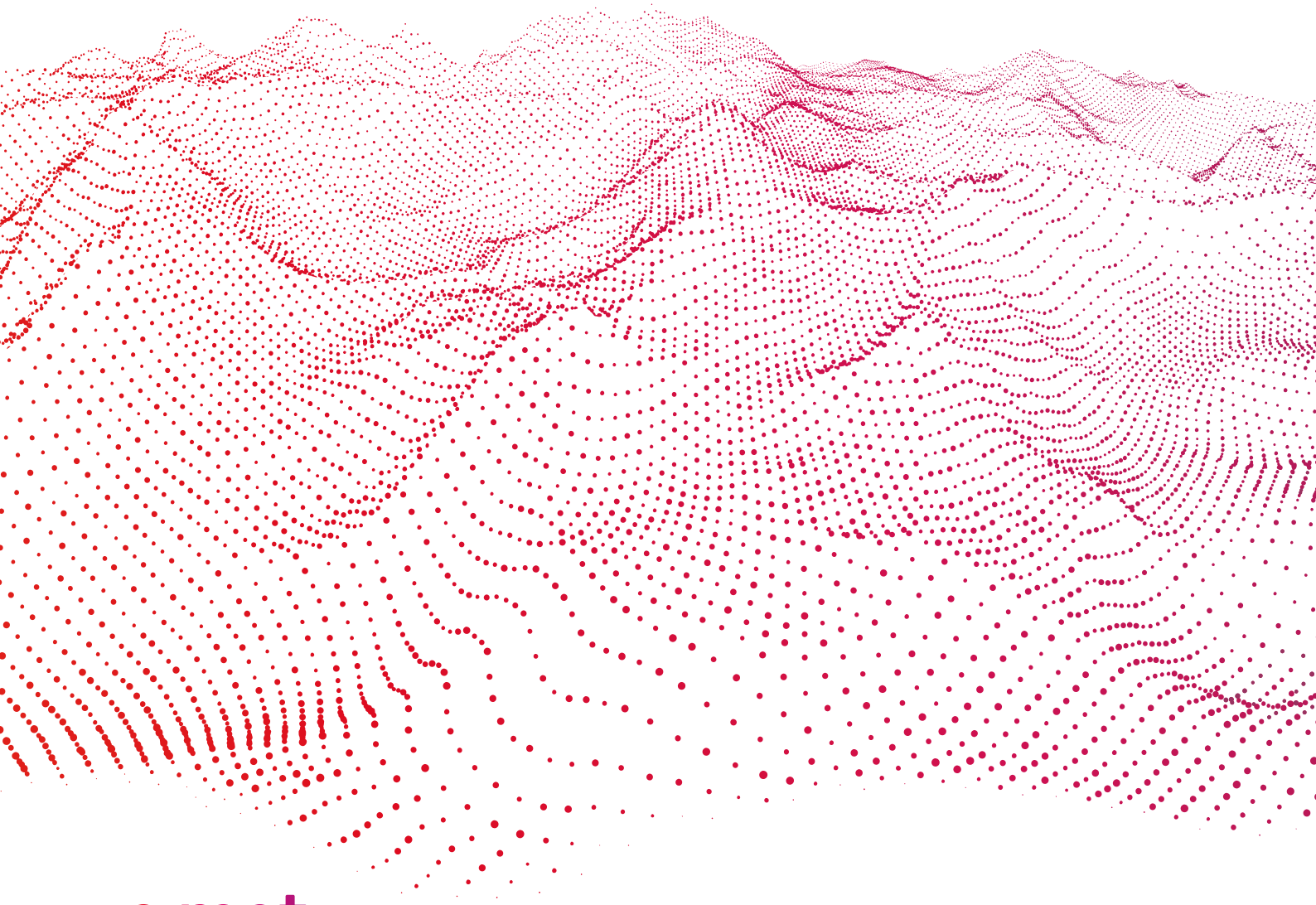
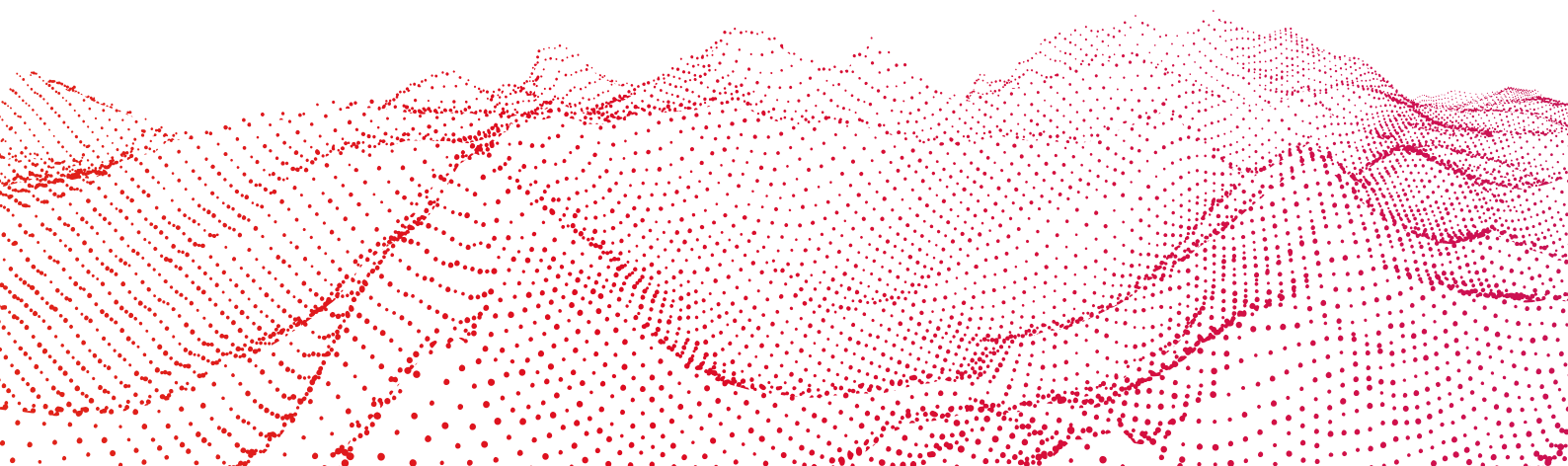
Revealing insights.

Comet X-ray Stationary catalog

Stationary mini-, meso-, micro- and nano focus modules



comet
x-ray



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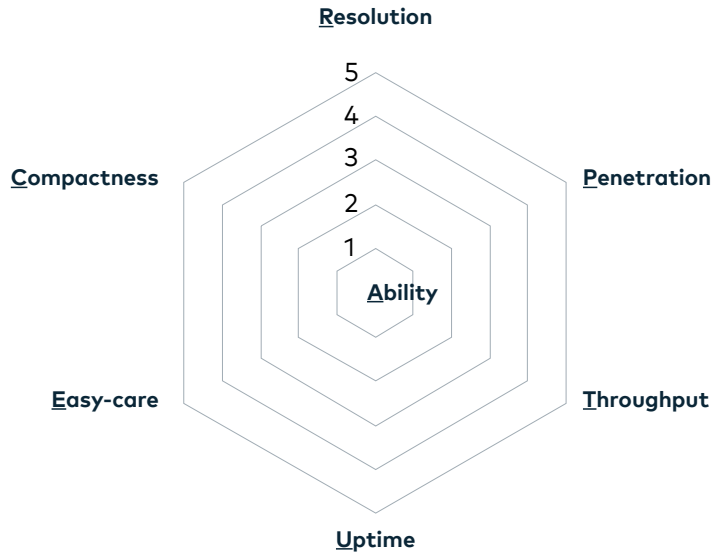
The Comet X-ray portfolio

Finding the perfect X-ray solution

Your needs and requirements are unique, and so are our X-ray modules. The essential abilities of our solutions help to define the right choice.



Resolution

Resolution is crucial for the visibility and clarity of defects or foreign bodies. Comet X-ray offers modules that reveal flaws down to sub-µm in size depending on the inspection task.

Penetration

The size and material characteristics of a part to be inspected, determine the requirements for an X-ray module's penetration capabilities of materials and structures. Modules up to 600 kV guarantee an efficient inspection even for large and dense assemblies.

Throughput

Time savings and speed in running X-ray routines are crucial for many applications and inspection businesses to reduce cost-per-item inspected. High dose performance X-ray tubes enable cost-optimized processes with high throughput.

