VJ X-RAY
OEM Solutions

CONFIDENCE DELIVERED

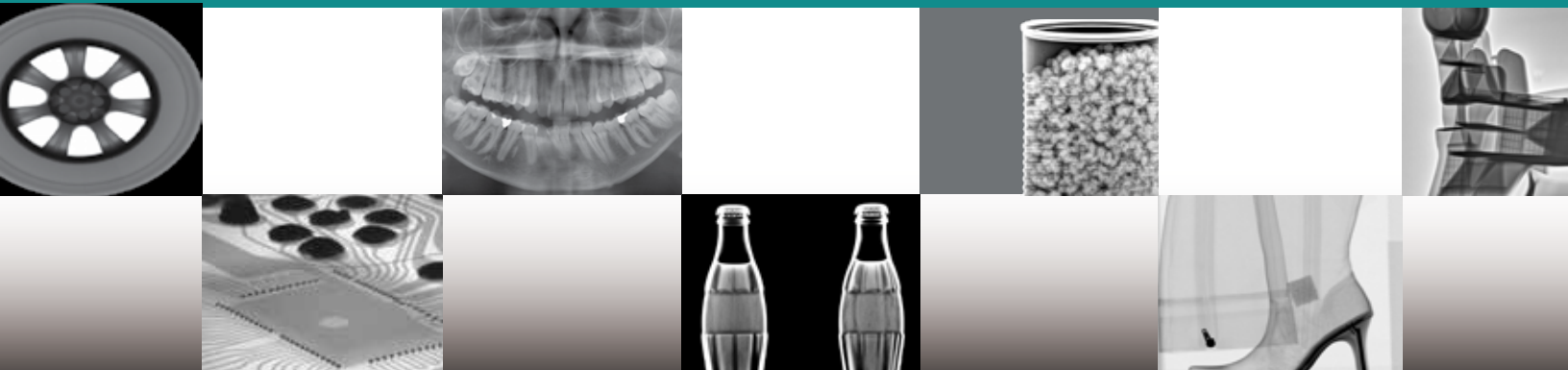
OEM's #1 Choice for X-Ray Sources and Generators

Focus on Performance, Reliability, Form Factor, and Versatility

www.vjtxray.com

Applications

Security, Industrial NDT, Food & Pharmaceutical, Quality & Safety, Electronics, Medical & Life Sciences, Sorting & Recycling



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Your Single Source for X-Ray Sources

The **IXS** Series and the **HVG** series are highly reliable product lines from VJ X-ray. These series of products comprise of integrated X-ray Sources and stand alone high voltage X-ray generators. Unique in design, these generators are exceptionally compact and robust units that have superior performance.

The **IXS** series are integrated X-ray sources which incorporate a high voltage inverter, a filament supply, an X-ray tube, and a heat dissipation component into a single unit. The versatile platform operates from 20 kV to 200 kV at up to 1000 Watts output power continuously, and even higher in pulsing applications. The sources can be controlled via user-friendly RS232 digital interface or analog signals.

The **HVG** series are high voltage generators uniquely offer high stability and performance while retaining an extraordinarily compact design. Either Bi-polar or Uni-polar, these units have a variety of kV and mA outputs and are capable of a wide array of applications. The High Voltage generators are designed to be controlled by Ethernet, RS 232, or Analog.

Capable of operating under an extensive range of conditions, the **IXS** and **HVG** Series are ideal for many applications. These include:

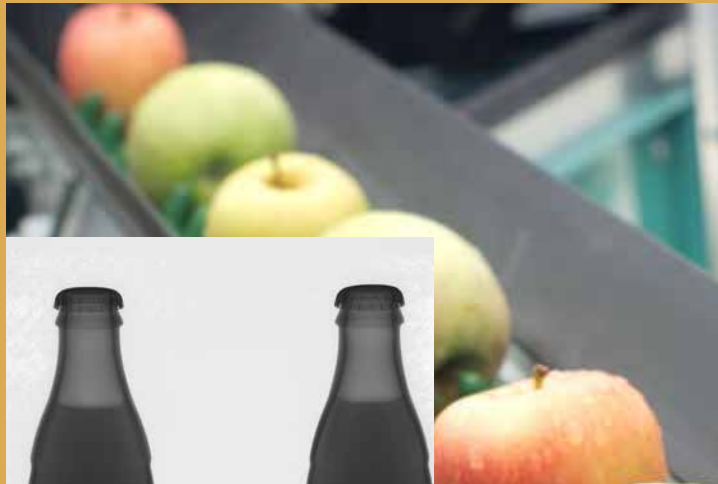
- Non-destructive Testing
- Security Inspections: explosive detection, baggage inspections, body screening
- Foreign Object Detection: food and beverage, health and beauty, pharmaceuticals
- Medical: mammography, dental CT, bone densitometry, medical C-arm
- Material Analysis: thickness gauging, X-ray fluorescence (XRF)
- Electronic Component Inspections
- Product Quality Inspections and Packaging Inspections

The **IXS** and **HVG** Series generators are cost-effective and reliable no matter what the application is. Their small form factor, efficient heat dissipation, and leak-free tank make integrating and maintaining these units simple and hassle-free.

In addition, the X-ray generators are backed by the support of a technical team that has over 20 years of high voltage and X-ray experience, and by VJ Technologies, a company that has delivered practical customized X-ray solutions for the past quarter century.







Multipurpose X-Ray Sources & Generators

Contents







VJ X-RAY
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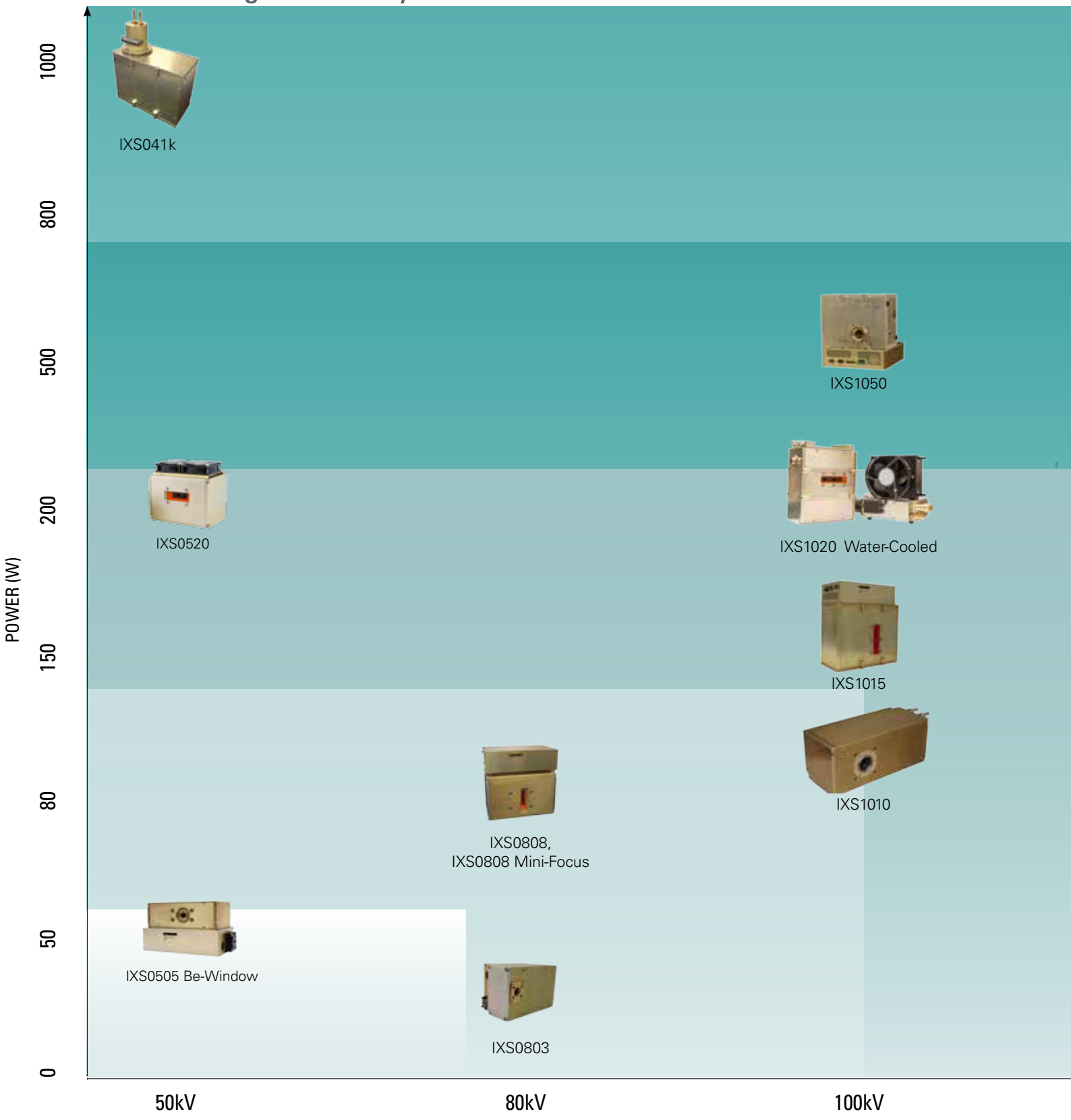
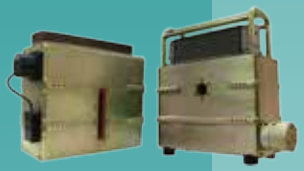
IXS Series - Integrated X-Ray Sources



Multipurpose X-Ray Sources & Generators

IXS1680



IXS1650 Water-Cooled, IXS1650

IXS2050

IXS1620

IXS1212

IXS1203 Mini-Focus

120kV

160kV

200kV

IXS Series
Integrated X-Ray Sources

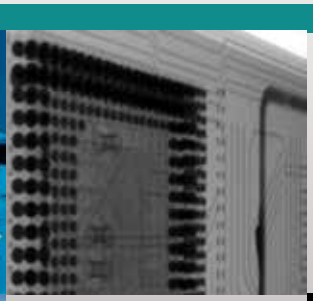
The IXS Series of Integrated sources incorporates the high voltage generator, X-ray tube, and control electronics into single compact products. These units boast high stability and performance over an expansive range of voltage and current. Versatile design allows customization based on application need, and seamless integration into OEM systems.

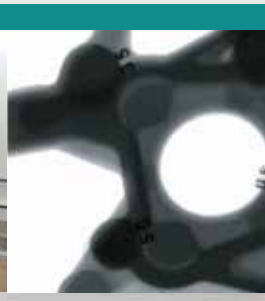
Specification Range

- Output Voltage: 10–200 kV
- Output Current: 0.05–40.0 mA
- Output Power: 5–1000 W
- Focal Spot Size: 35µm–1.2 mm

Typical Applications

- Security Scans
- Industrial NDT
- Food & Pharmaceutical Quality Control
- Electronics Inspections & Component Counting
- Medical Imaging
- Thickness Gauging
- Research
- Sorting & Separation




IXS041k Beryllium Window
40 kV, 1000 W

Multipurpose Sources

Applications

Food Inspection, Industrial NDT

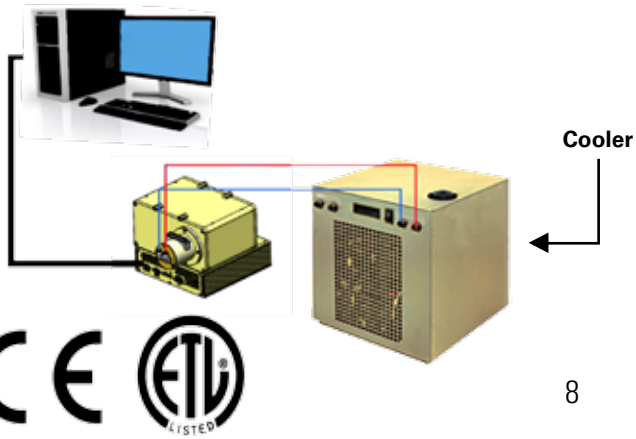
Key Features
- Integrated High Voltage Generator, X-ray tube, and Control Electronics
- Be-Window for Low kV, Soft X-ray Applications
- High Power with Water Cooling
- Radiation Shielded
- User Friendly RS232 Digital Interface

Specifications	
Input Line Range	230 VAC, 50/60 Hz
Output kV	20 - 40 kV
Output mA	1.0 - 25.0 mA
Output Power	1000 W maximum continuous
Voltage Regulation	Load: <0.1% at max kV output over the output mA range Line: <0.1% at max kV output over the input line range
Current Regulation	Load: <0.5% at max mA output over the output kV range Line: <0.5% at max mA output over the input line range
Ripple	kV: ± 0.5% p-p of maximum output mA: <0.5% p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Overshoot	kV: ≤5% of rated output
Output Rise Time	kV Rise Time <1 sec. from 10% to 90% of the output voltage.
Cooling	Water Cooled
Radiation shield	Less 0.1mR/hr at 15cm from the surface of the chassis.
Safety and Regulatory Compliances	Designed to meet CE, CSA, TUV, EN60950 and EN61010A-1.

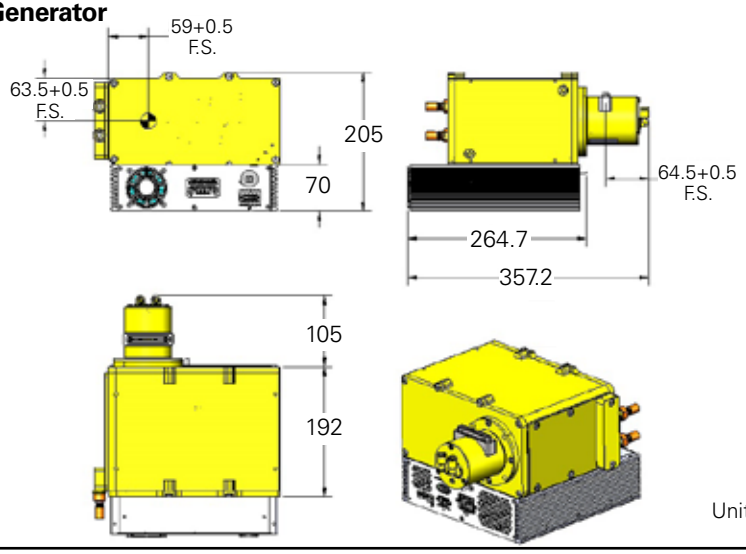
Fan Beam X-ray Generator

Control Unit

Dimensions	Generator: 250mm x 297mm x 125mm Control unit: 254mm x 247mm x 70mm
Weight	Generator: 14 kg Control unit: 3 kg
X-ray Tube	
X-ray Tube Type	Glass with 0.8 Be-Window
X-ray Focal Spot Size	1.3 mm as per IEC60336
Beam Port	Fan beam of 60° max. (Cone Beam available upon request)
Operating Environment	
Operating Temperature	5°C to 35°C
Storage Temperature	-20°C to 55°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

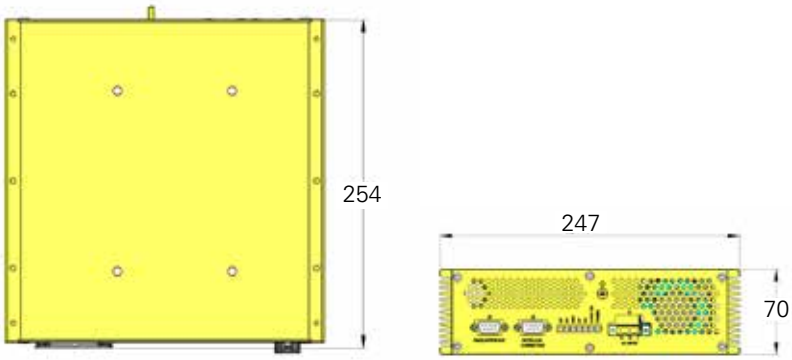


Generator



Unit: mm

Control Unit



Unit: mm

Graphical User Interface

LED Indicators

OP	Over Power fault
OC	Over current fault
ARC	ARC-ing fault
OT	Illuminated when oil temperature exceeds 60±3°C.
OV	Over voltage fault
X-RAY ON	Illuminated when interlock is closed and HV is enabled
POWER	Illuminated when power is present

J1: AC Input

Pin Out	Name
N	Neutral
GND	Ground
L	230 VAC Input

J2: Interlock

Pin Out	Name
1	Interlock out
2	Interlock In
3	X-ray on relay contact common
4	X-ray on relay contact N/C
5	X-ray on Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

J3: RS232

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

IXS0505 Beryllium Window
50 kV, 50 W

Sub-Compact Multipurpose Sources

Applications

XRF, Thickness Gauging, Food Inspection

Key Features

- Integrated High Voltage Generator, X-ray Tube, and Control Electronics
- BE-Window for Low kV Applications
- High Resolution
- Compact and Robust
- Radiation Shielded
- User Friendly RS232 Digital Interface

