Advanced interventions in your lab

Philips Allura Xper FD10 system specifications
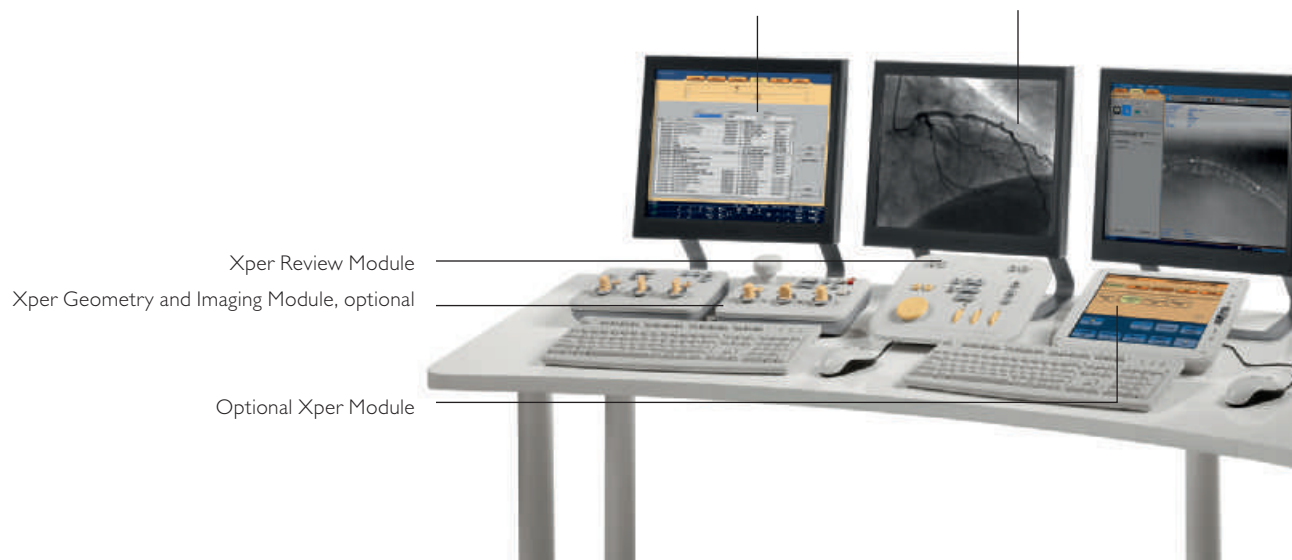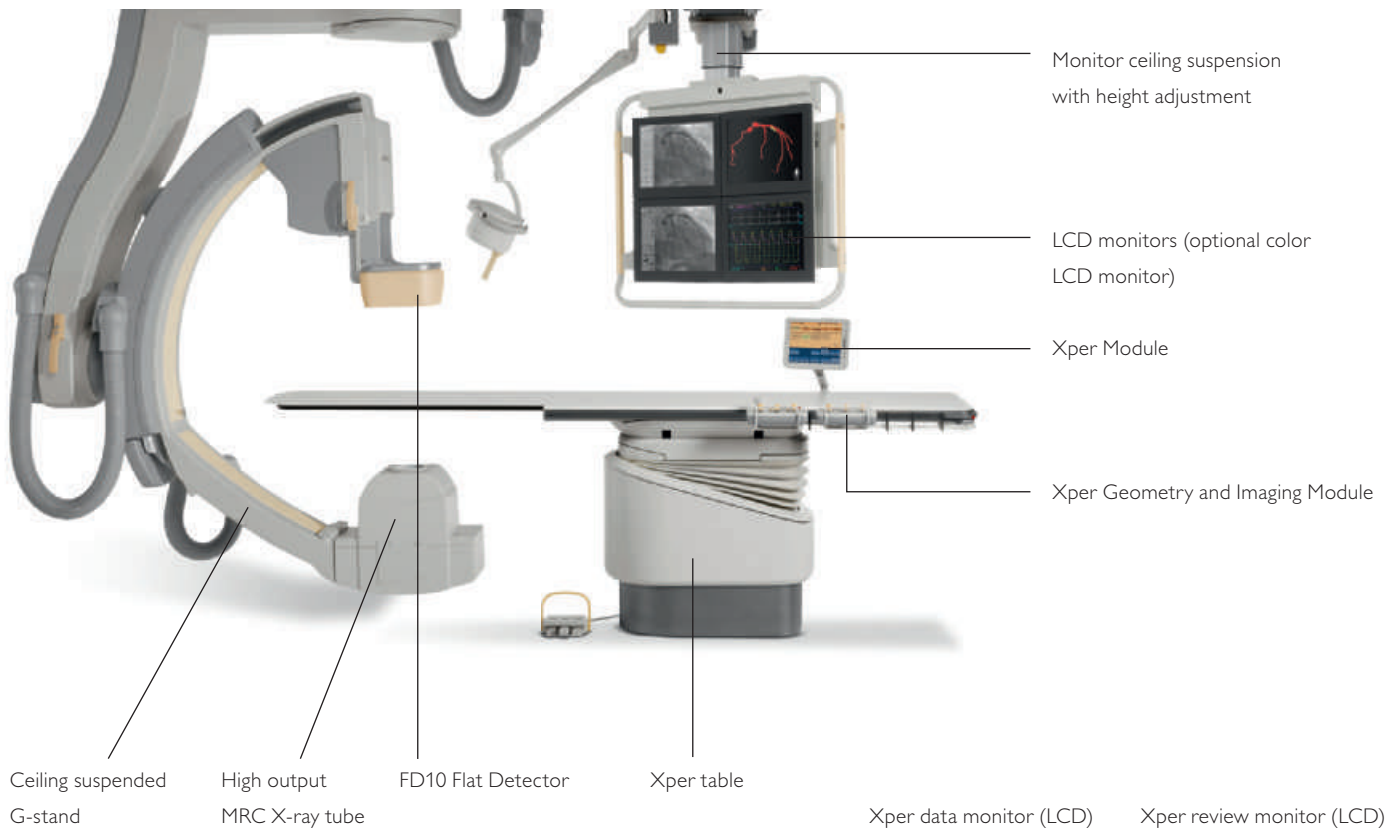
PHILIPS

sense and simplicity

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Introduction

Today, new interventional treatments and applications are constantly being pioneered. And although this expansion is exciting, it means that you must be more versatile than ever before. You must be equipped with an X-ray system that is capable of performing a wide variety of complex procedures. To achieve this, cardiologists need superb image quality at a low X-ray dose, instant access to multi-modality information, as well as advanced and easy-to-use image processing tools. Through partnerships with busy cath labs around the world, Philips has developed the Allura Xper FD10.

Monitor ceiling suspension with height adjustment

LCD monitors (optional color LCD monitor)

Xper Module

Xper Geometry and Imaging Module

Ceiling suspended G-stand

High output MRC X-ray tube

FD10 Flat Detector

Xper table

Xper data monitor (LCD)

Xper review monitor (LCD)

Xper Review Module

Xper Geometry and Imaging Module, optional

Optional Xper Module

1 Geometry

1.1 Gantry

The G-shaped stand maximizes speed and provides excellent patient access. Rock stable gantry design with fast and easy table side controlled operation, with full flexibility in applications by free positioning of the gantry, monitor suspension and operating modules. The unique G-shaped of the stand allows you to reach the groin without repositioning and allows a wide range of projections.

The exclusive BodyGuard patient protection mechanism is designed to protect the patient from unexpected contact between the detector and the body. It uses capacitive sensing to determine patient location to prevent collision, while allowing stand positioning at up to 25°/sec.