Uptime

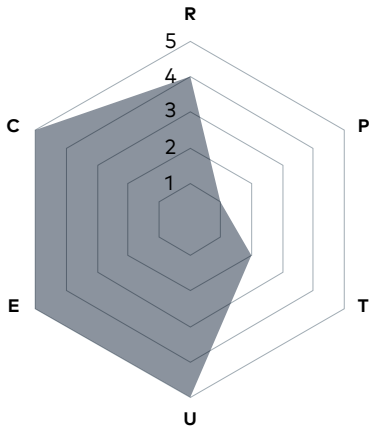
Today's trend towards 100% inspection requires efficient inline (CT) applications running up to 24/7. High uptime and dose stability are key for successful X-ray jobs-to-be-done.

Easy-care

The total cost of ownership frequently determines the viability of an application. Comet X-ray provides modules for easy integration, low maintenance, and no, or very short, service interventions.

Compactness

Many installations require a specific footprint and straightforward integration of the X-ray module. Comet X-ray provides very compact and weight conscious solutions as well as flexible stationary products.

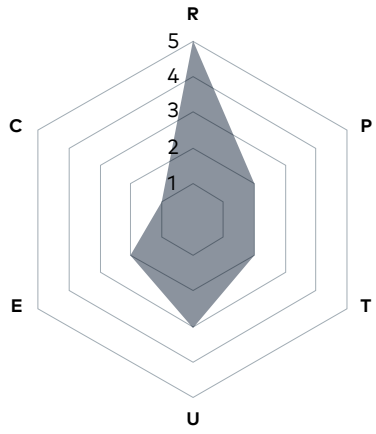


Xplorer series

Inline micro focus

Designed for applications requiring small focal spot size, high magnification, and stable output under continuous inline operation.

Ideal for the inspection of components such as Li-ion battery cells, electronic components, and bond inspection of PCBA's, in particular.

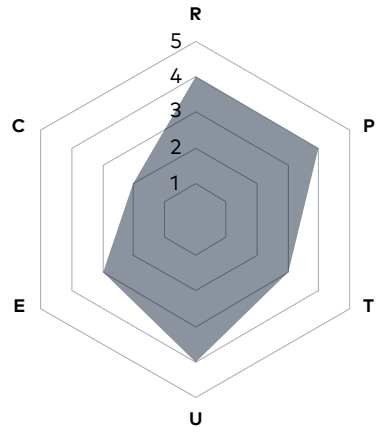


FXE series

Open nano focus

The FXE modules make the finest details visible through sub-micrometer resolution and a high optical magnification characteristic for transmission X-ray tubes.

Ideal for performing NDT quality control, offline inspection, and measurements of parts with defects from a few millimetres to 0.5 µm.

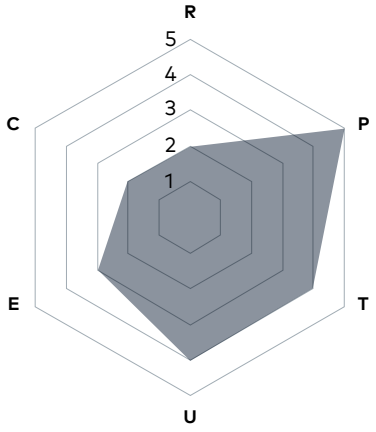


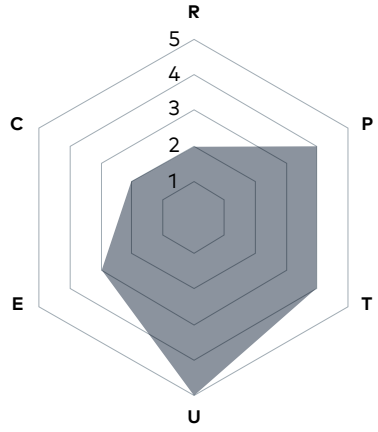
iXRS MF series

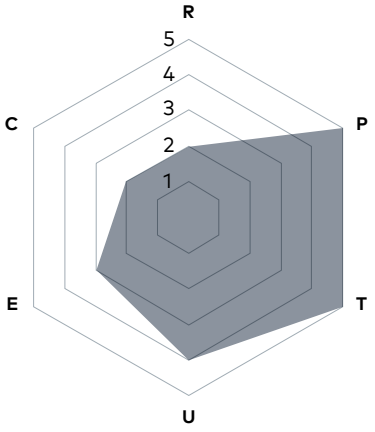
Sealed MesoFocus

The MesoFocus series brings micro focus inspection to the production floor.

Ideal for in- and at-line inspection of larger parts with significant differences in material strength or characteristics in a single component, particularly additive manufactured parts, carbon fiber materials, and castings.







iXRS HP series

Sealed mini focus

Dedicated to digital 2D and 3D X-ray applications. It's reliable and proven in countless applications.

The versatile bifocal-spot design is ideal for the inspection of various material types and thicknesses including the most dense and largest parts to be inspected.

iXRS XP series

Sealed mini focus

Dedicated to the most demanding inline CT applications optimizing power performance, focal spot size, and field of view. This series includes two identical and thermally separated focal spots.

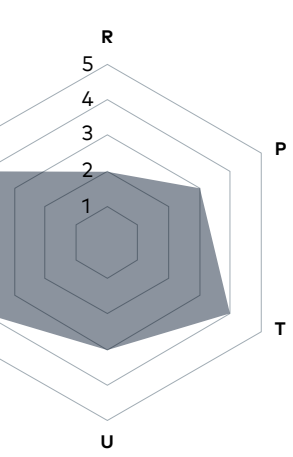
An ideal choice when uptime and high throughput are of utmost importance.

iXRS UP series

Sealed mini focus

In a world where speed is a crucial part of the production equation, the Ultra Performance tube pushes the limits of what is possible.

Thanks to its increased power load it allows for shorter exposure times to deliver higher throughput and high uptime while still maintaining excellent image quality.

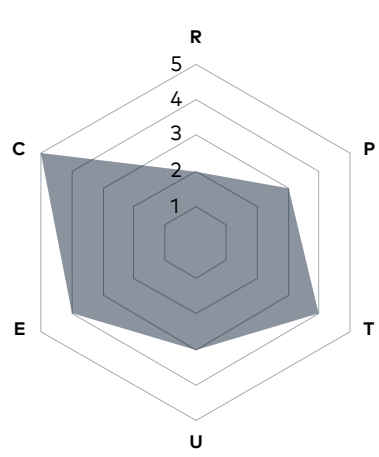


EVO series

Portable X-ray systems

The EVO systems are light weight, of high quality, and have been designed for flexible field inspection in all types of industrial environments.

The combination of our EVO tube heads and CONTROL EVO is the key to a fast workflow.

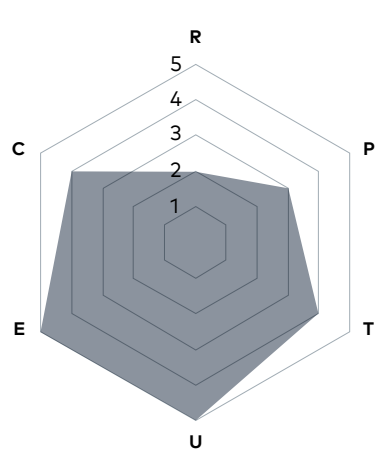


ECO series

Portable X-ray systems

With its robust, ergonomic design and weight, the ECO has been designed to make workflows faster, safer and less tiring.

And of course, because the ECO is built using the same principles, as the tried and trusted EVO series, there's no compromise on image quality.



ION series

Integrated mini focus

Tailor-made for X-ray scanning applications and ideal for industries such as food processing, sorting, thickness gauging, and security in particular.

The systems guarantee continuous and reliable performance, preventing costly production stops caused by unscheduled maintenance and ensure accuracy, speed, and X-ray dose stability, which is critical for real-time imaging.

