

DR-ID 900PU

Operation Manual

2nd Edition : July 2013

For Safe Operation

**System
Configuration
(Product Overview)**

Basic Operation

**Daily Inspection and
Maintenance**

Appendix

**Maintenance and
Inspection**

Introduction

DR-ID 900PU is an X-ray equipment which acquires a general radiograph from the indirect-conversion flat panel sensor.

DR-ID 900PU consists of DR-ID 900MP and DR-ID 911SE/DR-ID 601SE/DR-ID 602SE/DR-ID 611SE/DR-ID 613SE.

DR-ID 911SE, DR-ID 601SE, DR-ID 602SE, DR-ID 611SE and DR-ID 613SE :Wireless communication mode or wired communication mode is available. When used in wireless communication mode, an access point*1, battery pack (optional) and battery charger (optional) are required.

*1 In the countries other than the U.S., an access point is not included as a component of the system. For details including installation, consult our official dealer.

Each flat panel sensor complies with IEC 62220-1 (MEDICAL ELECTRICAL EQUIPMENT - CHARACTERISTICS OF DIGITAL X-RAY IMAGING DEVICES -) as a general X-ray radiography equipment.

The detector of flat panel sensors features 150 micron pixel pitch, a wide 16-bit dynamic range and exposure times up to 3.8 seconds.

This Operation Manual includes descriptions of matters necessary when using the DR-ID 900PU such as the equipment overview, operation procedures and precautions to observe, as well as daily inspections and maintenance.

Accompanying documents were originally drafted in the English language.

Installation may only be conducted by authorized service personal.



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This system is classified as a medical device under EC Directive 93/42/EEC.

Process waste correctly, as stipulated by local law or any regulations that apply.

Caution : Rx Only in the United States (Federal law restricts this device to sale by or on the order of a physician.)

Open-Source Software Used in This Product

This product uses third party's software that is made available as open source software or free software. For information on open source software used in this product, please see the attached CD. Source codes for certain type of open source software used in this product are available at delivery cost. If you would like to receive such source codes, please contact FUJIFILM dealer or the service representatives at the agency from which you purchased this product. (Please be noted that any inquiries concerning the contents of source codes should be directed to original licensors of open source software.)

Note : FUJIFILM has successfully performed verification and validation testing on all third party software and has confirmed its suitability to be used in this system.

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Maintenance and Inspection

Chapter 1 For Safe Operation

1.1 Safety

Before using the DR-ID 900PU, read this section thoroughly to ensure that you use the product properly.

Electric Shock Warnings and Cautions



WARNING

The power supply to the DR-ID 900PU is AC100 to 240V.

To avoid electric shocks, users should always take the following precautions:

- Never open any covers of the equipment.
- Install the equipment in a location where it will not be exposed to water.
- Check that the equipment is securely earthed.
- Check that all of the cords and cables are completely and securely connected.
- Keep the image processing unit and the control cabinet out of reach of patients.



WARNING

Do not touch the patient's body while touching the control cabinet. Otherwise, the patient may receive an electric shock.



WARNING

Do not use a multiple tap connector or extension cable for powering the devices constituting the system. Otherwise, fire or electric shock may occur due to the electrical load exceeding the allowable limit.



WARNING

Observe the following precautions when using the cables.

- Turn off each unit before connecting/disconnecting the cable.
Do not touch the plug and connector with wet hands. Otherwise, electric shock may result, causing death or severe injury.
- Hold the plug or connector when removing the cable.
Pulling the cable or carrying by holding it may damage the cable, causing fire or electric shock.
- Do not damage or remodel the cable.
Do not place a heavy object on the cable or lay it under the flat panel sensor. Do not step on, pull, forcibly bend, or bundle the cable. Otherwise, fire or electric shock may result.
- Do not use the flat panel sensor for the radiographic examination stand if its cable becomes overloaded. Otherwise, the cable may be damaged, causing fire or electric shock.



WARNING

Do not turn on the system with dew condensation on the flat panel sensor. Otherwise, fire or electric shock may result.



WARNING

Do not use the equipment in a location where metal particles could come into the equipment. This may cause an electric shock.



WARNING

Do not disassemble or remodel the equipment. Otherwise, fire or electric shock may result. Keep away from the parts inside the product, which may cause electric shock. If you touch them accidentally, death or severe injury may result.



WARNING

Do not hit or drop the equipment or subject it to severe shock. Otherwise, the equipment may be damaged. If the damaged equipment is used, fire or electric shock may result.



WARNING

Do not use the flat panel sensor when the battery cover and the battery pack are not installed. Doing so may cause electric shock



WARNING

Make sure to use the optional parts and accessories recommended by us. Failure to use the optional parts and accessories recommended by us may result in electric shock or injury.



CAUTIONS

As the cables of the equipment are long, be careful not to entangle the cables during use. Also, be careful not to trip over the cables. Falls could result in injury.



CAUTIONS

Be sure to follow the specified procedure when turning off the power of the equipment. Otherwise, the flat panel sensor could be damaged.



CAUTIONS

Do not store magnetic media near the DR system and control cabinet. Otherwise, magnetism generated by the equipment may cause the data to be lost.



CAUTIONS

Keep the equipment away from patient's body fluids, chemicals, water, etc. Otherwise, it may become damaged, causing fire or electric shock. If necessary, protect the flat panel sensor by covering it with a disposable bag.

Explosion Warnings



WARNING

Because this equipment is not explosion-proof, do not use combustibles and explosive gases near the equipment.



WARNING

Flammable gasses may stay in the room after disinfection. Ventilate the room well before powering on the equipment following disinfection.

Warnings for Abnormalities



WARNING

If any of the following occurs, immediately turn off the power of each unit, unplug the power cable from the outlet, and then contact a FUJIFILM dealer.

- When smoke, strange odor, or abnormal sound is present.
- When a foreign object (such as a metal object) or liquid enters the product.
- When the equipment is dropped or hit and is damaged.

Installation Precautions



CAUTIONS

Do not install the equipment in a location with the following conditions.

- Where the temperature changes sharply.
- Close to heat sources such as a heater.
- Where the equipment may be exposed to water due to water leakage or ingress.
- Where corrosive gas may be generated.
- Where there is excessive dust.
- Where the equipment is subject to frequent or excessive vibration/shock.
- Where the equipment is exposed to direct sunlight.



CAUTIONS

For veterinary or mobile applications, please contact a certified FUJIFILM service representative.



CAUTIONS

Use the system indoor in wireless communication mode. For details, contact a FUJIFILM dealer.



CAUTIONS

Do not place any object in a place where removal of the power cable is prevented.

Connection Instructions



WARNING

Make sure that the devices to be connected to the equipment are authorized for connection.



WARNING

Connect the DR-ID 900PU only to the designated control cabinet (DR-ID 900MC). When the DR-ID 900PU is connected to X-ray equipment, make sure that the equipment complies with IEC 60601-1.

Warning regarding radiographic examination stands



WARNING

In the case of using this product in combination with an upright-type or bed-type radiographic examination stand, select an upright-type or bed-type radiographic examination stand whose aluminum equivalent, of the front panel of the upright-type radiographic examination and the top of the bed-type radiographic examination or the like, complies with IEC 60601-1-3: 2008/EN 60601-1-3: 2008.

Precautions on External Network Connection



CAUTIONS

When a setting of the network to which the equipment is connected has been changed, check that the change does not affect the system operation and take measures if necessary.

The setting change may include the following:

- Change of connection destination
- Addition of devices
- Removal of devices
- Update of devices
- Upgrade of devices

Software Precautions



CAUTIONS

Connect to the Ethernet Network of 1000BASE-T, 100BASE-TX, or 10BASE-T prescribed in the IEEE standard 802.3.

Do not connect telephone lines to LAN connector. Only UTP-type straight LAN cables of 4-pair Category 5 cable (CAT 5E) or higher are appropriate for connection to this connector.



CAUTIONS

After connecting this system to the network with other systems, confirm that the other systems are not affected. If they are affected, take countermeasures such as network separation.

System Isolation Instructions



WARNING

To ensure complete system isolation, never install any unauthorized accessories or other such items.

