


ROTANODE™
E7242X
E7242FX  0197
E7242GX

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 1.5 and 0.6, and are available for a maximum tube voltage 125 kV.
- ◆ Accommodated with IEC60526 type high-voltage cable receptacles.



General Data

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

Electrical:

Circuit:

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

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

Radiographic 125 kV

Nominal Focal Spot Value (IEC60336:2005):

Large Focus 1.5

Small Focus 0.6

Nominal Anode Input Power (at 0.1s):

	50 Hz	60 Hz
Large Focus	47 kW	50 kW
Small Focus	16.5 kW	18 kW

Nominal Radiographic Anode Input Power (IEC60613:2010):

	50 Hz	60 Hz
Large Focus	37 kW	41 kW
Small Focus	14 kW	16 kW

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Motor Ratings:

Stator: XS-RA

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	14 degrees
Diameter	74 mm
Construction	Rhenium-Tungsten faced molybdenum
Filtration:	
Permanent Filtration	0.9 mm Al / 75 kV IEC60522:1999
Available Additional Filter combination (0.4 - 1.5 mm)	Maximum 2.4 mm Al / 75 kV
Radiation Protection (In accordance with IEC60601-1-3:2008):	
Leakage Technique Factor	125 kV, 4 mA
X-ray Coverage	354 × 354 mm at SID 710 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:	
E7242X	XH-121
E7242FX	XH-126
E7242GX	XH-150

Absolute Maximum and Minimum Ratings

(At any time, these values must not be exceeded.)

Maximum X-ray Tube Voltage (IEC60613:2010):	
Radiographic	125 kV
Between Anode (or Cathode) and Ground	62.5 kV
Minimum X-ray Tube Voltage	40 kV
Maximum X-ray Tube Current (IEC60613:2010)	
Large Focus	See rating charts
Small Focus	800 mA
Small Focus	290 mA
Maximum Filament Current:	
Large Focus	5.3 A
Small Focus	5.3 A
Filament Voltage:	
Large Focus (At maximum filament current 5.3 A)	10.6 ~ 14.4 V
Small Focus (At maximum filament current 5.3 A)	5.1 ~ 6.9 V
Filament Frequency Limits	0 ~ 25 kHz
Continuous Anode Input Power (IEC60613:2010)	60 W (85HU/s)
Thermal Characteristics:	
Anode Heat Content	142 kJ (200 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

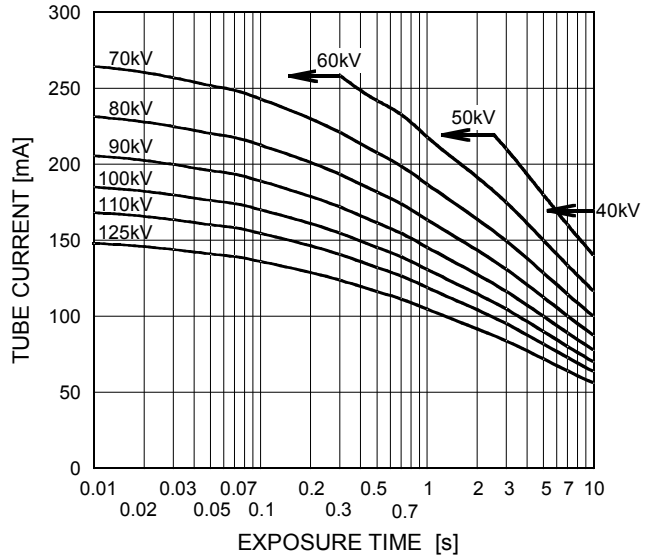
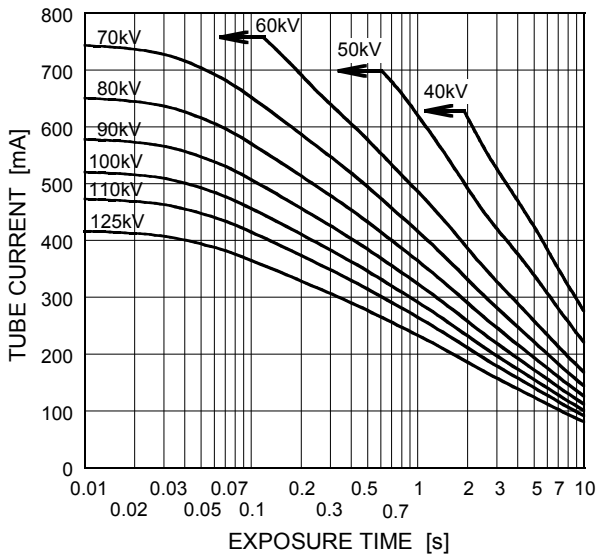
Operating Limits:	
Temperature	10 ~ 40 °C
Humidity	30 ~ 85 %
	(No condensation)
Atmospheric Pressure	70 ~ 106 kPa
Shipping and Storage Limits:	
Temperature	-20 ~ 70 °C
Humidity	20 ~ 90 %
	(No condensation)
Atmospheric Pressure	50 ~ 106 kPa

