

**Philips Medical Systems** Nuclear Medicine

# CardioMD

the whole picture just got clearer

**PHILIPS**

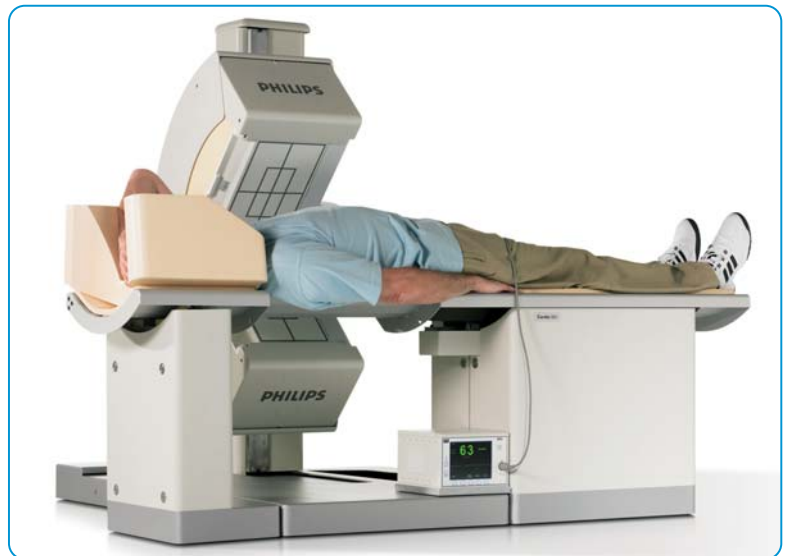
# CardioMD

Seamlessly meets the toughest standards.  
Especially yours.

Philips brings cardiac assessment capabilities to your practice in ways that work for you, your patients, and the future of healthcare. There's a reason our systems are in more places than anyone else's: CardioMD meets the most stringent clinical criteria.



- **Excellent image quality** with performance that meets or exceeds American Society of Nuclear Cardiology (ASNC) guidelines.
- **Unique attenuation correction with truncation compensation:** a Philips exclusive, VantagePro attenuation correction has been proven through multi-center clinical validation
- **Optimized clinical workflow** through JETStream Workspace integrated and intuitively advanced clinical algorithms and automation



# It's just what you'd expect from the leader in nuclear cardiology.

No wonder. Philips collaborates with cardiologists and leading medical research institutions to develop advanced imaging, diagnostic, interventional, patient monitoring, information management, and resuscitation tools to help you provide the highest standard of care in the most efficient way.

And working closely with hospital administrators and IT professionals helps make our systems easy to manage, integrate, and enhance. We see the future of nuclear cardiology and we're committed to giving you what you need to be successful now and in the future.



*More cardiac imaging/interventional procedures worldwide are performed with Philips systems than any other.<sup>1</sup>*

### **The importance of ASNC guidelines**

Nuclear cardiology has emerged as the preferred method for non-invasive screening of coronary artery disease and as an effective gatekeeper to the cath lab.<sup>2</sup> But the promise of nuclear cardiac imaging is only as good as the quality of data a system is able to generate.

The American Society of Nuclear Cardiology (ASNC) has published an imaging guideline for nuclear cardiology procedures to document state-of-the-art applications and protocols approved by experts in the field. This guideline is distributed to physicians and technologists qualified in the practice of nuclear cardiology.<sup>3</sup>

CardioMD meets or exceeds ASNC performance guidelines, giving you greater in-office diagnostic confidence.

1. Based on industry reports such as IMV and NEMA.
2. Shehata AR, Ahlberg AW, Gillam LD, Mascitelli VA, etc. Direct comparison of arbutamine and dobutamine stress testing with myocardial perfusion imaging and echocardiography in patients with coronary artery disease. *Am J Cardiol.* 1997 Sep 15; 80 (6): 716-20.
3. Garcia EV. Imaging guidelines for nuclear cardiology procedures. *J Nucl Cardiol.* 1996; 3: G1-G46.



# VantagePro AC

Proven through multi-center clinical validation.