Allura Xper FD10 Ceiling G-stand   Allura Xper FD10 Floor G-stand

Features	Specifications
Iso-center to floor	FD10 ceiling and floor is 106.5 cm (41.9 inch)
Longitudinal movement	FD10 ceiling has a motorized and manual range of 260 cm (102.4 inch) at 15 cm/sec (6 inch/sec.). It includes auto stops at the park position, cardio position, neuro position and lower peripheral position
	FD10 floor has no longitudinal movement. It pivots of the stand base for -90° to + 90°
L-arm rotation	FD10 ceiling has motorized and manual movement, over 180° with snap positions at 90°, -0°, -90° to allow patient access from three sides of the table
G-stand rotation / speed	FD10 ceiling and floor in head-end position: 120° LAO, 120° RAO up to 25°/sec
	FD10 ceiling in side position: 45° LAO, 45° RAO up to 18°/sec
G-stand angulation / speed	FD10 ceiling and floor in head-end position: 45° cranial, 45° caudal up to 18°/sec
	FD10 ceiling in side position: 120° cranial, 120° caudal up to 25°/sec
Focal spot to iso-center	Is up to 76.5 cm (30.1 inch)
Source Image Distance	Is 86.5 - 123 cm (34.1 to 48.4 inch)
G-stand depth	105 cm (41.3 inch)
Programmable positions	Standard two positions

Optional

Automatic Position Controller (APC)	Functionality for the stand is accessed through the Xper Module at the patient tableside. • This option includes a programmable position extension, which allows you up to ten different stand positions per clinical procedure • Another feature of the APC is reference-driven positioning. This allows you to recall stand positions by referring to the images at the reference monitors, which means that the rotation, angulation, SID, and detector orientation are restored to the original settings of the reference image.

1.2 Patient support

The Xper table offers full range of applications, without restriction on position during CPR. The Xper table is a dedicated interventional X-ray table with a free-floating tabletop. This table has very high patient loadability and can make large floating movements.

Xper table cradle

Xper table tilt

Features	Specifications
Tabletop material	Radio translucent carbon fiber tabletop
Tabletop length	319 cm (125.6 inch)
Tabletop width	50 cm (19.7 inch)
Motorized tabletop height adjustment	79 to 104 cm (31.1 to 40.9 inch)
Tabletop metal free overhang	125 cm (49.2 inch)
Longitudinal float	120 cm (47.2 inch)
Transversal float	36 cm (14.2 inch)
Maximum allowable patient weight	250 kg with additional force of 500 N, allowed in case of CPR. CPR can be performed while the tabletop is set in any longitudinal position
The positioning of the modules	The Xper Module, Xper Imaging, and Xper Geometry Modules can be positioned on three sides of the patient support
Cable integration	Cables are incorporated in the table to allow maximum operation flexibility
Patient mattress	The mattress is made of slow recovery foam, with a density of 58 kg/m^3 and a thickness of seven cm that adapts to the patient body shape.

Optional

Table tilt	Yes, Xper table tilt; tilt range: 17° head-down to 17° head-up; tilt speed: 2°/sec.
Iso centric tilt movement	Yes
Cradle movement	Movement: yes, with Xper Cradle; range: -15° to +15°; speed: 3°/sec.
Iso centric cradle	Yes
Pivot range	-90° to +180° (or -180 to +90°). Table can be locked at any position and indents at 0, -13° and +13° (to support arm angiography).
Table Automatic Position Controller	It contains store and recall functionality of the height-, longitudinal- and lateral position of the table top. This allows returning to a previously stored position, without using X-ray dose.
Patient tables	Besides the Allura Xper systems with the Xper table we also have the Allura Xper OR Table series available for full use in the OR environment. These systems combine the Allura high end x-ray with a fully OR compatible patient table. For details we refer to the specifications of the Allura Xper OR Table series.

1.3 Monitor Ceiling Suspension

The Monitor Ceiling Suspension allows flexible, freely rotating positioning with a concave set-up of the monitors for optimal viewing angle.

| Feature	Specifications
Number of monitors	One, two, three, four, six or eight monitors
Rotation range	350°
Transversal movement	Over a distance of 300 cm (118.1 inch)
Longitudinal movement	Over a distance of 330 cm (129.9 inch)

1.4 Accessories

1.4.1 Standard accessories

Mattress
Patient straps
Set of arm supports (if cradle)
Dripstand
OP rail accessory clamps
Cable holders (15 pieces)

Mattress (standard delivery of one piece per table)
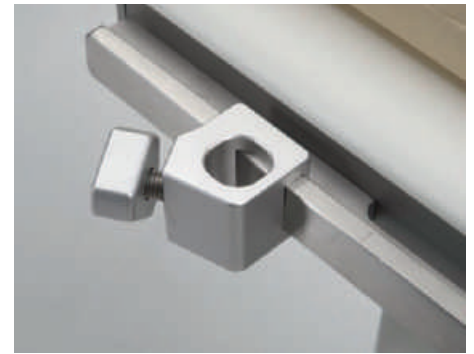
OP rail accessory clamps

Optional

1.4.2 Optional accessories

Arm support (height adjustable)
Ratchet compressor
Table X-ray protection
Peripheral X-ray filter
Pulse cath arm support
Examination light
MCS bracket ceiling rad. shield
Ceiling suspended radiation shield
Panhandle
Neuro Mattress (if Neuro tabletop)
Longer Mattress
Head support
Arm support, incl. mattress pad
Neuro wedge
Table clamp
Set handgrips and clamps
Additional op-rail
Additional op-rail (USA version)
Additional op-rail with cable extension kit for Xper Modules

Table X-ray protection

Ceiling suspended radiation shield

Panhandle

Arm support

2 User Interface

Tailor made customized operating user interface per user (groups) and per desired application is available. Full integration of the complete system user interface is available at table side. Xper stands for "X-ray Personalized", and reflects the expert nature of the Allura Xper FD10 system.

2.1 Xper User Interface in the examination room

In the examination room, the Xper User Interface comprises the On-Screen Display, the Xper Module, and the Xper Imaging and Geometry Modules. Information is displayed on the On-Screen display in the examination room.

The Xper Geometry and Imaging Module can be positioned on three sides of the patient table. The Modules adjust to the position to retain the intuitive button operation. Both the Xper Geometry and Imaging Module have a removable protection bar that prevents unintended activation of system.

Xper Viewpad Controls

Xper Geometry Module

Xper Module

Xper Imaging Module

Xper User Interface
X-ray indicator
X-ray tube temperature condition
Radiographic parameters: kV, mA, ms
Rotation and angulation of the stand positions
Source Image Distance (SID)
Table height
Detector field size display
General system messages
Selected frame speed
Fluoroscopy mode
Integrated fluoroscopy time
Air Kerma dose (both rate and accumulated X-ray dose)
Dose Area Product (both rate and accumulated X-ray dose)
Graphical bars for body zone specific X-ray dose rate and accumulated Air Kerma levels related to the 2Gy level for cardiac procedures
Stopwatch

Xper Viewpad controls
Run and image selection
Exam and run cycle
Review speed
Run and exam overview
Active exam sub files (exposure image/runs, reference images, print file)
Flagging exam and run for storage
Digital zoom
Storing reference run or image to reference monitors
Select reference monitors for review and/or processing of previous run exposures
Subtraction and image mask selection

Xper Module
Acquisition setting
Image Processing
USB port for data transfer
Automatic Position Control (APC), optional
Quantitative Analysis (QA), optional
Table Automatic Position Controller, optional
Interventional tools table side control, optional
Xcelera table side control, optional
Hemo table side control, optional
Ultrasound table side control, optional

Xper Geometry Module
Tabletop float
Table height position
Table tilt angle (if the tilt option is selected)
Table cradle angle (if the cradle option is selected)
Source Image Distance selection
Stand positioning
Longitudinal movement of the stand along the ceiling
Stand rotation in an axis perpendicular to the ceiling
Store and recall of two scratch stand positions including SID and detector orientation
Emergency stop button
Accept button of the Automatic Positioning Control
Geometry reset button, which resets stand and table to a default service configure able starting position

Xper Imaging Module
Fluoroscopy mode selection as defined via Xper settings
Positioning of shutters and wedges without radiation
Manual or automatic wedge including position on the last image without radiation
Xper fluoro storage to record fluoroscopy up to 999 images
Selection of the detector field size
Preferred beam width
Reset of the fluoroscopy buzzer
Selection of Roadmap Pro function
Selection of SmartMask function

2.2 Xper User Interface in the control room

The Xper Viewing Console comprises a 19 inch LCD color data monitor for patient data and system information management, including radiographic parameters, and a 18 inch black and white review monitor and Review Module enabling efficient exam viewing and post-processing. The monitors have the ability to extend the screen area to multiple screens.

