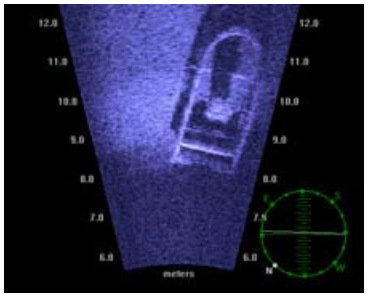
Sound Metrics

DIDSON Product Options

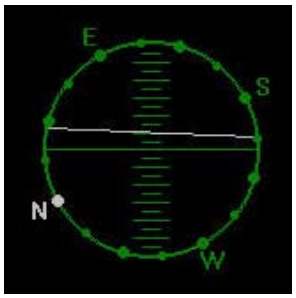
• Orientation Sensor

Standard in Diver-Held and optional in Unibodies

A Honeywell TruePoint Compass placed in the Diver-Held or Unibody housing provides roll, pitch, and yaw (compass) in degrees with a stated accuracy of 1 degree rms. DIDSON presents the data both as numbers printed on the display and as a graphic. The orientation numbers are recorded in the DDF (DIDSON Data File) file. The graphic and numbers will be shown on the display when the file is replayed.

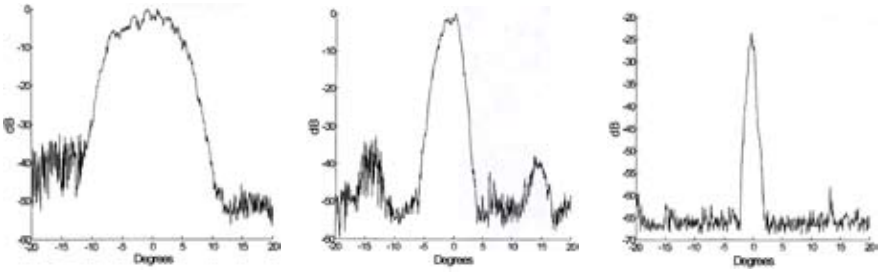


The heading of the sonar is marked by the direction shown at the top of the circle. When heading changes, the circle rotates. The white line marks the horizon. When the sonar tilts downward, the white line rises. When the sonar rolls counter-clockwise, the line rotates clockwise.



• Concentrator Lens

A concentrator lens is a plano-concave lens that fastens onto the front lens of a DIDSON as shown. Space between the two lenses allows water to fill the gap to make sure no air is trapped and thus attenuate the sound. The lens concentrates or reduces the vertical beamwidth from the default 14 degrees to either 3 degrees or 1 degree depending on which concentrator is used.



14 degrees 3 degrees 1 degree

Reducing the vertical beamwidth allows horizontal DIDSON beams to go farther in shallow rivers with reduced surface and bottom reverberation. With the 3 degree concentrator, the vertical beam spans only 0.5 meters at 10 meters range from the sonar.

The one degree concentrator illuminates a thin slice such that the vertical beam spans only 0.17 meter at 10 meters range. This could be useful for taking detailed topography of river or sea bottoms. If the DIDSON were rotated 90 degrees and panned while taking data with this concentrator, one would have raw data for a 3D reconstruction.

Four holes need to be drilled and tapped in the front lens to accept the four fasteners needed to attach the concentrator lens. If you ship us the front lens we will have that done for you. If shipping us the front lens for modification is a problem, we will provide a drawing that specifies where the holes are drilled and tapped and you can have it done by a local machine shop.

• Silt Exclusion Enclosure (Silt Box)

Some river sites support a heavy flow of suspended sediment. The DIDSON lens enclosure is open to ambient water and in those conditions can slowly fill with silt. For those occasions one can use the Silt Exclusion Enclosure or "Silt Box." The Silt Box encloses the DIDSON in a relatively silt-proof container that keeps silt out of the lens housing and provides uninterrupted imaging in sediment laden water.

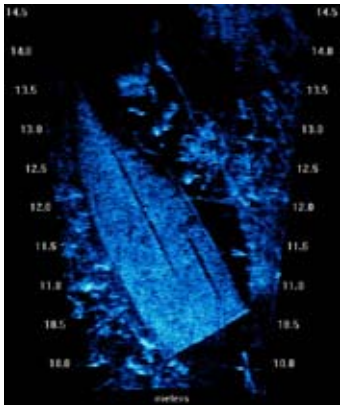
The Silt Box measures 8" by 9" by 13" and currently is designed for the Rear Facing Connector 300m units used heavily by fisheries management and research groups. The box could be modified to support Forward Facing Connector 300m units.

