

PHILIPS

Ultrasound

Sparq



Changing the way you look at imaging

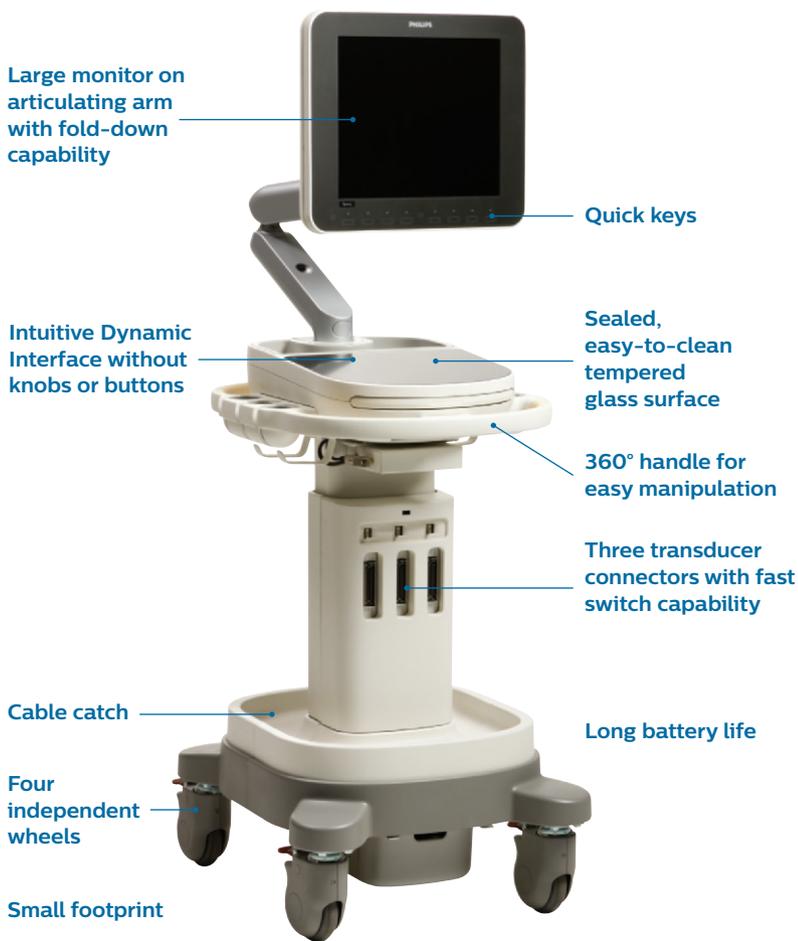
Philips Sparq ultrasound system specifications

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1. Introduction

The revolutionary Sparq ultrasound system features an intuitive design built around point-of-care clinicians workflow needs. Sparq offers a simple user interface and control panel that has a sealed, easy-to-clean tempered glass surface. To reduce unnecessary interaction with the system, the system controls dynamically change, showing only those keys and automation features that are compatible with the exam being performed.



1.1 Applications

- Cardiac
- Abdomen
- FAST
- Nerve
- Lung
- Ocular
- Musculoskeletal
- Musculoskeletal superficial
- Spine
- Vascular access
- Vascular arterial
- Vascular venous
- Pelvic
- Superficial
- Transcranial Doppler

Key advantages

- Rapid, reliable image quality in a simple, easy-to-use format
- Imaging protocols to guide the user through procedures
- Optional barcode scanner for quick patient data entry
- Support for critical care, emergency medicine, regional anesthesia, and pain medicine environments
- Quick-clean easy-wipe surfaces for the most intense environments
- Flexible user interface
- Ergonomic and intuitive design
- Automation features
- Needle visualization feature

Sparq allows you to select imaging capabilities, transducers, and clinical analysis tools to support your exam needs. You can add supported capabilities at any time, and upgrade the system when upgrades become available.

2. System overview

Philips proprietary technologies provide the basis for Sparq's extensive range of imaging capabilities.

