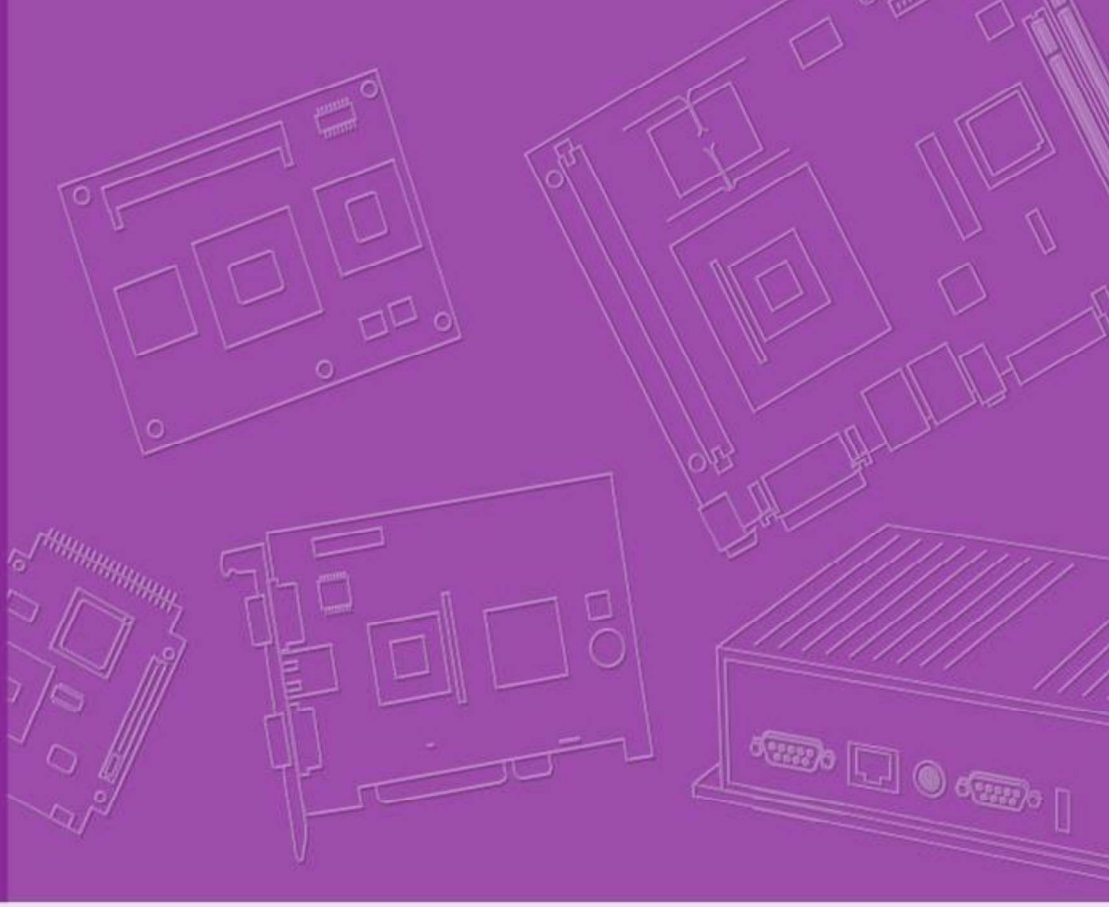

User Manual

EPD Device EPD-023 Module Solution

Wireless ePaper Display Solution

ADVANTECH

Enabling an Intelligent Planet

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Acknowledgements

Part No. 2006D023xx Edition 1

August 2019

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 equipmt.t.

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.

OEM Integration Instructions：

This device is intended only for OEM integrators under the following conditions：

(1). This module limit can be used to install in the list of host combinations below.

Product name	Host model	Module Model	Antenna type	Difference of End Product
Wireless ePaper Control Board	EPD-023B2	EPD-023 EPD023	Chip antenna	antenna type display screen size
Wireless ePaper Control Board	EPD-053R2	EPD-053 EPD053	PCB dipole	

(2). The antenna must be installed such that 20 cm is maintained between the antenna and users, and the transmitter module may not be colocated with any other transmit or antenna.

(3). The module shall be only used with the integral antenna(s) that has been originally tested and certified with this module.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirement with this module installed (for example, digital device emission, PC peripheral requirements, etc.)

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-023-053 ".

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 Supports and Assistance

1. Visit the Advantech website at http://Supports.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 Supports 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-023B1AG-NTC02	2.9" Wireless ePaper displays system solution in 2.4G
EPD-023B1AG-NTC12	EPD-023B2AG-NTC02 for 50 pcs solution kit
EPD-023B1AG-NTC22	EPD-023B2AG-NTC02 for 100 pcs solution kit
EPD-023B1AG-NTC32	EPD-023B2AG-NTC02 for 500 pcs solution kit
EPD-023B1AG-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 voldevicee 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 overvoldevicee.
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 manufacture. 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;
    - l 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 d? à une surtension transitoire
12. Ne jamais verser de liquide dans une ouverture sous peine de provoquer un incendie ou un choc électrique
13. Ne jamais ouvrir l'appareil.Pour des raisons de sécurité, cet équipement ne doit être ouvert que par du personnel qualifié
14. Si l'une des situations suivantes se produit, faites vérifier l'équipement par le personnel de service:
    - Le cordon d'alimentation ou la fiche est endommagé.
    - Un liquide a pénétré dans l'appareil.
    - L'équipement a été exposé à l'humidité.
    - L'équipement ne fonctionne pas bien ou vous ne pouvez pas le faire fonctionner conformément au manuel d'utilisation.
    - Equipment L'équipement est tombé et a été endommagé.
    - Equipment L'équipement présente des signes évidents de rupture.

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

Contents

Chapter 1

Product Overview

1.1 Introduction

EPD-023 is an ePaper device which Supportss ultra low power 2.4GHz RF wireless integrated with a 2.9” EPD with an ARM Cortex-M3 processor. The device is designed for hospital, pharmacy, factory, warehouse and retail applications. With optimization on power consumption and device management, low data rate applications can achieve years of battery life and thousand of device connections. Advantech’s EPD-023 provides multiple interface for application control which is highly integrated with a low power consumption system. EPD-023 can auto join and bind the network with the IoT Gateway (WISE-3610Z) and Router (WISE-3240). Data can be quickly and easily acquired and transformed into different formats to communicate with the ePaper Manager Server (ARK-2250L).

The main features of EPD-023 are:

- ARM Cortex-M3 Core Processor
- Supports IEEE 802.15.4 / 2.4 G networks
- 2.9" e-Paper panel display
- Low power consumption and years of battery life
- Multiple I/O with 3 buttons & 3 LEDs
- Supports temperature ranges: 0 ~ 50 °C
- High Performance integrated system with RTOS
- Supports over-the-air upgrades (OTA)
- Available solution kit for various application deployments.

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~ +6dBm
	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

Environment	Operation Temperature	B/W: 0 ~ 50 °C
	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! *Image for EPD needs to follow these instructions.*

1. *Image needs to set as 296 x 128 pixels, do not resize which will cause jaggy edges*
2. *24 bit / BMP format for EPD-023*
3. *Black: (0,0,0) / White (255, 255, 255)*

1.3 System implementation

The EPD device can be applied to different applications and system integrators can control the RESTful APIs to design for different scenarios.

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

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

EPD-023 is the end node of the system. Developers can apply Advantech WISE-3610Z /3240 to connect to ePaper manager which is installed in Advantech's Embedded Computer /ARK2250L.

Chapter 2

EPD-023 Network Specification

2.1 System Architecture

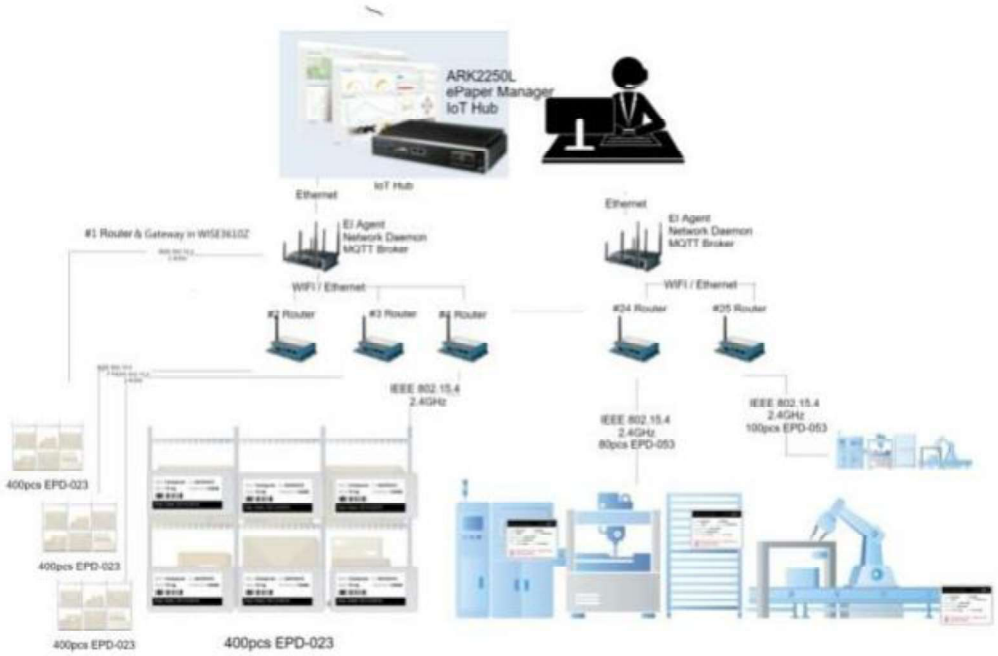


Figure 2.1 EPD-023 Network Topology

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. Supports 11 channels in this system.
5. Supports up to 10000 EPD devices in one system by 25 pcs routers.
6. System supports whitelists to join the system from ePaper manager.
7. Supports changeable encrypted keys.

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 shown below:
  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 whitelist to join the network.
  5. ePapaer manager can deliver the image/Firmware to EPD device through WISE Gateway.
  6. Device can periodically report status back to ePaper manager.

2.2.2 WISE Gateway (WISE-3610Z)

1) Supports MQTT broker server.
2) Executes 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

- A device can join the router when a corespondent LQI value can be detected and qualified.
- Supports router re-scan: if an EPD device fails to join after 2 mins the EPD device will start to look for new router.
- Supports status reports every 1 mins after a device joins the network.
- Supports sending data requests every 20 secs after a device joins the network.
- Supports emergency and event status reports every 1 mins after joining the network
  - Battery status report
  - Hardware malfunciton reports for panel errors and external-flash errors – exception handling: image CRC failing
- Device Battery: CR2450 x 4 pcs
  - The Battery life time can re-fresh images on screen 35000 times for EPD-023 to transfer images from the gateway to the EPD device (under a typical 25 degree environment.)
- Supports multi-image storage.
  - Full size image: EPD-023: 20 pages in total. The first 3 pages are mapped to the 3 buttons. The other 17 pages can be controlled from the ePaper manager directly.
  - Supports de-compression on the device side.
- Supports execute device action from the Router.