Specifications

Input Line Range	90–264 VAC, 50/60 Hz
Output Voltage	10–50 kV
Output Current	1.0 mA max
Output Power	50 W maximum
Voltage Regulation	Load:<0.1% at max kV output over the output mA range Line:<0.1% at max kV output over the input line range
Current Regulation	Load:<0.1% at max mA output over the output kV range Line:<0.1% at max mA output over the input line range
Ripple	kV:<0.5% p-p of maximum output mA: <20µA% p-p of maximum output
Repeatability	kV:<0.5% mA:<0.5%
Stability	kV: 0.2% over 4 hours
Overshoot	kV: ≤5% of rated output
Output Rise Time	Standard Rise Time ≤1 sec. from 10%–90% of max rated output
Cooling	External Air Cooling required
Radiation shield	Less than 0.5 mR/hr at 5 cm from the surface of the chassis as per FDA 21 CFR 1020.40
Safety and Regulatory Compliances	Designed to meet CE, CSA TUV EN60950 and EN61010A-1

Cone Beam X-ray Generator

Control Unit

Dimensions	Generator: 203mm x 125mm x 70mm Control unit: 254mm x 134mm x 65mm
Weight	Generator: 7 Kg Control unit: 2 Kg

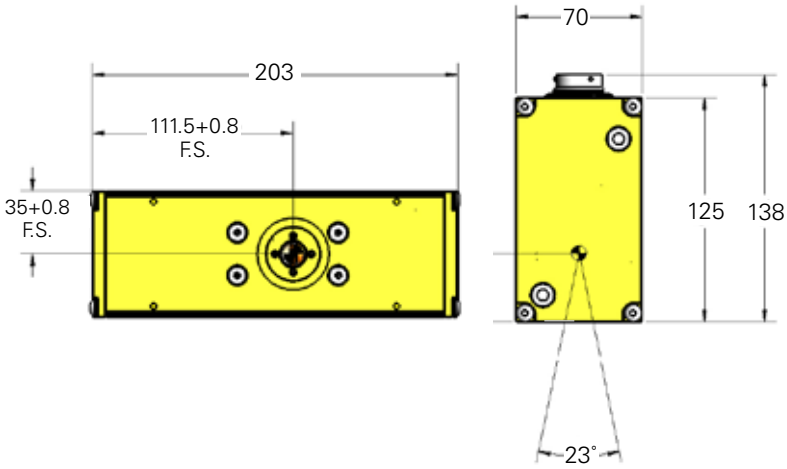
X-ray Tube

X-ray	Glass
X-ray Focal Spot Size	165 µm maximum
Beam Port	Cone beam 25°

Operating Environment

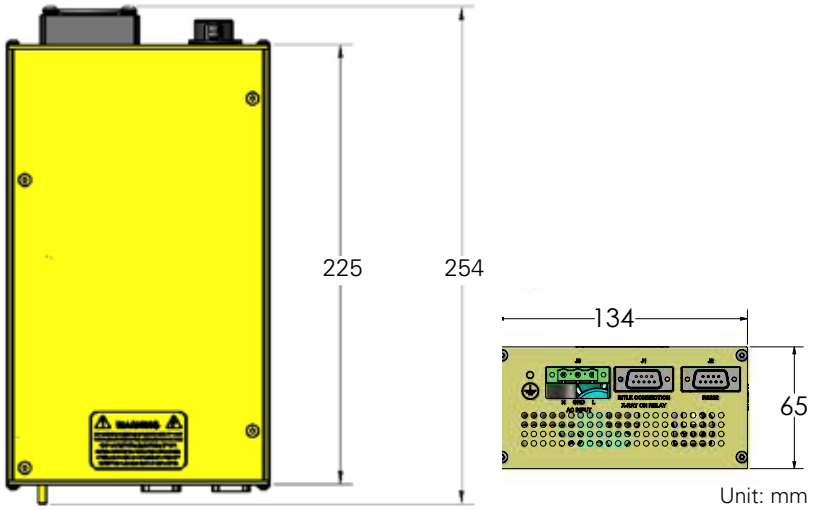
Operating Temperature	5°C to 40°C
Storage Temperature	-20°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Unit: mm

Control Unit



Unit: mm

Graphical User Interface

LED Indicators

X-RAY ON	Illuminated when interlock is closed and HV is enabled
POWER	Illuminated when power is present
OV	Over voltage fault
OP	Illuminated when selected power exceeds the rated power
OC	Over current fault
ARC	ARC-ing fault
OT	Illuminated when oil temperature exceeds 60°C ± 3°C

J1: Interlock Connection/ X-ray On Relay

Pin Out	Name
1	Interlock out
2	Interlock in
3	X-ray On Relay contact common
4	X-ray On Relay contact N/C
5	X-ray On Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

J2: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

J3: AC Input

N	Neutral
GND	Ground
L	90-264 VAC Input

IXS0520
50 kV, 200 W

Small Focus Multipurpose Sources

Applications

Baggage Inspections, Security Body Scanners, Food Safety, Industrial NDT

Key Features

- Integrated High Voltage Generator, X-ray Tube, and Control Electronics
- Compact and Robust
- High Stability
- High Resolution: 0.4 mm Focal Spot
- Radiation Shielded
- User Friendly RS232 Digital Interface

Specifications

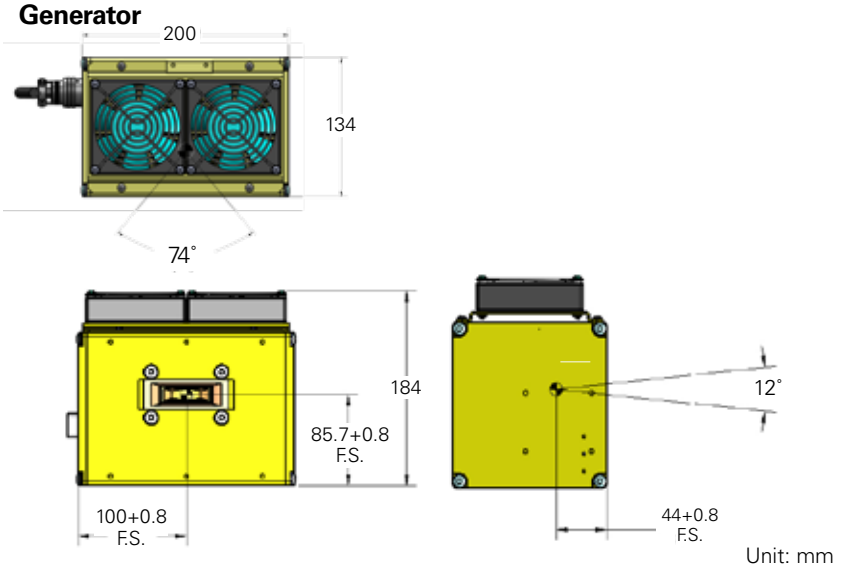
Input Line Range	120/240 VAC, 50/60 Hz
Output kV	20–50 kV *up to 80 kV also available
Output mA	0.5–4.0 mA
Output Power	80 W continuous/ 200 W peak 30% or less Duty Cycle
Voltage Regulation	Load: <0.1% at max kV output over the output mA range Line: <0.1% at max kV output over the input line range
Current Regulation	Load: <0.5% at max mA output over the output kV range Line: <0.5% at max mA output over the input line range
Ripple	kV: <1.0% p-p of maximum output mA: <0.5% p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Overshoot	kV: ≤5% of rated output
Output Rise Time	Rise Time ≤300 ms from 10%–90% of max rated output
Cooling	Air Cooled
Radiation shield	Less than 0.5 mR/hr at 5 cm from the surface of the chassis as per FDA 21 CFR 1020.40

X-ray Generator

Control Unit

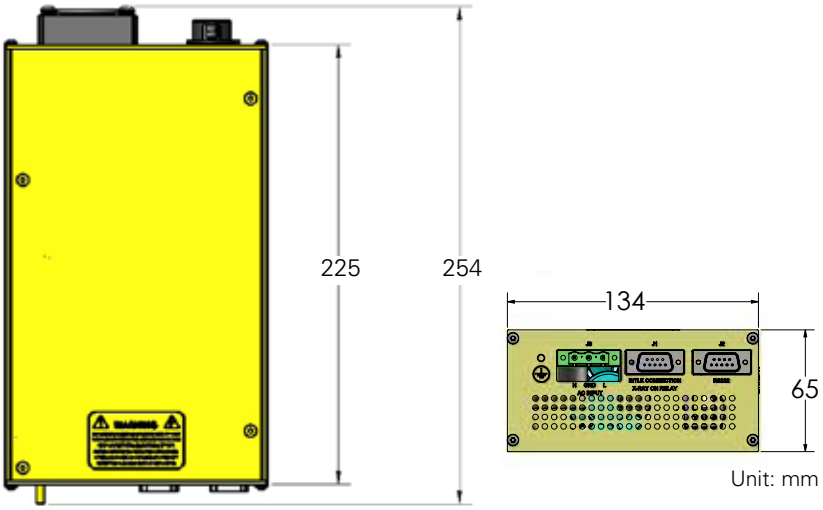
Safety and Regulatory Compliances	Designed to meet CE, CSA, TUV, EN60950, and IEC/EN61010-1
Dimensions	Generator: 200mm x 184mm x 134mm Control unit: 254mm x 134mm x 65mm
Weight	Generator: 11 Kg Control unit: 2 Kg
X-ray Tube	
X-ray Tube Type	Glass
X-ray Focal Spot Size	0.4 - 0.8 mm as per IEC60336
Beam Port	Fan beam: 80° X 10° , 74° X 12° Cone beam: 30°
Operating Environment	
Operating Temperature	0°C to 40°C
Storage Temperature	-40°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Unit: mm

Control Unit



Unit: mm

Graphical User Interface

LED Indicators

X-RAY ON	Illuminated when interlock is closed and HV is enabled
POWER	Illuminated when power is present
OV	Over voltage fault
OP	Illuminated when selected power exceeds the rated power
OC	Over current fault
ARC	ARC-ing fault
OT	Illuminated when oil temperature exceeds 60°C ± 3°C

J1: Interlock Connection/ X-ray On Relay

Pin Out	Name
1	Interlock out
2	Interlock in
3	X-ray On Relay contact common
4	X-ray On Relay contact N/C
5	X-ray On Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

J2: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

J3: AC Input

N	Neutral
GND	Ground
L	90-264 VAC Input

IXS0803
80 kV, 30 W

Multipurpose Sources

Applications

Food & Pharmaceutical Inspections, Fill Level Check

Key Features
- Integrated High Voltage Generator, X-ray Tube, and Control Electronics
- Radiation Shielded
- User Friendly RS232 Digital Interface
- 24 VDC Input

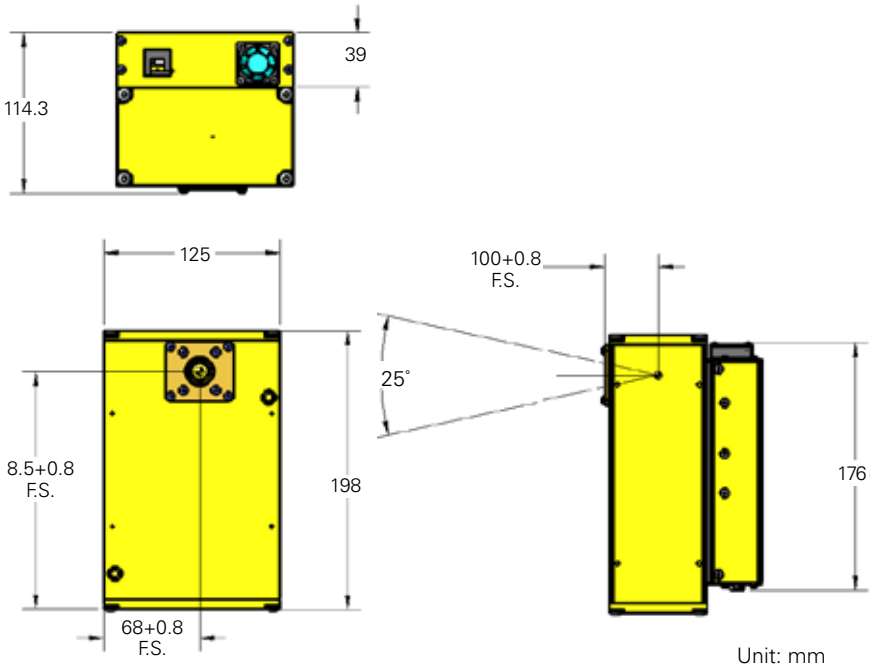
Specifications	
Input Line Range	24VDC ± 10%
Output kV	20 - 80 kV
Output mA	0 - 1.0 mA
Output Power	30 W continuous maximum
Voltage Regulation	Load: <0.2% at max kV output over the output mA range Line: <0.2% at max kV output over the input line range
Current Regulation	Load: <0.5% at max mA output over the output kV range Line: <0.5% at max mA output over the input line range
Ripple	kV: < ± 0.5% rms of maximum output mA: < ± 0.5% rms of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Overshoot	kV: ≤5% of rated output
Output Rise Time	Standard Rise Time ≤1 sec to within 1% of programmed kV
Cooling	Air Cooled
Radiation shield	Less than 0.5 mR/hr at 5 cm from the surface of the chassis as per FDA 21 CFR 1020.40

Generator view (front)

Control unit view (rear)

Safety and Regulatory	Designed to meet CE, and IEC/EN61010-1
Dimensions	Generator: 198 mm x 125 mm x 75 mm Control unit: 176 mm x 125 mm x 38 mm
Weight	Generator: 7 kg Control unit: 1 kg
X-ray Tube	
X-ray Tube Type	Glass
X-ray Focal Spot Size	0.8 mm as per IEC60336
Beam Port	Cone beam: 25°
Operating Environment	
Operating Temperature	5°C to 40°C
Storage Temperature	-20°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Unit: mm

Graphical User Interface

LED Indicators

POWER	Illuminated when power is present
X-RAY ON	Illuminated when interlock is closed and HV is enabled
ARC	ARC-ing fault
OC	Over current fault
OT	Illuminated when oil temperature exceeds 60°C ± 3°C
OP	Illuminated when selected power exceeds the rated power
OV	Over voltage fault

J1: Interlock Connection/ X-ray On Relay

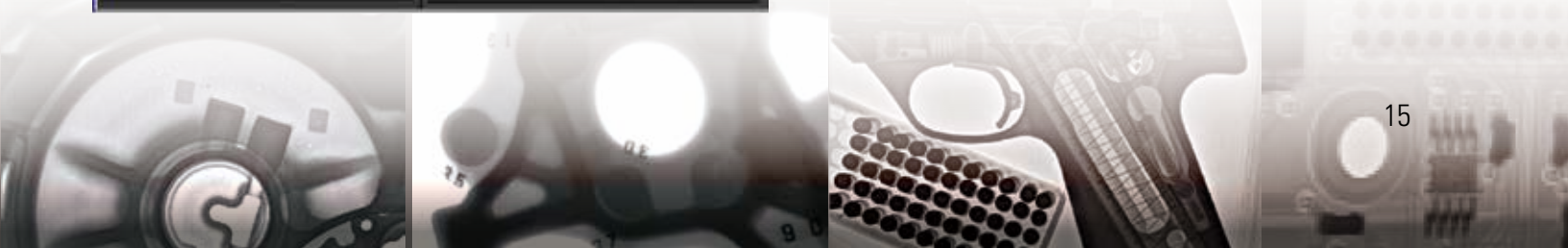
Pin Out	Name
1	Interlock 1 in
2	Interlock 1 in
3	Interlock 1 out
4	N/A
5	Interlock 2 in
6	Interlock 1 in
7	Interlock 1 out
8	Interlock 2 out
9	X-ray Enable (TBD)

J2: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	External kV program
7	External mA program
8	External kV monitor
9	External mA monitor

J3: Power Input

L	G
+24 VDC	Ground



IXS0808
80 kV, 80 W

Multipurpose Sources

Applications

Food Inspection Systems, Security Scanners, Industrial NDT, Product Quality Monitoring

Key Features

- Integrated High Voltage Generator, X-ray Tube, and Control Electronics
- Water Cooled Option for Improved Stability
- Compact and Robust
- Radiation Shielded
- User Friendly RS232 Digital Interface