2.1 System architecture

- Next-generation all-digital compact broadband beamformer with pulse shaping capability
- High resolution A/D conversion with 170 dB full-time system dynamic range
- 20,000 digitally-processed channels
- Supports PureWave technology
- Multivariate harmonic imaging including pulse inversion processing
- One-touch 2D optimization with broadband frequency compounding
- SonoCT real-time beam-steered compound imaging
- Advanced XRES adaptive image processing
- Continuously variable steering in 2D, color Doppler, and Doppler modes
- iSCAN one-touch intelligent optimization for 2D and Doppler
- AutoSCAN no touch continuous intelligent optimization for 2D
- Active native data manipulation
- Tissue specific imaging presets
- Gray shades: 256 levels (8 bit) in 2D, M-mode, and Doppler
- Simplicity Mode one-touch simplified control panel
- Advanced Imaging Control allows the flexibility to turn on advanced controls for imaging
- Built-in Philips Remote Services connectivity* allows for rapid response to clinical questions and technical issues

2.2 Imaging modes

- 2D
- Color Doppler
- M-mode (real-time M-mode)
- Anatomical M-mode
- Color M-mode
- Color Power Angio (CPA) imaging
- Directional CPA
- Pulsed wave (PW) Doppler
- HPRF PW Doppler
- Continuous wave (CW) Doppler
- Invert and color invert
- Color compare mode
- Dual mode
- Duplex for simultaneous 2D and Doppler
- Triplex for simultaneous 2D, Doppler, and color or Color Power Angio
- 2D and flow optimization signal processing
- Intelligent Doppler – automatically maintains pre-selected 0/60° flow angle
- Live compare
- Tissue harmonic imaging (THI)
- High definition write zoom
- Trapezoidal imaging
- Pulse inversion harmonic imaging
- Adaptive Doppler
- Adaptive color Doppler
- Color tissue Doppler imaging
- Pulsed wave tissue Doppler imaging
- Active native data (allows manipulation of raw image data)
- SmartExam system-guided protocol capability
- Needle visualization enhances viewing of the needle to assist the user in guiding the needle to the target anatomy



Needle visualization significantly enhances the presentation of the needle without degrading the image of the surrounding tissue.

* Service agreement required for access to Philips Remote Services. Access to the Internet required. Not all remote features available in all countries; contact your Philips representative for details.

2D grayscale

- Smart TGC: pre-defined TGC curves enhanced for consistently excellent imaging with reduced TGC adjustment
- High definition zoom concentrates all image processing power into a user-defined area of interest; possible to combine high definition zoom with pan zoom
- Cineloop image review
- Selectable 2D compression settings
- Sector size and steering control for sector and curved array image formats
- Split screen imaging layout with independent cineloop buffers
- Live compare
- Chroma imaging with multiple maps
- 256 (8 bits) discrete gray levels
- 2D acquisition frame rate up to 775 frames/sec (dependent on field-of-view, depth, and angle)

M-mode

- Available on all transducers and is real time
- Selectable sweeping rates
- Time markers: 0.2 and 1.0 seconds
- Acquisition zoom capability
- Selectable display format prospective or retrospective (1/3-2/3, 2/3-1/3, side by side, full screen)
- Chroma colorization with multiple color maps
- Cineloop review for retrospective analysis

Anatomical M-mode

- Available in all exams on sector array transducers
- Uses 2D image as a basis for M-mode analysis at a defined line, independent of transducer orientation
- Makes it easier to keep the M-mode line perpendicular to the anatomy, even in abnormally shaped or positioned hearts or other anatomy
- Provides data on direction, position, and timing of any single echo received from any point of the tissue for M-mode analysis in any direction, for examining cardiac chamber diameters, LV regional wall motion, and location of accessory pathways
- Anatomical M-mode trace can be generated or modified post-freeze

Tissue Doppler imaging

- Available on S4-2 cardiac transducer
- Allows high frame rate acquisition of tissue motion
- Color gain and TGC
- 2 color maps
- Velocity (cm/s and m/sec supported)

Pulsed wave Doppler

- Available on all imaging transducers
- Adjustable sample volume size: 0.8-24.6 mm (transducer-dependent)
- Simultaneous or duplex mode of operation
- Simultaneous 2D, color Doppler or CPA, pulsed Doppler
- iSCAN optimization automatically adjusts scale, baseline, and Doppler gain (in select transducers and presets)

Continuous wave Doppler

- Available on cardiac sector array transducers
- Steerable through 90° sector
- Maximum velocity range: +/-20 m/sec (transducer-dependent)

Spectral Doppler

- Display annotations including Doppler mode, scale (cm/sec) Nyquist limit, wall filter setting, gain, acoustic output status, sample volume size, normal/inverted, angle correction, grayscale curve
- Angle correction with automatic velocity scale adjustment
- Adjustable velocity display ranges
- Normal/invert display around horizontal zero line
- Selectable sweep speeds
- Selectable low-frequency signal filtering with adjustable wall filter settings
- Selectable grayscale curve for expanded display
- Selectable Chroma colorization maps
- Selectable display format prospective or retrospective (1/3-2/3, 2/3-1/3, side by side, full screen)
- Doppler review for retrospective analysis of Doppler data
- 256 (8 bits) discrete gray levels
- Post-processing in PW frozen mode includes map, baseline, sweep speed, invert, compress, reject, and Chroma



To make scanning easy, Sparq is designed with an Intuitive Dynamic Interface that eliminates knobs or buttons.

