

DIRECT DIGITIZER

AeroDR Portable RF Unit2

Operation Manual





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Introduction

Introduction

Digital radiography AeroDR SYSTEM 2 performs X-ray imaging of the human body using an X-ray planar detector that outputs a digital signal, which is then input into an image processing device, and the image acquired with a digital image acquisition device is then transmitted to a filing system, printer, and image display device as diagnostic image data. Specifically, the AeroDR Portable RF Unit2 provides a transportable unit that enables X-ray imaging at the destination in combination with the X-ray device.

Also, the diagnostic X-ray image data of digital radiography AeroDR SYSTEM 2 does not provide mammographic images.

The DIRECT DIGITIZER CS-7 or ImagePilot (hereafter referred to as the image processing controller), which controls the receiving, processing, and output of image data such as AeroDR Detector and access point of AeroDR Portable RF Unit2, is required for operation. For the operation of the image processing controller, refer to the "Operation Manual" of the image processing controller.

This operation manual provides instructions on the basic functions for operation of the AeroDR Portable RF Unit2. Those operating the AeroDR Portable RF Unit2 for the first time should read this manual beforehand. Also, store this manual close to the AeroDR Portable RF Unit2 after reading it through, so it can be used as a guide to allow optimum operating conditions.

- * If the pages of the operation manual are smudged and illegible, replace it with a new one. (There is a fee for this service.)
- * The illustrations of X-ray device and carrying case used in this manual, are just the examples.
- * The shape or insertion method of carrying case is one example.



- The AeroDR Portable RF Unit2 can be used in both AeroDR SYSTEM and AeroDR SYSTEM 2.
- Before using/operating the AeroDR Portable RF Unit2, read the operation manual of AeroDR SYSTEM/AeroDR SYSTEM 2 and image processing controller carefully. Also, refer to operation manual of the connected access points.

Summary of usability specifications (for IEC/EN 60601-1-6, IEC/EN 62366)

- (1) Medical purposes
 - Provision and reading of disease and injury diagnostic images.
- (2) Patient groups
 - No patient population exists who uses the device.
 - Patient population for the X-ray images read is not specified.
- (3) Parts of body or organizations to which the device is mounted or that interact with the device.
 - AeroDR Portable RF Unit2 contacts the body surface of an operator.
- (4) Operating principle
 - AeroDR Portable RF Unit2 is used along with the X-ray device to be exposed, and it performs communication with AeroDR Detector and image processing controller with the access point (radio communication device) to be connected. Also, it interfaces with the X-ray device.
 - AeroDR Detector forms the still images according to the X-ray energy passing through the human and animal body; after digitizing the exposed image, it is transmitted to the console (the image processing controller) with a wireless communication by way of AeroDR Portable RF Unit2.
 - Then, it connects to the AeroDR Detector with the AeroDR I/F Cable2, charges the AeroDR Detector, and registers the AeroDR Detector to be used in the X-ray device.
 - The console (the image processing controller) processes the image data into the diagnostic image, and then stores and outputs the images added with the patient information.
- (5) Significant physical characteristics
 - Refer to "7.1 Specifications".
- (6) Significant performance characteristics
- Refer to "2.1 Overview of AeroDR Portable RF Unit2".
- (7) User of this device
 - No special training is required to use this device. The intended users of this device are as follows. A professional in good health with specialist knowledge/qualifications who has fully understood the content of this document. (Such as a doctor or radiological technologist)

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Term description

The meanings of terms used in this operation manual are as follows:

| Terms | Explanation |
|-----------------------------|---|
| AeroDR Detector | Collective term indicating AeroDR 1417HQ, AeroDR 1417S, AeroDR 1717HQ, AeroDR 1012HQ, AeroDR 2 1417HQ and AeroDR 2 1417S. |
| Access Point | A term indicating general-purpose access points. |
| Image processing controller | The image processing workstation (CS-7 or ImagePilot) is referred to as the image processing controller. |
| Carrying case | A case to carry and operate the AeroDR Detector, AeroDR Portable RF Unit2 etc. |

Structure of pages Example of structure of pages 1.1 • Operation of AeroDR Portable RF Unit2 (1) -3 Turn the respective devices on. 1.1.1 Preparation for exposure A wireless connection may take time after starting the access point. - (5) The preparation for exposure with AeroDR Portable RF Unit2 is performed with the following procedure. (2) -1 Open the carrying case, and remove the AeroDR Detector. Reference -(4) Refer to "3.1 Startup and shutdown" for the startup operations of the respective devices. 2 Connect the AeroDR Portable XGCBL RF2 to the AeroDR Portable XG Cable which is connected to the X-ray device. 4 Turn the X-ray device on. AeroDR Portable XG Cable Ę X-ray device AeroDR Portable XGCBL RF2 AeroDR Portable RF Unit2 • The AeroDR Portable XGCBL RF2 is connected to the AeroDR Portable RF Unit2 which is inserted in the (3) carrying case. 00

| Number | Item | Description | lcon |
|--------|---------------------|---|-----------|
| (1) | Item heading | Describes the titles of described content. | - |
| (2) | Operation procedure | The operating procedure is described in sequential numerical steps. | - |
| (3) | Hint | Describes important information. | |
| (4) | Reference | Describes reference items. Refer to these as necessary. | Reference |
| (5) | Important items | Describes the important items for operation. Be sure to read them. | |



Safety Precautions & Warnings

This chapter describes precautions and warnings to ensure safe use of the AeroDR Portable RF Unit2.

1.1 • Symbols relating to safety

1.1.1 Safety Alert Symbol



1.1.2 Warning Notice (signal words)

Signal words indicate the degree of potential hazards in the use of the product.

Signal words include the following three types, which are used according to risk of damage caused by danger and the severity of damage.

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to indicate hazardous situation where only physical damage is likely to occur.

1.1.3 Description of graphic symbols



Indicates that it is necessary to read the User's Manual before use or operation of this device.

