

ROTANODE™
E7299X  0197
E7299FX

Rotating Anode X-ray Tube Assembly

- ◆ Rotating anode X-ray tube assembly for the purpose of general diagnostic procedures.
- ◆ Specially processed rhenium-tungsten faced molybdenum target of 74 mm diameter.
- ◆ These tubes have foci 1.0 and 0.3, 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
Fluoroscopic 125 kV

Nominal Focal Spot Value (IEC60336:2005):

Large Focus 1.0
Small Focus 0.3

Nominal Anode Input Power (at 0.1s):

	50 Hz	60 Hz
Large Focus	35.5 kW	39 kW
Small Focus	3.4 kW	3.7 kW

Nominal Radiographic Anode Input Power (IEC60613:2010):

	50 Hz	60 Hz
Large Focus	34 kW	38 kW
Small Focus	3.2 kW	3.5 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⁻¹60 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 (including both end plates):

E7299X XH-121

E7299FX 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
Fluoroscopic	125 kV
Between Anode (or Cathode) and Ground.....	75 kV
Minimum X-ray Tube Voltage	40 kV
Maximum X-ray Tube Current (IEC60613:2010)	See rating charts
Large Focus	640 mA
Small Focus	70 mA
Maximum Filament Current:	
Large Focus	5.5 A
Small Focus	5.0 A
Filament Voltage:	
Large Focus (At maximum filament current 5.5 A)	11.1 ~ 15.1 V
Small Focus (At maximum filament current 5.0 A)	4.3 ~ 5.8 V
Filament Frequency Limits	0 ~ 25 kHz
Continuous Anode Input Power (IEC60613:2010)	120 W (170 HU/s)
(Fluoroscopic, repeated radiographic or mixed exposure)	
Thermal Characteristics:	
Anode Heat Content	100 kJ (140 kHU)
Maximum Anode Heat Dissipation	475 W (667HU/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

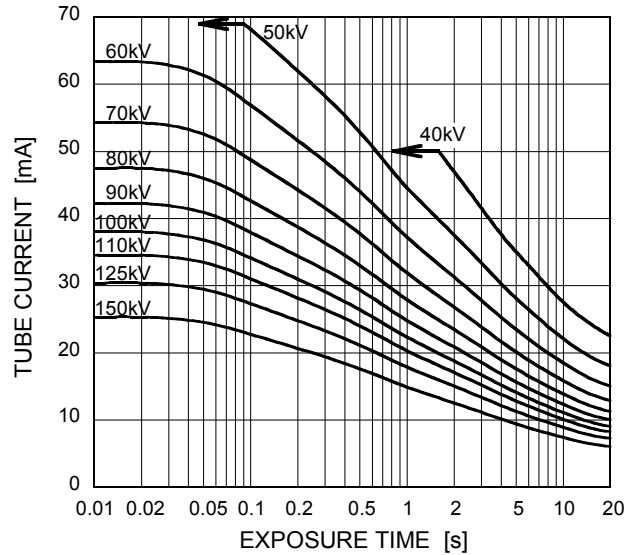
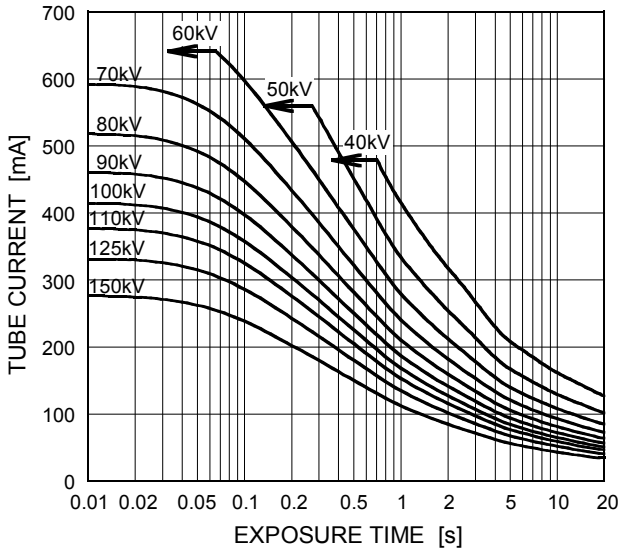
Operating Limits:	
Temperature	10 ~ 40 °C
Humidity	30 ~ 85 %
(No condensation)	
Atmospheric Pressure	70 ~ 106 kPa
Shipping and Storage Limits:	
Temperature	-20 ~ 70 °C
Humidity	20 ~ 90 %
(No condensation)	
Atmospheric Pressure	50 ~ 106 kPa

