Making the difference with Philips Live Image Guidance

Philips Allura Xper family FD20/15 specifications
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td><strong>1 Geometry</strong></td>
<td>4</td>
</tr>
<tr>
<td>1.1 Gantry</td>
<td>4</td>
</tr>
<tr>
<td>1.2 Xper Tables</td>
<td>5</td>
</tr>
<tr>
<td>1.3 Philips Monitor Ceiling Suspension</td>
<td>7</td>
</tr>
<tr>
<td>1.4 Accessories</td>
<td>7</td>
</tr>
<tr>
<td><strong>2 User Interface</strong></td>
<td>8</td>
</tr>
<tr>
<td>2.1 Xper User Interface in the Examination Room</td>
<td>8</td>
</tr>
<tr>
<td>2.2 Xper User Interface in the control room</td>
<td>10</td>
</tr>
<tr>
<td>2.3 User Interface Options</td>
<td>12</td>
</tr>
<tr>
<td><strong>3 X-ray generation</strong></td>
<td>13</td>
</tr>
<tr>
<td>3.1 X-ray generator</td>
<td>13</td>
</tr>
<tr>
<td>3.2 X-ray tubes</td>
<td>13</td>
</tr>
<tr>
<td><strong>4 Dose Management</strong></td>
<td>14</td>
</tr>
<tr>
<td>4.1 Dose awareness</td>
<td>15</td>
</tr>
<tr>
<td><strong>5 Imaging</strong></td>
<td>16</td>
</tr>
<tr>
<td>5.1 Dynamic Flat Detector</td>
<td>16</td>
</tr>
<tr>
<td>5.2 Fluoroscopy</td>
<td>16</td>
</tr>
<tr>
<td>5.3 Digital acquisition</td>
<td>17</td>
</tr>
<tr>
<td><strong>6 Viewing</strong></td>
<td>18</td>
</tr>
<tr>
<td>6.1 Monitors</td>
<td>18</td>
</tr>
<tr>
<td><strong>7 Additional Options</strong></td>
<td>20</td>
</tr>
<tr>
<td>7.1 Subtracted Bolus Chase</td>
<td>20</td>
</tr>
<tr>
<td>7.2 2D Quantification packages</td>
<td>20</td>
</tr>
<tr>
<td>7.3 XperSwing</td>
<td>21</td>
</tr>
<tr>
<td>7.4 Rotational Angio</td>
<td>21</td>
</tr>
<tr>
<td>7.5 Integrated CX50 compact ultrasound</td>
<td>21</td>
</tr>
<tr>
<td>7.6 Physio Viewing with ECG triggering</td>
<td>22</td>
</tr>
<tr>
<td>7.7 Workflow enhancer options</td>
<td>22</td>
</tr>
<tr>
<td><strong>8 Interventional Tools</strong></td>
<td>23</td>
</tr>
<tr>
<td>8.1 Innovative radiology tools</td>
<td>23</td>
</tr>
<tr>
<td>8.2 Innovative electrophysiology tools</td>
<td>26</td>
</tr>
<tr>
<td><strong>9 Integrated solutions</strong></td>
<td>27</td>
</tr>
<tr>
<td><strong>10 Room layout</strong></td>
<td>28</td>
</tr>
<tr>
<td><strong>11 SmartPath</strong></td>
<td>31</td>
</tr>
</tbody>
</table>
Making the difference with Philips Live Image Guidance

With Philips Live Image Guidance Together we make the difference in the treatment of cardiac diseases to improve patient outcomes and save lives. With our Live Image Guidance we aim to remove barriers to safer, effective and reproducible treatments, delivering relevant clinical value where it’s needed most - at the point of patient treatment. Intelligent and intuitive integration of multi-modality imaging, patient information, and procedure specific applications in an interventional or hybrid surgical suite delivers the critical information physicians need to optimize interventions and determine the optimal course of treatment with greater predictability. Leverage 3D information to quickly assess the exact nature and location of the problem and reveal hidden risks to initial treatment strategy. Navigate in real time to precisely target treatment and optimize decision making; and receive immediate intra-operative feedback of therapy response. Whether performing an ablation, implanting a device, treating an aneurism or racing the clock to remove a clot, our Allura Xper family enables clinicians to deliver fast, effective and simplified procedures with a more efficient clinical workflow.

Together, we drive growth and open doors to new procedures and techniques that truly make a difference in people’s lives.

Example configuration for the system

- Floor mounted C-arm stand
- FD20 Flat Detector
- High output MRC X-ray tube
- Wireless footswitch
- Xper Geometry and Imaging Module
- Monitor ceiling suspension with height adjustment
- LCD monitors (optional color LCD monitor)
- Lateral Arc
- Xper Module
- Xper table standard
- Xper data monitor (LCD)
- Xper review monitors (LCD)
- Xper Review Module
- Optional Xper Module
1 Geometry