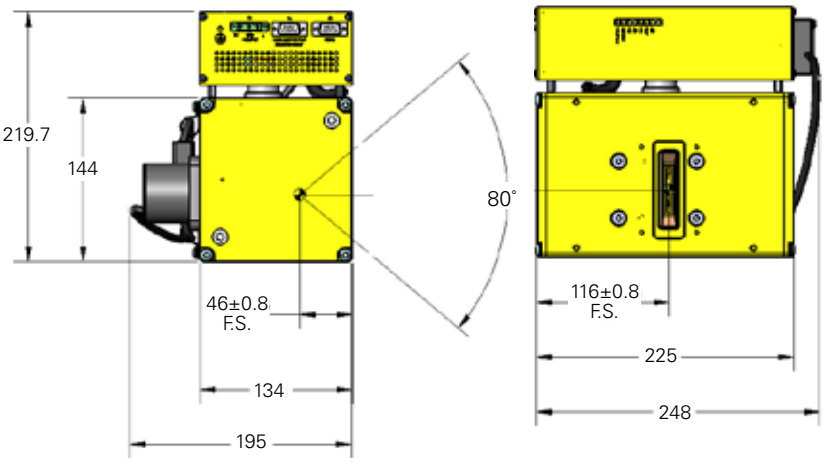
Specifications	
Input Line Range	90–264 VAC, 50/60 Hz
Output kV	20–80 kV
Output mA	0.05 - 1.0 mA
Output Power	80 W continuous maximum
Voltage Regulation	Load: <0.2% at max kV output over the output mA range Line: <0.2% at max kV output over the input line range
Current Regulation	Load: <0.1% at max mA output over the output kV range Line: <0.1% at max mA output over the input line range
Ripple	kV: <0.5% p-p of maximum output mA: <0.5% p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Stability	kV: <0.01% per °C over the operational ambient temperature range
Overshoot	kV: ≤5% of rated output
Output Rise Time	Standard Rise Time ≤500 msec. from 10%–90% of max rated output
Cooling	Air Cooled (Water cooled option also available)
Radiation shield	Less than 0.5 mR/hr at 5 cm from the surface of the chassis as per FDA 21 CFR 1020.40

Fan Beam X-ray Generator

Control Unit

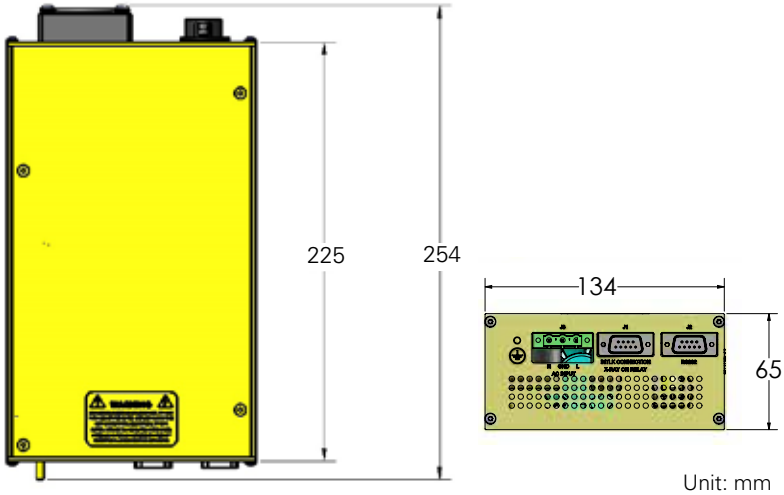
Safety and Regulatory Compliances	Designed to meet CE, CSA, TUV EN60950 and EN61010A-1
Dimensions	Generator: 225mm x 144mm x 134mm Control unit: 254mm x 134mm x 65mm
Weight	Generator: 11 Kg Control unit: 2 Kg
X-ray Tube	
X-ray Tube Type	Glass
X-ray Focal Spot Size	0.8 mm as per IEC60336
Beam Port	Fan beam: 80° X 10° max Cone beam: 30°
Operating Environment	
Operating Temperature	0°C to 40°C
Storage Temperature	-40°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Unit: mm

Control Unit



Unit: mm

Graphical User Interface

LED Indicators

X-RAY ON	Illuminated when interlock is closed and HV is enabled
POWER	Illuminated when power is present
OV	Over voltage fault
OP	Illuminated when selected power exceeds the rated power
OC	Over current fault
ARC	ARC-ing fault
OT	Illuminated when oil temperature exceeds 60°C ± 3°C

J1: Interlock Connection/ X-ray On Relay

Pin Out	Name
1	Interlock out
2	Interlock in
3	X-ray On Relay contact common
4	X-ray On Relay contact N/C
5	X-ray On Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

J2: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

J3: AC Input

N	Neutral
GND	Ground
L	90-264 VAC Input

IXS0808 Mini-Focus
80 kV, 56 W

Mini-Focus Sources

Applications

Electronic Inspections, Food & Pharmaceutical Safety Inspections, Industrial NDT

Key Features

- Integrated High Voltage Generator, X-ray Tube, and Control Electronics
- Wide Beam Angle
- High Resolution
- Compact and Robust
- Cone or Fan beam available for flat panel or line sensor detection
- Radiation Shielded
- User Friendly RS232 Digital Interface

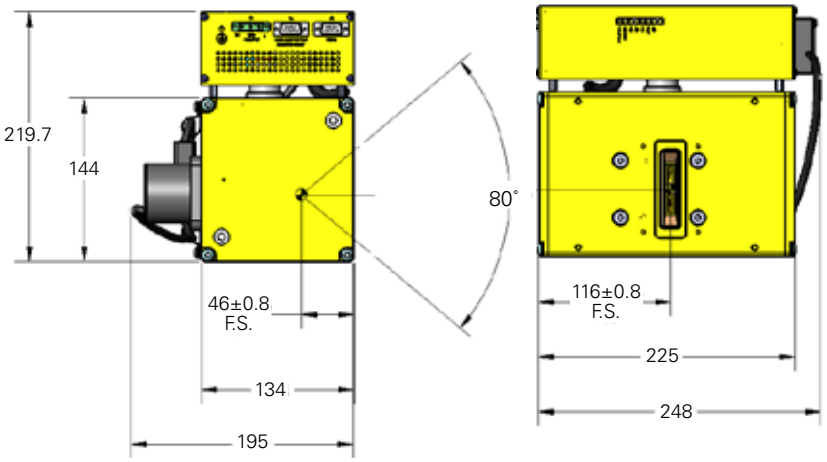
Specifications	
Input Line Range	90–264 VAC, 50/60 Hz
Output Voltage	20–80 kV
Output Current	0.2 - 0.7 mA
Output Power	56 W continuous maximum
Voltage Regulation	Load:<0.1% at max kV output over the output mA range Line:<0.1% at max kV output over the input line range
Current Regulation	Load:<0.1% at max mA output over the output kV range Line:<0.1% at max mA output over the input line range
Ripple	kV: <0.5% p-p of maximum output mA: <20µA p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Stability	kV: <0.01% per °C over the operational ambient temperature range
Overshoot	kV: ≤5% of rated output
Output Rise Time	Standard Rise Time ≤500 msec. from 10%–90% of max rated output
Cooling	External Air Cooling required
Radiation shield	Less than 0.5 mR/hr at 5 cm from the surface of the chassis as per FDA 21 CFR 1020.40
Safety and Regulatory	Designed to meet CE, CSA, TUV

Compact Configuration shown with Cone Beam and Integrated Control Unit

Control Unit

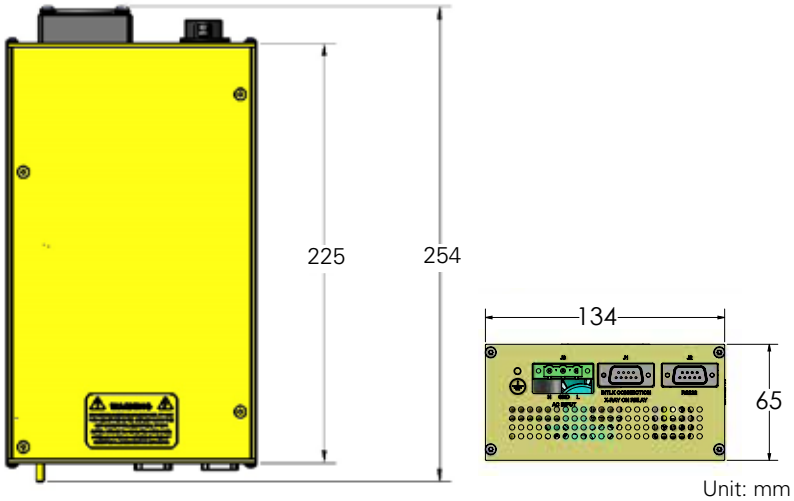
Compliances	EN60950 and EN61010A-1
Dimensions	Generator: 225mm x 144mm x 134mm Control unit: 254mm x 134mm x 65mm
Weight	Generator: 11 Kg Control unit: 2 Kg
X-ray Tube	
X-ray	Glass
X-ray Focal Spot Size	35 - 50 µm
Beam Port	Fan beam: 80° X 10° max Cone beam: 30°
Operating Environment	
Operating Temperature	0°C to 40°C
Storage Temperature	-40°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Unit: mm

Control Unit



Unit: mm

Graphical User Interface

LED Indicators

X-RAY ON	Illuminated when interlock is closed and HV is enabled
POWER	Illuminated when power is present
OV	Over voltage fault
OP	Illuminated when selected power exceeds the rated power
OC	Over current fault
ARC	ARC-ing fault
OT	Illuminated when oil temperature exceeds 60°C ± 3°C

J1: Interlock Connection/ X-ray On Relay

Pin Out	Name
1	Interlock out
2	Interlock in
3	X-ray On Relay contact common
4	X-ray On Relay contact N/C
5	X-ray On Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

J2: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

J3: AC Input

N	Neutral
GND	Ground
L	90-264 VAC Input

IXS1010
100 kV, 100 W

Multipurpose Sources

Applications

Thickness Gauging, X-ray Analysis

Key Features
- Integrated High Voltage Generator, X-ray Tube, and Control Electronics
- High Stability
- Form Factor Designed Specifically for Thickness Gauging
- Radiation Shielded
- User Friendly RS232 Digital Interface
- 24 VDC Input

Input Line Range	24 VDC ± 10%
Output kV	30 - 100 kV
Output mA	0.05 - 2.0 mA
Output Power	100 W (Continuous)
Voltage Regulation	Load: <0.1% at max kV output over the output mA range Line: <0.1% at max kV output over the input line
Current Regulation	Load: <0.1% at max mA output over the output kV range Line: <0.1% at max mA output over the input line range load:
Ripple	kV: < 0.5% rms of maximum output mA: < 20 µA p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
kV Stability	0.01% per °C over the operational ambient temperature range; 0.1% in 8 hours after 40 min warm up
Overshoot	kV: <5% of rated output
Output Rise Time	Standard Rise Time <1 sec to within 1% of programmed value
Cooling	Water Cooled (Optional air cool for lower output units)

Generator with mounted control unit

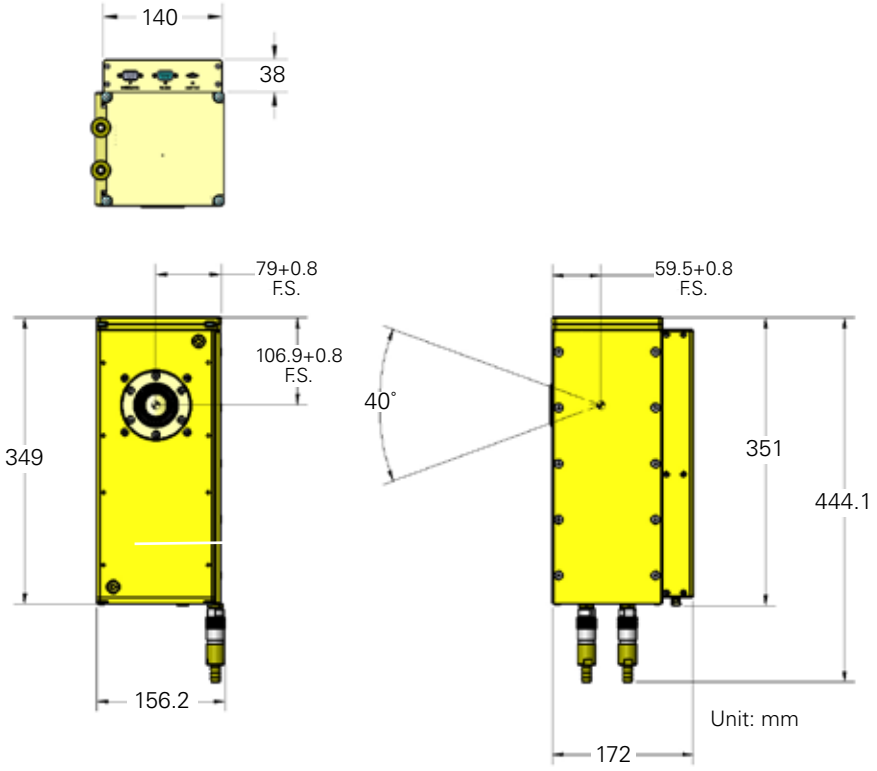
Generator with 40° beam port

Radiation shield	Less than 0.5 mR/hr at 5cm from the surface of the chassis as per FDA 21 CFR 1020.40
Safety and Regulatory	Designed to meet CE, CSA, TUV EN60950 and EN61010A-1
Dimensions	Generator: 156mm x 350mm x 174mm
Weight	Generator: ~15 kg

X-ray Tube	
X-ray Tube Type	Glass
X-ray Focal Spot Size	0.8 mm as per IEC60336
Beam Port	Cone beam: 40°

Operating Environment	
Operating Temperature	0°C to 40°C
Storage Temperature	-20°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Graphical User Interface

LED Indicators

POWER	Illuminated when Power is present
X-ray ON	Illuminated when Interlock is closed and HV is enabled
ARC	ARC-ing fault
OC	Over Current Fault
OT	Illuminated when oil temperature exceeds 60±3°C
OP	Illuminated when selected power exceeds the rated power
OV	Over Voltage fault

J1 Connector: (Interlock 9 Pin Male)

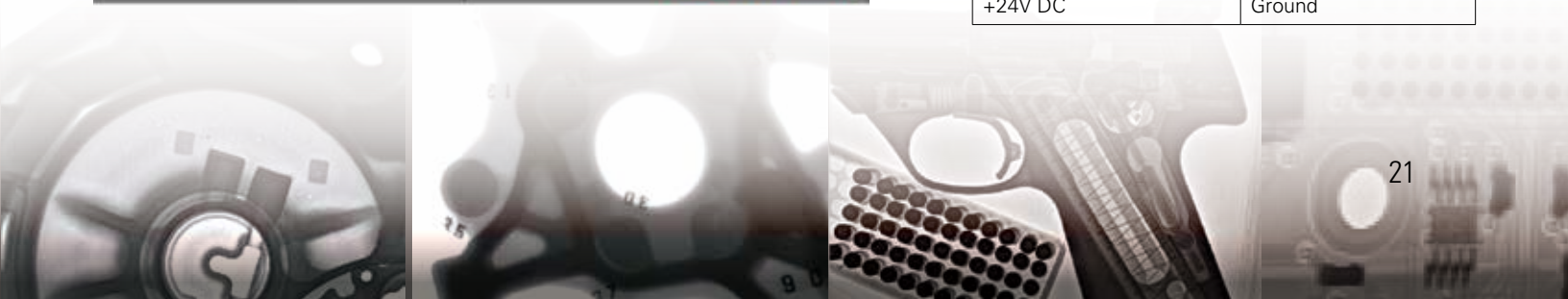
Pin Out	Name
1	Interlock In
2	Interlock In
3	Interlock Out
4	X-ray On Relay: On=GND, Off=Open
5	N/A
6	N/A
7	Interlock Out
8	X-ray Enable Out
9	X-ray Enable In

J2 Connector: (RS232 9 Pin Female)

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	External kV Program
7	External uA Program
8	External kV Monitor
9	External uA Monitor

J3 Connector

L	G
+24V DC	Ground



IXS1015
100 kV, 150 W

Multipurpose Sources

Applications

Food Inspection Systems, Security Scanners, Industrial NDT, Product Quality Monitoring

Key Features

- Integrated High Voltage Generator, X-ray Tube, and Control Electronics
- High Stability
- Compact and Robust
- Radiation Shielded
- User Friendly RS232 Digital Interface

Specifications	
Input Line Range	90–264 VAC, 50/60 Hz
Output kV	25–100 kV
Output mA	0.05–6.0 mA
Output Power	150 W continuous maximum
Voltage Regulation	Load: <0.1% at max kV output over the output mA range Line: <0.1% at max kV output over the input line range
Current Regulation	Load: <0.1% at max mA output over the output kV range Line: <0.1% at max mA output over the input line range
Ripple	kV: <0.5% p-p of maximum output mA: <0.5% p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Overshoot	kV: ≤ 5% of rated output
Output Rise Time	Standard Rise Time ≤500 ms from 10%–90% of max rated output
Cooling	Air Cooled (Water cooled option also available)
Radiation shield	Less than 0.5 mR/hr at 5 cm from the surface of the chassis as per FDA 21 CFR 1020.40
Safety and Regulatory Compliances	Designed to meet CE, CSA, TUV EN60950 and IEC/EN61010-1

