


ROTANODE™
E7884X
E7884FX  **0197**
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) 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	50 kW	54 kW
Small Focus	20 kW	22 kW

Nominal Radiographic Anode Input Power (IEC60613:2010):

	50 Hz	60 Hz
Large Focus	42 kW	46 kW
Small Focus	16 kW	17 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:

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

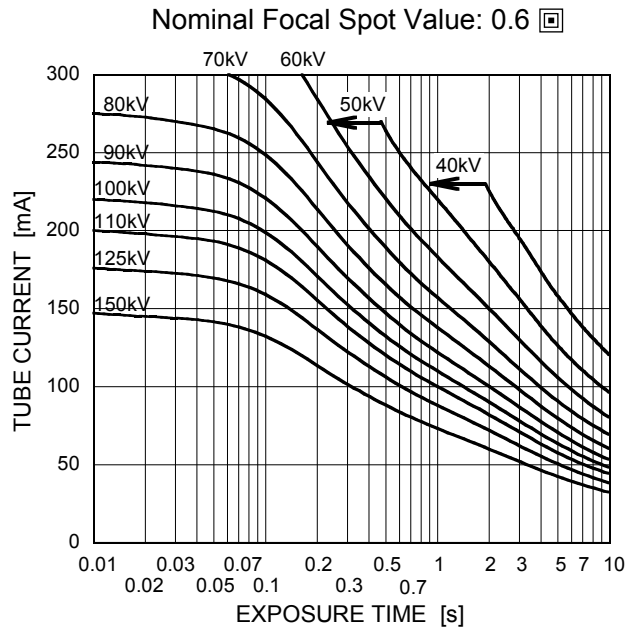
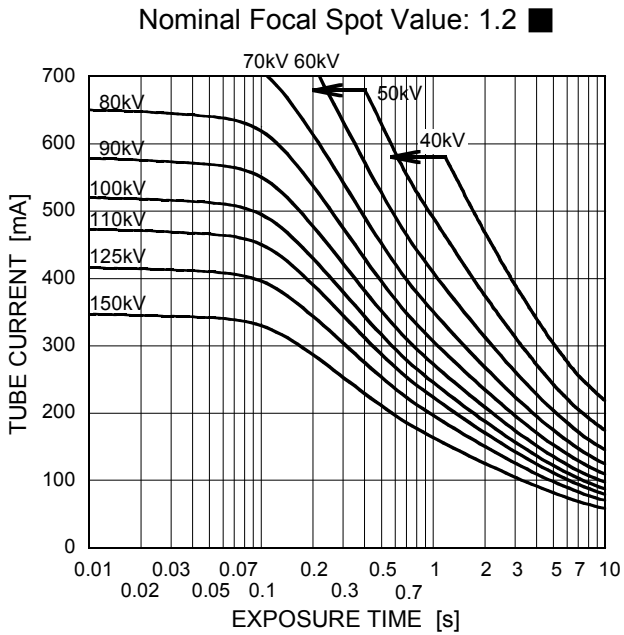
Maximum X-ray Tube Voltage (IEC60613:2010):	
Radiographic	150 kV
Between Anode (or Cathode) and Ground	75 kV
Minimum X-ray Tube Voltage	40 kV
Maximum X-ray Tube Current (IEC60613:2010) See rating charts	
Large Focus	700 mA
Small Focus	300 mA
Maximum Filament Current:	
Large Focus	5.4 A
Small Focus	5.2 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	0 ~ 25 kHz
Continuous Anode Input Power (IEC60613:2010)	142 W (200 HU/s)
(Fluoroscopic, repeated radiographic or mixed exposure)	
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