Maximum Rating Charts (Absolute Maximum Rating Charts)

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

Nominal Focal Spot Value: 1.0 ■

Nominal Focal Spot Value: 0.3 □

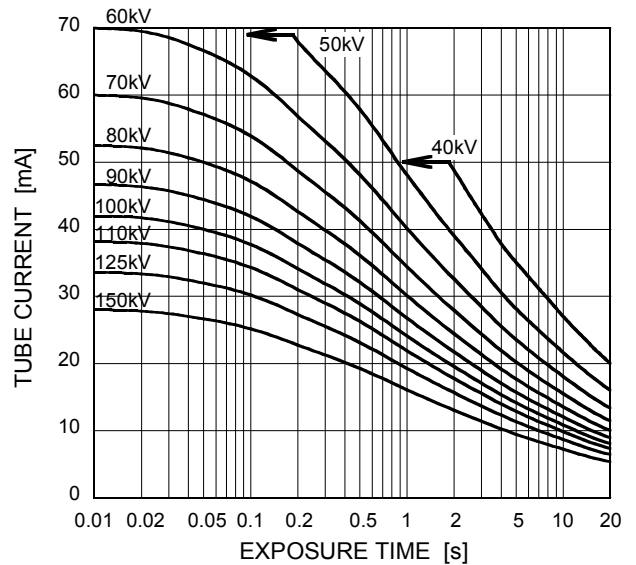
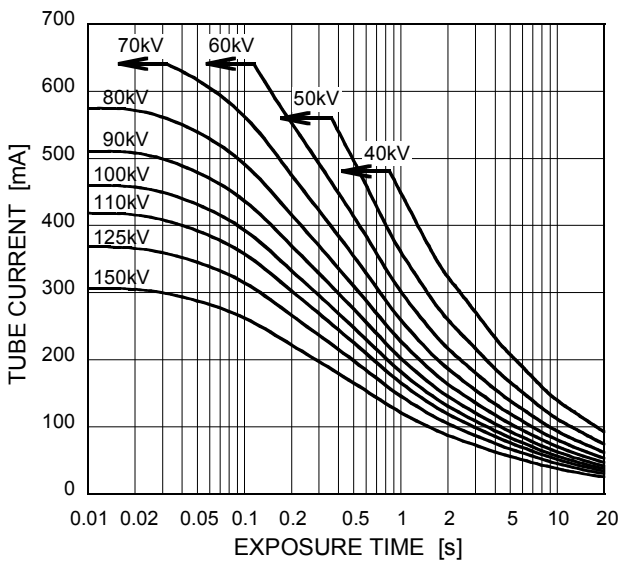


