



Digital X-ray Imaging System



3543Z/3543ZF/4343Z/4343ZF

User's Manual

Please read this manual before using the product.

Please keep this manual for future references.

Proper usage of the product relies on fully understanding of the manual.

Please note that this is a preliminary version, which may subject to change without notification.

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Reminder

This manual is the official documentation for the installation, configuration, operation and maintenance of the 1613A & 2925 & 3543A & 4343A & A843B digital x-ray imaging system. Please carefully read this manual before using the product.

Note

1. The product can only be operated by trained, professional medical or engineering personnel.
2. The product must be stored and operated in the specified environment.
3. The product complies with IEC60601-1, IEC60601-1-1, IEC60601-1-2, and IEC60601-1-3.
4. Only the dedicated cables can be used with the product.
5. Unauthorized personnel are not allowed to remove the back cover of the detector.
6. Devices with E&M emitting capabilities, such as mobile phones, radio transceivers, or remote controllers may affect the functionalities of the product. Therefore it is strongly suggested that these devices are not installed in the same room of the product.
7. Please dispose the packaging material and components according to the local waste disposal regulations.

Disclaimer

1. Malfunctioning or damage caused by usage not described by the manual.
2. Malfunctioning or damage caused by unauthorized modification of any components or circuits of the product.
3. Malfunctioning or damage caused by force majeure such as fires, earthquakes, etc.
4. Malfunctioning or damage caused by using non-dedicated power supplies or abnormal power supply voltages or frequencies.



5. Malfunctioning or damage caused by repairing, re-configuration, or refurbishment by agencies unauthorized by PZMedical.
6. X-ray irradiation, image processing, image transferring and data archiving of this product shall comply with the local regulations of the country or area where the product is installed. The user takes the responsibility of imaging data confidentiality.
7. The user shall be responsible for any inaccurate treatment of patients caused by inaccurate diagnosis(including loss of image data).
8. PZMedical reserves the right to modify the product specification, configuration, as well as appearance, without notifying the user.

Note on the disposal of this product

- The disposal of this product in an unlawful manner may have a negative impact on health and on the environment. When disposing of this product, therefore, be absolutely sure to follow the procedure which is in conformity with the laws and regulations applicable in your area.



-  European Union (and EEA*) only.

This symbol indicates that this product is not to be disposed of with your household waste, according to the WEEE Directive (2002/96/EC) and your national law. This product should be handed over to a designated collection point, e.g., on an authorized one-for-one basis when you buy a new similar product or to an authorized collection site for recycling waste electrical and electronic equipment (EEE). Improper handling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, waste authority, approved WEEE scheme or your household waste disposal service.

For more information regarding return and recycling of WEEE products, please contact PZMedical.

* EEA : Norway, Iceland and Liechtenstein.



1 Introduction

3543Z or 3543ZF or 4343Z or 4343ZF digital x-ray imaging system (in the following referred to as “the product”) works with x-ray systems to provide diagnostic imaging for medical facilities.

Features:

- Fast image acquisition
- High detection efficiency
- High dynamic range
- High spatial resolution

This manual covers the description and instructions of the using 3543Z/ZF and 4343Z/ZF.

1.1 Working Principles

1.1.1 Imaging principles

The scintillation layer of the detector converts incident x-ray into visible light, which is then converted to imaging electronic signals by the amorphous silicon photodiode array, and then amplified and digitized to form a digital x-ray image.

1.1.2 Major Electrical Circuits

The product's electrical circuits consist of real time logic controller, scan driver, readout modules as well as signal communication modules. Under the control of real time logic, the scan driver reads out the signals of each line, and the readout modules convert all columns of signal at the same time. The digitized signal is then transmitted through the communication modules to a computer.

1.2 Expected Usage and Scope of Applications

1.2.1 Expected usage and location

Installed in digital x-ray imaging systems of medical facilities.



1.2.2 Scope of Applications

The product is used in medical x-ray imaging systems. The product can only be used by trained personnel of the medical facility. The product is only used for single image diagnosis applications, and cannot be used for mammography, dental x-ray imaging, computerized tomography or dynamic imaging applications.

2 Description of FPD types and serial number

2.1 FPD Types

3543 Z (Pixel matrix: 2560×3072)

Standard Static Project.
Effective Size: Width 35cm xLength 43cm

4343 Z (Pixel matrix: 3072×3072)

Standard Static Project.
Effective Size: Width 43cm xLength 43cm

3543 ZF (Pixel matrix: 3584×4608)

High-resolution Static Project.
Effective Size: Width 35cm xLength 43cm

4343 ZF (Pixel matrix: 4352×4608)

High-resolution Static Project.
Effective Size: Width 43cmxLength 43cm

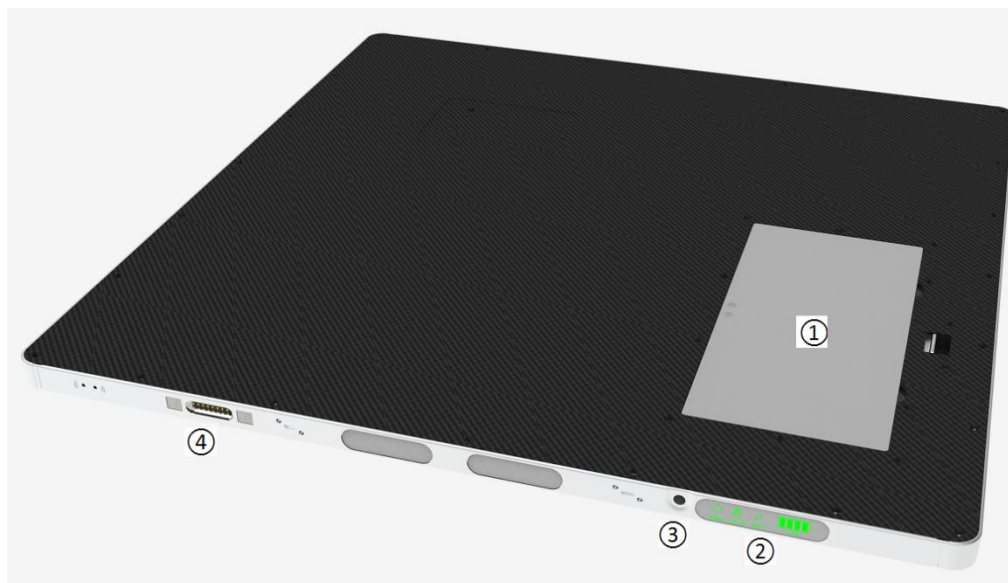


2.2 FPD serial number

The FPD serial number is on the nameplate back of FPD.

3 Component Connectors and Indicators

3.1 FPD Connector, Indicators and Image Orientation



Wireless



Wired

Notes:

① External battery.

② FPD Indicators.

LINK Keeps green when FPD is connected, otherwise flashes.

STAT Keeps green when FPD is idle; Flashing when acquiring images.

PWR Lit up when FPD is powered on.

BAT Lit up when FPD is powered on or connected to a DC power supply.
Only the wireless FPD has this Indicator.

③ FPD Power Switch.

When FPD is off, press down the power switch for 3 seconds to turn on the FPD, after which “POW” indicator is on. When FPD is on, press down the power switch for 3 seconds



to turn off the FPD, after which the "STAT" and "LINK" indicators are off and the "PWR" indicator is off when FPD is no power supply.

Please note that for wired-only version, there is no FPD Power Switch.

④ FPD Socket for Detector Cable.

3.2 Main components

FPD shall be connected to the Detector Cable by the FPD Socket (④ in 2.1). The Detector Cable is then connected to the Ethernet cable (to PC) and the power supply through the hybrid connector at the other end.



Detector Cable



Power Adapter



Connection Diagram

3.3 Control Box Connector

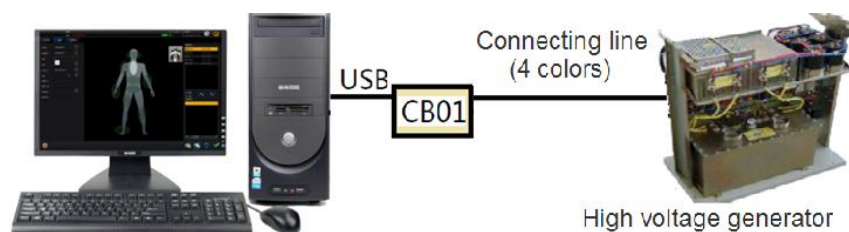
There are two types of control box, corresponding to two working modes:

CB01: REQ/OK mode, without hand switch.

CB02: PREP/RAD mode, with a hand switch.

Note that there is no need to use CB when FPD is in AED trigger mode.

