

Pro Focus 2202 Ultrasound Scanner

Product Data

Applications

- Surgical applications
- Urological applications
- Brachytherapy
- Abdominal scanning
- Small part scanning
- Vascular scanning
- Obstetric and gynecological scanning
- Breast scanning
- General imaging
- Intraoperative scanning
- Interventional procedures

BENEFITS

- Combines high class image quality and Doppler performance with state-of-the-art specialist transducers
- Compact construction makes the system very mobile
- Extremely user-friendly, due to the fast, intuitive, customizable user interface and ergonomic design
- Palm Control Unit (option) for use in sterile environments
- Change both transducer and application with programmable transducer Start-Stop button
- Specially designed puncture guides for convenient intraoperative, laparoscopic and percutaneous interventional procedures
- Fully digital signal processing delivers high image quality
- Simultaneous triplex imaging with high Pulse Repetition Frequency (PRF) maximizes the on-screen information
- Application-specific transducers and advanced calculation packages cover a variety of clinical needs
- Contrast Imaging (option)
- Fully integrated 3D capabilities (option)
- DICOM® capabilities (option)
- 17" flat screen, also available on an articulating arm (option)
- 360° scanning

General Description

B-K Medical's Pro Focus 2202 Ultra-sound Scanner is a fully digital, multipurpose scanner with the latest advances in ultrasound technology. The system platform is based on the latest PC technology and Windows® software making it easy to implement upgrades as required. The Pro Focus is highly integrated and can be operated in the following modes:

- B-mode
- B-mode with Tissue Harmonic Im-aging
- B-mode + M-mode
- Doppler mode including:
- Spectral Doppler (PW & CW)
- Power mode (including Directional Power Doppler)
- Color mode (Color Doppler)
- Triplex-(B-mode plus Spectral Doppler and either Color Doppler or Power Doppler)
- Contrast Imaging



The Pro Focus 2202 ultrasound scanner

Transducers available for the Pro Focus 2202

Transducer	Frequency Range	Type	Supported by Blue / Green	Puncture guide	Tissue Harmonic Imaging	Contrast Imaging	Abdominal	Intraoperative	Musculoskeletal	Obstetrics	Pediatrics	Peripheral Vascular	Small Part	Transrectal	Transvaginal	Fetal	Neurosurgery	Cardiac
1850 8539 6004 6005	5-10 10 5-10	SE	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓				✓						✓ ✓ ✓ ✓				
2050	6-16	SE	✓											✓	✓			
8551	6-10	SE	✓	✓										✓				
8658	4-9	CA/ LA	✓	✓	✓									✓				
8659	5-9	LA		✓	✓			✓			✓		✓					
8661	5-7.5	CA	✓	✓											✓	✓		
8662	5-8	CA		✓				✓			✓						✓	
8663	5-8	CA		✓				✓									✓	
8666	5-10	CA		✓	✓	✓		✓										
8667	5-10	CA	✓	✓	✓									✓				
8801	2-5	CA	✓	✓	✓	✓	✓			✓						✓		
8802	3-6	CA	✓	✓	✓		✓			✓	✓					✓		
8803	3-5	CA	✓	✓	✓		✓			✓	✓					✓		
8804	5-10	LA		✓	✓				✓		✓	✓	✓					
8805	6-12	LA		✓					✓			✓	✓					
8806	4.3-9	CA	✓	✓											✓	✓		
8808	5-10	CA	✓	✓	✓									✓				
8809	6-15	LA		✓				✓	✓			✓	✓					
8811	5-12	LA	✓	✓	✓			✓	✓		✓	✓	✓					
8812	3.75-8	LA		✓							✓	✓	✓					
8814	5-10	CA		✓	✓	✓		✓	✓			✓	✓					
8815	5-10	CA		✓	✓	✓		✓	✓		✓	✓	✓					
8817	2-4	CA	✓		✓													✓
8820	2-6	CA	✓	✓	✓	✓	✓			✓						✓		
8827	2-4	PA	✓		✓													✓

Transducer Type: SE = Single Element (Mechanical), CA = Convex Array, LA = Linear Array, PA = Phased Array

Specifications Pro Focus 2202

SCANNING MODES (MAIN)

B (B-mode)
M (M-mode)
PW (Pulsed Wave Doppler)
CW (Continuous Wave Doppler)
C (Color Flow Mapping: Velocity, Variance And Velocity + Variance)
P (Power Doppler and Directional Power Doppler)
THI (Tissue Harmonic Imaging)
Contrast (Optional)

SCANNING MODES (COMBINATION)

B + M
B + PW (Duplex)
B + CW (Duplex)
B + C
B + P
B + C + PW (Triplex)
B + C + CW (Triplex)
B + P + PW (Triplex)
B + P + CW (Triplex)