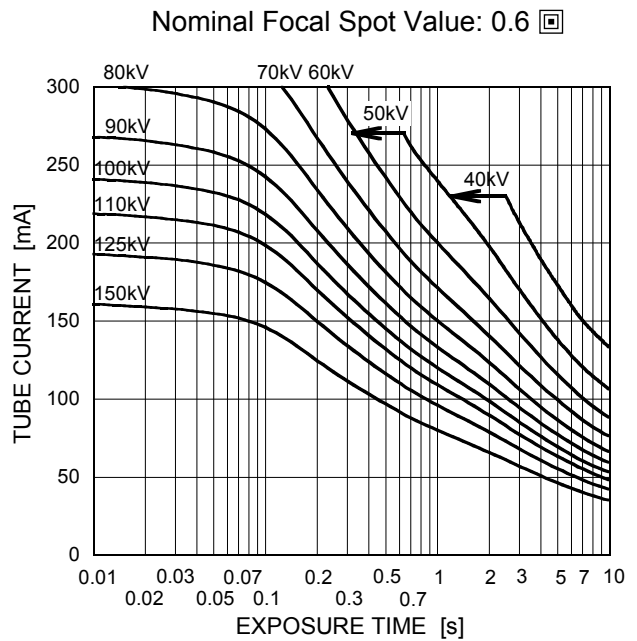
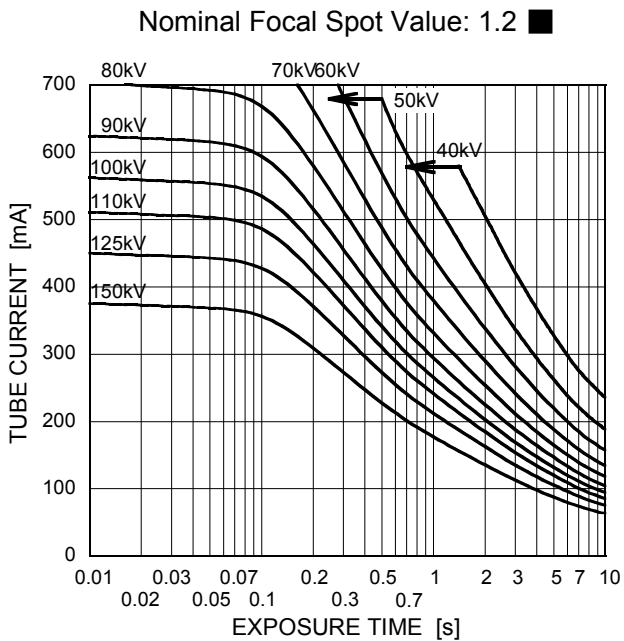
Maximum Rating Charts (Absolute Maximum Rating Charts)

