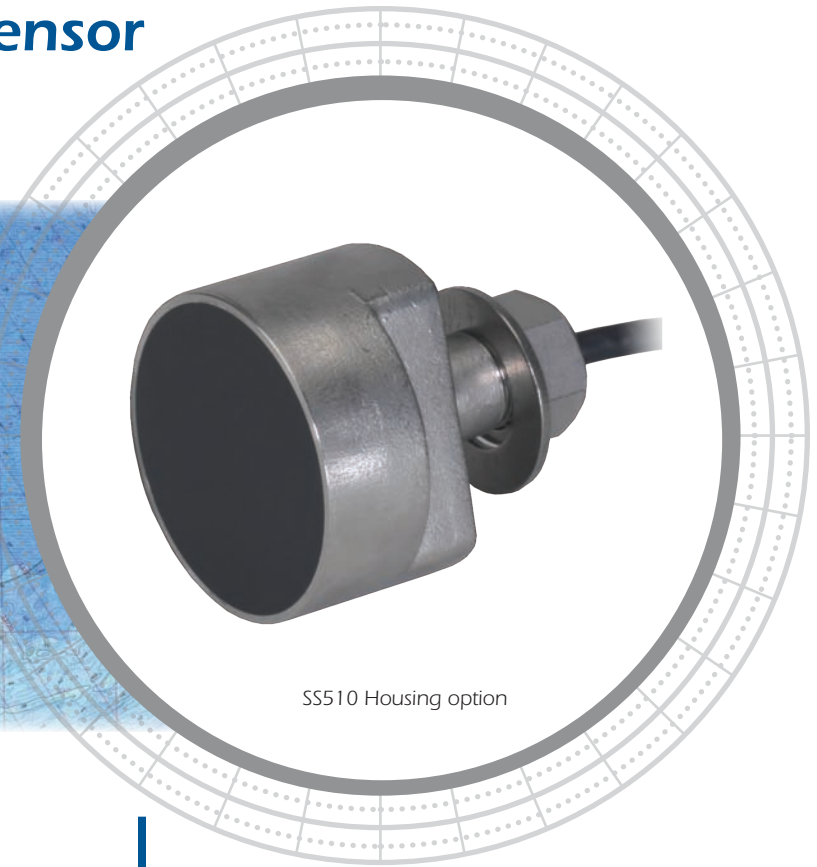


# EchoRange™ Smart™ Sensor

200 kHz Transducer with Embedded Signal Processing

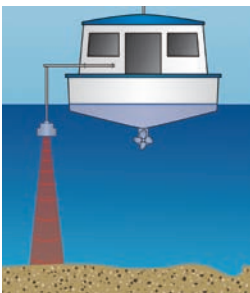


SS510 Housing option

## Low-Cost, Portable Hydrographic Survey System

The AIRMAR EchoRange™ Smart™ Sensor, featuring embedded micro-electronics, processes depth signals inside the sensor itself and transmits via two separate communication protocols. The first is a bi-directional interface compliant with the NMEA 0183 protocol and the second is a transmit-only interface with a proprietary protocol using RS485. The first interface is required, the latter interface is an **optional** viewer used to develop detailed echo envelope data.

Pairing the compact EchoRange Smart™ Sensor with a computer or other instrument provides a low-cost, portable hydrographic survey system. It is also very useful in checking bridge abutments and pillars for scouring. This model is constructed to withstand high-pressure and can be used on remote or automated under water vehicles to measure the distance to the sea floor.



Portable surveying on any size vessel



Scour monitoring

## Smart™ Sensor

200 kHz Transducer with Embedded Signal Processing

### Applications

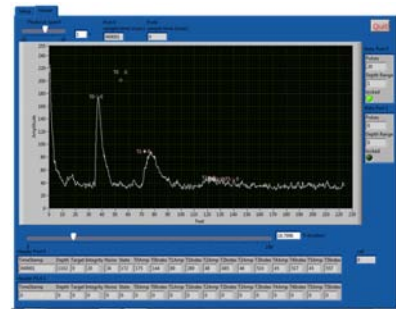
- Bridge scour inspection systems
- Portable hydrographic survey
- Dredging

### Features

- Embedded transceiver
- Digital signal processing
- Depth and temperature
- NMEA 0183 data output
- Robust stainless steel housing
- Pole mountable for portable apparatus

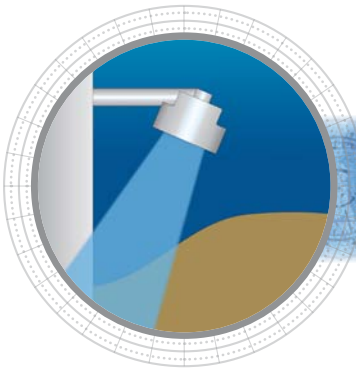
### Optional Feature

- Echo envelope time series data output via RS485



Pictured is AIRMAR's File Viewer which can be used to develop detailed echo envelope data. This feature is an available option with the EchoRange Smart™ Sensor.

