



Spellman's XRF Series allow for a wide range of input voltages and supply either 80W, 320W or 640W of output power at up to 160kVdc. These lightweight rack-mountable X-ray generators house a miniaturized high voltage system in a solid encapsulated, oil-free design. The XRF Series is designed with a power factor corrected input circuit which reduces harmonic emissions and noise normally associated with other high frequency switching power supplies. The XRF Series incorporates an internal floating filament and a closed-loop emission control circuit for precise regulation of emission current. Remote monitoring and control of voltage, current and filament current is also provided.

TYPICAL APPLICATIONS

X-ray Inspection
Non-Destructive Testing

OPTIONS

AOL Adjustable Overload	DF Dual Filament
GS Grid Supply	SL Slides
PC Power Control	APT Adjustable Power Trip
AT Arc Trip	IO Instant ON
SS(X) Non Standard Slow Start	

SPECIFICATIONS

Input Voltage:

80W: 90-125 and 180-264Vac at 48-62Hz.
320W: 180-264Vac at 48-62Hz.
640W: 180-264Vac at 48-62Hz.

Power Factor:

0.9 or better.

High Voltage Supply:

Output Voltage:

0-160kV, negative polarity.

Output Current:

80W: 0.5mA max.
320W: 2.0mA at 160kV; 3.0mA at 100kV.
640W: 4.0mA.

Output Voltage Stability:

Within 0.1% of set value after warm-up period at full load.

Output Voltage Ripple:

80W & 320W: <0.1%, or 160V p-p for high freq. and line freq. at full load.
640W: 0.03% rms <1kHz, 0.75% rms above 1kHz.

Beam Current Stability:

80W: Within 0.1% of set value after 1/2 hour warm-up at constant output setting of 30-160kV and line voltage of 90-125 & 180-264Vac.
320W & 640W: Same as 80W except line voltage of 180-264Vac.

- **160KV OUTPUT VOLTAGE**
- **RACK-MOUNTABLE**
- **FLOATING FILAMENT**
- **INTERNAL GRID POWER SUPPLY (80W MODEL)**
- **POWER FACTOR CORRECTION**
- **CLOSED-LOOP EMISSION CONTROL**
- **OEM CUSTOMIZATION AVAILABLE**

www.spellmanhv.com/manuals/XRF

Filament Supply: Constant current DC filament supply with closed-loop current feedback.

Filament Voltage: 7V rms (high frequency) max.

Filament Current: 5A max., adjustable 0-5.0A by external Filament Limit Programming input.

Floating Grid Power Supply (80W Unit Only):

Grid Supply: The grid supply controls tube beam current in a closed-loop regulation design.

Grid Voltage: 0 to 1200Vdc.

Grid Voltage Ripple: Less than 1.0V rms at any frequency.

Grid Supply Response: Less than 0.5mA in less than 10ms.

Control and Monitoring:

Analog Control Inputs: Three inputs have internal load resistance greater than 330kohms.

Voltage Programming:

80W & 640W: 0 to +10Vdc, where 10.0Vdc = 160kV output.

320W: 0 to +10Vdc, where 8.0Vdc = 160kV output.

Beam Tube Current Control:

80W: 0 to +10Vdc, where 10.0Vdc = 0.5mA tube current.

320W: 0 to +6Vdc, where 6.0Vdc = 3.0mA tube current.

640W: 0 to +10Vdc, where 10.0Vdc = 4.0mA tube current.

Filament Current Control:

0 to +10Vdc, where 5.0Vdc = 5.0A filament current.

Analog Monitor Outputs:(See Tables For Details)

80W, 320W, 640W: High Voltage and Beam Current Monitoring.

80W: Filament Current Monitoring.

320W & 640W: Internal filament current monitor test point not connected to the interface connector.

Digital Control Inputs:(See Tables For Details)

80W, 320W, 640W: Interlock Enable.

80W, 320W, 640W: HV Enable.

80W: Grid Inhibit.

640W: Filament Select.

Digital Outputs:(See Tables For Details)

HV ON.

Voltage Mode.

Current Mode.

Connections:

Output Connector: 160kV European Conical connector with 2-ring and center pin end.

Input Power Connector: 5-pin male MS-type, Amphenol P/N 97-3102A-18-20P

Control Connections: 25-pin "D" connector, male, chassis-mounted.