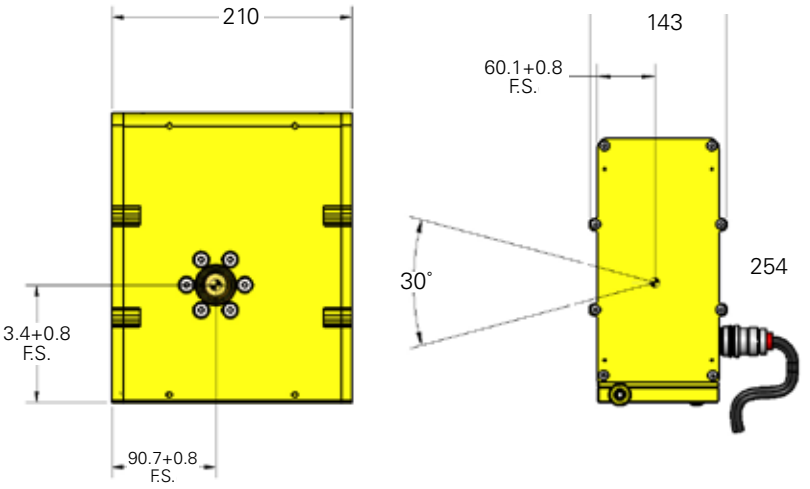
Cone Beam X-ray Generator

Control Unit

Dimensions	Generator: 254mm x 210mm x 143mm Control unit: 254mm x 134mm x 65mm
Weight	Generator: 14 Kg Control unit: 2 Kg
X-ray Tube	Control Unit
X-ray Tube Type	Glass
X-ray Focal Spot Size	0.8 mm as per IEC60336 0.5 mm available upon request
Beam Port	Fan beam: 80° X 10° max Cone beam: 30°

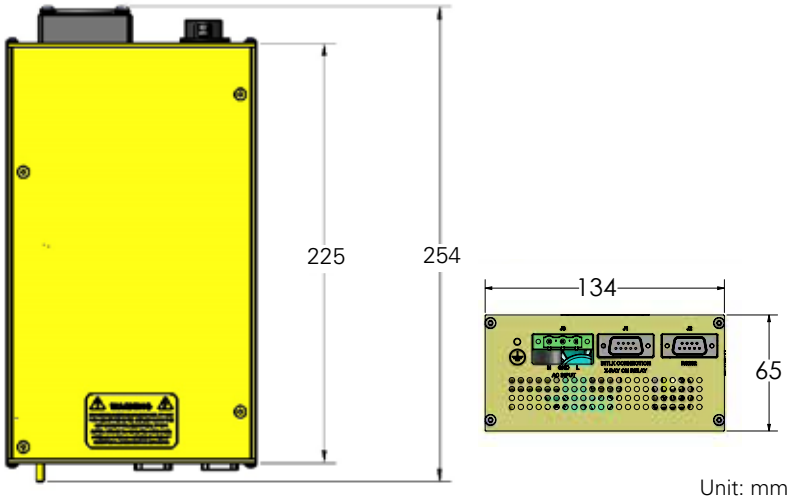
Operating Environment	
Operating Temperature	0°C to 40°C
Storage Temperature	-40°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Unit: mm

Control Unit



Unit: mm

Graphical User Interface

LED Indicators

X-RAY ON	Illuminated when interlock is closed and HV is enabled
POWER	Illuminated when power is present
OV	Over voltage fault
OP	Illuminated when selected power exceeds the rated power
OC	Over current fault
ARC	ARC-ing fault
OT	Illuminated when oil temperature exceeds 60ºC ± 3ºC

J1: Interlock Connection/ X-ray On Relay

Pin Out	Name
1	Interlock out
2	Interlock in
3	X-ray On Relay contact common
4	X-ray On Relay contact N/C
5	X-ray On Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

J2: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

J3: AC Input

N	Neutral
GND	Ground
L	90-264 VAC Input

IXS1020 Water Cooled
100 kV, 200 W

Multipurpose Sources

Applications

Thickness Gauging, X-ray Analysis, Industrial NDT, Security Scanners

Key Features

- Integrated High Voltage Generator, X-ray Tube,Control Electronics and Liquid to Liquid Heat Exchanger
- High Stability
- Compact and Robust
- Radiation Shielded
- User Friendly RS232 Digital Interface
- Ethernet & Wifi (optional)

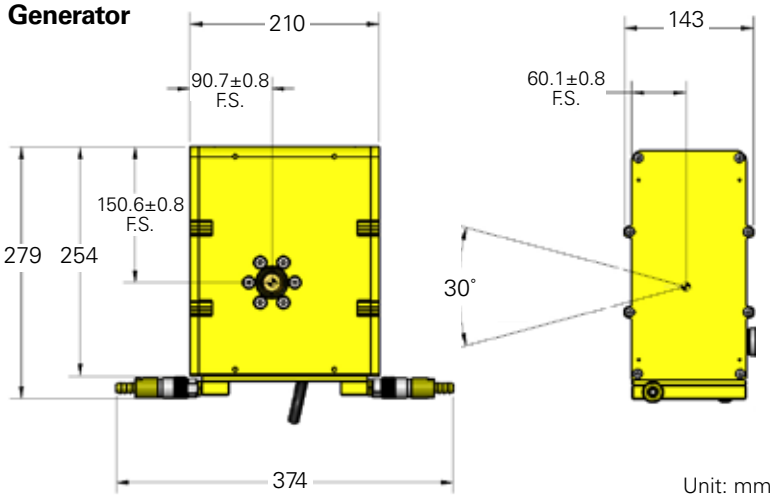
Specifications	
Input Line Range	90–264 VAC, 50/60 Hz
Output kV	25–100 kV
Output mA	0.05–8.0 mA
Output Power	200 W continuous maximum
Voltage Regulation	Load: <0.1% at max kV output over the output mA range Line: <0.1% at max kV output over the input line range
Current Regulation	Load: <0.1% at max mA output over the output kV range Line: <0.1% at max mA output over the input line range
Ripple	kV: <0.5% p-p of maximum output mA: <0.5% p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Stability	kV: <0.01% per °C over the operational ambient temperature range
Overshoot	kV: ≤5% of rated output
Output Rise Time	Standard Rise Time ≤500 ms from 10%–90% of max rated output
Cooling	Water Cooled (see accessories for cooler options)
Radiation shield	Less than 0.5 mR/hr at 5 cm from the surface of the chassis as per FDA 21 CFR 1020.40

Cone Beam X-ray Generator

Optional Water to Air Cooler

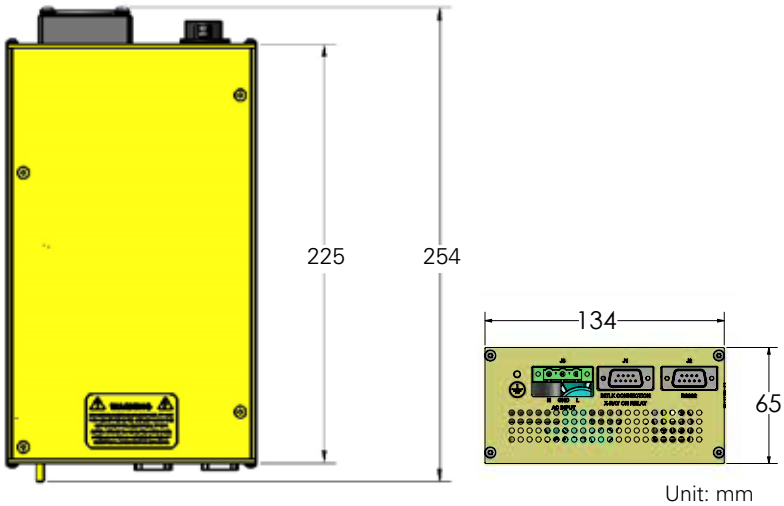
Safety and Regulatory Compliances	Designed to meet CE, CSA, TUV EN60950 and IEC/EN61010-1
Dimensions	Generator: 279mm x 210mm x 143mm Control unit: 254mm x 134mm x 65mm
Weight	Generator: 14 Kg Control unit: 2 Kg
X-ray Tube	
X-ray Tube Type	Glass
X-ray Focal Spot Size	0.8 mm as per IEC60336 0.5 mm available upon request
Beam Port	Fan beam: 80° X 10° max Cone beam: 30°
Operating Environment	
Operating Temperature	0°C to 40°C
Storage Temperature	-40°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Unit: mm

Control Unit



Unit: mm

Graphical User Interface

LED Indicators

X-RAY ON	Illuminated when interlock is closed and HV is enabled
POWER	Illuminated when power is present
OV	Over voltage fault
OP	Illuminated when selected power exceeds the rated power
OC	Over current fault
ARC	ARC-ing fault
OT	Illuminated when oil temperature exceeds 60°C ± 3°C

J1: Interlock Connection/ X-ray On Relay

Pin Out	Name
1	Interlock out
2	Interlock in
3	X-ray On Relay contact common
4	X-ray On Relay contact N/C
5	X-ray On Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

J2: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

J3: AC Input

N	Neutral
GND	Ground
L	90-264 VAC Input

IXS1050
100 kV, 500 W

Multipurpose Sources

Applications

Dental CT, Panoramic Dental, Medical Research

Key Features
- Ideal for panoramic dental and CT applications
- Integrated High Voltage Generator, X-ray Tube, and Control Electronics
- Radiation Shielded
- User Friendly RS232 Digital Interface

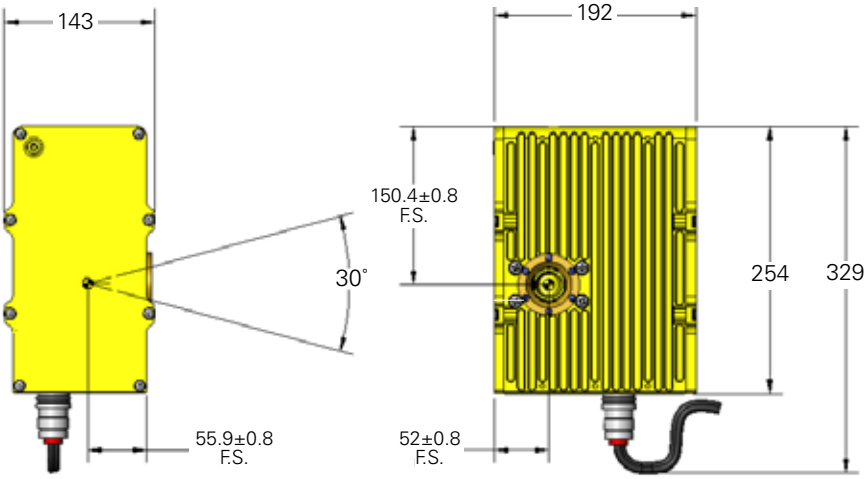
Specifications	
Input Line Range	230 VAC, 50/60 Hz
Output kV	40 - 100 kV
Output mA	2.0 - 10.0 mA
Output Power	150 W continuous maximum 500W peak power * up to 1 kW peak also available
Voltage Regulation	Load: <0.1% at max kV output over the output mA range Line: <0.1% at max kV output over the input line range
Current Regulation	Load: <0.5% at max mA output over the output kV range Line: <0.5% at max mA output over the input line range
Ripple	kV: <0.5% p-p of maximum output mA: <0.5% p-p of maximum output
Stability	kV: ± 1.0% mA: ± 1.0%
Overshoot	kV: ≤5% of rated output
Output Rise Time	kV Rise Time <200 msec to within 1% of selected value
Cooling	Air Cooled
Radiation shield	Less than 1 mGy/hr at 1 m from the surface of the chassis
Safety and Regulatory Compliances	Designed to meet CE, CSA, TUV, IEC/EN60601-1

Cone Beam X-ray Generator

Control Unit

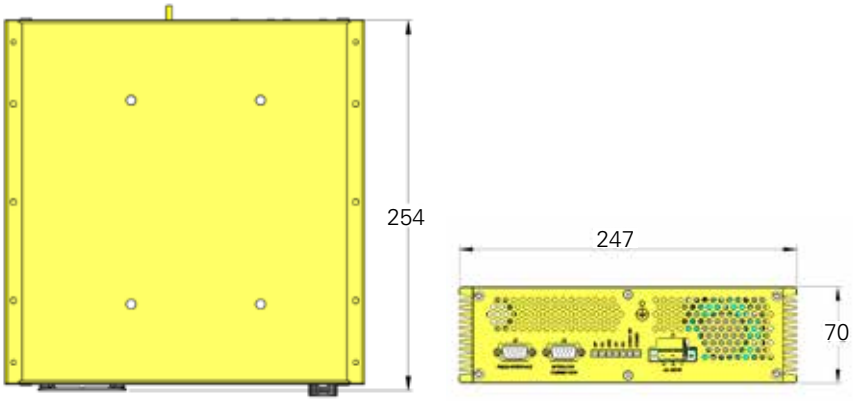
Dimensions	Generator: 254mm x 192mm x 143mm Control unit: 254mm x 247mm x 70mm
Weight	Generator: 12 kg Control unit: 3 kg
X-ray Tube	
X-ray Tube Type	Glass
X-ray Focal Spot Size	0.4 mm as per IEC60336
Beam Port	Cone beam: 30°
Operating Environment	
Operating Temperature	5°C to 40°C
Storage Temperature	-20°C to 80°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Unit: mm

Control Unit



Unit: mm

Graphical User Interface

LED Indicators

OP	Over Power fault
OC	Over current fault
ARC	ARC-ing fault
OT	Illuminated when oil temperature exceeds 60±3°C.
OV	Over voltage fault
X-RAY ON	Illuminated when interlock is closed and HV is enabled
POWER	Illuminated when power is present

J1: AC Input

N	Neutral
GND	Ground
L	230 VAC Input

J2: Interlock

Pin Out	Name
1	Interlock out
2	Interlock In
3	X-ray on relay contact common
4	X-ray on relay contact N/C
5	X-ray on Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

J3: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

IXS1203 Mini-Focus
120 kV, 36 W

Mini-Focus Sources

Applications

Electronic Inspections, Food & Pharmaceutical Safety Inspections, Industrial NDT

Key Features

- Integrated High Voltage Generator, X-ray Tube, and Control Electronics
- High Resolution
- Compact and Robust
- Cone or Fan beam available for flat panel or line sensor detection
- Radiation Shielded
- User Friendly RS232 Digital Interface

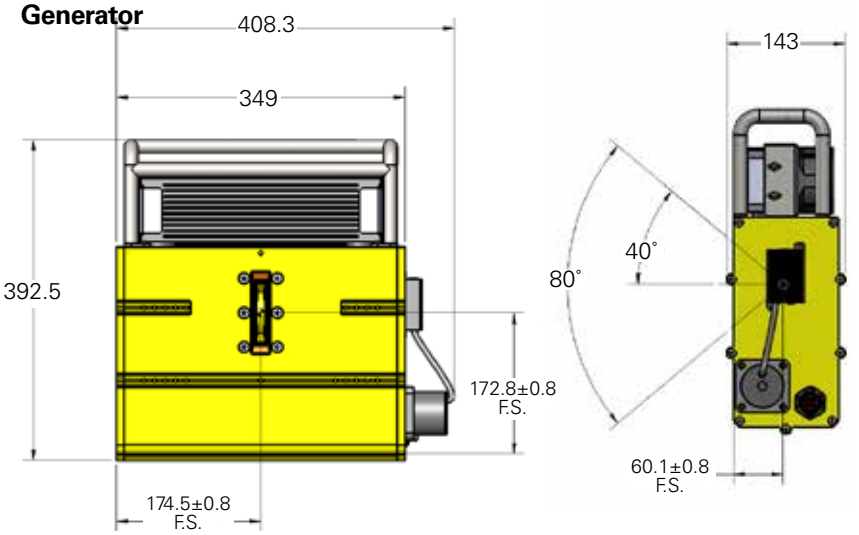
Specifications	
Input Line Range	115–230 VAC, 50/60 Hz
Output Voltage	40–120 kV
Output Current	0.05 - 0.3 mA
Output Power	36 W continuous maximum
Voltage Regulation	Load:<0.1% at max kV output over the output mA range Line:<0.1% at max kV output over the input line range
Current Regulation	Load:<0.5% at max mA output over the output kV range Line:<0.5% at max mA output over the input line range
Ripple	kV: <0.5% p-p of maximum output mA: <20µA p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Stability	kV: <0.01% per °C over the operational ambient temperature range
Overshoot	kV: ≤5% of rated output
Output Rise Time	Standard Rise Time ≤500 msec. from 10%–90% of max rated output
Cooling	External Air Cooling required
Radiation shield	Less than 0.5 mR/hr at 5 cm from the surface of the chassis as per FDA 21 CFR 1020.40
Safety and Regulatory	Designed to meet CE, CSA, TUV