2.3 System Network Specification

- Physical transmission data rate is 250 Kbps
- Network join performance
  a. 1 pcs EPD device takes 6 secs to join the network.
  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

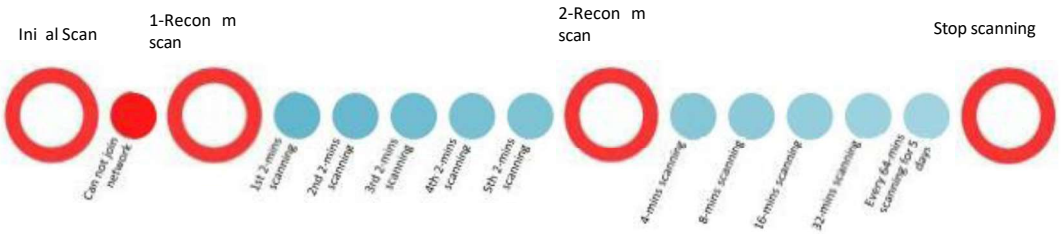
Note! *The performance will be adjusted according the environmental limitation.*

2.4 EPD System-Initial Flow on Device Side

This section will explain how the end device joins, registers, and communicates with the gateway and router. Users may change some parameters to fit their own scenario.

2.4.1 DEvice Scan for Router

- **Initial scan:** EPD device scans each available channel. If the EPD device still can't find the router after 2 mins, it will change the status to "lost connection".
- **Reconfirm scan:** The device will start to scan the channel to look for another router every 2 mins. If a device still can't find the router after 4 attempts, it will re-scan the channel every 2, 4, 8, 16, 32 mins, then every 64 mins for 5 days. Finally the device will move to deep sleep mode after scanning for 5 days continuously.
- **Stop scanning and deep sleep:** If the EPD device still can't find the router finally, it will stop RF Scanning and go back to deep sleep mode until the button of the device has been pressed. The device will start 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: Supports 11 channels.
  - Power on auto check if a router exists and asks to join the network.
  - Router permits to join if the EPD device is on the

  whitelist – EPD device joins 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 commands from the gateway in real-time .
- EPD device sends data requests every 20 secs from sleep mode to router to check if there are any action commands.
- 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 the Router will receive FW upgrade commands from the router in real-time and execute automatically. System will reboot after FW upgrade is complete.
- EPD device sends data requests every 20 secs from sleep mode to the router to check if there is any action command. EPD device receives FW upgrade commands if there is FW upgrade action. After upgrading, the EPD device will re-register network.

2.5 Whitelist mechanism

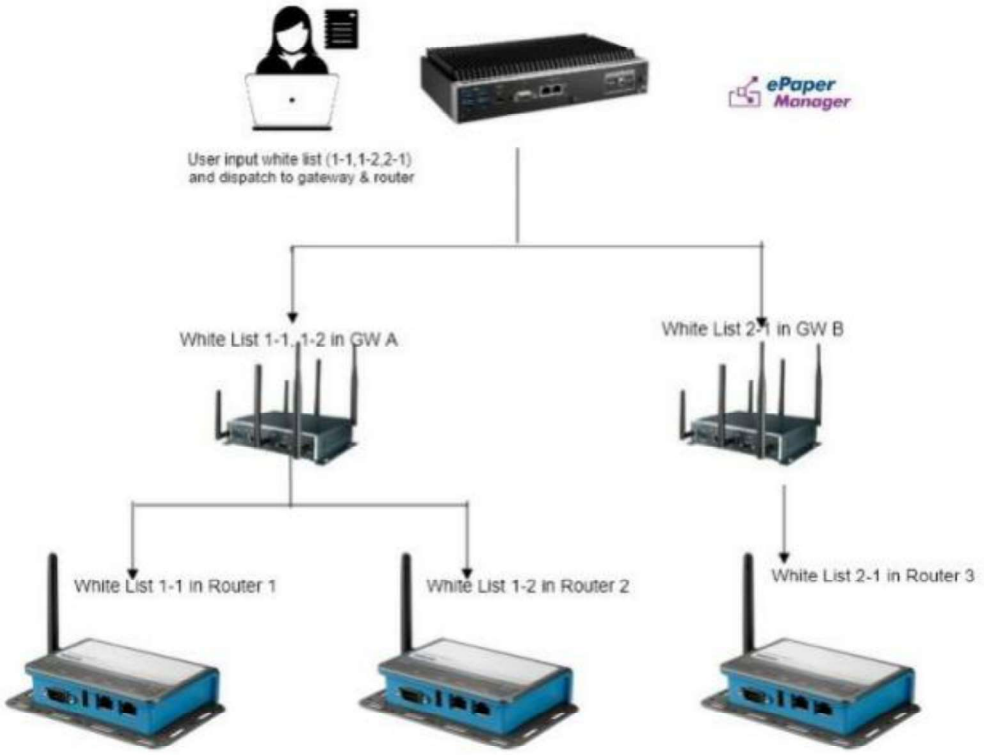
Before importing the whitelist, the user need to setup a router channel which can provide optimal performance. Users can setup the channel from ePaper manager and the router channels are: 11 13 14 15 20 21 22 23 24 25 26. If the channel has not been set, the router will be set to the default channel of 15.

(1). When a user receives the goods, it comes with an EPD device whitelist. Users need to import the list from ePaper manager.

(2).ePaper manager can dispatch the list to the connected system daemon in the Gateway.

(3) EPD device can auto join the network after the whitelist has been properly setup in ePaper manager and Gateway.

Note! *End users need to be aware which 2.4Ghz wi-fi channels have been used to avoid to using the same channels.*



2.6 Secure Key Mechanism

Advantech EPD-023 asks users to change the secure key when data exchanges between devices. Users can setup a new secure key from ePaper manager and the gateway will start passing the new key to connected devices. As long as the key has been changed, the device can not operate in the original system which has a different secure key setting.

- Data communication is encrypted by AES128
- Users can define a 128 bit secure key
- The Gateway exchanges keys to devices automatically

Chapter 3

Hardware Specification

3. H/W SPECIFICATION

This section provide board level PCBA design in #3.1 and #3.2 and the system level reference design in #3.2.
EPD-023,053 PCBA with following spec.

- 2.9" Panel Size : 79.0(H)×36.7(V) ×1.15(D) mm,
- 5.6 Panel Size : 125.4 (H) × 99.5 (V) × 1.15 (D) mm,
- PCBA: 89 x 36.8 x 3 mm
- PCB thickness: 3 mm ± 10%
- Module input voltage: 3.3V DC-in
- Connector current rating: 0.5A / Power contact
- operation temperature range: 0 °C to +50 °C for B/W , 0 °C to +40 °C for R/B/W

3.1 Board level I/O

3.1.1 Internal I/O

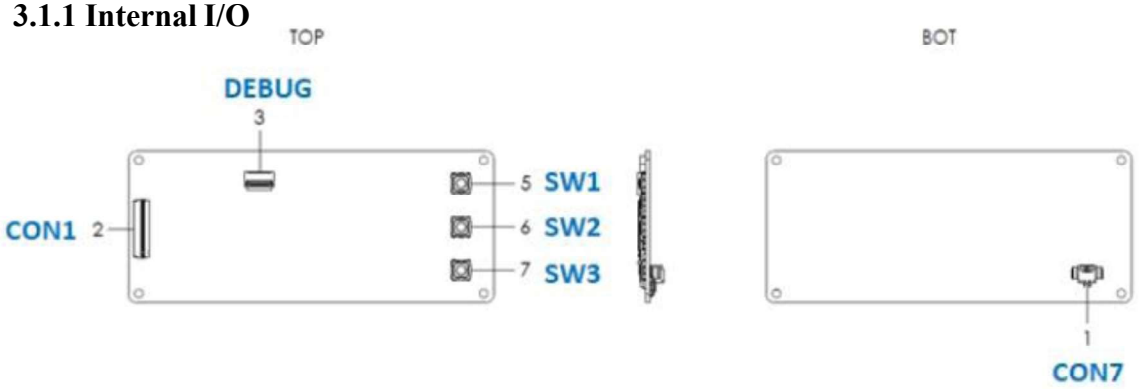


Figure 3-1

Table 3-1 I/O Connector

NAME	Description	EPD-023	EPD-053
CON7	2 pins power connector for battery	v	v
CON1	24 FPC connector for EPD	v	v
CON10	10 FFC connector for debug	v	v
CON11	10 FFC connector for EPD-053R daughter board		v
SW1	Switch button	v	
SW2	Switch button	v	
SW3	Switch button	v	

3.1.2 Power connector (CON7)

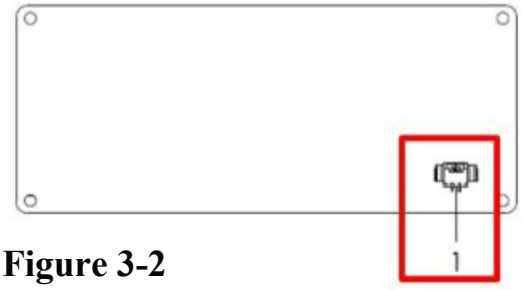


Figure 3-2

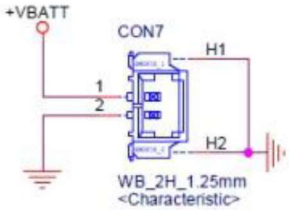


Figure 3-3

Table 3-2 Power connector (CON7)	
PIN	PIN_NAME
1	+VBATT
2	GND

3.1.3 EPD FPC connector (CON1)

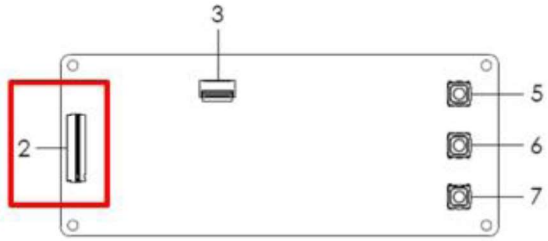


Figure 3-4

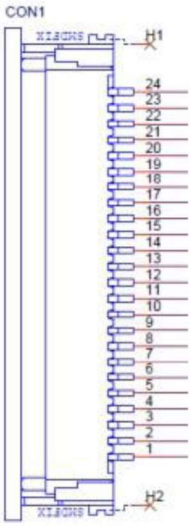


Figure 3-5

Table 3-1-3 EPD FPC connector (CON1)	
PIN	PIN_NAME
1	VCOM
2	PREVGL
3	VSL
4	PREVGH
5	VSH
6	FMSDO
7	VDD
8	GND
9	+IOVDD

10	+IOVDD
11	EPD_SDA
12	SPI0_CLK
13	SPI0_CS1#
14	EPD_DC_SEL
15	EPD_RST_N
16	EPD_BUSY
17	BUS_SEL
18	TSDA
19	TSCL
20	VGH
21	VGL
22	RESE
23	GDR
24	MFCSB

3.1.4 Debug FFC connector (CON10)

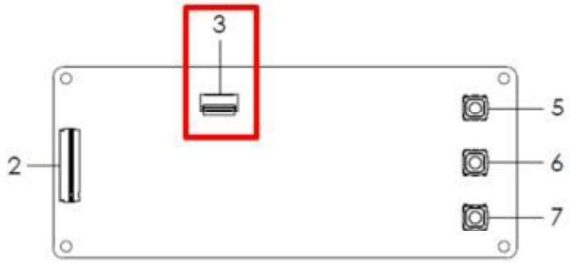


Figure 3-6

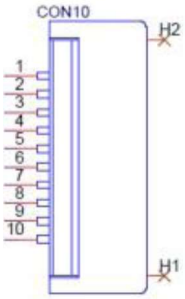


Figure 3-7

Table 3-1-4 Debug FFC connector (CON10)

