

XT H 225: STDS-600-200

Datasheet



METRIS

Reliable and Innovative Metrology Solutions



PRODUCT DESCRIPTION

The XT H 225 is a Computed Tomography (CT) system ideally suited to a wide range of materials and sample sizes. The system operates between 20 and 225 kV providing a flexible tool for quality laboratories, production facilities and research departments.

The system is fully interlocked and radiation shielded to better than 1 μ Sv/hr on all external surfaces. This makes the XT H 225 one of the safest systems on the market whilst being fully compliant with international safety regulations.

KEY FEATURES AND BENEFITS

HIGH SPEED CT

- The XT H system range has been optimized for high speed Computed Tomography and real-time X-ray visualization.
- The FAST CT™ acquisition and reconstruction software reduces sample scanning times and provides maximum throughput from the system.

HIGH QUALITY

- Full user control over imaging chain from source to image processing and reconstruction.
- Metris X-Tek high contrast, high power micro-focus source provides X-ray penetration and resolution at 225kV.
- State of the art digital imaging system options for a wide range of applications

SAFETY BY DESIGN

- Full shielded enclosure with continuous fail-to-safe monitoring and Interlocks
- Lead-lined cabinet fully complies to DIN 54113 radiation safety standards and CE regulation

LOW THROUGH LIFE COST

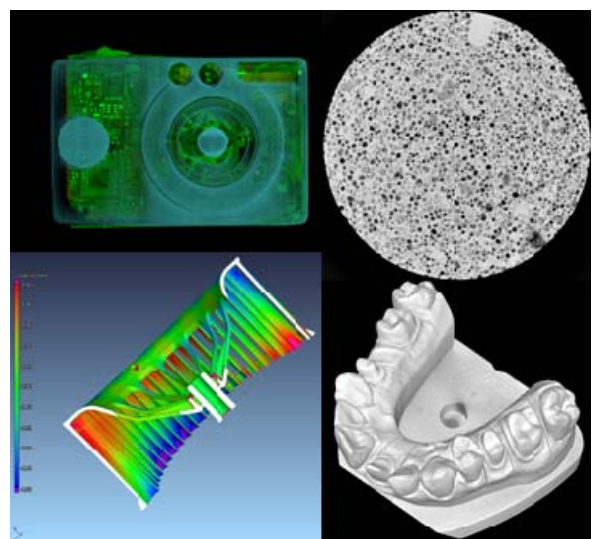
- Long life open X-ray tube – with low cost consumables.
- Planned maintenance schedule throughout system life.
- Compact design – system fits through standard double-doors enabling re-location to suit your business.

EASY TO USE

- Short learning curve – operational within 3 days
- CT wizard™ guides an operator easily through the data acquisition
- Improved failure analysis capability through 5 axis component manipulator.
- Local language support
- Operator and supervisor control modes

APPLICATIONS

- Market leading 3D CT suitable for a large range of applications from measurement to prospecting for Oil.



TECHNICAL SPECIFICATIONS

X-ray cabinet

The cabinet is shielded to better than 1.0 $\mu\text{Sv}/\text{hour}$, fully compliant with international radiation safety regulations. The cabinet features dual, independent safety interlocks on the door as well as visual warnings of X-ray status.

The system is has a sliding access door for sample loading with a large lead glass viewing window and optional fully shielded user access port for experiment/equipment services.

225 kV micro-focus X-ray source

The X-ray set comprises:

- Long life 225kV X-ray tube supplied with Ultra-focus target with Tungsten target and simple filter holder
- High voltage generator and control system
- Low maintenance vacuum system
- Essential filter kit

X-ray set

Operating voltage	30 to 225 kV
Beam current	0 to 1mA
Power rating	225 Watt High Power
Focal spot size ¹	3 μm High Power
Spot position	6 mm behind output window
Beam angle	25° included angle, conical beam
Ultra-focus target	Replaceable tungsten target can be indexed under vacuum
Filament type	Tungsten 'hairpin' – 10 supplied free within the spares kit
Target indexing	Manual rotation of target in increments – 1,000 spot positions
X-ray target	Optional 4-metal target for K-edge emission
X-ray filtration	Be output window
Tube construction	Machined from high grade aluminum and Stainless Steel
Vacuum system	Turbo-molecular pump backed by 2 stage rotary vane pump
Cooling system	External sealed water cooling system
Pumping time	Approx. 10 minutes from atmospheric pressure