SCANNING MODES (SIMULTANEOUS SPLIT)

B + B
B + THI
B + Contrast
B + (B + C)
B + (B + P)

TRANSDUCER CENTER FREQUENCY RANGE

Linear and convex array transducers: 1.9-15MHz
Phased array transducer: 2-4 MHz
Single-element transducers (option): 5-20MHz
360° rotating single-element transducers (option): 5-20MHz
Volumetric transducer (option): 5-20MHz

FREQUENCY SELECTION

B-mode: Up to 6 manual and 128 Automatic (Depth dependent)
THI: Up to 128 Automatic (Depth dependent)
C-mode: Up to 3 Manual
D-mode: Up to 3 Automatic

DISPLAY

15" screen. SVGA. 75Hz.
17" LCD flat screen

IMAGE CHARACTERISTICS

Ultrasound image: 512 x 480 pixels; 256 gray levels, 4096 colors
Graphics overlay: 800 x 600 pixels; 32-bit true color
Presentation: Images can be mirrored up/down and left/right

SWEEP SPEED

2-14 seconds per screen (1-9cm/s)

SIZE (ZOOM)

Examination Penetration: Max 28cm
Examination Penetration: Min 0.5cm
Works in Freeze and Scanning mode

FRAME RATE

>600Hz (automatically optimized), depending on the transducer and the scanning mode

PREPROCESSING

TGC: Overall gain, fine gain (TGC)
System dynamic range: 170dB
Gray scale conversion: 20 scales
Color scale conversion: 19 scales
Doppler conversion: 16 scales
B-mode Color Overlay: 32 bit

POST PROCESSING

Gray Scale Selection
Color Scale Selection
Noise Reject
Depth
Zoom
Pan
Gain

FOCAL ZONES

Up to 25 transmit zones depending on transducer
Up to 8 transmit zones for composite focus
Continuous receive focusing

FEATURES

Fully digital
Pulse Inversion Tissue Harmonic Imaging
Contrast Imaging (Optional)
Split screen (vertical and horizontal)
Simultaneous live split-screen imaging
User setups
Multibeam: 4 in parallel, Quad Beam
Channels: 1024 processing capability
Copy/Recall system and transducer setup
Image Review (cine) for up to 3000 images depending on scanning mode
Image Storage: CD, hard disk and USB storage device
Hard disk capacity: Expandable to 530GB (30GB built in), 530,000 images (30,000 on built-in HDD)
Clip browser
Report function
DICOM networking (option)
Fully integrated 3D (option)
Palm Control Unit (PCU) (option)
On-screen timer
Edge enhancement
Non-linear 2D persist filter
Picture-in-Picture (option)
User-defined hard keys
Automatic Mode Adjustment
Matching sliding filters
True Hilbert detection
Post-processing
Freeze Zoom (or Post Zoom)
Adjustable monitor and keyboard
Supports phased array transducers

PATIENT ARCHIVING

Search possibilities: Includes Patient name, ID, Last Exam Date, Archive Status, Free-Text search
Archive database of all patients on CD or DICOM PACS
Thumbnail display of selected exam
Document types: Frozen Images, Live Images, 3D data sets, Reports
Export Functions:
Archiving to CD, DICOM network
Copy to CD, USB-drive, External HDD
Format: BMP, AVI, html, BK3d

IMAGE MARKINGS

Image scale
Puncture lines

IMAGE ANNOTATIONS

Alphanumeric
Adjustable annotation arrow
Labels and comments (user-defined libraries)
Bodymarks (user-defined libraries)
Patient and hospital ID's
Real-time clock showing date and time

CINE

Cine Frames: >3000
Cine Doppler: >20 min
Loop Function
Clip: Up to 8 hours in chapters of max. 5 min

PULSED WAVE DOPPLER

Sample volume size: 1- 20mm
Units: cm/s or kHz
Flow inversion: Yes
Flow offset: Yes
Pulse repetition frequency: 1-15kHz
Wall filter: Digital filter. Cutoff frequency 1-10% of PRF
Detectable speed: 0.1cm/sec-10.8m/sec (0°-60°)
Display: B/W or color FFT spectra, 256 levels
Frequency resolution: Max. 5.2 Hz (PRF = 1 kHz)
Time resolution: Max. 4msec
Angle correction: 1° steps
Doppler audio output: max. 2 x 1W

STEERABLE DOPPLER

Angle: up to 40° (±20°)

COLOR FLOW MAPPING

CFM Modes: Velocity, Variance, Velocity + Variance
Sample: Max. 512 points
Pulse repetition frequency: 0.2-12kHz
Wall filter: Digital filter. Cutoff frequency 1-10% of PRF
Detectable speed: 0.1cm/sec-8.6m/sec (0°-60°)
Display: 4096 colors; 8 different color scales
Color Doppler interleave factor: 64 lines