This CE mark on this product indicates that this product is in conformity with the applicable requirements set out in the Directive 93/42/EEC (Medical Device Directive) and in Directive 2011/65/EU (RoHS Directive).

CE0197 O197 indicates the identification number of the notified body responsible only for implementation of the Directive 93/42/EEC (Medical Device Directive). EC Directive 93/42/EEC does not cover animal use. So, the notified body whose identification number is 0197 is not responsible for animal use.

1.2 • Warning labels

Various warning labels are attached to the AeroDR Portable RF Unit2 on the locations shown below. Do not remove these labels from the AeroDR Portable RF Unit2.

Warning labels are there to make sure that the user recognizes potential hazards when operating the AeroDR Portable RF Unit2.

* If a warning label is too dirty or damaged to read, contact Konica Minolta technical representatives to have a new warning label attached, and redisplay by parts replacement. (There is a fee for this service.)

1.2.1 AeroDR Portable RF Unit2



1.3 • Safety precautions

Read all safety precautions thoroughly before using the AeroDR Portable RF Unit2.

Be sure to observe the safety precautions described in this section.



Before using the AeroDR Portable RF Unit2, read the "Safety Precautions and Warnings" section of the AeroDR SYSTEM/AeroDR SYSTEM 2 Operation Manual carefully and be well-informed about the precautions to be taken while using the AeroDR Portable RF Unit2.

1.3.1 Precautions before usage



- The operators (hospitals and clinics) hold responsibility for the usage and maintenance of the AeroDR Portable RF Unit2. Do not use this device unless you are a physician or certified person under law.
- The AeroDR Portable RF Unit2, AeroDR Battery Charging KIT and AeroDR I/F Cable2 are suitable for use outside the patient environment.
- Confirm that the AeroDR Portable RF Unit2 is operating normally before using.

• When a problem occurs with the AeroDR Portable RF Unit2, turn the power off, attach an appropriate sign, such as "malfunction", on this device, and contact Konica Minolta technical representatives.

- The AeroDR Portable RF Unit2 is not explosionproof, so do not use any flammable or explosive gas near this device.
- If you dispose the AeroDR Portable RF Unit2, its accessories, options, consumables, storage media and their packing materials, follow the applicable Waste Management Law (the Waste Disposal and Public Cleaning Law) and ask an authorized industrial waste disposal contractor for their disposal. For the disposal method, follow the applicable regulations and rules of local government.



This symbol means: Do not dispose of this product together with your household waste!

Please refer to the information of your local community or contact our dealers regarding the proper handling of end-of-life electric and electronic equipments.

Recycling of this product will help to conserve natural resources and prevent potential negative consequences for the environment and human health caused by inappropriate waste handling.

1.3.2 Precautions for usage

- Take note of the following when using the AeroDR Portable RF Unit2:
 - Do not subject it to strong shocks or excessive loads by dropping it, etc.
 - Do not disassemble or modify this device.
 - Do not connect any devices that were not purchased from Konica Minolta.
 - Do not turn the power switch off or pull out the power cable while the system is operating.
 - Be careful not to drop AeroDR Detector on any part of a person's body due to tripping over AeroDR I/F Cable2.
 - Do not use AeroDR Detector for filming while its charging.
 - Do not connect the power cable with moisture on it to the wall outlet.
- AeroDR I/F Cable2 is connected to AeroDR Detector by using the magnetic power. Always move the AeroDR Detector by through its operation, and not through the cable. Do not pull the AeroDR Detector with force.
- If there is any smoke, odor, or abnormal sound, it may cause a fire if use is continued, so immediately turn the power switch off, unplug the power plug from the wall outlet, and contact Konica Minolta technical representatives.
- Take note of the following to reduce the risk of fire, electric shock, or electrical leakage:
 - Use specified cables for the power cable, etc.
 - Use a wall outlet with the correct rating as a power source.
 - Confirm that the power plug is connected to the wall outlet properly without any slack.
 - If you do not plan to use this device for an extended period of time, unplug the power plug.
 - The supplied power cable and AC adapter are dedicated for the AeroDR Portable RF Unit2, so do not use it elsewhere.
 - Avoid exposure to liquids such as water.
 - Make sure that foreign material, such as pieces of metal or wire, does not get inside.
 - Do not handle the power plug with wet hands.
 - Do not let soil or dust accumulate on the power plug and AeroDR I/F Cable2.
 - Do not use extension cords.
 - Do not connect many plugs to a single electrical outlet.
 - Do not damage the power cable. Also, do not use damaged cables.



- If there is any abnormality in appearance such as deformation of the housing or a crack, stop using the device immediately and contact Konica Minolta technical representatives.
- Register the AeroDR Detector with the AeroDR Portable RF Unit2 corresponding to the image processing controller used. Or, register it using the AeroDR Interface Unit, AeroDR Interface Unit2, AeroDR Battery Charger and AeroDR Battery Charger2 connected to image processing controller used .If the wrong device is registered, the AeroDR Detector may be selected from a different CS-7.
- Do not leave the device in places where the temperature is high, such as in a car parked in scorching sunlight.

- Take note of the following when using the AeroDR
 Portable RF Unit2:
 - Do not use devices that emit electromagnetic waves such as high-frequency therapy equipment, mobile phones, or pocket pagers, close to this device.
 - Take note of the reception status for radios and TVs near this device, since interference may occur in them when this device is in use.
 - Use under the specified environmental conditions. Failure to do so may result in degradation of performance or malfunction.
- Take note of the following when installing AeroDR I/F Cable2:
 - Remove it by using connector housing.
 - Do not wedge it between doors or put heavy objects on it.
 - Ensure that there is no extreme bending or pulling.
 - Confirm that it is connected to the AeroDR Detector without any slack.
 - Do not connect the connector housing in a reverse way.