PIN	PIN_NAME

1	ZB_UART0_TX
2	ZB_UART0_RX
3	GND
4	JTAG_TDI
5	JTAG_TDO
6	JTAG_TCK
7	JTAG_TMS
8	N_RESET
9	BOOT_CFG
10	+DCVIN

3.1.5 Switch button (SW1)

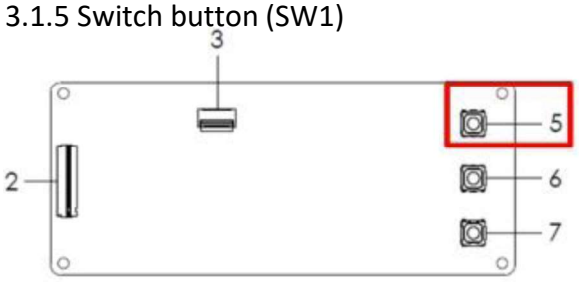


Figure 3-8

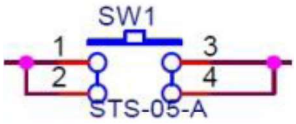


Figure 3-9

Table 3-1-5 Switch button (SW1)

PIN	PIN_NAME
1	SW1_IN
2	SW1_IN
3	+VDD
4	+VDD

3.1.6 Switch button (SW2)

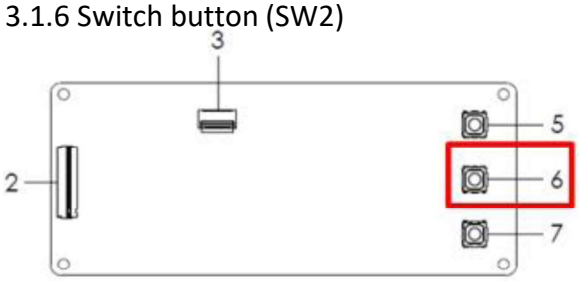


Figure 3-10

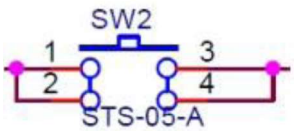


Figure 3-11

Table 3-1-6 Switch button (SW2)

PIN	PIN_NAME
1	SW2_IN
2	SW2_IN
3	+VDD
4	+VDD

3.1.7 Switch button (SW3)

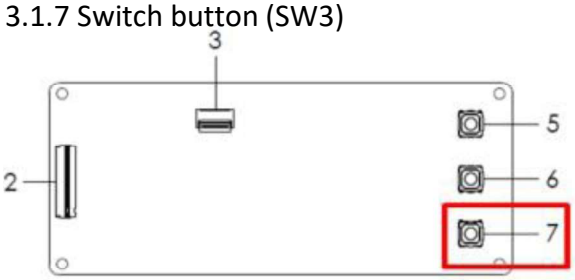


Figure 3-12

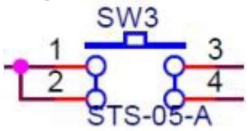
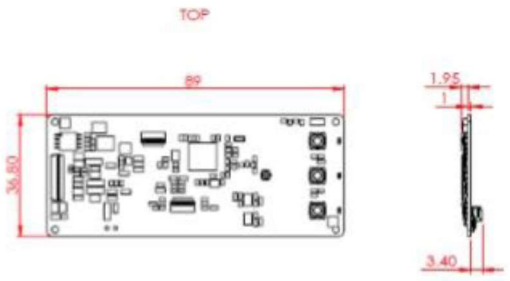
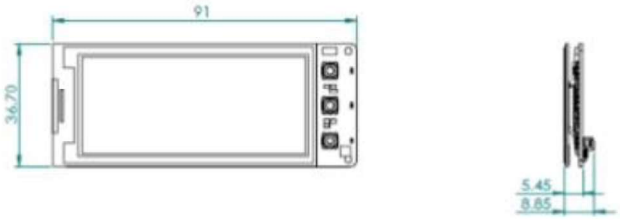


Figure 3-13

Table 3-1-7 Switch button (SW3)

PIN	PIN_NAME
1	SW3_IN
2	SW3_IN
3	+VDD
4	+VDD

3.2 Module & PANEL OUTLINE AND DIMENSION

Module	 **Figure 3-14**
EPD-023	

3.2 Device LED Button Behavior

3.2.1 EPD-023 button behaviors:

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 button (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 images and settings in the device will be deleted.
5	If device loses connection, press either SW1\SW\SW3	Press and release button	Leave sleep mode and try to connect to a network

3.2.2 EPD-023 LED behavior

Remote control commands from the gateway.

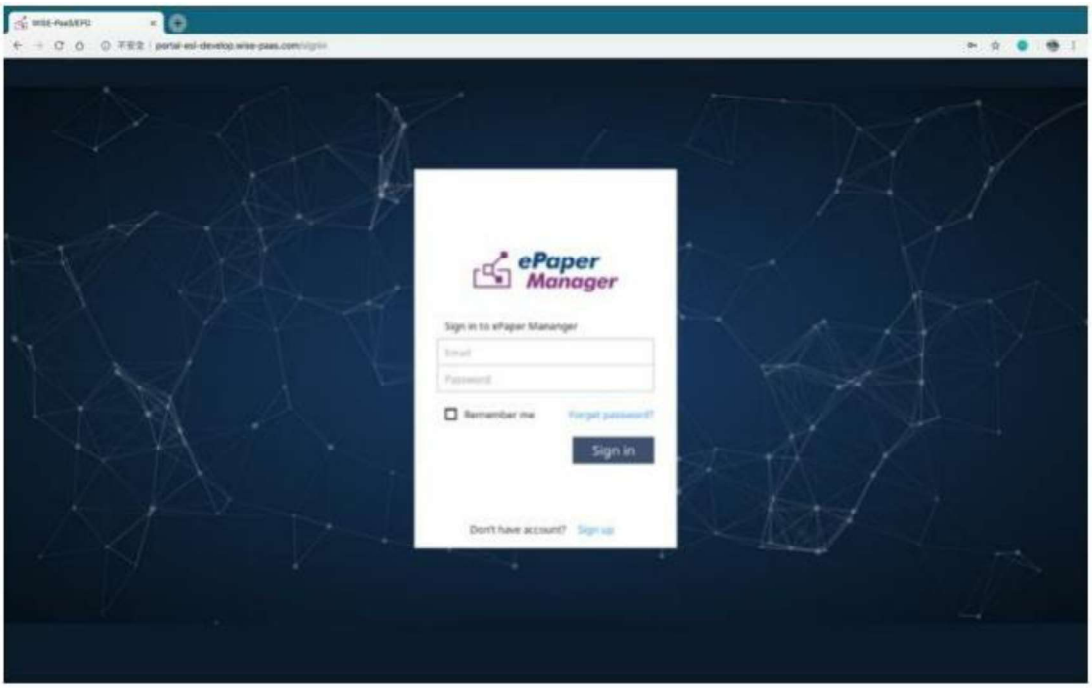
Item	Status	Action	Result
1	LED1	Remote Control by ePaper Manager API (ePaper Manager	On/Off/Blink
2	LED2	Remote Control by ePaper Manager API	On/Off /Blink
3	LED3	Remote Control by ePaper Manager API	On/Off/Blink

Chapter 4

EPD-023 in ePaper Manager

4.1 EPD-023 with ePaper Manager Solution

Previously, we looked at EPD-023 as an end device. To build up a solution, we need a gateway to connect to our CMS: ePaper Manager provides a complete solution to help you import device data, design templates and manage devices easily. This user manual will help you to build a total solution system.



ePaper Manager provides a complete solution to help you easily import device data, design device templates, and manage devices. The main features are listed 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	Whitelist setting	EPD whitelist
7	OTA	Firmware upgrade
8	Setting	User account management
9	Document	Online document

4.2 Preparation

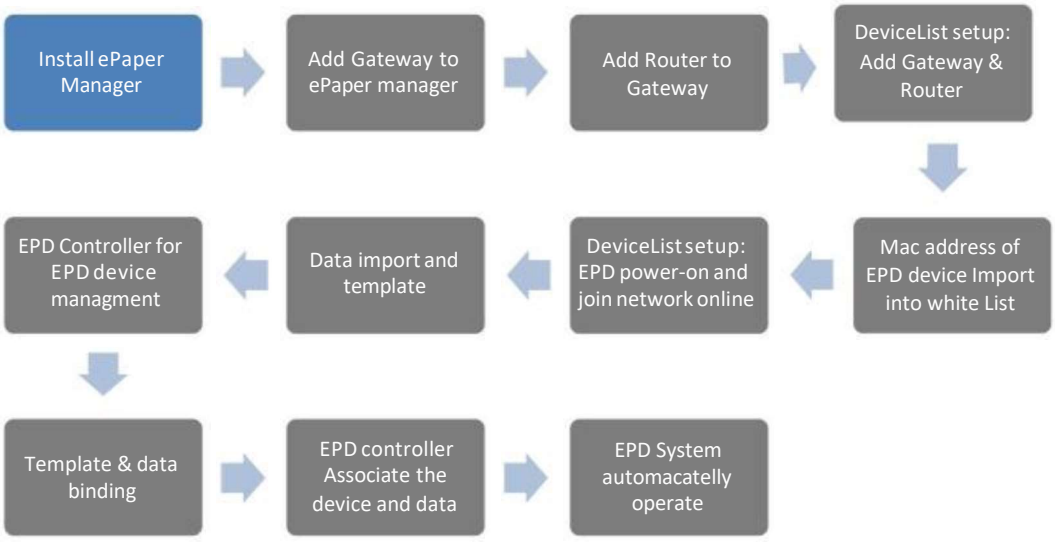
4.2.1 Hardware Component List

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

4.2.2 Software Component List

1. Windows 7 professional version for ARK2250L
   Windows firewall needs to be setup for ePaper manager service
   AMQP: 5672
   AMQP/SSL: 5671
   HTTP: 8080
   MQTT: 1883
   MQTT/SSL: 8883
   RabbitMQ: 15672
2. ePaper Manager Installation & License on ARK2250L
3. 500 connection licenses 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.

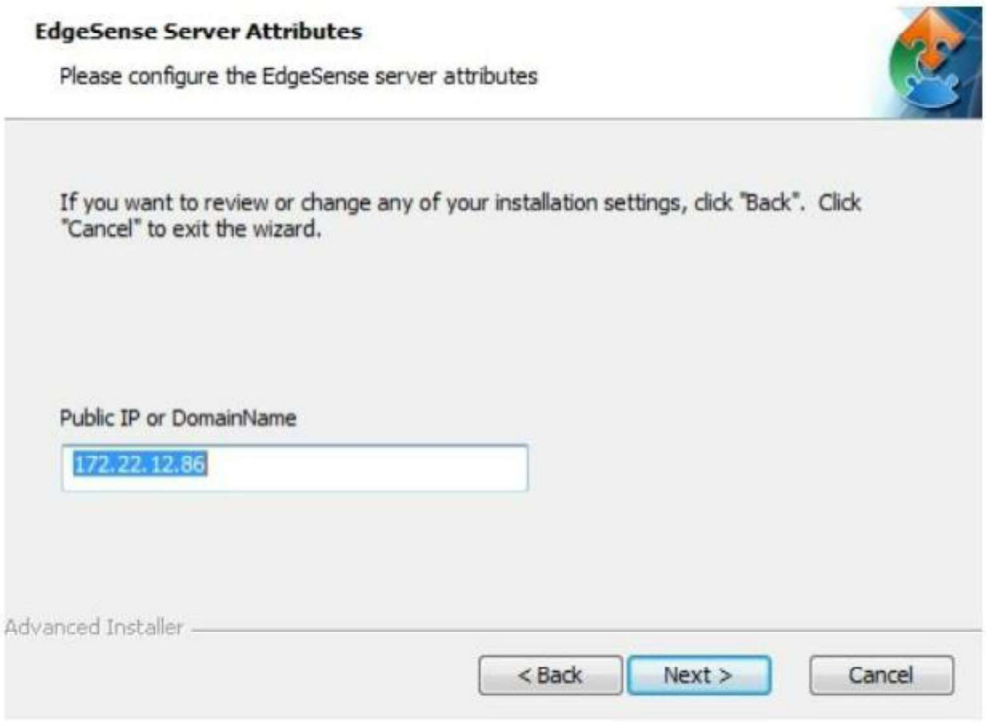

Welcome to the EPD Server Setup Wizard
The Setup Wizard will install EPD Server on your computer. Click "Next" to continue or "Cancel" to exit the Setup Wizard.
< Back
Next >
Cancel


