

TXF1250 Series

X-ray high voltage power supply | -160kV, 1200W, Floating filament



- Compact and light weight.
- Optional parameters-20kV to -160kV, 300W, 600W and 1200W.
- Universal input and power factor correction
- Support cold cathode or hot cathode X-ray tubes.
- Standard digital interfaces: USB, Ethernet and RS-232.
- User programmable and arc detection functions.

Product Introduction:

Teslaman TXF1250 series high-voltage power supply is an X-ray generator module specially designed for OEM applications, with a voltage output of up to 160kV and a power of 1200W. The power supply has a universal input, a small package size and three standard digital interfaces, which can be more simplified and integrated into your X-ray analysis system. The whole series of models can be used in any X-ray tube design of suspended filament (negative high voltage polarity) or grounding filament (positive high voltage polarity). The control circuit based on DSP enables the power supply to provide excellent emission current regulation and excellent stability.

Typical Applications:

Blood irradiation; nondestructive testing; crystal testing; electroplating measurement; diamond testing; mineral analysis; X-ray fluorescence; X-ray diffraction; plastic sorting; AI Visual Recognition.

Specification Description:

Input voltage	Input power factor correction AC100-240V $\pm 10\%$; 300W power supply, 47-63Hz, 4.6A. AC200-240V $\pm 10\%$; 600W power supply, 47-63Hz, 4.3A. 1200W power supply, 47-63Hz, 8.2A.
Output voltage	8Models - 20kV, 30kV, 40kV, 50kV, 60kV, 70kV, 75kV, 100kV And 160kV.
Output polarity	Negative polarity - used for suspended filament X-ray tube Positive polarity - used for grounding filament X-ray tubes
Power	300W, 600W, 1200W. Customizable).
Output voltage regulation	Within the specified input voltage range, $\leq 0.01\%$ of the rated output voltage. Full load change, $\leq 0.01\%$ of the rated output voltage.
Emission current regulation	Within the specified input voltage range, $\leq 0.01\%$ of the rated output current. When the rated output voltage changes from 30% to 100%, $\leq 0.01\%$ of the rated output current. When $kV < 30\%$ of the full range output, the filament is disabled.
Ripple	Under rated output conditions, it is better than 1% rms (0.1% rms optional).
Stability	After 2 hours of startup, it is better than 25ppm/hour.
Temperature coefficient	Voltage and current are better than 50ppm/ $^{\circ}C$.
Temperature range	Operating temperature: 0 $^{\circ}C$ to 40 $^{\circ}C$ Storage temperature: -40 $^{\circ}C$ to 85 $^{\circ}C$
Humidity	20% to 85% relative humidity, no condensation.

Filament configuration	Closed-loop emission control adjusts the filament setting to provide the desired X-ray tube emission current. Two types are available: suspension filament (AC output is referenced by negative output voltage) and grounding filament (DC output is referenced by ground).
Output	0-5A at 10V compliance, the maximum value. When the high-voltage output is less than 30% of the full-range output, the filament circuit is disabled to protect the X-ray tube. Standard filament preheating 0-2.5A adjustable. Other filament grades can be provided through special orders.
Control interface	Local interface: Adjust the filament limit and preheating level through the potentiometer. Remote interface: Standard USB, Ethernet and RS232. All digital monitoring is a 2% accuracy specification.
Control software	Provide an example of Windows graphical user interface.
High voltage enable	Hardware-based, dry contact closure will enable the power supply to enter high-voltage mode.
Monitoring signal	The voltage and current monitoring signal are proportional, 0-10VDC is equal to 0-100% full range, and the accuracy is 1%.
Cooling	Forced ventilation.
External dimensions	300/600W: 120.65mm high, 152.4mm wide and 304.8mm deep. 1200W: 120.65mm high, 304.8mm wide and 304.8mm deep. 160kV: 226.7mm high, 482.6mm wide and 546.1mm deep.
Weight	300/600W:7.5Kilogram 1200W:15Kilogram 160kV:70Kilogram
Input power connector	IEC320 with EMI filter
Output connector	It depends on the polarity choice. See the table and drawings. Other connector and pin allocation can be provided by customization

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;

TXF1250 N 160 - 1200

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Model Polarity Maximum Power