Maximum Rating Charts (Absolute Maximum Rating Charts)

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

Nominal Focal Spot Value: 1.5 ■

Nominal Focal Spot Value: 0.6 □

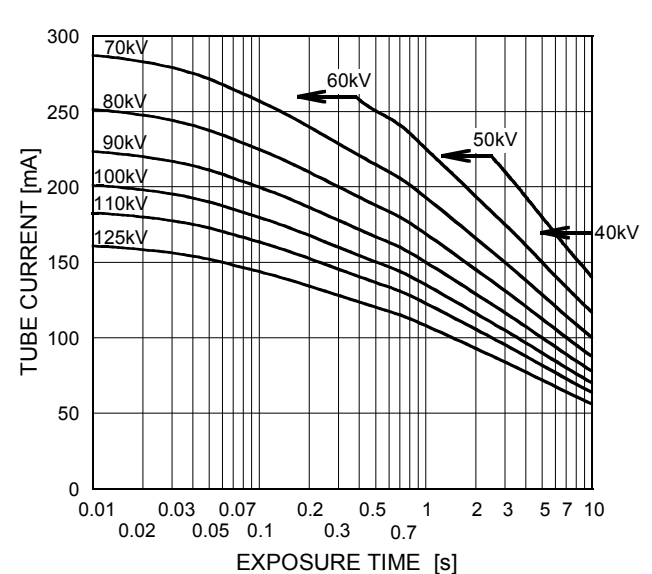
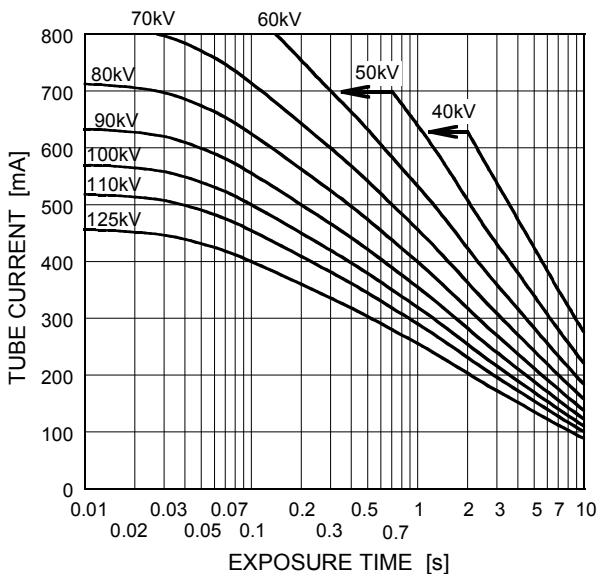


