

**ROTANODE™**

**E7886X**  0197  
**E7886FX**

**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 1.3 and 0.7, 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 ..... 1.3

Small Focus ..... 0.7

Nominal Anode Input Power (at 0.1s):

	50 Hz	60 Hz
Large Focus .....	36 kW	40 kW
Small Focus .....	15 kW	17 kW

Nominal Radiographic Anode Input Power (IEC60613:2010):

	50 Hz	60 Hz
Large Focus .....	33 kW	36 kW
Small Focus .....	15 kW	16 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 <sup>1) 3)</sup>	[V]	130	40
Current <sup>2)</sup>	[A]	7.8	2.3
Min. Speed Up <sup>4)</sup>	[s]	0.8	-
Capacitor	[ $\mu$ F]	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:**

50 Hz	Minimum 2700 min <sup>-1</sup>
60 Hz	Minimum 3200 min <sup>-1</sup>

**Stator Resistance:**Common-Main Winding ..... 9.4  $\Omega$ Common-Auxiliary Winding ..... 28.3  $\Omega$ Resistance between Housing and Low Voltage Terminals ..... Minimum 2 M $\Omega$ 

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 ..... 16 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 ..... 354 × 354 mm at SID 750 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:**

E7886X ..... XH-121

E7886FX ..... 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 .....	550 mA
Small Focus .....	280 mA
Maximum Filament Current:	
Large Focus .....	5.3 A
Small Focus .....	5.5 A
Filament Voltage:	
Large Focus (At maximum filament current 5.3 A) .....	10.9 ~ 14.7 V
Small Focus (At maximum filament current 5.5 A) .....	6.7 ~ 9.0 V
Filament Frequency Limits .....	0 ~ 25 kHz
Continuous Anode Input Power (IEC60613:2010) .....	60 W (85HU/s)
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 (IEC60613:2010):	
Without Air-circulator .....	180 W (15 kHU/min)

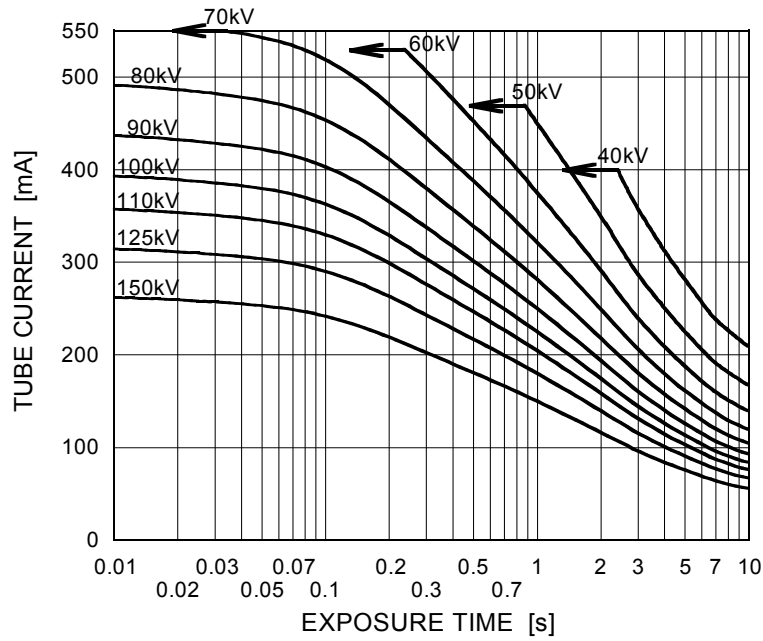
## Environmental Limits

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)

