

**ROTANODE™
E7884X
E7884FX
E7884GX**

Rotating Anode X-ray Tube Assembly

- ◆ Rotating anode X-ray tube assembly for high energy radiographic operations.
- ◆ The heavy anode is constructed with specially processed rhenium-tungsten faced molybdenum target which is 74 mm diameter and has an improved coating to increase thermal emissivity.
- ◆ 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+A1:2012) Class I ME EQUIPMENT

Electrical:

Circuit:

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

Nominal X-ray Tube Voltage:

Radiographic 150 kV

Nominal Focal Spot Value:

Large Focus 1.2
 Small Focus 0.6

Nominal Anode Input Power (at 0.1s):

	60 Hz	50 Hz
Large Focus	54 kW	50 kW
Small Focus	22 kW	20 kW

Nominal Radiographic Anode Input Power:

	60 Hz	50 Hz
Large Focus	48 kW	44 kW
Small Focus	22 kW	20 kW

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Motor Ratings:

Stator: XS-AL

		Starting	Running
Driven Frequency	[Hz]	50/60	50/60
Input Power	[W]	910	83
Voltage ¹⁾³⁾	[V]	130	40
Current ²⁾	[A]	7.8	2.3
Min. Speed Up ⁴⁾	[s]	0.8	-
Capacitor	[µF]	44	44

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:

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

Stator Resistance:

Common-Main Winding 9.4 Ω
 Common-Auxiliary Winding 28.3 Ω
 Resistance Between Housing and Low Voltage Terminals Minimum 2 MΩ
 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 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 150 kV, 3.4 mA
 X-ray Coverage 430 × 430 mm at SID 1000 mm
 Weight (Approx.) 16 kg
 High Voltage Receptacle To meet requirements of IEC60526 Corrigendum1:2010
 Cooling Method Natural or forced air
 Tube Housing Model Number:
 E7884X XH-121
 E7884FX XH-126
 E7884GX XH-150

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

Maximum X-ray Tube Voltage:

Radiographic	150 kV
Between Anode (or Cathode) and Ground	75 kV
Minimum X-ray Tube Voltage	40 kV
Maximum X-ray Tube Current	See rating charts
Large Focus	700 mA
Small Focus	300 mA

Maximum Filament Current:

Large Focus	5.4 A
Small Focus	5.2 A

Filament Voltage:

Large Focus (At maximum filament current 5.4 A)	11.9 ~ 16.1 V
Small Focus (At maximum filament current 5.2 A)	6.8 ~ 9.2 V

Filament Frequency Limits

Continuous Anode Input Power

Thermal Characteristics:

Anode Heat Content	210 kJ (300 kHU)
Maximum Anode Heat Dissipation	870 W (1226 HU/s)
X-ray Tube Assembly Heat Content	900 kJ (1250 kHU)

Nominal Continuous Input Power:

 Without Air-circulator

Environmental Limits

Operating Limits:

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

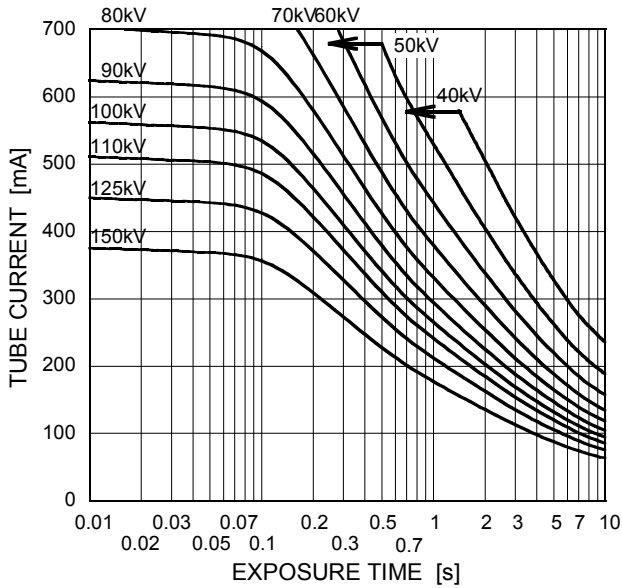
Shipping and Storage Limits:

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

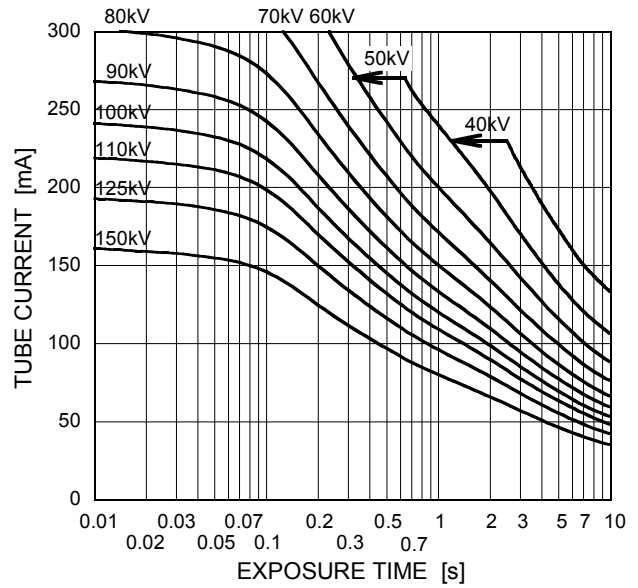
Maximum Rating Charts (Absolute Maximum Rating Charts)

Conditions: Tube Voltage
Constant potential high-voltage generator
Stator Power Frequency 60 Hz

Nominal Focal Spot Value: 1.2 ■

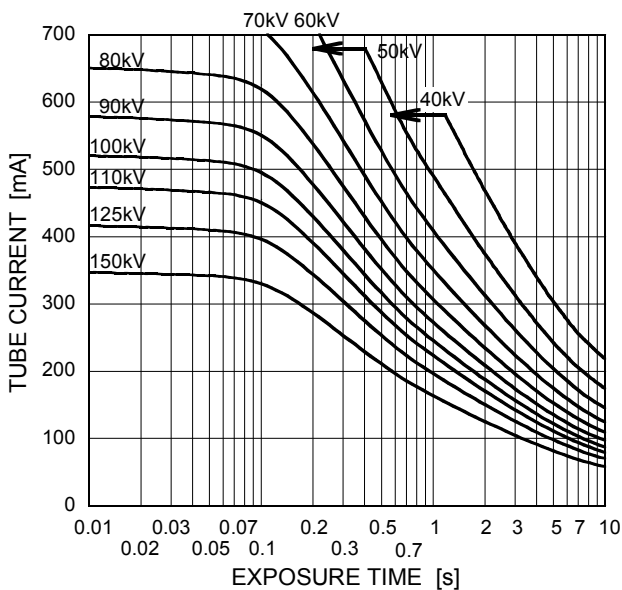


Nominal Focal Spot Value: 0.6 □

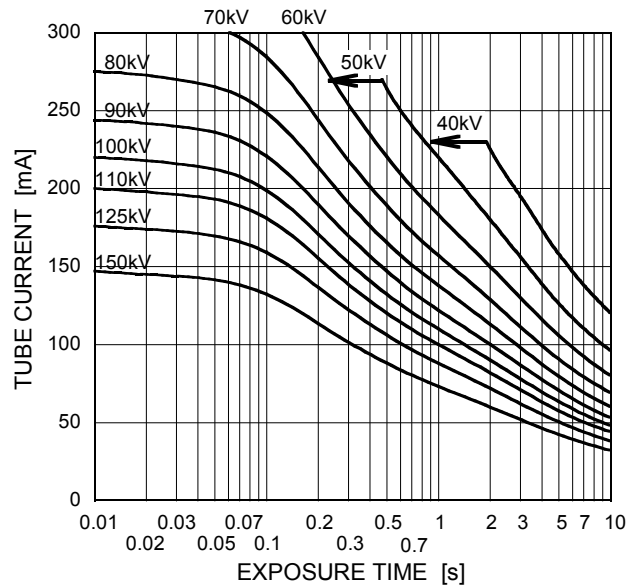


Conditions: Tube Voltage
Constant potential high-voltage generator
Stator Power Frequency 50 Hz