Refer to IEC60613:2010

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

Nominal Focal Spot Value: 1.5 ■

Nominal Focal Spot Value: 0.6 □

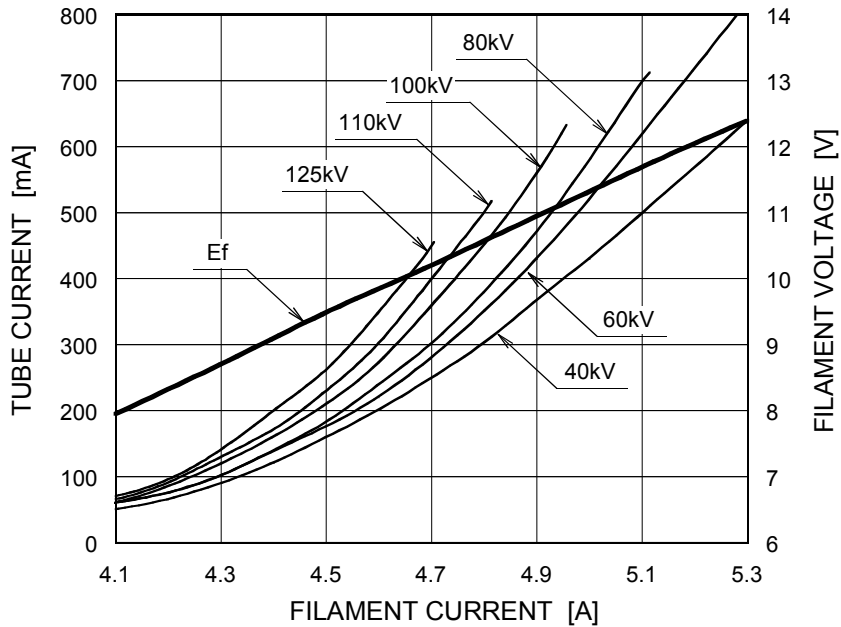


Refer to IEC60613:2010

Emission & Filament Characteristics

