



- STANDARD TR/ET, OPTIONAL USB2.0, RS-485 is AVAILABLE
- 30kV~70kV, 100 WATT MAX.
- ADJUSTABLE INTEGRATED FILAMENT SUPPLY
- OVERVOLTAGE, ARC & SHORT CIRCUIT PROTECTION
- VOLTAGE & CURRENT PROGRAMMING
- LOCAL and REMOTE CONTROL
- SAFETY INTERLOCK
- OEM CUSTOMIZATION AVAILABLE



D  
X-RAY GENERATOR

## INTRODUCTION

Wisman's XNA series x-ray generator is a compact, tight regulation and high stability high voltage power supply which is designed for all kinds of x-ray tubes. XNA offers output voltage ranges from 30kV to 70kV, and designed to DC filament to Ground, voltage 0~5Vdc adjustable, filament current ranges from 0.3A to 3.5A adjustable. Wisman's XNA x-ray generator provides local and remote control, with interface USB2.0, RS232 and RS485 option. Wisman's XNA series is with the over voltage, over current, arc and safety interlock function.

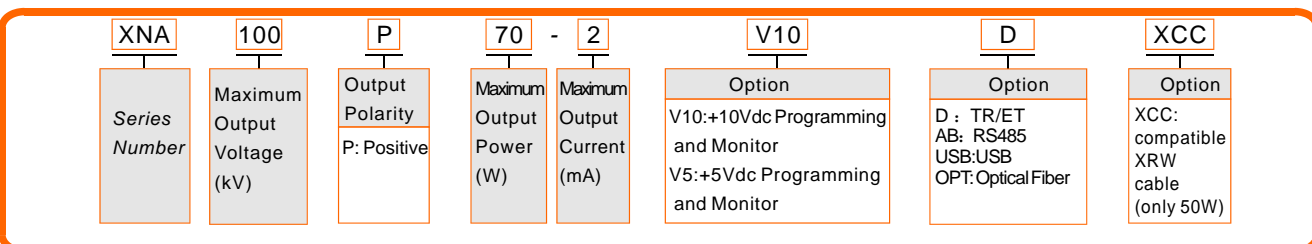
## TYPICAL APPLICATIONS

Grounded cathode X-ray tubes from Kevex, Oxford, RTW, Superior, Varian and Trufocus, ESD, Sulfur-detector, X-ray Fluorescence Instrument, X-ray Imaging, X-ray Diffractometer Non-destructive Testing Portable X-ray Machine, Rohs detector, Precious metal detector Life Science, Medical industry, Science experiment and so on.

## XNA SELECTION TABLE

| kV | mA   | P(W) | MODEL     | kV | mA   | P(W) | MODEL     | kV | mA   | P(W) | MODEL     | kV | mA   | P(W) | MODEL       |
|----|------|------|-----------|----|------|------|-----------|----|------|------|-----------|----|------|------|-------------|
| 30 | 0.33 | 10   | XNA30P10  | 50 | 0.20 | 10   | XNA50P10  | 65 | 0.15 | 10   | XNA65P10  | 50 | 2.00 | 50   | XNA50P50-2  |
|    | 1.00 | 30   | XNA30P30  |    | 0.60 | 30   | XNA50P30  |    | 0.46 | 30   | XNA65P30  |    | 2.00 | 75   | XNA50P75-2  |
|    | 1.67 | 50   | XNA30P50  |    | 1.00 | 50   | XNA50P50  |    | 0.77 | 50   | XNA65P50  |    | 4.00 | 75   | XNA50P75-4  |
|    | 2.17 | 65   | XNA30P65  |    | 1.30 | 65   | XNA50P65  |    | 1.00 | 65   | XNA65P65  |    | 2.00 | 60   | XNA60P60-2  |
|    | 2.50 | 75   | XNA30P75  |    | 1.50 | 75   | XNA50P75  |    | 1.15 | 75   | XNA65P75  |    | 2.00 | 75   | XNA60P75-2  |
|    | 3.33 | 100  | XNA30P100 |    | 2.00 | 100  | XNA50P100 |    | 1.54 | 100  | XNA65P100 |    | 2.00 | 100  | XNA60P100-2 |
| 40 | 0.25 | 10   | XNA40P10  | 60 | 0.17 | 10   | XNA60P10  | 70 | 0.14 | 10   | XNA70P10  | 65 | 2.00 | 60   | XNA65P65-2  |
|    | 0.75 | 30   | XNA40P30  |    | 0.50 | 30   | XNA60P30  |    | 0.43 | 30   | XNA70P30  |    | 2.00 | 75   | XNA65P75-2  |
|    | 1.25 | 50   | XNA40P50  |    | 0.83 | 50   | XNA60P50  |    | 0.71 | 50   | XNA70P50  |    | 2.00 | 100  | XNA65P100-2 |
|    | 1.63 | 65   | XNA40P65  |    | 1.08 | 65   | XNA60P65  |    | 0.93 | 65   | XNA70P65  |    | 2.00 | 65   | XNA70P65-2  |
|    | 1.88 | 75   | XNA40P75  |    | 1.25 | 75   | XNA60P75  |    | 1.07 | 75   | XNA70P70  |    | 2.00 | 75   | XNA70P75-2  |
|    | 2.50 | 100  | XNA40P100 |    | 1.67 | 100  | XNA60P100 |    | 1.43 | 100  | XNA70P100 |    | 2.00 | 100  | XNA70P100-2 |

