

Multibeam Imaging Sonars

Suitability for ROVs and AUVs



oi oceanology international®
CHINA

青岛国际海洋技术与工程设备展览会
23-25 OCT 2018, QINGDAO
A Reed Maritime Event

The image shows a 3D visualization of multibeam sonar data. It consists of several stacked, semi-transparent layers. The top layer is a color-coded bathymetric map with a gradient from blue (deep) to red (shallow). Below it, a darker blue layer shows a similar map. The bottom layer is a grayscale bathymetric map with several blue, cone-shaped beams originating from a central point, representing the sonar's field of view.

Presenter: Scott McLay

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TIL-LET-005.3



Agenda

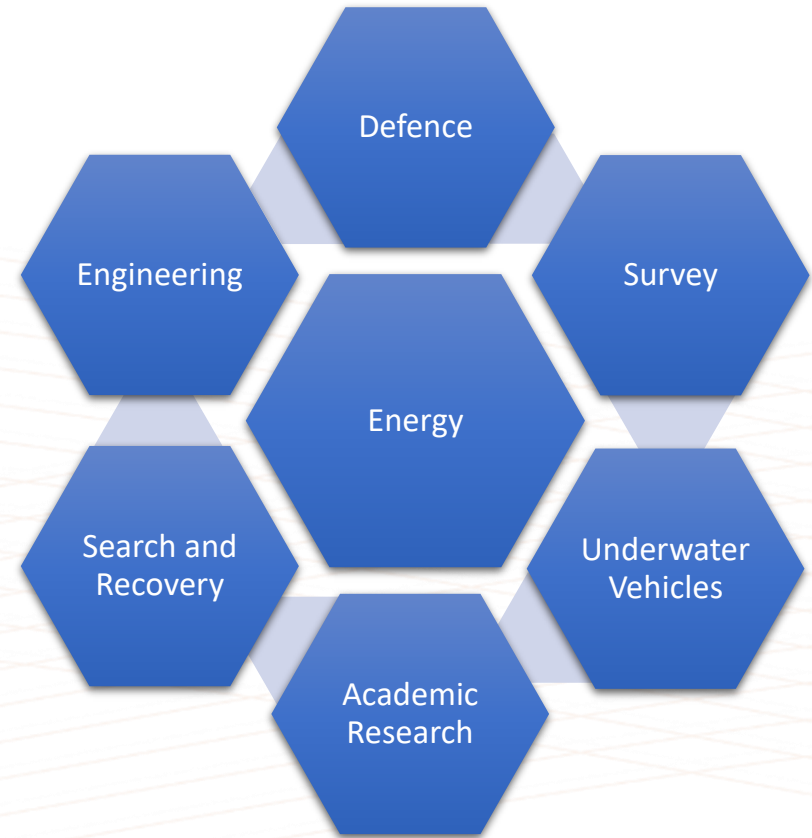
Multibeam Imaging Sonars for ROVs and AUVs

- Company Introduction
- Multibeam Imaging Technology
- Multibeam Imaging Range
- Conclusion
- Questions

About Us

Tritech

- We are a high-technology business dedicated to providing the most reliable imaging and ancillary equipment for use in underwater applications
- Our key markets include; Defence, Energy, Engineering, Survey, Search and Recovery, Academic Research and Underwater Vehicles
- We remain an industry leader in the provision of sensors and tools for ROV and AUV markets
- We were established in 1991
- We have approximately 70 staff across 4 international sites



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Tritech

A Moog Company

MOOG

Tritech is a Moog Inc. company who are a worldwide designer, manufacturer and integrator of precision control components and systems for:

- Military and commercial aircraft
- Satellites
- Space vehicles
- Launch vehicles
- Missiles
- Automated industrial machinery
- Medical equipment
- Marine applications

Moog Inc. supplies high-performance systems to the global onshore and offshore oil and gas industry through its marine companies Focal Technologies Corporation and Tritech International Ltd.