3.3.1 CB01 interface



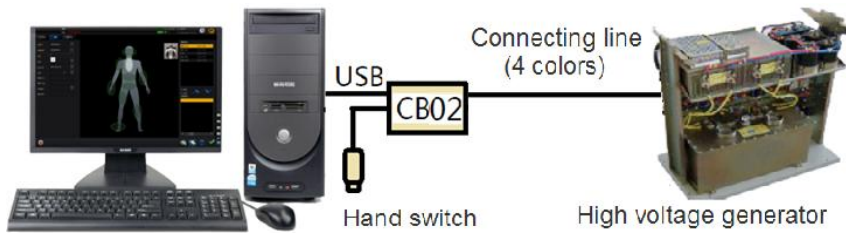
CB01 has two interfaces: one is a USB port, to connect to a computer; the other one is a four-wire connecting line, to connect to a high voltage generator.

The description of the four colors connecting line is as follow:



Wire Color	Signal name	I/O	Definition
Green	REQ-	I	Exposure REQ-
Red	REQ+	I	Exposure REQ+
Black	OK-	O	Exposure OK-
White	OK+	O	Exposure OK+

3.3.2 CB02 interface



CB02 has one hand switch and two interfaces. Two interfaces are: one is a USB port, to connect to a computer; the other is a four-wire line, to connect to a generator. The definition of the four wires:

Wire Color	Signal name	I/O	Definition
Green	PREP-	O	Exposure PREP-
Red	PREP+	O	Exposure PREP+
Black	RAD-	O	Exposure RAD-
White	RAD+	O	Exposure RAD+

3.4 The orientation correlation

The orientation correlation between the object on top of FPD and the image in PC:

The lower left corner of the image corresponds to where the detector cable connector is.

3543Z/3543ZF/4343Z/4343ZF:



FPD



PC



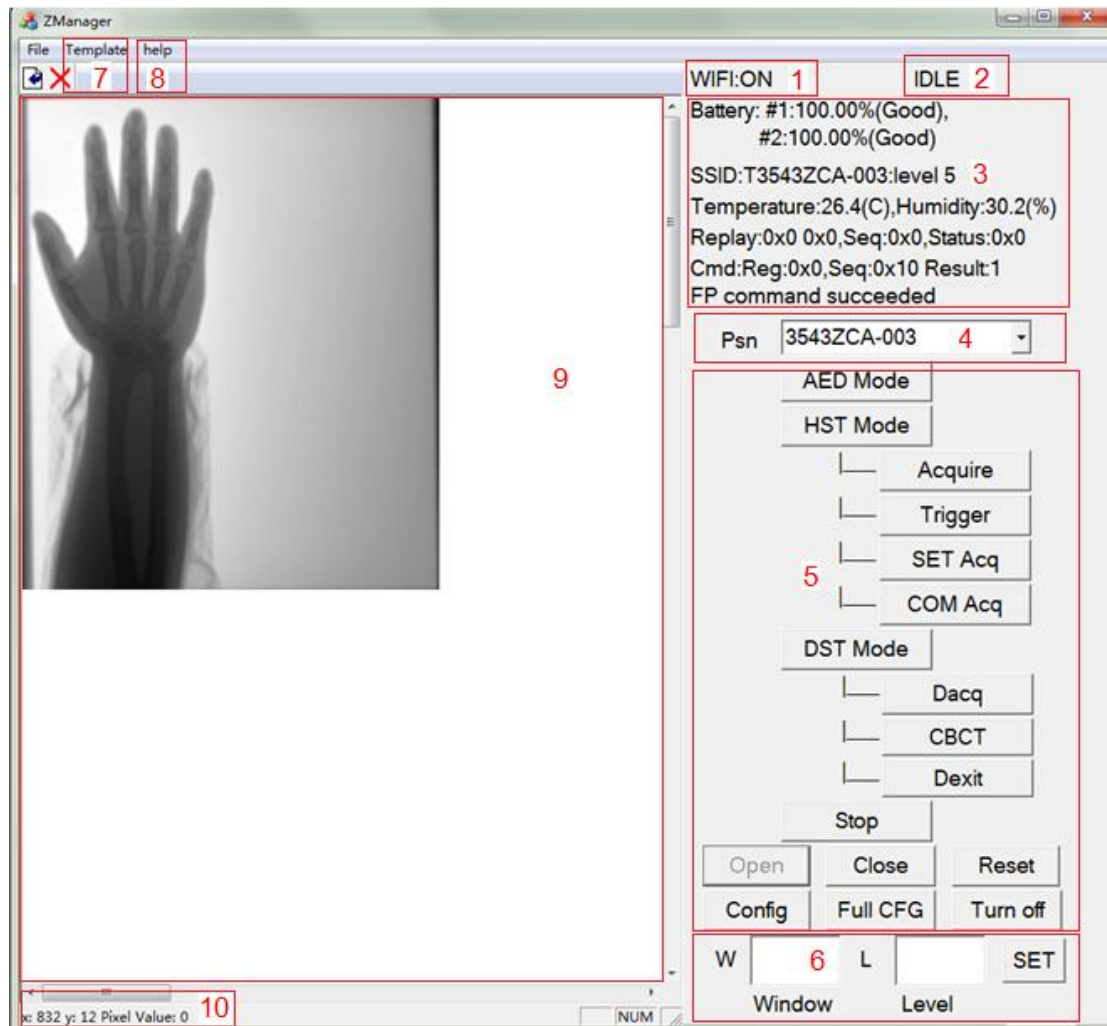
4 Instructions of Using ZManager

4.1 Installation of ZManager

ZManager is a user interface software for the debugging and configuration of the detector. Copy the ZManager software folder to the computer, open the ZManager folder, double click ZManager.exe to run it.

4.2 Introduction to ZManager.exe software interface

4.2.1 Main Interface of ZManager





Note that the buttons would be valid after manual configuration of detector;



Information in each region are defined as:

1: Connection Mode	ON : The connection of FPD is wireless.
	OFF: The connection of FPD is wired.
2: FPD Status	IDLE: FPD is idle.
	HST: FPD is in HST(hand switch trigger) mode.
	AED1/AED2 : FPD is in AED(automatic exposure detection) mode.
	RECOVER: FPD is in Recover status.
3: FPD Information	Battery: Battery charge level (for wireless FPD only).
	SSID : SSID for wireless connection of detector.
	Level: Wireless signal strength (for wireless connection only).
	Temperature : Current detector temperature.
	Humidity: Current detector humidity.
	Status: Status of detector (setting configuration, switching modes, etc)
4: FPD Selection	Psn: Product serial number.
5: Function Buttons	AED Mode: When FPD is idle, entering AED mode.
	HST Mode: When FPD is idle, entering HST mode.
	Acquire: Read one image (HST mode).
	Trigger: Trigger the FPD activities described in configuration file without triggering the generator (HST mode).
	SET Acq: Reserved function, not used.
	COMP Acq: Trigger the FPD activities described in configuration file and trigger the generator at the same time (HST mode).
	DST mode and its related commands: Dacq,CBCT,Dexit, reserved function, not used.
	Stop: Quit the AED/HST mode and enter the IDLE state.
	Open: Connect the selected FPD.
	Close: Close the connection of current FPD.
	Reset: FPD reboot.
	Config: Enter configuration interface.
	Full CFG: Use for factory internal debug only, omit.
Turn off: Wireless panel shutdown button.	
6: Window Width & Level	W: Window width of the image.
	L: Window level of the image.
	SET: Set window width and level.
7: Template Generation	Generate: For factory internal debug only, do not use.
	HST Quick Generate: Quickly generate templates in HST mode.
	AED Quick Generate: Quickly generate templates in AED mode.
	Edit Defect Template: Edit defect template file.
	AED_T Image Acquire: For internal testing, skip
	AED_T Quick Genenerate: For internal testing, skip



	AED_T Tpl Set: For internal testing, skip
	AED_T Tpl Get: For internal testing, skip
	Add Defect_S Tpl: For internal testing, skip
8: help	License: Includes flat panel and drc locking tools. please refer to 4.8 for details
	OffLine Trigger: The function of blind shooting and image storage. Please refer to 4.9 for details
	Advanced Config: Please refer to 4.10 for details.
9: Image display	 : Recover image, display the image with the original size, window and level.
	 : Remove image, remove the displayed image.
	Mouse wheel: Scroll up to zoom in, scroll down to zoom out.
	Mouse left button down: Press the left button down and move the mouse to move the image.
	Mouse right button down: Press the right button down and move to change the window and level. Moving left/right to reduce/increase the window, Moving up/down to reduce/increase the level.
	Mouse right click + double left click: Right click at one corner of a rectangle region of interest, and then double left click at the diagonal corner to automatically set the window and level of the region.
10: Pixel Coordinates and Values	x, y: Pixel coordinates.
	Pixel Value: Pixel gray value.

4.2.2 System Configuration

After connecting an FPD successfully, click on “Config” button of ZManager, open the configuration window.

