

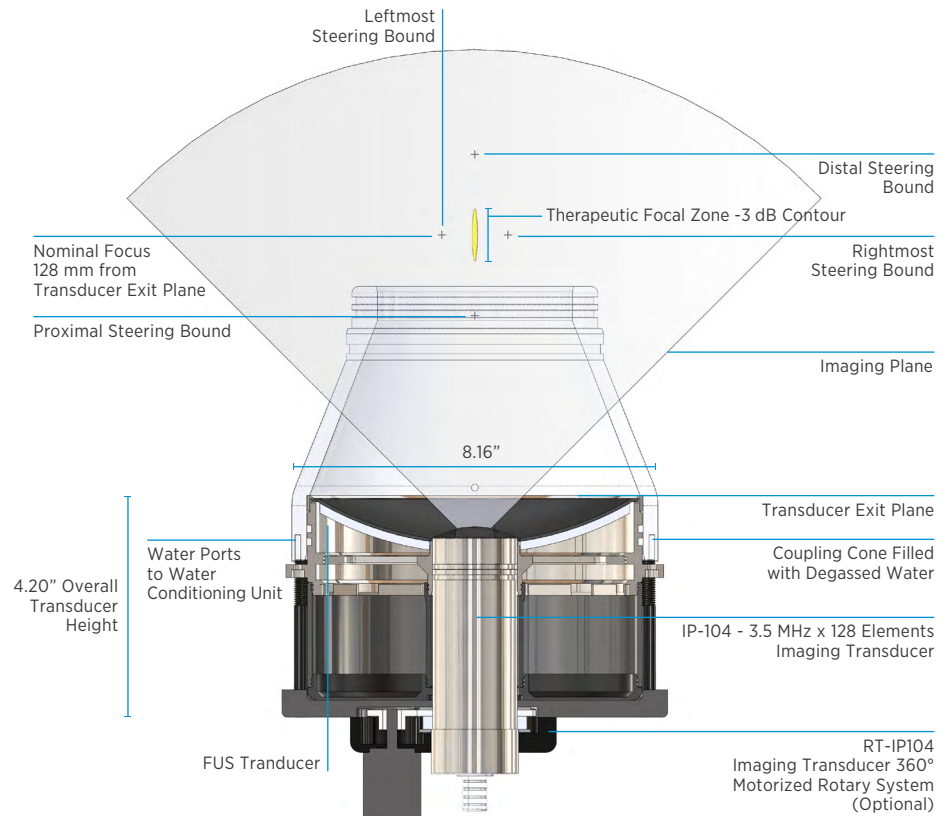
# HIFUPlex™

## HIFUPlex-04, -05 & -06 Transducer Bundles

**HIFUPlex-04 -05 & -06 Bundles** (0.5, 1.1 & 2.0 MHz, respectively) include FUS and imaging transducers to provide 3D therapeutic focusing where both lateral and axial steering is required. These solutions provide interleaving capability between the FUS therapy and imaging using Verasonics' HIFUPlex GUI or HIFUPlex PLUS GUI on the Vantage platform.

### FUS Transducer Specifications

- Ø150 mm f/1.0 FUS transducer
- Transmit efficiencies up to 80% over a 40% bandwidth
- Includes coupling cone for non-immersion applications and target for self-testing (CT-300)
- Bladder coupling system providing a membrane at the transducer exit plane (BCS-300 optionally available)



	H-313 (HIFUPlex-04)	H-301 (HIFUPlex-05)	H-302 (HIFUPlex-06)
Fc (MHz)	0.5	1.1	2.0
# of Elements	64	128	128
Radius (mm)	150	150	150
I.D. (mm)	44	44	44
O.D. (mm)	150	150	150
Geometric Focal Distance* (mm)	128	128	128
Lateral Width** (mm)	3.0	1.4	0.8
Axial Length** (mm)	30.0	10.7	7.3
Axial Steering (mm)	115	57	40
Lateral Steering (mm)	44	21	16
Pressure Focal Gain	21.0	50.2	92.0
TAP, Avg. (Watts)	500	1250	1250
TAP, Peak (Watts)	2500	5000	5000
Focal Pressure, Peak (MPa)*	67	343	627

\*From the exit plane of the transducer using the provided bladder coupling system

