Protecting Your Brand

POWERx™ High-Performance X-Ray Inspection Systems

POWERx

High-Performance X-Ray

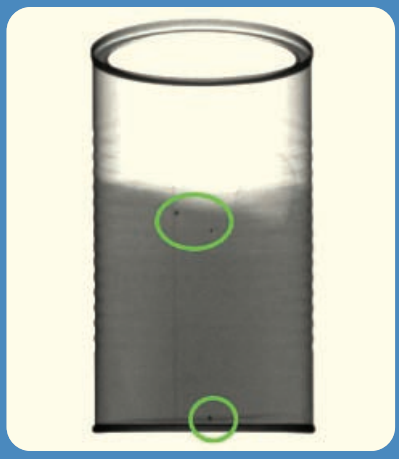
Stringent food and beverage safety standards are placing escalating demands on producers for greater levels of contaminant detection and inspection capability. In the past, basic metal detectors met the need. Now, the POWERx X-ray systems far surpass the capability and sensitivity of metal detectors.

Thermo Scientific POWERx systems are designed to enable the highest level of quality assurance. They feature state-of-the-art X-ray design and image analysis software that optimizes sensitivity and probability of detection.

A wide range of models for upright and horizontal package orientations are available providing application flexibility from a single vendor with years of X-ray experience.

POWERx is rugged, reliable, and hygienic—designed to meet or exceed adverse environmental and cleaning requirements. Modular internal components and software have undergone rigorous testing to insure reliability. The system can be augmented with optional software modules for contaminant simulation, pharmaceutical regulation compliance and mass measurement.

POWERx products are backed by Thermo Fisher Scientific's global service organization. Comprehensive service capabilities include a standard remote access feature allowing certified Thermo Fisher technicians to connect to your POWERx and optimize performance at any time.



Advanced Single-Beam Inspection for Upright Packages or Containers

The Thermo Scientific POWERx S single beam systems offer industry-leading detection capability for metal cans, plastic bottles or other upright packages such as boxes or pouches. In these applications the package can be scanned easily by one X-ray beam enabling complete foreign body detection.

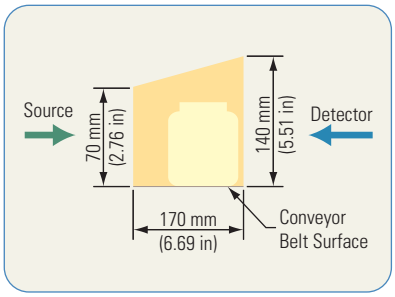
POWERx S models view upright containers from one angle, reliably finding contaminants anywhere inside the package

Model S140 Short Single Vertical-Beam System

Suitable for inspection of short, upright containers.

Designed for high performance, yet economical inspection of small cans, boxes and pouches standing upright during production. Utilizes the same feature-rich image analysis software as all POWERx systems. Compact system size and integration with an existing conveyor makes installation fast and easy. Pharmaceutical version available.

X-Ray Power ***S140: 90 kV and 10 mA***



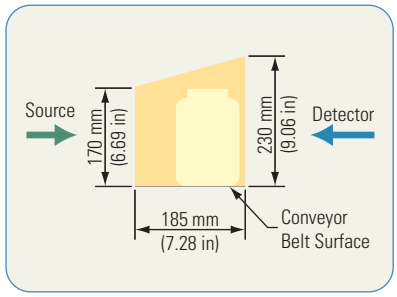
POWERx S140 Inspection Beam Geometry (side view)

Model S230 Tall Single Vertical-Beam System

Suitable for inspection of tall, upright containers.

The same powerful features as the POWERx S140, featuring a larger inspection window and more power for heavy, dense packages (lower power LP version available).

X-Ray Power ***S230: 90 kV and 20 mA***



POWERx S230 Inspection Beam Geometry (side view)

Dual-Beam Inspection for 100% Detection Probability in Glass Containers

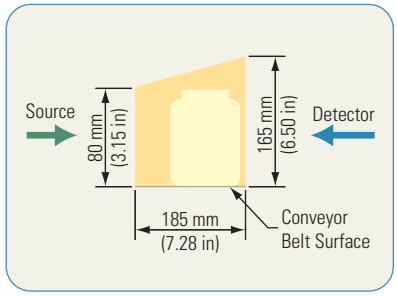
Detecting glass contaminants in glass containers with an X-ray system can be challenging. The Thermo Scientific POWERx D models utilize a patented approach with two X-ray beams that scan each container from a different angle eliminating blind spots found in other systems. The dual-beam architecture will also reliably detect hard to find glass slivers.