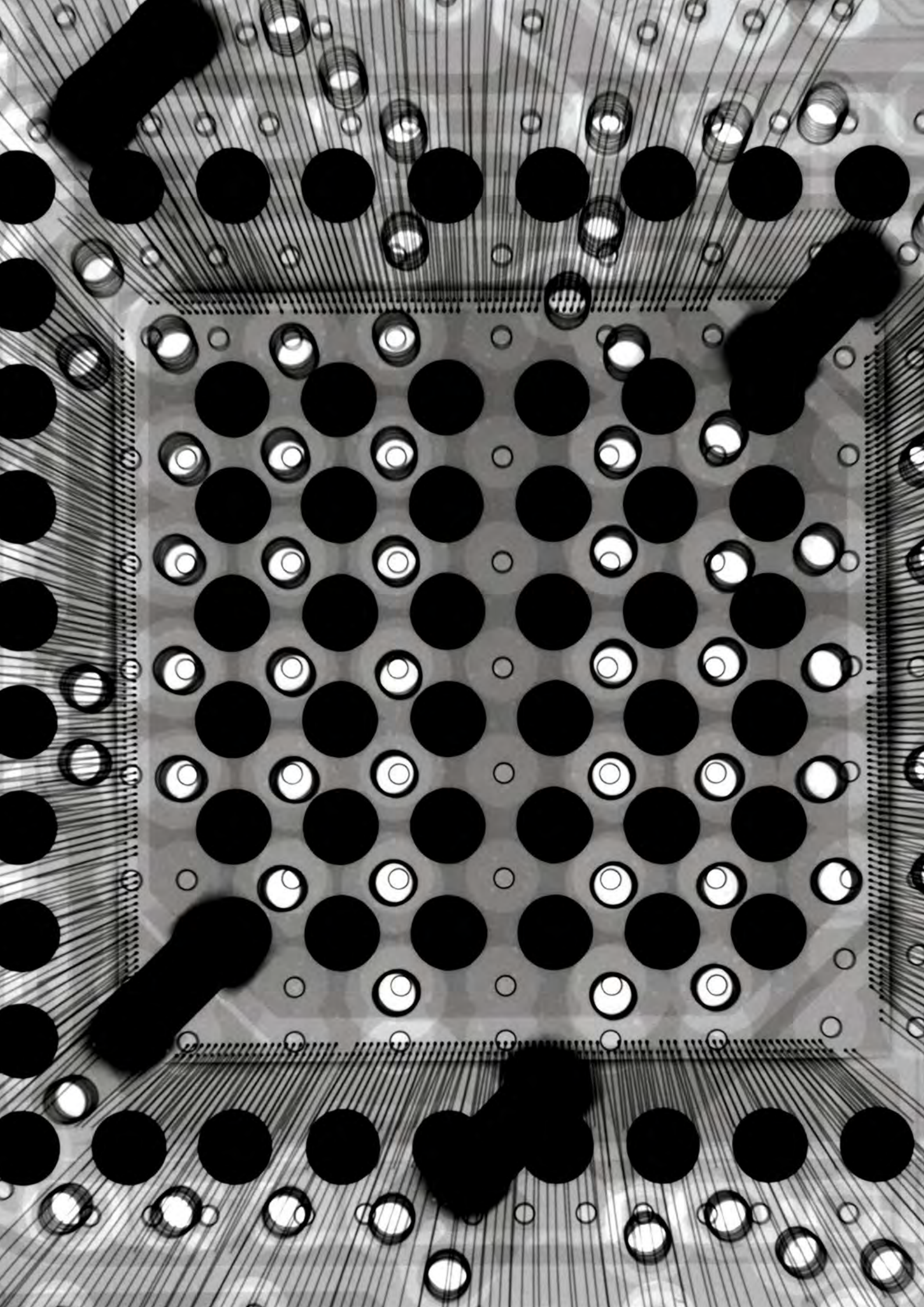
Xplorer Series

Enhanced quality control in modern production

The Xplorer series is designed to meet the rigorous demands of modern production environments, enabling efficient and cost-effective operations. The Xplorer series allows you to inspect even minute components in detail thanks to the combination of high magnification and high-resolution capabilities, ensuring superior quality control and production reliability. The system excels with a homogeneous intensity distribution and a symmetric focal spot, delivering consistent, high-quality 3D and CT images that make defect identification easier and more accurate.

A robust power output across the full kV range and a wide coverage beam enable efficient inspection of dense and large components at high throughput. The fully integrated and compact X-ray module minimizes the system's footprint, making integration into production lines seamless and space-efficient.

With dependable and consistent performance backed up by a global support team, the Xplorer series offers considerable advantages for any production environment.



Xplorer 130 Cube

130 kV

Module	Max. power	Min. resolution	Focal spot control	Radiation coverage	Comm. interface
XP-130/3-2	65 W	5 µm, JIMA	Optimized over power range	115° both axes	Ethernet RJ45

X-ray module configurations

Description	Product number	Cables
Integration kit	20134421	Power supply and cables
	20140025	Connector kit unasembled

Xplorer 130 Compact

130 kV

Module	Max. power	Min. resolution	Focal spot control	Radiation coverage	Comm. interface
XP-130/1-2_B	30 W	5 µm, JIMA	< 12 µm at 8 W < 45 µm at 30 W	115° both axes	RS232 9-pin D-sub

X-ray module configurations

Description	Product number	Cables
Integration kit	20130981	Power supply and cables

FXE Series

See beyond the image

When specifying the tube for your next micro focus project, it's tempting to focus solely on resolution, speed and initial cost: Three fixed parameters you can compare across spec sheets and price lists. But when choosing the perfect tube for your application, there's more that meets the eye than just the image.

Find the perfect balance

The interplay between power and resolution, between deterioration and efficiency, between flexibility and dedication - these factors will all impact ultimate performance and total cost. There is always a compromise to be made – and the FXE is designed to maximise the possibilities of these delicate combinations while maintaining valuable uptime and the longevity of your system.

Take the long view

Add to this platform seamless integration and global support of an established industry leader in consultation, service, and local spare part availability - and you have the ideal solution that considers all the details you need to consider when seeing the big picture for your next project.

FXE 160

160 kV

Module	Target type	Target power	Window	Beam angle	Min. FOD	Max. resolution
FXE 160 Micro	High Power	15 W	Carbon	170°	300 µm	2.0 µm
FXE 160 Micro CT	High Power	15 W	Carbon	170°	300 µm	2.0 µm
FXE 160 Nano	High Power	15 W	Carbon	170°	300 µm	0.9 µm
FXE 160 Nano CT	High Resolution Power	15 W	Carbon	170°	300 µm	0.9 µm

FXE 190

190 kV

Module	Target type	Target power	Window	Beam angle	Min. FOD	Max. resolution
FXE 190 Nano CT	High Resolution Power	15 W	Carbon	170°	300 µm	0.5 µm

FXE 225

225 kV

Module	Target type	Target power (dynamic focus)	Window	Beam angle	Min. FOD	Max. resolution
FXE 225 Range	Tungsten Reflection	100 W at 100 um 150 W at 170 um Max 280 W at 350 um	Aluminum	30°	6.75 mm	4.0 µm
FXE 225 Range	High Density Power	100 W at 50 um 150 W at 90 um Max 220 W at 140 um	Aluminium	30°	6.75 mm	4.0 µm

Stationary iXRS modules

Tailored solution

Comet X-ray provides a broad range of X-ray modules which are designed to be effectively integrated for maximum customization. Our choice of metal ceramic X-ray tubes is unmatched for industrial applications, allowing the X-ray module to be fully optimized for your image chain. By choosing exactly the elements you need for your system, you can reduce the cost incurred by additional, unnecessary, built-in accessories.

With just one single point of contact, we are your one-stop shop. As the only manufacturer of both X-ray tubes and generators, we supply all the integrated components for your X-ray module, reducing the coordination work for your supply chain. All iXRS modules are functionally tested as a module before delivery to reduce integration and testing times. The test report is your guarantee of peace of mind.

A user-friendly interface gives you easy access to protocols to provide smoother workflows from installation to operation. Combine this with easy access and control of key generator parameters for a swifter and more cost-efficient installation process.

Trouble-free operation

With pre-settings for each X-ray tube from our comprehensive database, you get accurate operation of your filament current and high voltage. This means the module never operates beyond the performance limit of the tube, prolonging tube lifetime and resulting in longer uptime. Advanced default arc-handling automatically restarts in case of shutdown, giving you continuous, reliable, and stable operation. You also avoid image loss through arcing - which is especially relevant for long CT scans. Our unique modular design approach means you can quickly swap components for service, repair, or troubleshooting, saving cost and time.

We've got your back - we made it, and we know how it works. From generator to tube, cooler, and cables, we have the knowledge and experience it takes to give you the ultimate in service and operational support. With remote access through TCP/IP, service interventions can be made off site to save costly call-outs. By continuously monitoring the generator's performance and operating data, it's faster to pre-empt malfunctions and perform root-cause analysis.

MesoFocus series

Revolutionizing Non-Destructive Testing

The MesoFocus series is ideal for inspecting parts with large differences in material strength or characteristics in a single component, in particular, batteries, additive manufactured parts, carbon fiber materials, and casting. It bridges the gap between open microfocus and minifocus X-ray technologies without compromising performance.

The MesoFocus technology allows users to detect features and conduct dimensional analysis down to 25 µm with a sealed X-ray tube. With its field of view, the MesoFocus X-ray tube reduces the number of images required to inspect a part resulting in a faster inspection process.

Unlike conventional microfocus tubes, the MesoFocus technology offers high stability due to minimal defocusing of the focal spot from thermal changes. This, and the absence of greasing O-rings and exchanging of filaments or targets result in fewer service interventions and an inherently higher uptime in your application.

