

cardiusx•act

A NEW ERA IN MOLECULAR IMAGING



DIGIRAD®

INTRODUCING
cardiusx•act



BEYOND THE SHADOW OF A DOUBT

HIGHER CLINICAL QUALITY, FASTER IMAGING, LOWER DOSE,
GREATLY REDUCED OPERATIONAL COSTS AND A SOLID PATHWAY TO THE FUTURE.



TAKING NUCLEAR CARDIOLOGY TO NEW CLINICAL FRONTIERS

We're entering an era when nuclear medicine is being challenged on multiple fronts with increased regulations, growing competition from other modalities, concerns about radiation dose and, very likely, further declines in reimbursement. We're being asked to raise quality, improve efficiencies and reduce costs. Sound impossible. It's not.

At Digirad, we see a future where clinical outcomes are significantly improved. Where it's possible to perform cardiac SPECT-VCT studies in as little as 5 minutes employing new, less costly low dose volume CT attenuation correction techniques that are able to improve clinical confidence while substantially reducing patient dose. We see the possibility to generate new revenues by being able to image large body habitus, COPD and severely claustrophobic patients. We see the opportunity to reduce five year lifecycle costs and the costs per procedure by up to a factor of four. And perhaps most important, we see ways to get cardiac patients, in and out of your department - in less than one hour.

Sound too good to be true - it's not. These possibilities are all very real. It all starts with the revolutionary **cardius x-act**, the world's first (and only) solid state SPECT system that combines solid-state detectors; a rapid imaging detector geometry; a low dose volume CT attenuation correction approach; 3D-OSEM reconstruction; and upright imaging. That's right, 5 enabling technologies, all from Digirad - all in the X-ACT. The X-ACT meets today's challenges head-on and raises clinical performance in nuclear cardiology to, as we say, beyond a shadow of a doubt.

MOLECULAR IMAGING

THE NEW STANDARD OF

QUALITY



A FULLY INTEGRATED SPECT·VCT APPROACH THAT OFFERS SUPERB QUALITY, HIGH SPEED AND UNMATCHED CLINICAL PRECISION.

The X·ACT elevates the performance and clinical confidence of myocardial perfusion imaging studies (MPI) to a level that was unimaginable, until now. Rapid emission imaging is made possible through the use of Digirad's proprietary high count-rate Solidium® solid-state high-definition detectors (HDS); high-efficiency triple-head geometry; high sensitivity fanbeam collimators; and rapid 3D-OSEM reconstruction techniques. Rapid transmission imaging is made possible by the use of a novel mono-energetic X-ray line source. Not only is imaging fast, but the images are of consistent outstanding quality, patient to patient, day after day.

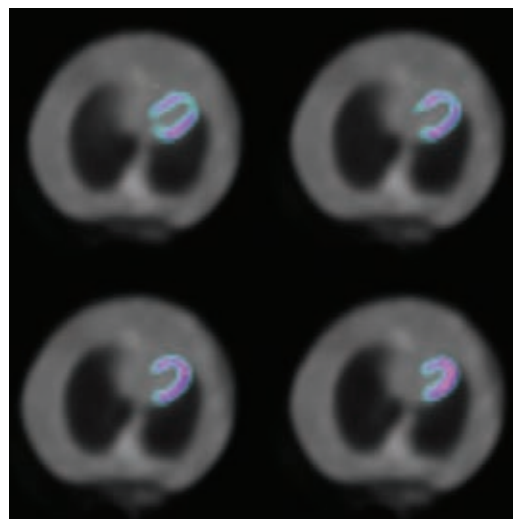
The X·ACT represents an advanced genre of fully-integrated SPECT·VCT designs where high-speed solid-state detectors have the ability to collect both the emission and the CT transmission data, eliminating the need to move the patient between the emission and transmission (E/T) data collections, providing greatly improved registration accuracy and efficiency over alternative in-line SPECT·VCT approaches. The 27 inch [69cm] wide FOV low dose volume CT attenuation correction (VCT AC) approach delivers 80 times more counts than isotopic techniques with 3.5x less noise during a short, 1 minute or less scan, that encompasses approximately 10 to 15 respiratory cycles. The results, the transmission images are free of truncation or beam hardening artifacts and the respiratory co-registration of the E/T data sets is excellent. These are key reasons why the quality of studies performed on X·ACT are so good. To top it off, the radiation dose is a low 5 microseverts, or nearly 100 to 1,000 times lower than other commercially-available CT-based AC approaches.

