



Portable Industrial X-ray Inspection Apparatus

New feature of X-ray imaging environment with enhanced operationality and safety



Please refer to industrial standards and others for the actual radiography test.

"Radioflex" series are the most reliable portable X-ray inspection apparatus. We meet your various needs of non-destructive inspection, such as inspections of pipes at various plant, building maintenance, cement core at building, welding of light alloy and connection of synthetic resin.

Simple operetion based on direct settings*

The rotary encoder setting for X-ray tube voltage and exposure time enables easy adjuustment of opitimal exposure condition. *RF-EGM2 Series, RF-300M2F

Power-saving mode enables use in limited-power environments*

New feature enables switch from standard-power (STD) to power-saving mode (LOW) when power supply capacity is limited.

*RF-EGM2 Series

System configuration

X-ray generator

X-ray generator, controller, accessories, remote controller (with 20m cable) Please refer to page 6 for the detailes of accessories.

*RF-EGM2 series

X-ray generation indication lamp

Reduced operating time with optimum aging mode*

Automatic aging mode will start when 8 hours have passed after the last stop. Unnecessary aging times are eliminated because the current kV setting is used for the aging.

*RF-EGM2 Series: Max voltage is used for automatic aging when stop period exceeds 30 days.

Safe operation assured by a variety of safety functions

Various safety functions provide inspections with reassurance.

- Safety key-switch
- Interlock mechanism
- Buzzer alarm function



Remote controller

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Radioflex

RF-EGM2 is the best X-ray solution for field testing because of its excellent operationality and robustness.

> Focus on fields

> > Robustness,

Easy operation

Various selections from tube voltage among 100kV-300kV

Low

to

High

power

Series

Reference exposure chart









Main Functions/Specifications of Controller

| Function | Specification |
|------------------------------|--|
| mer display rror display) | Digital: 1 sec, -9 mins. 59 secs. (1-second steps) Error code displayed when error occurs Waiting time displayed when X-ray generation halted (optional) |
| uto-aging | •Required aging time: Automatic setting for long and short halt |
| afety circuits | •Safety key switch •Output terminal for door interlock •Output terminal for X-ray generation warning •Pre-warning buzzer function before X-ray generation (optional) |
| ower saving ode | •Tube current selection switch (STD mode, LOW mode) |
| thers | •Time-up buzzer •Line voltage monitor •Remote controller (optional) |











| Tube voltage | | | 130-300kv in steps of 2kv | | | | |
|----------------------|-------------|--------------|--|--|--|--|--|
| Tube Current | | rent | (STD mode) 5mA (at 160kV or more) (LOW mode) ≒ 4mA (at 160kV or more) | | | | |
| | Duty cycl | е | 100% (10min10°C to +45°C) | | | | |
| X-ray tube | | е | Ceramic X-ray tube Focal spot size (nominal) 2.5mm×2.5mm | | | | |
| | Inherent f | ilter | Aluminum 2mm + Beryllium 1mm | | | | |
| Dimension | Dimensions | Generator | 320(W)×320(D)×687(H)mm | | | | |
| | DITIENSIONS | Controller | 360(W)×340(D)×208(H)mm | | | | |
| | M/nimbt | Generator | 36.5kg | | | | |
| | vveignt | Controller | 17.2kg | | | | |
| | Power su | pply | Single phase AC 190V-240V 50/60Hz | | | | |
| Power consumption | | nsumption | (STD mode) 4.1kVA (LOW mode) 3.0kVA | | | | |
| Generator insulation | | r insulation | SF6 insulation gas | | | | |
| Generator cooling | | r cooling | Forced air cooling by radiator | | | | |

