



Spellman's XRB80N100 Monoblock® X-Ray source is designed for OEM applications powering its internal X-Ray tube up to 80kV at 100W. Features like universal input, small package size and a standard analog and RS-232 digital interface simplify integrating this unit into your X-Ray system. The XRB80N100 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.

TYPICAL APPLICATIONS

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

SPECIFICATIONS

X-Ray Characteristics:

Focal Spot: 0.5mm (IEC 336)

Beam Filter:

Ultem: 3.30mm \pm 0.15mm

Oil: 8mm \pm 0.1mm

Glass: 1.8mm \pm 0.25mm

BE: 0.8mm

Beam Geometry:

Fan: Standard. The beam angular coverage will be 75° with the beam plane perpendicular to the X-Ray tube axis and 13° wide.

Cone: Optional. 25° cone beam

Input Voltage:

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

X-Ray Tube Voltage:

Nominal X-Ray tube voltage is adjustable up to 80kV

X-Ray Tube Current:

150uA to 1.25mA over specified tube voltage range

X-Ray Tube Power:

100W maximum continuous

- **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 Control Interface and Standard RS-232 Digital Interface**

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 1.25mA 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

Optional: 5 seconds. Specify at time of order

Voltage Overshoot:

5% of maximum voltage, to return within 2.5% of maximum voltage in less than 100ms

Voltage Ripple:

1% 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

Optional: 5 seconds. Specify at time of order

Arc Intervention:

3 arcs in 10 seconds with a 200ms quench = Shutdown

Filament Configuration:

Internal high frequency AC filament drive with closed loop filament emission control

Analog Interface:

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

Digital Interface:

Jumpers are needed to be configured and the digital interface cable installed to enable the RS-232 interface.

Control Software:

A demo GUI is available for engineering evaluations

Interlock/Signals:

A hardware interlock functions in both analog and digital programming modes. The hardware X-Ray Enable signal only functions in analog programming mode.

Operating Temperature:

0°C to +40°C

Storage Temperature:

-40°C to +70°C

Humidity:

10% to 95% relative humidity, non-condensing

Cooling:

Customer provided 150cfm external cooling fan as required to maintain oil temperature below 55°C. (External cooling is not required if fan option is selected)

Input Line Connector:

3 pin, Phoenix Contact 1829167, SHV part number 105725-219. Mating connector Phoenix Contact #1805990, SHV part number 105808-475 provided with unit.

Analog Interface Connector:

15 pin D connector, male

Digital Interface Connector:

9 pin D connector, female

Grounding Point:

8-32 ground stud provided on chassis

Dimensions:

See line drawings

Weight:

32lbs (14.5kg)

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 | NC | No Connection |
| 7 | NC | No Connection |
| 8 | NC | No Connection |
| 9 | NC | No Connection |

XRB 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 | mA Program Input | 0 to 9.00Vdc = 0 to 100% rated output, Zin = 10MΩ |
| 3 | kV Program Input | 0 to 9.00Vdc = 0 to 100% rated output, Zin = 10MΩ |
| 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 |

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

- RT** 5 second Risetime for both voltage and current
- CB** Cone Beam
- FN** Integrated Cooling Fan
- M** Elapsed Time Meter (measures X-Ray ON elapsed time)

How to Order:

Standard: PART NO.: XRB80N100

Risetime, Cone Beam, Fan and Elapsed Time Meter Options

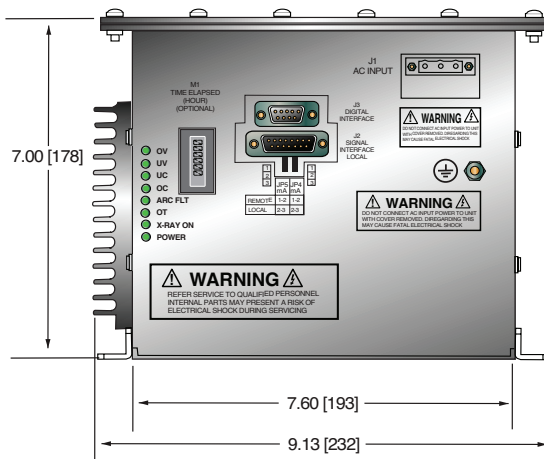
PART NO.: XRB80N100/RT/CB/FN/M

DIMENSIONS: in.[mm]