¹ Measured at 80kV 80 μA

X-ray controller

Programmable X-ray controller and software provides the following functions:

- X-ray on, X-ray off and pre-warning.
- User adjustable incremental kV steps from 30 – 225kV in 1kV or 5kV steps.
- User adjustable incremental μA steps from 0 – 1000 μA in 1 μA or 5 μA steps.
- Auto-focus, auto-defocus and focus trim
- Filament life timer
- Auto conditioning
- Full diagnostics display
- Individual interlock state display

CT Sample Manipulator

The XT H 225 is supplied with a 5-axis CT and failure analysis manipulator.

Max load	15 kg
Travel	(x) 200mm x (y) 300mm x (z) 610mm
Tilt axis	+/- 30 degrees
Rotate axis	n*360 degrees
Source to detector distance	1,000 mm
Geometric magnification	> 150 times
Resolution turn table	Continuous rotation with 1/1000 th degree resolution

A set of general CT sample holders is supplied for ease of sample mounting.

Imaging systems

There are four imaging systems that can be configured in this system. The highest performance all-round detector is fitted as standard.

- Standard - Real time detector (14bit) with 1900 x 1500 pixels with an active area of 467cm²
- Optional - High dynamic range (16bit) sensor 1000 x 1000 with active area of 400cm² : OPTN600-015
- Optional - Scanned high dynamic range (16bit) sensor providing 2000 x 1000 with active area of 800cm² : OPTN610-606

Please see accompanying detector specification for more information on optimization for your application.

Image processing

Inspect-X image processor and control software includes the following features:

- Live, average, save and load images
- Inspect-X CT wizard™
- Tone curve adjustment and memory
- Programming interface

A manual detailing all features is available upon request.

System Controller

The system is controlled by a high performance PC Workstation operating under Windows XP Professional operating system. The X-ray image and controls are presented to the user on an ergonomic twin 19" TFT monitor display.

Standard Software:

- Inspect-X – Metris X-Tek control software for the system
- X-Tek CT Pro license (32 bit) – an advanced reconstruction for reconstructing the CT data sets
- X-Tek FastCT reconstruction engine (32 bit)
- VG Studio – CT volume rendering software

Environmental specs

Power supply	Single power socket rated at 100-220V, 50/60Hz, 20A, single phase
Temperature control	System supplied with a closed loop chiller to control the cabinet source temperature to eliminate thermal drift from measurements

Systems dimensions are indicated on the drawing at the end of this data sheet.

SYSTEM OPTIONS

1. High Dynamic Range Sensor *OPTN-600-015*

The high dynamic range sensor is the best dedicated CT sensor with 1000 x 1000 digitized to 16 bits sensor. The high dynamic range sensor gives improved contrast sensitivity in 3D. It can also run at near real-time for radiographic inspection.

2. Panel Scan for High Dynamic Sensor *OPTN610-606*

With an additional detector scanning axis provides twice the resolution for CT by scanning the high dynamic range sensor to produce 2000 x 1000 images digitized to 16 bits. When configured with Panel Scan the system can operate in standard (fixed position) or scanning modes.

3. Optional Multi metal target *OPTN-600-020*

The standard Tungsten target gives an X-ray energy spectrum which contains the bremsstrahlung spectrum and the specific emission lines of Tungsten. For some materials, in particular composites, it is often better to have the specific emission at lower energies, this can be achieved by using different materials as a target. The multi metal target can be supplied with a choice of metals from Cu, Au, Ag and Mo.

4. Optional advanced filter kit *STDC-610-020*

The advanced filter kit helps produce the best quality CT metrology conditions using the Multi-Metal target.

