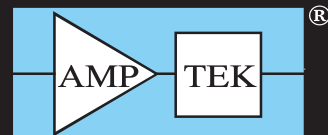


# SCORPIUS™

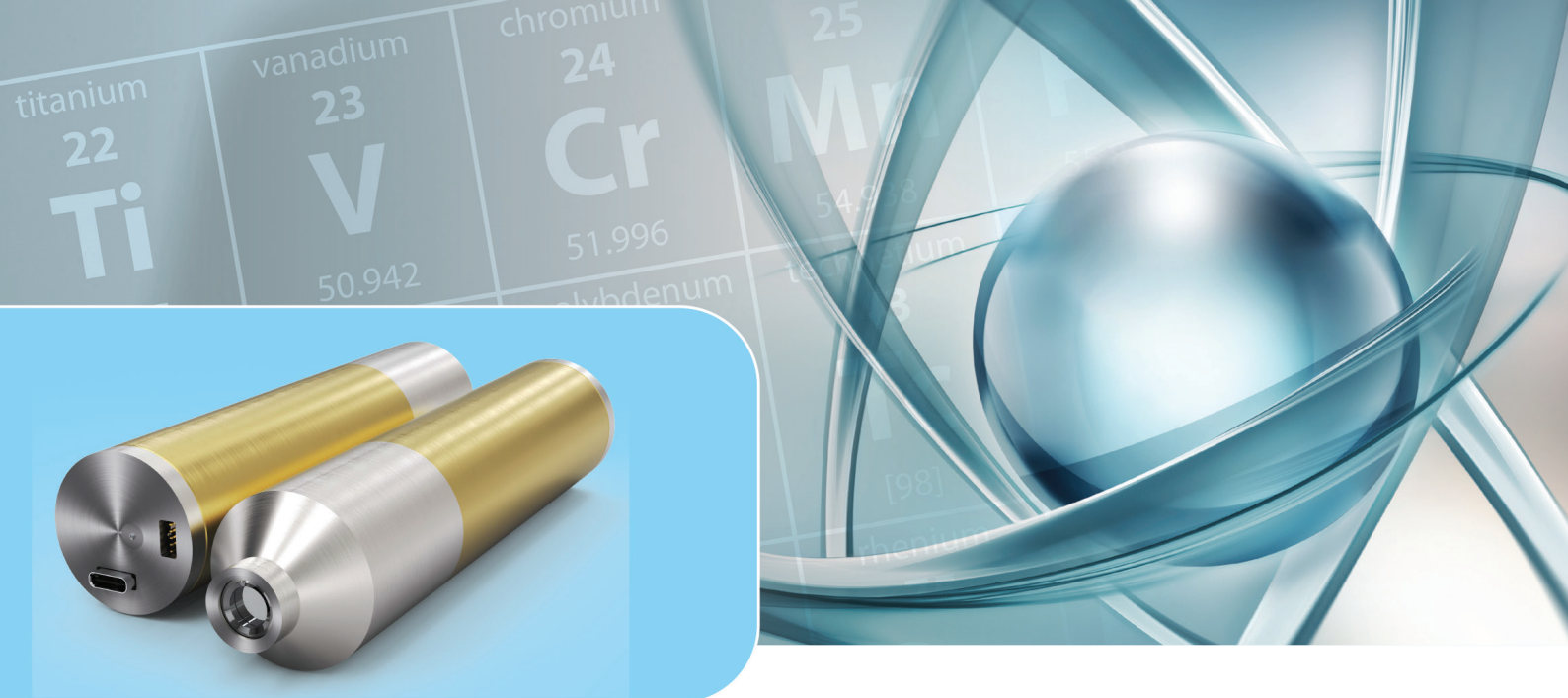
# XRT-450 X-Ray Source



**PRODUCTS FOR YOUR IMAGINATION**  
**STATE OF THE ART PERFORMANCE**



**AMETEK®**



## Amptek is excited to introduce our new **SCORPIUS™ X-RAY SOURCE** for XRF applications

Amptek have been developing world firsts for the XRF market for over 30 years, and we have done it again!

The Scorpius is a first-of-its-kind **optically excited** miniature X-Ray source for the XRF industry. A transmission window x-ray source with a 5 to 50kV output, and up to 120mA for maximum 6W output power, the XRT-450 is ideally suited to meet the needs of the Hand-held and Benchtop XRF market.

The real innovation in the Scorpius is inside: instead of the traditional heated filament, we use an optically excited cathode. With this new technology, we achieve best-in-class performance:

- <100  $\mu\text{m}$  Spot Size
- Exceptional spot location stability
- Near gaussian circular spot
- 2x longer useful life (lower cost of ownership)

In addition to this novelty, the Scorpius has been designed for easy installation and to enable tight geometry with XRF detectors.

We can customize the cover to meet your needs to mount Scorpius in your product.