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| Tube Voltage | | 110-250kV in steps of 2kV | | | | | |
|----------------------|------------|--|--|--|--|--|--|
| Tube Current | | (STD mode) 5mA (at 140kV or more) (LOW mode) ≒ 4mA (at 140kV or more) | | | | | |
| Duty cycl | e | 100% (10min10°C to +45°C) | | | | | |
| X-ray tube | | Ceramic X-ray tube Focal spot size (nominal) 2.0mm×2.0mm | | | | | |
| Inherent filter | | Aluminum 2mm + Beryllium 1mm | | | | | |
| Dimensions | Generator | 320(W)×320(D)×632(H)mm | | | | | |
| Dimensions | Controller | 360(W)×340(D)×208(H)mm | | | | | |
| Mainh | Generator | 28.0kg | | | | | |
| weight | Controller | 17.2kg | | | | | |
| Power su | pply | Single phase AC 190V-240V 50/60Hz | | | | | |
| Power consumption | | (STD mode) 3.7kVA (LOW mode) 2.8kVA | | | | | |
| Generator insulation | | SF6 insulation gas | | | | | |
| Generator cooling | | Forced air cooling by radiator | | | | | |

| Tube Voltage | | age | 70-200kV in steps of 2kV | | | | |
|-------------------|-------------|---|--|--|--|--|--|
| Tube Current | | rent | (STD mode) 5mA (at 90kV or more) (LOW mode) ≒ 4mA (at 90kV or more) | | | | |
| | Duty cycl | е | 100% (10min10°C to +45°C) | | | | |
| X-ray tube | e | Ceramic X-ray tube Focal spot size (nominal) 2.0mm×2.0mm | | | | | |
| Inherent filter | | ilter | Aluminum 2mm + Beryllium 1mm | | | | |
| | Dimonoiono | Generator | 262(W)×262(D)×617(H)mm | | | | |
| | DITIENSIONS | Controller | 360(W)×340(D)×208(H)mm | | | | |
| | Woight | Generator | 21.0kg | | | | |
| | weight | Controller | 16.5kg | | | | |
| | Power su | pply | Single phase AC 190V-240V 50/60Hz | | | | |
| | Power co | nsumption | (STD mode) 3.1kVA (LOW mode) 2.4kVA | | | | |
| | Generato | r insulation | SF6 insulation gas | | | | |
| Generator cooling | | r coolina | Forced air cooling by radiator | | | | |

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X-ray generation display lamp

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Portable Industrial X-ray Inspection Apparatus

Radioflex RF-200SPS

RF-200SPS is optimum X-ray radiographic tool for on-site inspection especially located in a narrow area or at a high place.





Robustness, Easy operation Excellent workability at tough testing environment

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RF-200SPS



| Tube Voltage | | 80-200kV | | | | |
|----------------------|------------|---|--|--|--|--|
| Tube Cur | rent | 3mA fix | | | | |
| Duty cycl | е | 100% (6min10°C to +40°C) | | | | |
| X-ray tube | | Ceramic X-ray tube Focal spot size (nominal) 2.0mm×2.0mm | | | | |
| Inherent filter | | Aluminum 2mm + Beryllium 1mm | | | | |
| Dimonoiono | Generator | 200(W)×200(D)×520(H)mm | | | | |
| DITIENSIONS | Controller | 360(W)×340(D)×185(H)mm | | | | |
| M/sight | Generator | 15kg | | | | |
| weight | Controller | 14.5kg | | | | |
| Power su | pply | Single phase AC 190-240V 50/60Hz | | | | |
| Power consumption | | 1kVA | | | | |
| Generator insulation | | SF6 insulation gas | | | | |
| Generato | r cooling | Forced air cooling by radiator | | | | |
| | | | | | | |

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Reference exposure chart



Made to order

| F | RF-100GSB | | | | | | | | |
|---|--|------------|---|--|--|--|--|--|--|
| | Tube Volt | age | 20-100kV 20-50kV in steps of 2.5kV 50kV-100kV in steps of 5kV | | | | | | |
| | Tube Cur | rent | 5mA | | | | | | |
| | Duty cycl | е | 100% (6min10°C to +40°C) | | | | | | |
| | X-ray tube | | Glass X-ray tube Focal spot size (nominal) 1.5mm×1.5mm | | | | | | |
| | Inherent f | ilter | - | | | | | | |
| | Dimensions | Generator | 262(W)×262(D)×570(H)mm | | | | | | |
| | | Controller | 425(W)×380(D)×245(H)mm | | | | | | |
| | Woight | Generator | 22kg | | | | | | |
| | weight | Controller | 21.5kg | | | | | | |
| | Power supply Power consumption Generator insulation Generator cooling | | Single phase AC 190V-240V 50/60Hz | | | | | | |
| | | | 1.0kVA | | | | | | |
| | | | SF6 insulation gas | | | | | | |
| | | | Forced air cooling by radiator | | | | | | |
| | | | | | | | | | |

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Panoramic Type Portable X-ray Unit

M2FRF-B Radioflex

RF-300M2F is a panoramic portable unit with flat target.