Xper Data Monitor
Scheduling
Preparation
Acquisition
Review
Report
Archive

System information
Stopwatch and Time
System guidance information
Dose Area Product (DAP) and Air Kerma X-ray Dose (both rate and accumulated X-ray dose)
Frame speed settings, fluoroscopy mode and accumulated fluoroscopy time
Exposure and fluoroscopy settings, such as Voltage (kV), Current (mA) and pulse time (ms)
Stand position information, such as rotation, angulation and SID

Xper Review Monitor

The Xper review monitor is a 18 inch black and white LCD monitor that have the ability to extend the screen area to multiple screens.

Xper Review Module

The Xper Review Module is a review station for basic interventional X-ray viewing needs. The most often used functions can be controlled by the touch of a button.

Xper Review Monitor
Step through file, run or images
File and run overview
Image processing features such as contrast, brightness and edge enhancement
Flagging of runs or images for transfer
Image annotation
Automatic printing
Video invert
Zoom and pan image
Electronic shutters
Toggle switch physio
Store/delete images/runs
Store fluoro
Quantitative Analysis Packages, optional
Subtraction, optional
Move or renew mask, optional
Landmarking (increase/decrease of subtraction degree), optional
View trace, optional
Pixel shift, optional

Xper Review Module
Power on/off of the system
Tagarno wheel to control the review of a patient exam
File and run cycle
Adjustment of contrast, brightness, and edge enhancement
File, run and image stepping
Run and file overview
Basic review functionality, such as image invert and digital zoom
Go to default settings
Reset fluoroscopy timer and switch X-ray on/off

Optional

2.3 User Interface options

Second or third Xper Module
The Allura Xper FD10 can be extended with additional Xper Modules. The functionality of these Xper Modules is equivalent to the functionality on the Xper Module connected in the examination room.

Xper Pedestal
The Xper Pedestal creates an additional flexible workspot for operating the system in the examination room. The pedestal is equipped with additional Xper Geometry and Imaging Modules and can also hold the X-ray footswitch. Optionally, an additional Xper Module can be mounted on the pedestal. The Xper Pedestal can be positioned freely around the patient table and can be stowed away when not in use.

Second Xper Imaging Module
Extension of the imaging controls with a second module in the control room in a master-slave configuration.

Second Xper Geometry Module
Extension of the geometry controls with a second module in the control room in a master-slave configuration.

Contrast Injectors
The system is optimized for coupling with several contrast injectors.

Second or third Xper Module

Xper Pedestal

Second Xper Imaging Module

Second Xper Geometry Module

3 X-ray generation

3.1 X-ray generator

The Velara generator is optimized for the latest interventional X-ray needs.

Features	Specifications
Generated power	Microprocessor-controlled, 100 kW high frequency converter generator
Minimum switching time	Quartz-controlled power-switch, with a minimum switching time of one ms
Voltage range:	40 to 125 kV
Maximum current:	1250 mA at 80 kV
Maximum continuous power:	2.4 kW for 0.5 hours, 2 kW for eight hours
Nominal power (highest electrical power):	100 kW (1000 mA at 100 kV)

With Xper settings on the Xper Module, different exposure protocols can be customized for every clinical application.

3.2 X-ray tube

The Allura Xper FD10 is provided with the legendary high power MRC-GS 0508 X-ray tube which allows for very high heat dissipation, enabling SpectraBeam filtration to reduce the patient X-ray dose.

| Features	Specifications
Focal spot size and loadability	0.5/0.8 nominal focal spot values with maximal 45 respectively 85 kW loadability
Grid-switched pulsed fluoroscopy	Yes
Fluoro power for 10 minutes	4,500 W
Fluoro power for 20 minutes	3,500 W
Anode heat dissipation	3,200 W
Max. heat dissipation of assembly heat	3,500 W
Maximum Anode cooling rate	910 kHU/min
Extra pre-filtration	SpectraBeam dose management with 0.2, 0.5, and 1.0 mm Copper equivalent SpectraBeam Filters
Cooling liquid	Oil cooled X-ray tube with thermal safety switch
Anode cooling method	Direct anode oil cooling system with 200 mm anode diameter

3.3 DoseWise

DoseWise is a set of techniques, programs, and practices that ensures excellent image quality, while protecting people in X-ray environments. It's a philosophy that drives Philips to develop innovative new strategies in dose management. DoseWise focuses on three highly effective strategies for dose management:

• Smart Beam management: the smart way to remove unwanted "soft" radiation and minimize scatter radiation.
• Less time: gives you a range of automatic exposure controls to maximize dose efficiency.
• More Awareness: clear, real-time information, so you can easily choose the optimal balance between image quality and radiation exposure.

Staff working in an X-ray environment wears a Personal Dose Meter (PDM).

3.4 SpectraBeam

The combination of SpectraBeam with the MRC-GS 0508 tube allows increased X-ray output with better filtration of soft radiation. This reduces patient X-ray dose for interventional X-ray applications, while maintaining the same excellent image quality.
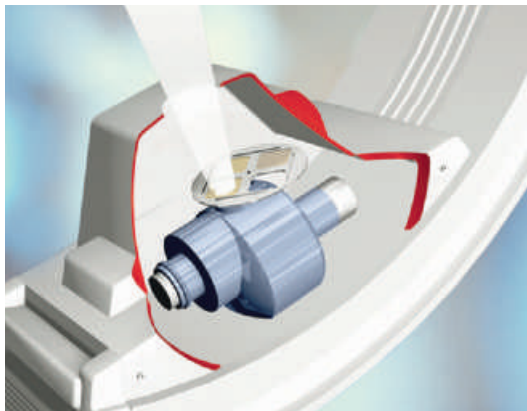
Spectrabeam with unique beam filtration

Xper Beam Shaping

Xper Beam Shaping allows for virtual collimation of the shutters and wedges on the last X-ray image, eliminating additional X-ray dose during collimation changes.

Double shutters / wedge filters

Double wedge filters provide outstanding image quality in all projections. The wedge filters allow exceptional exposure and hence excellent image quality is maintained (with minimal patient entrance X-ray dose).

Anatomical filters

Filters designed to compensate for large absorption differences in the object. There are special filters for cerebral angiography and the optional lower peripheral angiography.

Automatic wedge positioning

Wedge filters can be positioned automatically according to gantry positions.

Optional

DoseAware

The ability to see your dose exposure in real-time is now possible thanks to Philips DoseAware. An innovative new product that will transform the way you work. Only Philips DoseAware helps to visualize the invisible nature of radiation so clinicians and staff can see it in real time through a simple and easy to read display and immediately act to change their behavior and work patterns.

Staff working in an X-ray environment wears a Personal Dose Meter (PDM). This PDM measures X-ray dose reception and is wirelessly connected to the Base Station. The Base Station is mounted in the examination room where all staff can directly see whether received dose is in the red, yellow or green area. X-ray dose history information can be automatically retrieved from any Base Station of any PDM by using a Cradle with DoseView software of Dose Manager software. Working dose conscious is working healthier.

The BaseStation, a LCD touchscreen displays real time dose data for all PDMs within range, to enable you and your staff to take immediate action. DoseAware does not replace the thermoluminescent dosimeter (TLD) as a legal dose meter.

3.5 X-ray indication

"X-ray On" indicator light
The Allura Xper FD10 has an integrated "X-ray On" indicator light located above the LCD monitors that is clearly visible from virtually anywhere in the room.

Real-time dose information at tableside
Relevant dose information is integrated in the On-Screen User Interface of the LCD exam room monitors of the Allura Xper FD10 system. It provides the user with all relevant X-ray dose information, including accumulated and rate values of patient Air Kerma and X-ray dose area product. In addition, body zone specific X-ray dose rates are displayed for cardiac procedures. X-ray dose rates can be controlled by the user at tableside, by choosing a different fluoro mode.

X-ray dose information in the control room
X-ray dose information is also available in the control room. Cumulative X-ray dose is displayed on the Xper data monitor.