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Maximum Voltage

TXF1250 Series High Voltage Power Supply Model Selection Table:
300W

Output Rating		Model of Power Supply	
kV	mA	Positive Polarity	Negative Polarity
20	15	TXF1250*P20-300	TXF1250*P20-300
30	10	TXF1250*P30-300	TXF1250*P30-300
40	7.5	TXF1250*P40-300	TXF1250*P40-300
50	6	TXF1250*P50-300	TXF1250*P50-300
60	5	TXF1250*P60-300	TXF1250*P60-300
70	4.28	TXF1250*P70-300	TXF1250*P70-300
75	4	TXF1250*P75-300	TXF1250*P75-300
100	3	TXF1250*P100-300	TXF1250*P100-300
160	1.875	TXF1250*P160-300	TXF1250*P160-300

600W

Output Rating		Model of Power Supply	
kV	mA	Positive Polarity	Negative Polarity
20	30	TXF1250*P20-600	TXF1250*N20-600
30	20	TXF1250*P30-600	TXF1250*N30-600
40	15	TXF1250*P40-600	TXF1250*N40-600
50	12	TXF1250*P50-600	TXF1250*N50-600
60	10	TXF1250*P60-600	TXF1250*N60-600
70	8.56	TXF1250*P70-600	TXF1250*N70-600
75	8	TXF1250*P75-600	TXF1250*N75-600
100	1.5	TXF1250*P100-600	TXF1250*N100-600
160	3.75	TXF1250*P160-600	TXF1250*N160-600

1200W

Output Rating		Model of Power Supply	
kV	mA	Positive Polarity	Negative Polarity
20	60	TXF1250*P20-1200	TXF1250*N20-1200
30	40	TXF1250*P30-1200	TXF1250*N30-1200
40	30	TXF1250*P40-1200	TXF1250*N40-1200
50	24	TXF1250*P50-1200	TXF1250*N50-1200
60	20	TXF1250*P60-1200	TXF1250*N60-1200
70	17.12	TXF1250*P70-1200	TXF1250*N70-1200
75	16	TXF1250*P75-1200	TXF1250*N75-1200
100	10	TXF1250*P100-1200	TXF1250*N100-1200
160	7.5	TXF1250*P160-1200	TXF1250*N160-1200

Filament Terminal Block ----TB1 Two position terminal block:

Pin	Signal	Signal parameters
1	Filament output	0-5A, Maximum 10VDC.
2	Filament output	Filament Returns

Positive polarity/filament grounding power supply

TXF1250 analog interface----J2 15-pin female D-type connector

Pin	Signal	Signal parameters
1	Power Supply Fault	Open Collector, 35V @ 10mA Maximum
2	Current Program In	0 to 10V=0 to 100% Rated Output, Zin=10MΩ
3	Voltage Program In	0 to 10V=0 to 100% Rated Output, Zin=10MΩ
4	Filament Limit Input	0 to 10V=0 to 100% Rated Output, Zin=10MΩ
5	Local Filament Limit	Multi-turn front panel potentiometer
6	Filament Preheat Input	0 to 10V=0 to 100% Rated Output, Zin=10MΩ
7	Local Filament Preheat	Multi-turn front panel potentiometer
8	Voltage Monitor	0 to 10V=0 to 100% Rated Output, Zout =4.99k, 1%
9	Signal Ground	Ground
10	Current Monitor	0 to 10V=0 to 100% Rated Output, Zout =4.99k, 1%
11	X-ray Enable Input	Connect to Pin 12 to HV Enable Supply
12	X-ray Enable Output	+15V @ Open, ≤15mA @ Closed
13	Filament Monitor	1 Volt=1 Amp, Zout=10kΩ
14	X-ray On Output Signal	Open Collector, 35V @10mA Maximum
15	NC	/

RS-232 digital interface----J3 9-pin female D connector

Pin	Signal	Signal parameters
1	NC	/
2	TX out	Transmit data
3	RX in	Receive data
4	NC	/
5	SGND	Ground
6	NC	/
7	NC	/
8	NC	/
9	NC	/

Ethernet digital interface - J5 8-pin RJ45 connector

Pin	Signal	Signal parameters
1	TX+	Transmit data +
2	TX-	Transmit data-
3	RX+	Receive data +
4	N/C	No connection
5	N/C	No connection
6	RX-	Receive data-
7	N/C	No connection
8	N/C	No connection

R24 high-voltage connector pin distribution J6 cathode output (160kV)

Pin	Signal parameters
C (Common)	High voltage output
S (small)	High Voltage output
L (large)	Filament output

High-voltage output connector----J6: suspended filament
20-75kV negative polarity: standard X-ray connector
160kV negative polarity: R24 (cable not provided)