1.3.3 Precautions regarding electromagnetic waves

• EMC Statement

The AeroDR Portable RF Unit2 (called This Device) has been tested and found to comply with the IEC 60601-1-2: 2007 Standard.

These limits are designed to provide reasonable protection against harmful interference in a typical medical installation. The device generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in its vicinity. However, there is no guarantee that interference will not occur in a particular installation.

Whether this device does cause harmful interference to other devices can be determined by turning this device off and on. If it causes harmful interference, the user is encouraged to try to correct the interference by 1 or more of the following measures:

- Reorient or relocate the receiving device.
- Increase the separation between the devices.
- Connect this device into a wall outlet on a circuit different from that to which the other devices are connected.
- Contact Konica Minolta technical representatives.
- Supplementary information regarding IEC 60601-1-2: 2007
- Take precautions against this device especially regarding EMC. Install and put into service according to the electromagnetic compatibility (EMC) information provided in the manual (Table 1 - Table 4).
- (2) Do not use mobile phones or pocket pagers in the vicinity of this device. Use of mobile phones or pocket pagers near this device can cause errors in operation due to electromagnetic wave interference, so such devices should be turned off in the vicinity of this device.
- (3) Cable list
 - Power cable (3 m/2-Wire/Without shield)
 - AeroDR Portable XG CBL
 - Various I/F Connection Cable
 - · Various hand switch interface cables
 - · Various hand switch cables
 - Ethernet cable (max 5 m/With shield)
 - AeroDR I/F Cable2
- (4) The use of accessories, transducers and cables other than those sold by Konica Minolta, Inc. as internal components, may result in increased emissions or decreased electromagnetic immunity of this device.
- (5) Do not use this device adjacent to or stacked with other devices. If adjacent or stacked use is necessary, confirm normal operation in the configuration in which this device will be used. Normal operation has been checked when connected to the X-ray device. For applicable X-ray devices, contact Konica Minolta technical representatives.

1.3 Safety precautions

Table 1

| Guidelines and manufacture's declaration - electromagnetic emissions | | | | | |
|--|--|--|--|--|--|
| This device is intended for | r use in the elect | romagnetic environment specified below. | | | |
| The customer or the user | of this device sh | ould assure that it is used in such an environment. | | | |
| Emissions test | Emissions test Compliance Electromagnetic environment - guidelines | | | | |
| RF emissions CISPR 11 | Group 1 | The device uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. | | | |
| RF emissions CISPR 11 | Class B | | | | |
| Harmonic emissions IEC 61000-3-2 | Class A | This device is suitable for use in all establishments including the following: Domestic establishments and those directly connected to the public lowvoltage power supply network that supplies buildings for domestic purposes. | | | |
| Voltage fluctuations/ flicker emissions IEC 61000-3-3 | Complies | | | | |

Table 2

| Guidelines and manufacturer's declaration - electromagnetic immunity | | | | | | |
|--|--|--|--|--|--|--|
| This device is intended for use in the electromagnetic environment specified below. The customer or the user of this device should assure that it is used in such an environment. | | | | | | |
| Immunity test | IEC 60601 test level | Compliance level | Electromagnetic environment - guidelines | | | |
| Electrostatic discharge | ± 6 kV contact | ± 6 kV contact | Floors should be wood, concrete or ceramic | | | |
| IEC 61000-4-2 | ± 8 kV air | ± 8 kV air | tile. If floors are covered with synthetic | | | |
| Electrical fast transient/ burst IEC 61000-4-4 | ± 2 kV for power supply lines | ± 2 kV for power supply lines | at least 30%. Mains power quality should be be that of a typical commercial or hospital | | | |
| | ± 1 kV for input/output lines | ± 1 kV for input/output lines | environment. | | | |
| Surge | ± 1 kV differential mode | ± 1 kV differential mode | Mains power quality should be that of a typi- | | | |
| IEC 61000-4-5 | ± 2 kV common mode | ± 2 kV common mode | cal commercial or hospital environment. | | | |
| | <5% U _T (>95% dip in U _T) for 0.5 cycle | $<\!\!5\%$ U_T (>95% dip in U_T) for 0.5 cycle | Mains power quality should be that of a | | | |
| Voltage dips, short interruptions and | 40% U _T (60% dip in U _T) for 5 cycles | 40% U_T (60% dip in U_T) for 5 cycles | typical commercial or hospital environment. If the user of the device requires continued | | | |
| power supply input lines | 70% U_T (30% dip in U_T) for 25 cycles | 70% U_T (30% dip in U_T) for 25 cycles | it is recommended that the device be pow- ered from an uninterrupted power supply or | | | |
| | <5% U _T (<95% dip in U _T) for 5 sec | <5% U _T (<95% dip in U _T) for 5 sec | a battery. | | | |
| Power frequency (50/60 Hz) magnetic field IEC 61000-4-8 | 3 A/m | 3 A/m | Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environ- ment. | | | |
| [NOTE] U_{τ} is the AC mains voltage prior to application of the test level. | | | | | | |

Table 3

| | Guidelines and manu | facturer's decla | aration - electromagnetic immunity | | |
|--|---|---------------------|---|--|--|
| This device is intended | for use in the electroma | gnetic environr | nent specified below. | | |
| The customer or the us | er of this device should | assure that it is | used in such an environment. | | |
| Immunity test | IEC 60601 test level | Compliance level | Electromagnetic environment - guidelines | | |
| Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3 | 3 Vrms 150 kHz to 80 MHz 3 V/m 80 MHz to 2.5 GHz | [3] V [3] V/m | Portable and mobile RF communications equipment should be used no closer to any part of this device, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d=[1.2] \sqrt{P}$ $d=[1.2] \sqrt{P}$ 80 MHz to 800 MHz $d=[2.3] \sqrt{P}$ 800 MHz to 2.5 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey ^a , should be less than the compliance level in each frequency range ^b . Interference may occur in the vicinity of equipment marked with the following symbol: | | |
| [NOTE] At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. [NOTE] These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people. | | | | | |
| a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which this device is used exceeds the applicable RF compliance level above, this device should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating this device. b. Over the frequency range 150 kHz to 80 MHz field strength should be less than [3] V/m | | | | | |