Constant Potential High-Voltage Generator

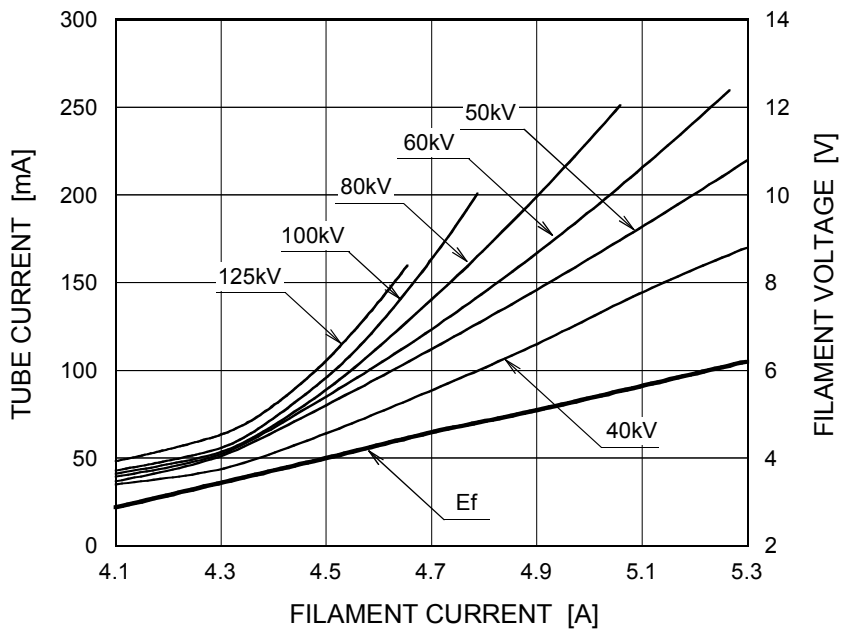
Nominal Focal Spot Value: 1.5 ■



Note1) For Reference Only

Note2) Refer to IEC60613:2010

Nominal Focal Spot Value: 0.6 □

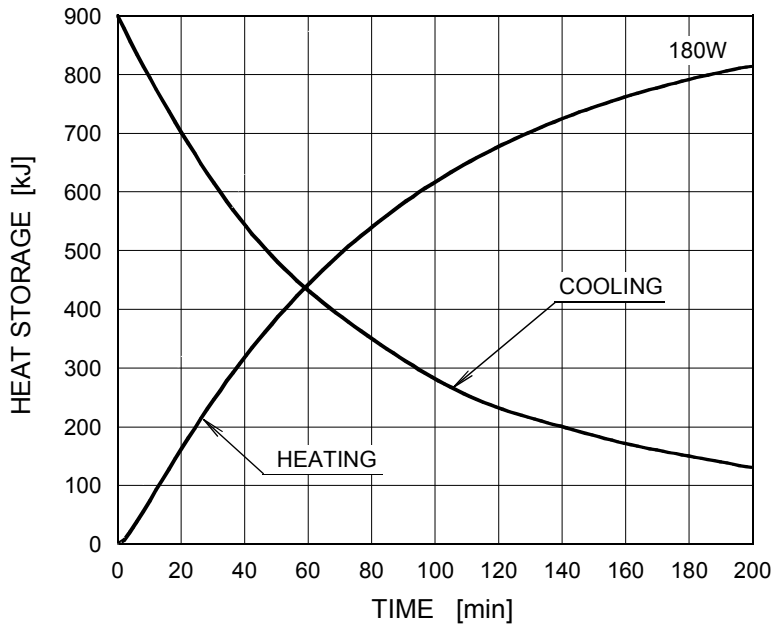


Note1) For Reference Only