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Spellman High Voltage is an ISO 9001:2000 and ISO 14001:2004 registered company

Environmental:

0 to +50°C at 10-95% RH, non-condensing.
Forced convection cooling.

Dimensions:

7"H x 19"W x 22"D. (17.8cm x 48.3cm x 55.9cm).

Regulatory Approvals:

Compliant to 2004/108/EC, the EMC Directive and 2006/95/EC, the Low Voltage Directive.

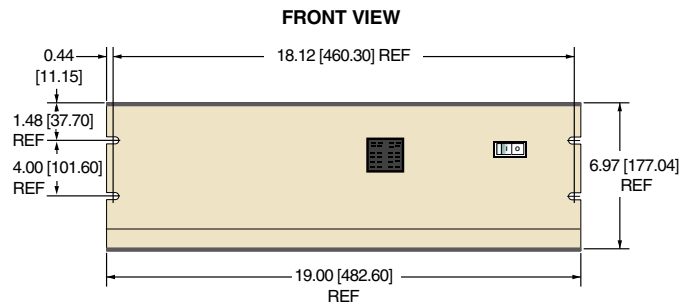
160kV XRF SELECTION TABLE

OUTPUT VOLTAGE kV	OUTPUT CURRENT mA	OUTPUT POWER W	MODEL NUMBER XRFxxx
160	0.5	80	XRF160N80
160	2.0	320	XRF160N320
160	4.0	640	XRF160N640

J2—AC INPUT CONNECTOR WIRING

5 Pin MS Type	7 Pin UTG Type	CONNECTION
A	1	Auxiliary (Logic) Line
B	2	Auxiliary (Logic) Neutral
C	3	Ground
D	4	Main (Inverter) Line
E	5	Main (Inverter) Neutral

DIMENSIONS: in.[mm]



TOP VIEW



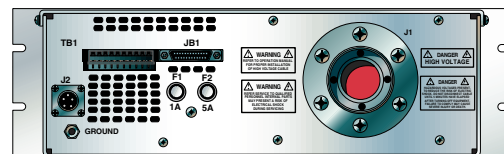
BACK VIEW

160kV XRF 80W, 320W, 640W, 25 PIN

JB1	SIGNAL	SIGNAL PARAMETERS
1	Filament Limit	0-5V=0-5A Filament Limit
2	High Voltage on Control	+12VDC IN = HV ON
3	N/C	
4	N/C	
5	High Voltage On Status	Open=HV ON for 320W, Low=HV ON for 80W
6	A-Ground	Ground
7	kV Monitor	0-8V=0-160kV for 320W, 0-10V=0-160kV for 80W
8	Interlock Control	+12VDC IN = Interlock Closed
9	N/C	
10	mA Demand	0-6V=0-3mA for 320W, 0-10V=0-0.5mA for 80W
11	N/C	
12	N/C	
13	D-Ground	Ground
14	Fil. Monitor	0-5V=0-5A rms
15	N/C	
16	N/C	
17	N/C	
18	N/C	
19	mA Monitor	0-6V=0-3mA for 320W, 0-10V=0-0.5mA for 80W
20	N/C	
21	+12VDC Out	
22	kV Demand	0-8V=0-160kV for 320W, 0-10V=0-160kV for 80W
23	Grid Inhibit/Fil. Select	(Low=Grid Inhibit), Low=small spot size
24	N/C	
25	Chassis Gnd (I/O Shield)	Chassis Gnd.

160kV XRF 80W, 320W, 640W TERMINAL BLOCK 10 PIN

TB1	SIGNAL	SIGNAL PARAMETERS
1	Interlock	Jumper to TB2 to close interlock
2	Interlock Return	
3	kV Monitor	0-8V=0-160kV for 320W, 0-10V=0-160kV for 80W
4	mA Monitor	0-6V=0-3mA for 320W, 0-10V=0-0.5mA for 80W
5	Filament Monitor	0-5V=0-5A rms
6	Bias Monitor	Status Only. No Scale Factor(optional)
7	HV ON Indicator	+15V=HV ON
8	Voltage Mode Indicator	Low=Voltage Mode.
9	Current Mode Indicator	Low=Current Mode.
10	GND	Ground



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