POWERx D models view glass containers from two angles finding contaminants in one view which are not visible in the other

Model D165 Short Dual Vertical-Beam System

Suitable for inspection of short, upright glass containers.
Patented dual-detection system design detects glass in glass bottles and jars. The probability of detection of contaminants in the bottom and side of containers is 100%. With the dual-beam system it's also possible to detect thin, flat glass fragments or slivers. The D165 utilizes the same feature-rich image analysis software as all POWERx systems. Pharmaceutical version available.

X-Ray Power ***D165: 2 x 90 kV and 2 x 10 mA***

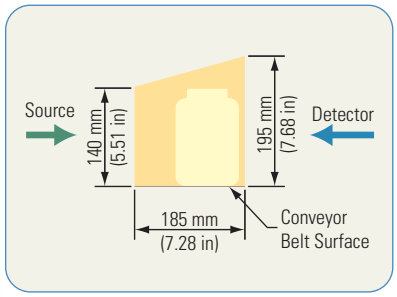


POWERx D165 Inspection Beam Geometry (side view)

Model D195 Tall Dual Vertical-Beam System

Suitable for inspection of tall, upright glass containers.
The same powerful features as the POWERx D165, only with a larger inspection window and sufficient power for heavy, dense packages (lower power LP version available).

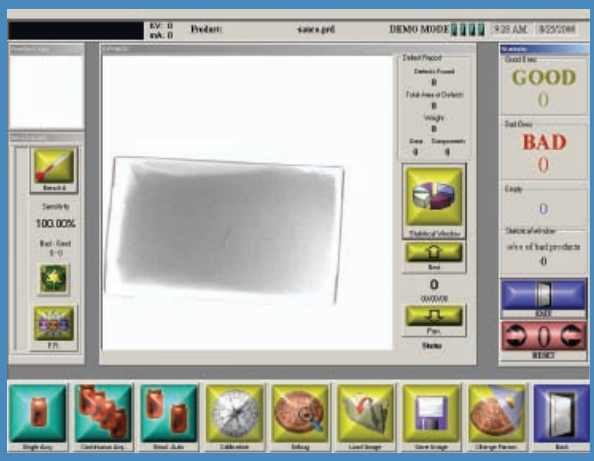
X-Ray Power ***D195: 2 x 90 kV and 2 x 20 mA***
D195LP: 2 x 90 kV and 2 x 10 mA



POWERx D195 Inspection Beam Geometry (side view)

The Power is in the Software

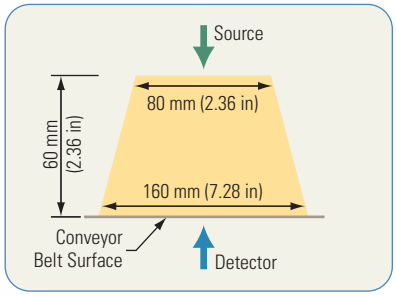
The Thermo Scientific POWERx software was designed with the user in mind. Its color-coded button interface makes it very intuitive and quick to learn. All POWERx models share many of the same system functions as well as a complete set of image processing and analysis tools. Operating and maintaining multiple systems across different production line types in a single factory is a snap.



Model C200 Compact Conveyor System

Suitable for inspection of small, flat containers. Designed for small footprint and cost effective inspection of small boxes, trays and bags handled on flatbed conveyors. Utilizes the same feature-rich image analysis software as all POWERx systems. Features a built-in rejecter. Pharmaceutical version available.