High-voltage output connector----J6: ground filament
Positive polarity: Provide 1 Meter-long high-voltage cable

High-voltage connector

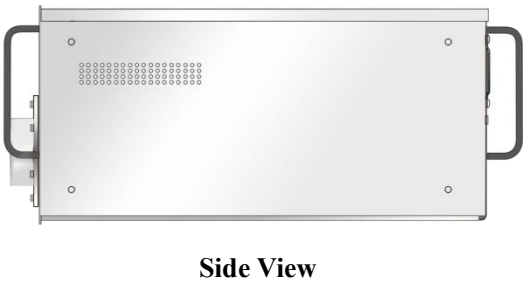
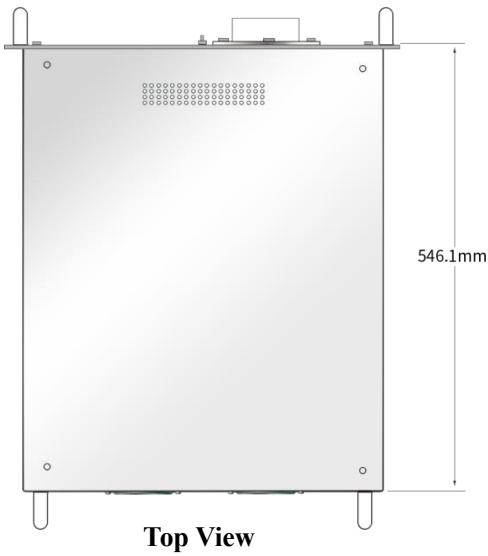
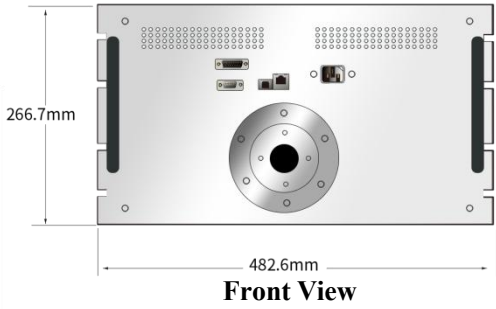
Pin	Signal parameters
C Common)	High-voltage output
S (small)	High-voltage output
L (large)	Filament output
G (grid)	Filament output

Note: High-voltage cables is not provided

USB digital interface----J4 4-pin USB "B" connector

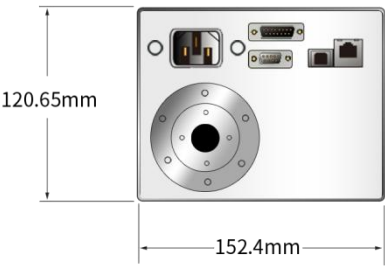
Pin	Signal	Signal parameters
1	VBUS	+5 Vdc
2	D-	Data
3	D+	Data +
4	GND	Ground