The open upright design of the X·ACT makes the system very patient-friendly, which is a big contrast from the deep tunnel-like supine

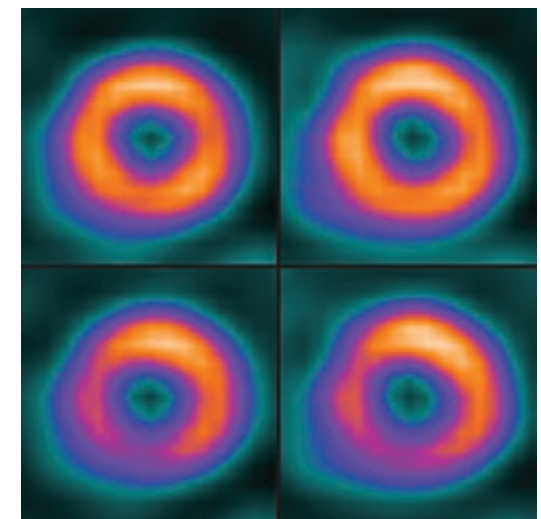
imaging designs of other SPECT·VCT systems. The open design and wide orbit radius enables you to image claustrophobic, COPD and bariatric patients up to 500 lbs. [227kg]. Since the diaphragm lowers when patients are imaged upright, you also get better separation of the heart from the liver and bowels, so artifacts from overlying activities are significantly reduced. The small size of the detectors mean a patient's arms do not have to be raised nearly as high, as with 'Anger' systems and it is possible to bring the detectors tight to the patient's chest, ensuring consistent high image quality results, for patients of any size. Patient motion is minimized by use of a saddle-like seat that provides passive resistance to sliding and the use of Digirad's fully-automated STASYS™ motion correction software - and of course, fast imaging.

X·ACT ATTENUATION CORRECTION

Co-Registered Transmission/Emission



Short Axis Slices



AC

no AC

cardiusx•act

X•ACT LOW DOSE VCT

High statistical precision with up to 1,000x less AC patient radiation dose.

27" WIDE-BEAM VCT FOV

No truncation or beam hardening artifacts with wide 27" [69cm] transverse beam and use of novel mono-energetic fluorescent X-ray line source.

FULLY-INTEGRATED SPECT•VCT

No movement of patient between emission & transmission images increases co-registration accuracy.

EASY TO OPERATE AND SITE

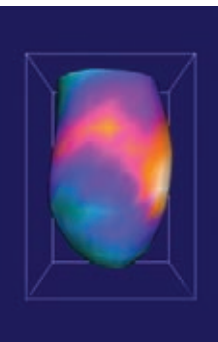
Compact, lightweight design ~1,000 lbs. [454kg]
Only 8 ft. X 8 ft. room required [2.43m X 2.43m]. No lead shielding or X-ray/CT tech required. Only 20Amp/110V electrical.



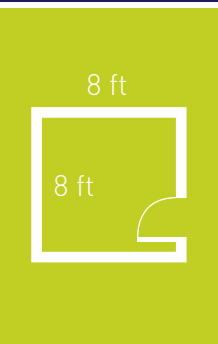
INCREASED QUALITY ▶ FASTER S



UPRIGHT, OPEN, PATIENT-FRIENDLY



NSPEED® 3D-OSEM RECONSTRUCTION



COMPACT - EASY TO SITE



MODERN SOLID-STATE HDSD™ DETECTORS

Superb clinical performance and reliability with high-definition solid-state Solidium® detectors. Enabling technology for future protocols.

RAPID IMAGING SYSTEM GEOMETRY

The solid-state triple-head design with nSPEED® 3D-OSEM reconstruction offers up to a 4-fold acquisition speed advantage.

NEW PATIENT REVENUE POTENTIAL

Ability to image COPD, large body habitus and claustrophobic patients.

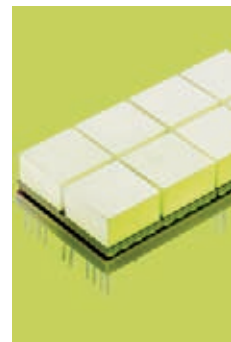
OPEN, UPRIGHT SYSTEM DESIGN

Patient-friendly, open and upright design with easy access. High 500 lbs. [227kg] weight capacity with up to 30" [76cm] cardiocentric orbit which accommodates patients from the 5th to the 95th percentile.