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



Refer to IEC60613:2010

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

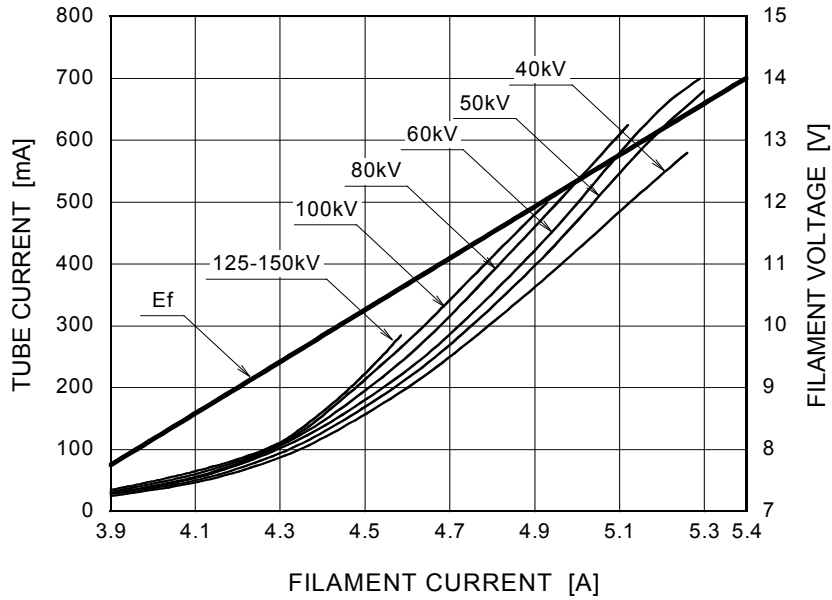


Refer to IEC60613:2010

Emission & Filament Characteristics

Constant potential high-voltage generator

