



40-140kV

320kV



Spellman's new DXB Series of bipolar X-Ray generator modules are designed for OEM applications up to 320kV ( $\pm 160$ kV) at 1200 watts. Its universal input, small package size and choice of three standard digital interfaces simplifies integrating the DXB into your X-Ray analysis system. DSP based emission control circuitry provides excellent regulation of emission current, along with outstanding stability performance.

### TYPICAL APPLICATIONS

- |                     |                    |
|---------------------|--------------------|
| Plastics Sorting    | Mineral Analysis   |
| Crystal Inspection  | X-Ray Fluorescence |
| Plating Measurement | X-Ray Diffraction  |
| Thickness Gauging   | Cargo Screening    |
| Food Inspection     |                    |

### SPECIFICATIONS

#### Input Voltage:

- Power factor corrected input
- 100-240Vac,  $\pm 10\%$  (90-264Vac):  
47-63Hz @ 5.7A for 300 watt units
- 200-240Vac,  $\pm 10\%$  (180-264Vac):  
47-63Hz @ 4.8A for 600 watt units  
47-63Hz @ 8.0A for 1200 watt units

#### Output Voltage:

- 7 models: 40kV, 60kV, 80kV, 100kV, 120kV, 140kV and 320kV

#### Output Polarity:

- $\pm$  bipolar output, filament referenced to negative output

#### Power:

- 3 power ranges available—300 watts, 600 watts and 1200 watts
- Other power levels available on special order.

#### Output Voltage Regulation:

- $\leq 0.01\%$  of rated output voltage over specified input voltage range
- $\leq 0.01\%$  of rated output voltage for a full load change

#### Emission Current Regulation:

- $\leq 0.01\%$  of rated output current over specified input voltage range
- $\leq 0.01\%$  of rated output current for a change from 30% to 100% of rated output voltage
- Filament is disabled when kV is  $< 30\%$  of full scale output

- **Bipolar Outputs in a Single Unit**
- **Compact & Lightweight**
- **Models from 40kV to 320kV, 300W, 600W and 1200W**
- **Universal Input, Power Factor Corrected**
- **Standard Digital Interfaces: USB, Ethernet and RS-232**
- **CE Compliant, UL Recognized**

#### Ripple:

$\leq 1\%$ rms at  $> 20$  kHz,  $0.1\%$ rms below 20 kHz

#### Stability:

$\leq 25$ ppm/hr after a 2 hour warm up

#### Temperature Coefficient:

$\leq 50$ ppm per degree C

#### Environmental:

- Temperature Range:  
Operating:  $0^{\circ}\text{C}$  to  $40^{\circ}\text{C}$   
Storage:  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- Humidity:  
20% to 85% RH, non-condensing.

#### Filament Configuration:

Closed loop emission control regulates filament setting to provide desired X-Ray tube emission current. Floating Filament (ac output referenced to negative output voltage).

#### Output:

0-5 amps at a compliance of 10 volts, maximum. The filament loop is disabled when the kV output is less than 30% of full scale output to protect the X-Ray tube. Standard filament Preheat adjustable 0-2.5 amps. Other filament levels available on special order.

#### Control Interface

**Local Interface:** Potentiometers are provided to adjust filament limit and preheat levels

**Remote Interface:** USB, Ethernet and RS-232 are standard. All digital monitors have an accuracy specification of 2%

**Control Software:** A Windows graphical user interface example is provided.

**High Voltage Enable:** A hardware based, dry contact closure will enable the power supply into the high voltage on mode

**Monitor Signals:** Voltage and current monitor signals are scaled 0-10Vdc equals 0-100% of full scale, accuracy is 1%

#### Cooling:

Forced air

#### Dimensions:

- 40-140kV:  
4.75" H X 12" W X 12" D (120.65mm x 304.8mm x 304.8mm)
- 320kV:  
10.5" H X 19.0" W X 21.5" D (266.7mm x 482.6mm x 546.1mm)

#### Weight:

- 40-140kV: 26 pounds (11.8kg)
- 320kV: 150 pounds (68kg)

**Input Line Connector:**

IEC320 with EMI filter

**Output Connectors:**

40-140kV:  
Claymount Mini Federal Standard X-Ray connectors.  
Other connectors and pinouts available on special order.