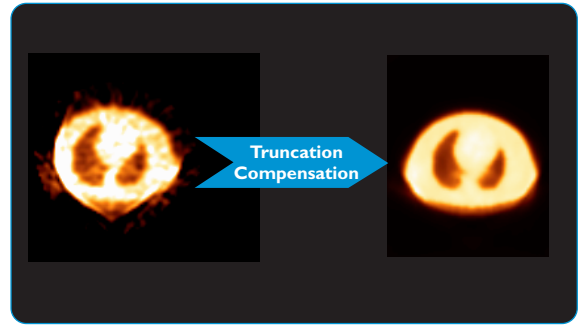
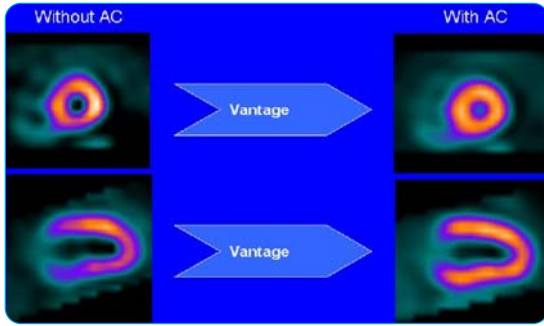
## Why accept anything less?

VantagePro Attenuation Correction (AC) from Philips is the only proven attenuation correction technology with truncation compensation, designed to maximize diagnostic accuracy and clinical usefulness. And it's the industry's only attenuation correction technique with published, comprehensive multi-center clinical validation.

Quite simply, Philips brings new levels of confidence to nuclear imaging.

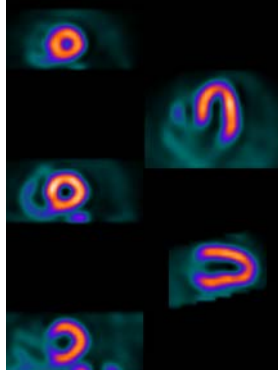
- Validated attenuation correction means fewer equivocal studies, reducing the need for rest imaging, and improving lab efficiency and diagnostic accuracy.
- Philips-only truncation compensation algorithm recovers the full-body transmission map for greater clinical confidence.
- Philips exclusive quality control algorithms provide trusted attenuation corrected results.
- Fast, high throughput acquisition through simultaneous emission and transmission and precise registration.
- Available as a field upgrade for maximum investment protection.



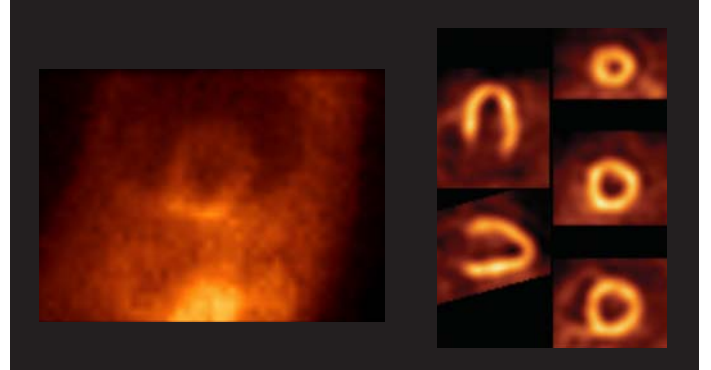


Philips VantagePro is the industry's only attenuation correction technique with truncation compensation. This truncation compensation algorithm is necessary to recover the full-body transmission map for clinical accuracy.