1.3 Safety precautions

Table 4

Recommended separation distance between portable and mobile RF communications equipment and the device

This device is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of this device can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and this device as recommended below, according to the maximum output power of the communications equipment.

| Rated maximum output power of the transmitter W | Separation distance according to frequency of transmitter m | | |
|---|---|--|---------------------------------------|
| | 150 kHz to 80 MHz d=[1.2] √P | 80 MHz to 800 MHz d=[1.2] √P | 800 MHz to 2.5 GHz d=[2.3] √P |
| 0.01 | 0.12 | 0.12 | 0.23 |
| 0.1 | 0.38 | 0.38 | 0.73 |
| 1 | 1.2 | 1.2 | 2.3 |
| 10 | 3.8 | 3.8 | 8 |
| 100 | 12 | 12 | 23 |
| The state of the second state of the second | a discourse in a set of the second second difference of the second second second second second second second se | the state of the s | Reference of the second card and here |

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

[NOTE] At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

[NOTE] These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

1.3.4 Precautions regarding wireless communication

- The AeroDR Portable RF Unit2 is connected with a device equipped with a communication function that operates via wireless LAN. When using communication function through wireless LAN, conformance with the relevant regulations defined by the respective countries is required.
- Inappropriate usage may cause interference in radio communication. Also, if the AeroDR Portable RF Unit2 is modified, approval and warranty according to the radio law of the applicable government will be voided.
- It may affect aeronautical systems, so do not use on-board airplanes.
- Switch off the power supply of device equipped with communication function using wireless LAN during the movement to avoid any impact on the surroundings.

1.3.5 Precautions for installing, moving, and storing

- Because connections of the X-ray device can only be made by Konica Minolta or its designated contractors, contact Konica Minolta or its designated contractors.
- Contact Konica Minolta or dealers specified by Konica Minolta to install or move the AeroDR Portable RF Unit2.
 - Take note of the following while installing and maintaining the AeroDR Portable RF Unit2:
 - Install and maintain the device within the scope of maintenance and usage environment conditions.
 - Do not install or store in a location where it may be adversely affected by atmospheric pressure, temperature, humidity, ventilation, sunlight, dust, salt-air, or air containing sulfur.
 - Do not install or store in a location where it is not stable, ventilation is insufficient, the difference in light-dark is great, electromagnetic waves are generated, or where subject to vibration or shock.
 - Do not install or store in a location where chemical agents are used or stored.
 - Do not install it face up or upside down.
- Take note of the following when using the AeroDR Portable RF Unit2 or when storing and transporting it in the carrying case:
 - Treat it as a precision instrument during transport even while it is stored in the carrying case.
 - Transport or use within storage and usage environment conditions.
 - Do not leave in vehicles or outdoors during midsummer or midwinter.
 - Do not use outdoors during midsummer or midwinter.
 - When moving from outdoors to indoors during midsummer or midwinter, make sure condensation does not occur when opening the carrying case.
- Connect the AeroDR Portable RF Unit2 to a X-ray device that complies with IEC60601 series or a similar regulation.

1.3.6 Precautions regarding maintenance

- Perform the maintenance and inspection periodically. In addition to the user periodical maintenance that needs to be performed, periodical maintenance by a service engineer is also required.
- If there are stains such as body fluids, clean and disinfect.



- Based on the warranty, parts that are no longer under warranty (1 year) can be replaced for a fee.
- Turn off the power and disconnect the power plug from the wall outlet before cleaning or maintaining the AeroDR Portable RF Unit2.
- Securely connect the power cable and AC adapter, after cleaning and inspection.
- Take note of the following while disinfecting the AeroDR Portable RF Unit2:
 - Use ethanol for disinfection, isopropanol for disinfection, or commercial chlorine bleach, or 0.5% hypochlorite (10-fold dilution of household bleach) when disinfecting. However, bleach and hypochlorite are corrosive, so wash the bleach off well to avoid corrosion.
 - Dampen a lint-free, soft cloth with disinfecting solution, and use after wringing it thoroughly.
 Do not apply disinfecting solution onto the wired connection connector and LED when cleaning.
 - Disinfecting solution is a chemical agent, so follow the precautions of the manufacturer.

1.3.7 Precautions on service life

Service Life

| Name | Service Life |
|--------------------------|--------------|
| AeroDR Portable RF Unit2 | 6 years |
| AeroDR I/F Cable2 | 6 years |

- The above service life is valid only if the product has been properly operated while following the precautions for use and performing the specified maintenance. (By self certification <our data>)
- The service life may differ depending on usage conditions and environment.
- Some component parts of this device are commercially available parts that have a short cycle of model changes, therefore, it might not be possible to supply service parts even within the service life. In addition, related component parts may need to be replaced to maintain compatibility at the time of model change.



Product Overview

This chapter describes the overview of AeroDR Portable RF Unit2.

2.1 • Overview of AeroDR Portable RF Unit2

This section describes the functions and system configuration of AeroDR Portable RF Unit2.

2.1.1 Functions

The AeroDR Portable RF Unit2 enables X-ray imaging at the destination by combining the configurations of the AeroDR Detector, image processing controller, and that of the X-ray device. Also, it makes this unit move easily by inserting it in the carrying case, and interfaces with the X-ray device.

2.1.2 System configuration

The system configuration, connection examples, and operation examples are as follows.

