

Chapter 1 Introduction

TXR1012 Series

X-Ray High Voltage Power Supply | 50kV/65kV,50W/65W,2mA, CECompliant



- Maximum output voltage 50kV/65kV
- Adjustable integrated filament power supply
- Overvoltage and short circuit protection
- Voltage and current regulation
- Local and remote emission control
- Security interlock function
- DB15, Rs-232 Or Rs-485 Communication Policy Available
- CECompliant

Product Introduction:

TeslaMan TXR1012 series high voltage power supply is a special power supply for small volume X-ray machine featuring a 0 to 50kV/65kV high voltage output @ 2mA limited to 50 or 65 watts. It integrates a filament power supply with an output DC of 5V and an adjustable current of 0.3 A to 3.5 A. High voltage and filament current can rise steadily.

TXR1012 series power supply can also be connected with external potentiometer to realize remote control of output voltage and current, and has the functions of external voltage and current display, high voltage output overvoltage and short circuit protection, safety interlock and so on. It can provide remote digital communication interface and realize RS-232 communication.

Typical Applications:

Liquid level detection; Thickness measurement; AI Visual Recognition; PCB board inspection; KeveX, Oxford, RTW, Superior, Varian, Trufocus, Cathode-grounded X-ray tube.

Optional features:

- 2mA Enhance Current
- Digital Interface
- Oxford tube adaptor
- No filament power supply

Specification Description:

Input	DC24V \pm 10%.
Output	50kV or 65kV rated value, 2mA enhance current, maximum power of 65 watts. 0 to rated voltage continuously adjustable
Voltage control	Inside the power supply: The multi-turn potentiometer of the power supply can set the output voltage between 0 and the highest voltage. External remote control: The external 0 to 10V control signal can adjust the output from 0 to the maximum output voltage.
Emission current control	Inside the power supply: The multi-turn potentiometer of the power supply can set the electron beam current from 0 to the highest current. External remote control: The external 0 to 10V control signal can set the electron beam current from 0 to the highest current.
DC filament power supply	The output current is 3.5A adjustable and the voltage is 5V adjustable.
Voltage regulation	Load: 0.01% of output voltage no load to full load. line: \pm 0.01% for \pm 10% change in input voltage.
Current adjustment	load: 0.01% of output current from 0 to rated voltage. line: \pm 0.01% for \pm 10% change in input voltage.
Ripple voltage	Under rated output conditions, the peak-to-peak value of ripple voltage is 0.1% of the maximum output voltage.
Environmental	Operational: 0 °C to + 50 °C. Storage:-40 °C to + 85 °C.
Temperature coefficient	below 100ppm/°C.

Stability	less than 0.05% every 8 hours after 1/2 hour warm-up.
Voltage and current monitors	0 to + 10Vdc proportional 0 to rated output. Accuracy $\pm 1\%$.
Dimensions	50kV: 73.5 mm wide, 127mm high and 203.5 mm deep. 50kV(I options): 73.5 mm wide, 145mm high and 203.5 mm deep. 65kV: 73.5 mm wide, 127mm high and 228 mm deep. 65kV(I options): 73.5 mm wide, 145mm high and 228 mm deep.
High Voltage Connector	The power supply comes standard with a recessed epoxy insulated duct and a probed high voltage cable connected by a 16mm diameter metal connector. Standard high voltage cable is 1 meter long, and other specifications of cables or joints can be customized.
Compliant	CE

Standard Functions

The TXR1012 family provides certain standard features to meet users' application and security needs.

High voltage output, Slow start function of high voltage current and filament current: This function enables high voltage output, high voltage current and filament current to rise steadily according to the slope required by design, thus prolonging the service life of X-ray tube. Usually, this rise time is about 4 seconds, and filament current will rise slowly until the emission current reaches the required level. When the output is the maximum, this time is generally 4 seconds.

Note: The special slow start time is subject to the actual index.

High Voltage Output Cable: The standard power supply provides a 1-meter long high voltage insulated cable with a high voltage plug at one end and a connector that can be easily fixed to the power supply housing. For non-standard power supply, please refer to relevant schematic diagrams and instructions.

Remote monitoring function

Remote detection:

Users can connect a voltmeter between pin 1 and pin 2 of the 15-pin terminal to display the current output voltage value, and an ammeter between pin 1 and pin 3 to display the current output value according to their needs. See Figure 3.4 for specific wiring.

