



Small animal radiation therapy with advanced precision

SmART has the exact same advanced features as our larger model, but with a more compact irradiation chamber for performing studies on smaller specimens such as mice and rats.

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 cells and small animals up to rats

Cone-Beam CT and μ CT automated image guidance

Fully integrated Bioluminescence imaging module

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

SmART Advanced Treatment Planning (ATP) system



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 60"(154cm) x D 41"(103cm) x H 76.5"(196cm)
Weight: 4290lbs (1950kg)
Power: 1N PE 110/208VAC +/- 10%, 40A, 50/60Hz or 3N PE 230/400VAC +/- 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: Perkin Elmer 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