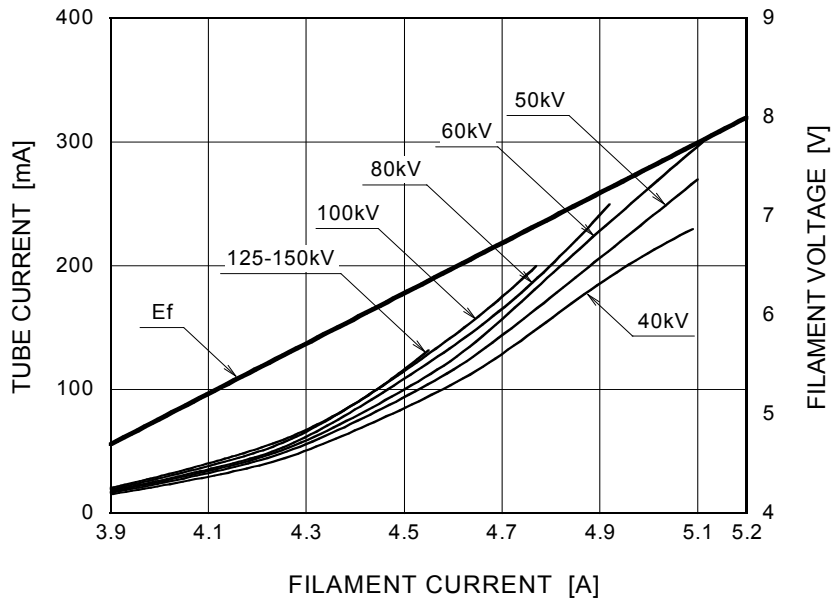
Nominal Focal Spot Value: 1.2 ■



Note1) For Reference Only

Note2) Refer to IEC60613:2010

Nominal Focal Spot Value: 0.6 □

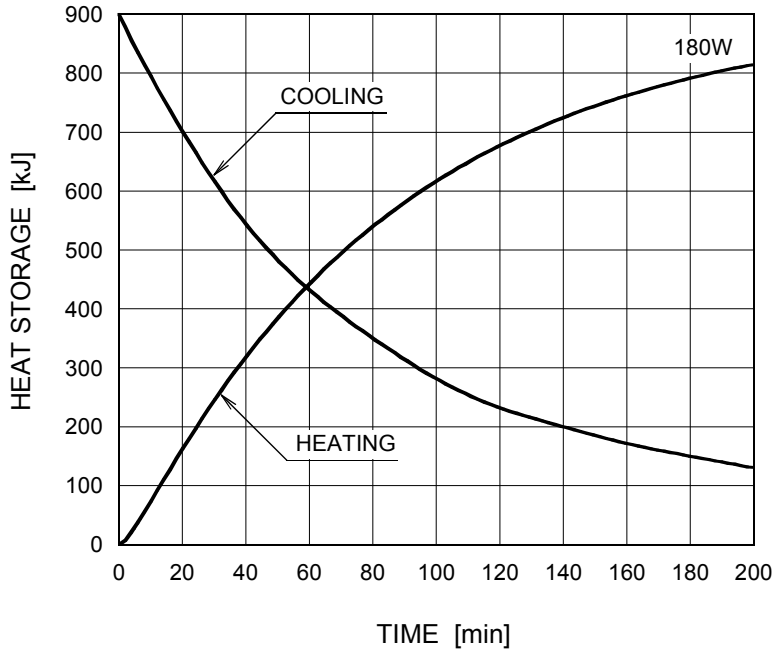


Note1) For Reference Only