EPD Server Setup
Welcome to the EPD Server Setup Wizard
The Setup Wizard will install EPD Server on your computer. Click "Next" to continue or "Cancel" to exit the Setup Wizard.
Warning
Please install windows hotfix of KB2999266
確定
< Back
Next >
Cancel

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

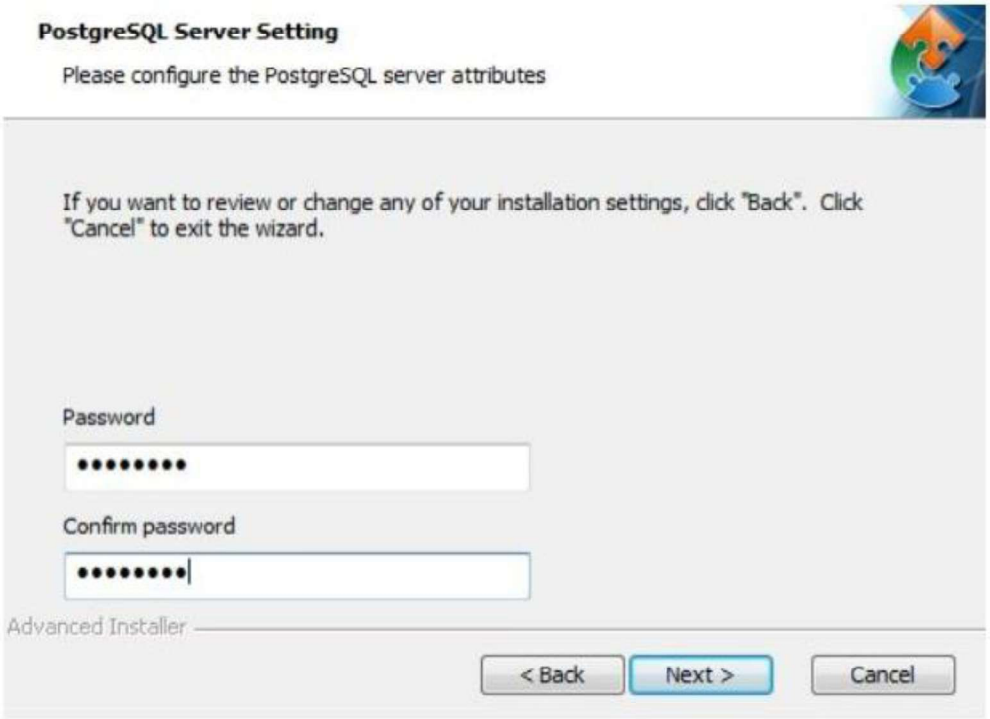
Microsoft Visual C++ 2015 Redistributable Update 3
(https://www.microsoft.com/en-us/download/details.aspx?id=53840)

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

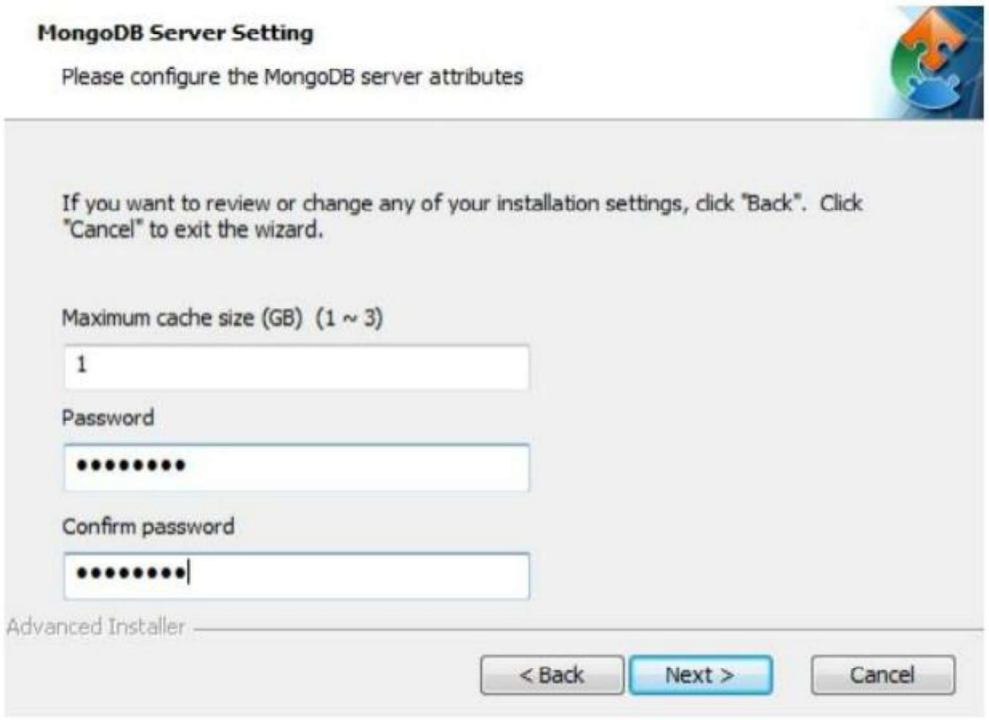


Please check your public IP or domain name and fill it in the HTTP port number field.

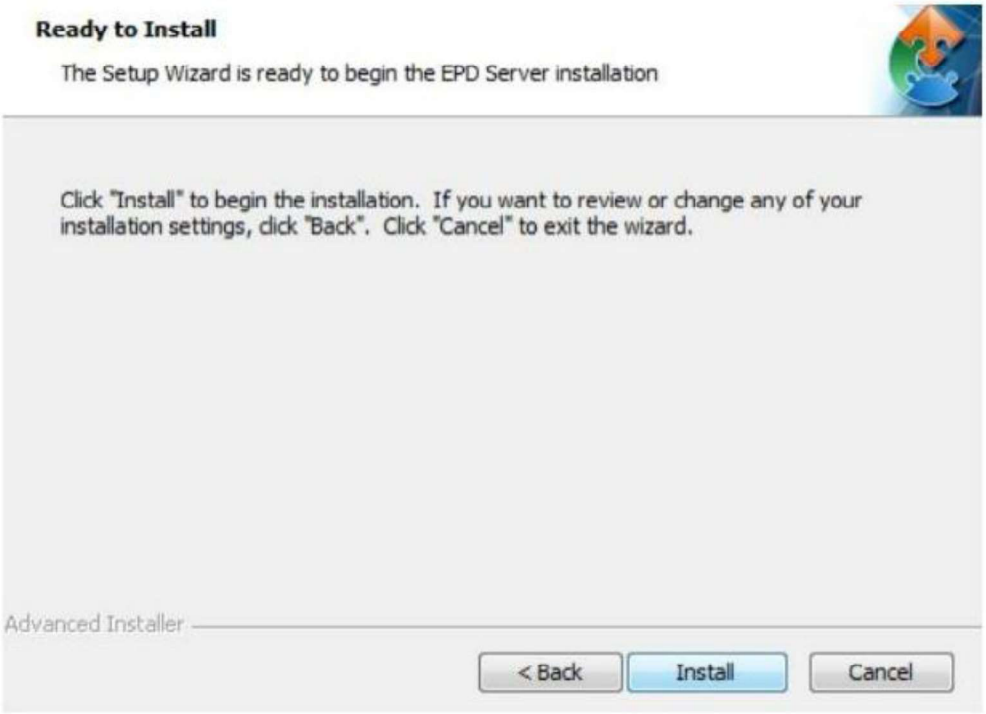
Please change the port number if needed.



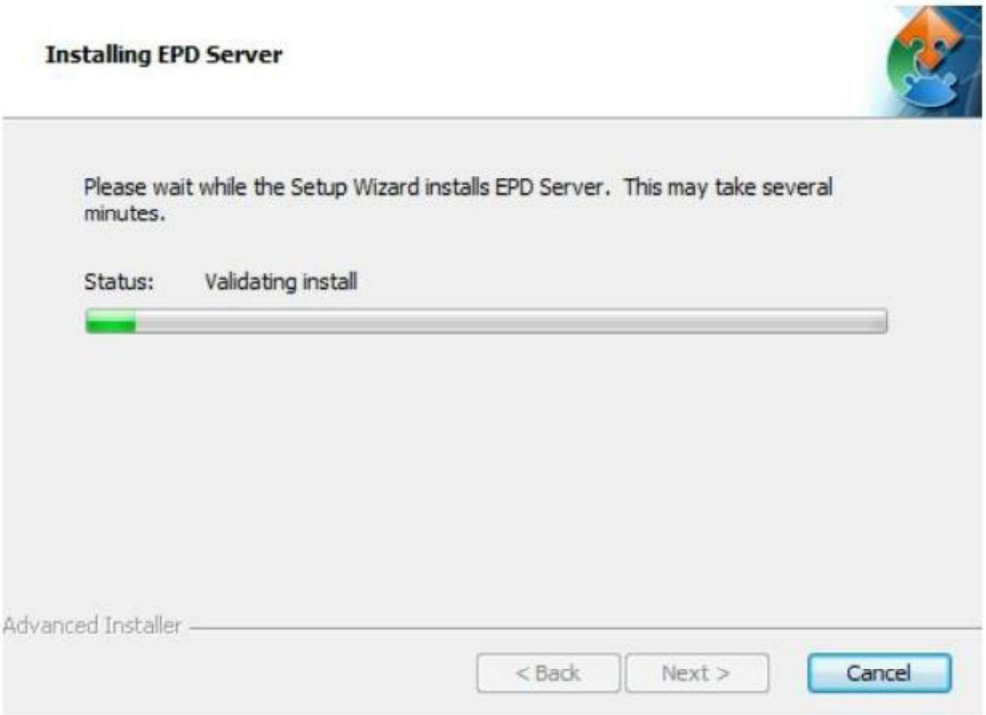
Please fill in the password and confirm it for the PostgreSQL database.



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

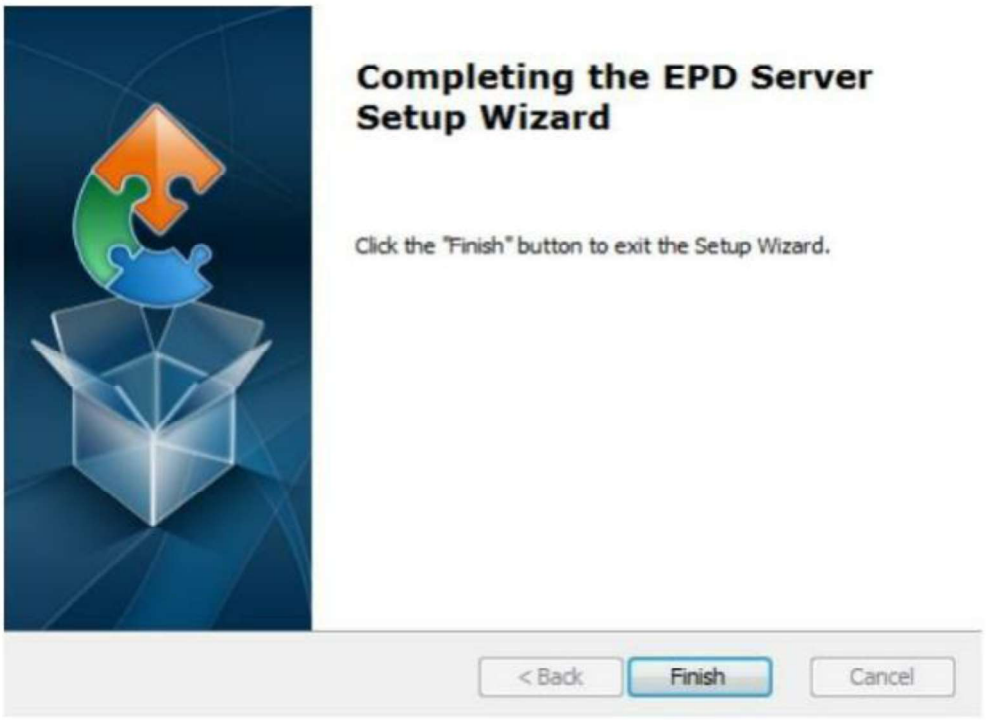


Click the install button to start installation.



