 EPD-023,053 setup and connect to ARK with ePaper manager



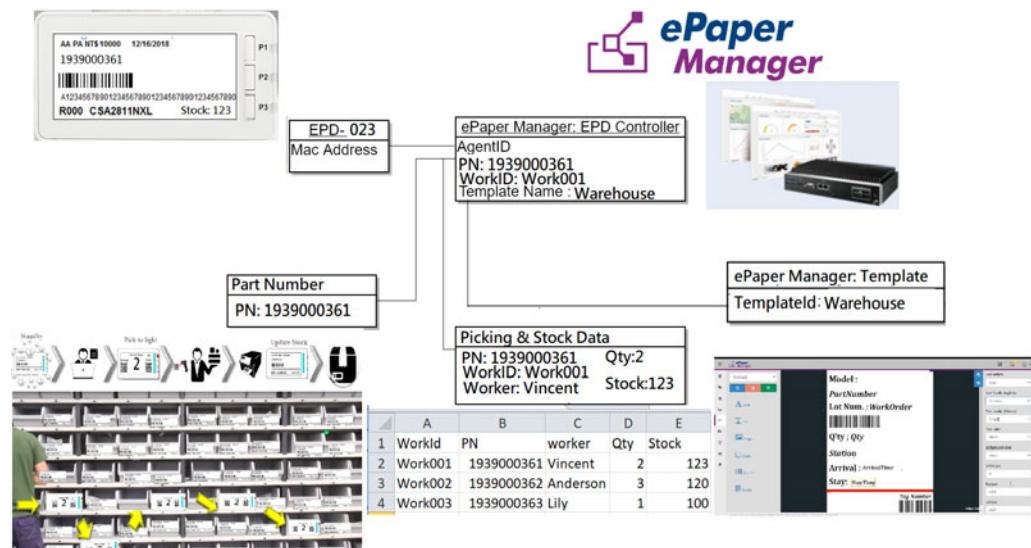
This section will explain how the router to join with the WISE-3610Z (gateway). User may know and understand what performance can be reach in our specification. Indeed, user may change some parameter to fit their user scenario.

1. Add Router (WISE-3610Z/WISE-3240) to ePaper manager:
 - a. WISE-3610Z: The WISE-3610Z combine gateway and router without any extra setting
 - b. WISE-3240: TBD

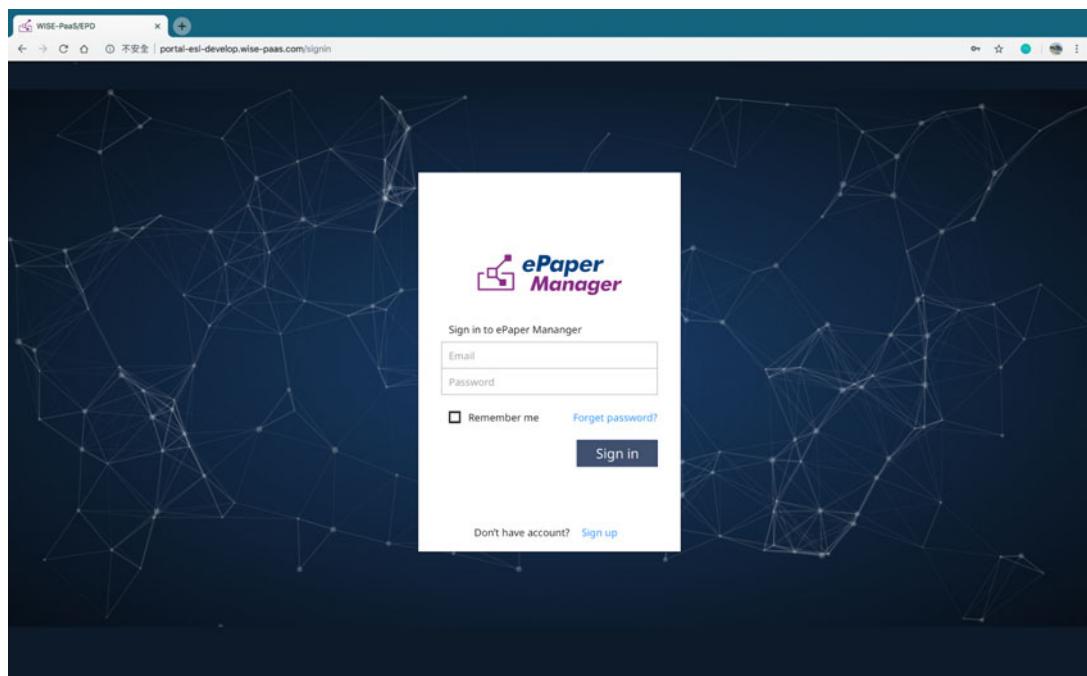
4.3 Hands-on the EPD Device on ePaper Manager

There are couple item, user need to prepare before start ePaper manager/EPD controller as below.

1. EPD device mac address
2. Target Item data contain unique ID as the key e.g. PN (Part number)
3. Target Item ID as the key e.g. PN (Part number)
4. EPD device screen setup by the EPD image template

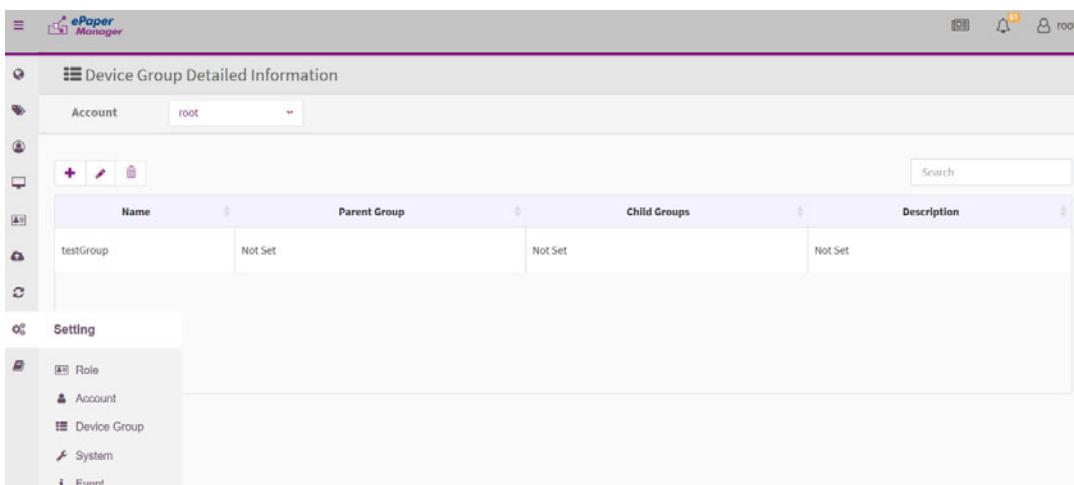
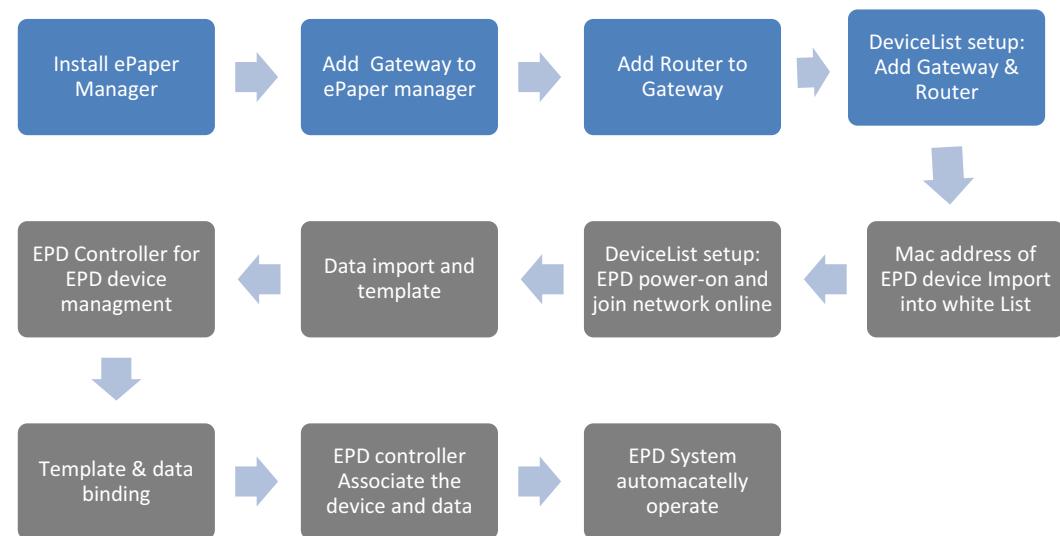


4.3.1 ePaper Manager Login

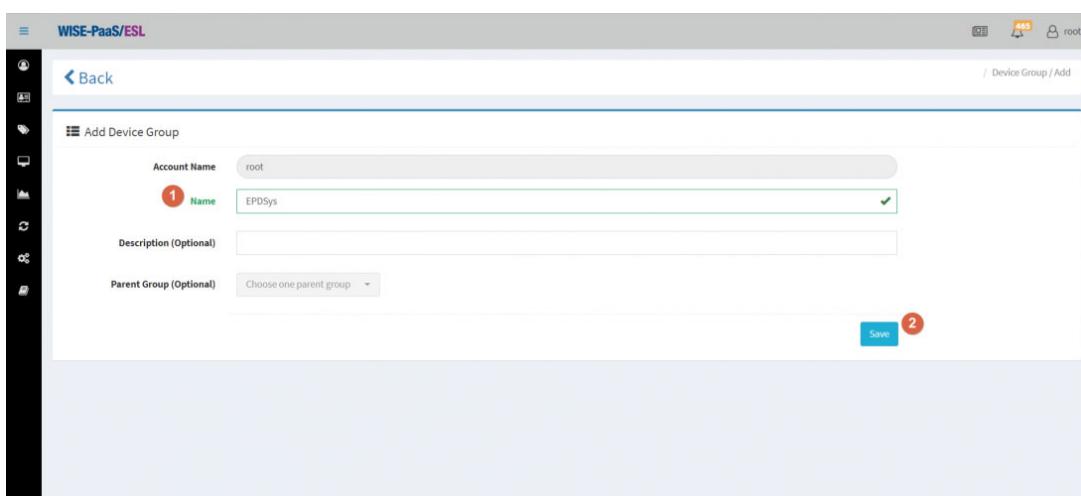


4.3.2 Add Group & device into ePaper Manager

1. Create group & Edit group information



2. Add Group



3. Add Gateway/Router to Group

The screenshots illustrate the steps to add a device to a group in the ePaper Manager application.

Screenshot 1: Device List Management

The interface shows a sidebar with navigation links: Overview, EPD Controller, Item Data, Device List (selected), Template, EPD Import/Dispatch, OTA, Setting, and Document. The main area is titled "Device List Management" with filters for Account (root), Group (testGroup), Status (All), and Mode (Device). A search bar and a grid view are also present. The grid displays columns for Name, Remote Control, Monitoring, Reporting, Get/Set Data, Threshold Rules, and Status Message. A message at the bottom states "No matching records found".

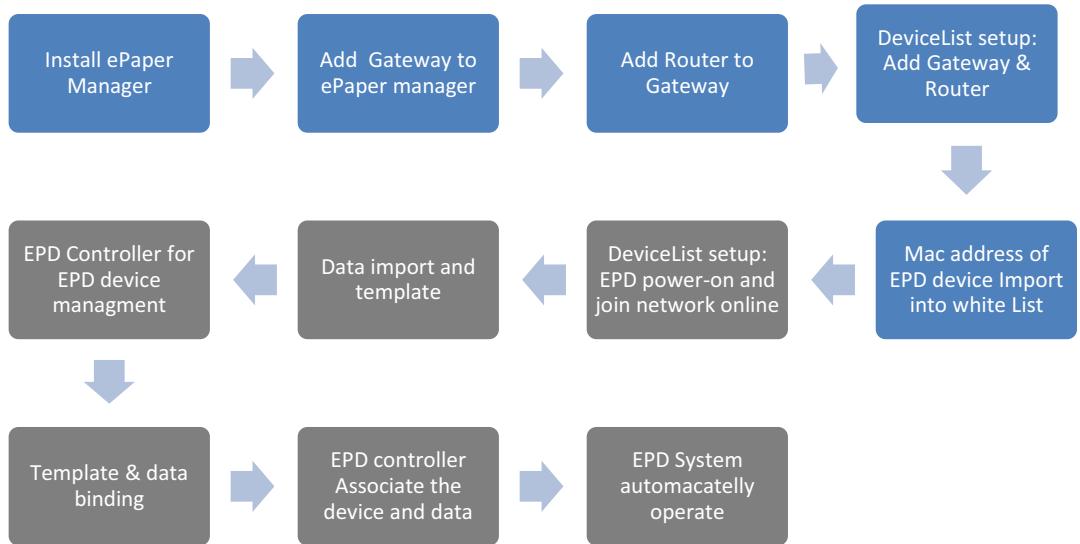
Screenshot 2: Add Device

The interface shows the "Add Device" screen. The sidebar is the same as in the first screenshot. The main area shows a table with columns "Name" and "Agent ID". Three devices are listed: ESL-Tag-a682, ESL-Router-b233, and WISE-3610_PaaS. The WISE-3610_PaaS row has a checked checkbox. A "Search" bar is at the top right. A "Finish" button is at the bottom right.

Screenshot 3: Success Confirmation

The interface shows the "Add Device" screen with a confirmation dialog box. The dialog has a green checkmark icon, the word "Success", and the message "Add device successfully". A "OK" button is at the bottom right. The background shows the same table and sidebar as the previous screenshots.

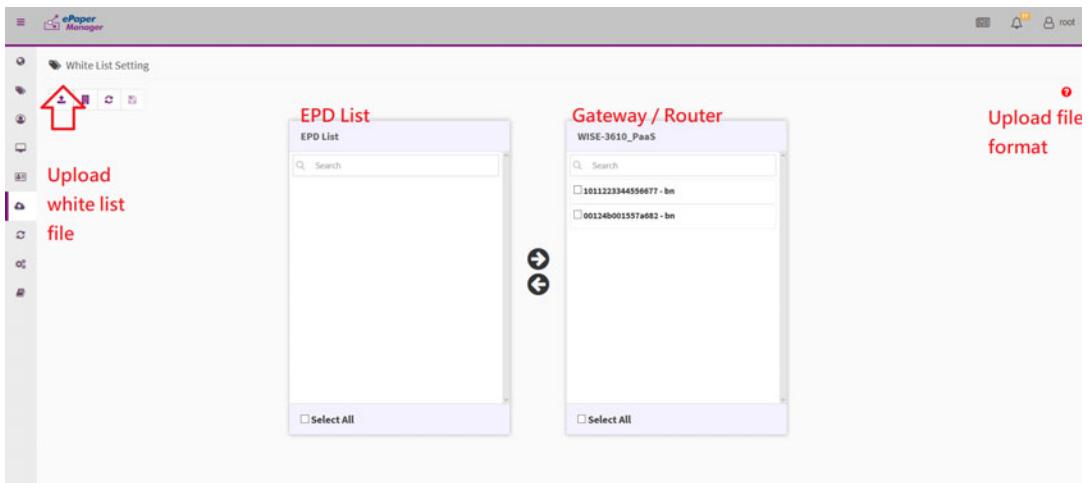
4. Legal ePaper device join the network



■ Import the white list

Import Mac address of EPD device list into ePaper manager.

Note: user may receive the mac address file when EPD device shipping.

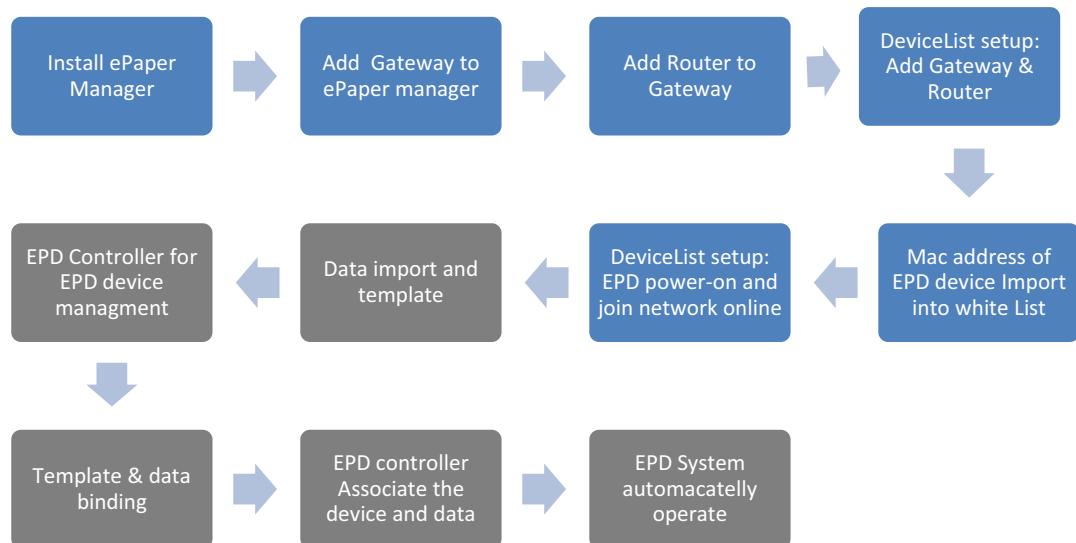


- Add EPD device into ePaper manager: white list. There is a mac address label on the EPD-053 back, user may scan QR Code to mapping the target item.



- Dispatch the EPD device to Gateway and Router
- (Option) Setup Router Channel
 - Refer to #4.3.2 item 7. Setup Router Channel.
- Wakeup EPD device from sleep mode
 - Press button and release button

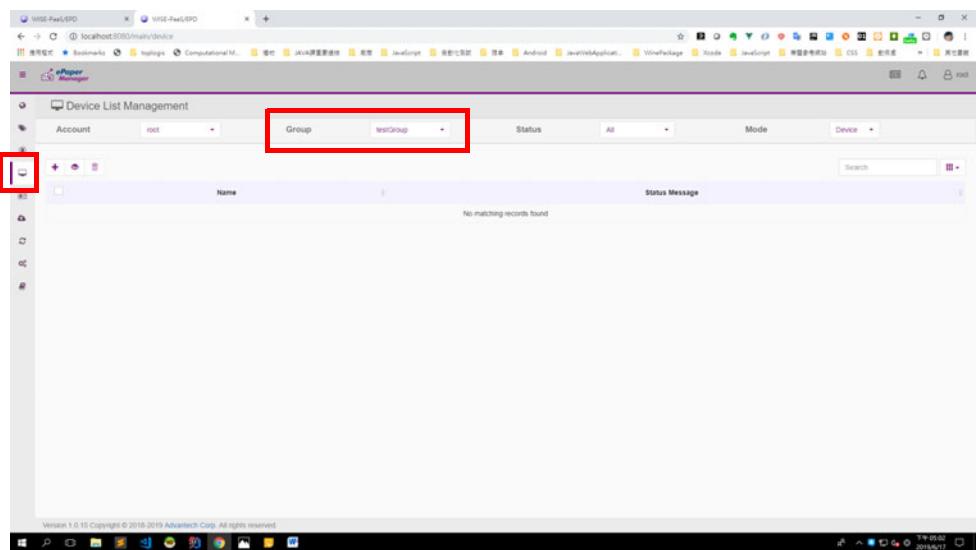
5. Add EPD device into a Device Group



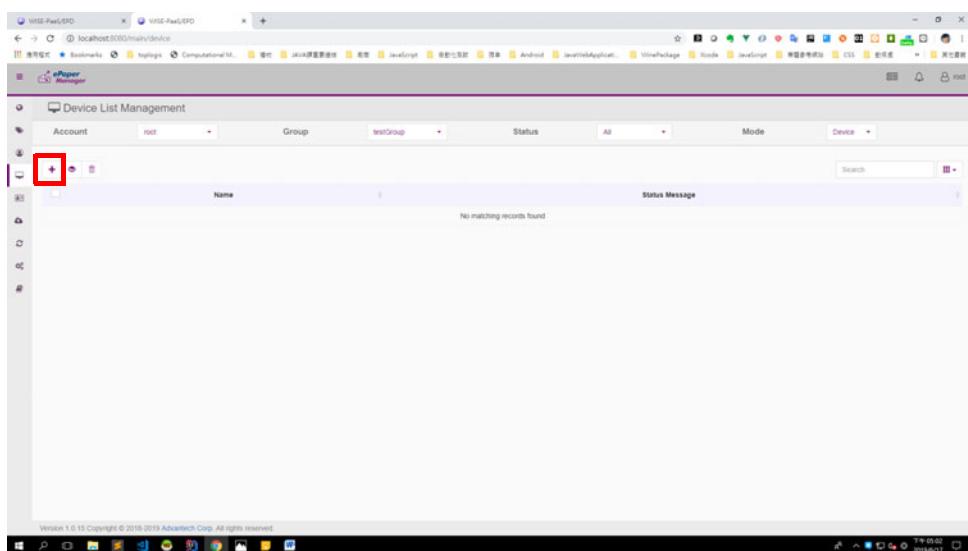
1). EPD device online.

Click any button of the EPD device and you can see it on-line (30 mins for 400 pcs EPD devices join network in each router).

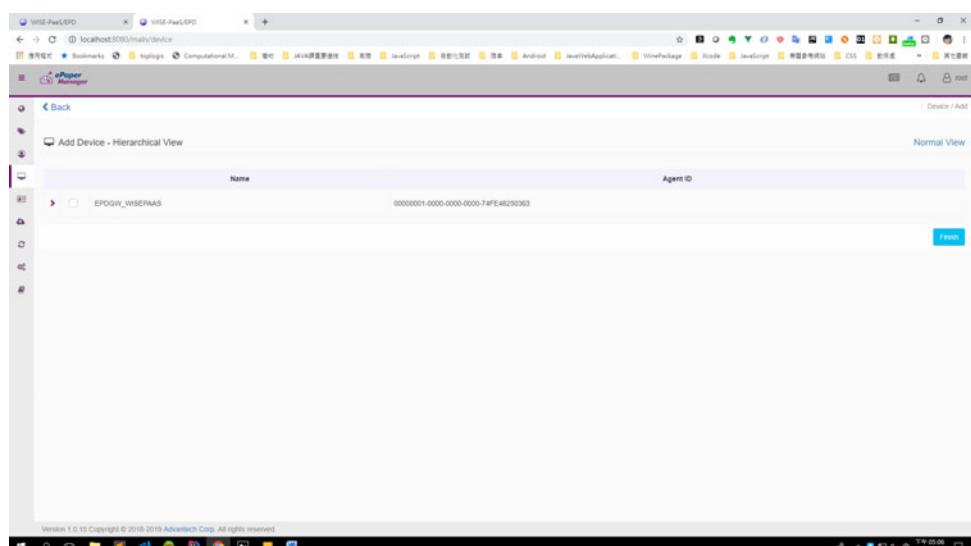
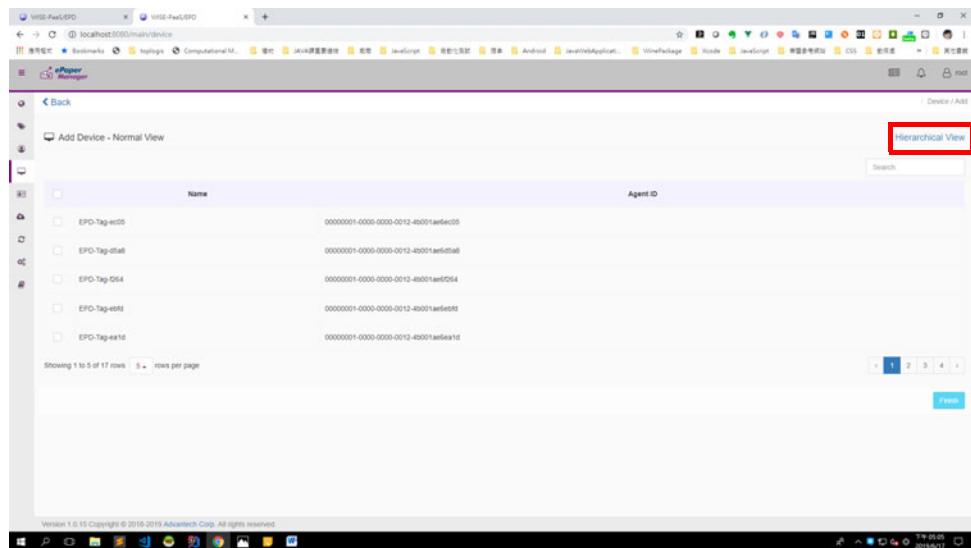
2). Click Device List on the side bar menu, and select the device group you want to add devices.