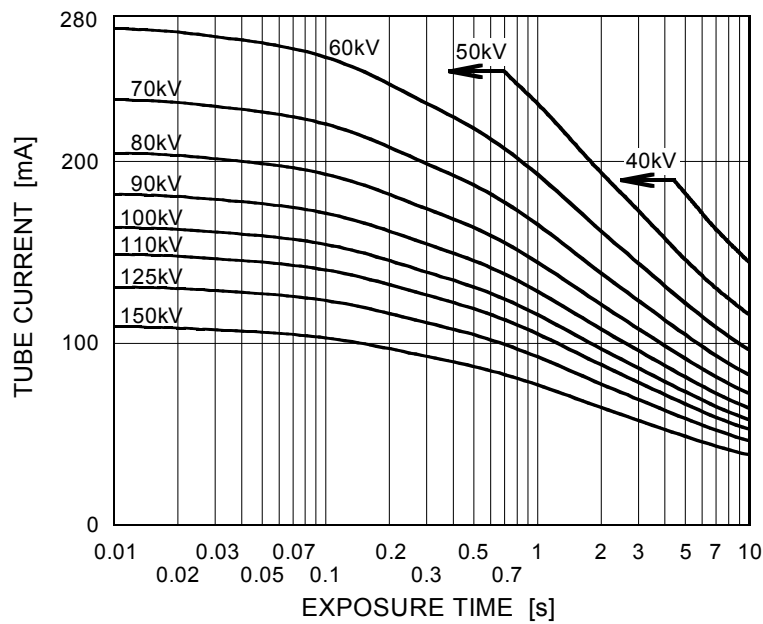
Conditions: Constant Potential High-Voltage Generator  
Stator Power Frequency 50Hz

Nominal Focal Spot Value: 1.3 ■



Refer to IEC60613:2010

Nominal Focal Spot Value: 0.7 □

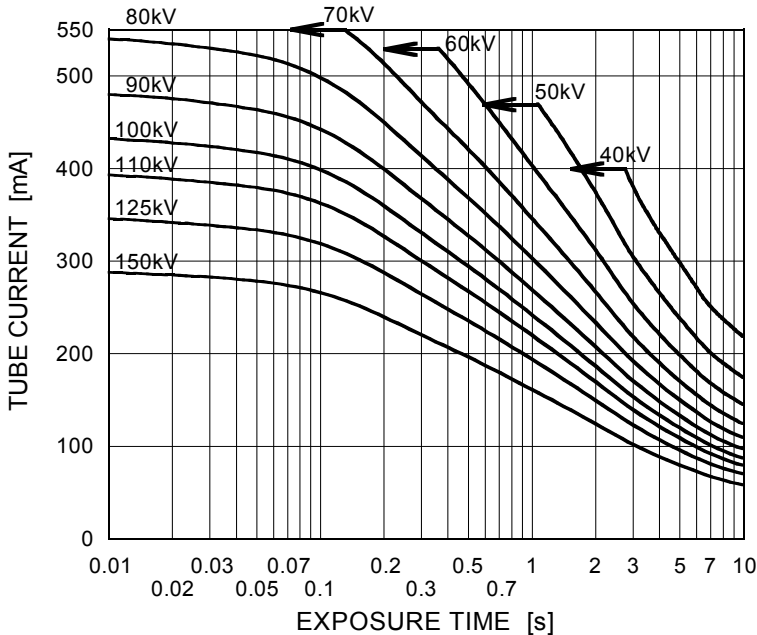


Refer to IEC60613:2010

### Maximum Rating Charts (Absolute Maximum Rating Charts)

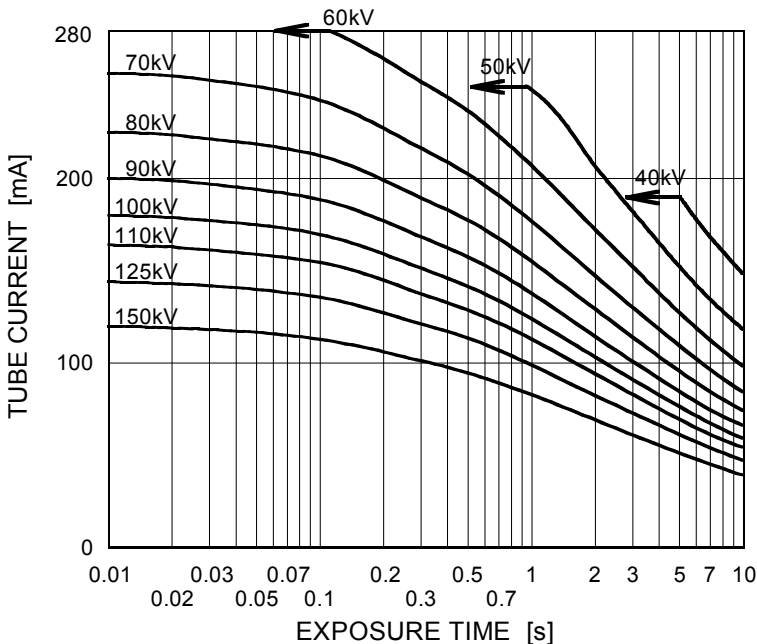
Conditions: Constant Potential High-Voltage Generator  
Stator Power Frequency 60Hz