Color Doppler

- Adaptive mode adjusts Doppler frequency and sensitivity based on color ROI placement within image available on all imaging transducers
- Cineloop review with full playback control
- Advanced motion suppression with intelligent algorithms; adapts to various application types to selectively eliminate virtually all color motion artifacts
- 256 color bins
- Track pad-controlled color region of interest: size and position
- Maps, filters, color sensitivity, line density, smoothing, echo write priority, color persistence, gain, and baseline optimized automatically by exam type or is user-selectable
- Velocity and variance displays
- Color invert in live and frozen imaging
- User-selectable smoothing control
- User-selectable persistence control
- Color/2D line density control

Tissue harmonic imaging

- Second harmonic processing to reduce artifacts and enhance image quality
- Multivariate pulsing including patented pulse inversion phase cancellation technology for increased detail resolution during harmonic imaging
- Available on all imaging transducers
- Extends high performance imaging capabilities to all patient body types
- Supports SonoCT (harmonic SonoCT) and XRES modes

Color Power Angio imaging

- Highly sensitive mode for small vessel visualization
- Available on all imaging transducers
- Cineloop review
- Multiple color maps
- Individual controls for gain, PRF, baseline, filters, sensitivity, echo write priority, and color invert
- Dynamic motion differentiation
- Adjustable CPA Region of Interest: size and position
- User-selectable persistence
- User-selectable blending
- Directional Color Power Angio (DCPA) mode

3. System controls

Sparq has simple but advanced system controls to help you acquire the best possible data on your patients, including many one-button optimization controls that adjust thousands of system parameters.

3.1 Advanced imaging controls

iSCAN image optimization

- One-touch image optimization
- In 2D mode, one-button automatic adjustment of TGC and receiver gain to achieve enhanced uniformity and brightness of tissues
- In Doppler mode, one-button automatic adjustment of:
 - Doppler PRF based on detected velocity
 - Doppler baseline based on detected flow direction
 - Gain to achieve enhanced brightness of spectral waveform (in selected transducers and presets)
- Available on all imaging transducers
- Operates in conjunction with SonoCT and XRES

AutoSCAN image optimization

- No-touch continuous intelligent optimization
- In 2D mode (no interaction by user) automatic and continual adjustment of TGC and receiver gain to achieve enhanced uniformity and brightness of tissues

SonoCT real-time compound imaging

- Available on all curved and linear array transducers
- Eliminates virtually all clutter and artifact
- Automatic selection of the number of steering angles (up to 7) based on the user-selected resolution/frame rate (Res/Speed) condition
- Operates in conjunction with tissue harmonic imaging, volume modes, imaging, and duplex Doppler
- Operates in conjunction with XRES imaging

Advanced XRES adaptive image processing

- Available on all imaging transducers
- Eliminates virtually all speckle noise and enhances border definition

Expanded field of view

- Trapezoidal imaging
 - Expands field of view on linear array transducers up to 15° in vascular, general imaging, nerve, musculoskeletal, superficial, ocular, and lung applications

Active native data

- 2D image controls that can be changed in review include: gain (overall gain, TGC), compress, gray map, Chroma map, orientation (L/R, U/D), XRES
- PW and CW Doppler controls that can be changed include: gain, baseline, invert, angle correct, angle 60/0/60, sweep speed, grayscale and Chroma maps (compress and reject), PW trace (High Q controls), display format
- Color image controls that can be changed in review include: gain, baseline, color map, invert, write priority, smoothing, suppress, variance, directional Color Power Angio
- Physio controls that can be changed: sweep speed, position, gain
- Can be acquired in prospective and retrospective direction
- Images are acquired at acoustic data frame rate
- Available in cineloop and quick review

Live compare

- Allows recall of current or previous exam image data for direct side-by-side comparison with current image data

Needle visualization

- Allows a view of the needle during procedures
- Enhances viewing of the needle to assist the user in guiding the needle to the target anatomy

Procedure guides

- Transducer centerline and on-screen centerline provide visual guidance for out-of-plane needle guidance procedures
- On-screen gridline provides a visual target size and distance estimation for needle guidance procedures
- Depth markers allow a visual measure of the depth of the image and anatomy (.5 to 5 cm increments dependent on depth)