• Basic configuration example

| Number | Name | Functions | |
|--------|--------------------------------|--|--|
| (1) | AeroDR Portable RF Unit2 | Receives the image data from AeroDR Detector, and transmits it to the image processing controller. Interfaces with the X-ray device. Charges/registers the AeroDR Detector when AeroDR I/F Cable2 is used. | |
| (2) | AeroDR I/F Cable2 | Used to charge and register the AeroDR Detector. Optional product. | |
| | AeroDR Portable XGCBL RF2 | Used to connect the AeroDR Portable RF Unit2 and the I/F Connection Cable. | |
| (3) | RF2 Gen Internal Cable | Used to connect the AeroDR Portable RF Unit2 and the AeroDR Portable S-SRM Cable. | |
| | I/F Connection Cable | | |
| (4) | AeroDR Portable S-SRM Cable | Relays signals between the X-ray device. | |
| (5) | AeroDR Portable AC Adapter | Used to supply power to the AeroDR Portable RF Unit2. | |
| (6) | RF2 H/S Internal Cable | Relays signals between the hand switch. | |
| (7) | Hand switch | When S-SRM connection is adopted, a hand switch is installed on AeroDR Portable RF Unit2. | |

• The RF2 H/S Internal Cable, RF2 Gen Internal Cable, and hand switch are included in the AeroDR Portable S-SRM KIT.

The AeroDR Portable XGCBL RF2 and I/F Connection Cable are used for Basic connection.

The AeroDR Portable S-SRM KIT and AeroDR Portable S-SRM Cable are used for S-SRM connection.

| 4 | |
|---|--|
| | |
| | |
| | |
| | |

• Refer to the "AeroDR SYSTEM/AeroDR SYSTEM 2 Operation Manual" regarding functions of the AeroDR Detector.

• Basic connection example



• Basic operation example



• S-SRM connection example



• S-SRM operation example



2.2.1 AeroDR Portable RF Unit2

The component names and functions of the AeroDR Portable RF Unit2 are as follows.



| Number | Name | Functions |
|--------|------------------------------|---|
| (1) | Cover | Protects the internal parts. |
| (2) | Connector mounting plate | Connects to various cables. |
| (3) | LAN port (LAN2) | Connects to the Ethernet cable (PoE). Used for connection to the access point. |
| (4) | Power cable connector socket | Connects to the power cable connector. |
| (5) | LAN port (LAN4) | Connects to the Ethernet cable. Connects to the image processing controller through the hub. |
| (6) | Base plate | Protects the internal parts. |
| (7) | LEDs | Displays the status of the AeroDR Portable RF Unit2. Preference For the display patterns and status of the LEDs, refer to "Chapter 4 Status (LED) Display". |
| (8) | LAN port (LAN1) | Directly connects LAN ports (LAN1) and (LAN3) with LAN cable. |
| (9) | LAN cable | Used to connect the LAN port (LAN1) and LAN port (LAN3). |
| (10) | USB Port | Connector for USB cable. |
| (11) | LAN port (LAN3) | Directly connects LAN ports (LAN1) and (LAN3) with LAN cable. |
| (12) | AeroDR Portable XGCBL RF2 | Used to connect the AeroDR Portable RF Unit2 and the I/F Connection Cable. |
| | RF2 Gen Internal Cable | Used to connect the AeroDR Portable RF Unit2 and the AeroDR Portable S- SRM Cable. |

2.2 Component names and functions

| Number | Name | Functions | |
|--------|-----------------------------|---|--|
| (13) | I/F Connection Cable | Relays signals between the X-ray device. | |
| | AeroDR Portable S-SRM Cable | The shape of the connector of I/F Connection Cable or AeroDR Portable S- SRM Cable varies according to the X-ray device to be connected. | |
| (14) | AeroDR I/F Cable2 | Used to charge and register the AeroDR Detector. | |
| (15) | Spring connector | Connects to the wired connection connector of the AeroDR Detector. | |
| (16) | Power cable connector | Connects to the power cable connector socket of the AeroDR Portable RF Unit2. | |
| (17) | Power cable | Used to supply power to the AeroDR Portable RF Unit2. | |
| (18) | AC Adapter | | |
| (19) | RF2 H/S Internal Cable | Relays signals between the hand switch. | |
| (20) | Hand switch | When S-SRM connection is adopted, a hand switch is installed in the AeroDR Portable RF Unit2. | |



General Operations

This chapter describes general operation methods of AeroDR Portable RF Unit2.

3.1 • Startup and shutdown

Operate the startup/shutdown of respective devices as follows.

3.1.1 Startup sequence of respective devices

The startup sequence of respective devices is as follows.



Confirm that the AeroDR Detector is ready for use on the image processing controller.

3.1.2 Startup of respective devices

The startup methods of respective devices are as follows.

• AeroDR Portable RF Unit2

• When AC Adapter is connected to the wall outlet, power of the AeroDR Portable RF Unit2 is turned on. Confirm that the power LED (green) lights.



Access Point

• When the power of AeroDR Portable RF Unit2 is turned on, the power of access point turns on.

C Reference

- For the start up of access point, refer to the operation manual of access point.
- •••••

• Image processing controller

 Start the image processing controller by turning the power switch of the image processing controller on.

• AeroDR Detector

 Press the power switch of the AeroDR Detector for 2 seconds and turn it on, and confirm that the LED (green) is slowly flashing or lit.



3.1.3 Shutdown sequence of respective devices

The shutdown sequence of the respective devices is as follows.

| AeroDR Detector |
|-----------------------------|
| Ų |
| Image processing controller |
| <u> </u> |
| AeroDR Portable RF Unit2 |
| |
| Access point |
| |

3.1.4 Shutdown of respective devices

The shutdown methods of the respective devices are as follows.

AeroDR Detector

• Press the power switch of the AeroDR Detector for 5 seconds to turn it off, and confirm that the LED (green) is turned off.



• Image processing controller

• Turn the power switch of the image processing controller off, and shutdown the image processing controller.

• AeroDR Portable RF Unit2

• When AC Adapter is removed from the wall outlet, the power is turned off and the LED (green) is turned off.



• Access Point

• When the power of AeroDR Portable RF Unit2 is turned off, the power of access point turns off.