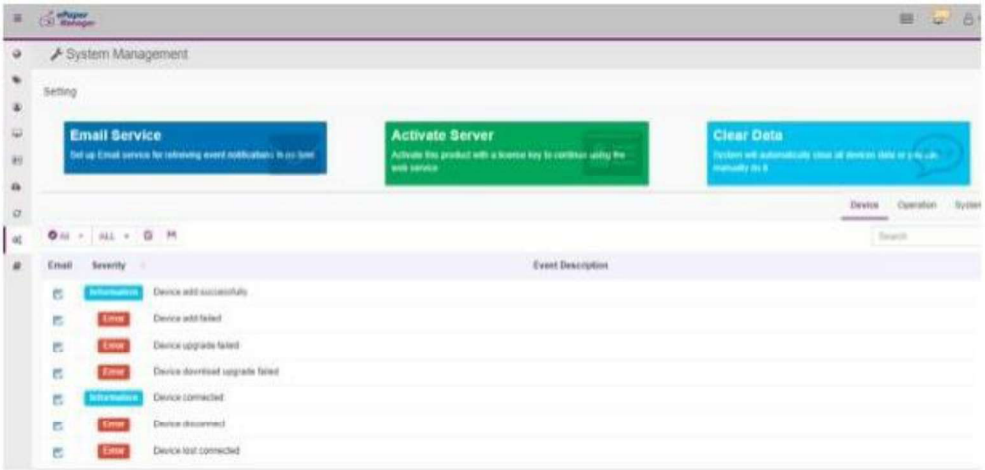
Please allow access to the installation of erl.exe.

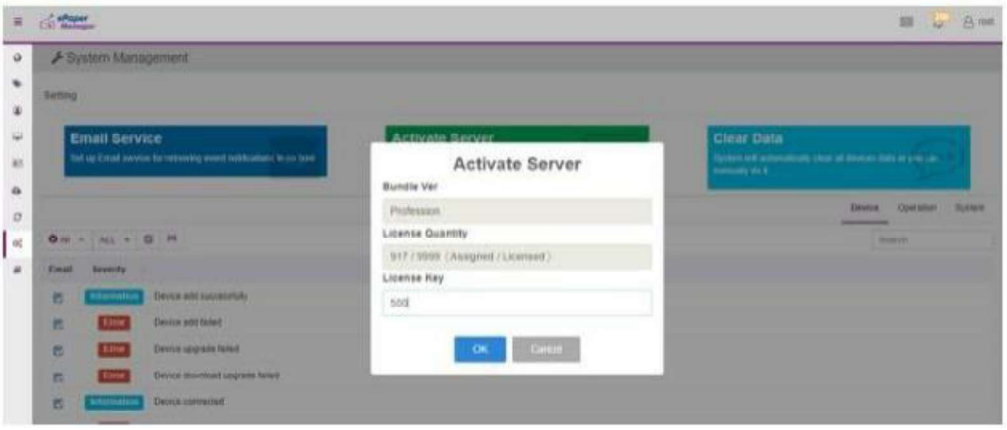
Allow to access the installation of epmd.exe.



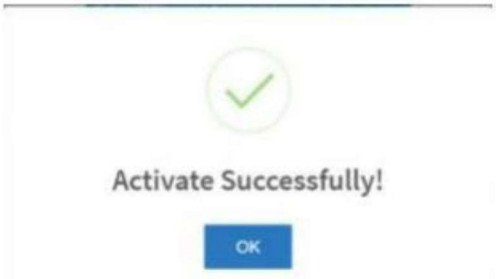
Click the Finish button to exit the Setup Wizard.

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




System Management
Email Service
Activate Server
Clear Data
Activate Server
Bundle Ver
Profession
License Quantity
License Key
OK
Cancel


Activate Server
Bundle Ver
Profession
License Quantity
3 / 110 (Assigned / Licensed)
License Key
213243
342343
24234
OK
Cancel

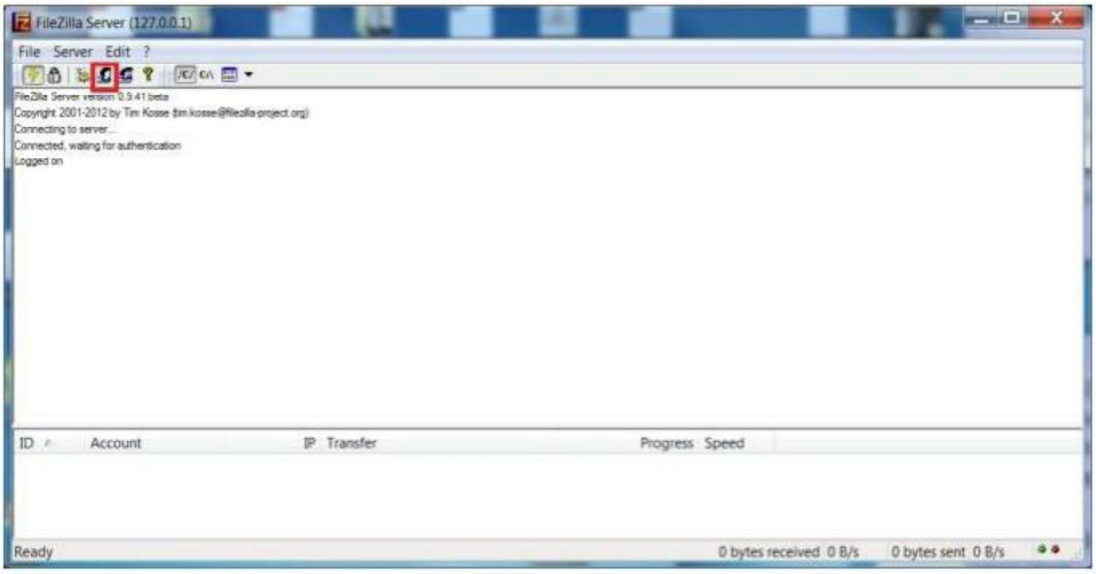

Activate Successfully!
OK

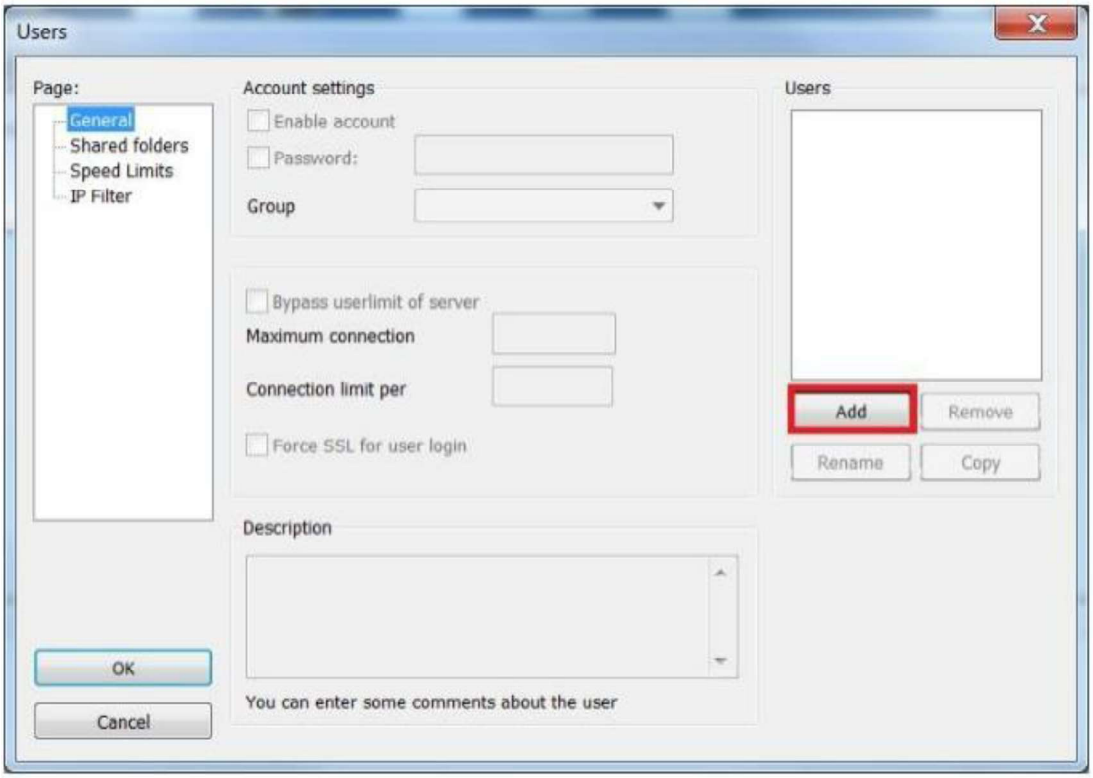
4.2.3.1 How to configure your FTP server

Before you start transmitting an image to EPD or Firmware upgrade. You need to setup an FTP server. ARK2250L should have an FTP server installed. Click the startup icon to launch the Filezilla Server.

1. Start the FTP Server.

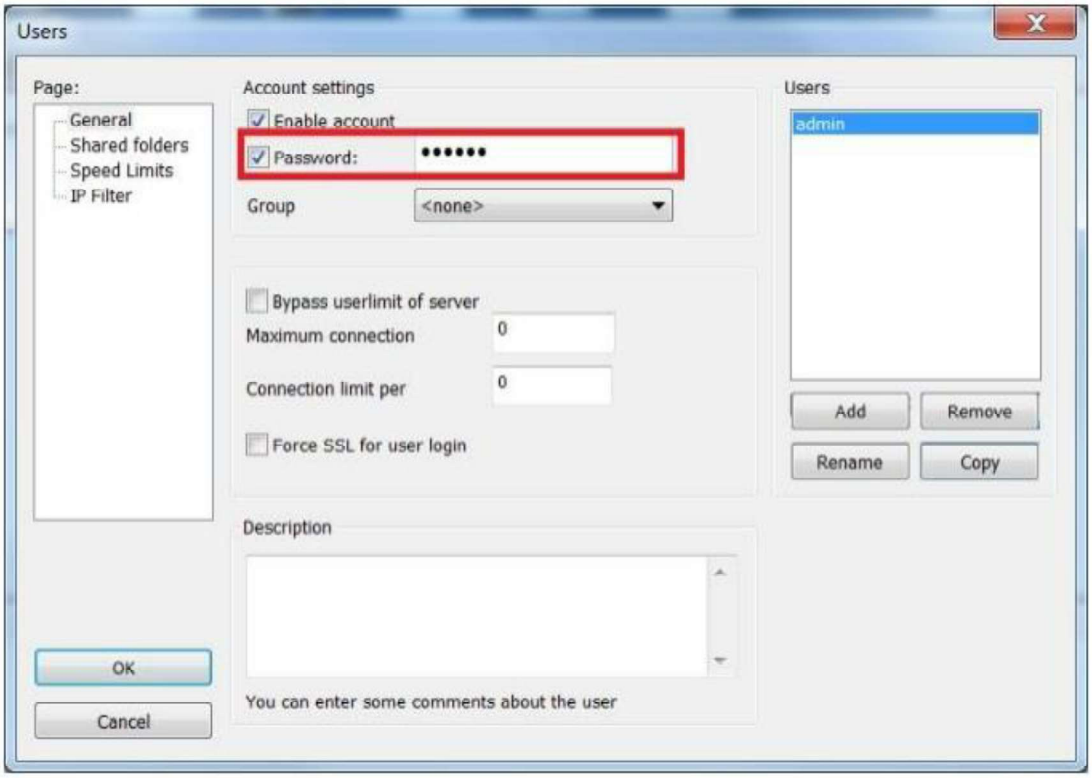
2. Add user account.



