

ROTANODE™
E7240X **CE** 0197
E7240FX

Rotating Anode X-ray Tube Assembly

- ◆ Rotating anode X-ray tube assembly for the purpose of general diagnostic X-ray procedures.
- ◆ Specially processed Rhenium-tungsten faced molybdenum target of 74 mm diameter.
- ◆ These tubes have foci 1.2 and 0.6, and are available for a maximum tube voltage 150 kV.
- ◆ Accommodated with IEC60526 type high-voltage cable receptacles.



General Data

IEC Classification (IEC60601-1:2005) Class I ME EQUIPMENT

Electrical:

Circuit:

High Voltage Generator Constant Potential High-Voltage Generator
Grounding Center-grounded

Nominal X-ray Tube Voltage (IEC60613:2010):

Radiographic 150 kV

Nominal Focal Spot Value (IEC60336:2005):

Large Focus 1.2
Small Focus 0.6

Nominal Anode Input Power (at 0.1s):

	50 Hz	60 Hz
Large Focus	29 kW	30 kW
Small Focus	14 kW	15 kW

Nominal Radiographic Anode Input Power (IEC60613:2010):

	50 Hz	60 Hz
Large Focus	29 kW	30 kW
Small Focus	14 kW	15 kW

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Motor Ratings:

Stator: XS-AV

Driven Frequency [Hz]	Starting		Running
	50/60		50/60
Input Power [W]	1050	270	43
Voltage ^{1) 3)} [V]	200	100	40
Current ²⁾ [A]	6.0	3.0	1.2
Min. Speed Up ⁴⁾ [s]	0.8	1.5	-
Capacitor [μ F]	24	24	24

Note: 1) Applied voltage between common and main terminal.

2) Common current.

3) The every applied voltage must be never exceeded 110% of the above specification.

4) The speed-up time is allowed up to 110% of the above specification.

Anode Speed:

50 Hz Minimum 2700 min⁻¹
 60 Hz Minimum 3200 min⁻¹

Stator Resistance:

Common-Main Winding 27.5 Ω

Common-Auxiliary Winding 58.0 Ω

Resistance between Housing and Low Voltage Terminals Minimum 2 M Ω

Normal Operating Range of the Housing Temperature 16 ~ 75 °C

Mode of Operation Intermittent

Mechanical:

Dimensions See dimensional outline

Overall Length 479 mm

Maximum Diameter 152.4 mm

Target:

Anode Angle 12 degrees

Diameter 74 mm

Construction Rhenium-Tungsten faced Molybdenum

Filtration:

Permanent Filtration 1.3 mm Al / 75 kV IEC60522:1999

Available Additional Filter combination (0.4 - 1.5 mm) Maximum 2.8 mm Al / 75 kV

Radiation Protection (In accordance with IEC60601-1-3:2008):

Leakage Technique Factor 150 kV, 3.4 mA

X-ray Coverage 430 × 430 mm at SID 1000 mm

Weight (Approx.) 16 kg

High Voltage Receptacle To meet the requirements of IEC60526 Corrigendum1:2010

Cooling Method Natural or forced air

Tube Housing Model Number:

E7240X XH-121

E7240FX XH-126

Absolute Maximum and Minimum Ratings (At any time, these values must not be exceeded.)

Maximum X-ray Tube Voltage (IEC60613:2010):	
Radiographic	150 kV
Between Anode (or Cathode) and Ground	75 kV
Minimum X-ray Tube Voltage	40 kV
Maximum X-ray Tube Current (IEC60613:2010)	
Large Focus	See rating charts
Small Focus	500 mA
Small Focus	200 mA
Maximum Filament Current:	
Large Focus	5.8 A
Small Focus	5.2 A
Filament Voltage:	
Large Focus (At maximum filament current 5.8 A)	14.9 ~ 20.1 V
Small Focus (At maximum filament current 5.2 A)	10.2 ~ 13.8 V
Filament Frequency Limits	0 ~ 25 kHz
Continuous Anode Input Power (IEC60613:2010)	60 W (85 HU/s)
(Repeated radiographic exposure)	
Thermal Characteristics:	
Anode Heat Content	100 kJ (140 kHU)
Maximum Anode Heat Dissipation	475 W (667 HU/s)
X-ray Tube Assembly Heat Content	900 kJ (1250 kHU)
Nominal Continuous Input Power (IEC60613:2010):	
Without Air-circulator	180 W (15 kHU/min)