X-ray dose information in the examination report
Examination report data can be provided via the RIS/CIS DICOM two-way interface, to the RIS/CIS (MPPS protocol). A X-ray dose report can optionally be printed or e-mailed (in background) at the end of each examination at the touch of a button. Body zone specific information is included.

Specifications
Copper filters: 0.2, 0.5, and 1.0 mm copper equivalent
The filters can be programmed via Xper settings
Three fluoroscopy modes per application can be selected at tableside

4 Imaging

The Allura Xper FD10 is equipped with a compact dynamic flat detector which can easily handle complex projections. Image quality and X-ray dose reduction are further enhanced by dedicated image processing.

4.1 Dynamic Flat Detector

Philips' next generation dynamic flat detector provides excellent image quality at a low patient X-ray dose.

Features	Specifications
Size of detector housing	37 cm (14 inch) diagonal, including BodyGuard
Physical detector size	28 cm (11 inch) diagonal
Maximum field of view	25 cm (10 inch) diagonal square
Image matrix	1024 x 1024 pixels at 14 bits depth
Detector zoom fields	25, 20 and 15 cm (10, 8 and 6 inch) diagonal square formats
Pixel pitch	184 x 184 µm
Detector bit depth	14 bits
Nyquist frequency	2.72 lp/mm
DQE (0)	75% at 0 lp/mm
Digital output	$1k^2$ and 512^2 at 8 or 10 bit depth resolution
MTF at 1 lp/mm	> 60%

4.2 Fluoroscopy

Per application, three fluoro modes are available at tableside which can be programmed via Xper settings. Each mode can be programmed with a different composition of X-ray dose rate, digital processing and filter settings.

Features	Specifications
Extra pre-filtration	SpectraBeam filters: 0.2, 0.5 and 1.0 mm Copper equivalent
Fluoroscopy image processing	Recursive filtering, localized contrast-adaptive contour enhancement, SPIRIT filters and Xres algorithm
Pulse rates	Default at 3.75, 7.5, 15 and 30 pulses per second
Frame grabbing of static fluoroscopy images	Yes
Fluoroscopy storage	Default storage of the last 10 sec, programmable up to 999 images of fluoroscopy for reference or archiving
Grid-switched pulsed fluoroscopy	Yes

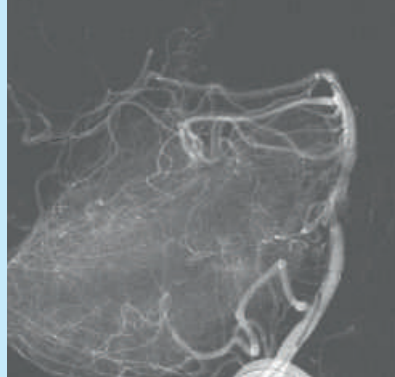The roadmapping tool tailored for specific clinical applications

Optional

Subtraction package

The Digital Subtraction Angiography (DSA) option extends the vascular applicational functionality of the Allura Xper system. DSA features real-time digital subtraction at low frame speeds of 0.5, 1, 2, 3, or 6 frames per second. The DSA programs can be selected via the Xper settings. This option's exposure technique provides exceptional image quality for subtracted images. It also also offers run-subtract to perform subtraction per run. This feature can be applied in the Rotational Scan and Bolus Chase Subtract options.

Roadmap Pro

Advanced subtraction angiography techniques are now being used to support highly complex procedures throughout the body. A roadmap is created by superimposing a live fluoro image on an angiographic image. Roadmap Pro is a software tool that provides a flexible range of features to support all anatomical areas and types of interventions. It offers insight into anatomy, and aids interventionalists in carefully positioning tools and materials, evaluating their effect, and provides information to help their decision making process. Automatic Motion Compensation has been added to the roadmapping functionality. It compensates for subtracted artifacts that might conceal important clinical information during Roadmapping due to small movements of the patient.

SmartMask

SmartMask simplifies roadmapping procedures by overlaying fluoroscopy with a selected reference image on the live monitor. The reference and fluoro images can be faded to taste on the monitors.

4.3 Digital acquisition

The Allura Xper FD10 system can be customized with a virtually unlimited number of acquisition programs for digital angiography and digital subtraction angiography. Image resolution is up to 1024 x 1024 pixels for interventional X-ray imaging. Xres Cardio is a real-time processing algorithm that provides excellent image quality through improved contrast and sharpness. It exploits the benefits of the fully digital detector to reduce noise in clinical images for cardiac applications.

Acquisition frame rates

	1024 x 1024 matrix
Standard configuration	3,75, 7,5, 15 and 30 images/sec.

Up to 60 images/sec. acquisition at a 512 x 512 matrix is optionally available

Storage capacity

	1024 x 1024 matrix
Standard configuration	100.000 images

5 Viewing

5.1 Monitors

The system is delivered standard with two black and white 18 inch LCD monitors in the examination room. A 19 inch LCD color monitor and an 18 inch black and white LCD monitor are standard in the control room.

Monochrome LCD monitor

Features	Specifications
Size of monochrome TFT-LCD display	18 inch monochrome TFT-LCD display
Format	Native format of 1280 x 1024 SXGA
Grey-scale resolution	10 bit with grey-scale correction
Wide viewing angle	Yes (approximately 160°)
High brightness	Yes (max 600 Cd/m^2, default 500 Cd/m^2), with ambient light dependent brightness control
Protection screen	Yes, in the examination room

Color LCD monitor

Features	Specifications
Size of color TFT-LCD display:	18 or 19 inch Color TFT-LCD display
Format	Native format 1280 x 1024 SXGA
Wide viewing angle	Yes (approximately 160°)
High brightness	Controlled brightness (200 Cd/m^2) with ambient light dependent brightness control

Optional

Second reference monitor
A second reference monitor (monochrome) in the examination room can display both reference images and reference runs. The User Interface on this reference monitor is accessed via the Xper ViewPad.

Optional

Physio Viewing

Physio Viewing provides acquisition, storage and display of physiological signals on the Allura Xper FD10 system. Four physiological data signals can be acquired and stored. One signal can be displayed when reviewing images. Physio Viewing includes ECG triggering that offers the possibility to acquire one fluoroscopic image per heart cycle, each at the same phase (e.g. end-diastolic or end-systolic). For each heartbeat the system generates a trigger pulse and only one image is acquired.

Acquiring only one image per cardiac cycle phase has two major advantages:
• Drastically reduces patient and physician X-ray dose.
• Cardiac motion is eliminated from the images, caused by the cardiac contraction being visible.

MultiSwitch

Xper MultiSwitch enables the Xper workspot in the control room to be shared with other applications that are loaded on separate PC modalities. The MultiSwitch option lets you switch the color LCD data monitor, keyboard and mouse that are normally connected to the Allura Xper system.

The Xper data monitor can be switched to Radiology/Cardiology Information Systems via the web-based browser (HTML) or X-window (Exceed). It makes full use of the RIS/CIS facilities and existing support for automatic handling of logistic tasks (e.g. automatic tracking, purchasing of supplies and billing) that are available.

MultiVision

The MultiVision video switch is the integrated video switch for high quality, progressive display video sources on the color LCD monitor. It can switch either black and white or color signals, and supports up to four inputs to one output. MultiVision enables an extra color monitor in the ceiling suspension in the examination room to be shared between the system and other sources, such as a DICOM viewer, StentBoost, Allura 3D-CA software, etc. The switch is controlled via the Xper Module.

FlexVision XL

Philips has introduced a new 56 inch display: FlexVision XL. FlexVision XL is a new viewing concept that provides outstanding viewing flexibility, using a large, high definition LCD screen, it allows you to display multiple images in a variety of layouts - each tailored for your specific procedure.

FlexVision XL allows you to display multiple images in variety of layouts

Now you are able to see a complete overview of all the relevant data and images without having to leave the examination room all the time

6 Additional options

6.1 Subtracted Bolus Chase

Routine examinations can be performed quickly and confidently with Bolus Chase (only for FD10 ceiling). A hand-held speed controller is used to constantly match table speed to the speed of the contrast run-off, which is displayed in real-time on the monitor screen. After the contrast run, the recorded speed profile can be used to acquire mask images with the subtraction results. The result is an efficient, run-off study that may eliminate the need for repeat exposures. Bolus Chase gives fast results for increased patient throughput and improved patient management.

