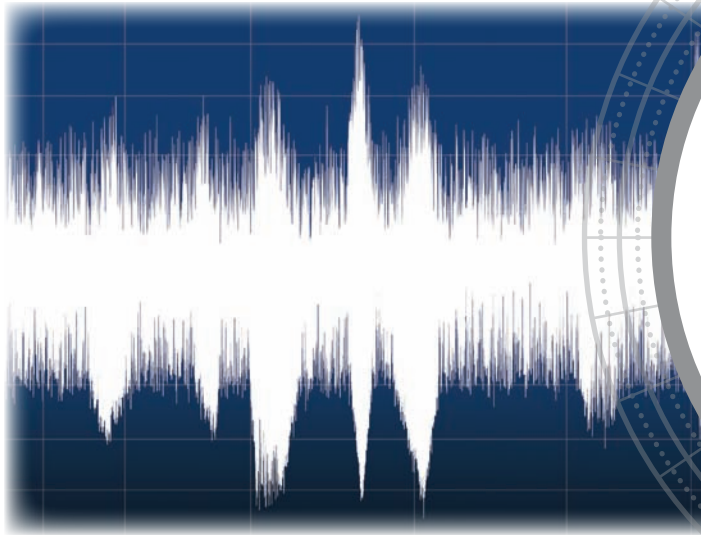
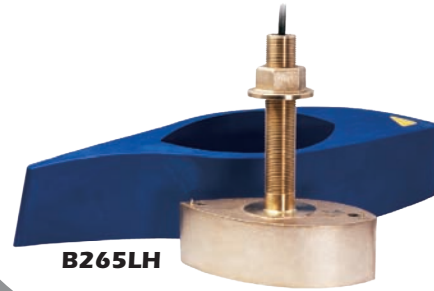


# Broadband / CHIRP Transducers



R209LH



B265LH

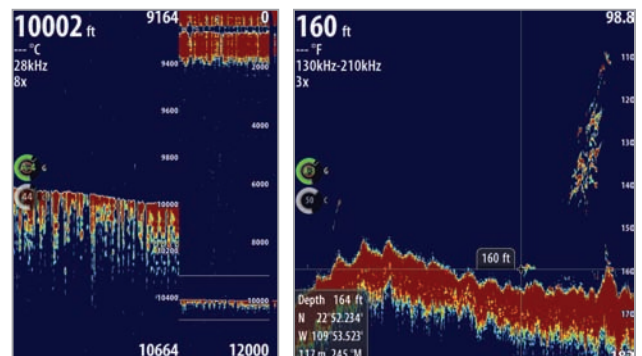
## The Fishfinding Revolution is Here!

Airmar's new Broadband transducers represent the next generation of technology that will allow fishermen to unlock new secrets in fishfinding. These transducers are designed for use specifically with Broadband, CHIRP, FM, and Spread-Spectrum fishfinders.

**CHIRP Fishfinders** transmit across a wide frequency band instead of using a single frequency. This is also known as "Frequency Modulation" or "Spread-Spectrum" Transmissions. These waveforms are typically of long duration and for example may start at 42 kHz and end at 65 kHz. Energy transmitted into the water can be 10 to 50 times greater than a traditional fishfinder. By storing the shape of the transmitted waveform in memory and comparing it to the received echoes using pattern matching techniques (also called pulse compression), it is possible to find targets within the noise and precisely determine their range with astounding accuracy (see photo).

## Benefits

- Extreme target detail and image resolution at all depths
- Precise separation between baitfish and gamefish
- Bottom discrimination of fish laying on the seabed
- Deep sounding accuracy down to 3,000 m (10,000')
- Ability to detect targets at greater depths & higher speeds
- Ability to find targets within the noise ("snow" on the display)



## A complete broadband product line of 14 Models

- **Frequencies\*:**
  - Low-Frequency Options (LF): 28 kHz to 75 kHz
  - Medium-Frequency Options (MF): 80 kHz to 135 kHz
  - High-Frequency Options (HF): 130 kHz to 210 kHz
- **Beamwidths\*:**
  - LF: 12° to 25°, MF: 11° to 16°, & HF: 5° to 10°
- **6 mounting styles for any boat size and hull type:**
  - External Mount
  - Thru-Hull
  - In-Hull
  - Low-Profile Tilted Element
  - Commercial Cavity / Tank Mount
  - Transom-Mount

\* Frequency band and beamwidth vary with model—see specific model for details.



