



Spellman's XRB80PN100HR (high reliability) Monoblock® X-Ray source is designed for OEM applications powering its internal Bipolar X-Ray tube up to 80kV at 100W. Features like universal input, small package size and a standard RS-232 digital interface simplify integrating this Monoblock® into your X-Ray system. The XRB80PN100HR is available either with fan shaped (standard) or (optional) cone shaped beam geometries. Proprietary emission control circuitry provides excellent regulation of X-Ray tube current, along with outstanding stability performance. The XRB80PN100HR is designed for long field life.

TYPICAL APPLICATIONS

X-Ray Scanning, Thickness Measurement, Food Inspection, Fill Level Confirmation, Parcel Inspection

SPECIFICATIONS

X-Ray Characteristics:

Focal Spot: 0.8mm (IEC 336) standard
0.5mm (IEC 336) optional

Beam Filter:

Ultem: 3.00mm \pm 0.15mm
Oil: 7.5mm \pm 0.25mm
Glass: 1.7mm \pm 0.2mm
Be: 0.8mm

Beam Geometry:

Fan: The standard beam angular coverage will be 80° with the beam plane perpendicular to the X-Ray tube axis and 20° wide (with a 2° tolerance)
An optional 80° x 10° (with a 2° tolerance) is also available
Cone: Optional. 20° cone beam (with a 2° tolerance)

Input Voltage:

Power factor corrected input 0.98, 100-240Vac \pm 10%
50/60Hz, 2A maximum

- **Integrated HV Supply, Filament Supply, X-Ray Tube, Beam Port and Control Electronics**
- **Compact & Lightweight**
- **Universal Input, Power Factor Corrected with Internal EMI Filter**
- **Can be Mounted in Any Physical Orientation**
- **Analog Monitoring Interface and Standard RS-232 Digital Program and Monitor Interface**
- **Elapsed Time Meter Provided on Controller to Monitor X-Ray Tube Usage**

www.spellmanhv.com/manuals/XRB80PN100HR

X-Ray Tube Voltage:

Nominal X-Ray tube voltage is adjustable 40kV (\pm 20kV) to 80kV (\pm 40kV)

X-Ray Tube Current:

150uA to 2.00mA over specified tube voltage range (100W max.)

X-Ray Tube Power:

100W maximum continuous

Voltage Regulation:

Line: \pm 0.05% of maximum output voltage over a \pm 10% change of nominal input line voltage
Load: \pm 0.1% of maximum rated voltage for 150uA to 2.00mA load change

Voltage Accuracy:

Voltage measured across the X-Ray tube is within \pm 2% of the programmed value

Voltage Risetime:

Standard: Ramp time shall be <500ms from 10% to 90% of maximum rated output voltage

Voltage Ripple:

0.5% peak to peak of maximum voltage for frequencies \leq 1kHz

Emission Current Parameters

Current Regulation:

Line: \pm 0.05% of rated output current over a \pm 10% change of nominal input line voltage
Load: \pm 0.1% of rated output current for a change from 50% to 100% of rated output voltage

Current Accuracy:

Current measured through the X-Ray tube is within \pm 2% of the programmed value

Current Risetime:

Standard: Ramp time shall be <500ms from 10% to 90% of maximum rated current

Arc Intervention:

4 arcs in 10 seconds with a 100ms quench/100ms re-ramp = Shutdown

Filament Configuration:

Internal AC filament drive with closed loop filament emission control

Analog Monitoring Interface:

Ground referenced 0 to 9Vdc for all monitoring signals. Relay contacts and open collector signals for other signals. See analog interface connector pin out table.

Digital Programming and Monitoring Interface:

The RS-232 interface allows for programming of kV, mA output and X-Ray enable. Provides monitoring for kV, mA output and oil temperature. Tolerance 3%. (with an additional 5µA offset at ≤10% mA programming)

Control Software:

A demo GUI is available for engineering evaluations

Operating Temperature:

0°C to +40°C

Storage Temperature:

-40°C to +70°C

Humidity:

10% to 95% relative humidity, non-condensing

Cooling:

X-Ray Tank: Customer provided 250 cfm external cooling fan as required to maintain oil temperature below 55°C.

Controller: Forced air via internal fan.

Input Line Connector:

3-pin Phoenix Contact 1829167. Mating connector provided with unit

Analog Interface Connector:

15 pin male D connector provided with unit

Digital Interface Connector:

9 pin female D connector provided with unit

Grounding Point:

M4 ground stud provided on chassis

Dimensions:

X-Ray Tank: 11.3"L x 9.625"W x 4.93"H
(287.02mm x 244.4mm x 125.2mm)

Controller: 8.5"L x 6.70"W x 2.21"H
(215.9mm x 170.2mm x 56.1mm)

Weight:

X-Ray Tank: 36lbs (16.32kg)

Controller: 3.7lbs (1.68kg)

Orientation:

Can be mounted in any orientation.