The iXRS-MF modules provide cost-saving opportunities as they can eliminate the need for dual tube systems or two distinct cabinets with different X-ray tube technologies.

iXRS 225 MF

225 kV

Tube type	Product no.	Continuous rating	Focal spot ASTM E1165-20	Radiation coverage	Target angle	Target material
MXR-225MF	915427.51	50 W | 130 W | 200 W	FS 19 (50µm) | FS 15 (130 µm) | FS 13 (200 µm)	40° x 40°	20°	W

X-ray module configurations

Generators	Coolers	Cables
iVario-225/0.5 MF	XRC-523-WA	P3/250-R24SL-R28SL 5 meter
		P3/250-R24SL-R28SL 10 meter
		P3/250-R24SL-R28SL 15 meter

iXRS 450 MF

450 kV

Tube type	Product no.	Continuous rating	Focal spot ASTM E1165-20	Radiation coverage	Target angle	Target material
MXC-450MF	915707.51	50 W | 100 W | 250 W 350 W | 450 W	FS 19 (63µm) | FS 16 (100µm) FS 13 (200µm) | FS 11 (350µm) FS 10 (450µm)	40° x 40°	20°	W

X-ray module configurations

Generators	Coolers	Cables
iVario-450/1.0 MF	XRC-4523-OA	P3/250-R28SL-R28SL 5 meter
	XRC-4523-OW	P3/250-R28SL-R28SL 10 meter
		P3/250-R28SL-R28SL 15 meter

Xtra performance series

Designed for In-line CT Inspections

The Comet XP series is dedicated for the most demanding non-destructive testing and in-line CT applications optimizing power performance, focal spot form, and field of view.

Two identical and thermally separated focal spots prevent your application from long downtimes in case of a focal spot dropout. With a simple and easy switch to the second focal spot you ensure continuous functionality of your system without time-consuming service interventions. This can further reduce the costs of your local service inventory.

enlarged Field of View (FOV) with 50° x 40° radiation coverage enables a reliable and efficient inspection of larger objects without additional mechanical efforts compared to traditional high-power solutions. The 15° target angle and larger field of view create a uniform dose spread and allow the detector to be placed closer to the tube, increasing the dose received by the detector according to the inverse square law.

The XP series is an ideal choice when uptime and short scanning times are of utmost importance.

iXRS 225 XP

225 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-225XP/15/15-15	915417.51	2250 W | 2250 W	d = 1.5 mm | d = 1.5 mm	50° x 40°	15°	W
MXR-225XP/15/06-06	915430.51	1000 W | 1000 W in Power mode 700 W | 700 W in Endurance mode	d = 0.6 mm | d = 0.6mm	50° x 40°	15°	W

X-ray module configurations

Generators	Coolers	Cables
iVario-225/2.25	XRC-3023-WA	P3/250-R24SL-R28SL 5 meter
	XRC-3023-WW	P3/250-R24SL-R28SL 10 meter
		P3/250-R24SL-R28SL 15 meter

iXRS 450 XP

450 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-450 XP/15/20-20	915431.51	1800 W | 1800 W	d = 2.0 mm | d = 2.0 mm	40° x 30°	15°	W

X-ray module configurations

Generators	Coolers	Cables
iVario-450/4.5	XRC-4523-OA	P3/250-R28SL-R28SL 5 meter
	XRC-4523-OW	P3/250-R28SL-R28SL 10 meter
		P3/250-R28SL-R28SL 15 meter

Ultra performance series

Speed up throughput by getting details faster

The perfect fit for your high-speed application. When the focal spot and target angle is already ideal for your application, but you simply need more power to drive higher speed productivity, the UP is the right tool for the job. Take out the old bulb, put in a new and you're good to go.

An optimized Field of View (FOV) with 40° x 40° radiation coverage enables a reliable and efficient inspection of larger objects without additional mechanical efforts compared to traditional high-power solutions.

Integrated X-ray scanners are a vital part of today's efficiency driven production flows. Delivering consistent quality control on high-speed production lines is crucial to product integrity. The challenge is always how fast can this be achieved without compromising quality.

iXRS 225 UP

225 kV

Tube type	Product no.	Continuous and cycling rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-225UP/11/04	915436.51	900 W	d = 0.4 mm	40° x 30°	11°	W

X-ray module configurations

Generators	Coolers	Cables
iVario-225/2.25	XRC-3023-WA	P3/250-R24SL-R28SL 5 meter
	XRC-3023-WW	P3/250-R24SL-R28SL 10 meter
		P3/250-R24SL-R28SL 15 meter

High performance series

Compact and powerful

Comet's unique range of X-ray modules for non-destructive testing, security and sorting applications to increase your productivity.

The iXRS-HP modules give trusted output power for an improved digital imaging quality and a high throughput in your inspection processes.

The stable performance allows for a wide range of scanning techniques in a multitude of application from 2D inspection to 3D additive parts enabling a reliable inspection of low- to high-density materials as well as different sizes of components.

The unmatched variety of X-ray tubes includes energy levels up to 600 kV for an optimized signal-to-noise ratio (SNR) when inspecting large and dense parts for the automotive and aerospace industry.

Cone and fan beam windows make the HP series a perfect choice not only for non-destructive testing but also for baggage, cargo, vehicle inspection as well as domestic waste, food and iron-ore-sorting applications.

iXRS 160 HP/11

160 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-160HP/11	915370.51	800 W | 1800 W	d = 0.4 mm | d = 1.0 mm	40° x 30°	11°	W

X-ray module configurations

Generators	Coolers	Cables
iVario-160/2.25	XRC-3023-WA	N3/160-R24SL-R24SL 5 meter
	XRC-3023-WW	N3/160-R24SL-R24SL 10 meter
		N3/160-R24SL-R24SL 15 meter
		N3/160-R24SL-R24SL 20 meter
		N3/160-R24SL-R24SL 25 meter

iXRS 225 HP/11

225 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-225HP/11	915371.51	800 W | 1800 W	d = 0.4 mm | d = 1.0 mm	40° x 30°	11°	W
MXR-225HP/11FB	915362.51	800 W | 1800 W	d = 0.4 mm | d = 1.0 mm	90° x 25°	11°	W

X-ray module configurations

Generators	Coolers	Cables
iVario-225/2.25	XRC-3023-WA	P3/250-R24SL-R28SL 5 meter
	XRC-3023-WW	P3/250-R24SL-R28SL 10 meter
		P3/250-R24SL-R28SL 15 meter

iXRS 320 HP/11

320 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-320HP/11	915368.51	800 W | 1800 W	d = 0.4 mm | d = 1.0 mm	40° x 30°	11°	W
MXR-320HP/11-90	915368.56	800 W | 1800 W	d = 0.4 mm | d = 1.0 mm	40° x 30°	11°	W
MXR-320HP/11 AX	915368.58	800 W | 1800 W	d = 0.4 mm | d = 1.0 mm	40° x 30°	11°	W
MXR-320HP/11/FB	915388.51	800 W | 1800 W	d = 0.4 mm | d = 1.0 mm	80° x 11°	11°	W
MXR-320HP/11/FB-90	915388.56	800 W | 1800 W	d = 0.4 mm | d = 1.0 mm	80° x 11°	11°	W

X-ray module configurations

Generators	Coolers	Cables
iVario-320/4.5	XRC-4523-OA	N3/160-R24SL-R24SL 5 meter
	XRC-4523-OW	N3/160-R24SL-R24SL 10 meter
		N3/160-R24SL-R24SL 15 meter

iXRS 450 HP/11

420/ 450 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXC-453HP/11	915706.51	700 W | 1200 W	d = 0.4 mm | d = 1.2 mm	40° x 30°	11°	W
MXR-421HP/11	915369.55	700 W | 1500 W	d = 0.4 mm | d = 1.0 mm	40° x 30°	11°	W
MXR-451HP/11	915369.51	700 W | 1500 W	d = 0.4 mm | d = 1.0 mm	40° x 30°	11°	W

X-ray module configurations

Generators	Coolers	Cables
iVario-450/4.5	XRC-4523-OA	P3/250-R24SL-R28SL 5 meter
	XRC-4523-OW	P3/250-R24SL-R28SL 10 meter
		P3/250-R24SL-R28SL 15 meter

iXRS 500 HP/11

500 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-500HP/11	915369.61	700 W | 1500 W	d = 0.4 mm | d = 1.0 mm	40° x 30°	11°	W

X-ray module configurations

Generators	Coolers	Cables
iVario-500/1.5	XRC-4523-OA	P3/250-R24SL-R28SL 5 meter
	XRC-4523-OW	