Nominal Focal Spot Value: 1.2 ■



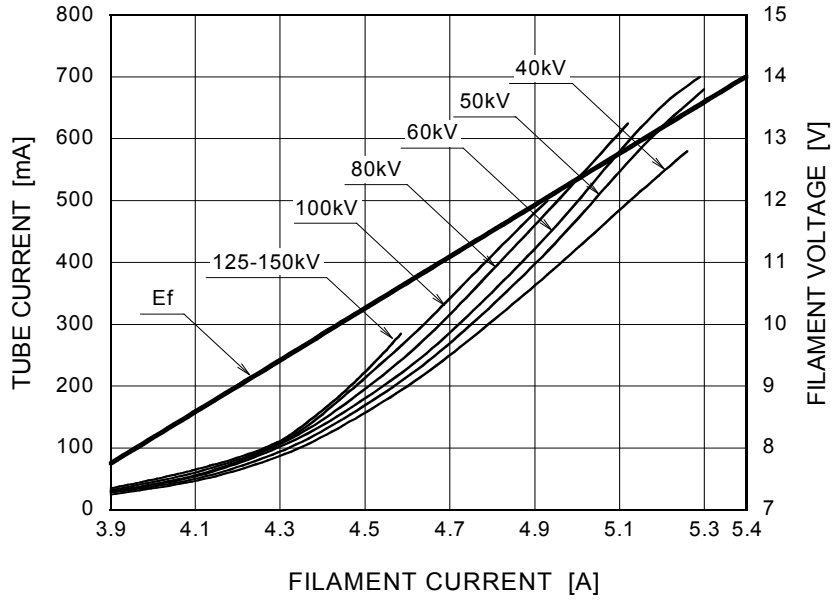
Nominal Focal Spot Value: 0.6 □



Emission & Filament Characteristics

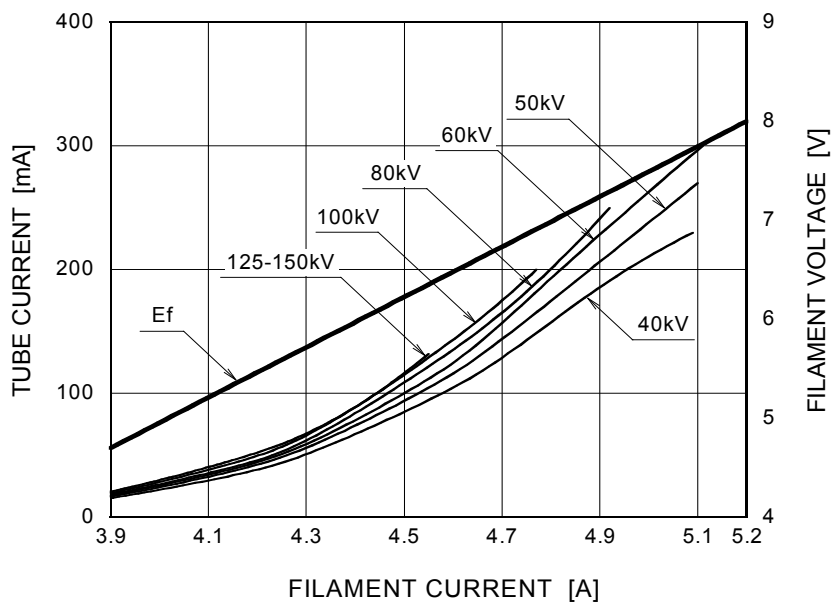
Constant potential high-voltage generator