X-Ray Power C200: 95 kV and 1.5 mA

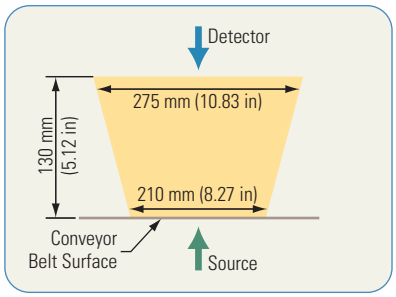


POWERx C200 Inspection Beam Geometry (side view)

Model C300 Mid-Size Conveyor System

Suitable for inspection of moderate-sized packages. Similar to the C200 only for larger packages. Front access door provides quick entry to the X-ray inspection tunnel for cleaning and service. Pharmaceutical version available.

X-Ray Power C300: 70 kV and 3.0 mA



POWERx C300 Inspection Beam Geometry (side view)

Advanced Capabilities for Pharmaceutical Applications

FDA 21 CFR Part 11 Capability
The Thermo Scientific POWERx Rx models enable the user to comply with the requirements of 21 CFR 11 regarding security, storage and retrieval of electronic records for tracking and traceability. User access to the system is strictly controlled at multiple levels and meets the requirements for electronic signatures. Lot and Action databases are maintained for audit trail records and events tracking.

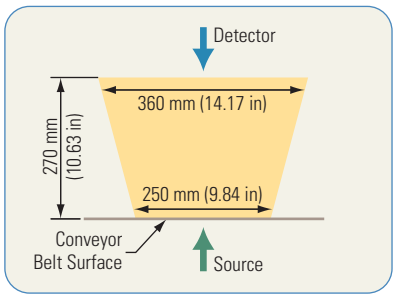
IQ/OQ/PQQ Validation Packages
Installation, Operations and Production Qualification documentation and support detailing the POWERx system specifications and text methods to support validation and cGMP compliance.

Consulting Services
Consulting by Thermo Fisher Scientific for guidance as to the safe and effective implementation of X-ray inspection systems for pharmaceutical production applications.

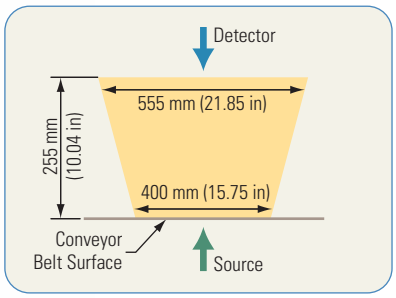
Models C400 and C600 Full-Size Standard Conveyor Systems

Suitable for inspection of most typical sized packages.
Available in two aperture sizes with a high power X-ray source for large, dense products (lower power C400 LP version available). Unique roll-out conveyor design for easy cleaning and maintenance. Capable of bulk product inspection in up to eight lanes.

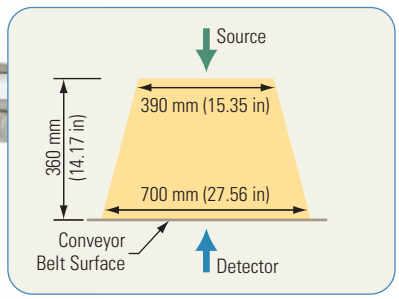
X-Ray Power ***C600: 90 kV and 10 mA***
C400: 90 kV and 10 mA
C400 LP: 90 kV and 5 mA



POWERx C400 Inspection Beam Geometry (side view)



POWERx C600 Inspection Beam Geometry (side view)



POWERx C800 Inspection Beam Geometry (side view)

Model C800 Large Conveyor System

Suitable for inspection of large packages or cases.
Similar to the POWERx C400/C600 models, only designed with the largest possible aperture.

X-Ray Power ***C800: 90 kV and 10 mA***

Available Options

Software Options

- Virtual Contaminant Simulation: Assists in optimizing the probability of detection by simulating contaminant detection in stored images
- Auto Set-Up: Automatically determines the ideal parametric set-up based on statistics captured during production set-up
- Checkweighing Feature (C models only): Mass measurement by correlation of X-ray density to weight*

**not compliant with the international R51 standard*

Hardware Options

- Customized radiation shielding and conveyors (S and D models)
- Product alignment rails (C models)
- Reject devices and bins, audible alarms and beacons
- Metal and glass test spheres
- UL or CSA safety certification
- Radiation survey meter
- Spare parts kit