\*\*Down -3 dB from acoustic maximum  
\*Assumes a linear free field environment

TAP = Total Acoustic Power



### IP-104 Imaging Transducer Specifications

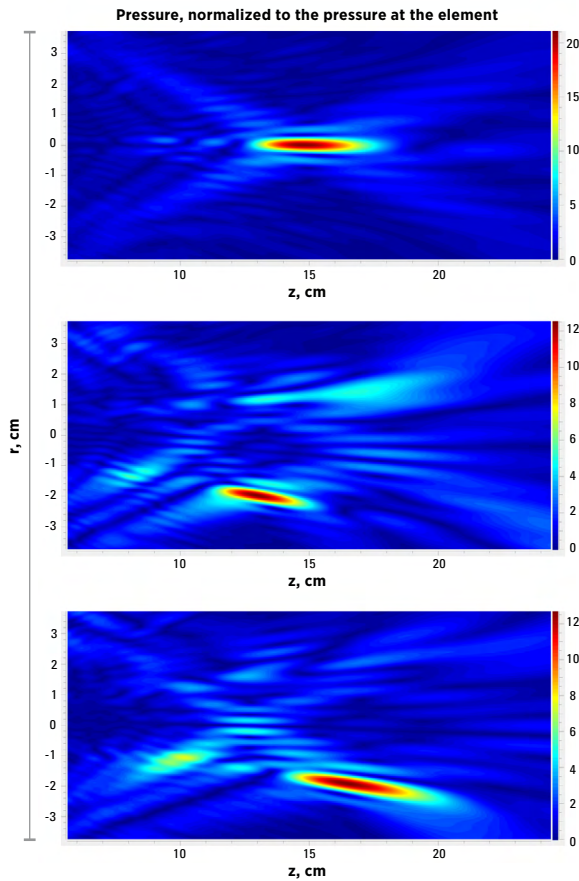
- Single crystal technology
- 128-element phased array (note: only 64 elements available if using HIFUPlex-04 with Vantage 128 or Vantage 64LE configuration)
- 3.5 MHz center frequency
- Watertight housing with rotational and vertical adjustability

	IP-104
Fc (MHz)	3.5
Bandwidth (%)	95
Pitch (mm)	Lambda/2
Aperture Elevation (mm)	13.5
Aperture Azimuth (mm)	28.2
Elevation Focus (mm)	75.0



## Dynamic Focal Depth Steering

The acoustic pressure field maps (below) illustrate software-controlled spatial modulation of the HIFUPlex-04 along the transverse plane. The HIFUPlex coherent focus is shown at 150 mm, or 128 mm from the exit plane of the transducer (top), X = 20 mm, Z = 130 mm (mid), and Z = 170 mm (bottom).



	HIFUPlex-04	HIFUPlex-05	HIFUPlex-06
<b>Axial Focal Steering down -3 dB</b>			
<b>Near Field Distance* (mm)</b>	104	118	134
<b>Far Field Distance* (mm)</b>	182	176	166
<b>Lateral Focal Steering down -3 dB</b>			
<b>Diameter (mm)</b>	32	21	12

\*From the exit plane of the transducer  
 +Assuming a linear field

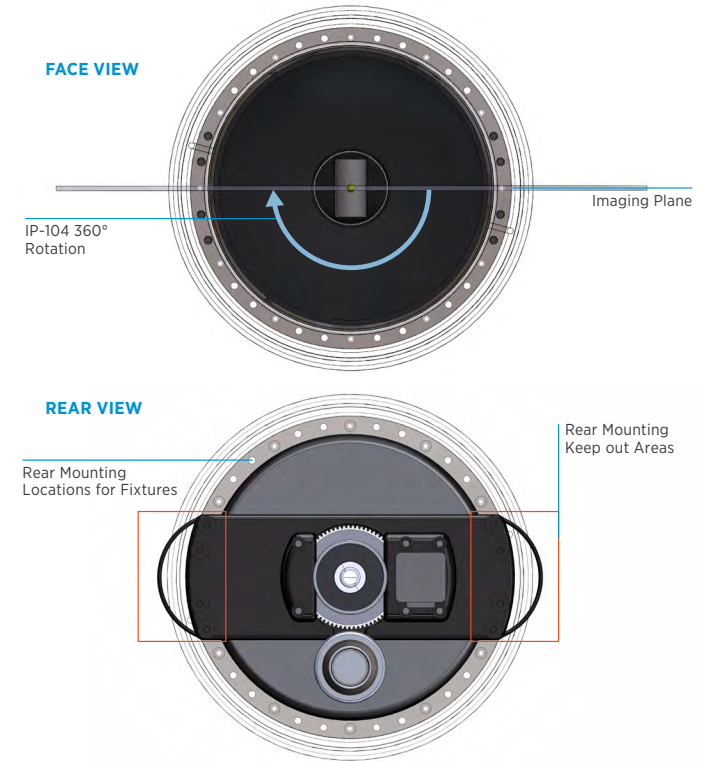


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## 3D Rotary and Rear Mounting

The large rotary motion apparatus can be added to the HIFUPlex-04, -05, or -06 and is controlled by using the Vantage HIFUPlex PLUS GUI for 3D therapy planning and delivery.



## HIFUPlex Full-screen Graphical User Interface for USgFUS Workflow

Workflow Step	Capability	HIFUPlex	HIFUPlex Plus
<b>GUIDANCE</b>	B-Mode Imaging (Plane waves, Wide Beams, Scanline)	✓	✓
	Doppler Imaging (Color Flow, Color Power)	✓	✓
	Harmonic Imaging (Nonlinear imaging via pulse inversion)	✓	✓
<b>PLANNING &amp; DELIVERY</b>	Motorized Rotary Movement of Imaging Plane	✗	✓
	Motorized X-Y Movement of Imaging Plane	✗	✓*
	2D Treatment Planning & Delivery	✓	✓
<b>MONITORING</b>	3D Treatment Planning & Delivery	✗	✓
	Thermal strain imaging (thermometry via user calibration)	optional	✓
<b>DATA MANAGEMENT</b>	Experimental event logging, data capture & recall	✓	✓

\*Plus 1000 only



Sonic Concepts, Inc. founded in 1986 in Bothell, Washington delivers premium ultrasonic systems to biomedical, industrial, marine, and research markets. They specialize in designing and manufacturing High Intensity Focused Ultrasound (HIFU) transducers, electronics and software. Their systems are installed in leading corporate and academic research labs around the globe.

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