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Our Subsea World

Energy: a Typical Subsea Scene Below

- One of our largest operating markets is the exploration and production of hydrocarbons in the Oil & Gas industry
- The scene to the right depicts a typical subsea environment, complete with oil rig, surface vessels, a Remotely Operated Vehicle (ROV) and a side scan sonar working across this seabed construction site around structures such as pipelines and manifolds



Our Subsea World

Core Product Line

Sonars

- Mechanical
- Towed
- Multibeam
- Imaging
- Profiling

Navigation:

- USBL Positioning
- Altimeter
- Compass
- Velocity

Ancillary

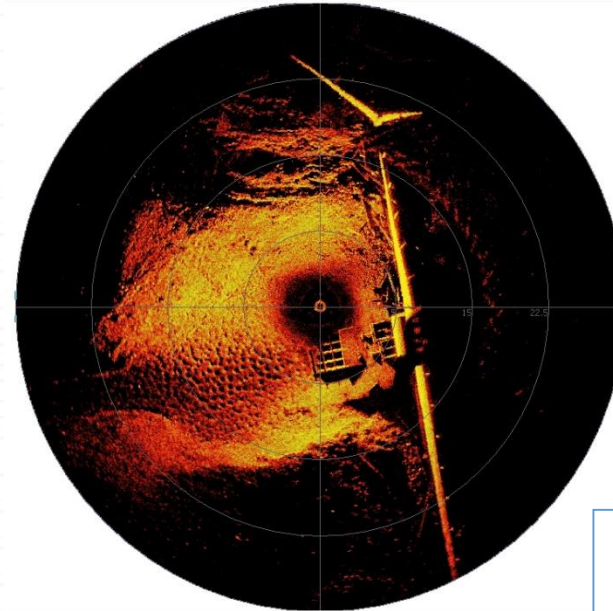
- Bathymetric
- Control

Video

- Cameras

Hydraulic

- Pan & Tilt
- Dredging
- Pumping



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Multibeam imaging technology