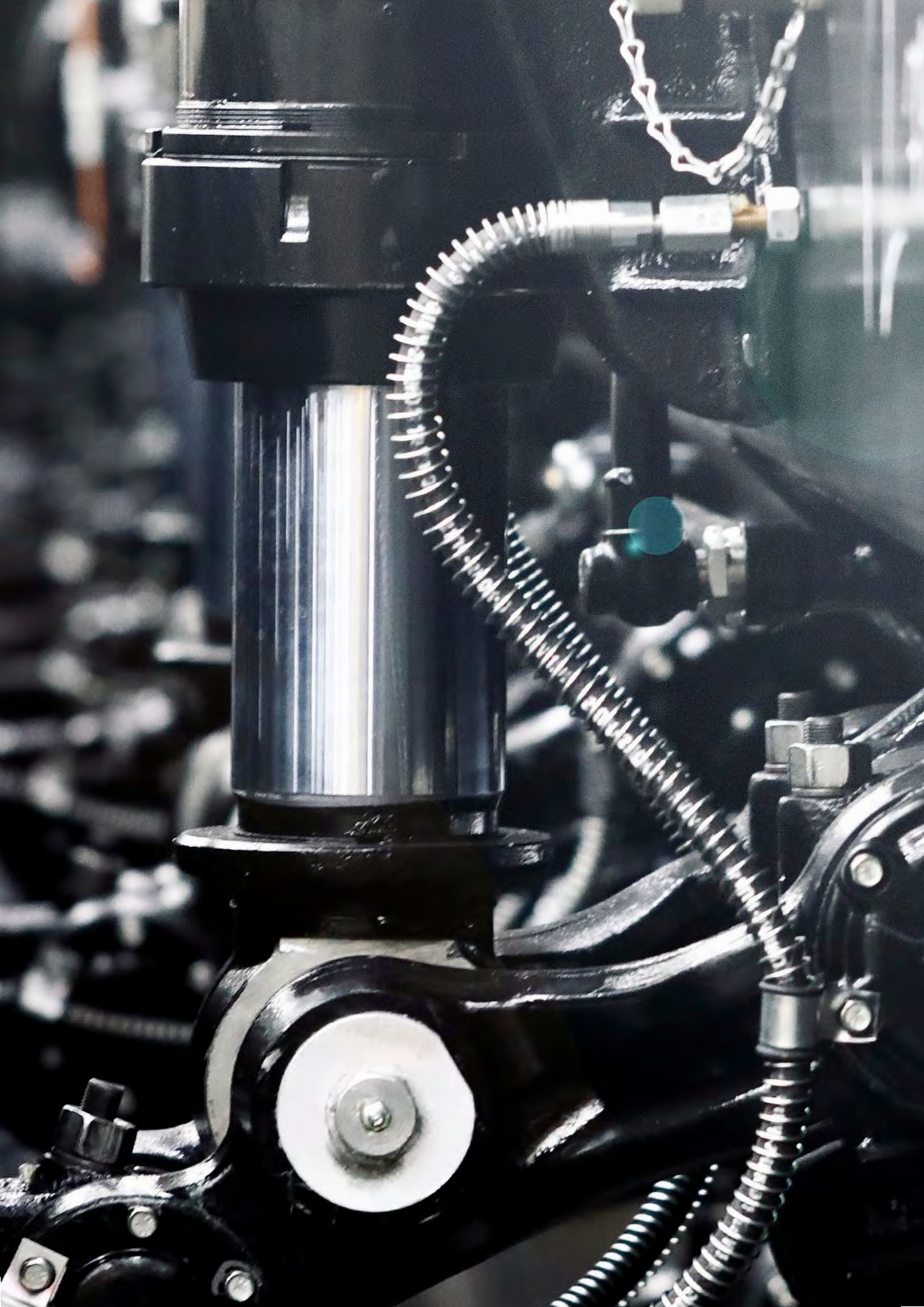
XRS 600 HP/11

600 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-601HP/11	915395.51	700 W | 1500 W	d = 0.7 mm | d = 2.0 mm	40° x 30°	11°	W

X-ray module configurations

Generators	Coolers	Cables
XRP-600/4500/2	XRC-4523-OA	F3/300-R30-R30 5 meter
	XRC-4523-OW	



Standard tubes

X-ray tubes and inserts

Comet provides an unmatched range of X-ray tubes developed based on the application needs of many industries – from non-destructive testing, security, sorting, thickness gauging to irradiation.

Depending on your needs, you will find the right choice for resolution, penetration, throughput, and uptime requirements.

And, all our products are designed with easy care and a minimum footprint in mind. Thanks to our in-house development and manufacturing of the noble parts of an X-ray tube, we guarantee the highest quality and consistent radiation in any operation mode.

MXR 75/100

75/100 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-75/30	915376.51	1000 W	d = 5.5 mm	40° x 40°	30°	W
MXR-100/12	915301.52	3000 W	d = 5.5 mm	40° x 40°	20°	W
MXR-100/30	915376.61	1000 W	d = 5.5 mm	40° x 40°	30°	W
MXR-75HP/20	915377.52	1000 W	d = 1.0 mm	40° x 40°	20°	W
MXR-75HP/20 FB	915380.52	1000 W	d = 1.0 mm	40° x 100°	20°	W
MXR-100HP/20	915377.62	1000 W	d = 1.0 mm	40° x 40°	20°	W
MXR-100HP/20 FB	915380.62	1000 W	d = 1.0 mm	40° x 100°	20°	W
MXR-101	915343.51	1000 W	d =5.5 mm	40° x 40°	30°	W
MXR-75/30 Fe	915390.51	400 W	d =5.5 mm	40° x 40°	30°	Fe

MXR 160

160 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-160/21	915302.51	640 W | 1600 W	d = 1.0 mm | d = 3.0 mm	40° x 40°	20°	W
MXR-160/22	915301.51	640 W | 3000 W	d = 1.0 mm | d = 5.5 mm	40° x 40°	20°	W
MXR-161	915305.51	3000 W	d = 7.5 mm	40° x 40°	30°	W
MXRP-160C	915311.51	1000 W	l = 0.4 mm | w = 4.0 mm	360° x 40°	22°	W
MXR-160/01	915313.51	320 W	d = 0.5 mm	40° x 30°	10°	W
MXR-160/20	915317.51	640 W | 640 W	d = 1.0 mm | d = 1.0 mm	40° x 40°	20°	W
MXR-165	915356.51	6000 W	d = 5.5 mm	50° x 50°	30°	W
MXR-160HP/20	915357.51	1000 W | 1000 W	d = 1.0 mm | d = 1.0 mm	40° x 40°	20°	W
MXR-160HP/FB	915359.51	1000 W	d = 1.0 mm	60° x 25°	20°	W

MXR 225

225 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-225/21	915325.51	640 W | 1600 W	d = 1.0 mm | d = 3.0 mm	40° x 40°	20°	W
MXR-225/22	915326.51	640 W | 3000 W	d = 1.0 mm | d = 5.5 mm	40° x 40°	20°	W
MXR-225/01	915327.51	320 W	d = 0.5 mm	40° x 30°	10°	W
MXR-225FB/C	915361.52	3000 W	d = 5.5 mm	90° x 30°	20°	W
MXR-225/02/FB	915365.51	3000 W	d = 5.5 mm	90° x 30°	20°	W
MXR-225/26	915386.51	600 W | 4500 W	d = 1.2 mm | d = 5.5 mm	40° x 40°	30°	W
MXR-226	915332.51	3000 W	d = 7.5 mm	40° x 40°	30°	W

MXR 320

320 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-320/23	915334.51	640 W | 1600 W	d = 1.9 mm | d = 3.6 mm	40° x 40°	20°	W
MXR-320/23 90	915334.56	640 W | 1600 W	d = 1.9 mm | d = 3.6 mm	40° x 40°	20°	W
MXR-320/23 AX	915334.58	640 W | 1600 W	d = 1.9 mm | d = 3.6 mm	40° x 40°	20°	W
MXR-320/26	915358.51	1500 W | 4200 W	d = 3.0 mm | d = 5.5 mm	40° x 40°	20°	W
MXR-320/26 90	915358.56	1500 W | 4200 W	d = 3.0 mm | d = 5.5 mm	40° x 40°	20°	W
MXR-320/26 AX	915358.58	1500 W | 4200 W	d = 3.0 mm | d = 5.5 mm	40° x 40°	20°	W

MXR 450

420/ 450 kV

Tube type	Product no.	Continuous rating	Focal spot EN 12543:2008	Radiation coverage	Target angle	Target material
MXR-421/26	915366.55	900 W | 4500 W	d = 2.5 mm | d = 5.5 mm	40° x 40°	30°	W
MXR-451/26	915366.51	900 W | 4500 W	d = 2.5 mm | d = 5.5 mm	40° x 40°	30°	W
MXC-451	915704.51	800 W	d = 7.5 mm	40° x 40°	30°	W
MXR-452/Y	915344.55	900 W | 4500 W	d = 2.5 mm | d = 5.5 mm	90° x 20°	30°	W

ION Series

The ideal X-ray system for your scanning applications

The ION integrated X-ray series is tailor-made for X-ray scanning applications and ideal for industries such as food processing, sorting, thickness gauging, and security in particular.

