Best Valued Portable Depth Sensors for Hydrographic Surveying

200 kHz and 30/200 kHz Transducers with Embedded Signal Processing
Accurate measurement of water depth from 0.4m to 200m
- Hydrographic surveying of harbors, waterways and coastal water areas
- Dredging management operations
- Mobile field work

What makes Airmar sensors smarter than the rest?
Airmar’s patented Smart™ sensors feature embedded microelectronics that process depth and temperature inside the sensor that can be instantly displayed on any device that accepts NMEA data. EchoRange™ transfers NMEA 0183 data in real time to a computer via RS422.

Customizable Operation
The EchoRange™ can be successfully operated in most open water applications using the factory default settings. In other applications (such as when deployed in enclosures, or when using multiple devices, or when using with battery power) the user can optimize the EchoRange™ performance by changing one or some combination of the factory default settings.

When performance matters most we’ve got you covered.
### SS510 Housing Dimensions

*SS510 weight 5.5 lbs. with 20m of cable*

![SS510 Housing Diagram](image1)

- Ø 22 mm (0.86”)
- 43 mm (1.69”)
- 43 mm (1.71”)
- 25 mm (1.00”)
- 25 mm (1.00”)
- 1/2”-14 NPS threads

### M195 Housing Dimensions

* M195 weight 13 lbs. with 20m of cable

![M195 Housing Diagram](image2)

- 197 mm (7.74”)
- 38 mm (1.50”)
- 139 mm (5.49”)
- 30 mm (1.18”)
- 55 mm (2.18”)
- 70 mm (2.75”)
- 76 mm (3.00”)
- 114 mm (4.50”)
- 25 mm (1.00”)

### Frequencies

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Beamwidth (@-3 dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequencies</strong></td>
<td></td>
</tr>
<tr>
<td>200 kHz</td>
<td>9°</td>
</tr>
</tbody>
</table>

### Operational Current Draw

9V peak (during ping) input current: 1A
9V average input current: 150mA
12V peak (during ping) input current: 1A
12V average input current: 150mA
24V peak (during ping) input current: 600mA
24V average input current: 100mA
40V peak (during ping) input current: 400mA
40V average input current: 50mA

### Operational Current Draw

9V peak (during ping) input current: 2A
9V average input current: 400mA
12V peak (during ping) input current: 1.7A
12V average input current: 300mA
24V peak (during ping) input current: 800mA
24V average input current: 200mA
40V peak (during ping) input current: 600mA
40V average input current: 150mA

### Transducer Configurations

- **Airmar Single Frequency Smart Transducer with Echo Envelope**
  - RS485
  - NMEA-In
  - NMEA-Out
  - ECHO Envelope @921600 BAUD
  - 9-40 Volt Power

- **Airmar Single Frequency Smart Transducer without Echo Envelope**
  - RS422
  - NMEA-Out
  - NMEA-Out
  - ECHO Envelope @921600 BAUD
  - 9-40 Volt Power

- **Airmar Dual Frequency Smart Transducer with Echo Envelope**
  - RS485
  - NMEA-In
  - NMEA-Out
  - ECHO Envelope @921600 BAUD
  - 9-40 Volt Power

- **Airmar Dual Frequency Smart Transducer with Echo Envelope**
  - RS485
  - NMEA-Out
  - NMEA-Out
  - ECHO Envelope @921600 BAUD
  - 9-40 Volt Power
Portable surveying on any size vessel

Fixed mount scour monitoring

**Mounting options:**
- Portable mount for installation on survey poles
- Internal or external hull mount

**Exclusive to OEM’s Only — Echo Envelope Developer Option**

In addition to the bi-directional NMEA 0183 interface, a secondary transmit only interface with a proprietary protocol using RS485 is available to OEMs. The user can obtain detailed echo envelope data which may be displayed as an analog waveform.

The echo envelope is a 900-point time-series of the echo amplitude. By analyzing the shape of the echo envelope, information indicative of the seafloor type is revealed.

**ACCURACY**

(Based on tank testing)

<table>
<thead>
<tr>
<th>Actual</th>
<th>Reported</th>
<th>Difference</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.05m</td>
<td>3.07m</td>
<td>+0.02m</td>
<td>99.33%</td>
</tr>
<tr>
<td>4.57m</td>
<td>4.59m</td>
<td>+0.02m</td>
<td>99.56%</td>
</tr>
<tr>
<td>5.79m</td>
<td>5.82m</td>
<td>+0.03m</td>
<td>99.48%</td>
</tr>
</tbody>
</table>

Note: A minimum test tank of 50 gallons is recommended as smaller tanks may induce reverberation and interfere with measurements.

**SPECIFICATIONS**

**NMEA 0183* Standard Output Sentences**

- Power output from transmitter: 100W
- Reverse polarity protection: Yes
- Power supply voltage: 9 – 40 VDC, Regulated
- Average current draw: 300mA @ 12V for 30/200 kHz
  150mA @ 12V for 200 kHz
- NMEA 0183 Baud Rate: 4800 (Default)
- Full Auto mode data output rate: From 0.1 to 25 sec/interval
- Manual mode: Output rate equal to ping rate
- Flash reprogrammability: Using boot loader with encryption
- Operating temperature range: -5°C to +60°C
- Storage temperature range: -30°C to +70°C
- CE certification: Marine standard IEC60945
- Minimum depth reading: 0.4m, limited in manual mode
- Maximum depth reading: 200m, limited in manual mode
- Depth display resolution: 1 cm
- Depth accuracy: 99.46% at full range (see accuracy table for more info)
- Submersible: to 10m
- Housing type offered: M195: 30/200 kHz
  SS510: 200 kHz
- Temperature Sensor: 10k ohm +/-0.05°C accuracy
- Temperature resolution: 0.1°C
- Power and data cable: ER SS510: C304, 4 twisted pairs with TPR jacket
  ER M195: C314, 5 twisted shielded pairs with extreme grade urethane jacket
  ER SS510: C316, 4 twisted shielded pairs with extreme grade urethane jacket
- Maximum cable length: 20m
- Connector: None
- Sounding rate: In full auto mode, sounding rate is variable with depth, in manual mode, sounding rate is configurable up to 10 times per second. Data output rate and ping rate are the same in manual mode, one ping produces one depth output. In full auto mode, data output rate is configurable (0.1 to 25 seconds per interval)

*NMEA 0183 is a serial data bus standard communications protocol that permits different types of electronic equipment to communicate. For more information visit www.nmea.org.