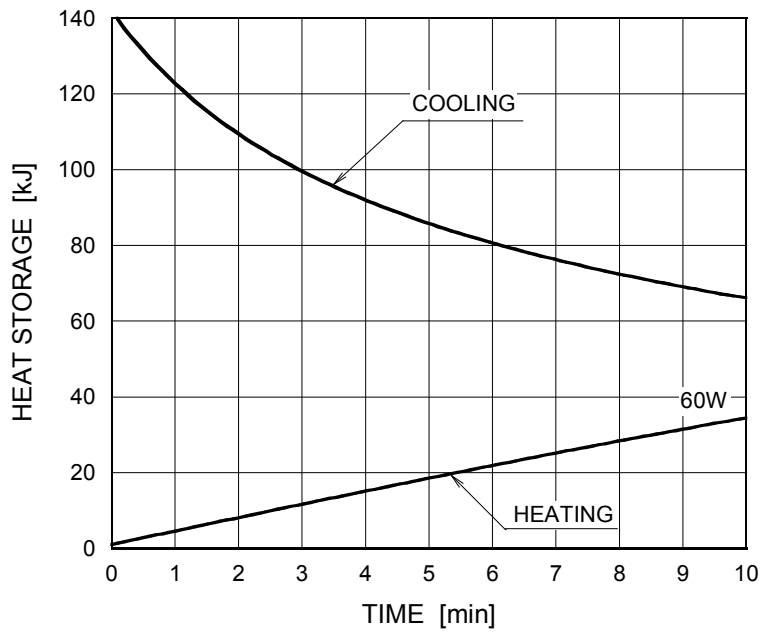
Note2) Refer to IEC60613:2010

Thermal Characteristics

X-ray Tube Assembly Heating / Cooling Curve



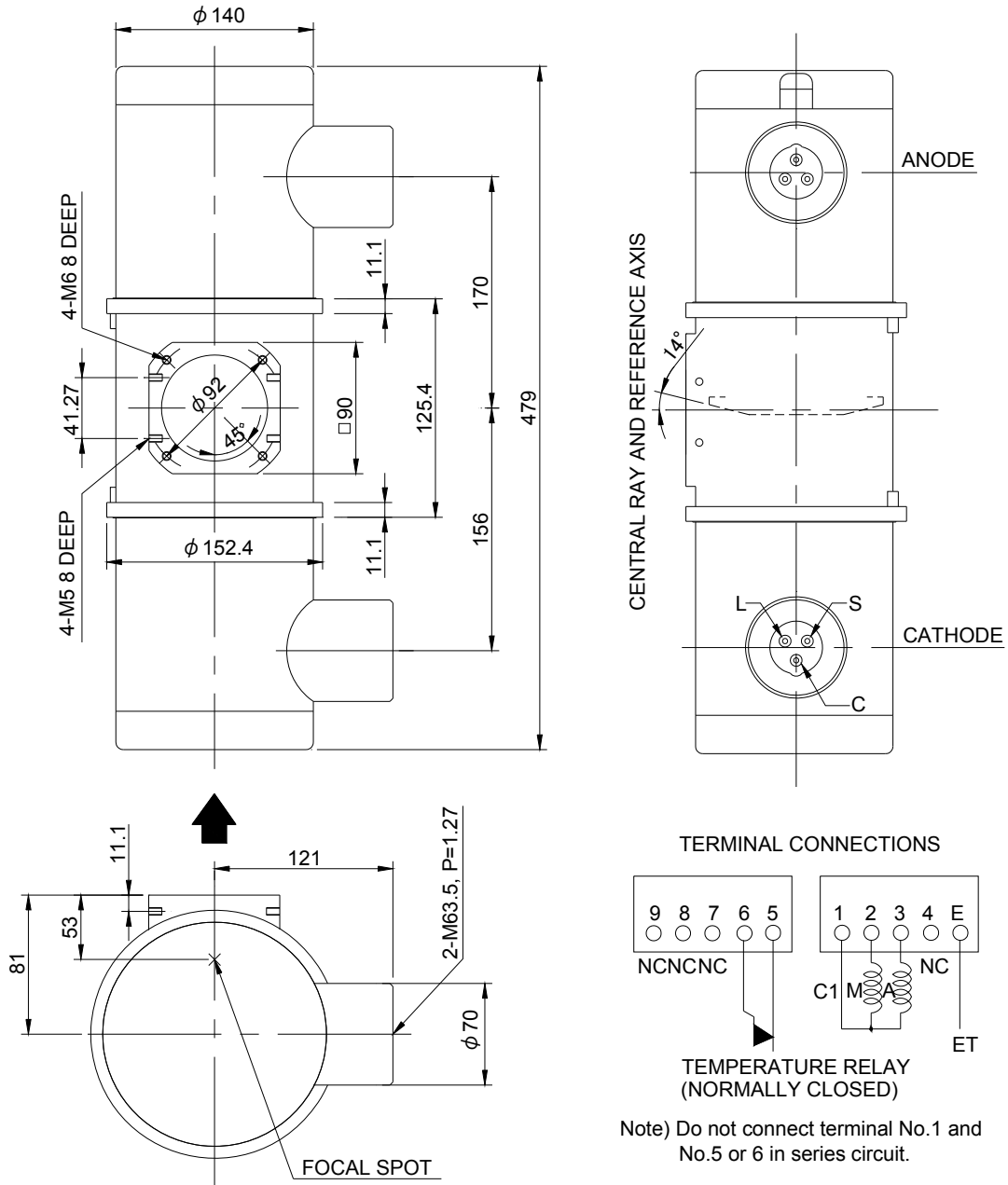
Anode Heating / Cooling Curve



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