How it differs from a mechanical sonar



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Sonar Theory

Sonar Location

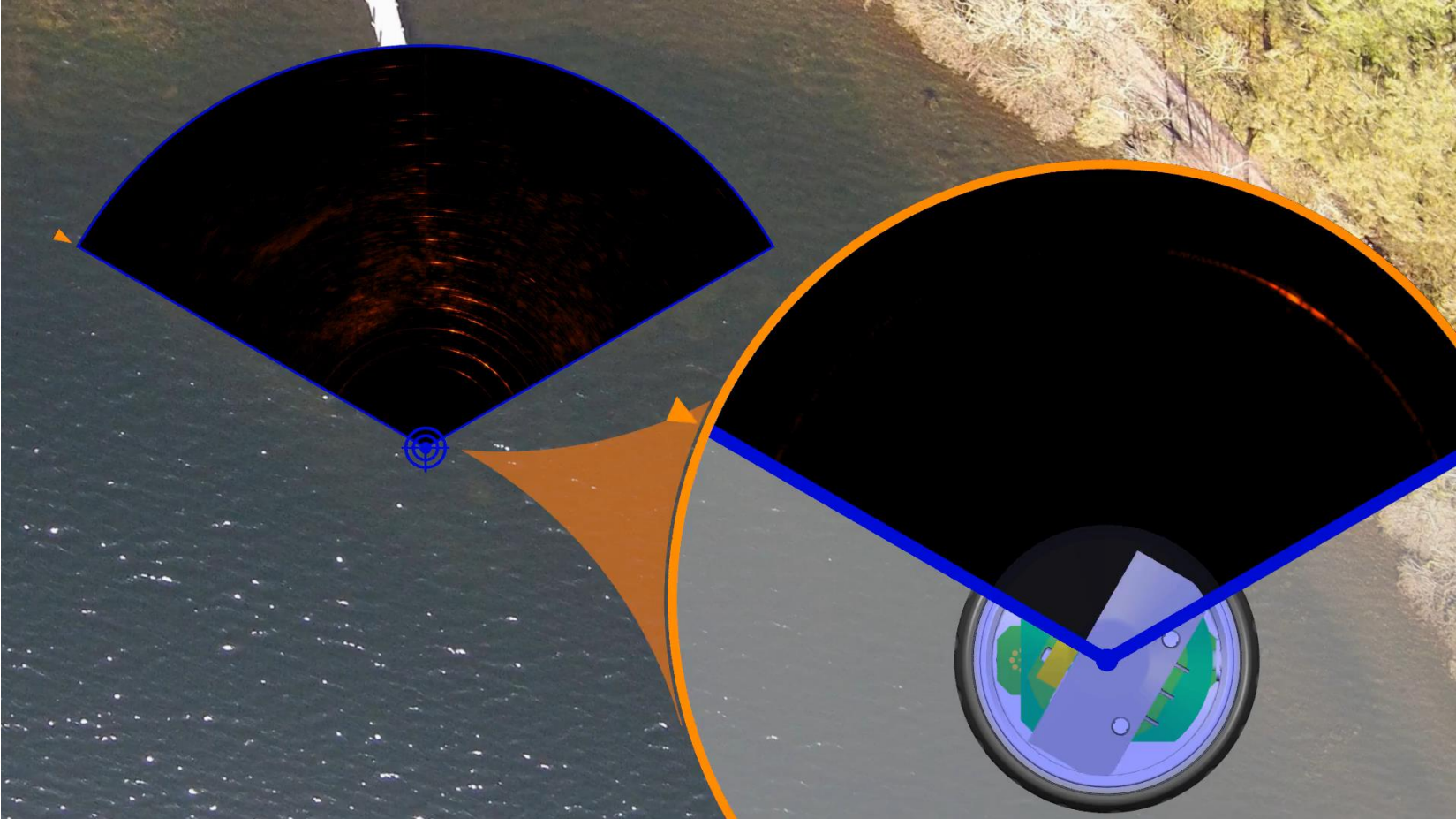


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Sonar Theory

Mechanical Imaging Sonar

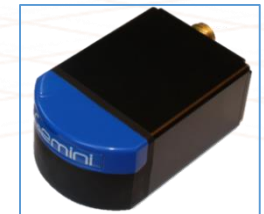
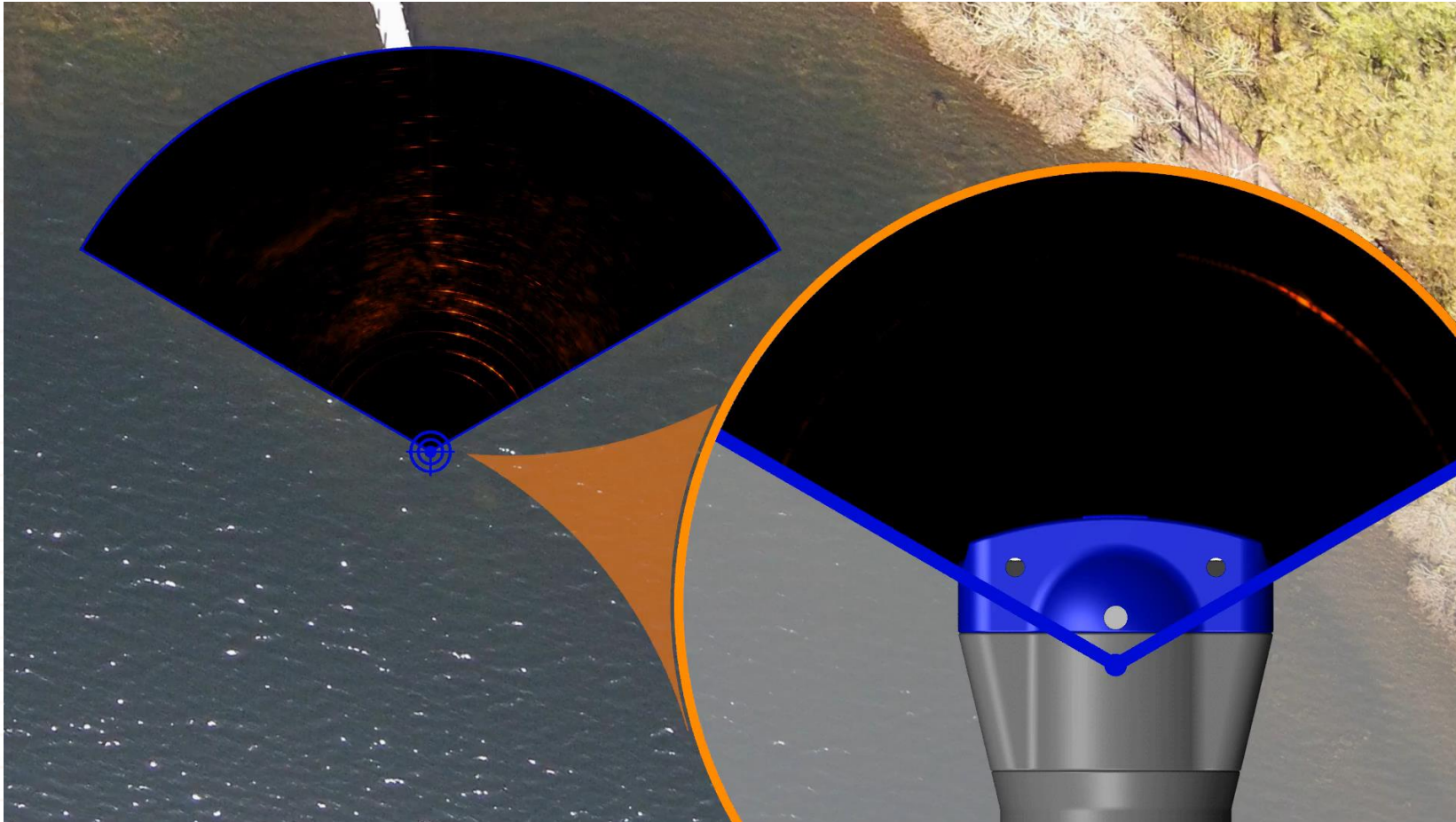