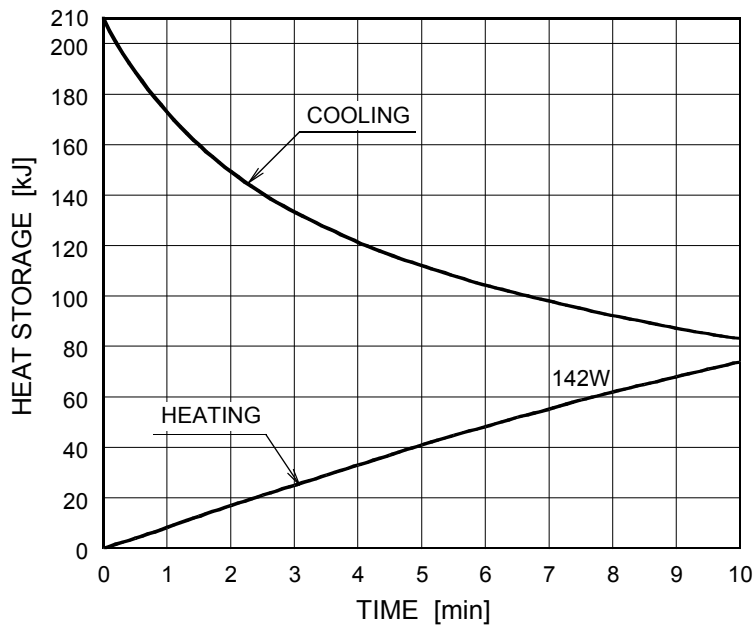
Note2) Refer to IEC60613:2010

Thermal Characteristics

X-ray Tube Assembly Heating / Cooling Curve



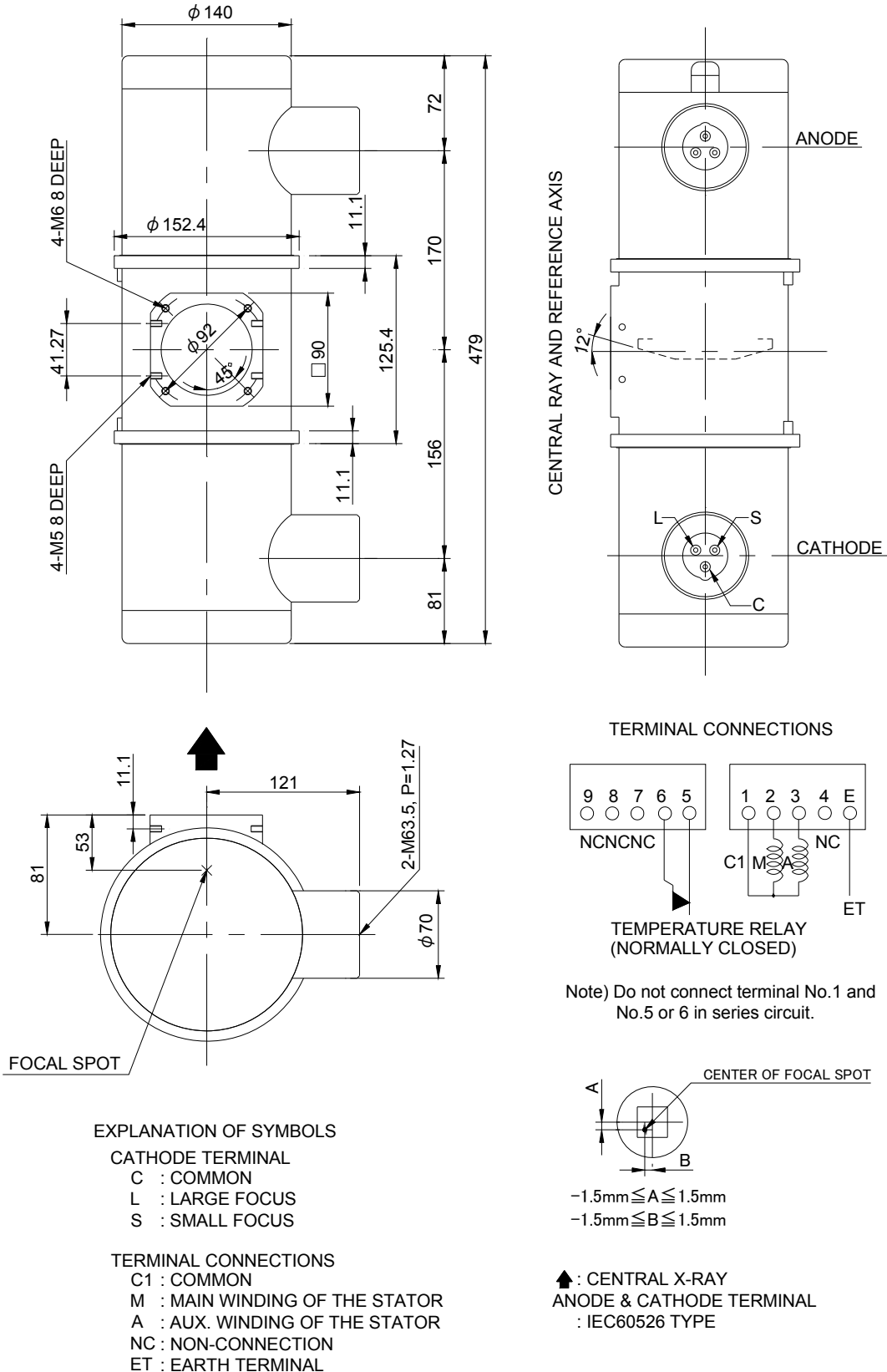
Anode Heating / Cooling Curve



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