When it is necessary to install authorized accessories or optional items, contact a FUJIFILM dealer.



WARNING

Keep equipment other than those used for patients out of their reach to ensure appropriate system isolation.



WARNING

Do not move the Console from where it is installed.



WARNING

In normal use, have a patient take a proper positioning for exposure. The operator should operate the system in a place where safety from radiation is ensured. The operator should also make sure before exposure that no one but the patient is in the exposure area and the operating area of the system.

Software Precautions



CAUTIONS

Do not install additional software to the system. Do not uninstall any of the software preinstalled in the system.

The system is preinstalled with the appropriate software. If other software is installed or if the existing software is uninstalled, various operational errors may result.

Various operational errors may result.

Disinfection Instructions



WARNING

Confirm that the respiratory density of disinfectant including solvent is under legal regulation. Certain disinfectants may damage health. When using a disinfectant, follow instructions supplied by the manufacturers.



WARNING

Ethanol for disinfection is recommended as the disinfectant. Carefully read the instructions and cautions supplied with the disinfectant before use. Do not use the following when disinfecting. Otherwise, the equipment may be damaged, and its quality, performance, and safety cannot be guaranteed.

- Chloric disinfectant which is strongly corrosive to metals and rubber parts.
- Disinfectant whose use on metals, plastics, and coating is forbidden according to the instructions supplied with the disinfectant.
- Formalin gas and disinfectant sprays that may get inside the equipment.
- Ultraviolet sterilizers



CAUTIONS

Clean the sensor unit of the flat panel sensor with ethanol for disinfection, etc. for each patient to prevent infection.

Precautions for Charging the Battery



CAUTIONS

- Use the battery charger recommended by FUJIFILM Corporation.
For details on operations, refer to the instruction manual for the battery charger.
- Do not charge the battery pack near fire or under strong sunshine. If the built-in protection mechanisms are activated by a high temperature, the battery pack cannot be charged. Also, if the built-in protection mechanisms are damaged, the battery pack may be charged with extremely high current and voltage, and abnormal chemical reactions may occur inside the battery pack, causing it to overheat, emit smoke, explode or ignite.
- Immediately stop charging the battery pack, if charging is not completed within the specified time. Otherwise, the battery pack may overheat, emit smoke, explode or ignite.
- Do not use the flat panel sensor near the AC adapter.
- Do not use the broken battery charger.

Battery Pack (Optional) Precautions



WARNING

If this equipment is not in use for while, store it with the battery pack removed. Not removing the battery pack may cause malfunction.



CAUTIONS

Be sure to observe the following cautions when using the battery pack (optional).

- Do not use the battery pack with any device other than those designated by FUJIFILM Corporation.
- Charge the battery pack only with the designated battery charger. If the battery pack is charged under the charging conditions (voltage, current and charging method) different from those specified by FUJIFILM Corporation, the battery pack may emit smoke, ignite, explode or leak fluid.
- When storing the battery pack (125N100050) for a long period, charge the battery fully, remove it from the flat panel sensor and then store it in a cool and dark place. Recharge the stored battery every six months or every year. Otherwise a decrease in battery capacity or other problems may result.
- Do not leave the removed battery pack in a car or other place exposed to high temperature.
- Use and store the battery pack only in the environmental conditions specified by FUJIFILM Corporation. If the battery pack is used or stored in a place where it is exposed to high temperature, the battery pack may emit smoke, ignite, explode or leak fluid.
- When disposing of the battery pack, consult our official dealer.
- Do not disassemble or remodel the battery pack. The battery pack is equipped with built-in safety and protection mechanisms. If they are damaged, the battery pack may overheat, emit smoke, explode or ignite.
- Do not connect the positive (+) and negative (-) terminals of the battery pack using any metal object, such as a wire. Do not carry or store the battery pack together with metal objects such as necklaces or hairpins. Otherwise, the battery pack may short-circuit and overcurrent may flow, causing the battery pack to overheat, emit smoke, explode or ignite. Metal objects such as necklaces or hairpins may also become hot.
- Do not throw the battery pack into fire or expose it to excessive heat. Otherwise, its insulator may melt, its gas release vent or safety mechanisms may be damaged, and/or its electrolyte may catch fire, causing the battery pack to overheat, emit smoke, explode or ignite.
- Do not use or leave the battery pack in a place where it is exposed to high temperature (80°C or higher), such as fire or a heater. If the resin separator is damaged due to heat, the battery pack may short-circuit, causing it to overheat, emit smoke, explode or ignite.
- Do not immerse the battery pack in water or seawater, and do not allow it to become wet. If the built-in protection mechanisms are damaged, the battery pack may overheat, emit smoke, explode or ignite.
- Do not pierce the battery pack with a nail, hit it with a hammer, or step on it. Otherwise, the battery pack may be damaged or deformed and short-circuit, causing it to overheat, emit smoke, explode or ignite.
- Do not subject the battery pack to strong impact or throw it. If the built-in protection mechanisms are damaged, the battery pack may be charged with extremely high current and voltage, and abnormal chemical reactions may occur inside the battery pack, causing it to overheat, emit smoke, explode or ignite.
- Do not use an apparently damaged or deformed battery pack. Otherwise, the battery pack may overheat, emit smoke, explode or ignite.
- Do not solder the battery pack directly. Otherwise, its insulator may melt, or its gas release vent or safety mechanisms may be damaged, causing the battery pack to overheat, emit smoke, explode or ignite.
- Do not reverse the positive (+) and negative (-) terminals of the battery pack. Otherwise, the battery pack may be reverse-charged during charging. As a result, abnormal chemical reactions may occur inside the battery pack, or extremely high current may flow during discharging, causing it to overheat, emit smoke, explode or ignite.
- The battery pack has a predetermined polarity. If you cannot connect the battery pack to the battery charger or other equipment, do not connect the battery pack forcefully. Make sure that the terminals are correctly oriented. If the battery pack is connected in reverse, it will be reverse-charged, and abnormal chemical reactions may occur inside the battery pack, causing it to overheat, emit smoke, explode or ignite.
- Do not connect the battery pack to an electrical outlet or cigarette lighter socket in a car. Overcurrent may flow to the battery pack due to high voltage applied, causing the battery pack to overheat, emit smoke, explode or ignite.
- Do not use the battery pack for equipment other than those specified. Otherwise, the guaranteed performance will be reduced and/or the service life will be shortened. Depending on the equipment to which the battery pack is connected, extremely high current may flow,

causing the battery pack to be damaged, overheat, emit smoke, explode or ignite.

- If the electrolyte leaked from the battery pack enters the eyes, do not rub them. Wash the eyes immediately with clean water such as tap water, and consult a doctor. Otherwise, eye injury may result.
- Do not use the battery pack in combination with a primary battery such as a dry battery or other battery of a different capacity, type and/or brand. Otherwise, the battery pack may be overcharged during charging, and abnormal chemical reactions may occur inside the battery pack, causing it to overheat, emit smoke, explode or ignite.
- Do not put the battery pack in a microwave oven or high-pressure container. Otherwise, the battery pack may be rapidly heated or damaged, causing it to overheat, emit smoke, explode or ignite.
- If the battery pack leaks or emits an unusual odor, remove it from fire immediately. Otherwise, the leaked electrolyte may catch fire, causing the battery pack to overheat, emit smoke, explode or ignite.
- If you notice an unusual odor, heat, discoloration, deformation or any other abnormality during use, charging or storage, remove the battery pack from the equipment or battery charger, and stop using it. Otherwise, the battery pack may overheat, emit smoke, explode or ignite.
- Do not use the battery pack exposed to a strong magnetic field of an MRI system, etc.
- Do not use the battery pack immersed in liquid.

Other Warnings and Cautions



WARNING

No modification of this equipment is allowed.



CAUTIONS

Install the system in accordance with what is provided by IEC60601-1-1. Contact a FUJIFILM dealer for installation and relocation (except the flat panel sensor) of the system.



CAUTIONS

Do not hit or drop the equipment. Otherwise, injury or damage to images, etc. may result.



CAUTIONS

Be sure to inspect the system periodically.