C Reference

• For the shutdown of access point, refer to the operation manual of access point.

3.2 • Operation of AeroDR Portable RF Unit2 (Basic Connection)

[🖞 IMPORTANT]

- Do not use the AeroDR Portable RF Unit2 outdoors.
- Insert the AeroDR Portable RF Unit2 in the carrying case, and operate this unit with the carrying case open.
- Keep the carrying case at a stable place, and make sure this case will not get closed, or the cables will not get pinched during usage.
- To avoid intervention in a wireless communication, do not keep any object on the access point.
- When the AeroDR Portable RF Unit2 connect to the image processing controller with an Ethernet cable, use the hub.

3.2.1 Preparation for exposure

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The preparation for exposure with AeroDR Portable RF Unit2 is performed with the following procedure.

- 1 Open the carrying case, and remove the AeroDR Detector.
- 2 Connect the AeroDR Portable XGCBL RF2 to the I/F Connection Cable which is connected to the X-ray device.





AeroDR Portable RF Unit2

3 Turn the respective devices on.



• A wireless connection may take time after starting the access point.

C Reference

• Refer to "3.1 Startup and shutdown" for the startup operations of the respective devices.

4 Turn the X-ray device on.

3.2.2 Exposure

The exposure with AeroDR Portable RF Unit2 is performed with the following procedure.

- Remove the AeroDR I/F Cable2 from AeroDR Detector during exposure.
- When there is a wired connection between the AeroDR Portable RF Unit2 and image processing controller, remove the Ethernet cable (which is connected to the hub) from the image processing controller.
- 1 Check that respective devices are ready to expose images.
- 2 Register the exposure examination information on the image processing controller to be used for the X-ray device.
 - 🔊 HINT
 - When the inspection information is imported in advance, this procedure need not be applied. Select the inspection information on the list screen of image processing controller.

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C Reference

• Regarding the operation of the image processing controller, refer to the "Operation Manual" of the image processing controller.

- **3** Prepare for the exposure, press the exposure switch of the X-ray device and perform exposure.
 - When the exposure is completed, images are stored in the AeroDR Detector and will then be converted to digital data and sent to the image processing controller sequentially.

• During exposure, make sure there is no extreme bending or trip over the cables.

• •

4 Check that the exposed image is displayed on the image processing controller.

 The AeroDR Detector is precision equipment, and therefore impact or vibration during radiography or image transfer may affect the image quality. Be careful when handling the AeroDR Detector during and just after radiography.

السلم HINT

- If the AeroDR Detector remains unused for a long time (time can be set) it transitions to the sleep mode.
- When the image processing controller is ready to expose, it recovers from the sleep mode.

C Reference

• Regarding the operation of the image processing controller, refer to the "Operation Manual" of the image processing controller.

3.2.3 Operation after exposure

The operation after completing exposure is performed with the following procedure.

1 Turn the power of all devices off.

C Reference

• Refer to "3.1 Startup and shutdown" for the shutdown operations of the respective devices.

2 Remove the AeroDR Portable XGCBL RF2 from the I/F Connection Cable which is connected to the X-ray device.



- **3** Insert the AeroDR Detector and cables in the carrying case.
- 4 Go back to the establishment.
- 5 Output the image exposed from the image processing controller used in the X-ray device.
 - C Reference
 - Regarding the operation of the image processing controller, refer to the "Operation Manual" of the image processing controller.

6 Charge the AeroDR Detector and image processing controller.

Reference

- Refer to the "AeroDR SYSTEM/AeroDR SYSTEM 2 Operation Manual" regarding operation of AeroDR Detector.
- Regarding the operation of the image processing controller, refer to the "Operation Manual" of the image processing controller.

••••••

3.3 • Operation of AeroDR Portable RF Unit2 (S-SRM Connection)

🛱 IMPORTANT

- Do not use the AeroDR Portable RF Unit2 outdoors.
- Insert the AeroDR Portable RF Unit2 in the carrying case, and operate this unit with the carrying case open.
- Keep the carrying case at a stable place, and make sure this case will not get closed, or the cables will not get pinched during usage.
- To avoid intervention in a wireless communication, do not keep any object on the access point.

3.3.1 Preparation for exposure

The preparation for exposure with AeroDR Portable RF Unit2 is performed with the following procedure.

- 1 Open the carrying case, and remove the AeroDR Detector.
- 2 Connect the RF2 Gen Internal Cable to the AeroDR Portable S-SRM Cable which is connected to the X-ray device.



3 Connect the hand switch with the RF2 H/S Internal Cable.





 When registering an AeroDR Detector, use a wired connection to connect the AeroDR Portable RF Unit2 and image processing controller.

Image processing controller



4 Turn the respective devices on.



5 Turn the X-ray device on.

3.3.2 Exposure

The exposure with AeroDR Portable RF Unit2 is performed with the following procedure.

- Remove the AeroDR I/F Cable2 from AeroDR Detector during exposure.
- · When there is a wired connection between the AeroDR Portable RF Unit2 and image processing controller, remove the Ethernet cable (which is connected to the hub) from the image processing controller.
- When the battery level on the battery level display of built-in monitor image processing controller is less than 20%, perform exposure after charging the battery.
- 1 Check that respective devices are ready to expose images.
- 2 Register the exposure examination information on the image processing controller to be used for the X-ray device.
 - Ď£ HINT

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When the inspection information is imported in advance, this procedure need not be applied. Select the inspection information on the list screen of image processing controller.

|....

- C Reference
- · Regarding the operation of the image processing controller, refer to the "Operation Manual" of the image processing controller.

- 3 Prepare for the exposure and push the exposure switch up to the first stage.
 - · The exposure ready signal is sent to the X-ray device.



- 4 Push the exposure switch up to the second stage to perform exposure.
 - · Exposure is performed to produce X-ray images.
 - · When the exposure is completed, images are stored in the AeroDR Detector and will then be converted to digital data and sent to the image processing controller sequentially.