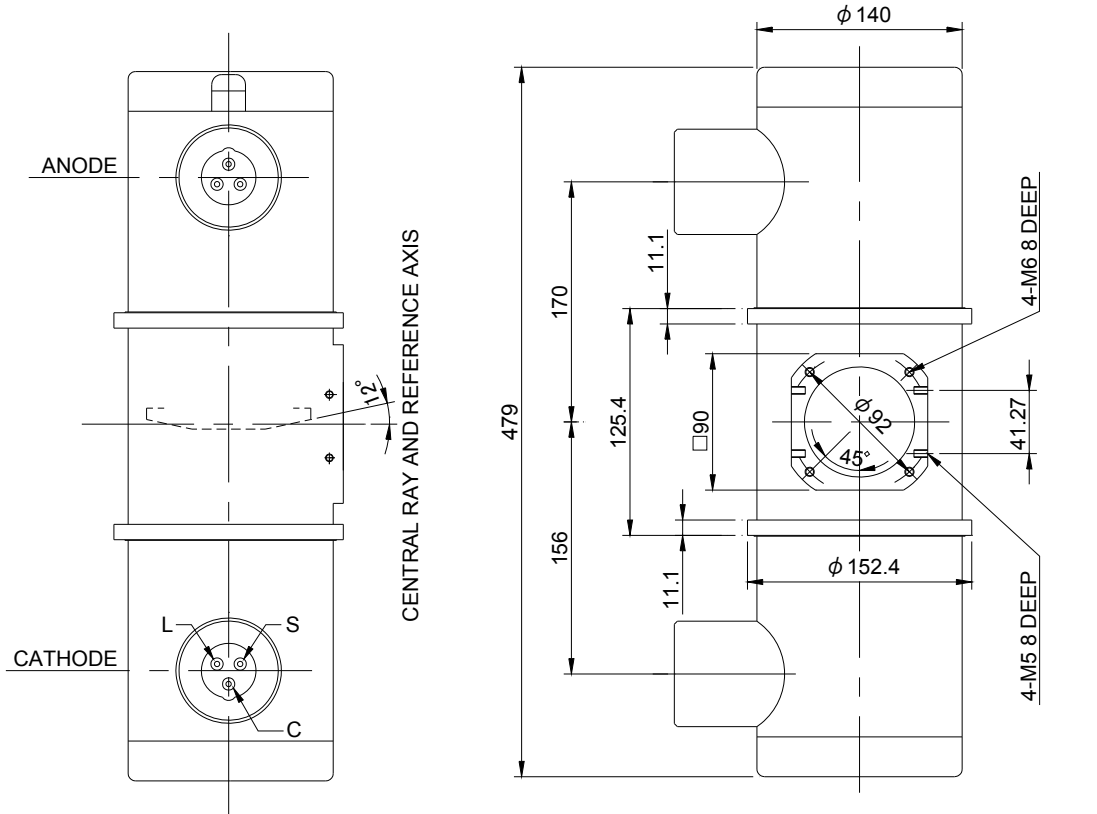
Dimensional Outline of E7884X

Unit: mm

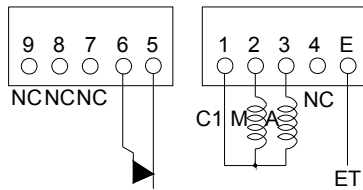


Dimensional Outline of E7884FX

Unit: mm

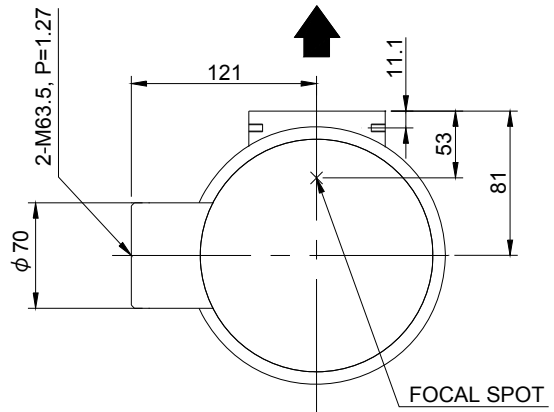


TERMINAL CONNECTIONS



TEMPERATURE RELAY
(NORMALLY CLOSED)