Environmental Limits

Operating Limits:

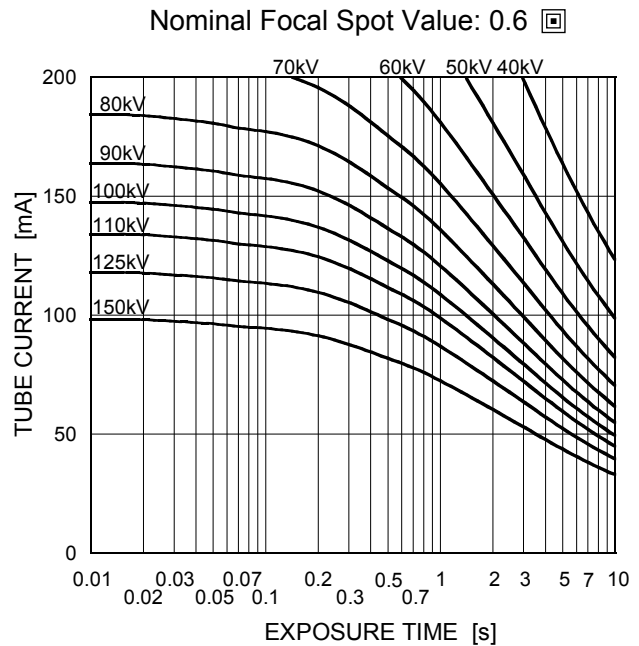
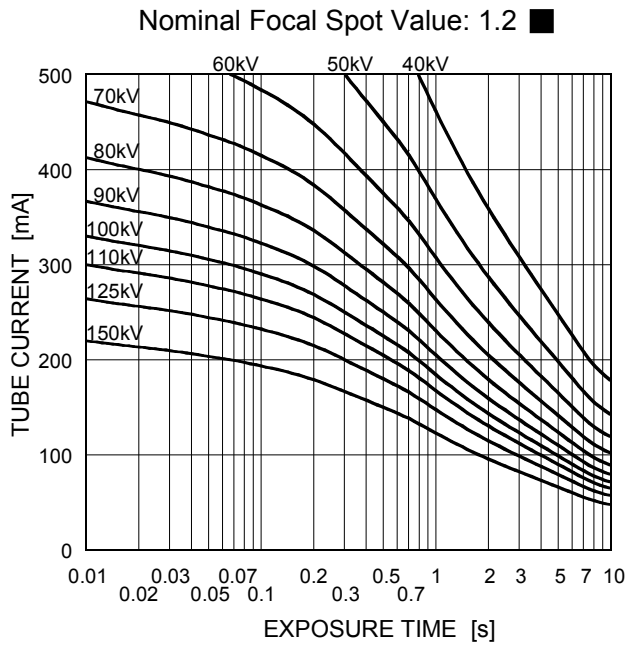
Temperature 10 ~ 40 °C
Humidity 30 ~ 85 %
(No Condensation)
Atmospheric Pressure 70 ~ 106 kPa

Shipping and Storage Limits:

Temperature -20 ~ 70 °C
Humidity 20 ~ 90 %
(No Condensation)
Atmospheric Pressure 50 ~ 106 kPa