POWER DOPPLER – Directional Power Doppler

Sample: Max. 512 points
Pulse repetition frequency: 0.2-12kHz
Wall filter: Digital filter
Display: 256 colors. 11 different color scales

CONTINUOUS WAVE DOPPLER

Range: 1.3-30kHz
Wall filter: Digital filter. Cutoff frequency 1-20% of PRF
Detectable speed: 0.3cm/sec-18.4m/sec (0° to 60°)

MEASUREMENT FACILITIES

Trackball (point, move, measure)
Pro Packages: General (including Vascular), OB/GYN, Surgery, Urology, Cardiac

CONNECTION POSSIBILITIES

Transducers: 3 or 4 active sockets; 2 or 3 for linear and convex array transducers and 1 for 360° and single-element (option)
External controls: Foot switch, transducer button, Palm Control Unit (PCU) (option)
Signal output: Audio (stereo line level), video (composite color, composite black/white, RGB, S-video), 2 x SVGA, 75Hz
Image storage: Internal hard disk, CD-RW or USB storage device, Digital B&W printer, Digital color printer
Documentation trigger: 2 units
Signal input: Audio (stereo line level), video (composite color, S-video, RGB)
Communication: Expandable to 8 x USB 2.0 (3 built in), RS232 serial channel, 2 x IEEE 1394a FireWire, 10/100 Ethernet
Isolated auxiliary power outlets: 100-230V AC (equal to input voltage), max total output available for use 350 VA
DICOM network (optional)

POWER SUPPLY

Complies with requirements for Class 1 (protective earth) devices of EN/IEC 60601-1[1]
Voltage: 100-230V AC
Frequency: 50-60Hz
Power consumption: 900VA total (incl. the 350VA isolated power outlet)
Automatic circuit breakers: 2

NOISE

Fan noise during operation: <30dBA

ENVIRONMENTAL LIMITS

Operating temperature: +10 to 40°C (+50 to 104°F)
Storage temperature: -25 to +60°C (-13 to +140°F)
Operating/storage humidity: max 85% RH non-condensing
Operating pressure: 700-1060hPa (normal atmospheric pressure)

DISINFECTION

Chemical resistance of console during disinfection:
Wiping with:
Sodium hypochlorite up to 2% in water
Chlorhexidine gluconate 5% in water
Chlorhexidine 1.5% and cetrimide 15% in water
Chlorhexidine 0.5% in ethanol 70%
Glutaraldehyde 2% solution
Ethanol 70% in water
Isopropanol 70% in water

APPROXIMATE DIMENSIONS

Height: 1410-1500mm (adjustable)
Width: 530mm

Specifications Pro Focus 2202

Depth: 780mm Weight: 69kg (with flat screen, excluding transducers and printer) ELECTROMAGNETIC COMPATIBILITY Complies with requirements for Class A devices of EN/IEC 60601-1-2 [2] SAFETY Complies with EN/IEC 60601-1[1], EN 60601-2-37[3], UL2601-1[4], and CSAC22.2 No. 601.1[5] APPROVALS UL International DEMKO (CB certification) UL Listed CUL (UL listing for Canada) TUV	MARKET CLEARANCE USA - FDA, Market Clearance Canada - Health Canada, Licence EU - Notified Body (DGM), CE certification Japan - PMDA, Licence (pending) MANUFACTURER B-K Medical Mileparken 34 DK-2730 Herlev Denmark REFERENCES [1] EN 60601-1:1990 + A1:1993 + A2:1995 + A13:1996 <i>Medical electrical equipment. Part 1: General requirements for safety.</i>	[2] EN 60601-1-2:2002 + A1:2006 <i>Medical electrical equipment – Part 1-2: General requirements for safety. Collateral standard: Electromagnetic Compatibility-Requirements and tests.</i> [3] EN 60601-2-37:2001+ A1:2005 + A2:2005 <i>Medical electrical equipment – Part 2-37: Particular requirements for the safety of ultrasonic medical diagnostic and monitoring equipment.</i> [4] UL 2601-1:2003 <i>Medical Electrical Equipment – Part 1. General Requirements for safety.</i> [5] CSA C22.2 No. 601.1–M90:2001 <i>Medical Electrical Equipment – Part 1. General Requirements for safety.</i> [6] EN 60601-1-1:2001 <i>Medical electrical equipment –Part 1-1: General requirements for safety. Collateral standard: Safety requirements for medical electrical systems.</i>
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Ordering Information Pro Focus 2202