3.2 Control panel and user interface

- Easy-to-learn graphical user interface
- Ergocentric design of primary controls readily accessible and logically grouped
- Intuitive Dynamic Interface – active and available controls adjust as the user interacts with the control panel
- Automatic ambient lighting sensing for superb image viewing in both light and dark environments
- 3 slide-pot control adjustment of TGC curve
- iSCAN control for 2D/Doppler/color Doppler automatic optimization
- AutoSCAN control for 2D continuous and automatic optimization
- High definition/pan zoom control
- Freeze control
- Programmable print control
- Acquisition and print of still images
- Acquisition of loop images (maximum loop time is 180 seconds and maximum loop beats is 20)
- Transducer selection and tissue specific imaging control
- Full Reports, Quick Reports and review controls
- Protocol selection control
- Sealed, easy to clean, tempered glass surface
- Ability to lock the control panel
- Barcode scanner allows easy entry of patient data
- Exam Dashboard is an easy and intuitive tool to manage the exam from beginning to end
- Simplicity Mode is a one-touch solution that allows the user to turn off pre-determined controls that are not needed for that exam
- Sleep Mode allows the user to save battery power when not in use (instant on from Sleep Mode)
- Optional On-Line Support Request feature* provides rapid response to clinical questions and technical issues
- Optional Proactive Monitoring* helps prevent unscheduled downtime

Simplicity Mode can be turned on or off to present the ultrasound functions that you use most often.



* Service agreement required for access to Philips Remote Services. Access to the Internet required. Not all remote features available in all countries; contact your Philips representative for details.

4. Workflow

Sparq fits seamlessly into your workflow, whether it is used for critical care, emergency medicine, regional anesthesia, or pain medicine. With easy-to-use tools and a streamlined user interface designed for these types of exams and procedures, Sparq can scan whenever and wherever you need it.

4.1 Ergonomics

- Ergonomic features built to provide a high degree of mobility and speed in your environment
 - Philips user experience control panel with central track pad and easy-access mode keys
 - Dynamic Response Controls allow immediate feedback of active and available controls in all modes
 - High-resolution LCD display with wide viewing angle and automatic ambient light compensation
 - Quick keys
 - System-guided exam protocol capability
- Annotation data and patient name can be turned off (hidden) for generating images used in publication and presentation
- Scan plane orientation marker
- User-selectable depth scale display
- Real-time display of mechanical index (MI)
- Real-time display of thermal index (TIb, TIc, TIs)
- Multiple track pad-driven annotation arrows
- Pre-defined annotation for labeling of image, supported in single and dual imaging formats
- Pre-defined body markers, supported in single and dual imaging formats

4.2 SmartExam system-guided protocols

- Exam guide with on-screen display
- Required views based on exam type
- Fully customizable protocol capability for clinical applications supported on the system with flexibility to conduct the examination protocol in any sequence
- Preset protocols:
 - Adult echo
 - Abdominal
 - GYN
 - Lower extremity
- Exams based on industry and accreditation guidelines
- Automatic launching of annotation and body marker icon on required views
- Automatic launching of calculations
- Ability to pause and resume SmartExam function at any time
- System analysis capabilities supported in all defined protocols
- Custom protocol transfer between Sparq systems
- Doppler baseline invert in live and frozen imaging
- TGC curve (user-selectable On/Off display)
- TGC values (On/Off display)
- Tool tips provide a brief description of the abbreviated on-screen image parameters
- Informative track pad arbitration prompts
- Thumbnail display of images printed/stored
- Calculations results and analysis labels
- User-friendly menus that allow navigation to other analysis features
- Network and connectivity icons to allow instant feedback about network and printer conditions
- Cineloop frame display
- Cineloop bar with trim markers
- Prompt region for informational message display
- Protocol procedure list with status

4.3 Display annotation

- On-screen annotation of all pertinent imaging parameters for complete documentation, including transducer type and frequency, active clinical options and enhanced presets, display depth, TGC curve, grayscale, color map, frame rate, compression map value, color gain, color image mode, hospital name, and patient demographic data
- User-selectable display of patient birth date or user ID, institution name, and performed by

4.4 Image presentation

- Up/down
- Left/right
- Multiple duplex image formats (1/3-2/3, 2/3-1/3, 50/50 and full screen)
- Depth from 1 cm to 30 cm (transducer-dependent)

4.5 Cineloop review

- Acquisition, storage, and display in real time and duplex modes of up to three minutes in quick review of 2D and color images
- Dual imaging available

* Optional. Not all services available in all geographies; contact your Philips representative for more information. May require service contract.