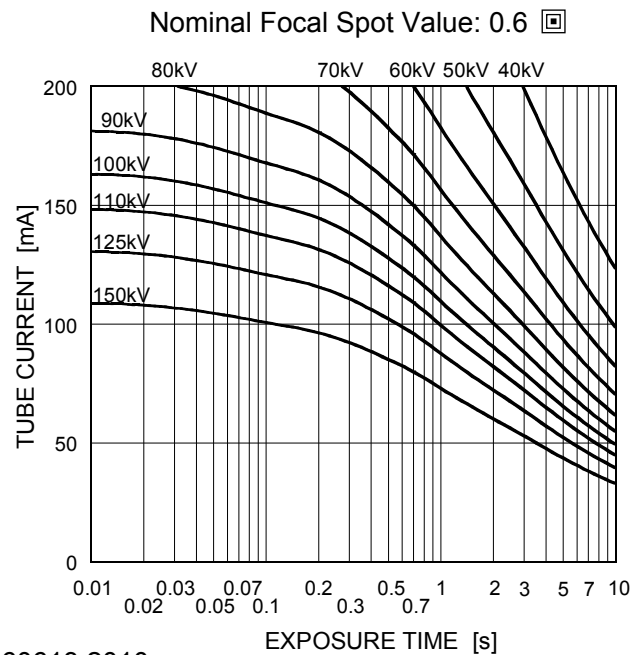
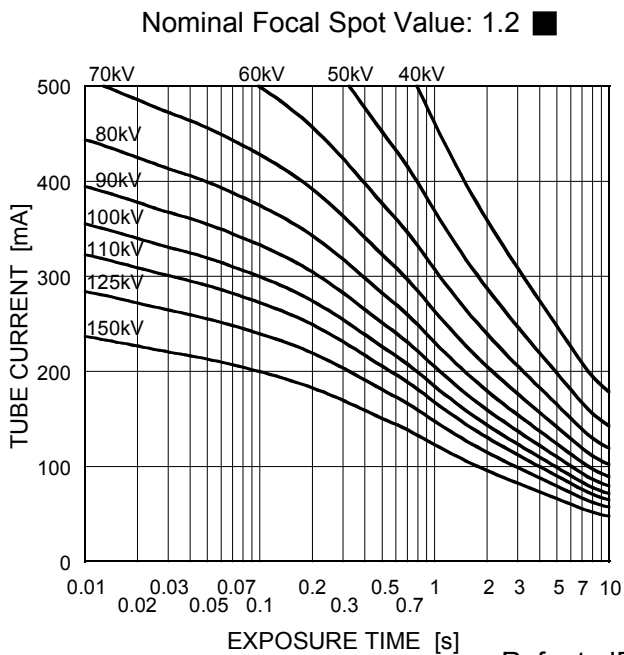
Maximum Rating Charts (Absolute Maximum Rating Charts)

Conditions: Tube Voltage
Constant Potential High-Voltage Generator
Stator Power Frequency 50Hz



Refer to IEC60613:2010

Conditions: Tube Voltage
Constant Potential High-Voltage Generator
Stator Power Frequency 60Hz