To assure optimum performance of the equipment, it is necessary to systematically perform maintenance and inspection. For information on maintenance and inspection, contact a FUJIFILM dealer.



CAUTIONS

The institution where the equipment is installed is responsible for its use and maintenance. In addition, this equipment should not be used by persons other than doctors or suitably trained staff.



CAUTIONS

Do not place the cable terminal on the floor. Doing so may cause infection. Also, periodically clean the cable and the terminal.



CAUTIONS

The institution where the equipment is installed is responsible for its use and maintenance. In addition, this equipment should not be used by persons other than doctors or suitably trained staff.

Contraindications and Prohibitions

No contraindications present.

Classification

- According to the type of protection against electrical shock
Wired communication mode: Class 1 equipment (stationary)
Wireless communication mode: Internal power supply
- According to the degree of protection against electrical shock
Type B applied part
- According to the degree of protection against harmful ingress of water
IPX0
- According to the degree of safety of application in the presence of a flammable anesthetics mixture with air or with oxygen or nitrous oxide.
Equipment not suitable for use in the presence of a flammable anesthetics mixture with air or with oxygen or nitrous oxide.
- According to the mode of operation
CONTINUOUS OPERATION

1.2 Electromagnetic Compatibility (EMC)

1.2.1 DR-ID 900PU

DR-ID 900PU consists of DR-ID 900MP and DR-ID 911SE/DR-ID 601SE/DR-ID 602SE/DR-ID 611SE/DR-ID 613SE.

This equipment has been tested and found to comply with the limits for medical devices to the IEC 60601-1-2:2001+A1:2004/EN 60601-1-2:2001+A1:2006, IEC 60601-1-2:2007/EN 60601-1-2:2007, Medical Device Directive 93/42/EEC.

These limits are designed to provide reasonable protection against harmful interference in a typical medical installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to other devices, which can be determined by tuning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving device.
- Increase the separation between the equipment.
- Connect the equipment into an outlet on a circuit different from that to which the other device(s) are connected.

If the problem cannot be solved with the above measures, stop using this equipment and consult the manufacturer or our official dealer for help.



WARNING

- **Do not place devices generating electromagnetic wave near this equipment.**
- **If a device(s) other than those specified is connected, predetermined EMC performance cannot be guaranteed.**

Further information for IEC 60601-1-2 (EN60601-1-2)

1. Medical electrical equipment needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in the accompanying documents.
2. Portable and mobile RF communications equipment can affect medical electrical equipment.
3. Information regarding the cable affecting EMC is as follows.

Name	Maximum Length	General Specification
Network Cable	30m (98.4 ft.)	Cat5e or more, UTP type and straight cable
Power Cable	3m (9.8 ft.)	Use a hospital grade power cable. (for North America)
		A non-hospital grade power cable can be used. (for other countries)

4. The use of accessories, transducers and cables other than those specified, with the exception of transducers and cables sold by FUJIFILM Corporation as replacement parts for internal components, may result in increased emissions or decreased immunity of the DR-ID 900PU.
5. The DR-ID 900PU should not be used adjacent to or stacked with other equipment.
If adjacent or stacked use is necessary, the DR-ID 900PU should be observed to verify normal operation in the configuration in which it will be used.
6. Basic performance of the equipment and the system
After image data are acquired from the panel unit (DR-ID 900PU), data correction is performed by the control unit (DR-ID 900MC), and the image is saved in and displayed on the image processing unit.
7. Test items (Tables 1 to 4)

Table 1

Table 1

Guidance and manufacturer's declaration - electromagnetic emissions			
The DR-ID 900PU is intended for use in the electromagnetic environment specified below. The customer or the user of the DR-ID 900PU should assure that they are used in such an environment.			
Emissions test	Compliance		Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1		The DR-ID 900PU uses RF energy only for their internal function. Therefore, their RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. The DR-ID 900PU is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
RF emissions CISPR 11	Class A		
Harmonic emissions IEC61000-3-2	Complies	Class A	
Voltage fluctuations/ flicker emissions IEC61000-3-3	Complies		

Table 2

Guidance and manufacturer's declaration - electromagnetic immunity			
The DR-ID 900PU is intended for use in the electromagnetic environment specified below. The customer or the user of the DR-ID 900PU should assure that they are used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC61000-4-2	±6kV contact ±8kV air	±6kV contact ±8kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC61000-4-4	±2kV for power supply lines ±1kV for input/output lines	±2kV for power supply lines ±1kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC61000-4-5	±1kV differential mode ±2kV common mode	±1kV differential mode ±2kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC61000-4-11	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 s	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If the user of the DR-ID 900PU requires continued operation during power mains interruptions, it is recommended that the DR-ID 900PU be powered from an uninterruptible power supply or a battery.
Power frequency (50/60Hz) magnetic field IEC61000-4-8	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 environment.
NOTE: U_T is the a.c. mains voltage prior to application of the test level.			

Table 3

Guidance and manufacturer's declaration - electromagnetic immunity			
The DR-ID 900PU is intended for use in the electromagnetic environment specified below. The customer or the user of the DR-ID 900PU should assure that they are used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the DR-ID 900PU, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
Radiated RF IEC61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	Recommended separation distance $d = 1.2\sqrt{P}$ $d = 1.2\sqrt{P} \quad 80 \text{ MHz to } 800 \text{ MHz}$ $d = 2.3\sqrt{P} \quad 800 \text{ MHz to } 2.5 \text{ GHz}$ 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 metres (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 1: At 80 MHz and 800 MHz, the higher frequency range applies.			
NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
a Field strength 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 the DR-ID 900PU is used exceeds the applicable RF compliance, the DR-ID 900PU should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the DR-ID 900PU. b Over the frequency range 150 kHz to 80 MHz, field strength should be less than 3 V/m.			

Table 4

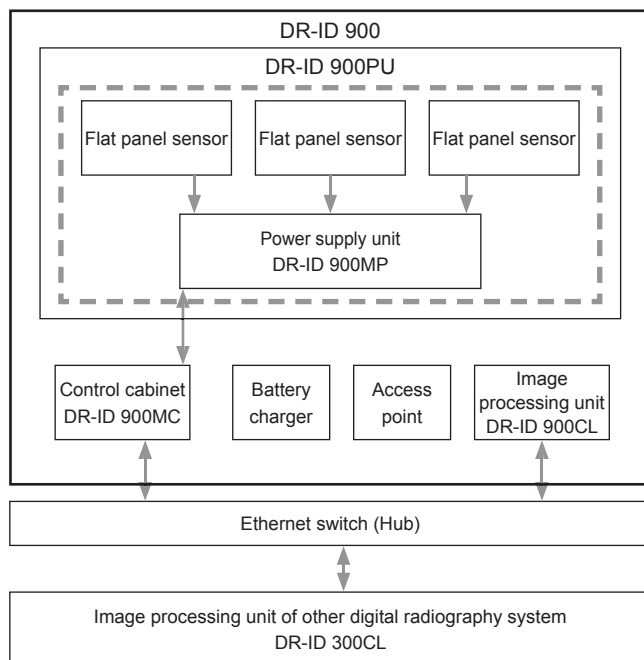
Recommended separation distances between Portable and mobile RF communications equipment and the DR-ID 900PU			
The DR-ID 900PU is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the DR-ID 900PU can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the DR-ID 900PU as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	80 MHz to 800 MHz $d = 1.2\sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3\sqrt{P}$
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	7.3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (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 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

Chapter 2 System Configuration (Product Overview)

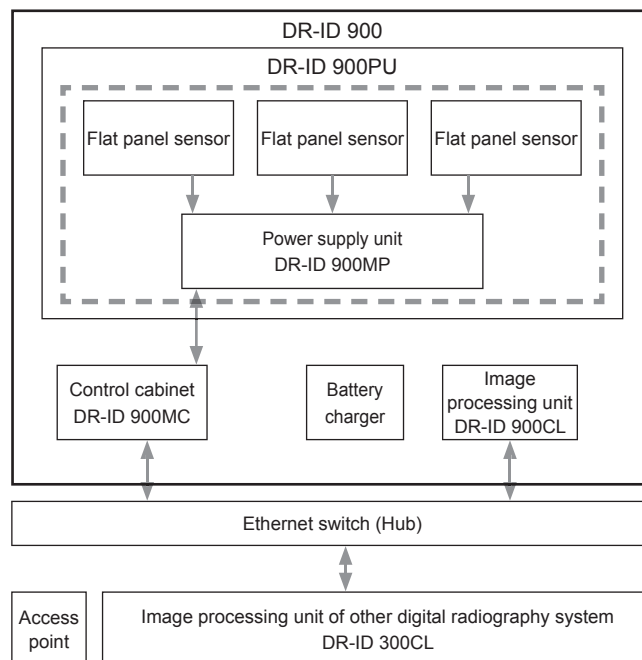
2.1 DR-ID 900PU

2.1.1 System Configuration

For the U.S.