4.2.2.1 Status page

Open the configuration window, and select the "Status" page, as the following:



The Configuration window displays the following settings:

- SDK: V4.1.2 FPGA: V9.3.2 CPU: V5.0.7 MCU: V6.0.5
- FP Type: 3543Z (Set Type)
- CB Port: 0 (Set Port)
- Serial Number: 3543ZCA-003
- FP Cable Address: 192 . 168 . 11 . 2
- FP Wireless Address: 192 . 168 . 11 . 3
- Sta mode Essid: ap_default
- AP mode Essid: T3543ZCA-003
- AP mode Channel: 157
- AP/Sta Key: 123456789 (Set wifi)
- Wifi Mode: AP Station
- Turb Ready(ms): 1800
- X Window(ms): 1000
- Delay Time(ms): 0
- Repeat Times: 1
- Max X Time(ms): 750
- Min X Trailing Time(ms): 0
- Pre-processing mode: Offset
- Post-processing mode: Gain-Defect
- Binning mode: 1x1
- SET button

Information of the "Status" page are defined as:

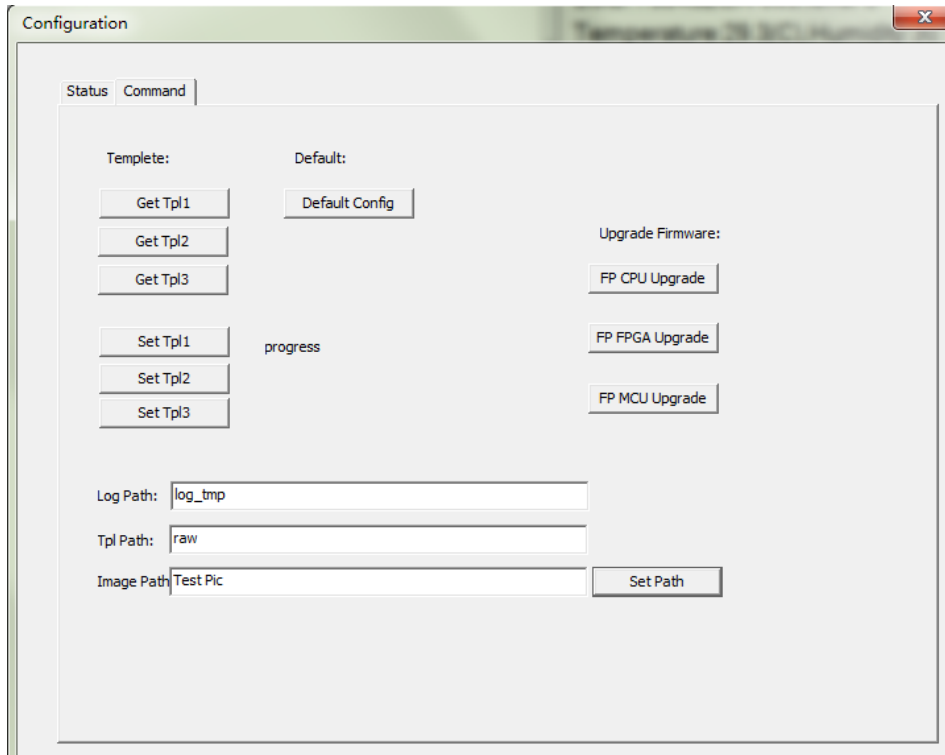
SDK: V4.1.2	SDK version, this case is V4.1.2
FPGA: V9.3.2	PPC version, this case is V9.3.2.
CPU: V5.0.7	FPGA version, this case is V5.0.7.
MCU: V6.0.5	MCU version, this case is V6.0.5.
FP Type:	FPD model automatically identifies plate type.
Serial No:	FPD product serial number, this case is: 3543ZCA-003.
CB Port	Port number used by CB (click "Set Port" button to set). Default is 0.
FP Cable Address:	FPD wired IP address.
FP Wireless Address	FPD wireless IP address.
Sta mode Essid: ap_default	SSID of the router for FPD to connect (when Wi-Fi mode is station).
AP mode Essid: 3543ZCA-003	SSID of the FPD when Wi-Fi mode is AP.
AP mode Channel: 157	Wireless channel for AP.
AP/Sta Key: 123456789	Wireless password configurable. The Default value of Default config is 123456789, and it will take effect after restarting the FPD.
Wifi Mode:	Wifi mode: AP, as an access point; Station, as a station.
Tube Ready(ms):	Time for the tube to get ready (only used for HST mode). If the time is not a constant, fill in the maximum time. The unit is millisecond.
Maximum X time (ms):	The maximum x-ray exposure time that the FPD allows (only used for HST mode). The unit is millisecond.
X Window(ms):	The time between FPD scrub and acquisition, unit ms.
Min X trailing time(ms):	Minimum exposure tailing time control.
Set Delay Time(ms):	Additional time for which FPD waits before starting image



	acquisition, upon receiving the image acquisition command, unit ms.
Set Repeat Times:	Number of repeat times of image acquisition.
Acq average num: <input type="text" value="0"/>	This feature only works on 1613 and defaults to 0.
Pre-processing mode:	The Pre-Processing Mode can be set as "Raw" or "Pre-Offset", Corresponding to w/o or w/ offset correction in FPD, respectively.
Post-processing mode:	<p>When Pre-Processing Mode is "Raw", the Post-Processing Mode can be set as 5 modes: "Raw", "Offset", "Offset-Gain", "Offset-Gain-Defect", or "Defect-Only". The 5 modes correspond to 5 different calibrations in computer: no calibration, offset calibration, offset and gain calibration, offset-gain-defect calibration, and defect only calibration, respectively;</p> <p>When Pre-Processing Mode is "Pre-Offset", Post-Processing Mode can be set as 4 modes: "Raw", "Gain", "Gain-Defect", "Defect-Only". The 4 modes correspond to 4 different calibrations in computer: no calibration, gain calibration, gain-defect calibration, and defect only calibration, respectively.</p>
Set	Click it to set the configuration of timing and calibration.

4. 2. 2. 2 Command page

Select the "Command" page, as the following:



Description of the "Command" page:



Get Tpl1	Downloading from FPD the calibration templates stored in FPD. ZManager need to be restarted to use the downloaded templates.
Get Tpl2	Reserved function, not used.
Get Tpl3	Reserved function, not used.
Set Tpl1	Uploading to FPD the calibration template stored in the default path in PC.
Set Tpl2	Reserved function, not used.
Set Tpl3	Reserved function, not used.
Default Config	Recover the configuration of FPD to factory configuration.
FP CPU Upgrade	Upgrade FPD CPU(PPC)Software version.
FP FPGA Upgrade	Upgrade FPD FPGA Software version.
FP MCU Upgrade	Upgrade FPD MCU Software version.
Log path:	ZManager log path.
Tpl path:	Template file storage path.
Img path:	Image file storage path.
Get path	Get log path, tpl path and Img path.
Set path	Set log path, tpl path and Img path.

4.3 PC Configurations

4.3.1 Recommended PC configuration

It is recommended that the User's PC shall have the following configuration:

Parts	Recommended	Minimum
CPU	I7 7770 or similar CPU and up	I3-3110 or similar CPU
Memory	8G RAM and up	4G RAM
Hard Drive	1T high speed hard drive	500G high speed hard drive
Monitor	1920x1080 resolution	1920x1080 resolution
Video Card	>1G memory	>512M memory
Ethernet Card	1000M	1000M
Wifi Card	802.11n/ac 5GHz	802.11n 5GHz
OS	Windows 7/8/10 32/64 bit	Windows 7/8/10 32/64 bit



4.3.2 Configuration of PC's Ethernet card

For the connection configurations ①, and ③ in section 3.4, at least one Ethernet card need to be installed in the PC. The Ethernet card shall be connected to WR's LAN port or FPD, and its IP shall be set as 192.168.11.252. If there exist other Ethernet cards (include wifi card) in the PC, please make sure that other cards' IP cannot be 192.168.11.252.

For the connection configurations ② in section 3.4, at least one 5GHz wifi card need to be installed in the PC. The wifi card's IP shall be set as 192.168.11.252. If there exist other Ethernet cards (include wifi card) in the PC, please make sure that other cards' IP cannot be 192.168.11.252. The user needs to configure the PC to connect to the SSID of FPD's SPN+SN, with the password also as PZMedcial's default "123456789".

For the connection configurations ③ in section 3.1, the user need to configure FPD's AP ESSID same as the router's SSID, with the password also as PZMedcial's default "123456789".

Note that, there shall be no other devices with the IP address of 192.168.11.252 in the same local area network where the PC's Ethernet card locates (Default IP address of local area network is 192.168.11.252).