[www.airmar.com](http://www.airmar.com)



## R209LH Thru-Hull

- Operating Frequency Bands:  
Low—Can be Chirped from 28 kHz to 60 kHz  
High— Can be Chirped from 130 kHz to 210 kHz
- Beamwidth:  
Low—11° to 17°  
High—5° to 7°
- Fast-response water-temperature sensor
- Optionally available as R209LM, low and medium-frequency (28 kHz to 60 kHz and 80 kHz to 130 kHz)

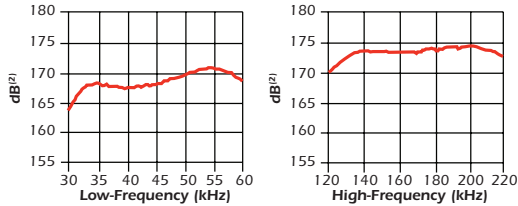


SPECIFICATIONS		
	28-60 kHz	130-210 kHz
Elements		
Nominal TVR*	170 dB	173 dB
Nominal RVR**	-176 dB	-180 dB
Nominal FOM***	-6 dB	-7 dB
Impedance	100 - 250 Ω	100 - 250 Ω
Weight	20.8 kg (46 lb)	
Hull Deadrise	0° to 25°	
Acoustic Window	Epoxy	

\*TVR—Transmit Voltage Response \*\*RVR—Receive Voltage Response  
\*\*\*FOM = TVR + RVR (measure of overall performance)

### TVR

The graphs show that the R209LH can run optimally at a wide range of frequencies with no loss of sensitivity.



## B265LH Thru-Hull

- Operating Frequency Bands:  
Low—Can be Chirped from 42 kHz to 65 kHz  
High— Can be Chirped from 130 kHz to 210 kHz
- Beamwidth:  
Low—18° to 25°  
High—6° to 10°
- Fast-response water-temperature sensor
- Optionally available as B265LM, low and medium-frequency (42 kHz to 65 kHz and 85 kHz to 135 kHz)

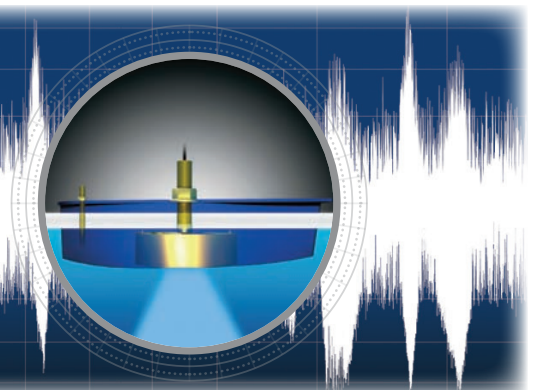
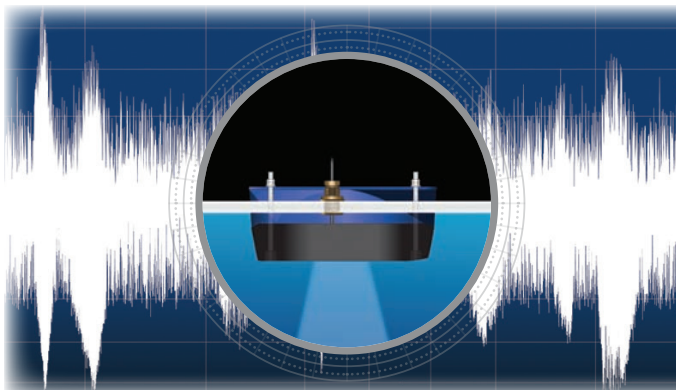
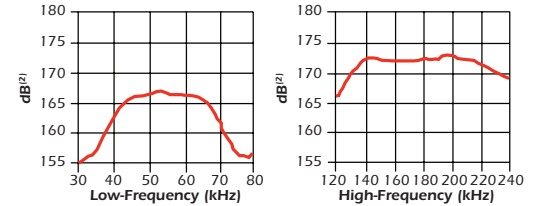


SPECIFICATIONS		
	42-65 kHz	130-210 kHz
Elements		
Nominal TVR*	166 dB	172 dB
Nominal RVR**	-179 dB	-184 dB
Nominal FOM***	-13 dB	-12 dB
Impedance	100 - 250 Ω	100 - 250 Ω
Weight	7.3 kg (16 lb)	
Hull Deadrise	0° to 25°	
Acoustic Window	Urethane	