It works effectively for inspection of circumferential weld for large dia. steel pipe.



RF-300M2F

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Weight: 17.2kg

| Tube Voltage | | 150-300kV in steps of 2kV | | | | | |
|----------------------|------------|---|--|--|--|--|--|
| Tube Current | | 5mA | | | | | |
| Duty cycl | е | 100% (6min10°C to +40°C) | | | | | |
| X-ray tub | e | Glass X-ray tube Focal spot size (nominal) 2.5mm×2.5mm | | | | | |
| Inherent filter | | Aluminum 2.5mm (case) + Cupper1mm (tube) | | | | | |
| Dimension | Generator | 356(W)×356(D)×825(H)mm | | | | | |
| Dimensions | Controller | 360(W)×340(D)×208(H)mm | | | | | |
| Weight | Generator | 50.2kg without the cover for directional 55.5 kg with the cover for directional | | | | | |
| | Controller | 17.2kg | | | | | |
| Power su | pply | Single phase AC 190V-240V 50/60Hz | | | | | |
| Power consumption | | 4kVA | | | | | |
| Generator insulation | | SF6 insulation gas | | | | | |
| Generator cooling | | Forced air cooling by radiator | | | | | |
| | | | | | | | |

Reference exposure chart

Film : Fuji Ix 100 Intensifying screen : Lead foil intensifying screen 0.03×2 (front bag) Focus film distance (FFD) : 600mm Film density (D) : 2.0 Development : 20°C, 5min, tank develoment



Accessories

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Controller

| | RF-EGM2 Series | RF-200SPS | RF-100GSB (made to order) | RF-300M2F | |
|--|--|---|---|--|--|
| Power cable | 1pc. (3-pin plug attached, 20m long) | 1pc. (3-pin plug attached, 20m long) | 1pc. (3-pin plug attached, 20m long) | 1pc. (3-pin plug attached, 20m long) | |
| Low-voltage cable 1pc. (9-pin plug attached, 20m long) | | 1pc. (10-pin plug attached, 20m long) | 1pc. (9-pin plug attached, 20m long) | 1pc. (9-pin plug attached, 20m long) | |
| Spare fuse | 25A 2pcs. (10.3mmφ×38mm) 2A 2pcs. (6.4mmφ×30mm) | 2A 2pcs. (6.4mm <i>φ</i> ×30mm) | 10A 2pcs. (10.3 <i>φ</i> ×38mm) 2A 2pcs. (6.4 <i>φ</i> ×30mm) 1A 1pcs. (6.4 <i>φ</i> ×30mm) | 25A 2pcs. (10.3mm $\phi \times$ 38mm) 2A 2pcs. (6.4mm $\phi \times$ 30mm) | |
| Spare lamp | - | 3pcs. (mA, Ready, X-Ray) | 3pcs. | - | |
| Interlock key | 2pcs. | 2pcs. | - | 2pcs. | |
| Grounding rod | Option | Option | Option | Option | |
| X-ray generation indication lamp (External connection type) | Option (3m cable attached) | 1set (3m cable attached) | 1set (3m cable attached) | 1set (15m cable attached) | |
| X-ray generation indication lamp (Embeded type) | 1рс. | - | - | - | |
| X-ray direction indicator | 1 set (X-ray focus-to-film distance 600mm type) | 1 set (X-ray focus-to-film distance 600mm type) (Option except Japan) | 1 set (X-ray focus-to-film distance 600mm type) | 1 set (X-ray focus-to-film distance 600mm type) | |
| Unidirectional radiation cover | - | - | - | 1pc. | |
| RF-200EGM2: Lead plate, 104mmφ×t3.5mm Window 26x63mm 1pc Lead plate, 104mmφ×t3.5mm Window 54x63mm 1pc Lead plate, 104mmφ×t3.5mm Window 54x63mm 1pc RF-250EGM2: Lead plate, 104mmφ×t6mm Window 68x71mm 1pc Lead plate, 104mmφ×t6mm Window 61x71mm 1pc Lead plate, 113mmφ×t10mm Window 26x74mm 1pc Lead plate, 113mmφ×t10mm Window 63x74mm 1pc | | | Lead, 76mm∳×t3.0mm Window 20×40mm Lead, 76mm∱×t3.0mm Window 40×40mm | | |

