Chapter 1 Introduction

TXF1270 Series

X-ray high voltage power supply | 225kV,4kW Compact and Bipolar Output Configuration

- 160kV,225kV,320kVand450kV Model
- Build in PFC circuit
- Integrated double filament power supply
- Digital interface USB, Ethernet and RS-232
- Excellent stability and adjustment

Product Introduction:

Teslaman TXF1270 series X-ray high voltage power supply is a compact power supply with negative, positive, or bipolar output options, with a power range from 1.8 kW to 6.0 kW, and an output voltage range of 160 kV to 450 kV, suitable for various application needs. The power supply adopts an active power factor correction circuit, with a high power factor and low input current, and reduces line-related electromagnetic interference to a minimum. TXF1270 adopts a proprietary inverter topology technology to make the power supply more efficient and higher in power density. The high-voltage part of the power supply is packaged in a solid-state way to reduce volume and weight and improve the reliability and maintenance convenience of the product. The power supply uses DSP technology based on SMT control circuits and provides various interfaces such as USB, RS-232, Ethernet, and analog signals to facilitate integration into OEM systems. The power supply has two DC outputs, and the stable emission current regulation circuit controls the filaments power supply, providing precise and stable current to the X-ray tube. In addition, the power supply also has a comprehensive fault diagnosis circuit, arc monitoring, arc extinguishing, and arc counting functions.

Typical Applications:

Non-destructive testing
X-ray scanning
Secure applications
Medical applications
Al Visual Recognition

Specification Description:

Input Voltage	AC220V±10%, 50/60Hz, PFC input≥0.98 (1.8kW~4.5kW model).
Input Current	<30A (1.8kW~4.5kW model).
Output Voltage	Accuracy: 0.25% Stability: ≤ 0.1% per 8 hours, after 1 hour warm up Load:±0.05% of rated output voltage for a full load change Line: ±0.05% of rated output voltage over specified input voltage range
Temperature Coefficient	50ppm/°C

Emission Current	Temperature coefficient: 100ppm/°C Load:±0.05% of rated output current for a change from 30% to 100% of rated output voltage Line: ±0.05% of rated output current over specified input voltage range
Filament	Output:0-6 amps at a compliance of 10Vdc, maximum Dual Focal Spot:Small and large, selectable via interface signal Configuration: DC filament drive. Closed loop emission control regulates filament setting to provide desired X-Ray tube emission current
Polarity	Specify negative or positive when ordering
Environment	Work:0°C To +50°C.Storage:-40°C To +85°C.
Mains Input Connector	MS3106A24-11S
Interface Connector	Digital—Ethernet, RS-232 and USB Analog—25 pin connector
Cooling	Forced air

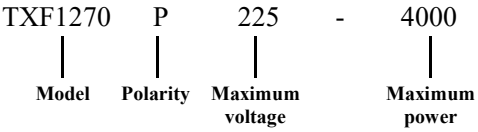
Description of Model Code

The model code represents the performance and parameters of the power supply, which are:

Maximum output voltage in kV;

Maximum output power in W;

Output polarity, P for positive output, N for negative output;



J1 MAIN AND AUXILIARY INPUT POWR TYPE 97-3102A-24-11P（Single Phase Units）

PIN	SIGNAL	PARAMETERS
A	Auxiliary AC Line Power	AC180-264V
B	Auxiliary Ground	Ground
C	Auxiliary AC Neutral	Neutral
D	Main AC Line Power	AC180-264V
E	Main Ground	Ground
F	Main AC Neutral	Neutral

JB2 AUXILIARY AC INPUT POWER

PIN	SIGNAL	PARAMETERS
A	Line 1	208VAC, ±10%, 50/60Hz (source 3 phase L1, L2)
B	Line 2	208VAC, ±10%, 50/60Hz (source 3 phase L1, L2)
C	GND	Ground

Note: Use 4 conductor cable or single isolated wires rated no less that 600VAC, 30 amps (10AWG, minimum).

