

MicrUs and MicrUs Pro Series Ultrasound Systems

Echo Wave A Software

Measurements and Calculations Reference Manual



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Echo Wave A Software Measurements and Calculations Overview

This document presents equations that are used for Echo Wave A measurements and calculations.

- B mode measurements and calculations

Distance

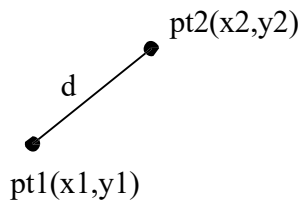
Area (method: 1 ellipse)

Circumference(method: 1 ellipse)

Volume (method: 1 ellipse)

1 B mode general measurements and calculations

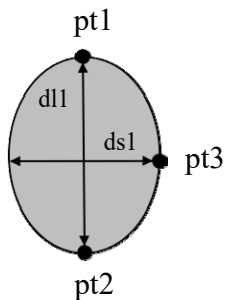
1.1 B Distance



Distance d between points $pt1$ and $pt2$ is calculated using the following equation:

$$d(pt1, pt2) = \sqrt{(x1 - x2)^2 + (y1 - y2)^2} .$$

1.2 B Area (Ellipse)

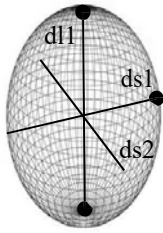


During measurements and calculations we assume that ellipse axis between two circular marker points $pt1$ and $pt2$ is "long axis", and axis with one circular endpoint marker $pt3$ is "short axis". And this "long axis" and "short axis" notation remains unchanged no matter what are real lengths of these axes.

Area S and circumference P (perimeter) of an ellipse with long axis length $d11$ and short axis length $ds1$ are calculated using the following equations:

$$S = \frac{\pi \cdot d11 \cdot ds1}{4}, \quad P = \pi \cdot \sqrt{\frac{1}{2}((d11)^2 + (ds1)^2)} .$$

Volume V of an ellipsoid with axes lengths $d11$, $ds1$, and $ds2=ds1$ is calculated using the following equation:



$$V = \frac{\pi \cdot d11 \cdot ds1 \cdot ds2}{6}.$$

1.3 B Volume (1 ellipse)

See "B Area (Ellipse)" section.

2 Revision History

Revision	Revision Date	Description of Revision	Revision Author
1.0.0	2019.10.07	Initial Release	V.Perlibakas
1.0.1	2020.05.14	Changed first page photo.	V.Perlibakas