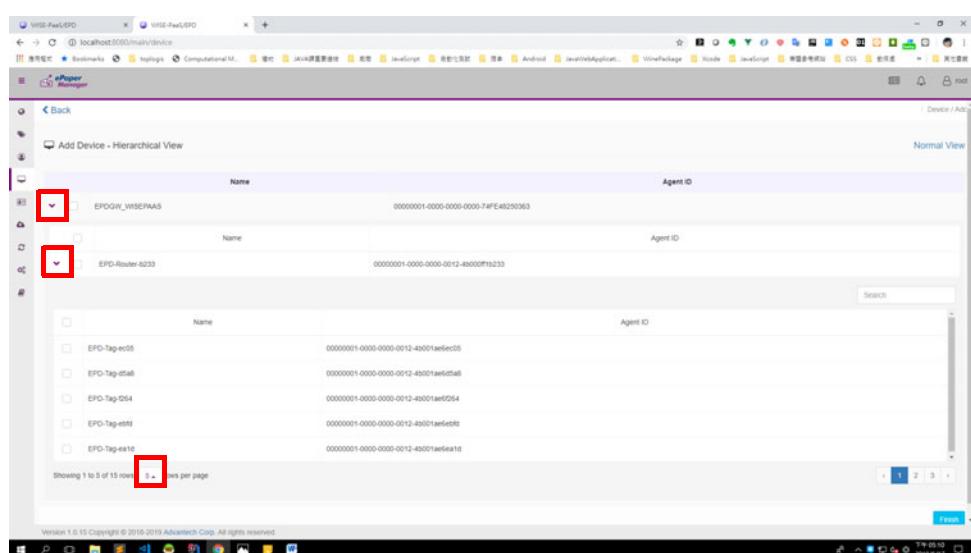
2). Click add button on the top-left corner.



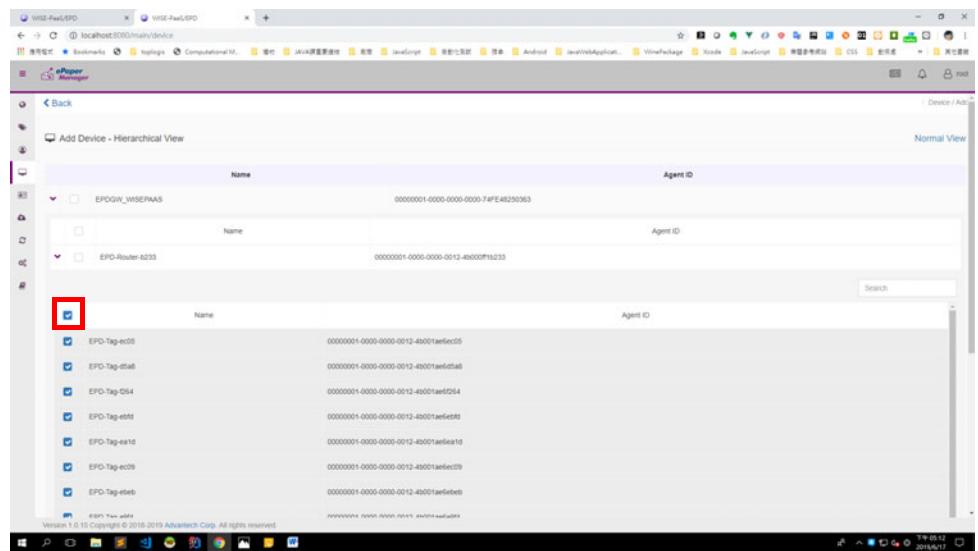
3). Choose the Hierarchical view. (If you have finished the White List Setting previously, you will see the devices grouped under a gateway.)



4). Open the hierarchy until you see the device. Change the show number in order to select all devices under this gateway.

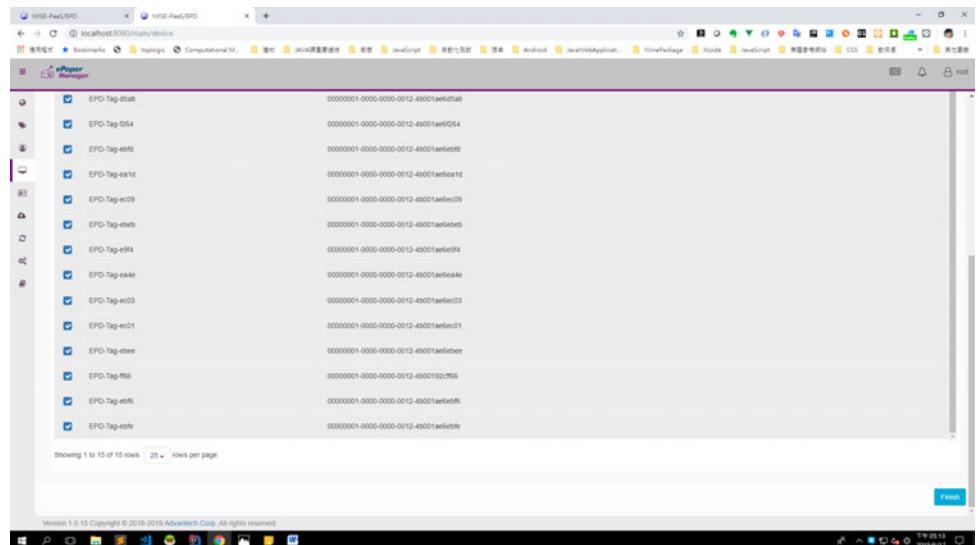


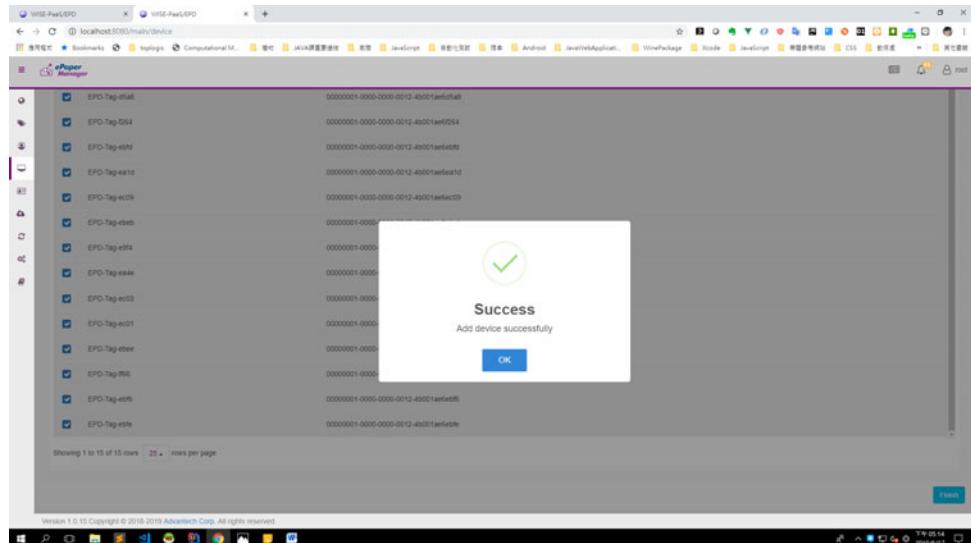
5). Select all by click the checkbox above.



6). Click the finish button to finish the selection.

Note: It's an option step, since system already have encrypted key to protect all transmission data.

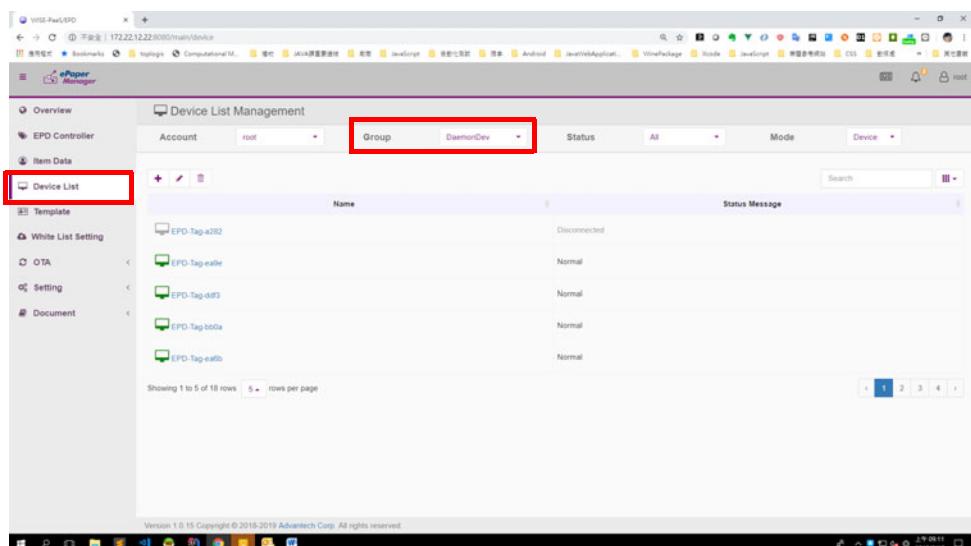




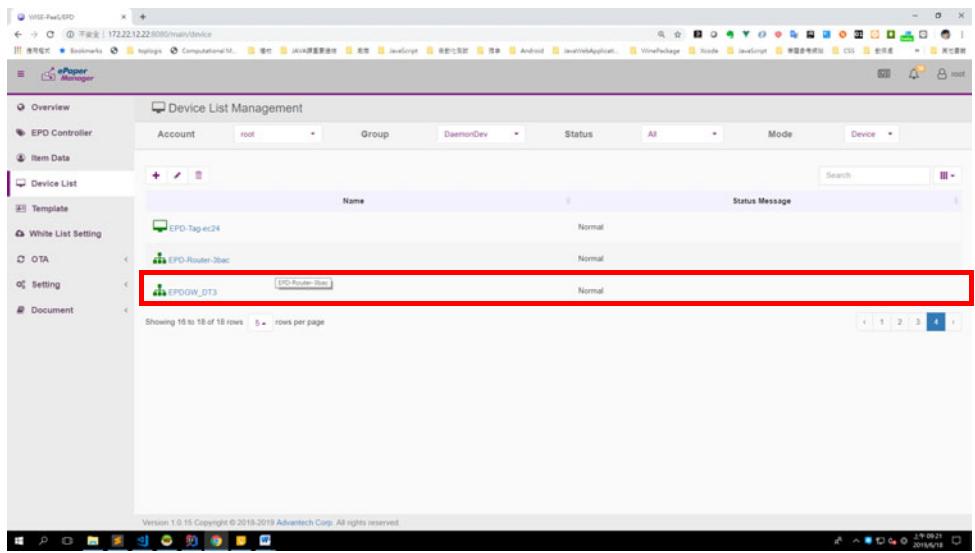
6. Set Gateway Encrypted Key

Note: It's an option step, since system already have encrypted key to protect all transmission data.

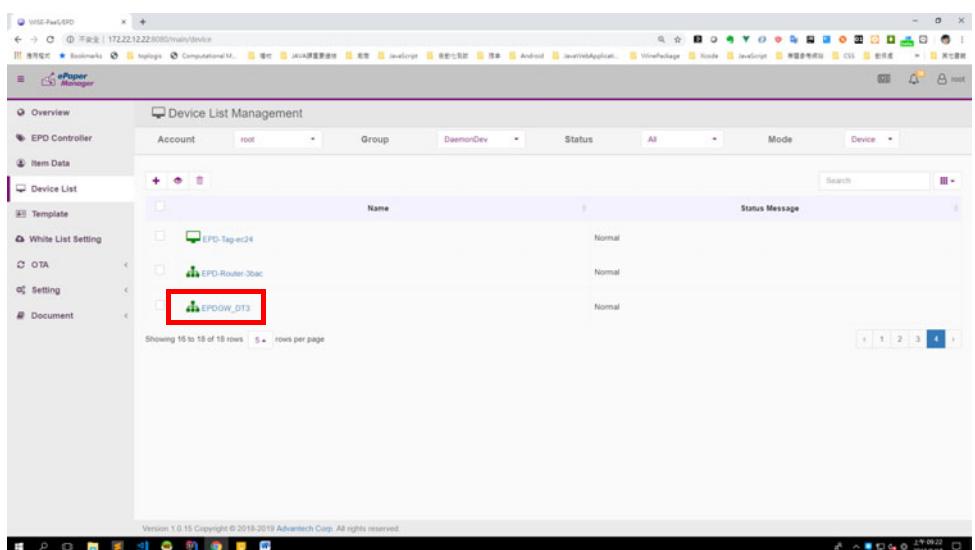
1). Click Device List on the side bar menu, and select the device group which the router.



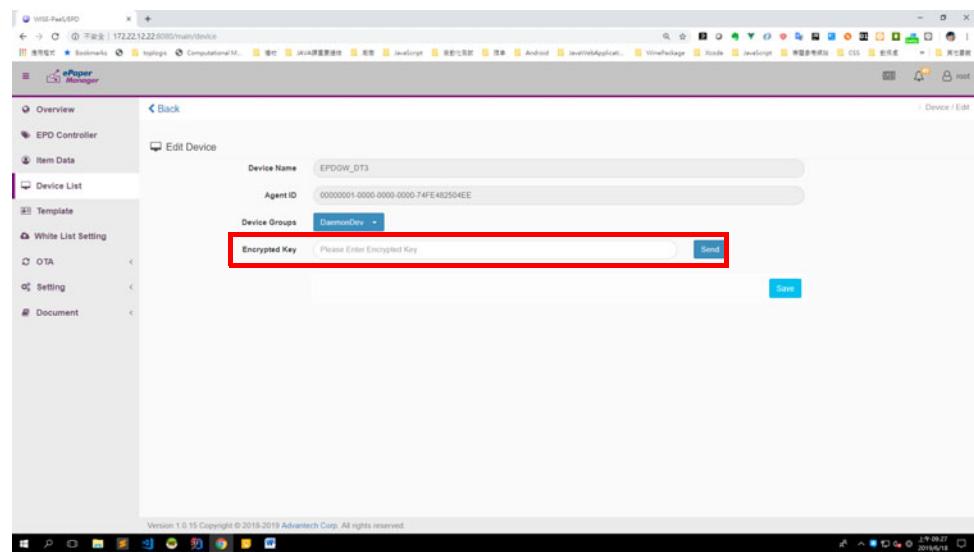
2). Find the gateway device, and change to edit mode by click the edit button.



3). Click the name of gateway device to enter the edit mode.

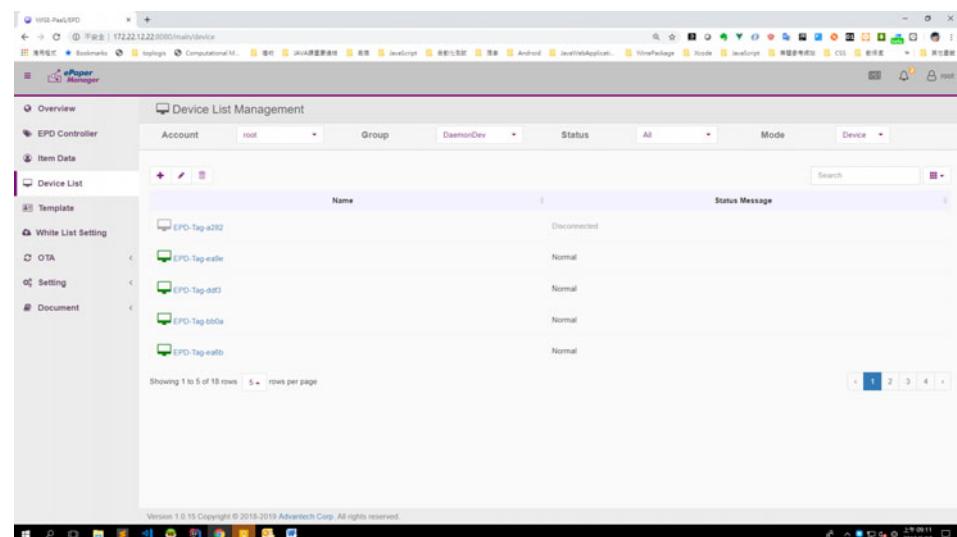


4.) Fill in the Encrypted Key (32-characters with A-Z and 0-9), and then click send to finish the configuration.

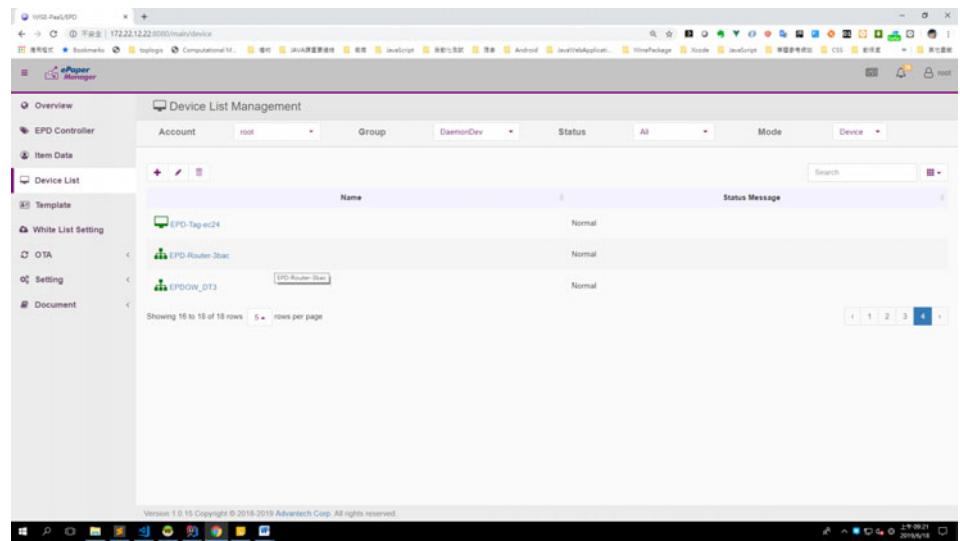


7. Setup Router Channel on WISE-3610Z or WISE-3240

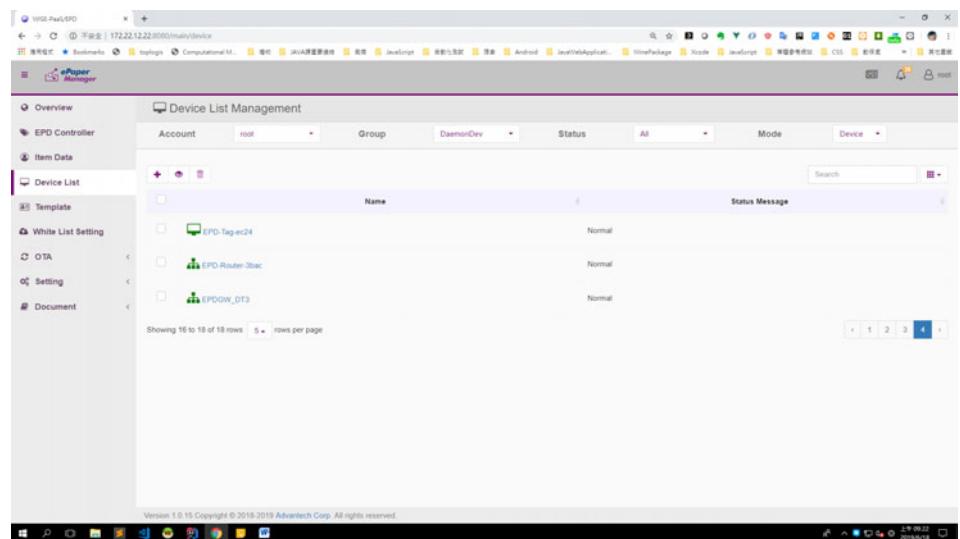
1). Click Device List on the side bar menu, and select the device group which the router.



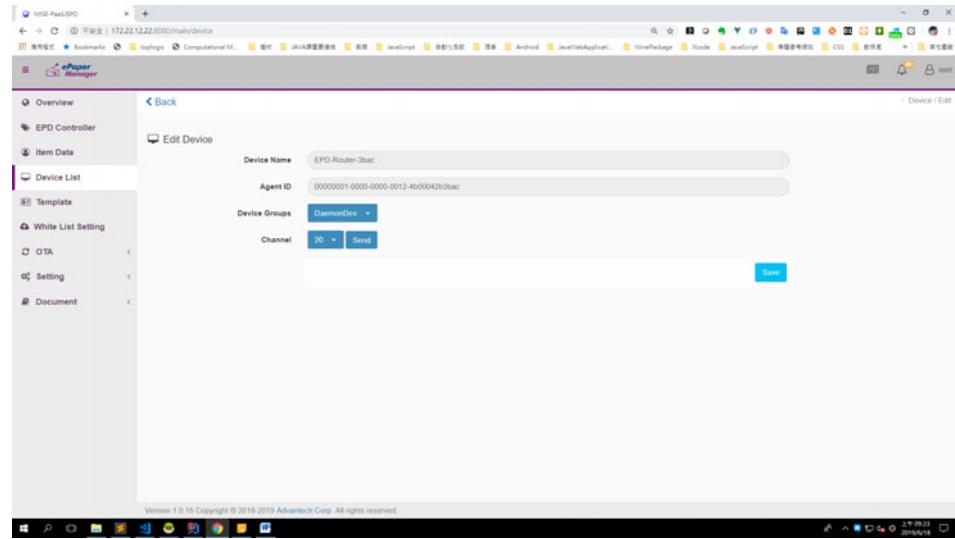
2). Find the router device, and change to edit mode by click the edit button.



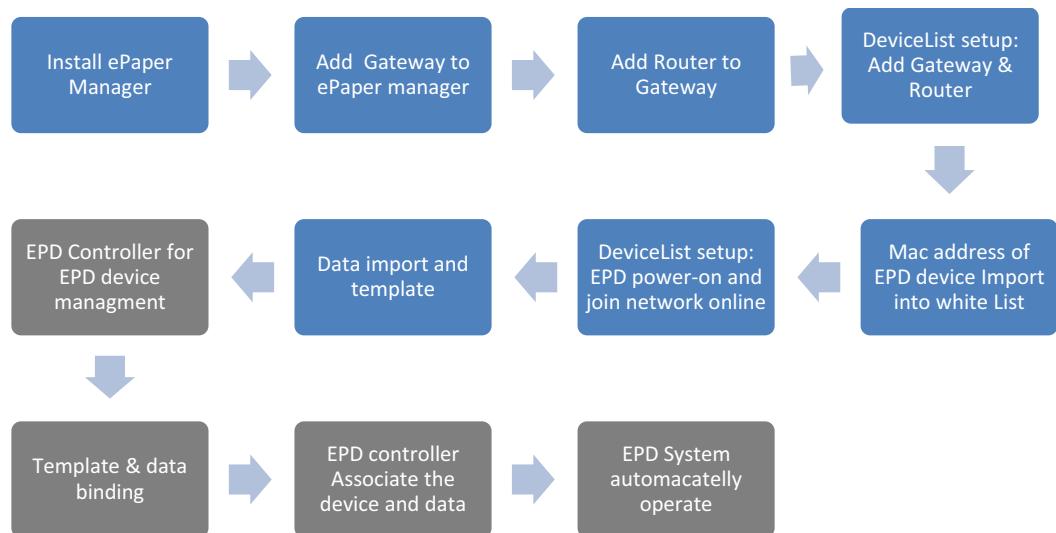
3). Click the name of route to enter the edit mode.