HV CONNECTOR—J3 R24/R28:

PIN	SIGNAL	PARAMETERS
C	HV Output	160kV and 320kV - R24 connector 225kV and 450kV - R28 connector
S	Small Filament Output	0 to 6A @ 10VDC
L	Large Filament Output	0 to 6A @ 10VDC

USB DIGITAL INTERFACE - JB6 PIN USB “B” CONNECTOR:

PIN	SIGNAL	PARAMETERS
1	VBUS	+5VDC
2	D-	Data -
3	D+	Data +
4	GND	Ground

ETHERNET DIGITAL INTERFACE - JB7 8 PIN RJ45 CONNECTOR：

PIN	SIGNAL	PARAMETERS
1	TX+	Transmit Data+
2	TX-	Transmit Data-
3	RX+	Receive Data+
4	NC	No Connection
5	NC	No Connection
6	RX-	Receive Data
7	NC	No Connection
8	NC	No Connection

RS-232 DIGITAL INTERFACE JB8 9 PIN FEMALE D CONNECTOR：

PIN	SIGNAL	PARAMETERS
1	NC	No Connection
2	TX out	Receive Data
3	RX in	Transmit Data
4	NC	No Connection
5	SGND	Ground
6	NC	No Connection
7	NC	No Connection
8	NC	No Connection
9	NC	No Connection

JB9 ANALOG INTERFACE —25 PIN D CONNECTOR

PIN	SIGNAL	PARAMETERS
1	Power Supply Fault	Low, sum of faults, HVPS detected a fault, open collector, 50V @ 10mA max
2	mA Program	0 to 10V FS Z in = 10M ohms
3	kV Program	0 to 10V FS Z in = 10M ohms
4	Filament Limit L/S Ref.*	0 to 10V FS Z in = 10M ohms
5	Filament Preheat L/S Ref.*	0 to 10V FS Z in = 10M ohms
6	kV Monitor	0 to 10V FS Z out = 4.99k ohms
7	mA Monitor	0 to 10V FS Z out = 4.99k ohms
8	Filament Current Monitor*	0 to 10V FS Z out = 4.99k ohms
9	Signal Ground	Ground
10	X-Ray Enable	+24Vdc = X-Ray ON, connect to pin 14 with dry contact relay
11	Filament ON*	Filament ON status, low, filament is ON open collector 50V, @ 10mA max
12	Interlock 1	Active low, interlock is closed, safe to enable HV
13	Interlock 2	Active low, interlock is closed, safe to enable HV
14	+24Vdc	+24Vdc @ 100mA, maximum
15	Filament Enable*	Active low, turn filament ON
16	Filament Control*	Active low, filament is regulated by ECR (HV must be ON). Not active, the filament is regulated by the preheat reference
17	Filament L/S Select	Filament selection large or small, low = small spot is selected
18	Filament L/S Confirm	Open collector, 50V @ 10mA max Filament selection confirm, low = small spot is selected
19	HVPS RDY	Low = HVPS ready, open collector, 50V @ 10mA max
20	X-Ray ON	X-Ray ON status, low = X-Rays are ON open collector, 50V @ 10mA max
21	Interlock Status	Low, interlocks are closed, can enable HV open collector, 50V @ 10mA max
22	GND	Digital Ground
23	X-Ray ON Pre-Warn	Pre-warning, low, before X-Ray ON open collector, 50V @ 10mA max
24	Reset	Active low, minimum 10mS transition
25	Arc fault	Low, arc fault, the HVPS has detected an arc open collector, 50V @ 10mA max

TXF1270 SERIES SPECIFICATIONS（CUSTOMIZABLE）：

160kV~320kV 规格

	TXF1270*160-1800	TXF1270*160-3000	TXF1270*160-4000	TXF1270*160-6000	TXF1270PN160-1800	TXF1270PN160-4500	TXF1270PN175-4500
DC Output Voltage	0 to 160kV	0 to 160kV	0 to 160kV	0 to 160kV	0 to ±160kV	0 to ±160kV	0 to ±175kV
Polarity*	Pos or Neg	Pos or Neg	Pos or Neg	Pos or Neg	Bipolar	Bipolar	Bipolar
Output Rated Current	0-30mA	0-30mA	0-50mA	0-50mA	0-30mA	0-30mA	0-30mA
Output Power	1.8kW	3.0kW	4.0kW	6.0kW	1.8kW	4.5kW	4.5kW
Ripple/Noise（P-P）	<0.025%	<0.05%	<0.1%	<0.25%	<0.025%	<0.1%	<0.1%
Dimensions	10.09″ H x 17.16″ W x 24″ D				2 x (10.09″ H x 17.16″ W x 24″ D)		
Weight	68kg	68kg	68kg	70.3 kg	136 kg	136kg	136 kg
Output Connector	R24	R24	R24	Two R24	Two R24	Two R24	Two R24