External dimensions: mm
160KV

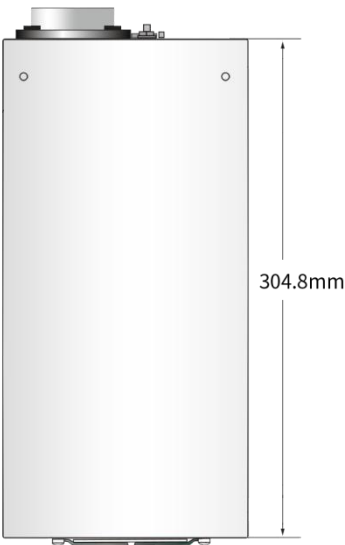


300/600W

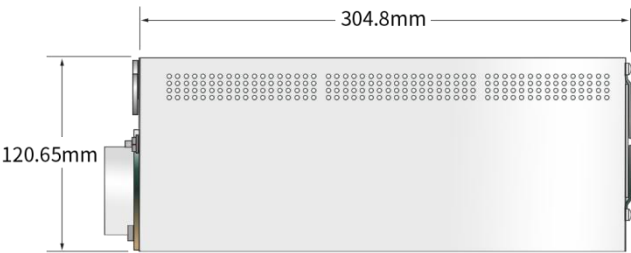
Negative polarity - Floating Filament



Front View

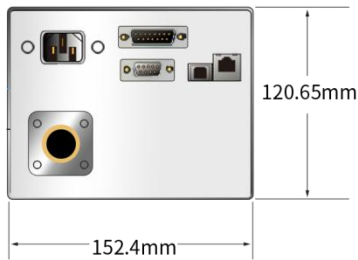


Top View

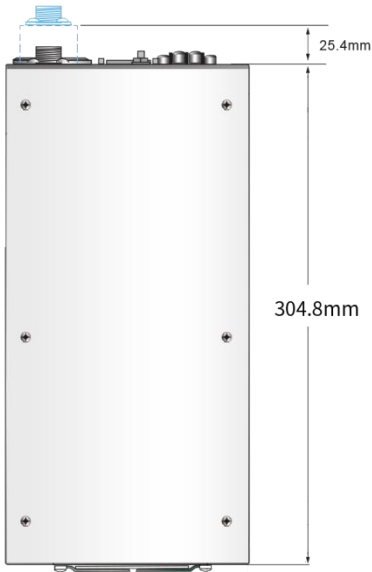


Side View

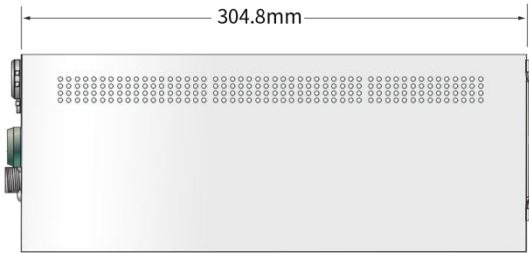
Positive polarity



Front View



Top View



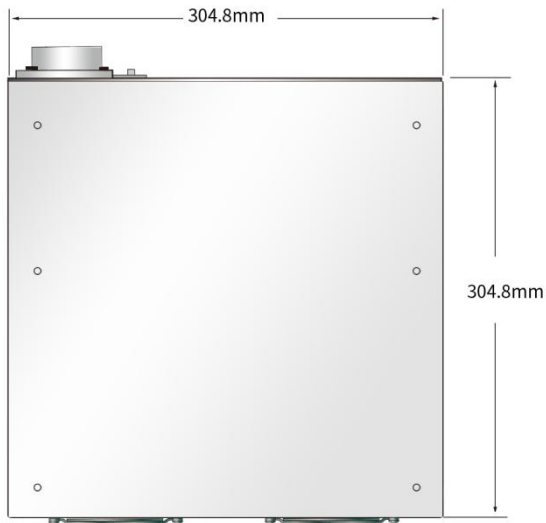
Side View

1200W

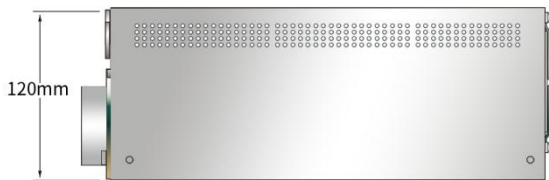
Negative polarity - Floating Filament



Front View

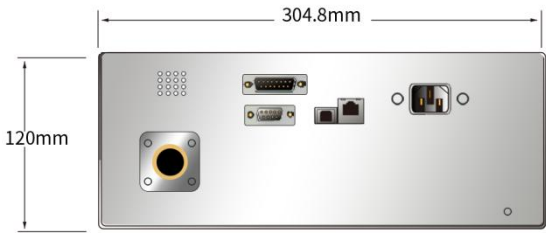


Top View

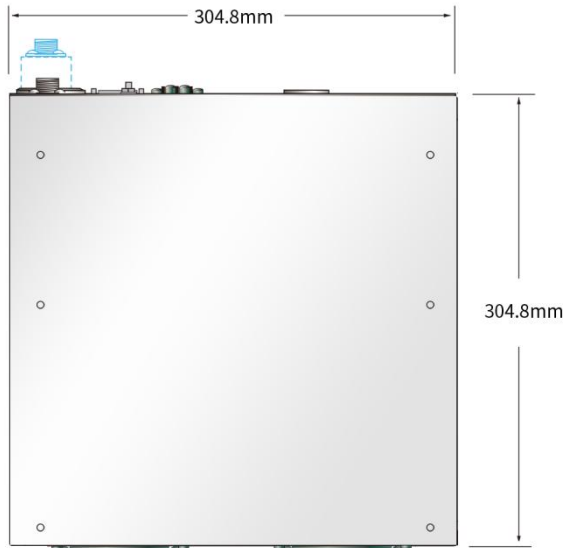


Side View

Positive polarity



Front View



Top View



Side View