

PRODUCT SPECIFICATION ULTRASONOGRAM**PRODUCT SPECIFICATION ULTRASONOGRAM****ETHIROLI TINY 16a****1.0 OVERALL DESCRIPTION**

The Ethiroli Tiny 16a is an ultra-portable ultrasound scanner weighing under 4 Kgs, operating from batteries and offering superb image quality. It is the industries **first and only entry level colour Doppler ultrasound scanner.** Ethiroli has imaging in the following modes

1. B
2. M
3. **Pulse wave doppler**
4. **Colour flow doppler**

It supports imaging with the following transducers

1. 3.5 MHz (2 – 5 MHz broad band) 60mm Radius of curvature (ROC), 62 Deg. Field of View (FOV) Curvilinear electronic probe
2. 7.0 MHz (4 – 9 MHz broad band) 10mm ROC, 110 deg. FOV Endocavity electronic probe
3. 8.0 MHz (5 – 10 MHz broad band) 40mm Field of View Linear array electronic probe
4. 6.0 MHz 50mm FOV Linear array electronic probe
5. 3.0 MHz (2 -5 MHz broad band) 20mm ROC, 100 deg FOV Micro Convex Electronic Probe for cardiac exam.

Image is displayed in a 15" flat screen TFT monitor at 1024 x 768, 32 bit true colour resolution.

Power is derived from an external mains socket. In addition it supports battery backup for 6 hours through built in batteries.

Standard accessories included with the Tiny 16a are:

- 1 – C2-5/60AP 3.5 MHz (2 – 5 MHz broad band) 60mm Radius of curvature (ROC), 62 Deg. Field of View (FOV) Curvilinear electronic probe.
- 1 – Power supply cable
- 1 – Operator's Manual
- 1 – Maintenance Manual
- 1 – Shipping Carton

Optional Accessories include

1. 7.0 MHz (4 – 9 MHz broad band) 10mm ROC, 110 deg. FOV Endocavity electronic probe
2. 8.0 MHz (5 – 12.9 MHz broad band) 40mm Field of View Linear array electronic probe
3. 6.0 MHz 50mm FOV Linear array electronic probe
4. 3.0 MHz (2 -5 MHz broad band) 20mm ROC, 100 deg FOV Micro Convex Electronic Probe for cardiac exam.
5. HP 1030 Colour Laser Jet Printer
6. HP 1004 B & W Laser Printer, Thermal Printer
7. Free Hand 3D/4D imaging software
8. Dicom 3.0 package

Product Specification

2.0 FUNCTIONAL CHARACTERISTICS

2.1 TINY 16a FUNCTIONAL CHARACTERISTICS

General Descriptions

Imaging mode:	B, B+B, 4B, B+M, M, <u>B+PWD, B+Power Doppler, B+Directionla Power Doppler, B+CFM</u>
Gray scale:	256
Colour scale:	256 shades for Colour Doppler Modes
Display:	15" 1024 x 768, 60Hz refresh, 32bit true colour Flat TFT monitor (flicker free)
Transducer frequency:	2.0 ~ 10MHz
Beam Forming	Multiple transmit focus (probe dependant) Continous receive focus Dynamic receive aperture Tracking filter Variable transmit frequency Variable acoustic power
Scanning angle:	from 40 to 110 degree (depending on transducers)
Scanning depth (mm):	from 25 to 200 (depending on transducers)

Imaging Processing:

B-Mode

Dynamic range
Frame Averaging
6-segment TGC adjustment
γ-correction

M-Mode

Scroll or moving bar type

Spectral Doppler

Doppler Gain 20 to 120 db in 10 spteps
Sample Volume – 0.5mm to 4.0mm, probe dependant
Angle correction – 360 deg in 15 deg step
PRF 4 Khz to 8 KHz (Supports HPRF)
Wall filter – automatic optimisation
Adjustable baseling and velocity scale

Colour Doppler

Modes: Power Doppler, Directional Power Doppler and CFM modes
Doppler Gain 20 to 120 db in 10 spteps
PRF 1 to 4 KHz adjustable
Ensemble length – 4 to 16 pulses per vector, adjustable
Colour persistance – adjustable
Colour priority - adjustable

Review:

Multi Document Imaging
64 frame cine loop with each child window
Raw data storage (including cine) and retrieval
Freely resizable window

Image Storage

Built in non-volatile image storage for 1,00,000 (one lakh) images. Cine selection possible on recalled images and recalled images can be resized. Calculations possible on recalled images.
Scan recording: 60 min Scan recording in “windows Media Format” and playback in any windows PC

Measurement & Calculation

B-mode: Distance, Circumferance, Area by Two Distance, Ellipse, Trace
M-mode: HR, time, velocity, depth
PWD – mode: Velocity, acceleration, time, Velocity ratio, Pressure Gradient, RI

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Image Archive

Hard Disk Recording
CD-R/W recording
USB pen drive recording

Connectivity

USB 2.0
10/100 MBPS LAN
Internet connectivity via external USB/ LAN modem
Telemedicine ready
Dicom 3.0 (optional)

User input

Alphanumeric keyboard for patient data and report generation.
16mm Trackball and touch pad on scanner
6 slider TGC
Dedicated keys for all modes
Two rotary knobs with soft functions.

Report Generation

Report pages can be customized by end user. Also new calculations and new measurements can be added by end user. Structured reports for any diagnosis can be generated.
Images are also incorporated with the reports. Hence a complete report along with image as evidence is generated. Such reports can be printed on any PC compatible printer on plain page of any size supported by the printer.
Has software report packages including measurement and calculations for General Medicine, OB, Gynecology, Cardiology, Vasular, Small parts. These packages are user configurable and new report packages can be added by end user.

Software Update

Reporting software can be field upgradable through CD. Apart from reporting packages Ultrasound software itself can be upgraded to latest version by CD or USB pen drives.

3.0 PERFORMANCE CHARACTERISTICS

3.1 AC LINE REQUIREMENTS

Input Requirements 194 - 254 VAC 48-65 Hz.

Power Requirements: 90 watts max, with fully discharged battery in charge mode.

Green Wire Leakage: <50 ua RMS at 220 VAC 60 Hz conforming to IEC 60601-1 standard.
Patient applied part conforms to IEC 60601-1 standard leakage current under normal operation and single fault conditions

Hipot: 2500 VAC RMS 60 Hz between AC hot and neutral and green wire ground conforming to IEC 60601-1 standard

3.2 BATTERY BACK UP

Battery Life: 15 Min under full operation
Battery Type: Two no. Lion Smart battery on laptop and PC
Battery Charge Time: 2 hours to full charge
Low Battery Indicator: On screen display of remaining capacity and run time to empty.

3.3 PHYSICAL CHARACTERISTICS

Size: 300mmx260mmx80mm with display folded.
Weight: 25 kg. with probe

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3.4 ENVIRONMENTAL CHARACTERISTICS

3.4.1 Temperature

Storage: 0 deg C to 65 deg C
Operating: 25 deg C to 55 deg C

3.4.2 Humidity

Operating: 5% to 96% relative humidity