1.1 Gantry
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 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.

<table>
<thead>
<tr>
<th>Features Frontal C-arm</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iso-center to floor</td>
<td>113.5 cm (44.7 inch)</td>
</tr>
<tr>
<td>L-arm rotation</td>
<td>Motorized and manual movement, over 180° with snap positions at 90°, -0°, -90° to allow patient access from three sides of the table</td>
</tr>
<tr>
<td>C-arm rotation</td>
<td>In head-end position: 120° LAO, 185° RAO, in side position: 90° LAO, 90° RAO</td>
</tr>
<tr>
<td>C-arm rotation speed</td>
<td>Is up to 25°/sec. and 55°/sec. for rotational scan</td>
</tr>
<tr>
<td>C-arm angulation / speed</td>
<td>In head-end position: 90° cranial, 90° caudal. In side position: 185° cranial, 120° caudal up to 18°/sec</td>
</tr>
<tr>
<td>Focal spot to iso-center</td>
<td>Is up to 81 cm (31.9 inch)</td>
</tr>
<tr>
<td>Source Image Distance</td>
<td>89.5 – 119.5 cm (35.2 – 47.1 inch)</td>
</tr>
<tr>
<td>C-arm depth</td>
<td>90 cm (35.4 inch)</td>
</tr>
<tr>
<td>Rotation of the flat detector</td>
<td>Xper Access allows re-positioning of the flat detector from portrait to landscape within 3 sec.</td>
</tr>
<tr>
<td>Programmable positions</td>
<td>Standard 2 positions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Features Lateral C-arc</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iso-center to floor</td>
<td>113.5 cm (44.7 inch)</td>
</tr>
<tr>
<td>Longitudinal movement</td>
<td>Is motorized and manual of 300 cm (118.1 inch) at 15 cm/sec. It includes auto stops at the park position, cardio, neuro and lower peripheral position. Motorized or manual longitudinal movement for parking or positioning. Autostop in Iso-center. Two speed control to accurately position the beam longitudinally in the region of interest: 6 cm/sec (2.35 inch/sec) inside working area with neuro fine positioning 12 cm/sec. (4.7 inch/sec) outside working area</td>
</tr>
<tr>
<td>Motor-driven rotation</td>
<td>- 27° RAO to 115° RAO (or 0° LAO to 90° LAO for lateral arc CN).</td>
</tr>
<tr>
<td>C-arc rotation speed</td>
<td>Is up to 8°/sec.</td>
</tr>
<tr>
<td>Motor-drive angulation</td>
<td>45° cranial to 45° caudal, possible at any rotation angle</td>
</tr>
<tr>
<td>Focal spot to iso-center</td>
<td>Is up to 76.5 cm (30.1 inch)</td>
</tr>
<tr>
<td>Focal spot to flat detector</td>
<td>87.5 – 130.3 cm (34.4 – 51.3 inch), motorized and manual movement</td>
</tr>
</tbody>
</table>

Optional

Automatic Position Controller (APC)
Functionality for the stand is accessed through the Xper Module at the patient tables side.
- 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 Xper tables

The Xper Table Standard and Xper Table are dedicated interventional X-ray tables that supports a full range of applications. A feather-light free floating tabletop helps maintain your region of interest and reduce effort. It has very high patient loadability and CPR can be performed on the table.

### Xper Table Standard

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table height (min.-max.)</td>
<td>74 cm - 102 cm (29.1 inch - 40.2 inch)</td>
</tr>
<tr>
<td>Table top length</td>
<td>319 cm (125.6 inch)</td>
</tr>
<tr>
<td>Table top width</td>
<td>50 cm (19.7 inch)</td>
</tr>
<tr>
<td>Longitudinal float range</td>
<td>120 cm (47.2 inch)</td>
</tr>
<tr>
<td>Lateral float range</td>
<td>36 cm (14.2 inch)</td>
</tr>
<tr>
<td>Max. table load</td>
<td>325 kg (715 lbs)</td>
</tr>
<tr>
<td>Max. patient weight</td>
<td>250 kg (550 lbs) + 500 N additional force</td>
</tr>
<tr>
<td>Vertical stiffness</td>
<td>38 N/mm</td>
</tr>
</tbody>
</table>

### Optional

**Auto Position Controller for Table**

With this option, the X-ray beam automatically adapts to the table movement to keep the region of interest in the isocenter of rotation and angulation of the stand. This ensures that your region of interest always remains centered.

**Store and recall**

Reproducing precise coordinates (height, longitude and latitude) is critical for obtaining accurate visualizations. The optional automatic position controller brings the Xper table back to the original table position stored, without applying additional X-ray dose.

**Pivot**

Transradial access, upper extremity angiography, and patient transfer have never been simpler with our optional Pivot feature. One finger push-to-pivot allows effortless patient positioning. It moves with less friction, making it easier to move larger patients. A secure mechanism locks the tabletop in place to prevent it from moving.

**Tilt**

Our option tilt functionality allows you to tilt the table for gravity oriented or puncture procedures. As the table tilts, the X-ray beam automatically adapts to the movement to keep the region of interest in the isocenter of rotation and angulation of the stand. As a result, your region of interest always remains centered.

**Tilt and cradle**

Many electrophysiology and non-vascular procedures benefit from additional positioning options. Our Xper table with isocentric tilt and cradle-tilt functionality puts your gravity oriented or guided puncture procedures at the required angle.

### Technical specifications

<table>
<thead>
<tr>
<th>Options</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Isocenter positioning</td>
<td>Automatic Position Controller in table</td>
</tr>
<tr>
<td>Store/Recall table position</td>
<td>Automatic Position Controller in table</td>
</tr>
<tr>
<td>Pivot</td>
<td>-90°/+180° or -180°/90°</td>
</tr>
<tr>
<td>Swivel (includes pivot)</td>
<td>Extended longitudinal range: 78.2 cm (30.8 inch), Height: +8.5 cm (3.3 inch), Pivot range: -180°/90° only</td>
</tr>
<tr>
<td>Tilt and Cradle</td>
<td>Tilting range: ±17° iso-centric, Cradle tilting range: ±15°, Height: min +4 cm (1.6 inch), max +1 cm (0.4 inch), Vertical stiffness: 36 N/mm</td>
</tr>
<tr>
<td>Tilt</td>
<td>Tilting range: ±17° iso-centric, Table height: min. +4 cm (1.6 inch), max. + 1 cm (0.4 inch), Vertical stiffness: 36 N/mm</td>
</tr>
</tbody>
</table>
Interface to MAGNUS OR Table
In addition to the Xper table, the Allura Xper family can be equipped with an interface to the MAGNUS operating table system (fixed column), manufactured by MAQUET. This allows you to use a fully OR compliant patient table with the Allura Xper family. This integration helps improve:

Safety
• With the integrated emergency stop, all motorized movements (including table) are stopped when the Allura emergency stop button is pressed.
• With the integrated collision detection, all motorized movements (including table) are slowed down or stopped when BodyGuard detects the patient.