These systems guarantee continuous and reliable performance, preventing costly production stops caused by unscheduled maintenance and they ensure accuracy, speed, and X-ray dose-stability, which is critical for real-time imaging and measurement.

A growing number of items that require screening means that security screening systems need to be increasingly efficient. X-ray security inspection systems operating at logistics centers, airports, ports, and institutions help ensure greater public safety and security. The ION system is the perfect solution, identifying unwanted elements and illegal goods in vehicles, luggage, and containers.

ION systems are flexible and scalable, perfect for tailoring specifications, and creating unique systems that make a world of difference to our customers.

ION 300

300 kV

Tube type	System no.	High voltage adjustment	Focal spot ASTM 1165	Max. X-ray power	Beam angle	mA adjustment
300F 450/105	20128941	150 - 300 kV	1.4 x 1.4 mm	450 W	5° x 105°	0.1 - 2.0 mA
300F 600/105	20130513	60 - 300 kV	1.4 x 1.4 mm	600 W	5° x 105°	0.5 - 3.0 mA
300F 600/120	20113041	150 - 300 kV	1.4 x 1.4 mm	600 W	5° x 120°	0.5 - 3.0 mA

Inserts

Comet unipolar and bipolar X-ray tubes

The metal-ceramic insert range is available for a host of industrial applications, ranging from small portable units to larger modules.

Comet ensures high product quality delivering performance uniformity, stability, nearly no fluctuation, and perfect reproducibility.

Variants and specifications

Insert	Nominal tube voltage	Max. continuous rating	Target angle
MIR-160E	160 kV	900 W	20°
MIR-200E	200 kV	900 W	20°
MIR-201E	200 kV	600 W	20°
MIRP-200E	200 kV	600 W	22°
MIR-225E	225 kV	900 W	20°
MIR-300E	300 kV	900 W	20°
MIR-301E	300 kV	900 W	20°
MIRP-301E	300 kV	600 W	22°
CIR-102	100 kV	600 W	20°
CIR-105	100 kV	1000 W	20°
CIR-150	150 kV	1000 W	15°
CXR-102	100 kV	600 W	20°
CXR-105	100 kV	1000 W	20°

	Beam angle	Focal spot EN 12543:2008	Cooling medium	Weight	Availability
	60° x 40°	d = 3.0 mm	Air	2.2 kg	Standard and custom
	60° x 40°	d = 3.0 mm	Air	2.2 kg	Standard and custom
	60° x 40°	d = 1.0 mm	Air	2.2 kg	Standard and custom
	360° x 40°	l = 0.4 mm | w = 4.0 mm	Air	3.0 kg	Standard and custom
	60° x 40°	d = 3.0 mm	Air	3.3 kg	Standard and custom
	60° x 40°	d = 3.0 mm	Air	2.6 kg	Standard and custom
	60° x 40°	d = 3.0 mm	Air	3.9 kg	Standard and custom
	360° x 40°	l = 0.5 mm | w = 5.5 mm	Air	5.5 kg	Standard and custom
	40° x 40°	d = 2.0 mm	Water	0.96 kg	Standard and custom
	40° x 40°	d = 3.0 mm	Water	0.96 kg	Standard and custom
	65° x 35°	d = 2.0 mm	Water	1.6 kg	Standard and custom
	40° x 40°	d = 2.0 mm	Water	0.96 kg	Standard and custom
	40° x 40°	d = 3.0 mm	Water	3.8 kg	Standard and custom

Generators

Reliable, accurate, and powerful

The iVario generators are designed to be flexible with a broad range of configuration options. They deliver continuous uptime, prolonged tube life, and consistent X-ray module output.

Generator	iVario 160		iVario 225		iVario 320	
Product specifications	**iVario 160/2.25**	**iVario 160/4.5**	**iVario 225/2.25**	**iVario 225/4.5**	**iVario 320/4.5**	
Voltage range	7.5 – 160 kV		10 – 225 kV		15 – 320 kV	
Adjustment increments (minimum step)	≤ 0.1 kV		≤ 0.1 kV		≤ 0.1 kV	
Accuracy	± 1 % of max kV		± 1 % of max kV		± 1 % of max kV	
Reproducibility (at constant temperature)	± 0.01 % of max kV		± 0.01 % of max kV		± 0.01 % of max kV	
Long-term voltage stability	± 0.1 % of max kV		± 0.1 % of max kV		± 0.1 % of max kV	
Temperature induced drift	± 40 ppm/°C		± 40 ppm/°C		± 40 ppm/°C	
High-voltage ripple (with 10 m high-voltage cable)	5 V/mA (min 20V)		5 V/mA (min 20V)		10 V/mA (min 40V)	
Emission current range	0–22.5 mA	0–45 mA	0-15 mA	0-30mA	0–22.5 mA	
Adjustment increments	≤ 0.01 mA		≤ 0.01 mA		≤ 0.01 mA	
Absolute accuracy	± 0.2 % of max mA		± 0.2 % of max mA		± 0.2 % of max mA	
Reproducibility (at constant temperature)	± 0.002 mA		± 0.002 mA		± 0.002 mA	
Long term current stability	± 0.1 % of set mA		± 0.1 % of set mA		± 0.1 % of set mA	
Temperature-induced drift	± 50 ppm/°C		± 50 ppm/°C		± 50 ppm/°C	
Maximum power	2250 W	4500 W	2250 W	4500 W	4500 W	
kV ramp-up and ramp-down time	< 300 ms		< 300 ms		< 300 ms	
INTERFACES						
High-voltage connector type	R24		R28		R24	
Data / Control	Ethernet RS-232		Ethernet RS-232		Ethernet RS-232	
Mains voltage	220 – 240 VAC ±10%		220 – 240 VAC ±10%		220 – 240 VAC ±10%	
Max. current	Auxiliary: 2A / Mains: 16 A		Auxiliary: 2A / Mains: 16 A		Auxiliary: 2A / Mains: 16 A	
DIMENSIONS						
Dimensions (W x H x L)	375 x 500 x 640 mm		500 x 530 x 660 mm		375 x 910 x 640 mm	
Weight	84 kg	87 kg	126 kg	129 kg	166 kg	
Approvals	CE, CB, NFC 74100		CE, CB, NFC 74100		CE, CB, NFC 74100	

	iVario 450	iVario 500	XRP 600	iVario 225MF	iVario 450MF
	iVario 450/4.5	**iVario 500/1.5**	**XRP-600/4500/2**	**iVario MF 225/0.5**	**iVario MF 450/1.0**
	20 – 450 kV	20 - 500 kV	20 – 600 kV	10 - 225 kV	20 – 450 kV
	≤ 0.1 kV	≤ 0.1 kV	0.2 kV	≤ 0.1 kV	≤ 0.1 kV
	± 1 % of max kV	± 1 % of max kV	± 1 % of output value ± 0.2 kV	± 1 % of max kV	± 1 % of max kV
	± 0.01 % of max kV	± 0.01 % of max kV	± 0.01 % of maximum kV-value	± 0.01 % of max kV	± 0.01 % of max kV
	± 0.1 % of max kV	± 0.1 % of max kV	± 0.01 % of max kV	± 0.1 % of max kV	± 0.1 % of max kV
	± 40 ppm/°C	± 40 ppm/°C	80 ppm / °C based on ouput value	± 40 ppm/°C	± 40 ppm/°C
	10 V/mA (min 40V)	10 V/mA (min 40V)	10V/mA, (min 40 V)	5 V/mA (min 20V)	10 V/mA (min 40V)
	0–15 mA	0–15 mA	0-10 mA	0 - 5 mA	0 - 5 mA
	≤ 0.01 mA	≤ 0.01 mA	In 0.01 mA steps from 0.5mA to maximum value	≤ 0.01 mA	≤ 0.01 mA
	± 0.2 % of max mA	± 0.2 % of max mA	± 0.2 % of output value ± 0.01 mA	± 0.2 % of max mA	± 0.2 % of max mA
	± 0.002 mA	± 0.002 mA	± 0.002 mA	± 0.002 mA	± 0.002 mA
	± 0.1 % of set mA	± 0.1 % of set mA	± 0.1 % of set mA	± 0.1 % of set mA	± 0.1 % of set mA
	± 50 ppm/°C	± 50 ppm/°C	± 50 ppm/°C	± 50 ppm/°C	± 50 ppm/°C
	4500 W	1500 W	4500 W	500 W	1000 W
	< 300 ms	< 2.0 s	< 300 ms	< 300 ms	< 300 ms
	R28	R28	R30	R28	R28
	Ethernet RS-232	Ethernet RS-232	RS-232	Ethernet	Ethernet
	220 – 240 VAC ±10%	220 – 240 VAC ±10%	220 – 240 VAC ±10%	220 – 240 VAC ±10%	220 – 240 VAC ±10%
	Auxiliary: 2A / Mains: 16 A	Auxiliary: 2A / Mains: 16 A	Auxiliary: 2A / Mains: 16 A	Auxiliary: 2A / Mains: 16 A	Auxiliary: 2A / Mains: 16 A
	500 x 970 x 660 mm	500 x 970 x 660 mm	557 x 927 x 950 mm	578 x 579 x 709 mm	578 x 1021 x 709 mm
	249 kg	249 kg	405 kg	172 kg	292 kg
	CE, CB, NFC 74100	CE	CE	CE, MET-NRTL, NFC 74100	CE, MET-NRTL, NFC 74100

Coolers

Efficient and reliable

Comet offers a variety of cooling solutions that address the wide range of cooling and temperature control requirements for industrial applications.