320kV:  
R24 X-Ray connectors.  
Other connectors and pinouts available on special order.

**Regulatory Approvals:**

Compliant to EEC EMC Directive. Compliant to EEC Low Voltage Directive. UL/CUL recognized, File E227588. RoHS Compliant. DXB320PN1200 is not UL recognized.

**DXB SELECTION TABLE— 300W, 600W, 1200W**

300 Watt			600 Watt		1200 Watt	
kV	mA	Model	mA	Model	mA	Model
40	7.50	DXB40PN300	15.0	DXB40PN600	30.0	DXB40PN1200
60	5.00	DXB60PN300	10.0	DXB60PN600	20.0	DXB60PN1200
80	3.75	DXB80PN300	7.50	DXB80PN600	15.0	DXB80PN1200
100	3.00	DXB100PN300	6.00	DXB100PN600	12.0	DXB100PN1200
120	2.50	DXB120PN300	5.00	DXB120PN600	10.0	DXB120PN1200
140	2.14	DXB140PN300	4.28	DXB140PN600	8.57	DXB140PN1200
320	Not Available		Not Available		3.75	DXB320PN1200

**DXB ANALOG INTERFACE— J2 15 PIN MALE D 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	Spare	N/C

**RS-232 DIGITAL INTERFACE— J3 9 PIN FEMALE D CONNECTOR**

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

**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

**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	NC	No Connection
5	NC	No Connection
6	RX-	Receive Data -
7	NC	No Connection
8	NC	No Connection

**CLAYMOUNT HV CONNECTOR PINOUT J6 CATHODE OUTPUT (40-140kV)**

PIN	OUTPUT CONNECTION
C (common)	-High Voltage Output
S (small)	-High Voltage Output
L (large)	Filament Output
G (grid)	Filament Output

**CLAYMOUNT HV CONNECTOR PINOUT J7 ANODE OUTPUT (40-140kV)**

PIN	OUTPUT CONNECTION
C (common)	+High Voltage Output
S (small)	+High Voltage Output
L (large)	+High Voltage Output
G (grid)	+High Voltage Output

Note: No high voltage cable is provided

Recommended Cable:

Claymount part number: 12096

Cable assembly, L3 CA11, CA11, 10F, CS=Bare 10 foot, Mini Federal Connectors on both ends, "C" and "S" are both connected to the bare wire

**R24 HV CONNECTOR PINOUT J6 CATHODE OUTPUT (320kV)**

PIN	OUTPUT CONNECTION
C (common)	-High Voltage Output
S (small)	Filament Output
L (large)	Filament Output

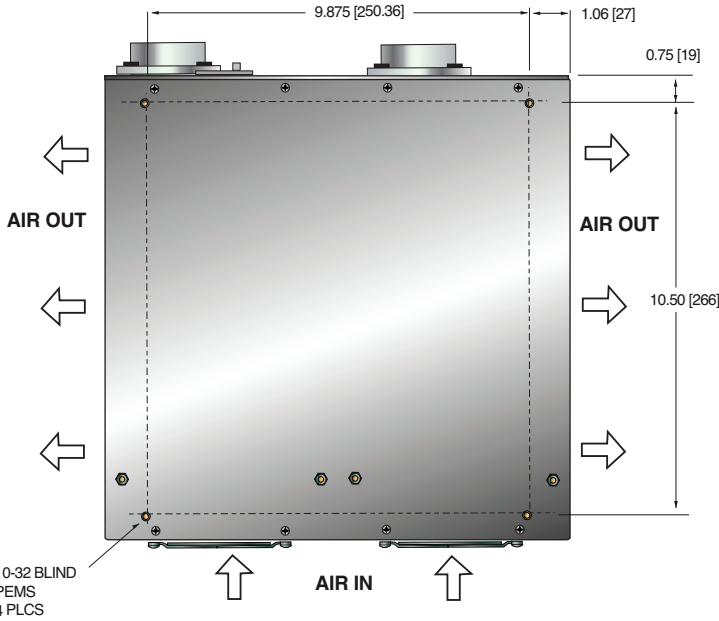
**R24 HV CONNECTOR PINOUT J7 ANODE OUTPUT (320kV)**