Workflow
• All patient positioning movements are supported via the Xper Geometry module and MAGNUS (MAQUET) user interface controls, including transporter, table height, tilt, cradle, longitudinal/lateral movement, reset geometry, and synchronized patient orientation.

Advanced functionality includes the isocentric tilt feature that tilts the tabletop while keeping the point of rotation fixed in the isocenter of the imaging system. The syncra tilt feature synchronizes the stand orientation with the isocentric tilt movement so that the view stays perpendicular to the tabletop surface.

The OR table is available with two different tabletops, the modular tabletop for open surgery and the radio translucent tabletop for endovascular and hybrid procedures. The tabletops can be easily exchanged using the transporter, allowing smooth transfer of patients between procedures.

The exceptionally balanced, modular design of the OR tabletops facilitates extreme positioning, allowing both microsurgery and larger operations to be carried out. The special height adjustment options allow clinicians to work in a comfortable position, while providing a high level of patient comfort in all disciplines.

With the innovative slope saddle technology of the table columns and the extreme positioning options, MAGNUS already fulfills the requirements of tomorrow, today. The fixed column version is used in combination with the Allura Xper family.

Significant advantages
Thanks to its highly modular design, the OR table can be quickly adapted to meet the needs of new interventional and surgical requirements.

OR table configurations are available for every specialty. The OR table can be positioned at extreme tilt and slope angles to provide improved patient access during surgery and to reduce cut-and-stitch times during minimally invasive procedures. With the radio translucent OR table, the length and width of the radio translucent areas have been extended significantly to support larger imaging spaces.

Please see MAQUET Brochure 1180_MSW_BR_10000045 for additional specifications on the modular version and MAQUET Brochure 1180_MSW_BR_10000815 for additional specifications on the carbon fiber table top version.
1.3 Philips Monitor Ceiling Suspension

The Philips Monitor Suspension allows flexible, freely rotating positioning with a concave set-up of the monitors for optimal viewing angle which only works with Philips monitors. A separate integration kit is available for third party monitor suspensions and ceiling booms.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of monitors</td>
<td>One, two, three, four, six or eight monitors</td>
</tr>
<tr>
<td>Rotation range</td>
<td>350°</td>
</tr>
<tr>
<td>Transversal movement</td>
<td>Over a distance of 300 cm (118.1 inch)</td>
</tr>
<tr>
<td>Longitudinal movement</td>
<td>Over a distance of 330 cm (129.9 inch)</td>
</tr>
</tbody>
</table>

1.4 Accessories

Standard accessories Xper table

- Mattress
- Patient straps
- Set of arm supports (if cradle option is chosen)
- Drip stand
- OP rail accessory clamps
- Cable holders (15 pieces)

Optional accessories

- Panhandle
- Neuro Mattress (if Neuro tabletop)
- Longer Cardio Mattress
- Head support
- Arm support, incl. arm pad
- Neuro wedge
- Table clamp
- Set handgrips and clamps
- Additional OP-rail with cable extension kit for Xper Modules
- Ratchet compressor
- Additional OP-rail
- Auxiliary OP rail for table base
- Examination light
- Arm support (height adjustable)
- Table X-ray protection
- Peripheral X-ray filter
- Pulse cath arm support
- Ceiling suspended radiation shield

Optional accessories Xper table

- Mattress
- Patient straps
- Set of arm supports (if cradle option is chosen)
- Drip stand
- OP rail accessory clamps
- Table clamp
- Set handgrips and clamps
- Additional OP-rail with cable extension kit for Xper Modules
- Ratchet compressor
- Additional OP-rail
- Auxiliary OP rail for table base
- Examination light
- Arm support (height adjustable)
- Table X-ray protection
- Peripheral X-ray filter
- Pulse cath arm support
- Ceiling suspended radiation shield

Optional accessories

- Mattress
- Patient straps
- Set of arm supports (if cradle option is chosen)
- Drip stand
- OP rail accessory clamps
- Table clamp
- Set handgrips and clamps
- Additional OP-rail with cable extension kit for Xper Modules
- Ratchet compressor
- Additional OP-rail
- Auxiliary OP rail for table base
- Examination light
- Arm support (height adjustable)
- Table X-ray protection
- Peripheral X-ray filter
- Pulse cath arm support
- Ceiling suspended radiation shield
2 User Interface

Tailor made customized User Interface is available for each user group and for each desired application. Xper stands for "X-ray Personalized", and reflects the expert nature of the Allura Xper family, which is based on several generations of proven technology.