225kV~450kV SPECIFICATIONS

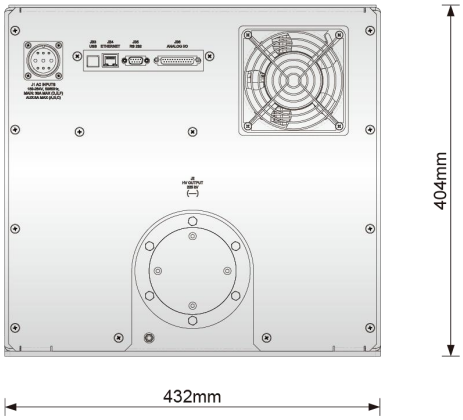
	TXF1270*225-1800	TXF1270*225-3000	TXF1270*225-4000	TXF1270*225-6000	TXF1270PN225-1800	TXF1270PN225-4500
DC Output Voltage	0 to 225kV	0 to 225kV	0 to 225kV	0 to 225kV	0 to ±225kV	0 to ±225kV
Polarity*	Pos or Neg	Pos or Neg	Pos or Neg	Pos or Neg	Bipolar	Bipolar
Output Rated Current	0-30mA	0-30mA	0-30mA	0-30mA	0-30mA	0-30mA
Output Power	1.8kW	3.0kW	4.0kW	6.0kW	1.8kW	4.5kW
Ripple/Noise（P-P）	<0.025%	<0.05%	<0.1%	<0.25%	<0.025%	<0.1%
Dimensions	15.90″ H x 17″ W x 30.72″ D					
Weight	109kg	109kg	109kg	109kg	218kg	218kg
Output Connector	R28**	R28**	R28**	R28**	Two R28**	To R28**

Units are available in positive output polarity without filament, see model selection table for ordering details.

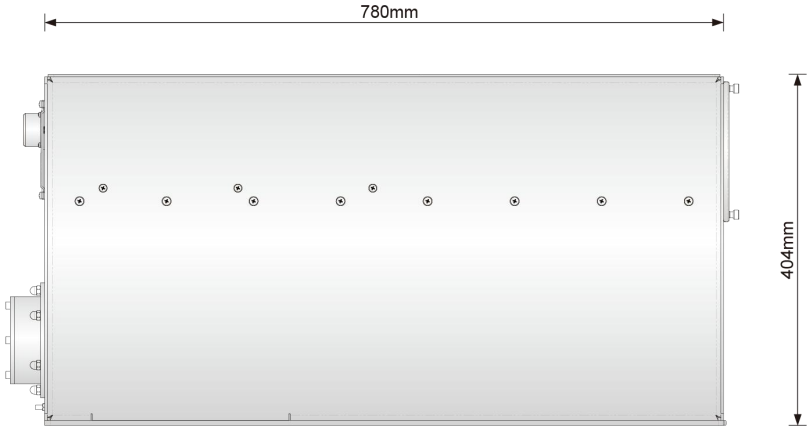
* Specify “P” for positive or “N” for negative polarity.

* If user select Comet HV cable with R28SL connector, please order Teslaman’s HV flange.

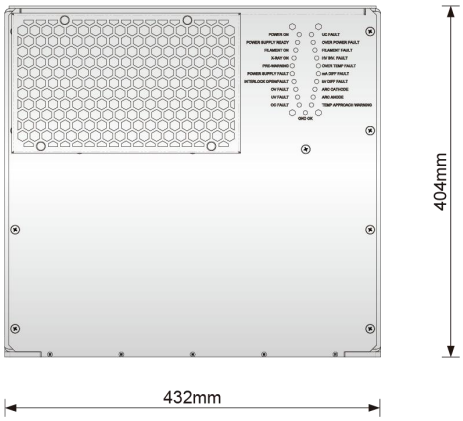
Dimensions: mm



Front view



Side view



Rear view