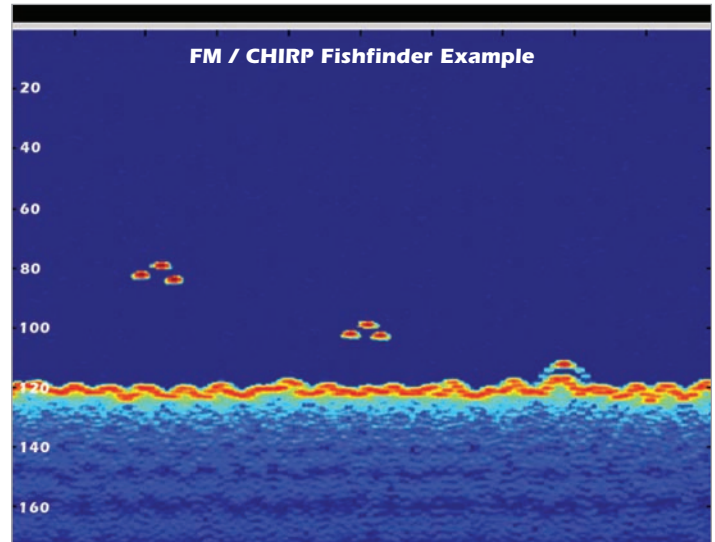
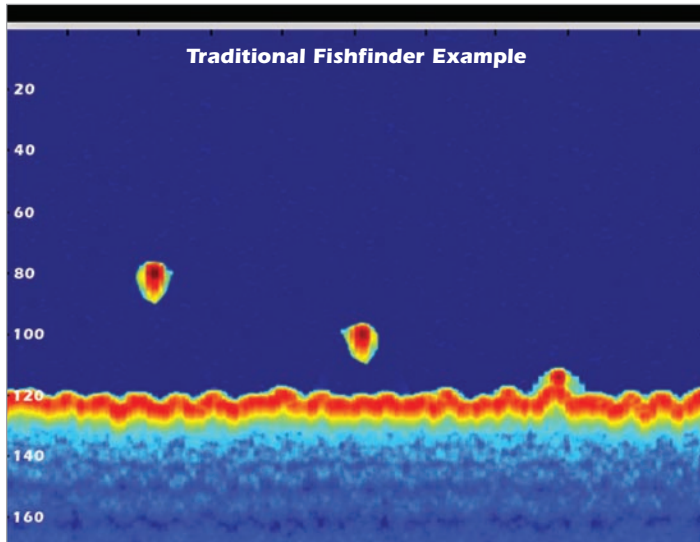
\*TVR—Transmit Voltage Response \*\*RVR—Receive Voltage Response  
\*\*\*FOM = TVR + RVR (measure of overall performance)

### TVR

The graphs show that the B265LH can run optimally at a wide range of frequencies with no loss of sensitivity.