Refer to IEC60613:2010

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

Nominal Focal Spot Value: 1.0 ■

Nominal Focal Spot Value: 0.3 □



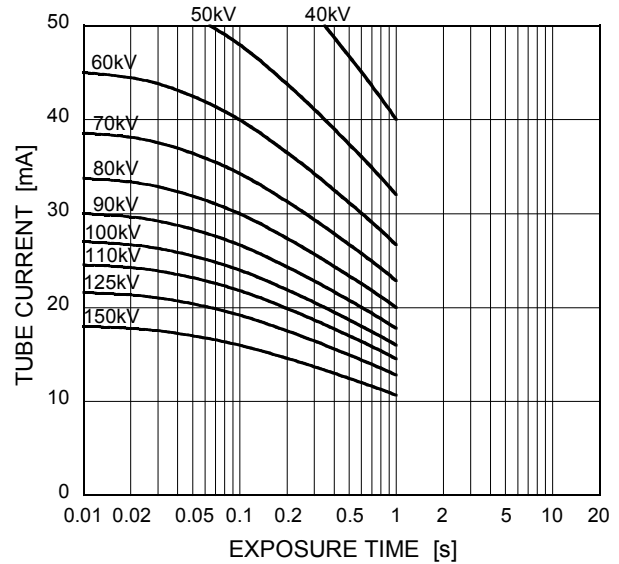
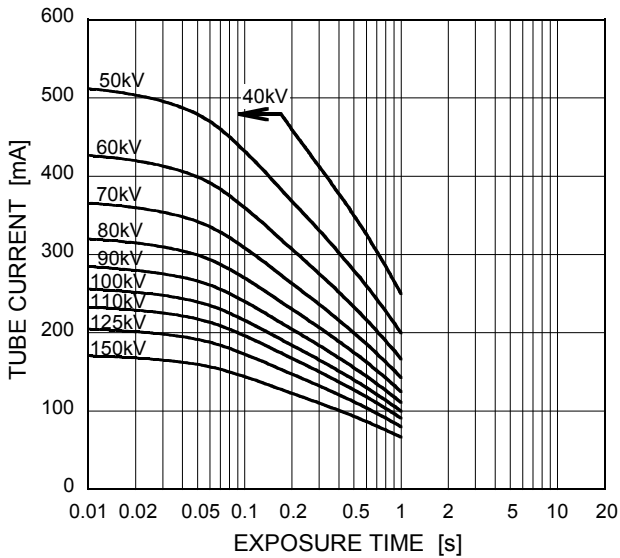
Refer to IEC60613:2010

Maximum Rating Charts (Spot-Film Rating Charts)

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

Nominal Focal Spot Value: 1.0 ■

Nominal Focal Spot Value: 0.3 □

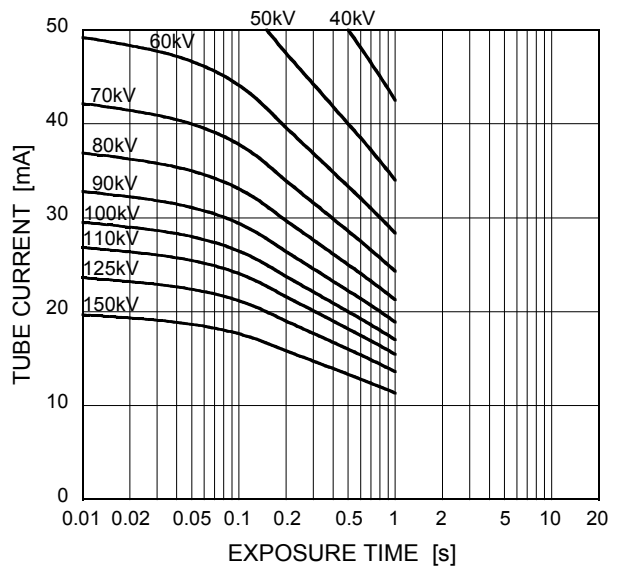
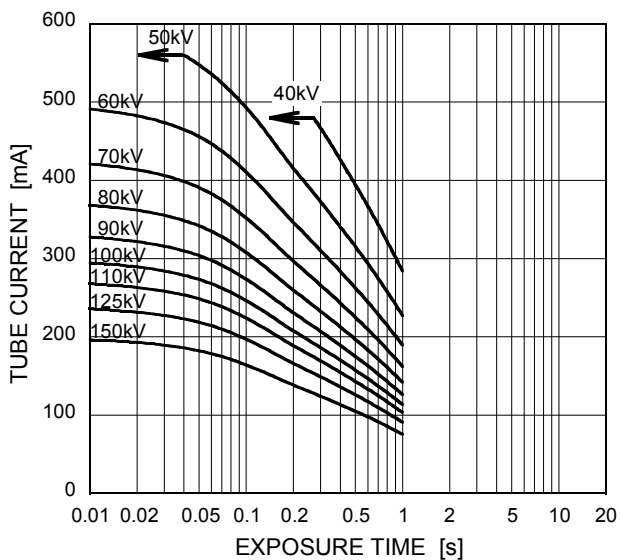