4). Change the Channel (11,13,14,15,20,21,22,23,24,25,26 are available), and then click send to finish the configuration.



4.3.3 Import Item Data to ePaper manager



There are 2 ways to import data from vertical market application to our ePaper manager.

1) JSON Format: User send out the API to update the data in real time.

In order to import data to EPD, below is the JSON format schema. You should reference below rule and prepare the data to upload your file.

Note: Code must be an unique ID in the JSON format for overall item data

```
{
    "items": [
        [
            {
                "code": "uniqueID_user_provide_1",
                "name": "item_name_user_provide_1",
                "content": {
                    "Tag Content Title 01": "Tag Content01",
                    "Tag Content Title 02": "Tag Content02"
                }
            },
            {
                "code": "uniqueID_user_provide_2",
                "name": "item_name_user_provide_2",
                "content": {
                    "Tag Content Title 11": "Tag Content11",
                    "Tag Content Title 12": "Tag Content12"
                }
            }
        ]
    ]
}
```

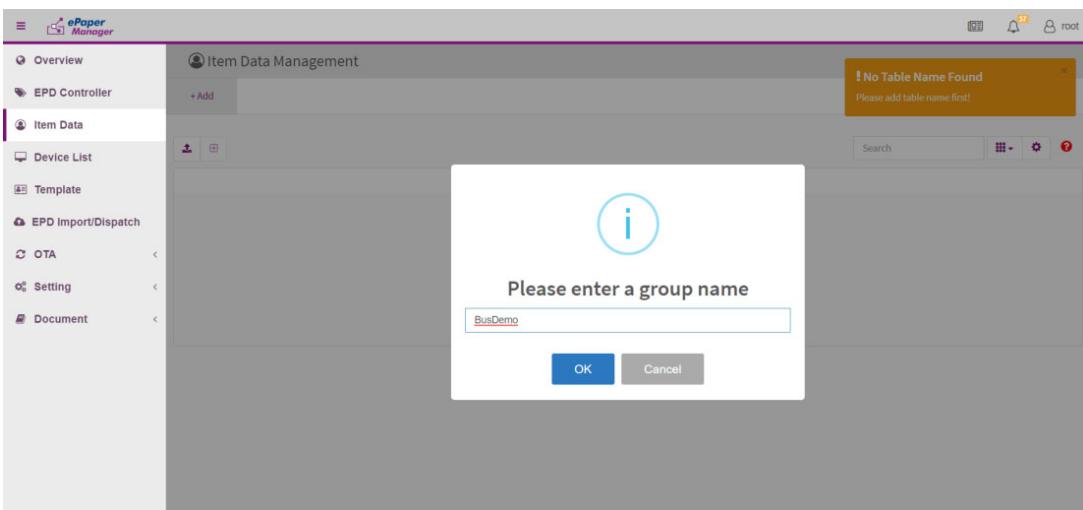
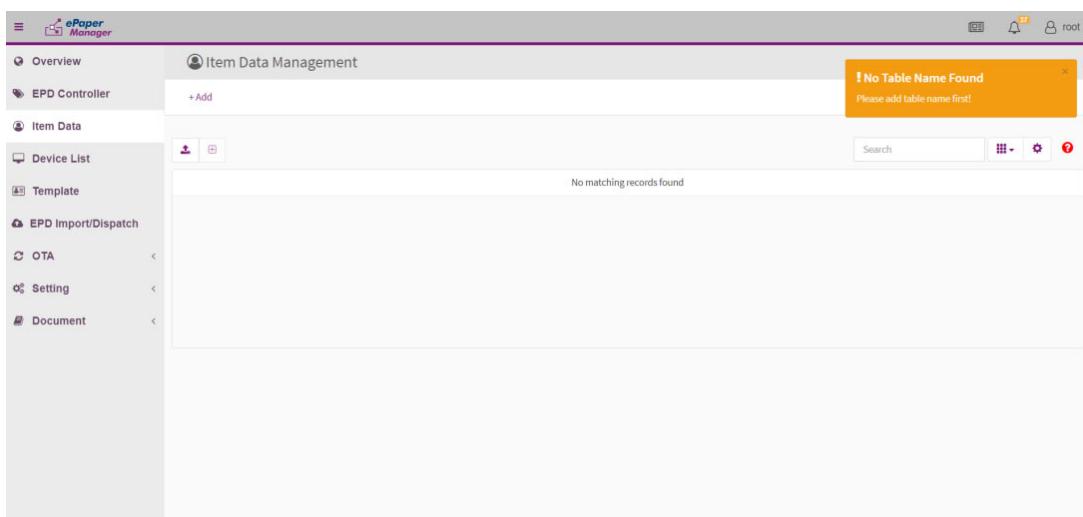
2) Batch data update into ePaper manager database using Excel or CSV format

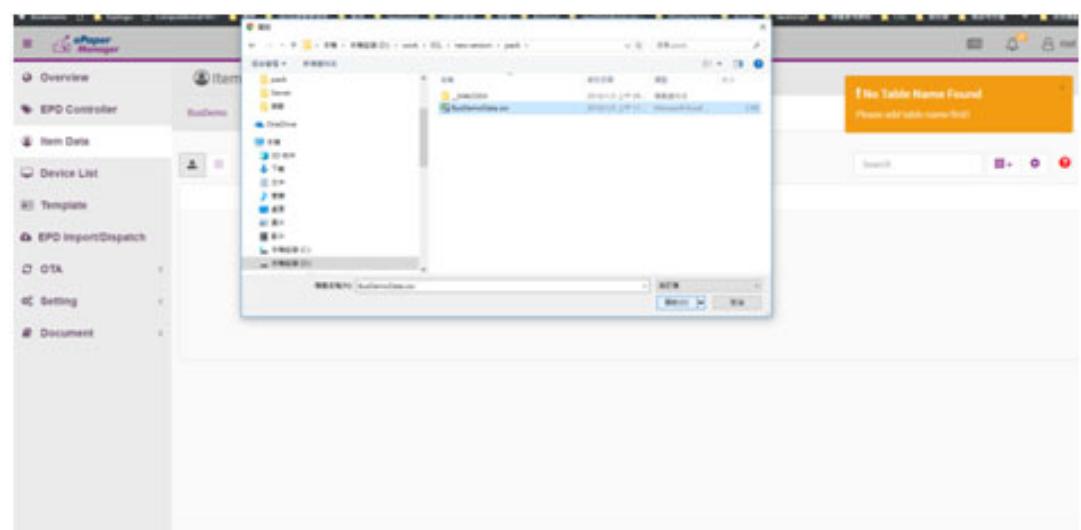
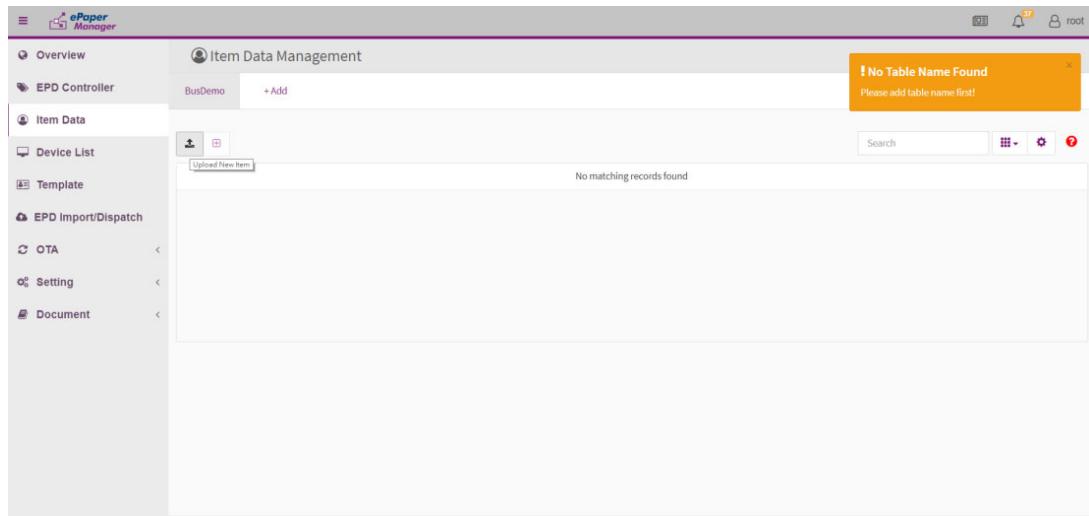
If you upload Excel or CSV to the system directly, the system will auto transfer the format to JSON.

Note: The first column of data must be an unique ID in Excel or CSV format for overall item data.

Example1:

- i. Vertical application scheduling send data to ePaper manager server
- ii. Or click ITEM Data in the left-side navigation bar and click left side button in the page as the picture shows below.

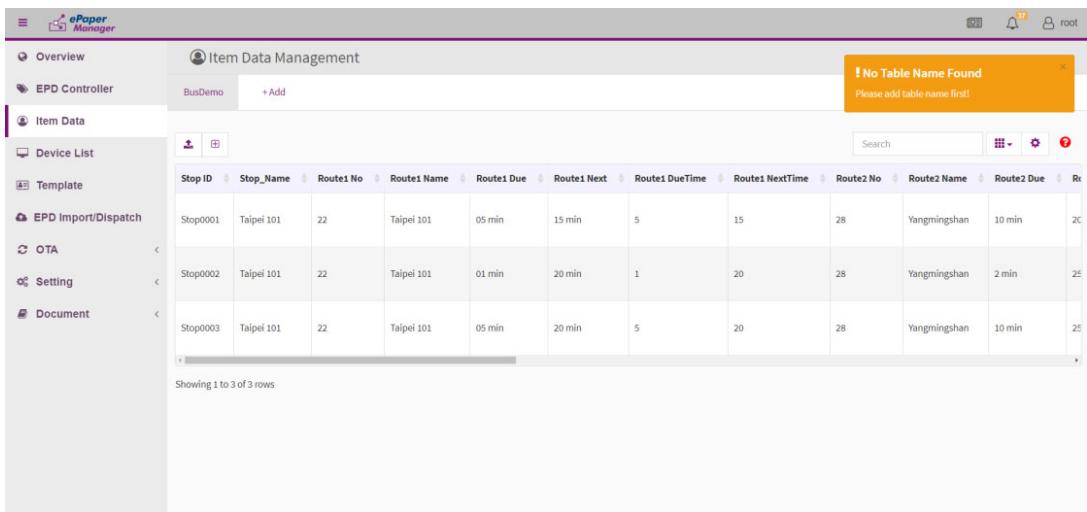




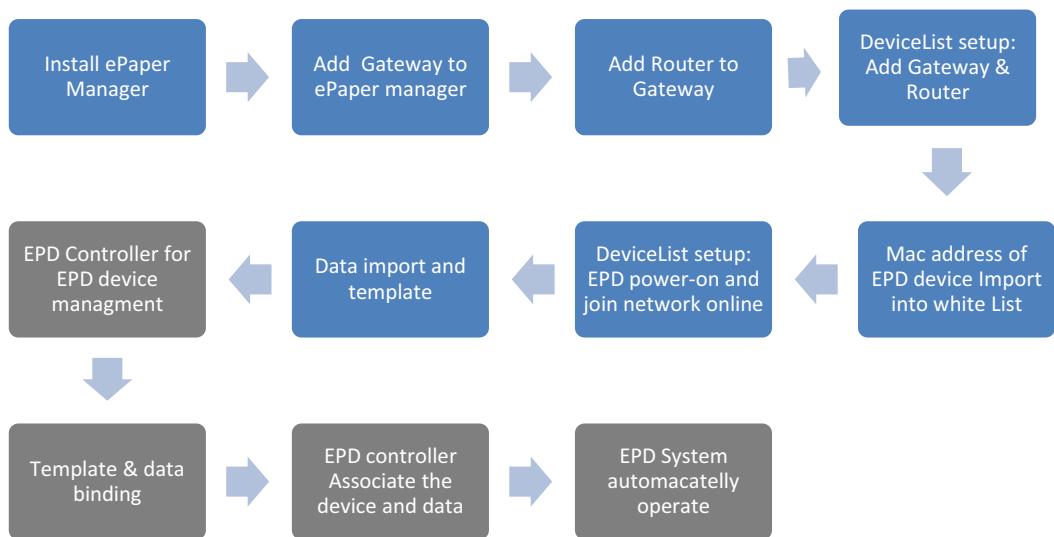
Import file

Import this file?

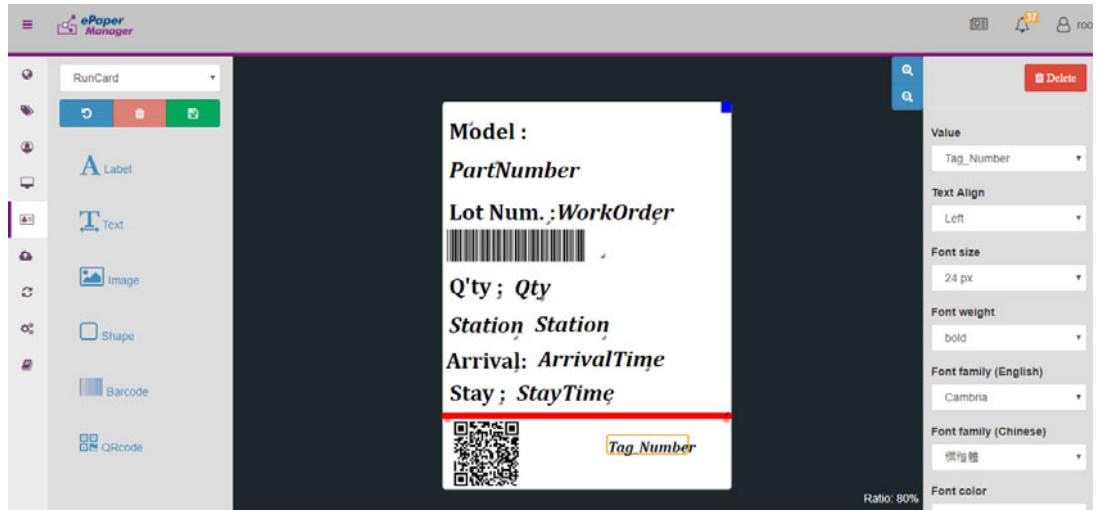
OK Cancel



4.3.4 Design your own template



Before deliver the data to EPD device, user needs to design the template for device to show the data on the screen. We provide you a drag & drop user interface to help you design templates more easily. Click **Template** in the left-side navigation bar. We provide some tools to design templates, such as Label, Text, Image, Shape, Barcode and QRcode.

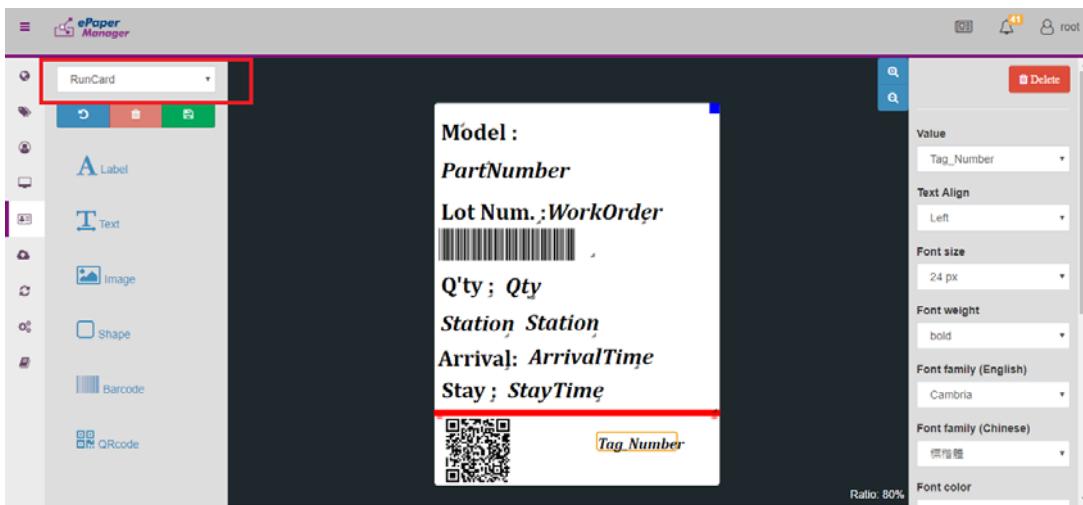


- Label
It is simply text message
- Text
Its value comes from imported data, and you can choose what column of data needed to be shown.
- Image
You can upload colorful images and it will automatically be transferred to red, black and white.
- Shape
System support rectangle, circle and triangle shapes.
- Barcode
System support Code 39 barcode
- QRcode

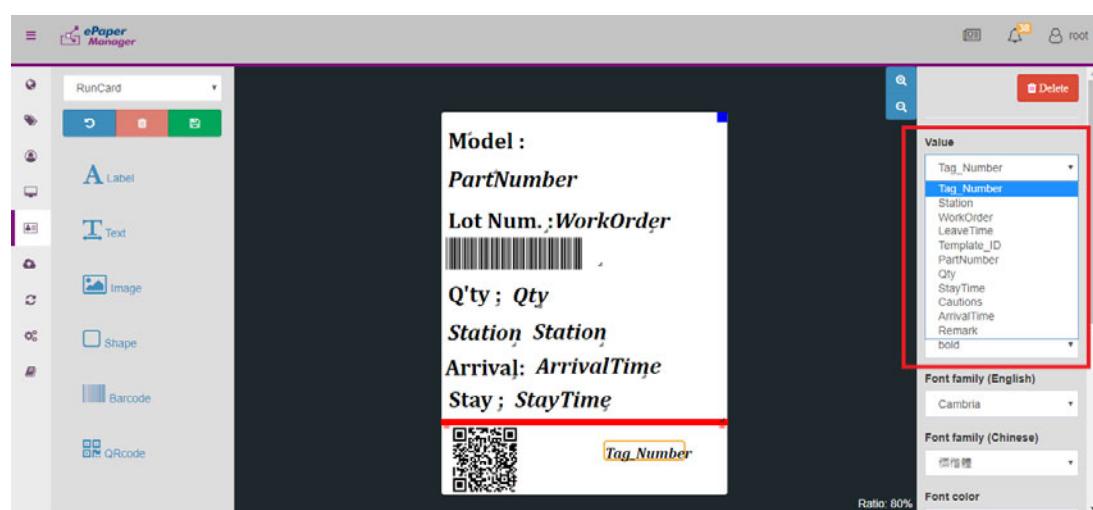
4.3.5 Combine the Template and Item Data

After import data and make the template, we can combine them for regular data auto update.

1) Select Item Group which is from Item Data



2) Click on the component, you can select value at the right Drop-down menu

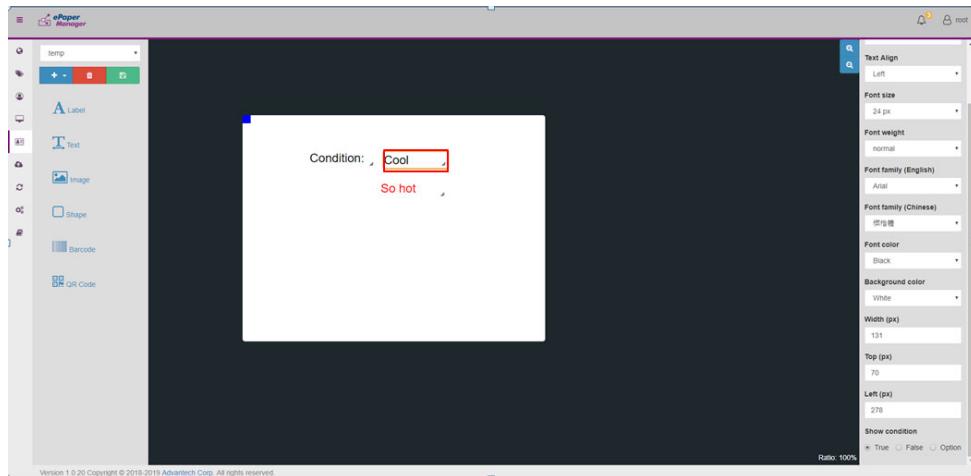


3). Setup dynamic template.

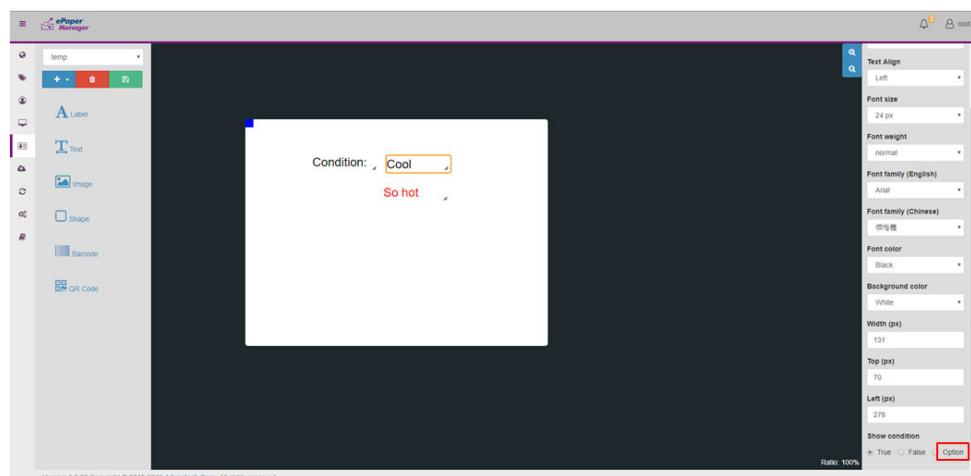
For another special purpose in template setting, you can decide whether an object show or not depends on the specific item values. For example, word becomes red when temperature is over 40. The next step is demonstration of how to achieve this goal.

a. Make two objects which show conditions are opposite.

Click one object.

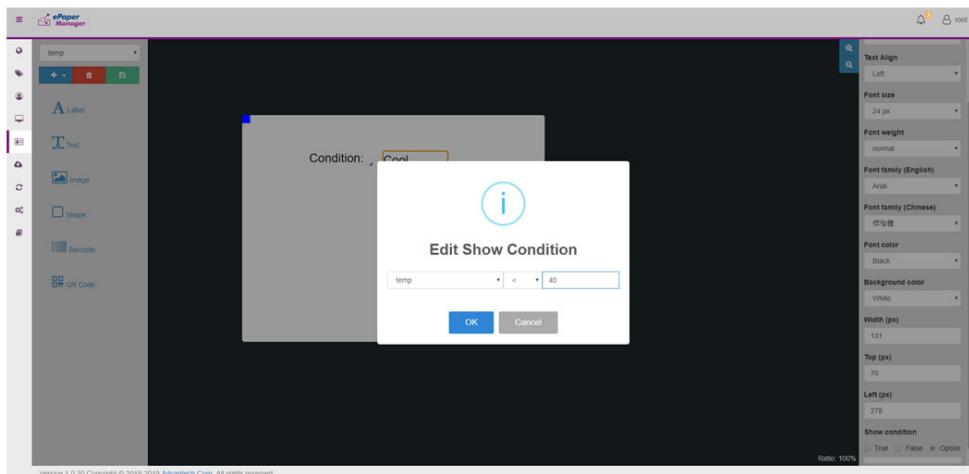


Click the radio of the option in the show condition.