For other countries



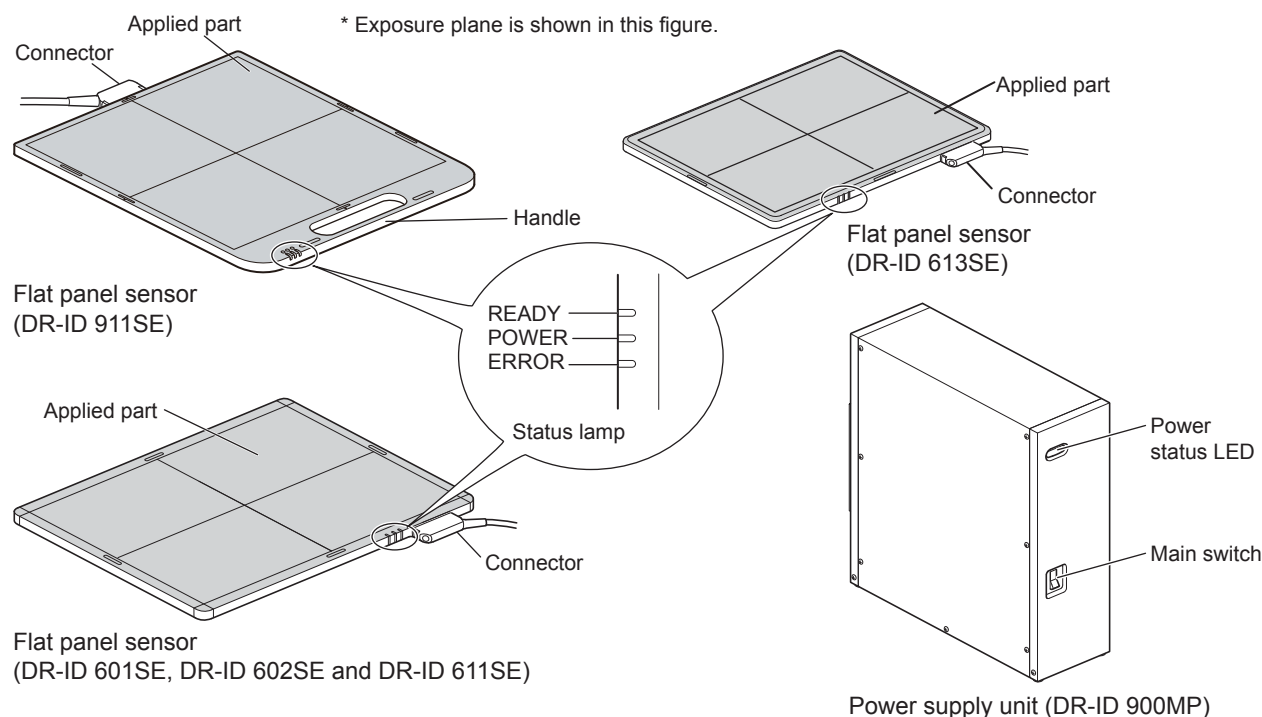
- The products in  can be installed in patient environment.
- The FDR D-EVO Advanced consists of the DR-ID 900RU and the image processing unit.
- An access point is used only in wireless communication mode.
- * The configuration of the system varies depending on the country.
- One to four flat panel sensors can be connected to one power supply unit. If you connect all four flat panel sensors in wired communication mode or use them with three different techniques, two power supply units are required.
- The flat panel sensor can be used in wireless communication mode or wired communication mode.
- Up to four flat panel sensors can be connected in wired or wireless communication mode in DR-ID 900PU.

However, either of the following conditions must be met:

- Two DR-ID 911SE flat panel sensors are connected in wired communication mode. (More than three flat panel sensors cannot be connected in wired communication mode.)
- Any two of the DR-ID 601SE, DR-ID 602SE, DR-ID 611SE and DR-ID 613SE flat panel sensors are connected in wired communication mode.

2.2 Unit Names and the Functions

Unit names and the functions of the DR-ID 900PU are described below.



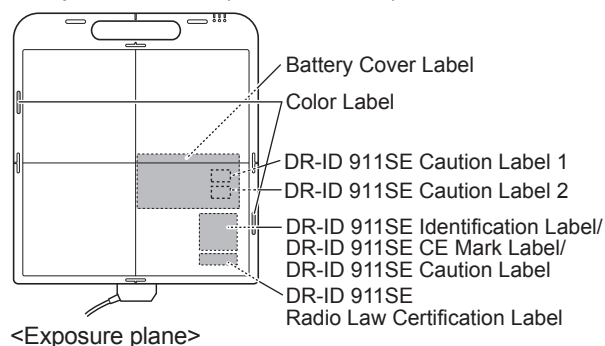
Name	Description																																	
Flat panel sensor DR-ID 911SE, DR-ID 601SE, DR-ID 602SE, DR-ID 611SE and DR-ID 613SE	They incorporate a GOS indirect panel. However, the DR-ID 611SE and DR-ID 613SE incorporates a Csl indirect panel. Wireless communication mode or wired communication mode can be used.																																	
Status lamp	Indicates the equipment status by LEDs. <table><tr><td rowspan="3">READY  (Green)</td><td>On</td><td colspan="2">Exposure possible</td></tr><tr><td>Blinks for 1.0 second.</td><td colspan="2">During exposure sequence</td></tr><tr><td>Off</td><td colspan="2">Ready</td></tr><tr><td rowspan="5">POWER  (Green) (In wireless communication mode, the status of the battery pack is indicated. In wired communication mode, the power status is indicated.)</td><td></td><td>Wireless</td><td>Wired</td></tr><tr><td>On</td><td>OK (Power ON)</td><td>Power ON</td></tr><tr><td>Blinks for 1.0 second.</td><td>Less than 10 min.</td><td>–</td></tr><tr><td>Off</td><td>Empty (Power OFF)</td><td>Power OFF</td></tr><tr><td rowspan="3">ERROR  (Orange)</td><td>On</td><td colspan="2">Communication not possible.</td></tr><tr><td>Blinks for 1.0 second.</td><td colspan="2">Error occurred</td></tr><tr><td>Off</td><td colspan="2">Normal</td></tr></table>	READY  (Green)	On	Exposure possible		Blinks for 1.0 second.	During exposure sequence		Off	Ready		POWER  (Green) (In wireless communication mode, the status of the battery pack is indicated. In wired communication mode, the power status is indicated.)		Wireless	Wired	On	OK (Power ON)	Power ON	Blinks for 1.0 second.	Less than 10 min.	–	Off	Empty (Power OFF)	Power OFF	ERROR  (Orange)	On	Communication not possible.		Blinks for 1.0 second.	Error occurred		Off	Normal	
READY  (Green)	On		Exposure possible																															
	Blinks for 1.0 second.		During exposure sequence																															
	Off	Ready																																
POWER  (Green) (In wireless communication mode, the status of the battery pack is indicated. In wired communication mode, the power status is indicated.)		Wireless	Wired																															
	On	OK (Power ON)	Power ON																															
	Blinks for 1.0 second.	Less than 10 min.	–																															
	Off	Empty (Power OFF)	Power OFF																															
	ERROR  (Orange)	On	Communication not possible.																															
Blinks for 1.0 second.		Error occurred																																
Off		Normal																																
* All LEDs are off when the equipment is off.																																		
Power supply unit (DR-ID 900MP)	Supplies the power to the flat panel sensor and connects the flat panel sensor and the control cabinet.																																	
Main switch	Supplies the power to the flat panel sensor and the inside of the power supply unit.																																	
Power status LED	Displays ON/OFF of the power supply unit.																																	