2.1 Xper User Interface in the examination room

In the examination room, the Xper User Interface is comprised of 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 protection bar that prevents unintended activation of system.
### 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
- Laser pointer
- 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 PACS side control, optional
- Xper Flex Cardio table side control, optional
- CX50 table side control, optional
### Xper Geometry Module
- Tabletop float
- Tabletop motorized 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 per plane
- Biplane rotation
- Longitudinal movement of the stand along the ceiling
- Frontal 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 configurable starting position

### Xper Imaging Module
- Fluoroscopy mode selection as defined via Xper settings
- Positioning of shutters and wedges without radiation
- Manual or automatic wedge operation for each plane, 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
- Toggle button to select the required channel for adjustments

### 2.2 Xper User Interface in the control room
The Xper Viewing Console consists of an LCD color data monitor for patient data and system information management, including radiographic parameters, and two monochrome review monitors 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 monochrome LCD monitor that has 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.

<table>
<thead>
<tr>
<th><strong>Xper Review Monitor</strong></th>
<th><strong>Xper Review Module</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Step through file, run or images</td>
<td>Power on/off of the system</td>
</tr>
<tr>
<td>File and run overview</td>
<td>Tagarno wheel to control the review of a patient exam</td>
</tr>
<tr>
<td>Image processing features such as contrast, brightness and edge enhancement</td>
<td>File and run cycle</td>
</tr>
<tr>
<td>Flagging of runs or images for transfer</td>
<td>Adjustment of contrast, brightness, and edge enhancement</td>
</tr>
<tr>
<td>Image annotation</td>
<td>File, run and image stepping</td>
</tr>
<tr>
<td>Automatic printing</td>
<td>Run and file overview</td>
</tr>
<tr>
<td>Video invert</td>
<td>Basic review functionality, such as image invert and digital zoom</td>
</tr>
<tr>
<td>Zoom and pan image</td>
<td>Go to default settings</td>
</tr>
<tr>
<td>Electronic shutters</td>
<td>Reset fluoroscopy timer and switch X-ray on/off</td>
</tr>
<tr>
<td>Toggle switch physio</td>
<td></td>
</tr>
<tr>
<td>Store/delete images/runs</td>
<td></td>
</tr>
<tr>
<td>Store fluoro</td>
<td></td>
</tr>
<tr>
<td>Pixel shift</td>
<td></td>
</tr>
<tr>
<td>Quantitative Analysis Packages, optional</td>
<td></td>
</tr>
<tr>
<td>Subtraction, optional</td>
<td></td>
</tr>
<tr>
<td>Move or renew mask, optional</td>
<td></td>
</tr>
<tr>
<td>Landmarking (increase/decrease of subtraction degree), optional</td>
<td></td>
</tr>
<tr>
<td>View trace, optional</td>
<td></td>
</tr>
</tbody>
</table>
2.3 User Interface options

Optional

Xper Pedestal
The Xper Pedestal creates a flexible workspot for operating the system in the examination room. The pedestal is equipped with an Xper Geometry and Imaging Module and can also hold the X-ray footswitch. The Xper Pedestal can be positioned freely around the patient table and can be put aside when not in use.

Second Imaging or Geometry Module.
Third Xper Module
The FD20/15 biplane can be extended with additional Xper Modules that have the same functionality as the Xper Module in the examination room. Adding a second Imaging or Geometry Module in the control room works in a master-slave configuration.

Contrast Injectors
The system can be connected to contrast injectors to enhance procedures.

Wireless Footswitch
Our Wireless Footswitch1 streamlines workflow, reduces clutter, and simplifies preparation and cleanup where it’s needed most – at the point of patient treatment. Clinicians can wirelessly control the X-ray system from any convenient position around the table. No sterile covers are needed with the IPX8 certified waterproof design. It’s one of Philips Live Image Guidance solutions for X-ray environments.
3 X-ray generation

3.1 X-ray generator

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

<table>
<thead>
<tr>
<th>Features</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generated power</td>
<td>Microprocessor-controlled, 100 kW high frequency generator with MOSFET technology</td>
</tr>
<tr>
<td>Minimum switching time</td>
<td>Quartz-controlled power switch, with a minimum switching time of one ms</td>
</tr>
<tr>
<td>Voltage range</td>
<td>40 to 125 kV</td>
</tr>
<tr>
<td>Maximum current</td>
<td>1000 mA at 100 kV</td>
</tr>
<tr>
<td>Maximum continuous power</td>
<td>2.5 kW for 0.25 hrs, 1.5 kW for 8 hrs</td>
</tr>
<tr>
<td>Nominal power (highest electrical power)</td>
<td>100 kW (1000 mA at 100 kV)</td>
</tr>
</tbody>
</table>

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

3.2 X-ray tubes

The Allura Xper FD20/15 biplane systems are provided with the legendary high power MRC-GS 0407 X-ray tube which allows for very high heat dissipation, enabling SpectraBeam filtration to reduce the patient X-ray dose.