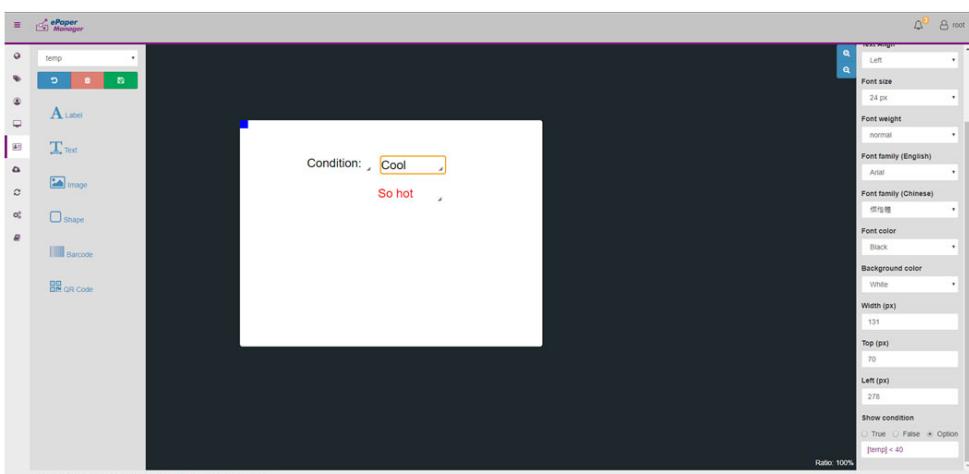


It will pop up the dialog, and fill the condition to show up this object.

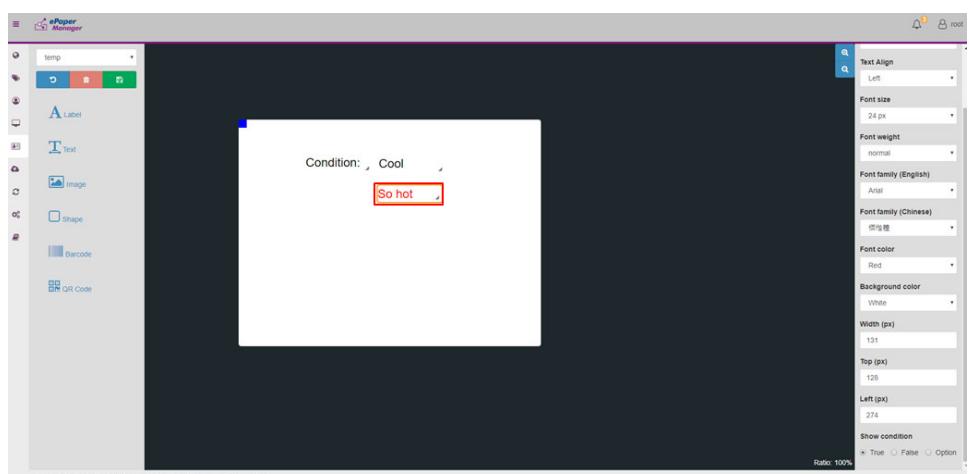
Note: if this item value is number, you can use all operations. If this item value is character, you only can use "==" or "!=").



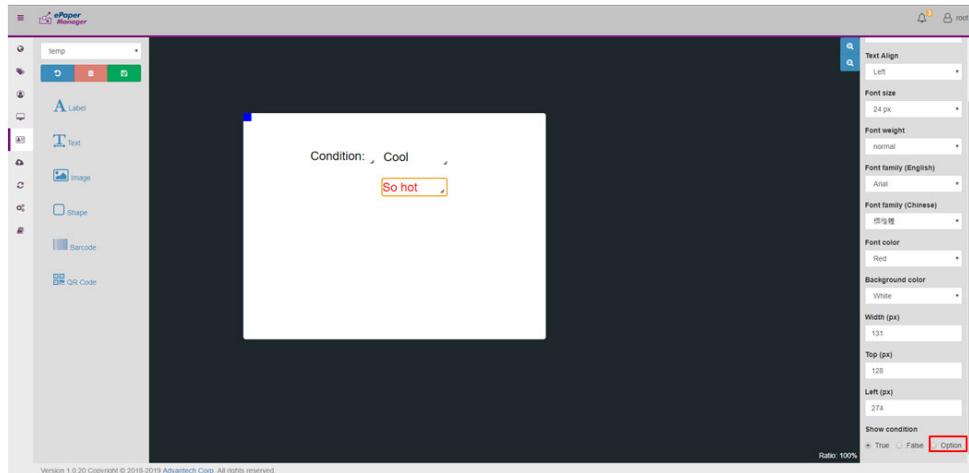
Finish the show condition setting.



Click another object.

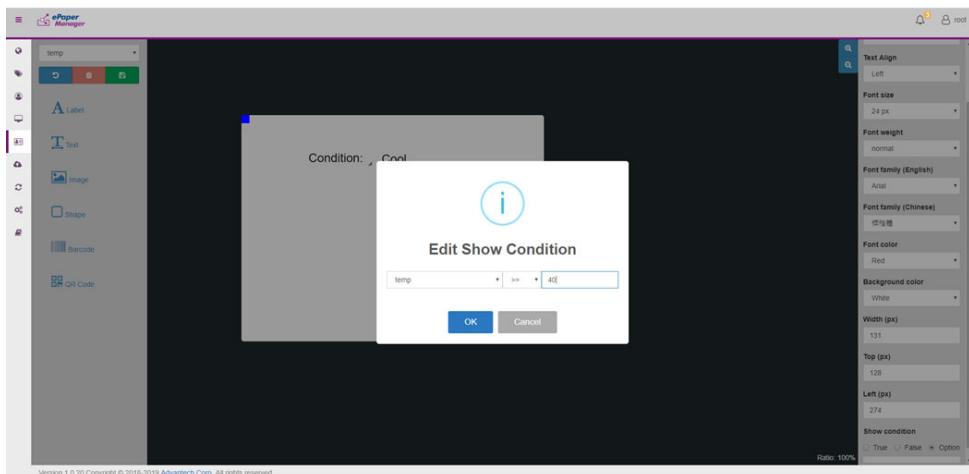


Click the radio of the option in the show condition.

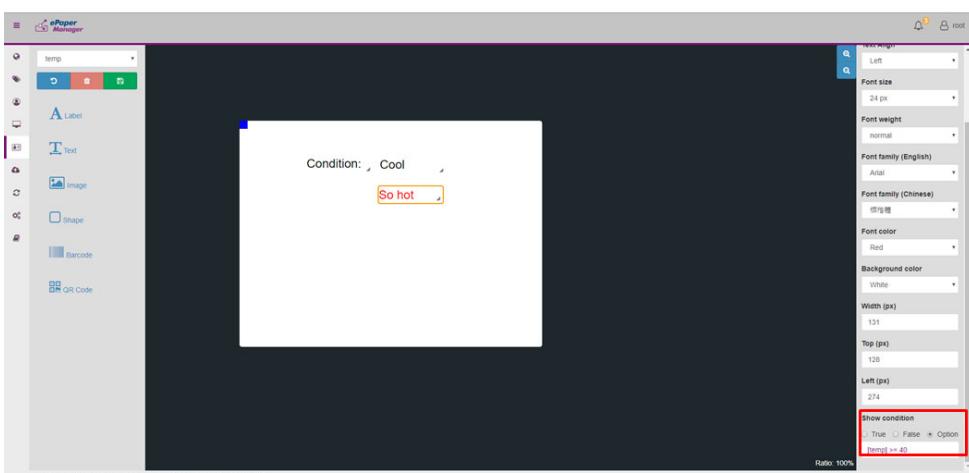


It will pop up the dialog, and fill the condition to show up this object.

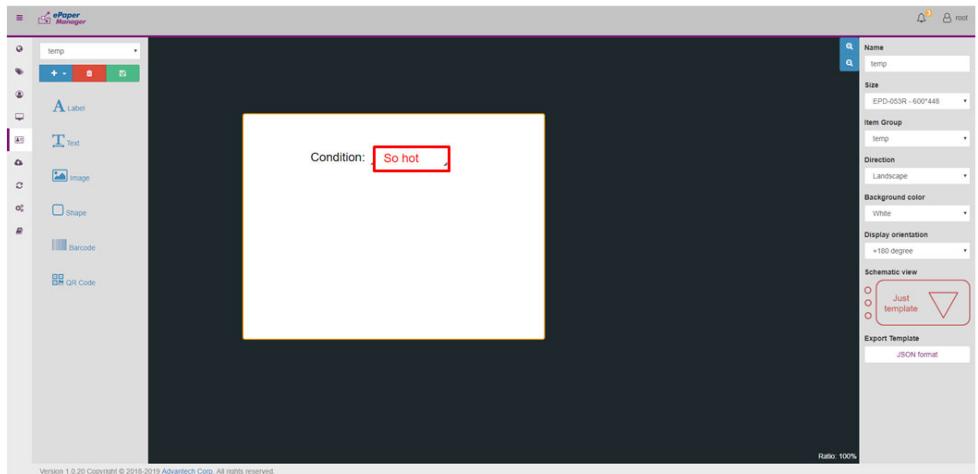
Note: if this item value is number, you can use all operations. If this item value is character, you only can use "==" or "!=").



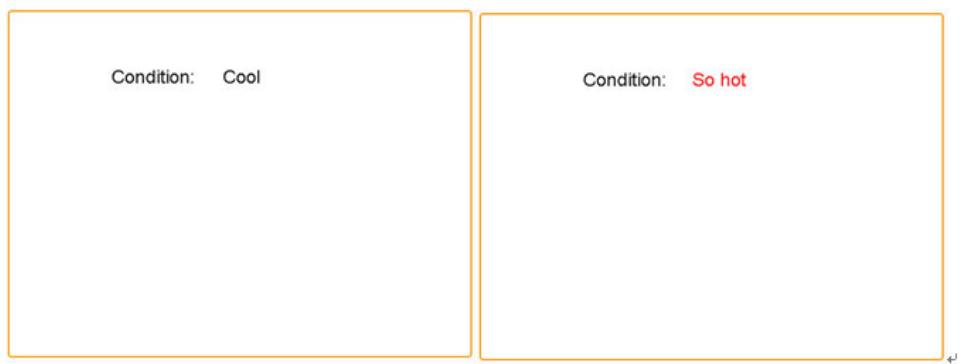
Finish the show condition setting.



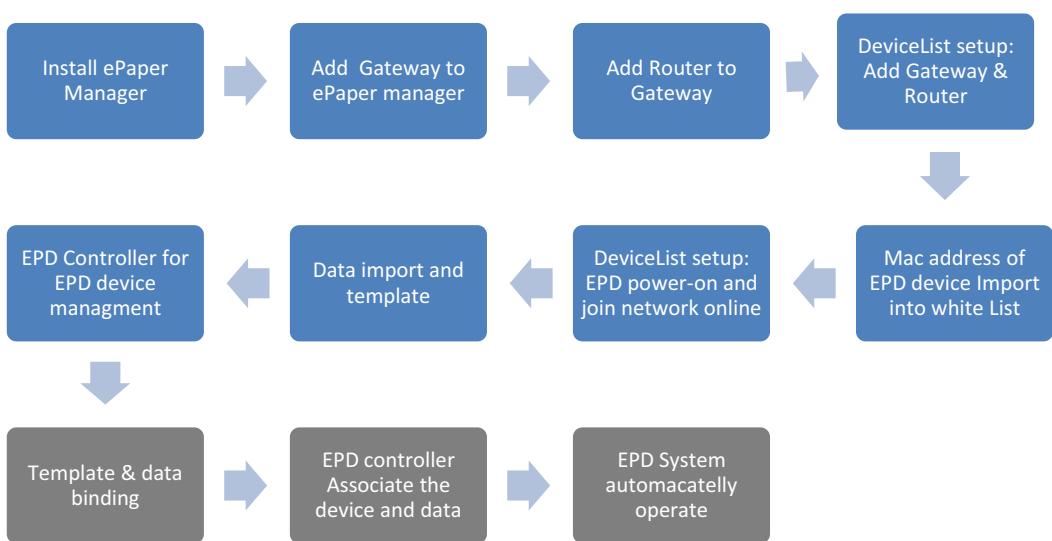
b. Put these two objects in the exact same position.



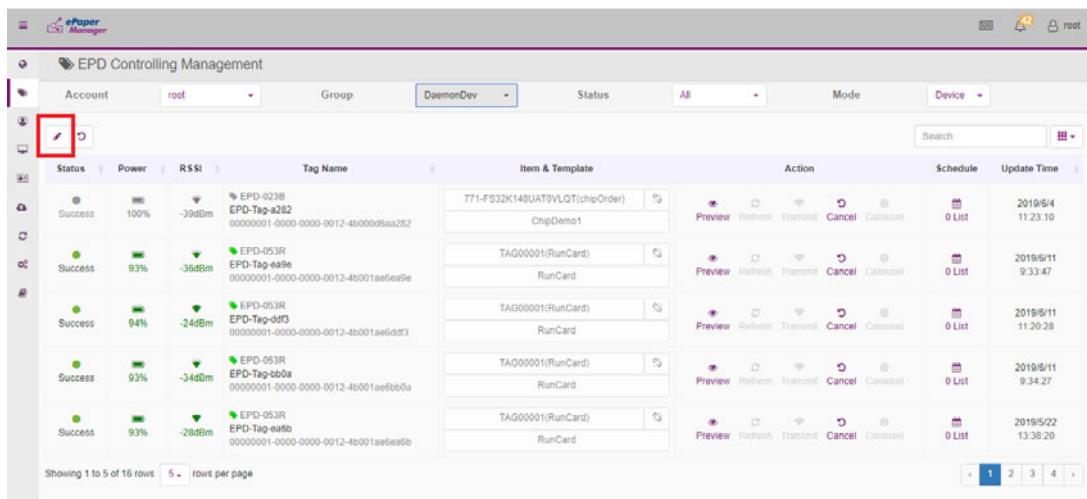
c. See the results by the preview action in the EPD controller page.



4.3.6 EPD Controller for EPD device management



- Select correct account/group where your devices belong to
- Select Preview / Edit mode



EPD Controlling Management		Account	root	Group	DaemonDev	Status	All	Mode	Device	Search	Print
		Status	Power	RSSI	Tag Name	Item & Template	Action	Schedule	Update Time		
		Success	100%	-39dBm	EPD-023B 00000001-0000-0000-0012-4b00006aa282	771-F532K148UAT0VQ7(chipOrder) ChipDemo1	Preview Refresh Transmit Cancel Carousel	0 List	2019/6/4 11:23:10		
		Success	93%	-36dBm	EPD-053R 00000001-0000-0000-0012-4b001ae6aa9e	TAG000001(RunCard) RunCard	Preview Refresh Transmit Cancel Carousel	0 List	2019/6/11 9:33:47		
		Success	94%	-24dBm	EPD-053R 00000001-0000-0000-0012-4b001ae6dd3	TAG000001(RunCard) RunCard	Preview Refresh Transmit Cancel Carousel	0 List	2019/6/11 11:20:28		
		Success	93%	-34dBm	EPD-053R 00000001-0000-0000-0012-4b001ae6bb0a	TAQ000001(RunCard) RunCard	Preview Refresh Transmit Cancel Carousel	0 List	2019/6/11 9:34:27		
		Success	93%	-28dBm	EPD-053R 00000001-0000-0000-0012-4b001ae6aa0b	TAQ000001(RunCard) RunCard	Preview Refresh Transmit Cancel Carousel	0 List	2019/5/22 13:38:20		

There are 2 parts in the management: Properties & Action

1) Properties: User can read EPD devices status below

- EPD Device Status
- Power
- RSSI
- Device Type, Name, Mac address
- Binding Item & Template
- Update Time

2) Action

- 2-1 preivew: user can preview the image on EPD device
- 2-2 Refresh: user may control EPD device to refresh
- 2-3 Transmit: user can delivery image to EPD device
- 2-4 Cancel: user can cancel the transmitting task.
- 2-5 Carousel: user can setup carousel mode to EPD device. (this feature is only for EPD-092/132 model)
- 2-6 Schedule: User need to setup EPD device data delivery schedule:

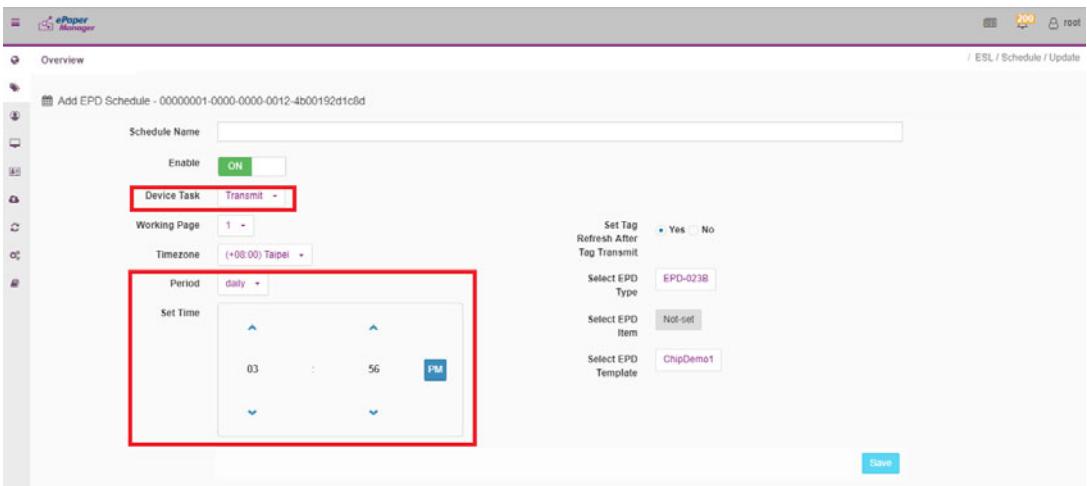
Note: The timezone is determined by browser's UTC time.

– User need to setup EPD device data delivery schedule:

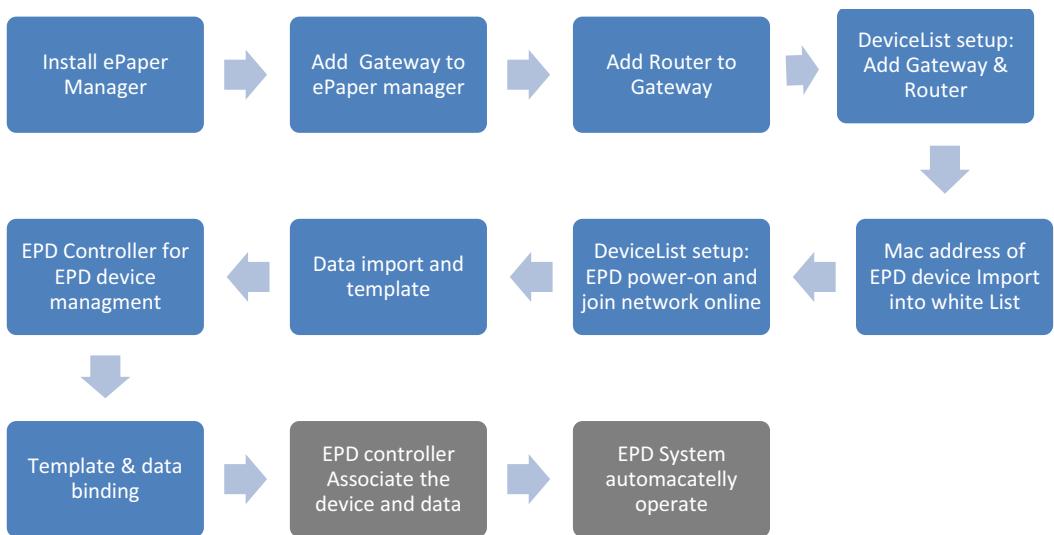
 Device Task: Select Transmit

– User need to setup EPD device image flash schedule

 Device Task: Select Re-fresh



- Select EPD Item: you may select device to do receive the schedule.
- Set EPD Template: you may select EPD Template from the list which you already design.
- Working Page: select which page in EPD device
- User may setup the schedule date and time from system.



1. Select binding data icon

EPD Controlling Management

Account	root	Group	DaemonDev	Status	All	Mode	Device	Search
Status	Power	RSSI	Tag Name	Item & Template	Action	Schedule	Update Time	
Success	100%	-39dBm	EPD-023B EPD-Tag-a282 00000001-0000-0000-0012-4b0006aa282	771-F332K148UAT0VLOT(chipOrder) ChipDemo1	Preview Refresh Transmit Cancel Carousel	0 List	2019/6/4 11:23:10	
Success	93%	-36dBm	EPD-053R EPD-Tag-e9e9 00000001-0000-0000-0012-4b001ae6ea9e	TAG00001(RunCard) RunCard	Preview Refresh Transmit Cancel Carousel	0 List	2019/6/11 9:33:47	
Success	94%	-24dBm	EPD-053R EPD-Tag-dd3 00000001-0000-0000-0012-4b001ee6dd03	TAG00001(RunCard) RunCard	Preview Refresh Transmit Cancel Carousel	0 List	2019/6/11 11:20:28	
Success	93%	-32dBm	EPD-053R EPD-Tag-bb0a 00000001-0000-0000-0012-4b001ae6bb0a	TAG00001(RunCard) RunCard	Preview Refresh Transmit Cancel Carousel	0 List	2019/6/11 9:34:27	
Success	93%	-27dBm	EPD-053R EPD-Tag-ea6b 00000001-0000-0000-0012-4b001ae6ea6b	TAG00001(RunCard) RunCard	Preview Refresh Transmit Cancel Carousel	0 List	2019/5/22 13:38:20	

Showing 1 to 5 of 16 rows 5+ rows per page

2. Select data to bind

EPD Controller

Item Data

Device List

Template

EPD Import/Dispatch

OTA

Setting

Document

BusDemo

Stop ID Stop_Name Route1 No Route1 Name Route1 Due Route1 Next Route1 DueTime Route1 NextTime Route2 No Route2 Name Route2 Due

Stop ID	Stop_Name	Route1 No	Route1 Name	Route1 Due	Route1 Next	Route1 DueTime	Route1 NextTime	Route2 No	Route2 Name	Route2 Due
1	Stop0001	Taipei 101	22	Taipei 101	05 min	15 min	5	15	28	Yangmingshan 10 min
2	Stop0002	Taipei 101	22	Taipei 101	01 min	20 min	1	20	28	Yangmingshan 2 min
3	Stop0003	Taipei 101	22	Taipei 101	05 min	20 min	5	20	28	Yangmingshan 10 min

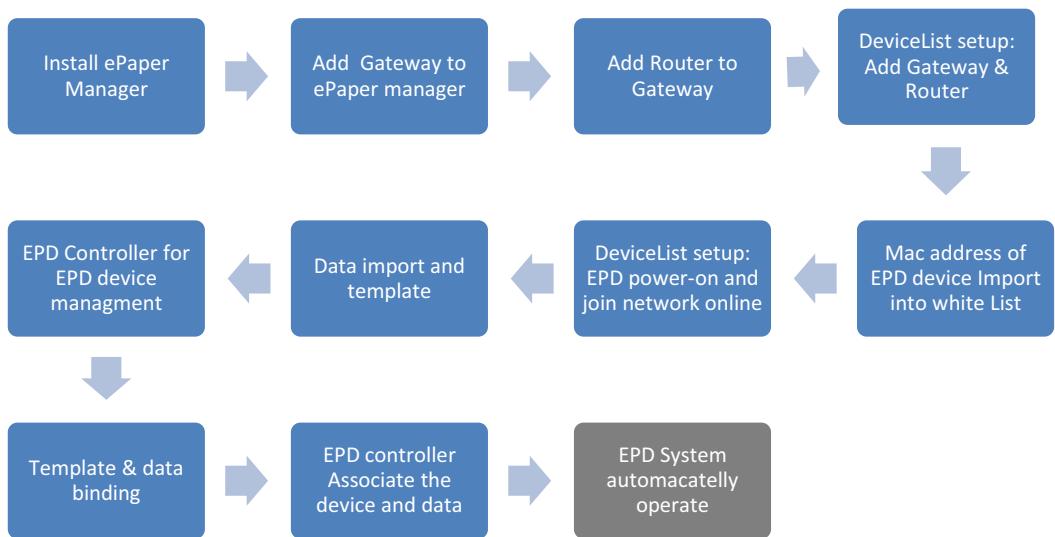
Showing 1 to 3 of 3 rows

Note! User can import data and binding data to the EPD device in this web page.



We also offer user use handset APP to binding device data and EPD as following. User can choose one to completed this binding task.