Dimensional Outline of E7242X

Unit mm



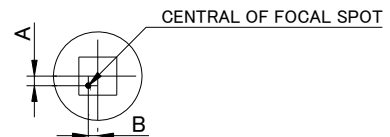
EXPLANATION OF SYMBOLS

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



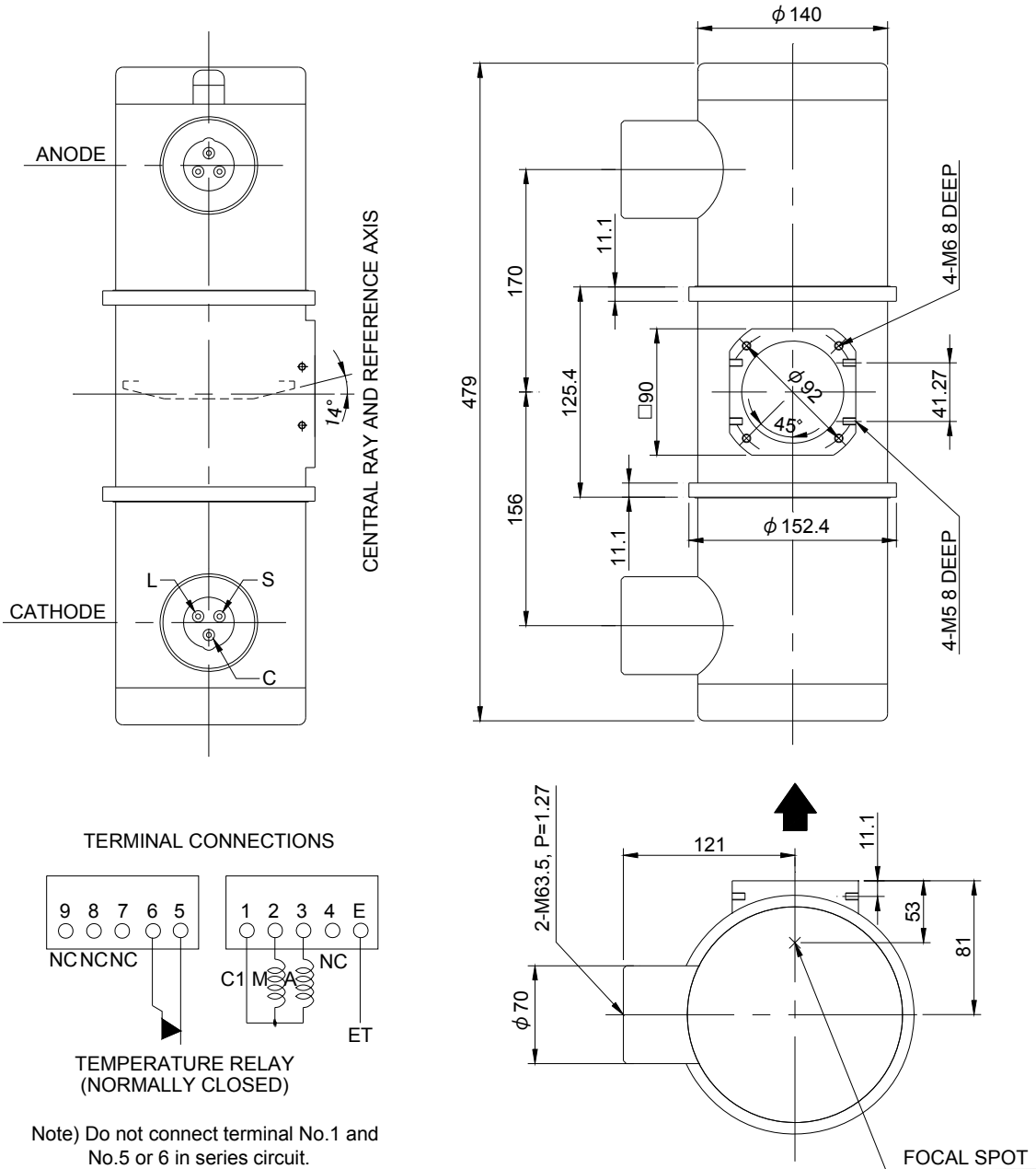
$$-1.5\text{mm} \leq A \leq 1.5\text{mm}$$