5. Sample holders

A selection of additional sample holder is available to increase the flexibility of the XT H 225. These include:-

- Self centering chuck *OPTN-610-250*
- Self centering Vice *OPTN-610-251*

CT OPTIONS

6. Optional Advanced CT upgrade *OPTN-610-160*

This package upgrades the XT H 225 system to one of the fastest CT systems on the market.

The Advanced CT option includes a high performance 64-bit reconstruction workstation with following minimum specifications:

- 16GB RAM – for large volume visualization
- 1.2Tb storage – for data storage and retrieval
- 24" LCD monitor – for crisp image display
- Microsoft keyboard and mouse – for simple control

Full specifications of the Advanced CT package are available on request.

7. Additional Workstations *OPTN-610-254*

In order to maximize the throughput from the system it is beneficial to have additional advanced CT processing stations. In order to facilitate this Metris offers an advanced 64-bit PC specifically configured to optimize CT volume reconstruction and analysis. *Requires Option 1.*

Minimum PC specifications:

- 64-bit PC with Windows XP with 30" TFT monitor
- 16 GB RAM

8. Workstation upgrade , 30" monitor OPTN-610-010

This replaces the 24" monitor on the reconstruction PC with a high performance 30" TFT monitor.

9. Workstation upgrade 3D monitor OPTN-610-255

This is an additional 22" 3D monitor with glasses for use with any workstation running VGStudioMax 2.0.

10. Workstation upgrade RAM Options

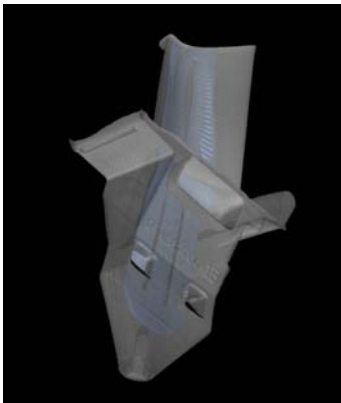
This is additional RAM for use with any workstation running VGStudioMax 2.0 to enable larger volume rendering. Options include:-