## XNA SELECTION EXAMPLE





## SPECIFICATIONS

D X-RAY GENERATOR

| PARAMETER                  |              | DESCRIBE  |               |
|----------------------------|--------------|---|---------------|
| Input Voltage              |              | +24Vdc±10% ,5.0A maximum for 100W.  |               |
| Output Voltage             |              | 30kV, 40kV, 50kV, 60kV, 70kV.   |               |
| Stability                  |              | 0.02% per 8 hours after 1/2 hour warm-up.                                       |               |
| Temperature Coefficient    |              | ≤25ppm/°C.  |               |
| Ripple                     |              | 0.1% p-p of output voltage.   |               |
| Voltage/Current Monitor    |              | 0~+10Vdc , Zout=10kW , Accuracy:±1%.  |               |
| Local Voltage Programming  |              | Internal multi-turn potentiometer to set voltage from 0 to full output voltage. |               |
| Local Current Programming  |              | Internal potentiometer to set beam current between 0 to full output current.    |               |
| Remote Voltage Programming |              | 0 ~+10Vdc proportional from 0 to full output voltage. Zin=10MΩ                  |               |
| Remote Current Programming |              | 0 ~+10Vdc proportional from 0 to full output current. Zin=10MΩ                  |               |
| Voltage Load Regulation    |              | 0.01% of output voltage no load to full load.                                   |               |
| Voltage Line Regulation    |              | ± 0.01% for 10% change in input voltage.  |               |
| Current Load Regulation    |              | 0.01% of output current from 0 to rated voltage.                                |               |
| Current Line Regulation    |              | ± 0.01% for 10% change in input voltage.  |               |
| DC Filament Supply         |              | Current: 0.3~3.5A, adjustable, Voltage: 0~5V, Preheat.                          |               |
| Operating Temperature      |              | 0°C~+50°C.  |               |
| Storage Temperature        |              | -40°C~+85°C.  |               |
| Cooling                    |              | Natural cooling.  |               |
| Humidity                   |              | 20% to 85% RH, non-condensing.  |               |
| Dimensions                 | 30~50kV unit | 4.19" H x 2.96" W x 8.00" D (127.00mm x 75.00mm x 203.50mm)                     | Weight 3kg.   |
|                            | 60~70kV unit | 4.19" H x 2.96" W x 9.00" D (127.00mm x 75.00mm x 229.00mm)                     | Weight 3.5kg. |

### XNA POWER INPUT/ FILAMENT OUTPUT CONNECTOR

| SIGNAL |                 | SIGNAL            |   |               |              |
|--------|-----------------|-------------------|---|---------------|--------------|
| 1      | +24Vdc Input    | +24 Vdc @ 5A, max | 2 | +24Vdc Ground | Power Ground |
| 3      | Filament output | +5V @ 3.5A, max   | 4 | Ground        | Ground       |