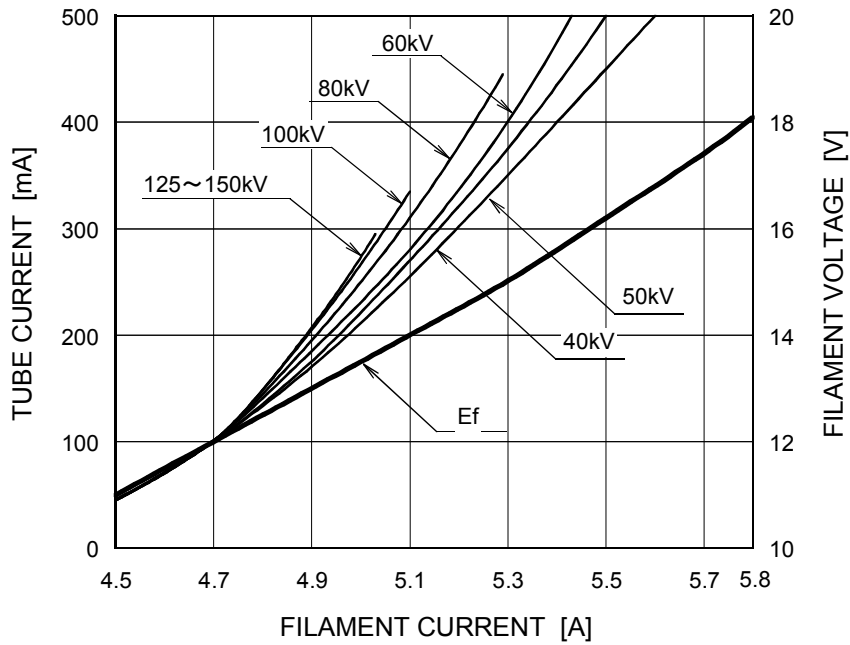


Refer to IEC60613:2010

Emission & Filament Characteristics

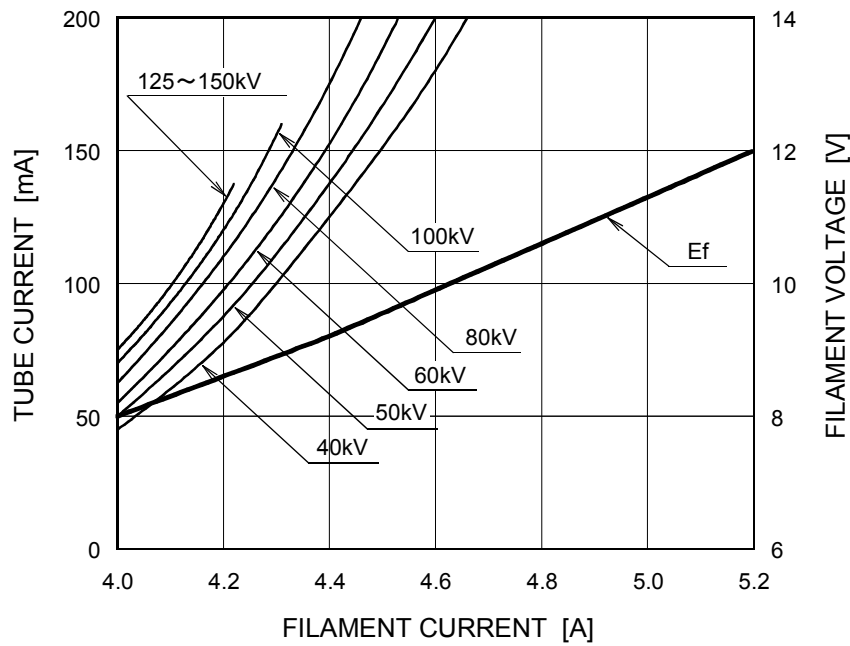
Constant Potential High-Voltage Generator