Cone Beam X-ray Generator

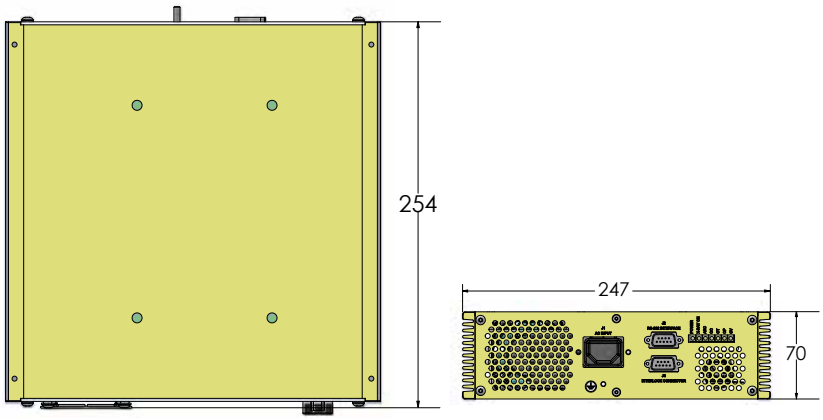
Control Unit

Compliances	EN60950 and EN61010A-1
Dimensions	Generator: 417mm x 393mm x 143mm Control unit: 254mm x 247mm x 70mm
Weight	Generator: 23 kg Control unit: 3 kg
X-ray Tube	
X-ray	Glass
X-ray Focal Spot Size	50 µm
Beam Port	Fan beam: 80° X 10° max Cone beam: 30°, 40°
Operating Environment	
Operating Temperature	0°C to 40°C
Storage Temperature	-20°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Control Unit



Graphical User Interface

LED Indicators

X-RAY ON	Illuminated when interlock is closed and HV is enabled
POWER	Illuminated when power is present
OV	Over voltage fault
OP	Illuminated when selected power exceeds the rated power
OC	Over current fault
ARC	ARC-ing fault
OT	Illuminated when oil temperature exceeds 60ºC ± 3ºC

J1: Interlock Connection/ X-ray On Relay

Pin Out	Name
1	Interlock out
2	Interlock in
3	X-ray On Relay contact common
4	X-ray On Relay contact N/C
5	X-ray On Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

J2: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

J3: AC Input

N	Neutral
GND	Ground
L	90-264 VAC Input

IXS1212 Portable
120 kV, 120 W

Portable X-Ray Source

Applications

Non-Destructive Testing, Security, General X-ray Operations

Key Features
- Battery Operated
- Integrated High Voltage Generator, X-ray Tube, Control Electronics, and Exchangeable Lithium Battery Pack
- Radiation Shielded
- Wifi, and Ethernet or RS232
- Accessories: Tripod Mount, Protective Cover, and Carrying Handle

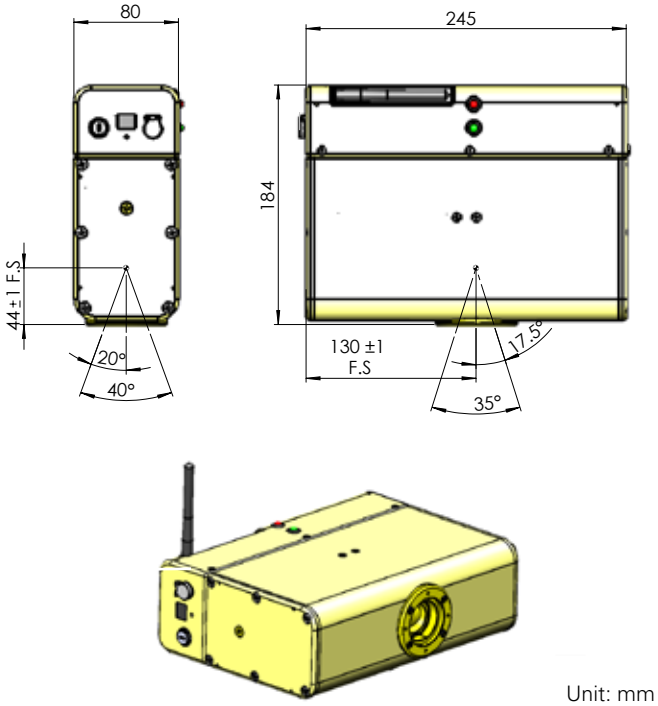
Input Line Range	24VDC ± 10%, or 24V LiFePO4 Battery Pack
Output kV	30–120 kV
Output mA	0.2–1.0 mA
Battery Power	Continuous: 14min @120W Pulsing: 21min, 15sec On/15sec Off
Battery Charging Time	2 hours from low line (21V)
Voltage Regulation	Load: < 0.2% for mA changes over specified range (with constant ambient temperature and line input.) Line: < 0.2% for Line Input changes over specified range (with constant ambient temperature and load).
Current Regulation	Load:< 0.5% for mA changes over specified kV range (with constant ambient temperature and line input). Line: < 0.5% for Line Input changes over specified range (with constant ambient temperature and load).
Ripple	kV: < ± 0.5% rms of maximum output mA: < ± 0.5% rms of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Overshoot	kV: <5% of rated output
Output Rise Time	Standard Rise Time ≤0.5 Sec. to within 1% of programmed kV

Generator shown with protective cover and handle

Generator shown mounted on tripod

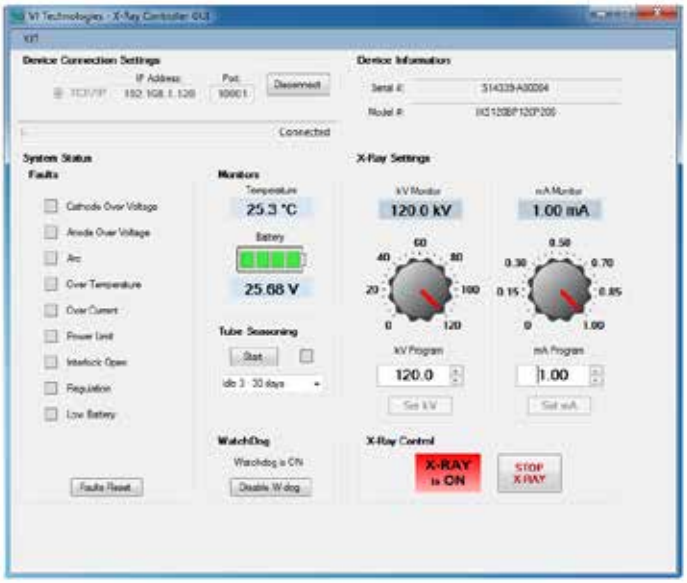
Cooling	Air Cooled
Radiation Shield	<6mR/hr at 5cm from the surface with beam port blocked.
Safety and Regulatory	Designed to meet CE, and IEC/EN61010-1
Dimensions	Generator: 245mm x 80mm x 184mm
Weight	5.9 kg (Generator only)
X-ray Tube	
X-ray Tube Type	Glass
X-ray Focal Spot Size	0.5 mm as per IEC60336
Beam Port	Cone beam: 35°
Operating Environment	
Operating Temperature	-20°C to 50°C
Storage Temperature	-30°C to 80°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing
IP Rating	IP60

Generator



Unit: mm

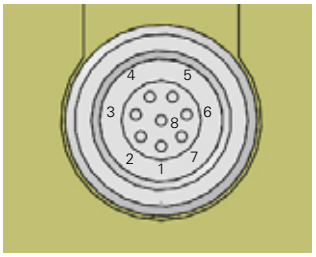
Graphical User Interface



Connectors

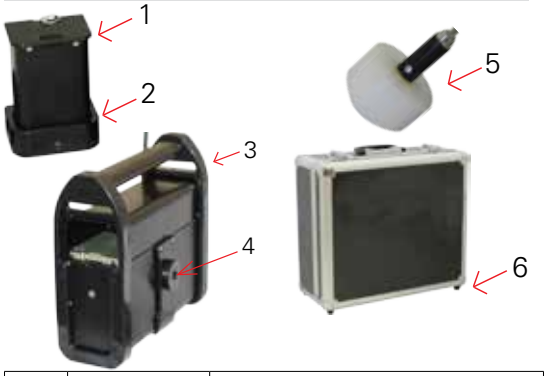
J1	Safety Key Lock
J2	RJ45 Connector (Ethernet or RS232)
J3	Input Power and Battery Charger

INPUT POWER CONNECTOR



Pin Out	Name
1	24VDC Return
2	24VDC/10A External Power Supply
3	Auxiliary Power 24VDC/2W
4	24VDC Battery Charger
5	Battery Charger Return
6	Auxiliary Return
7	Interlock Out
8	Interlock In

Accessories



Item	Part Number	Description
1	AS3001-288M	Battery pack(inc. 24V $LiFeO_4$ battery)
2	AS3001-300M	Charging Station
3	DS3000-041M	Protective Cover and Handle
4	DB3000-122M	Tripod Mount
5	DS3000-106	Laser Alighment Guide
6	JP3000-019	Carrying Case

IXS1620
160 kV, 200 W

Multipurpose Sources

Applications

Medical Imaging, Security Inspections, Industrial NDT, Food Inspection, Quality Monitoring

Key Features

- Integrated High Voltage Generator, X-ray Tube, and Control Electronics
- Compact and Robust
- Wide Beam Angle
- Fast Rise time
- Radiation Shielded
- User Friendly RS232 Digital Interface

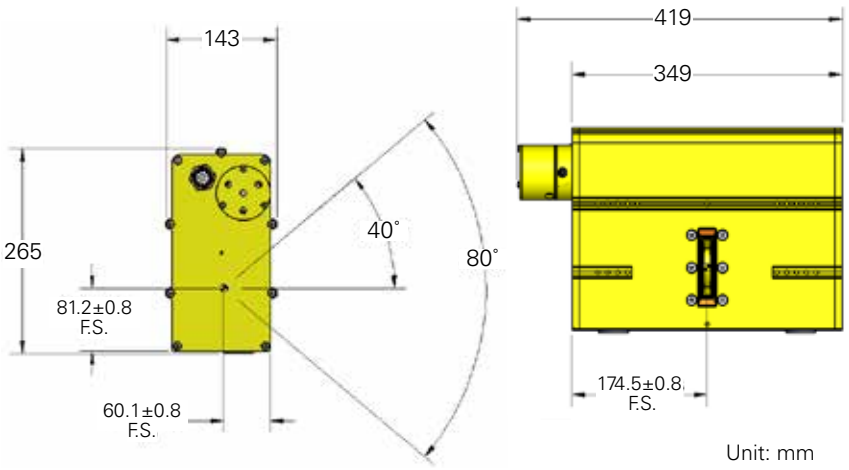
Input Line Range	115/230 VAC, 50/60 Hz
Output kV	25 - 160 kV
Output mA	0.2 - 8.0 mA
Output Power	200 W continuous Higher peak power with Duty Cycle
Voltage Regulation	Load: <0.1% at max kV output over the output mA range Line: <0.1% at max kV output over the input line range
Current Regulation	Load: <0.5% at max mA output over the output kV range Line: <0.5% at max mA output over the input line range
Ripple	kV: <0.5% p-p of maximum output mA: <0.5% p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Overshoot	kV: ≤5% of rated output
Output Rise Time	Rise Time ≤200 ms from 10%–90% of max rated output
Cooling	External Air Cooling required
Radiation shield	Less than 0.5 mR/hr at 5 cm from the surface of the chassis as per FDA 21 CFR 1020.40
Safety and Regulatory Compliances	Designed to meet CE, CSA, TUV, EN60950, and IEC/EN61010-1
Dimensions	Generator: 419mm x 265mm x 143mm Control unit: 254mm x 247mm x 70mm (Smaller control unit for models ≤100kV)
Weight	Generator: 21 Kg Control unit: 3 Kg

Generator shown with Integrated Control Unit

Control Unit options: 160kV or 100kV

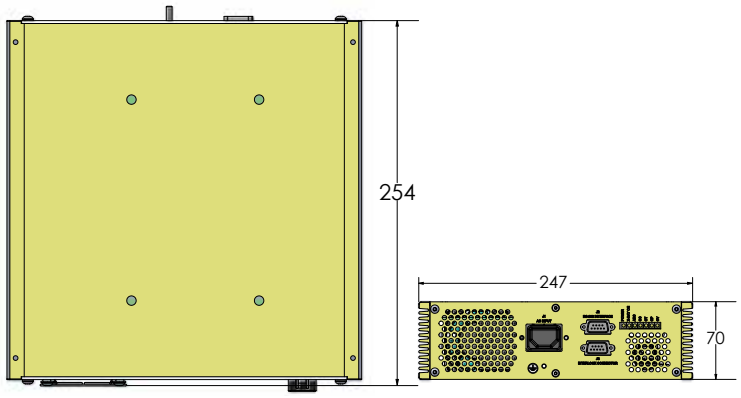
X-ray Tube	
X-ray Tube Type	Glass
X-ray Focal Spot Size	0.8 mm as per IEC60336 0.5 mm available upon request
Beam Port	Fan beam: 80° X 10° Cone beam: 30°, 40°
Operating Environment	
Operating Temperature	0°C to 40°C
Storage Temperature	-40°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Unit: mm

Control Unit



Unit: mm

Graphical User Interface

LED Indicators

POWER	Illuminated when power is present
X-RAY ON	Illuminated when interlock is closed and HV is enabled
ARC	ARC-ing fault
OC	Over current fault
OT	Illuminated when oil temperature exceeds 60°C ± 3°C
OP	Illuminated when selected power exceeds the rated power
OV	Over voltage fault

J2: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

J3: 24 VDC Pump/Fan

Pin Out	Name
+	+24 VDC
-	Return
+	+24 VDC
-	Return

J4: Interlock Connection/ X-ray On Relay

Pin Out	Name
1	Interlock out
2	Interlock in
3	X-ray On Relay contact common
4	X-ray On Relay contact N/C
5	X-ray On Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

IXS1650
160 kV, 500 W

Multipurpose Sources

Applications

Industrial NDT, Security Scanners, Medical Research, Product Quality Monitoring

Key Features

- Ideal Alternative to Conventional High Voltage Generator and X-ray Tube Setup
- Integrated High Voltage Generator, X-ray Tube, Control Electronics, and Heat Radiator
- Radiation Shielded
- Cone or Fan beam available for flat panel or line sensor detection
- User Friendly RS232 Digital Interface

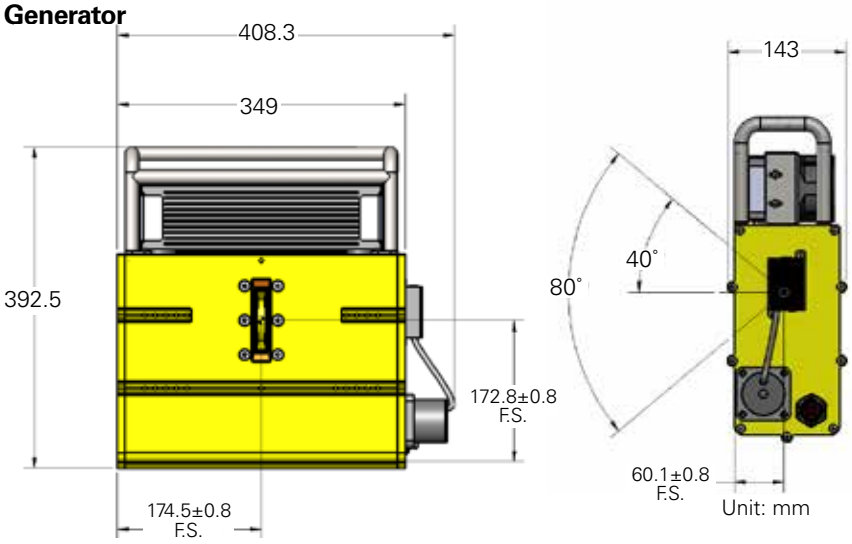
Input Line Range	115/230 VAC, 50/60 Hz
Output kV	25–160 kV
Output mA	0.2 – 8.0 mA
Output Power	500 W continuous maximum
Voltage Regulation	Load: <0.1% at max kV output over the output mA range Line: <0.1% at max kV output over the input line range
Current Regulation	Load: <0.5% at max mA output over the output kV range Line: <0.5% at max mA output over the input line range
Ripple	kV: <1.0% p-p of maximum output mA: <1.0% p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Overshoot	kV: ≤5% of rated output
Output Rise Time	Standard Rise Time ≤ 500 msec. from 10%–90% of max rated output (Faster Rise Time available upon request)
Cooling	Air Cooled (Several heat exchanger options available)
Radiation shield	Less than 0.5 mR/hr at 5 cm from the surface of the chassis as per FDA 21 CFR 1020.40
Safety and Regulatory Compliances	Designed to meet CE, CSA, TUV, EN60950, and IEC/EN61010-1