Technical Data	XRC-3023-WA	XRC-3023-WW
Physical dimensions		
Length	483 mm	460 mm
Width	406 mm	296 mm
Height	481 mm	404 mm
Weight (without coolant) **Weight (with coolant)**	38.4 kg 42.5 kg	24 kg 32.5 kg
Casing color	Grey aluminum (RAL 9007)	Grey aluminum (RAL 9007)
Coolant circuit		
Coolant	Water or water-glycol mixture	Water or water-glycol mixture
Coolant capacity	4.0 l	8.5 l
Performance data		
Cooling capacity	3000 W	3000 W
Throughput	≥ 5,4 l/min at 4 bars	≥ 5,4 l/min at 4 bars
Mains voltage	230 V AC + 10% / - 15%, 50/60 Hz	230 V AC + 10% / - 15%, 50/60 Hz
Current consumption	≤ 2,6 A	≤ 1,8 A
Air flow at 50Hz (60Hz)	2200 m3/h (2600 m3/h)	n.a.
Operating noise	55 dB (50 Hz) measured at a distance of 1 m 59 dB (60 Hz) measured at a distance of 1 m	47 dB (50 Hz) measured at a distance of 1 m 51 dB (60 Hz) measured at a distance of 1 m
Protection class	IP21	IP21
Environmental specifications		
Operation above sea level	Up to 4000 meters above sea level	Up to 4000 meters above sea level
Operating temperature	-10°C up to +40°C	+5°C up to +40°C
Storage temperature	-25°C up to +70°C (with antifreeze)	-25°C up to +70°C (with antifreeze)
Rel. humidity	20% up to 90% relative humidity	20% up to 90% relative humidity
Settings		
Maximum pressure	6.7 ± 0.2 bar	6.5 ± 0.2 bar
Flow switch open #1	< 4.0 l/min	< 4.0 l/min
Flow switch close #1	> 4.8 l/min	> 4.8 l/min
Flow switch open #2	n.a.	n.a.
Flow switch close #2	n.a.	n.a.
Thermal switch open	> 50°C	> 25°C
Thermal switch close	< 45°C	< 45°C
NRTL listed		

	XRC-4523-OA	XRC-4523-OW	XRC-523-WA	Thermica 10 WA
	778 mm	621 mm	328 mm	431 mm
	380 mm	350 mm	295 mm	469 mm
	539 mm	551 m	346 mm	486 mm
	54 kg 65.5 kg	45 kg 68 kg	17 kg 18.7 kg	33.5 kg 39 kg
	Grey aluminum (RAL 9007)	Grey aluminum (RAL 9007)	Grey white (RAL 9002)	Grey
	Oil, Shell Diala S4 ZX-I	Oil, Shell Diala S4 ZX-I	Water, glysantin or water-glycol mixture	Water / ethylen-glycol (50/50 mixture)
	12.5 l	23 l	1.7 l	~5 l
	4500 W	4500 W	500 W	5000 W
	≥ 25 l/min at 3.5 bar	≥ 25 l/min at 3.5 bar	2.3 l/min at 1 bar	6.1 - 6.9 l/min at 4 bar
	230 V AC + 10% / - 15%, 50/60 Hz	230 V AC + 10% / - 15%, 50/60 Hz	230 V AC + 10% / - 15%, 50/60 Hz	230 V AC +- 10%, 50/60 Hz
	≤2.5 A	≤ 4 A	1.5 A	3.4 A
	2200 m3/h (2600 m3/h)	n.a.	pending	Auto adaptive fan speed
	65 dB measured at a distance of 1 m	60 dB measured at a distance of 1 m	< 60 dB(A)	59 dB(A) at 3000 W and 1m
	IP21	IP21	IP21	IP21
	Up to 4000 meters above sea level	Up to 4000 meters above sea level	Up to 4000 meters above sea level	Up to 2000 meters above sea level
	-10°C up to +40°C	+5°C up to +40°C	+5°C up to +40°C	+5°C up to +40°C
	-25°C up to +70°C (with antifreeze)	-25°C up to +70°C (with antifreeze)	-25°C up to +70°C (dry or with antifreeze)	-20°C up to +70°C (with antifreeze)
	20% up to 90% relative humidity	20% up to 90% relative humidity	20% up to 80% relative humidity	30% up to 95% relative humidity, non-condensing
	9.5 ± 0.2 bar	9.5 ± 0.2 bar	2.05 bar	7.5 bar
	< 20.5 l/min	< 20.5 l/min	< 0.9 l/min	n.a.
	> 22 l/min	> 22 l/min	> 1.2 l/min	n.a.
	< 14 l/min	< 14 l/min	n.a.	n.a.
	> 15.5 l/min	> 15.5 l/min	n.a.	n.a.
	> 50°C	> 50°C	> 45°C	> 50°C
	< 47°C	< 47°C	< 40°C	< 45°C
				IEC 61010-1

Cables

High voltage connections

Comet supplies spring-loaded, high-voltage cables in a variety of rated voltages and lengths. Our spring-loaded cables have mechanical springs, replacing elastomeric springs where bulging normally occurs.

HV Cable & Connectors

	75/100kV	160kV	225kV	320kV	450kV	500kV	600kV
Tube Side	C11 / R10SL	R24SL R24RASL	R24SL R24RASL	R24SL R24RASL	R28SL R28RASL	R28SL R28RASL	R30
Generator Side		R24SL R24RASL	R28SL R28RASL	R24SL R24RASL	R28SL R28RASL	R28SL R28RASL	R30
Cable length	1m | 5m | 10m | 15m | 20m | 25m | 30m						

Cooling hoses, control and power cable

	100kV	160kV	225kV	320kV	450kV	500kV	600kV
Cooling hoses length	1m | 5m | 10m | 15m | 20m | 25m | 30m						
Control Cable length	1m | 5m | 10m | 15m | 20m | 25m | 30m						
Power cable length	1m | 5m | 10m | 15m | 20m | 25m | 30m						

Standard cable length at maximum voltage rating

Cable length	XRS-100	iXRS-160	iXRS-225	iXRS-320	iXRS-450	iXRS-500	XRS-600
5m	100kV	160kV	225kV	320kV	450kV	500kV	600kV
10m	100kV	160kV	225kV	320kV	450kV		
15m	100kV	160kV	225kV	320kV	450kV		
20m	100kV	160kV	220kV	315kV	440kV		
25m	100kV	160kV	210kV	310kV	420kV		
30m	95kV	155kV	200kV	310kV	400kV		
35m	95kv	155kV	200kV	310kV	400kV		

HV cable specifications

	L3/75	U3/100	N3/160	P3/250	F3/300
Rated voltage	75 kVDC	100 kVDC	160 kVDC	250 kVDC	300 kVDC
Nominal outside diameter	16.7 mm	20 mm	29 mm +/- 1.5	36 mm +/- 1.5	51 mm
Coverage shielding braid	> 95%	> 95%	> 95%	> 80%	Appr. 90%
Conductor resistance Bare conductor at 20°C	6.6 mΩ/m	6.6 mΩ/m	6.6 mΩ/m	6.6 mΩ/m	1.0 mΩ/m
Conductor resistance Red & White conductor at 20°C	9.5 mΩ/m	9.5 mΩ/m	11.4 mΩ/m	11.4 mΩ/m	13.7 mΩ/m
Minimum bending radius (dynamic /stationary)	66.8 mm / 33.4 mm	80 mm / 40 mm	116 mm / 58 mm	144 mm / 72 mm	306 mm / 204 mm
Insulation resistance (wires to shield)	> $1x10^{12}$ Ω.m	> $5x10^{12}$ Ω.m	> $1x10^{12}$ Ω.m	> $1x10^{12}$ Ω.m	> $1x10^{12}$ Ω.m
Capacitance (wires to shield)	145 pF/m	136 pF/m	126 pF/m	107 pF/m	112 pF/m
Max. operating temperature	+70° C	+70° C	+70° C	+70° C	+90° C
Bending radius (stationary)	2 x D	2 x D	2 x D	2 x D	4 x D
Bending radius (dynamic)	4 x D	4 x D	4 x D	4 x D	6 x D

Accessories

For easy care and easy handling

Comet provides a range of accessories that make the integration and operation of the X-ray module easy and efficient – from controlling options, safety components to protection covers for harsh environment operation.