# EchoRange Smart™ Sensor



## Technical Information

Frequencies	Configuration	Beamwidth (@-3 dB)	RMS Power (W)
200 kHz		9°	100 W

### SPECIFICATIONS

**Power output from transmitter:** 100 watts at 13.6 Vdc input  
**Reverse polarity protection:** Yes  
**Power supply voltage:** 9 - 40VDC, Regulated  
**Average current draw:** 80mA @ 12V  
**NMEA0183 Baud Rate:** 4800 (Default)  
**Echo Envelope Baud Rate:** 921,600  
**Full Auto mode data output rate:** In tenths of seconds, from 0.1 to 25 sec/interval  
**Manual mode:** Output rate equal to ping rate  
**Flash reprogrammability:** Yes, using boot loader with encryption  
**Operating temperature range:** -5C to +60C  
**Storage temperature range:** -30C to +70C  
**CE certification:** Yes to marine standard IEC60945  
**Minimum depth reading:** 0.4m, limited in manual mode (by pulse width)  
**Maximum depth reading:** 200m, limited in manual mode (by ping rate)  
**Depth display resolution:** 0.01 meters  
**Depth precision:** 0.25% at full range  
**Housing type offered:** Stem type SS510  
**Temperature Sensor:** 10k ohm +/-0.05C accuracy  
**Temperature resolution:** 0.09 C  
**Power and data cable:** C304, 4 twisted shielded pairs, 7.6 m and 20 m  
**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)

### DATA OUTPUT PROTOCOL

#### NMEA 0183\* Standard Output Sentences

\$SDDPD .....Depth  
 \$SDDBT .....Depth Below Transducer  
 \$SDMTW .....Water Temperature

#### NMEA 0183\* Proprietary Commands/Responses

\$PAMTC, OPTION, SOSTW.....Speed of Sound Thru Water  
 \$PAMTC, OPTION, DOFFSET .....Depth Offset  
 \$PAMTC, OPTION, TOFFSET.....Temperature Offset  
 \$PAMTC, EN.....Enable/Disable Sentences  
 \$PAMTC, BAUD.....Change Baud Rate  
 \$PAMTC, ERST.....Reset User Eeprom  
 \$PAMTC, FC.....Query Format Code  
 \$PAMTC, INFO.....Query Device Information  
 \$PAMTC, POST.....Request Power on Self Test  
 \$PAMTC, QV.....Query Version Information  
 \$PAMTC, QPS.....Query Part and Serial Number  
 \$PAMTC, RESET.....Reset Processor  
 \$PAMTC, OPTION, MANUAL.....Manual Mode Commands  
 \$PAMTC, OPTION, PING.....Ping Control (On, Off, Once)  
 \$PAMTC, OUTPUTMC.....Sentence Mode Control  
 \$PAMTC, OPTION, PINGSPS.....Pings Per Second  
 \$PAMTC, OPTION, PULSESPP.....Pulses (Cycles) Per Ping  
 \$PAMTC, OPTION, RANGE.....Depth Range Control  
 \$PAMTC, OPTION, RANGEDEFAULT.....Default Depth Range Control  
 \$PAMTC, OPTION, SFILTER.....Sample Filter Control  
 \$PAMTC, OPTION, DFILTER.....Depth Filter Control  
 \$PAMTC, EEC .....Echo Envelope Control

\*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](http://www.nmea.org).



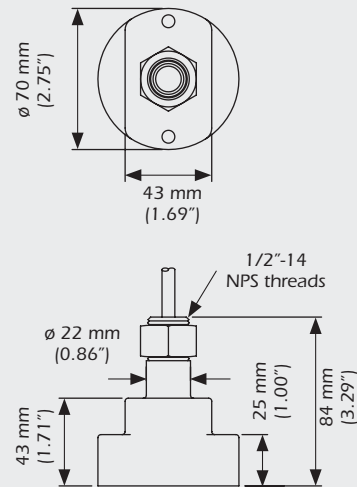
Sensing Technology



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### HOUSING DIMENSIONS

#### SS510



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