2.3 Locations of Labels and Signs

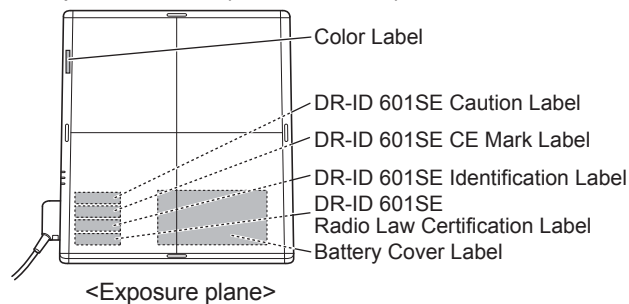
Locations of labels and signs affixed to the DR-ID 900RU, and the relevant safety signs are shown below.

2.3.1 Locations of Labels

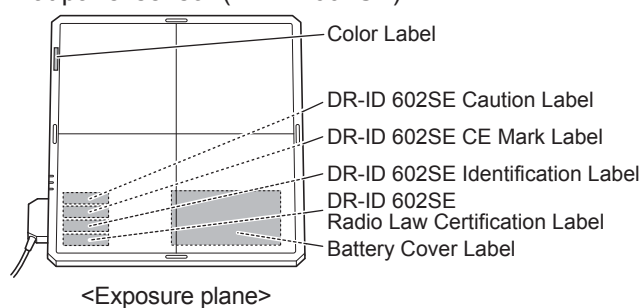
Flat panel sensor (DR-ID 911SE)



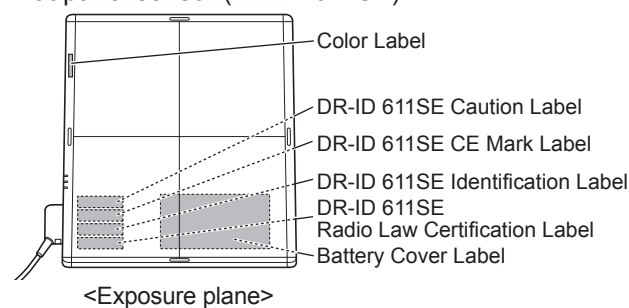
Flat panel sensor (DR-ID 601SE)



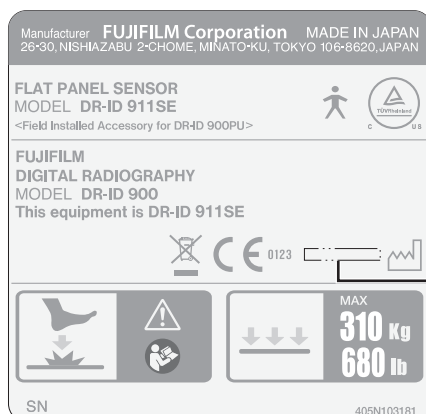
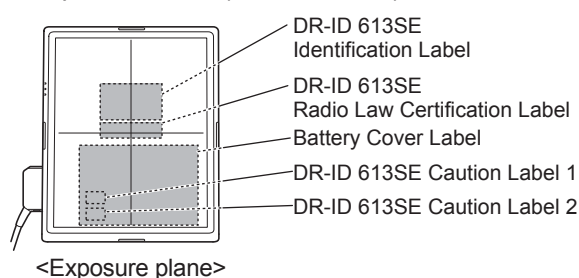
Flat panel sensor (DR-ID 602SE)



Flat panel sensor (DR-ID 611SE)



Flat panel sensor (DR-ID 613SE)

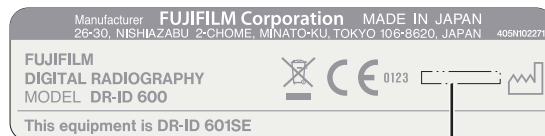


Sample year of manufacture

DR-ID 911SE Identification Label/DR-ID 911SE CE Mark Label/DR-ID 911SE Caution Label



DR-ID 601SE Identification Label

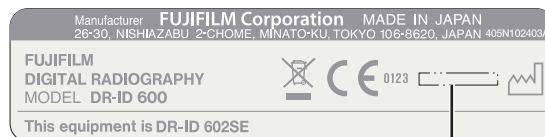


DR-ID 601SE CE Mark Label

Sample year of manufacture



DR-ID 602SE Identification Label

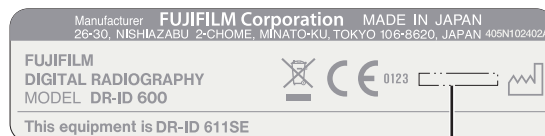


DR-ID 602SE CE Mark Label

Sample year of manufacture

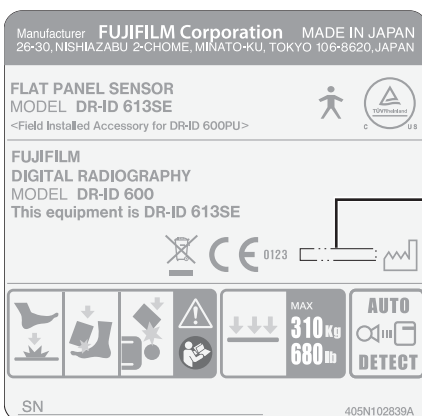


DR-ID 611SE Identification Label



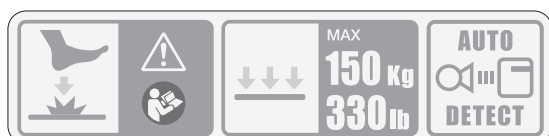
DR-ID 611SE CE Mark Label

Sample year of manufacture

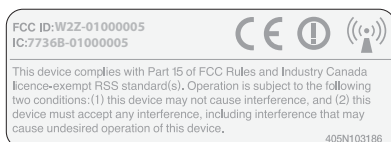


DR-ID 613SE Identification Label

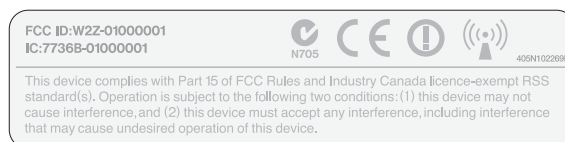
Sample year of manufacture



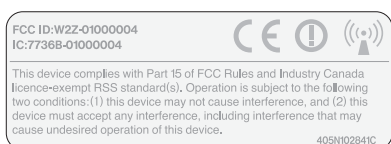
DR-ID 601SE/DR-ID 602SE/DR-ID 611SE Caution Label



DR-ID 911SE Radio Law Certification Label



DR-ID 601SE/DR-ID 602SE/DR-ID 611SE Radio Law Certification Label



DR-ID 613SE Radio Law Certification Label



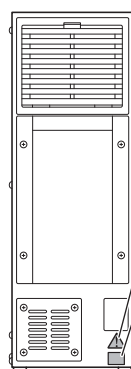
Battery Cover Label

Power supply unit (DR-ID 900MP)

DR-ID 900MP Caution Label 1

DR-ID 900PU Rating Label

<Left-hand side>



DR-ID 900MP
Caution Label 2

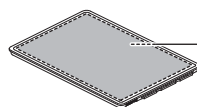
DR-ID 900MP
Caution Label 3



For the types of
connectable cables,
consult a FUJIFILM dealer.

<Rear side>

Battery pack (optional)



Battery pack
Rating Label



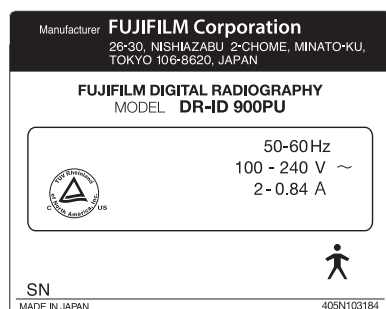
DR-ID 900MP Caution Label 1



DR-ID 900MP Caution Label 2 /
DR-ID 911SE Caution Label 1 /
DR-ID 613SE Caution Label 1



DR-ID 900MP Caution Label 3 /
DR-ID 911SE Caution Label 2 /
DR-ID 613SE Caution Label 2



DR-ID 900PU Rating Label



Battery Pack Rating Label

2.3.2 Safety and Other Symbols

The following safety symbols are used in the labels or on its body.