- Chapter 3
- 5 Check that the exposed image is displayed on the image processing controller.

IMPORTANT

The AeroDR Detector is precision equipment, and therefore impact or vibration during radiography or image transfer may affect the image quality. Be careful when handling the AeroDR Detector during and just after radiography.

∕⊅่≑ HINT

If the AeroDR Detector remains unused for a long time (time can be set), it transitions to the sleep mode.

- When the image processing controller is ready to expose, it recovers from the sleep mode.

͡ → Reference

Regarding the operation of the image processing controller, refer to the "Operation Manual" of the image processing controller.

1



Remove the hand switch from the RF2 H/S

X-ray device

AeroDR Portable RF Unit2

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3.4 • Example of insertion in carrying case

The shape or insertion method of carrying case is one example.

- Take note of the following when using the AeroDR Portable RF Unit2 or when storing and transporting it in the carrying case:
 - Treat it as a precision instrument during transport even while it is stored in the carrying case.
 - Transport or use within storage and usage environment conditions.
 - Do not leave in vehicles or outdoors during midsummer or midwinter.
 - Do not use outdoors during midsummer or midwinter.
 - When moving from outdoors to indoors during midsummer or midwinter, make sure condensation does not occur when opening the carrying case.
- Make sure that the carrying case is not placed upside down before opening the lid.

3.4.1 Main body side

• Upper section



Lower section



3.4.2 Lid side



3.5 • Charging and registration of AeroDR Detector

To charge/register the AeroDR Detector with AeroDR I/ F Cable2, follow the procedure below.

- Remove the AeroDR I/F Cable2 from AeroDR Detector during exposure.
- During charging, if the AeroDR Detector should become hot, stop charging immediately.
- If charging errors occur repeatedly, contact Konica Minolta technical representatives.
- The AeroDR Detector can be charged when the power is either on or off.
- The AeroDR Detector can be used while stopping charging in progress.

3.5.1 Charging of AeroDR Detector

- 1 Confirm that the LED (green) of the AeroDR Portable RF Unit2 lights.
- 2 Securely connect the AeroDR I/F Cable2 to the wired connection connector on the AeroDR Detector. Once it is connected, the AeroDR Detector will start charging.



- **3** Once the AeroDR Detector is connected properly and charging starts, the LED (blue) on the AeroDR Portable RF Unit2 will light.
- 4 Once the charging of the AeroDR Detector is higher than 10%, the LED (blue) on the AeroDR Detector will go out.

🔊 🖧 HINT

Confirm completion of full charge and the level of battery power with the image processing controller.

- If there is any problem during charging, the LED (orange) on the AeroDR Detector will light. Also, charging will stop when an error occurs.
- ••••••

3.5.2 Charging time guide

To fully charge the AeroDR Detector requires the following charging time.

AeroDR 1417HQ/AeroDR 1417S/ AeroDR 1717HQ

| Charging status | Charging time of the AeroDR Detector when the power is off |
|-----------------|--|
| Via wired cable | 60 minutes or less |

• AeroDR 1012HQ

| Charging status | Charging time of the AeroDR Detector when the power is off |
|-----------------|--|
| Via wired cable | 30 minutes or less |

AeroDR 2 1417HQ

| Charging status | Charging time of the AeroDR Detector when the power is off |
|-----------------|--|
| Via wired cable | 30 minutes or less |

• AeroDR 2 1417S

| Charging status | Charging time of the AeroDR Detector when the power is off |
|-----------------|--|
| Via wired cable | 17 minutes or less |

• When the AeroDR Detector is on, the charging time will be slightly longer as it depends on the operation status.

3.5.3 Registration of AeroDR Detector

- When registering the AeroDR Detector with AeroDR I/F Cable2, there must be a wired connection between AeroDR Portable RF Unit2 and image processing controller.
- 1 Securely connect the AeroDR I/F Cable2 to the wired connection connector on the AeroDR Detector.
 - Registration process will start.



2 Confirm that the AeroDR Detector icon is displayed on the image processing controller.



Status (LED) Display

This chapter describes the LED display patterns and the status of the respective devices.

4.1 • LED display

Status of the AeroDR Portable RF Unit2 can be confirmed with LEDs. Check the status of the AeroDR Portable RF Unit2, referring to the "LED display pattern".

LED display pattern

| Notation | Display pattern |
|----------|-----------------|
| | Off |
| | On |

4.1.1 AeroDR Portable RF Unit2



①: Power LED (green)

| Display pattern | Status | |
|-----------------|--------------------|--|
| | Shutdown condition | |
| | Operating | |

Connection: Connect LED (blue)

| Display pattern | Status | |
|-----------------|--|--|
| | Shutdown condition or not connected to the AeroDR Detector | |
| | Connected to the AeroDR Detector | |

Chapter 5

Troubleshooting

This chapter describes problems that may occur and error codes that may be displayed, and how to resolve each of them.

5.1 • Various problems and countermeasures

If the following problems occur with AeroDR Portable RF Unit2, consult the respective references for countermeasures.

After performing countermeasures, if the problem does not go away, contact Konica Minolta technical representatives.

HINT
 When an error message has been displayed in the image processing controller, check the error description and countermea-

sures listed in the "Operation Manual" of the image processing controller.