4.4 Connection Configuration of ZManager and PC

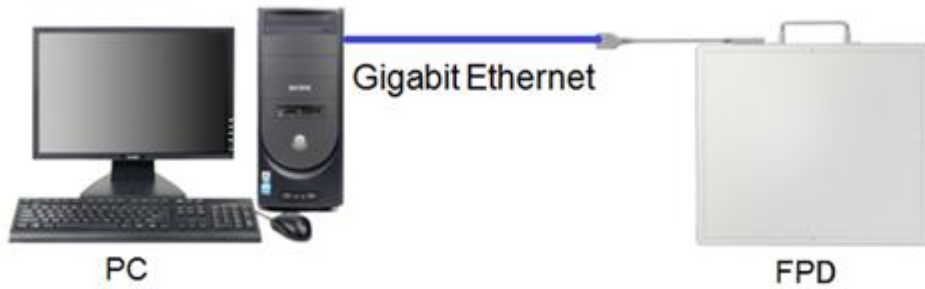
FPD can be connected either through wire or wirelessly. In wireless mode, FPD can be configured as an Access Point to which a PC can directly connect, or a Station to connect to a PC through a wireless router. The synchronization between image acquisition and X-ray exposure can be realized through wired connection by CB, or through the internal AED function of FPD.

There are 3 major connection configurations for FPD, summarized as the following:

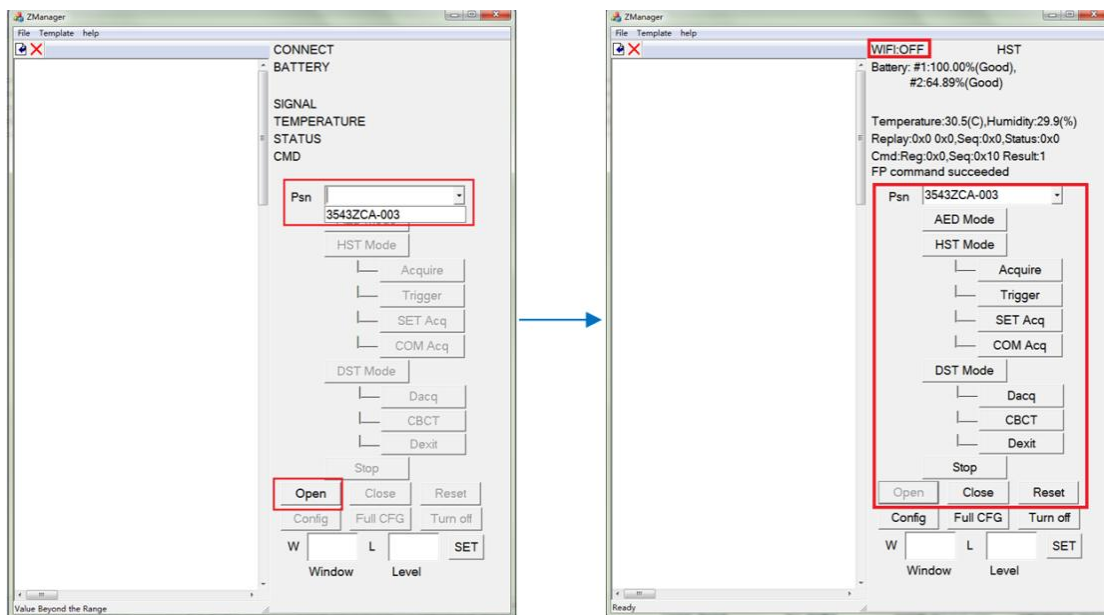
No	Connection	FPD WIFI Mode	Trigger Mode
(—Wired, ...Wireless)			
①	FPD—PC	Not Used	HST/AED
②	FPD...PC	Access Point	HST/AED
③	FPD...Router—PC	Station	HST/AED



4.4.1 Wired connection (FPD—PC)



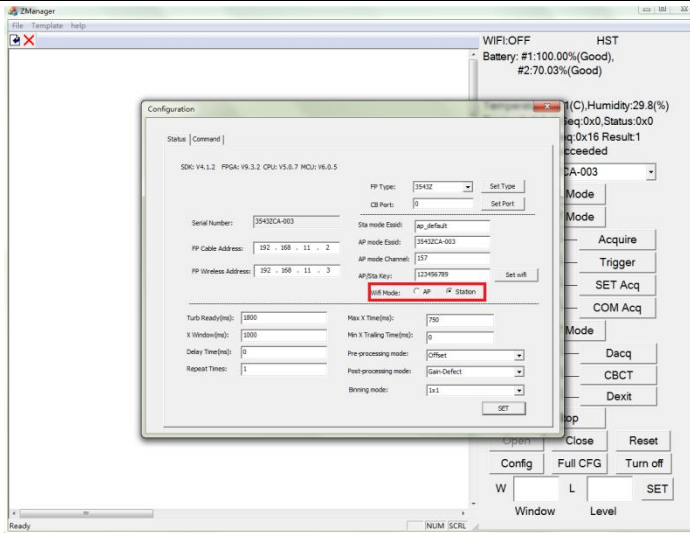
Run ZManager.exe, select FPD in the Psn list, click on “Open” button. When the command buttons become available and WIFI is displayed as OFF, connection is successful, as the following:



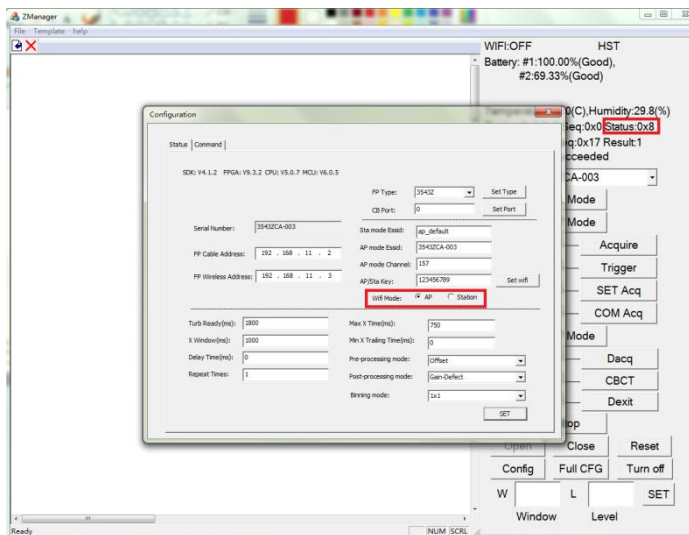
4.4.2 Wireless connection (FPD...PC)



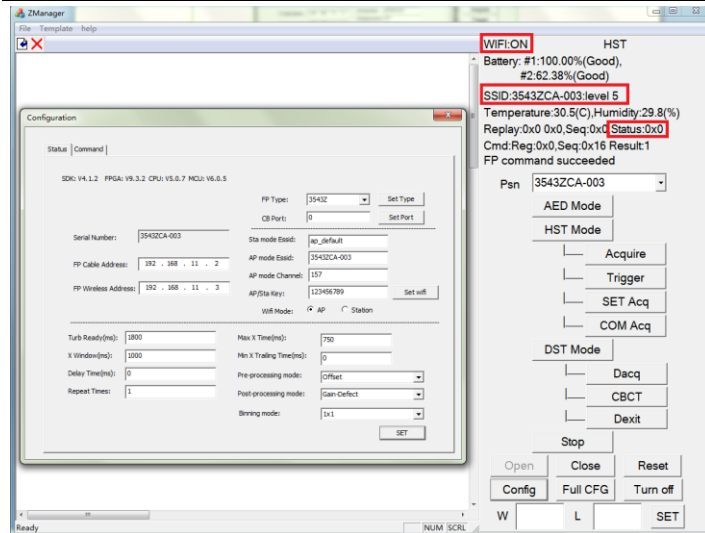
(1) After wired connection is successful, Click on “Config” button, select "Status" page;



- (2) The FPD's WiFi mode should have been set as AP mode. If the current WiFi mode is set as "Station", please set it to "AP", after which the FPD status will change to 0x8, as shown in the following figure:



- (3) After FPD status changes back to 0X0, close the configuration window.
- (4) Disconnect the cable connection and use the wireless network card. Select the ESSID of the FPD to be connected (example: 3543ZCA-003, you can customize the ESSID of the FPD, but no spaces), and enter the password: 123456789 (or user-defined wireless password); After the connection is successful, "WiFi :ON" will be displayed on ZManager, as shown below:



Note that:

1. If current wifi mode is "AP " already, please ignore step (1)~(3).
2. Wireless connection is invalid when PC and FPD are wired connecting.
3. ESSID or password cannot have spaces.

4.4.3 Wireless connection through router

The default password in the tablet is 123456789 (FPD...Router—PC)



4.4.3.1 Router settings

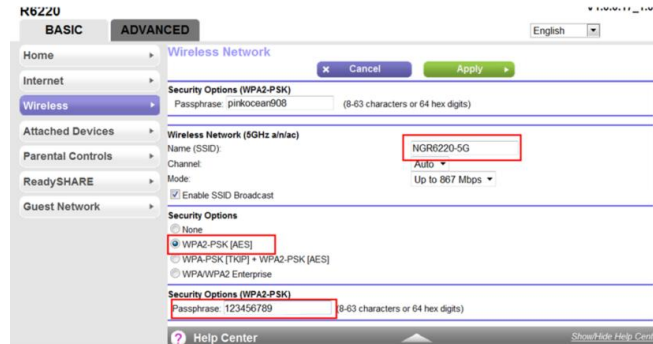
The wireless router needs to support 802.11n 5GHz, The following uses NETGEAR R6220 as an example.