Symbol	Description
	This symbol indicates compliance of the equipment with Directive 93/42/EEC.
	Caution (See “2.3.1 Locations of Labels” (page 2-3).)
	OFF (To indicate disconnection from the mains, at least for mains switches or their positions, and all those cases where safety is involved.)
	ON (To indicate connection to the mains, at least for mains switches or their positions, and all those cases where safety is involved.)
	Protective earth (ground)
	Alternating current
	This symbol indicates that the equipment is a Type B Applied Part.
	Ready (To indicate the machine is ready for operation.)
	Electric energy
	General mandatory action sign
	Stand-by
	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. 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 waste, please contact FUJIFILM dealers.
	Year of manufacture
	Environmentally Friendly Use Period (EFUP)
	Caution for local load
	Entire surface load
	This symbol indicates that the flat panel sensor supports the automatic X-ray detection function. With this function, operations for making an exposure start when the flat panel sensor detects X-rays. * This function is not supported by the DR-ID 900PU.
	No Stepping on Surface
	Refer to Instruction Manual/Booklet

Chapter 3 Basic Operation

3.1 Preparing the Flat Panel Sensor

This section describes how to prepare the flat panel sensor.

3.1.1 Type of Flat Panel Sensor

Wireless communication mode or wired communication mode is available. When used in wireless communication mode, an access point*¹, battery pack (optional) and battery charger (optional) are required.

*¹ In the countries other than the U.S., an access point is not included as a component of the system. For details including installation, consult our official dealer.

- Product compliant with IEC60950, UL60950, PSE or JIS
- Compliant with IEEE802.11n [W52] (in the 5.2GHz band) /36, 40, 44, 48ch
- WLAN interface: 1000BASE-T/100BASE-TX (minimum requirements)
- LAN interface: 1000BASE-T/100BASE-TX (minimum requirements)
- Available OS: Linux
- Compliant with UL
- Compliant with FCC part15



CAUTIONS

Use only one access point. A communication error may occur if two units or more are used.

3.1.2 Number of the Connectable Flat Panel Sensors

To enable the flat panel sensor, its ID needs to be registered in advance by a FUJIFILM dealer.

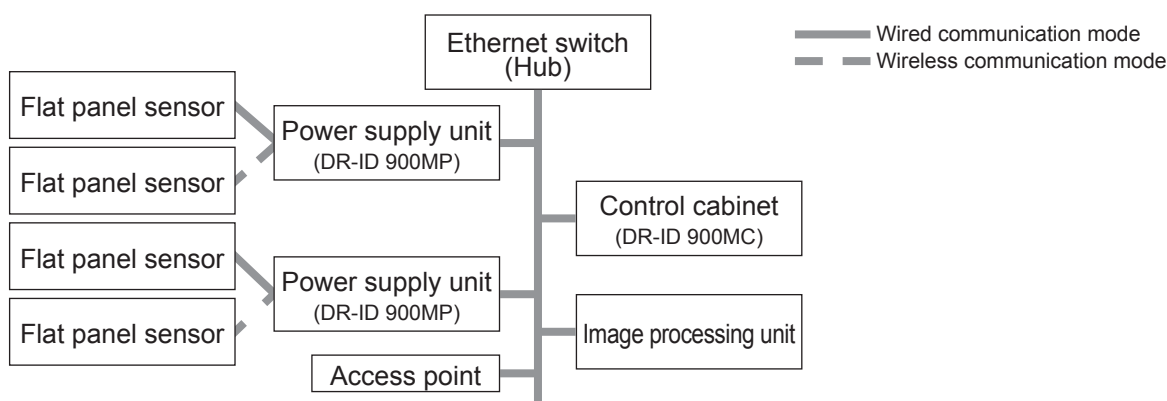
Up to five flat panel sensors can be registered.

Up to four flat panel sensors can be connected in wired or wireless communication mode in DR-ID 900PU.

However, either of the following conditions must be met:

- Two DR-ID 911SE flat panel sensors are connected in wired communication mode. (More than three flat panel sensors cannot be connected in wired communication mode.)
- Any two of the DR-ID 601SE, DR-ID 602SE, DR-ID 611SE and DR-ID 613SE flat panel sensors are connected in wired communication mode.

(Connection example)



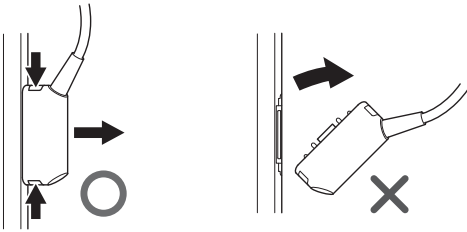
When multiple flat panel sensors are connected, make sure that the READY lamp among the status lamps of the flat panel sensor to be used for an exposure is lit.

3.1.3 Connecting/Disconnecting the Flat Panel Sensor Connector

When used in wireless communication mode, disconnect the connector.

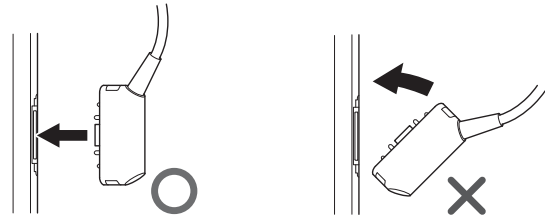
1 Disconnect the connector.

Press the latches on both sides of the connector.



2 Connect the connector.

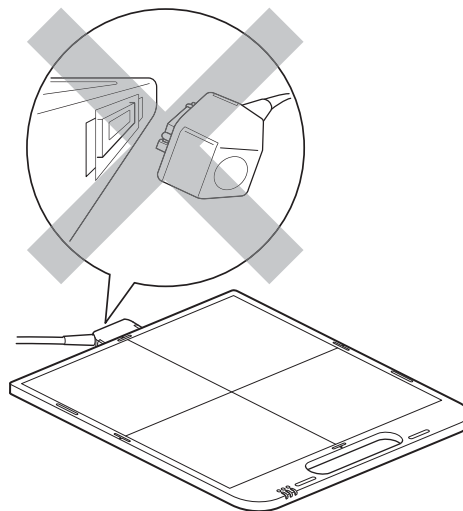
Press the connector into the insertion section.



Make sure that the latches on both sides are properly engaged when connecting the connector. If the flat panel sensor is used with the connector inserted incompletely, the flat panel sensor may turn off.



Connect/Disconnect the connector straight to the flat panel sensor. If connected/disconnected at an angle, the connector may be damaged.



3.1.4 Inserting/Removing the Flat Panel Sensor into/from the Radiographic Examination Stand

[1] In the case of the flat panel sensor DR-ID 911SE

The DR-ID 911SE cannot be mounted to any radiographic examination stand other than one specified by FUJIFILM Corporation.

❶ For details, refer to the operation manual of the radiographic examination stand.

[2] In the case of the flat panel sensors DR-ID 601SE/DR-ID 602SE/DR-ID 611SE/DR-ID 613SE

Follow the procedure below to insert/remove the flat panel sensor into/from the radiographic examination stand.

❶ For details, see the Operation Manual for the radiographic examination stand



CAUTIONS

For the positioning at the time of inserting/removing the flat panel sensor, see the Operation Manual for the radiographic examination stand.



CAUTIONS

Be careful not to have your fingers caught when inserting/removing the flat panel sensor into/from the radiographic examination stand.

[1] Upright type

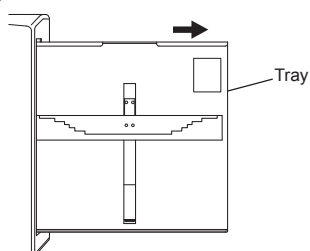
When inserting from the right-hand side



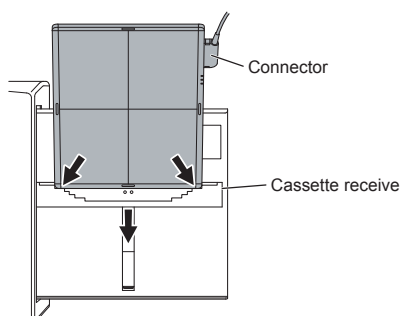
CAUTIONS

When inserting the flat panel sensor into the radiographic examination stand, direct the exposure plane toward the X-ray tube.