Specifications

POWERx S and D Models

Application Specifications				
Inspectable Products	Packaged products including glass jars, bottles, cans, brick packs			
Product Height and Width (refer to beam diagrams for inspection area details)	S 140:	140 mm x 165 mm (5.5 in x 6.5 in)	D 165:	165 mm x 185 mm (6.49 in x 7.28 in)
	S 230:	230 mm x 185 mm (11.0 in x 7.28 in)	D 195:	195 mm x 185 mm (7.67 in x 7.28 in)
Conveyable Product Weight	Determined by external conveyor design			
Detection Sensitivity for Metal (Fe, non-Fe and SS) and Glass	Typical sensitivities range from 1 mm to 2 mm (0.04 in to 0.08 in) diameter metal and 2 mm to 4 mm (0.08 in to 0.16 in) diameter glass depending on product density, texture and packaging. In some products 0.5 mm (0.02 in) diameter metal and 1.0 mm (0.04 in) glass can be detected.			
Detection Sensitivity for Other Contaminants (stone, bone, plastic. et.al.)	Application testing is required; Results typically range from 2 mm to 5 mm (0.08 in to 0.20 in)			
Inspection Speed	≤120 m/minute (≤394 ft/minute)			
Standard Reject Signal Rate	2500 containers per minute (cpm); Faster rates available with external hardware			
Technical Specifications				
X-Ray Beams	S 140 and S 230: Single D 165 and D195: Dual (positioned at 90 degrees, patented design)			
X-Ray Power	S 140:	≤90 kV and ≤10 mA	D 165:	2 x ≤90 kV and 2 x ≤10 mA
	S 230:	≤90 kV and ≤20 mA	D 195:	2 x ≤90 kV and 2 x ≤20 mA
	S 230 LP option:	≤90 kV and ≤10 mA	D 195 LP option:	2 x ≤90 kV and 2 x ≤10 mA
Conveyor Height	(measured from the floor to the bottom of the package being inspected)			
	S 140:	771 to 965 mm (30.4 to 38.0 in)	D 165:	916 to 1110 mm (36.0 to 43.7 in)
	S 230:	775 to 900 mm (30.4 to 35.4 in)	D 195:	835 to 905 mm (32.9 to 35.6 in)
Software Algorithms	Colorimetric thresholds, shape analysis, photometric inspection; Application specific inspection routines possible at additional cost			
Human-Machine Interface	High contrast 15-in color LCD with touch screen			
Available Languages	English, French, Italian, German, Portuguese, Spanish, Polish			
Data Export and Interfaces	File formats: .mdb, .txt, .tif, .jpg, .bmp; USB and network interfaces			
Remote Access	Standard, includes software and hardware (modem or network interface)			
Machine Weight	S 140:	600 kg (1323 lb)	D 165:	1200 kg (2646 lb)
	S 230:	1100 kg (2425 lb)	D 195:	1400 kg (3086 lb)
Construction	AISI 304 stainless steel, scotch bright finish			
Electrical Requirements (not including optional air conditioners)	230 VAC ±10%, 50/60 Hz, single phase			
	S 140:	18 A	D 165:	30 A
	S 230:	28 A; LP option: 18 A	D 195:	41 A; LP option: 39 A
Cooling	External water chiller (X-ray tube) and heat exchanger (cabinet)			
Environmental Specifications				
Operating Temperature/Humidity	+5°C to +35°C (+41°F to +95°F); 20-80% non-condensing			
Water and Dust Protection	IP 65, NEMA 4X			
Air Supply Requirement	6 bar (87 psi), required for X-ray shutters on some models			
Conformance and Certifications				
Radiation Safety	Certified to emission <0.5 µSv/h excluding input/output tunnels; FDA CFR21 part 1020.40			
Pharmaceutical (Rx models)	CFR 21 part 11 compliant; IQ/OQ/PQ validation available			
Available Options				
Hardware	Water chiller, shielding, rejecters, radiation safety meter			
Software	Auto Set-Up, Virtual Contaminant Simulation			
Service	Installation, 24/7 technical support, service contracts, extended warranties			