### ANALOG INTERFACE CONNECTION

| I/O | SIGNAL                            |                                     |
|-----|-----------------------------------|-------------------------------------|
| 1   | Ground                            | Ground                              |
| 2   | Voltage Monitor                   | 0~+10Vdc=0 to full scale, Zout=10kΩ |
| 3   | Current Monitor                   | 0~+10Vdc=0 to full scale, Zout=10kΩ |
| 4   | Interlock Output                  | Alternate Interlock Configurations  |
| 5   | +10 Vdc Reference                 | +10Vdc @ 1mA , maximum              |
| 6   | Filament Monitor                  | 1Vdc=1A, Zout=10kΩ                  |
| 7   | Voltage Program Input             | 0~+10Vdc=0 to full scale, Zin=10MΩ  |
| 8   | Local Voltage Program             | 10 turn pot , screwdriver adjust    |
| 9   | Filament Limit Setpoint           | 1Vdc=1A, Screwdriver adjust         |
| 10  | Current Program Input             | 0~+10Vdc=0 to full scale, Zin=10MΩ  |
| 11  | Local Current Program             | 10 turn pot , screwdriver adjust    |
| 12  | No Used(+24Vdc Out for Interlock) | Interlock Configuration+24Vdc       |
| 13  | No Used( Interlock Coil)          | Pin 12 Interlock Configuration      |
| 14  | Filament Preheat Setpoint         | 1Vdc=1A, Screwdriver Adjust         |
| 15  | Ground                            | Ground                              |

### RS-232/RS-485 DIGITAL INTERFACE

| SIGNAL |                   | SIGNAL |         |
|--------|-------------------|--------|---------|
| 1      | N/C               | 6      | N/C     |
| 2      | TXD/Transmit Data | 7      | RS-485B |
| 3      | RXD/Receive Data  | 8      | N/C     |
| 4      | N/C               | 9      | RS-485A |
| 5      | SGND              |        |         |

### ET DIGITAL INTERFACE

| SIGNAL |     | SIGNAL         |   |     |               |
|--------|-----|----------------|---|-----|---------------|
| 1      | RX+ | Receive data+  | 5 | N/C | N/C           |
| 2      | RX- | Receive data-  | 6 | TX- | Transmit data |
| 3      | TX+ | Transmit data+ | 7 | N/C | N/C           |
| 4      | N/C | N/C            | 8 | N/C | N/C           |

### USB DIGITAL INTERFACE

| SIGNAL |      | SIGNAL |   |     |        |
|--------|------|--------|---|-----|--------|
| 1      | VBUS | +5Vdc  | 3 | D+  | Data+  |
| 2      | D-   | Data-  | 4 | GND | Ground |

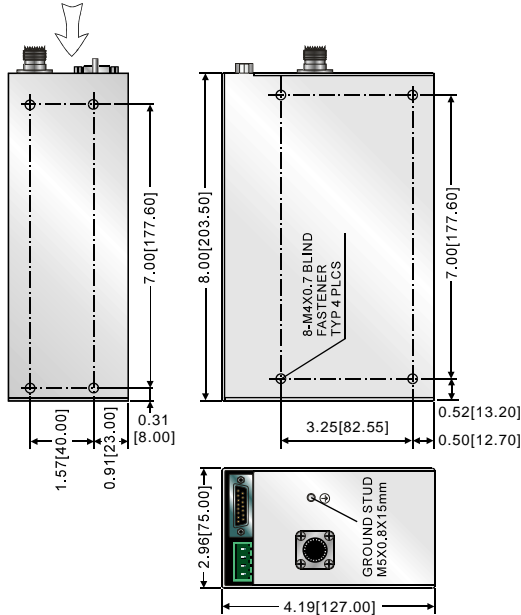


**DIMENSIONS**

Unit : in.[mm]