Refer to IEC60613:2010

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

Nominal Focal Spot Value: 1.0 ■

Nominal Focal Spot Value: 0.3 □

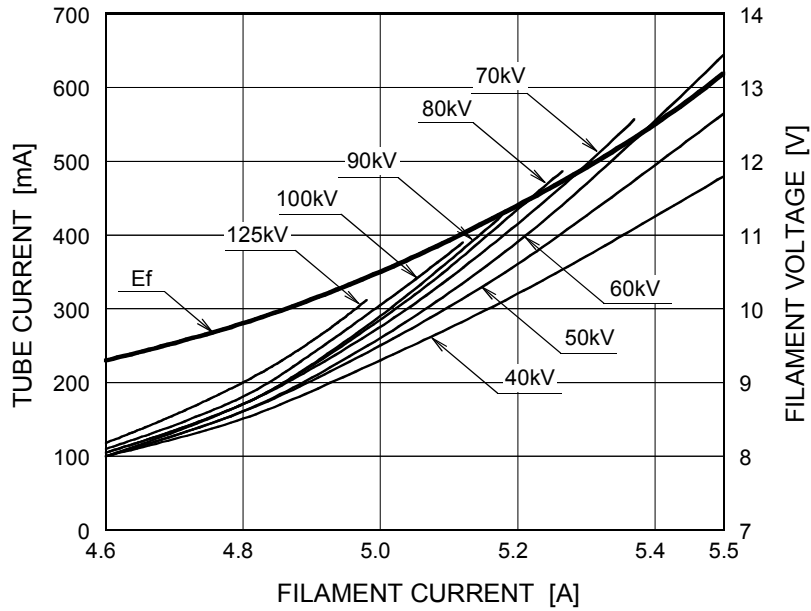


Refer to IEC60613:2010

Emission & Filament Characteristics

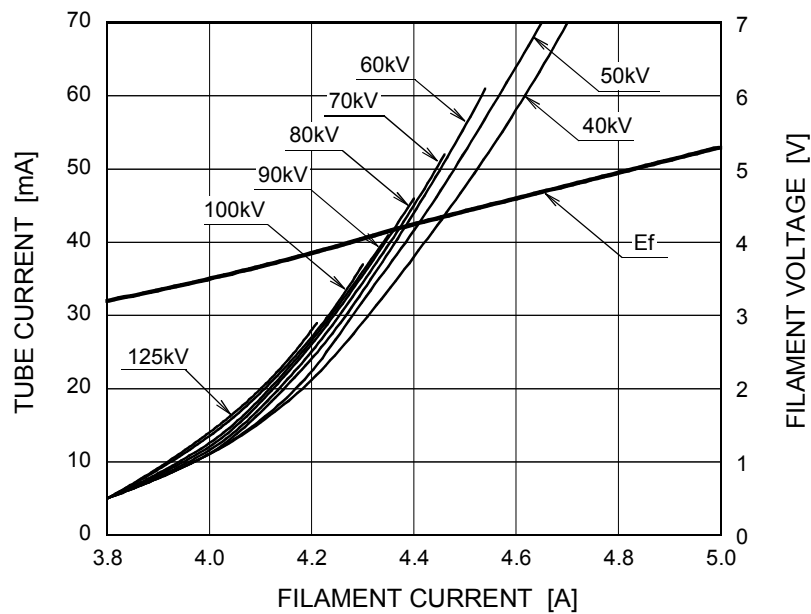
Constant Potential High-Voltage Generator