Nominal Focal Spot Value: 1.2 ■



Note1) For Reference Only
 Note2) Refer to IEC60613:2010

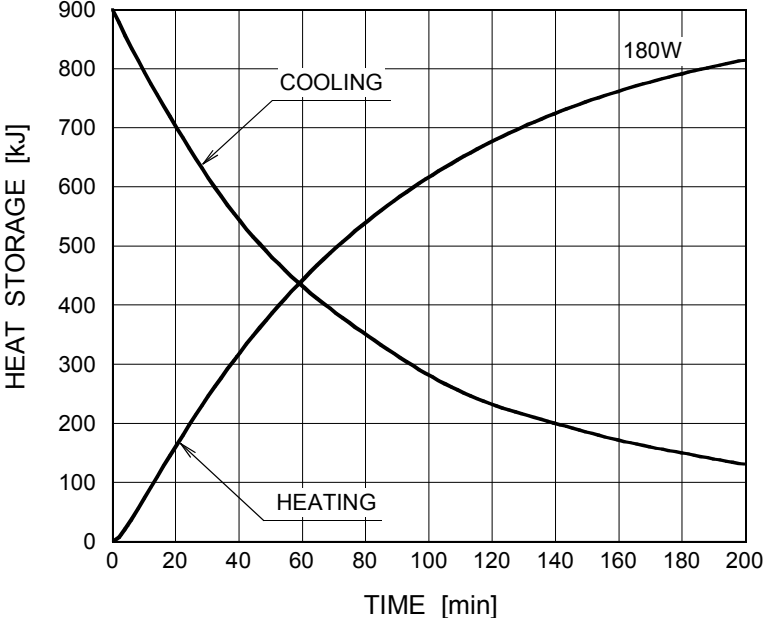
Nominal Focal Spot Value: 0.6 □



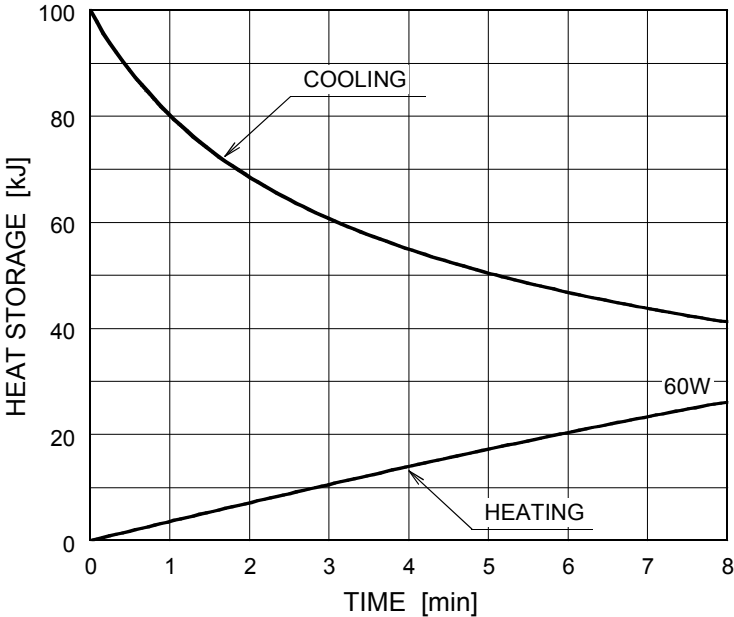
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 Note2) Refer to IEC60613:2010