<table>
<thead>
<tr>
<th>Features</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focal spot size and loadability</td>
<td>MRC-GS 0407 X-ray tube for frontal plane is 0.4/0.7 nominal focal spot values with max. 30 and 65 kW loadability. MRC-GS 0508 X-ray tube for lateral plane is 0.5/0.8 nominal focal spot values with max. 45 and 85 kW loadability.</td>
</tr>
<tr>
<td>Grid-switched pulsed fluoroscopy</td>
<td>Yes</td>
</tr>
<tr>
<td>Fluoro power for 10 minutes</td>
<td>4,500 W</td>
</tr>
<tr>
<td>Fluoro power for 20 minutes</td>
<td>3,500 W</td>
</tr>
<tr>
<td>Maximum anode cooling rate</td>
<td>910 kHU/min</td>
</tr>
<tr>
<td>Max. anode heat storage</td>
<td>2.4 MHU</td>
</tr>
<tr>
<td>Max. assembly heat storage</td>
<td>5.4 MHU</td>
</tr>
<tr>
<td>Anode heat dissipation</td>
<td>11,000 W</td>
</tr>
<tr>
<td>Continuous anode heat dissipation</td>
<td>3,200 W</td>
</tr>
<tr>
<td>Max. assembly continuous heat dissipation</td>
<td>3,400 W</td>
</tr>
<tr>
<td>Extra pre-filtration</td>
<td>SpectraBeam dose management with 0.2, 0.5, and 1.0 mm Copper equivalent SpectraBeam filters</td>
</tr>
<tr>
<td>Cooling liquid</td>
<td>Oil cooled X-ray tube with thermal safety switch</td>
</tr>
<tr>
<td>Anode cooling method</td>
<td>Direct anode oil cooling system with 200 mm anode diameter</td>
</tr>
</tbody>
</table>
4 Dose Management

Philips interventional X-ray systems, the Allura Xper family incorporates a set of techniques, programs, and practices that ensure excellent image quality, while reducing radiation exposure to people in X-ray environments.

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.

**Specifications**
- Copper filters: 0.2, 0.5, and 1.0 mm CU equivalent
- The filters can be programmed via Xper settings
- Three fluoroscopy/cine modes per application can be selected at tablesde

**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 stand positions.

**X-ray indicator light**
The Allura Xper FD20/15 has an integrated “X-ray On” indicator light located above the LCD monitors that is clearly visible from virtually anywhere in the room.
4.1 Dose Awareness

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 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.

DICOM Radiation Dose Structured Report

Collection of dose relevant parameters and settings and export to a DICOM database\(^7\) (e.g. PACS, RIS). The reported data can be used for analysis, to further reduce X-ray dose. The DICOM RDSR function collects and exports the required data. The software to provide the DICOM data for analysis and alerting needs to be acquired separately.

The Secondary Capture Dose Report function allows you to save & transfer, manually or automatically, a patient Dose Report to PACS in DICOM secondary capture format.

DoseAware family

Real-time dose feedback to increase radiation awareness and promote healthier working practices

Philips DoseAware\(^3\) family of real-time dose feedback tools is designed to make it easier for people working in X-ray environments to monitor their radiation exposure in daily work and adopt healthier working practices.

DoseAware Xtend is a dedicated solution for rooms with Philips FlexVision XL display that provides feedback on scattered X-ray dose per procedure received by staff and proactively encourages healthy radiation practices. DoseAware is a flexible solution that can be used in any X-ray room to provide real-time feedback on scattered X-ray exposure.

Together we can make a difference to the health of medical professionals who work in the interventional environment.
The Allura Xper FD20/15 biplane systems are equipped with next generation dynamic flat detectors, whose compact size easily handle complex projections. Image quality and X-ray dose reduction are further enhanced by dedicated image processing.

### 5.1 Dynamic Flat Detector

The dynamic flat detector of Philips provides excellent image quality.

<table>
<thead>
<tr>
<th>Features</th>
<th>Specifications for the FD20 detector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of detector housing</td>
<td>67 cm (26 inch) diagonal, including BodyGuard</td>
</tr>
<tr>
<td>Physical detector size</td>
<td>50 cm (20 inch) diagonal</td>
</tr>
<tr>
<td>Maximum field of view</td>
<td>48 cm (19 inch) diagonal</td>
</tr>
<tr>
<td>Image matrix</td>
<td>2480 x 1920 pixels at 16 bit depth</td>
</tr>
<tr>
<td>Detector zoom fields</td>
<td>42, 37, 31, 27, 23, 19, 16 cm (19, 17, 15, 12, 11, 9, 7.5, 6 inch) diagonal square formats</td>
</tr>
<tr>
<td>Pixel pitch</td>
<td>154 μm x 154 μm</td>
</tr>
<tr>
<td>Detector bit depth</td>
<td>16</td>
</tr>
<tr>
<td>Nyquist frequency</td>
<td>3.25 lp/mm</td>
</tr>
<tr>
<td>DQE (0)</td>
<td>77% at 0 lp/mm</td>
</tr>
<tr>
<td>Digital output</td>
<td>2k², 1k² and 512² at 16 bit depth resolution</td>
</tr>
<tr>
<td>MTF at 1 lp/mm</td>
<td>&gt; 60%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Features</th>
<th>Specifications for the FD15 detector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of detector housing</td>
<td>42.1cm x 38.1cm (including bodyguard cover)</td>
</tr>
<tr>
<td>Physical detector size</td>
<td>392mm x 338mm x 84mm</td>
</tr>
<tr>
<td>Maximum field of view</td>
<td>29 cm x 26 cm</td>
</tr>
<tr>
<td>Image matrix</td>
<td>1560 x 1440 pixels at 16 bit depth</td>
</tr>
<tr>
<td>Detector zoom fields</td>
<td>37, 31, 27, 23, 19, 16 cm (15, 12, 11, 9, 7.5, 6 inch) diagonal square formats</td>
</tr>
<tr>
<td>Pixel pitch</td>
<td>184 μm x 184 μm</td>
</tr>
<tr>
<td>Detector bit depth</td>
<td>16</td>
</tr>
<tr>
<td>Nyquist frequency</td>
<td>2.72 lp/mm</td>
</tr>
<tr>
<td>DQE (0)</td>
<td>70% at 0 lp/mm</td>
</tr>
<tr>
<td>Digital output</td>
<td>1k² and 512² at 16 bit depth resolution</td>
</tr>
<tr>
<td>MTF at 1 lp/mm</td>
<td>&gt; 59%</td>
</tr>
</tbody>
</table>