Nominal Focal Spot Value: 1.3 ■



Refer to IEC60613:2010

Nominal Focal Spot Value: 0.7 □

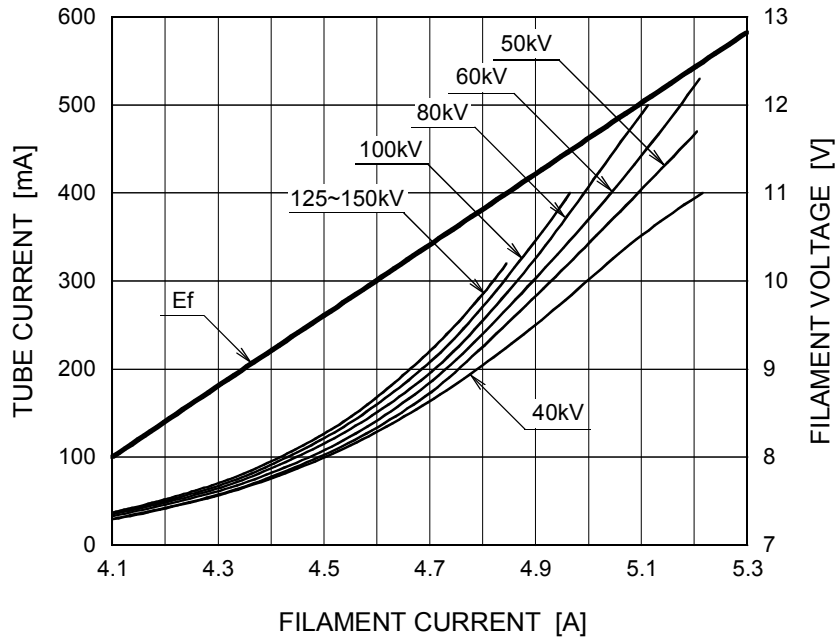


Refer to IEC60613:2010

## Emission & Filament Characteristics

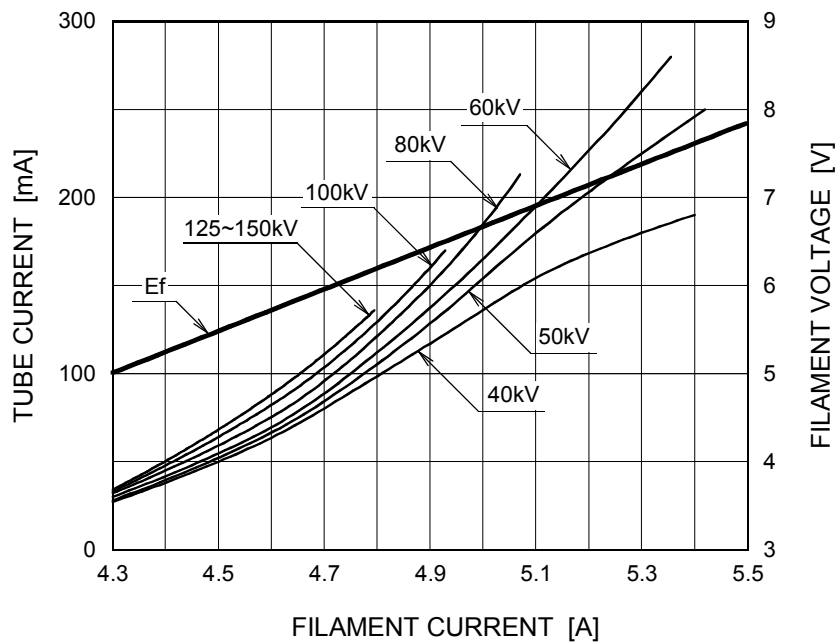
Constant Potential High-Voltage Generator