External interlock function:

The interlock between the power output and the external signal is realized by connecting a safety switch externally to four pins of the 15-pin terminal. When the interlock circuit (INTERLOCK) is closed by an external indicator light of 12V, 0.5 W to 0.8 W, the output starts to rise steadily. When the interlock circuit (INTERLOCK) is disconnected, the output closes quickly. Interlock circuit can be used as a safe interlock option. However, when the safety interlock function is not required, the indicator lamp can be replaced by a resistor of 270 ohms and 1 watt.

Optional

Optional code	Description of code
ENC	2mA enhance current
EXT	Oxford tube adaptor
i	Digital communication interface
F0	No filament power supply

Table 1.1 Options

All of the options are listed in Table 1.1. See Chapter 4 for details on the action and setup steps. With a few exceptions, these options can be changed quickly within the factory. Please contact Teslaman's sales department for price and more details.

Description of Model Code

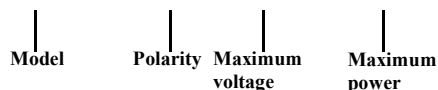
The model code represents the performance and parameters of the power supply, which are:

Maximum output voltage in kV (kV);

Maximum output power in W (watt);

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

TXR1012 - P 65 - 65



TXR1012 Series High Voltage Power Supply Model Selection Table:

Output rating		Type of power supply
kV	mA	
25	2.0	TXR1012P25-50
50	1.0	TXR1012P50-50
50	2.0	TXR1012P50-50
65	1.0	TXR1012P65-65
65	2.0	TXR1012P65-65

Analog control interface J1: DB15

I/O	Signal	I/O	Signal
1	Ground	9	Filament limit Setpoint
2	Voltage monitor	10	Current program input
3	Current monitor	11	Local current program
4	High voltage enable	12	NC
5	+ 10V reference	13	NC
6	Filament monitor	14	Filament preheat setpoint
7	Voltage program input	15	Interlock return(ground)
8	Local voltage program		

Power Input/Filament Output Interface J2

Port	Signal	Port	Signal
+ 24V	+ 24V input	FIL OUT	Filament output
GND	+ 24V ground	FIL RET	Filament ground

SIC Option Digital Communication Interface J3: RS-232/RS-485

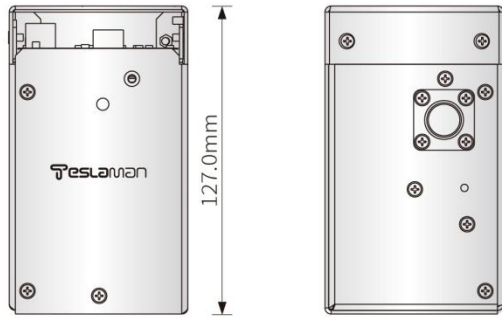
I/O	Signal	I/O	Signal
1	NC	6	RB
2	TXD/Send Data	7	RA
3	RXD/Accept Data	8	NC
4	NC	9	NC
5	Ground		

Ethernet Control Interface J4:

I/O	Signal	I/O	Signal
1	TX+	5	
2	TX-	6	RX-
3	RX+	7	
4		8	

Dimensions: mm

50kV:

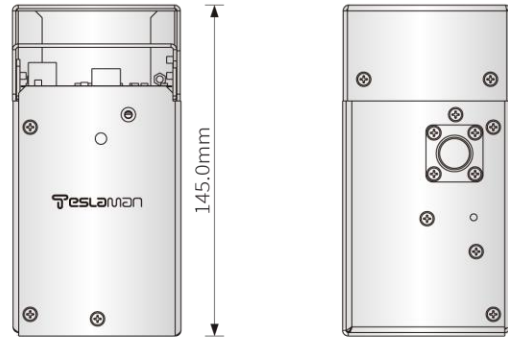


73.5mm

Front View

Rear View

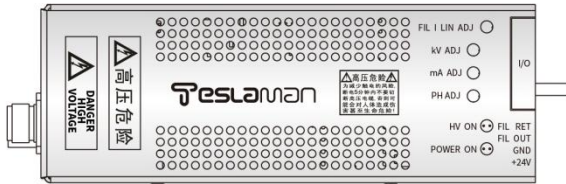
50kV (option i):



