Gemini 720ik$^{360°}$

Dual Frequency 360° multibeam sonar

Applications

- Freshwater & subsea monitoring
- Environmental impact assessment
- Port and harbour security
- High-value asset security

Using proven technology from the Tritech Gemini 720ik multibeam imaging sonar, the Gemini 720ik$^{360°}$ is a fully integrated and cost-effective underwater monitoring system. With a 360° field-of-view, a large underwater environment can be monitored in real-time. Unlike mechanical scanning sonars, the Gemini 720ik$^{360°}$ generates 1536 beams simultaneously, making it ideal for monitoring targets in motion.

Benefits

- Cost-effective monitoring
- Reduces human supervison
- Surface deployable

Features

- Real-time 360^{0} field-of-view
- Reliable 24/7 operation
- AI enabled for improved target identification

Tritech's advanced electronics have a proven track record of continuous operation for prolonged periods of time. The sonar is capable of Compressed High Intensity Radar Pulse (CHIRP) processing for improved target separation. An integrated Velocity of Sound (VoS) sensor ensures accurate ranging. A built in attitude and heading reference system aids deployment accuracy.

Larger areas of water can be monitored when using the low frequency mode which increases the range from 120m to 150m, thereby providing up to 300m of coverage.

The system operates at acoustic frequencies above 200kHz to reduce the side effects of active sonar on marine life. This makes the Gemini 720ik360^{0} a suitable sonar for longterm marine monitoring applications.

The software deployed with the sonar uses artificial intelligence in the form of deep learning models based on artificial neural networks. These models are used to detect and classify targets of interest to a higher degree of accuracy than previously possible. The models are trained by using previously acquired data and then used in real-time to detect and track targets. By using deep learning techniques, the improvement in identification accuracy reduces the amount of human supervision necessary.

When deployed for long periods of time, a method of rolling data can be implemented meaning storage requirements are kept to a minimum. Alternatively, the operator can also set the software to store only those files containing positive targets. The system can generate configurable text reports and graphs to allow variations in activity over a large period of time to be analysed more conveniently.

Key specification	Low frequency mode	High frequency mode
Operating frequency	435kHz	720kHz
Range	0.2m - 150m / 7.87in - 492.13ft	0.2m - 120m / 7.87in - 393.71ft
Depth rating	350m / 1148ft[2]	
Weight in water	8.0kg / 17.64lbs	

www.tritech.co.uk

Tritech

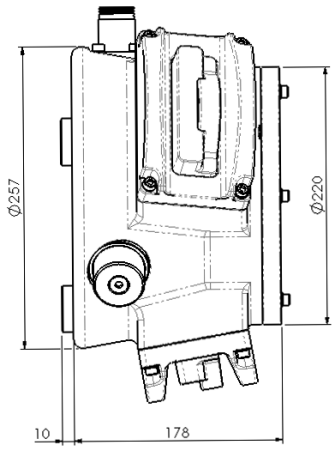
Acoustic specifications	Low frequency mode	High frequency mode
Operating frequency	435kHz	720kHz
Angular resolution	1.7˚ acoustic	1.0˚ acoustic
Range	0.2m - 150m / 7.87in - 492.13ft [1]	0.2m - 120m / 7.87in - 393.71ft
Vertical beamwidth	33˚	20˚
Range Resolution	7mm / 0.28in	4mm / 0.16in
Horizontal beamwidth	360˚	
Number of beams	1536	
Update rate	Up to 50Hz (range dependent)	
Mode of operation	CHIRP or CW	
Integrated sensors	Velocity of sound (VoS) AHRS	

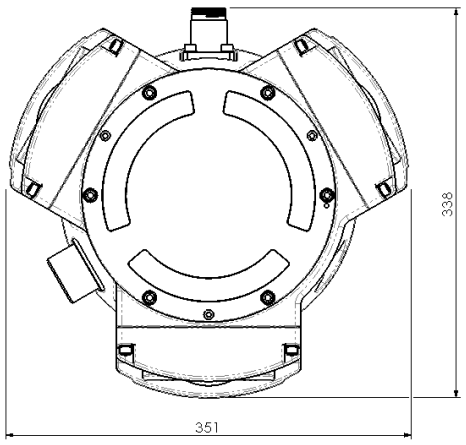
Electrical and communications	
Supply voltage	19V to 74V
Power consumption	110W
Communications interface	Gigabit Ethernet (1000Base-T) Fibre (1000Base-LH) optional
External TTL Trigger	Supported
Connector type	Sub Conn DFCR2013M Fibre-optic optional

Physical specification	
Depth rating	350m / 1148ft[2]
Material	Aluminium Alloy[3]
Weight in air	18.0kg / 39.68lbs
Weight in water	8.0kg / 17.64lbs
Temperature rating (operating)	-10˚C to 30˚C / 14˚F to 86˚F
Temperature rating (storage)	-20˚C to 50˚C / 4˚F to 122˚F

Specification subject to change in line with Tritech's policy of continual product development

[1] An increase in maximum range up to 200m is possible at the expense of maximum range at 720kHz.
[2] Deeper ratings available upon request.
[3] Alternative material options available for harsh environments and prolonged deployment applications.





Tritech International Limited
Peregrine Road, Westhill Business Park
Westhill, Aberdeenshire AB32 6JL
United Kingdom
Email: sales@tritech.co.uk
Tel: +44 (0)1224 744111

Not to scale. Measurements in mm.