(1) LAN settings: IP Address is 192.168.11.1; IP Subnet mask as 255.255.255.0; Disable DHCP Server function. As the following:



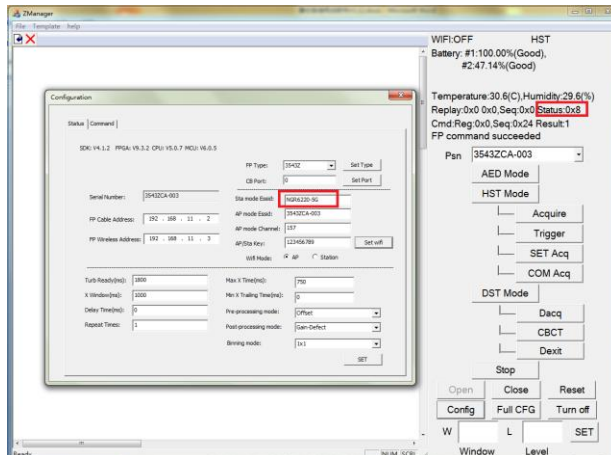


(2) Defining the SSID and password: Please note that the user can set the router's SSID to any phrases, but the password has to be "123456789". As the following:

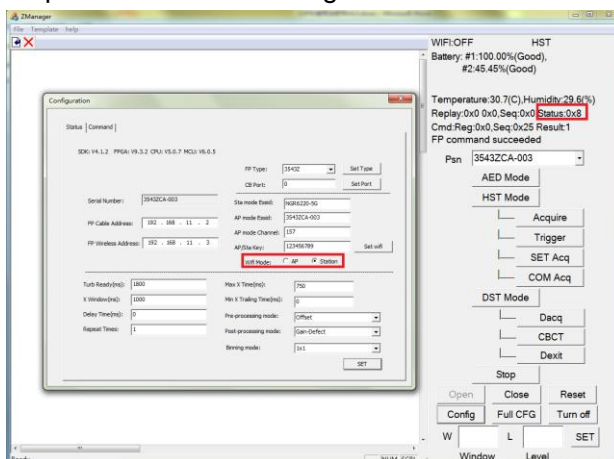


4. 4. 3. 2 Connection Configuration

(1) After successfully registering with wired connection, click "Config" button and the configuration interface will pop up. Set the AP ESSID (e.g, NGR6220-5G). After FPD status changes back to 0x0 from 0x8, close configuration window.

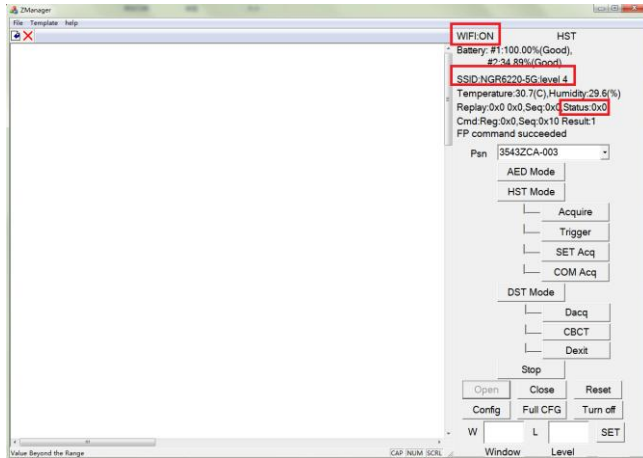


(2) If the current WiFi mode is AP, you need to select station, and then the FPD status will change to 0x8. When status changes back to 0x0, it means the setting is completed. Close the configuration interface. As shown in the figure below:





(3) Unplug the Ethernet cable from the FPD, plug it into LAN Port of the router. After connection is successful, The status of FPD will appear in the right of the ZManager window(WIFI:ON,SSID: NGR6220-5G).



Note that:

1. Wireless connection is invalid when PC and FPD are wired connecting.
2. ESSID or password cannot have spaces.
3. The wireless password in the Key must be the same as the password set by the router.

4.4.4 Wireless connection through router:

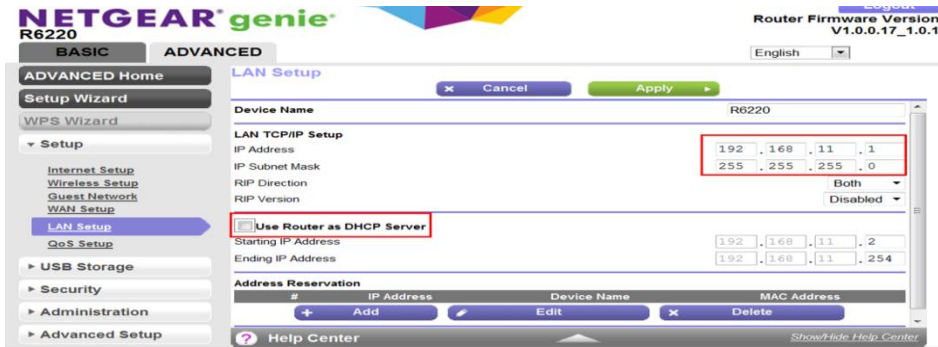
Customize your wireless password. (FPD...Router—PC)



4.4.4.1 Router settings

The wireless router needs to support 802.11n 5GHz, The following uses NETGEAR R6220 as an example.

(1) LAN settings: IP Address is 192.168.11.1; IP Subnet mask as 255.255.255.0; Disable DHCP Server function. As the following:

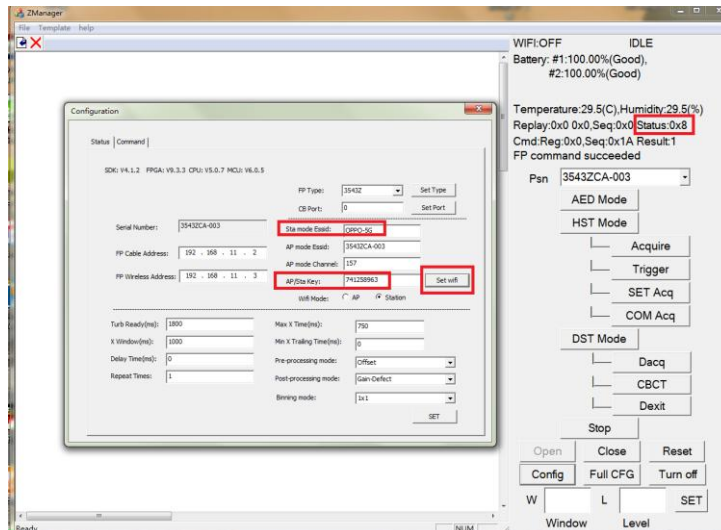


(2) Set the SSID (such as OPPO-5G) and password (such as 741258963) of 5GHz network, set security Option as wpa2-psk [AES], as shown in the figure below:



4. 4. 4. 2 Connection Configurations

(1) Click the "Config" button to open the configuration interface. After setting station mode ESSID (e.g. OPPO-5G) and password in AP / Sta key (e.g. 741258963), click "Set wifi" button, then FPD status will change to 0x8, as shown in the following figure:

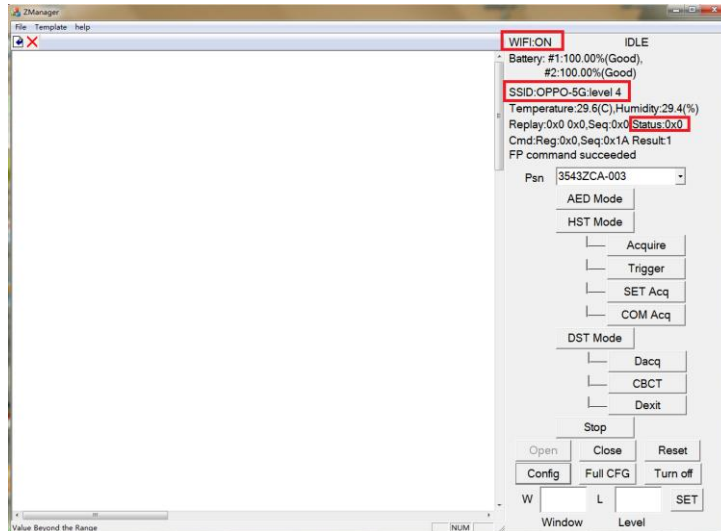


(2) After FPD status changes back to 0x0, close the configuration interface.

(3) Unplug the network cable from the FPD end and plug it into the LAN port of the router.