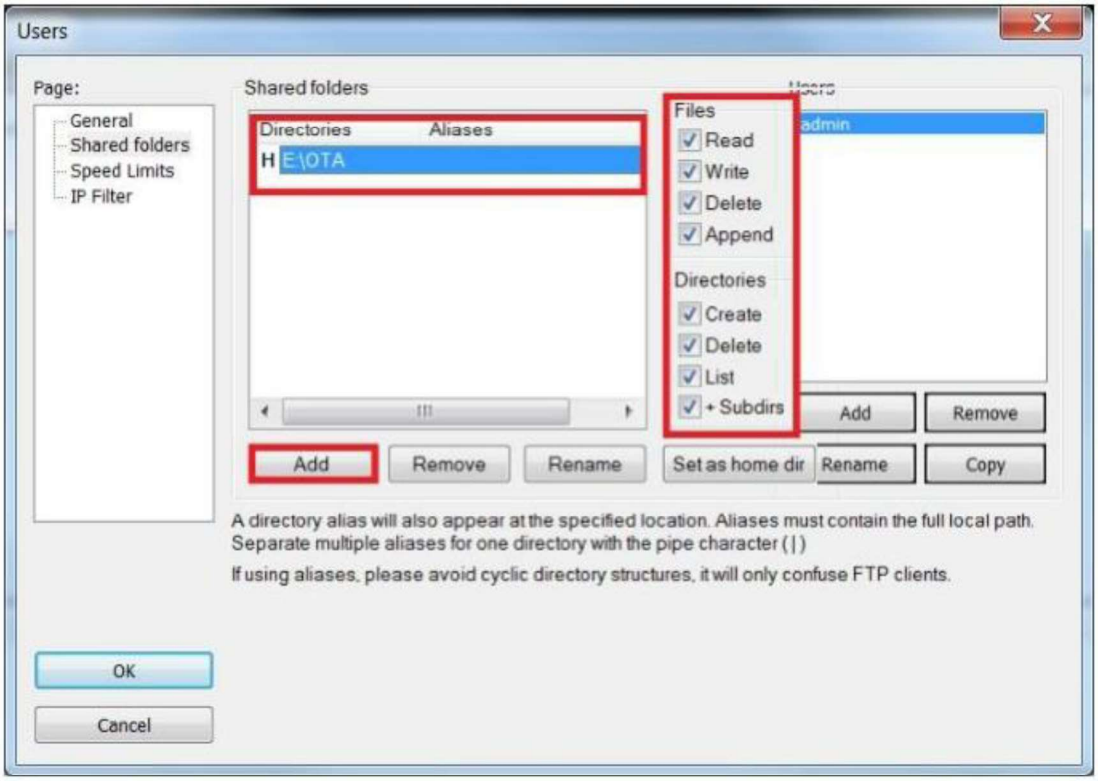

Users
Page:
General
Shared folders
Speed Limits
IP Filter
Account settings
Enable account
Password:
Group
Bypass userlimit of server
Maximum connection
Connection limit per
Force SSL for user login
Users
Add
Remove
Rename
Copy
Description
You can enter some comments about the user
OK
Cancel


Add user account
Please enter the name of the user account that should be added:
admin
User should be member of the following group:
<none>
OK
Cancel

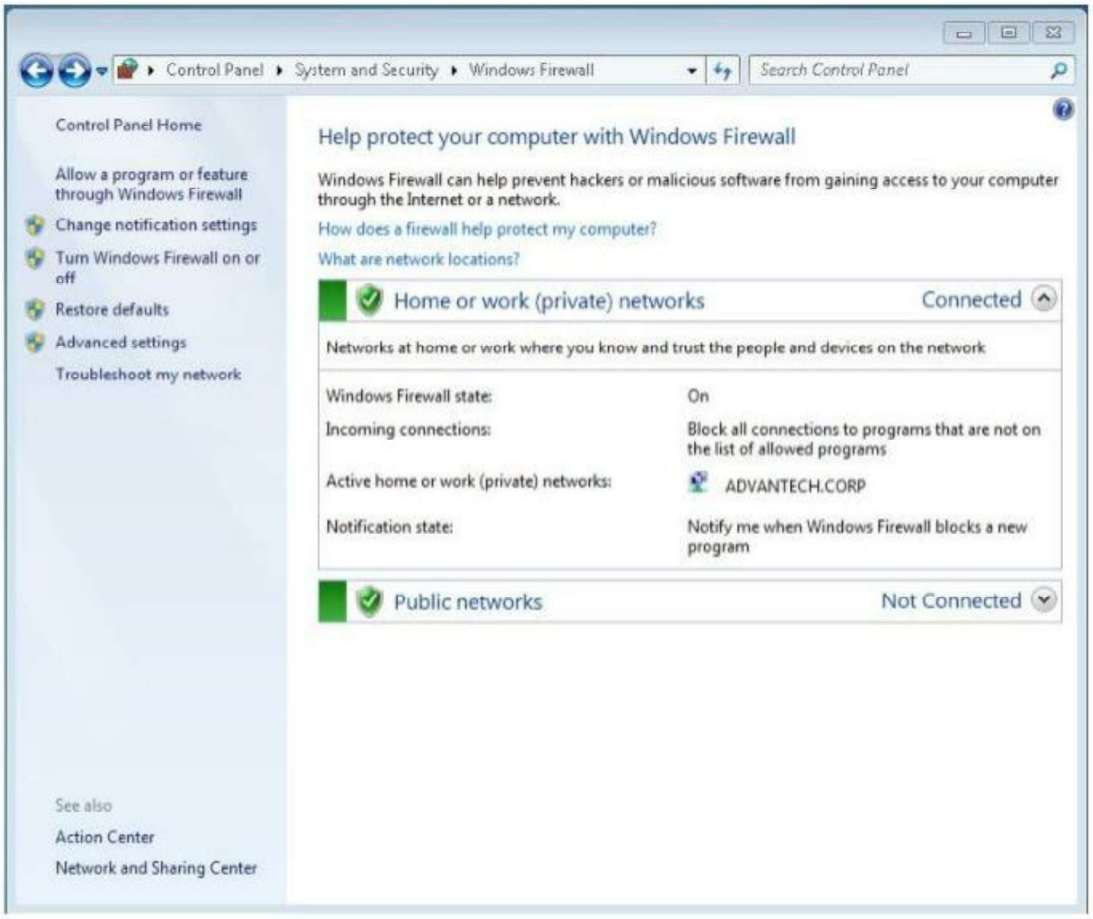
3. Add a password for the user. (Don't use the "@" symbol in password)



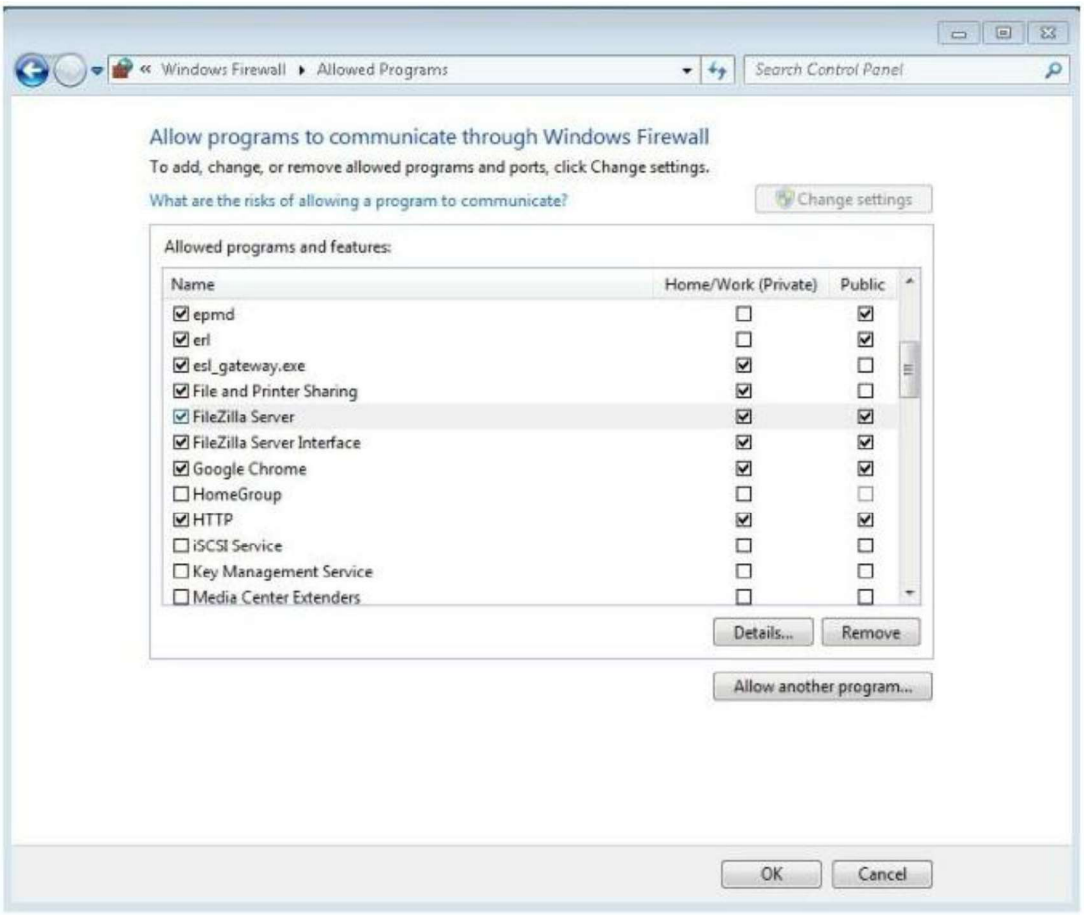
4. Add Shared folders and set the property of the directories and files. Add the FTP Server to OTA Storage. You should make sure that the Shared folders are available.