Silt filled lens compartment

Silt Exclusion Exclosure

• Ultra-High Resolution Large Lens Set Option

A large lens set 29 cm (11.5-in.) wide by 49.5 cm (19.5-in.) long almost doubles the resolution over the standard or LR lens sets. The large lens set also has a smaller vertical beampattern (approximately 3 degrees). The combined concentration of horizontal and vertical beamwidths increases the returned signal from a given target by 10 dB. The lens set fits on a standard or LR Unibody DIDSON. The field of view of the Large Lens Set is 15 degrees compared to 29 degrees for the standard lens set.



These beamwidths were measured with the standard and large lens sets.

Beamwidth Large Lens Set	Beamwidth Standard Lens Set	Sonar Operating Frequency
0.17	0.3	1.8 MHz (HF Standard)
0.25	0.5	1.1 MHz (LF Standard)
0.25	0.5	1.2 MHz (HF LR)

Large Lens Set image of an upside-down row boat in a bed of milfoil. Note that a number of the individual strands of milfoil are resolved in this image even at 13 meters range from the sonar.

• 8 Gigabyte Internal Memory (Compact Flash Card)

Some DIDSON applications require autonomous recording. In this case there is no cable connecting the sonar to a host computer for control, display, and data storage. The sonar requires only a power source. The user sets up the sonar with the desired settings (range, frequency, frame rate, etc.), then puts the sonar in autonomous record mode and turns off the sonar. The user places the sonar in the desired location and applies power. The sonar loads the stored settings and begins recording into its internal memory. The 8 GB internal memory allows four hours of recording at HF at 10 frames/s.

Two applications that use autonomous recording are:
1) placing DIDSON in the mouth of a trawl net to monitor animal behavior as they approach and enter the mouth of the net, and
2) monitoring fish traps on the sea bottom.

• Communication over Extended Distances

The standard 100/10BaseT Ethernet link will work over cables up to 200 feet long. This distance can be extended by changing the protocol and transmitting over a twisted copper pair up to distances of 4000 feet (1200 meters) or over fiber optics for kilometers of range. Examples of converters successfully used are a Patton Ethernet Extender (model 2158) and a Prizm 100/baseT to Fiber Optic Converter. Sound Metrics does not sell the Prizm but does sell the Patton Ethernet Extender.

• Cable Length Options

The standard scope of supplies when one purchases a DIDSON includes a 50-ft cable. The exception is the SplitBody system which comes with a 25-ft cable. Additional cable lengths are available: 100 feet, 150 feet, 200 feet, and 500 feet. Cable lengths up to and including 200 feet come in a coil. The 500-ft cable comes on a sturdy plastic reel (picture at right) made to allow one to unwind either or both ends of the cable from the reel.

500-ft Cable Kit

The 500-ft cable requires Ethernet Extenders. The extenders convert the 100/10 Base T protocol to a protocol that works over cables that are longer than 200 feet. The 500-ft cable kit includes a pair of Ethernet Extenders with one of them in a waterproof housing depth rated to 500 feet (150 m). One end of the housing connects to the 500-ft cable and the other end of the housing connects to the sonar via a DIDSON cable with a length from 50 feet to 200 feet. The other end of the 500-ft cable connects to the topside box. The second Ethernet Extender connects between the topside box and control/display computer. In summary, the 500-ft cable kit includes the following: 500-ft cable, reel, Local Ethernet Extender, Remote Ethernet Extender (in waterproof housing), and a 3-ft Ethernet Cable.

Left: Remote Ethernet Extender (in waterproof housing)
Right: Local Ethernet Extender

• Spreader for Standard and Large Lens Set

The Spreader Lens is a plano-convex lens that fastens onto the front lens of a Large Lens Set (LLS) or a DIDSON Standard Lens Set (SLS) as shown at right.

Security and Inspections: Spreader Lenses are useful for hull searches and other up-close uses. The 28-degree two-way vertical angle for the SLS spreader doubles the vertical coverage at any given range. The Spreader on the LLS almost triples the vertical coverage. It generates 14-degree two-way vertical width versus the 3.5-degree vertical width of the LLS with no spreader.

Fisheries: The Spreader on the LLS makes it easier to image fish at close ranges. Fisheries customers want more detail at short ranges to determine species identification.

Specs:

•Standard Lens Set Spreader vertical width:
28-degrees two-way pattern.

•Large Lens Set Spreader vertical width:
14-degrees two-way pattern.

• Simple Pole Mount

Sometimes all one needs to deploy a DIDSON is a simple articulated mount on a extensible pole. The mount angle allows adjustable sonar roll and tilt relative to the pole. The pole length is also adjustable.

• Remote Auxiliary Lens

The Remote Lens Exchanger allows one to mount and dismount a concentrator or spreader lens from a 300m depth-rated DIDSON when the sonar is deployed. This gives the operator two choices of vertical beamwidth: 14-degrees or one of 1, 3, 8, or 28 degrees. The lens is exchanged by a software command saving the time to bring up the sonar and physically changing the lens by hand. The Remote Lens Exchanger requires its own motor actuator and needs the new rear endcap that supports one.