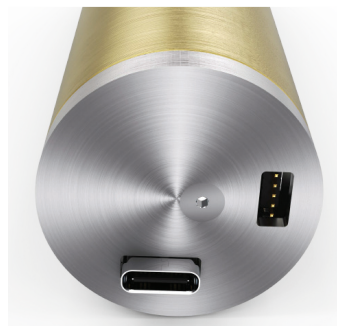
As if all this innovation wasn't enough, we've got yet another for you:

Instead of potting the HV power supply, we have decided to use gas insulation. With gas insulation, in the already unlikely event that repairs are necessary, we can do exactly that, repair it! This avoids the waste of just throwing it away and further reduces the cost of ownership, making Scorpius the most cost effective solution on the market.



The XRT-450 is Gas filled to allow (depot) disassembly and repair.

The Scorpius uses a single cable for both Power and Control. We have built in both USB-C and RS-232 communication protocols, with both connectors available as standard on every unit - just choose whichever connection best meets your needs.

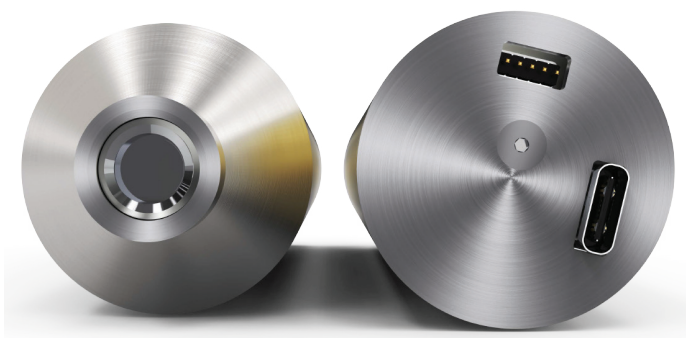
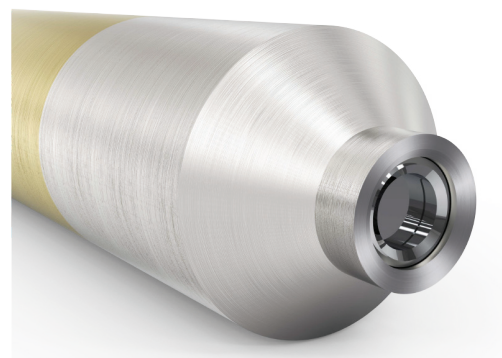


USB-C and RS-232 connectors on Scorpius

# Highlights

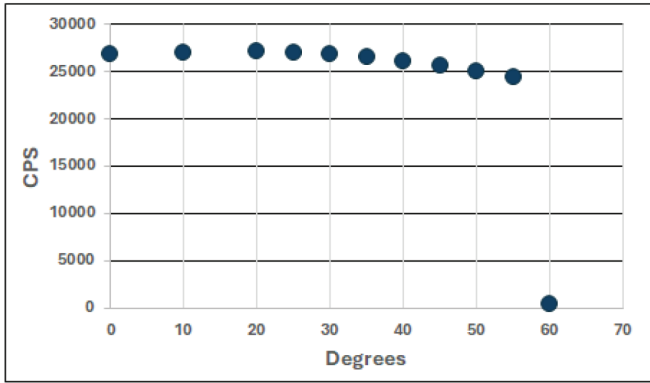
- Replacing the traditional heated filament with optical excitation eliminates major life limiting component
  - Remember when we switched from Incandescent light bulbs to LED light bulbs?
- Smaller, near gaussian, spot provides improved consistency of flux and therefore more consistent excitation of the sample
  - Improved consistency of sample excitation when used with collimators and filters
- Improved spot location stability and smaller spot size:
  - Significantly improved flux capture when used with X-Ray focussing optics for  $\mu$ XRF applications
- Improved system efficiency:
  - <7W input power gives 6W tube output
  - Reduces power consumption (improved battery life where applicable)
  - Reduces heat rejection for improved thermal stability
  - Increases overall system life
- 1 connector provides both power and communication / lockout signal, for ease of integration
- USB-C and RS-232 communication built in by default, enables easy integration with your existing system hardware
- Can use either connector out of the box
- Connectors are locking to prevent unintentional loss of power / communication (due to vibration or movement)

Feature	Specification
Tube Type	Metal-Ceramic
Window	Beryllium, 125 $\mu$ m (5 mil)
Target	Ag (others on demand)
Focal Spot	<100 $\mu$ m FWHM
X-Ray Output Cone Angle	120°
High Voltage	-5 to -50 kV
Beam Current	up to 250 $\mu$ A
Input Voltage	20 VDC
Output Power	up to 6W
Power Consumption	<7W (for 6W output)
Input Connection	Digital Control via single cable (USB-C or RS-232)
HV Polarity	Grounded Anode
Cooling	Conduction or Convection
Mounting	Threaded Snout (custom available)
RoHS Compliance	RoHS3
Radiation Shielding	meets IEC 62495
Standard Warranty	2 years or 4000 operating hours
Serviceability	Yes — gas dielectric allows for depot servicing
Weight	300g
Operating Temperature	-10°C to +60°C