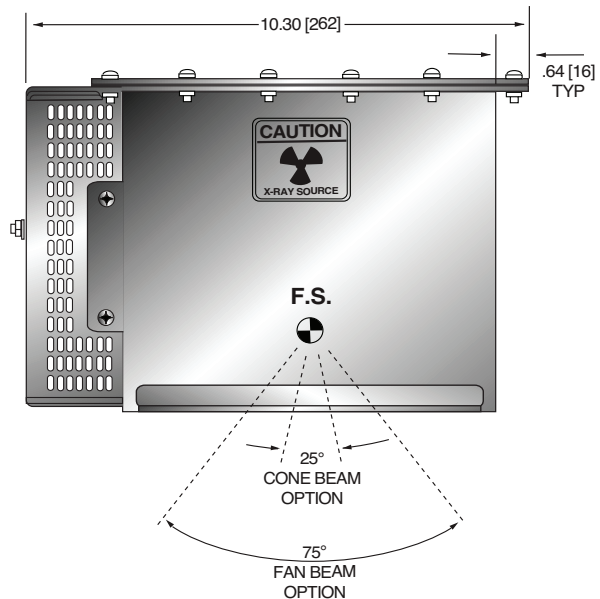
Standard Unit

FRONT VIEW

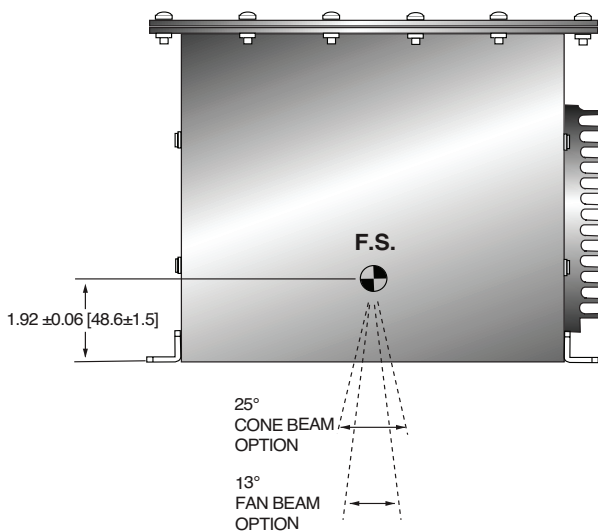
NOTE: Shown with Elapsed Time Meter option



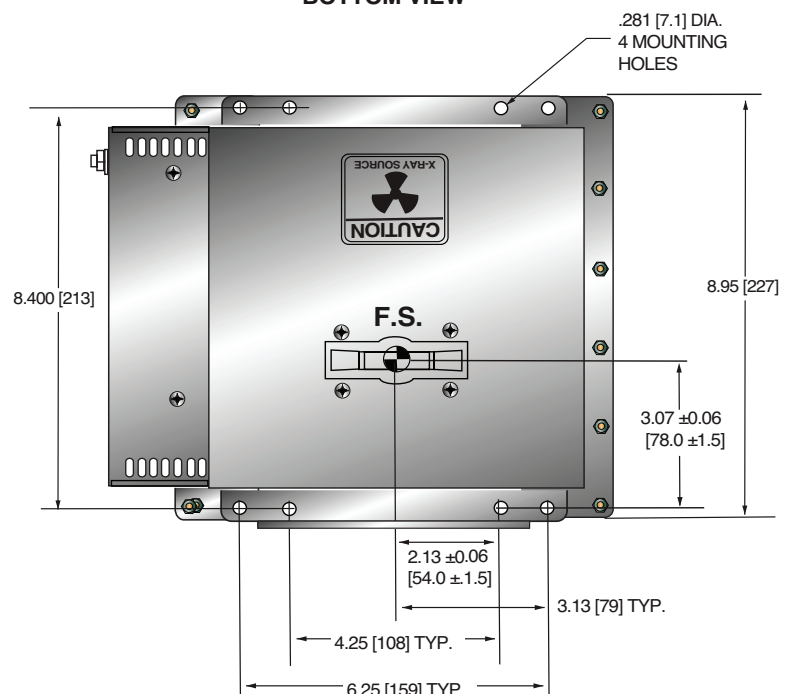
SIDE VIEW



BACK VIEW



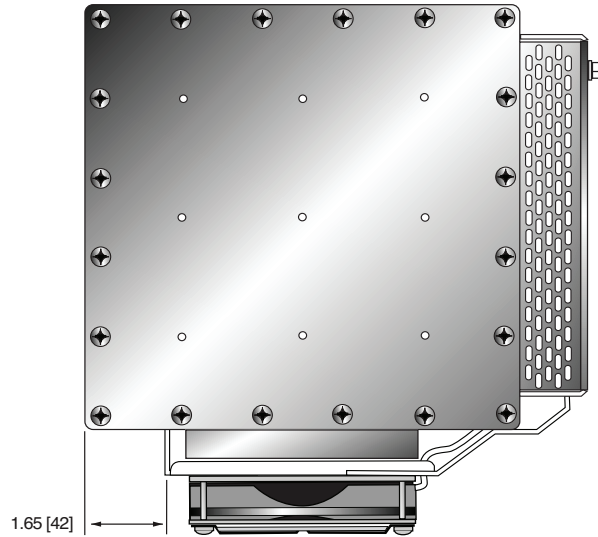
BOTTOM VIEW



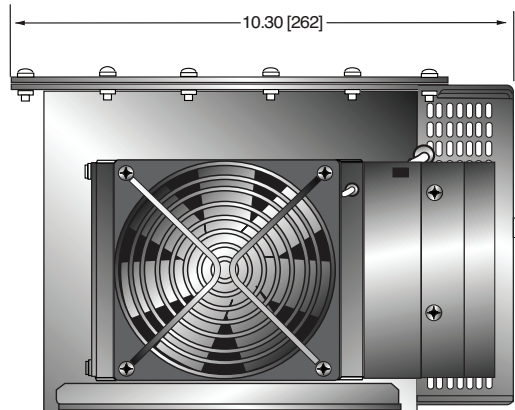
DIMENSIONS: in.[mm]

Cooling Fan Option

TOP VIEW



SIDE VIEW



BACK VIEW