- 32Gb Ram : OPTN-610-252

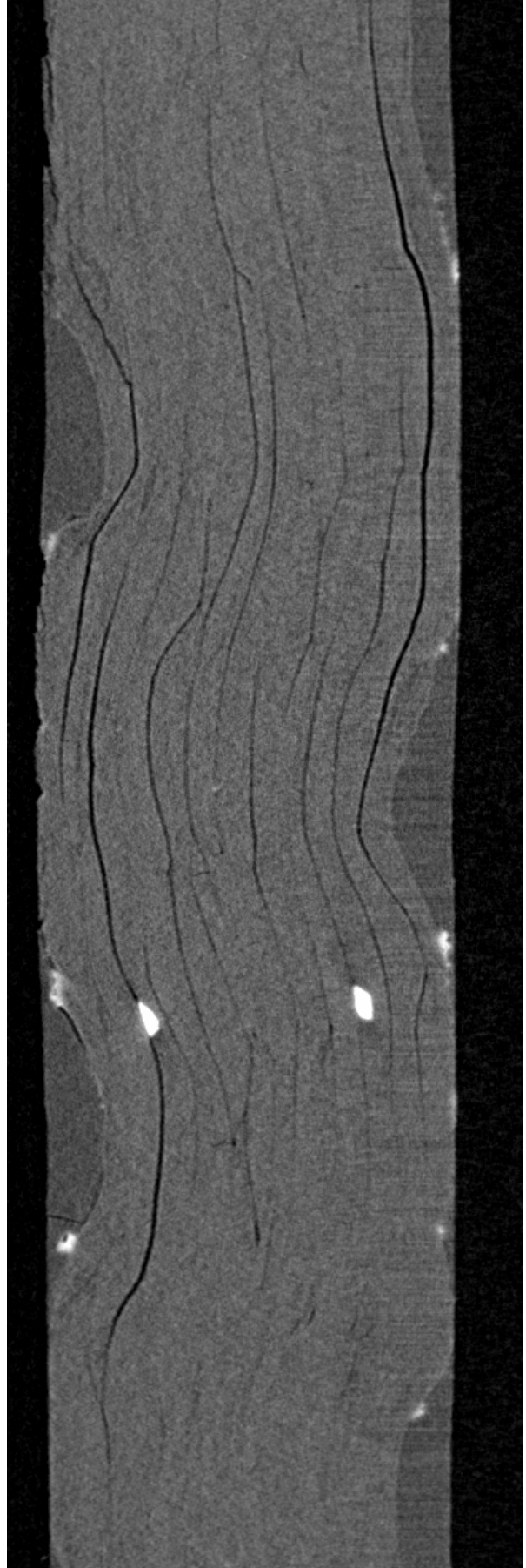
11. Volume Analysis software - upgrades

We recommend upgrading VGStudio to Volume graphics VG Studiomax 2.0 for use on additional workstations.. There is a choice of

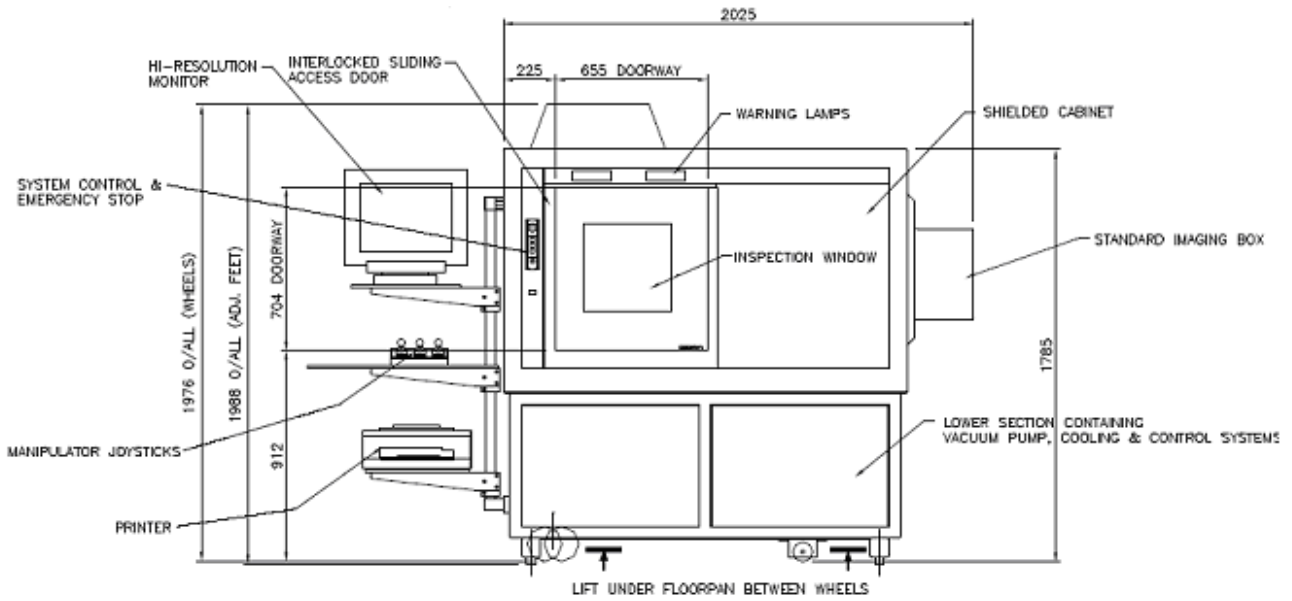
- VGStudioMax 2.0 64bit 1 workstation license ASOF-611-050
- VGStudioMax 2.0 64bit 1 multi-workstation license ASOF-612-050 & 612-051
- Advanced Analysis modules
 - Defect Analysis module ASOF- 611-052
 - Wall thickness module ASOF- 611-053
 - Co-ordinate measurement module ASOF- 611-051
 - Cad comparison (Actual / nominal) ASOF- 611-054 (requires Co-ordinate measurement module)
 - Bundle module discounts for 2, 3 & 4 modules available; ASBD-611-050,051 & 052.