### 5.2 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.

<table>
<thead>
<tr>
<th>Features</th>
<th>Specifications for the FD15 detector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra pre-filtration</td>
<td>SpectraBeam filters: 0.2, 0.5 and 1.0 mm Copper equivalent</td>
</tr>
<tr>
<td>Fluoroscopy image processing</td>
<td>Recursive filtering, localized contrast-adaptive contour enhancement, SPIRIT filters and Xres algorithm</td>
</tr>
<tr>
<td>Pulse rates</td>
<td>Default at 3.75, 7.5, 15 and 30 pulses per second</td>
</tr>
<tr>
<td>Frame grabbing of static fluoroscopy images</td>
<td>Yes</td>
</tr>
<tr>
<td>Fluoroscopy storage</td>
<td>Default storage of the last 20 sec. of fluoroscopy for reference or archiving</td>
</tr>
<tr>
<td>Grid-switched pulsed fluoroscopy</td>
<td>Yes</td>
</tr>
</tbody>
</table>
5.3 Digital acquisition

The Allura Xper FD20/15 biplane systems can be customized with a virtually unlimited number of acquisition programs for digital angiography and digital subtraction angiography. Image resolution is up to 2048 x 2048 pixels for vascular imaging and 1024 x 1024 pixels for interventional X-ray imaging.

### Acquisition frame rates

<table>
<thead>
<tr>
<th></th>
<th>1024 x 1024 matrix</th>
<th>2048 x 2048 matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard configuration</td>
<td>0.5 to 6 images/sec.</td>
<td>0.5 to 6 images/sec.</td>
</tr>
</tbody>
</table>

Up to 60 images/sec. acquisition at a 512 x 512 matrix is optionally available in monoplane and biplane mode.

### Storage capacity

<table>
<thead>
<tr>
<th></th>
<th>1024 x 1024 matrix</th>
<th>2048 x 2048 matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard configuration</td>
<td>100,000 images</td>
<td>25,000 images</td>
</tr>
<tr>
<td>Storage extension</td>
<td>200,000 images</td>
<td>50,000 images</td>
</tr>
</tbody>
</table>

The storage capacity is divided equally per channel.
6.1 Monitors

The system is delivered standard with four monochrome LCD monitors in the examination room. These monitors are mounted on the Philips Monitor Ceiling Suspension. Two monochrome LCD monitors and a LCD color monitor are standard in the control room.

<table>
<thead>
<tr>
<th>Features</th>
<th>Monochrome LCD monitor</th>
<th>Specifications</th>
<th>Color LCD monitor</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Native format of 1280 x 1024 SXGA</td>
<td>Native format 1280 x 1024 SXGA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grey-scale resolution</td>
<td>10 bit with grey-scale correction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wide viewing angle</td>
<td>Yes (approximately 170°)</td>
<td>Yes (approximately 170°)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High brightness</td>
<td>Yes (max 600 Cd/m² with 18 inch, max 1000 Cd/m² with 19 inch, default 500 Cd/m²), with ambient light dependent brightness control</td>
<td>Controlled brightness (200 Cd/m²) with ambient light dependent brightness control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection screen</td>
<td>Yes, in the examination room</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video signal</td>
<td>Compatible with video signals up to 1920x1200 and from Ultrasound and IVUS</td>
<td>Compatible with video signals up to 1920x1200 and from Ultrasound and IVUS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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-RA software, etc. The switch is controlled via the Xper Module.

FlexVision XL
FlexVision XL is a new viewing concept that provides outstanding viewing flexibility, using a high definition 58-inch LCD screen, it allows you to display multiple images in a variety of layouts - each tailored for your specific procedure. The SuperZoom feature lets you enlarge small details of anatomy, devices and data (ECG signals and hemodynamic data) for better visibility to enhance decisions during challenging procedures.
7 Additional options

7.1 Clinical enhancement options

Subtracted Bolus Chase
Routine examinations can be performed quickly and confidently with Bolus Chase. 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.

7.2 2D Quantifications 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 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)

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 stenosis.
• 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.
**CO₂ view trace**

This software package enables tracing (stacking) of images acquired with CO₂ injections. This package can be used during post-processing, next to "View Trace" images acquired with iodine injections.

**Measurement**

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

**7.3 XperSwing**

During a dual axis rotation scan, the C-arm operates on two axes simultaneously, enabling it to swing in a three-dimensional 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 its boundaries in order to avoid any collisions. Dedicated trajectories are available for the left and the right coronary arteries.

**7.4 Rotational Angio**

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 ‘cardiovascular’ vessels. A contrast vascular 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 as a result of rotational scan. The high speed acquisition decreases the amount of contrast medium, while the wide rotation range provides a complete evaluation of anatomy.

**7.5 Integrated CX50 compact ultrasound**

To provide additional support for your interventional procedures, you can extend the power of your Philips Allura Xper system with unique compact xtreme ultrasound integration solution. The 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.

<table>
<thead>
<tr>
<th>Features Rotational Angio</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C-arm in head position</strong></td>
<td><strong>Maximum rotation speed</strong> 55°/sec.</td>
</tr>
<tr>
<td><strong>C-arm in side position</strong> (ceiling mounted only)</td>
<td><strong>Maximum rotation speed</strong> 30°/sec.</td>
</tr>
<tr>
<td><strong>Frame speeds</strong></td>
<td><strong>Maximum rotation angle</strong> 15 to 30 and 60 fps.</td>
</tr>
</tbody>
</table>

Users can designate speed, as well as a start and end position, through Xper settings.