PIN	OUTPUT CONNECTION
C (common)	+High Voltage Output
S (small)	+High Voltage Output
L (large)	+High Voltage Output

DIMENSIONS: in.[mm]

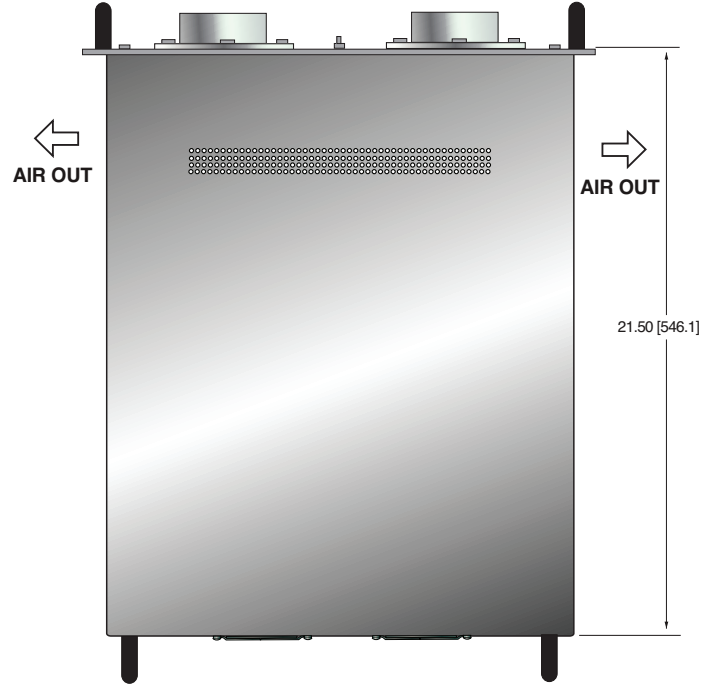
40-140kV

BOTTOM VIEW

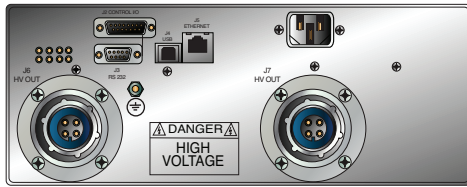


320kV

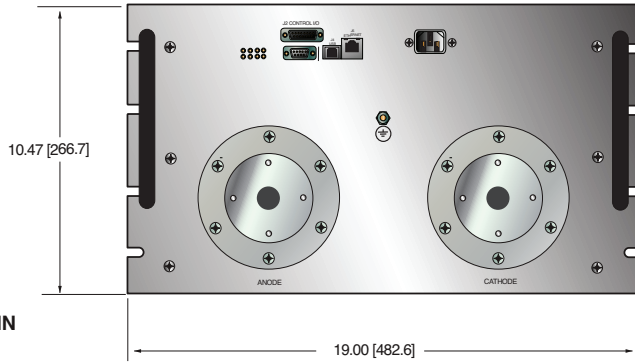
TOP VIEW



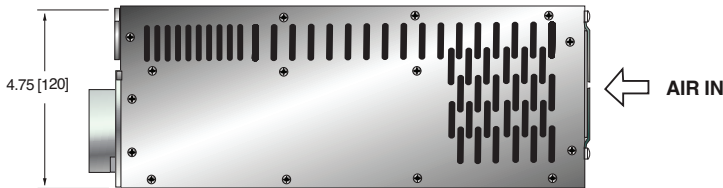
FRONT VIEW



FRONT VIEW



SIDE VIEW



SIDE VIEW