After the connection is completed, "WIFI ON" and "SSID: OPPO-5G" is displayed on ZManager, as shown below:



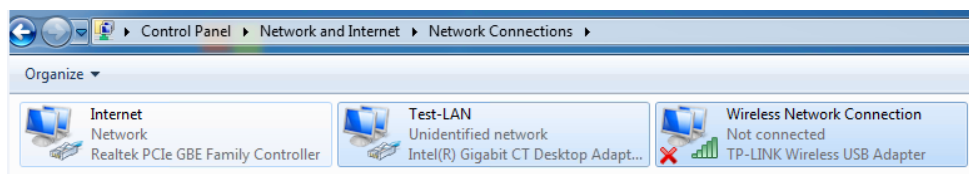
Note that:

1. Wireless connection is invalid when PC and FPD are wired connecting.
2. ESSID or password cannot have spaces.
3. The wireless password in the Key must be the same as the password set by the router.

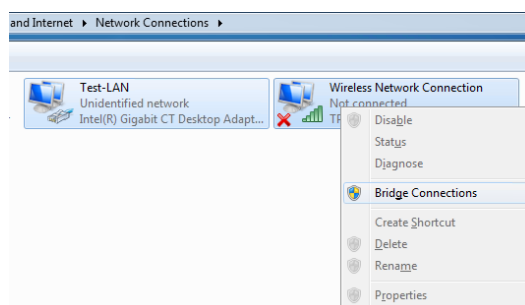
4.5 Wired and wireless bridging

If the wired connection and the wireless connection are frequently switched, the IP address should be changed frequently. It is convenient to use the bridge mode without changing the IP address.

1. Select Start -> Control Panel -> Network and Internet -> Network Connections, as shown below:



2. Press and hold the "Ctrl" key, select the wired network card and wireless network card at the same time with the left mouse button, and then click the right mouse button, as shown in the following picture:

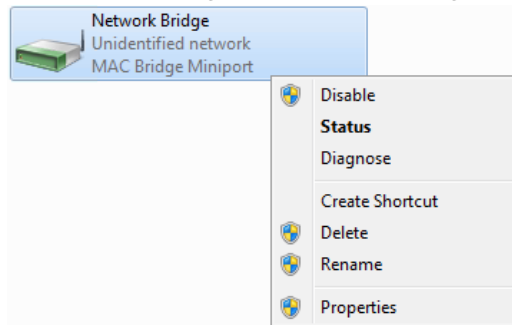




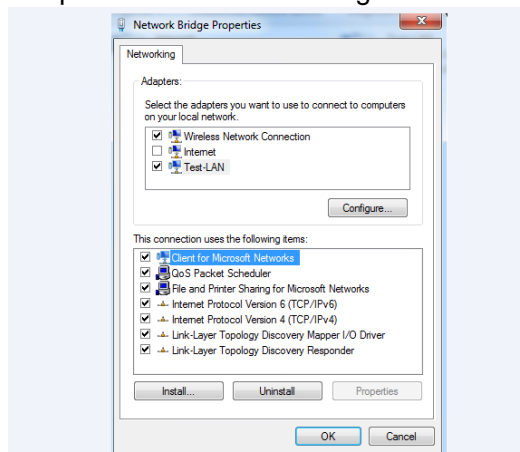
3. Select "Network Bridge" and the following screen will appear:



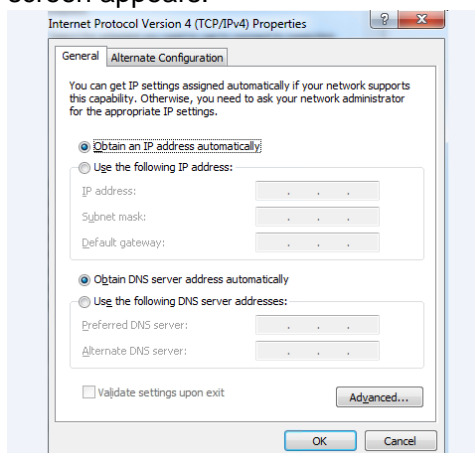
4. Select "Network Bridge" and the following screen will appear:



5. Select "Properties" and the following screen will appear:

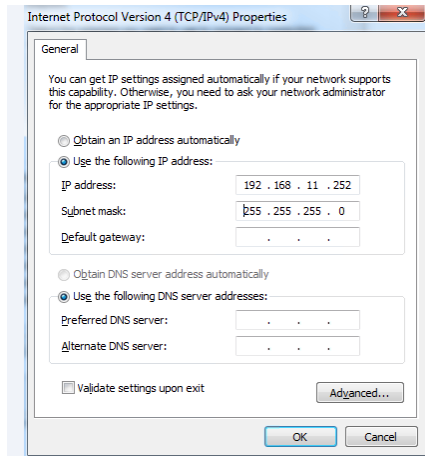


6. Double click "Internet Protocol version 4 (TCP / IPv4)" with the left button, and the following screen appears:





7. Set IP address to 192.168.11.252 and subnet mask to 255.255.255.0, as follows:



8. After clicking "OK", the FPD can be freely switched between wired and wireless, and does not need to be reset every time.

Note that:

The bridge does not work well on Windows 10 home edition. It can run normally on professional edition and enterprise edition of Windows 10.

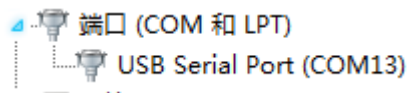
4.6 Image Acquisition

4.6.1 HST Trigger mode

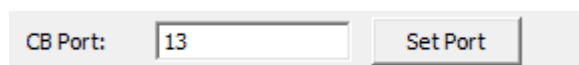
If the user needs to synchronize image acquisition with x-ray exposure through a hand switch, a CB needs to be connected between the PC and the high voltage generator (Please refer to section 2.3).

4.6.1.1 CB parameter settings

Install the CB driver (driver of usb_to_com converter).



Set the CB serial port number on ZManager.





4.6.1.2 Acquiring image

While FPD is idle, click on "HST Mode" button to enter HST mode. When FPD is in HST mode, click on "Trigger" button to get a dark image, or press the hand switch to get a flood image.

4.6.2 AED Trigger mode

While FPD is idle, click on "AED Mode" button to enter AED mode. After entering the AED mode, first for the AED1 state, in this state, FPD scrubs the TFT panel and generates an offset template, after 4 seconds, enter the AED2 state. When FPD is in the AED2 state, directly fire x-ray to get an image.

4.7 Calibration

4.7.1 Preparation

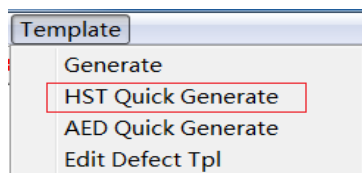
When making the template for the first time, you need to click the Get Tpl1 button on the ZManager to get the factory template and restart ZManager.

4.7.2 Recommended exposure dose

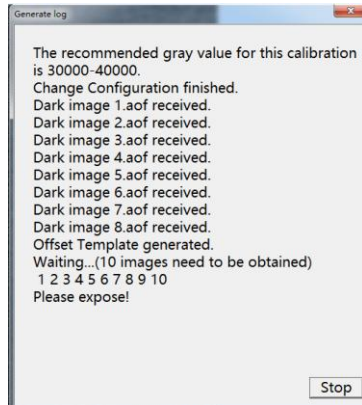
The gray scale of flood images is around 30000-40000. The shooting conditions can be adjusted appropriately, such as:

SID 1.5m ,70kV-6.3mAs; SID 1.8m, 70kV-16mAs.

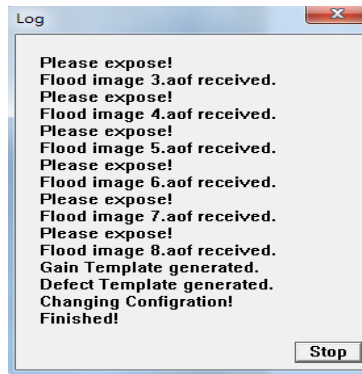
4.7.3 HST Quick Generate



Click the button "HST Quick Generate" to generate templates with the "HST Quick Generate" function. Click the button and a log dialog will show as below to show users the process of generating templates.

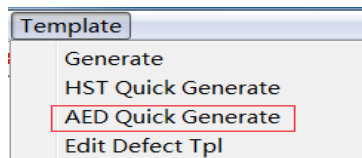


When the user interface shows "Please expose !", the user needs to fire x-ray by using a hand switch. The program will automatically determine whether the x-ray image is good or not. When all the x-ray images are taken, it will show "Finished!" and automatically exit;

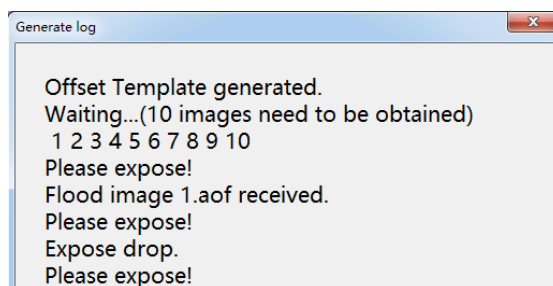


In this process, the folder of dark and flood images will be generated automatically, and users can click the Stop button in the right bottom of the log dialog to stop the commands.