6.2 2D Quantification packages

Quantitative Coronary Analysis (QCA)

This software package provides quantification of stenosis measurements in the coronary arteries. It includes the following functions:
• Diameter measurement along the selected segment
• Cross sectional area
• Percentage of stenosis
• Pressure gradient values
• Stenotic flow reserve
• Calibration routines

Left Ventricular Analysis (LVA)

The Left Ventricular package quantifies the status of the left ventricle using various relevant. It includes the following functions:
• Various Left Ventricular volumes
• Ejection Fraction
• Cardiac Output
• Wall Motion (Centerline, Regional, Slager)
• Calibration routines

Right Ventricular Analysis (RVA)

This software package is used to assess ejection fraction and right ventricular volumes. It allows you to perform right ventricular analysis from angiograms. The calculations can be executed from single plane or biplane projections.

The package is intended especially for pediatric cardio applications and focuses on easy and efficient wall contour detection. It includes the following functions:
• Calibration routines
• Various Right Ventricular volumes
• Ejection Fraction
• Cardiac output
• Wall Motion (Centerline, Regional, Slager)
• Biplane Ejection Fraction (automatic and manual)

Quantitative Vascular Analysis (QVA)

QVA is an analytical software package for quantitative analysis. It includes the following functions:
• Calibration routines to enter the scale into the programs (based on the size of the catheter visible in the image).
• Automated Vessel Analysis. This program uses contour detection to calculate vessel dimensions and analyzes stenoses.
• Vessel diameter and stenotic index. This program measures vessel size and calculates the degree of stenosis.

Full Autocal

The Full Autocal option can be used in conjunction with the quantitative analysis packages. When the object to be analyzed (e.g., Left Ventricle, Vessel Segment) is placed in the iso-center, full autocal avoids the need to:
• Acquire an additional image series containing a sphere or grid for calibration purposes, or
• Calibrate manually on a calibration object (e.g., catheter) displayed in the image or image series to be analyzed

Measurement (MEAS)

Measurement is an analytical software package for different kinds of measurement, except from stenotic measurements. This option includes angle-, length-, ratio-, and density measurements.

6.3 XperSwing

During a dual axis rotation scan, the G-stand operates on two axes simultaneously, enabling it to swing in a threedimensional arc around the patient, providing a flexibility of movement that allows it to capture the required coronary images in fewer 'runs'. The system rotates with curved trajectories around the patient, thereby allowing imaging in all desired anatomical views in a single run. The trajectories are pre-programmed and are optimized to maximize the clinical image content, while staying within it's boundaries in order to avoid any collisions. Dedicated trajectories are available for the left and the right coronary arteries.

6.4 Rotational scan

Rotation image data can be used for advanced post processings, like 3D reconstructions. Rotational Angiography acquires a range of projections to create real-time, 3D impressions of complex 'vascular' and coronary arteries. A contrast run can be followed up with a mask run to allow image/run subtraction. Rotational Angiography can save considerable time and contrast, while providing the image detail required for diagnostic and therapeutic decisions. A rotational scan can be done in both the head and side positions. The high speed acquisition decreases the amount of contrast medium, while the wide rotation range provides a complete evaluation of anatomy.

The CX50 system can be fully integrated into the Allura Xper system via a one-click connection.

6.5 CX50

To provide additional support for your interventional procedures, you can extend the power of your Allura Xper system with Philips' unique CX50 ultrasound integration solution. The new CX50 is a compact ultrasound system that enables you to have premium image quality ultrasound available right where you need it, when you need it. The CX50 system can be fully integrated into the Allura Xper system via a one-click connection. The CX50 is controlled at the table side by the Xper module with the ultrasound image displayed on the Allura's ceiling suspended monitor system. In addition, all patient data is shared automatically between the X-ray and ultrasound system eliminating workflow duplication.

Features Rotational Angio		Specifications
G-stand in head position	Maximum rotation speed	55°/sec.
	Maximum rotation angle	240°
G-stand in side position (ceiling mounted only)	Maximum rotation speed	30°/sec.
	Maximum rotation angle	90°
Frame speeds		15 to 30 and 60 fps.

Users can designate speed, as well as a start and end position, through Xper settings. The clinical images from the rotational scan can be sent automatically to a 3D-CA interventional tool for a reconstruction of static vasculature.

7 Interventional tools

In close partnership with our clinical partners, Philips continues to enhance the capabilities of the interventional tools on Allura Xper family. Recent Philips innovations have expanded the clinical utilization by continuous improvement of the acquisition protocols and reduction of reconstruction times and expanding the range of applications with e.g. the image guidance on previous acquired high resolution CT and/or MR data sets.

7.1 StentBoost

StentBoost is a simple and cost-effective tool which improves the visualization of stents in the coronary arteries during interventions. It produces an instant and enhanced view of the stent position and deployment while the catheter is still in place, assisting you with stent positioning. With the unique StentBoost Subtract, contrast can be used during acquisition which provides a better visualization of stent-vasculature relationships. The enhanced stent image and the contrast image are superimposed and alternately faded in and out to visualize the stent in relation to the vessel lumen, enabling an enhanced control of the expansion of the stents and of their apposition to the vessel wall. It also provides additional information with the better visibility of stent struts and morphology, and calcification.

- Improves visualization of the stent placement and deployment example during stent-in-stent placement, malapposition and under-expansion of stent due to calcification
- Save time and money by shorting the procedure time and potentially eliminating the use of additional stents.

7.2 Allura 3D-CA

Allura 3D-CA creates a 3D model of 2D coronary artery images. It can help with diagnosis by providing optimal insight into the structure of the coronary tree that leads to enhance assessment of lesions and bifurcations. It also gives you insight into the exceptional working angles.

Enhance interventional preparation to assist the user to:
- Select the right stent length
- Select view of lesion or bifurcation with "TrueView" map

Enhance interventional execution to assist you/the physician to:
- Work with optimal viewing angles of lesions and/or bifurcations
- Place the right stent with the right length in the right place

(A) Image after initial stent deployment showing malapposition.
(B) Image after post dilation showing correct apposition of the stent with the vessel wall.
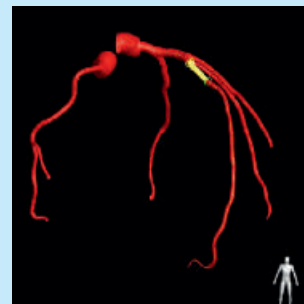
Allura 3D-CA: Create a 3D model of 2D coronary arteries to enhance assessment of lesions and bifurcations

7.3 CT TrueView

CT TrueView connects the Cath lab to the CT room. It provides all the benefits of Allura 3D-CA based on a CT diagnostic image. It offers:

• Optimal G-stand positioning on Philips CT data sets to minimize foreshortening when assessing lesions or bifurcations.

• CTO Navigator provides an overlay of a 2D exposure run over the previous acquired segmented cardiac CT data. The images are matched manually or automatically for images in the same part of the ECG signal.

• Easy to use user interface, on the EBW and interventional tools.

7.4 EP navigator

EP navigator provides a fluoroscopy overlay of a 3D image of the heart, based on either a pre-interventional CT image or an 3D atriography acquisition. EP navigator shows the catheters and the 3D anatomy in real-time in one image, allowing electrophysiologists to instantly confirm the position of any catheters or lead with respect to detailed 3D cardiac anatomy in the EP intervention lab.

3D atriography

3D atriography allows the user to create a 3D image of the left atrium on the X-ray system in the EP lab by doing a rotational angiography with contrast injection. An up-to-date view of the cardiac anatomy is vital for guiding EP interventions. Obtaining good CT scans is often difficult, time consuming and expensive, and it requires a high X-ray dose. With 3D atriography, you can create 3D images of the left atrium in your own lab and use this information to guide your catheters.