The acquired images from the rotational scan or XperSwing can be sent automatically to Allura 3D-CA for a 3D reconstruction.
7.6 Physio Viewing with ECG triggering
Physio Viewing provides acquisition, storage and display of physiological signals on the FD20/15 biplane 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:
• Reduces patient and operator X-ray dose.
• Cardiac motion is eliminated from the images.
  This allows the physician to focus on relevant items only (e.g. moving catheters) without the movement caused by the cardiac contraction being visible.

7.7 Workflow enhancer options
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 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
• Resize and enlarge information with EP cockpit XL.

The large 58 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 feature you can resize and enlarge information at any time and at any position on the screen.

Xper Flex Cardio
Your need for a small, compact, and reliable hemodynamic measurement system that saves floor space and moves with the table is realized with the Xper Flex Cardio. This system seamlessly integrates with your Philips Allura X-ray system to optimize workflow in your interventional lab. Xper Flex Cardio may be small in size, but it will have a big impact on your clinical practice thanks to the integrated Fractional Flow Reserve (FFR) measurements and proven Philips ECG capabilities.

Ambient Experience
Ambient Experience is a purposely designed healthcare environment. With a refreshingly creative eye, Ambient Experience integrates technology, spatial design, and workflow improvements to create a more comfortable, relaxing environment for both patients and staff. Patients relinquish control to relative strangers when they agree to any catheterization procedure. Fear of the unknown fosters nervousness and anxiety.

With Ambient Experience, the patient can be an active participant in the process. The opportunity to personalize the environment provides a sense of control that increases comfort and reduces anxiety. It helps make the entire process go smoothly. It’s relaxing for the patient and makes the job of the clinician easy, potentially reducing procedure time and enhancing efficiency by improving layout and decluttering of the room.

Ambient Experience also contributes to a positive staff experience and patient satisfaction; sets your hospital apart from the competition and helps increase staff retention.
In close partnership with our clinical partners, Philips continues to enhance the capabilities of the Interventional Tools on Allura Xper systems. Recent Philips innovations have expanded the clinical utilization by further improving the acquisition protocols and reducing reconstruction times, while expanding the range of applications for cardiovascular and electrophysiology procedures.

8.1 Innovative radiology tools
Interventional radiology is rapidly evolving requiring better insight and precision to perform an increasing number of interventions, with greater efficiency. Precise navigation is crucial, whether maneuvering through tortuous pelvic vasculature or performing a tumor biopsy. To mitigate risks our unique imaging capabilities provide detail-rich insight so you can effectively plan the procedure, select devices and vascular routes. With our innovative cardiovascular tools, you can now reach target areas, deploy devices, and gauge treatment in real-time with more accuracy and predictability.

Allura 3D-RA
Allura 3D-RA provides extensive three-dimensional (3D) visualization into vascular pathologies and great vessels in congenital heart disease from a single rotational angiographic X-ray acquisition. Paired with the unique whole body coverage of the Allura Xper system, 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 Xper 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, enabling improved procedure management for aneurysms, AVMs, stroke, congenital heart disease or surgical planning.

Dynamic 3D Roadmap and MR/CT roadmap
Dynamic 3D Roadmap is based on the visualization of the vessel tree from a 3D-RA, CTA or MRA scan combined with a live 2D fluoroscopy image. Integrated 3D-RA functionality rapidly reconstructs the rotational angiography X-ray run into a 3D volume. A previously acquired CT angio or MR angio scan can be imported into the system and registered with a low dose 3D-RA scan. The “live” 2D fluoroscopy image is overlaid with the 3D volume of the vessel tree and is automatically displayed on the 3D roadmap monitor in both the examination and control rooms.

XperCT
Philips introduces the next generation XperCT, designed to improve visualization also for challenging cases and difficult anatomies, during neuro, oncology and endovascular interventions. Clinicians can visualize bone, soft tissue, and
contrast enhanced vessels with great clarity using the range of clinically fine-tuned XperCT protocols at fast acquisition and reconstruction times. XperCT assists clinicians in the interventional suite before, during, and after treatment. It helps to assess the treatment results already in the interventional suite and thereby often eliminates the need for a separate post-interventional control CT exam. Philips next generation XperCT allows thorax and abdominal scans in just 4 and 5 seconds. These protocols targets to increase image quality while ensuring higher patient comfort with less motion artifacts and x ray dose exposure.

**XperGuide**

Philips exclusive XperGuide, provides live 3D guidance by combining real-time fluoroscopy with XperCT, CT or MR soft-tissue imaging in one view for a wide range of clinical procedures from biopsies and drainages to RF ablations. Virtual needle paths are created on an XperCT dataset or on the original previous acquired CT or MR data. The volumetric dataset and the virtual needle paths can be viewed in any slice orientation. A wide range of projections can be used to define the needle path. Multiple targets can be defined at once and requires no additional navigation or tracking devices to assist in guided procedures.

The XperGuide functionality is fully integrated with the Allura system, and can be controlled at the table side.

**VasoCT**

VasoCT is an advanced imaging technique, which supports treatment of ischemic stroke in the interventional X-ray lab. It uses high resolution soft tissue imaging technology to reveal key information about cerebral vascular structures in a very high level of detail. VasoCT is designed to help you quickly identify and assess the size and direction of an occlusion in case of an ischemic stroke. This allows treatment to be carried out as quickly as possible to enhance patient care. VasoCT is based on a 3D rotational scan and a special injection protocol. VasoCT can also be used to visualize stents apposition to the vessel wall and fast follow up scans without the need for hospitalization. The more you can see, the more you can do.