Generator

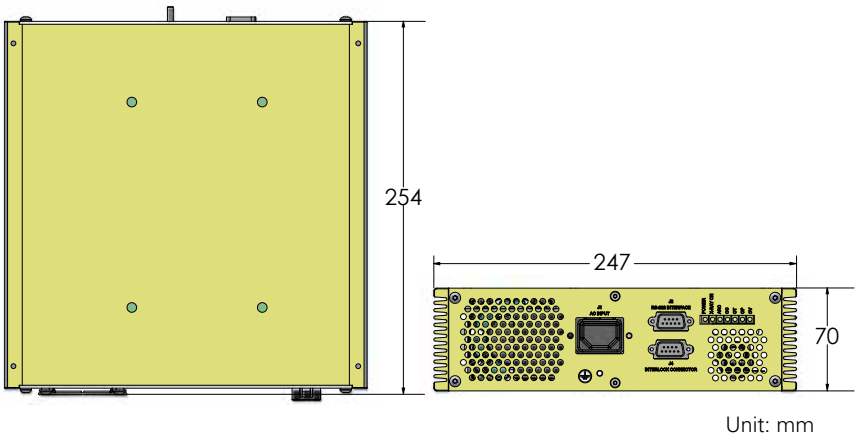
Control Unit

Dimensions	Generator: 417mm x 393mm x 143mm Control unit: 254mm x 247mm x 70mm
Weight	Generator: 23 Kg Control unit: 3 Kg
X-ray Tube	
X-ray Tube Type	Glass
X-ray Focal Spot Size	0.8 mm as per IEC60336 0.5 mm available upon request
Beam Port	Fan beam: 80° X 10° Cone beam: 30°, 40°
Operating Environment	
Operating Temperature	0°C to 40°C
Storage Temperature	-40°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Control Unit



Graphical User Interface

LED Indicators

POWER	Illuminated when power is present
X-RAY ON	Illuminated when interlock is closed and HV is enabled
ARC	ARC-ing fault
OC	Over current fault
OT	Illuminated when oil temperature exceeds 60°C ± 3°C
OP	Illuminated when selected power exceeds the rated power
OV	Over voltage fault

J2: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

J3: 24 VDC Pump/Fan

Pin Out	Name
+	+24 VDC
-	Return
+	+24 VDC
-	Return

J4: Interlock Connection/ X-ray On Relay

Pin Out	Name
1	Interlock out
2	Interlock in
3	X-ray On Relay contact common
4	X-ray On Relay contact N/C
5	X-ray On Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

IXS1650 Water Cooled
160 kV, 500 W

Multipurpose Sources

Applications

Industrial NDT, Thickness Gauging, Medical Research, Product Quality Monitoring

Key Features

- Integrated High Voltage Generator, X-ray Tube, Control Electronics, and Liquid to Liquid Heat Exchanger
- Compact and Robust
- Exceptional Stability
- Radiation Shielded
- User Friendly RS232 Digital Interface

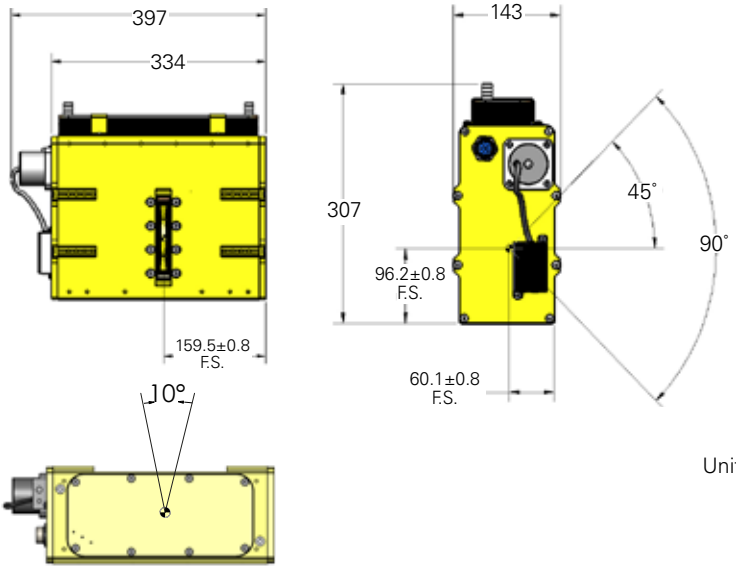
Input Line Range	115/230 VAC, 50/60 Hz
Output kV	20–160 kV
Output mA	0.2–8.0 mA
Output Power	500 W continuous maximum
Voltage Regulation	Load: <0.1% at max kV output over the output mA range Line: <0.1% at max kV output over the input line range
Current Regulation	Load: <0.1% at max mA output over the output kV range Line: <0.1% at max mA output over the input line range
Ripple	kV: <0.5% p-p of maximum output mA: <0.5% p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Stability	kV: <0.01% per °C over the operational ambient temperature range
Overshoot	kV: ≤5% of rated output
Output Rise Time	Standard Rise Time ≤500 ms from 10%–90% of max rated output
Cooling	Water Cooled (see accessories for cooler options)
Radiation shield	Less than 0.5 mR/hr at 5 cm from the surface of the chassis as per FDA 21 CFR 1020.40
Safety and Regulatory Compliances	Designed to meet CE, CSA, TUV, EN60950, and IEC/EN61010-1

Generator

Optional Water to Air Cooler
(see accessories and options)

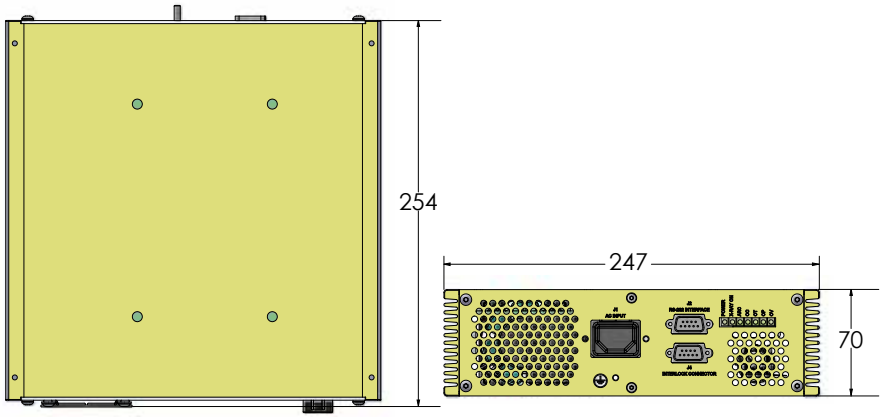
Dimensions	Generator: 419mm x 338mm x 143mm Control unit: 254mm x 247mm x 70mm
Weight	Generator: 23 Kg Control unit: 3 Kg
X-ray Tube	
X-ray Tube Type	Glass
X-ray Focal Spot Size	0.4–0.8 mm as per IEC60336
Beam Port	Fan beam: 80° X 10° Cone beam: 30° ,40°
Operating Environment	
Operating Temperature	0°C to 40°C
Storage Temperature	-40°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Unit: mm

Control Unit



Unit: mm

Graphical User Interface

LED Indicators

POWER	Illuminated when power is present
X-RAY ON	Illuminated when interlock is closed and HV is enabled
ARC	ARC-ing fault
OC	Over current fault
OT	Illuminated when oil temperature exceeds 60°C ± 3°C
OP	Illuminated when selected power exceeds the rated power
OV	Over voltage fault

J2: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

J3: 24 VDC Pump/Fan

Pin Out	Name
+	+24 VDC
-	Return
+	+24 VDC
-	Return

J4: Interlock Connection/ X-ray On Relay

Pin Out	Name
1	Interlock out
2	Interlock in
3	X-ray On Relay contact common
4	X-ray On Relay contact N/C
5	X-ray On Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

IXS1680
160 kV, 800 W

Multipurpose Sources

Applications

Industrial NDT, Food Inspection, Security Scanners, Medical Research

Key Features

- Ideal Alternative to Conventional High Voltage Generator and X-ray Tube Setup
- Integrated High Voltage Generator, X-ray Tube, Control Electronics, and Heat Radiator
- Radiation Shielded
- Cone or Fan beam available for flat panel or line sensor detection
- User Friendly RS232 Digital Interface
- Ethernet & Wifi (optional)

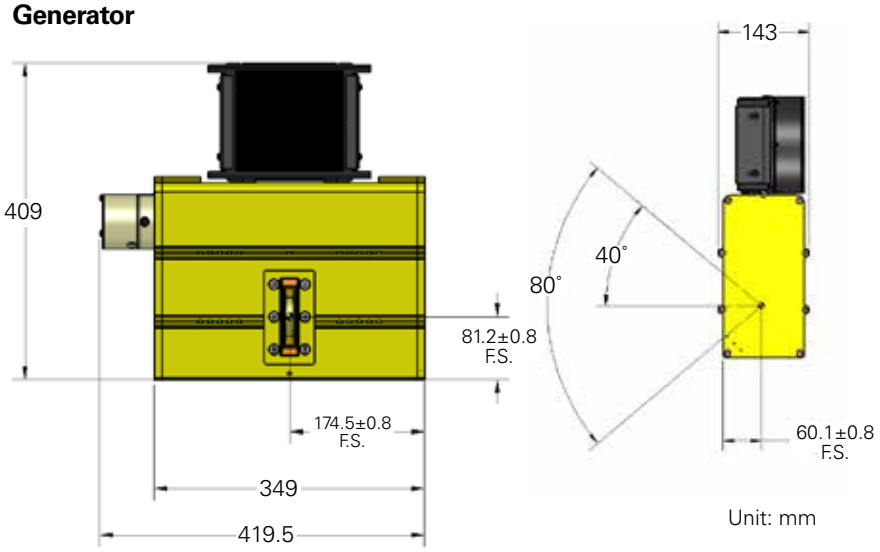
Input Line Range	230 VAC, 50/60 Hz
Output kV	40–160 kV
Output mA	0.5–10.0 mA
Output Power	800 W continuous maximum
Voltage Regulation	Load: <0.1% at max kV output over the output mA range Line: <0.1% at max kV output over the input line range
Current Regulation	Load: <0.5% at max mA output over the output kV range Line: <0.5% at max mA output over the input line range
Ripple	kV: <0.5% p-p of maximum output mA: <0.5% p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Overshoot	kV: ≤5% of rated output
Output Rise Time	Standard Rise Time ≤500 msec. from 10%–90% of max rated output (Faster Rise Time available upon request)
Cooling	Air Cooled (Water cooled option also available)
Radiation shield	Less than 0.5 mR/hr at 5 cm from the surface of the chassis as per FDA 21 CFR 1020.40
Safety and Regulatory Compliances	Designed to meet CE, CSA, TUV, EN60950, and IEC/EN61010-1

Generator

Control Unit

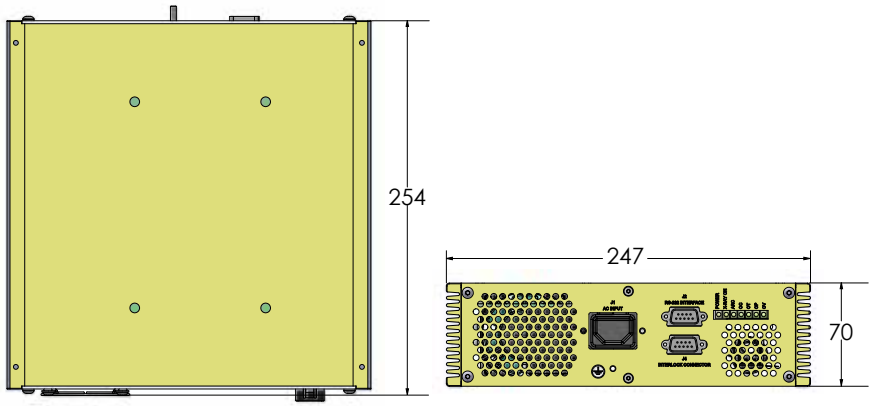
Dimensions	Generator: 417mm x 409mm x 143mm Control unit: 254mm x 247mm x 70mm
Weight	Generator: 23 Kg Control unit: 3 Kg
X-ray Tube	
X-ray Tube Type	Glass
X-ray Focal Spot Size	1.2 mm as per IEC60336
Beam Port	Fan beam: 80° X 10° Cone beam: 30°, 40°
Operating Environment	
Operating Temperature	0°C to 40°C
Storage Temperature	-40°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Unit: mm

Control Unit



Unit: mm

Graphical User Interface

LED Indicators

POWER	Illuminated when power is present
X-RAY ON	Illuminated when interlock is closed and HV is enabled
ARC	ARC-ing fault
OC	Over current fault
OT	Illuminated when oil temperature exceeds 60°C ± 3°C
OP	Illuminated when selected power exceeds the rated power
OV	Over voltage fault

J2: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

J3: 24 VDC Pump/Fan

Pin Out	Name
+	+24 VDC
-	Return
+	+24 VDC
-	Return

J4: Interlock Connection/ X-ray On Relay

Pin Out	Name
1	Interlock out
2	Interlock in
3	X-ray On Relay contact common
4	X-ray On Relay contact N/C
5	X-ray On Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

IXS2050
200 kV, 500 W

Multipurpose Sources

Applications

Industrial NDT, Security, General X-ray Operations

Key Features
- Ideal Alternative to Conventional High Voltage Generator and X-ray Tube Setup
- Integrated High Voltage Generator, X-ray Tube, Control Electronics, and Heat Radiator
- Radiation Shielded
- Large Beam Angle Suitable for Compact System Design
- Cone or Fan Beam Available for Flat Panel Or Line Sensor Detection
- User Friendly RS232 Digital Interface

Input Line Range	230 VAC, 50/60 Hz
Output kV	80–200 kV
Output mA	0.2–6.0 mA
Output Power	500 W continuous maximum
Voltage Regulation	Load: <0.1% at max kV output over the output mA range Line: <0.1% at max kV output over the input line range
Current Regulation	Load: <0.5% at max mA output over the output kV range Line: <0.5% at max mA output over the input line range load:
Ripple	kV: <1.0% p-p of maximum output mA: <1.0% p-p of maximum output
Repeatability	kV: <0.5% mA: <0.5%
Overshoot	kV: <5% of rated output
Output Rise Time	Standard Rise Time ≤ 500 msec from 10%–90% of max rated output (Faster Rise Time available upon request)
Cooling	Air Cooled
Radiation shield	Less than 0.5 mR/hr at 5cm from the surface of the chassis as per FDA 21 CFR 1020.40

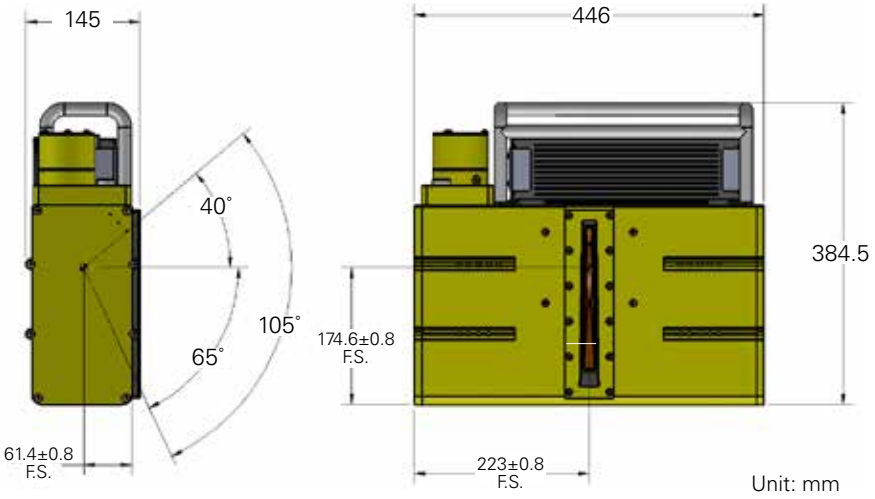
Fan Beam X-ray Generator

Control Box

Safety and Regulatory	Designed to meet CE, CSA, TUV, EN60950, and IEC/EN61010-1
Dimensions	Generator: 436mm x 145mm x 385mm
Weight	Generator: 29.5 kg

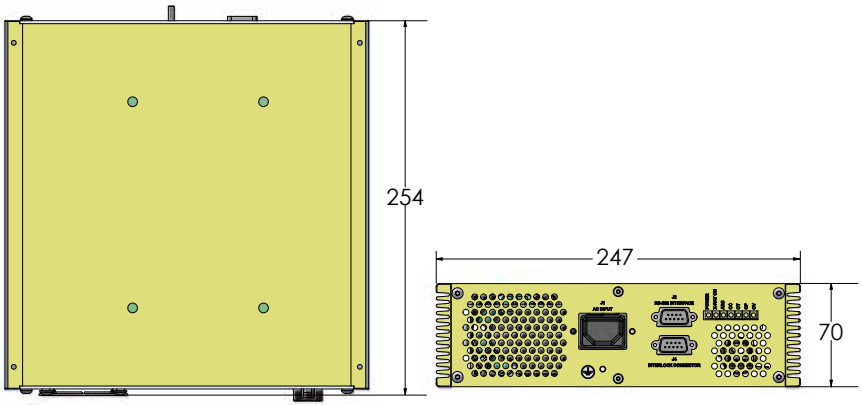
X-ray Tube	
X-ray Tube Type	Glass
X-ray Focal Spot Size	0.8 mm as per IEC60336
Beam Port	Fan beam: 90° x 10° (Beam port opening: 105° x 10° max) Cone beam : 40°
Operating Environment	
Operating Temperature	0°C to 40°C
Storage Temperature	-40°C to 85°C
Thermal Cut Off	60°C ± 3°C of oil temperature
Humidity	98% non-condensing