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



FOCAL SPOT

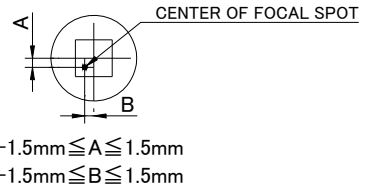
EXPLANATION OF SYMBOLS

CATHODE TERMINAL

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

TERMINAL CONNECTIONS

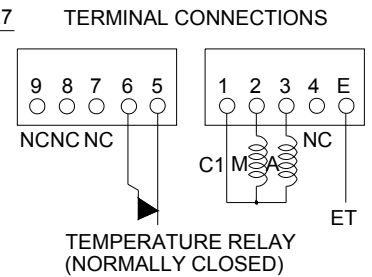
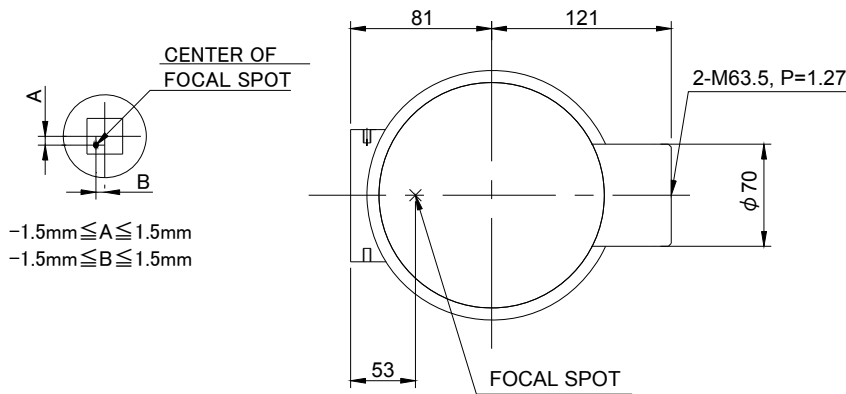
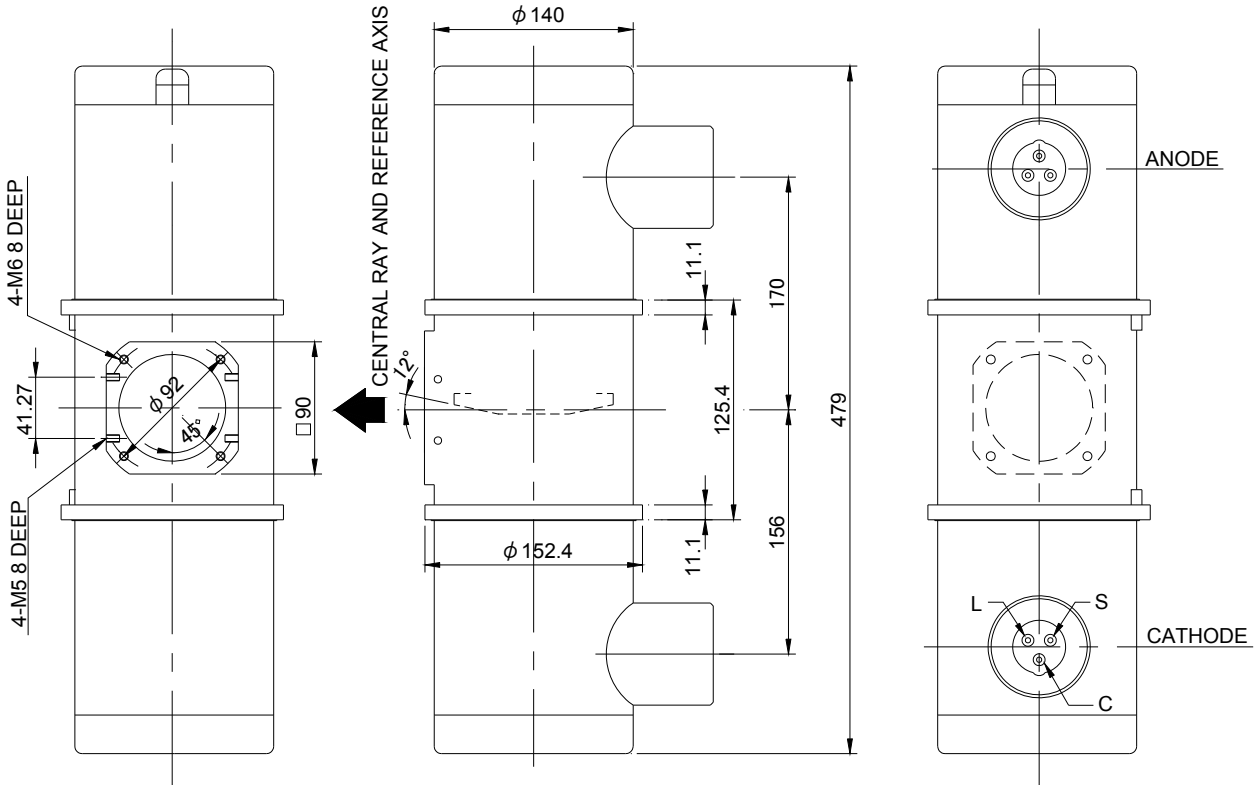
- C1 : COMMON
- M : MAIN WINDING OF THE STATOR
- A : AUX. WINDING OF THE STATOR
- NC : NON-CONNECTION
- ET : EARTH TERMINAL



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

Dimensional Outline of E7884GX

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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