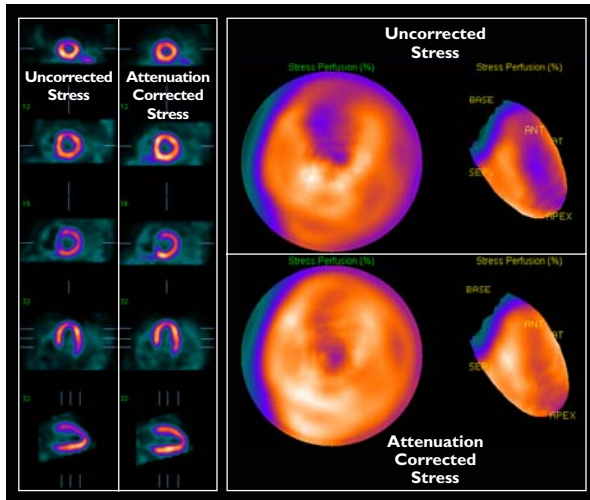
## Clinical Image Gallery



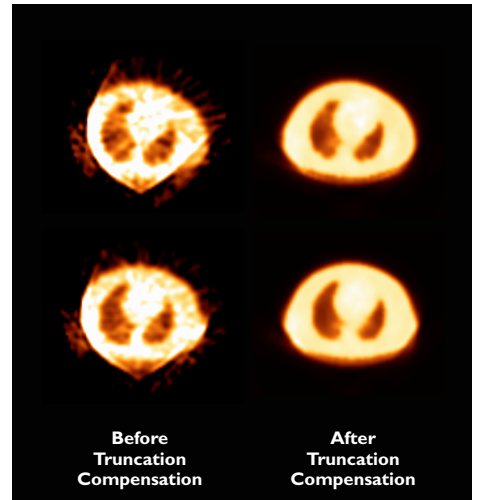
A typical CardioMD study. The CardioMD system is designed to provide excellent image quality for nuclear cardiac imaging.



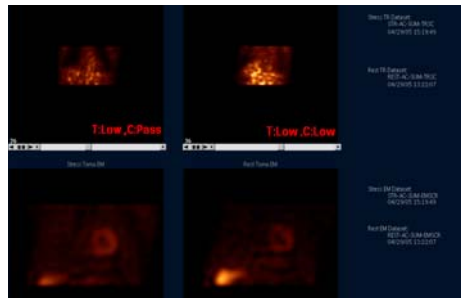
Even with significant soft tissue attenuation, CardioMD provides the clinician with superior image quality.



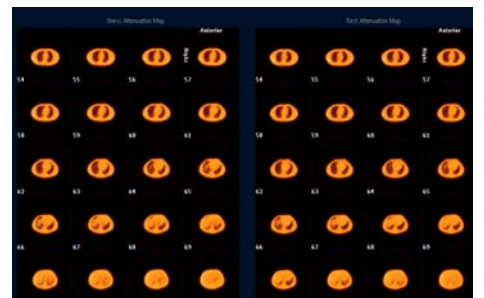
Philips VantagePro corrects attenuation artifacts and maximizes diagnostic accuracy and clinical usefulness.



Truncation compensation is essential for attenuation correction on small FOV cameras.



Philips post-acquisition quality control (truncation and count statistics) ensures the validity of the attenuation corrected result.



Splash presentation of the transmission map helps clinicians determine if the attenuation corrected result is free from truncation artifacts.

# Diagnostic confidence in a system that's as intuitive and innovative as your pace demands



**1 Mobile acquisition laptop with three mounting options**

Gives you the flexibility to adapt to your workflow and room layout (laptop cart, wall-mount or desk-mount)

**2 Windows XP-based acquisition laptop**

Automated, intuitive, and easy-to-use

**3 Clinically validated VantagePro attenuation correction**

Attenuation correction with truncation compensation on small FOV cameras improves diagnostic confidence, and it is field upgradeable to maximize investment protection