3. Binding Product item data with APP

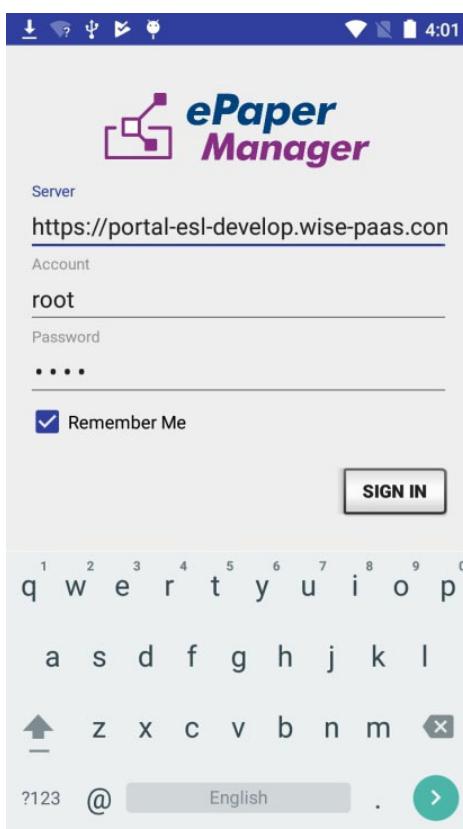


- Install on Barcode scanner handset
- Use a barcode scanner: PWS-472 to scan the EPD device Mac address barcode and target product barcode

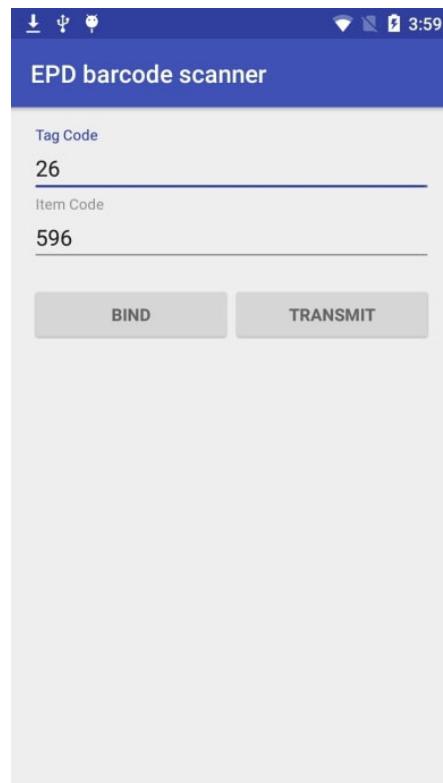
ePaper Manager Associate App

Download and install the EPM Barcode Scanner app on the PWS-472 device, a 5" Industrial-Grade Handheld Terminal with 1D barcode scanner, and you will see the icon  in your desktop.

Please check your device linked with internet. Launch the app by click the icon. Enter the server location, account, and password to sign in e-Paper Manager.

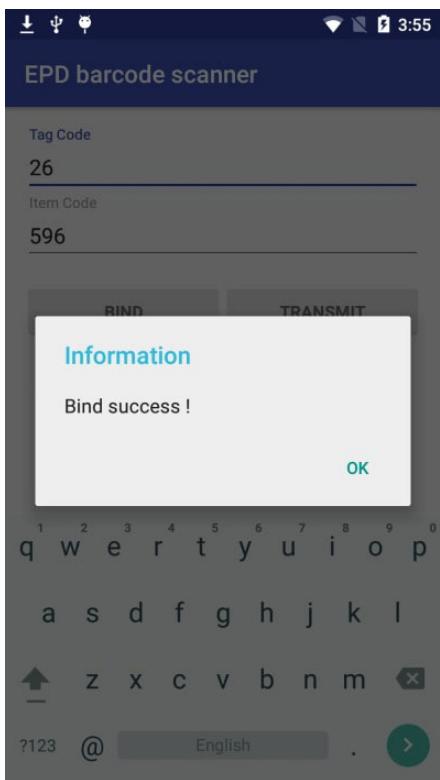


Enter your Tag Code and Item Code information to do bind action.

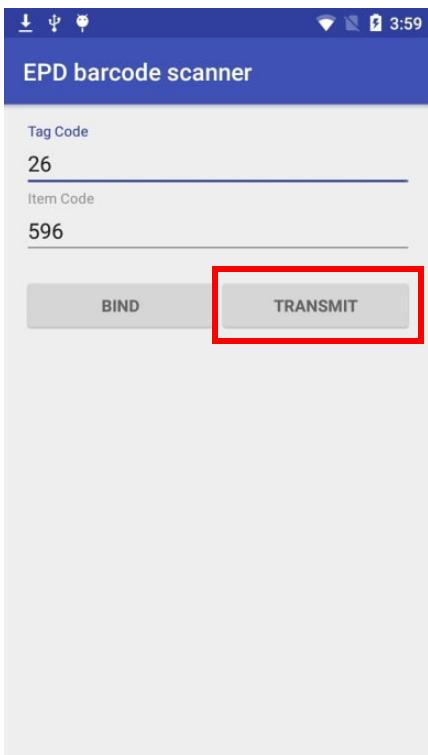


User with the PWS-472 device can scan a barcode to quickly bring the Tag Code and Item Code information into the fields.

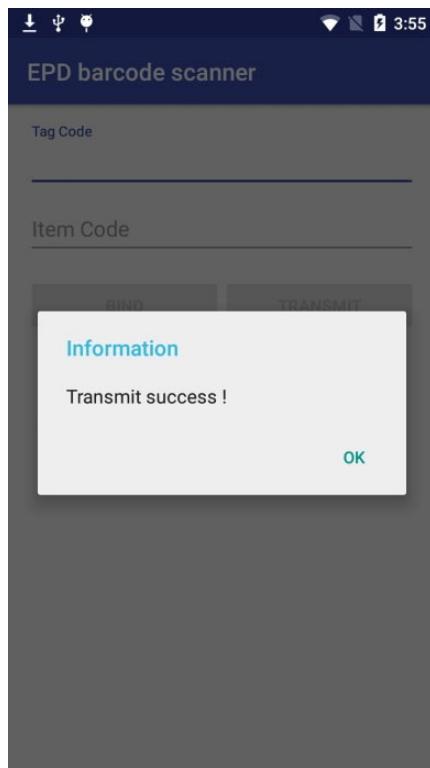
Success information window will show up.



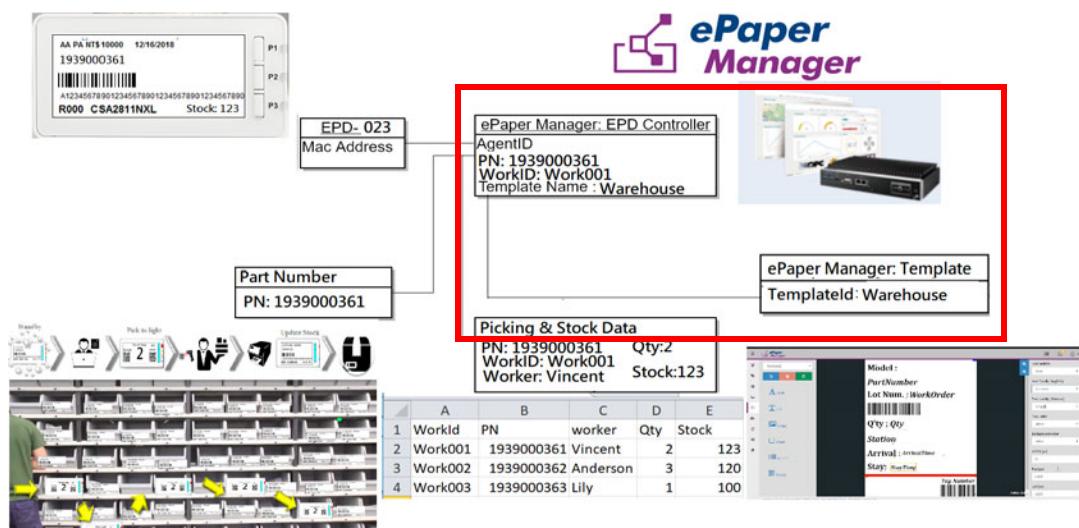
Click the transmit button to transmit image to tag device.



Success information window will show up.



4. Binding template:



EPD Controlling Management										
Account	root	Group	DaemonDev	Status	All	Mode	Device	Search		
Status	Power	RSSI	Tag Name	Item & Template			Action	Schedule	Update Time	
Success	100%	-39dBm	EPD-023B EPD-Tag-a232 00000001-0000-0000-0012-4b000d6aa232	771-FS32K148UAT0VLQT(chipOrder)	ChipModel1		Preview Refresh Transmit Cancel Cancel	0 List	2019/6/4 11:23:10	
Success	93%	-34dBm	EPD-049E EPD-Tag-a9e 00000001-0000-0000-0012-4b001aae6aa9e	TAG00001(RunCard)	RunCard		Preview Refresh Transmit Cancel Cancel	0 List	2019/6/11 9:33:47	
Success	94%	-24dBm	EPD-053R EPD-Tag-d3f 00000001-0000-0000-0012-4b001aae6dd3	TAG00001(RunCard)	RunCard		Preview Refresh Transmit Cancel Cancel	0 List	2019/6/11 11:20:28	
Success	93%	-34dBm	EPD-053R EPD-Tag-b0a 00000001-0000-0000-0012-4b001aae6bb0a	TAG00001(RunCard)	RunCard		Preview Refresh Transmit Cancel Cancel	0 List	2019/6/11 9:34:27	
Success	93%	-28dBm	EPD-053R EPD-Tag-e5b 00000001-0000-0000-0012-4b001aae6ab5b	TAG00001(RunCard)	RunCard		Preview Refresh Transmit Cancel Cancel	0 List	2019/5/22 13:38:20	

WISE-PaaS/EPD

不安全 | 172.22.12.22:8080/main/esitag

ePaper Manager

EPD Controlling Management

Account	root	Group	DaemonDev	Status	All	Mode	Device	Search
Status	Power	RSSI	Tag Name	Item & Template	Action	Schedule	Update Time	
Success	100%	-39dBm	EPD-023B EPD-Tag-a282 00000001-0000-0000-0012-4b0000000000	771-FS32K148UATVQLT(chipOrder) ChipDemo1	Preview Refresh Transmit Cancel Carousel	0 List	2019/6/11 11:23:10	
Success	93%	-34dBm	EPD-053R EPD-Tag-e9e9 00000001-0000-0000-0012-4b001aae5ea9e	TAG000001(RunCard)	Preview Refresh Transmit Cancel Carousel	0 List	2019/6/11 9:33:47	
Success	94%	-25dBm	EPD-053R EPD-Tag-d373 00000001-0000-0000-0012-4b001aae5dd3	EPD-053R_L01	Preview Refresh Transmit Cancel Carousel	0 List	2019/6/11 11:20:28	
Success	93%	-32dBm	EPD-053R EPD-Tag-bb0a 00000001-0000-0000-0012-4b001aae5bb0a	EPD-053R_L01 EPD-053R_P01 RunCard	Preview Refresh Transmit Cancel Carousel	0 List	2019/6/11 9:34:27	
Success	93%	-26dBm	EPD-053R EPD-Tag-e4b 00000001-0000-0000-0012-4b001aae5ea5b	Item Group: MacAddress	Preview Refresh Transmit Cancel Carousel	0 List	2019/5/22 13:38:20	

Showing 1 to 5 of 16 rows 5 rows per page

Choose templateSearch template...cancel

Item Group:
RunCardcancel

Item Group:
EPD-053R_L01✓cancel

Item Group:
EPD-053R_P01cancel

Item Group:
MacAddresscancel

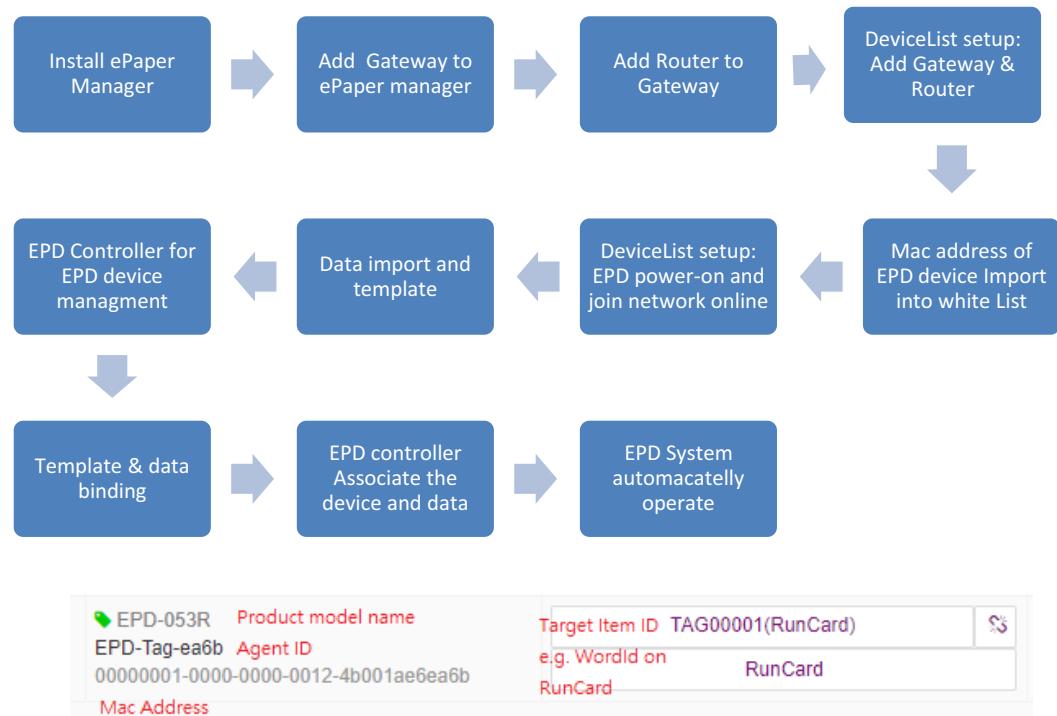
1 2 3 4

Status	Battery	Tag Name	Item & Template	Action	Schedule	Update Time
Run	7%	EPD-053R ESL-Tag_a62	00000001-0000-0000-0012-4b001557a682	Stop0002(BusDemo) BusDemo2	   	 0 List 2019/1/7 16:32:5

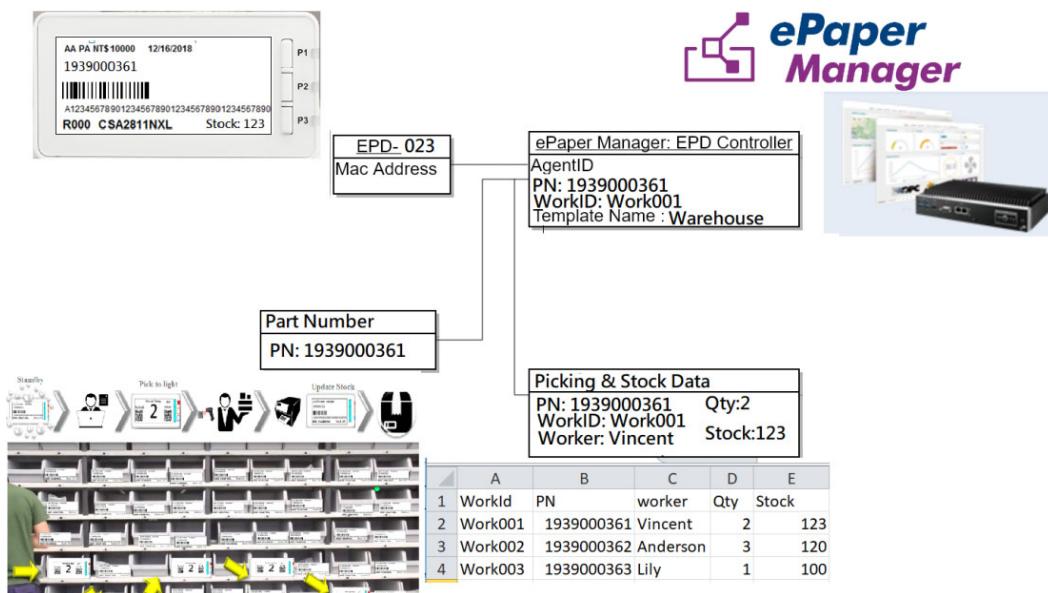
5. There are 4 actions for you to select the action.

- Preview: Current EPD device image preview
- Refresh: Re-fresh image
- Transmit: Transmit image
- Un-bind the EPD device and Item

4.3.7 Final Association between EPD device, target product and product data



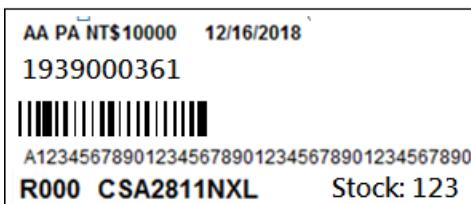
- 1) EPD device: Get EPD device's Mac address as associate attribute, aPaper manager record and mapping to agent ID.
- 2) Target Item Product: Get a physical working ID Lot num as associate attribute.
- 3) User need to associate above item, the association is in the #4.2.7.
- 4) Import RunCard Data need to include field name: WorkID and data: Work001.



4.3.8 Smart Warehouse pick to light scenario



1. EPD device in standby Mode, only shows stock status



2. When pick material request input to the ERP, ERP send out the API to ePaper manager to trigger
Action1: change the image as below



Action2: light up LED to guide the picker to pick the material

Below is the comparison between traditional card and EPD.

3. When picker see the LED indicator on the drawer.

Action1: Picker take out the material according to the EPD's information|

Action2: Picker user barcode scanner to scan the QR code

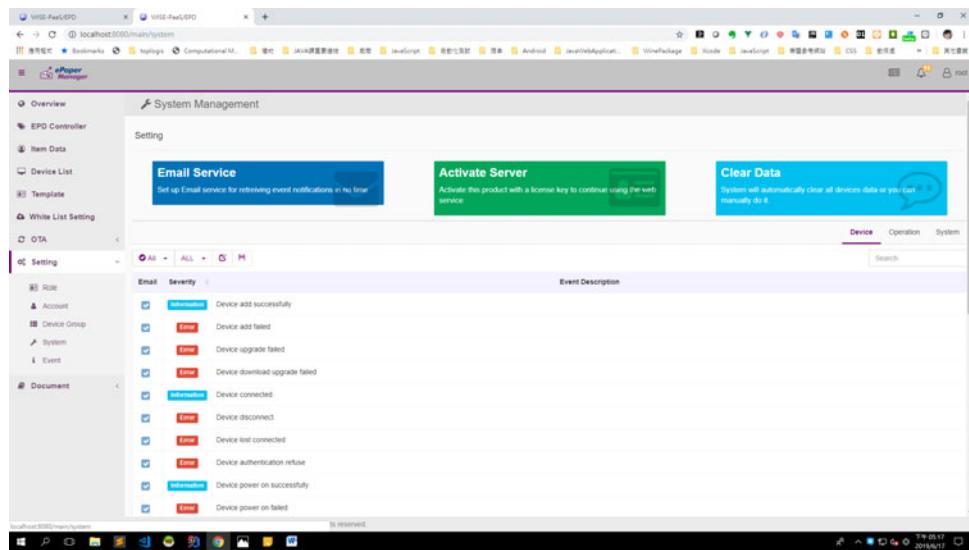
Action3: ERP system will update the stock status and trigger the API to request EPD to update the information



Action4: printer print out the label directly

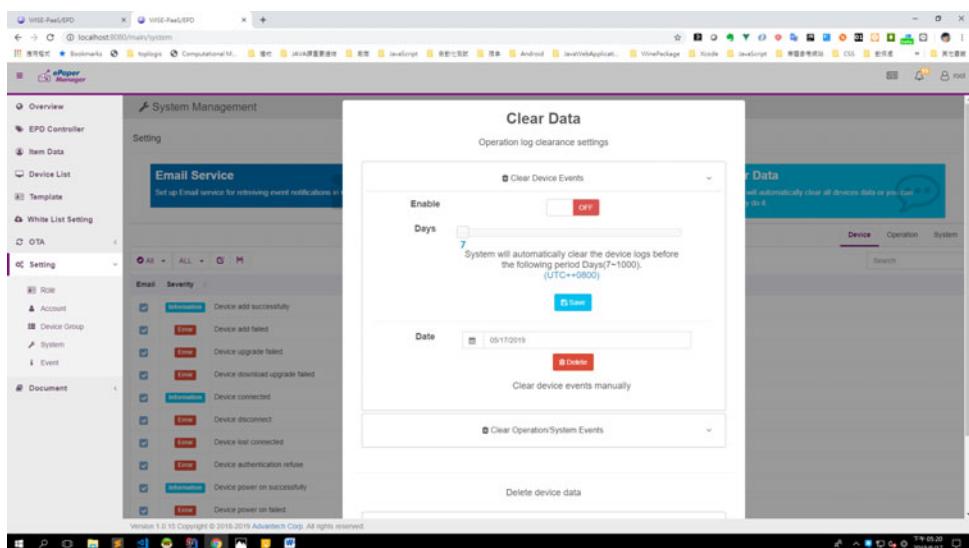
4.3.9 Clear Events and Data of MongoDB

1. Click Setting – System on the side bar menu, and Click the Clear Data Button.

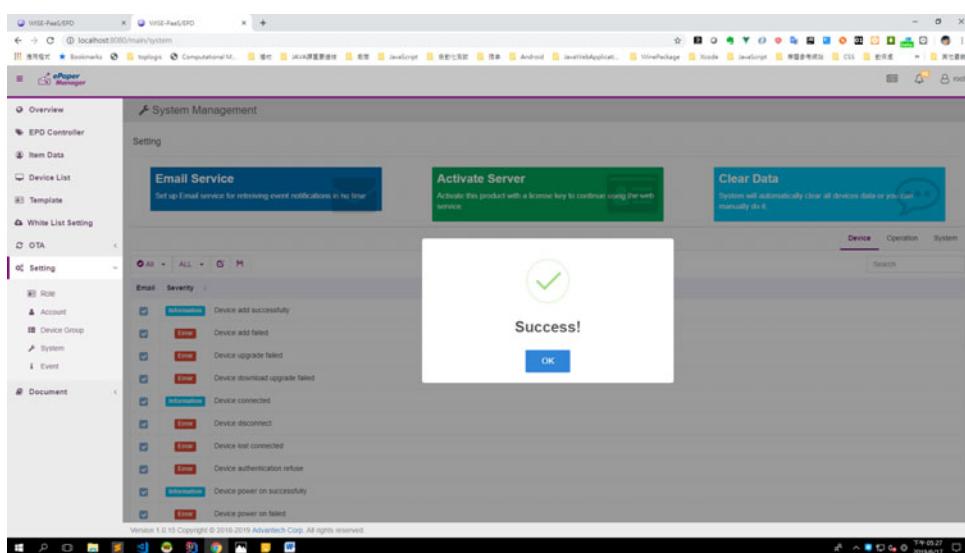
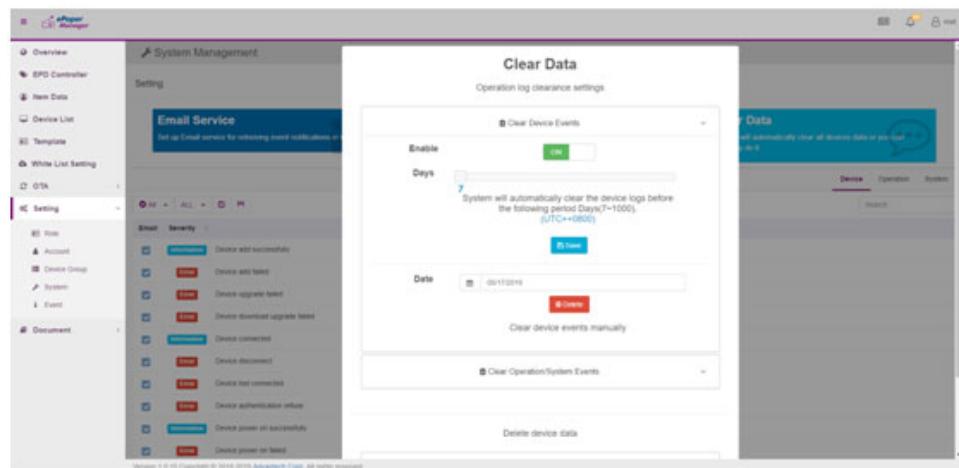


2. Clear device events:

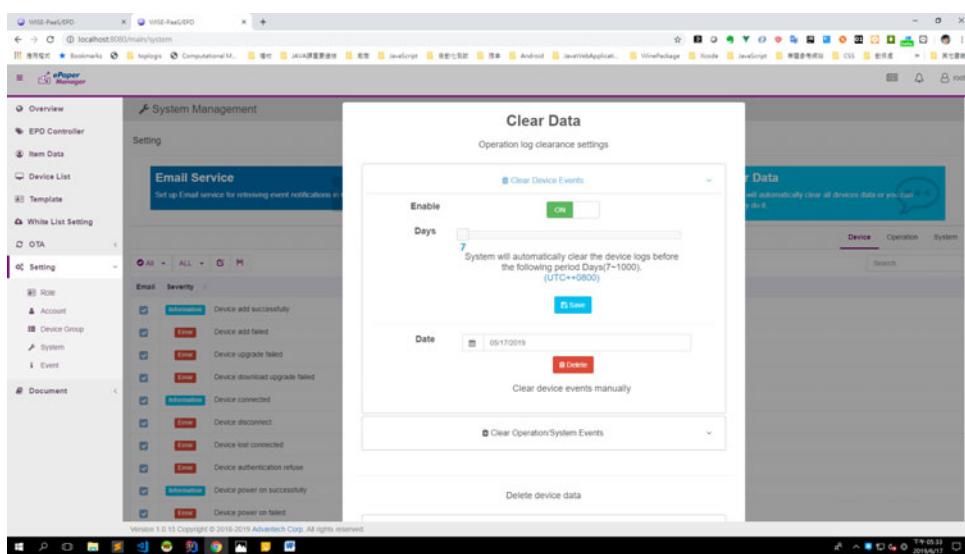
- 1.) Open the Clear Device Events section.