Nominal Focal Spot Value: 1.3 ■



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

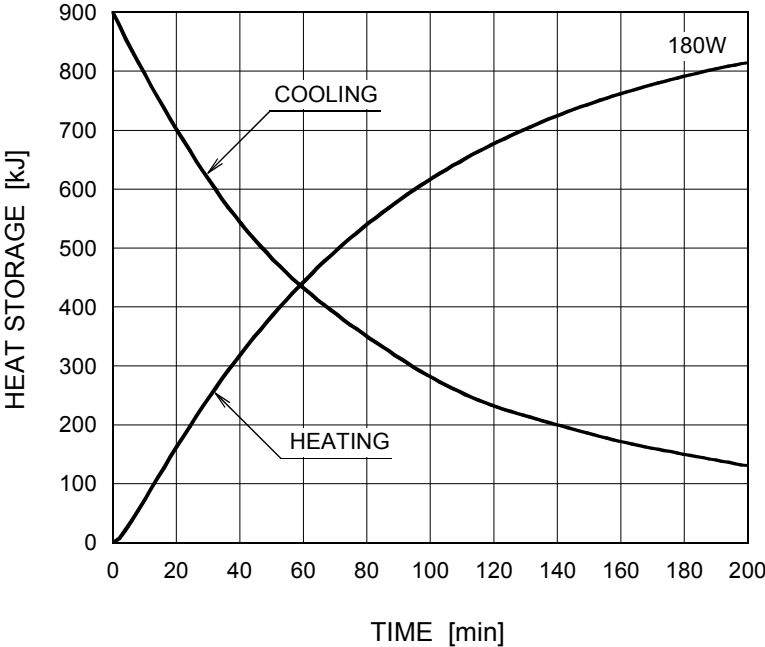
Nominal Focal Spot Value: 0.7 □



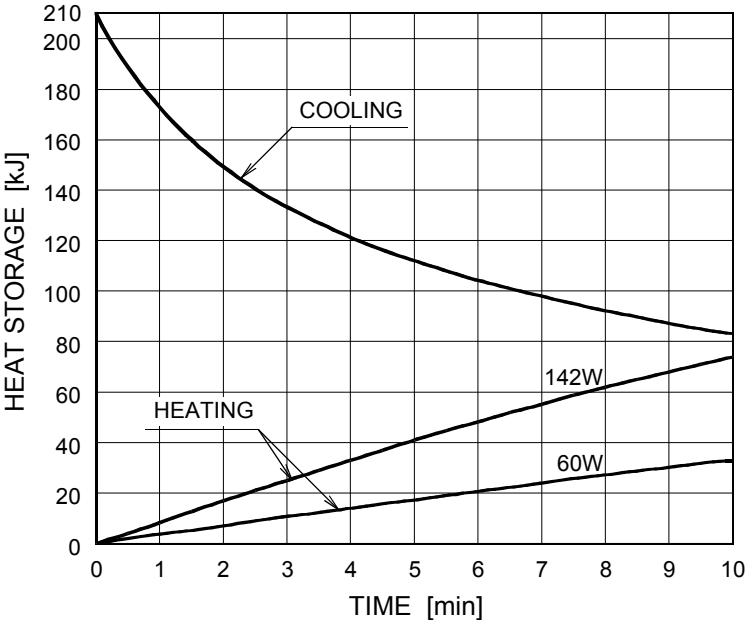
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### Thermal Characteristics