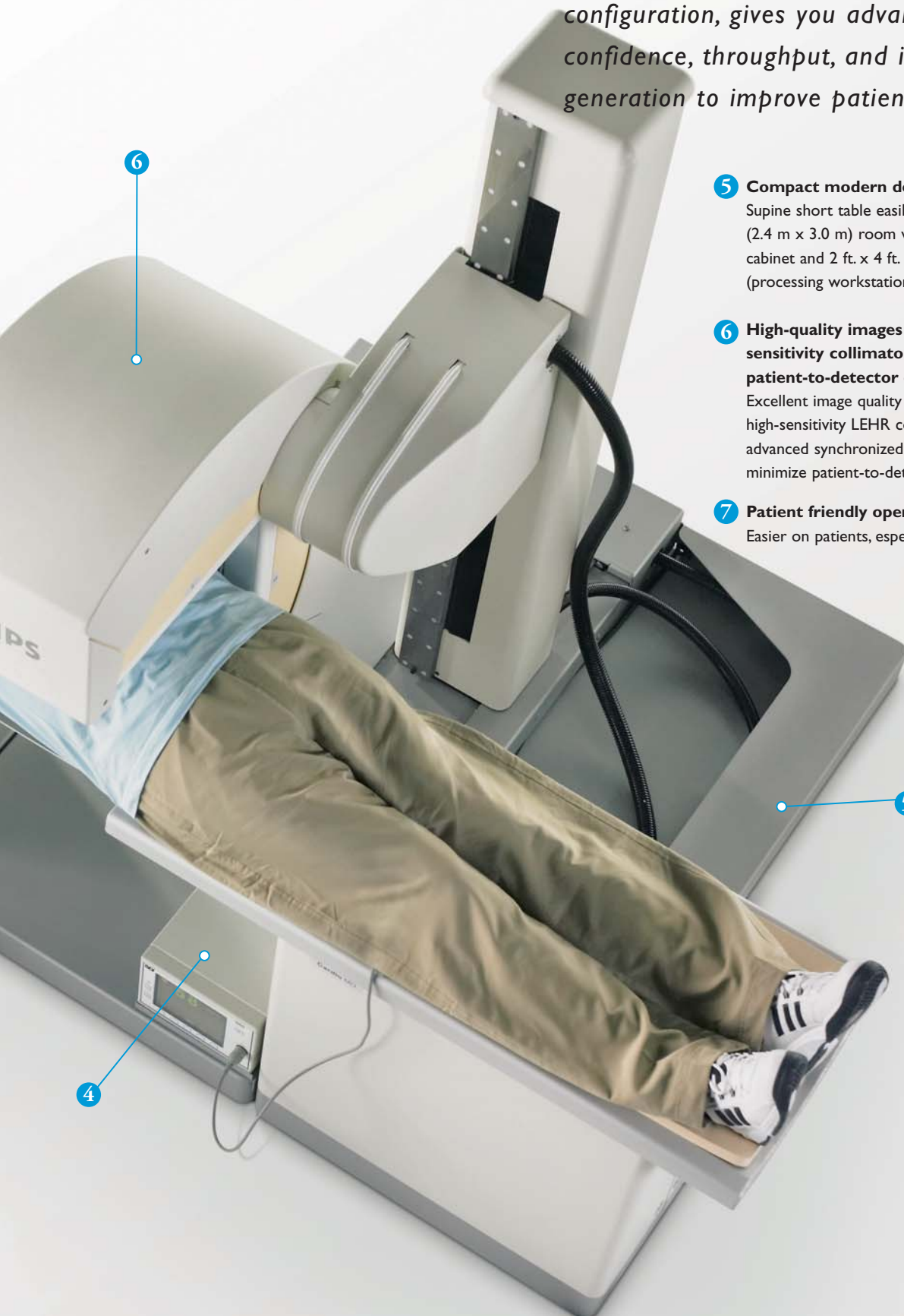


**4 Horizontal imaging position for improved diagnostic confidence**

Adheres to ASNC/ACC imaging guidelines, allows supine and prone imaging for improved diagnostic confidence, and is comfortable for patients



Nuclear cardiology is becoming increasingly important as a gatekeeper to more invasive procedures. CardioMD, with its 90° dual-detector configuration, gives you advantages in diagnostic confidence, throughput, and information generation to improve patient care.