Nominal Focal Spot Value: 1.0 ■



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

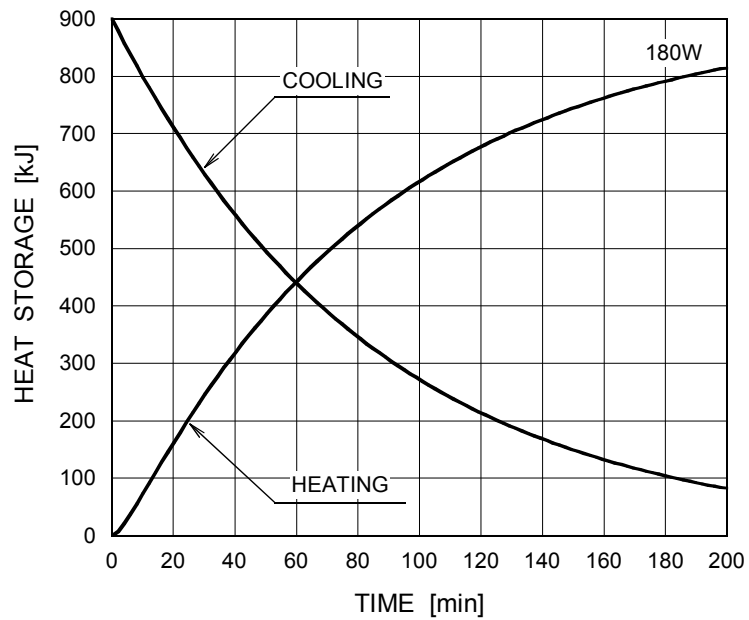
Nominal Focal Spot Value: 0.3 □



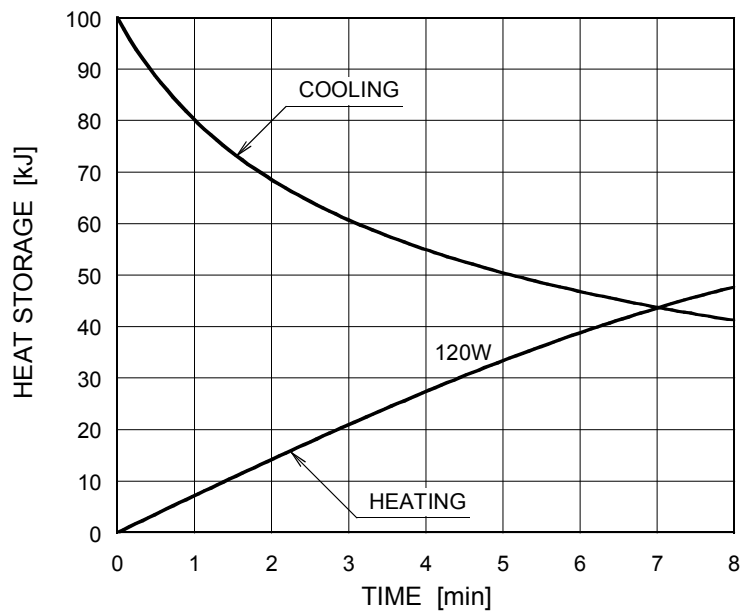
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Thermal Characteristics