4.7.4 AED Quick Generate



AED Quick Generate function is almost the same as HST Quick Generate function. But when the log shows "Please expose!", the user does not need to use the hand switch. The x-ray can be fired independently.



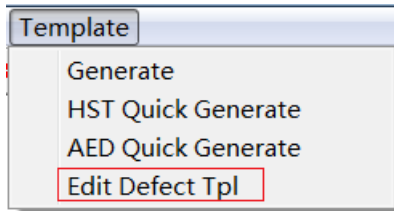
If the log shows "Expose drop", it indicates that the collected image is not suitable for template and is discarded. Please wait for the next "Please expose!", then continue to expose to collect image until it is finished.

Please note that:

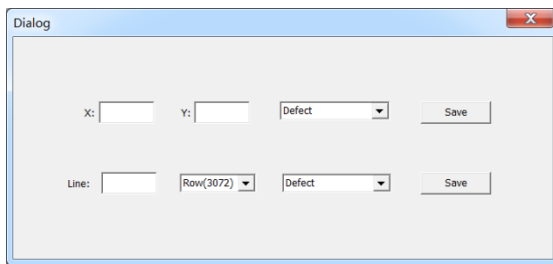
1. Recalibration is required when core components (such as X-ray generator, ball tube, collimator, etc.) are replaced.
2. Generally, template files need to be updated once every 3-6 months to prevent the increase of image noise.



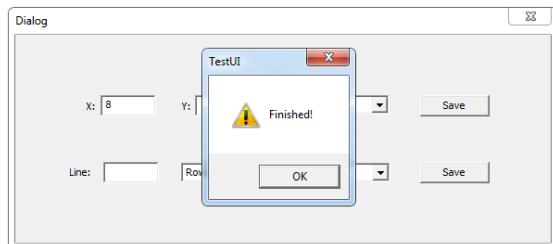
4.7.5 Edit Defect Template function



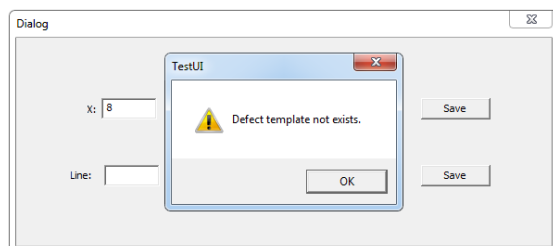
Click the button "Edit Defect Template", it shows the dialog as bellow, users can edit the Defect template saved in local.



Edit the point defect, input the value of X and Y to set the location of the point. Choose Defect (set the point to be a defect point) or Not Defect (set the point to be a non-defect point), and click on the "Save" button. When saved successfully, it will show the "Finished!" message.

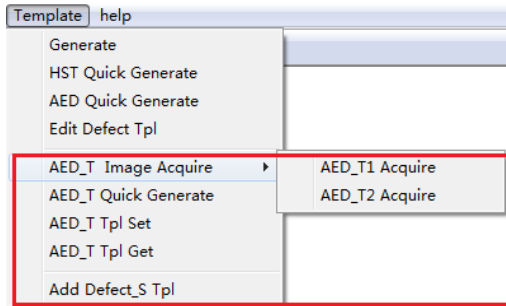


Edit a line, input the coordinate of the line, choose Row/Col to define the line as a scan line (horizontal) or data line (vertical). Choose Defect (set the line to be a defect line) or Not Defect (set the line to be a none defect line), and click on the "Save" button. When saved successfully, it will show the "Finished!" message.



If it runs without the Defect template, it will show the message of: Defect template not exists, when edit the Defect template.

4.7.6 AED_T

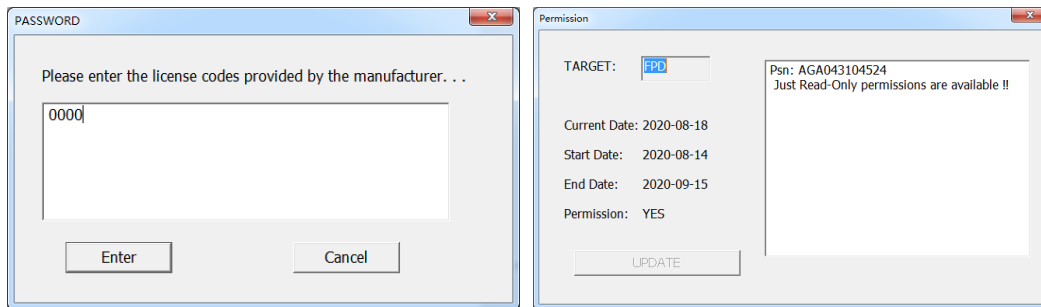


Use for factory internal debug only, omit.

4.8 License authorization module (unlock FPD)

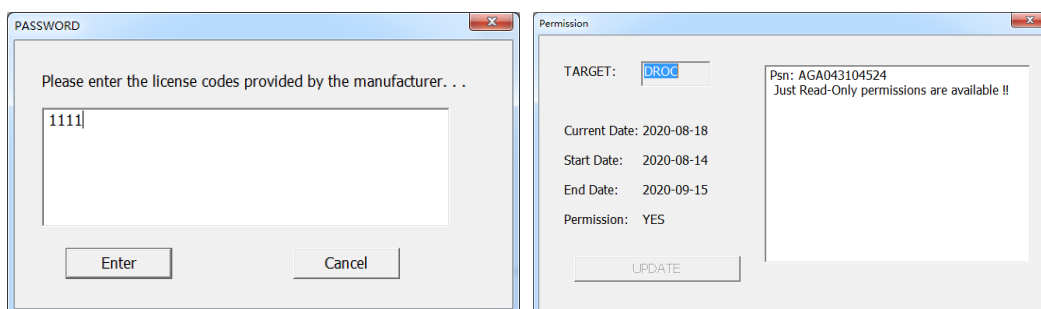
4.8.1 query FP authorization information

Click the help menu, select license, enter 0000, and then click enter to query FP authorization information



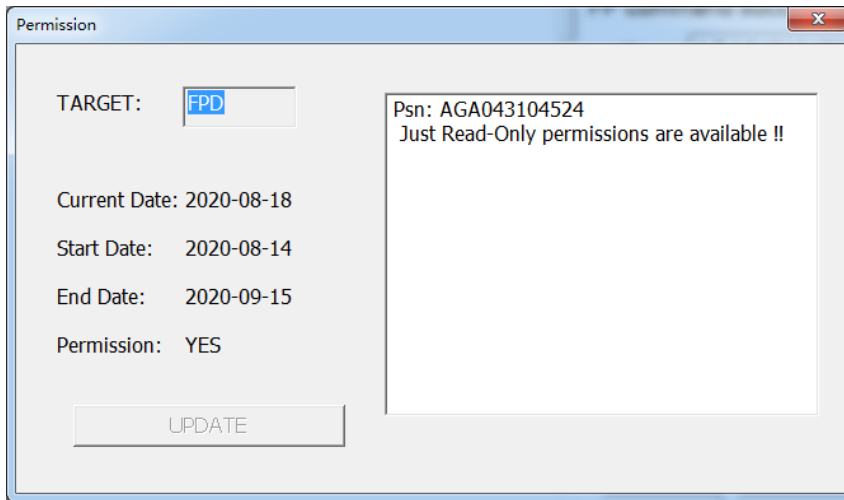
4.8.2 query PZDR authorization information

Click the help menu, select license, input "1111", and then click "enter" to query PZDR authorization information

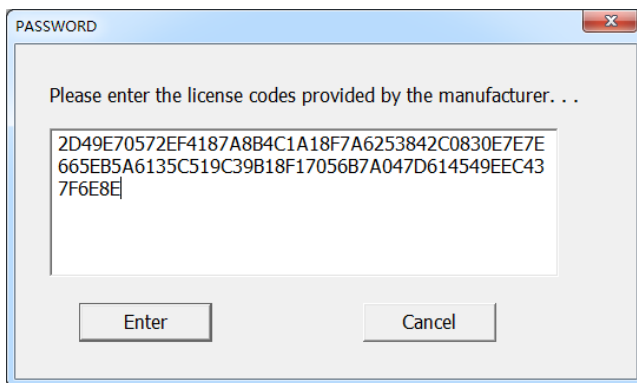




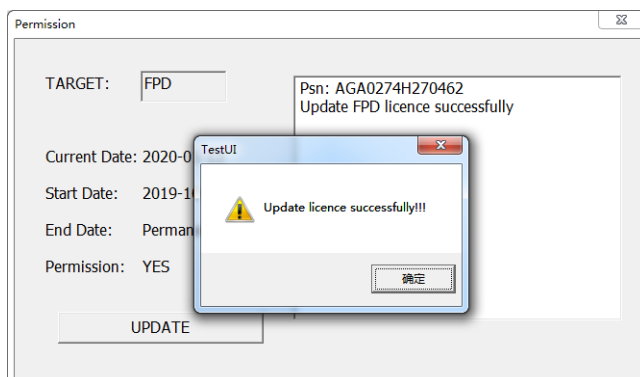
4.8.3 FP licensing information



4.8.4 Authorization



Choose license at help list on menu tag, copy and paste a license to blank window, as shown;



After filling the license, click Enter button to active the FPD. You have to restart ZManager after it shows " Update licence successfully!!! " .