7.5 Allura 3D-RA

Allura 3D-RA provides extensive three-dimensional (3D) visualization into vascular pathologies from a single rotational angiographic X-ray acquisition. Paired with the unique whole body coverage of the Allura, which is specifically designed for 3D-imaging, Allura 3D-RA is able to cover any anatomy, including cerebral, abdominal and peripheral vasculature. The 3D-RA functionality is fully integrated with the Allura system, and can be fully controlled at the table side. 3D-RA volumes can be matched with any previous acquired CT and/or MR scan, to assist with procedure management for aneurysms, AVMs, stroke or surgical planning.

The combination of CT TrueView and CTO Navigator, provides the optimal view and insight to the distal trajectory of the occluded coronary arteries
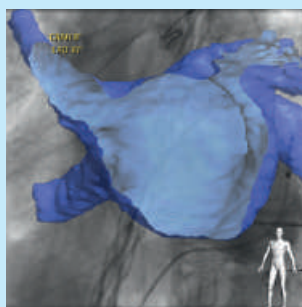
EP Navigator: show the catheters and the 3D anatomy in real-time to confirm the position of the catheters or lead
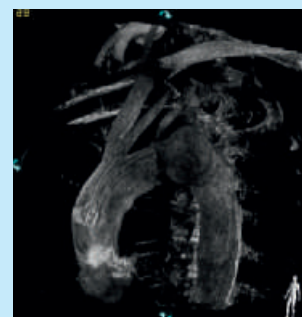
Excellent image quality of a 3D-RA image showing an aneurysm at the aorta arch

Workflow enhancer options

7.6 EP cockpit

EP cockpit creates a comfortable EP lab working environment, integrates EP information across the EP care cycle and supports new complex therapies.

The EP cockpit brings the following innovations to your EP lab
• Organize EP equipment on one moveable ceiling mounted rack to reduce EP clutter
• Mix and match images from Philips and 3rd party equipment on any Philips' exam or control room monitor
• Operate equipment (incl 3rd party systems) centrally from one workspot in control room
• Store and retrieve all information used during EP procedure in a central place
• Reduce radiation exposure for staff and patients by up to 80% with special EP X-ray dose settings
• Resize and enlarge information with EP cockpit XL. The large 56 inch, high resolution colour display, lets you select and personalize all relevant procedure information from up to eight sources simultaneously. With the advanced Super Zoom you can resize and enlarge information at any time and any position on the screen.

Optional

Ambient Experience

Philips Ambient Experience provides a positive environment for patients and healthcare professionals to enhance clinical processes and patient care. Ambient Experience integrates architecture, design and enabling technologies, such as dynamic lighting and sound, to allow patients to personalize their environment and surround themselves in a relaxing atmosphere. Our innovative approaches to enhancing the clinical environment makes the prodecure less stressful and more relaxing for both patients and caregivers. This makes your clinicians' jobs easier, potentially reducing procedure time, and improving workflow. Ambient Experience can lead to greater patient and staff satisfaction, help you attract and retain clinicians, and set your hospital apart from the competition.
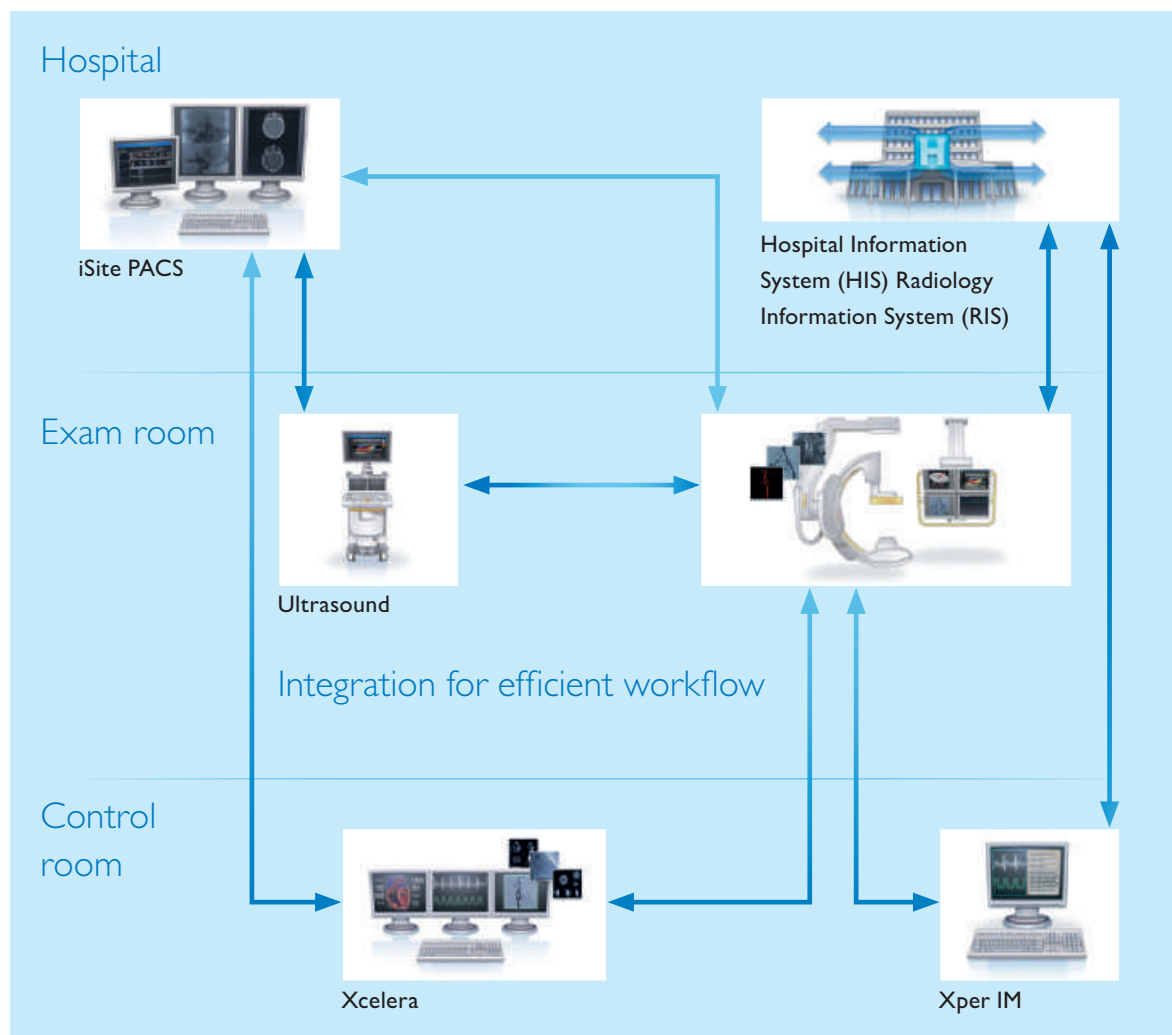

Ambient Experience, a purpose-fully designed environment that makes patients and staff feel more comfortable.

8 Integration solutions

The Xper DICOM Image Interface enables clinical images to be exported to a destination, such as Xcelera or any third party PACS. The system exports clinical studies in DICOM XA Multi Frame or DICOM Secondary Capture formats.

The Xper DICOM Image Interface speeds up image transfer through its fast Ethernet link, making images available on-line within seconds. The archiving process can be configured via Xper settings:
- The image archiving is done in the background during or after the procedure
- The images can be archived automatically in the background with the Continuous Autopush option

- The export format is configurable in 512^2 and 1024^2 matrix
- The Xper DICOM Image Interface can distribute the examination images to multiple destinations for archiving and reviewing purposes
- The Xper DICOM Image Interface provides DICOM Store and DICOM Store Commitment Services
- The Query/Retrieve function allows older DICOM studies to be uploaded in the system

Hospital

iSite PACS

Hospital Information System (HIS) Radiology Information System (RIS)

Exam room

Ultrasound

Integration for efficient workflow

Control room

Xcelera

Xper IM

Optional

Continuous autopush

This option provides an additional processor board that is dedicated to archiving. This minimizes interruptions that are caused by other functions that require the image processor, such as patient review. Using the continuous autopush option speeds up archiving and availability of clinical images for review at other PACS destinations.