Thermal Characteristics

X-ray Tube Assembly Heating / Cooling Curve



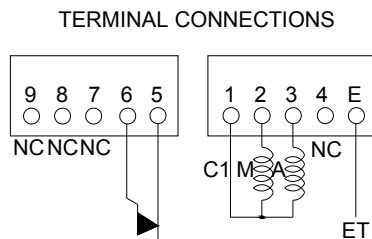
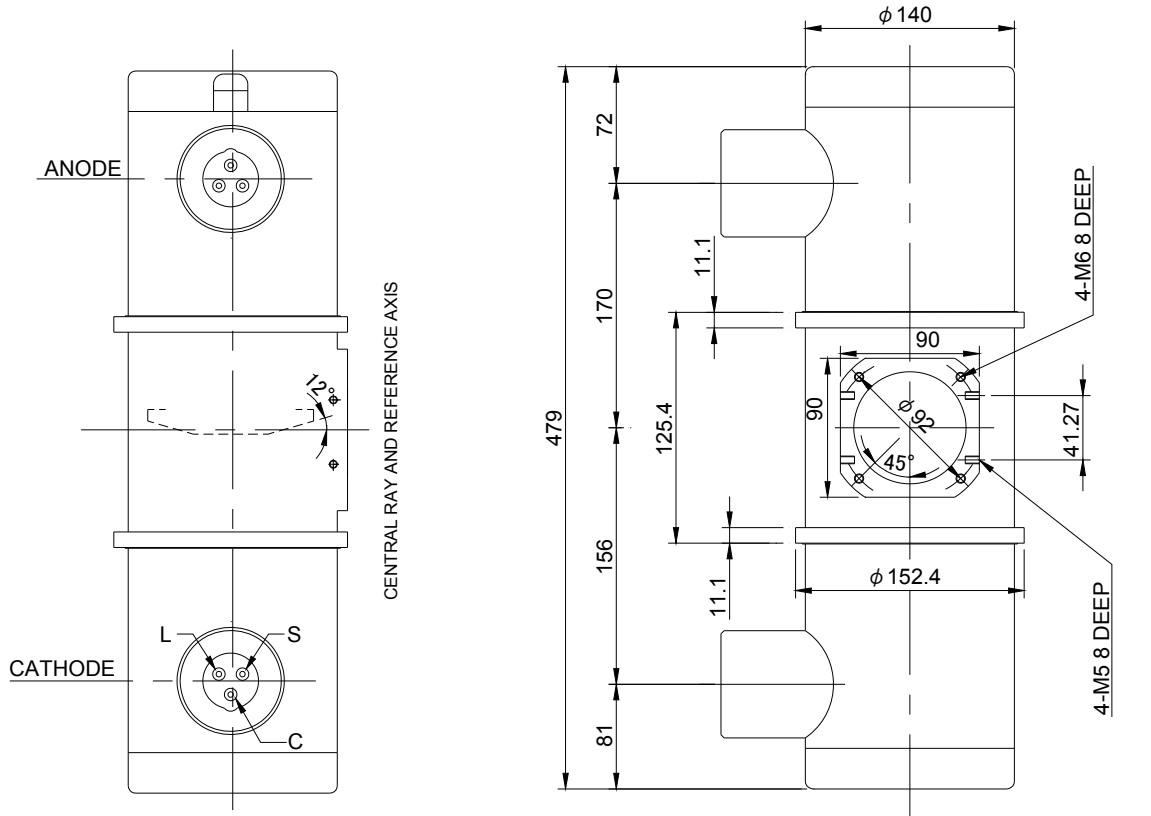
Anode Heating / Cooling Curve



The heating curves are showing example of average input power to anode in operation.

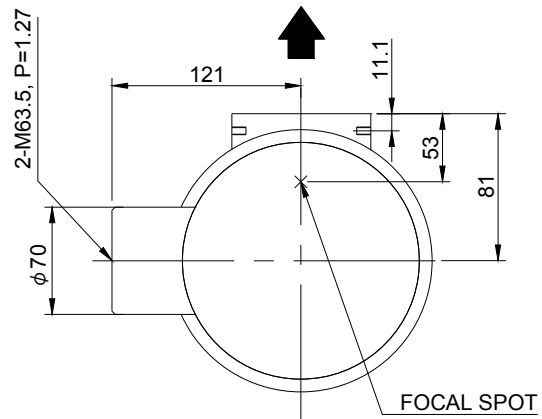
Dimensional Outline of E7240FX

Unit mm



TEMPERATURE RELAY
(NORMALLY CLOSED)

Note) Do not connect terminal No.1 and
No.5 or 6 in series circuit.



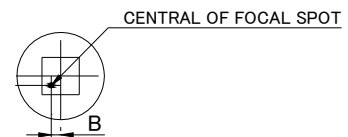
EXPLANATION OF SYMBOLS

CATHODE TERMINAL

- C : COMMON
- L : LARGE FOCUS
- S : SMALL FOCUS

TERMINAL CONNECTIONS

- C1 : COMMON
- M : MAIN WINDING OF THE STATOR
- A : AUX. WINDING OF THE STATOR
- NC : NON-CONNECTION
- ET : EARTH TERMINAL



- $-1.5\text{mm} \leq A \leq 1.5\text{mm}$
- $-1.5\text{mm} \leq B \leq 1.5\text{mm}$

▲ : CENTRAL X-RAY
ANODE & CATHODE TERMINAL
: IEC60526 TYPE

OVERSEAS SUBSIDIARIES AND AFFILIATES



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