The Advantages of X-Ray Inspection

- *Compliance To Requirements:* Easily comply with your customer inspection mandates and/or government regulations
- *Surpasses Metal Detector Capability:* Detect more than just metal—find other dense foreign objects such as glass, stone, and some plastics
- *Surpasses Metal Detector Sensitivity:* Improve your detection sensitivity in applications where metallic packaging impacts the performance of metal detectors
- *Verification:* Verify assembly of your product (e.g., presence/absence, counting, breakage, placement) guaranteeing the highest quality level and a superior brand
- *Conformance:* Mass measurement software (optional) to maintain ideal product weight
- *Traceability:* Create and save detailed records for traceability and process improvement including information-rich images of rejected product

POWERx C Models

Application Specifications				
Inspectable Products	Packaged products including bag-in-box, metallized pouches, tray and carton products, vacuum packed products; Bulk flow products			
Product Height and Width (refer to beam diagrams for inspection area details)	C 200: C 300: C 400:	160 mm x 160 mm (6.3 in x 6.3 in) 275 mm x 130 mm (10.8 in x 5.11 in) 360 mm x 270 mm (14.2 in x 10.63 in)	C 600: C 800:	555 mm x 255 mm (21.8 in x 10.03 in) 700 mm x 360 mm (27.6 in x 14.17 in)
Conveyable Product Weight	≤100 kg (≤220 lb)			
Detection Sensitivity for Metal (Fe, non-Fe and SS) and Glass	Typical sensitivities range from 1 mm to 2 mm (0.04 in to 0.08 in) diameter metal and 2 mm to 4 mm (0.08 in to 0.16 in) diameter glass depending on product density, texture and packaging. In some products 0.5 mm (0.02 in) diameter metal and 1.0 mm (0.04 in) glass can be detected.			
Detection Sensitivity for Other Contaminants (stone, bone, plastic. et.al.)	Application testing is required; Results typically range from 2 mm to 5 mm (0.08 in to 0.20 in)			
Inspection Speed	C 200: ≤40 m/minute (≤131 ft/minute) C 300: ≤60 m/minute (≤195 ft/minute) C 400/C 600/C 800: ≤70 m/minute (≤230 ft/minute)			
Inspection and Reject Lanes	Up to 8			
Technical Specifications				
Maximum X-Ray Power	C 200: C 300:	≤95 kV, 1.5 mA 70 kV, 3 mA	C 400 (LP): C 600/C 800:	90 kV, 10 mA; LP option: 5 mA 90 kV, 10 mA
Conveyor Height	C 200: C 300:	800 mm to 950 mm (31.5 in to 37.4 in) 860 mm to 1020 mm (33.8 in to 40.2 in)	C 400: C 600/C 800:	850 mm to 1050 mm (33.5 in to 39.8 in) 850 mm to 1050 mm (33.5 in to 39.8 in)
Conveyor Belt Width	C 200: C 300: C 400:	160 mm (6.3 in) 270 mm (10.6 in) 405 mm (16.0 in)	C 600: C 800:	585 mm (23.0 in) 850 mm (33.46 in)
Conveyor Length	C 200: C 300: C 400:	1100 mm (43.3 in) ; includes reject system 1840 mm (72.4 in) 2530 mm (99.6 in); includes reject system	C 600: C 800:	2530 mm (99.6 in); includes reject system 2750 mm (108.3 in)
Software Algorithms	Colorimetric thresholds, shape analysis, photometric inspection; Application specific inspection routines possible at additional cost			
Human-Machine Interface	High contrast 15-in color LCD with touch screen			
Available Languages	English, French, Italian, German, Portuguese, Spanish			
Data Import and Export	File formats: .mdb, .txt, .tif, .jpg, .bmp; USB and network interfaces			
Remote Access	Standard, includes software and hardware (modem or network interface)			
Machine Weight	C 200: 400 kg (882 lb) C 300: 600 kg (1323 lb) C 400: 800 kg (1764 lb)		C 600: 850 kg (1874 lb) C 800: 1100 kg (2425 lb)	
Construction	AISI 304 stainless steel, bead blast finish			
Electrical Requirements	230 VAC ±10%, 50/60 Hz, single phase C 200: 10 A C 400/C 600/C 800: 18 A		C 300: 13 A	
Cooling	External water chiller (X-ray tube) and heat exchanger (cabinet)			
Environmental Specifications				
Operating Temperature/Humidity	+5°C to +35°C (+41°F to +95°F); 0-80% non-condensing			
Water and Dust Protection Level	IP 65, NEMA 4X			
Air Supply	6 bar (87 psi) for rejecter only			
Conformance and Certifications				
Radiation Safety	Certified to emission <0.5 µSv/h excluding input/output tunnels; FDA CFR21 part 1020.40			
Pharmaceutical (Rx models)	CFR 21 part 11 compliant; IQ/OQ/PQ validation available.			
Available Options				
Hardware	Water chiller, shielding, rejecters, radiation safety meter			
Software	Mass Measurement, Auto Set-Up, Virtual Contaminant Simulation			
Service	Installation, 24/7 technical support, service contracts, extended warranties			