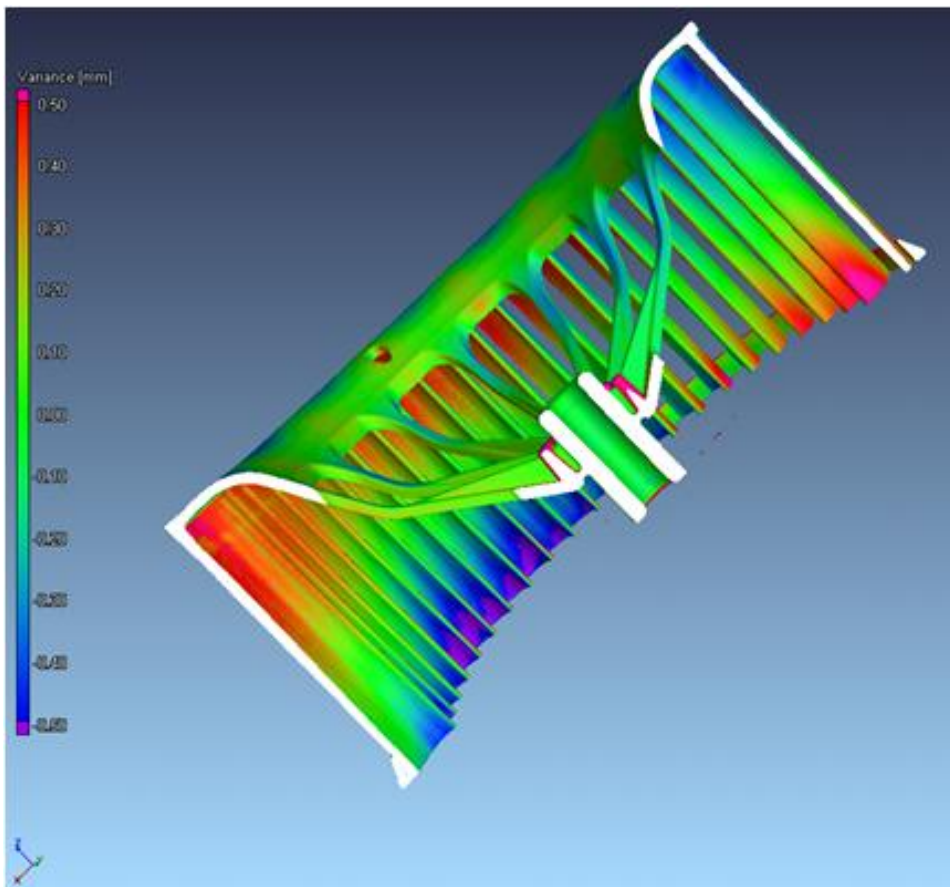
XT H 225 Lost Wax inspection



XT H 225 Carbon Composite inspection



METRIS XT H 225 – CT & MEASUREMENT



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Metris HQ
Geldenaaksebaan 329
B-3001 Leuven
Belgium
tel. +32 16 74 01 01
fax +32 16 74 01 03
info@metris.com

Metris USA
tel. +1 810 2204360
sales_us@metris.com

Metris UK Ltd.
tel. +44 1332 811349
sales_uk@metris.com

Metris Belgium
tel. +32 16 74 01 01
sales_belgium@metris.com

Metris Germany
tel. +49 6023 91733-0
sales_germany@metris.com

Metris France
tel. +33 4 74 76 64 76
sales_france@metris.com

Metris Italia
tel. +39 011 9635511
sales_italy@metris.com

Metris China
tel. +86 21 6448 1061
sales_asia@metris.com

Metris Korea
tel. +82 31 399 5951
sales_korea@metris.com

Metris Japan
tel. +81 52 709 3877
sales_japan@metris.com

Metris India
tel. +91 11 2275 32 44
sales_india@metris.com

More offices and resellers at: www.metris.com