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Sonar Theory

Multibeam Imaging Sonar



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Multibeam imaging range

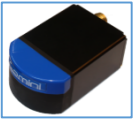
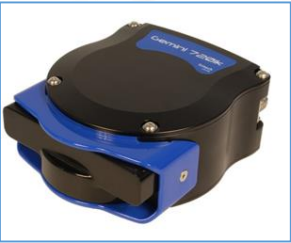
Range of sizes and suitability



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Multibeam Imaging Range

Multibeam Imaging Sonars for ROVs and AUVs



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Multibeam Imaging Range

Physical Specification (compared)



Specification	720im	Micron DST	720ik
Size: length width height	99mm 63mm 40mm	68mm 56mm 79mm	150mm 125mm 65mm
Weight in water:	244g	180g	430g
Depth Rating:	300m	750m	350m

- Low profile and almost ½ weight of **Gemini 720ik**
- Only 65 grams heavier than **Micron DST**
- Similar depth rating as **720ik** and ideal for most MicroROV depths

Multibeam Imaging Range

Technical Specification (compared)



Specification	720im	Micron DST	720ik
Horizontal beam width	90°	360°	120°
Range	0.2 – 50m	0.3 - 75m	0.2 – 120m
Angular Res.	2.34° acoustic	3° acoustic	1° acoustic
Range Res.	8mm	7.5mm	8mm
Update Rate	3 - 20Hz	0.25 – 0.1Hz ¹	5 - 97Hz
Typical Power Requirement	7.5W	4W	16W
Supply Voltage	12 – 48V DC	12 – 48V DC	19 – 74V DC
Comms.	Ethernet / Serial	Serial	Ethernet