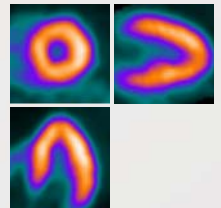


**5 Compact modern design**

Supine short table easily fits into an 8 ft. x 10 ft. (2.4 m x 3.0 m) room with extra space for collimator cabinet and 2 ft. x 4 ft. (0.6 m x 1.2 m) desk (processing workstation)

**6 High-quality images through high-sensitivity collimator and minimum patient-to-detector distance**

Excellent image quality enabled by high-sensitivity LEHR collimator and advanced synchronized robotics that minimize patient-to-detector distance



**7 Patient friendly open-gantry design**

Easier on patients, especially those who are claustrophobic

# JETStream Workspace

## Dedicated to you and your workflow

Today's competitive environment is prompting physicians to look for additional ways to improve efficiency. Philips JETStream Workspace is the ideal solution and the first completely integrated work environment, designed specifically to increase your efficiency by consolidating all your tasks into one workstation.

The system is designed as an integrated solution to make your life easier by helping you process with more speed, increase confidence through accurate diagnostic results, convey results to referring physicians faster and more conveniently, and run your practice more effectively.

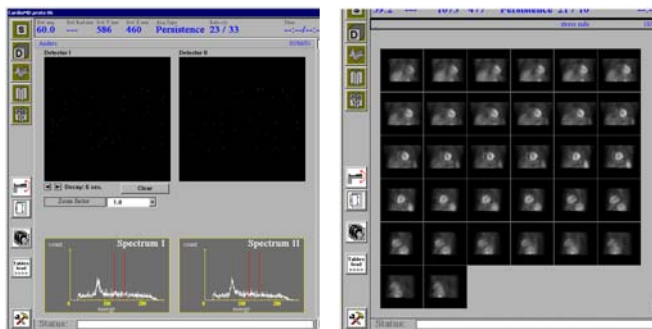
JETStream Workspace is built for flexibility to adapt to the way you most like to work, automated in ways that make sense, standardized, and future-safe.

- The completely integrated work environment increases your productivity by allowing you to multi-task, for example, by integrating Windows Office tools directly into nuclear medicine applications for quicker and easier data interpretation, report generation, presentations, and administrative functions.
- Dramatically enhanced user interface with intuitive screen interactions, automated program launching, and other sophisticated tools such as protocol manager, which automatically links patient studies with the appropriate protocol.
- Adaptable workflow – customizable to you and your practice – doesn't penalize you for the inevitable interruptions to "standard" imaging practices, such as adjusting a protocol during a procedure, allowing you to work in ways that are most effective for you and your practice.

JETStream Workspace is built around you and your needs.

### Acquire

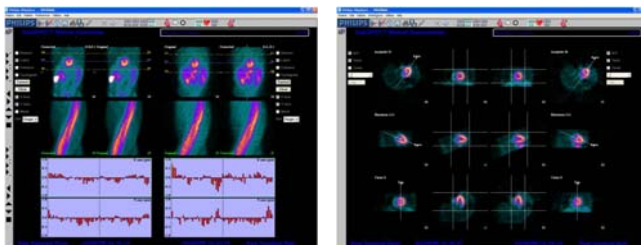
#### Intuitive acquisition



- Automated workflow with effortless data entry for easy review and quality check of acquired images
- Automated (or manual) image transfer to processing

### Process

#### Integrated motion correction with processing



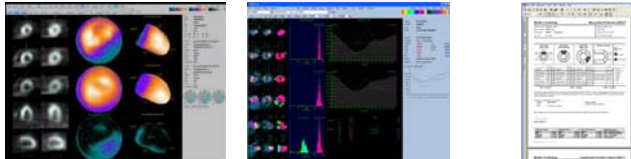
- INSTILL\* motion correction is integrated into reconstruction with clinically validated accuracy levels of 93.7%
- AutoSPECT\* processing offers fast, accurate, and fully automated reconstruction and reorientation

Philips offers a comprehensive solution that encompasses imaging equipment, monitoring, and healthcare IT.



## Review

### Integrated reporting with review/quantify



- Comprehensive cardiac review and quantification suite of applications: AutoQUANT\*, Emory Toolbox\*\*, and 4DMSPECT\*\*
- AutoQUANT integrates perfusion and function applications, as well as offering integrated reporting on a single screen
  - Results file saves both the processed images and the processed file so that during patient follow-up, you're looking at exact data from the initial interpretation without the need for reprocessing
- Automated Report Generation (ARG)\*
  - Extracts quantified output from applications
  - Generates reports in PDF or text format
  - Reduces transcription costs and errors

\* AutoQUANT, AutoSPECT, INSTILL and Automated Report Generation are options within JETStream Workspace.