FASTER SPEED ▶ LOWER DOSE ▶ REDUCED COSTS ▶ FUTURE ENABLED

DIGIRAD®

SOLID-STATE SOLIDIUM® HDSD DETECTORS 3-HEAD HIGH-EFFICIENCY GEOMETRY



27" LOW DOSE VCT WIDE BEAM





THE NEW STANDARD IN
ECONOMICS

LOWER CAPITAL, SERVICE, SITING & STAFFING COSTS.

With spiraling healthcare costs, it's a tough challenge to improve quality, when capital and operational budgets are being tightened and reimbursement is declining. The solution is - we have to do things differently. We have no choice, but to take the inefficiencies out of our operations. We'll have to choose technology that offers the capacity to increase productivity; purchase equipment that lowers our 5 year lifecycle costs; buy systems that reduce our costs per procedure; and acquire cameras that offer new revenue generation opportunities. The bottom line is, there is a need to migrate to technology that will provide the capacity to do more, much more - with less, and without any sacrifice in quality.

Sound impossible, it's not. The fact is rapid solid-state SPECT imagers with low dose VCT AC, like the X-ACT, dedicated for cardiac procedures make it possible to image better - and faster, today. Clinical accuracy and confidence is improved; the costs per procedure are dramatically reduced; the systems require less space; less labor; less power; and raise patient satisfaction considerably. There is no need to lead-line rooms and an X-ray or CT technologist is not required to operate the VCT system. Rapid imaging systems provide an opportunity for nuclear services to reduce their operating costs by consolidating or retiring less efficient assets. And with the open upright system design, you can image patients, not possible on traditional designs. Most important, we enter an era where we finally raise the clinical confidence in nuclear cardiology - Beyond the Shadow of a Doubt.



IT IS NOW POSSIBLE

TO INCREASE QUALITY AND PRODUCTIVITY,
WHILE LOWERING OPERATIONAL COSTS.

MOLECULAR IMAGING

A SOLID PATH

TO THE FUTURE

INCREASED VALUE TODAY WITH ENABLING TECHNOLOGY FOR TOMORROW.

The X·ACT sets the standard for myocardial perfusion imaging today, yet equally important, the system embodies extraordinary 'enabling technology' like high-count rate solid-state detectors, a rapid imaging geometry, low dose volume CT attenuation correction, upright imaging and nSPEED® 3D-OSEM reconstruction that extend it's clinical potential to the most promising future protocols of tomorrow including stress only / VCT protocols, dynamic SPECT, simultaneous dual isotope and the ultimate quest - absolute quantitation.

The bottom line, compared to other SPECT·VCT systems, X·ACT delivers superior imaging clarity and accuracy, more rapid imaging, better comfort, easier installation, a significant reduction in radiation dosage, more revenue generation potential and far better economics.

Digirad is driving the technology progression in nuclear medicine to reach new clinical frontiers, attain new economical benchmarks and get you geared-up for tomorrow. Make a safe investment today and get ready for the future with the technology leader.



100% DEDICATED TO

NUCLEAR MEDICINE

Your advantage goes beyond image quality, economics and future readiness. It requires a system that you know will deliver high quality results, reliably and consistently, day after day. It requires a company with an attitude and response that places their customers first in delivering high quality service and support. The result: Digirad delivers world class support with a focus that is 100% dedicated to what you do - nuclear medicine. We welcome the opportunity to serve you.