X-ray Tube Assembly Heating / Cooling Curve



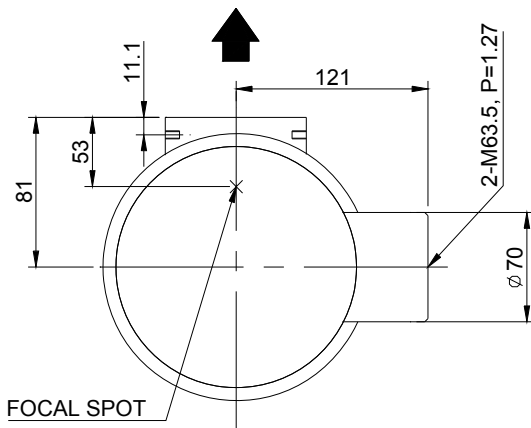
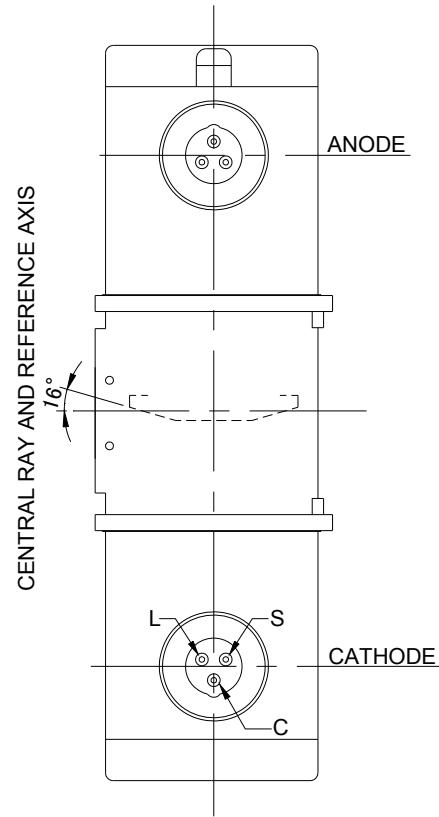
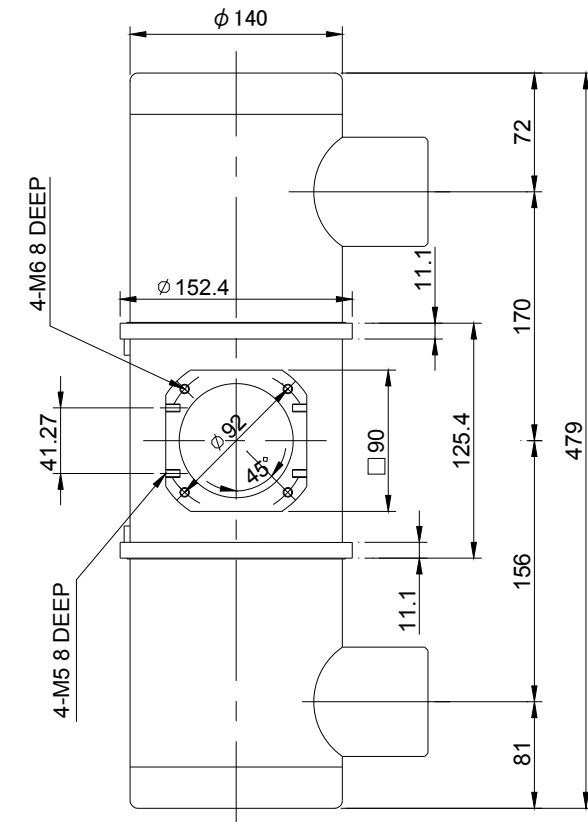
Anode Heating / Cooling Curve



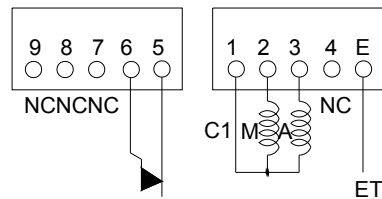
The heating curves are showing example of average input power to anode in operation.

### Dimensional Outline of E7886X

Unit mm



#### TERMINAL CONNECTIONS



TEMPERATURE RELAY (NORMALLY CLOSED)

