

**Model M47:** 50 kV, 10W X-ray Monoblock - The M47 x-ray monoblock is a fully integrated miniature 50 kV, 10 W x-ray generator designed specifically to be used as component of a handheld, portable, or benchtop x-ray instrument. The source includes a miniature sealed x-ray tube with a transmission-type end window, a high voltage power supply, and control electronics contained in a compact grounded enclosure.

## Features

**Compact design** – ideal for handheld, portable and benchtop instruments

**Low Power** consumption – compatible with battery operation

**Easy to operate** – analog control interface

**Integrated design** – no high voltage cables

**Machined metal enclosure** – precision mounting and alignment

**Patented X-ray Omnishield™** – 360 degree light weight radiation shielding

**Wide Cone Angle** – 110 degree full width x-ray cone angle

**Threaded adapter** for collimated applications – optional

## Applications

### XRF Materials Analysis

- Alloy and metal sorting
- ROHS and ELV compliance
- Environmental analysis
- Forensic science
- Mining and geology
- Art and archeology
- Coating thickness
- Lead detection
- Quality control
- Precious metal verification

### X-ray Imaging

- Medical, dental, small animal
- NDT
- Security, contraband

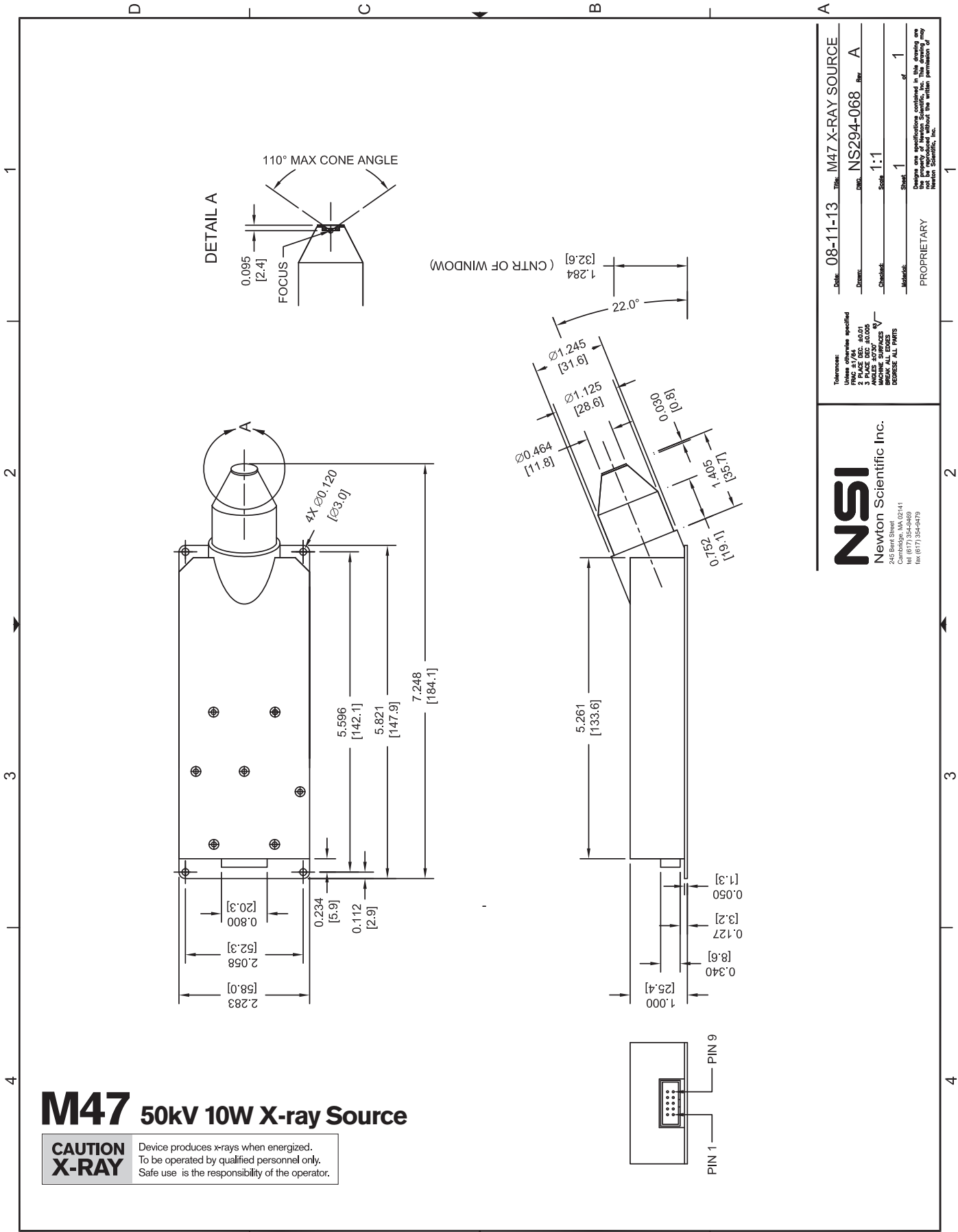
## Specifications

Tube type:	Metal-ceramic
Tube voltage:	5 kV - 50 kV
Tube current:	0 - 200 $\mu$ A
Tube power:	10 watts maximum
Cathode type:	Tungsten filament
X-ray window:	Be, 125 $\mu$ m
Target type:	Transmission
Available targets:	Au, Ag, Rh, W
Depth to focal spot:	2.4 mm (see drawing)