\*\* Emory Toolbox and 4DMSPECT are works-in-progress.  
Windows is a registered trademark of Microsoft Corporation.

## CardioMD system specifications

The combination of exceptional detector specifications and key feature set provides outstanding clinical performance.

Detector specifications	
<b>Intrinsic spatial resolution</b>	
FWHM in UFOV	3.7 mm
FWTM in UFOV	7.6 mm
<b>Intrinsic spatial linearity</b>	
Absolute in UFOV	≤0.5 mm
Differential in UFOV	≤0.2 mm
<b>Intrinsic energy resolution</b>	
UFOV	≤9.4%
<b>Intrinsic flood field uniformity</b>	
Integral in UFOV	±2.50%
Differential in UFOV	±1.50%

System specifications	
<b>Intrinsic detector count rate</b>	
Max count rate	≥ 200 kcps
<b>System spatial resolution w/o scatter</b>	
LEHR collimator @ 10 cm	
FWHM in UFOV	≤ 7.7 mm
<b>System spatial resolution w/o scatter</b>	
LEGP collimator @ 10 cm	
FWHM in UFOV	≤9.4 mm
<b>System sensitivity*</b>	
LEHR	191 cpm/uCi (5157 cpm/MBq)
LEGP	277 cpm/uCi (7479 cpm/MBq)

Acquisition laptop	
Operating system	Windows XP
Processor	Intel Pentium 4 or higher, min.1.0 GHz
Hard drive	Min. 30 GB
LCD monitor	Min. 15" with 1024 x 768 resolution
Persistence scope	256 x 256
Acquisition matrices	64, 128, 256, 512
Display features	Frame/Cine display
Display color	Full color range

Attenuation correction (VantagePro)	
Acquisition method	Simultaneous emission & transmission
Transmission source	2 Gd-153 scanning line sources
Source strength	240 mCi (8.88 GBq) per source 480 mCi (17.76 GBq) total
Source life	Up to 2 years
Downscatter contamination	< 5%
<b>ASNC recommended corrections*</b>	
Motion correction	Yes
Scatter correction	Yes
Resolution recovery	Yes
Truncation compensation	Yes
Automated QC	Yes

\* Sensitivity data is calculated with Tc-99m through a 20% window and is ±7%.

\*\* Reference to ASNC implies neither product endorsement nor ASNC approval

### Detector physical specifications

Detector type	Fixed 90° dual detector system
Field of view	37 cm x 21.4 cm (14.6 in. x 8.4 in.)
Useful field of view	36 cm x 20.4 cm (14.2 in. x 8.0 in.)
Dead space in 90°	26 mm (1.0 in.)
Shielding to UFOV distance	7.1 cm (2.8 in.)
Shielding	170 keV

#### **Crystal**

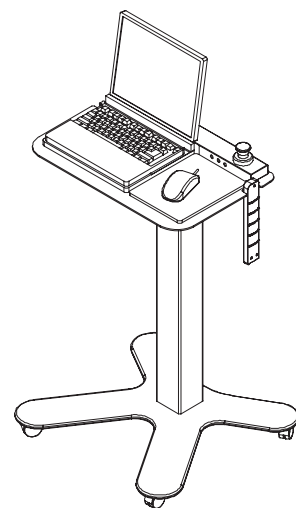
Thickness	9.5 mm (3/8 in)
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#### **Digital detector**

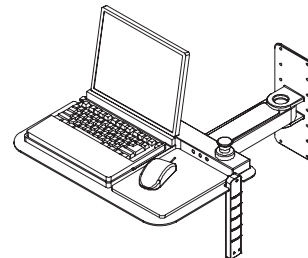
Photomultiplier tubes	24 per detector
Diameter	7.6 cm (3 in. sq.)
Array	6 x 4
Analog to digital conversion	5 channels per detector
Energy range	60–170 keV