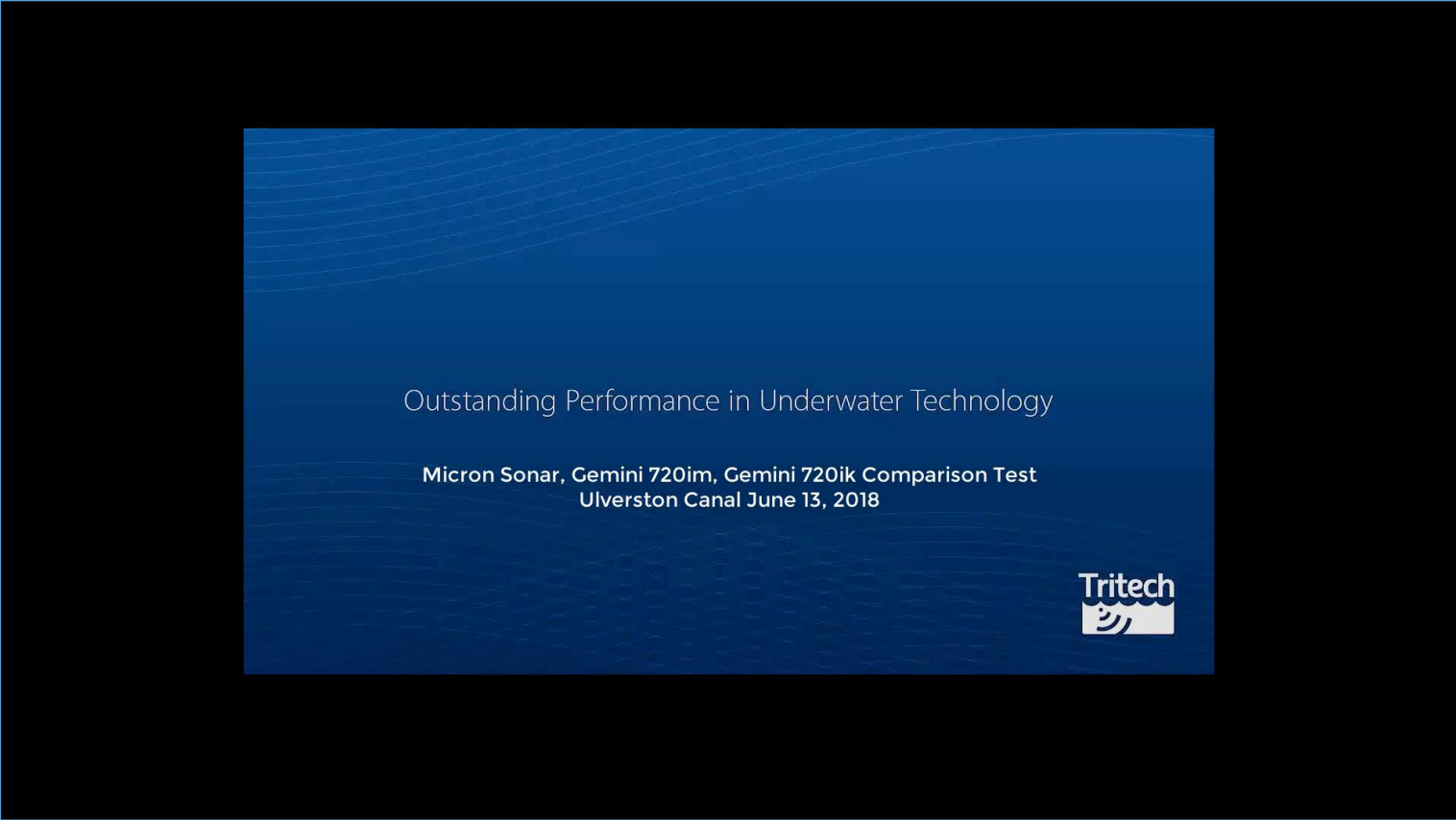
- Fast update rate for real time imaging
- Low power requirement
- Ethernet and Serial comms capability

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Multibeam Imaging Range

How The Image Compares Against A Mechanical Sonar



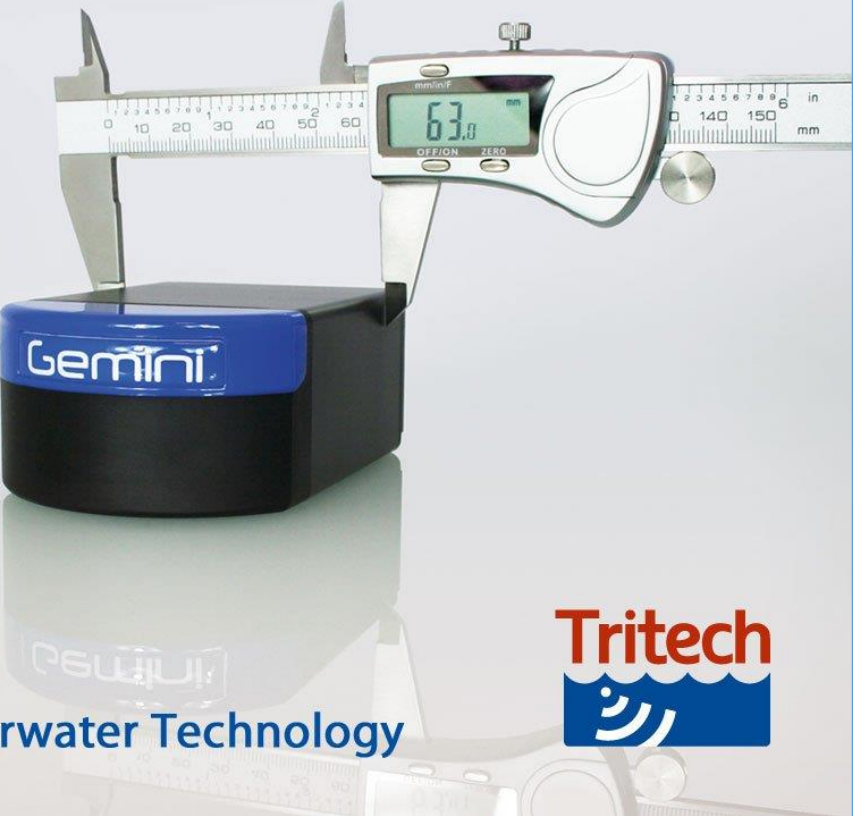
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Multibeam Imaging Range

