ABB Marine services centers

<table>
<thead>
<tr>
<th>Country</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>+55 11 3688 8294</td>
</tr>
<tr>
<td>China</td>
<td>+86 21 23288866</td>
</tr>
<tr>
<td>Denmark</td>
<td>+45 65 47 70 70</td>
</tr>
<tr>
<td>Finland</td>
<td>+358 10 22 21999</td>
</tr>
<tr>
<td>France</td>
<td>+33 4 96158283</td>
</tr>
<tr>
<td>Germany*</td>
<td>+49 180 5222580</td>
</tr>
<tr>
<td>Greece</td>
<td>+30 693 7075236</td>
</tr>
<tr>
<td>India</td>
<td>+91 80 22948476</td>
</tr>
<tr>
<td>Italy</td>
<td>+39 010 2752 311</td>
</tr>
<tr>
<td>Japan</td>
<td>+81 3 57846056</td>
</tr>
<tr>
<td>Korea</td>
<td>+82 51 621 5777</td>
</tr>
</tbody>
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<table>
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<tr>
<th>Country</th>
<th>Phone</th>
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</thead>
<tbody>
<tr>
<td>The Netherlands</td>
<td>+31 10 407 8867</td>
</tr>
<tr>
<td>New Zealand</td>
<td>+64 9 356 2160</td>
</tr>
<tr>
<td>Norway</td>
<td>+47 916 17 373</td>
</tr>
<tr>
<td>Russia</td>
<td>+7 8152686534</td>
</tr>
<tr>
<td>Singapore</td>
<td>+65 9820-8018</td>
</tr>
<tr>
<td>South Africa</td>
<td>+27 314656077</td>
</tr>
<tr>
<td>Spain</td>
<td>+34 915819907</td>
</tr>
<tr>
<td>Taiwan</td>
<td>+886 2 85127318</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>+971 2 4932000</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>+44 1224 592123</td>
</tr>
<tr>
<td>USA</td>
<td>+1 954 874 47 00</td>
</tr>
</tbody>
</table>

*14 euro cents/minute from German landlines, max. 42 euro cents/minute from mobile phone service

Contact

**ABB Limited**  
Measurement & Analytics  
Oldends Lane  
Stonehouse  
Gloucestershire GL10 3TA, UK  
Phone: +44 1453 826 661  
Fax: +44 1453 829 671  
E-Mail: instrumentation@gb.abb.com

**ABB Inc.**  
Measurement & Analytics  
125 E. County Line Road  
Warminster, PA 18974, USA  
Phone: +1 215 674 6000  
Fax: +1 215 674 7183

**ABB Engineering (Shanghai) Ltd.**  
Measurement & Analytics  
No. 4528, Kangxin Highway, Pudong New District  
Shanghai, 201319, P.R. China  
Phone: +86(0) 21 61056666  
Fax: +86(0) 21 61056677  
E-Mail: china.instrumentation@cn.abb.com

**ABB Automation Products GmbH**  
Measurement & Analytics  
Dransfelder Str. 2  
37079 Göttingen, Germany  
Phone: +49 551 905 0  
Fax: +49 551 905 777  
E-Mail: vertrieb.messtechnik-produkte@de.abb.com

[abb.com/measurement](http://www.abb.com/measurement)
Looking for new ways to save costs by increasing fuel efficiency?

With soaring fuel prices and tight regulations on greenhouse gas emissions, fuel efficiency has become a major concern for the transportation industry and especially for the marine business. Approximately 50% of all operational costs of ships are fuel costs.

In order to manage fuel consumption responsibly, considering ecologic, economic and legal reasons, it takes an innovative fuel management system based on reliable, highly accurate and durable flow sensors.
**Marine fuel consumption measurement**

In accordance to SEEMP* guidelines with CoriolisMaster mass flow measurement.

- Reliable and highly accurate mass flow measurement: 0.1% accuracy
- Working even under harsh vibrations
- Working at high frequencies of about 400 Hz, far away from noisy vibration frequencies on board (~10 to 200 Hz)
- No in- or outlet sections and inlet filters required
- Direct mass measurement eliminates pressure and temperature compensation
- Maintenance free: no moving parts in the fluid
- Real time density measurement for fuel quality control
- Minimum pressure drop through the meter
- DNVGL certified
- MID / OIML R117 certified

Fuel consumption is energy consumption – energy is directly related to the mass of the fuel – therefore direct mass flow measurement is key to highly accurate energy management. **CoriolisMaster – modern fuel consumption measurement**

**Application benefits of Coriolis mass flowmeter**

- Easy retrofit even in tight spaces due to small compact flange to flange dimensions
- Coriolis flowmeter accuracy remains because its stiff outer casing is designed to decouple outer installation forces of up to 40 tons
- CoriolisMaster mass flowmeters are in compliance with marine class standards: by operating at high frequencies far away from noise frequencies on board they are free of disturbances
- Easiest meter integration: Enabled by various output options like Modbus, Profibus, pulses or classic current outputs

*Ship Energy Efficiency Management Plan (SEEMP) was introduced in 2013 in order to reduce global carbon emissions. Ship owners are responsible to monitor ship and fleet efficiency performance over time to comply with the new regulations.*
Seamless integration with marine systems

- Communication Interfaces: HART and MODBUS
- Torductor 500 shaft torque meter
- Cylmate: 2-stroke engine performance monitoring system
- ABB’s Advisory Systems: Providing a complete product portfolio for performance management in marine applications. It includes a wide range of products for reducing energy consumption, increasing the availability of the vessels, and improving the safety of the whole fleet of vessels. A complete energy, (SEEMP compliant) fuel and process monitoring and benchmarking tool. By using ABB’s online reporting tool, fuel consumption trends of the whole fleet can be viewed at and analyzed by the onshore operations department.

ABB flowmeter solutions for Marine

Measurement made easy!

- Bunkering flow meters with large diameters with CoriolisMaster
- Lubrication oil measurements with CoriolisMaster
- Ballast water flow measurement with ProcessMaster
- Energy measurement of steam on board with SwirlMaster

For more information see data sheet

CoriolisMaster
Simply fits your purpose

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**Series FCx100** | **Series FCx400**
---|---
LCD indicator | no | yes, illuminated
Outputs | Modbus 2 digital outputs (impulse, frequency contact output) | Up to 5 modular inputs/outputs freely selectable and adjustable*, HART, Modbus, PROFIbus DP
DNVGL certified | yes | yes
SmartSensor Concept | yes | yes
Ambient temperature | −40 to 70 °C | −40 to 70 °C
Custody transfer | yes, in accordance with MID/OIML R175 | yes, in accordance with MID/OIML R117
SIL2 | no | yes
Power supply | 11 to 30 VDC | 11 to 30 VDC 110/230 VAC
Max. power consumption | 5 W (normal: 2 to 3 W) | 20 W (normal: 4 to 5 W)
DensiMass concentration | yes (Version FCx150) | yes (Version FCx450)
FillMass filling software | yes (Version FCx150) | yes (Version FCx450)
VeriMass verification | yes | yes

*Details available in the data sheet

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Flowmeter family with integral mount design

Flowmeter with remote mount design