

4700-DFX

FOCUSED MULTI-PULSE SIDESCAN



The *EdgeTech 4700-DFX Dynamically Focused Multi-Pulse Side Scan Sonar* combines in one system, Multi-Pulse technology for high speed surveys, along with dynamically focused transducers for high resolution imagery at long range. A secondary conventional frequency (300 kHz) is also provided for search capabilities. The result is a low cost state-of-the-art side scan sonar system.

Conventional side scan sonars have always been defined by the limitation of having only one ping in the water at a time. Typically this has kept the speed of survey below 5 knots to ensure 100% coverage.

Based on EdgeTech's Full Spectrum Frequency Modulated (CHIRP) pulses, the 4700-DFX uses proprietary signal coding to place up to 4 pulses in the water at the same time. This translates into a 4 times increase in survey speeds while still maintaining 100% bottom coverage or a 4 times increase in hits on the target for improved imaging at standard survey speeds. The same simplicity of a conventional single beam side scan system, all we do is ping up to four times faster!

The resolution achievable by conventional sonars is always a compromise between low frequency for long range performance, and array size, which limits the along track resolution. The along track resolution is, at best, equal to the physical array length, and degrades even further with range.

Traditional, single element arrays are essentially focused at long range, providing sub-optimal behavior at shorter ranges. By using a physically concave array to focus the acoustic beam the resolution can be improved. However, such transducers have a reduced depth of field and as such are not practical for use in side scan sonar. By using a transducer comprised of multiple, individually accessible elements, electronic dynamic focusing techniques can overcome this limitation by changing the effective shape of the array during the receive cycle. This provides an along track beam width substantially less than the physical array length. The full array length can then be exploited at long ranges to provide extremely small beam angles of 0.1 degrees for superior long-range resolution.

*BETTER
PERFORMANCE
than multi-beam
side scan sonar,
WITHOUT the
complexity and high
cost.*

Features:

- Enhanced resolution at long range using dynamically focused transducers
- High speed sonar data collection using EdgeTech's Multi-Pulse technology
- Four times as many pings on a target, compared to multi-beam side scan sonar
- Second conventional freq (300 kHz) for long range search capabilities.
- Flexible system design allows for operation in towed, ROV, or AUV deployment

Applications:

- High speed high resolution surveys
- Hydrographic surveys
- Geophysical surveys
- Cable and pipeline surveys
- Mine counter measure (MCM) surveys
- Site selection surveys, pre/post dredging surveys

4700-DFX SIDE SCAN SONAR

Combine the multi-pulse technology for speed, and dynamically focused transducers for resolution, and you meet or exceed the specifications of a multi-beam side scan sonar. This is achieved without some of the **limitations** of multi-beam side scan such as degraded images in turns.



The 4700-DFX system is also ideally suited to AUV and ROV installations and employs the common control and data interface of all EdgeTech's Full Spectrum® family of products

Key Specifications

Frequency:	300 kHz single pulse	600 kHz Multi-Pulse DF
Pulse Type:	FM Pulse (CHIRP)	
Pulse Length:	4 to 20 ms	2 to 10 ms
Resolution (along track):	30 cm to 60 m then increasing to 80 cm at 200 m, Beam width = 0.23 degrees	< 20 cm to 80 m then increasing to 28 cm at 125 m max. range
Resolution (across track):	1 Pulse only = 3 cm	1 pulse 1.5 cm / PL 2 msec 2 pulse 3.0 cm / PL 4 msec 3 pulse 4.5 cm / PL 6 msec 4 pulse 6.0 cm / PL 10 msec
Operating Speed Envelope:	2-6 knots typical	2-14 knots @ 125 meters sonar range
Sonar Digitization:	16 bits	16 bits
Max Operating Range:	250 meters (500 m swath)	125 meters (250 m swath)
Max Operating Depth:	300 meters	
Pulse Repetition Rate:	7.5 @ 100 m/side scale	30 @ 100 m/side scale
Array Length:	123 cm	
Towfish Length:	173 cm	
Diameter	19 cm	
Weight in Air	60 kg nominal	
Heading Sensor:	Standard (Accuracy < 0.5°)	
Pressure Sensor:	Standard	
Pitch and Roll Sensor:	Standard (Accuracy ± 0.4°)	
Altimeter:	Optional	
Temperature:	Standard	
Responder:	Optional	
Tow Cable Type & Length:	Coaxial up to 6000 m	

Specifications subject to change without notice.

Other EdgeTech Products

✓ Side Scan, Sub-bottom, Integrated and Modular Imaging Systems for Deep Towed, AUV, ROV and Other Applications utilizing Full Spectrum, MultiPing or Synthetic Aperture Acquisition and Processing Techniques.



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