X-Ray Leakage:

Not to be greater than 0.5mR/hr at 5cm outside the external surface.

Regulatory Approvals:

Compliant to EEC EMC Directive. Compliant to EEC Low Voltage Directive. UL/CUL recognized file E235530

AC LINE POWER CONNECTOR— J1 THREE POSITION PHOENIX CONTACT

PIN	SIGNAL
1	Earth Ground
2	Line
3	Neutral

Mating connector provided with unit

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

PIN	SIGNAL	PARAMETERS
1	N/C	No Connection
2	TD	Transmit Data
3	RD	Receive Data
4	N/C	No Connection
5	SGND	Signal Ground
6	N/C	No Connection
7	N/C	No Connection
8	N/C	No Connection
9	N/C	No Connection

XRB80PN100HR ANALOG INTERFACE— J2 15 PIN MALE D CONNECTOR

PIN	SIGNAL	PARAMETERS
1	Power Supply Fault Output	Open collector, 35V @ 10mA max. high = no fault
2	N/C	No Connection
3	N/C	No Connection
4	X-Ray On Lamp Relay Output	Common, dry contacts, 30Vdc @ 1A, max
5	X-Ray On Lamp Relay Output	Normally open, X-Ray ON = closed
6	mA Monitor Output	0 to 9Vdc = 0 to 100% rated output, Zout = 10kΩ
7	X-Ray On Lamp Relay Output	Normally closed, X-Ray ON = open
8	kV Monitor Output	0 to 9.00Vdc = 0 to 100% rated output, Zout = 10kΩ
9	Signal Ground	Ground
10	Signal Ground	Ground
11	HV Interlock Return Input	Connect to Pin 12 to close HV interlock
12	HV Interlock Output	+15Vdc @ open, 5mA when connected to pin 11
13	X-Ray Enable Output	+15Vdc @ open, 5mA when connected to pin 15
14	X-Ray Status Output	Open collector, 35V @ 10mA max high = X-Ray OFF
15	X-Ray Enable Return Input	Connect to pin 13 to enable X-Ray generation (for local enable)

LED INDICATORS

INDICATOR	SIGNAL NAME	CONDITION Illuminated When...
LED 1	OV	High kV occurs
LED 2	UV	Low kV occurs
LED 3	UC	Low mA occurs
LED 4	OC	High mA occurs
LED 5	ARC FLT	Arc fault occurs
LED 6	OT	Over temperature occurs
LED 7	X-RAY ON	X-Rays are enabled
LED 8	PWR	Power is ON

OPTIONS

- CB** Cone Beam
- .5mm** .5mm focal spot X-Ray tube
- NF** 80° x 10° Narrow Fan beam
- RA** Right Angle cable

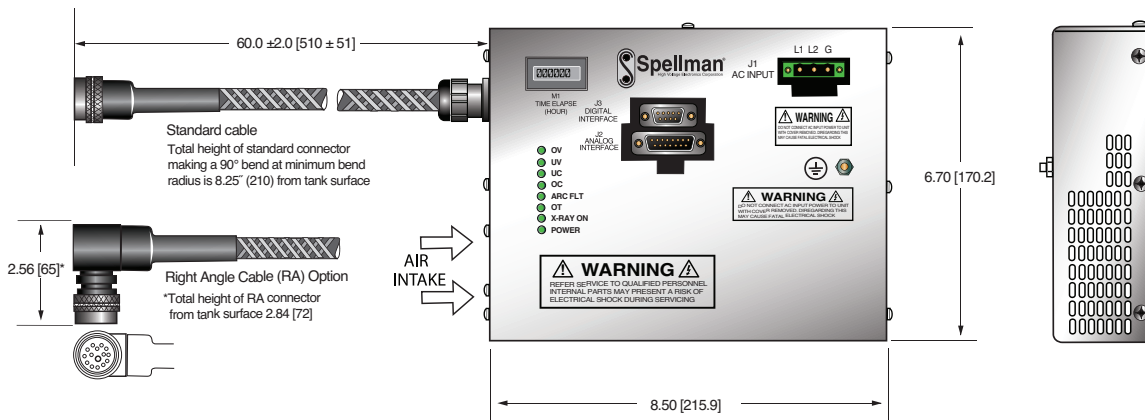
How to Order:

Standard:	PART NO.: XRB80PN100HR
Cone Beam Option	PART NO.: XRB80PN100HR/CB
0.5mm Focal Spot Option	PART NO.: XRB80PN100HR/.5mm
80° X 10° Narrow Fan Beam Option	PART NO.: XRB80PN100HR/NF
Cable Option:	PART NO.: XRB80PN100HR/RA