### Acquisition laptop options

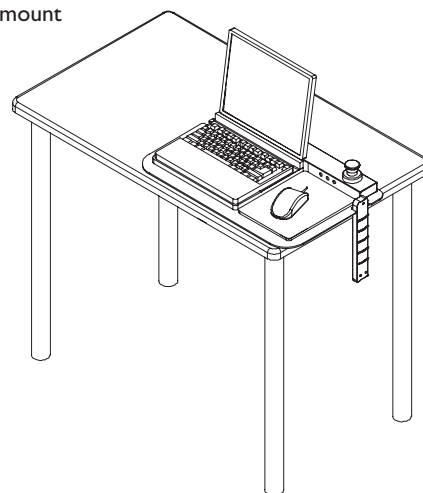
Cart-mount



Wall-mount



Desk-mount

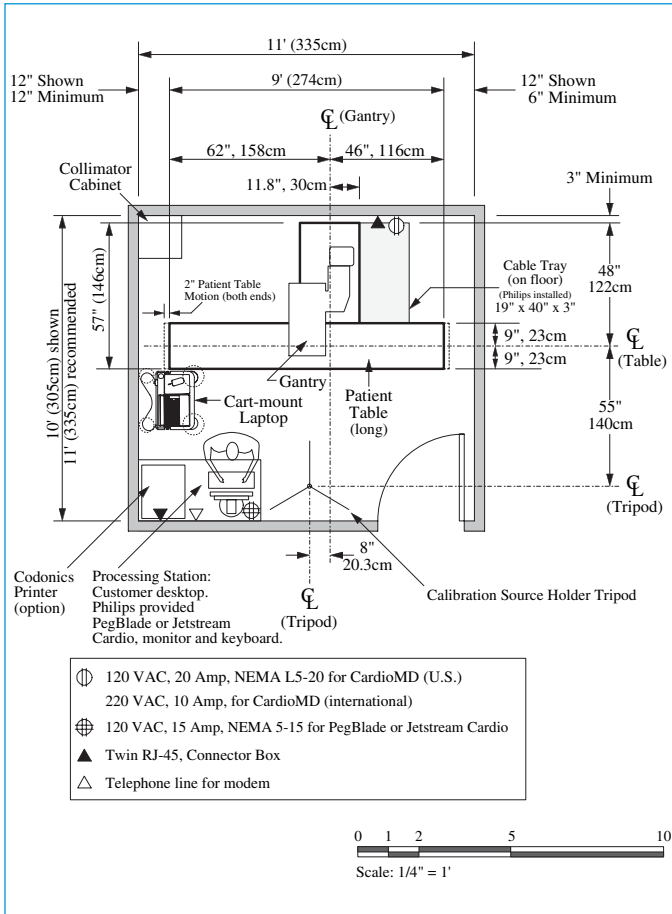


## CardioMD system specifications

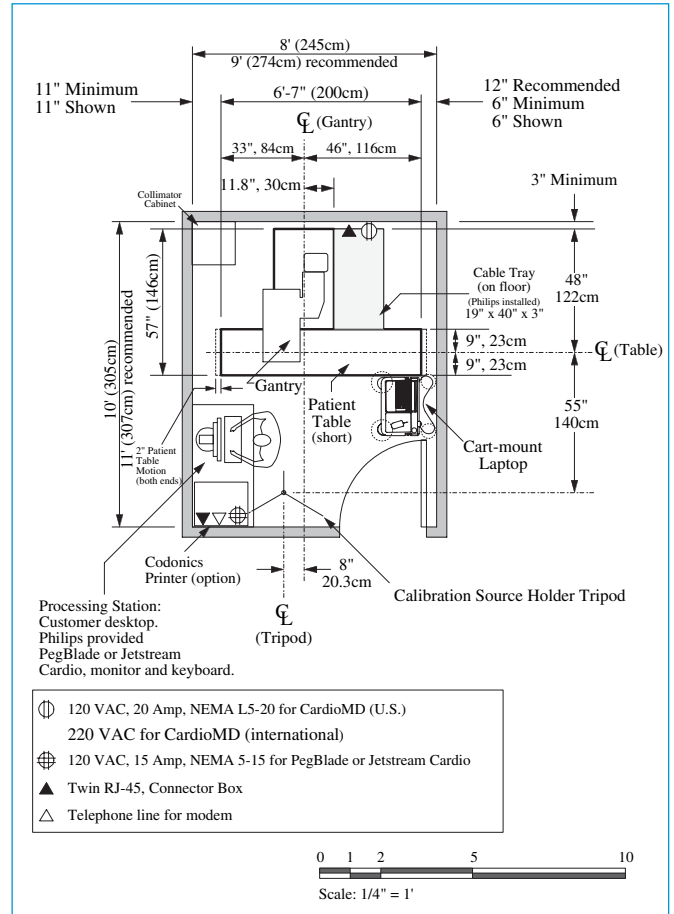
System physical specifications	
<b>System dimensions (operating mode)</b>	
Height (w/o AC option)	189 cm (74 in.)
Width (w/o AC option)	186 cm (73 in.)
Height (w/ AC option)	195 cm (77 in.)
Width (w/ AC option)	215 cm (85 in.)
Length – supine short table	200 cm (79 in.)
Length – supine/prone long table	274 cm (108 in.)
Weight (w/o AC option)	1100 kg (2,425 lbs.)
<b>Patient table</b>	
Thickness (aluminum)	3 mm (0.12 in.)
Attenuation	< 10% @ 140 keV
Dimension – supine short table	45 cm x 10 cm x 200 cm (18 in. x 4 in. x 79 in.)
Dimension – supine/prone long table	45 cm x 10 cm x 275 cm (18 in. x 4 in. x 108 in.)
Table height (from floor)	66 cm (26 in.)
Lateral motion	±5.1 cm (2 in.)
Maximum patient weight	180 kg (400 lb.)
Patient contouring	Automatic (single learning point)
<b>Emission tomography</b>	
Detector rotate motion range	270°
Angular sampling	128, 64, 32 or 16 projections
Detector rotate speed	0 – 1.0 rpm

Physical, environmental, and power	
Minimum room size – supine short table	2.4 m x 3 m (8 ft. x 10 ft.)
Minimum room size – supine/prone long table	3 m x 3.4 m (10 ft. x 11 ft.)