SOLUTIONS FOR
A BRIGHTER FUTURE

- ▶ INCREASED QUALITY
- ▶ FASTER IMAGING
- ▶ LOWER DOSE
- ▶ REDUCED COSTS
- ▶ FUTURE ENABLED

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CONFORMANCE TO
STANDARDS

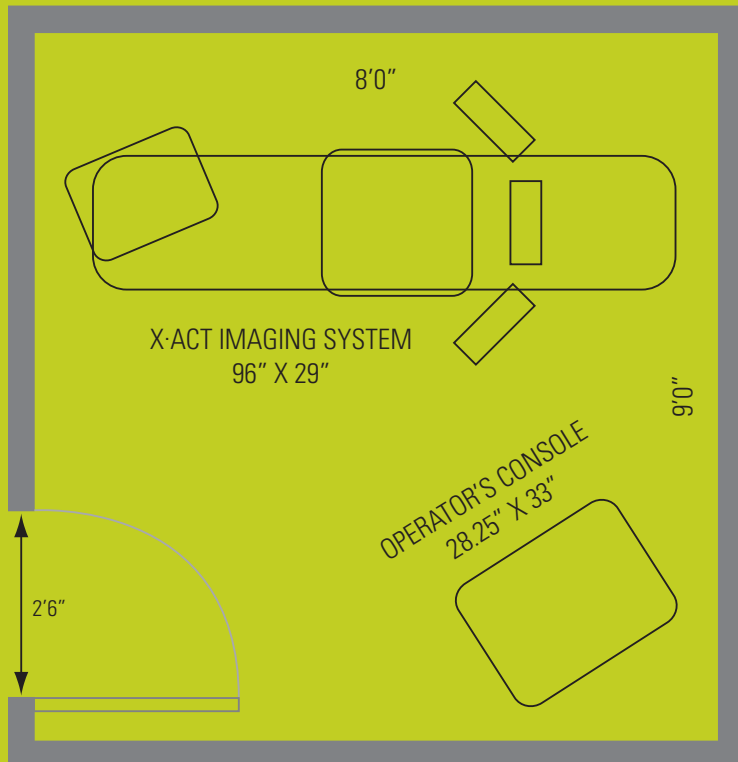
The Cardius X·ACT family conforms to the Medical Device Directive Quality System and the Essential Requirements of the Medical Device Directive. The product is designed to meet IEC 60601-1:1998 and IEC 60601-1-2:2001 for safety and electromagnetic compatibility. Trademarks and service marks used in this material are property of Digirad Corp. All other company, brand, product and service names may be trademarks or registered trademarks of their respective holders. Digirad reserves the right to modify the design and specifications contained herein without prior notice. Some configurations are optional. Product performance depends on the selected configuration. Please contact Digirad for the most up-to-date information. This information may be changed without notice.

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DIGIRAD®

CARDIUS® X·ACT SPECIFICATIONS & SITE REQUIREMENTS

MINIMUM ROOM LAYOUT 8'0" X 9'0" [2.4 m x 2.7 m]



Note: Specifications are subject to change. All photos and images may vary slightly from actual product.

CARDIAC IMAGING

applications	MUGA, SPECT, Gated SPECT, Attenuation Correction
angular sampling range	202.5°
start angle	-45° OR 38° LAO
angular sampling steps	3.375 ° or 6.75°
heart orientation	cardiocentric imaging, heart on axis of rotation
orbit radius	18.8 cm - 35.5 cm [7.4" - 14"]
seat height	61 cm - 86.3 cm [24" - 34"] from armrest surface
acquisition frames	30 or 60

ENVIRONMENTAL/OPERATION REQUIREMENTS

system total weight	370 kg [815 lbs] est.
minimum room size	2.4 m x 2.7 m [8' x 9']
recommended room size	2.4 m x 3 m [8' x 10']
power requirements	20A [dedicated line] 120VAC 60Hz
recommended operating temperature range	18 - 27°C [65 - 80°F]
relative humidity [non-condensing]	30 - 75%
architectural modifications	not required
environmental storage system	2 - 35°C [35 - 95°F]
shipping factory packaging	0 - 50°C [32-122°F] non condensed
HVAC load	2800 BTU

DETECTORS

detector technology	solid state
crystal type	pixelated crystal
detector material	CsI[Tl] / photo diode
type	triple head camera
field-of-view [rectangular] [cm, in]	15.8 cm x 21.2 cm [6.2"x 8.3"]
number of pixels per detector	768
pixel size [voxel]	6.1 mm x 6.1 mm
reconstructed spacial resolution	8.14 mm @ 20 cm [LEHR]
energy resolution	<10.5%
energy range	50 - 170 keV
sensitivity [cpm/uci]	160 cpm /uci [LEHR]

X-RAY SPECIFICATIONS

scan time	33 - 60 seconds
X-ray beam energy (lead fluorescent x-ray)	40 - 160keV ave.77.3 keV

RADIATION EXPOSURE SURVEY

location description	operator's station
measured exposure rates	0.36 [mR/hr]
limit	≤ 0.5 mR/hr

OPERATOR'S CONSOLE

operator's console	flexible positioning
operator's workstation	PC with single monitor and keyboard
height [work surface]	Fixed 108.58 cm (42.75")
width	83.82 cm (33.0")
depth / length	71.75 cm (28.25")
console weight with laptop	54 kg (120 lbs)
system speed	Min. 2.8 GHz P4, 1 GB RAM
operating system	Windows XP
spectrum analysis mode	10 bit [part of detector head]
count rate [max.]	> 3.5 million counts / sec
display features	frame or cine display
display color depth	true color
multitasking	simultaneous acquisition and processing
supported isotopes	Tl-201, Tc-99m, Co-57

PATIENT CHAIR

type	upright chair
ingress /egress height	85 cm [33.5"]
patient weight limit	227 kg [500 lbs]