Generator



Unit: mm

Control Unit



Unit: mm

Graphical User Interface

LED Indicators

POWER	Illuminated when Power is present
X-ray ON	Illuminated when Interlock is closed and HV is enabled
ARC	ARC-ing fault
OC	Over Current Fault
OT	Illuminated when oil temperature exceeds 60±3°C
OP	Illuminates when selected power exceeds the rated power
OV	Over Voltage fault

J1: AC Input

N	Neutral
GND	Ground
L	230 VAC Input

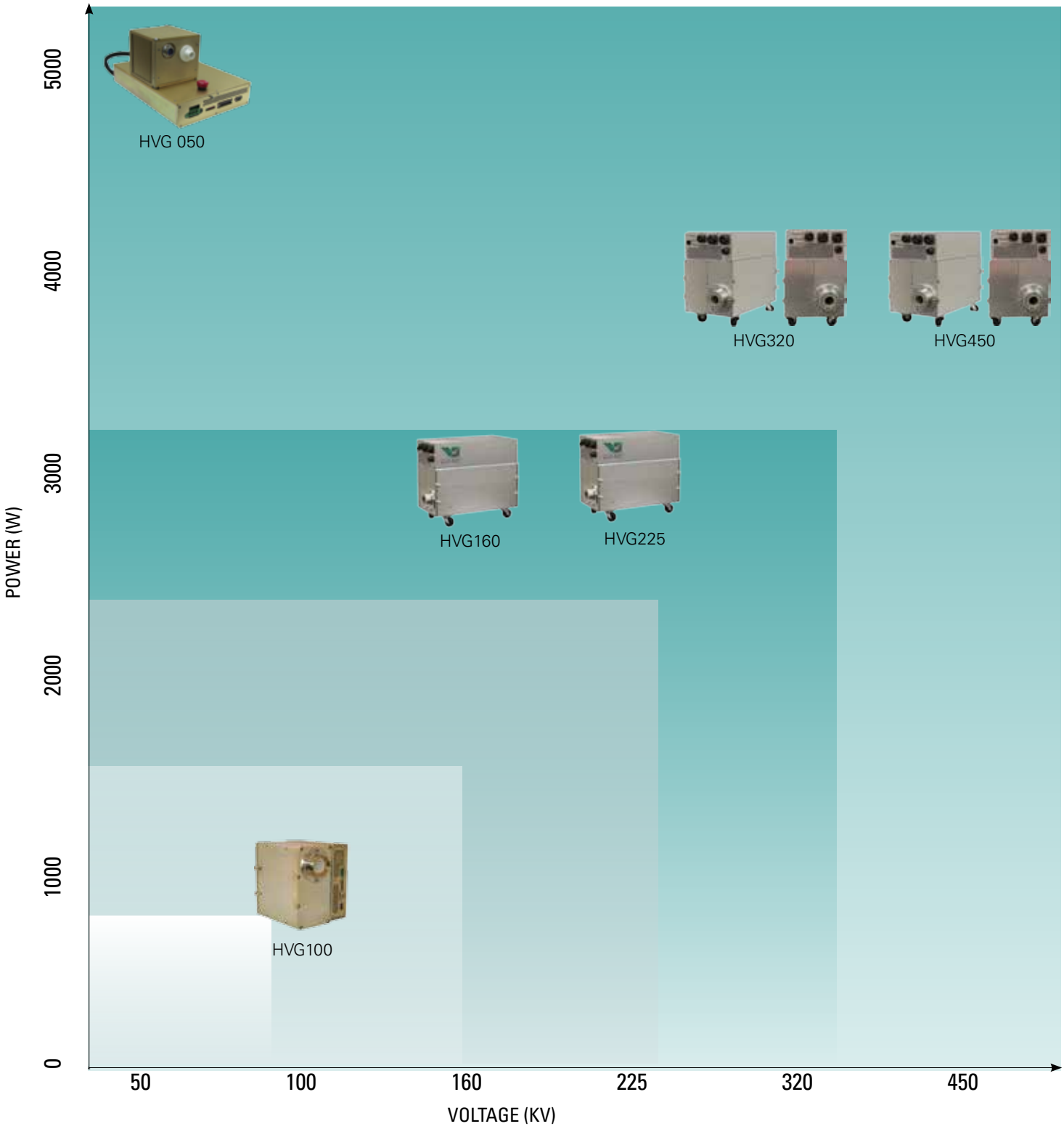
J2 Connector: (Interlock 9 Pin Male)

Pin Out	Name
1	Interlock out
2	Interlock In
3	X-ray On Relay contact Common
4	X-ray On Relay contact N/C
5	X-ray On Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

J3 Connector: (RS232 9 Pin Female)

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A

HVG Series - High Voltage Generators



HVG Series
High Voltage Generators

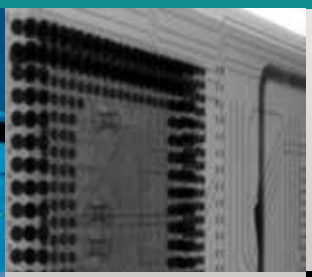
The HVG Series of High Voltage Generators offers high stability and reliability over a variety of voltage and current outputs. Units can be unipolar or bi-polar and can be customized per OEM requirements. The High Voltage Generators are compatible with most commonly used X-ray tubes, allowing for effortless OEM integration.

Features

- Small Form Factor
- Field Serviceable
- Oil Insulation for ease of maintenance

Applications

- Industrial NDT
- Medical Imaging
- Security




HVG050
50 kV, 5000 W

High Voltage Generator for Mammography

Applications

Digital mammography operations

Key Features
- Compact and robust
- Rapid output response time
- Modular design provides flexible mounting configurations
- Filament with precision loop emission control

Specifications

Input Line Range	230 VAC, 50/60 Hz
Input Current	30A
Output kV	10–50 kV
Output Power	5000 W peak output *6000 W peak output also available
Output mA	10 - 140 mA
Voltage Regulation	Line regulation: < 0.2% for Line Input changes over specified range (with constant ambient temperature and load). Load regulation: < 1.0% for mA changes over specified range (with constant ambient temperature and line input).
Current Regulation	Line regulation: < 0.5% for Line Input changes over specified range (with constant ambient temperature and load) kV regulation: < 0.5% for mA changes over specified kV range (with constant ambient temperature and line input)
Rise time	≤5 msec
Ripple	≤1%
Repeatability	<0.5% for both KV and mA output
Output Connectors	High Voltage output: Claymount CA-3

Mammography Generator

Control Unit

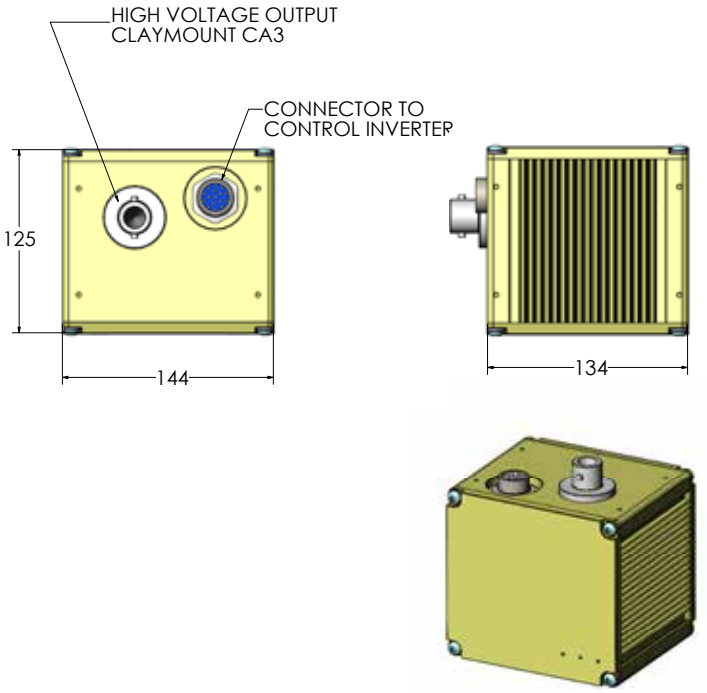
Dimensions	Generator: 144mm x 125mm x 134mm Control unit: 344mm x 254mm x 64mm
Weight	Generator: 4 Kg Control unit: 4 Kg

Operating Environment

Operating Temperature	0°C to 40°C ·
Storage temperature:	-40°C to +85°C
Humidity:	90% non-condensing

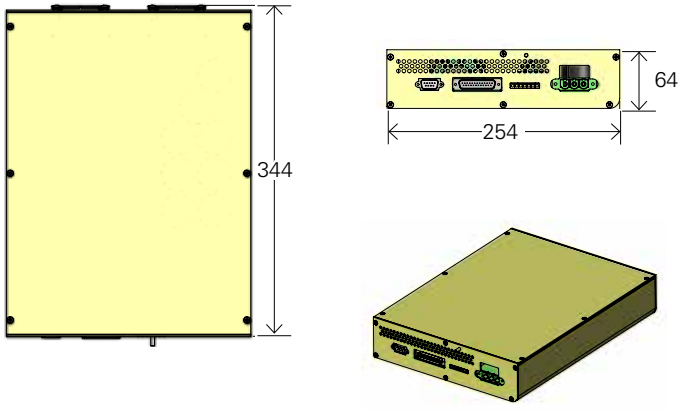
Graphical User Interface

Generator



Unit: mm

Control Unit



Unit: mm

LED Indicators

POWER	Illuminated when power is present
X-RAY ON	Illuminated when interlock is closed and HV is enabled
ARC	ARC-ing fault
OC	Over current fault
OT	Illuminated when oil temperature exceeds 60±3°C.
OP	Over Power fault
OV	Over voltage fault

J1: AC Input

N	Neutral
GND	Ground
L	230 VAC Input

J2: Analog and Interlock Control Interface

Pin Out	Name	Pin Out	Name
1	Interlock out (+15V)	14	N/A
2	Interlock In	15	Detection enable
3	Contactor common	16	N/A
4	X-ray OFF	17	3.3Vref
5	X-ray ON	18	3.3Vref_Gnd
6	24VDC_Gnd	19	X-ray Enable
7	24VDC_OUT	20	N/A
8	EXT_kV Prog	21	External exposure
9	EXT_mA Prog	22	N/A
10	EXT_mA Gnd	23	Ready
11	EXT_kV Mon	24	Prep
12	EXT_mA Mon	25	Starter return
13	EXT_Mon Gnd		

J3: RS232 Interface

Pin Out	Name
1	TX+
2	TX-
3	TX+
4	TX-
5	SIGNAL GND
6	N/A
7	N/A
8	N/A
9	N/A

HVG100
100 kV, 1000 W

High Voltage X-Ray Generators

Applications

Thickness Gauging, Tire Inspection, Industrial NDT, Food & Packaging Inspections

Key Features

- High Frequency
- Compact and Robust
- Power Factor Corrected
- User Friendly RS232 Digital Interface
- Field Serviceable

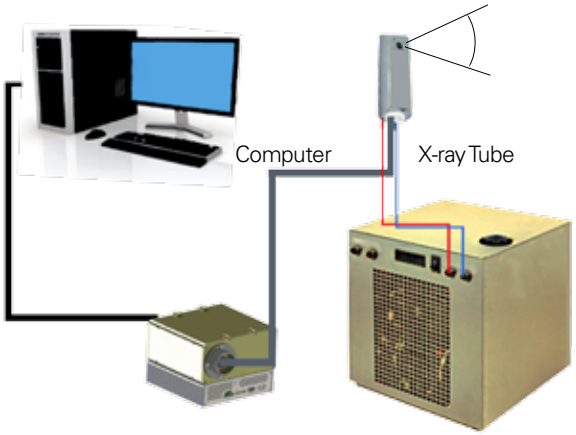
Specifications

Input Line Range	230VAC, 50/60Hz, 10 Amps RMS
Output Current	0-25mA (Per X-ray tube ratings)
Output KV	30–100kV, negative or positive polarity
kV Rise Time	< 1.0Sec from 10% to 90% of the output voltage
kV Accuracy	+/-2%
kV Stability	< 25PPM per hour after 1 hour warm-up
kV Regulation	≤ 0.01% of rated output voltage over specified input voltage range ≤ 0.01 % of rated output voltage over specified mA range
Output Ripple	< 1% Peak – Peak at >20KHz
	< 0.1% Peak – Peak at <20KHz
Output Power	1000 W maximum continuous output 1500 W also available upon request
mA Rise Time	Available on special request
mA Regulation	≤ 0.01% of rated output current over specified input current range ≤ 0.01 % of rated output current over specified kV range
Safety and Regulatory Compliances	Designed to meet IEC/EN 61010-1
Output Connectors	Claymount CA1 HV connector (XR-7) R10 (CA10) available upon special request
Insulation	Oil

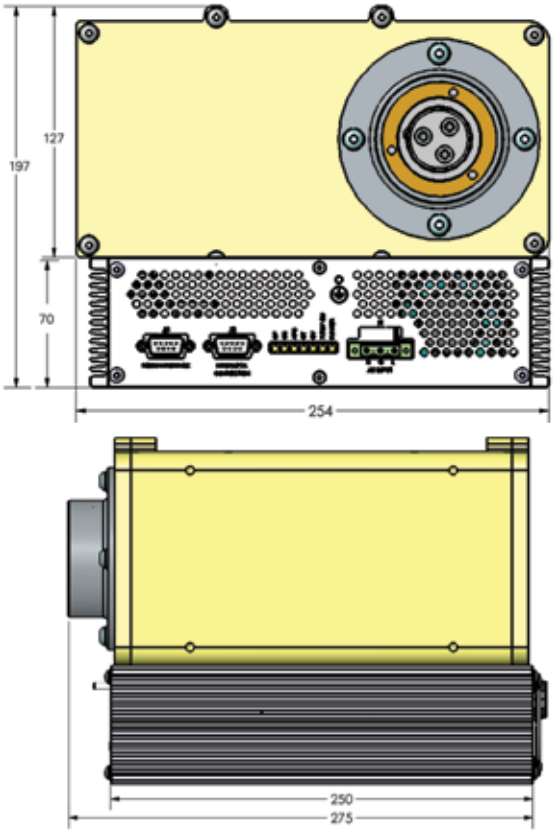
100 kV, 1 kW
Uni-polar Generator

Cooling	Self cooled, forced air
Dimensions	Generator: 254mm x 197mm x 252mm
Weight	Generator: 13kg
Operating Environment	
Operating Temperature	0°C to 40°C
Storage temperature:	–40°C to +80°C
Humidity:	98% non-condensing

System Block Diagram (For Reference Only)



Generator



Unit: mm

Graphical User Interface

LED Indicators

OP	Over Power fault
OC	Over current fault
ARC	ARC-ing fault
OT	Illuminated when oil temperature exceeds 60±3°C.
OV	Over voltage fault
X-RAY ON	Illuminated when interlock is closed and HV is enabled
POWER	Illuminated when power is present

J1: AC Input

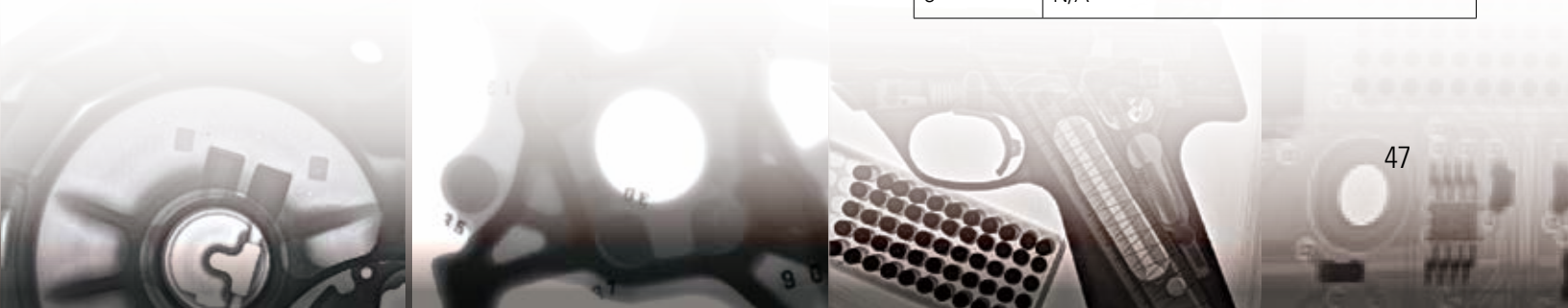
N	Neutral
GND	Ground
L	230 VAC Input

J2: Interlock

Pin Out	Name
1	Interlock out
2	Interlock In
3	X-ray on relay contact common
4	X-ray on relay contact N/C
5	X-ray on Relay contact N/O
6	N/A
7	N/A
8	N/A
9	N/A

J3: RS232 Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	SIGNAL GRD
6	N/A
7	N/A
8	N/A
9	N/A



HVG160–450
160kV–450kV, 1.8KW–4.5KW

Unipolar: HVG 160 & HVG 225

High Voltage Generator

Applications

Industrial NDT, Security Cargo Inspection, Medical Irradiation & Sterilization, General Purpose