DICOM Print

DICOM Print provides an interface to any DICOM Printer. It provides Print Preview, Print Compose, Print Manual Overrides, Print Job submission, and Print Job management via automated printing protocols.

Intercom

The remote Intercom is used for communication between the examination and control room.

Lab reporting

This option allows the clinical user to generate and print a report in modality stand-alone situations. The user can incorporate free text, clinical images and X-ray dose information. The report is printed or sent by e-mail. Part of the report is generated automatically from administrative data (e.g. patient/exam data, hospital name) and acquired data (e.g. run log, X-ray dose information and event log).

RIS/CIS DICOM Interface

This interface option enables two-way communication between the FD10 and a local Information System (CIS or RIS) or hemodynamic system. The interface uses the DICOM Worklist Management (DICOM WLM) and Modality Performed Procedure Step (DICOM MPPS) standards. If an information system is present, it is possible to receive patient and examination (request) information and to report examination results.

This option provides the following benefits:
• Eliminates the need to retype patient information on the system
• Can help prevent errors in typing patient name or registration number, which allows for consistency of information throughout the department to prevent

problems in archive clusters
• Provides information to and from the information system about the acquired images and radiation dose. Upon request from the system, the complete worklist with all relevant patient and examination data is returned to the system.

Standard line rate video output

The standard line rate video output option is 625 (525) lines for a 50 (60) Hz video output unit. This option is required to connect a medical DVD/VCR or an additional TV monitor. This option enables you to store fluoro and acquisition data on a DVD/CD as X-ray is being generated during fluoroscopy and exposure.

Cath lab experience

The Philips cath lab experience is based on a simple yet powerful concept: The procedures you perform are increasingly complex, so using advanced technologies that assist you in diagnosing and treating your patients should not be. Our offerings for interventional X-ray interventions are designed to simplify cath lab workflow, and may help you deliver faster, accurate diagnosis and treatment.

With advanced image acquisition and visualization tools, multimodality access, hemodynamic monitoring and integrated reporting, the Philips cath lab experience creates a fluid workflow that works for you and your patients.

Xcelera

The ultimate goal of using information solutions is to streamline workflow and provide access to all relevant images and information at one location. Philips can help you do just that with one of the most interfaced interventional X-ray image management and reporting solutions on the market. Philips unites interventional X-ray care, offering one access point for all relevant information - X-ray, ultrasound, CT, MR, nuclear medicine, ECG, and electrophysiology. One workspace for documentation, viewing, quantification and reporting tasks. Philips gives you everything you need to manage and enhance your interventional X-ray operations.

9 Services

Services – a full lifecycle solution

The success of your organization depends on people. Philips Services are designed with that in mind – creating healing environments, developing your staff, improving your organization's performance, and increasing patient satisfaction.

Depend on us. The resources, training, and support we offer enable you to focus on what's most important – your patients.

Philips provides a full lifecycle solution designed around your patients, your people, and your organization. We help you succeed in every phase of system ownership, from planning to start-up, through peak usage and renewal.

Planning

Understand how and when the right equipment and services contribute to better patient care and better economics.

Start-up

Make the most of your system as quickly as possible.

Peak Usage

Extract maximum utility out of your system day to day.

Renewal

We'll help you make smart decisions on upgrading or transitioning to a new system.