4.6 Utilization reports

- Optional Utilization Report* provides data to help manage ultrasound assets
 - Track system and transducer usage
 - Summarize data about exam types and duration
 - Provide data to help with credentialing and privileging
 - Identify referrals by exam type

4.7 Connectivity

- 5 USB ports on control panel – 1 on the front of system, 4 on the rear of the system
- 500 GB hard drive space
- Internal slot-load DVD RW drive
- DICOM print, store, and storage commitment
- DICOM structured reporting for cardiac, obstetrics, and vascular
- Performed procedure step (PPS)
- Modality worklist
- DICOM reader saved onto media
- Export data as PC-compatible or DICOM files
- Ethernet at 1000 Mb/second
- Wireless “B and G” networking
- USB-to-serial converter adapter
- Support for optional small B/W and color printers (external only)

4.8 Security

Security-related features

- Firewall policy blocks all unnecessary ports

OS hardening

- OS settings utilizing the DISA STIGS
- Disable unnecessary services
- Disable auto-run for removable media

Media export security

- Provides the ability to disable export of patient data to removable media

Access level

- No restrictions – users may perform exams and access all previously completed exams or MWL data
- Only patient data is locked – users may perform exams without requiring a login, but must successfully log in prior to accessing previously completed exams or MWL data
- Complete system is lockable – users and administrators must successfully log in prior to any system access

User management policy

User management local

- Local user management
- Support for multiple unique user accounts
- Support for multiple unique administrator accounts

User management remote

- Supports active directory authentication utilizing LDAP (system may not be joined to the domain)
- Support for individual accounts or AD groups for users and administrators
- May utilize LDAP or secure LDAP
- Customer may configure the system to perform authenticated binding

Password policies

- Provides the ability to specify password policies for local accounts
- Password history (1-8)
- Minimum password length (6-14 characters)
- Maximum password length (6-63 characters)
- Minimum password age (0-998 days)
- Maximum password age (1-999 days)
- Password complexity

Account lockout policies

- Lockout threshold (1-999 minutes)
- Lockout duration (1-999 minutes)
- Lockout counter reset (minutes)

Auto logoff

- Automatically logs off a user after the specified period of inactivity
- Disabled, 5, 10, 20, 30, or 60 minutes

Hard drive encryption

- 128 bit • 128 bit with diffuser
- 256 bit • 256 bit with diffuser

Login/legal banner

- Configurable login/legal banner
- Configurable login/legal banner title

Audit log export

- Audit logs may be exported utilizing syslog
- Available protocols are UDP or TLS

Safeguard

- Optional malware protection utilizing the McAfee Application Controls whitelisting solution

Government security

- Configurable option to provide up-to-date security features while fully hardening the system for patient data protection; option also fully removes the capability for creating or configuring any VPN functionality

4.9 Remote reporting

- Allows users to have on-cart remote access to the Telexy’s QPATH data management system
- Supports the transfer of imaging and measurement data to an external reporting system

5. Transducers

Sparq offers a wide complement of transducers, designed and optimized for an extensive range of exams in emergency medicine, critical care, regional anesthesia, and pain medicine environments.

5.1 Transducer selection

- Automatic parameter optimization of each transducer for exam type through tissue specific imaging (TSI) software
- User-customizable imaging exams for each transducer
- Continuous dynamic receive focusing on all imaging transducers

5.2 PureWave transducer technology

- Proprietary combination of PureWave crystal, and impedance matching layers, backing materials, micro-electronics, and cable design
- Achieves breakthrough acoustic broadband response and twice the efficiency of conventional technology for superb image quality and Doppler performance
- Designed for multivariate harmonic imaging capabilities including pulse inversion and coded pulse sequencing
- Available in the TEE xMATRIX, C5-1 and S5-1 transducers



Curved array

C5-1 broadband curved array with PureWave technology

- 5 to 1 MHz extended operating frequency range
- High density curved array, 160 elements
- 2D, steerable PW Doppler, high PRF and color Doppler; and Color Power Angio, SonoCT, advanced XRES, and multivariate harmonic imaging
- General purpose abdominal, obstetrical, deep nerve
- Supports reusable, 4-angle, plastic biopsy guide (14-23 gauge)

C6-2 broadband curved array

- 6 to 2 MHz extended operating frequency range
- 128 elements
- 70° field of view
- 2D, steerable PW Doppler, High PRF and color Doppler and Color Power Angio, SonoCT, advanced XRES, and multivariate harmonic imaging
- General purpose abdominal, pelvic (includes obstetrical and gynecological), trauma, and regional anesthesia applications
- Supports 4-angle disposable Ultra-Pro II gauges 8.5, 14-25 GA (19 GA not available)