Tips:

1. There are 2 authorizations, perpetual/temporary.
2. The 4.8.4 is a permanent license.
3. There is the same way to get perpetual/temporary authorization.

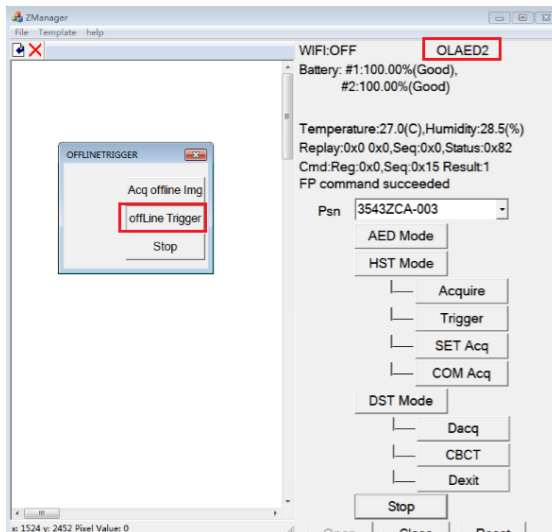


4. The FPD only works during the temporary license period; it will stop working if the authorization is expired.

4.9 Offline Trigger function

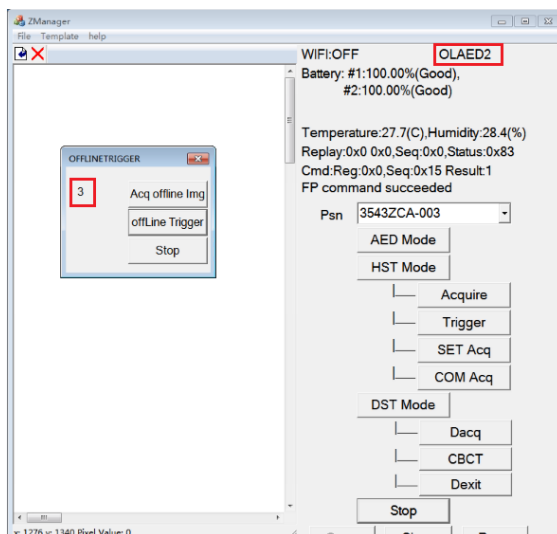
4.9.1 Offline Tigger OLAED2

After ZManager connected to the panel, Offline Trigger was selected from the Help menu to enter the offline trigger interface. Click the Offline Trigger button to enter the offline trigger mode with the state of OLAED2



4.9.2 Offline Trigger and checking the number of stored images

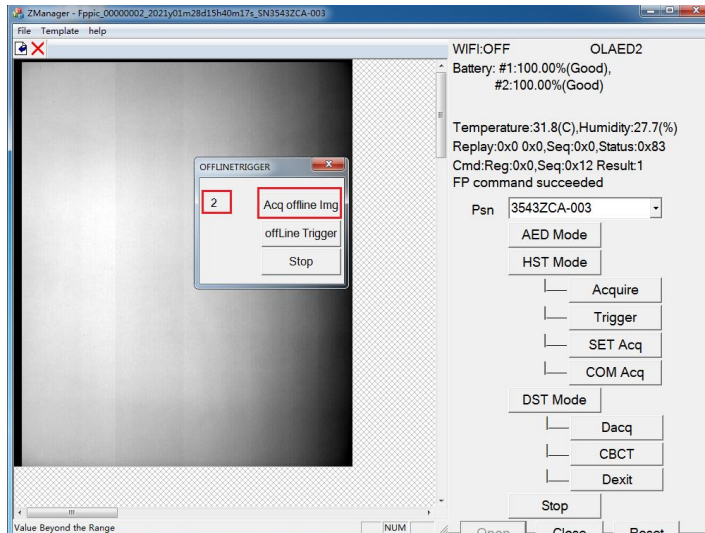
When the network is disconnected, Offline Trigger can be carried out. The flat panel will store the blind shot images in sequence according to the exposure time. After the ZManager is connected to the tablet again, the number of saved images can be viewed through the blind shot interface (in this case, 3 images are stored for 3 exposures).





4.9.3 Offline trigger images getting

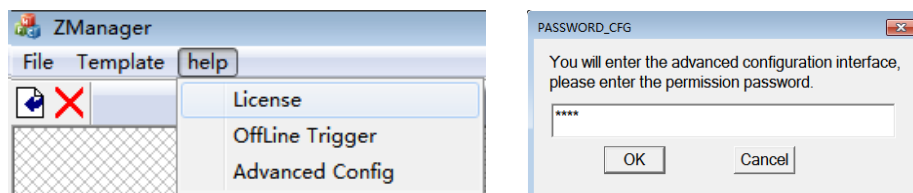
Click [Acq Offline Img] button on the blind shot interface to obtain 1 offline trigger image. The sequence of taking the image is taken out in sequence according to the sequence of taking the image, and the number represents the number of remaining offline trigger images.



Note:

1. The maximum number of offline trigger is 200.
2. Currently, only 3543Z and 4343Z wireless panels are supported.

4.10 Advanced Config



Click the help menu, select Advanced Config, enter 0000, and then click OK to enter the Config_Advanced window.



The screenshot shows the 'Config_Advanced' window with the following settings:

- Recovery Time(s): 0
- SelfStart A PowerOn: off
- Time(mins) to Turn off: 0
- OLAed A PowerOn: off
- IP: 192 . 168 . 11 . 2
- NetMask: 255 . 255 . 255 . 0
- Fp Motion Detection: on
- quaternion: 1129.-16299,1229.-11 euler: 3017.-8,2753
- angular: 0,1,0 gravity: -8,-134,-971
- Dhcp Range: 192 . 168 . 11 . 100 on-off: 0
- 192 . 168 . 11 . 200
- AP mode Country: CN

Information of "Config_Advanced" window is defined as:

Recovery Time(s): <input type="text" value="0"/>	AED Recovery time, unit: Second.
SelfStart A PowerOn: <input checked="" type="radio"/> off <input type="radio"/> on	Wireless FPD self start setting.
Time(mins) to Turn off: <input type="text" value="0"/>	Wireless FPD auto turn off setting, unit: Second.
OLAed A PowerOn: <input checked="" type="radio"/> off <input type="radio"/> on	FPD Auto entering Offline trigger mode setting.
IP: <input type="text" value="192 . 168 . 11 . 2"/> NetMask: <input type="text" value="255 . 255 . 255 . 0"/>	Detector IP address and subnet mask settings.
Fp Motion Detection: <input type="radio"/> off <input checked="" type="radio"/> on	FPD motion detection setting.
Dhcp Range <input type="text" value="192 . 168 . 11 . 100"/> <input type="text" value="192 . 168 . 11 . 200"/> <input checked="" type="radio"/> off <input type="radio"/> on	DHCP IP address range setting and DHCP function switch setting.
AP mode Country: <input type="text" value="CN"/>	AP mode Country setting.



5 Installation safety

Owing to the complicated using environment of FPD, image might be interfered in some case. Here are some notices when installation:

1. Apply insulation treatment between frame (bucky or cassette) and FPD.
2. Ensure FPD is away from power adapter at least 1 meter to get rid of interference sources (high voltage generator, electric machine etc.) as far as possible.
3. Support the power of FPD adapter independently as far as possible. Do not share patch panel with interference sources (high voltage generator, microwave oven, electric machine etc.).



6 Regular inspection and maintenance

In order to ensure the safety and normal use of the equipment, please be sure to check the equipment before use. In the process of inspection, if any problem is found but cannot be solved, please contact sales representative or product distributor.

6.1 Daily inspection

Before using this product, the following checks need to be performed:

Item	Operation
Cable	Make sure there is no crack or short circuit on the power supply.
	Make sure that the detector cable is not broken or damaged.
	Ensure that the power supply cord is reliably connected to the AC input and output socket.
	The detector cable must be firmly connected with the detector without any looseness.
Detector	Make sure that no screws are loose or broken.
	Make sure that there is no dust at the connecting pins
	Make sure there is no crack or short circuit at the connecting pins.
	Make sure that the detector can be turned on normally after the power is turned on.

6.2 Monthly and yearly inspection

Item	Frequency	Execution operation
Artifact	Monthly / yearly	After calibration, check the exposure image.
Calibration	Half a year / when the exposure condition has changed	When the number of bad spots or lines of detector increases, or the core components (such as X-ray generator, ball tube, collimator, etc.) are replaced.
Battery	Monthly	Ensure the battery can be charged and discharged normally.