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

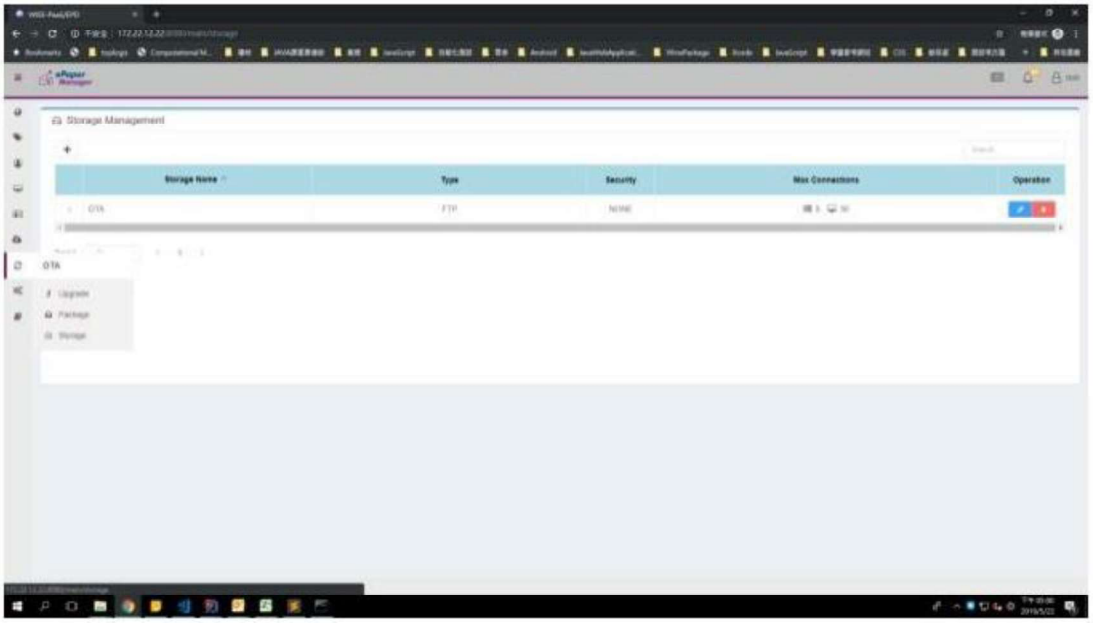


6. Make sure to allow FileZilla Server and FileZilla Server Interface to pass through the Windows firewall.



4.2.3.2 How to configure your FTP server on ePaper manager

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

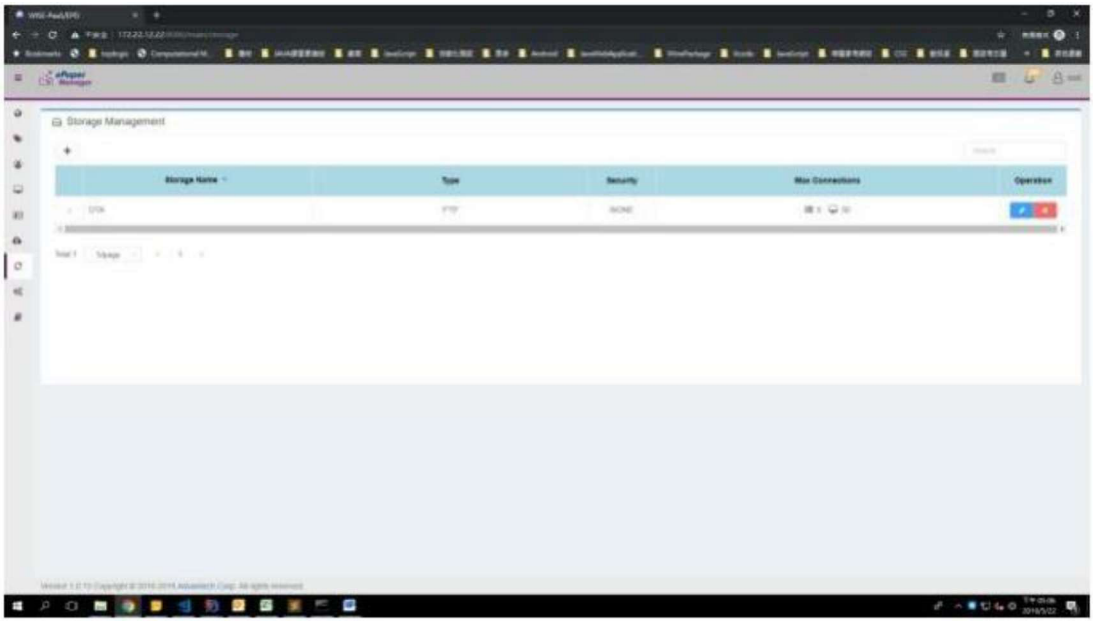


2. Click Add (+) button on the left-upper corner. Select the FTP option.

3. Finish the configuration form and click Confirm.

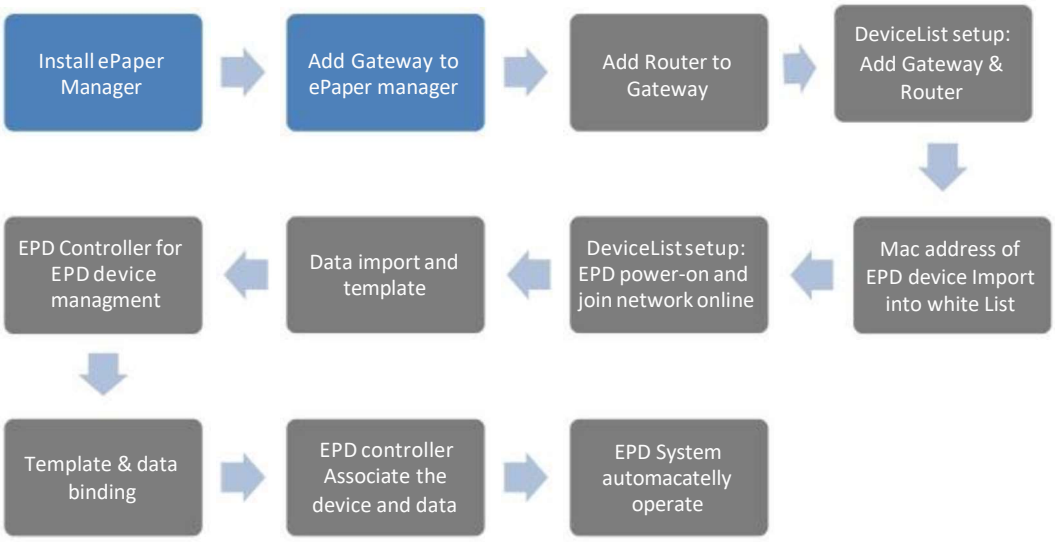
Storage Name: OTA
Security: NONE
Domain: [Your Server IP]
Port: 21
Account Name: [Your FTP account]
Password: [Your FTP password]
Root Path: [Your root path]

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



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

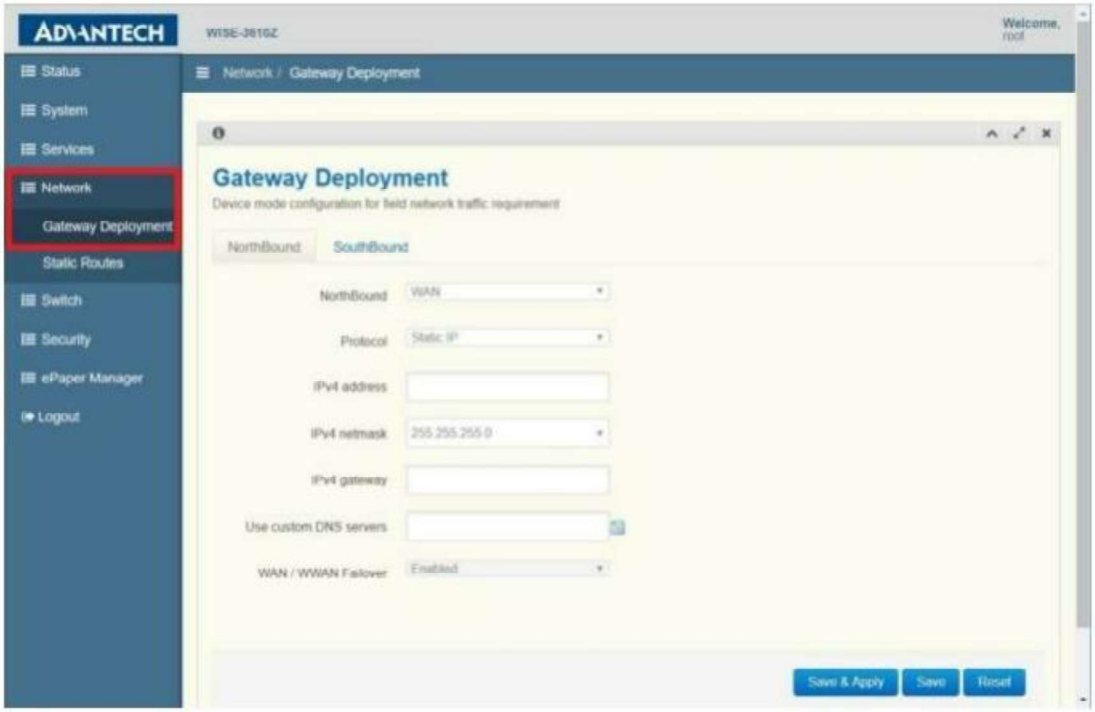
4.2.4 WISE-3610Z Setup and Connection ARK with ePaper Manager



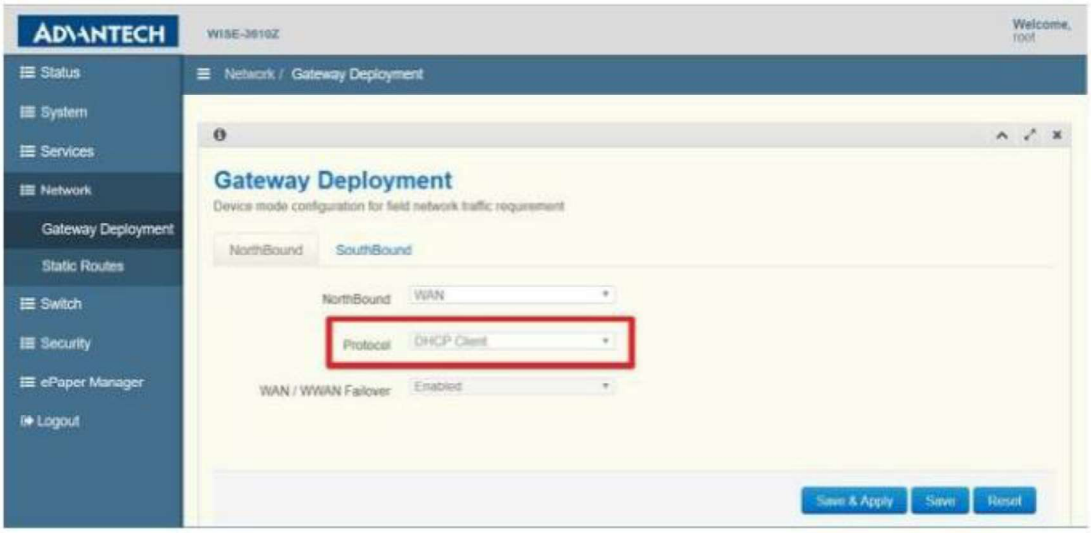
After completing the ePaper manager installation, you may start to configure the Gateway: WISE-3610Z.