X-ray cone angle:	110° (see drawing)
Input voltage:	11-12 VDC
HV polarity:	Grounded anode
HV stability:	< 0.1%
Electrical insulation:	Silicone potting
Radiation shielding:	Self-shielded
Operating temp (case):	-10°C to 60°C
Storage temp:	-25°C to 85°C
Cooling:	Air cooled
Ambient humidity:	90% max (non-condensing)
Weight:	Approx. 400 g.



## Interface

PIN	NAME	TYPE	RANGE	SCALING / VALUE
Pin 1	V+	Input Power	11 VDC	
Pin 2	V+	Input Power	11 VDC	
Pin 3	GND	Ground	0V	
Pin 4	GND	Ground	0V	
Pin 5	TUBE I CONTROL	Analog Input	0-4V	0-200 $\mu$ A
Pin 6	TUBE HV CONTROL	Analog Input	0-4V	0-50 kV
Pin 7	TUBE READY	Digital Output	TTL	LOW = NOT READY HIGH = READY
Pin 8	TUBE ENABLE	Digital Input	TTL	LOW = OFF HIGH = ENABLE
Pin 9	TUBE HV MONITOR	Analog Output	0-4V	0-50 kV
Pin 10	TUBE I MONITOR	Analog Output	0-4V	0-200 $\mu$ A



## M47 50kV 10W X-ray Source

**CAUTION X-RAY** Device produces x-rays when energized. To be operated by qualified personnel only. Safe use is the responsibility of the operator.

Date:	08-11-13	Title:	M47 X-RAY SOURCE
Drawn:	DMG	Part No.:	NS294-068 Rev. A
Checked:		Scale:	1:1
Material:		Sheet:	1 of 1

PROPRIETARY

Customer use specifications contained in this drawing are the property of Newton Scientific, Inc. This drawing may not be reproduced without the written permission of Newton Scientific, Inc.

**NSI**  
**Newton Scientific Inc.**  
 245 Bent Street  
 Cambridge, MA 02141  
 Tel: (617) 354-9469  
 Fax: (617) 354-9479

Tolerances:  
 Unless otherwise specified:  
 FINISH: 1/4" ±0.01  
 1/2" ±0.01  
 3/4" ±0.01  
 1" ±0.01  
 HOLE SURFACES:  
 BREAK ALL EDGES  
 DECISE: ALL PARTS