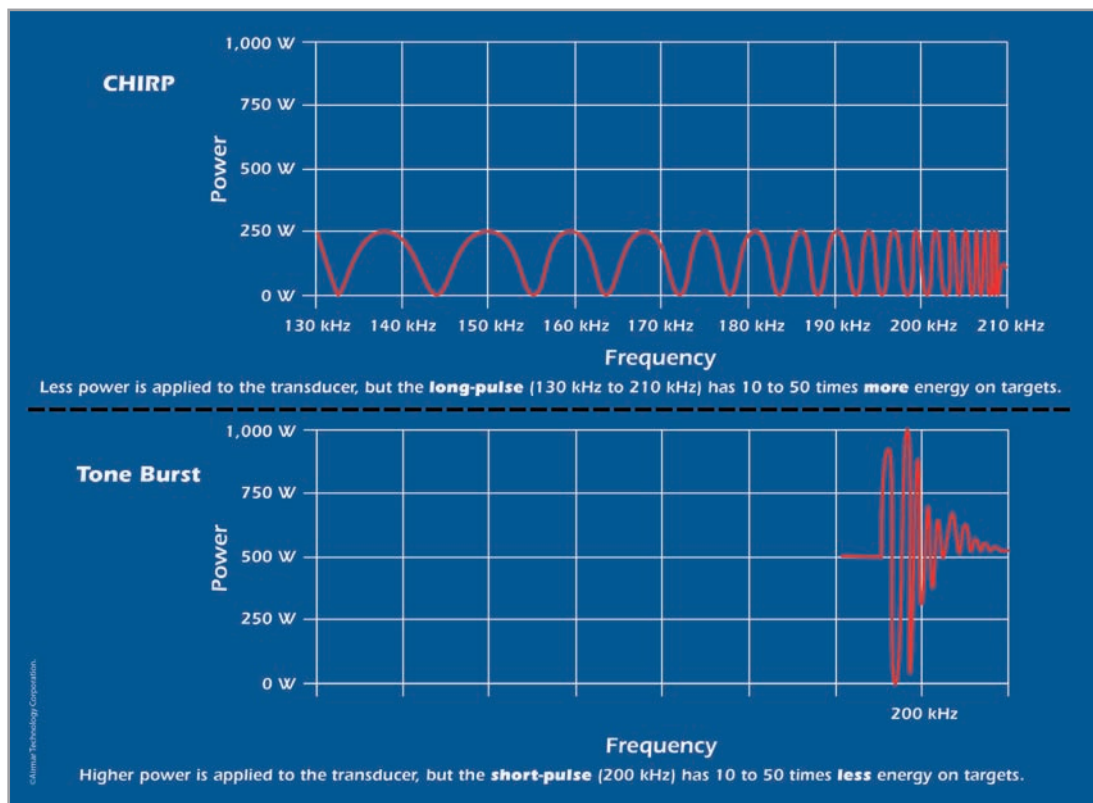


# More Energy on Target = Better Fish Detection



**Traditional fishfinders** transmit pulses at a single frequency (such as 50 kHz and 200 kHz) and this pulse is often referred to as a "tone burst". These pulses can be of very high power but are typically of very short duration and this limits the energy that can be transmitted into the water. With tone burst fishfinders there is always the trade-off between pulse length and target resolution. For example, if a fishfinder transmits a pulse that is 500 microseconds in duration, it has a pulse length of 0.7 m (2.4'). With a tone burst, no targets can be resolved that are closer to one another than the pulse length. So fish less than 0.7 m (2.4') apart will appear as a single large mass, and fish less than 0.7 m (2.4') from the bottom will appear attached to the sea bed and will be difficult or impossible to detect. See graphic illustration above. Longer pulse lengths at 50 kHz are typically used to put more energy into the water to improve deep-water detection but doubling the pulse length reduces target discrimination by half thereby compromising resolution and detail. There is no "free lunch".

**With CHIRP fishfinders**, there is no trade-off between pulse length and target resolution. While CHIRP fishfinders may output less peak power than a conventional fishfinder, what really matters is the energy put into the water with each pulse. Wide band, frequency modulated pulses (130-210 kHz, for example) can be very long in duration and put 10-50 times more energy into the water. Unsurpassed target detection and resolution is achieved with digital signal processing using pattern matching techniques. With CHIRP fishfinders, the ability to determine the separation between fish and between fish and bottom can be a matter of inches as compared to several feet with traditional fishfinders. Closely grouped fish can now be shown as distinct targets instead of a single mass and show fish close to the bottom rather than being hidden. See graphic illustration. It is well known that different fish species and fish sizes return stronger echoes as certain frequencies. With traditional fishfinders operating at fixed frequencies (50 kHz and 200 kHz), fish echoes may be weak or not detected at all. Since CHIRP fishfinders transmit pulses over wide frequency bands, this maximizes fish detection capability.

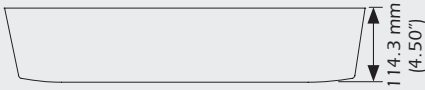
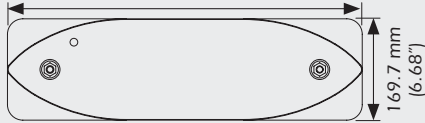


# Dimensions

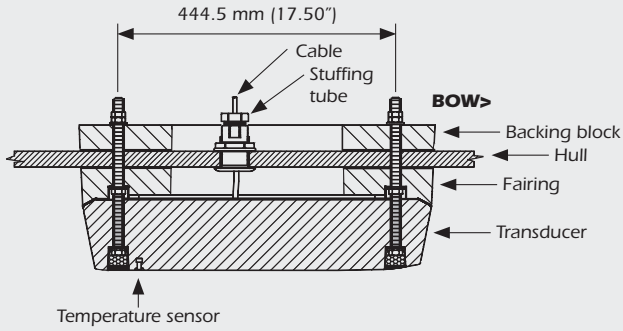
## R209LH, R209LM—DIMENSIONS

### Transducer

587.2 mm (23.12")

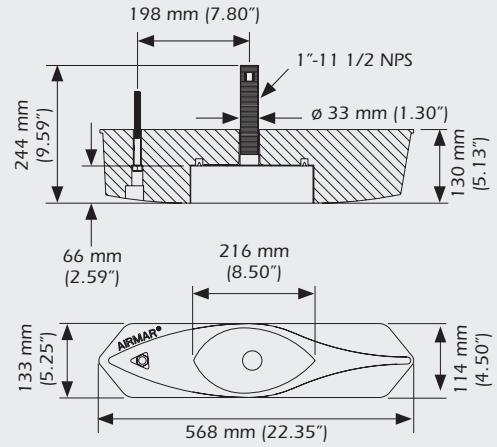


### Installing the Transducer



## B265LH, B265LM—DIMENSIONS

### Transducer and High-Performance Fairing



## Alternative Mounting Styles

Available Spring 2011

Available Summer 2011

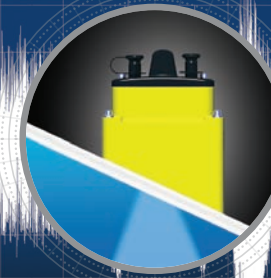
### R299LH / LM In-Hull



### TM265LH / LM Transom-Mount



### M265LH / LM In-Hull



### CM265LH / LM Tank-Mount



### B265LH / LM Keel-Mount



### CM299LH / LM Keel-Mount