X-ray Tube Assembly Heating / Cooling Curve



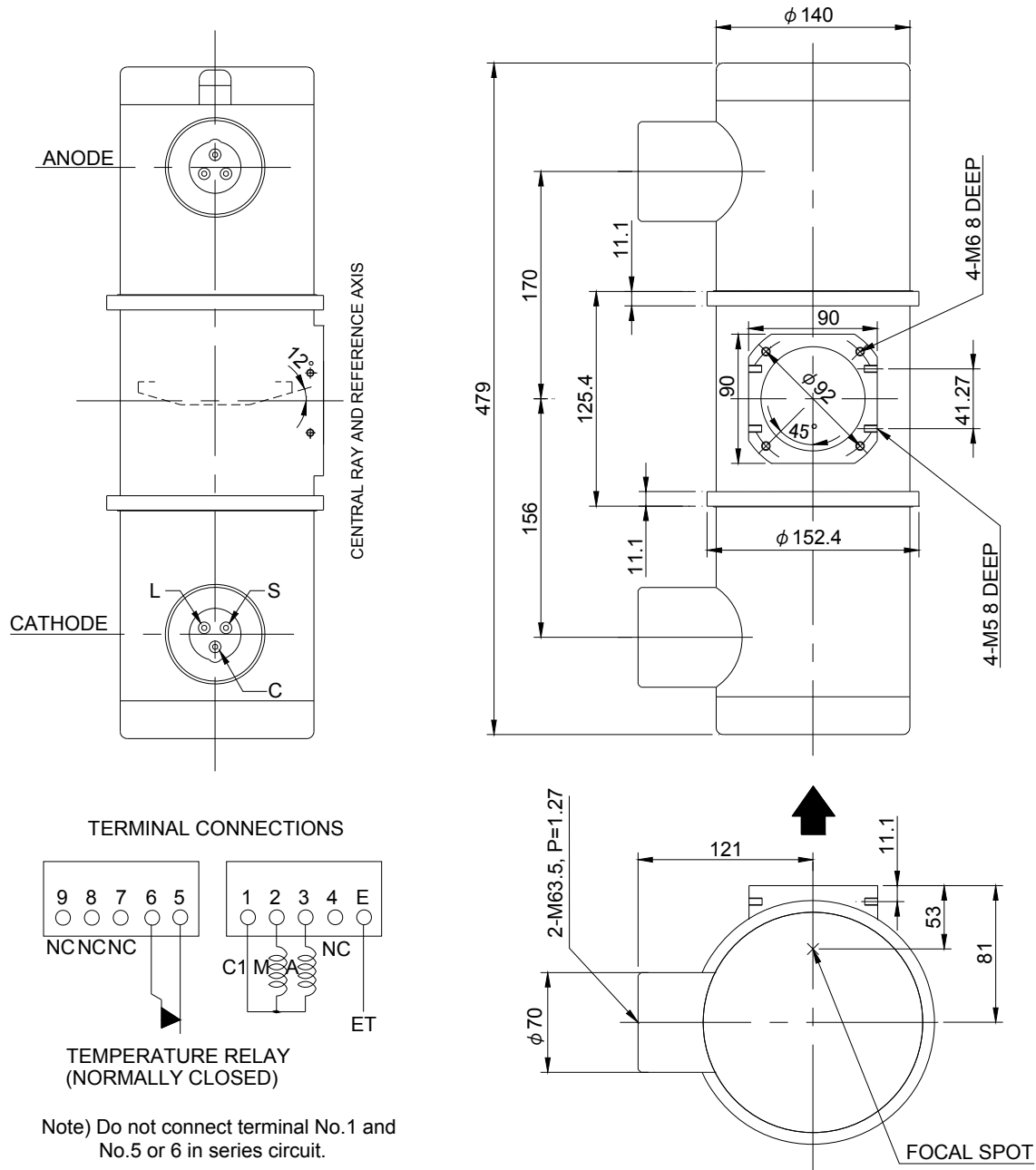
Anode Heating / Cooling Curve



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

Dimensional Outline of E7299FX

Unit: mm

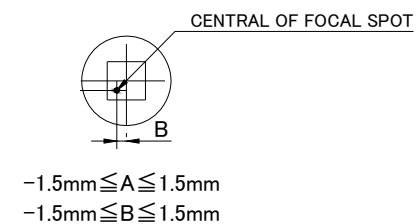


EXPLANATION OF SYMBOLS

- 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



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

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