Product Data

SmART+

Innovate with larger specimens in our largest chamber size

Mimicking clinical Radiotherapy imaging and treatments, the SmART+ brings a highly sophisticated expandable platform to the field of Preclinical Research.

The fully shielded cabinet design allows for installations in almost any laboratory space, and features high precision electromechanics and advanced imaging modalities, including fully integrated Bioluminescence imaging, for unprecedented targeting accuracy.

SmART+ uses the superior Pilot software, developed by the esteemed scientific team at Princess Margaret Cancer Centre, to offer a full suite of tools for acquiring images, guiding the targeting system, delivering therapy, and system calibrations.

Upgrade your system with SmART Advanced Treatment Planning (ATP) for state-of-the-art Monte Carlo calculation algorithms to rapidly devise treatment plans with gold standard accuracy for static beams, arcs, and even non-coplanar treatments across single and multiple isocenters. Image SmART, Plan SmART, Treat SmART.

Key Features

Designed to image, target and irradiate small animals up to rabbits

Cone-Beam CT and µCT automated image guidance

Fully integrated Bioluminescence imaging module

Pilot software suite, including Co-Pilot for multi-modal image registration

SmART Advanced Treatment Planning (ATP) system

PRECISION
X-RAY IRRADIATION

SmART+

Cabinet Features

No additional shielding required

Flexible design - for installation in almost any laboratory space

Rotational gantry: 360°, 0-3 RPM, 6 arc minute repeatability

X-Y-Z Animal Stage: 150mm travel in X, Y and Z, 150 mm/sec velocity (adjustable), +/- 2 micron repeatability

Cabinet port to introduce anaesthesia and cables to the chamber

Complies with US and International regulations for Cabinet X-ray systems (US FDA regulation 21 CFR 1020.40)

Cabinet Specification

Overall dimensions:
W 66"(170cm) x D 41"(103cm) x H 76.5"(196cm)

Weight: 5060lbs (2300kg)

Power: 1N PE 110/208VAC +/ 10%, 40A, 50/60Hz
or 3N PE 230/400VAC +/0 10%, 15A per phase, 50/60Hz

Irradiation Performance

Irradiation Energy: 10 - 225KVp, 3000 W (4500 W optional)

Dose Rate: 1 - >600 cGy/min
(depending on x-ray settings, beam filtration and collimation)

Beam Filtration: User interchangeable slides
– 2 HVL's provided (2.0mm Al, 0.3mm Cu), others optional

Collimation: Conformal Collimators available in sizes from 1mm to 100mm round, rectangular, and custom shapes

Beam Orientation: Static or Dynamic 0 – 360 degrees

Isocentre Distance: 30cm typical

Image Guided Targeting Precision: up to 0.05mm

CT Imaging Performance

Volumetric Imaging Resolution: 0.1mm (nominal)

Volumetric Field of View: 10cm x 10cm without moving couch

Acquisition Time: Customizable

Imaging Dose: 0.1 cGy to 10 cGy (scan-dependent)

Optical Imaging Performance

Camera Resolution: 0.2mm

Filters Available: 562 nm, 591 nm, 624 nm, 655 nm

CT Registration Accuracy: 0.2 mm

Optical Targeting Accuracy: <1 mm

Software Suite

Pilot® image acquisition and reconstruction, 3D alignment and targeting. Licensed by Princess Margaret Cancer Centre, Toronto

PilotCal system calibration control software

Co-Pilot registration software for Multi-Modality Image Guidance

Windows© 64 Bit OS with remote diagnostics + support capability

DICOM importable and exportable image data

Database Management Tools for easy management of images, treatments and studies by each researcher

System Components

X-ray Power Supply:
Comet iVario 225kV, 4.5kW, 100% Duty-Cycle

X-ray Tube: Comet (600/3000W) Optional (600/4500W)
Focal spot sizes are correct

X-ray Cooling System:
Water-to-Water or Water-to-Air options included with system.
Up to 4000W cooling capacity

Optical Camera: EMCCD Sensor
9.7cm FOV at imaging isocenter
0.2mm resolution
Filter Wheel for support of multiple wavelength acquisition
Fully integrated inside cabinet - easy registration with CT imaging

Imaging Panel: XRD 0820 AN3-ES
Active pixels: (1024 x 1024)
Pitch: 200µm
Total Area: 20cm x 20cm
Capture Speed: 15 fps (30 fps with 2x2 binning)

Options

Bioluminescent Imaging System

SmART ATP – Advanced Treatment Planning

Multi-Modality Image Fusion Module Co-Pilot

Automated Adjustable Collimator and Fixed Collimators

Animal Rotation Stage for Non-Coplanar Irradiation

Isofluorance-based Anesthesia System

Environmental Chamber Systems

Internal and External Dose Verification

Specimen Turntable

Up to 5 Year Extended Warranty

PRECISION
X-RAY IRRADIATION

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