C9-4v broadband curved array

- 9 to 4 MHz extended operating frequency range
- 128 elements
- End-fire sector, 10 mm radius of curvature, 150° field-of-view
- Steerable pulsed wave, High PRF and color Doppler and Color Power Angio, SonoCT, advanced XRES, and multivariate harmonic imaging
- Endovaginal applications
- Supports disposable biopsy guide (16-18 gauge), reusable stainless steel biopsy guide (16-18 gauge), and disposable quick release biopsy guide (10, 14, and 16-18 gauge)

Linear array

L12-4 broadband linear array

- 12 to 4 MHz extended operating frequency range
- Fine pitch, high resolution linear array, 128 elements
- 2D, steerable PW, High PRF and color Doppler and Color Power Angio, M-mode, SonoCT, advanced XRES, and multivariate harmonic imaging
- Regional anesthesia, vascular, superficial, musculoskeletal, lung, and trauma applications
- Supports disposable infinite angle (gauges 14, 18, 20, 21/22, 25) and a disposable AccuSite guide (gauges 18, 20 and 21 supported)

L15-7io broadband compact linear array

- 15 to 7 MHz extended operating frequency range
- Steerable PW Doppler, color Doppler and Color Power Angio imaging, and XRES processing
- Intelligent Doppler flow optimization
- Scanplane aperture: 23 mm linear
- Unique lens footprint design allowing high resolution imaging at transducer surface
- Transducer length: 3.5 in/89 mm
- Cable length: 96 in/243.84 cm
- Vascular access, musculoskeletal, small parts, and nerve 0-4 cm applications

L12-5 50 mm linear array

- Fine pitch, 256 element, high-resolution linear array
- 12 to 5 MHz extended operating frequency range
- 10° of trapezoidal imaging
- Steerable pulsed wave, color Doppler, and Color Power Angio, SonoCT, XRES, and harmonic imaging
- Intelligent Doppler flow optimization
- AutoSCAN imaging
- Cable length: 198 cm/78 in
- Breast, superficial small parts; musculoskeletal, abdomen, nerve and vascular applications
- Biopsy guide available

Sector array

S4-2 broadband sector array

- 4 to 2 MHz extended operating frequency range
- Sector array, 80 elements
- 2D, steerable PW Doppler, CW Doppler, High PRF Doppler, color Doppler, Color Power Angio, Tissue sDoppler, M-mode, advanced XRES and multivariate harmonic imaging
- Adult cardiac, general purpose abdominal and trauma
- Supports reusable 3-angle plastic biopsy guide (14-23 gauge) and 3-angle stainless steel biopsy guide (14-23 gauge)

S5-1 sector array with PureWave technology

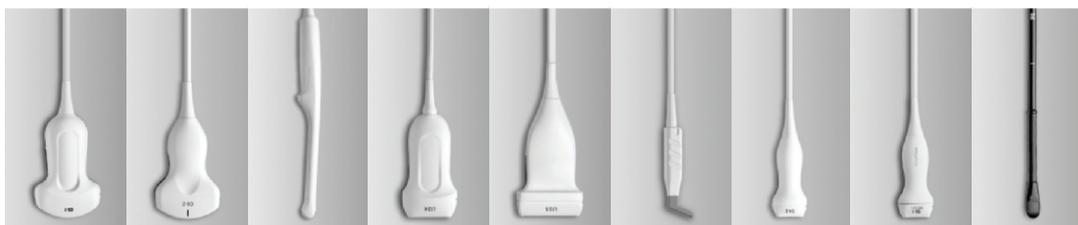
- 5 to 1 MHz extended operating frequency range
- Sector array, 80 elements
- 2D, steerable PW Doppler, CW Doppler, high PRF Doppler, color Doppler, tissue Doppler, advanced XRES, multivariate harmonic imaging and adult LVO applications
- Adult cardiac, general purpose abdominal, general purpose GYN and fetal, transcranial Doppler (TCD) and acute care
- Supports reusable three-angle, plastic biopsy guide (14-23 gauge) and three-angle stainless steel biopsy guide (14-23 gauge)

xMATRIX array

X7-2t xMATRIX array with PureWave technology

- 7 to 2 MHz extended operating frequency range
- xMATRIX array TEE with 2,500 elements
- 2D, color flow, PW Doppler, CW Doppler, M-mode, and advanced XRES
- Harmonic imaging
- Electrocautery suppression
- Electronically rotating image plane from 0 to 180°
- Adult transesophageal applications
- Optional adapter for use on iE33 systems