Key Features

- Compact form factor
- Oil based insulation for efficient thermal dissipation
- Fully enclosed, fan-less design for use in rugged environments
- Advanced HV design optimized for performance & reliability
- Plug and play compatibility with major tube brands
- Dual filament supplies controlled by closed-loop emission current control

Cathode

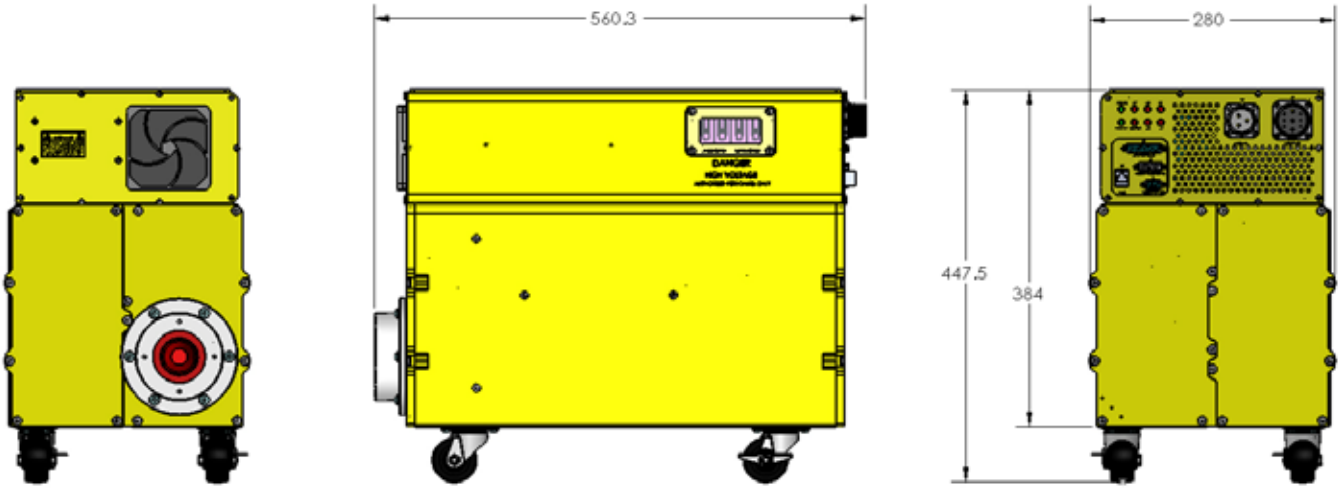
Anode

Bipolar: HVG 320 & HVG 450

Model	HVG160		HVG225		HVG320		HVG450	
Max. Output Power	1.8KW	3.0KW	1.8KW	3.0KW	1.8KW	4.5KW	1.8KW	4.5KW
Output KV (see note)	10–160	10–160	10–225	10–225	10–320	10–320	10–450	10–450
Output mA (see note)	0–30	0–30	0–30	0–30	0–30	0–30	0–30	0–30
Output Polarity	- / +	- / +	- / +	- / +	Bipolar	Bipolar	Bipolar	Bipolar
Ripple	kV: 0.05% peak-peak; mA: 0.1%							
Stability	Less than 0.1% per 8hr after 1 hr warm-up							
Repeatability	kV: ±40V; mA: 2uA							
Accuracy	kV: ±1.0%; mA: ±0.5%							
Output Rise Time	Preset 3 sec (1–10 sec adjustable)							
Output HV Connector	R24	R24	R28	R28	R24	R24	R28	R28
Operating Temperature	0˚C to +40˚C							
Storage Temperature	-40˚C to +80˚C							
Humidity	98% non-condensing							
Cooling	Forced Air Cool							
Duty Cycle	100%							
Dimension (mm)	280W x 560L x 448H				2x (280W x 560L x 448H)			
Weight	60kg				120kg			
Input Voltage	230VAC ±10%, 50/60Hz, Single Phase							
Input Current	12A	20A	12A	20A	12A	30A	12A	30A
Communication	RS232 / Ethernet / Analog							

Note: Specific kV and mA range setting to be discussed for optimal performance.

Generator Dimensions



Unit: mm

Control Interface Connections

Unipolar Module

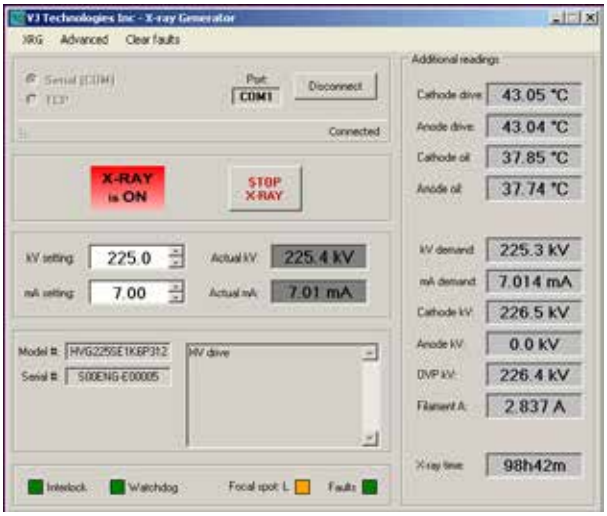
Bipolar Module

Cathode

Anode

HVG160–450
160kV–450kV, 1.8KW–4.5KW

Graphical User Interface



Connectors

Connectors

Connector	Description
J1	Main & Auxiliary Input Power
J2	Analog Interface
J3	RS232 Digital Interface
J4	RJ45 Ethernet Digital Interface
J5	Anode VAC Input
J6	Anode Feedback / Control
J7	HV Connector

J1: Main & Auxiliary Input Power (MS3102A24-11P)

Pin Out	Name
A	AUX – 180-264VAC
B	AUX – Ground
C	AUX – Neutral
D	Main – 180-264VAC
E	Main – Ground
F	Main – Neutral
G	N/A
H	N/A
I	N/A

LED Indicators

LED Indicators

X-RAY ON	Illuminated when interlock Is closed and HV is enabled
OV	Over Voltage Fault
OC	Over Current Fault
OP	Over Power Fault When Exceeds Rated Power
POWER	Illuminated When Power Is Present
REG-ERROR	Regulation Error
ARC	Arcing Fault
OT	Illuminated When Oil Temperature Exceeds 65±3°C.

J2: Analog Interface (AMP747238-6)

Pin Out	Name
1	Interlock Out (15VDC)
2	Interlock In (15VDC)
3	Relay Contactor (+24V)
4	LED (24VDC, 0.2 A Max))
5	LED (24VDC Return)
6	15V GND
7	15V Out
8	EXT_kV Program
9	EXT_mA Program
10	EXT_PROGRAM_GND
11	EXT_kV Monitor
12	EXT_mA Monitor
13	EXT_FIL_ENABLE
14	EXT_FIL_MONITOR
15	Sync In
16	X-ray Pre-warning
17	10V-REF (10mA Max)
18	10V-RET
19	Cooler Fault
20	FIL_Select
21	External X-ray Enable
22	X-ray Pre-Warning Return
23	N/A
24	N/A
25	N/A

J3: RS232 Digital Interface

Pin Out	Name
1	N/A
2	TX-
3	RX+
4	N/A
5	Signal Ground
6	N/A
7	N/A
8	N/A
9	N/A

J4: RJ45 Ethernet Digital Interface

Pin Out	Name
1	TX+
2	TX-
3	RX+
4	N/A
5	N/A
6	RX-
7	Ground
8	Ground

J5: Anode VAC Input (For Bipolar Configuration)

Pin Out	Name
A	GND
B	NEUTRAL
C	LINE

J6: Anode Feedback & Control (For Bipolar Configuration)

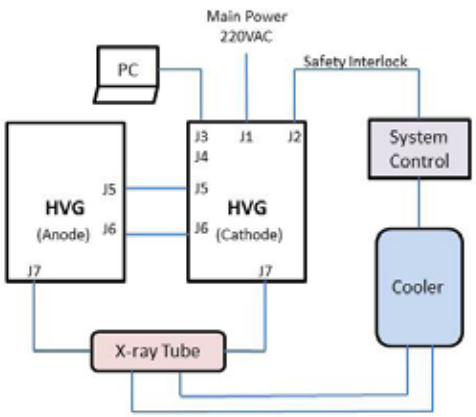
Pin Out	Name
1	ANODE-kV-FDBK
2	N/A
3	N/A
4	ANODE-mA-FDBK
5	N/A
6	GND
7	ANODE-ARC-DETECT
8	N/A
9	ANODE-INV-DRIVE A
10	ANODE-INV-DRIVE B
11	ANODE INV-SENSE
12	ANODE-INV-TEMP-SENSE
13	ANODE OIL TEMP
14	+15V OUT
15	-15V OUT

J7: High Voltage Connector (R28 or R24)

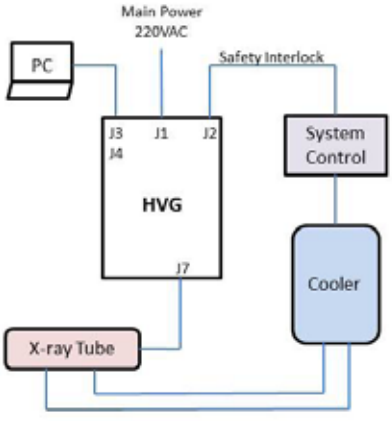
Pin Out	Name
C	HV Output
S	Small Filament Output
L	Large Filament Output

System Interconnection

HVG Bipolar System Interconnection



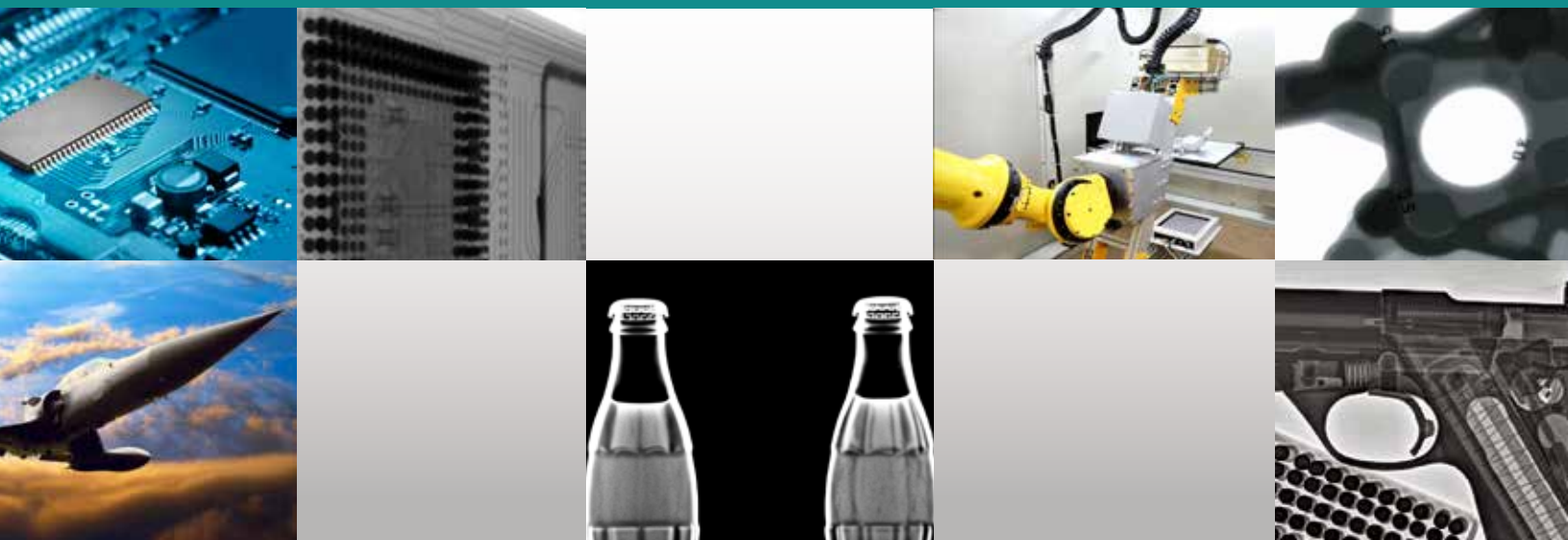
HVG Unipolar System Interconnection



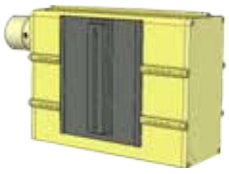
Accessories and Options

Accessories and options offer convenience and ease of adaptation with IXS and HVG products.

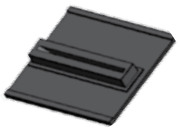
- **Collimators**
- **Coolers**
- **External Battery and Convertor**
- **Options for Portable Source IXS1212**
- **Recommended Kit for Electronic Protection**
- **Reusable Cases**



Collimators



Generator shown with
fan-shaped lead Collimator



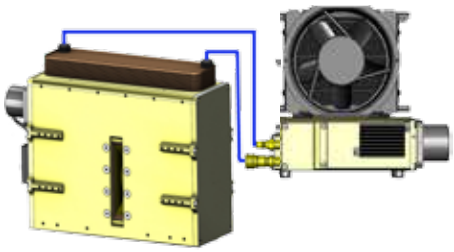
Generator shown with
conical lead Collimator

- Provides convenience for mechanical interface between IXS and the system
- Minimizes radiation leakage
- Ability to shape x-ray beam

DF3000-009	Asymmetrical Fan Beam 80˚, 160kV with Flange
DF3000-063	Cone Beam 40˚, 160kV
DF3000-142	Cone Beam 40˚, 160kV with Flange
DF3000-096	Symmetrical Fan Beam 75˚, 160kV
DF3000-111	Symmetrical Fan Beam 56˚, 100kV Mid-Size
DF3000-082	Symmetrical Fan Beam 60˚, 80kV Compact

Cooler

Model: AS3001-126



An IXS1650 x-ray source
configured with a cooler
(For illustration purposes)

- Ability to operate IXS sources in high temperature environment
- Enhanced stability
- Allows sources to run continuous duty cycles

External Batteries and Converters

- 36VDC Battery pack, AC converter and charger
- Supports 500W IXS source operations for 2.5 hours
- Charging time: 8 hours
- Ideal for mobile/field uses

The x-ray source, the detector, and the computer of this mobile system are powered by the battery

Options for Portable IXS1212

Battery pack & charging station

Laser Alignment Guide

Generator shown with protective cover and handle

Generator shown mounted on tripod

Wireless option

AS3001-288M	Battery pack(inc. 24V $LiFeO_4$ battery)
AS3001-300M	Charging Station
DS3000-041M	Protective Cover and Handle
DB3000-122M	Tripod Mount
DS3000-106	Laser Alignment Guide
JP3000-019	Carrying Case

Recommended Kit for Electronic Protection

EMI Filter

Isolation Transformer

- Protects electronics from external factors, such as input power instability, transient surge, or electromagnetic disruption
- Recommend every system to equip with adequate isolation transformer and EM1 filter, Consult with VJX sales for recommended kit.

EC3000-158	Filter, EMI
ET3000-122	Isolation Transformer, for 100W
ET3000-123	Isolation Transformer, for 150W
ET3000-124	Isolation Transformer, for 200W
ET3000-125	Isolation Transformer, for 500W

Reusable Cases

- Rugged and reusable
- Ideal for field use and repair center for product transport

JP3000-005	Case for IXS 160kV
JP3000-018	Case for IXS 100kV
JP3000-019	Case for IXS 120kV Portable

VJ X-RAY
OEM Solutions

CONFIDENCE DELIVERED

Founded in 1987, VJ Technologies, Inc. is a world leader in the design, manufacture, installation, operation and long-term support of a wide range of industrial x-ray systems. These systems utilize state of the art digital imaging. In almost three decades, we've grown in size around the world and expanded the range of industries we serve and products offered. Our customer base includes companies in the Aerospace, Automotive, Defense, Electronics, Homeland Security, Nuclear, and Oil & Gas fields. The design engineering and manufacturing expertise we have accumulated thus far drives our systems, products and services to become must-haves in the X-ray inspection world.

Our mission is to meet the unique X-ray inspection needs of each client that calls upon our experience and expertise. We accomplish this by designing, manufacturing, and supporting a variety of unique and customized inspection system needs, which often include our world-renowned, innovative line of X-ray sources & generators.

Since 2008, the components business unit, VJ X-ray, has become our specialization and central to our growth. We have committed ourselves to develop and maintain a state-of-the-art line of Integrated X-ray Sources and High Voltage Generators. Our rapidly growing OEM business has expanded our markets into Security, Food & Pharmaceutical, and Medical Imaging. We have an install base of more than 10,000 units since 2010.

The VJ professional service engineers perform high quality in-house inspection services for those customers with low-volume or "one-off" inspection needs when they are not out in the field supporting 1000+ installed systems worldwide.

Our global presence is headquartered on Long Island, 50 miles east of New York City in Bohemia, New York. We have offices and facilities throughout the US, Asia, and Europe.

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