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

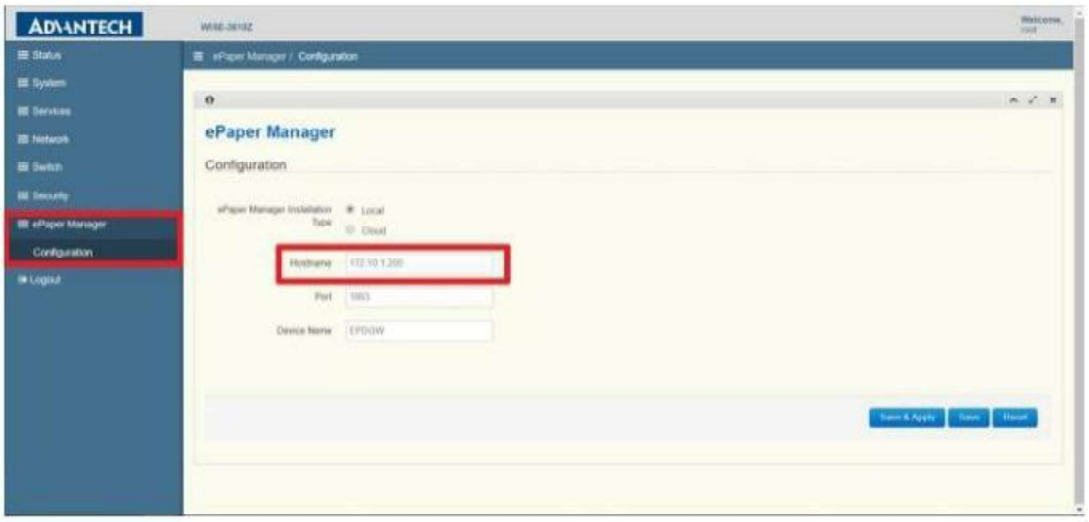
4. Setup Networking Connection



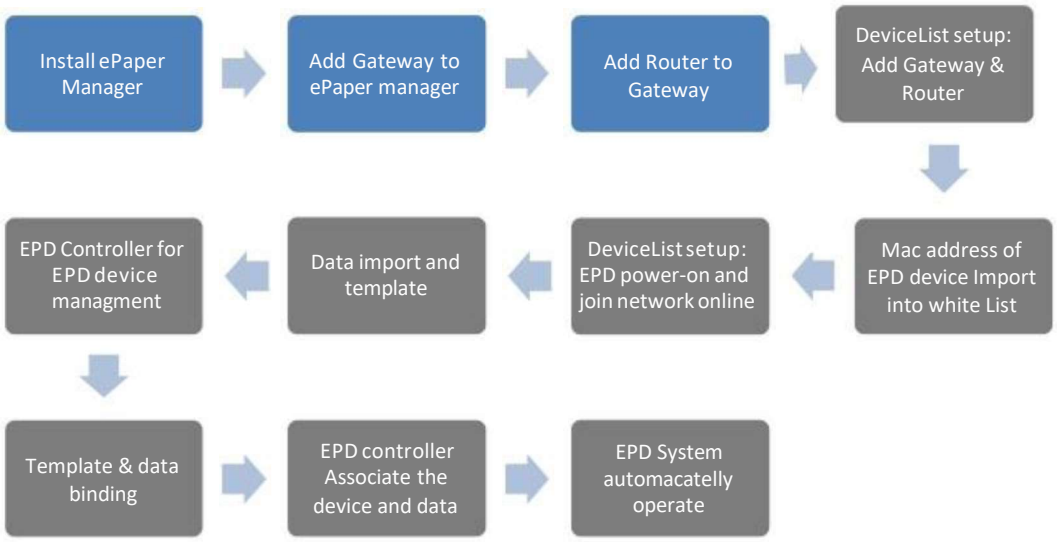
5. Ethernet WAN Backhaul Connection:
   Connect Ethernet cable to an exiting backhaul router and ISP cable modem or Internet service provider xDSL / FTTx modem.
   Select WAN for NorthBond backhaul connection and choose Protocol > DHCP Client



6. Setup the ePaper management server IP as below.



4.2.5 EPD-023,053 Setup and Connection to ARK with ePaper Manager



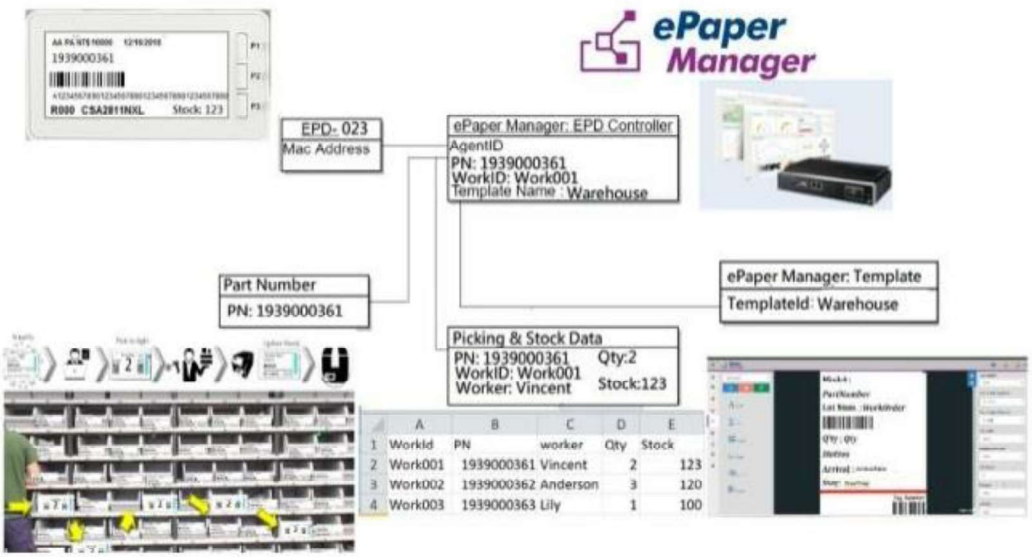
This section explains how the router auto joins with the WISE-3610Z (gateway). Users may change some parameters to fit their scenario.

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

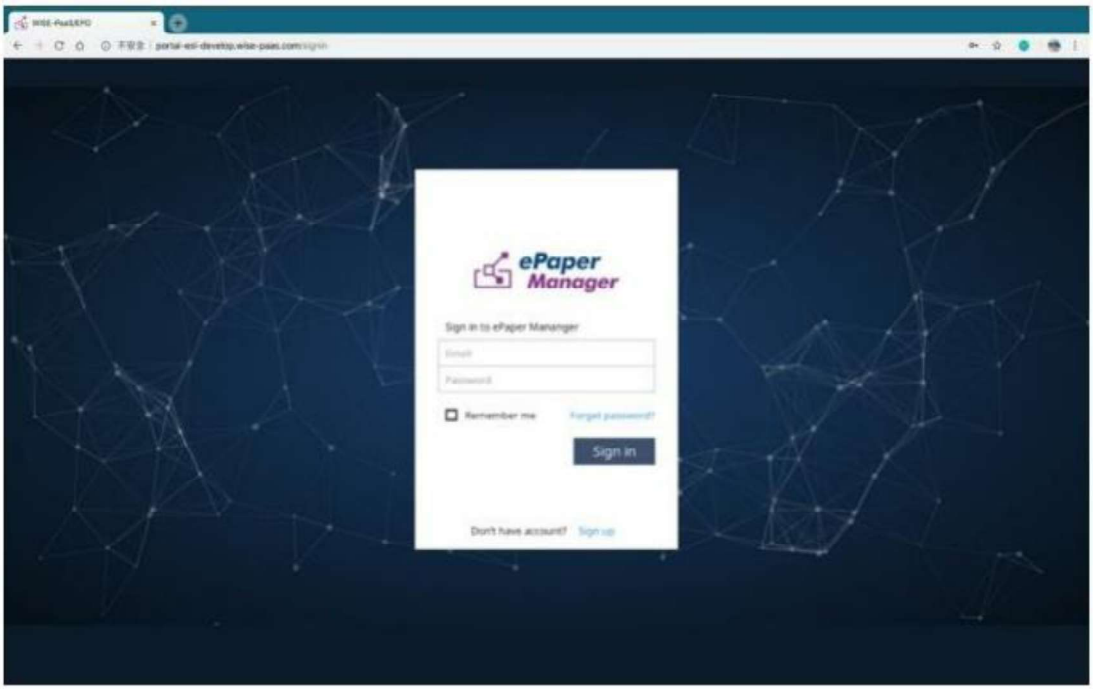
4.3 Hands-on EPD Device on ePaper Manager

Users need to prepare a few things before starting ePaper manager/EPD controller.

1. EPD device mac address
2. Target Item data contains unique ID such 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 via the EPD image template

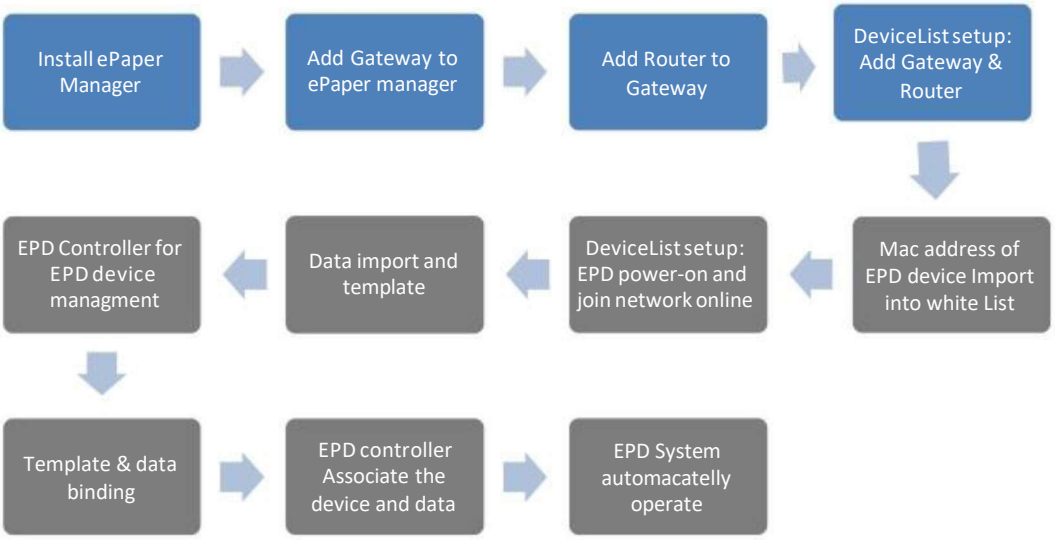


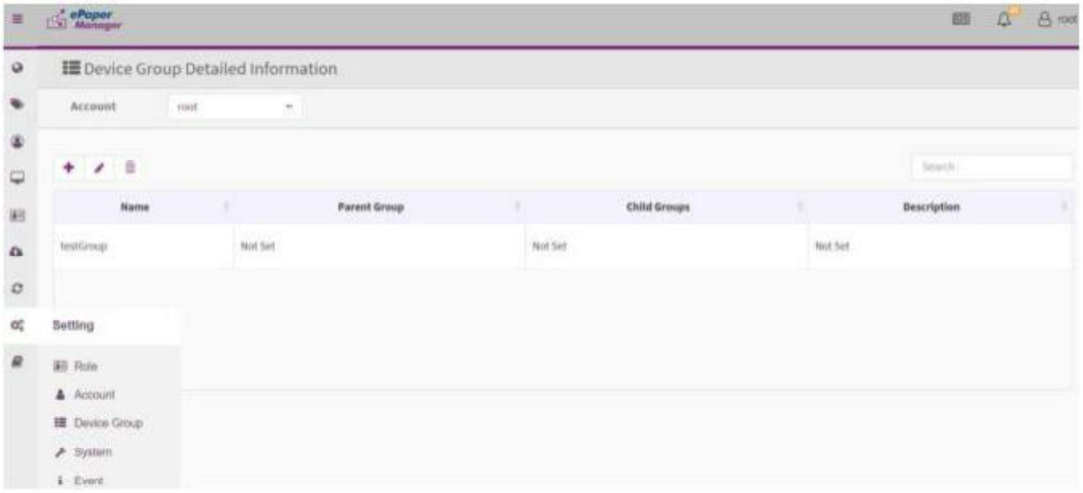
4.3.1 ePaper Manager Login



4.3.2 Add Group & Device into ePaper Manager

1. Create group & edit group information





2. Add Group