5.3 Transducer application guide



Transducer	C5-1	C6-2	C9-4v	L12-4	L12-5 50	L15-7io	S4-2	S5-1	X7-2t
Type of array	Curved	Curved	Curved	Linear	Linear	Linear	Sector	Sector	xMATRIX
Number of elements	160	128	128	128	256	128	80	80	2500
Scanplane aperture	56 mm			38.4 mm	50 mm	22.7 mm	20.3 mm	20.3 mm	Proprietary
Field of view	71°	70°	150°					90	
Broadband frequency range	5-1 MHz	6-2 MHz	9-4 MHz	12-4 MHz	12-5 MHz	15-7 MHz	4-2 MHz	5-1 MHz	7-2 MHz
PureWave technology	•							•	•

Exam type

TEE									•
Cardiac							•	•	
Abdomen	•	•					•	•	
FAST	•	•					•	•	
Nerve 0-4				•	•	•			
Nerve 4-6				•	•				
Nerve 6+	•	•							
Lung				•	•			•	
Ocular				•					
Musculoskeletal				•	•				
Musculoskeletal superficial				•	•	•			
Spine		•							
Vascular access				•	•	•			
Vascular arterial				•	•				
Vascular venous				•	•				
Pelvic (includes OB)	•	•	•					•	
Superficial				•		•			
TCD							•	•	

6. Measurements and analysis

6.1 Comprehensive measurement tools

- Analysis packages for cardiac, pelvic, vascular, abdominal, general, superficial, trauma, ocular, CV access, and PV access
- 2D distance
- 2D circumference and area by ellipse, continuous trace, trace by points
- M-mode distance, time, and slope measurements
- Manual Doppler distance for time and velocity
- Manual Doppler trace
- Trace erase by backing up the track pad
- Trace erase segmentally using the erase control
- Time and slope measurements in Doppler and M-mode
- High Q automatic Doppler analysis
- Volume flow rate
- 2D volume
- Heart rate (directly measure from M-mode and Doppler traces)
- Trackpad-controlled electronic measurement calipers: 8 sets
- User-defined protocols, measurements, and equations
- On-the-fly measurement labels
- Fully editable results data sheet
- Integrated patient exam report
- Simpson's trace methods: traditional trace or three-point adjustable border
- 2D all points guided workflow
- M-mode all points guided workflow
- PISA methods with automatic aliasing velocity acquisition
- Body surface index calculations
- User-friendly powerful equation editing wizard
- Units and precision set independently for all measurement and calculations
- Cardiac TDI measurement package
- User-adjustable results box position
- Export measurement and analysis package to CD or DVD and import onto other Sparq ultrasound systems
- Ability to add images to the long report

6.2 Clinical option analysis packages

- Cardiac analysis
 - Volume by area/length method
 - M-mode ejection fraction (via Teichholz or cubed method)
 - Novel three-point adjustable Simpson's template
 - Simpson's biplane and single plane volume and ejection fraction
 - Area, length, volume, and ejection fraction
 - LV mass
 - 2D all points
 - M-mode all points
 - Peak velocity
 - Maximum and mean pressure gradients
 - Pressure half-time
 - E/A ratio
 - D/E slope
 - Continuity equation
 - Diastolic function
 - Cardiac output
 - Acceleration time
 - Heart rate
- Pelvic analysis
 - Includes pelvic and OB
 - CRL
 - BPD
 - HC
 - AC
 - FL
 - Cervix
 - EMM
 - Fetal HR
 - Ovarian volumes
 - Uterine volumes
 - Bladder volumes
- Access to all abdominal measurements (including kidney volumes, GB, CBD, aorta, spleen, and bladder volumes)
- Access to all vascular measurements (upper and lower extremity arterial and venous as well as carotid)
- Trauma (includes abdominal and cardiac measurements)

To provide you quick access to ultrasound imaging, Sparq features multiple transducer options with fast switch capability.