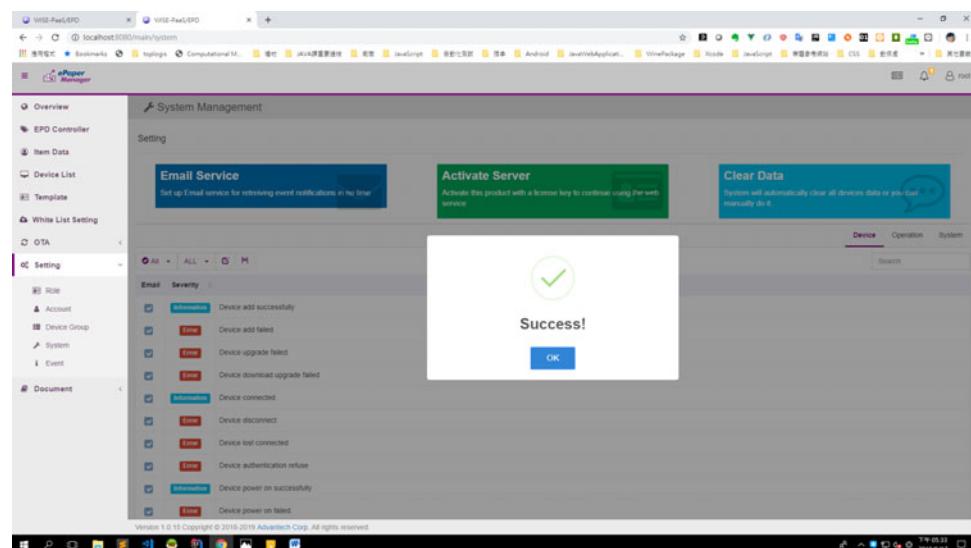
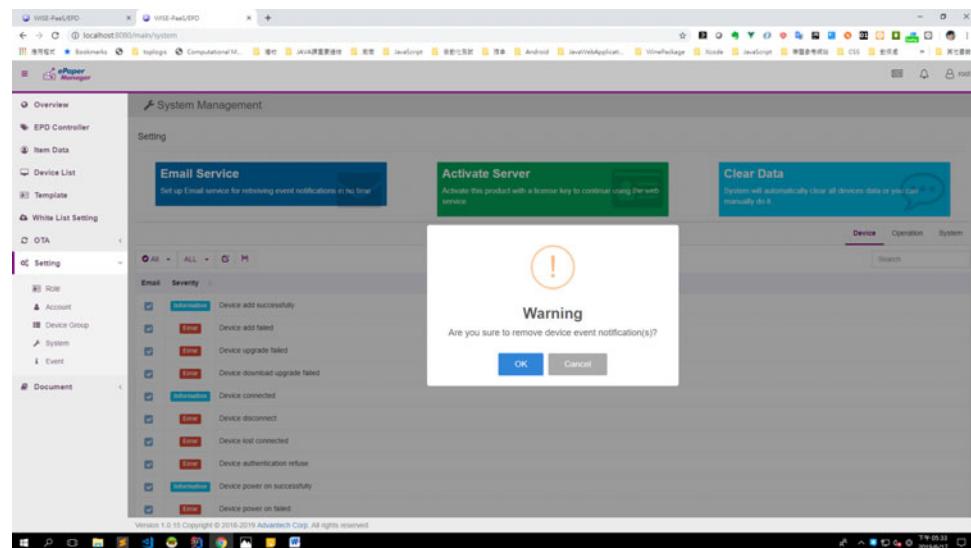


2.) System automatically clearance. Change the Enable switch to ON, and select the days how often system will begin the clearance, and then click save button to finish this configuration.

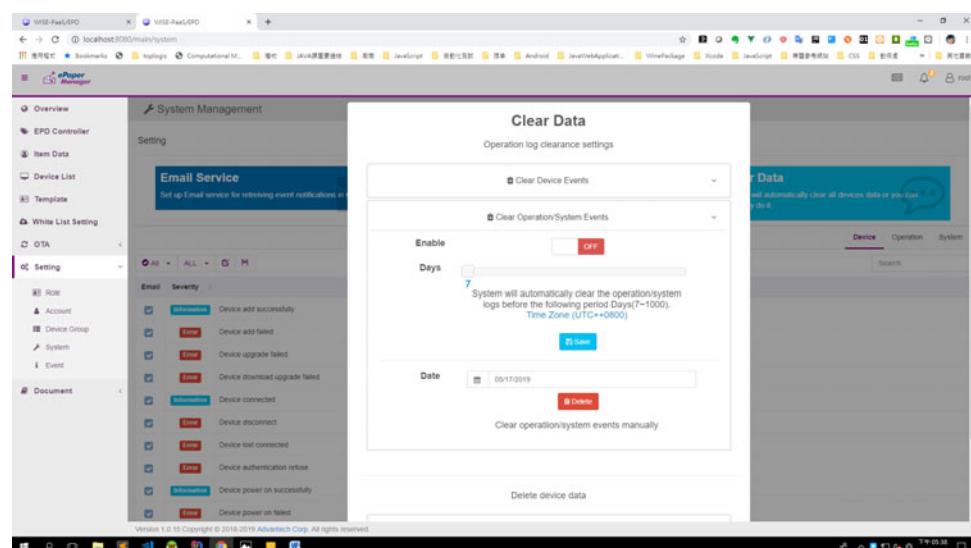


3.) Clear events manually. Select the clearance date (Reminder: the events between the date and before will be cleared), and click the Delete button to begin to clear data.

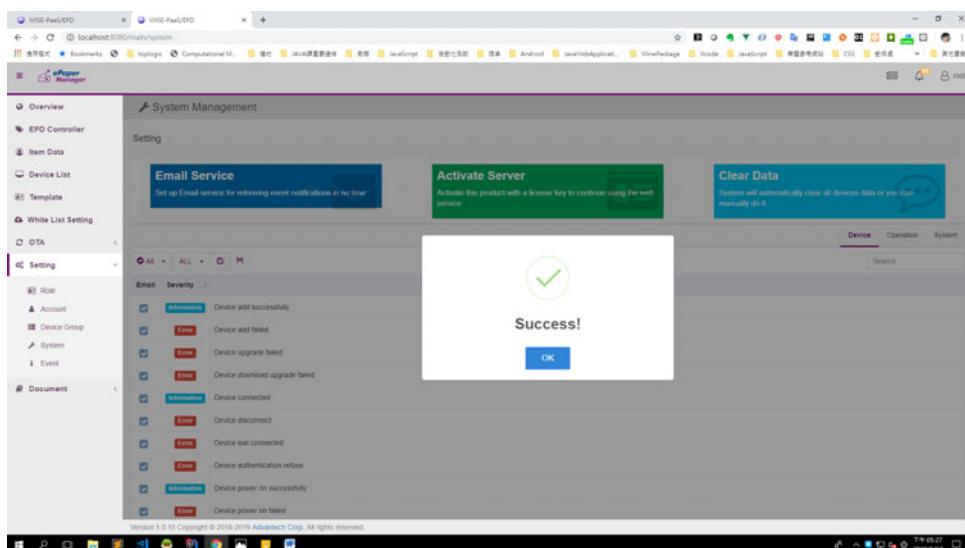
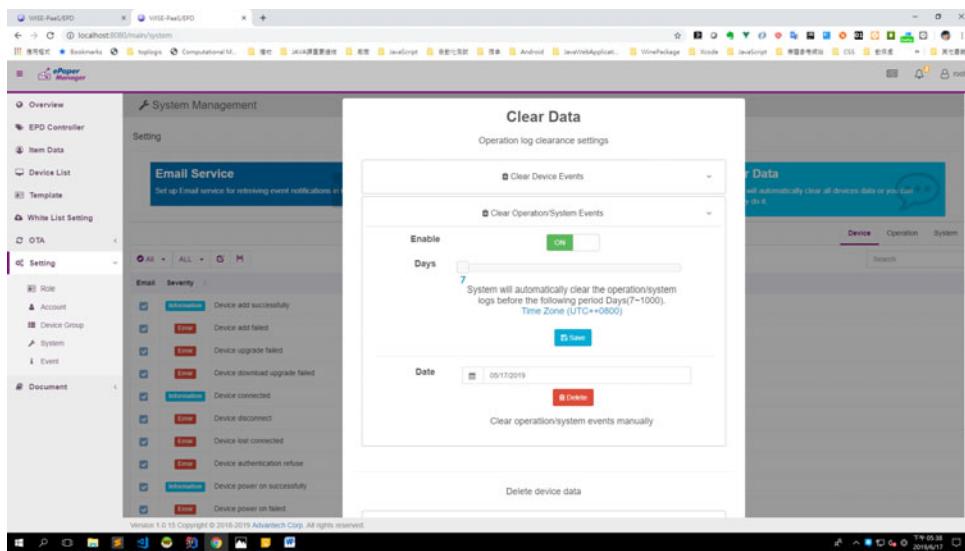




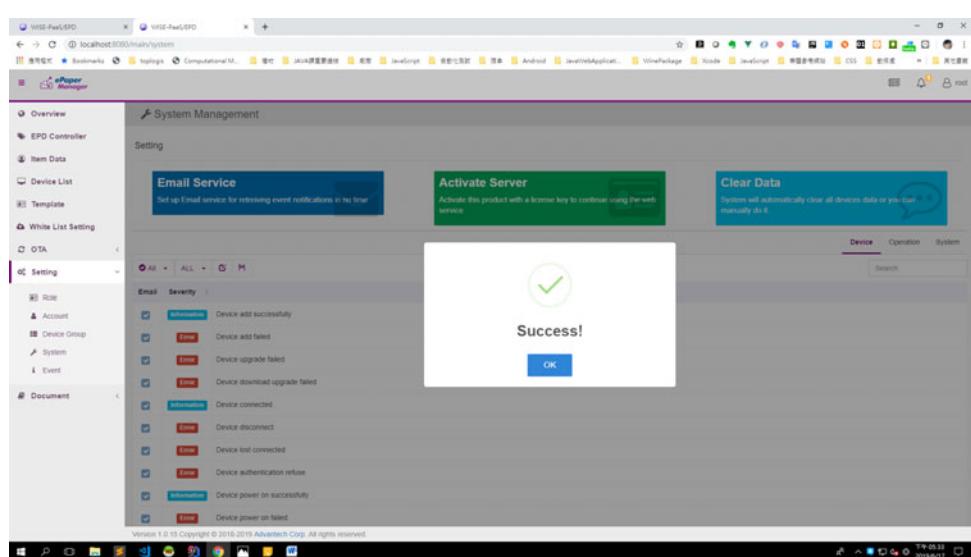
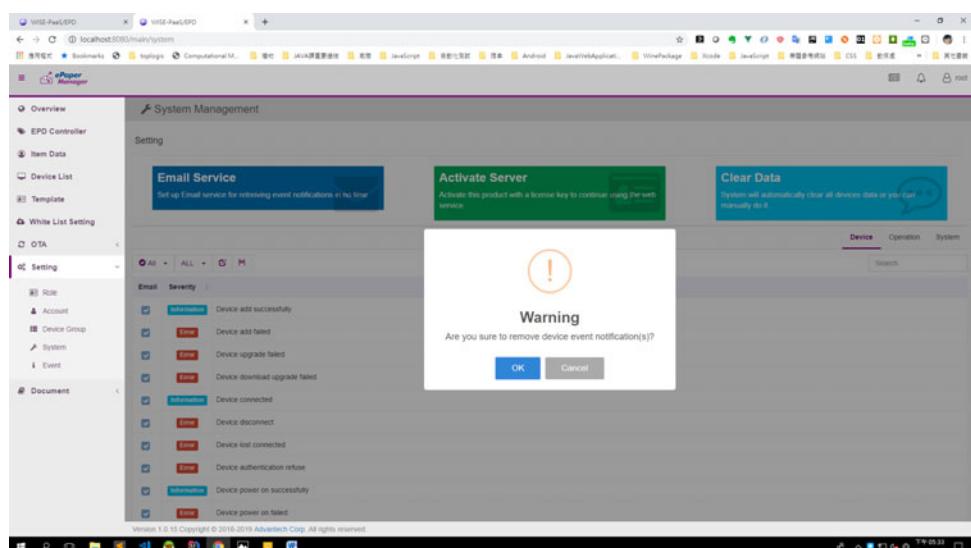
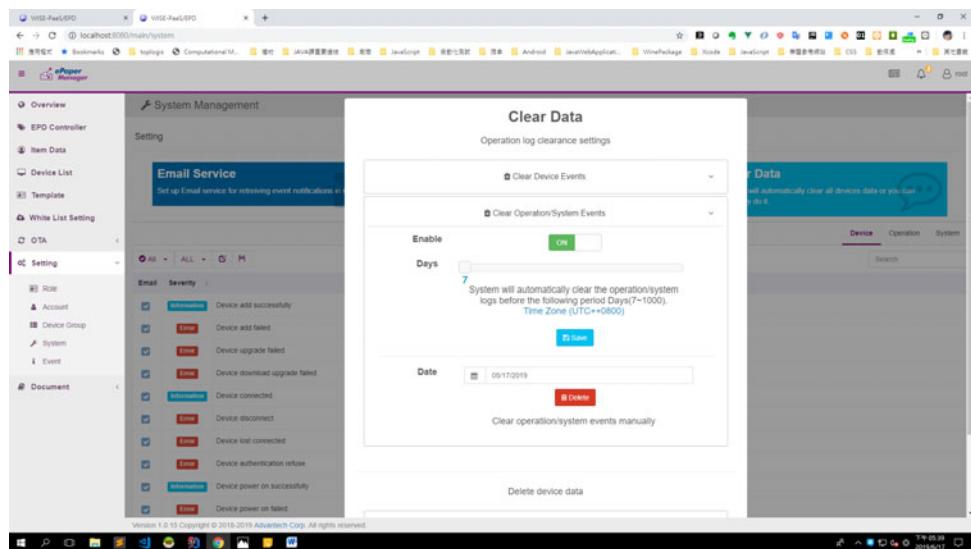
3. Clear operation/system events:
 - 1.) Open the Clear Operation/System Events section.



2.) System automatically clearance. Change the Enable switch to ON, and select the days how often system will begin the clearance, and then click save button to finish this configuration.

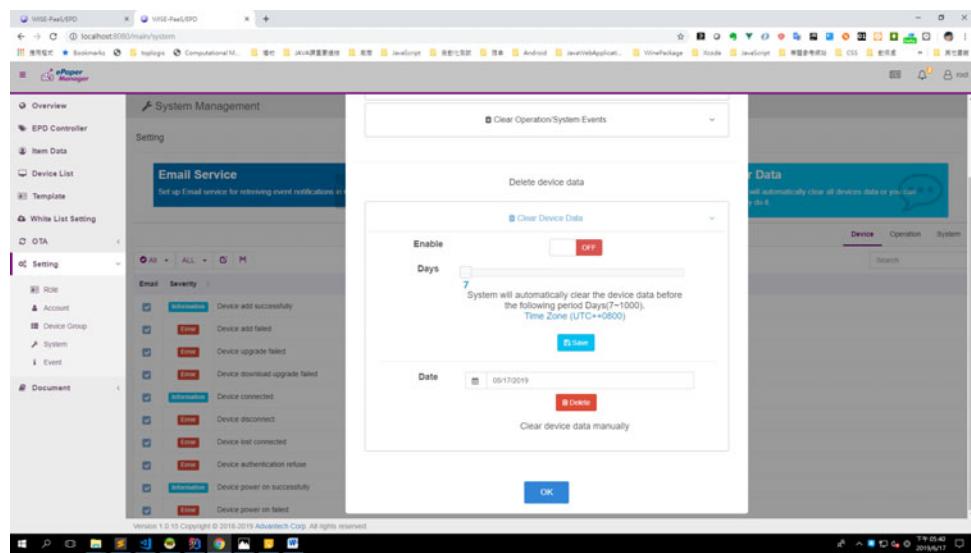


3.) Clear events manually. Select the clearance date (Reminder: the events between the date and before will be cleared), and click the Delete button to begin to clear data.

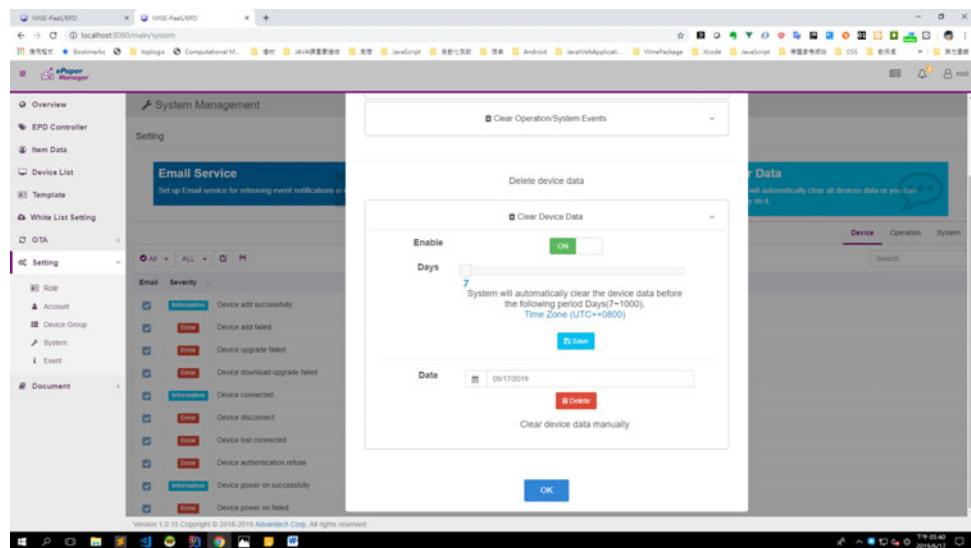


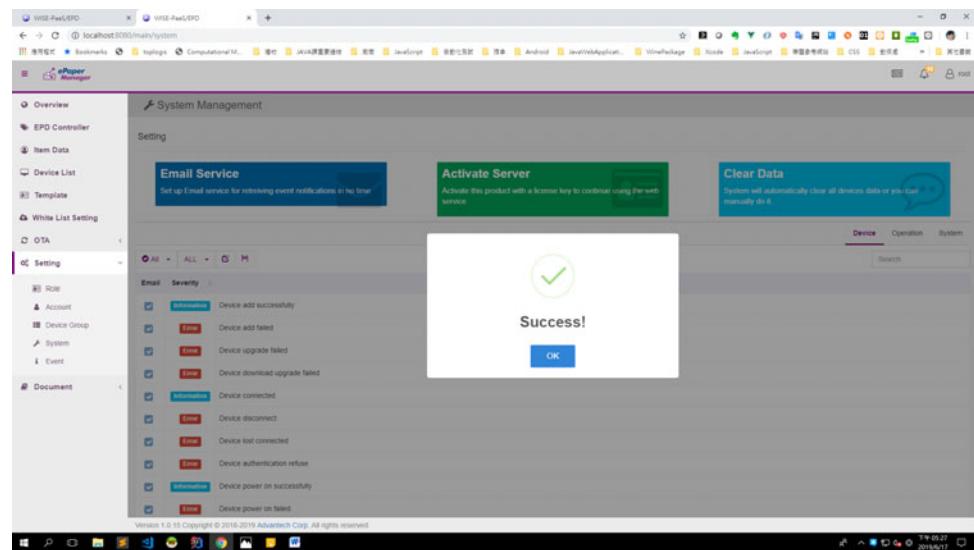
4. Clear device data:

1.) Open the Clear Device Data section.

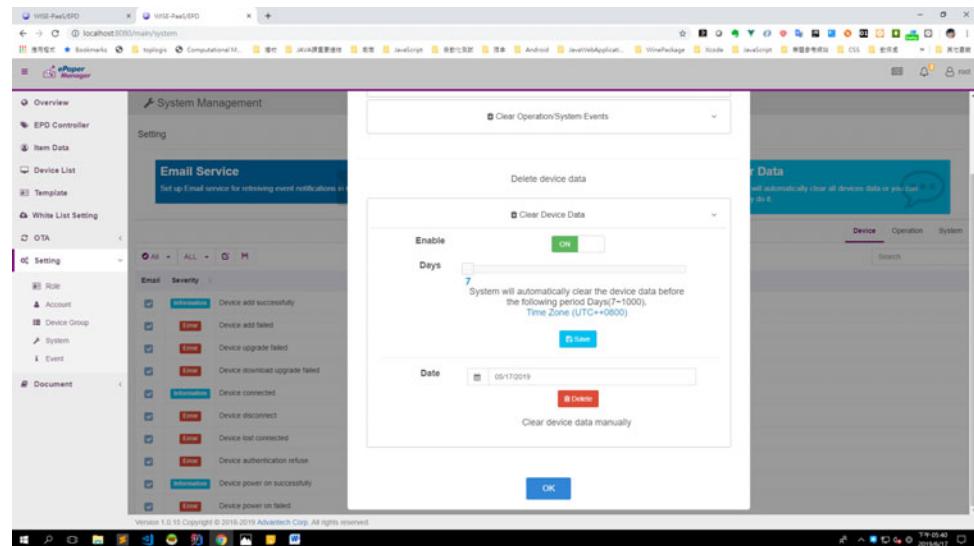


2.) System automatically clearance. Change the Enable switch to ON, and select the days how often system will begin the clearance, and then click save button to finish this configuration.