5.1.1 AeroDR Portable RF Unit2

| Status | Error description | Corrective actions |
|---|---|--|
| Power LED (green) does not light. | The AC adapter is disconnected. | Make sure that the AC adapter is connected correctly. |
| Connect LED (blue) does not light. | The AeroDR Detector and AeroDR I/F Cable2 are not properly connected. | Make sure that the AeroDR Detector and AeroDR I/F Cable2 are properly connected. |
| | When the image processing controller has a wired connection, the Ethernet cable is not connected. | Make sure that the Ethernet cable is connected correctly. |
| | The wired/wireless selector switch of the image processing controller is not on. | Turn on the wired/wireless selector switch of the image processing controller. |
| No communication between AeroDR Detector and image | The power supply of AeroDR Portable RF Unit2 is not turned on. | Make sure that the AC adapter is connected correctly to the AeroDR Portable RF Unit2. |
| processing controller. | Error is occurring in the AeroDR Detector. | Refer to the "AeroDR SYSTEM/AeroDR SYSTEM 2 Operation Manual", and restart the AeroDR Detector. |
| | AeroDR Detector battery level is low. | Refer to the "AeroDR SYSTEM/AeroDR SYSTEM 2 Operation Manual", and restart the AeroDR Detector. |
| The image display on image processing controller is slow. | When the image processing controller has a wireless connection, the wireless environment is not good. | During exposure, point the opening of the carrying case towards the AeroDR Detector or image process controller to improve wireless environment. |



Maintenance

This chapter describes the items that require periodic maintenance.

6.1 • Maintenance and inspection items

This chapter describes the inspections and cleaning required in order to maintain the use of AeroDR Portable RF Unit2 in an optimum condition.

6.1.1 Maintenance schedule

The maintenance and inspection items that the user should perform are as follows.

| Maintenance task | Mainte- nance interval |
|--|------------------------------|
| Checking and cleaning the surface of the AeroDR Portable RF Unit2 | Weekly |
| Checking for external damage to the AeroDR Portable RF Unit2 | Weekly |
| Cleaning the spring connectors of the AeroDR I/F Cable2 | Weekly |

[二] IMPORTANT

- To ensure optimum use of AeroDR Portable RF Unit2, be sure to perform periodic maintenance.
- The above task intervals are estimates and vary according to usage.

6.1.2 Cleaning

The cleaning methods of the AeroDR Portable RF Unit2 are as follows.

- Be careful not to apply any cleaning chemical or liquid onto the LEDs, respective cable connections, and spring connectors.
- Do not clean with sharp or hard metal objects. If you cannot remove stains, contact Konica Minolta technical representatives.

• AeroDR Portable RF Unit2

 Clean the dust on the AeroDR Portable RF Unit2 with a soft cloth dampened with dehydrated alcohol or water.



Respective cable connections LEDs

• Spring connector

• If foreign material has adhered to the spring connectors of the AeroDR I/F Cable2, remove it with a commercial plastic brush.



6.1.3 Consumables

다 IMPORTANT

- Refer to each device's manual for information about periodic replacement parts and consumables for the image processing controller, etc.
- In particular, continued use of the battery may result in degradation and wear, and it may no longer exhibit proper functioning capabilities. For extended, safe use, it is necessary to replace parts which have become worn or degraded.

Chapter **7**

Specifications

This chapter describes the specifications of respective devices.

7.1 • Specifications

• The specifications and graphs described below are nominal values which may be different from actual values, and may vary depending on environment and frequency of use. (These are not to provide any guarantees.)

7.1.1 AeroDR Portable RF Unit2

| Item | Description | | |
|---|--|--|--|
| Product name | AeroDR Portable RF Unit2 | | |
| Power requirements | AC 100/110/115/120/200/220/230/240V ± 10%, single phase 50/60Hz | | |
| Power consumption | Approx. 150VA (100 to 240V) | | |
| External dimensions | 298(W)×160(D)×50(H)mm 50mm 160mm 298mm | | |
| Weight | 1.28kg | | |
| A eroDR Portable AC Adapter Specifications | Product Name: Switching Adapter (Model Number. Cincon Electronics Co.,Ltd. TR100M480)Dimensions:142x58x37 mm (excluding cables)Weight:485gINPUT:AC100-240V 1.5-0.6A 47-63HzOUTPUT:DC48V 2.1A | | |

7.1.2 AeroDR I/F Cable2

| Item | Description | | |
|---------------------|----------------------|--|--|
| Product name | AeroDR I/F Cable2 | | |
| Cable length | 1m | | |
| External dimensions | 42mm 14mm 79mm | | |

7.1.3 General AeroDR Portable RF Unit2

| Item | Description | | | |
|--|--------------------------|---------------------------------------|--|---------------------------------|
| | | Temperature | Humidity | Atmospheric pressure |
| | When operating | 10 to 30°C | 35 to 80% RH (ensure no water condensation) 35 54H | 700 to 1060hPa |
| | | | | |
| | When not operating | Temperature | Humidity | Atmospheric pressure |
| Recommended storage and usage environment conditions | | -10 to 40°C | 20 to 90% RH (ensure no water condensation) | 700 to 1060hPa |
| | | | | |
| | In storage/ transport | Temperature | Humidity | Atmospheric pressure |
| | | -20 to 60°C ^{*1} | 20 to 90% RH (ensure no water condensation) | 700 to 1060hPa |
| | | *1 However, performance w | varranty period when storing at | 60°C is 6 months after packing. |
| Classification | Safety IEC6 | C60601-1 internally-powered equipment | | |

7.1.4 Product configuration

This device must be configured as shown below.

• EU and EFTA countries and Turkey

| Product Name | Component name in this manual | Component name in Label |
|-----------------|-------------------------------|----------------------------|
| AeroDR SYSTEM 2 | AeroDR Portable RF Unit2 | AeroDR Portable RF Unit2 |
| | | AeroDR Portable AC Adapter |

• Cables and minor components

Specific components described in operation manual of the specific components are not described in the following table.

| Product Name | Component name in this manual | Component name in Label |
|-----------------|-------------------------------|-----------------------------------|
| AeroDR SYSTEM 2 | I/F Connection Cable | AeroDR Portable XGCBL RF2 |
| | | AeroDR Portable XGCBL PX20HF Plus |
| | | AeroDR Portable XGCBL RJ-45 |
| | AeroDR Portable S-SRM Cable | AeroDR Portable S-SRM Cable |

• The I/F Connection Cable and AeroDR Portable S-SRM Cable may be subject to add/change without prior notice for improvements.



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