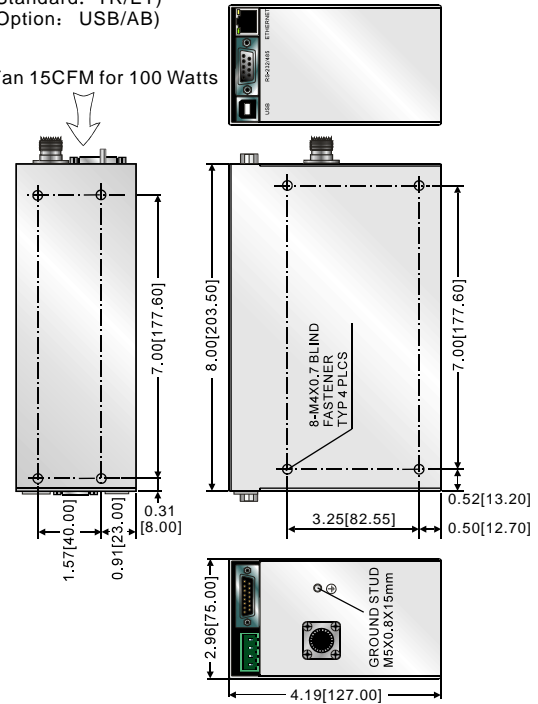
30kV~50kV unit:

Fan 15CFM for 100 Watts



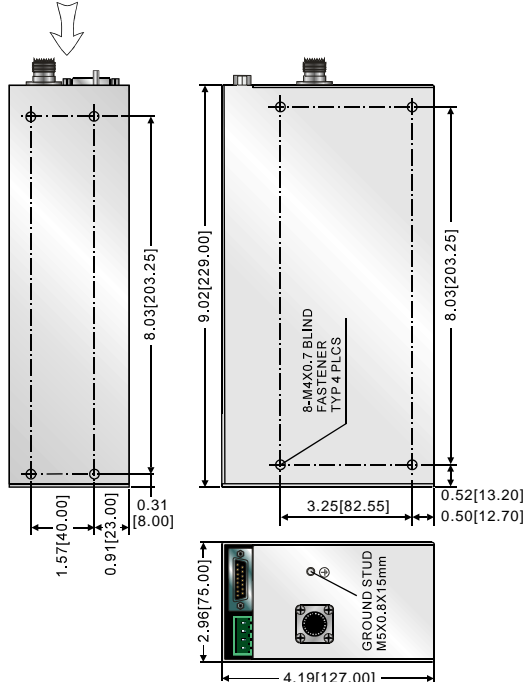
30kV~50kV unit:  
(Standard: TR/ET)  
(Option: USB/AB)

Fan 15CFM for 100 Watts



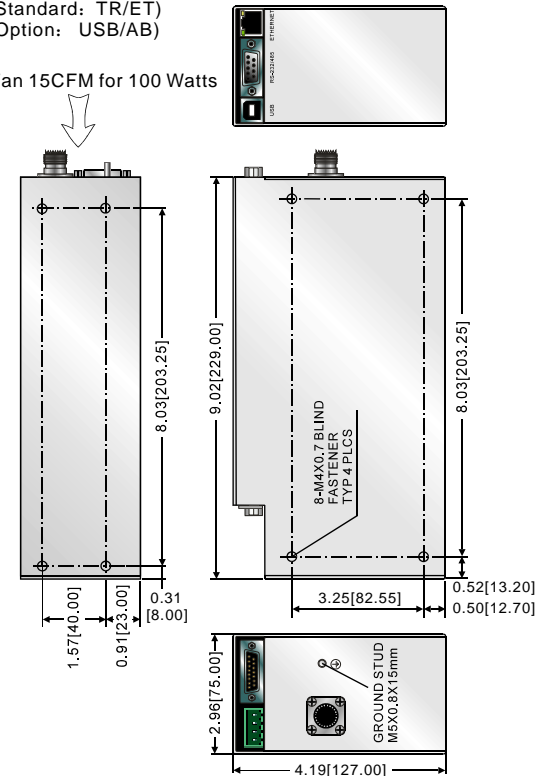
60kV~70kV unit:

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60kV~70kV unit:  
(Standard: TR/ET)  
(Option: USB/AB)

Fan 15CFM for 100 Watts



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