Nominal Focal Spot Value: 1.2 ■



For Reference Only

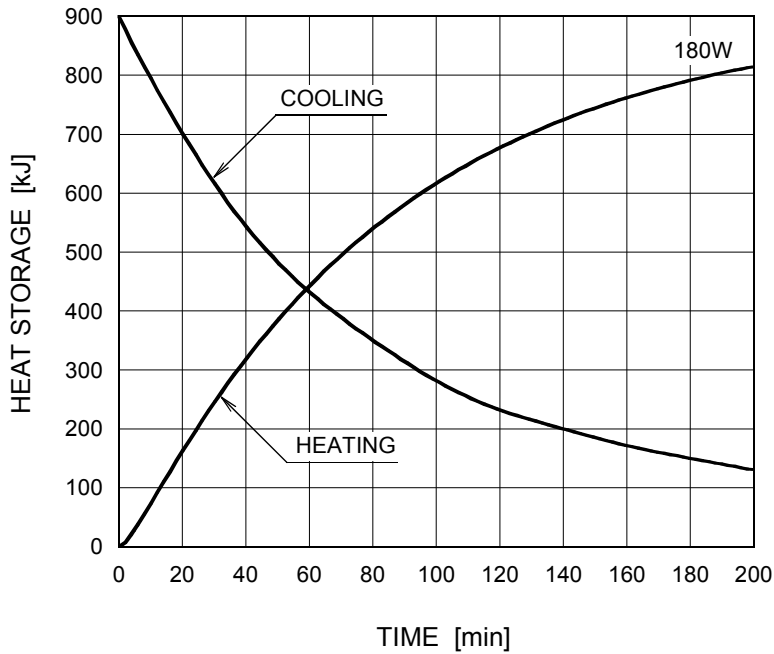
Nominal Focal Spot Value: 0.6 □



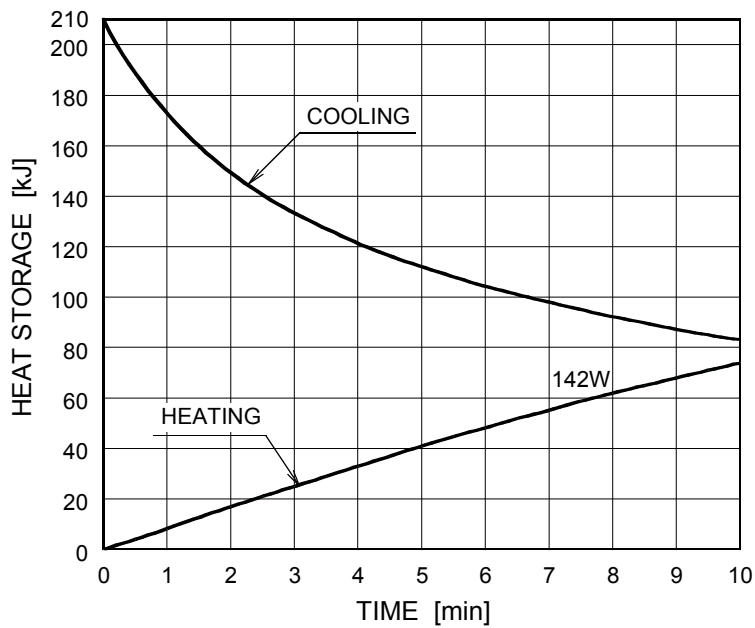
For Reference Only

Thermal Characteristics

X-ray Tube Assembly Heating / Cooling Curve



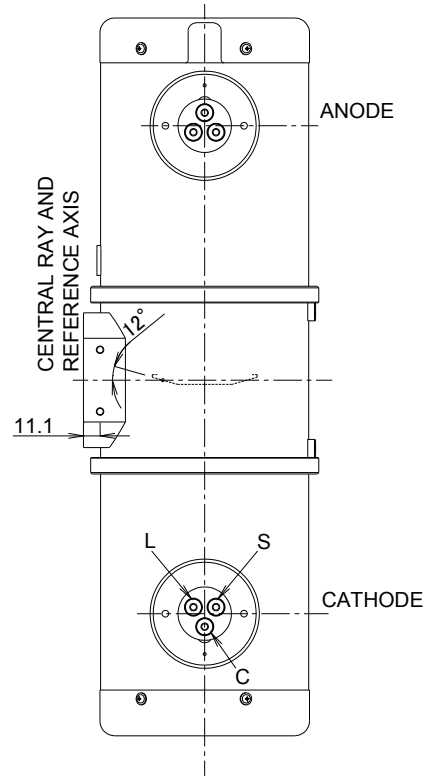
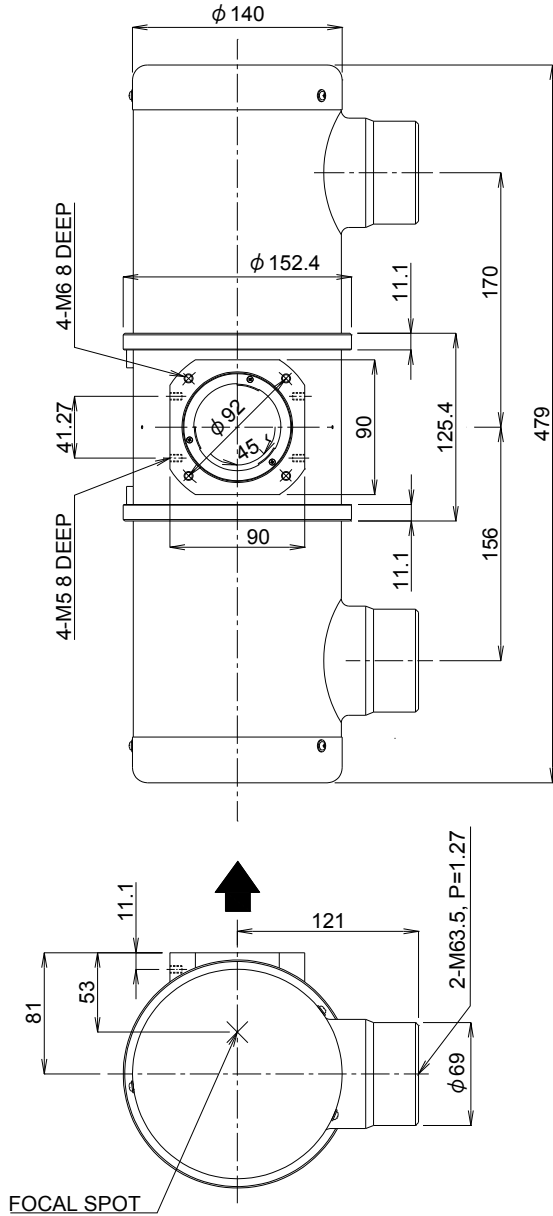
Anode Heating / Cooling Curve



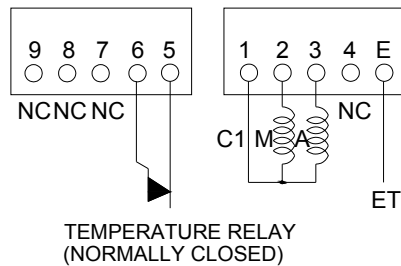
The heating curves are showing example of average input power to anode in operation.

Dimensional Outline of E7884X

Unit: mm



TERMINAL CONNECTIONS



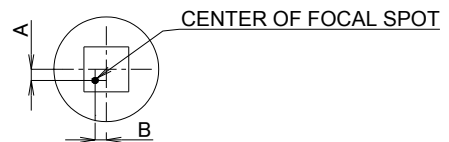
Note) Do not connect terminal No.1 and No.5 or 6 in series circuit.