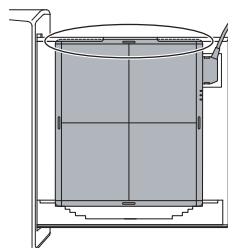
1 Pull out the tray.



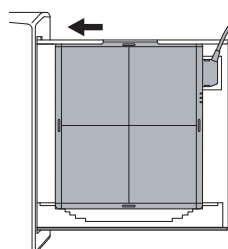
2 Insert the flat panel sensor into the cassette receive while the connector directed to the upper right, and then move it downwards.



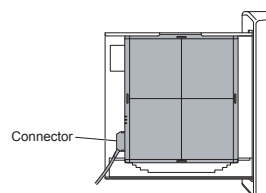
3 Set the flat panel sensor to the upper part of the tray.



4 Push the tray back into place after setting the flat panel sensor.



When inserting the flat panel sensor from the left-hand side, direct the connector to the lower left.



5 Remove the flat panel sensor after use.

Pull out the tray, push the cassette receive downwards, and then remove the flat panel sensor. Push the tray back into place.

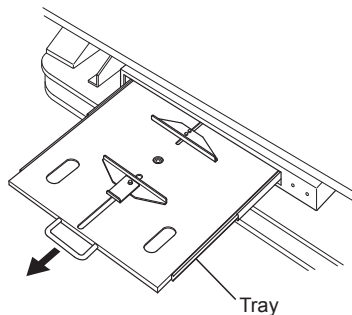
[2] Bed type



CAUTIONS

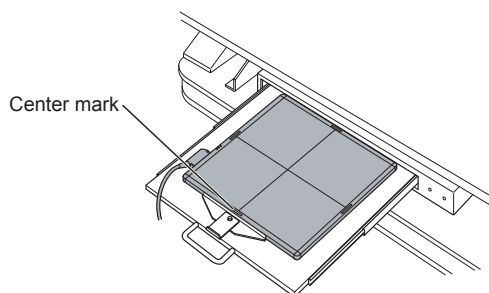
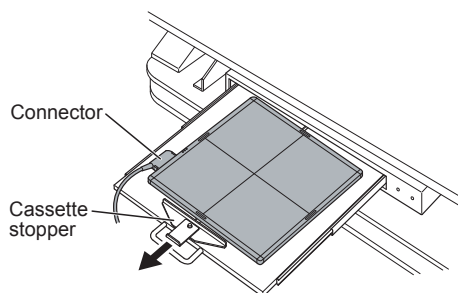
When inserting the flat panel sensor to the radiographic examination stand, direct the exposure plane upwards.

- 1** Pull out the tray by using the handle.

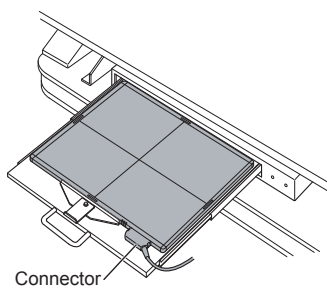


- 2** Pull the cassette stopper, and set the flat panel sensor so that its center mark is aligned with the center of the stopper.

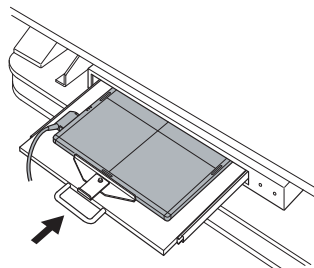
Position the connector of the flat panel sensor as shown in the figure below.



When setting the flat panel sensor horizontally, position the connector as shown in the figure below.



- 3** Push the tray back into place by using the handle after setting the flat panel sensor.



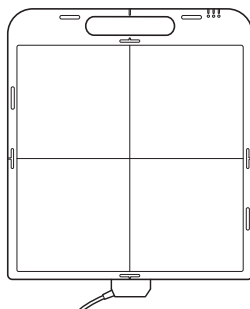
- 4** Remove the flat panel sensor after use.

Hold the handle and pull out the tray. Remove the flat panel sensor while pulling the cassette stopper, and then push the tray back into place.

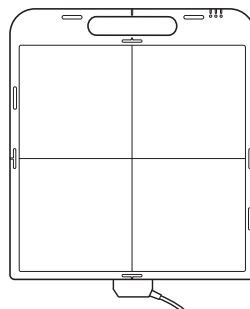
3.1.5 Changing the Direction of the Flat Panel Sensor Connector

The direction of the connector of the flat panel sensor can be changed, depending on how it is inserted into the radiographic examination stand.

To change the direction, contact a FUJIFILM dealer.



When shipped



After changing the direction

3.1.6 Charging the Battery Pack (optional) for the Flat Panel Sensor

Use the battery charger recommended by FUJIFILM Corporation.

For details on operations, refer to the instruction manual for the battery charger.

3.1.7 Installing/Removing the Battery Pack (optional) for the Flat Panel Sensor

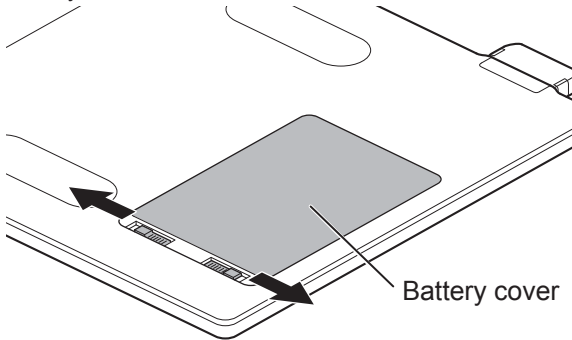
Follow the procedure below to install/remove the battery pack for the flat panel sensor.



When installing/removing the battery pack, place the flat panel sensor on a flat place.

1 Remove the battery cover.

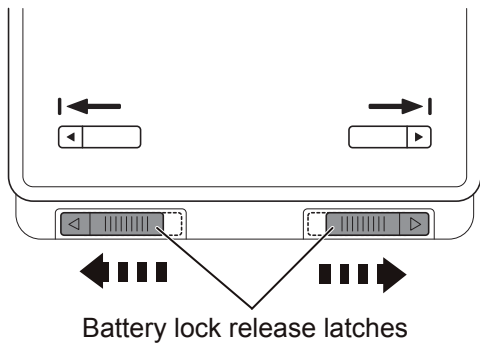
Place the flat panel sensor with the back side facing upward, and then simultaneously slide both the battery lock release latches outward to remove the battery cover.



2 Install the battery pack.

Make sure that the battery lock release latches are released.

When the battery lock release latches are released



Slide the battery pack along the dent of the battery section of the flat panel sensor toward the connector terminal. Align the guide mark of the battery pack with that of the flat panel sensor, and push the battery pack in to install it.

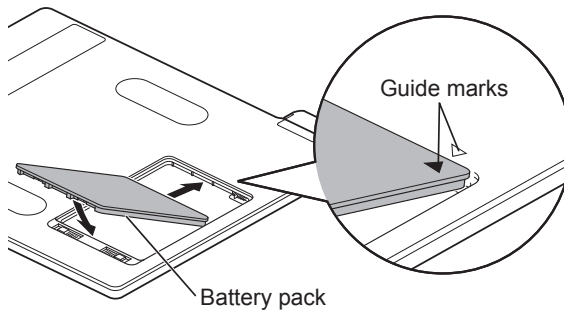
Make sure that battery pack is securely installed.



Pushing the battery pack in with the guide marks misaligned may damage the connector terminal.



When the battery pack is installed, the power is automatically turned on.



- To remove the battery pack, perform the same procedure as Step **1** (removing the battery cover).
- To install the battery cover, perform the same procedure as Step **2** (installing the battery pack)

3.2 Starting Up and Shutting Down the DR-ID 900PU

This section explains how to start up and shut down the DR-ID 900PU.