Services and Benefits

Thermo Scientific Priority One™ Service

We provide a complete service and support offering to insure that our products perform according to your requirements. From our comprehensive warranty, to customer service, to spare parts and service contracts we are committed to providing you the highest level of service for your investment. Whenever you need service or support, factory trained and certified technicians are ready to keep your production up and running. For further information on our service and support offerings, visit our website or give us a call toll-free at +1 (800) 227-8891.

A Comprehensive Product Offering for Product Inspection

We offer a complete line of Thermo Scientific packaging inspection equipment including checkweighers, metal detectors and X-ray systems. Our products protect your brand and insure safety and quality for your customers. Visit our website or give us a call—we are the experts in Product Inspection.

- Checkweighers, visit www.thermo.com/checkweighers
- X-Ray Inspection Systems
  - EZx, visit www.thermo.com/ezx
  - PROx, visit www.thermo.com/prox
  - POWERx, visit www.thermo.com/powerx
  - InScan, visit www.thermo.com/inscan
- APEX Metal Detectors, visit www.thermo.com/apex
- Moisture and Constituent Analysis
  - Spectra-Quad, visit www.thermo.com/spectraquad
  - GMS, visit www.thermo.com/gms

Financial Services

Thermo Fisher is able to offer attractive leasing terms on its products. Leasing can be a good way to expand or upgrade your production line without straining your cash flow. Any Thermo Scientific product can be quoted as a purchase or lease.

Product Inspection Facilities

Thermo Fisher has several facilities located around the world which will inspect products for metal or solid contaminants using our Thermo Scientific X-ray systems. If you have a quantity of material or products which you suspect may be contaminated, simply give us a call to discuss the situation. Once you ship the product to one of our facilities we will inspect and segregate it, saving you time, money and rework. Call us toll-free at +1 (800) 227-8891

Argentina
+54 (0) 11 4334 3827
+54 (0) 11 4334 9159 fax

Australia
+61 (0) 8 8150-5300
+61 (0) 8 8234-5882 fax

Canada
+1 (905) 888-8808
+1 (905) 888-8828 fax

Chile
+56 (0) 2-335-3388
+56 (0) 2-335-1590 fax

China
+86 (0) 21 6865 4588
+86 (0) 21 6445 1101 fax

France
+33 (1) 60 92 48 00
+33 (1) 60 92 49 00 fax

Germany
+49 (2) 08-824930
+49 (2) 08-852310 fax

India
+91 (20) 6626 7000
+91 (20) 6626 7001 fax

Italy
+39 05 217886-1
+39 05 212729-14 fax

Malaysia
+60 (0) 3 2300 1626
+60 (0) 3 2300 1636 fax

Mexico
+52 55-5638-0237
+52 55-5639-2227 fax

Netherlands
+31 (0) 76-579-5555
+31 (0) 76-571-4958 fax

Poland
+48 (0) 22 651 75 30
+48 (0) 22 651 75 35 fax

South Africa
+27 (0) 11-609-3101
+27 (0) 11-609-3120 fax

Spain
+34 91-484-5954
+34 91-661-5572 fax

United Kingdom
+44 (0) 1788-820300
+44 (0) 1788-820301 fax

United States
+1 (800) 227-8891
+1 (763) 783-2525 fax

www.thermo.com

Thermo SCIENTIFIC