Temperature	15° to 30° C (59° to 86° F)
Relative humidity	45% to 80%
Voltage/current	100, 120V +10%, 12 A 200, 220, 240V +10%, 6.25 A
Heat generation	< 4800 BTU/hr.
Noise output	< 55 dBA
Receptacle	NEMA L5-20
Frequency	50 or 60 Hz
Processing terminal	115 VAC @ 15 amps
Acquisition laptop cart	64 cm x 65 cm (25.2 in. x 25.4 in.)
Collimator rack	43 cm x 43 cm (17 in. x 17 in.)
Floor level specification	Floor must be level +.5 in.

## Minimum Room Layout



Long Patient Table (supine/prone)



Short Patient Table (supine)

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**[www.medical.philips.com](http://www.medical.philips.com)**

### *Via e-mail*

**[medical@philips.com](mailto:medical@philips.com)**

### *By phone*

**888.647.4285**

### *By fax*

**408.321.7435**

### *By postal service*

**Philips Medical Systems**

**540 Alder Drive**

**Milpitas, CA 95035**

### *North America*

Regional Office USA

Tel: +1 800 285 5585

Fax: +1 425 487 8130

Toll free: +1 800 229 6417

### *Asia*

Regional Office Asia Pacific

Tel: +852 2821 5888

Fax: +852 2527 6727

### *Europe/Middle East/Africa*

Regional Office Netherlands

Tel: +31 40 27 62 092

Fax: +31 40 27 64 577

### *Latin America*

Regional Office Brazil

Tel: +55 11 5188 0764

Fax: +55 11 5188 0761

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