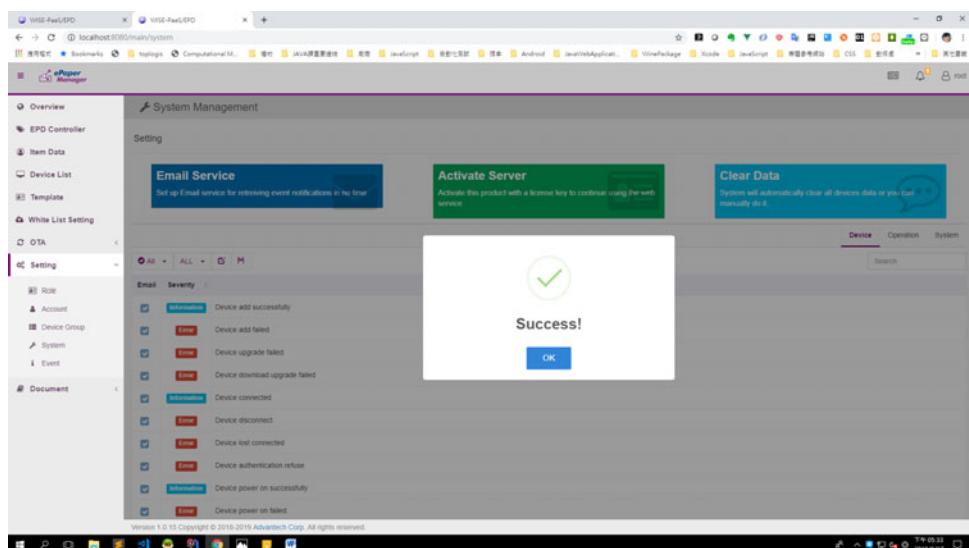
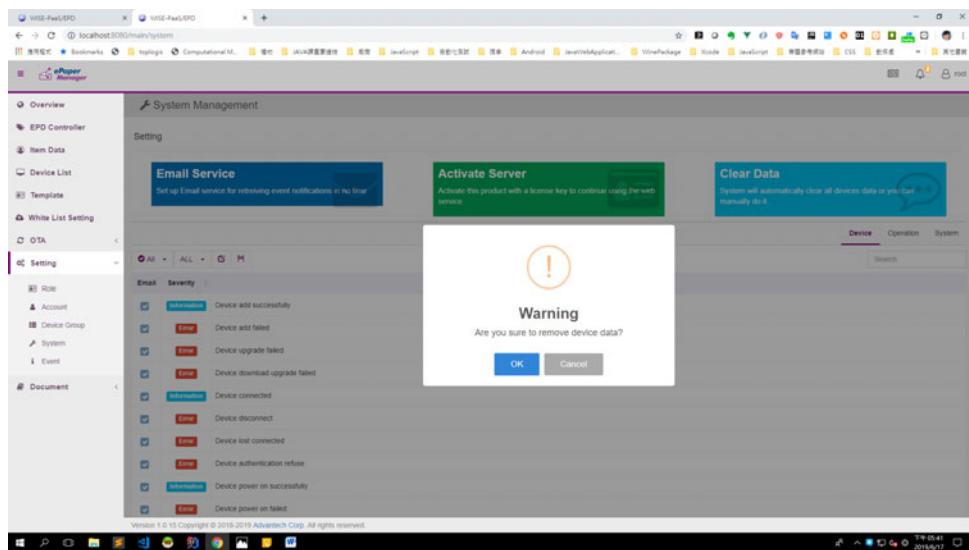




3.) Clear events manually. Select the clearance date (Reminder: the data between the date and before will be cleared), and click the Delete button to begin to clear data.

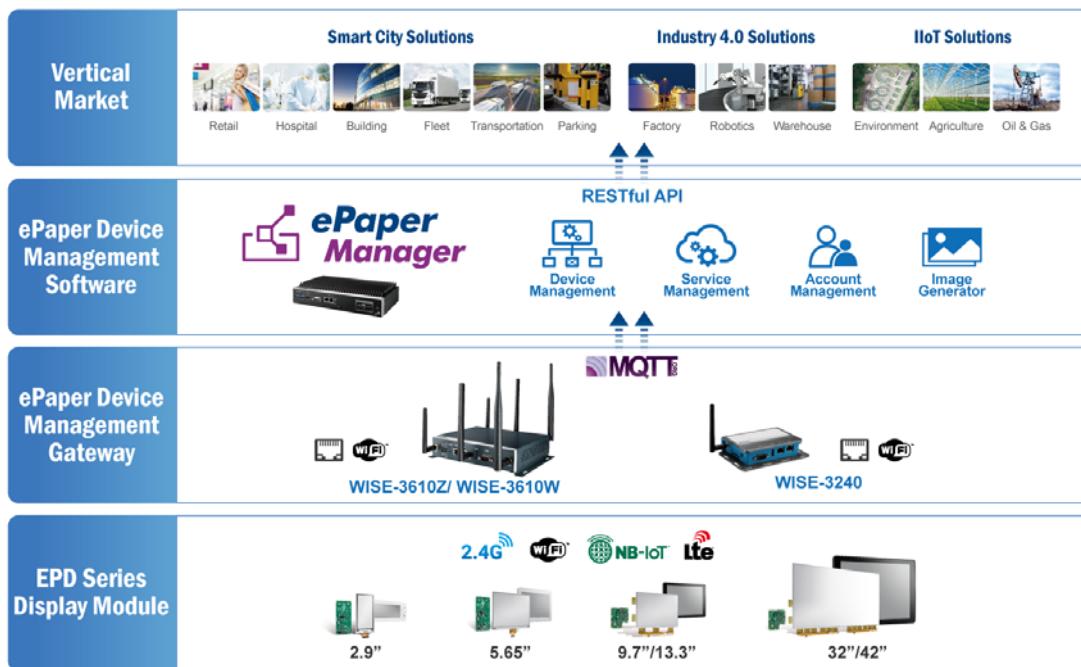


Chapter 4 EPD-023 in ePaper Manager



4.4 Integrate EPD APIs into Your System

We provide easy-to-use APIs to help you integrate into your own system below is the sample for you to understand it's very easy to integration into your system with our restful API.



Vertical application need to send Api to ePaper manager the sample code as below.

1. Our API in Javascript below: setItemData to update data into ePaper manager and ePaper manager 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 = $('#sensorId').val();
    var sensorValue = parseInt($('#sensorValue').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.

4.5 Control EPD Data through ePaper Manager API

1. Upload EPD Data

- path: /esl/v1/items
- method: POST
- header: Basic Authorization
- body paramters:
- 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 paramters:
 - 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" }

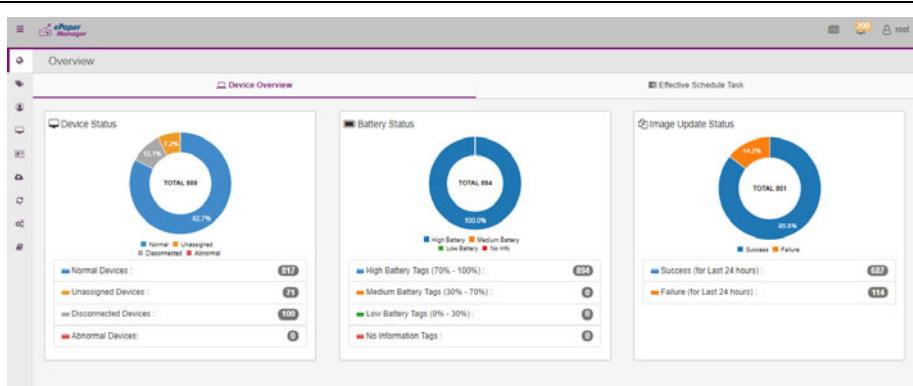
12. Get Item

- 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\", \"WorkOrder\":\"YSI5001ZA\", \"PartNumber\":\"DLV8315-1J30000\", \"Qty\":20, \"Station\":\"Assy\", \"NextStation\":\"BurnIn\", \"Arrival-Time\":\"5/22/18 9:11\", \"LeaveTime\":\\\", \"StayTime\":0, \"Cautions\":\\\", \"Remark\":\\\"\" } }

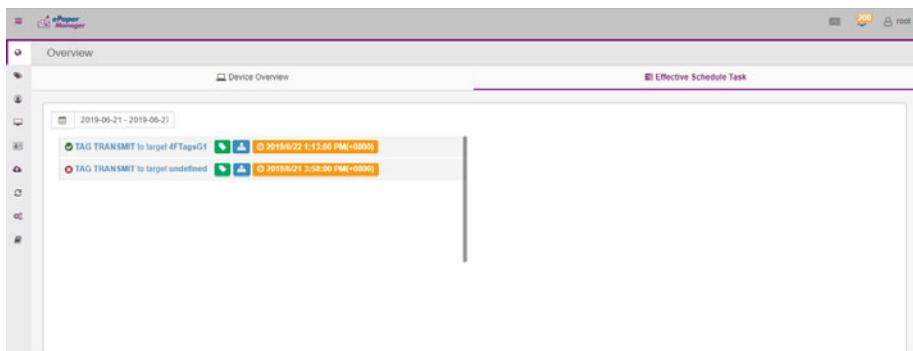
4.6 ePaper Manager Feature list

4.6.1 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 Controlling Management		Account	root	Group	4FLabOther	Status	All	Mode	Device	Search	...	
	Offline	92%	-49dBm	EPD-Tag-45b0	00000001-0000-0000-0012-4b001aae5eb099	TAQ000001(RunCard)						
	Offline	92%	-46dBm	EPD-Tag-eae0	00000001-0000-0000-0012-4b001aae5ea0	TAQ000001(RunCard)						
	Offline	93%	-48dBm	EPD-Tag-ead0	00000001-0000-0000-0012-4b001aae5eadc	TAQ000001(RunCard)						
	Offline	92%	-49dBm	EPD-Tag-eab0	00000001-0000-0000-0012-4b001aae5eb0	TAQ000001(RunCard)						
	Offline	92%	-49dBm	EPD-Tag-e0d0	00000001-0000-0000-0012-4b001aae5eb0d	TAQ000001(RunCard)						

Search criteria

Account/ Group/Connecting Status/ EPD Device Mode

Properties

EPD Controlling Management		Account	root	Group	4FLab02	Status	All	Mode	Device	Search	...	
	Success	93%	-38dBm	EPD-Tag-1cb0	00000001-0000-0000-0012-4b00193d1c8d	Not set						
	Success	93%	-51dBm	EPD-Tag-1cf0	00000001-0000-0000-0012-4b00192f1cf0	Not set						
	Success	92%	-39dBm	EPD-Tag-1c50	00000001-0000-0000-0012-4b00192d1c50	Not set						
	Success	92%	-48dBm	EPD-Tag-1c04	00000001-0000-0000-0012-4b00192d1d04	Not set						
	Success	93%	-45dBm	EPD-Tag-1c30	00000001-0000-0000-0012-4b00193d1c30	Not set						

Name / Panel type/ total page /Connecting status / Update Status

Action	Schedule

User can setup SLEEP/ TRANSMIT/REFRESH as the scheduling task daily / weekly/ monthly /yearly.

Bind Item

Tag Name	Item & Template	Action
EPD-023B PD-Tag-eb96 J000001-0000-0000-0012-4b001ae6eb96	TAG00001(RunCard)	Preview Refresh Transmit Call
EPD-023B PD-Tag-eae0 J000001-0000-0000-0012-4b001ae6eae0	TAG00001(RunCard)	Preview Refresh Transmit Call
EPD-023B PD-Tag-eadc J000001-0000-0000-0012-4b001ae6eadc	TAG00001(RunCard)	Preview Refresh Transmit Call

Available Target Product and Data

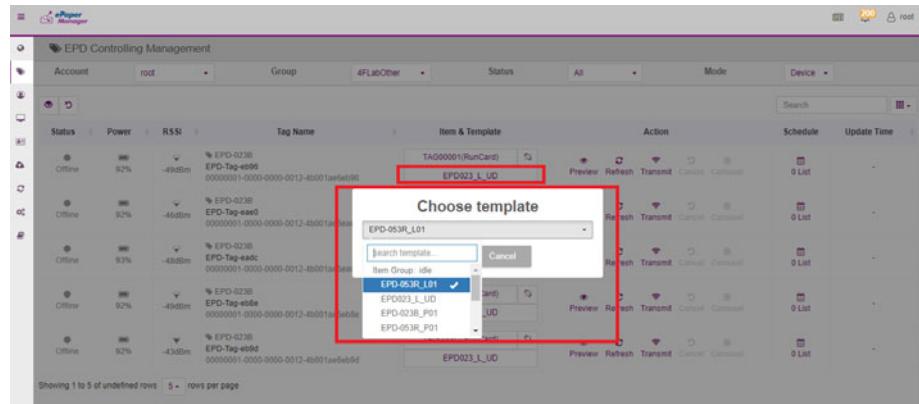
Tag_Number	Station	WorkOrder	LeaveTime	Template_ID	PartNumber	Qty	StayTime	Cautions	ArrivalTime	Remark
TA000001	NextStation Module	YAA022ZA		RunCard	DMS-SA2300-A1E	77	0		2019/1/5 14:08	
TA000002	NextStation Module	YAA023ZA		RunCard	DMS-SA2300-A1E	52	0		2019/1/4 16:31	
TA000003	Station Burn In	YAA022ZA		RunCard	DMS-SA2300-A1E				2019/1/4 09:51	
TA000004	NextStation Module	YWB036ZA		RunCard	ACC-E3825A0-W7P0E	23	0		2019/1/2 16:05	
TA000005	NextStation Module	YAA022ZA		RunCard	DMS-SA2300-A1E	75	0		2019/1/4 13:20	
TA000006	Station Burn In	YAA021ZA		RunCard	DMS-SA2300-A1E				2018/12/27 11:10	
TA000007				RunCard						
TA000008	NextStation T1	YAA024ZA		RunCard	DMS-SA2300-A1E	89	0		2019/1/7 13:12	
TA000009	NextStation Module	YAA024ZA		RunCard	DMS-SA2300-A1E	64	0		2019/1/7 16:16	
TA000010	NextStation PI	YAA023ZA		RunCard	DMS-SA2300-A1E	4	0		2019/1/4 16:05	

User can manual binding/unbinding ITEM DATA to EPD device

1. click the eye image icon
2. select the bind icon
3. system will pop-up another page for Available Target Product and Data.

Action

Bind Template



User can manual binding TEMPLATE to EPD device

Action Preview

Account	Power	RSSI	Tag Name	Item & Template	Action	Schedule	Update Time
Offline	92%	-49dBm	EPD-023B EPD-Tag-e99	TAQ00001(RunCard)	Preview Refresh Transmit Cancel (disabled)	0 List	
Offline	92%	-46dBm	EPD-023B EPD-Tag-e99	TAQ00001(RunCard)	Preview Refresh Transmit Cancel (disabled)	0 List	
Offline	93%	-49dBm	EPD-023B EPD-Tag-e99	TAQ00001(RunCard)	Preview Refresh Transmit Cancel (disabled)	0 List	
Offline	92%	-49dBm	EPD-023B EPD-Tag-e99	TAQ00001(RunCard)	Preview Refresh Transmit Cancel (disabled)	0 List	
Offline	92%	-43dBm	EPD-023B EPD-Tag-e99	TAQ00001(RunCard)	Preview Refresh Transmit Cancel (disabled)	0 List	

User can preview the EPD Device image.

Transmit

Account	Power	RSSI	Tag Name	Item & Template	Action	Schedule	Update Time
Offline	92%	-49dBm	EPD-023B EPD-Tag-e99	TAQ00001(RunCard)	Preview Refresh Transmit Cancel (disabled)	0 List	
Offline	92%	-46dBm	EPD-023B EPD-Tag-e99	TAQ00001(RunCard)	Preview Refresh Transmit Cancel (disabled)	0 List	
Offline	93%	-49dBm	EPD-023B EPD-Tag-e99	TAQ00001(RunCard)	Preview Refresh Transmit Cancel (disabled)	0 List	
Offline	92%	-49dBm	EPD-023B EPD-Tag-e99	TAQ00001(RunCard)	Preview Refresh Transmit Cancel (disabled)	0 List	
Offline	92%	-43dBm	EPD-023B EPD-Tag-e99	TAQ00001(RunCard)	Preview Refresh Transmit Cancel (disabled)	0 List	

1. User can re-fresh the image on EPD device
2. User can Transmit image to EPD device
3. If user have click "transmit" or "re-fresh" for the device, then the system keep busy, not response from device side. User can click "reset" to cancel the execution.
4. LED Blinking value: maximum is 86400, minimum is 0, duration cycle 1.5 secs.

Transmit Image Options

Which page in EPD Tag: 1

1

Refresh After Transmit?

ON

With Blinking LED?

LED1

100

This action may leads to timeout if the server is busy, especially when server is busy on batch jobs. Please try it again after batch jobs finished.

OK

Cancel

Item Data

Import ITEM Data

Rules for Uploading Item Data

Now we support three file types: JSON, Excel and CSV.

• JSON format (Example)

```
items: [
  {
    "code": "X001",
    "name": "GroupName"
    "content": "1#1"
  },
  {
    "code": "X002",
    "name": "GroupName"
    "content": "1#2"
  }
]
```

Excel/CSV format (Example)

id	name	age
X001	John	18
X002	Sally	23

OK

Support CSV, EXCEL , JASON Format

Add new data into current item

RunCard

Tag_Number Station WorkOrder LeaveTime Template_ID PartNumber Qty StayTime Cautions ArrivalTime Remark

Tag_Number	Station	WorkOrder	LeaveTime	Template_ID	PartNumber	Qty	StayTime	Cautions	ArrivalTime	Remark
TA000001	NextStation Module	YAA0232A		RunCard	DMS-SA2300-A1E	77	0		2019/1/5 14:06	
TA000002	NextStation Module	YAA0232A		RunCard	DMS-SA2300-A1E	52	0		2019/1/4 16:31	
TA000003	Station Burn In	YAA0232A		RunCard	DMS-SA2300-A1E				2019/1/4 09:51	
TA000004	NextStation Module	YN80362A		RunCard	ACC-E325A-W7P0E	23	0		2019/1/2 16:05	
TA000005	NextStation Module	YAA0232A		RunCard	DMS-SA2300-A1E	75	0		2019/1/4 13:29	

Showing 1 to 5 of 11 rows | 5+ rows per page

Working Group

RunCard

Tag_Number Station WorkOrder LeaveTime Template_ID PartNumber Qty StayTime Cautions ArrivalTime Remark

Tag_Number	Station	WorkOrder	LeaveTime	Template_ID	PartNumber	Qty	StayTime	Cautions	ArrivalTime	Remark
TA000001	NextStation Module	YAA0232A		RunCard	DMS-SA2300-A1E	77	0		2019/1/5 14:06	
TA000002	NextStation Module	YAA0232A		RunCard	DMS-SA2300-A1E	52	0		2019/1/4 16:31	
TA000003	Station Burn In	YAA0232A		RunCard	DMS-SA2300-A1E				2019/1/4 09:51	
TA000004	NextStation Module	YN80362A		RunCard	ACC-E325A-W7P0E	23	0		2019/1/2 16:05	
TA000005	NextStation Module	YAA0232A		RunCard	DMS-SA2300-A1E	75	0		2019/1/4 13:29	

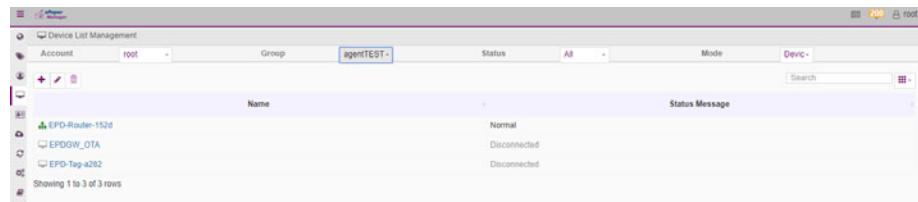
Showing 1 to 5 of 11 rows | 5+ rows per page

Please enter a group name
newGroup

OK Cancel

1. User can perform different working group in the same system.
2. User can add new group by click "Add" icon.

Device List Device search including EPD device, Router and Gateway.



Search criteria

Account/ Group/Connecting Status/ EPD Device Mode

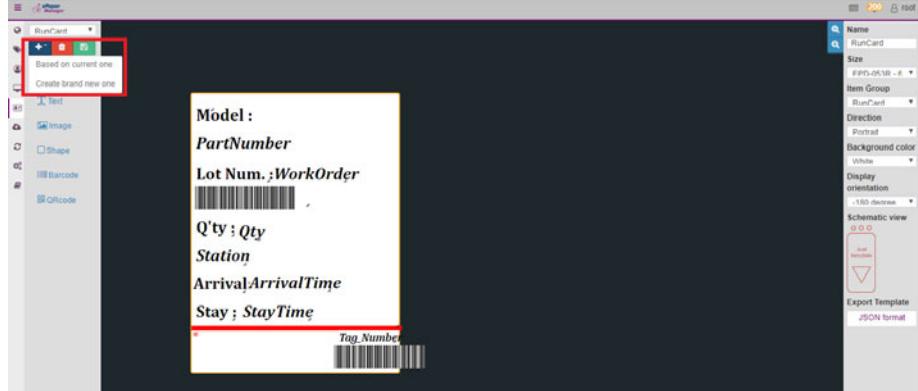
Action



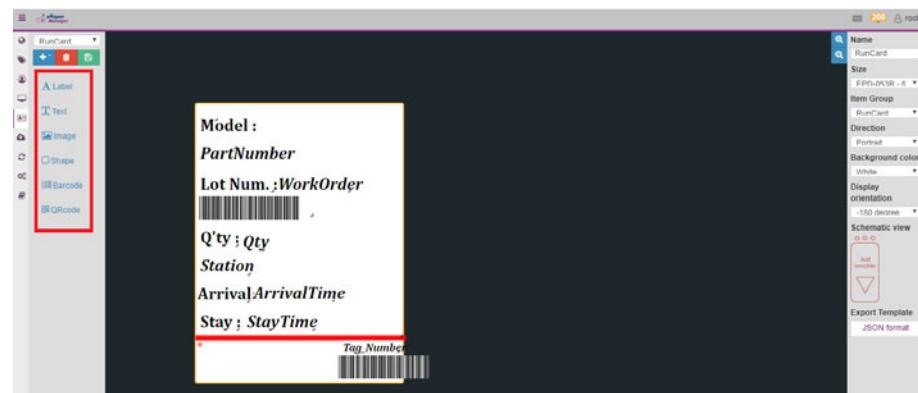
Remote control device:

1. Default column is Name and status message.
2. User can click icon at the right to select more field: monitoring and Get/Set Data.

Template



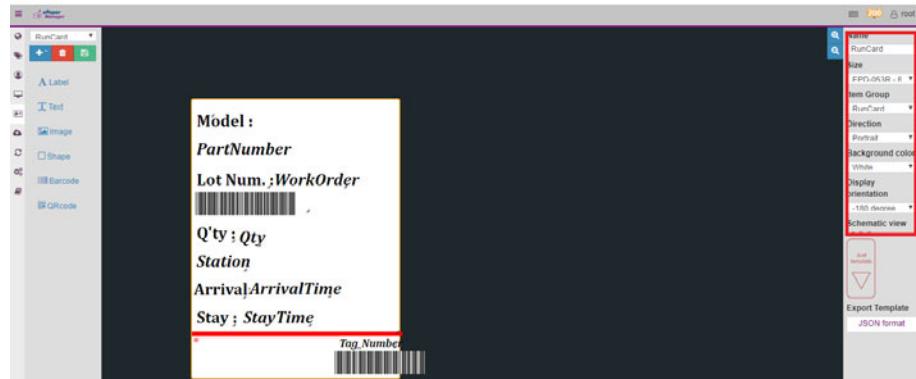
User may add, save, delete Template



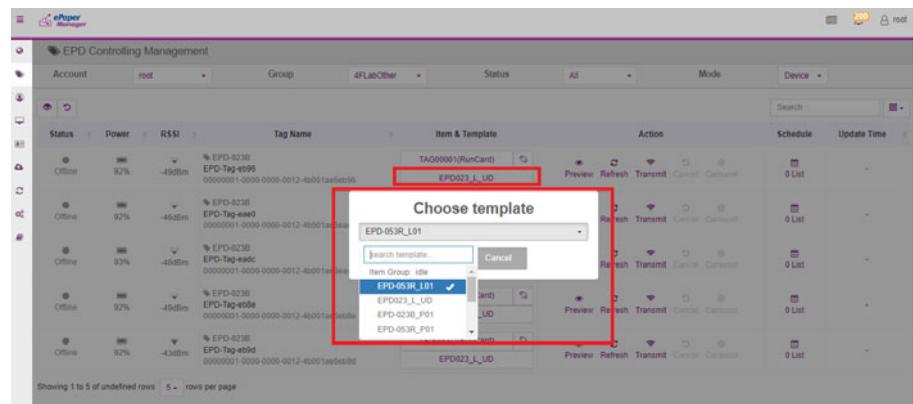
Provide image tool

Label / Text / Image / Shape / Barcode / Qrcode

User may save the template and then go to EPD controller to bind the template with EPD device.