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

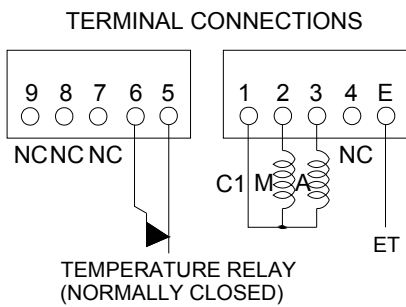
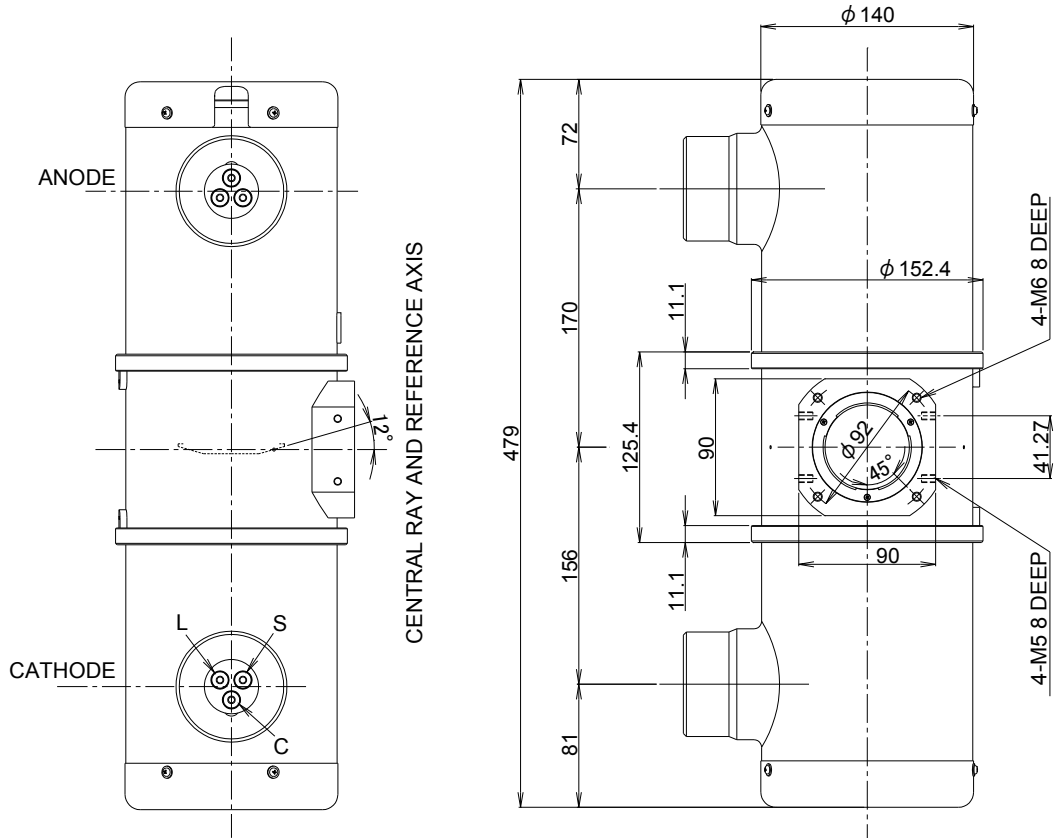


$-1.5\text{mm} \leq A \leq 1.5\text{mm}$
 $-1.5\text{mm} \leq B \leq 1.5\text{mm}$

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

Dimensional Outline of E7884FX

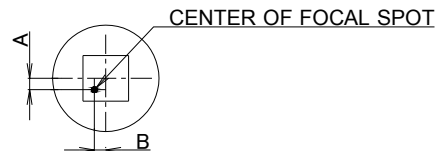
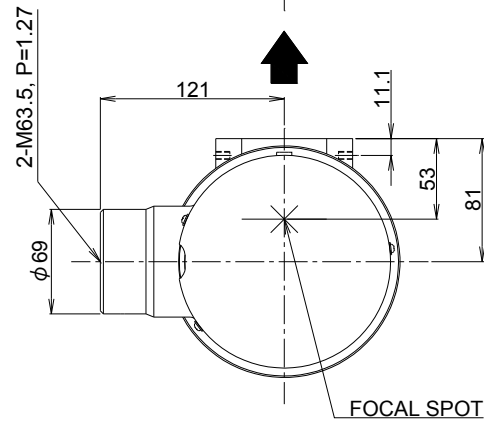
Unit: mm