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

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

Dimensional Outline of E7242FX

Unit mm

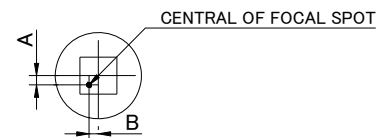


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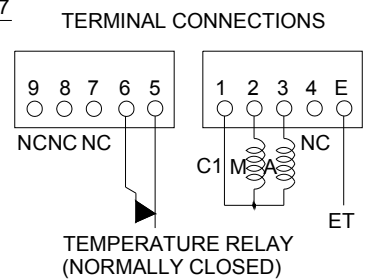
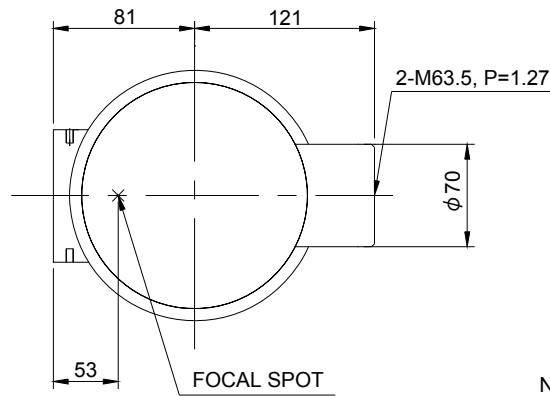
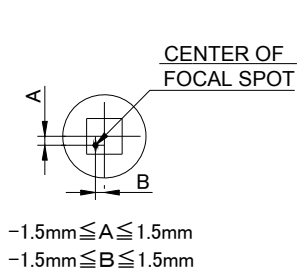
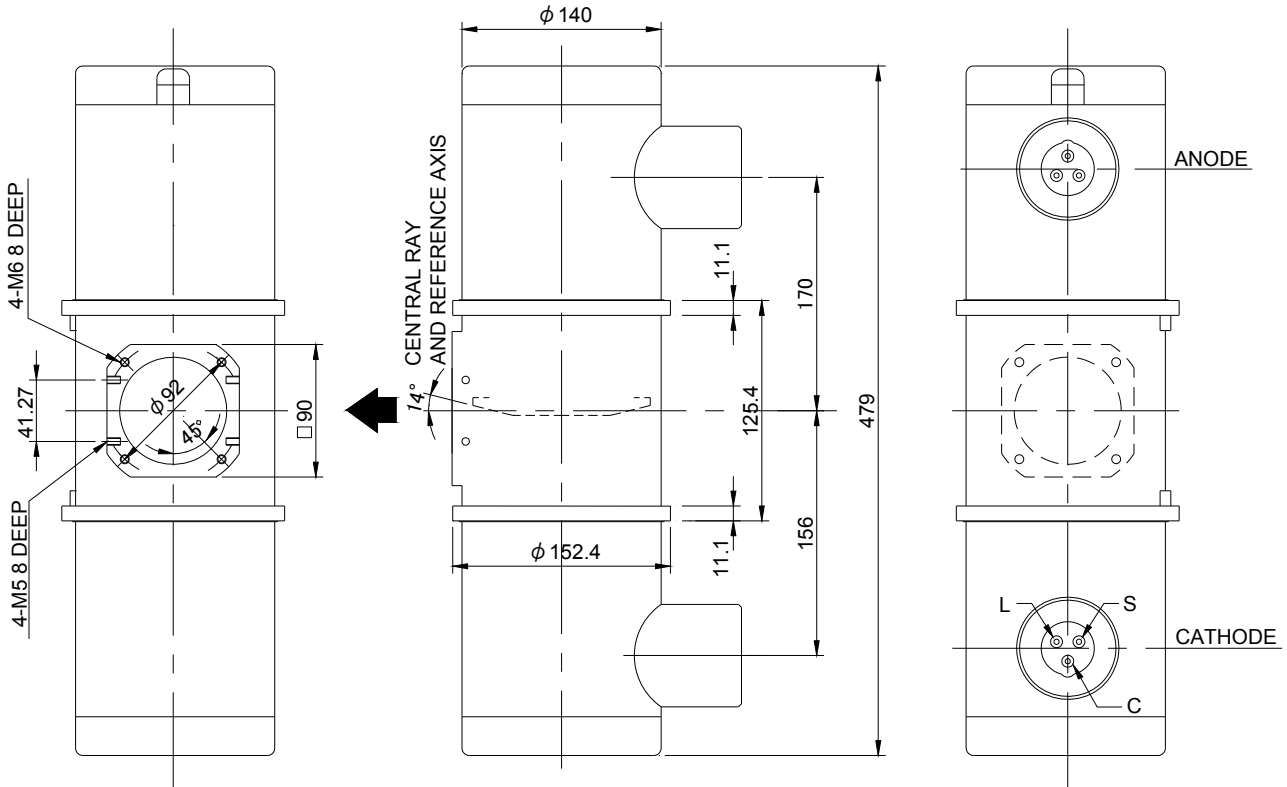


$-1.5\text{mm} \leq A \leq 1.5\text{mm}$
 $-1.5\text{mm} \leq B \leq 1.5\text{mm}$

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

Dimensional Outline of E7242GX

Unit mm



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

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

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