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Related products

Radioflex

<u>CR-1012</u> (mobile type imaging plate scanner) Irradiation Box



CR-1012 is a scanner for imaging plates, for industrial X-ray inspection apparatus. Its compact size and light weight make it highly mobile. It does not need a PC in order to scan images. Simple operation, and no chemicals required, reduces load on operators and the environment in field operations.

Specifications

System image

| Reading pitch | 100µm, 50µm, 25µm* (*Windows7 only) |
|-------------------------------|---|
| Output format | DICOM (16 bit), BMP (8bit RGB) |
| Effective max reading size | 244×295mm (IP size: 252×303mm) |
| Reading time | 90sec@100µm, 164sec@50µm (in case of IP size 252×303mm) |
| Unit size | 480(W)×360(D)×390(H)mm |
| Weight | 35kg |
| Power supply | AC 120V ±10% 0.5kW or AC 220V ±10% 0.5kW |
| Option | Carrying case, IP holder, IP, Casette |
| | |



The irradiation box is designed for safe and reliable X-ray radiography testing. Various sizes are available on request, to meet customer requirements.

Specifications

| X-ray leakage | Shield capability: 1µSv/h or less | | | | |
|---|--|--|--|--|--|
| | Interlock with door switch of X-ray controller | | | | |
| | Electro-magnetic lock | | | | |
| Standard features | Lighting inside box | | | | |
| | Casters for mobility, adjuster bolts for fixing (may not be fitted in some cases, owing to box shape, weight, etc.) | | | | |
| Options X-ray generation indicator lamp | | | | | |
| | and the substantiant of second international second s | | | | |

Size of irradiation box can be customized depending on purpose and space, etc.



Customized systems are proposed, based on customer needs, by selecting optimum X-ray source, detection media and sample stage, to suit the purpose and applications.

| System setting example | | | | | | | |
|------------------------|----------------------------------|--|--|--|--|--|--|
| X-ray source | 100kV-300kV | | | | | | |
| Detect medium | Film, IP FPD | | | | | | |
| Sample stage | X-Y, X-Y-Z | | | | | | |
| Irradiation box | Various size and shield capacity | | | | | | |
| | | | | | | | |

CR-1012



Application of each model

| Application Type | Inspection of lumber, rubber, synthetic resin | Inspection of small electrical constitutional component | Inspection of aluminum welds | Inspection of aluminum die casting | Inspection of brick and concrete | Internal radiographic inspection of other metals | Inspection of cast steel | Inspection of steel welds | | Guide to radiographic power | Using high definition film (equivalent to Fuji#100) | |
|---------------------------------|--|---|------------------------------|---------------------------------------|----------------------------------|--|--------------------------|---------------------------|---|-----------------------------|--|--------------|
| RF-300EGM2 Cat. No. 6063A202 | | | | | | | | | | | | |
| RF-250EGM2 Cat. No. 6062A202 | | | | | | | | | | | | |
| RF-200EGM2 Cat. No. 6061A202 | | | | | | | | | | | | |
| RF-200SPS Cat. No. 6028P401 | | | | | | | | | | | | |
| RF-100GSB Cat. No. 6031B2 | | | | | | | | | | | | |
| RF-300M2F Cat. No. 6063F202 | | | | | | | | | | | | |
| | | | | | | | | (|) | 20 (Iror | 40 n thicknes | 60 s: mm) |

The numeric values of performance indicated in this brochure are based on the test results at Rigaku. Rigaku does not warrant that the identical values can always be obtained regardless of different operational environments.
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