**StentBoost – enhance accuracy with instant stent visualization**

StentBoost with its unique StentBoost Subtract\(^*\) feature allows you to clearly see your stent in relation to the vessel wall. So you can immediately check positioning, before and after deploying balloons and stents, and confirm stent expansion.

StentBoost is an excellent alternative to intravascular ultrasound (IVUS) when it is not available or when a quick result is required. Potential problems can be corrected immediately, without applying additional fluoroscopy.

**Vascular StentBoost**

Cardiac labs that also perform peripheral procedures can now use the unique Vascular StentBoost – based on the enhanced workflow and technology of StentBoost – to advance visualization of balloons and stents for vascular interventions.

**XperGuide: planning on a low X-ray dose XperCT, matched with previous acquired CT image**

Visualize location, size and direction of an occlusion when dealing with an ischemic stroke
2D Perfusion
2D Perfusion brings perfusion imaging into the interventional suite, allowing the assessment of tissue perfusion during interventions. It is based on a digital subtraction angiography (DSA) run, and calculates the transit time of the contrast through the vessels, which is displayed at a very high level of detail on a full color image. 2D Perfusion can be used to identify perfusion differences in tissue during the assessment of vascular pathologies or to verify the perfusion behavior of tumors and arteriovenous malformations (AVMs). These visualizations support clinicians in identifying areas at risk of being under or over perfused. By comparing pre, peri and post-procedural perfusion images, clinicians can verify if the required level of perfusion has been achieved in order to define the treatment endpoint. Clinicians can draw a region of interest (ROI) and analyze the perfusion within the ROI using the time density curve. After the ROI is selected, the time density curve is generated in real-time and the average value of the selected parameter is calculated and displayed. When comparing pre and post-intervention images, the user can draw a region of interest and it will be automatically drawn in the comparative image. The software will also calculate the time density curve of both images, for easy assessment of pre and post intervention differences.

The functional parameters available are:
- Mean Transit Time
- Time to Peak
- Width
- Arrival Time
- Wash-in Rate
- Area Under Curve

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

HeartNavigator
Philips HeartNavigator is an interventional planning and guidance tool designed to increase clinician confidence in carrying out complex structural heart disease procedures like trans-catheter aortic valve replacements.
- Simplifies planning, device selection and choice of X-ray projection.
- Provides insight into calcified plaque distribution in the ascending aorta and ostia of the coronaries
- During the procedure, it combines previously acquired CT images with live fluoroscopy to provide live image guidance during device placement
- Tracks table and L-arm movement to maintain registration during procedure

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 improved assessment of lesions and bifurcations. It also gives you insight into the exceptional working angles.
8.2 Innovative electrophysiology tools

In the dynamic field of electrophysiology, exceptional skill and creativity is needed to perform an increasing number of new and challenging procedures. The ability to orchestrate disparate technologies and move quickly from one procedure to another is critical. Afib ablation requires clear visualization of the left atrium. CRT implant scheduling needs rapid analysis and fast room turnaround. Our advanced imaging support delivers immediate in-suite 3D reconstruction overlays with live fluoro to guide precise catheter navigation.

EP navigator

EP navigator provides insight into complex cardiac anatomies and facilitates intuitive 3D catheter image guidance during AF ablation procedures. It provides detailed 3D anatomy, which can be overlaid onto live fluoroscopy, removing the need for a mapping system, or exported to a compatible mapping system to help minimize dose and reduce mapping time.

3D EP Rotational Scan

3D EP Rotational Scan is a feature within EP navigator. 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.
The Xper DICOM Image Interface enables clinical images to be exported to a destination, such as ViewForum, 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 512², 1024², or 2k² (unprocessed) 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

- The DICOM Radiation Dose Structured Report collects dose relevant parameters and settings and export them to a DICOM database
- The Secondary Capture Dose Report function allows you to save & transfer, manually or automatically, a patient Dose Report to PACS in DICOM secondary capture format.
10 Room layout

Top view

Examination room

Ceiling mounted C-arm stand

LCD monitor
ceiling suspension

Control room

Geometry cabinet

System cabinet

Xper Viewing console

Certeray CFD generator

0.25 0.5 1 2 4 yards

0.25 0.5 1 2 4 meters
Optional

Biplane continuous autopush
The biplane continuous autopush 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 system 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 available as a monoplane (frontal) or biplane version. 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.
Your Philips imaging system is designed to be reliable and efficient. Ensuring that it remains so from day one forward, is our commitment to you.

Philips SmartPath is a way to give you easy access to the latest updates, upgrades and innovations throughout the cycle of product ownership. By maintaining your equipment at peak performance, you can realize your full clinical and operational potential and be ready to quickly benefit from next-generation solutions.

From small enhancements to major system conversions, we help you maximize your investment, for success today and into the future.

Please visit www.philips.com/Smartpath for more information.
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References
1 The Wireless Footswitch is available for versions of the Philips Allura Xper family of X-ray systems onwards. It is not available with Philips X-ray systems that are combined with the Niobe Remote Magnetic Navigation System.
2 Only in combination with Philips Allura FD20/15 OR Table
3 These products do not replace the thermoluminescent dosimeter (TLD) as a legal dosimeter.

Not for distribution in the USA.
Availability in other countries subject to local approvals, please contact your local representative.

Please visit www.philips.com/interventionalxray