Small Sonar for Small ROVs and AUVs

The world's smallest
multibeam imaging sonar
Gemini 720im



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- Greatly reduced size and weight
- Ethernet and Serial comms
- Micron AUX port
- Micro ROV pricing



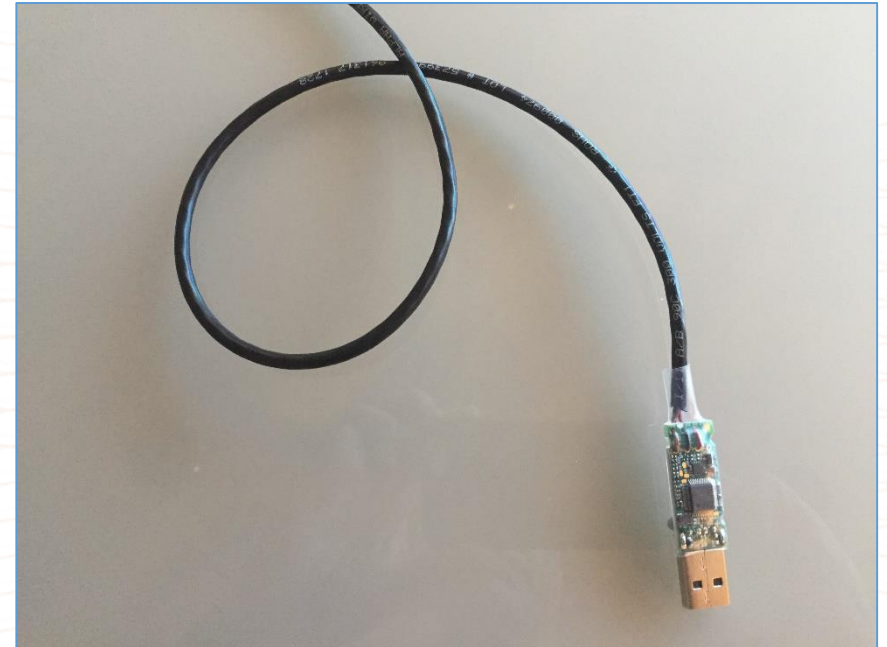
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Multibeam Imaging Range

720im Serial Interface for Multibeam over Copper

Protocol developed by Trittech to allow for the transmission of high volume data over a Serial (RS485 and RS232) link thus allowing a multibeam to run over a simple copper twisted pair when using RS485.

The Trittech USB to Serial converter has been developed to provide optimum telemetry performance although the sonar will operate with any high quality Serial interface.



TSMP adaptor shown here prior to potting

Conclusion

Multibeam Imaging Sonar Choice

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Multibeam Imaging

Conclusions

- Gemini Multibeam image offers real time imaging
- 720is and 720ik provides seabed imaging for target classification
- 720im offers Multibeam capability where it was not possible before
 - Consider application and your requirements /expectations
- Multibeam imaging technology is advancing fast!
- Multibeam not just for ROVs
 - AUVs
 - Towed Vehicles
 - Pole Mount
 - Divers Too!



Image courtesy of Kraken



Thank you, questions?

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