CS229

High-Strength for Harsh Environments
The high-strength, cast-steel CS229 stands up to harsh environments. It has been designed to facilitate service or repair. The transformer can be accessed from the top of the housing for a quick, field repair or impedance change. The transducer is removable from the outer, thru-hull housing and can be replaced while a vessel is underway.

Options
- Impedance to customer's specifications using matching transformer
- Available as special-order unit with 12 kHz, 24 kHz, 28 kHz, 30 kHz, 33 kHz, 38 kHz, or 50 kHz array

Thru-Hull
1.5 - 2.1 kW

Applications
- Large, steel-hull vessels
- Harsh environments including ice filled water
- Navigation and survey
- Steel hulls only

Features
- Versatile housing accommodates variety of frequencies for most navigation and survey requirements
- Low-ringing arrays provide good bottom detail in deep-water
- Available with stainless steel or "acoustically transparent", urethane window, depending on the frequency
- Features inner, CS234 transducer and outer, CS229, thru-hull housing
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### SPECIFICATIONS

**Weight:** Varies depending on configuration (Call for weight)

**Acoustic Window:**
- Urethane—28 kHz to 200 kHz
- Stainless steel—12 kHz to 24 kHz

**Cable Type:** C-43
- Shielded twisted pair (2-14 AWG) with braided shield, black neoprene jacket, 10 mm (13/32") diameter

### DIMENSIONS

- Ø 305 mm (12.00") bolt circle
- Ø 368 mm (14.50")
- Ø 273 mm (10.75"")
- Ø 50 mm (1.95")
- Accessible transformer pocket
- 66 mm* or 74 mm** (2.60" or 2.93")
- 25 mm (1.00")

### NOTES

* Stainless steel acoustic window
** Urethane acoustic window

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**Technical Data—12 kHz-B**

TVR in dB re 1µPa/Volt at 1 m

<table>
<thead>
<tr>
<th>Frequency (kHz)</th>
<th>TVR dB (1)</th>
<th>RVR dB (2)</th>
<th>FOM dB (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>-145</td>
<td>-45</td>
<td>-30</td>
</tr>
<tr>
<td>10</td>
<td>-140</td>
<td>-35</td>
<td>-25</td>
</tr>
<tr>
<td>15</td>
<td>-135</td>
<td>-30</td>
<td>-20</td>
</tr>
<tr>
<td>20</td>
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<td>-25</td>
<td>-15</td>
</tr>
<tr>
<td>25</td>
<td>-125</td>
<td>-20</td>
<td>-10</td>
</tr>
<tr>
<td>30</td>
<td>-120</td>
<td>-15</td>
<td>-5</td>
</tr>
<tr>
<td>40</td>
<td>-115</td>
<td>-10</td>
<td>0</td>
</tr>
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</table>

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**Technical Information**

**Frequencies**

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Beamwidth @-3 dB</th>
<th>RMS Power (kW)</th>
<th>FOM (dB)</th>
<th>Q</th>
<th>Series Impedance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 kHz-B</td>
<td>42°</td>
<td>2.1 kW</td>
<td>-14</td>
<td>7</td>
<td>185-j0(Ω)</td>
</tr>
<tr>
<td>24 kHz - W</td>
<td>20°</td>
<td>1.5 kW</td>
<td>-14</td>
<td>3</td>
<td>60-j0(Ω)</td>
</tr>
<tr>
<td>28 kHz-R</td>
<td>18°</td>
<td>2 kW</td>
<td>-9</td>
<td>5</td>
<td>120-j0(Ω)</td>
</tr>
<tr>
<td>50 kHz-N</td>
<td>13°</td>
<td>2 kW</td>
<td>-8</td>
<td>9</td>
<td>60-j0(Ω)</td>
</tr>
<tr>
<td>200 kHz-AF</td>
<td>3°</td>
<td>3 kW</td>
<td>-3</td>
<td>18</td>
<td>60-j0(Ω)</td>
</tr>
</tbody>
</table>

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