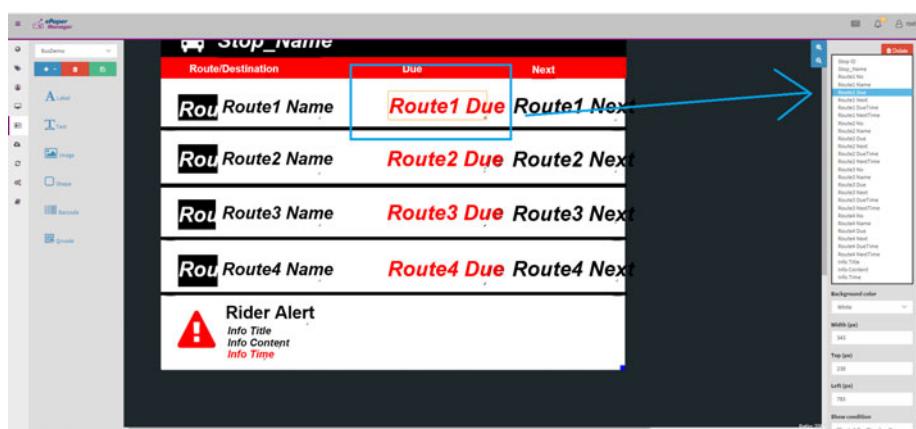
Template name:
EPD Size
ITEM DATA group
Image direction
Background color
Display orientation
Schematic view



1. EPD controller should setup the binding template.

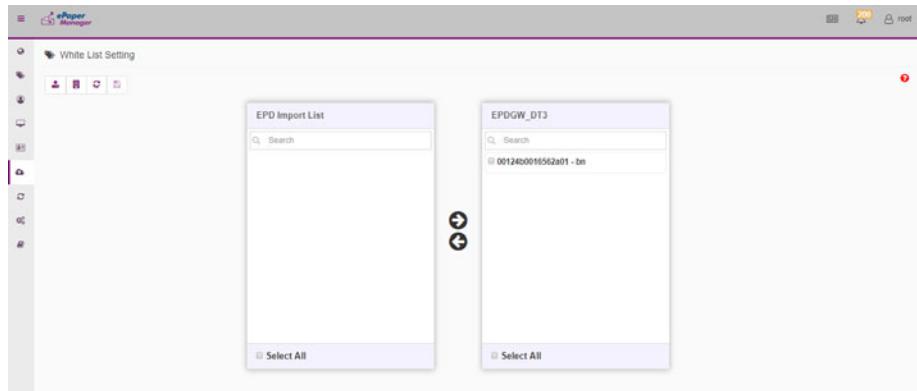


1. Select on component
2. Right side shows the component properties.



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.

White List Setting



File format

i

Rules for Uploading a file

Now we support three file types: JSON, Excel, and CSV.

- JSON format (Example)

```
{  
  "tags": [  
    {  
      "mac": "00124b0015577208",  
      "group": "1F"  
    },  
    {  
      "mac": "00124b0015577209",  
      "group": "1F"  
    }  
  ]  
}
```

- Excel/CSV format (Example)

mac	group
00124b0015577208	1F
00124b0015577209	1F

OK

Epd-023,053 white list setting.

User needs to import the device list and then the device can join the network.

OTA

Note:

The upgrade action currently is valid for WISE-3610Z only and cannot upgrade single tag individually

Upgrade: This step will proceed Download and Deploy, which describe the following:

Download: This step will download the specific version of package file from FTP server. Before proceed this step, you need to upload the package file in the upload page.

Deploy: This step will deploy the file and upgrade the EPD tags firmware to the specific version.

Select upgrade device

Package

File preparing for the upgrade

Storage Name	Type	Security	Max Connections	Operation
OTA	FTP	NONE	5 30	 
Storage Name	Type	Security	Max Connections	Operation

Storage Name: OTA
 Type: FTP
 Security: NONE
 Max Connections: 5 30
 Domain: 172.22.12.22
 Port: 21
 Account Name: admin
 Description: N/A

Storage Name	Name	Security	Domain	Port	Account	Max Connections	Operation
OTA	OTA	• NONE <input checked="" type="radio"/>	172.22.12.22	21	admin	5 30	 
Storage Name	Name	Security	Domain	Port	Account	Max Connections	Operation

Storage Name: OTA
 Name: OTA
 Security: NONE
 Domain: 172.22.12.22
 Port: 21
 Account: admin

FTP & File path setting

Setting Role

Name	Description
super admin	Super Administrator
admin	System Administrator
device admin	Device Administrator

Definition as below

Super admin:

Admin:

Device admin:

Account & Group

Account Detailed Information

Name	Mail	Phone	Full Name
root	root@advantech.com.hr	Not set	root

Device Group Detailed Information

Name	Parent Group	Child Groups	Description
WSEEC	Not Set	Not Set	Not Set
wisepaas	Not Set	Not Set	Not Set
DaemonDev	Not Set	Not Set	Not Set
aritest	Not Set	Not Set	Not Set
alantest	Not Set	Not Set	Not Set

Set the device into group.

Email Service

1. Click System button under the Setting list

System Management

Email Service

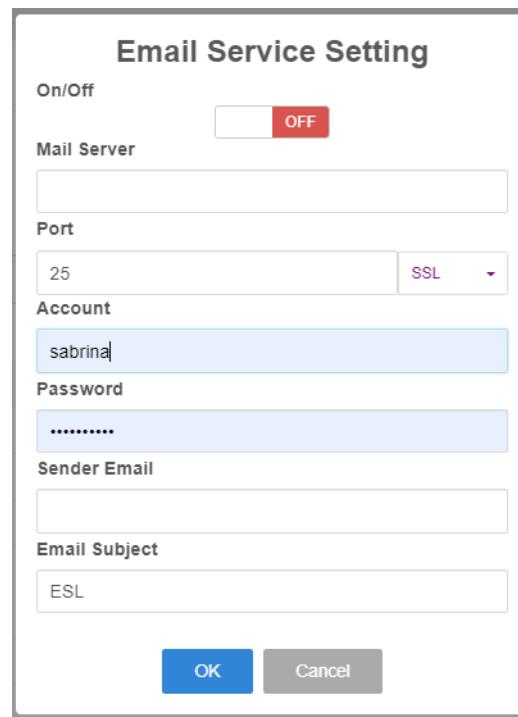
Activate Server

Clear Data

Event Description

Event Log

2. Click Email Service, and fill in the following form.

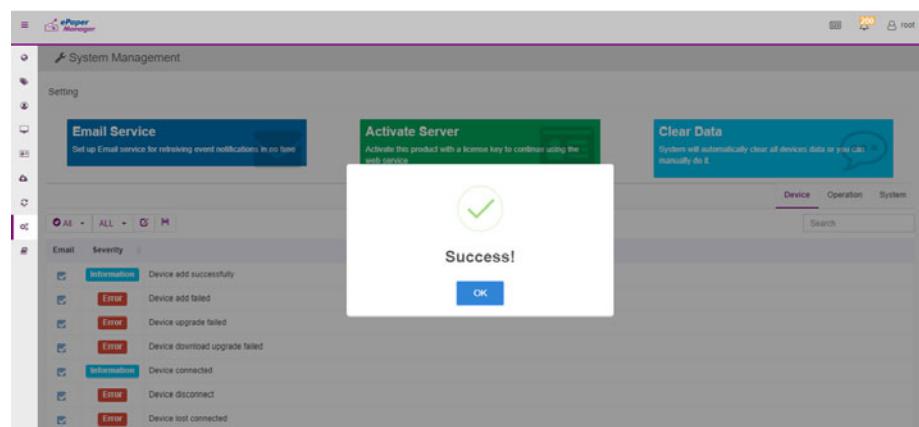


The dialog box is titled "Email Service Setting". It contains the following fields:

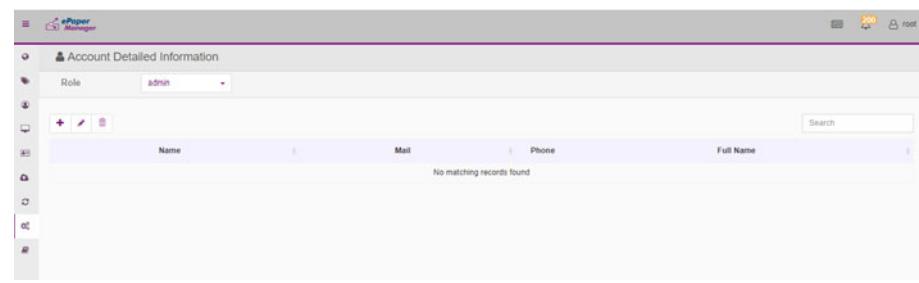
- On/Off:** A switch button labeled "OFF".
- Mail Server:** An input field.
- Port:** An input field with the value "25" and a dropdown menu set to "SSL".
- Account:** An input field containing "sabrina".
- Password:** An input field with masked text "*****".
- Sender Email:** An input field.
- Email Subject:** An input field with the value "ESL".

At the bottom are "OK" and "Cancel" buttons.

3. Setting successfully.



4. Add email account list for this service. Click Account button under the Setting List.



5. Add an admin account. Click Save button. Email will send to this local user when event occurs.

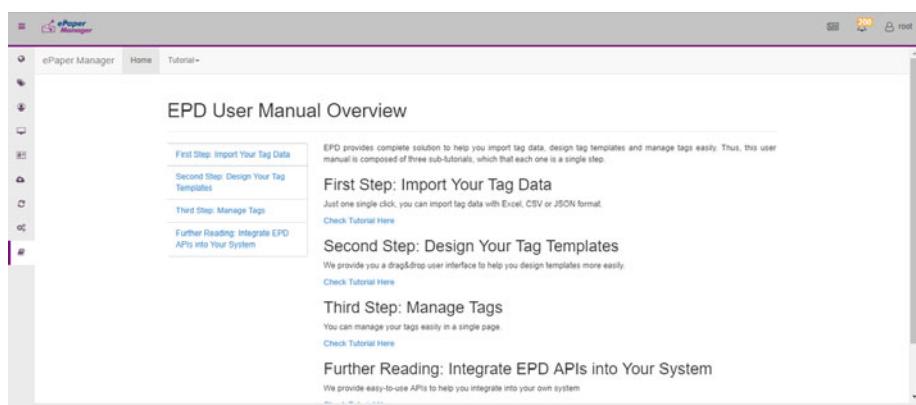
Add EPD connection number license.

Clear Data

Event

User can query the event by clicking the calendar.

Document



The screenshot shows the ePaper Manager software interface. At the top, there is a navigation bar with the title 'ePaper Manager', a 'Home' button, and a 'Tutorial' dropdown menu. On the far right of the top bar, there are icons for maximizing the window, minimizing, closing, and a user profile labeled 'root'. The main content area is titled 'EPD User Manual Overview'. It contains four main sections: 'First Step: Import Your Tag Data', 'Second Step: Design Your Tag Templates', 'Third Step: Manage Tags', and 'Further Reading: Integrate EPD APIs into Your System'. Each section includes a brief description and a 'Check Tutorial Here' link. The left side of the interface features a vertical toolbar with various icons for file operations like Open, Save, Print, and Preferences.

User manual
Restful API
Release Notes

Chapter 5

WISE-EC EPD Design-
in Service



5.1 The Acquisition of Information

Since ePaper is not a plug and play device, Advantech WISE-EC Design-in Services help customers to reduce the time and work involved with designing new ePaper device. Advantech handle the complexities of technical research and provides hardware and software integrated connectivity solutions to accelerate the implementation in a wide range of applications such as electronic shelf labelling, smart logistic, smart factory, smart hospital, digital information signage and smart transportation. Advantech not only provide the single end device but for end-to-end solution includes our ePaper Manager server, IoT gateway and router.

With ePaper Manager, you can manage all information on ePaper devices in real-time. Remotely control all services to provide your customers with the latest information and have proper interaction with them. We also provide APIs to integrate data with your original management system. Below item for you to extension your service for your end customer.

Full centralized control at a glance

- Monitoring functions for low power etc
- Immediate/scheduling information to end user
- Control stock levels in stocktaking mode

Flexible content editor for users

- Creation of templates with simple GUI
- Content previews for system management
- Auto-generated content by system
- Easily check product expiry dates

Finally, Applying Advantech EPD series solution, and system integrators and developers can focus on their own application development with Advantech's reliable battery powered wireless ePaper display solutions.

5.1.1 Concept

- Product selection guide
- Node-to-cloud architecture proposal
- Demo kit for POC evaluation with SDK

According different user scenario and requirement, Advantech offers product selection guide and system architecture proposal for customer to choose the right solution. After preliminary selection of the specification, customer can use demo kit for POC Evaluations. Since we not only offer hardware planning and technology consulting, but also software for customer to evaluation the solution. Resolving customer concerns is Advantech's main target at this stage. Indeed, we all know that product evaluation is the key task in the planning period, especially for performance and specification, so we try to help our customers conduct all the necessary tests for their user scenario.

5.1.2 Design

Design Guideline Support

- Multiple I/O extension
- Customized industrial design

Wireless Conductive Measurement

- TX power / mask / RF harmonic tuning / RX sensitivity

When a product moves into the design stage, Advantech will supply a design guide of the EPD device for reference as well as Antenna selection & schematic review. The EPD device design guide provides onboard IO definitions and recommendations of the industrial design, so customers can have a clear guideline to follow during their EPD device development. In addition, our team is able to assist customers to review the placement/layout and schematics to ensure the EPD device design meets their full requirements.

For software development, Advantech WISE-EC software team can assist customers to establish an environment for software development and evaluate the amount of time and resources needed. If customers outsource software development to a 3rd party, Advantech can also cooperate with the 3rd party and provide proficient consulting services. With Advantech's professional support, the design process becomes much easier and product quality will be improved to meet their targets.

Design Assistance Service

Advantech provides check list for engineer for easy check their schematics and also review service based on customer carrier board schematics. Those services are preventative,

and help to catch design errors before they happen. It helps to save a lot of time and costs with regard to developing carrier boards.

- Schematic Review
- Placement and Layout Review
- Debugging Assistance Services
- General/Special Reference Design Database.

5.1.3 Integration

- Performance fine tuning
- SW integration from end-to-end
- Certification pre-scan
- Wireless & safety certification

Integration stage

This phase comprises of HW/SW integration, application development, and ePaper implementation. Due to the lack of knowledge and experience on platforms, customers need to spend a certain amount of time on analyzing integration problems. In addition, ePaper implementation has a lot to do with driver and signal communication which is not plug and play device. Therefore the customer has to learn from trial and error and finally get the best solution with the least effort. Advantech's team has completed total standard HW/SW solution to do performance fine tune, driver integration and application-specific customization. Consequently, we can support customers with professional advice and information as well as shortening development time and enabling more effective product integration.

Validation stage

After customer's ES sample is completed, the next step is a series of verification steps. In addition to verifying a product's functionality, the related test of the product's efficiency and stability are also an important part at this stage especially. As a supportive role, Advantech primarily helps customers solve their problems in the testing process and will give suggestions and tips as well. Through an efficient verification process backed by our technical support, customers are able to optimize their applications with less fuss. Furthermore, Advantech's team can provide professional consulting services about further testing and equipment usage, so customers can find the right tools to efficiently identify and solve problems to further enhance their products quality and performance.

5.1.4 Production

- Production
- Worldwide logistics management
- Global repair service & RMA

Advantech has two manufacturing center in Taiwan and Kunshan to provide customized chassis assembly, testing services, packaging and labeling to meet customer special needs.

Customer can place an order via our smart and fast on-line system. With global peripheral procurement service and global logistics service, Advantech provide vertical integration in short lead time and competitive price for customers' one-stop shopping solutions, and then direct shipment to end users. After sales, a completed global repair service (RMA) take charge to provide device fully repairing service, and then execute efficient delivery.

5.2 Contact Information

Below is the contact information for Advantech customer service.

Region/Country	Contact Information
America	1-888-576-9688
Brazil	0800-770-5355
Mexico	01-800-467-2415
Europe (Toll Free)	00800-2426-8080
Singapore & SAP	65-64421000
Malaysia	1800-88-1809
Australia (Toll Free)	1300-308-531800-810-0345
China (Toll Free)	800-810-8389Sales@advantech.com.cn
India (Toll Free)	1-800-425-5071
Japan (Toll Free)	0800-500-1055
Korea (Toll Free)	080-363-9494
	080-363-9495
Taiwan (Toll Free)	0800-777-111
Russia (Toll Free)	8-800-555-01-50

On the other hand, you can reach our service team through below website, our technical support engineer will provide quick response once the form is filled out:

http://www.advantech.com.tw/contact/default.aspx?page=contact_form2&subject=Technical+Support

5.3 Global Service Policy

5.3.1 Warranty Policy

Below is the warranty policy of Advantech products:

5.3.1.1 Warranty Period

Advantech branded off-the-shelf products and 3rd party off-the-shelf products used to assemble Advantech Configure to Order products are entitled to a 2 years complete and prompt global warranty service. Product defect in design, materials, and workmanship, are covered from the date of shipment.

All customized products will by default carry a 15 months regional warranty service. The actual product warranty terms and conditions may vary based on sales contract.

All 3rd party products purchased separately will be covered by the original manufacturer's warranty and time period, and shall not exceed one year of coverage through Advantech.

5.3.1.2 Repairs under Warranty

It is possible to obtain a replacement (Cross-Shipment) during the first 30 days of the purchase, thru your original ADVANTECH supplier to arrange DOA replacement if the products were purchased directly from ADVANTECH and the product is DOA (Dead-on-Arrival). The DOA Cross-Shipment excludes any shipping damage, customized and/or build-to-order products.

For those products which are not DOA, the return fee to an authorized ADVANTECH repair facility will be at the customers' expense. The shipping fee for reconstructive products from ADVANTECH back to customers' sites will be at ADVANTECH's expense.

5.3.1.3 Exclusions from Warranty

The product is excluded from warranty if

- The product has been found to be defective after expiry of the warranty period.
- Warranty has been voided by removal or alteration of product or part identification labels.
- The product has been misused, abused, or subjected to unauthorized disassembly/modification; placed in an unsuitable physical or operating environment; improperly maintained by the customer; or failure caused which ADVANTECH is not responsible whether by accident or other cause. Such conditions will be determined by ADVANTECH at its sole unfettered discretion.
- The product is damaged beyond repair due to a natural disaster such as a lightning strike, flood, earthquake, etc.
- Product updates/upgrades and tests upon the request of customers who are without warranty.

5.3.2 Repair Process

5.3.2.1 Obtaining an RMA Number

All returns from customers must be authorized with an ADVANTECH RMA (Return Merchandise Authorization) number. Any returns of defective units or parts without valid RMA numbers will not be accepted; they will be returned to the customer at the customer's cost without prior notice. An RMA number is only an authorization for returning a product; it is not an approval for repair or replacement. When requesting an RMA number, please access ADVANTECH's RMA web site: <http://erma.ADVANTECH.com.tw> with an authorized user ID and password.

You must fill out basic product and customer information and describe the problems encountered in detail in "Problem Description". Vague entries such as "does not work" and "failure" are not acceptable.

If you are uncertain about the cause of the problem, please contact ADVANTECH's Application Engineers (AE). They may be able to find a solution that does not require sending the product for repair.

The serial number of the whole set is required if only a key defective part is returned for repair. Otherwise, the case will be regarded as out-of-warranty.

5.3.2.2 Returning the Product for Repair

It's possible customers can save time and meet end-user requirements by returning defective products to an authorized ADVANTECH repair facility without an extra cross-region charge. It is required to contact the local repair center before offering global repair service.

It is recommended to send cards without accessories (manuals, cables, etc.). Remove any unnecessary components from the card, such as CPU, DRAM, and CF Card. If you send all these parts back (because you believe they may be part of the problem), please note clearly that they are included. Otherwise, ADVANTECH is not responsible for any items not listed. Make sure the "Problem Description" is enclosed.

European Customers that are located outside European Community are requested to use UPS as the forwarding company. We strongly recommend adding a packing list to all shipments. Please prepare a shipment invoice according to the following guidelines to decrease goods clearance time:

1. Give a low value to the product on the invoice, or additional charges will be levied by customs that will be borne by the sender.
2. Add information "Invoice for customs purposes only with no commercial value" on the shipment invoice.
3. Show RMA numbers, product serial numbers and warranty status on the shipment invoice.
4. Add information about Country of origin of goods

In addition, please attach an invoice with RMA number to the carton, then write the RMA number on the outside of the carton and attach the packing slip to save handling time. Please also address the parts directly to the Service Department and mark the package "Attn. RMA Service Department".

All products must be returned in properly packed ESD material or anti-static bags. ADVANTECH reserves the right to return unrepairs items at the customer's cost if inappropriately packed.

Besides that, "Door-to-Door" transportation such as speed post is recommended for delivery, otherwise, the sender should bear additional charges such as clearance fees if Air-Cargo is adopted.

Should DOA cases fail, ADVANTECH will take full responsibility for the product and transportation charges. If the items are not DOA, but fail within warranty, the sender will bear the freight charges. For out-of-warranty cases, customers must cover the cost and take care of both outward and inward transportation.

5.3.2.3 Service Charges

The product is excluded from warranty if:

- The product is repaired after expiry of the warranty period.
- The product is tested or calibrated after expiry of the warranty period, and a No Problem Found (NPF) result is obtained.
- The product, though repaired within the warranty period, has been misused, abused, or subjected to unauthorized disassembly/modification; placed in an unsuitable physical or operating environment; improperly maintained by the customer; or failure caused which ADVANTECH is not responsible whether by accident or other cause. Such conditions will be determined by ADVANTECH at its sole unfettered discretion.
- The product is damaged beyond repair due to a natural disaster such as a lightning strike, flood, earthquake, etc.
- Product updates and tests upon the request of customers who are without warranty.

If a product has been repaired by ADVANTECH, and within three months after such a repair the product requires another repair for the same problem, ADVANTECH will do this repair free of charge. However, such free repairs do not apply to products which have been misused, abused, or subjected to unauthorized disassembly/modification; placed in an unsuitable physical or operating environment; improperly maintained by the customer; or failure caused which ADVANTECH is not responsible whether by accident or other cause.

Please contact your nearest regional service center for detail service quotation.

Before we start out-of-warranty repairs, we will send you a pro forma invoice (P/I) with the repair charges. When you remit the funds, please reference the P/I number listed under "Our Ref". ADVANTECH reserves the right to deny repair services to customers that do not return the DOA unit or sign the P/I. Meanwhile, ADVANTECH will scrap defective products without prior notice if customers do not return the signed P/I within 3 months.

5.3.2.4 Repair Report

ADVANTECH returns each product with a "Repair Report" which shows the result of the repair. A "Repair Analysis Report" is also provided to customers upon request. If the defect is not caused by ADVANTECH design or manufacturing, customers will be charged US\$60 or US\$120 for in-warranty or out-of-warranty repair analysis reports respectively.

5.3.2.5 Custody of Products Submitted for Repair

ADVANTECH will retain custody of a product submitted for repair for one month while it is waiting for return of a signed P/I or payment (A/R). If the customer fails to respond within such period, ADVANTECH will close the case automatically. ADVANTECH will take reasonable measures to stay in proper contact with the customer during this one month period.

5.3.2.6 Shipping Back to Customer

The forwarding company for RMA returns from ADVANTECH to customers is selected by ADVANTECH. Per customer requirement, other express services can be adopted, such as UPS, FedEx and etc. The customer must bear the extra costs of such alternative shipment. If you require any special arrangements, please indicate this when shipping the product to us.

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Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.

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