73.5mm

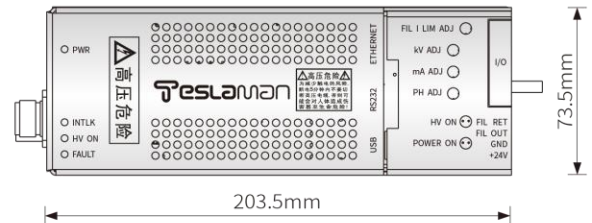
Front View

Rear View



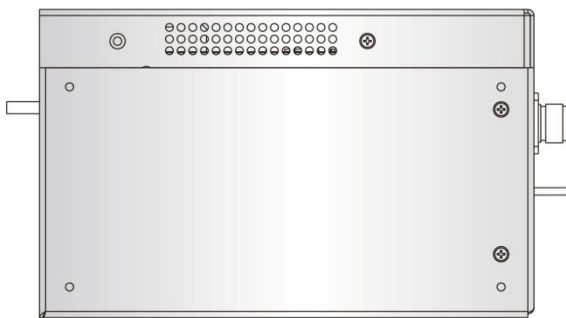
203.5mm

Top View



Top View

230.85mm

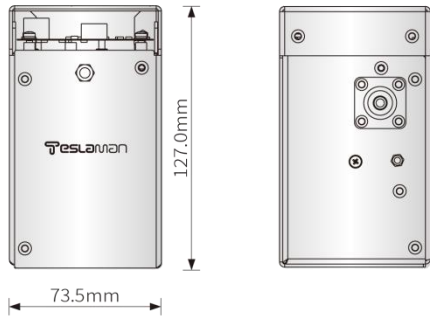


Side View



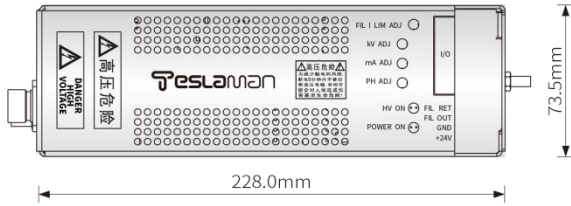
Side View

60kV:

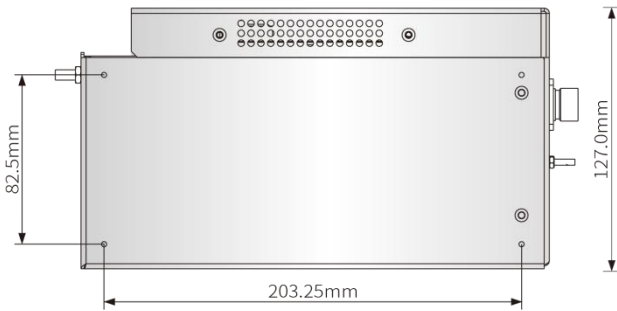


Front View

Rear View

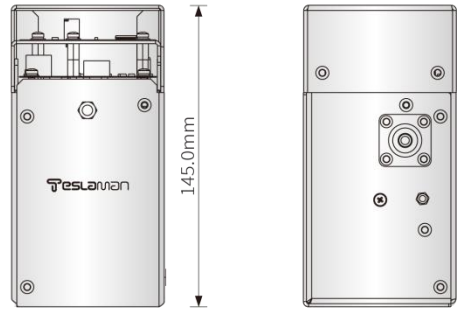


Top View



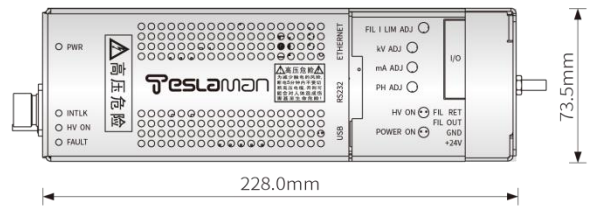
Side View

60kV (option i):

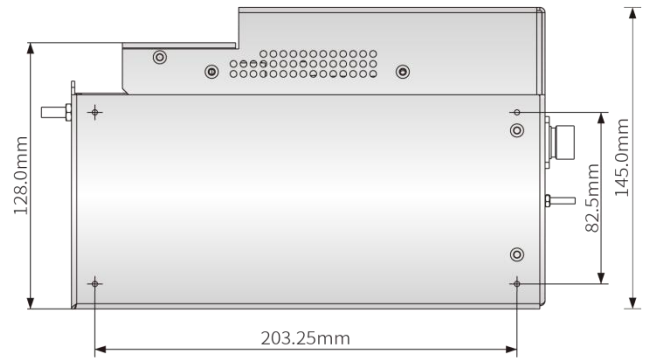


Front View

Rear View



Top View



Side View