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

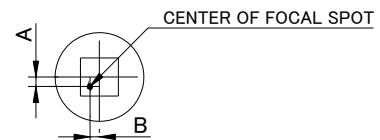
#### EXPLANATION OF SYMBOLS

##### 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



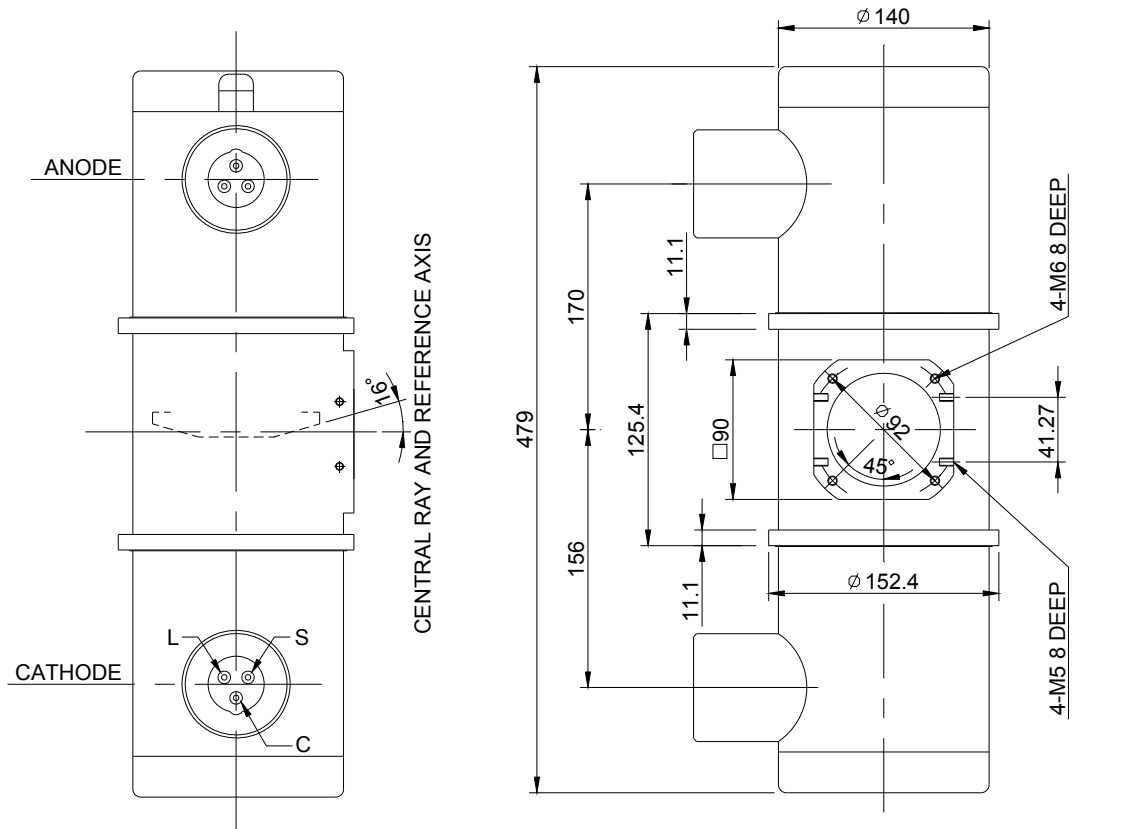
$-1.5\text{mm} \leq A \leq 1.5\text{mm}$   
 $-1.5\text{mm} \leq B \leq 1.5\text{mm}$

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

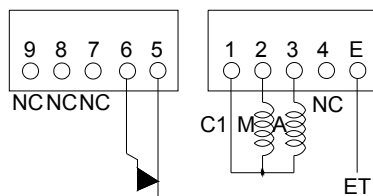


## Dimensional Outline of E7886FX

Unit mm

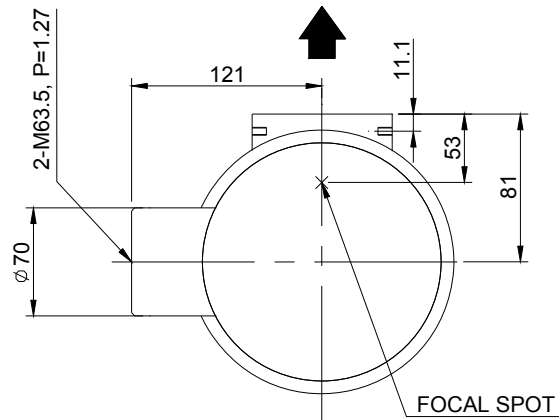


### TERMINAL CONNECTIONS



TEMPERATURE RELAY  
(NORMALLY CLOSED)

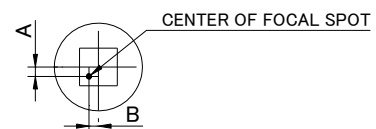
Note) Do not connect terminal No.1 and  
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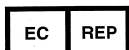
TERMINAL CONNECTIONS  
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$-1.5\text{mm} \leq A \leq 1.5\text{mm}$   
 $-1.5\text{mm} \leq B \leq 1.5\text{mm}$

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

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