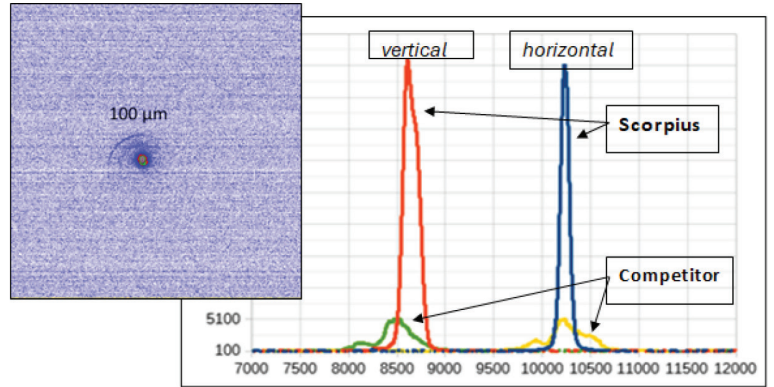


USB-C and RS-232 connectors on Scorpius

- In addition to providing the shielding necessary to meet IEC 62495 as a stand alone unit (so no need for additional shielding), the front radiation shield can be designed to incorporate different mounting configurations to match your needs



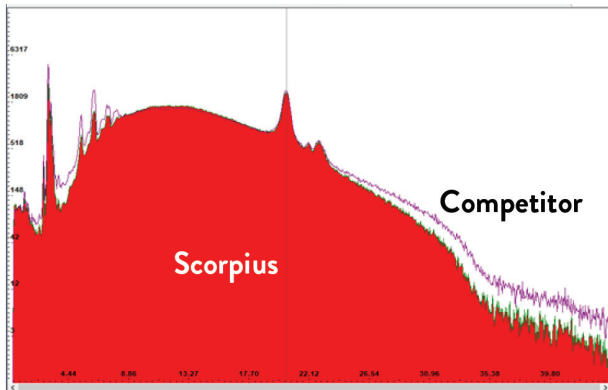
Flux Off-take Angle



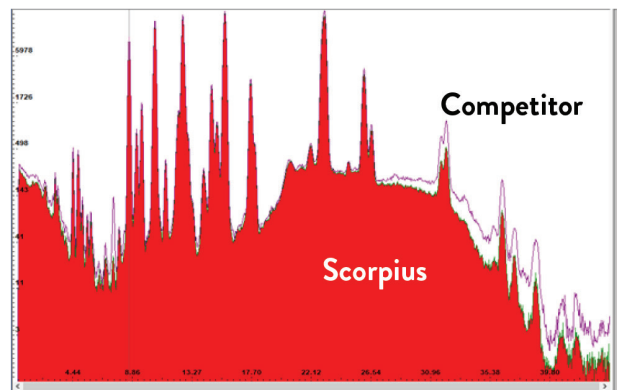
Spot Size and Intensity

## Spectra Plots — comparing Scorpium™ to “best-in-class” competitor

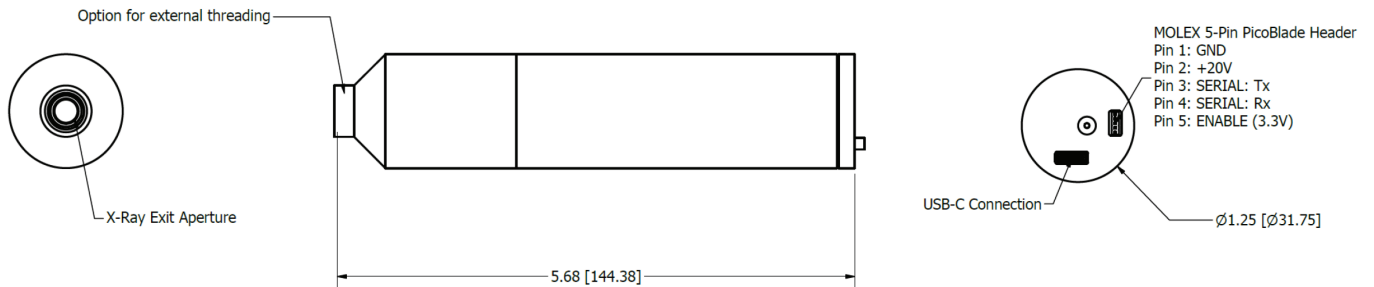
Scorpium spectra exhibit equivalent peaks, and reduced background



HDPE scatterer



Recal-Glass FLX-SP2



Dimensional Drawing