DIMENSIONS: in.[mm]

CONTROL UNIT

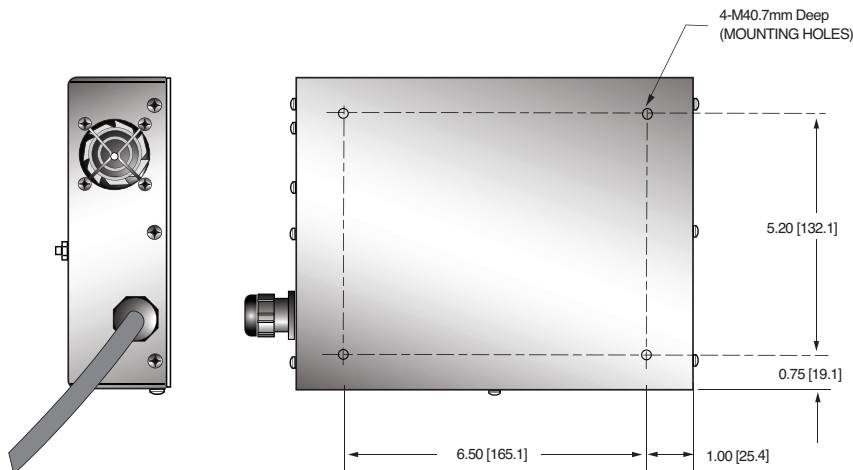
TOP VIEW



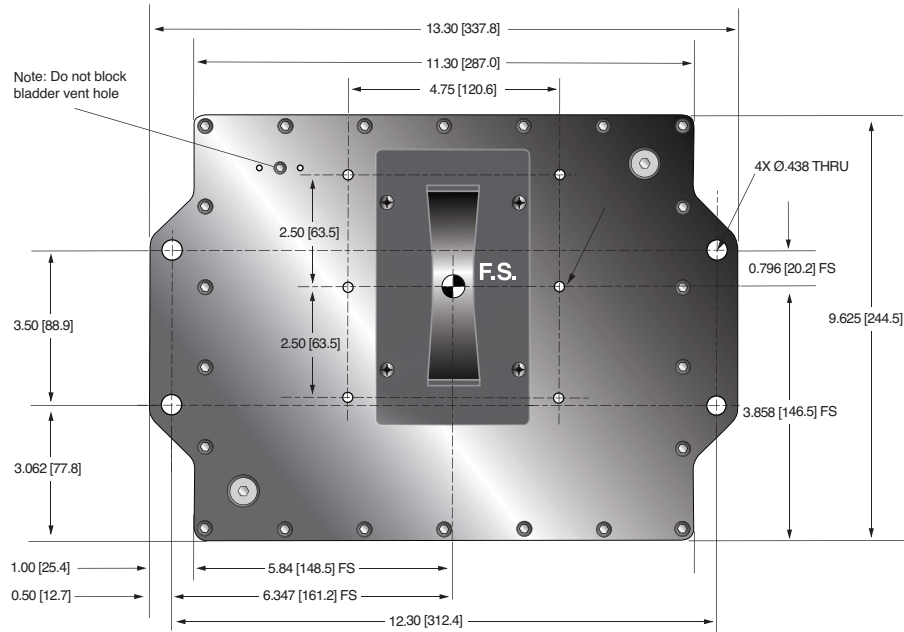
SIDE VIEW



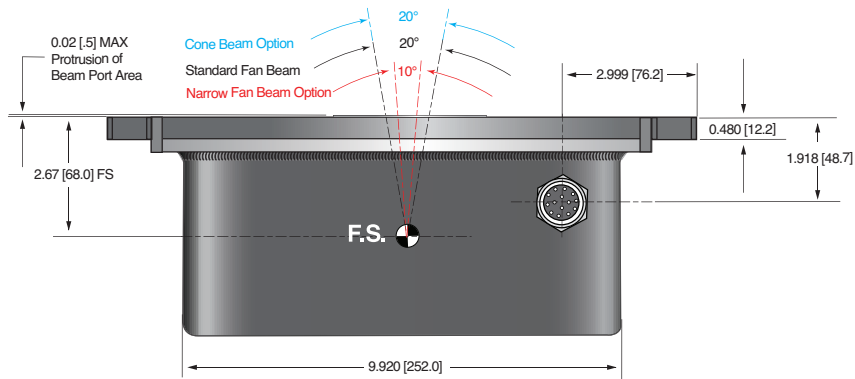
BOTTOM VIEW



DIMENSIONS: in.[mm]
GENERATOR TANK
TOP VIEW



FRONT VIEW



SIDE VIEW