7. Physical specifications

System dimensions

Weight	66.2 kg/146 lbs
Width	53.3 cm/21 in
Depth (including handle)	63.5 cm/25 in
Height	Adjustable from 111 cm/43.75 in to 82.6 cm/32.5 in
Display	43.2 cm/17 in high-resolution display with wide viewing angle – 5:4 aspect ratio
Vertical articulation	22.9 cm/9 in
Monitor vertical adjustment	17.1 cm/6.75 in
Arm reach to the side	30.5 cm/12 in from the widest point of the cart or 56.5 cm/22.25 in from the center out
Laptop style	Alphanumeric QWERTY keyboard
Footswitch	USB
Surface	Sealed glass
Handle	360° for easy maneuvering of cart
Casters	5 in; front casters provide total locking (directional and rotational) engaged by foot pedals
Storage	Top mounted storage bin 3 transducer connectors Cable management hooks Cable Catch
Transducer holders	Accommodates 6 transducers
Input power	To B/W and color printers (external only)
USB	1 front
USB, VGA, LAN	4 USB back

Power management

- Four internal lithium ion polymer batteries
- Fully charged battery yields approximately 2.5 hours of continuous use battery life under continuous use without AC
- Quick-charge battery technology
- Advanced battery/AC monitoring circuitry includes on-screen graphics and low battery warning
- Suspend mode for instantaneous boot-up between exams

Power requirements

- System with peripherals: 100–240 V, 50/60 Hz, 500 VA

Environmental

- Heat dissipation: 700–1100 BTUs/hour (fully loaded)
- Operation range: 10° C–40° C operating in 15–80% relative humidity

ECG and physio

- One three-lead ECG input
- One external ECG input
- Two physio input channels (1V, p-p)
- Selectable ECG-triggered skipping between 1 and 20
- Respiration, Phono, and Pulse

Electrical safety standards

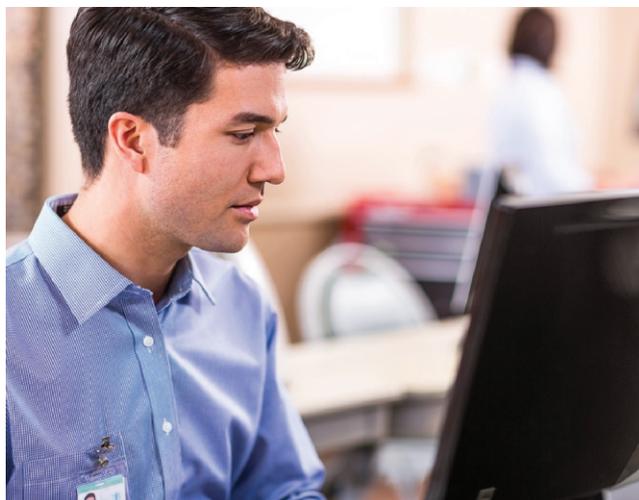
- CAN/CSA-C22.2 NO. 60601-1
- ANSI/AAMI 60601-1
- JIS T 0601-1, Japan
- EN 60601-1, European Norm, Safety of Medical Electrical Equipment
- EN 60601-1-2, European Norm, Collateral Standard: Electromagnetic compatibility
- EN 60601-2-37, European Norm, Particular Requirements for the safety of ultrasonic medical diagnostic and monitoring equipment

Agency approvals

- Canadian Standards Association (CSA)
- CE Mark in accordance with the European Medical Device Directive issued by British Standards Institute (BSI)
- Japanese Ministry of Health, Labor and Welfare

8. Maintenance and services

The value of a Philips ultrasound system extends far beyond technology. With every Sparq system you get access to our award-winning service organization, competitive financing, and educational tools that help you get the most out of your system.*



Maintenance

- Easy customer access to air filter for cleaning
- System designed for easy replacement of key components by your facility's biomedical engineers
- Flexible RightFit service agreements to
 - Maximize uptime
 - Access Philips award-winning service organization
 - Minimize risk

Services*

- Clinical applications support available
- On-cart transducer test provides confidence in your transducer quality
- Philips Remote Services connectivity allows for many advanced service features, including
 - Virtual on-site visits for both clinical and technical support provides fast resolution to issues and questions
 - Remote clinical education
 - Remote log file transfer decreases downtime by allowing rapid diagnosis of problems by Call Center personnel
 - Online Support Request
 - Simplifies support engagement
 - Provides fast response to clinical questions and technical issues
 - User can enter request directly on ultrasound system
 - Proactive monitoring
 - Helps prevent unscheduled downtime
 - Monitors key system parameters.
 - Sends an alert to Philips Call Center so action can be taken before system operation is affected
- Optional Utilization Report provides data to help manage ultrasound assets
 - Track system and transducer usage
 - Summarize data about exam types and duration
 - Provide data to help with credentialing and privileging
 - Identify referrals by exam type

* Optional. Not all services available in all geographies; contact your Philips representative for more information. May require service contract.

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