3.2.1 Starting Up the DR-ID 900PU

- 1** Press the ON side of the main switch of the power supply unit.



Start up the DR-ID 900PU with the initial settings properly made by our official dealer.

3.2.2 Shutting Down the DR-ID 900PU

- 1** Press the OFF side of the main switch of the power supply unit.

Chapter 4 Daily Inspection and Maintenance

4.1 Daily User Inspection and Maintenance

During maintenance and inspection, strictly observe precautions contained in “Chapter 1 For Safe Operation” in this manual for you to use the DR-ID 900PU under best conditions.

4.1.1 Periodical Inspection

Inspection Every Three Months

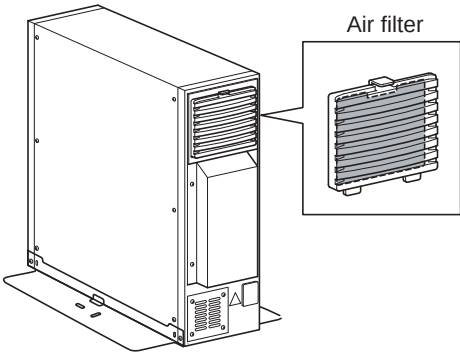
Using a vacuum cleaner, remove any dirt or dust accumulated in each unit of the equipment once every three months. Clean then with a slightly moistened soft cloth and wipe off any moisture with a dry cloth.

● See “2.2 Unit Names and the Functions” (page 2-2).

No.	Unit	No.	Unit	No.	Unit
1	Flat panel sensor	2	Power supply unit	3	Power supply unit Air filter (1)

Air filter

Clean the air filter on the rear of the power supply unit with a vacuum cleaner. Push down the lever at the top of the louver-and-filter assembly, and clean the air filter with a vacuum cleaner after detaching it from the assembly.



Be sure to turn off the equipment before cleaning the air filter or the remote switch (optional).

Appendix A Specifications

A.1 Specifications

Specifications of the DR-ID 900PU are shown below.

A.1.1 Reduced Equivalent (DR-ID 900)

Peak reduced equivalent on the front panel of the flat panel sensor: 0.5 mmAl

A.1.2 Power Supply Conditions

Rated voltage : 100 - 240 V ~

Input current : 2 - 0.84 A

Frequency : 50 - 60 Hz

A.1.3 Environmental Conditions

(1) Operating Conditions

Temperature : 15°C (15%RH) - 30°C (80%RH)

Humidity : 15%RH (15°C) - 80%RH (30°C) (no dew condensation)

Atmospheric pressure : 700hPa - 1060hPa

(2) Non-operating Conditions

(Environmental conditions under which power can be supplied)

Temperature : 5°C - 35°C (no dew condensation)

Humidity : 10%RH - 80%RH (no dew condensation)

Atmospheric pressure : 700hPa - 1060hPa

A.1.4 Image performance

The flat panel sensors comply with the IEC 62220-1 standard (Medical electrical equipment –Characteristics of digital X-ray imaging devices) as general X-ray devices.

To ensure optimal image quality, it is recommended that you do not use the flat panel sensor near devices (motor, transformer, switching supply, etc.) that generate electromagnetic noise.

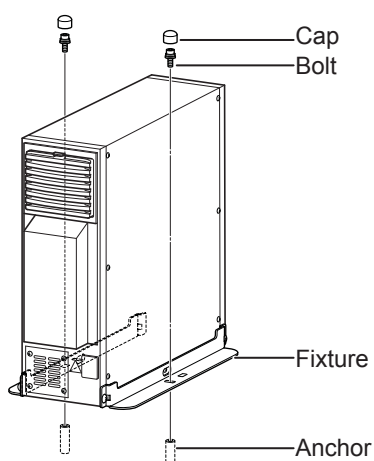


Appendix O Use of Optional Items

O.1 Optional Items

Name	Description
Retaining bracket for MP	A set of an anchor and a fixture, which is used for securing the power supply unit to the floor. ➤ For the external view, see “O.2 Using the Retaining Bracket for MP” (page O-2).
SE cable	A cable that connects the flat panel sensor and the power supply unit(s). When a second or third flat panel sensor is added to the system, this cable is used for reconnecting flat panel sensors, for example.
X-ray camera connection cable	A signal cable that connects the power supply unit and the X-ray equipment (shot signal). Cable length : 15m (49.2 ft)
Battery pack	A battery pack for the flat panel sensor. ➤ For precautions, charging and installing/removing, see pages 1-5, 1-6, 3-5 and 3-6.
Battery charger	A battery charger for the battery pack. ➤ For precautions, external view and charging, see pages 1-5, 1-6, 2-1 and 3-5.

O.2 Using the Retaining Bracket for MP



Contact a FUJIFILM dealer for installation of the Retaining bracket for MP.

Radio frequency (RF) compliance information

Compliance with Part 15 of FCC Rules and Industry Canada licence-exempt RSS standard(s).

This device complies with Part 15 of FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:
(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.

Le présent appareil est conforme aux la partie 15 des règles de la FCC et CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC CAUTION

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

The available scientific evidence does not show that any health problems are associated with using low power wireless devices.

There is no proof, however, that these low power wireless devices are absolutely safe. Low power Wireless devices emit low levels of radio frequency energy (RF) in the microwave range while being used. Whereas high levels of RF can produce health effects (by heating tissue), exposure of low-level RF that does not produce heating effects causes no known adverse health effects. Many studies of low-level RF exposures have not found any biological effects.

Some studies have suggested that some biological effects might occur, but such findings have not been confirmed by additional research. DR-ID 601SE/DR-ID 602SE/DR-ID 611SE/DR-ID 613SE/DR-ID 911SE has been tested and found to comply with FCC/IC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines and RSS-102 of the IC radio frequency (RF) Exposure rules.

Les connaissances scientifiques dont nous disposons n'ont mis en évidence aucun problème de santé associé à l'usage des appareils sans fil à faible puissance. Nous ne sommes cependant pas en mesure de prouver que ces appareils sans fil à faible puissance sont entièrement sans danger. Les appareils sans fil à faible puissance émettent une énergie radioélectrique (RF) très faible dans le spectre des micro-ondes lorsqu'ils sont utilisés. Alors qu'une dose élevée de RF peut avoir des effets sur la santé (en chauffant les tissus), l'exposition à de faibles RF qui ne produisent pas de chaleur n'a pas de mauvais effets connus sur la santé. De nombreuses études ont été menées sur les expositions aux RF faibles et n'ont découvert aucun effet biologique. Certaines études ont suggéré qu'il pouvait y avoir certains effets biologiques, mais ces résultats n'ont pas été confirmés par des recherches supplémentaires. DR-ID 601SE/DR-ID 602SE/DR-ID 611SE/DR-ID 613SE/DR-ID 911SE a été testé et jugé conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'IC.

5.15-5.25GHz band is restricted to indoor operations only.

Labande 5150-5250 MHz est restreints à une utilisation à l'intérieur.

Compliance with FCC requirement 15.407(C) Data transmission is always initiated by software, which is the passed down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted.

In other words, this device automatically discontinues transmission in case of either absence of information to transmitter or operational failure.

(This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.)

Maintenance and Inspection

1 Maintenance and Inspection Items Assigned to Specified Dealer

For periodical inspection of the equipment and necessary arrangements, consult our official dealer or local representative.

Periodical Maintenance

Make sure that the periodical maintenance and inspection assigned to our official dealer are performed as specified.

Maintenance and Inspection Items Assigned to Specified Dealer

Periodical Maintenance and Inspection Items	Period
Checking of the image	Every year
Checking of the operation record by referring to the error log	Every year
Checking of the internal units	Every 2 years
Checking of the S value	Every 6 months

Main Periodical Replacement Parts

* It is recommended that the battery pack (optional) be replaced once a year.

If the duration of use exceeds one year, the capacity of the battery pack will decrease.

The cycles of periodical maintenance and inspection and of parts replacement differ depending on the usage and the daily operation time.

For details, contact us directly or our official dealer.

FUJIFILM



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