ACCESSORIES INCLUDED BB1279: Pro Focus 2202 Extended User Guide (English)* BB1564: Transducer Care, Cleaning & Safety (English)** SC1617/SC1638: Control Panel Guide (English) BZ2100: Technical Data CD BZ2200: Screen texts CD QA0228: Trackball adjustment tool UA0967: Hand rest * A user guide is available in other languages ** other language versions available Transducers For more information about B-K Medical's transducer program, please contact your local sales representative. OPTIONS UA2222: 3D Professional (includes 3D module mover) UA2222-K: 3D mover module kit UA2223: 360° mechanical input module UA2223-K: 360° mechanical input module kit UA2207: 3D Freehand UA2205: Picture-in-Picture (PiP) UA2206: DICOM option (license) UA2215: Contrast Imaging UA2214: Tissue Harmonic Imaging UA2220: 3rd Array Transducer Connector UA2203: ECG (includes AO366 and QA0210) AO0366: ECG electrode cable (3.5m) QA0210: ECG electrodes (box of 50) UA2230: 2202 Blue to Green upgrade kit†	UA2231: 2202 Green to Yellow upgrade kit† UA2232: 2202 Blue to Yellow upgrade kit† UA2233-K: B/W to Color upgrade kit for 2202 Blue to Green†† UA2251: Flat Screen for 2202 UA2251-K: Flat Screen kit for 2202 UA2252: Flat Screen on arm for 2202 UA2252-K: Flat Screen on arm kit for 2202 ACCESSORIES AVAILABLE UA0967: Hand rest UA2240: Printer shelf (Blue and Green systems) UA1215: Foot switch EJ4000: Plug for isolated auxiliary power outlets UA2204: Cord retaining kit UA0610: Scanning gel (5L) WQ0739: Scanning gel (290ml) DZ9756: Transducer holder inlay UA1302: Endo probe holder DP0889: Paper holder UA2410: Palm Control Unit (PCU) UA1271: Adaptor for PCU UA0955: Scanner cover SC1624: Shortcut stickers UA2210: Docking cable UA2211: Docking box UA2212: Holder for docking cable and PCU Documentation UA4100: Digital B/W printer start-up kit EQ4100: Digital B/W Printer (Sony UP D897) EQ4067: Monochrome Video Graphic Printer (Sony UP-980MD)	EQ4068: Printing paper for UP-980MD (Sony UPP-210HD) EQ4069: Blue transparency film for multiformat use with UP-980MD (Sony UPT-210BL) EQ4072: Printing paper (Sony UPP-110HG) EQ4099: Digital Color Printer (Sony UP-D23MD) EQ4086: Remote control unit for UP-2800 and UP-895CE (Sony RM-91) EQ4092: Color Video Printer (Sony UP-21MD) EQ4093: Color printing pack for UP-21MD (Sony UPC-21S) EQ4094: Color printing pack for UP-21MD (Sony UPC-21L) 3D Scanning Accessories UA0550: Endocavity Rotational Mover (ECRM) UA0551: ECRM cradle for 8658 UA0552: Pullback mover for 1850 and 8808 UA0553: Variable friction support arm † For scanners purchased before February 2007 †† For scanners purchased after February 2007
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Ordering Information Pro Focus 2202

Available versions for Pro Focus 2202

There are 3 versions of the Pro Focus 2202 available for order: Yellow (high-end color scanner), Green (midrange color scanner) and Blue (high-end B&W scanner). Upgrade kits are available (see Ordering Information for details).

Feature	Blue	Green*	Yellow
17" Flat screen	Optional*	Optional*	Optional
17" Flat screen on arm	Optional*	Optional*	Optional
Detachable monitor	-	-	Included
Digital B/W printer	Optional	Optional	Optional
Printer shelf	Optional	Optional	Included
Power Doppler	-	Included	Included
Directional Power Doppler	-	Included*	Included
Color Flow Mapping	-	Included*	Included
Pulsed Wave Doppler	-	Included*	Included
Continuous Wave Doppler	-	-	Included
Tissue Harmonic Imaging	Included	Included	Included
Contrast Imaging	-	-	Optional
Picture-in-Picture	-	-	Optional
DICOM	Optional	Optional	Optional
3D Freehand	Optional	Optional	Optional
3D Professional and mover	Optional	Optional	Optional
ECG module	Optional	Optional	Optional
3rd Linear and Convex Array (electronic) transducer connector	-	Optional	Included
Support for single element (mechanical) transducers: 1850, 2050, 8551	Optional	Optional	Optional
Support for transducers: 8658, 8661, 8667, 8801, 8802, 8803, 8806, 8808, 8811, 8817, 8820, 8827	Included	Included	Included
Support for transducers: 8659, 8662, 8663, 8666, 8804, 8805, 8809, 8812, 8814, 8815	-	-	Included

* only available in some countries



The Sentinel Imaging Group
1172 Winola Road
Clarks Summit PA 18411
Toll Free: 888 838 7488

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