Dust cover IP21/IP54

Protection:

- Of the ingress of solid foreign objects
- From dripping water and condensation / water spray

Controller

The iVario controller enables easy access to all parameters of the iXRS, allowing for smooth operation.

iVario control software

With the iVario control software you can access all parameters of the iXRS from your computer or application software.

External safety

The external safety box minimizes additional customer design efforts when integrating the iVario generator into the customer's safety setup.

Starter kit

The one-stop-shop advantage with a module-specific pack of warning lamps, USB/Ethernet adaptors, plugs, and cables.

More accessories and spare parts

For a complete overview of our accessories and spare parts, please visit our website https://xray.comet.tech/en/download-center

Customized solutions

With You, Every Step

Your project is unique, but our goal is always the same: To create solutions that generate real value for every customer, with an individually optimized price-performance ratio. With over 70 years in X-ray technology, we know that there's only one way to deliver a commercially viable tailor-made product: at your side, using our experience to guide you through every stage of the journey.

Powerful Process

You'll be introduced to a team of experts including sales, engineering, and product management: specialists who know your market and are experienced in your application area. Together, we'll fine-tune what specific requirements and preferences your project demands. With these specifications in mind, we'll tailor the most realistic and best possible solution for your individual application.

Customized Confidence

We have the ability to act quickly and shape tailor-made solutions for a timely delivery. Thanks to our in-house manufacturing processes, we can produce X-ray inserts and tubes in various shapes, forms, or energy levels. Our know-how guarantees unique product quality on the critical components of your X-ray tube or module. And, depending on the best match for your application, you also benefit from the largest range of off-the-shelf standard X-ray tubes available in the industry.

Commercially Minded

It's not just our expertise, capabilities, and passion for state-of-the-art X-ray technology that we bring to the table. We also bring a finely-tuned commercial approach: For tailor-made products, we work closely with our partners to define a manageable plan to cover the development costs. We deliver a fully functional solution, and our efficient product-to-market approach reduces your risk of wasted time.

Discover your advantages when partnering with us

Customized Solutions

We listen and understand your specific challenges and requirements, offering customized X-ray technologies that perfectly fit your applications.

Enhanced Productivity

Our cutting-edge X-ray modules and systems are engineered to improve your inspection processes, ensuring higher productivity and efficiency.

Unmatched Quality

Through in-house vertical manufacturing, we maintain stringent quality control, delivering reliable, high-performance products that stand the test of time.

Comprehensive Support

From initial consultation to ongoing support, our dedicated team is always one step ahead, providing responsive and proactive service. This ensures seamless operation and minimal downtime, giving you the confidence to focus on your business.

Innovation and Improvement

Our commitment to research and development drives continuous innovation, keeping you ahead of industry trends and technological advancements.

Sustainable Practices

At Comet X-ray, we are committed to pioneering eco-friendly solutions. By doing so, we help you achieve your sustainability goals while maintaining operational excellence. Together, we can make a difference.

Global Reach with Local Care

Our global presence, combined with local support, ensures that we are always there when you need us, offering timely solutions and assistance. With Comet X-ray, you gain a trusted partner dedicated to illuminating your path to success with transparency, clarity, and unparalleled expertise.

1

Refining your solution

People are at the heart of our process. That's why we set up the right team for your project, who will follow you throughout the process. Based on in-depth dialog and sparring, we refine a solution together. We also demonstrate precisely how Comet adds value to your solution.

Our experience and knowledge mean we can assess what solutions are possible from a technological point of view – and how your vision can become a viable reality. We'll share reference stories and white papers to show how we have solved similar problems for similar applications.

Next, we evaluate the project type and scope to determine if it is standard product-based or if we should initiate a research project together. Finally, we set up milestones for our journey.

2

From concept to prototype

Comet's manufacturing structure means we have an industry-wide, unique ability to create customized products. It's at this stage that we define which approach we will use for the solution, whether we need to customize existing modules or create a new solution.

With more complex projects, we have the tenacity and determination to work through development cycles. We'll work closely with you to ensure that you can build your product and deliver your system on time.

Our plant in Switzerland can react quickly and customize prototypes. Each customized solution is designed precisely to address your specific needs, so you avoid paying for what you don't need. Specialty knowledge, consultation, and years of experience are simply part of the package.

3

Validating your custom solution

Our experienced salespeople have a sound understanding of your market, allowing us to align expectations early on in the process.

Based on rigorous mathematical models, a digital twin, we simulate the physical possibilities of any given task. This is more economical and faster than building a physical prototype. This approach prevents us from expending valuable resources on designs that are not technically viable.

At this crucial point, we decide whether another design iteration is needed to optimize the prototype design, or we proceed with building the physical prototypes.

Because we manufacture everything in-house, we can react quickly. Our straightforward troubleshooting approach gives fast problem resolution with an iterative approach.

4

Delivering real value

Comet is a one-stop shop, which gives you significant logistical advantages: With one single company to provide everything you need, from design to development, rapid prototyping, and production of X-ray tubes and sources, you spend less time getting your products to market.

Because we produce all components at our manufacturing facilities, we can guarantee the consistent quality of our products – and you always get exactly what you expect. With shorter lead times and the ability to quickly reprioritize, we can steer our production processes to encompass rush jobs for time-sensitive projects.

For larger production runs, our ability to create uniformity and reproducible products is second to none.

We are also with you when you have commissioned your system: With comprehensive service and support and quick and easy replacement of repair parts, you get fast problem resolutions and less downtime. We're a call away.

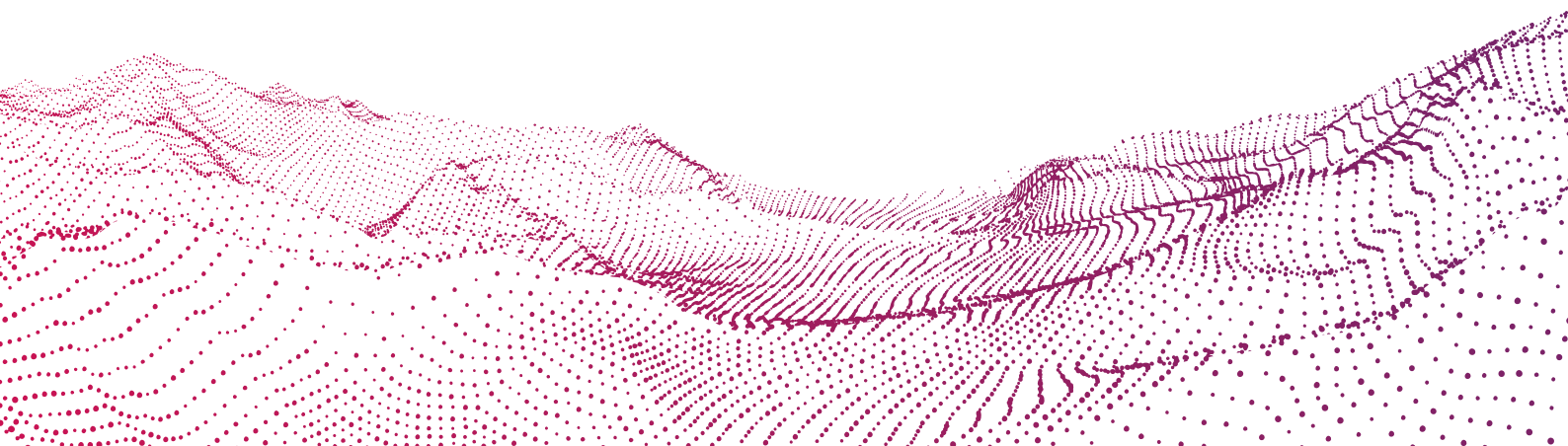
Enlightenment through technology

Customers trust us to challenge the limits of what can be revealed. By pioneering intelligent X-ray technologies, we provide safer and more economical, ground-breaking solutions enabling our customers to navigate their own voyage of discovery.

Accepting this challenge demands extraordinary commitment. We invest talent and resources in creating brighter ways of exposing hidden worlds through the application of energised light. Light is at the core of everything we do, illuminating the path ahead. And with light comes revelation.

The transparency and clarity of the data we reveal, empowers our customers to make enlightened business decisions. These decisions have an impact on our mutual security and efficiency, accelerating our common journey to a sustainable planet.

Because when we see things clearly, the right way forward is obvious.



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