asimpleswitch.com

Our Allura Xper FD10 is labeled as being a Green Product. The Allura Xper FD10 saves you at least 12% energy, and 5% is related to the use of LCD monitors. An optimal counter balance design has resulted in eliminating 83% of the total lead content thus reducing the amount of lead to an absolute minimum for specific applications only (e.g. X-ray shielding).
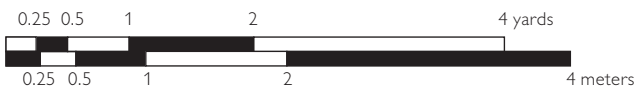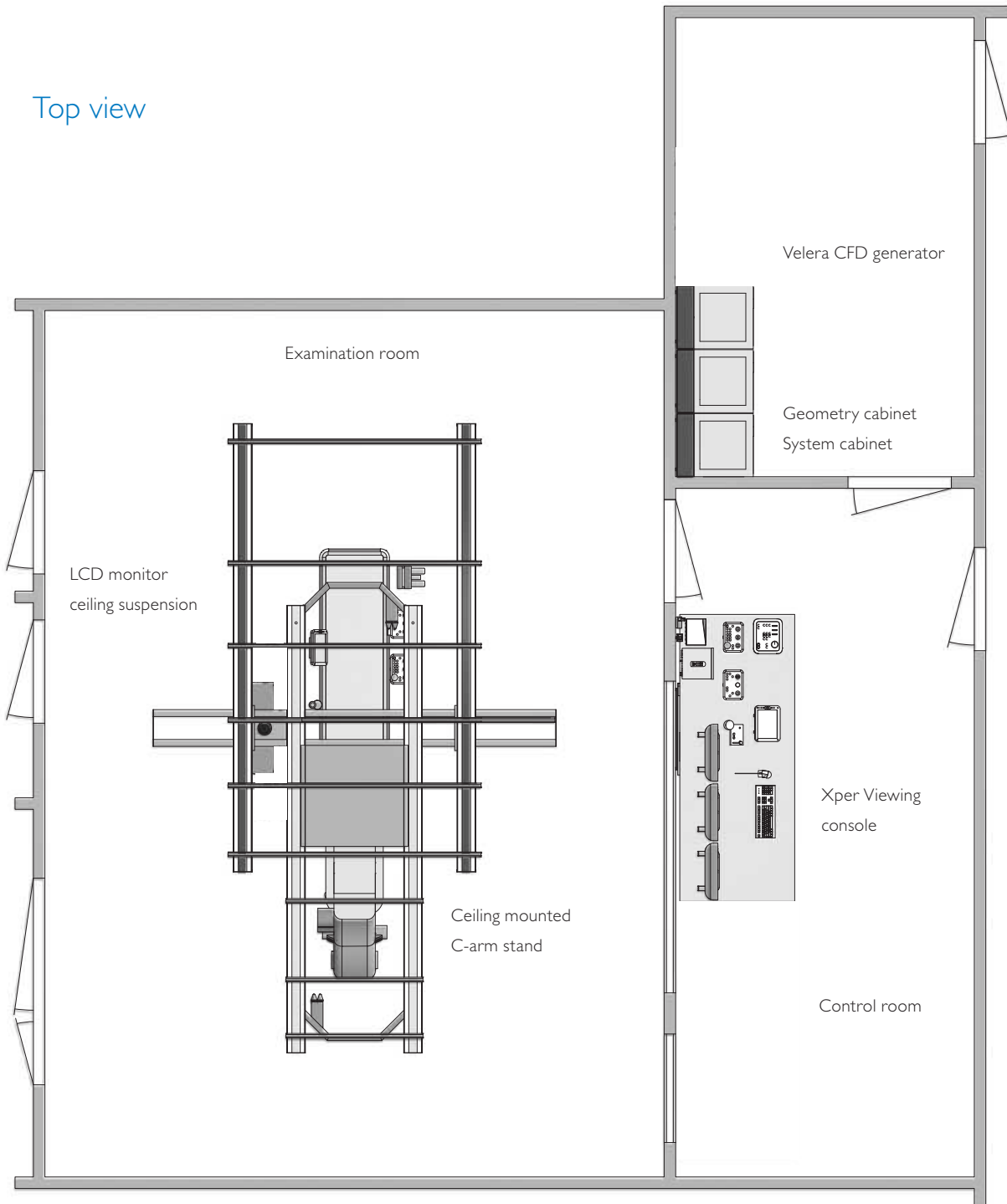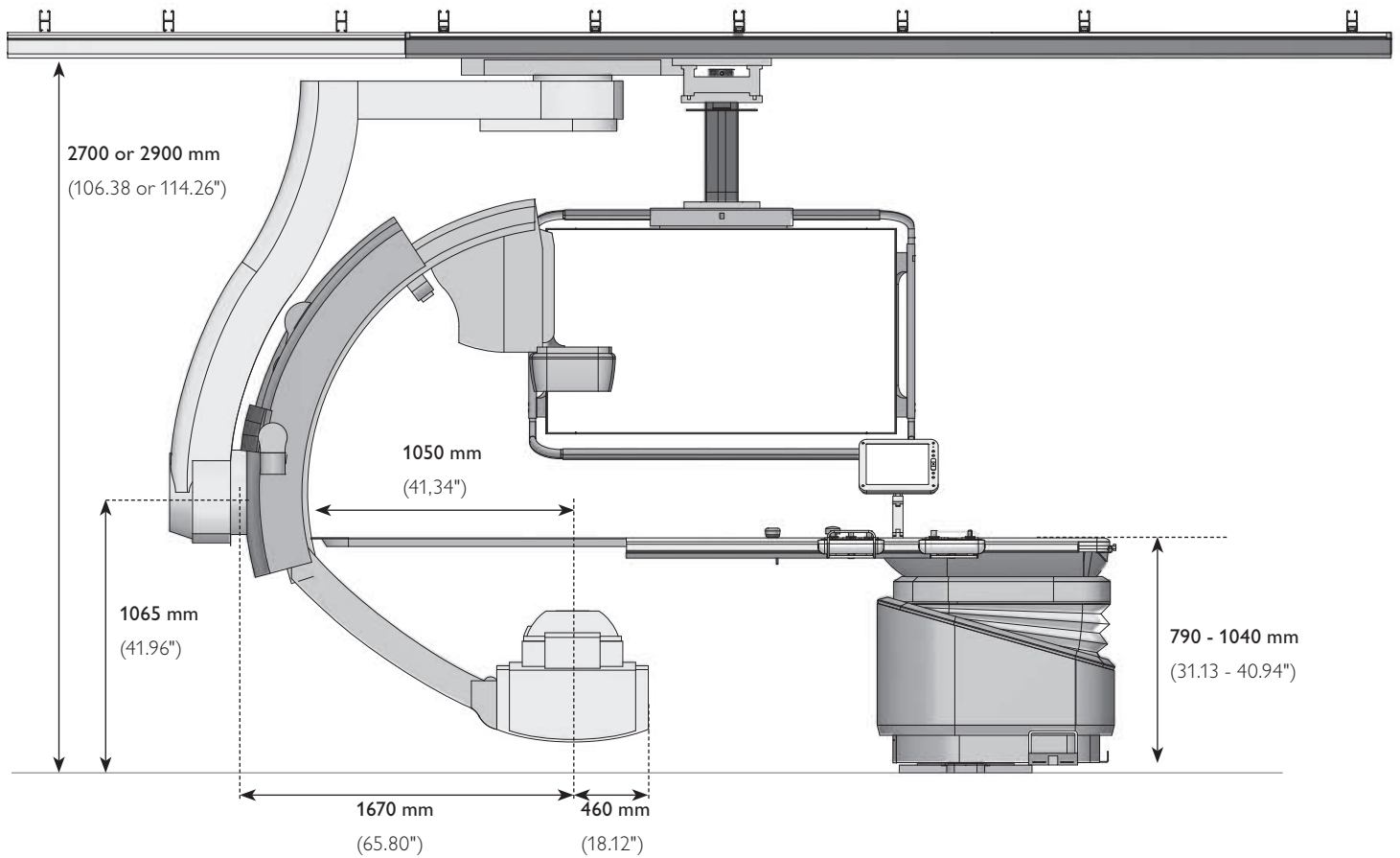
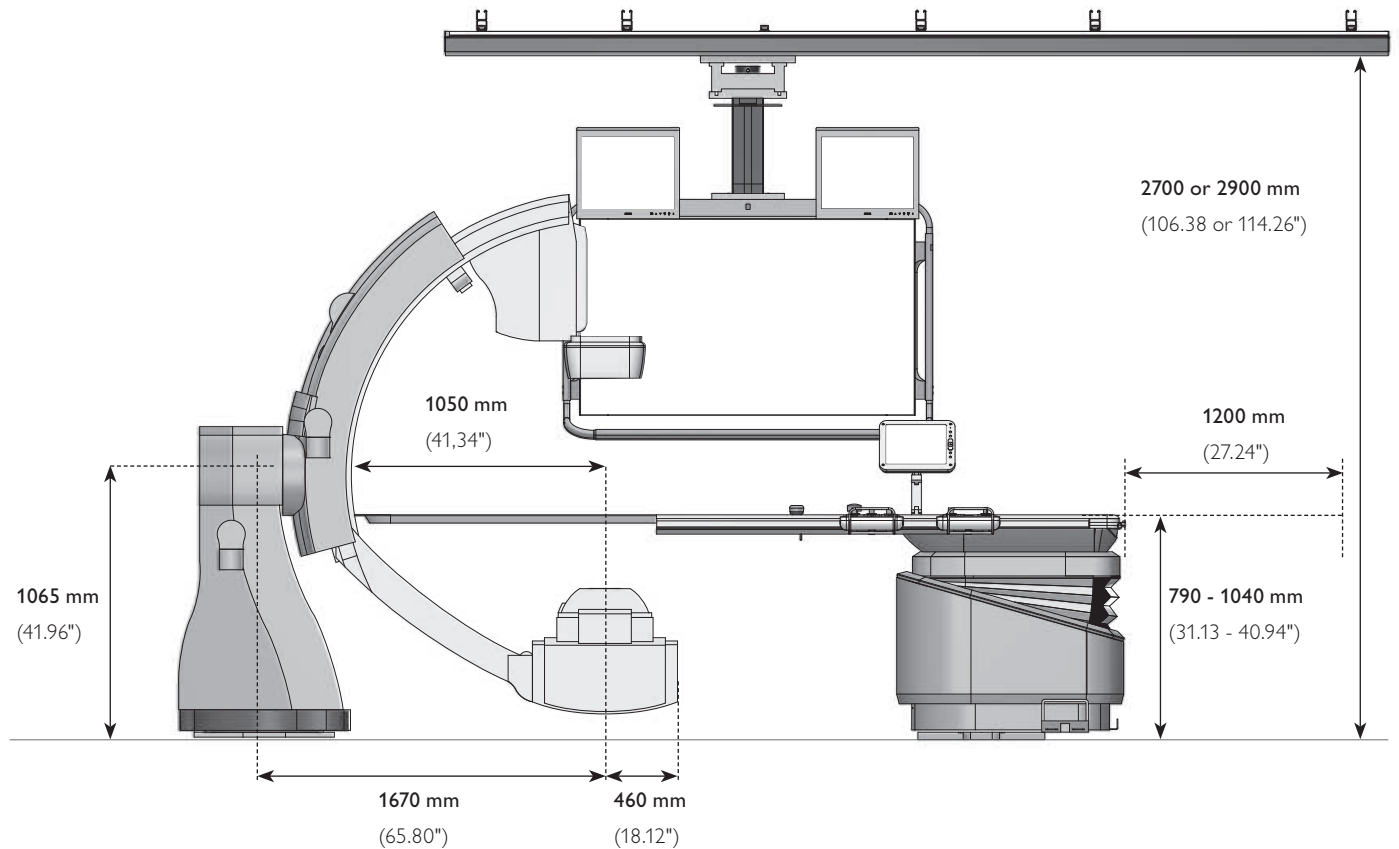Hazardous substances   Energy efficiency

10 Room layout

Top view

Velera CFD generator

Geometry cabinet

System cabinet

Examination room

LCD monitor

ceiling suspension

Xper Viewing

console

Ceiling mounted

C-arm stand

Control room

0.25 0.5   1   2   4 yards

0.25 0.5   1   2   4 meters

Front view ceiling mounted

2700 or 2900 mm
(106.38 or 114.26")

1050 mm
(41,34")

1065 mm
(41.96")

790 - 1040 mm
(31.13 - 40.94")

1670 mm
(65.80")

460 mm
(18.12")

Front view floor mounted

2700 or 2900 mm
(106.38 or 114.26")

1050 mm
(41,34")

1200 mm
(27.24")

1065 mm
(41.96")

790 - 1040 mm
(31.13 - 40.94")

1670 mm
(65.80")

460 mm
(18.12")

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