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

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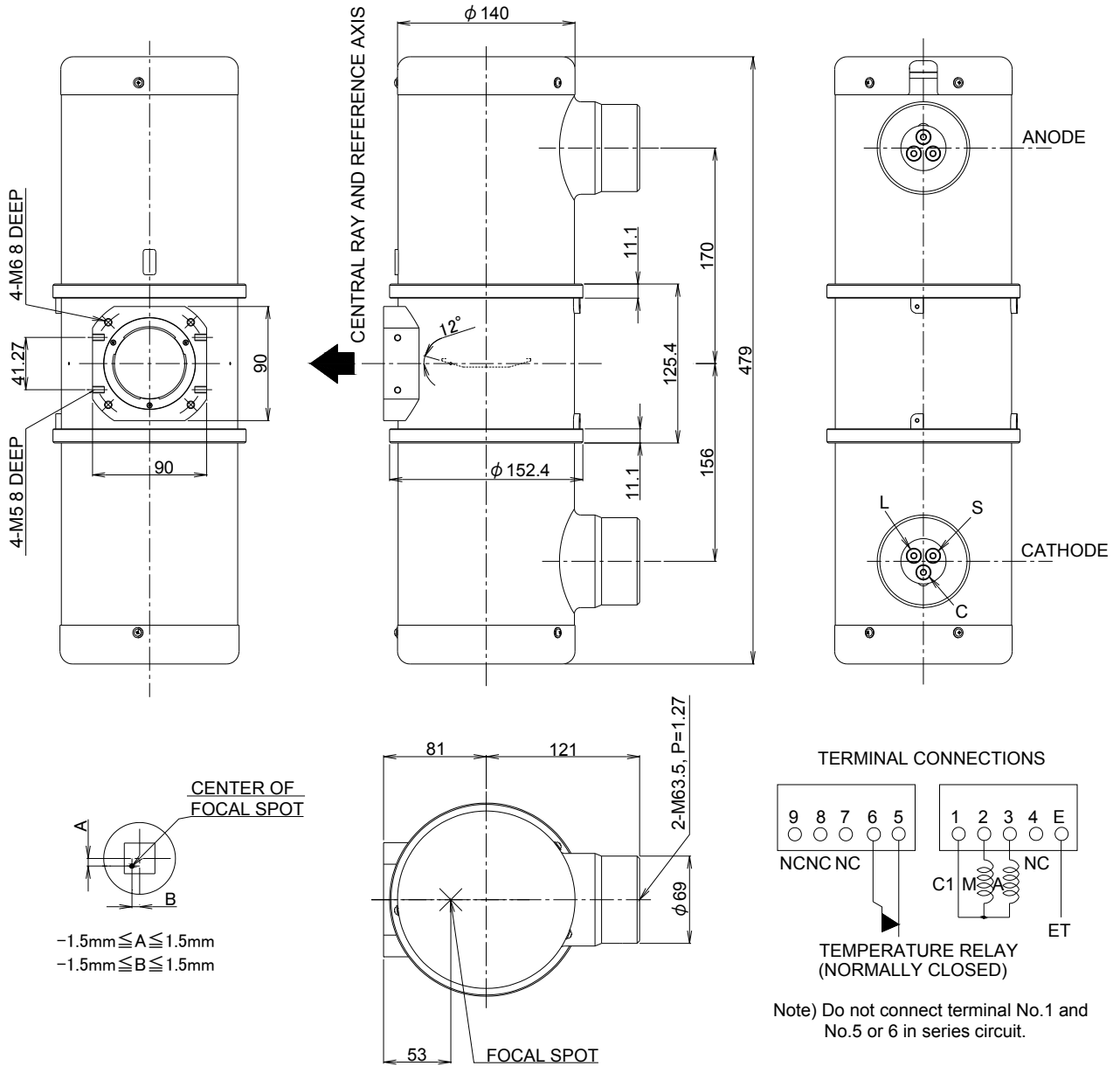


-1.5mm ≤ A ≤ 1.5mm
 -1.5mm ≤ B ≤ 1.5mm

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

Dimensional Outline of E7884GX

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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·Canon Electron Tubes & Devices Co., Ltd. has been certified to meet all the requirements of Quality Management Systems ISO9001 and ISO13485.
Product scope is referred to the following URL. <https://etd.canon/eng/company/quality.htm>.